# Polaris

# Master Repair Manual

*Foreword*

*This manual is designed primarily for use by snowmobile service technicians in a properly equipped shop. Since a certain knowledge of mechanical theory, tool use, and shop procedures are necessary to perform the servicing work satisfactorily, all operations should be carried out only by qualified service personnel. In order to perform the work efficiently and prevent costly errors, the technician should read the text, thoroughly familiarizing himself with procedures before starting the work. Cleanliness of both the component to be repaired and the work area is of major importance.*

*This manual includes procedures for maintenance operations, component identification, and unit repair, along with service specifications for the 1972 through 1981 model Polaris snowmobiles. The handy section index tabs will enable the user to quickly locate the component unit section he desires. In addition, a table of contents is placed at the beginning of each section for location of specific page numbers and service information pertinent to that component.*

⚠ **THIS SYMBOL IS USED THROUGHOUT THE MANUAL TO IDENTIFY SPECIAL INSTRUCTIONS OR PROCEDURES WHICH ARE SAFETY RELATED AND REQUIRE YOUR SPECIAL ATTENTION.**

**"NOTE:" INDICATES SPECIAL POINTS OF PARTICULAR INTEREST WHICH WILL AID THE SERVICE TECHNICIAN IN WORK QUALITY AND EFFICIENCY.**

Polaris TEXTRON
Polaris E-Z-Go Division of Textron Inc.

*Technical Training Center*
*Roseau, MN 56751*

*Part No. 9910749*

# SECTION I

# MODELS AND SPECIFICATIONS

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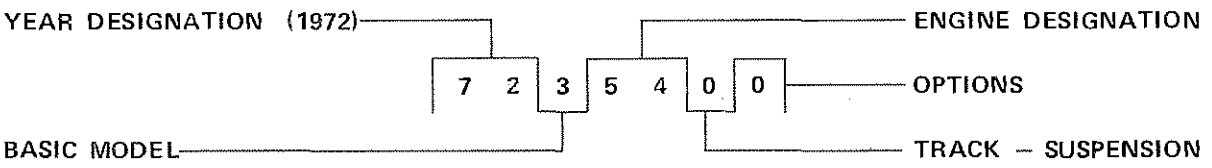
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## Model Identification

The machine serial number may be referred to as an aid in identifying machine model year. Refer to the first digit in the machine serial number for proper identification:

| FIRST DIGIT | MODEL YEAR | FIRST DIGIT | MODEL YEAR |
|---|---|---|---|
| 2 | 1967 | 8 | 1973 |
| 3 | 1968 | 9 | 1974 |
| 4 | 1969 | 10 | 1975 |
| 5 | 1970 | 02 | 1976 |
| 6 | 1971 | 03 | 1977 |
| 7 | 1972 | 04 | 1978 |
| | | 05 | 1979 |

### 1972 MODEL NUMBER IDENTIFICATION




| MODEL DESIGNATION | ENGINE DESIGNATION | TRACK – SUSPENSION |
|---|---|---|
| 1 – Charger | 17 – 175cc | Fan Air: 0 – Cleated, Slide Rail |
| 3 – Mustang | 25 – 244cc | Fan Air: 1 – Rubber, Driftskipper |
| 5 – Colt SS | 29 – 294cc | Fan Air: 2 – Cleated, Driftskipper |
| 7 – Charger SS | 34 – 335cc | |
| A – Aluminum TX Racer | 39 – 396cc | Free Air: 9 – Cleated, Slide Rail |
| C – Colt | 40 – 398cc | Free Air: A – Rubber, Driftskipper |
| D – TX | 43 – 439cc | Free Air: C – Cleated, Driftskipper |
| F – Aluminum Colt | 44 – 432cc | |
| | 50 – 488cc | Free Air Racing: G – Cleated, Slide Rail |
| | 51 – 502cc | Free Air Racing: H – Rubber, Driftskipper |
| | 54 – 530cc | Free Air Racing: J – Cleated, Driftskipper |
| | 65 – 648cc | |
| | 79 – 795cc | |

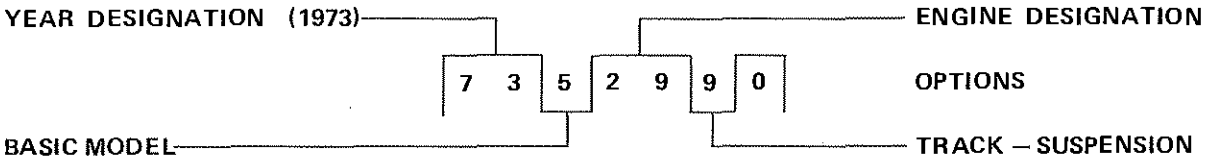
### OPTIONS

0 – Manual Start
1 – Electric Start
2 – Manual Start w/Transmission
4 – CD Manual Start
S – Sears

## MODELS AND SPECIFICATIONS

### Model Identification

#### 1973 MODEL NUMBER IDENTIFICATION

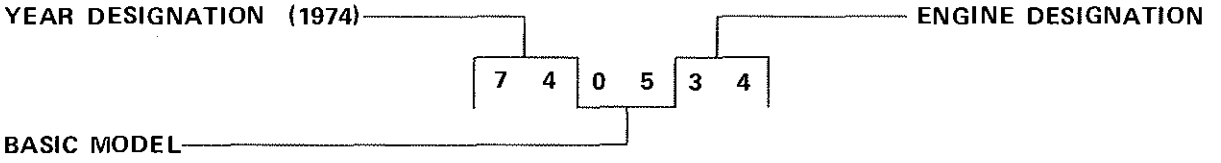



| MODEL DESIGNATION | ENGINE DESIGNATION | TRACK – SUSPENSION |
|---|---|---|
| 1 – Charger | 17 – 175cc | Fan Air – 0 – Cleated, Slide Rail |
| 3 – Mustang | 25 – 244cc | Free Air – 9 – Cleated, Slide Rail |
| 5 – Colt SS | 29 – 294cc | Free Air – G – Cleated, Slide Rail |
| A – ATX Racer | 34 – 335cc | Racing |
| C – Colt | 39 – 396cc | |
| D – ATX Consumer (TX) | 40 – 398cc | |
| | 43 – 439cc | |
| | 44 – 432cc | |
| | 50 – 488cc | |
| | 51 – 502cc | |
| | 54 – 530cc | |
| | 65 – 648cc | |
| | 79 – 795cc | |

**OPTIONS**

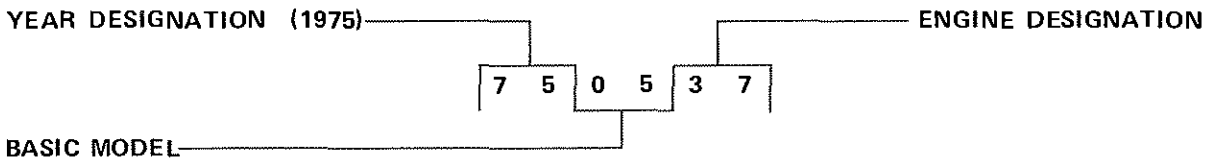
0 – Manual Start
4 – CD Ignition

#### 1974 MODEL NUMBER IDENTIFICATION



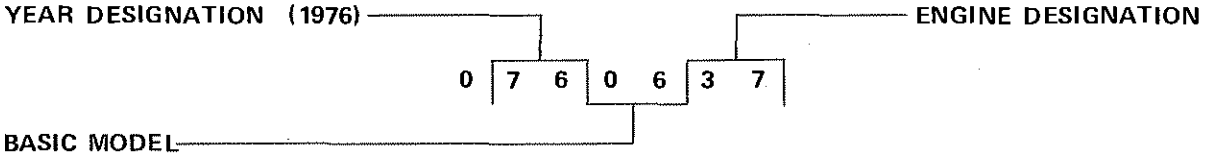

| MODEL DESIGNATION | ENGINE DESIGNATION | ENGINE DESIGNATION |
|---|---|---|
| 05 – TX | 17 – 175cc | 35 – 335cc |
| 10 – Colt | 18 – 175cc | 36 – 335cc |
| 11 – Colt SS | 22 – 250cc | 40 – 400cc |
| 25 – Electra | 23 – 250cc | 42 – 440cc |
| 26 – Custom II | 24 – 250cc | 44 – 440cc |
| 35 – TC | 25 – 250cc | 52 – 500cc |
| | 29 – 295cc | 54 – 530cc |
| | 34 – 335cc | |

## 1975 MODEL NUMBER IDENTIFICATION




| MODEL DESIGNATION | ENGINE DESIGNATION | ENGINE DESIGNATION |
|---|---|---|
| 05 – TX | 18 – 175cc | 36 – 340cc |
| 10 – Colt | 22 – 250cc | 37 – 340cc |
| 11 – Colt SS | 23 – 250cc | 42 – 440cc |
| 25 – Electra | 24 – 250cc | 45 – 440cc |
| 36 – TC | 25 – 250cc | 52 – 500cc |
| | 35 – 340cc | |

## 1976 MODEL NUMBER IDENTIFICATION

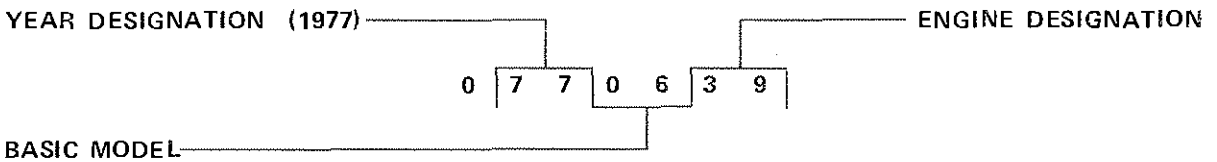



| MODEL DESIGNATION | ENGINE DESIGNATION | ENGINE DESIGNATION |
|---|---|---|
| 05 – TX | 18 – 175cc | 35 – 340cc |
| 06 – Starfire | 22 – 250cc, single | 36 – 340cc |
| 10 – Colt, Standard | 23 – 250cc, twin | 37 – 340cc |
| 11 – Colt SS | 24 – 250cc, twin | 42 – 440cc |
| 25 – Electra | 25 – 250cc, twin | 45 – 440cc |

## MODELS AND SPECIFICATIONS

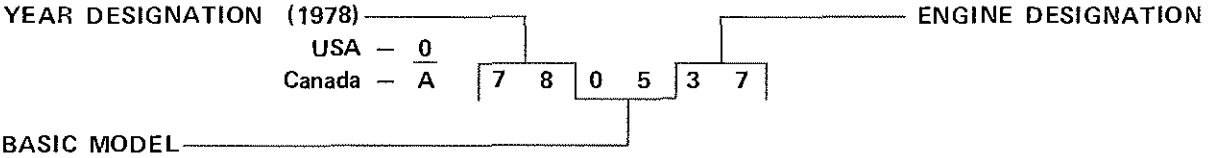
### Model Identification

#### 1977 MODEL NUMBER IDENTIFICATION




| MODEL DESIGNATION | ENGINE DESIGNATION | ENGINE DESIGNATION |
|---|---|---|
| 05 – TX | 23 – EC25PT–07 Twin | 38 – EC34PM–03 Twin |
| 06 – TXL | 24 – EC25PC Twin | 39 – EC34PL–01 Twin |
| 10 – Colt | 25 – EC25PS Single | 42 – EC44PQ Twin |
| 11 – Colt SS | 26 – EC25PM–01 Twin | 45 – EC44PT–05 Twin |
| 25 – Electra | 36 – EC34PQ Twin | 46 – EC44PT–06 Twin |
| | 37 – EC34PT–05 Twin | |

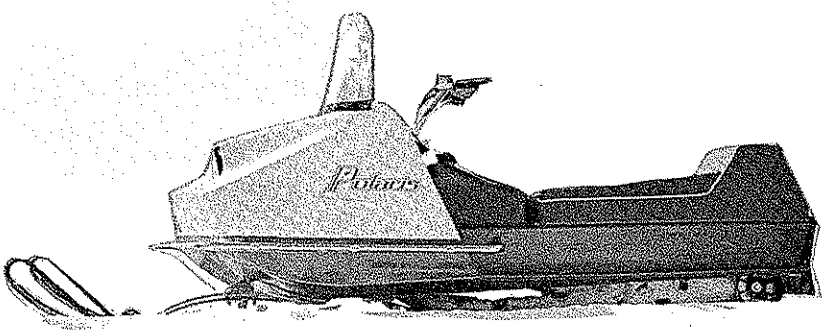
#### 1978 MODEL NUMBER IDENTIFICATION




| MODEL DESIGNATION | ENGINE DESIGNATION | ENGINE DESIGNATION |
|---|---|---|
| 05 – TX | 23 – EC25PT–07 Twin FA | 37 – EC34PL–03 Twin LC |
| 06 – TX-L | 24 – EC25PC Twin FA | 38 – EC34PM–03/04 Twin FA |
| 10 – Colt | 25 – EC25PS Single FC | 39 – EC34PL–02 Twin LC |
| 11 – S/S 340 | 37 – EC34PT–05 Twin FA | 43 – EC44PM–01 Twin FC |
| 15 – RXL | | 45 – EC44PT–05 Twin FA |
| 18 – Cobra | | |

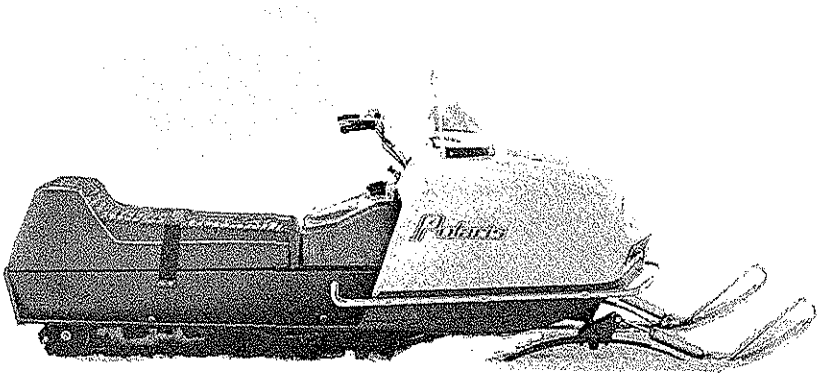
## 1972 COLT

Track Type — Growser Bar Double Drive
Track Length on Ground — 42"
Track Width — 15"
Overall Length w/Skis — 98"
Height w/Windshield — 39"
Height less Windshield — 29"
Approximate Weight — 300 pounds
Suspension — Power Slide
Transmission — Torque-O-Matic
Brake — Hydraulic Disc
Fuel Capacity (U.S. Gal.) — 5
Engine Options — Polaris 175cc/1 cylinder
Polaris 244cc/1 cylinder
Polaris 294cc/2 cylinder




## 1972 COLT SS

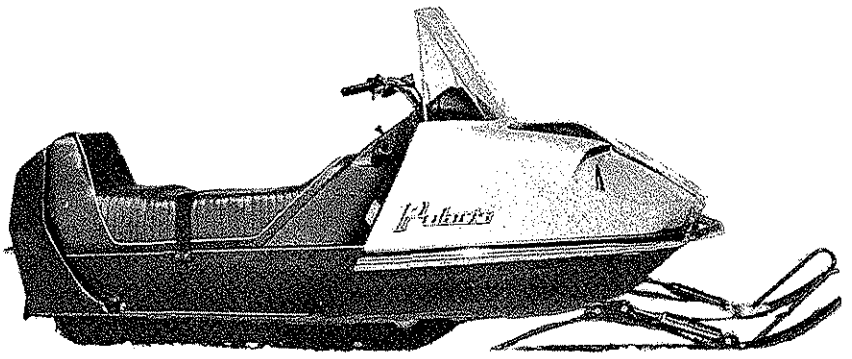
Track Type — Growser Bar Double Drive
Track Length on Ground — 42"
Track Width — 15"
Overall Length w/Skis — 98"
Height w/Windshield — 39"
Height less Windshield — 29"
Approximate Weight — 308 pounds
Suspension — Power Slide
Transmission — Torque-O-Matic
Brake — Hydraulic Disc
Fuel Capacity (U.S. Gal.) — 5
Engine Options — Polaris 294cc/2 cylinder



## MODELS AND SPECIFICATIONS

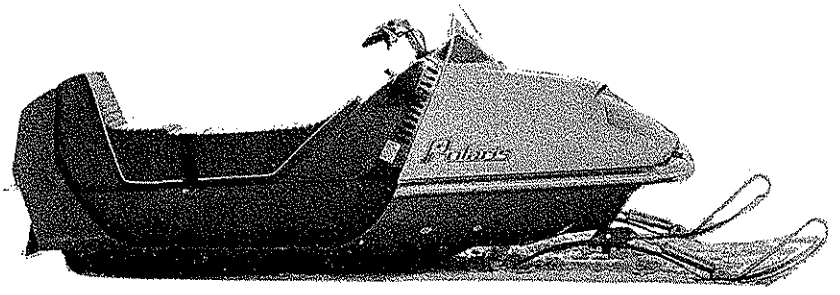
## 1972 Charger and 1972 Charger SS

### 1972 CHARGER



Track Type – Growser Bar Double Drive
Track Length on Ground – 45"
Track Width – 15"
Overall Length w/Skis – 104"
Height w/Windshield – 41"
Height less Windshield – 33"
Approximate Weight – 400 pounds
Suspension – Power Slide
Transmission – Torque-O-Matic
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 4.5
Engine Options – Polaris 294cc/2 cylinder
Polaris 398cc/2 cylinder
Polaris 530cc/2 cylinder

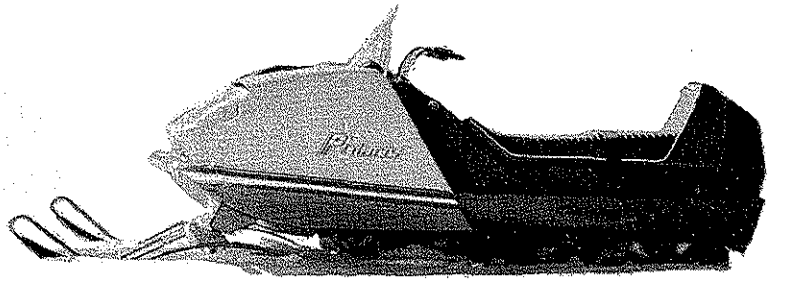
### 1972 CHARGER SS



Track Type – Growser Bar Double Drive
Track Length on Ground – 45"
Track Width – 15"
Overall Length w/Skis – 104"
Height w/Windshield – 41"
Height less Windshield – 33"
Approximate Weight – 390 pounds
Suspension – Power Slide
Transmission – Torque-O-Matic
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 4.5
Engine Options – Polaris 398cc/2 cylinder
Polaris 530cc/2 cylinder

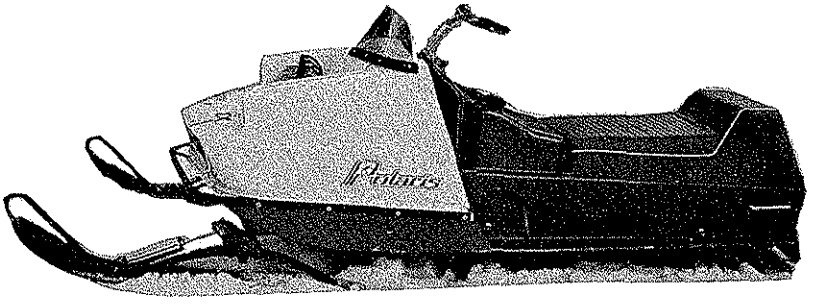
## 1972 MUSTANG

Track Type – Growser Bar Double Drive
Track Length on Ground – 45"
Track Width – 20"
Overall Length w/Skis – 108"
Height w/Windshield – 41"
Height less Windshield – 33"
Approximate Weight – 455 pounds
Suspension – Power Slide
Transmission – Torque-O-Matic
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 4.5
Engine Options – Polaris 398cc/2 cylinder
Polaris 530cc/2 cylinder



## 1972 ATX (TX)

Track Type – Growser Bar Double Drive
Track Length on Ground – 45"
Track Width – 15"
Overall Length w/Skis – 101"
Height w/Windshield – 37"
Height less Windshield – 29"
Approximate Weight – 340 pounds
Suspension – Power Slide
Transmission – Torque-O-Matic
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
Engine Options – Polaris 335cc/2 cylinder
Polaris 500cc/3 cylinder



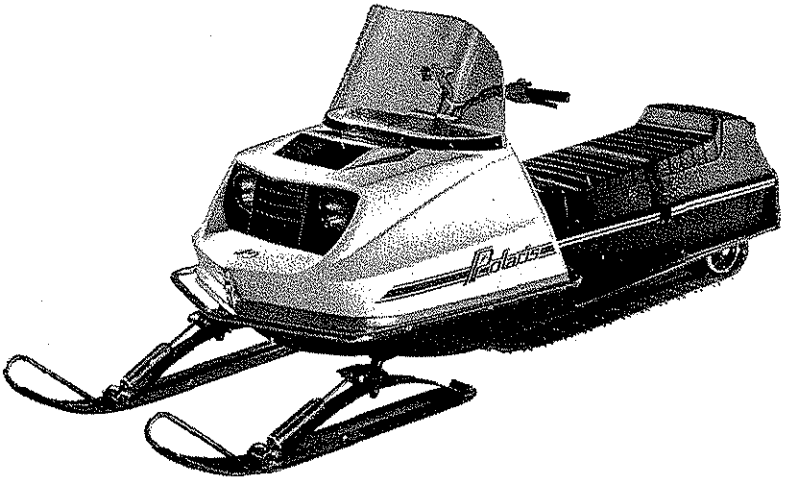
1973 COLT

Track Type — Growser Bar Double Drive
Track Length on Ground — 42"
Track Width — 15"
Overall Length w/Skis — 98"
Height w/Windshield — 39"
Height less Windshield — 29"
Approximate Weight — 300 pounds
Suspension — Power Slide
Transmission — Torque-O-Matic
Brake — Hydraulic Disc
Fuel Capacity (U.S. Gal.) — 5
Engine Options — Polaris 175cc/1 cylinder
Polaris 244cc/1 cylinder
Polaris 294cc/2 cylinder
NOTE: No Hood or Tunnel Stripe on Polaris 175cc Models
No Tunnel Stripe on Polaris 244cc Models



1973 COLT SS

Track Type — Growser Bar Double Drive
Track Length on Ground — 42"
Track Width — 15"
Overall Length w/Skis — 98"
Height w/Windshield — 39"
Height less Windshield — 29"
Approximate Weight — 308 pounds
Suspension — Power Slide
Transmission — Torque-O-Matic
Brake — Hydraulic Disc
Fuel Capacity (U.S. Gal.) — 5
Engine Options — Polaris 294cc/2 cylinder
Polaris 335cc/2 cylinder



## 1973 CHARGER

Track Type – Growser Bar Double Drive
Track Length on Ground – 45"
Track Width – 15"
Overall Length w/Skis – 104"
Height w/Windshield – 42"
Height less Windshield – 34"
Approximate Weight – 400 pounds
Suspension – Power Slide
Transmission – Torque-O-Matic
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 4.5
Engine Options – Polaris 294cc/2 cylinder
Polaris 398cc/2 cylinder
Polaris 530cc/2 cylinder



## 1973 MUSTANG

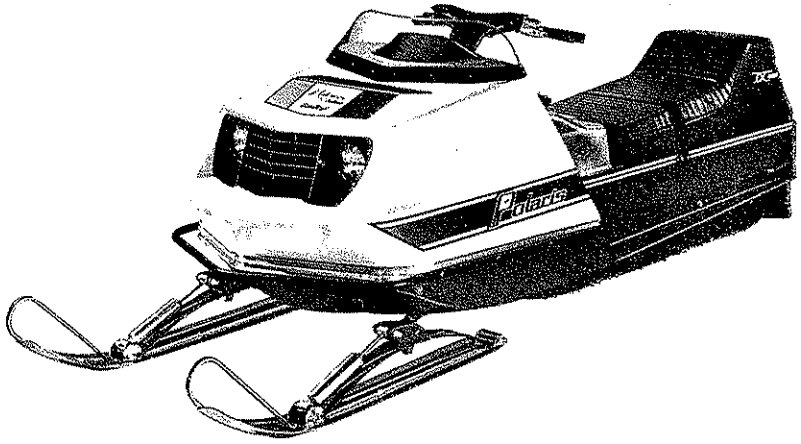
Track Type – Growser Bar Double Drive
Track Length on Ground – 45"
Track Width – 20"
Overall Length w/Skis – 108"
Height w/Windshield – 41"
Height less Windshield – 33"
Approximate Weight – 455 pounds
Suspension – Power Slide
Transmission – Torque-O-Matic
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 4.5
Engine Options – Polaris 398cc/2 cylinder
Polaris 530cc/2 cylinder



## MODELS AND SPECIFICATIONS

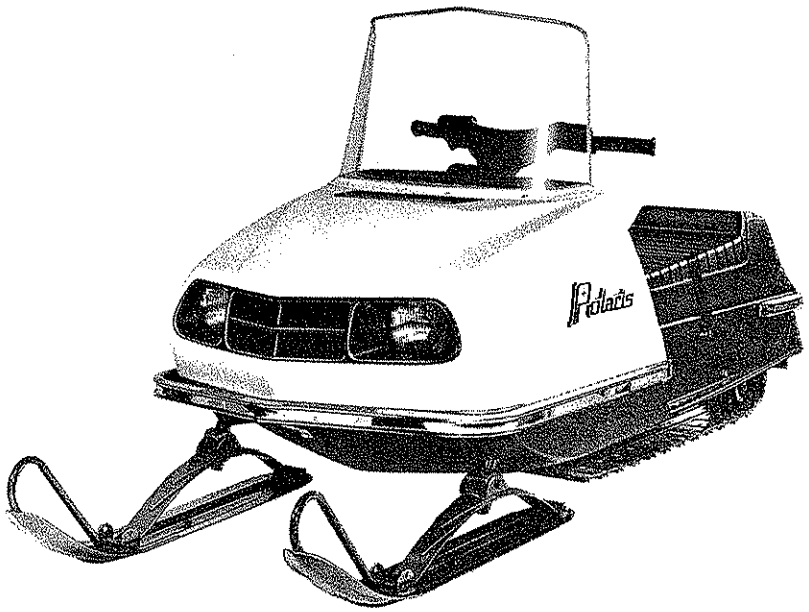
### 1973 TX and 1974 Colt

1973 TX



Track Type — Growser Bar Double Drive
Track Length on Ground — 45"
Track Width — 15"
Overall Length w/Skis — 101"
Height w/Windshield — 37"
Height less Windshield — 29"
Approximate Weight — 332 pounds
Suspension — Power Slide
Transmission — Torque-O-Matic
Brake — Hydraulic Disc
Fuel Capacity (U.S. Gal.) — 5
Engine Options — Polaris 295cc/2 cylinder
Polaris 335cc/2 cylinder
Polaris 398cc/2 cylinder
Polaris 432cc/2 cylinder
Polaris 500cc/3 cylinder

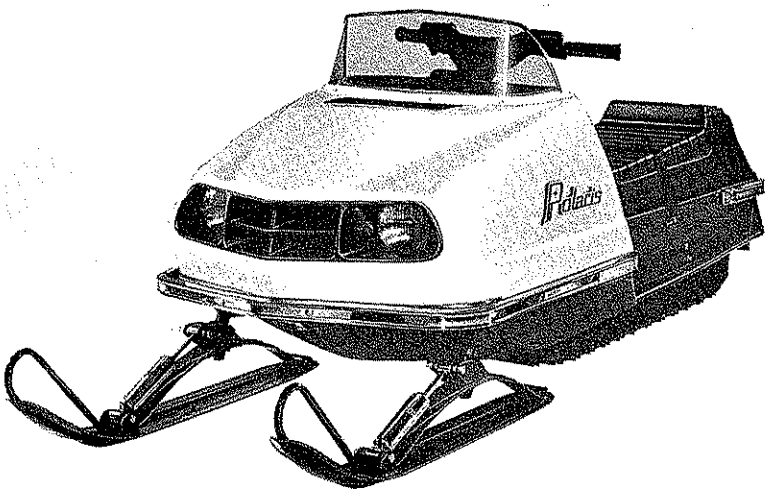
1974 COLT



Track Type — Growser Bar Double Drive
Track Length on Ground — 42"
Track Width — 15"
Overall Length w/Skis — 100"
Height w/Windshield — 41"
Height less Windshield — 32"
Approximate Weight — 300 pounds
Suspension — Equaliberator Slide —
No shocks provided on 175cc models
Transmission — Torque-Balance Drive System
Brake — Hydraulic Disc
Fuel Capacity (U.S. Gal.) — 5
Engine Options —
Polaris Star 175cc/1 cylinder
Polaris Star 244cc/1 cylinder
Polaris Star 294cc/2 cylinder

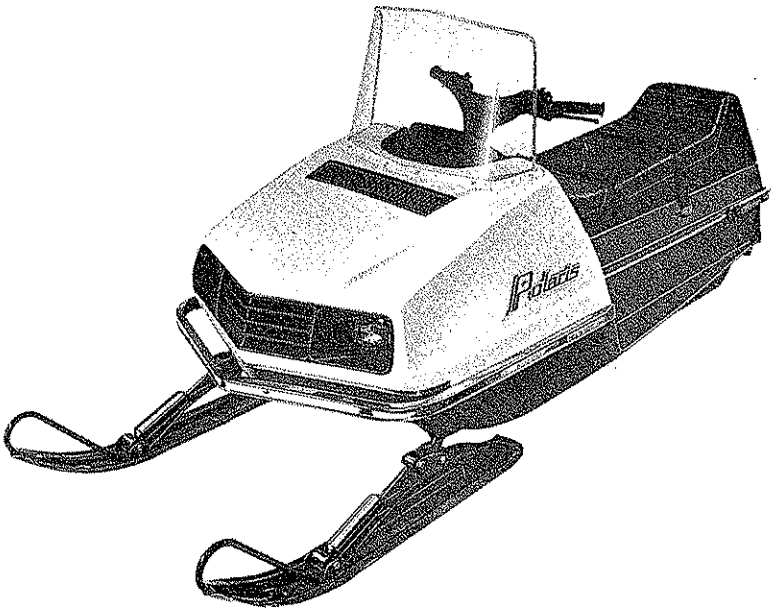
## 1974 COLT SS

Track Type – Growser Bar Double Drive
Track Length on Ground – 42"
Track Width – 15"
Overall Length w/Skis – 100"
Height w/Windshield – 34"
Height less Windshield – 32"
Approximate Weight – 335 pounds
Suspension – Equaliberator Slide
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
Engine Options –
Polaris Star 250cc/2 cylinder
Polaris Star 294cc/2 cylinder
Polaris Star 335cc/2 cylinder




## 1974 CUSTOM II

Track Type – Growser Bar Double Drive
Track Length on Ground – 45"
Track Width – 18"
Overall Length w/Skis – 104"
Height w/Windshield – 44"
Height less Windshield – 32"
Approximate Weight – 400 pounds
Suspension – Equaliberator Slide
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 6.5
Engine Options –
Polaris Star 244cc/1 cylinder
Polaris Star 398cc/2 cylinder
Polaris Star 530cc/2 cylinder

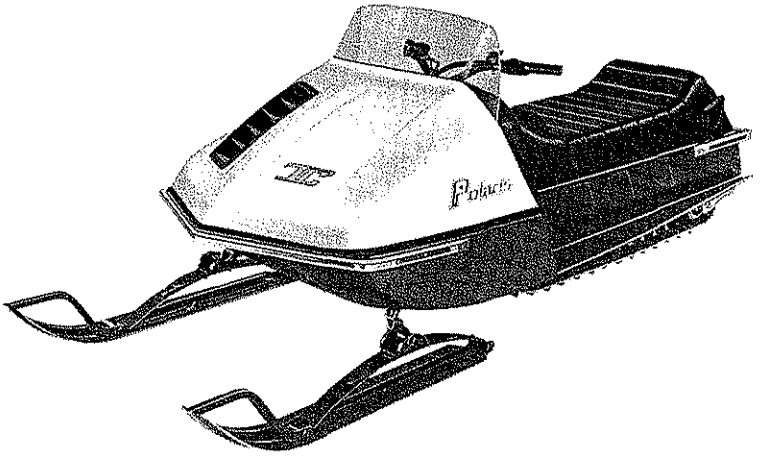


1974 ELECTRA



Track Type — Growser Bar Double Drive
Track Length on Ground — 45"
Track Width — 18"
Overall Length w/Skis — 104"
Height w/Windshield — 44"
Height less Windshield — 32"
Approximate Weight — 405 pounds
Suspension — Equaliberator Slide
Transmission — Torque-Balance Drive System
Brake — Hydraulic Disc
Fuel Capacity (U.S. Gal.) — 6.5
Engine Options —
Polaris Silent Star 336cc/2 cylinder
Polaris Silent Star 432cc/2 cylinder

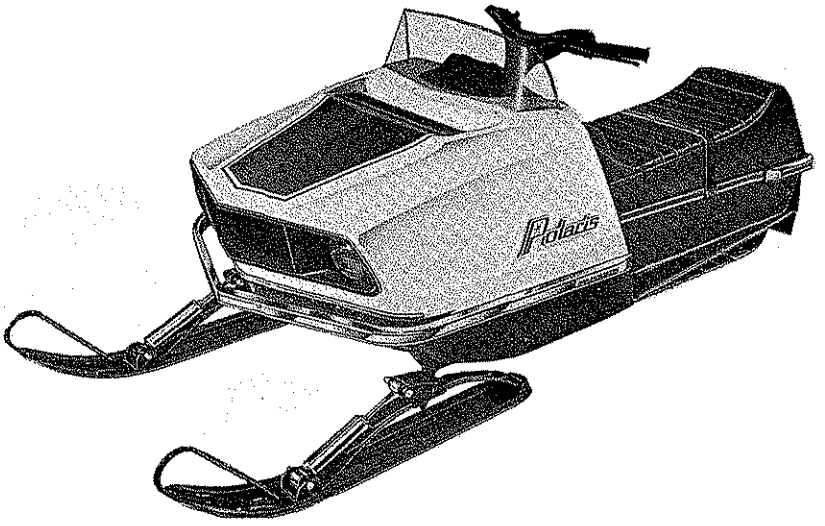
1974 TC



Track Type — IDL (Involute Drive Lug) Molded Track
Track Length on Ground — 38"
Track Width — 15"
Overall Length w/Skis — 87"
Height w/Windshield — 32"
Height w/Windshield Down — 27"
Approximate Weight — 235 pounds
Suspension — Bogie Wheel
Transmission — Torque-Balance Drive System
Brake — Band-drum
Fuel Capacity (U.S. Gal.) — 5
Engine Options —
Polaris Star 175cc/1 cylinder
Polaris Star 244cc/1 cylinder

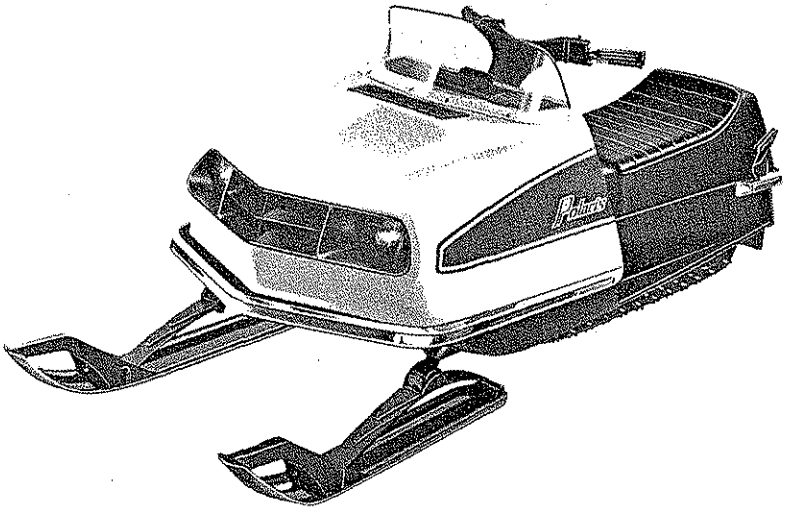
1974 TX

Track Type – Growser Bar Double Drive
Track Length on Ground – 45"
Track Width – 15"
Overall Length w/Skis – 103.5"
Height w/Windshield – 36"
Height less Windshield – 34"
Approximate Weight – 375 pounds
(Depending on Model)
Suspension – Equaliberator Slide
(Stamped Steel)
Transmission – Torque-Balance Drive
System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5.2
Engine Options –
Polaris SuperStar 250cc/2 cylinder
Polaris SuperStar 335cc/2 cylinder
Polaris SuperStar 432cc/2 cylinder
Polaris SuperStar 500cc/3 cylinder



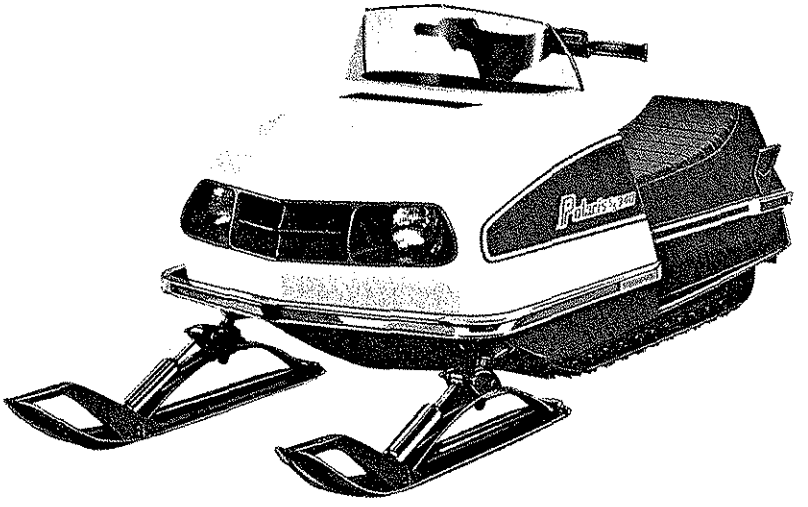

1975 COLT

Track Type – Rubber with Steel Cleats and
Molded Rubber Ice Growsers
Track Length on Ground – 42"
Track Width – 15"
Overall Length w/Skis – 100"
Height w/Windshield – 34"
Height less Windshield – 32"
Approximate Weight – 345 pounds
Suspension – Slide Rail
Transmission – Torque-Balance Drive
System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Star 250cc/2 cylinder
Polaris Star 336cc/2 cylinder



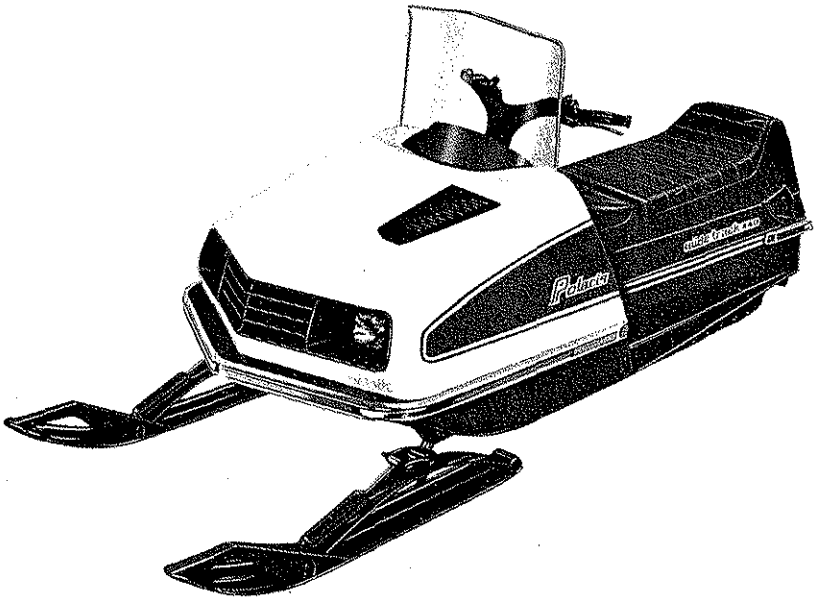
## 1975 COLT SS

Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Length on Ground – 42"
Track Width – 15"
Overall Length w/Skis – 100"
Height w/Windshield – 34"
Height less Windshield – 32"
Approximate Weight – 350 pounds
Suspension – Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Star 250cc/2 cylinder
Polaris Star 336cc/2 cylinder



## 1975 ELECTRA

Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Length on Ground – 46"
Track Width – 18"
Overall Length w/Skis – 102.25"
Height w/Windshield – 42.5"
Height less Windshield – 31.5"
Approximate Weight – 408 pounds
Suspension – Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 6.2
(Imp. Gal.) – 5.16
Engine Options –
Polaris Star 244cc/1 cylinder
Polaris Silent Star 336cc/2 cylinder
Polaris Silent Star 439cc/2 cylinder



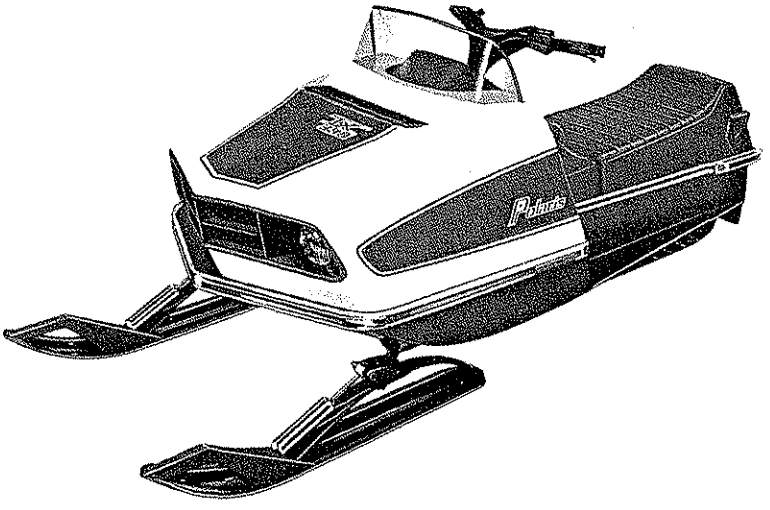
1975 TC

Track Type – IDL (Involute Drive Lug) Molded Track
Track Length on Ground – 38"
Track Width – 15"
Overall Length w/Skis – 87"
Height w/Windshield – 32"
Height w/Windshield Down – 27"
Approximate Weight – 235 pounds
Suspension – Bogie Wheel
Transmission – Torque-Balance Drive System
Brake – Band-drum
Fuel Capacity (U.S. Gal.) – 5
Engine Options –
Polaris Star 175cc/1 cylinder
Polaris Star 244cc/1 cylinder



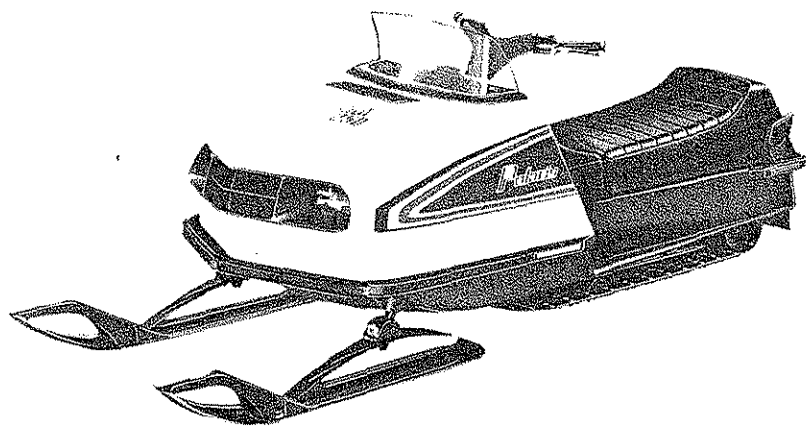

1975 TX

Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Length on Ground – 45"
Track Width – 15"
Overall Length w/Skis – 103.5"
Height w/Windshield – 36"
Height less Windshield – 34"
Approximate Weight – 375 pounds (Depending on Model)
Suspension – Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5.2
(Imp. Gal.) – 4.33
Engine Options –
Polaris SuperStar 250cc/2 cylinder
Polaris SuperStar 335cc/2 cylinder
Polaris SuperStar 432cc/2 cylinder
Polaris SuperStar 500cc/3 cylinder



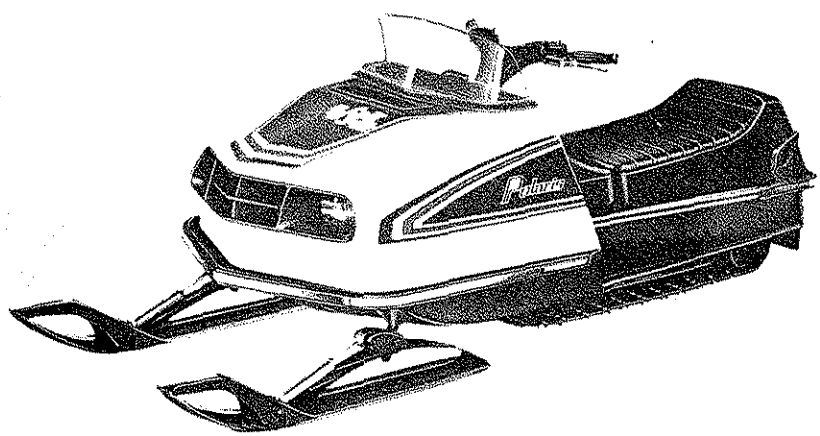
1976 COLT

Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.058 lbs./sq. in.
Track Length on Ground – 42"
Track Width – 15"
Overall Length w/Skis – 100.5"
Height w/Windshield – 34"
Height less Windshield – 31.5"
Width – 31"
Approximate Dry Weight – 343/355 Pounds
Suspension – Stamped Steel Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Star 175cc/1 cylinder
Polaris Star 244cc/1 cylinder
Polaris Star 250cc/2 cylinder
Polaris Star 340cc/2 cylinder



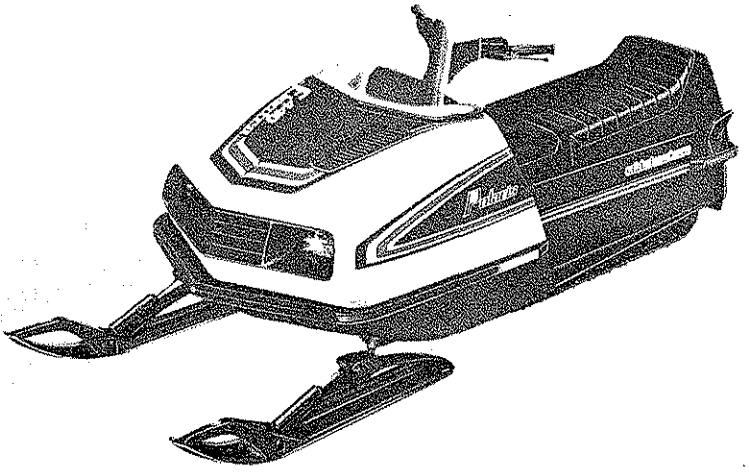
1976 COLT SS

Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.058 lbs./sq. in.
Track Length on Ground – 42"
Track Width – 15"
Overall Length w/Skis – 100.5"
Height w/Windshield – 34"
Height less Windshield – 31.5"
Width – 31"
Approximate Dry Weight – 348/358 pounds
Suspension – Stamped Steel Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity – (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Star 250cc/2 cylinder
Polaris Star 336cc/2 cylinder



Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.224 lbs./sq. in.
Track Length on Ground – 46"
Track Width – 18"
Overall Length w/Skis – 102.25"
Height w/Windshield – 42.5"
Height less Windshield – 31.5"
Width – 33.5"
Approximate Dry Weight – 408/431 pounds
Suspension – Stamped Steel Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 6.2
(Imp. Gal.) – 5.16
Engine Options –
Polaris Star 244cc/1 cylinder
Polaris Silent Star 339cc/2 cylinder
Polaris Silent Star 433cc/2 cylinder

1976 ELECTRA



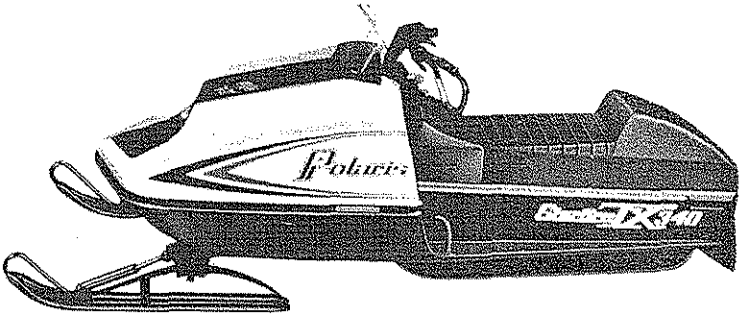
Track Type – Rubber with Steel Growser Bars
Track Bearing Area – 1.148 lbs./sq. in.
Track Length on Ground – 49.25"
Track Width – 15"
Overall Length w/Skis – 102.75"
Height w/Windshield – 34.5"
Height less Windshield – 31.75"
Width – 38"
Approximate Dry Weight – 370/373/378 pounds
Ski Springs – Monoleaf
Suspension – Extruded Aluminum Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris SuperStar 250cc/2 cylinder
Polaris SuperStar 336cc/2 cylinder
Polaris SuperStar 433cc/2 cylinder

1976 TX



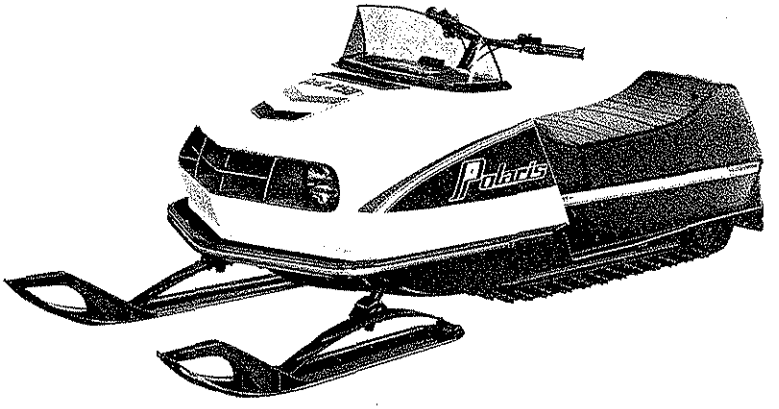
Track Type – Rubber with Steel Growser Bars with 47 Steel and Carbide Studs
Track Bearing Area – 1.038 lbs./sq. in.
Track Length on Ground – 49.25"
Track Width – 15"
Overall Length w/Skis – 99.125"
Height w/Windshield – 34.5"
Height less Windshield – 31.75"
Width – 38"
Approximate Dry Weight – 369/371 pounds
Ski Springs – 3 Leaf
Suspension – Aluminum Extruded Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Starflame 250cc/2 cylinder
Polaris Starflame 340cc/2 cylinder

1976 STARFIRE



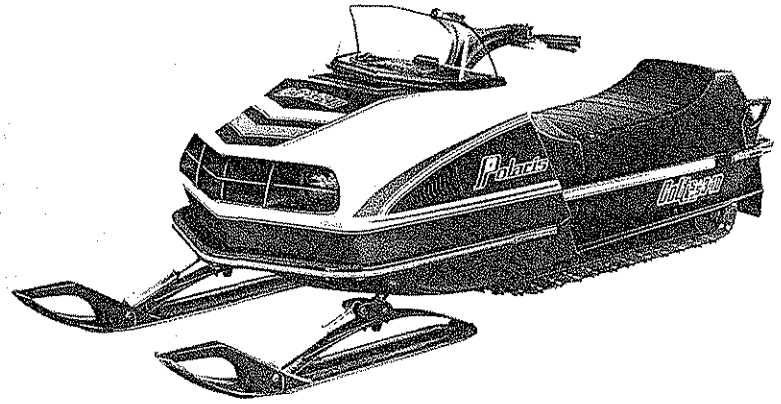

Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.058 lbs./sq. in.
Track Length on Ground – 42"
Track Width – 15"
Overall Length w/Skis – 100.5"
Height w/Windshield – 34.0"
Height less Windshield – 31.5"
Width – 31.0"
Approximate Dry Weight – 348/360 pounds
Suspension – Stamped Steel Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Star 244cc/1 cylinder
Polaris Star 250cc/2 cylinder

1977 COLT



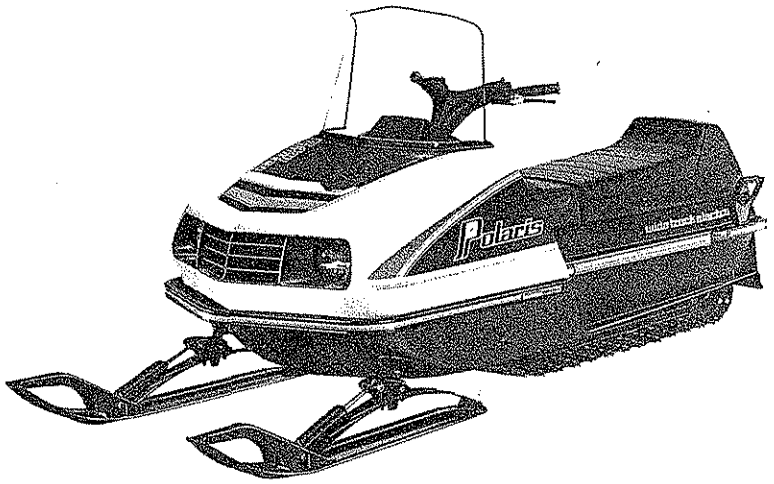
1977 COLT SS

Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.058 lbs./sq. in.
Track Length on Ground – 42"
Track Width – 15"
Overall Length w/Skis – 100.5"
Height w/Windshield – 34.0"
Height less Windshield – 31.5"
Width – 31.0"
Approximate Dry Weight – 368 pounds
Suspension – Stamped Steel Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Star 244cc/2 cylinder
Polaris Star 333cc/2 cylinder




1977 ELECTRA

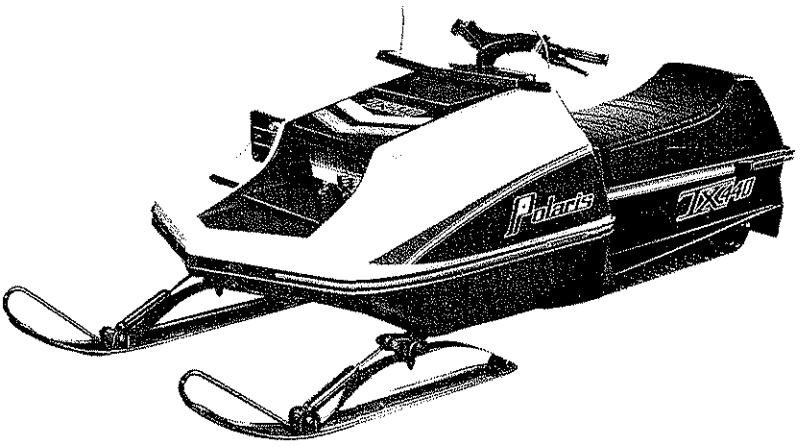
Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.224 lbs./sq. in.
Track Length on Ground – 46"
Track Width – 18"
Overall Length w/Skis – 102.25"
Height w/Windshield – 42.5"
Height less Windshield – 36.375"
Width – 33.5"
Approximate Dry Weight – 402/421/431 pounds
Suspension – Stamped Steel Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 6.21
(Imp. Gal.) – 5.16
Engine Options –
Polaris Star 244cc/1 cylinder
Polaris Silent Star 339cc/2 cylinder
Polaris Silent Star 433cc/2 cylinder



## MODELS AND SPECIFICATIONS

## 1977 TX and 1977 TX–L

1977 TX




Track Type – Rubber with Steel Grower Bars
Track Bearing Area – 1.037 lbs./sq. in
Track Length on Ground – 49.25"
Track Width – 15"
Overall Length w/Skis – 102.75"
Height w/Windshield – 34.5"
Height less Windshield – 31.50"
Width – 38"
Approximate Dry Weight – 370/373/378 pounds
Ski Springs – Monoleaf
Suspension – Extruded Aluminum Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris SuperStar 249cc/2 cylinder
Polaris SuperStar 336cc/2 cylinder
Polaris SuperStar 433cc/2 cylinder

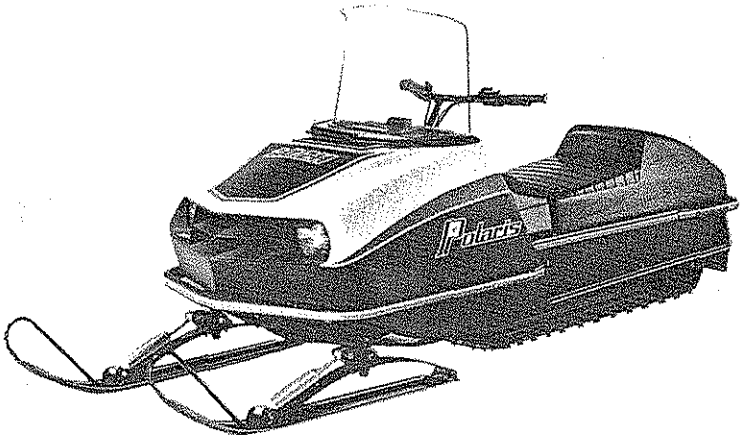
1977 TX–L




Track Type – Molded Rubber
Track Bearing Area – 1.087 lbs./sq. in.
Track Length on Ground – 47.5"
Track Width – 15"
Overall Length w/Skis – 102.75"
Height w/Windshield – 34.5"
Height less Windshield – 31.50"
Width – 38"
Approximate Dry Weight – 405 pounds
Ski Springs – Monoleaf
Suspension – Extruded Aluminum Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Starflame 333cc/2 cylinder

Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.058 lbs./sq. in.
Track Length on Ground – 42"
Track Width – 15"
Overall Length w/Skis – 101.25"
Height w/Windshield – 34"
Height less Windshield – 31.5"
Width – 31.5"
Approximate Dry Weight – 348/360 pounds
Suspension – Stamped Steel Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Star 244cc/1 cylinder
Polaris Star 250cc/2 cylinder

1978 COLT

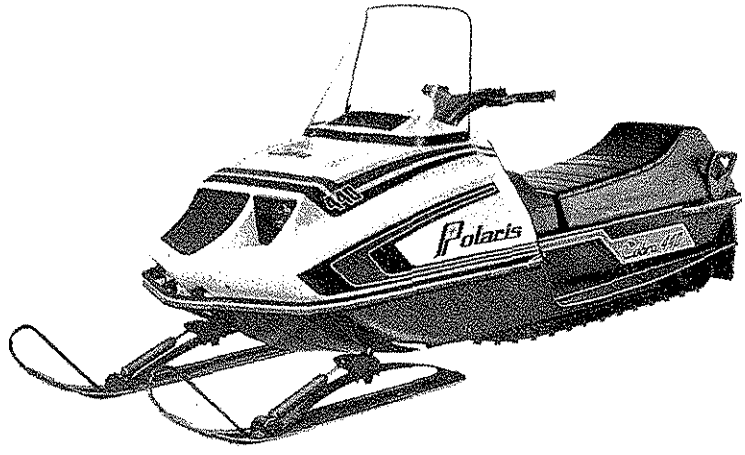



Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.058 lbs./sq. in.
Track Length on Ground – 42"
Track Width – 15"
Overall Length w/Skis – 101.25"
Height w/Windshield – 38"
Height less Windshield – 31.5"
Width – 31.5"
Approximate Dry Weight – 368 pounds
Suspension – Stamped Steel Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5
(Imp. Gal.) – 4.16
Engine Options –
Polaris Star 333cc/2 cylinder

1978 S/S 340



1978 COBRA




Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.094 lbs./sq. in.
Track Length on Ground – 48.75"
Track Width – 15"
Overall Length w/Skis – 104"
Height w/Windshield – 42.625"
Height less Windshield – 31.5"
Width – 33.5"
Approximate Dry Weight – 396/406.5 pounds
Suspension – Stamped Steel Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 5.2
(Imp. Gal.) – 4.33
Engine Options –
Polaris Star 333cc/2 cylinder
Polaris Star 432cc/2 cylinder

1978 TX




Track Type – Rubber with Steel Cleats and Molded Rubber Ice Growsers
Track Bearing Area – 1.037 lbs./sq. in.
Track Length on Ground – 44.25"
Track Width – 15"
Overall Length w/Skis – 103.75"
Height w/Windshield – 34.5"
Height less Windshield – 31.5"
Width – 38"
Approximate Dry Weight – 370/373/378 pounds
Ski Springs – Monoleaf
Suspension – Extruded Aluminum Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 7
(Imp. Gal.) – 5.83
Engine Options –
Polaris SuperStar 249cc/2 cylinder
Polaris SuperStar 336cc/2 cylinder
Polaris SuperStar 432cc/2 cylinder

Track Type – Rubber Construction Involute Drive with Molded Rubber Cleats
Track Bearing Area – 1.087 lbs./sq. in.
Track Length on Ground – 47.5"
Track Width – 15"
Overall Length w/Skis – 103.75"
Height w/Windshield – 34.5"
Height less Windshield – 31.5"
Width – 38"
Approximate Dry Weight – 405 pounds
Ski Springs – Monoleaf
Suspension – Extruded Aluminum Slide Rail
Transmission – Torque-Balance Drive System
Brake – Hydraulic Disc
Fuel Capacity (U.S. Gal.) – 7
(Imp. Gal.) – 5.83
Engine Options –
Polaris SuperStar 333cc/2 cylinder

1978 TX–L



## 1979 MODEL NUMBER IDENTIFICATION

YEAR DESIGNATION (1979) — ENGINE DESIGNATION

0 | 7 9 | 0 5 | 3 7

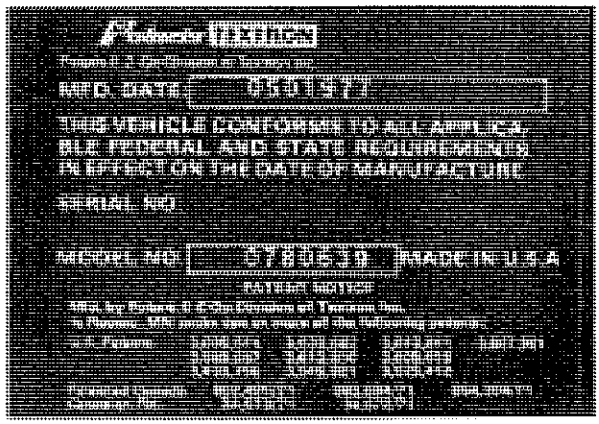
BASIC MODEL

| MODEL DESIGNATION | ENGINE DESIGNATION | ENGINE DESIGNATION |
|---|---|---|
| 05 – TX | 23 – EC25PT–07 Twin FA | 39 – EC34PL–02 Twin LC |
| 06 – TX-L/Centurion | 25 – EC25PS Single FC | 43 – EC44PM–01 Twin FC |
| 10 – Gemini | 26 – EC25PM–01 Twin FC | 45 – EC44PT–05 Twin FA |
| 11 – Apollo 340 | 37 – EC34PT–05 Twin FA | 53 – EC51PL–01 Three LC |
| 18 – Cobra | 38 – EC34PM–03/04 Twin FC | |

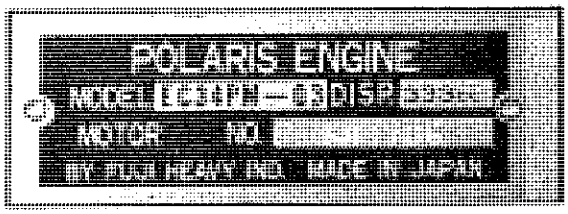
| MODEL NUMBER | MACHINE DESCRIPTION | MODEL NUMBER | MACHINE DESCRIPTION |
|---|---|---|---|
| 0791025 | Gemini 244cc Single FC | 0790523 | TX 250cc Twin FA |
| 0791026 | Gemini 250cc Twin FC | 0790537 | TX 340cc Twin FA |
| 0791138 | Apollo 340cc Twin FC | 0790545 | TX 440cc Twin FA |
| 0791838 | Cobra 340cc Twin FC | 0790639 | TX-L 340cc Twin LC |
| 0791843 | Cobra 440cc Twin FC | 0790653 | Centurion 500cc Three LC |

These numbers should be referred to in any correspondence regarding warranty, service or replacement parts.

The Machine Model and Serial Number Identification Tag is located on the right front side of the tunnel. The Serial Number is permanently stamped into the tunnel and the Model Number is embossed on the tag.



Whenever corresponding about an engine it is important that the Engine Model and Serial Number be called out. This information is found on the Engine Identification Plate generally located on the crankcase.





Star Engine Options:

EC25PS – 244cc Single Cylinder Fan Cooled – Model Number 0791025
EC25PM–01 – 244cc Twin Cylinder Fan Cooled – Model Number 0791026

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris - torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel, hinged |
| Drive Belt | 30° 11.1" C.D., part number 3211021 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 13/35 – 244 single cylinder<br>15/35 – 250 twin cylinder |
| Drive Chain | 84 pitch 35-2 – 244 single cylinder<br>86 pitch internal tooth silent – 250 twin cylinder |

Track and Suspension:

| | |
|---|---|
| Track Type | belted rubber with steel cleats and molded-on rubber ice growsers |
| Width | 15" |
| Length | 114.44" pitch length, track length on ground – 42" |
| Suspension Type | slide rail, stamped steel construction |
| Shock Absorber | accessory |
| Sprockets | combination sprocket with idler |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 24" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | 2 leaf on 244 single cylinder; 3 leaf on 250 twin cylinder |
| Shocks | accessory |
| Rubber Stable Ski Insert | accessory on 244 single cylinder, standard on 250 twin cylinder |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | with accessory instrument package |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | optional speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | steel, spot welded |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard without gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel, hitch as accessory |
| Front Bumper | one-piece steel wraparound |
| Running Board Pads | formed safety walk |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear spring latches |
| Hood Trim | Polaris side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weights:

| | |
|---|---|
| Height Less Windshield | 31" |
| Length with Skis | 101.75" |
| Width | 31.5" |
| Approximate Dry Weight | 355 pounds — 244 single cylinder<br>365 pounds — 250 twin cylinder |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

MODELS AND SPECIFICATIONS

1979 Apollo 340



Star Engine Options:

EC34PM–03 – 333cc Twin Cylinder Fan Cooled – Model Number 0791138

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel, hinged |
| Drive Belt | 30° 11.1" C.D., part number 3211021 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 18/35 |
| Drive Chain | 88 pitch internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber convolute with molded-on rubber traction bars |
| Width | 15" |
| Length | 114.85" pitch length, track length on ground – 42" |
| Suspension Type | slide rail, stamped steel construction |
| Shock Absorber | standard |
| Sprockets | combination sprocket with idler |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 27" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | 3 leaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Adjustments | rotational adjustments |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | with accessory instrument package |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | optional speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | steel, spot welded |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard without gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel, hitch as accessory |
| Front Bumper | one-piece steel wraparound |
| Running Board Pads | formed safety walk |
| Tunnel Stripe | decal |

Hood

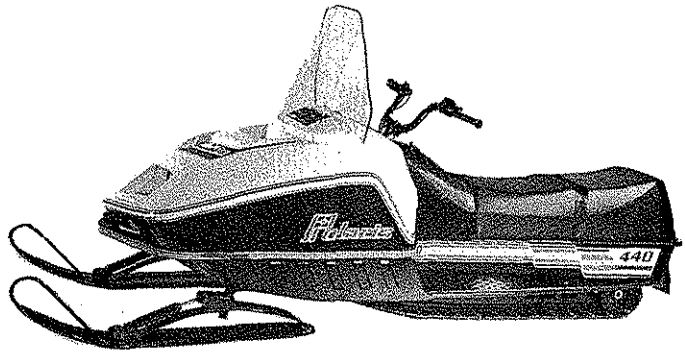
| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear spring latches |
| Hood Trim | Polaris side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31" |
| Length with Skis | 101.75" |
| Width | 31.5" |
| Approximate Dry Weight | 375 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

1979 Cobra




Star Engine Options:

EC34PM–04 – 333cc Twin Cylinder Fan Cooled – Model Number 0791838
EC44PM–01 – 432cc Twin Cylinder Fan Cooled – Model Number 0791843

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 15/35 – 340 twin cylinder |
| | 17/33 – 440 twin cylinder |
| Drive Chain | 88 pitch internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | belted rubber with steel cleats and molded-on rubber ice growsers |
| Width | 15" |
| Length | 119.5" pitch length, track length on ground – 48.75" |
| Suspension Type | slide rail, stamped steel construction |
| Shock Absorber | standard |
| Sprockets | combination sprocket with idler |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 28" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | 3 leaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Adjustments | rotational adjustments |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | with accessory instrument package |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | optional speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | steel, spot welded |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | storage case with zipper closure attached to chassis under hood |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard without gauge |
| Foot Rests | standard — stirrup type |
| Rear Bumper | tubular steel, hitch as accessory |
| Front Bumper | one-piece steel wraparound |
| Running Board Pads | formed safety walk |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear spring latches |
| Hood Trim | Polaris side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 32" |
| Length with Skis | 104" |
| Width | 33.5" |
| Approximate Dry Weight | 396 pounds — 340 twin cylinder<br>406.5 pounds — 440 twin cylinder |

Tool Kit and Owner's Manual — standard



SuperStar Engine Options:

EC25PT–07 – 249cc Twin Cylinder Free Air – Model Number 0790523
EC34PT–05 – 336cc Twin Cylinder Free Air – Model Number 0790537
EC44PT–05 – 432cc Twin Cylinder Free Air – Model Number 0790545

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 15/39 – 250 twin cylinder |
| | 17/39 – 340 twin cylinder |
| | 19/39 – 440 twin cylinder |
| Drive Chain | 64 pitch internal tooth silent – 250 twin cylinder |
| | 66 pitch internal tooth silent – 340 and 440 twin cylinder |

Track and Suspension:

| | |
|---|---|
| Track Type | belted rubber with steel cleats and molded-on rubber ice growsers |
| Width | 15" |
| Length | 114.44" pitch length, track length on ground – 44.25" |
| Suspension Type | extruded aluminum slide rail |
| Shock Absorber | standard |
| Sprockets | combination sprocket with idler |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | 2 watt |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | speedometer and tachometer with instrument lighting |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with ABS nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard with gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel, hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear spring latches |
| Hood Trim | Polaris side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 370 pounds – 250 twin cylinder<br>373 pounds – 340 twin cylinder<br>378 pounds – 440 twin cylinder |

Tool Kit and Owner's Manual — standard

MODELS AND SPECIFICATIONS

1979 TX–L



SuperStar Engine Options:

EC34PL–02 – 333cc Twin Cylinder Liquid Cooled – Model Number 0790639

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 19/39 |
| Drive Chain | 66 pitch internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | 2 watt |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | speedometer, tachometer, and coolant high temperature warning indicator light with instrument lighting |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with ABS nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard with gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel, hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear spring latches |
| Hood Trim | Polaris side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 400 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

MODELS AND SPECIFICATIONS

1979 Centurion



SuperStar Engine Options:

EC51PL—01 — 500cc Three Cylinder Liquid Cooled — Model Number 0790653

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris — RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris — torque sensing, 30° sheaves (15%each) |
| Drive Clutch Guard | full coverage |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 19/35 |
| Drive Chain | 64 pitch internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars and steel studs |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground — 47.5" |
| Suspension Type | extruded aluminum slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width — 5.12"; length — 40"; ski center distance — 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | 2 watt |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | speedometer, tachometer, and coolant high temperature warning indicator light with instrument lighting |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with ABS nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard with gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel, hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Tunnel Stripe | decal |

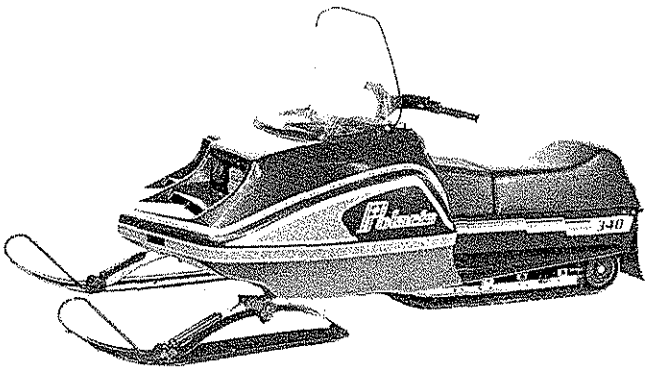
Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear spring latches |
| Hood Trim | Polaris side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 420 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |



The following specifications for the TXC are identical to the TX 340, with the exceptions of:

1. Suspension Type III, aluminum slide rail (same as TX-L/Centurion)
2. Track (same as TX-L)
3. Ski shocks (same as TX-L/Centurion)
4. Front drive shaft and sprockets (same as TX-L/Centurion)
5. High windshield
6. Foot rests (cross-country storage type)
7. Hood hold down (rubber straps)

When performing any other maintenance on the TXC, refer to TX 340 specifications in this manual.

SuperStar Engine Options:

EC34PT–05 – 336cc Twin Cylinder Free Air – Model Number 0790637

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 17/39 |
| Drive Chain | 66 pitch internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum slide rail |
| Shock Absorber | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

## 1979 TXC

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | 2 watt |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | speedometer and tachometer with instrument lighting |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with ABS nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartments | rear of seat and foot rests |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard with gauge |
| Foot Rests | cross-country storage type |
| Rear Bumper | tubular steel, hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Tunnel Stripe | decal |

Hood

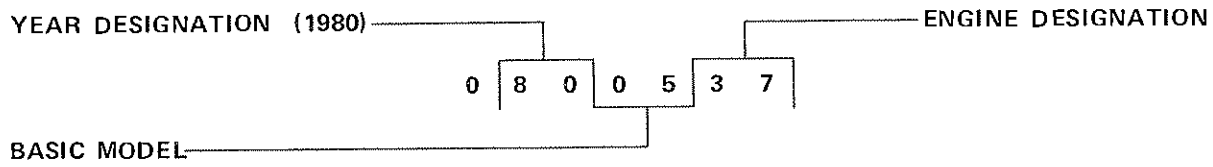
| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | rubber straps |
| Hood Trim | Polaris side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | injection molded plastic |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | on right side of console |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 385 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

## 1980 MODEL NUMBER IDENTIFICATION




### MODEL DESIGNATION

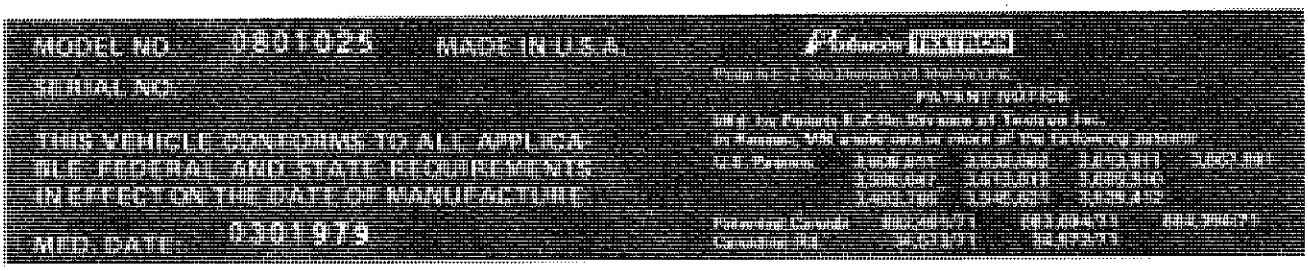
05 – TX
06 – TX–L/Centurion/TX–C
07 – TX–L Indy
10 – Gemini
11 – Apollo
12 – Apollo – With Accessories (Tachometer, speedometer, gas gauge, and tow hitch)
18 – Galaxy
19 – Galaxy – With Accessories (Tachometer, speedometer, gas gauge, tow hitch, and electric start)
20 – Galaxy – With Rubber Track

### ENGINE DESIGNATION

25 – EC25PS Single FC
26 – EC25PM–01 Twin FC
37 – EC34PT–07 Twin FA
38 – EC34PM–03 Twin FC (Apollo)
38 – EC34PM–04 Twin FC (Galaxy)
39 – EC34PL–02 Twin LC (TX–L)
39 – EC34PL–05 Twin LC (TX–L Indy)
43 – EC44PM–01 Twin FC (Galaxy Manual Start)
43 – EC44PM–02 Twin FC (Galaxy Electric Start)
45 – EC44PT–05 Twin FA
53 – EC51PL–02 Three LC

| MODEL NUMBER | MACHINE DESCRIPTION |
|---|---|
| 0801025 | Gemini 244cc Single FC |
| 0801026 | Gemini 244cc Twin FC |
| 0801138 | Apollo 333cc Twin FC |
| 0801238 | Apollo 333cc Twin FC (With Accessories) |
| 0801838 | Galaxy 333cc Twin FC |
| 0801843 | Galaxy 432cc Twin FC |
| 0801943 | Galaxy 432cc Twin FC (With Accessories) |

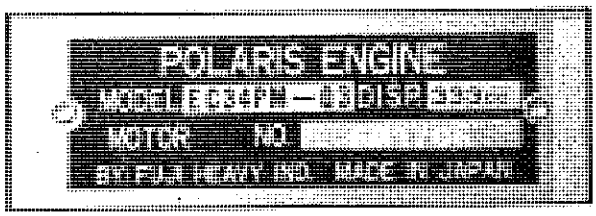
| MODEL NUMBER | MACHINE DESCRIPTION |
|---|---|
| 0802043 | Galaxy 432cc Twin FC (With Rubber Track) |
| 0800537 | TX 336cc Twin FA |
| 0800545 | TX 432cc Twin FA |
| 0800637 | TX–C 336cc Twin FA |
| 0800639 | TX–L 333cc Twin LC |
| 0800653 | Centurion 500cc Three LC |
| 0800739 | TX–L Indy 333cc Twin LC |

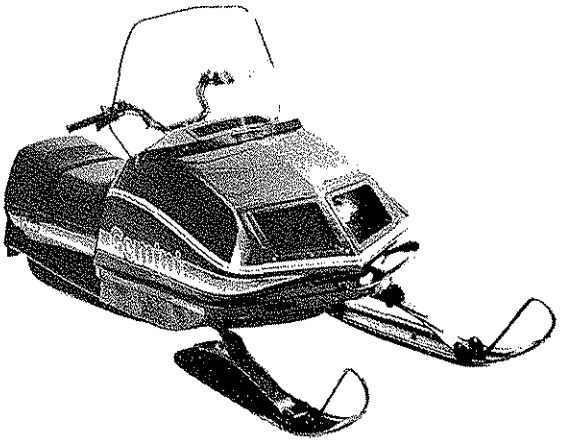



These numbers should be referred to in any correspondence regarding warranty, service or replacement parts.

The Machine Model and Serial Number Identification Tag is located on the right front side of the tunnel. The Serial Number is permanently stamped into the tunnel and the Model Number is embossed on the tag.

Whenever corresponding about an engine it is important that the Engine Model and Serial Numbers be called out. This information is found on the Engine Identification Plate generally located on the crankcase.





Star Engine Options:

EC25PS – 244cc Single Cylinder Fan Cooled – Model Number 0801025
EC25PM–01 – 244cc Twin Cylinder Fan Cooled – Model Number 0801026

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel, hinged |
| Drive Belt | 30° 11.1" C.D., part number 3211021 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 13/35 – Model 0801025<br>15/35 – Model 0801026 |
| Drive Chain | 84 pitch 8 link 35-2 – Model 0801025<br>86 pitch 8 link internal tooth silent – Model 0801026 |

Track and Suspension:

| | |
|---|---|
| Track Type | belted rubber with steel cleats and molded-on rubber ice growsers |
| Width | 15" |
| Length | 114.44" pitch length, track length on ground – 42" |
| Suspension Type | slide rail, stamped steel construction, adjustable ride |
| Shock Absorber | accessory |
| Sprockets | 6 tooth combination sprocket with idler |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 24" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | 2 leaf on Model 0801025; 3 leaf on Model 0801026 |
| Shocks | accessory |
| Rubber Stable Ski Insert | accessory on Model 0801025; standard on Model 0801026 |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | with accessory instrument package |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | accessory speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | steel, spot welded |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard without gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece steel wraparound |
| Running Board Pads | formed safety walk |
| Tunnel Stripe | decal |

Hood

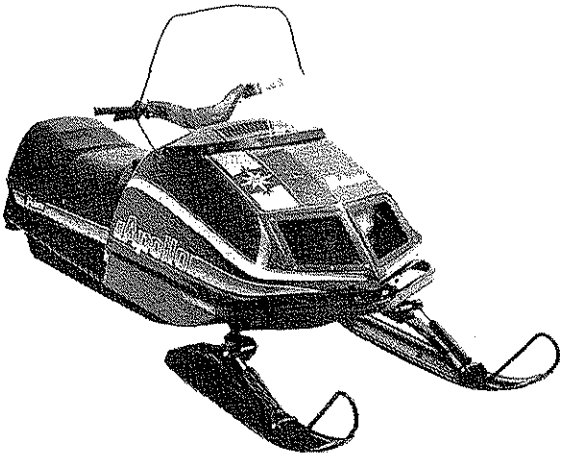
| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Passenger Safety Seat Hand Strap | standard |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weights:

| | |
|---|---|
| Height Less Windshield | 31" |
| Length with Skis | 101.75" |
| Width | 31.5" |
| Approximate Dry Weight | 355 pounds – Model 0801025<br>365 pounds – Model 0801026 |

Tool Kit and Owner's Manual — standard

## 1980 Apollo



Star Engine Options:

EC34PM–03 – 333cc Twin Cylinder Fan Cooled – Model Number 0801138
EC34PM–03 – 333cc Twin Cylinder Fan Cooled, with Tachometer, Speedometer, Gas Gauge, and Tow Hitch – Model Number 0801238

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel, hinged |
| Drive Belt | 30° 11.0" C.D., part number 3211044 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 18/35 |
| Drive Chain | 88 pitch 8 link internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber convolute with molded-on rubber traction bars |
| Width | 15" |
| Length | 114.85" pitch length, track length on ground – 42" |
| Suspension Type | slide rail, stamped steel construction, adjustable ride |
| Shock Absorber | standard |
| Sprockets | 10 tooth combination sprocket with idler |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 27" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | 3 leaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Adjustments | rotational adjustments |
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | with accessory instrument package – Model 0801138<br>standard – Model 0801238 |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | accessory speedometer and tachometer – Model 0801138<br>standard speedometer and tachometer – Model 0801238 |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | steel, spot welded |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard without gauge – Model 0801138<br>standard with gauge – Model 0801238 |
| Foot Rests | standard |
| Rear Bumper | tubular steel; hitch as accessory – Model 0801138,<br>hitch standard – Model 0801238 |
| Front Bumper | one-piece steel wraparound |
| Running Board Pads | formed safety walk |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Passenger Safety Seat Hand Strap | standard |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31" |
| Length with Skis | 101.75" |
| Width | 31.5" |
| Approximate Dry Weight | 375 pounds – Model 0801138<br>377 pounds – Model 0801238 |

Tool Kit and Owner's Manual — standard

## 1980 Galaxy



Star Engine Options:

EC34PM–04 – 333cc Twin Cylinder Fan Cooled – Model Number 0801838
EC44PM–01 – 432cc Twin Cylinder Fan Cooled – Model Number 0801843
EC44PM–02 – 432cc Twin Cylinder Fan Cooled, with Tachometer, Speedometer, Gas Gauge, Tow Hitch, and Electric Start – Model Number 0801943
EC44PM–01 – 432cc Twin Cylinder Fan Cooled, with Rubber Track – Model Number 0802043

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 15/35 – Model 0801838<br>17/33 – Models 0801843, 0801943, 0802043 |
| Drive Chain | 88 pitch 8 link internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | belted rubber with steel cleats and molded-on rubber ice growsers – Models 0801838, 0801843, 0801943<br>all-rubber involute with molded-on internal drive lugs and rubber traction bars – Model 0802043 |
| Width | 15" |
| Length | 119.5" pitch length, track length on ground – 46" – Models 0801838, 0801843, 0801943<br>120.96" pitch length, track length on ground – 46" – Model 0802043 |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorber | standard |
| Sprockets | 7 tooth combination sprocket with idler – Models 0801838, 0801843, 0801943<br>polyethylene involute drive – Model 0802043 |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 28" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | 3 leaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Adjustments | rotational adjustments |
| Handlebar Pad | m olded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | with accessory instrument package — Models 0801838, 0801843, 0802043<br>standard — Model 0801943 |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | accessory speedometer and tachometer — Models 0801838, 0801843, 0802043<br>standard speedometer and tachometer — Model 0801943 |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | steel, spot welded |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | removable storage case with zipper closure attached to chaincase under hood |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard without gauge — Models 0801838, 0801843, 0802043<br>standard with gauge — Model 0801943 |
| Foot Rests | standard — stirrup type |
| Rear Bumper | tubular steel; hitch as accessory — Models 0801838, 0801843, 0802043, hitch standard — Model 0801943 |
| Front Bumper | one-piece steel wraparound |
| Running Board Pads | formed safety walk |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear spring latches |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with two-tone vinyl cover with stitching |
| Passenger Safety Seat Hand Strap | standard |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 32" |
| Length with Skis | 104" |
| Width | 33.5" |
| Approximate Dry Weight | 386.5 pounds — Model 0801838; 397 pounds — Model 0801843; 427 pounds — Model 0801943; 403 pounds — Model 0802043 |

Tool Kit and Owner's Manual — standard



SuperStar Engine Options:

EC34PT–07 – 336cc Twin Cylinder Free Air – Model Number 0800537
EC44PT–05 – 432cc Twin Cylinder Free Air – Model Number 0800545

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage aluminum, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 17/39 – Model 0800537 |
| | 19/39 – Model 0800545 |
| Drive Chain | 66 pitch 11 link internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | belted rubber with steel cleats and molded-on rubber ice growsers |
| Width | 15" |
| Length | 119.5" pitch length, track length on ground – 46" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorber | standard |
| Sprockets | 7 tooth combination sprocket with idler |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | 3.4 watt |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with Ren-flex nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard with gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 371 pounds – Model 0800537<br>376 pounds – Model 0800545 |

Tool Kit and Owner's Manual — standard

MODELS AND SPECIFICATIONS

1980 TX–C




SuperStar Engine Options:

EC34PT–07 – 336cc Twin Cylinder Free Air – Model Number 0800637

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage aluminum, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 17/39 |
| Drive Chain | 66 pitch 11 link internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | 3.4 watt |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with Ren-flex nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartments | rear of seat and foot rests |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard with gauge |
| Foot Rests | cross-country storage type |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | injection molded plastic |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 375 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |



SuperStar Engine Options:

EC34PL–02 – 333cc Twin Cylinder Liquid Cooled – Model Number 0800639

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage aluminum, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 19/39 |
| Drive Chain | 66 pitch 11 link internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | 3.4 watt |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer, tachometer, and coolant high temperature warning indicator light |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with Ren-flex nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard with gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 400 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

## 1980 Centurion



SuperStar Engine Options:

EC51PL–02 – 500cc Three Cylinder Liquid Cooled – Model Number 0800653

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage aluminum, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 19/35 |
| Drive Chain | 64 pitch 11 link internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars and steel studs |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | 3.4 watt |
| Switches | ignition and tether on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer, tachometer, and coolant high temperature warning indicator light |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with Ren-flex nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard with gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Tunnel Stripe | decal |

Hood

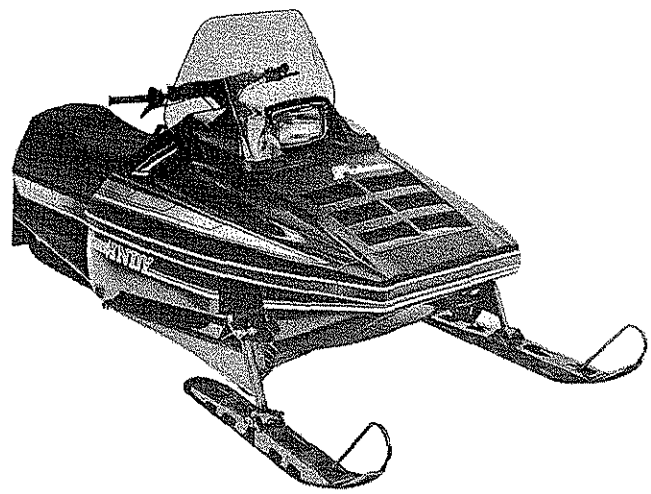
| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 420 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

## 1980 TX–L Indy



SuperStar Engine Options:

EC34PL–05 – 333cc Twin Cylinder Liquid Cooled – Model Number 0800739

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage aluminum, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 19/39 |
| Drive Chain | 66 pitch 11 link internal tooth silent |

Track and Rear Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering, Skis, and Front Suspension:

| | |
|---|---|
| Front Suspension | independent trailing arm |
| Skis | width – 5.12"; length – 40"; ski center distance – 36.5" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | coil spring over oil shock absorbers |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 12 watt lamp |
| Instrument Lights | 3.4 watt |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer, tachometer, and coolant high temperature warning indicator light |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with Ren-flex nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Tank Cap | standard with gauge |
| Foot Rests | standard |
| Rear Bumper | tubular steel |
| Front Bumper | high-impact nose cone |
| Tunnel Stripe | decal |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with midnight blue vinyl cover |
| Recoil Handle Location | control console right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 106.5" |
| Width | 41.38" |
| Approximate Dry Weight | 425 pounds |

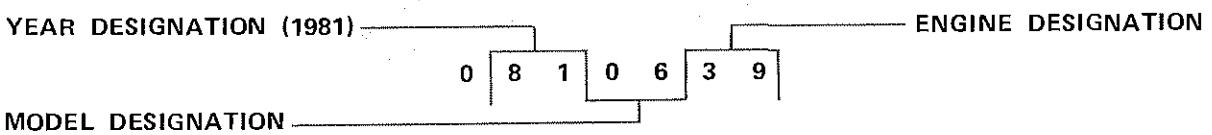
| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

## 1981 Model Identification

The machine serial number may be referred to as an aid in identifying machine model year. Refer to the first digits in the machine serial number for proper identification:

| FIRST DIGIT | MODEL YEAR | FIRST DIGITS | MODEL YEAR | FIRST DIGITS | MODEL YEAR |
|---|---|---|---|---|---|
| 2 | 1967 | 7 | 1972 | 03 | 1977 |
| 3 | 1968 | 8 | 1973 | 04 | 1978 |
| 4 | 1969 | 9 | 1974 | 05 | 1979 |
| 5 | 1970 | 10 | 1975 | 06 | 1980 |
| 6 | 1971 | 02 | 1976 | 07 | 1981 |

### 1981 MODEL IDENTIFICATION




### MODEL DESIGNATION

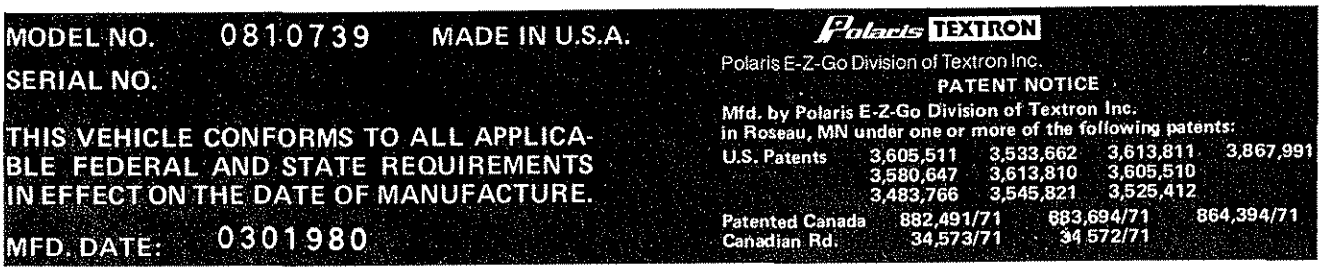
06 – TX-L/TX-C
07 – TX-L Indy/Centurion Indy
09 – Cutlass
10 – Gemini
12 – Gemini – With Rubber Track
13 – Cutlass SS
21 – Galaxy

| MODEL NUMBER | MACHINE DESCRIPTION |
|---|---|
| 0811025 | Gemini 244cc Single FC |
| 0811225 | Gemini 244cc Single FC (With Rubber Track) |
| 0812143 | Galaxy 432cc Twin FC |
| 0810938 | Cutlass 333cc Twin FC |

### ENGINE DESIGNATION

25 – EC25PS Single FC
38 – EC34PM–03 Twin FC
39 – EC34PL–05 Twin LC
43 – EC44PM–02 Twin FC
47 – EC44–2PM–1100 Twin FC
49 – EC44–2PM–3100 Twin FC
53 – EC51PL–02 Three LC
41 – EC44–2PM–3300 Twin FC

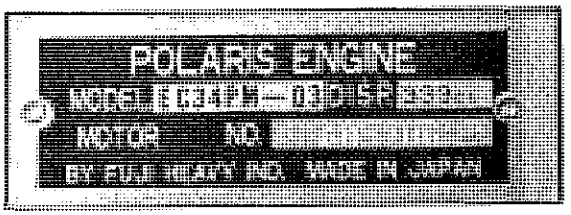
| MODEL NUMBER | MACHINE DESCRIPTION |
|---|---|
| 0811349 | Cutlass SS 432cc Twin FC |
| 0810647 | TX-C 432cc Twin FC |
| 0810639 | TX-L 333cc Twin LC |
| 0810739 | TX-L Indy 333cc Twin LC |
| 0810753 | Centurion Indy 500cc Three LC |
| 0811341 | Cutlass SS 432cc Twin FC (w/Elec. Start) |




These numbers should be referred to in any correspondence regarding warranty, service or replacement parts.

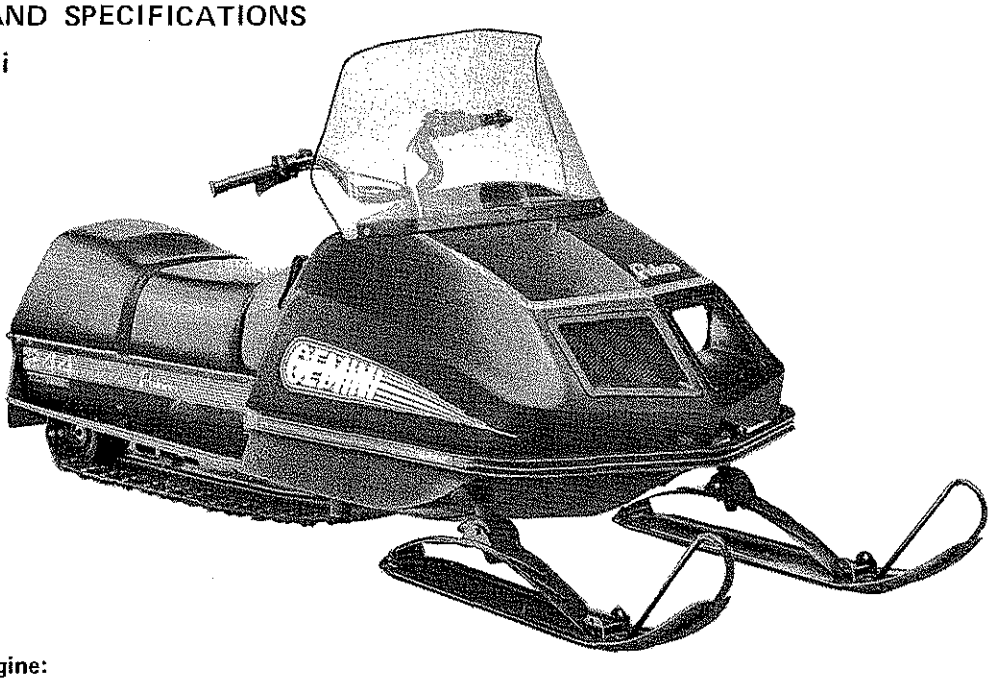
The machine Model and Serial Number Identification Decal is located on the right front side of the tunnel. The Serial Number is permanently stamped into the tunnel and the Model Number is embossed on the decal.

Whenever corresponding about an engine it is important that the Engine Model and Serial Numbers be called out. This information is found on the Engine Identification Decal generally located on the crankcase.



MODELS AND SPECIFICATIONS

1981 Gemini



Star Engine:

EC25PS — 244cc Single Cylinder Fan Cooled — Model Number 0811025
EC25PS — 244cc Single Cylinder Fan Cooled, with Rubber Track — Model Number 0811225

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris — RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris — torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel, hinged |
| Drive Belt | 30° 11.1" C.D., part number 3211021 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 13/35 |
| Drive Chain | 84 pitch 35-2 |

Track and Suspension:

| | |
|---|---|
| Track Type | belted rubber with steel cleats and molded-on rubber ice growsers — Model 0811025<br>all-rubber convolute with molded-on rubber traction bars — Model 0811225 |
| Width | 15" |
| Length | 114.44" pitch length, track length on ground — 42" — Model 0811025<br>114.85" pitch length, track length on ground — 42" — Model 0811225 |
| Suspension Type | slide rail, stamped steel construction, adjustable ride |
| Shock Absorber | accessory — Model 0811025<br>standard — Model 0811225 |
| Sprockets | 6 tooth combination sprocket with idler — Model 0811025<br>10 tooth combination sprocket with idler — Model 0811225 |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width — 5.12"; length — 40"; ski center distance — 24" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | 2 leaf |
| Shocks | accessory |
| Rubber Stable Ski Insert | accessory |
| Rubber Spring Stop | standard |

| | |
|---|---|
| **Handlebars:** | |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |
| **Electrical:** | |
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 13.3 watt lamp |
| Instrument Lights | with accessory instrument package |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | accessory speedometer and tachometer |
| Reflectors | class A standard |
| **Body and Trim:** | |
| **Chassis** | |
| Type | steel, spot welded |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Gauge | accessory |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece steel wraparound |
| Running Board | formed safety walk |
| Tunnel | steel, alkyd baked enamel/midnight blue with decal stripe |
| **Hood** | |
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with vinyl cover |
| Passenger Safety Seat Hand Strap | standard |
| Recoil Handle Location | right side of fuel tank |
| Snow Flap | full coverage rubber |
| **Dimensions and Weight:** | |
| Height Less Windshield | 31" |
| Length with Skis | 101.75" |
| Width | 31.5" |
| Approximate Dry Weight | 355 pounds |
| Tool Kit and Owner's Manual | standard |

1981 Galaxy



Star Engine:

EC44PM–02 – 432cc Twin Cylinder Fan Cooled with Electric Start – Model Number 0812143

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 30° sheaves (15° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 17/33 |
| Drive Chain | 88 pitch 8 link wide internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 46" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorber | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 28" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | 3 leaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Adjustments | rotational adjustments |
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 13.3 watt lamp |
| Instrument Lights | 2 watt lamps/one per instrument |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | steel, spot welded |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | removable storage case with zipper closure attached to chaincase under hood |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Gauge | standard in gas tank cap |
| Foot Rest Stirrups | standard |
| Rear Bumper | tubular steel; hitch standard |
| Front Bumper | one-piece steel wraparound |
| Running Board | formed safety walk |
| Tunnel | steel, alkyd baked enamel/midnight blue with decal stripe |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear spring latches |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with vinyl cover |
| Passenger Safety Seat Hand Strap | standard |
| Recoil Handle Location | right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 32" |
| Length with Skis | 104" |
| Width | 33.5" |
| Approximate Dry Weight | 418 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

## 1981 Cutlass




Star Engine:

EC34PM–03 – 333cc Twin Cylinder Fan Cooled – Model Number 0810938

Drive and Brake:

| | |
|---|---|
| Drive System | direct drive – automatic V-belt transmission |
| Drive Clutch | Polaris – RPM and torque sensing, 28° sheaves (14° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel |
| Drive Belt | 30° 11.5" C.D., part number 3211043 |
| Brakes | mechanical disc |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 110" pitch length, track length on ground – 44.25" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorber | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 13.3 watt lamp |
| Instrument Lights | with accessory instrument package |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | accessory speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | steel, spot welded |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | under-hood storage bag with zipper |
| Gas Tank | polyethylene – 5.4 U.S. gallons capacity; 4.5 Imperial gallons capacity |
| Gas Gauge | accessory |
| Foot Rest Stirrups | standard |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece steel wraparound |
| Running Board | formed safety walk |
| Tunnel | steel, alkyd baked enamel/midnight blue with decal stripe |

Hood

| | |
|---|---|
| Type and Finsih | high gloss ABS |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Seat Cushion | controlled compression foam with vinyl cover |
| Recoil Handle Location | right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 33" |
| Length with Skis | 102" |
| Width | 40" |
| Approximate Dry Weight | 370 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

## 1981 Cutlass SS



Star Engine:

EC44—2PM—3100 — 432cc Oil-Injected Twin Cylinder Fan Cooled — Model Number 0811349
EC44—2PM—3300 — 432cc Oil-Injected Twin Cylinder Fan Cooled — Model Number 0811341 — With Electric Start

Drive and Brake:

| | |
|---|---|
| Drive System | direct drive — automatic V-belt transmission |
| Drive Clutch | Polaris — RPM and torque sensing, 28° sheaves (14° each) |
| Driven Clutch | Polaris — torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage steel |
| Drive Belt | 30° 11.5" C.D., part number 3211043 |
| Brakes | mechanical disc |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 110" pitch length, track length on ground — 44.25" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorber | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width — 5.12"; length — 40"; ski center distance — 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Adjustments | rotational adjustments |
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 13.3 watt lamp |
| Instrument Lights | 3.4 watt lamps/one per instrument |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | steel front, aluminum rear, riveted |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | under-hood storage bag with zipper |
| Gas Tank | polyethylene — 5.4 U.S. gallons capacity; 4.5 Imperial gallons capacity |
| Gas Gauge | standard console mount sight tube |
| Foot Rest Stirrups | standard |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece steel wraparound |
| Running Board | formed safety walk |
| Tunnel | aluminum, unpainted with decal stripe |

Hood

| | |
|---|---|
| Type and Finish | high gloss ABS |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim — high accessory |
| Seat Cushion | controlled compression foam with vinyl cover |
| Recoil Handle Location | right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 33" |
| Length with Skis | 102" |
| Width | 40" |
| Approximate Dry Weight | 380 pounds — Model 0811349<br>405 pounds — Model 0811341 |

Tool Kit and Owner's Manual — standard

## 1981 TX–C



SuperStar Engine:

EC44–2PM–1100 – 432cc Oil-Injected Twin Cylinder Fan Cooled – Model Number 0810647

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 28° sheaves (14° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage aluminum, hinged |
| Drive Belt | 30° 11.1" C.D., part number 3211044 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 19/35 |
| Drive Chain | 64 pitch 11 link wide internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 13.3 watt lamp |
| Instrument Lights | 3.4 watt lamps/one per instrument |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer and tachometer |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with Ren-flex nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Gauge | standard in gas tank cap |
| Foot Rest Stirrups | accessory cross-country storage type |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Running Board | formed safety walk |
| Tunnel | aluminum alkyd baked enamel/midnight blue with decal stripe |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | injection molded plastic |
| Seat Cushion | controlled compression foam with vinyl cover |
| Recoil Handle Location | right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 392 pounds |

Tool Kit and Owner's Manual — standard

## 1981 TX–L



SuperStar Engine:

EC34PL–05 – 333cc Twin Cylinder Liquid Cooled – Model Number 0810639

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 28° sheaves (14° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage aluminum, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 19/39 |
| Drive Chain | 66 pitch 11 link wide internal tooth silent |

Track and Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering and Skis:

| | |
|---|---|
| Skis | width – 5.12"; length – 40"; ski center distance – 31" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | monoleaf |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |
| Rubber Spring Stop | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 13.3 watt lamp |
| Instrument Lights | 3.4 watt lamps/one per instrument |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer, tachometer, and coolant high temperature warning indicator light |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with Ren-flex nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Gauge | standard in gas tank cap |
| Foot Rest Stirrups | accessory cross-country storage type |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | one-piece extruded aluminum wraparound |
| Running Board | formed safety walk |
| Tunnel | aluminum alkyd baked enamel/midnight blue with decal stripe |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with vinyl cover |
| Recoil Handle Location | right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 103.75" |
| Width | 38" |
| Approximate Dry Weight | 400 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

## 1981 TX–L Indy



**SuperStar Engine:**

EC34PL–05 – 333cc Twin Cylinder Liquid Cooled – Model Number 0810739

**Drive and Brake:**

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 28° sheaves (14° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage aluminum, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 19/39 |
| Drive Chain | 66 pitch 11 link wide internal tooth silent |

**Track and Rear Suspension:**

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

**Steering, Skis, and Front Suspension:**

| | |
|---|---|
| Front Suspension | independent trailing arm |
| Skis | width – 5.12"; length – 40"; ski center distance – 36.5" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | coil spring over oil shock absorbers |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 13.3 watt lamp |
| Instrument Lights | 3.4 watt lamps/one per instrument |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer, tachometer, and coolant high temperature warning indicator light |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with Ren-flex nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene — 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Gauge | standard in gas tank cap |
| Foot Rest Stirrups | standard |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | high-impact nose cone |
| Running Board | formed safety walk |
| Tunnel | aluminum alkyd baked enamel/midnight blue with decal stripe |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim — high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with vinyl cover |
| Recoil Handle Location | right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 106.25" |
| Width | 41.62" |
| Approximate Dry Weight | 425 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

## 1981 Centurion Indy



SuperStar Engine:

EC51PL–02 – 500cc Three Cylinder Liquid Cooled – Model Number 0810753

Drive and Brake:

| | |
|---|---|
| Drive Clutch | Polaris – RPM and torque sensing, 28° sheaves (14° each) |
| Driven Clutch | Polaris – torque sensing, 30° sheaves (15° each) |
| Drive Clutch Guard | full coverage aluminum, hinged |
| Drive Belt | 30° 12.0" C.D., part number 3211042 |
| Brakes | hydraulic disc, automotive brake fluid |
| Sprocket Ratio | 19/35 |
| Drive Chain | 64 pitch 11 link wide internal tooth silent |

Track and Rear Suspension:

| | |
|---|---|
| Track Type | all-rubber involute with molded-on internal drive lugs and rubber traction bars and steel studs |
| Width | 15" |
| Length | 120.96" pitch length, track length on ground – 47.5" |
| Suspension Type | extruded aluminum long-travel slide rail |
| Shock Absorbers | standard |
| Sprockets | polyethylene involute drive |
| Rear Idlers | plastic with rubber tire |

Steering, Skis, and Front Suspension:

| | |
|---|---|
| Front Suspension | independent trailing arm |
| Skis | width – 5.12"; length – 40"; ski center distance – 36.5" |
| Finish | alkyd baked enamel/midnight blue |
| Springs | coil spring over oil shock absorbers |
| Shocks | standard |
| Rubber Stable Ski Insert | standard |

Handlebars:

| | |
|---|---|
| Handlebar Pad | molded rubber |
| Type Grips | plastic, custom molded |
| Controls | throttle and brake |

Electrical:

| | |
|---|---|
| Headlight | one adjustable 60 watt hi-lo sealed beam |
| Taillight | two 2.7 watt lamps |
| Brake Light | one 13.3 watt lamp |
| Instrument Lights | 3.4 watt lamps/one per instrument |
| Switches | ignition on console; headlight dimmer and auxiliary safety shut-off on handlebar |
| Regulated Circuit | standard electronic regulator |
| Instruments | standard speedometer, tachometer, and coolant high temperature warning indicator light |
| Reflectors | class A standard |

Body and Trim:

Chassis

| | |
|---|---|
| Type | lightweight aluminum with Ren-flex nosepan |
| Finish | alkyd baked enamel/midnight blue |
| Storage Compartment | rear of seat |
| Gas Tank | polyethylene – 7 U.S. gallons capacity; 5.8 Imperial gallons capacity |
| Gas Gauge | standard in gas tank cap |
| Foot Rest Stirrups | standard |
| Rear Bumper | tubular steel; hitch as accessory |
| Front Bumper | high-impact nose cone |
| Running Board | formed safety walk |
| Tunnel | aluminum alkyd baked enamel/midnight blue with decal stripe |

Hood

| | |
|---|---|
| Type | chopped fiberglass, resin impregnated |
| Finish | high gloss gel-coat |
| Type of Hold Down | front center hinge with two rear rubber tie-downs |
| Hood Trim | side and deck decals |
| Windshield Type | formed polycarbonate with trim – high standard |
| Console Type | stamped steel |
| Seat Cushion | controlled compression foam with vinyl cover |
| Recoil Handle Location | right side of fuel tank |
| Snow Flap | full coverage rubber |

Dimensions and Weight:

| | |
|---|---|
| Height Less Windshield | 31.5" |
| Length with Skis | 106.25" |
| Width | 41.62" |
| Approximate Dry Weight | 440 pounds |

| | |
|---|---|
| Tool Kit and Owner's Manual | standard |

# SECTION II

# BODY AND STEERING

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## CLEANING AND PRESERVATION OF HOOD, CHASSIS, AND TRIM

Proper storage starts by cleaning, washing, and waxing the hood, chassis, upholstery, and plastic parts. Clean and touch up with paint any rusted or bare metal surfaces. Ensure that all corrosive salt and acids are removed from surfaces before beginning preservation with waxes and rust inhibitors (grease, oil, or paint).

If the machine is equipped with electric start, disconnect the battery cables and clean the cables and battery post. Remove and store the battery in a cool dry place.

The machine should be stored in a dry garage or shed out of the sunlight and covered with a fabric snowmobile cover.

## CONTROLS AND LINKAGE

All bushings, spindle shafts, and tie rod ends should be coated with a light coat of oil or grease. Throttle controls and cables should be lubricated with light oil or WD-40, LPS, etc. Force a small amount of lubricant down cable.

## ELECTRICAL CONNECTIONS

Separate electrical connector blocks and clean corrosive build-up from connectors. Lubricate or pack connector blocks with petroleum jelly and re-connect. Replace worn or frayed electrical wire and connectors.

## CLUTCH AND DRIVE SYSTEM

Remove drive belt and store in cool dry location. Lubricate surface faces, shaft, and ramps of drive and driven clutches with light oil (oil must be cleaned off before installing belt for service). A generous amount of lubrication, such as WD-40, LPS, etc., should be sprayed through the three windows on the drive clutch cover and onto the rollers and weight pins. Replace chaincase lubricant with new oil. Spray lubricant on steel drive shafts, etc., to reduce rusting.

## TRACK AND SUSPENSION

Under normal conditions moderate track tension should be maintained during summer storage. Apollo rubber track tension should be maintained at the prescribed normal operating tension specified in this manual. The rear of the machine should be supported off the ground to allow free hanging of track.

## ENGINE AND CARBURETOR

There are two methods of properly preparing an engine for storage. The best method is to keep your machine in an area where you can run the engine for about five minutes twice a month. This gives the crankshaft bearings and cylinder walls a fresh coat of oil. Run the engine at about 3,000 RPM and stop it by pulling the choke. This method will prevent rusting of the cylinder walls and prevent the formation of varnish from evaporated fuel in the carburetor.

However, this approach to summer storage is not always feasible, and if not suitable, the following method of engine storage can be used. The fuel tank, fuel lines, and carburetor should be completely drained of gasoline. The engine should be run until it stops to eliminate any gas remaining in the carburetor. Support the front of the snowmobile so that the engine is level or tilted slightly rearward. Remove the spark plug(s). Rotate the piston to B.D.C. (piston in its lowest position) and pour approximately two ounces of Polaris 40:1 petroleum-base oil into the cylinder. NOTE: Allow ample time for the oil to flow from the top of the piston, down the transfer ports and onto the crankshaft bearings before proceeding to the next cylinder. Turn the engine over several times to ensure coverage of piston rings, cylinder walls, and crankshaft bearings.

## Torque Specifications

### Standard Torque Specifications

The following torque specifications are to be used for all applications, except for special cases where the Torque Deviation List will apply.

| Bolt Size | Threads Per Inch | Torque – Minimum – Maximum |
|---|---|---|
| 8 | 18 & 32 | 18 – 21 in./lbs. |
| 10 | 24 & 32 | 20 – 24 in./lbs. |
| 1/4 | 20 & 28 | 5 – 6 ft./lbs. |
| 5/16 | 18 & 24 | 10 – 12 ft./lbs. |
| 3/8 | 16 | 18 – 22 ft./lbs. |
| 3/8 | 24 | 20 – 25 ft./lbs. |
| 7/16 | 14 | 25 – 30 ft./lbs. |
| 7/16 | 20 | 30 – 40 ft./lbs. |
| 1/2 | 13 | 50 – 57 ft./lbs. |
| 1/2 | 20 | 55 – 65 ft./lbs. |

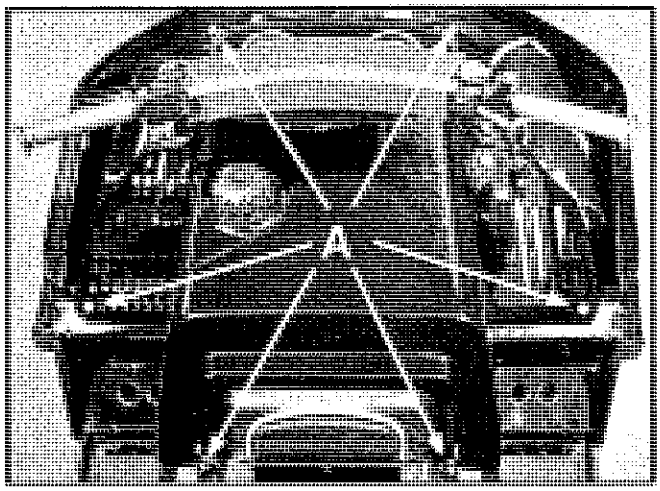
### Torque Deviation List

Due to the special-grade bolts and nuts and their applications, the following torque values must be observed.

| Bolt Size | Description | Torque – Minimum – Maximum |
|---|---|---|
| 1/4 | Handlebar Adjuster Block | 11 – 13 ft./lbs. |
| 5/16 | 175 Drive Clutch Bolt | 18 – 20 ft./lbs. |
| 5/16 | Skag Bolt | 14 – 16 ft./lbs. |
| 3/8 | Spring Saddle | 35 – 40 ft./lbs. |
| 3/8 | Steering Arm | 36 – 40 ft./lbs. |
| 3/8 | Tie Rod End Attaching Bolt | 25 – 30 ft./lbs. |
| 3/8 | Tie Rod End Jam Nut | 10 – 12 ft./lbs. |
| 3/8 | Suspension Mounting | 35 – 40 ft./lbs. |
| 3/8 | Ski Spindle Pivot Bolt | 36 ft./lbs. |
| 3/8 | Engine Mounting Bolt | 34 – 38 ft./lbs. |
| 7/16 | Engine Mounting Bolt | 55 – 60 ft./lbs. |
| 7/16 | Drive Clutch Bolt | 40 – 45 ft./lbs. |
| | Flywheel Nut – 175cc | 30 – 35 ft./lbs. |
| | Flywheel Nut – All Other | 60 – 65 ft./lbs. |

### Conversions

1 Inch = 25.4mm
1mm = .0394 Inch
1 Mile = 1.609 Kilometers
1 Kilometer = .62 Mile
1 U.S. Gallon = .8327 Imperial Gallon
1 Imperial Gallon = 1.2009 U.S. Gallons
Number of Cubic Centimeters x 0.061 = Cubic Inches
Number of Cubic Inches x 16.387 = Cubic Centimeters
Number of Foot Pounds x 0.1383 = Kilogram Meters
Number of Kilogram Meters x 7.235 = Foot Pounds



⚠ Before beginning removal of the fuel tank it must be emptied.

1. Remove the two 1/4" x 1" capscrews from the rear underside of the tunnel. Disconnect the seat wire harness at the tank and remove the seat.
2. Remove the six 10—24 x 5/8" bolts (A) fastening the console to the chassis.
3. Remove the fuel line from the fuel pump.
4. Cut tank vent line (located on the upper left front side of tank) from its fitting. Do not attempt to pull it off as damage to the vent fitting may result.
5. Roll the front and rear tank hold-down springs off the tank.
6. Disconnect the fuel gauge sight line (top and bottom) from the right front side of the tank.
7. Remove the fuel cap, lift the console slightly, and remove the tank.
8. Reverse procedure for reinstallation.

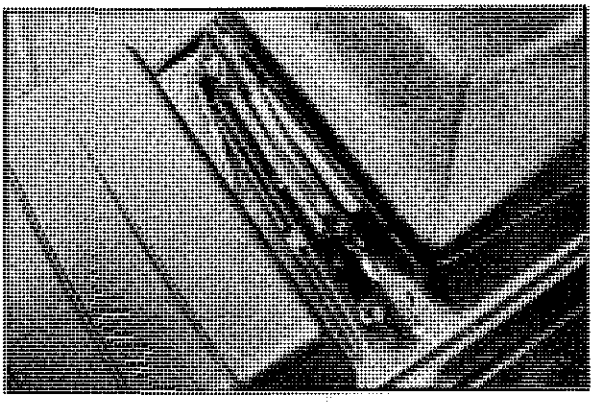
1. Disconnect the gas line from the fuel pump and plug the line to prevent fuel spillage from the tank (A). Roll the front tank hold-down spring (B) forward off the tank saddle.



2. Remove the two bolts holding the rear of the seat to tunnel. Remove the fuel tank and seat hold-down strap by removing the retaining nuts located between the tank and seat.

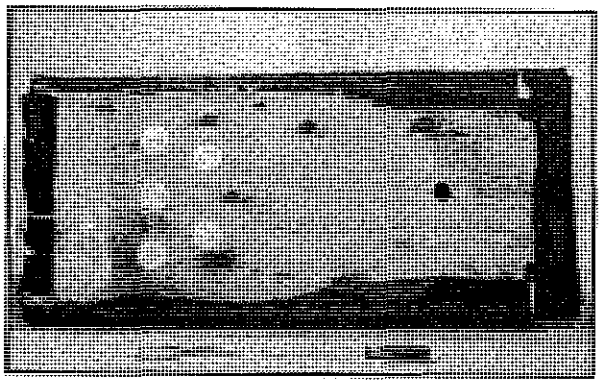


3. The seat and fuel tank can now be removed from the chassis.

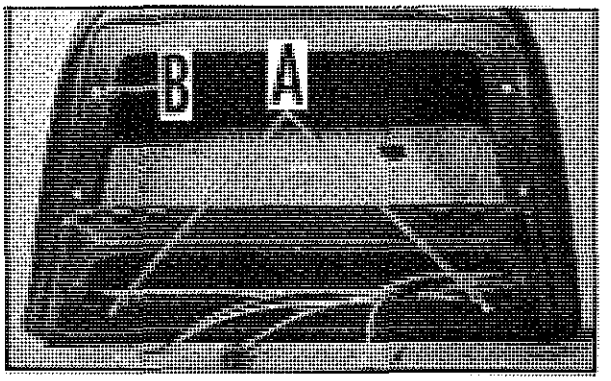


## Seat Cover Replacement

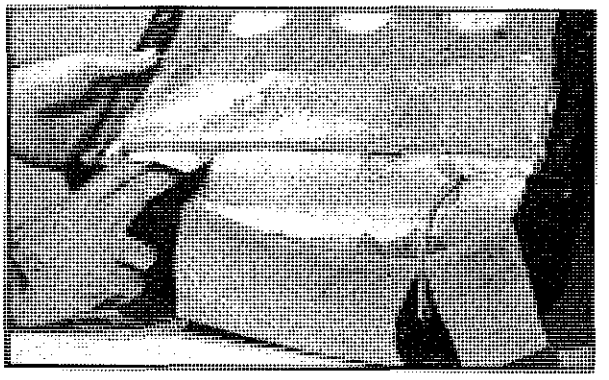
Seat covers on models fitted with loose cover are replaceable by removing existing cover and replacing as outlined below. On models with molded-in cover, the new cover will have to be installed over the top of the existing cover.



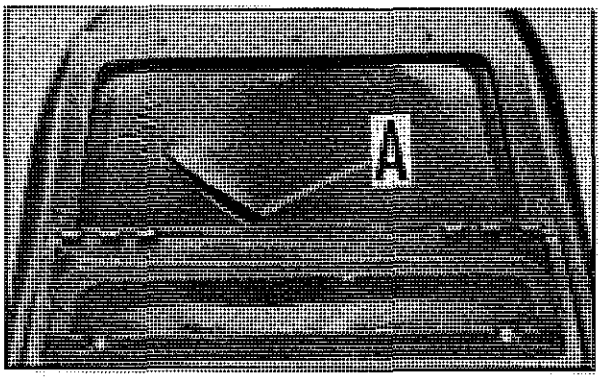
1. Remove the seat cushion from snowmobile as outlined on page II – 3.
2. Remove the staples from the seat board.




3. On models equipped with rear storage compartment, the door frame must be removed.
   - A. Remove the taillight lens.
   - B. Slide the taillight housing out and remove the tail and brake light sockets.
   - C. Remove the two screws at the bottom of door frame (A).
   - D. Drill out the seven 1/8" blind rivets (B).
   - E. Remove old cover.



4. Pull cover tightly and evenly and restaple to seat board. Cut and tuck the forward portion under the seat board as shown.




5. Place the door frame into position and install the two screws located at the bottom of door frame. Cut the material in middle of door frame as shown (A). Push the door frame securely into position (corners first). Re-rivet to compartment housing and remove excess material from compartment area. NOTE: If rivet holes were damaged when old rivets were removed, new holes can be drilled between existing holes.
6. Reinstall light socket to taillight housing and install lens. Make a final check for a wrinkle-free finish before reinstalling to snowmobile.

1. Remove old decal. NOTE: Before removing old decal it is important to note its position by marking it in several locations. A small amount of heat will aid in removing the old decal.

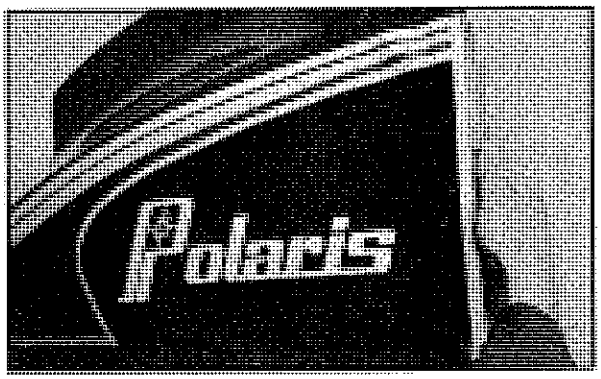


2. Thoroughly clean hood in the area in which the new decal will be installed. Apply a solution of mild soap and clean water to this area (approximately four ounces mild soap to one gallon of water).



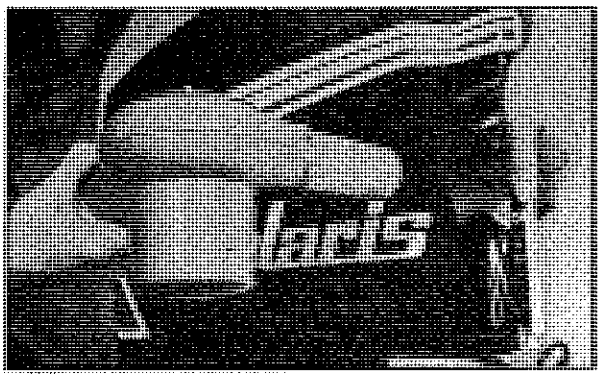
3. Remove decal backing. With the decal positioned on hood, apply the soap/water solution to the top of decal. Holding decal in position, remove all trapped air and soap/water solution out from under the decal.
IMPORTANT: This must be done with a clean, soft rubber squeegee to prevent scratching of the decal outer surface. Apply heat to the installed decal to ensure it is fastened.

FOR MODELS REQUIRING THE DECAL END TO BE STRETCHED AROUND THE RADIUS AT REAR OF HOOD




1. Fasten a straight edge to the tail end of decal as shown.

2. The mass of the decal which has been secured in the above steps will allow you to pull or stretch the remaining portion around the radius and into position. NOTE: Applying a small amount of heat to the decal will aid in forming it to the radius.




3. Apply soap/water solution to top of decal and remove trapped air. Scribe and remove excess decal material and reinstall hood trim molding.

## ABS Nosepan — Care, Cleaning, and Repair

### CARE AND CLEANING

ABS nosepans will retain their original finish with reasonable care and handling. The following suggested care and cleaning tips will help to keep the original luster.

DO:

——dust and clean with a soft, damp cloth or chamois, wiping the surfaces gently.

——use pure soap and lukewarm water — mild detergents or most household cleaners are recommended.

——dry the surfaces, after washing and rinsing, by blotting with a damp cloth or chamois.

——wax sparingly the surfaces for protection and the highest degree of polish. Apply household or commercial type wax sparingly in a thin, even film with a soft clean cloth.

——polish waxed surfaces lightly with a clean cotton flannel or jersey. After polishing, wipe gently with a damp cloth to ground any electrostatic charges which may attract dust particles.

DO NOT:

——use cloths containing grit or abrasive particles or kitchen scouring compounds to clean or dust. Light scratches may be rubbed out with wax.

——use boiling water or strong solvents to clean, as they will soften the plastic.

——use strong soaps or abrasives.

### SPECIAL CLEANING PROBLEMS

Dirt and Grease: Normal liquid cleaners or soap and water may not always remove grimy dirt. Janitor in a Drum and Cascade were found to be the best cleaners to remove ground-in dirty grease.

Stains: Stains such as iodine may be safely removed with 45 percent isopropanol (rubbing alcohol). The higher concentrated, commercial grades will remove the stain but will dull the film surface. The gloss can be returned with Simoniz.

Surface Scratches and Abrasions: Light scratches can be removed by waxing with Simoniz paste wax. Deeper scratches may be removed by lightly buffing with a fine grade of rubbing compound.

### REPAIR OF CRACKS AND FRACTURES

Materials Needed:

1. Fiberglass cloth.
2. ABS pipe cement. (Several types of plumbing cement are available. Be sure to use one which is for PVC and ABS material, or ABS material only. Do not use cement labeled "for PVC only.")
3. Polaris blue ABS touch-up paint, PN 2870423. Do not use the standard Polaris touch-up paint, as it is not adaptable to ABS.

Procedure:

1. Clean all dirt, grease, etc., from the area around the crack. The crack itself should be as clean as possible. (Household detergent should work well.) Be sure the pan is dry before proceeding to step 3.
2. Cut a piece of the fiberglass cloth approximately 3" wide and long enough to extend 1" to 2" past the ends of the fracture.
3. Separate the edges of the crack slightly and fill the void with cement. Press the edges together, clamp in place, and wipe the excess cement from the outside of the pan.
4. Liberally coat the inside surface of the pan with cement, covering approximately 1 1/2" on either side of the fracture.
5. Lay the cloth over the fracture.
6. Work the cloth into the pan using a squeegee or your fingers (wear rubber gloves). ABS cement is a "solvent" cement; it actually dissolves the outer surface of the pan. The cement and cloth will take on a slightly bluish tint as this happens.

7. When the cloth is well worked in, wipe off the excess cement and let dry. Drying time will depend on the brand of cement used. Refer to the manufacturer's instructions printed on the can.

8. Lightly sand the outside of the pan and paint. A more "finished" job will result if the repaired area on the inside of the pan is also painted.

INSTALLATION OF REPLACEMENT ABS NOSEPAN

When installing a new replacement ABS nosepan, the following procedures must be closely observed to ensure correct fit to the frame and maximum strength. ABS material is not rigid; consequently, it must be installed in such a manner that it can expand or contract with temperature change.

1. Remove damaged nosepan by drilling out rivet heads. Engine and other mountings attached to forward part of sled and engine compartment should be removed for easier installation.

2. The rivets required for nosepan replacement must be aluminum. Part numbers are:

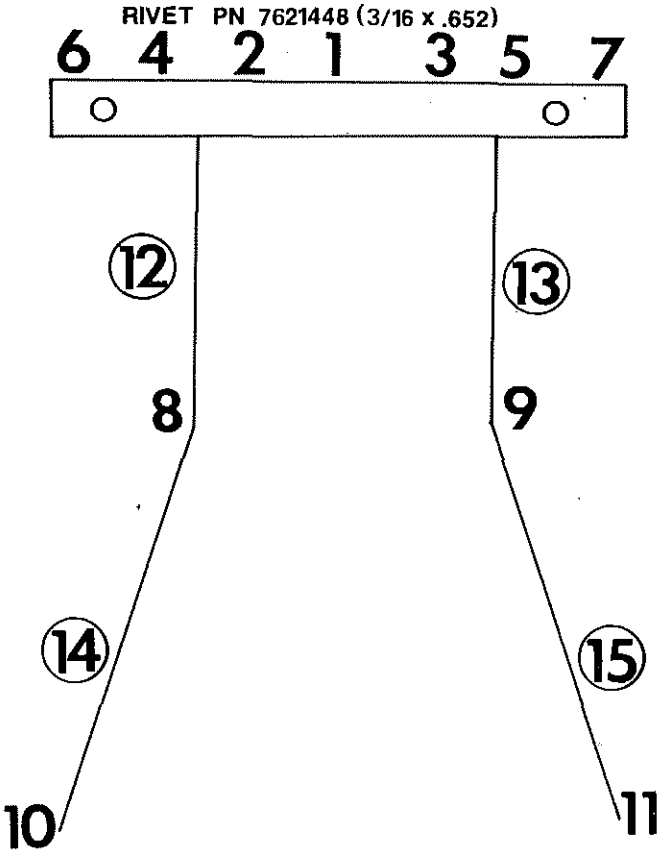
   7 each — PN 7621448 (3/16 x .652")  39 each — PN 7621403 (3/16 x .527")

   All holes drilled into the nosepan are to be .220" in diameter. This will be larger than the 3/16 rivet (diameter is .187"). To drill a .220" hole use a 7/32 drill bit (7/32 diameter is .218").

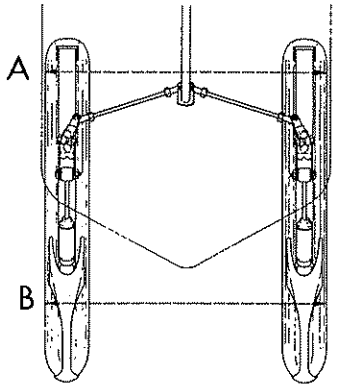
3. Position new nosepan in place and attach a bulkhead with the seven 3/16 x .652" rivets, PN 7621448 (top seven only). These rivets should be installed using rivet pattern shown below. All remaining holes use 3/16 x .527" rivets, PN 7621403.

4. Maintain 1/4" clearance around exhaust outlet.

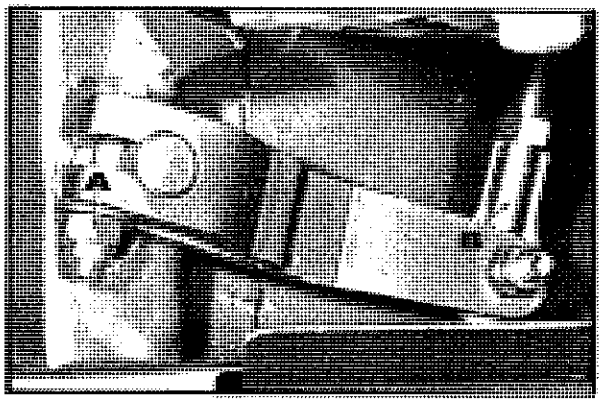
5. Install tin foil, PN 5810108, in same location as original.



## Steering Type I

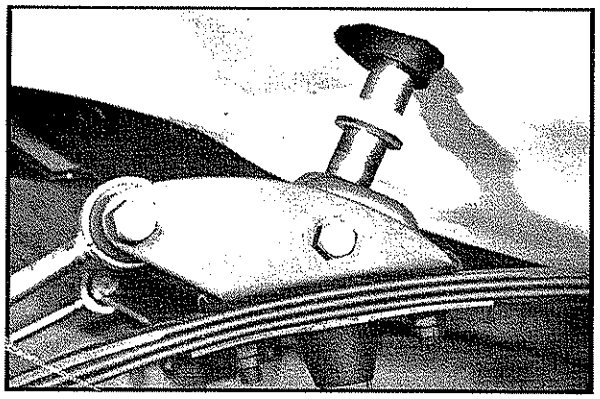



Skis should be parallel at points A and B, with the handlebars at the straight ahead position. Measure from the straight edge of the ski. Skis must not toe-in.




To remove the steering, first remove the steering arm bolt (A). To retain proper ski alignment, the spindle and steering arm should be marked. Adjust the tie rod end for proper ski alignment. Steering skis should be parallel with each other and with vehicle frame when handlebar is in normal straight driving position. Adjustment may be made by turning tie rod end clockwise or counterclockwise, whichever is necessary (B).

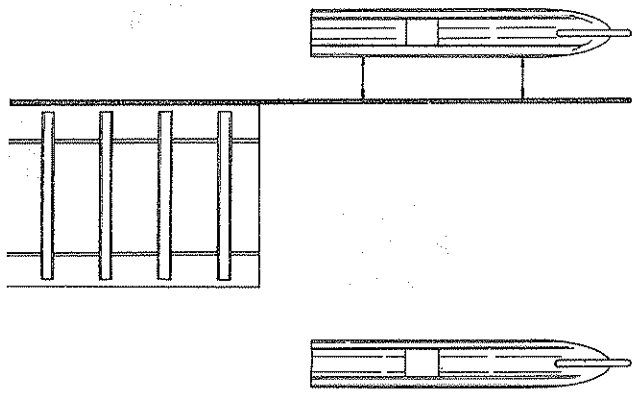
⚠ NOTE: The steering assembly of every machine should be checked whenever it comes in for tune-up or repairs. In the event there is evidence of wear or stress on the tie rods or tie rod end bearings, they should be replaced as a complete unit.



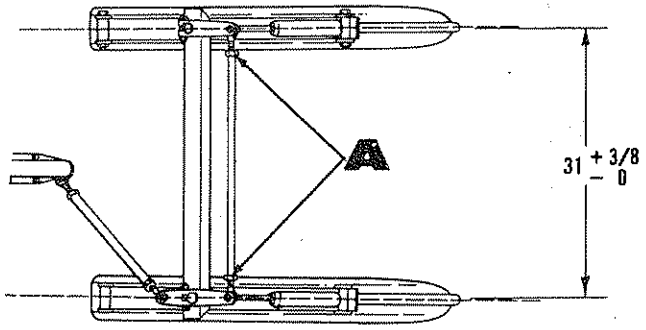
Spindle can now be removed from the body. The spindle should be lubricated annually to insure proper steering.

⚠ NOTE: If spindles appear to be damaged (bent or cracked) they should be replaced immediately before further damage results.

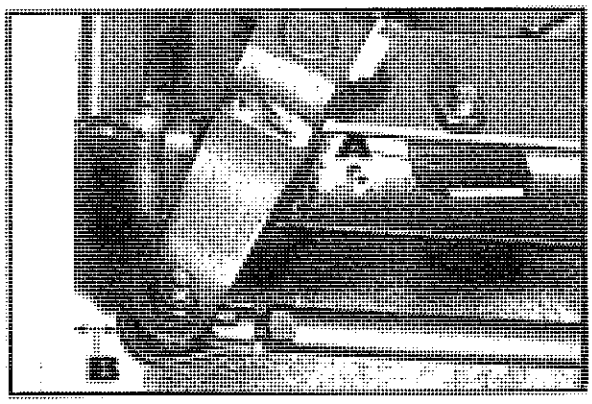
With the handlebars in the straight-ahead position, place a straight edge alongside the track, measure the distance from both ends of one ski. The distance at both the front and back of the ski should be equal. When one ski is parallel with the track, measure across to the opposite ski to ensure that it is also parallel with the track. If adjustment is needed, the tie rod should be adjusted accordingly.



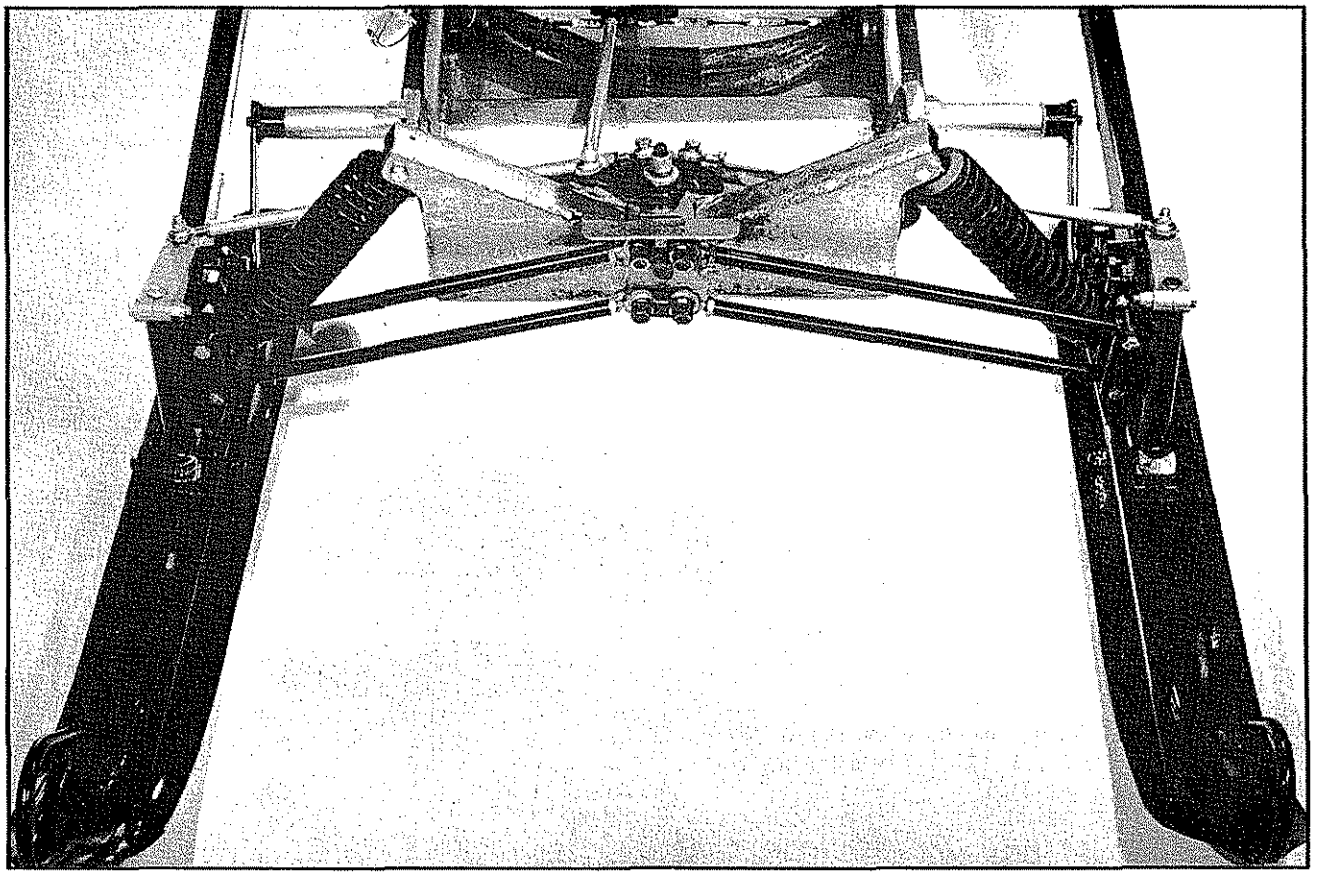
Ski alignment is accomplished by loosening the jam nuts on both tie rod ends (A) and rotating the tie rod in the direction required.




Adjust the steering stop (A) so the left and right steering arms clear the nosepan approximately 1/2" (B).



## Steering Type III — Independent Front Suspension



SPECIFICATIONS:

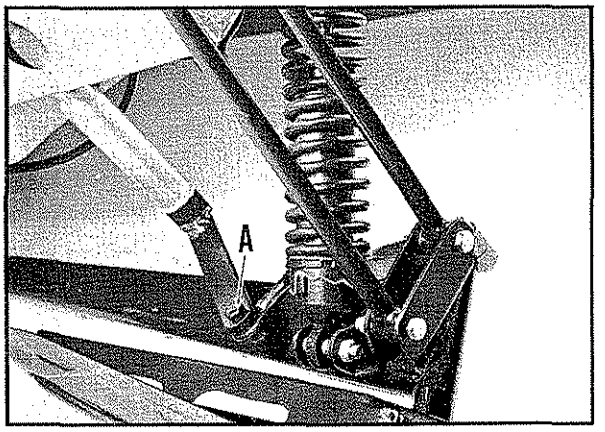
| | |
|---|---|
| Ski Spindle Center Distance: | 36.5" |
| Ski Width: | 5.12" |
| Ski Length: | 40" |
| Independent Ski Vertical Travel: | 6" |
| Caster: | Fixed |
| Camber: | Adjustable for positive/negative |
| Toe-in/Toe-out: | Adjustable |
| Dampening: | Coil spring with five-position spring rate adjustment cam over oil-filled shock absorber |
| | Torsion bar |

## INSPECTION

Prior to performing any alignment procedures, the suspension should be inspected for damage or wear and replacement parts installed as required. The following are components which must be inspected at this time:

1. Tie rods and ends
2. Radius rods and ends
3. Torsion bar and linkage*
4. Handlebars and steering post assembly
5. Spindles and bushings
6. Trailing arms and bushings

*Disconnect the torsion bar by removing the 5/16" bolts (A) fastening the arms to the linkage at each side. The torsion bar arms should rest equally on the floor to indicate that the bar is not bent or twisted.




## ALIGNMENT BAR SPECIFICATIONS

Material: C-1018

Diameter: .623"-.625"

Length: 42"

Not available through Polaris

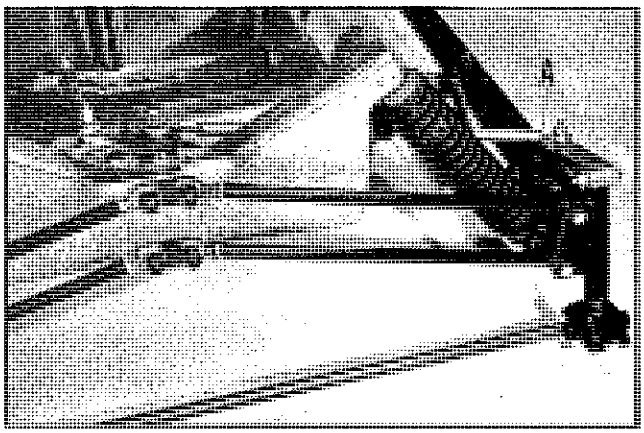
## Steering Type III — Independent Front Suspension

### ADJUSTMENT PROCEDURE

Support the front of the machine 1"-2" off the floor. With the skis and pivot bushings removed and torsion bar linkage disconnected, install the alignment bar through one of the spindles and into the opposite spindle.
NOTE: This should be a free sliding fit to indicate correct camber and toe adjustment.

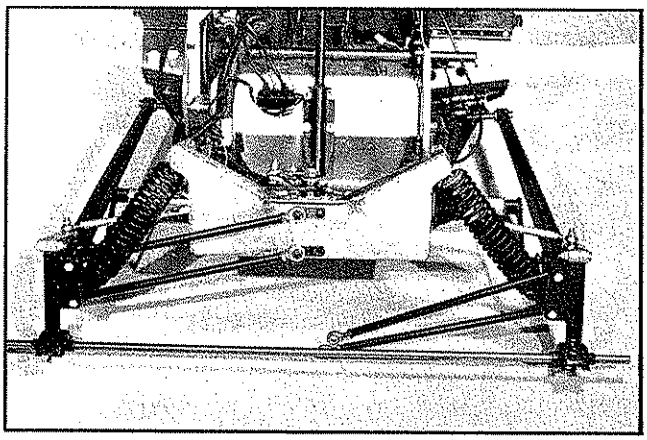
TIP: Horizontal misalignment indicates toe adjustment required.
Vertical misalignment indicates camber adjustment required.

In the event the alignment bar does not enter the opposite spindle freely, proceed as follows:



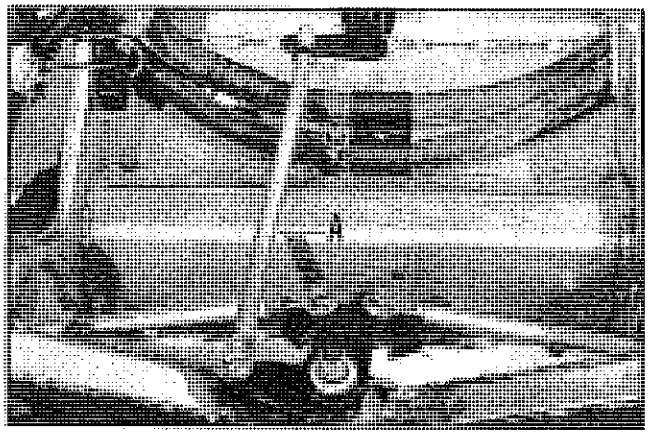
### TOE ADJUSTMENT

1. Loosen the four jam nuts (A) on both tie rods.
2. Change the toe adjustment in or out to determine if this is the reason for misalignment.



### CAMBER ADJUSTMENT

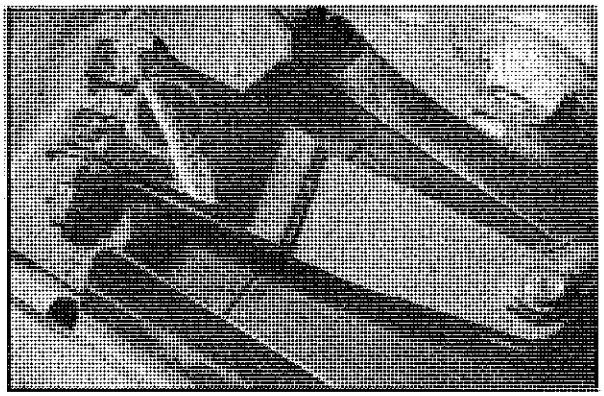
1. If the alignment bar still will not slide through the spindles, camber adjustment must be changed. Remove the radius rods and change camber until the bar does slide freely through the spindles.
   NOTE: Adjust the four radius rod ends equally, maintaining 36 1/2" spindle center distance.
2. With the alignment bar installed through the spindles, center the handlebars by adjusting drag link length (A).
3. Tighten all jam nuts. Torque the four radius rod bolts to 25 ft./lbs. and the bell crank center bolt to 40 ft./lbs.
4. Reinstall the torsion bar linkage.
5. Lubricate the ski pivot bushings; install the skis. Torque the pivot bushing bolts to 25-30 ft./lbs.



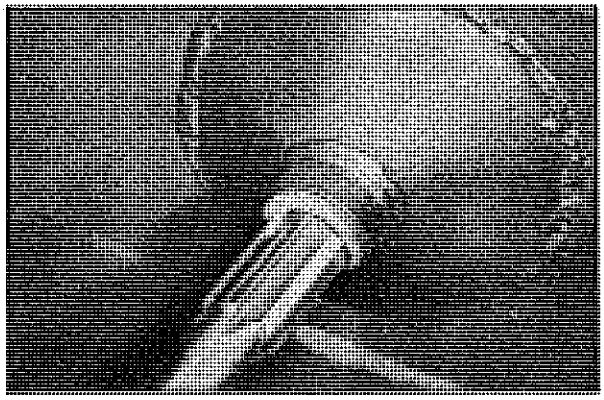
## Ski Spindle Bushing Replacement — Handlebar Torque and Sequence

### SKI SPINDLE BUSHING REPLACEMENT

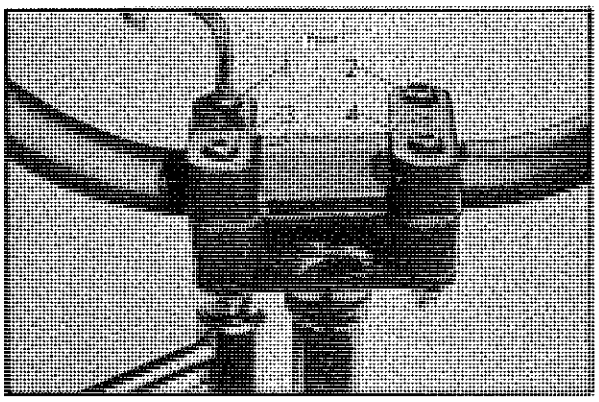
1. With a scribe, mark the steering arm to spindle for reference in reassembly. Remove steering arm bolt and spindle.



2. With a drift punch, remove old bushings and install new bushings, tapered end first.



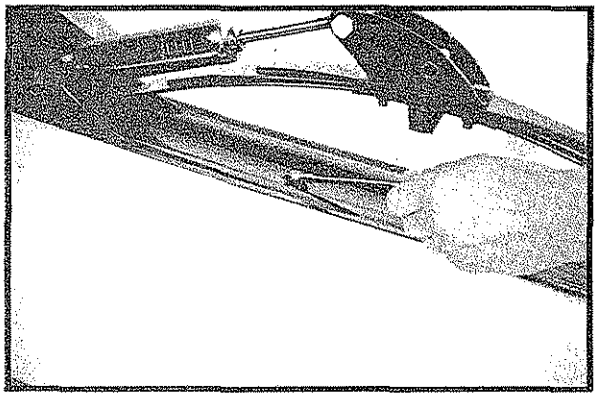
3. The newly installed bushings must be reamed before attempting to install the ski spindle.
   Small Spindles — Reamer Size: .750"
   Large Spindles — Reamer Size: .875"



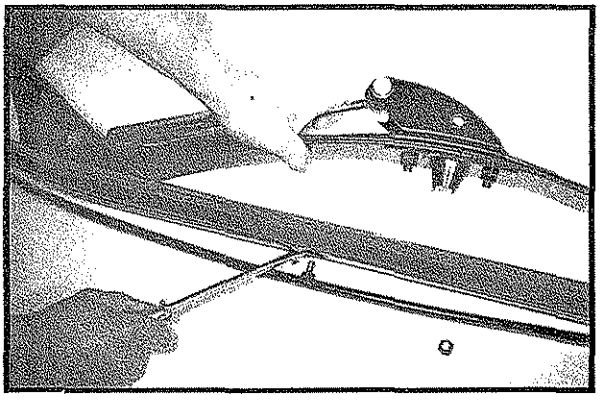
### HANDLEBAR TORQUE AND SEQUENCE

Torque the handlebar adjuster block 11-13 ft./lbs. as shown. The gap should remain rearward.
IMPORTANT: When adjusting the handlebar, be sure the serrations in handlebar and adjuster block match before torquing.

1. To remove the ski skag, first remove retaining nut as shown. Then push bolt down through ski.



2. Pull the rear of the skag from the ski, as shown, then the skag is free to be pulled from the ski.



NOTE: EACH TIME A MACHINE COMES IN FOR REPAIR OR TUNE-UP, CHECK THE SKI SKAGS FOR WEAR. TO PREVENT DAMAGE TO THE SKIS AND FOR GREATER STEERING CONTROL, REPLACE ALL SKAGS THAT ARE HALF WORN OR GREATER WITH NEW SKAGS. CHECK ALL SKI SADDLE BOLTS. IF THEY ARE LOOSE OR WORN, REPLACE WITH NEW BOLTS AND NUTS.

# SECTION III

# BODY ELECTRICAL

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## Headlight Adjustment

Headlights on all models can be adjusted to raise or lower the light beam by adjusting the lamp according to the specifications below.

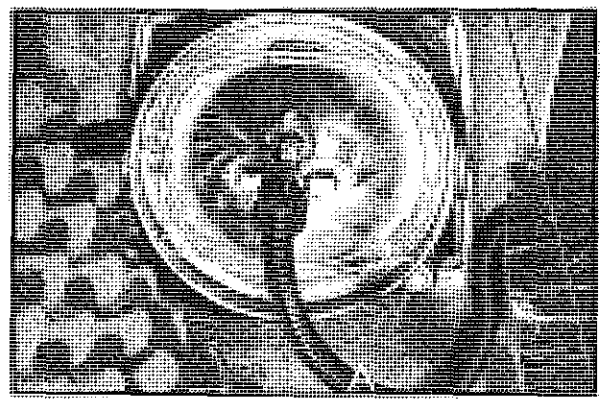
A. Snowmobile on a level surface with hood securely latched.

B. Rider(s) seated.

C. Headlight on high beam circuit.

D. Adjust screw (A).

E. The center of the brightest spot should have a 2" drop from center of headlight lense at 25'.

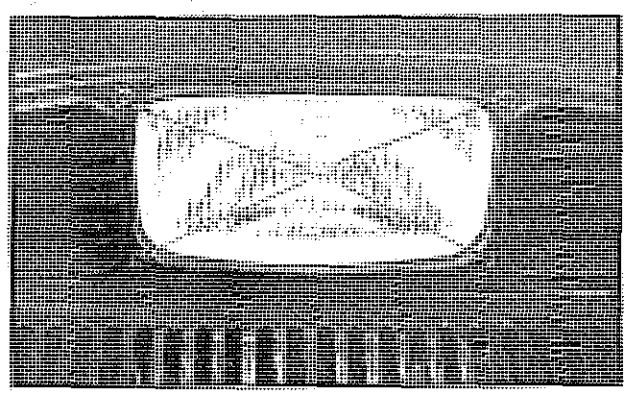


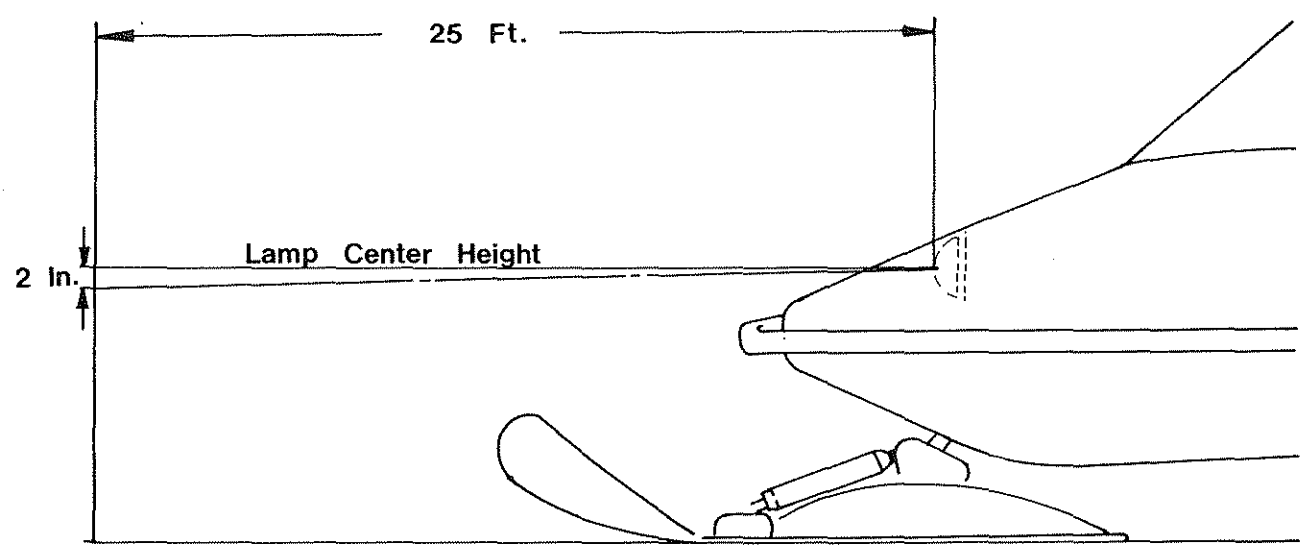
Headlamps on models equipped with rectangular lamp can be adjusted to raise or lower lamp beam and also adjust beam right or left.

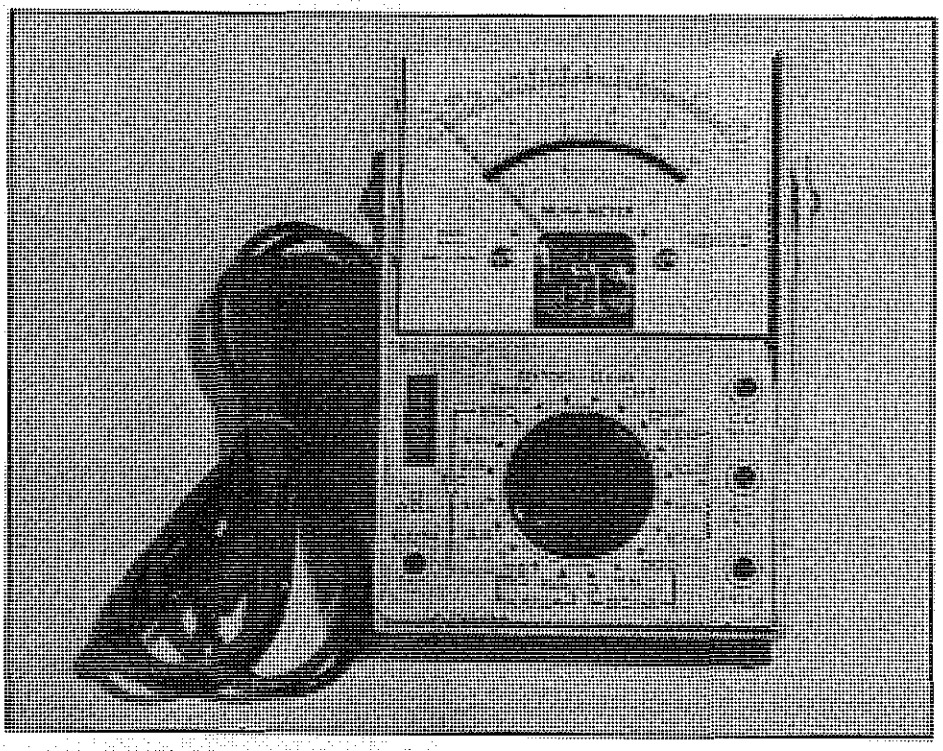
A. Equal turns on the two upper or two lower screws control vertical beam adjustment.

B. Equal turns on the two left or two right screws control horizontal beam adjustment.

C. Initial adjustment is 2" drop at 25' with brightest spot straight ahead or in line with chassis.







SPECIFICATIONS:

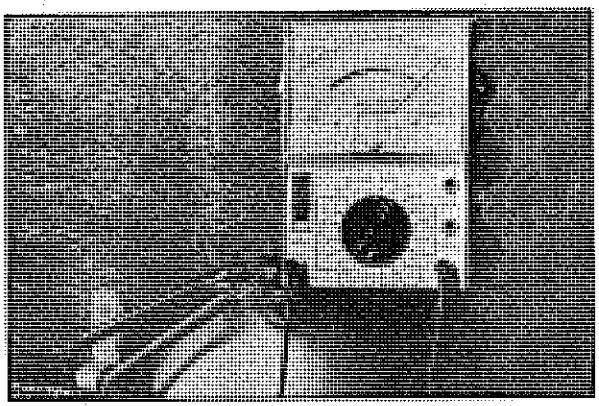
| | |
|---|---|
| DC Voltage: | 0-.25, 1, 2.5, 10, 25, 100, 250, 1000 volts. 20,000 ohms/volt. |
| AC Voltage: | 0-10, 25, 100, 250, 1000 volts. 10,000 ohms/volt. |
| Decibels: | -20 to +20 dB. |
| DC Current: | 0-50, 500 uA; 0-5, 50, 500 mA. |
| Ohmmeter: | 0-6 Megohms in 4 ranges. |
| Power Supply: | One 1.5-volt size "AA" cell for ohmmeter. |

Polaris Multitester (Part No. 2870335)

This tester may be used in the following Polaris lighting circuit and related component tests.

## FILAMENT CONTINUITY TEST

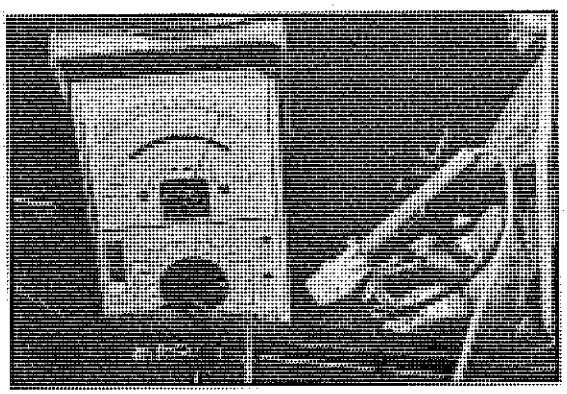
Adjust the Multitester (PN 2870335) to Ohms x 1 scale. Disconnect wire harness from headlamp. Connect the black test lead of the Multitester to the left terminal of the headlight. The red test lead is connected to the right terminal to check high beam filament and to the other center terminal to check the low beam filament. Zero to one ohm resistance (full deflection of Multitester needle to the right) indicates a lamp in good working condition.



## ALTERNATOR OUTPUT TESTS

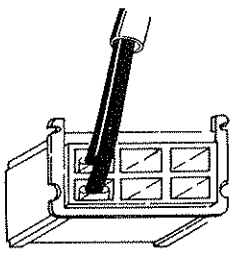
CAUTION: Before performing this test, be sure the Multitester selector is set to the 100 ACV scale to prevent damage to the tester.

1. Disconnect the alternator connector from the engine.
2. Insert red tester lead into one yellow wire coming from the engine alternator.
3. The black tester lead must be grounded to either the engine or the brown wire at connector block.
4. ⚠ Start engine; observe AC voltage reading on Multitester; slowly increase engine speed to 3,000 RPM. The voltage should read approximately 20 volts. Readings of 15-45 volts are considered normal.
   NOTE: On lighting systems with two yellow wires at the connector block, each yellow wire must be checked separately as in steps above. If output on one or both sides is zero or low, the lighting coil must be replaced.

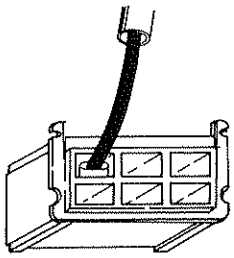


NOTE: On all 140 watt twin cylinder systems alternator output is checked with test leads connected to both yellow wires from the engine.

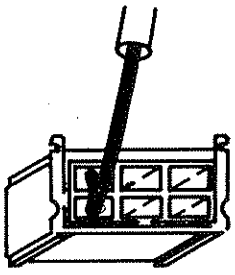
## LIGHTING SYSTEM IDENTIFICATION



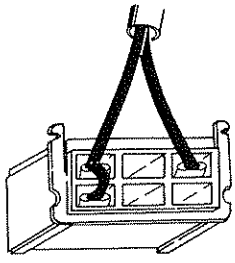
Yellow Wires
75 Watt
Single and Twin Cylinders



Yellow Wire
90/120 Watt
Twin Cylinders



Yellow Wires
120 Watt
Three Cylinders



Yellow Wires
140 Watt
Twin Cylinders

## Light Circuit Tests

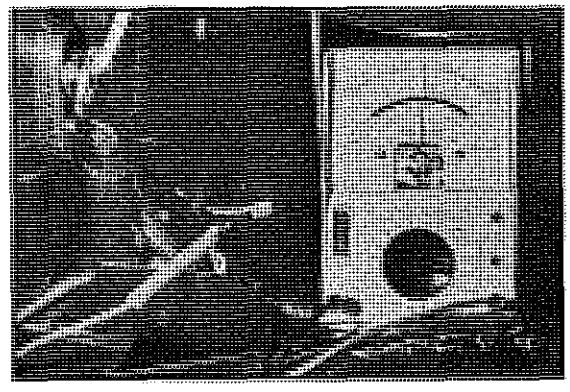
### REGULATOR TESTING

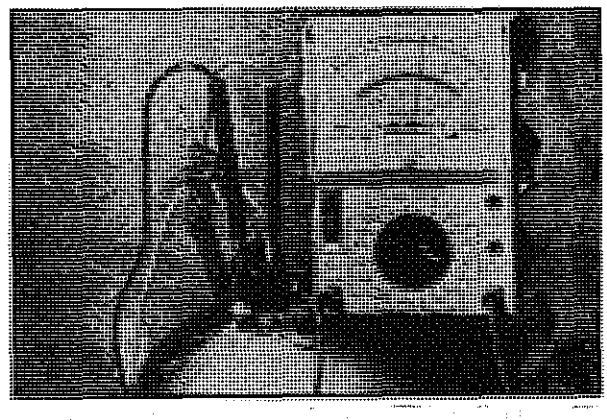
CAUTION: Before performing this test, be sure the Multitester selector is set to the 25 ACV scale to prevent damage to the tester.

1. Insert one test probe as shown under plastic terminal protector from the voltage regulator. Ground the other probe to the regulator heat sink.
   NOTE: This test must be taken with the headlight connected and in working order.

2. ⚠ Start engine; let idle; slowly increase engine speed to 3,000 RPM while observing Multitester scale. Voltage on the ACV scale should not exceed 15 volts. High voltage indicates a defective regulator, a poorly grounded regulator, a broken or loosely connected wire to the regulator (11 - 15 ACV acceptable).

3. Regulated voltage can also be checked at the headlamp as shown. Connect black test lead to ground and red test lead to either hi or lo beam terminal.
   NOTE: Hi/lo beam switch must be in proper position for circuit being tested, headlamp harness connected and lamp in good condition. Proceed as outlined in step 2.





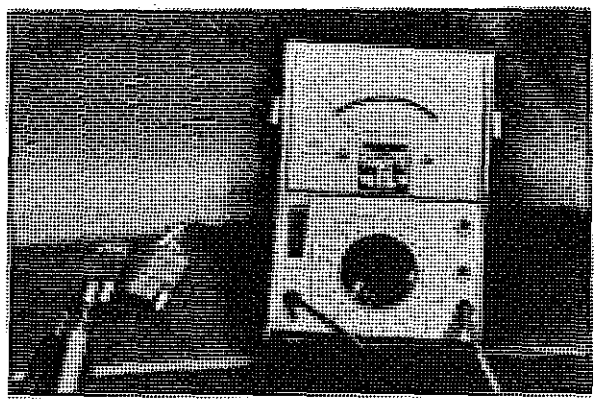
### ALTERNATE METHODS FOR REGULATOR TESTING

1. Disconnect regulator from circuit; start the engine. If lights come on, the regulator is at fault.
   CAUTION: With regulator disconnected, run engine for short period only or damage may result to lights or lighting circuit.

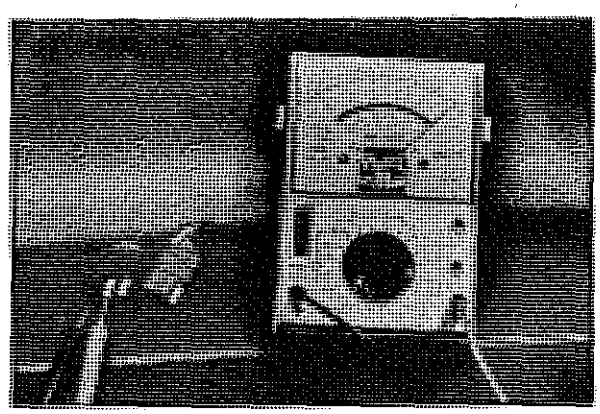
2. Disconnect regulator from circuit. Adjust Multitester to Ohms x 1 scale and zero the meter. Check between the regulator lead wire (yellow) and ground on engine. A reading of 120 ohms ± 10% is normal.
   NOTE: If reading is high, check for secure, clean connections at voltage regulator mounting.

If a shorted underseat wire harness is suspected, proceed as follows:

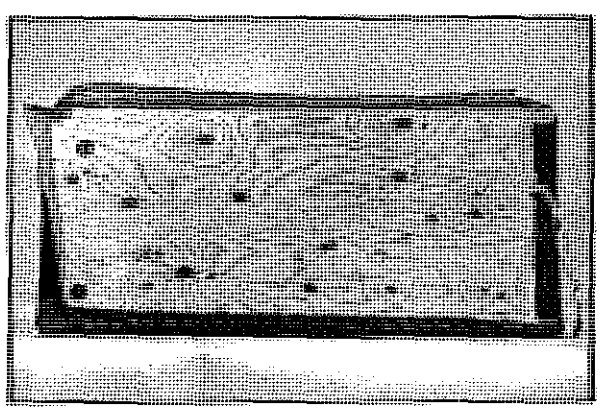
1. Remove the taillight lens, the two taillight bulbs, and the brake bulb. Disconnect the seat wire harness as shown. Attach the black test lead of the Multitester to the brown wire of the seat harness. Attach the red test lead to the orange wire (brakes). If the meter remains to the left, the circuit is not shorted. Repeat this procedure on the yellow wire (taillights).



2. If the wire harness is shorted, the meter will move to the right as shown.

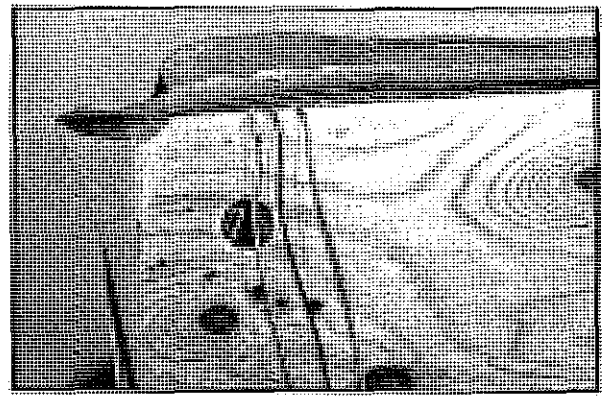


3. To replace a shorted wire harness under the seat, first remove the staples on one side and approximately halfway on the back as shown.

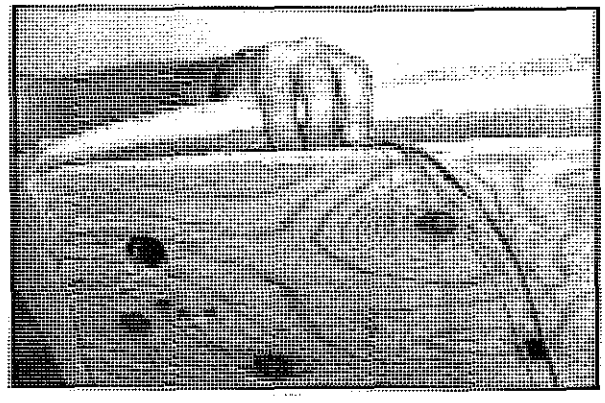


## Seat Wire Harness Troubleshooting and Repair

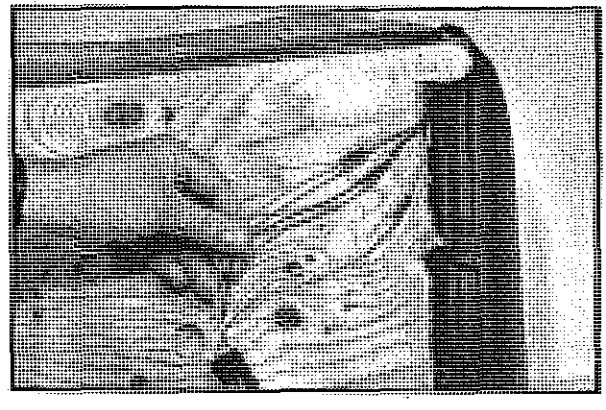
4. At the rear of the seat, pull the wire from between the plywood and foam. Cut the wire and splice as shown. Solder the connections and cover with electrical tape.



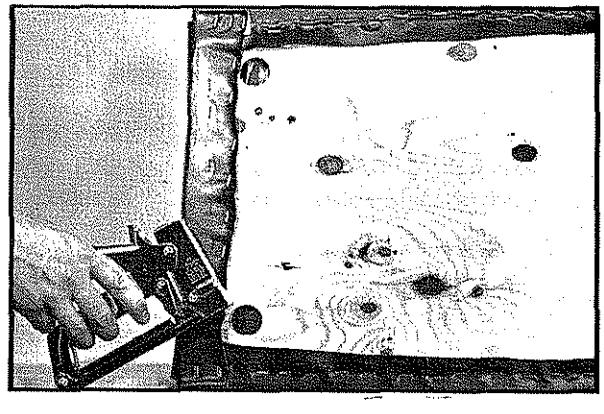
5. Carefully push the new wire between the seat board and foam as shown.



6. Cut and splice the new wire to the three-prong connector at the front of the seat.

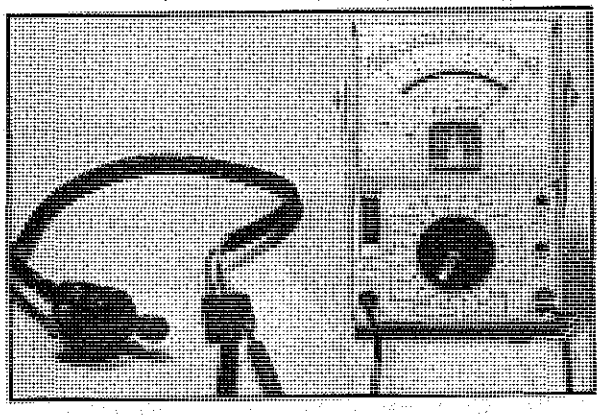


7. Using a hand staple gun, re-staple the cover to the seat board.



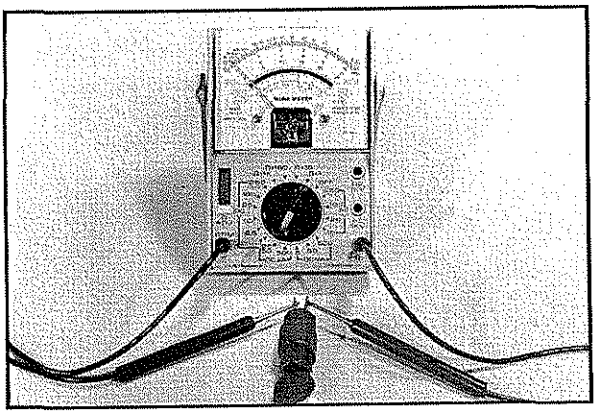
## HI/LO BEAM SWITCH CONTINUITY TEST

Adjust the Multitester to Ohms x 1 scale. With the hi/lo switch disconnected, check continuity between the yellow wire and the green wire, switch in low beam position. The Multitester should read zero ohms resistance (full deflection to the right). Turn switch to high beam position and the Multitester should change from zero ohms resistance to infinite ohms resistance (no deflection to the right). Next, check between the yellow wire and red wire, switch in high beam position. The Multitester should read zero ohms resistance, and when switched to low beam position, the Multitester should read infinite ohms resistance. If any of the above tests fail, the switch is defective.



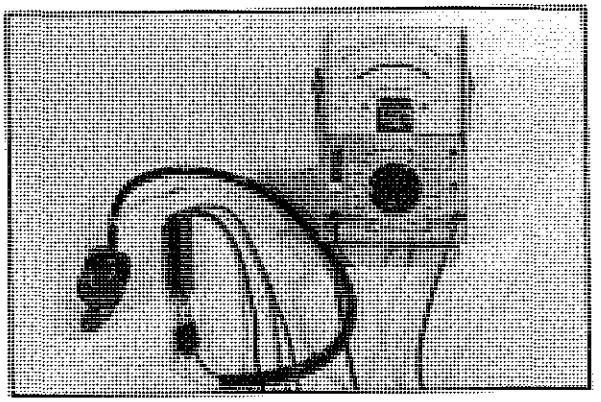
## IGNITION SWITCH CONTINUITY TEST

Adjust the Multitester to the Ohms x 1 scale. The switch in the "on" position is open. When the test probes are attached as shown, there should be no deflection of the Multitester needle. If the needle shows deflection, the ignition switch is shorted and must be replaced.



## KILL SWITCH CONTINUITY TEST

Adjust the Multitester to the Ohms x 1 scale. The kill switch in the "run" position is normally open. With the test probes attached as shown, there should be no deflection of the Multitester needle. Meter deflection indicates a defective switch.



## Guidelines for Lighting Circuit Diagnosis

1. Headlamp Filament Continuity — Page 3.

2. Alternator Output Tests — Page 3.

3. Regulator Testing — Page 4.

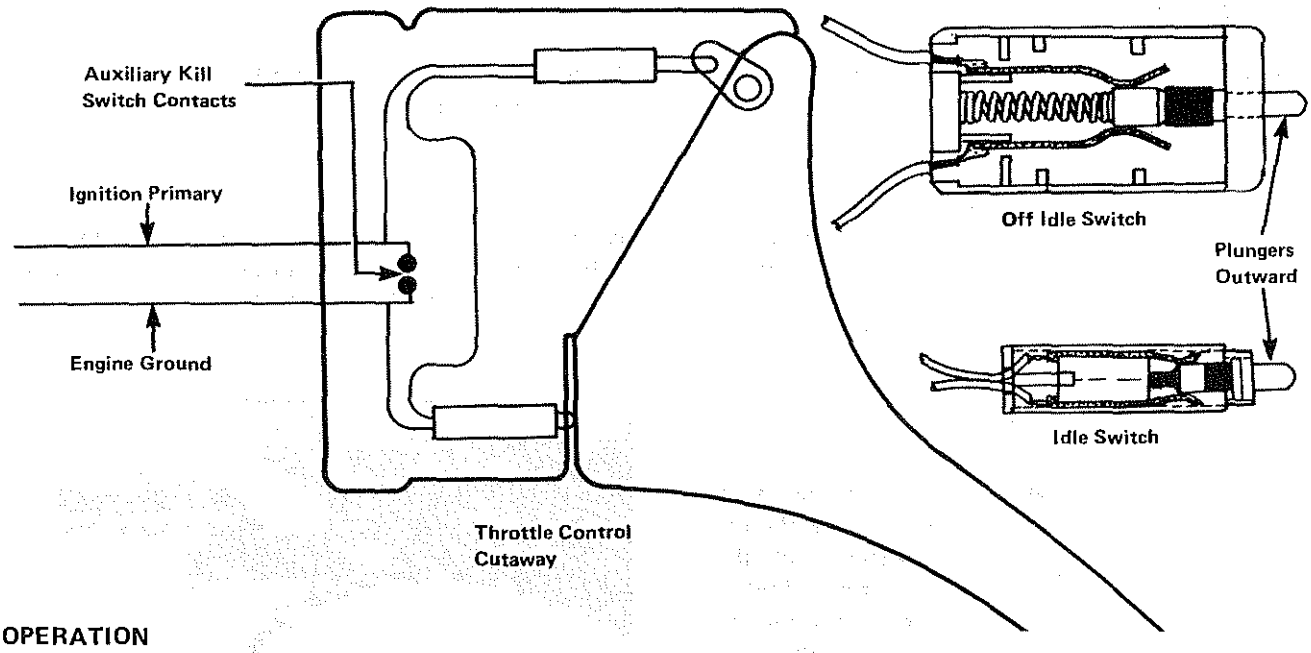
4. Seat Wire Harness. Disconnect between seat and gas tank; start engine. If lights come on, problem is in seat wire harness. Proceed as outlined on pages 5 and 6.

5. Hi/Lo Beam Switch Continuity Test — Page 7.

6. Headlamp Wire Harness. Check for open circuit or shorted circuit. Use Multitester in Ohms x 1 position, top scale.
   CAUTION: Checks taken in Ohms position are made with the engine stopped.

NOTE: On models equipped with a light-off switch, this switch must also be checked with Multitester or by bypassing switch.

## Speed Control Assurance Operation and Adjustment




### OPERATION

The speed control assurance consists of two series connected switches. If one or both switch plungers are positioned inward, the circuit is open and the engine will run.

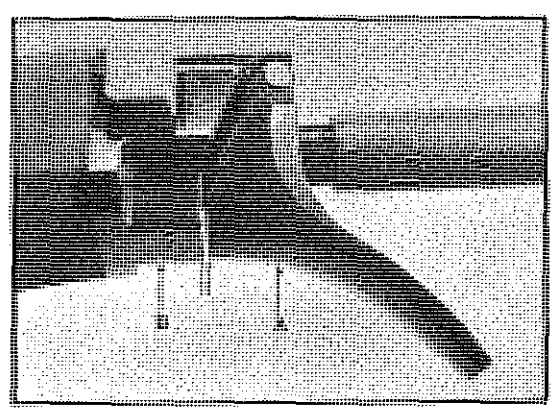
At idle, with the throttle lever properly adjusted, the bottom switch circuit is open (plunger inward). The top switch circuit is now closed (plunger outward). The speed control circuit is open, allowing the engine to run.

As the throttle lever is actuated to an off idle position, the top switch circuit is opened (plunger in) and the bottom switch circuit is closed (plunger out). The speed control circuit is still open, allowing the engine to run.

In the event the carburetor or controls malfunction and allow the throttle cable to become slack, the circuit will close (both switch plungers out), grounding the ignition system and in turn causing the engine to stop.

### ADJUSTMENT

The throttle lever free play should at all times be adjusted to provide a .010"—.030" clearance between throttle lever (A) and throttle block (B). This clearance is controlled by the throttle cable sleeve(s) and the idle speed screw(s). If the idle speed screw(s) is adjusted inward and the cable sleeve(s) is not adjusted to take up the throttle lever to throttle block clearance, the engine may misfire or kill upon initial throttle opening.



⚠ After any idle speed adjustments are made, the throttle lever to throttle block clearance must be checked and adjusted.

NOTE: When above adjustments are made on models which have more than one carburetor, refer to the Carburetion Section on adjustments for proper carburetor synchronization.

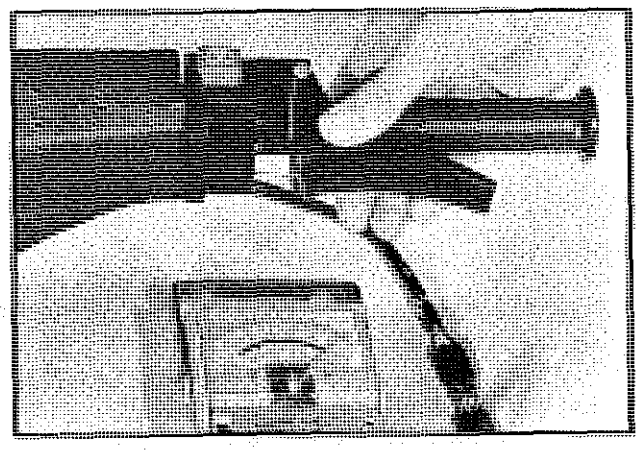
## Speed Control Assurance Testing and Replacement

### TESTING

The speed control assurance switches can be tested with the Multitester in the Ohms x 1 position. For Tests 1, 2, and 3, disconnect the switch harness from main wire harness. Zero the ohmmeter and connect the two ohmmeter test leads to the two switch wires.

Test 1 — Open Circuit — Run
With the auxiliary shut-off switch in the "on" position, the ohmmeter needle should read infinite ohms resistance. As the throttle lever is moved from an idle position to an off idle position, the meter should remain at an infinite ohms reading. If the needle fluctuates and throttle lever to throttle block clearance is adjusted properly, the switch assembly needs to be replaced.

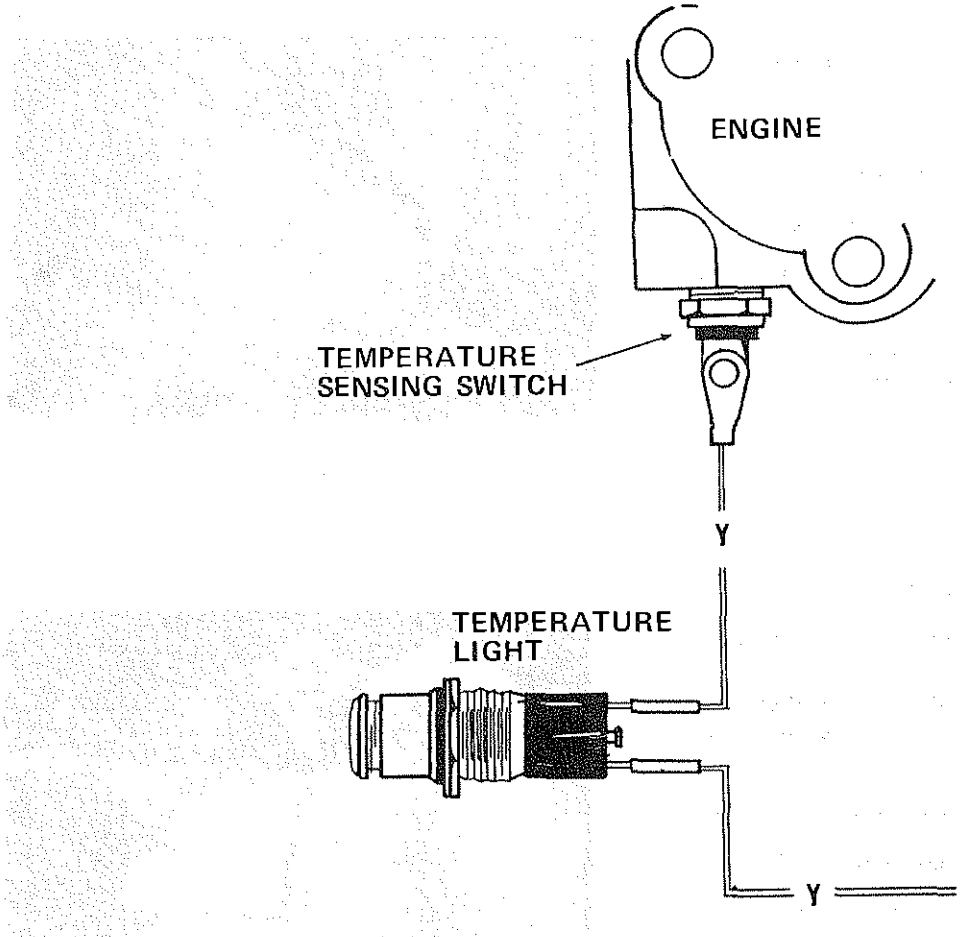
Test 2 — Closed Circuit — Kill
The two speed control switches must make a complete circuit to kill the engine. To check the switches, pull the throttle lever out away from throttle block. With switch plungers outward and the auxiliary shut-off switch in the "on" position, the ohmmeter must read zero ohms resistance or switch assembly needs to be replaced.



Test 3 — Auxiliary Shut-Off
Needle should read zero ohms in "off" position(s) and infinite ohms in "on" position. If not, the switch assembly needs replacement.

### REPLACEMENT

Auxiliary shut-off and speed control assurance switches are connected and replaced as a unit. The unit is replaced from the back side of throttle block. To gain access to the switches and attaching screws, the handlebar pad and/or the throttle block backing plate are removed. The auxiliary shut-off portion of switch slides out. The two speed control assurance switches are fastened with screws. Remove the two screws and switches, noting their placement in the throttle block. Replace assembly and check operation.




The indicator light is controlled by a temperature/warning switch installed into the engine cooling system. When engine coolant temperature reaches approximately 205° F, the switch closes, completing the current flow from the wire harness through the indicator light and to ground. The system should be tested periodically for proper operation.

LAMP CIRCUIT TEST

⚠ Remove wire from temperature sensing switch located under the thermostat housing. With the engine idling, ground the wire to the engine. The temperature warning light on the console should light. If not, replace bulb (GE 1889) or inspect wiring for shorts or open circuit.

TEMPERATURE SENSING SWITCH TEST

The temperature/warning switch is normally open. Using the Multitester (PN 2870335) in Ohms x 1 scale, with the lamp wire disconnected, contact one test probe to the switch terminal and the other test probe to engine ground. The meter needle should not deflect, indicating a normal open switch.

## Tachometer and Speedometer Installation — Gemini and Apollo

### TACHOMETER KIT INSTALLATION

1. Cover instrument panel with template and tape to hold it in place.
   NOTE: On Apollo models with star decal, use center of right star for centering tachometer hole.
2. Center-punch or scribe tachometer hole center.
3. Drill 3" diameter hole in instrument panel.
4. Install and secure tachometer to hood using hardware provided in kit.
5. Fasten terminal connector from tachometer to receptacle near headlight. Wire harness routing and connections are shown in figure 1.

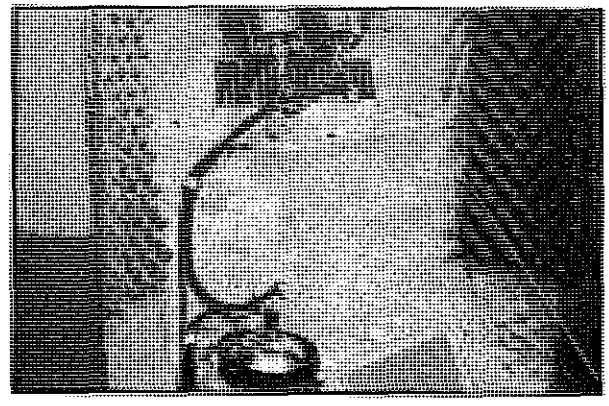


Figure 1

### SPEEDOMETER KIT INSTALLATION

1. Cover instrument panel with template and tape to hold it in place.
   NOTE: On Apollo models with star decal, use center of left star for centering speedometer hole.
2. Center-punch or scribe speedometer hole center.
3. Drill 3" diameter hole in instrument panel.
4. Install and secure speedometer to hood using hardware provided in kit.
5. Remove muffler and the mounting nuts from the drive shaft flange. Insert the small end of the drive bushing into the drive shaft. Tap lightly to ensure it is seated properly, figure 2.
   NOTE: Some models may have drive bushing installed.
6. Insert the square key drive extension into the drive bushing.
7. Secure the angle drive with the longer bolts provided in kit, figure 3.
8. Route the cable along the bulkhead brace between the muffler and the engine. Secure cable to nosepan using the wire harness clip. Route cable to speedometer using the wire harness clips to secure cable to hood. Refer to figures 1 and 3 for proper routing and fastening. Use tie straps to secure any loose wires.

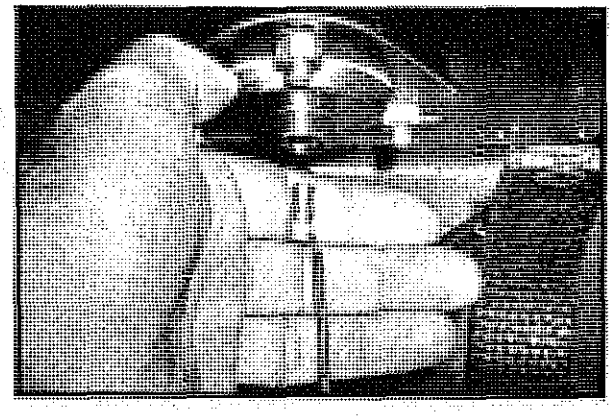


Figure 2

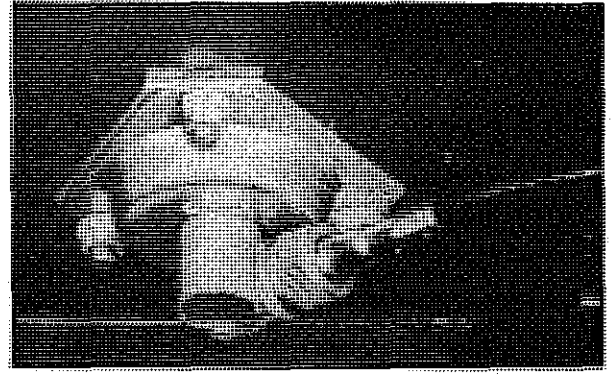
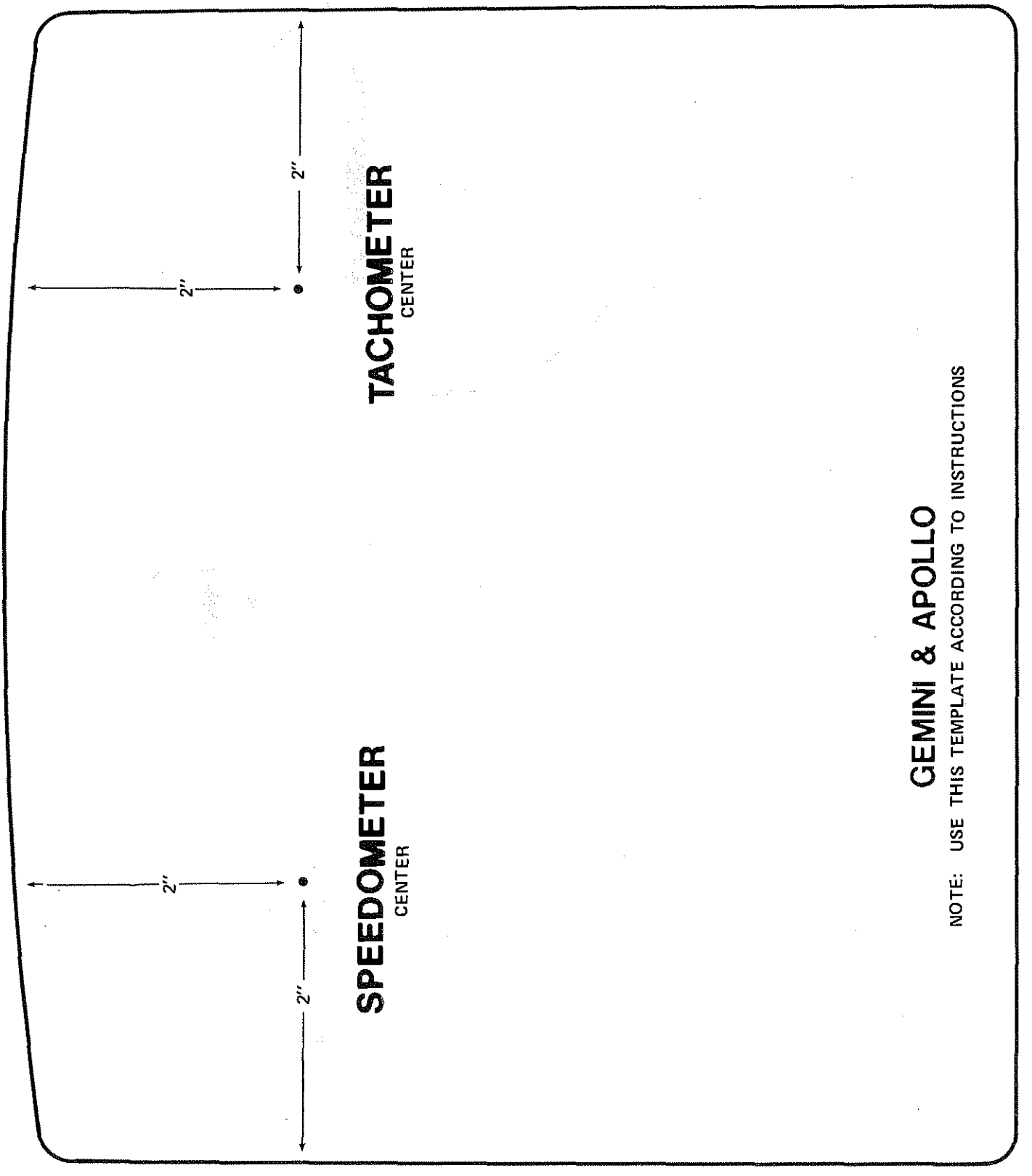
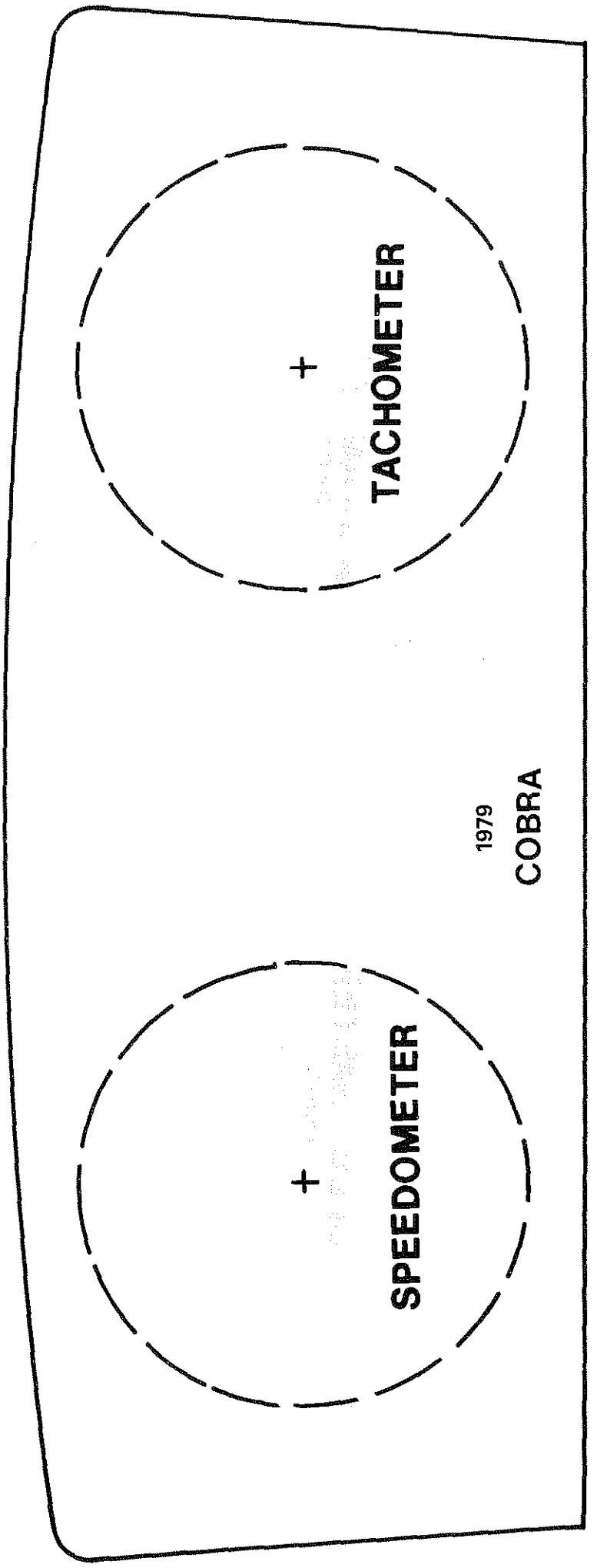
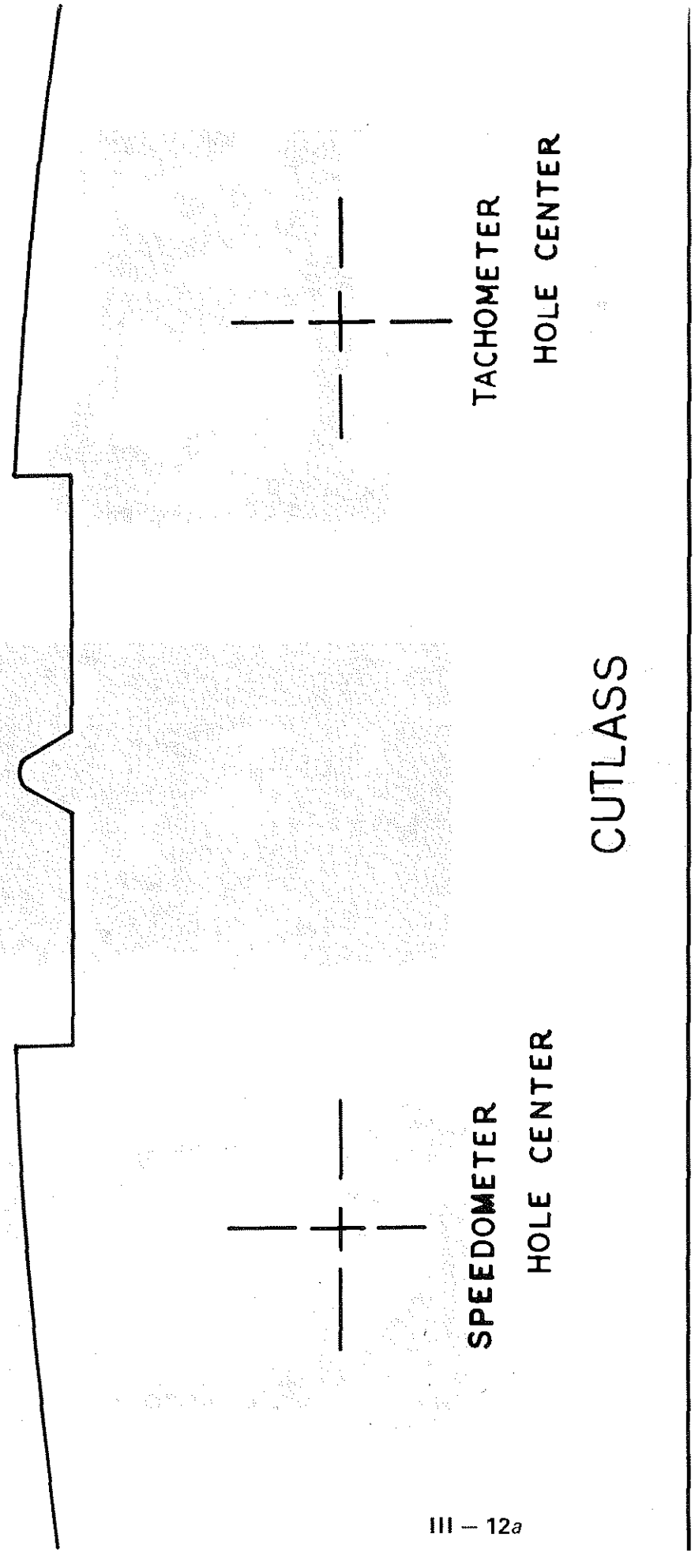


Figure 3


2"
2"
TACHOMETER
CENTER
2"
2"
SPEEDOMETER
CENTER
GEMINI & APOLLO
NOTE: USE THIS TEMPLATE ACCORDING TO INSTRUCTIONS

Template




TACHOMETER
HOLE CENTER
CUTLASS
SPEEDOMETER
HOLE CENTER

## BODY ELECTRICAL

### Tachometer and Speedometer Installation — Cutlass

#### TACHOMETER KIT INSTALLATION

1. Cover instrument panel with template and tape to hold it in place.
2. Scribe tachometer hole center.
3. Drill 3" diameter hole in instrument panel.
4. Install and secure the tachometer to the hood instrument panel using hardware provided in kit.
5. Fasten terminal connector from tachometer to receptacle near headlight using short wire harness in kit. Refer to wire harness routing shown in figure 1.

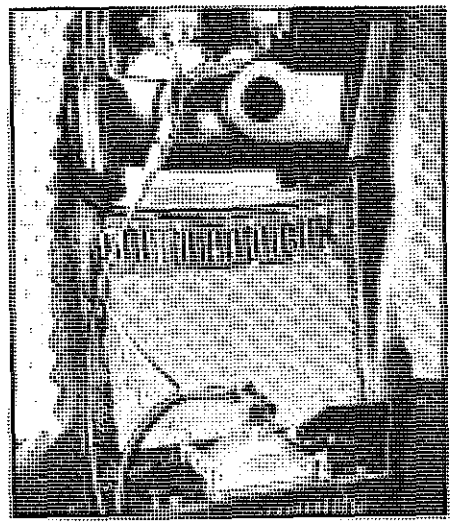


Figure 1

#### SPEEDOMETER KIT INSTALLATION

1. Cover instrument panel with template and tape to hold it in place.
2. Scribe speedometer hole center and drill 3" diameter hole in instrument panel.
3. Install and secure the speedometer head to hood using hardware provided.
4. Open the adjuster bolt jam nut locking tab (A, figure 2). Loosen the jam nut, remove the adjuster bolt (B, figure 2) and actuating arm (C, figure 2).
5. Remove the two brake caliper attaching nuts (D, figure 2) and install the square key drive extension into drive shaft.
6. Install the angle drive assembly onto the square key and caliper attaching bolts. Fasten with attaching nuts and torque to 30 ft./lbs.
7. With the brake lever bottomed on handlebar and the caliper helix shaft turned in, install the actuating arm, locking tab, jam nut, and adjuster bolt.
8. Insert a .012" feeler gauge between the brake disc and movable brake pad. Release brake lever and turn the adjuster bolt finger-tight. Set the jam nut and bend locking tab. Reinstall the actuating arm return spring. (Refer to Section VIII for further brake adjustment information.)
9. Fasten the speedometer cable to the angle drive and route it under the rear muffler bracket and to the left side of the nosepan. Fasten cable to speedometer head.
10. Route and fasten wire harness and cable as shown in figure 1.
    NOTE: For maximum holding strength, before installing "D" clip fasteners, the hood should be cleaned with ABS pipe cleaner or primer.

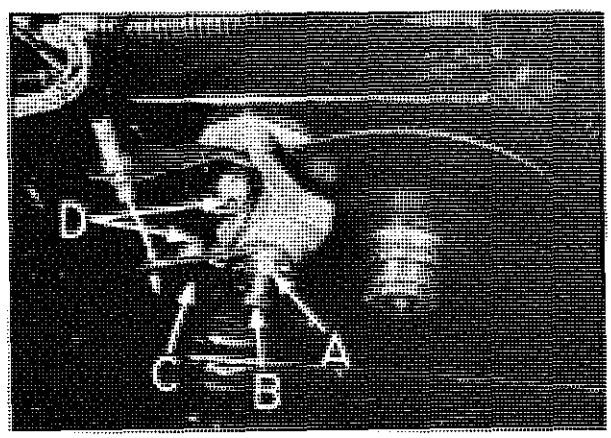



Figure 2

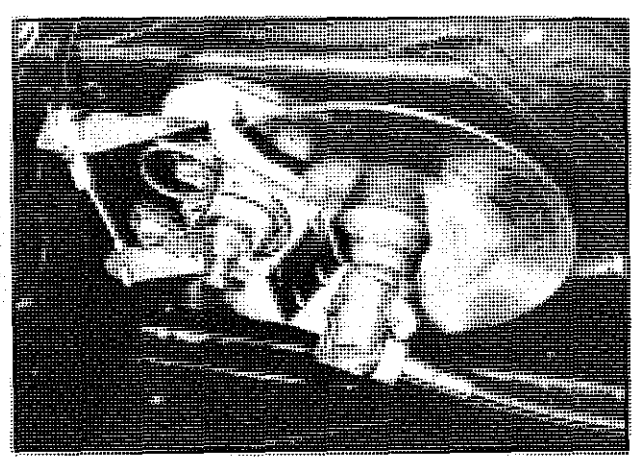


Figure 3

## Tachometer and Speedometer Installation — Galaxy and 1979 Cobra

### TACHOMETER KIT INSTALLATION

1. 1979 Cobra models — Cover instrument panel with template and tape to hold it in place.

   Galaxy models — Locate the center of the right side tachometer cut-out reference circle.

2. Center-punch or scribe tachometer hole.
3. Drill 3" diameter hole in instrument panel.
4. Install and secure tachometer to hood using hardware provided in kit.
5. Fasten terminal connector from tachometer to receptacle near headlight. Wire harness routing and connections are shown in figure 1.

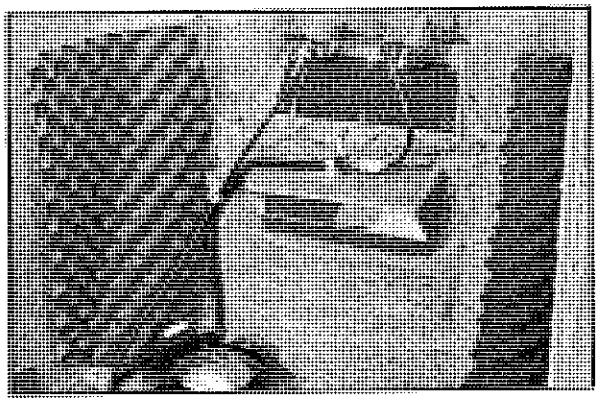


Figure 1

### SPEEDOMETER KIT INSTALLATION

1. 1979 Cobra models — Cover instrument panel with template and tape to hold it in place.

   Galaxy models — Locate the center of the left side speedometer cut-out reference circle.

2. Center-punch or scribe speedometer hole.
3. Drill 3" diameter hole in instrument panel.
4. Install and secure speedometer to hood using hardware provided in kit.
5. Remove muffler and the mounting nuts from the drive shaft flange. Insert the small end of the drive bushing into the drive shaft. Tap lightly to ensure it is seated properly, figure 2. NOTE: Some models may have the drive bushing installed.
6. Insert the square key drive extension into the drive bushing.
7. Secure the angle drive with the longer bolts provided in kit.
   NOTE: Because of the dual application angle drive provided for some Cobra models, it becomes necessary to note rotation viewed from the cable take-off end. Rotation must be clockwise. To achieve proper cable rotation it may be necessary to remove the rubber dust cap. Normally the brass threaded end will be used on the Cobra. Install dust cap on end not in use, figure 3.
8. Route the cable along the bulkhead brace between the muffler and the engine. Secure cable to nosepan using the wire harness clip. Route cable to speedometer using the wire harness clips to secure cable to hood. Refer to figure 1 for proper routing and fastening. Use panduit straps to secure any loose wires.

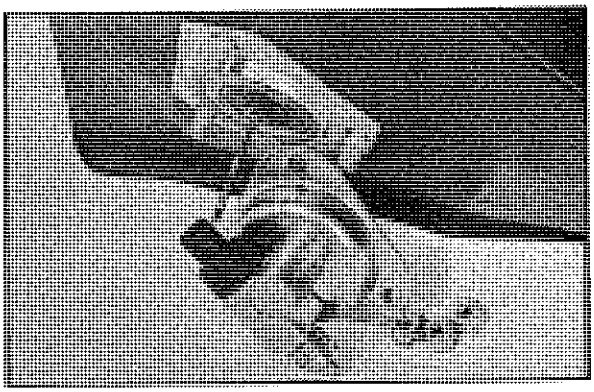


Figure 2

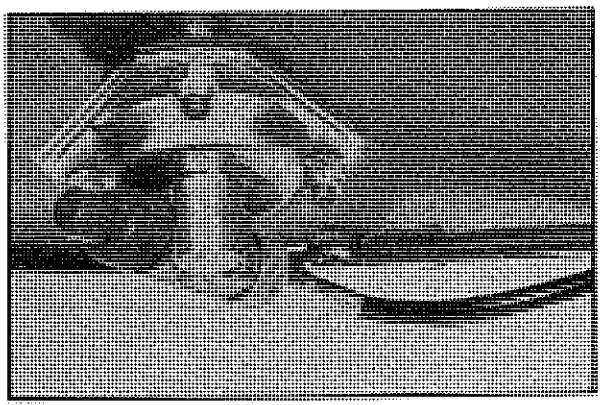


Figure 3

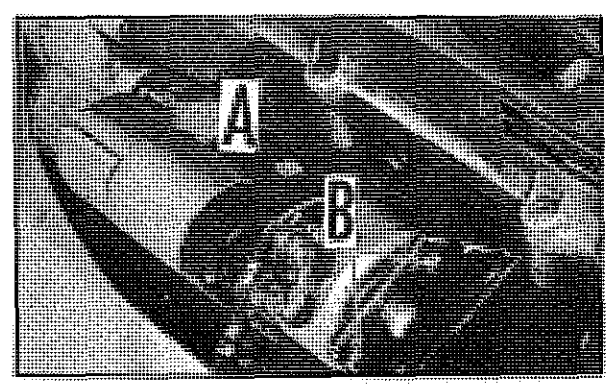
## BODY ELECTRICAL

### 1978 Cobra 440 Electric Start Installation

1. Remove the hood, exhaust system, and air silencer.
2. Remove the voltage regulator and bend the bracket flush with the tunnel. The air silencer bracket also must be bent flush to the tunnel.
3. Disconnect main wire harness, headlamp connections, seat wire harness connector located between seat and fuel tank, main connection at engine, ignition switch, auxiliary kill switch, brakelight switch, and hi/lo beam.
4. Loosen the fuel tank front hold-down spring. Fasten a 3-foot piece of soft small diameter wire to the connection between the seat and fuel tank. Then slide the old seat wire harness out. The soft wire will be used to pull the new wire harness back under the fuel tank.
5. Tie a loop in the starter rope near the recoil starter and remove the recoil handle and eye bolt.
6. Disconnect and plug fuel line at fuel filter.
7. Install new wire harness. The soft wire which was connected to the seat wire harness can now be used to pull the new seat harness under the gas tank. The tank may be raised slightly to aid in installation of the seat wire harness.
8. Remove ignition switch, replacing with kit switch.
9. Connect brakelight and ignition switch wires.

### CRANKING MOTOR INSTALLATION

1. Remove the flywheel cranking motor cover plate located on the front side of engine blower housing.
2. Install two studs (A) (PN 3080011) into the blower housing using Loctite (PN 2870326) on threads. NOTE: Metric threads go into housing.
3. Loosen the two crankcase attaching studs (approximately 3/8") located on either side and beneath the drain plug on the front lower crankcase half.
4. Remove the two cranking motor thru studs (B) from the motor terminal end.
5. Install the starter mount support bracket (PN 2450016) to the motor terminal end with thru studs (do not tighten at this time).



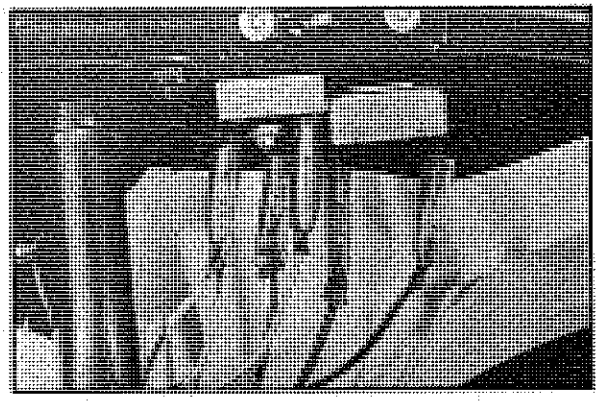

6. Assemble the cranking motor and support mount to engine using nuts and washers provided.
7. Tighten cranking motor to engine, support bracket to motor terminal end and support mount to crankcase studs in this order.

### RING GEAR INSTALLATION

1. Remove the four starter cup and six flywheel fan attaching capscrews, remove the cup and fan from flywheel.
2. Install ring gear (beveled side of teeth toward cranking motor) to fan using bolts and lock washers provided. IMPORTANT: Use Loctite or peen protruding thread on inside of ring gear to prevent loosening during operation. Torque to 20 ft./lbs.
3. Reinstall fan assembly and starter cup to flywheel.
4. Reinstall blower housing.

## RECTIFIER-CIRCUIT BREAKER INSTALLATION

Secure the rectifier and circuit breaker to the mounting bracket. Mount the assembly on the left side of steering hoop next to the steering post as shown, using flex locknuts and pop rivets provided.

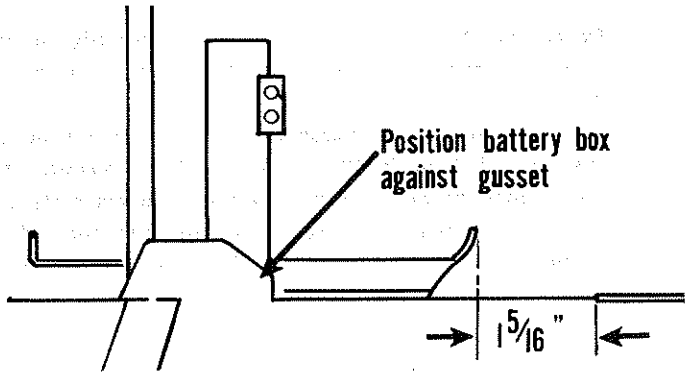


## STARTER ROPE BRACKET

Mount the recoil starter rope bracket to the steering hoop using three pop rivets.
NOTE: Center bracket in console recoil opening.

## BATTERY BOX INSTALLATION

1. Position the battery box with the narrowed end rearward according to drawing.
2. Locate and center punch the four box mounting holes using the box base as a template.
3. Bore four 1/4" diameter holes through chassis and remove suspension from machine.
4. Install four 1/4-20 x 1/2" hex socket button head capscrews into underside of chassis and through battery box. Secure with 1/4" locking nuts. NOTE: Position brakelight wires and seat harness beneath the rear of box base narrowed end.

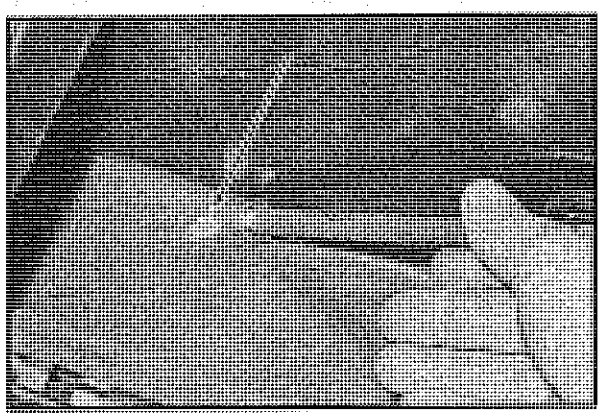



5. Reinstall suspension into chassis.
6. Install the voltage regulator on the "L" bracket provided on the right-hand side of battery box. The brown wire coming from the harness should be installed under one side of the regulator mount bolt.
   ⚠ CAUTION: All regulator mounting contact surfaces should be clean and unpainted.
7. Install wiring harness, referring to schematic for proper terminal connections.

## BATTERY

⚠ CAUTION: It is important that the sealed end of the vent tube be opened or cut off to allow battery to vent properly.

1. Activate battery. Refer to instructions provided in battery shipping box.
2. Secure battery in battery box, vented end rearward.
3. Drill 7/16" hole in chassis, as shown, for over-flow tube. Install over-flow. Lock with two nuts, then place over-flow plastic tube inside steel tube. Cut off excess tube below running board.



## 1978 Cobra 440 Electric Start Installation

4. A. Install positive 40" cable (small end) to battery with circuit breaker wire. Route cable between engine and motor mount plate, fastening large cable end to cranking motor terminal provided.

   B. Install blue solenoid starter wire to solenoid and into engine connector block blue wire.

5. Install short 17" cable to battery negative terminal, connecting opposite end to lower blower housing bolt.

6. Install fuel line, recoil handle, and muffler.

### PRE–START CHECK

1. Inspect all wire connections for proper placement and routing.

2. Use panduit straps to secure loose wiring.

3. Test start system.

4. Install air silencer and hood.

### OPERATION

1. Never operate the cranking motor continuously for more than 30 seconds. If the engine fails to start, allow a 30 second cool-down period between cranking intervals.

2. To allow maximum charging of the battery during daylight riding, always operate the snowmobile with the ignition switch in the "lights off" or "run" position. If the machine is ridden only at night with frequent starter use, it may be desirable to maintain a higher state of battery charge using an auxiliary low amperage charger. If additional charging is required, the connections from auxiliary charger can be made at the starter motor. Connect positive charger lead to large cable on starter motor solenoid. Connect negative charger lead to engine (ground).

### MAINTENANCE

1. The battery electrolyte level is visible through the plastic case; maintain the electrolyte at the specified level indicated. In the event additional electrolyte is required, it may be brought to the proper level with clean tap water. Always operate the machine after adding water or charge the battery for 10 minutes at 4 amperes with a portable charger.

⚠ USE EXTREME CARE TO AVOID SPILLAGE AND SKIN CONTACT WITH ELECTROLYTE. FLUSH ANY SPILLAGE WITH WATER.

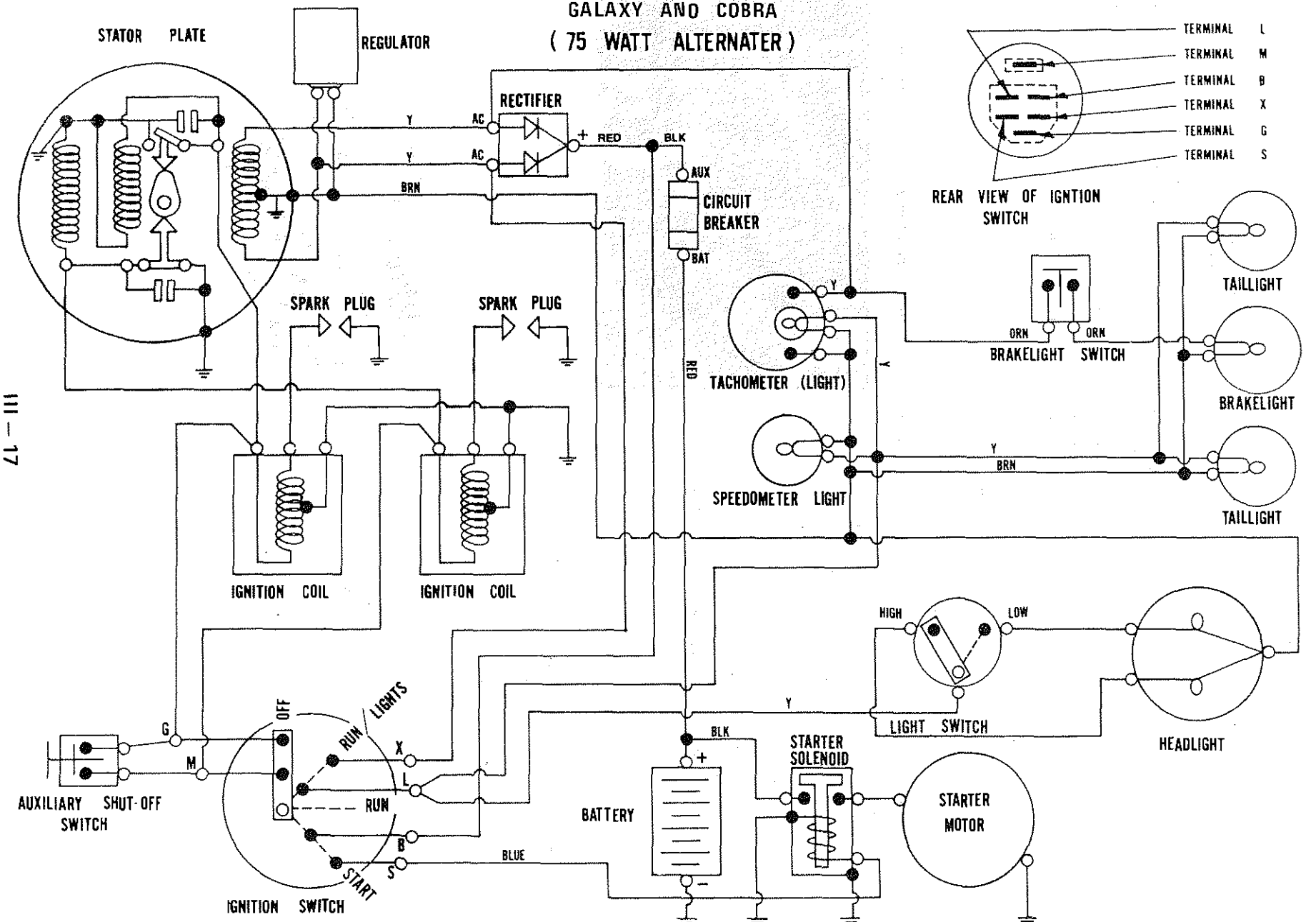
2. Keep the battery terminals clean and free of corrosion. After cleaning with baking soda ($NaHCO_3$), apply a light coat of petroleum grease to the cable connections.

⚠ CAUTION: Whenever performing any maintenance on the system or near the battery, always remove the negative (–) ground cable fastened to the engine first; then remove the battery cable connections. Whenever installing the battery, always make the negative (–) indicated connection last.

# SCHEMATIC DIAGRAM

## GALAXY AND COBRA

## ( 75 WATT ALTERNATER )



## BODY ELECTRICAL

### Galaxy and 1979 Cobra Electric Start Installation

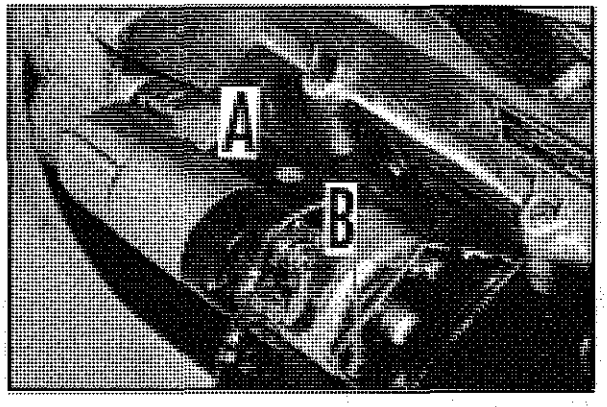
PROCEDURE

1. Remove the hood, exhaust system, and air silencer.
2. Disconnect main wire harness, headlamp connections, seat wire harness connector located between seat and fuel tank, main connection at engine, ignition switch, auxiliary kill switch, brakelight switch, and hi/lo beam.
3. Remove the fuel tank front hold-down spring. Fasten a 3-foot piece of soft small diameter wire to the connection between the seat and fuel tank. Then slide the old seat wire harness out. The soft wire will be used to pull the new wire harness back under the fuel tank.
4. Install new wire harness. The soft wire which was connected to the seat wire harness can now be used to pull the new seat harness under the fuel tank. The tank may be raised slightly to aid in installation of the seat wire harness. Install new fuel tank hold-down spring (long leg to battery side).

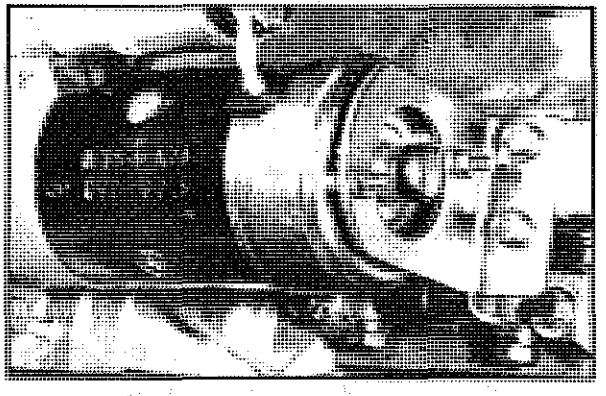
CRANKING MOTOR INSTALLATION

NOTE: 340 models follow steps 1 and 2 only.
Cobra 440 models follow steps 1 through 7 only.
Galaxy 440 models follow steps 1, 2, 8, 9, and 10 only.

1. Remove the flywheel cranking motor cover plate located on the front side of engine blower housing.
2. Install two studs (A) into the blower housing using Loctite (PN 2870326) on threads.
NOTE: Metric threads go into housing. (Install cranking motor on 340 models.)
3. Loosen the two crankcase attaching studs (approximately 3/8") located on either side and beneath the drain plug on the front lower crankcase half.
4. Remove the two cranking motor thru studs (B) from the motor terminal end.

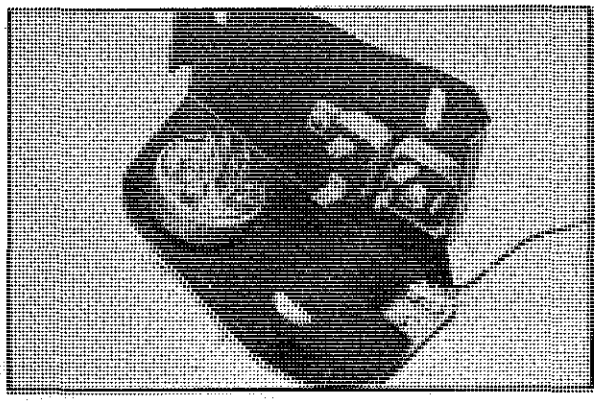



5. Install the starter mount support bracket to the motor terminal end with thru studs (do not tighten at this time).
6. Assemble the cranking motor and support mount to engine using nuts and washers provided.
7. Tighten cranking motor to engine, support bracket to motor terminal end and support mount to crankcase studs, in this order.
8. Install and tighten cranking motor to engine.
9. Remove two crankcase bolts (one upper and one lower). Position crankcase legs of starter motor bracket, insert and torque crankcase bolts.
10. Install starter motor attaching "L" support bracket and secure to starter motor thru studs. Install and tighten the bolts which join the support bracket halves.



RING GEAR INSTALLATION

1. Remove the four starter cup and six flywheel fan attaching capscrews, remove the cup and fan from flywheel.
2. Install ring gear (beveled side of teeth toward cranking motor) to fan using bolts and lock washers provided. IMPORTANT: Use Loctite or peen protruding thread on inside of ring gear to prevent loosening during operation. Torque to 20 ft./lbs.
3. Reinstall fan assembly and starter cup to flywheel.
4. Reinstall blower housing.



CONSOLE GROUP

Remove the ignition switch and replace with kit switch. Secure the rectifier and circuit breaker as shown.

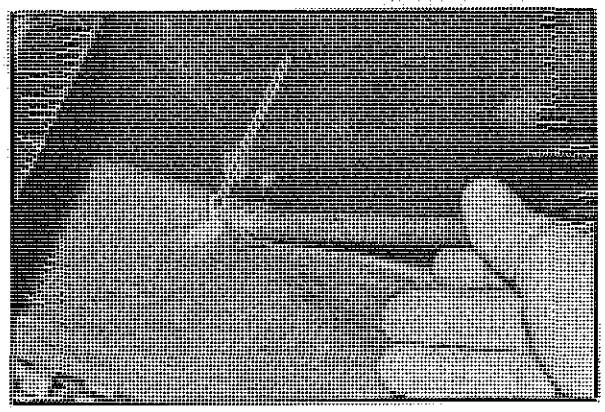
BATTERY BOX AND BATTERY INSTALLATION

1. Place the battery box and uprights onto the two bolts provided in the tunnel. Note the long upright must be installed on the right side bolt and the short upright must be installed on the left side. Secure the box and uprights with the two 1/4" flex lock nuts provided in kit.

⚠ CAUTION: Before proceeding with battery activation it is important that the sealed end of plastic vent tube be opened or cut to allow the battery to vent properly.

2. Activate battery, referring to specific activation instructions provided in battery shipping box.

3. Install the battery in battery box, vented end rearward. The padded top strap will interlock with the short upright on left side. Secure the strap to the right side upright with bolt provided in kit.



4. Drill 7/16" hole in chassis. Install and secure the steel over-flow tube. Place the plastic over-flow tube inside the steel tube and cut any excess tubing flush with running board.

WIRING GROUP

1. Complete the installation of wire harness, referring to schematic diagram (III – 17) for wire color and proper connections.

2. Insert the blue solenoid wire to engine connector block. Note as the main wire harness block and engine block are connected, the blue wires must meet.

3. Install long positive cable (small end) and red circuit breaker wire to battery positive terminal. Route the positive cable and blue solenoid wire between the engine and engine mount plate and fasten to starter motor solenoid.

4. Install short negative cable to battery and connect the opposite end to lower blower housing bolt.

## BODY ELECTRICAL

### Galaxy and 1979 Cobra Electric Start Installation

#### PRE–START CHECK

1. Install the exhaust system and inspect all wire connections for proper placement and routing.
2. Use panduit straps to secure loose wiring.
3. Test start system.
4. Install air silencer and hood.

#### OPERATION

1. Never operate the cranking motor continuously for more than 30 seconds. If the engine fails to start, allow a 30 second cool-down period between cranking intervals.
2. To allow maximum charging of the battery during daylight riding, always operate the snowmobile with the ignition switch in the "lights off" or "run" position. If the machine is ridden only at night with frequent starter use, it may be desirable to maintain a higher state of battery charge using an auxiliary low amperage charger. If additional charging is required, the connections from auxiliary charger can be made at the starter motor. Connect positive charger lead to large cable on starter motor solenoid. Connect negative charger lead to engine (ground).

#### MAINTENANCE

1. The battery electrolyte level is visible through the plastic case; maintain the electrolyte at the specified level indicated. In the event additional electrolyte is required, it may be brought to the proper level with clean tap water. Always operate the machine after adding water or charge the battery for 10 minutes at 4 amperes with a portable charger.

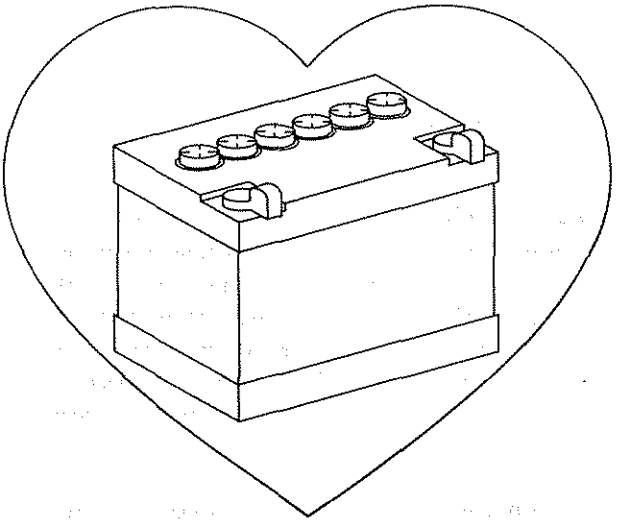
⚠ USE EXTREME CARE TO AVOID SPILLAGE AND SKIN CONTACT WITH ELECTROLYTE. FLUSH ANY SPILLAGE WITH WATER.

2. Keep the battery terminals clean and free of corrosion. After cleaning with baking soda ($NaHCO_3$), apply a light coat of petroleum grease to the cable connections.

⚠ CAUTION: Whenever performing any maintenance on the system or near the battery, always remove the negative (–) ground cable fastened to the engine first; then remove the battery cable connections. Whenever installing the battery, always make the negative (–) indicated connection last.

## Battery Maintenance

The battery is the heart of any electric-start system; therefore, its condition is critical to all electric-start functions. Long storage periods and high vibrations which are encountered in all snowmobile applications make periodic battery inspections and service essential.



The following items must be inspected and adjusted on a regular basis, or whenever this type machine enters for preventive maintenance.

1. Battery Connections:

   ⚠ CAUTION: Whenever performing any maintenance on the electric-start system or near the battery, always first remove the negative (–) ground cable.

   If battery connections and cable ends show any signs of corrosion, they must be separated, cleaned with a soda solution, and shined with a wire brush. This will ensure a resistance-free, good connection. After cleaning and tightening, the cable connection should be coated with a petroleum grease or jelly to help retard corrosion.

2. General Battery Cleanliness:

   The battery box or holder and battery top should always be kept free from film, dirt, or corrosion. If any of these are evident, the battery should be removed, cleaned with a soda solution, and rinsed with warm water. Keep the battery cell caps tight while washing the battery. If the soda solution should enter the battery cells, it will neutralize the electrolyte causing early battery failure. If the battery box shows signs of corrosion or rust, it should be removed, cleaned, and repainted.

3. Battery Mountings:

   The battery should be positioned to provide adequate clearance on its four sides and top. The battery uprights must be kept tight enough to keep the battery from sliding in its holder. However, they should not be tightened to the point where the battery's plastic case is placed under a severe strain.

   ⚠ CAUTION: Whenever installing the battery connections, always make the negative (–) ground connection last.

4. Electrolyte Level:

   The battery electrolyte level is visible through the plastic case. When the electrolyte is low, it may be brought to the indicated level with distilled water. Do not overfill the battery. Overfilling will cause a loss of electrolyte, resulting in early battery failure and poor performance. After adding water, always operate the machine or charge the battery for a period of ten minutes at 4 amps. This will mix the water with the electrolyte to keep it from freezing.

## Battery Testing

### INSPECTION

Make a visual inspection of the battery. If the battery shows signs of abuse, such as a cracked or badly worn case, it should be replaced.

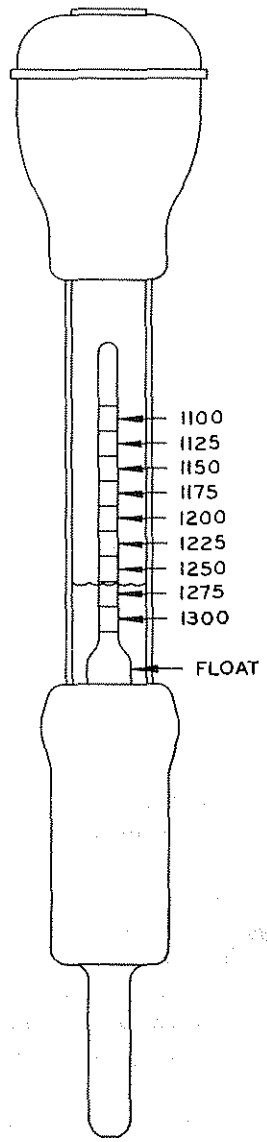
### HYDROMETER TESTS

The lead-acid storage battery used in snowmobile application is a device for converting chemical energy into electrical energy.

The hydrometer measures the percentage of acid in the battery electrolyte in terms of specific gravity. As the battery drops from a charged to a discharged condition, the acid leaves the electrolyte and enters the plates which are supported in the battery. This causes a decrease in the specific gravity of the electrolyte. With the hydrometer, a test can be made indicating battery condition or state of charge. Hydrometer readings must never be taken after water has been added. For accurate hydrometer readings, the added water must be mixed with electrolyte by charging at 4 amps for 30 minutes.

Remove the six battery cell caps. With the hydrometer, draw a separate sample from each cell and record readings. The readings should not vary more than .025 specific gravity (referred to as 25 points) between cells. If cells vary 25 points or more, there is likely internal damage to the battery and it should be replaced.

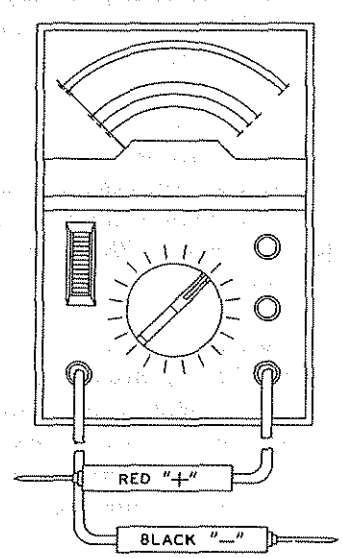
| Specific Gravity Readings | State of Charge |
|---|---|
| 1.260 – 1.280 | Fully charged |
| 1.220 – 1.240 | 3/4 charged |
| 1.180 – 1.200 | 1/2 charged |
| 1.160 – 1.170 | 1/4 charged |
| 1.110 – 1.120 | Discharged |



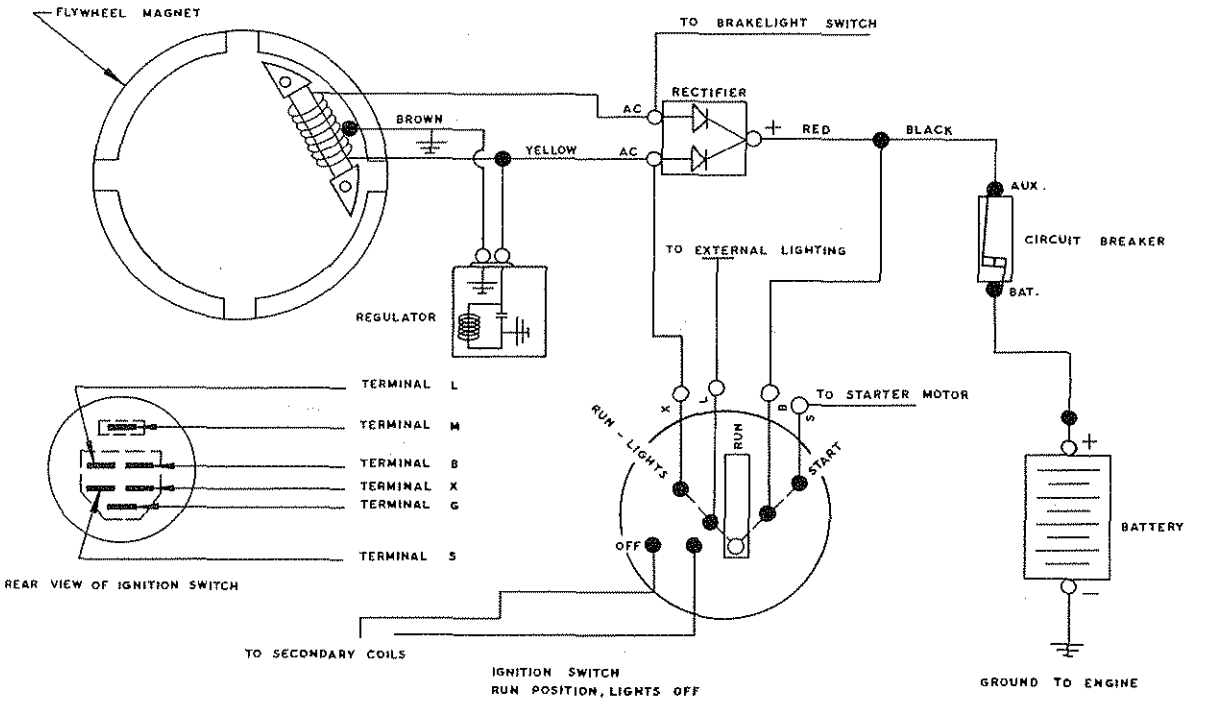

Hydrometer

### VOLTAGE TESTS

If the hydrometer tests indicate a good, fully charged battery and you feel the battery is still at fault, you can further test the battery with a Multitester. Check to see that the battery caps are in place and tight. Set the Multitester to the 25 DC volt position. Place the red test lead to the positive (+) indicated battery terminal and the black test lead to the negative (–) indicated terminal. Battery voltage should read from 11-13 volts. Crank the engine for 15 seconds, wait 15 seconds and read battery voltage. Reading should remain between 11 and 13 volts or battery is defective and should be replaced. If while cranking the engine the meter needle drops to 9 volts or less, the problem could be in the cranking motor.




Multitester




Before proceeding with any test procedures, you must have a basic understanding of how the Polaris charging system functions. Using the charging system diagram above, follow the current flow from the engine to the battery. Note the ignition switch position in the diagram. This "Run" position allows maximum alternator output to the battery. With the switch in the "Run/Lights" position (circuit completed between "X" and "L"), the majority of the alternator output is used for external lighting.

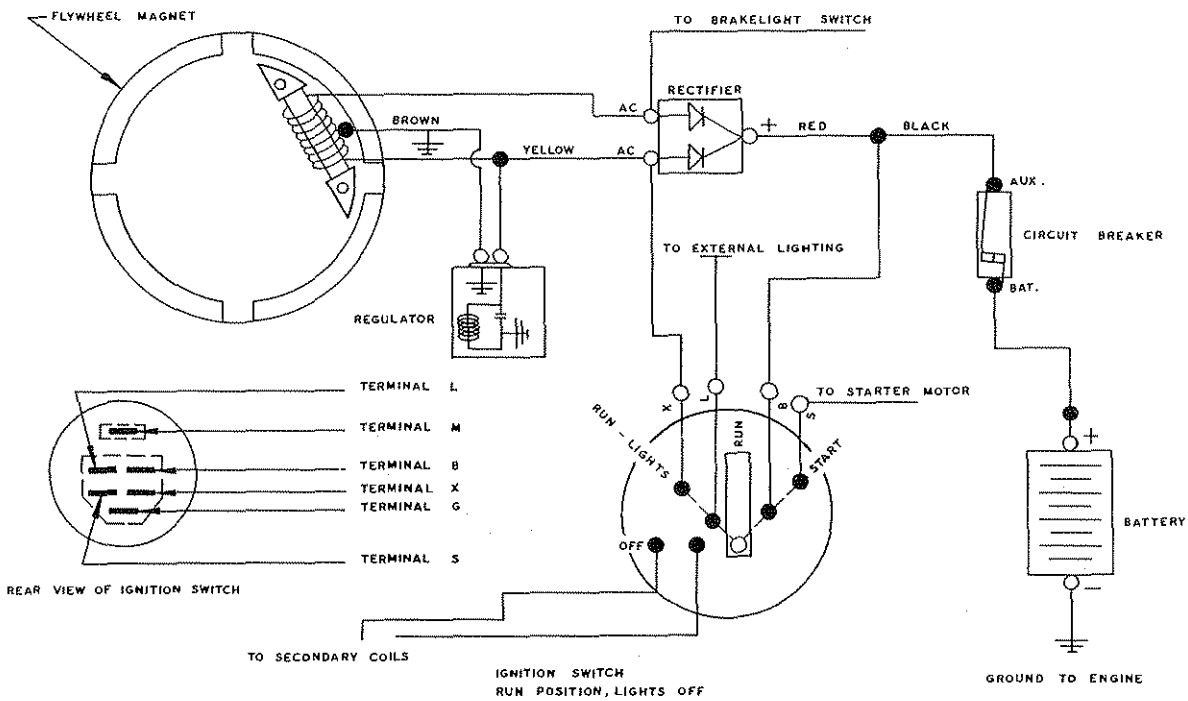
The lighting coil and flywheel magnets produce the current necessary to charge the battery. Because the lighting coil is influenced by the north/south poles of the spinning flywheel magnets, the voltage produced is first in one direction, then in the other, much like a piston moves back and forth in a cylinder. This type of current flow is called alternating current (referred to as "AC").

Since AC voltage cannot be utilized or stored in the battery, it is changed to direct current (referred to as "DC"). DC voltage travels through a wire in one direction only. The change from AC to DC takes place in the rectifier. The rectifier has two diodes which are fed by the two yellow wires from the lighting coil. These diodes, or check valves, allow current to flow freely in one direction only. From the plus (+) side of the rectifier this DC voltage flows through the circuit breaker and into the storage battery.

The voltage regulator is a control device which siphons excess alternator output voltage to ground. The regulator limits voltage to 11-15 volts, which in turn protects voltage-sensitive components from damage.

The circuit breaker is an overload switch which protects components from stored battery energy. Should a short occur in the system, the circuit breaker will overheat and break the current flow from the battery.

## Charging System Testing




All the components which are briefly described on the preceding page work in conjunction to maintain battery voltage and state of charge. If one or more of these components fails to function properly, the battery will suffer. The tests for these components are as follows:

1. Alternator Output Tests:
   Refer to light circuit testing in this section.

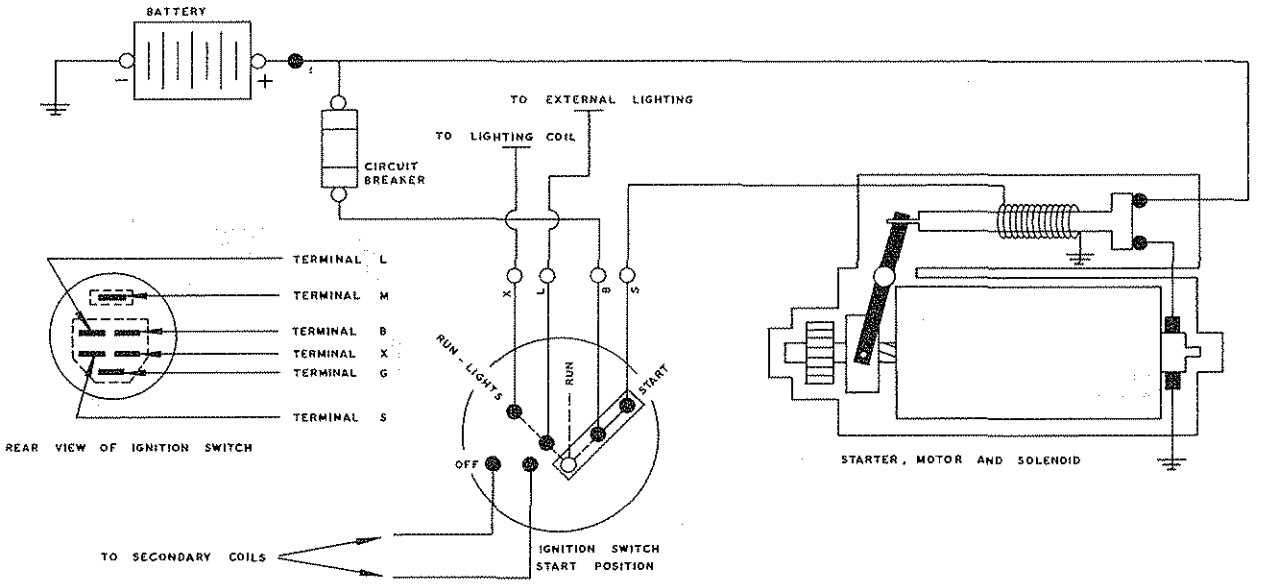
2. Voltage Regulator Tests:
   Refer to light circuit testing in this section.

3. Rectifier Tests:
   The rectifier has two diodes which are tested separately and must allow current flow in one direction only. Remove rectifier connections. Set the Multitester to the Ohms x 1 position. Place one test lead on the plus (+) indicated rectifier terminal and the other test lead to the AC indicated terminal. Note the reading obtained, reverse the test leads and again note reading. If both readings are very low or very high, the rectifier is defective. A good diode will give one low reading and one high reading.

4. Circuit Breaker Test:
   The circuit breaker is tested with the Multitester in the Ohms x 1 position. Remove the circuit breaker connections and check between the two terminals. Readings should be zero ohms resistance. If a high reading is obtained, the circuit breaker is defective.

5. Ignition Switch Tests:
   The ignition switch can also be tested using the Multitester in Ohms x 1 position. Check between designated terminals with wires removed. Example: Key in "Run/Lights" position, check resistance between terminals "X" and "L" (terminal identification letters are noted on rear view of ignition switch in above diagram). Multitester should read zero ohms resistance. When switch is turned to any other position, the meter should read infinite ohms resistance. If partial opens or shorts are noted, the switch should be replaced.

6. Wire Connections:
   Due to the low alternator output amperage, it is essential that all connections between the stator plate and the battery be clean, tight, resistance-free connections.




The components which make up the cranking system are shown above.

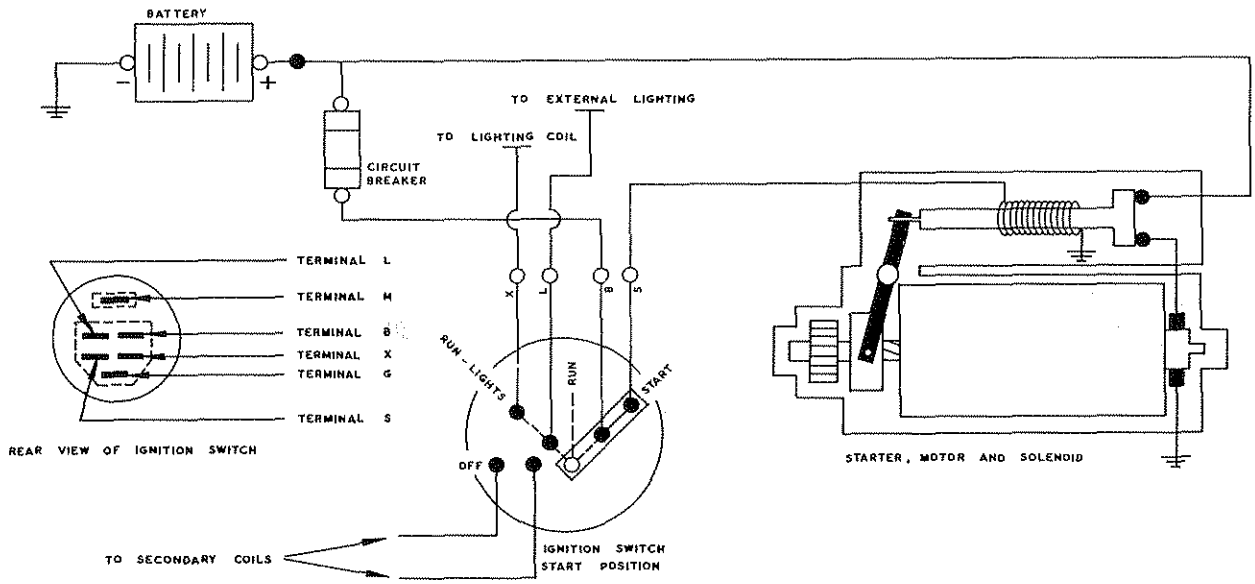
The battery is the sole source of electrical energy for the cranking system. Satisfactory starter motor life and performance are highly dependent upon battery condition and state of charge.

The ignition switch when turned to the start position completes the circuit between the battery and starter motor solenoid.

The solenoid is a magnetic switch. As current flows through the ignition switch contacts and through the solenoid windings, two things happen in rapid sequence. The solenoid plunger shifts the pinion gear into mesh with the engine flywheel ring gear. Also, the battery is connected directly to the starter motor through large contacts in solenoid.

The cranking motor converts the battery electrical energy into a mechanical energy which is necessary to crank the snowmobile engine. The cranking motor is a high horsepower unit which requires high battery current to operate and should never be used for more than a 30-second interval.

## Cranking System Testing




The power supply for the cranking system is the battery. Therefore, the first step in testing the cranking system is to test the battery as outlined on the battery testing page in this section. With the battery tested and fully charged, proceed to test the cranking system circuitry and individual components.

### SOLENOID DOES NOT ENGAGE

1. Large Battery Cables and Connections:
   Adjust the Multitester to the 25 DC volt scale. Place the red test lead to the battery side of circuit breaker and the black test lead to engine ground. The reading must be the same as a battery voltage reading (from + side to – side of battery). If the reading is not the same, excessive resistance is present between the engine ground to the – side of battery or between the battery side of the circuit breaker and the + side of battery. Check for corroded, loose connections and frayed or burned wires. Replace or repair as needed.

2. Circuit Breaker:
   Set Multitester to the 25 DC volt scale. Connect the red test lead to the auxiliary side of circuit breaker and the black test lead to engine or battery ground. Readings should be the same as battery voltage reading. If not, the circuit breaker is defective and must be replaced. The circuit breaker should also be checked for ohms resistance. Zero ohms resistance readings are normal; high readings indicate poor contact connection in circuit breaker and it should be replaced.
   ⚠ CAUTION: To prevent damaging the Multitester, all resistance checks must be taken with engine stopped and battery (source of power) disconnected.

3. Wire from Circuit Breaker to Ignition Switch:
   Set Multitester to the 25 DC volt scale. Place red test lead on B terminal of ignition switch (terminal identification letters are noted on rear view of ignition switch in above diagram) and black test lead to engine ground. Reading should be the same as battery voltage. If not, check for corroded, loose connections and frayed or burned wires. Replace or repair as needed.

4. Ignition Switch:
   Adjust Multitester to the 25 DC volt scale. Place red test lead to S terminal and black test lead to engine or battery ground. Rotate ignition switch to the start position. Reading should be the same as battery voltage reading. If not, replace the ignition switch.

5. Wire from Ignition Switch to Starter Motor Solenoid:
   Set Multitester to the 25 DC volt scale. Place red test lead to the small terminal of starter motor solenoid and black test lead to engine or battery ground. Rotate the ignition switch to start position and note reading. Reading must be the same as battery voltage. If not, repair or replace wires as needed.
   NOTE: Check for a good connection at main engine terminal block.

6. Starter Motor Mountings:
   The starter motor is also a part of the solenoid circuit. Be sure the starter motor solenoid and starter motor are securely fastened and grounded to the engine.

If the above systems checks are okay, the problem is in the starter motor solenoid, which is a sealed unit and must be replaced.

SOLENOID ENGAGES/STARTER MOTOR TURNS/ENGINE DOES NOT TURN

Remove starter motor. Inspect flywheel ring gear condition. If teeth are missing or excessively worn, replace flywheel ring gear. Disassemble starter motor and inspect solenoid to pinion gear linkage; worn or bent linkage should be replaced. If inspections are okay, replace starter motor pinion gear assembly.

SOLENOID ENGAGES/STARTER MOTOR DOES NOT TURN

1. Solenoid:
   A. Set Multitester to the 25 DC volt scale. Place red test lead on the large terminal at starter motor solenoid (battery side) and black test lead to engine or battery ground. Rotate ignition switch to start position and note reading.

   B. Leave Multitester on the 25 DC volt scale. Place red test lead on the large solenoid terminal (starter motor side) and black test lead to engine or battery ground. Rotate ignition switch and note reading.

   If readings from tests A and B are not equal, replace solenoid assembly. If readings are equal, the problem lies in the starter motor.

2. Starter Motor:
   Disassemble starter motor and observe the following:

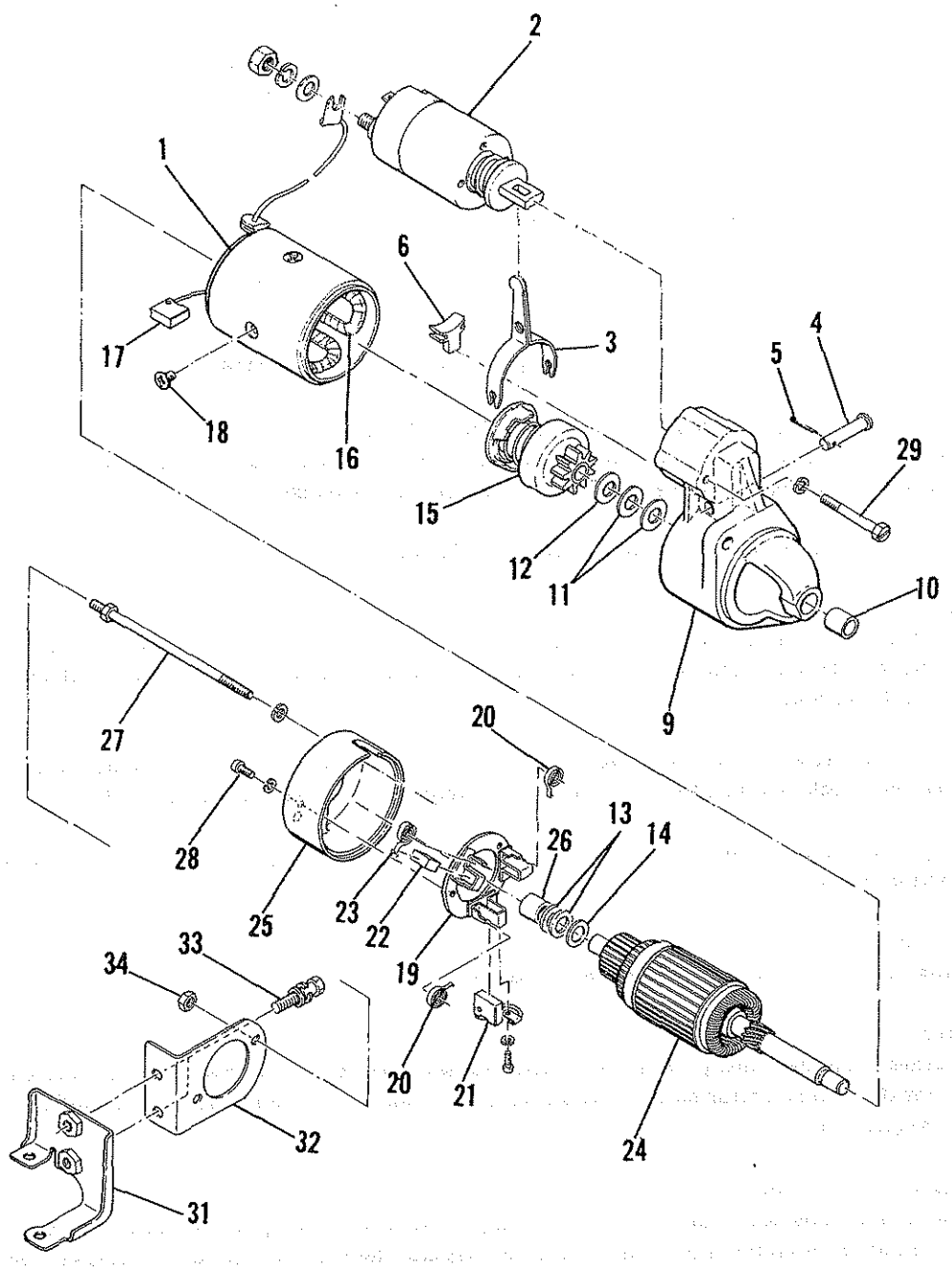
   A. Brush Inspection:
   Brushes must slide freely in brush holder. Brushes worn to 1/4" or less must be replaced. Brush contact to armature commutator must be resistance free. If the commutator bars require sanding, use commutator sandpaper only.

   B. Bushing Inspection:
   Check rear cover and gear case cover bushings. Excessive bushing to armature shaft clearance will allow the armature to interfere with the field coils. Replace these parts as signs of excessive wear appear.

   C. Field Coil Tests:
   Set Multitester to Ohms x 1 position. Check continuity between the large field coil solenoid wire and the insulated brush. Readings must be zero ohms resistance. Also, check field coil windings which may be shorted to the case. Place one test lead to large solenoid wire and the other test lead to field coil case; readings must be infinite (open circuit). Field coils which do not pass these two tests must be replaced.

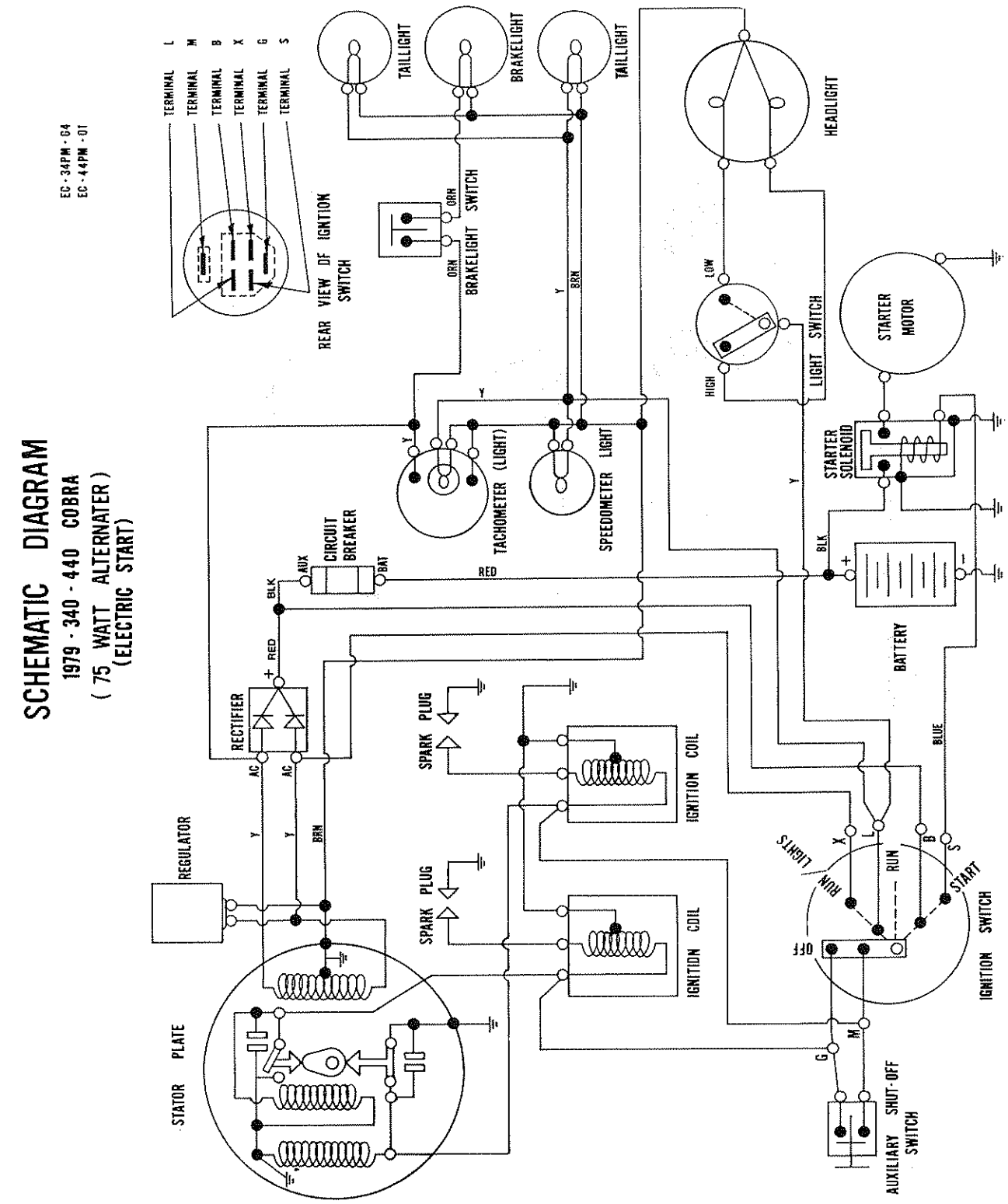
   D. Armature Short Circuit Tests:
   With the armature installed in a growler, place a thin strip of steel on the armature. With the growler on, slowly rotate the armature one full turn. If the steel strip does not vibrate, the armature is not shorted. If the steel strip does vibrate, the armature has a short circuit and must be replaced.

## Cranking Motor Exploded View



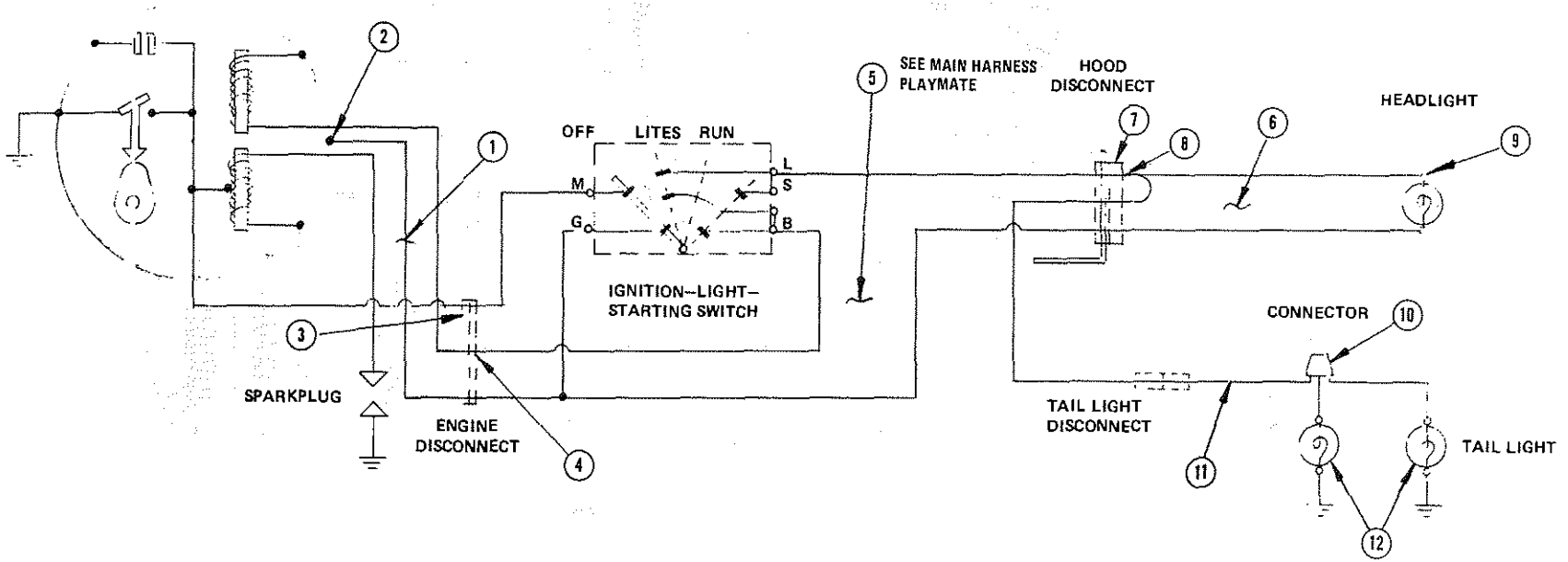

1 — Field Coil Housing
2 — Solenoid
3 — Shift Lever
4 — Lever Pin
5 — Split Pin
6 — Dust Cover
9 — Gear Case
10 — Gear Case Bushing
11 — Thrust Washer
12 — Thrust Washer
13 — Thrust Washer
14 — Thrust Washer
15 — Pinion Assembly
16 — Field Coils
17 — Brush (+) Insulated
18 — Pole Core Set Screw
19 — Brush Holder Assembly
20 — Brush Spring
21 — Brush (—) Grounded
22 — Brake
23 — Brake Spring
24 — Armature Assembly
25 — Rear Cover Assembly
26 — Rear Cover Bushing
27 — Starter Thru Bolts
28 — Rear Cover Attaching Screw
29 — Solenoid Attaching Bolt
31 — Engine Bracket
32 — Starter Bracket
33 — Starter to Engine Bracket Bolt
34 — Bracket to Starter Attaching Nut

## 1979 Cobra 340 and 440 Electric Start Wiring Schematic

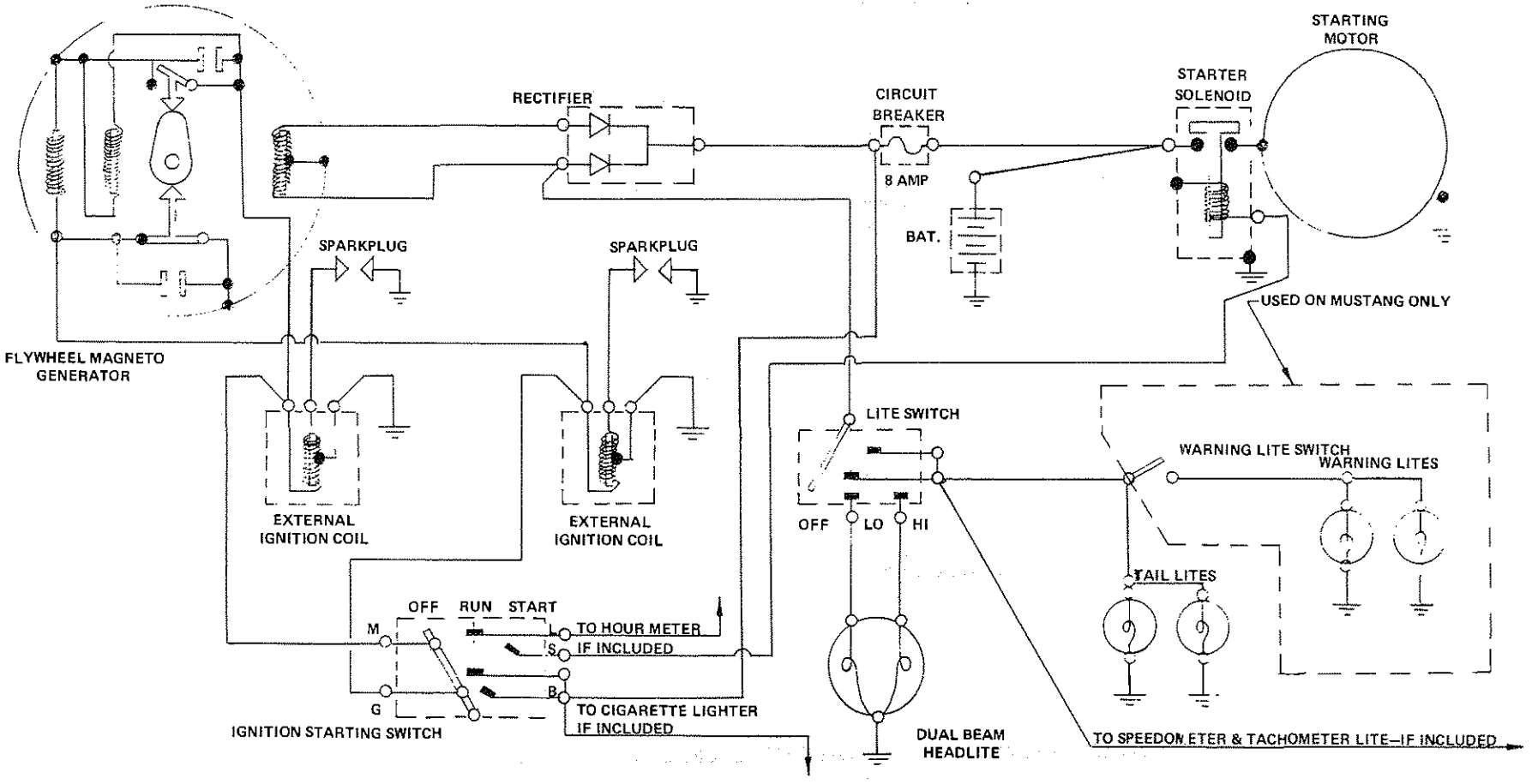


# WIRING SCHEMATIC (PLAYMATE)

| ITEM | REQ. | PART NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 1 | 2460071 | ENGINE CONNECTOR ASSEMBLY |
| 2 | 1 | 4110003 | IGNITION–LITE SWITCH |
| 3 | 1 | 2460070 | MAIN HARNESS |
| 4 | 1 | 2460069 | HEADLIGHT HARNESS |
| 5 | 1 | 4030008 | HEADLIGHT |
| 6 | 1 | 4020023 | CONNECTOR |
| 7 | 2 | 2432008 | TAIL LIGHT ASSEMBLY |
| 8 | 1 | 2460068 | TAIL LIGHT WIRE |
| 9 | 1 | 5223409 | WIRING HARNESS CLIP |

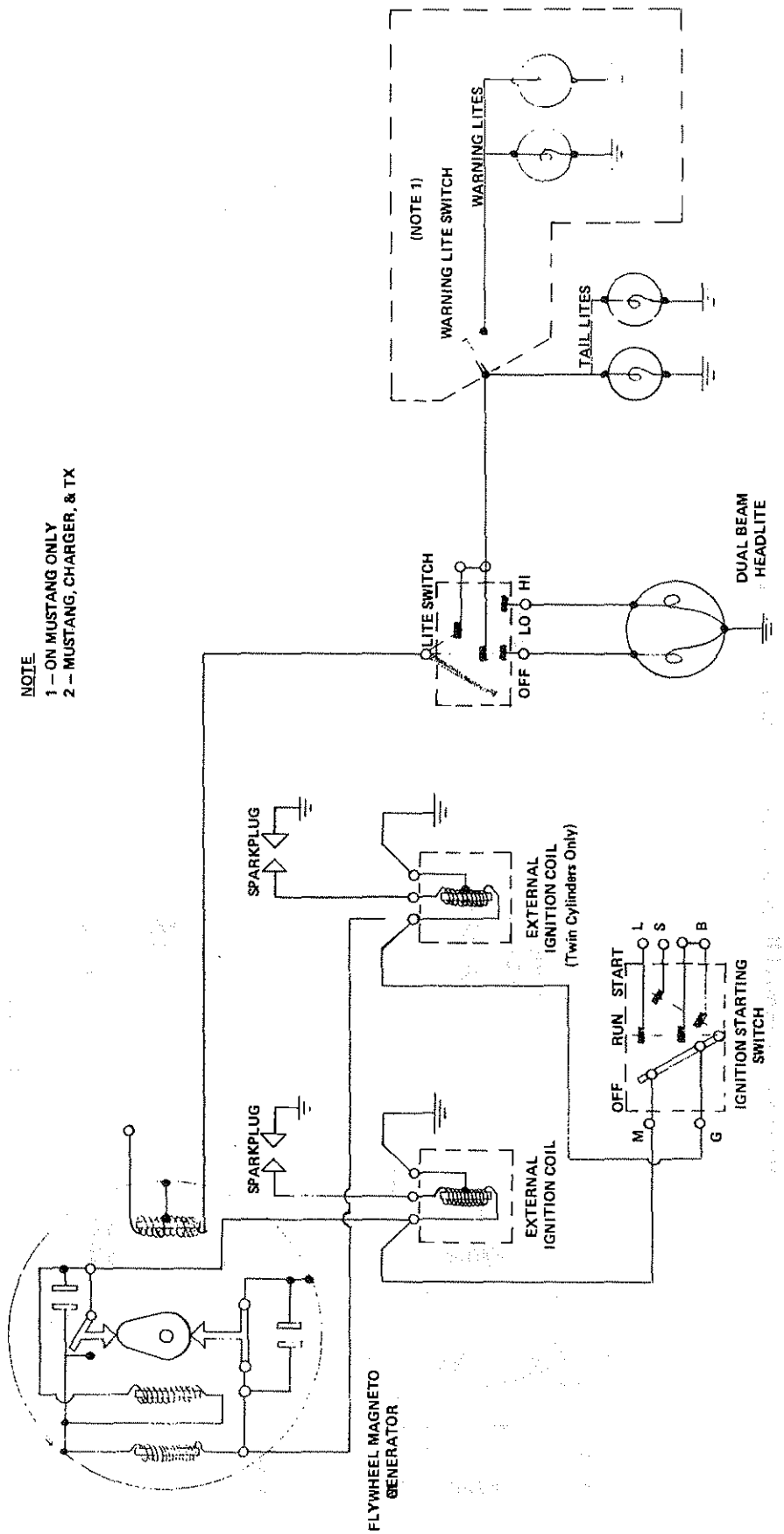


## WIRING SCHEMATIC (MUSTANG – CHARGER – ELECTRIC START)

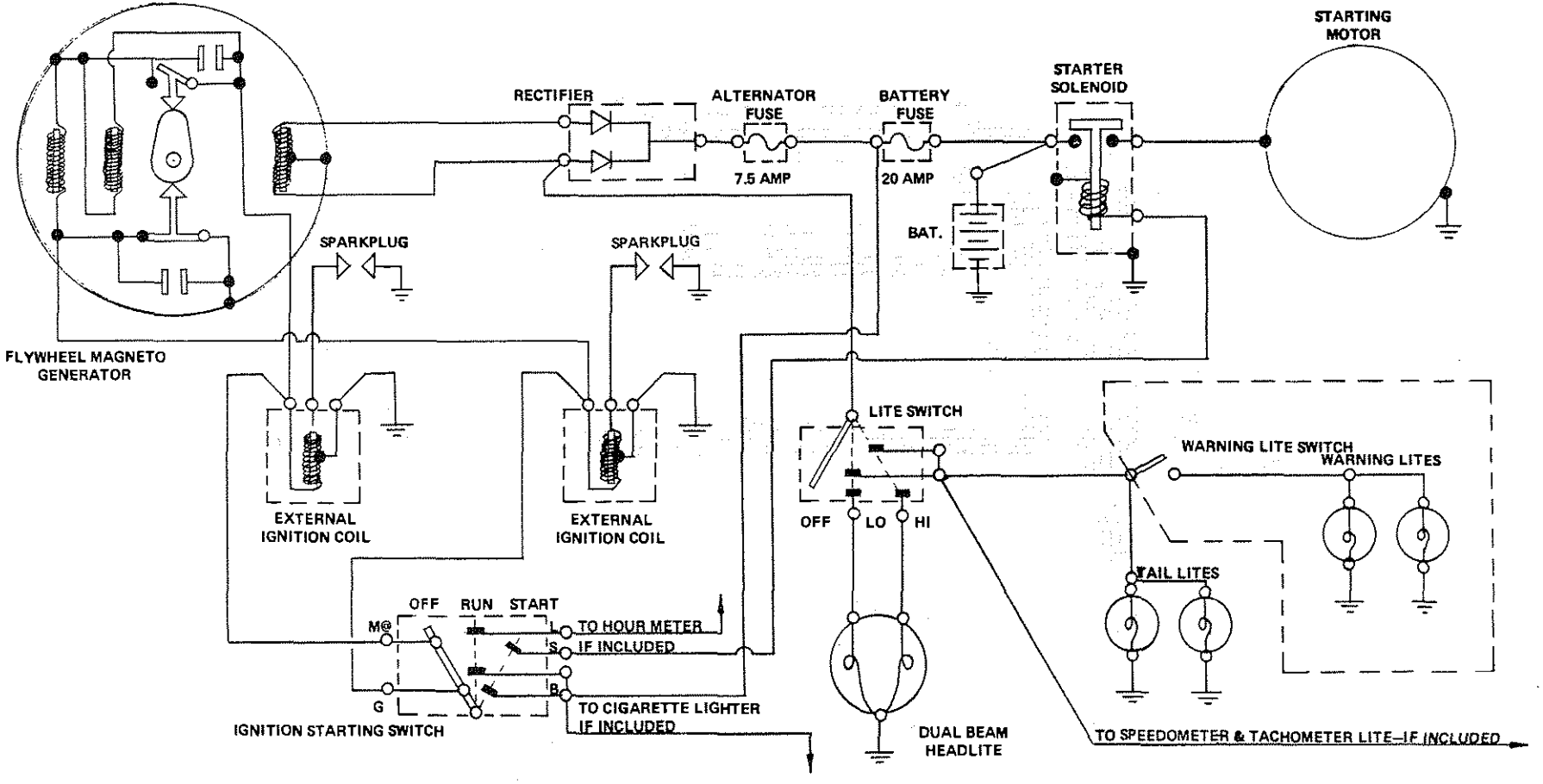


## 1971 Wiring Schematic — Mustang, Charger, TX — Manual Start

### WIRING SCHEMATIC (MUSTANG - CHARGER - TX - MANUAL START)

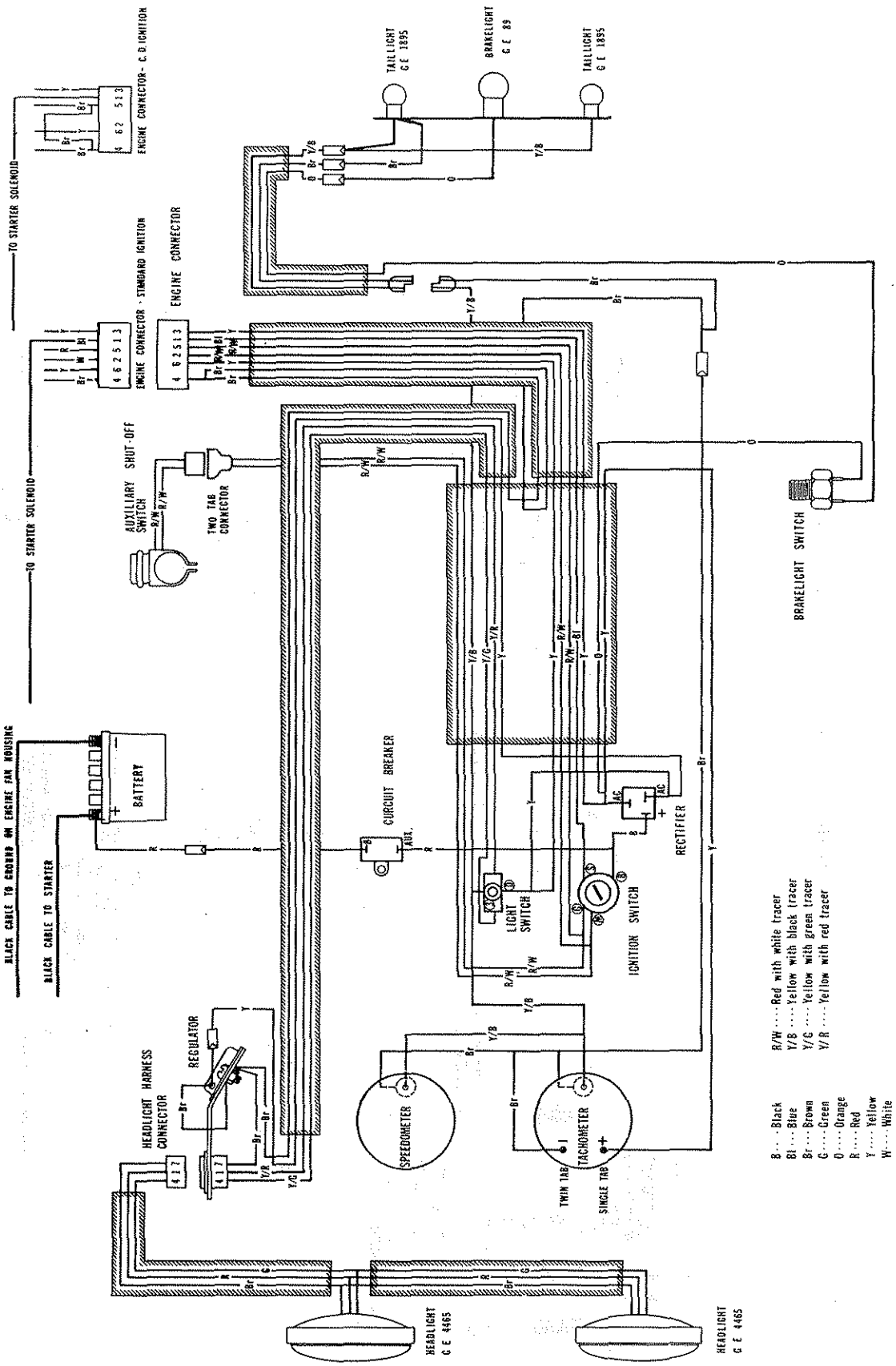


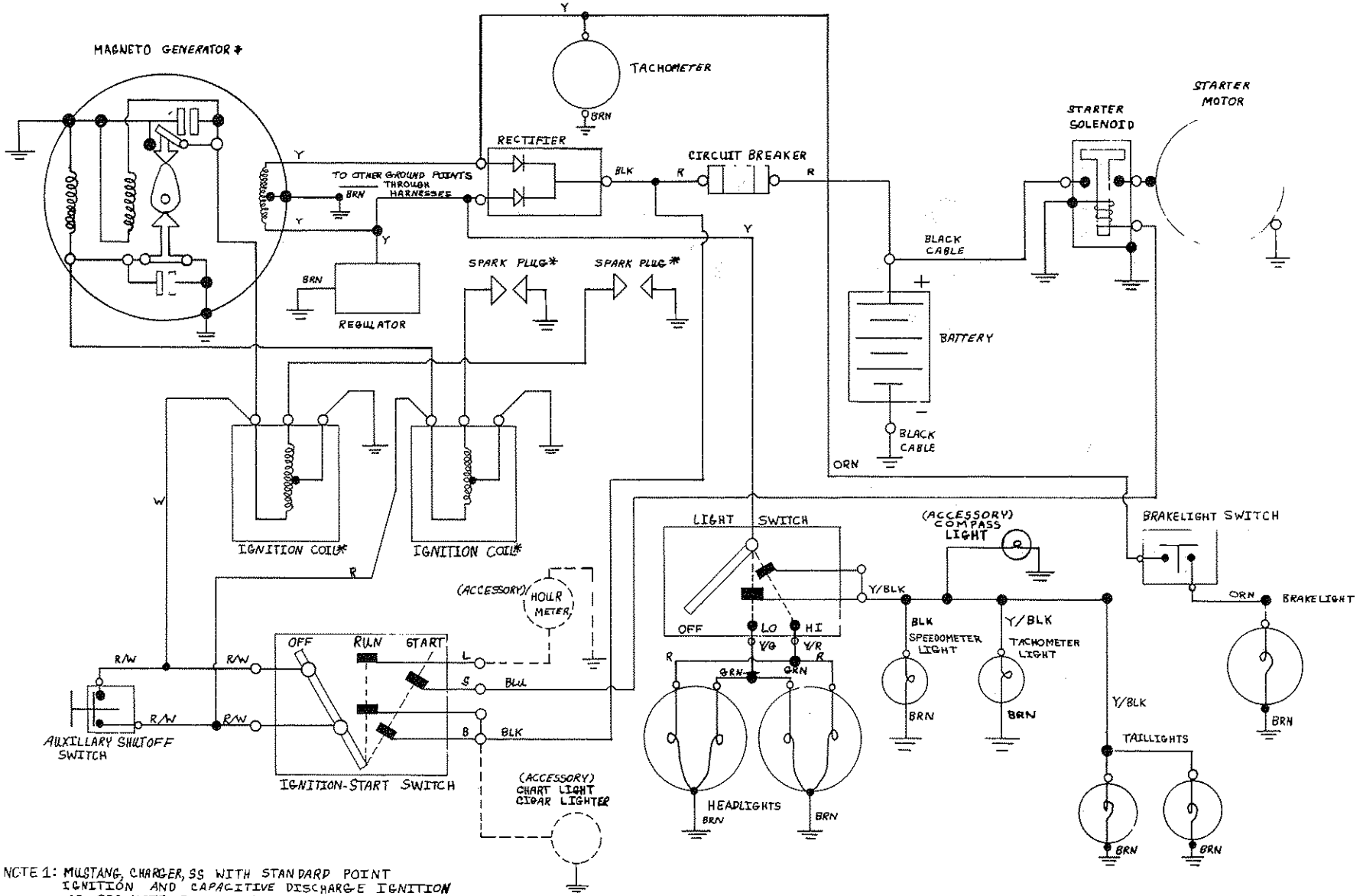
## WIRING SCHEMATIC (VOYAGER)



## 1972 Wiring Diagram — Mustang, Charger

### WIRING DIAGRAM

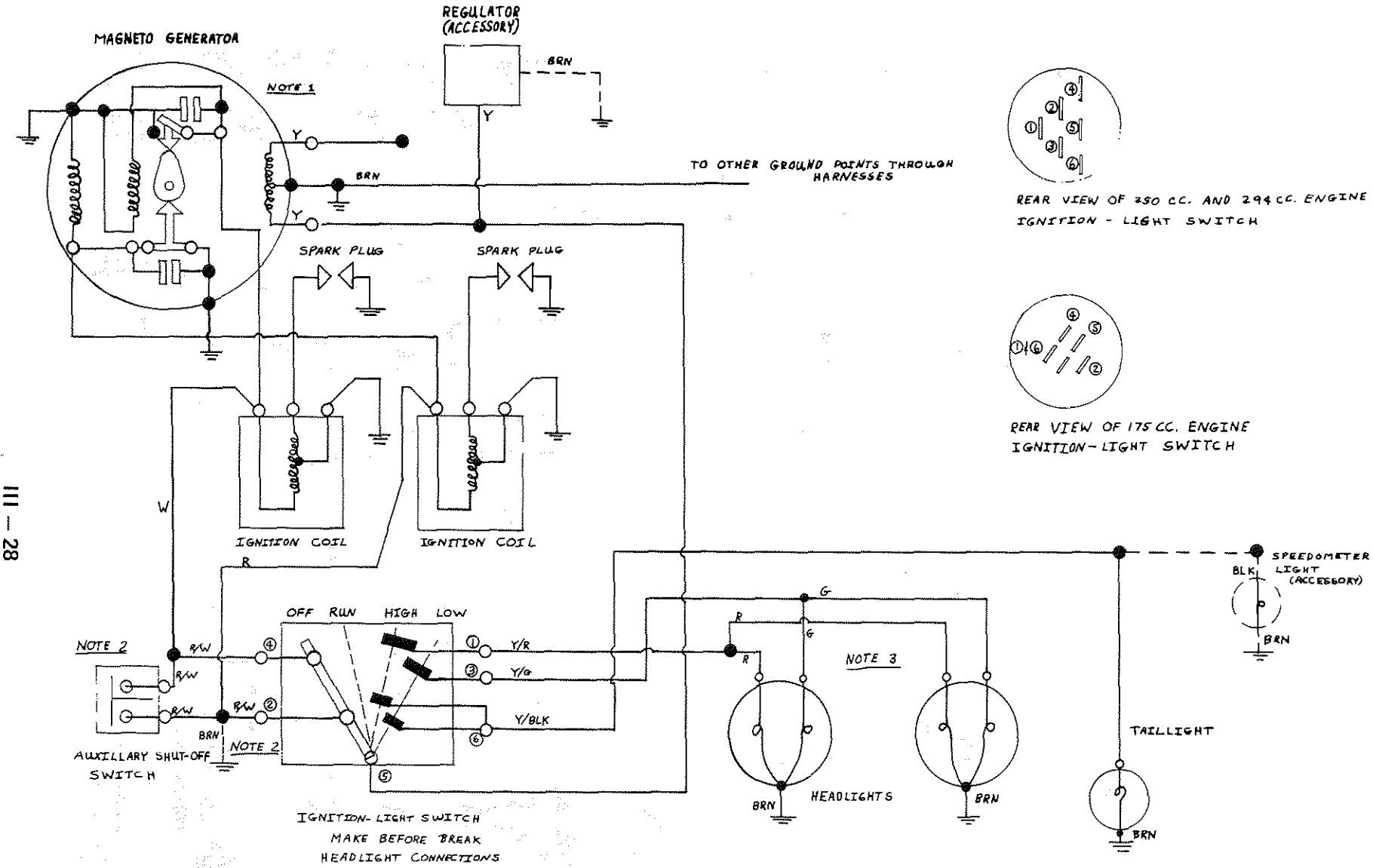





NOTE 1: MUSTANG, CHARGER, SS WITH STANDARD POINT IGNITION AND CAPACITIVE DISCHARGE IGNITION AS PER NOTE 2. TX 335 AS PER NOTE 2.

NOTE 2: DIAGRAM DOES NOT SHOW CAPACITOR DISCHARGE IGNITION PARTS AND WIRING. STANDARD IGNITION PARTS SHOWN WITH (*).

MUSTANG, CHARGER WIRING SCHEMATIC




NOTE 1 175 CC. ENGINE HAS A SINGLE RED ALTERNATOR LEAD AND A BROWN EXTERNAL GROUND LEAD.

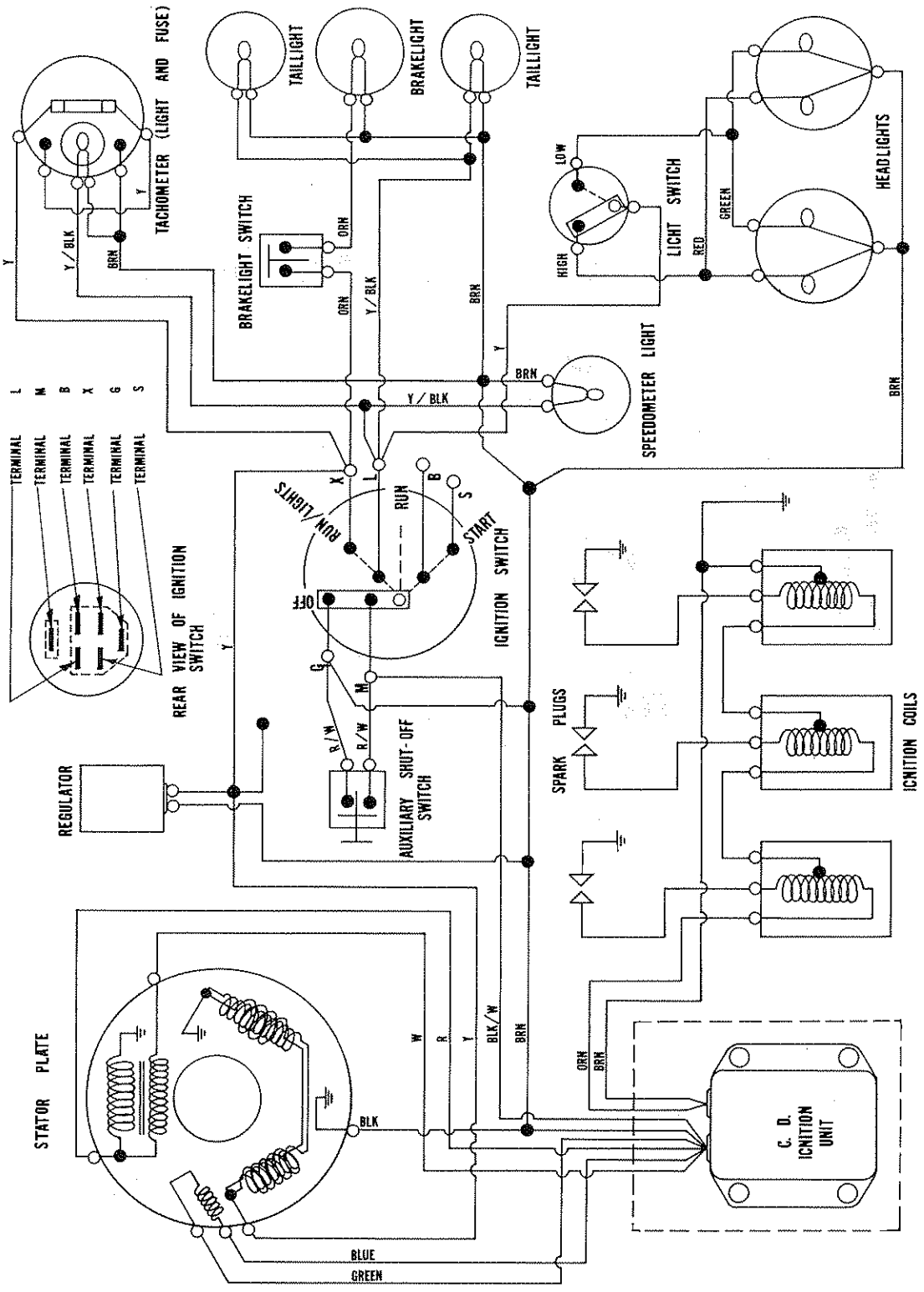
NOTE 2 175 CC. ENGINE AND 250 CC. ENGINE HAVE A SINGLE INTERNAL IGNITION COIL AND A WIRE GROUNDED THROUGH IGNITION SWITCH OR SHUT-OFF SWITCH SHUT OFF ENGINE.

NOTE 3 C. COLT HAS SINGLE HEADLIGHT.

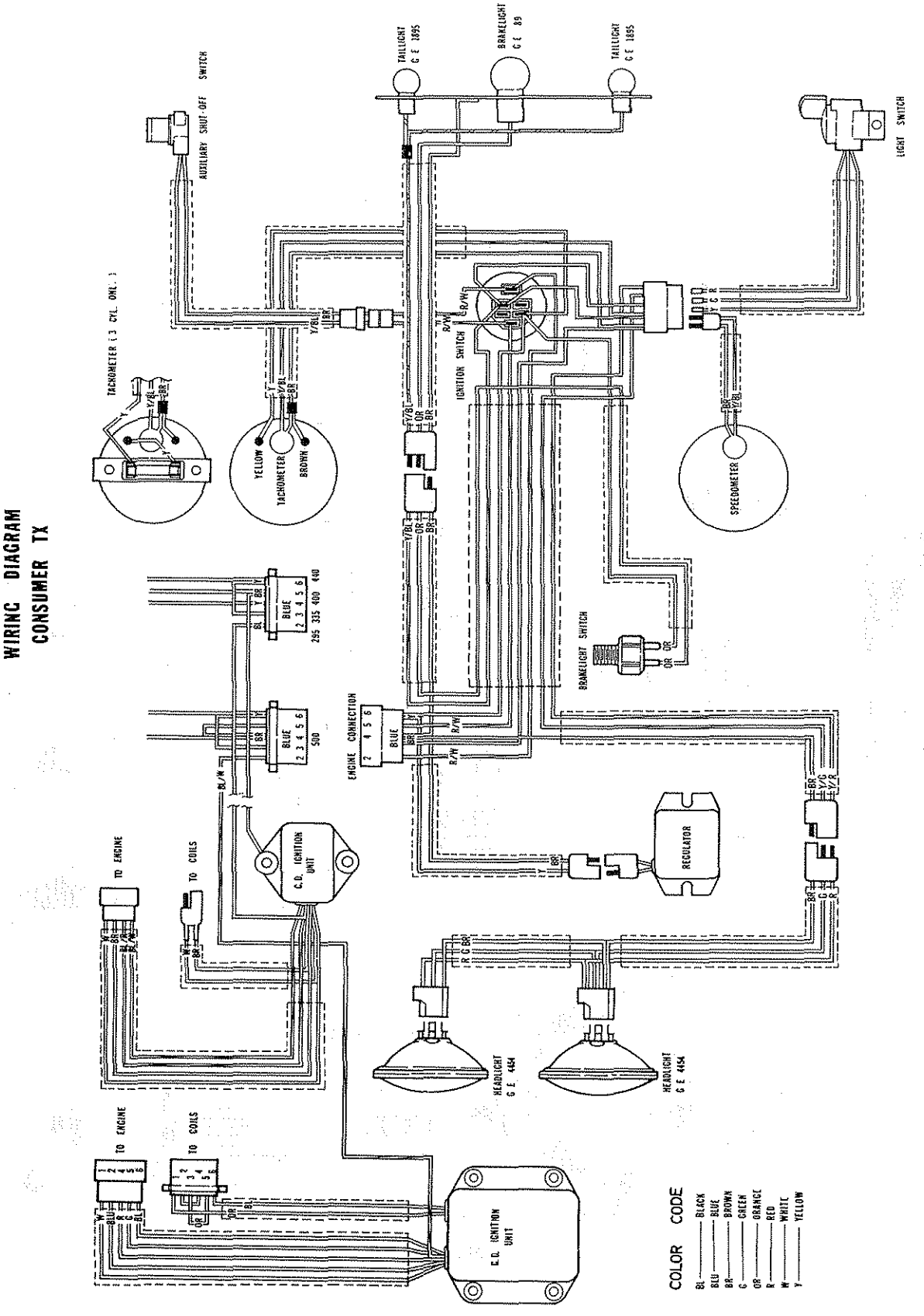
COLT WIRING SCHEMATIC

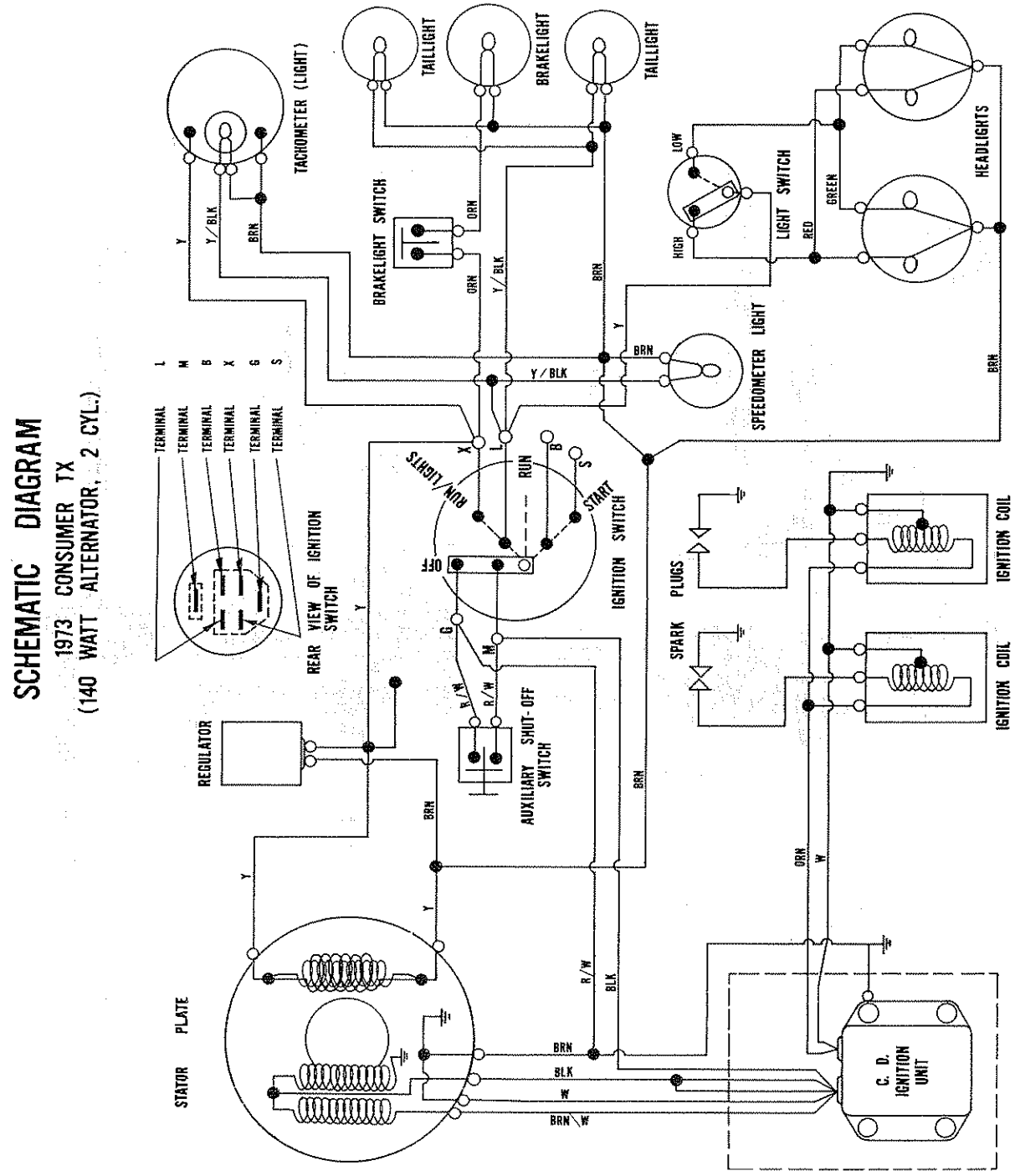
# SCHEMATIC DIAGRAM

1973 CONSUMER TX
(140 WATT ALTERNATOR, 3 CYL.)

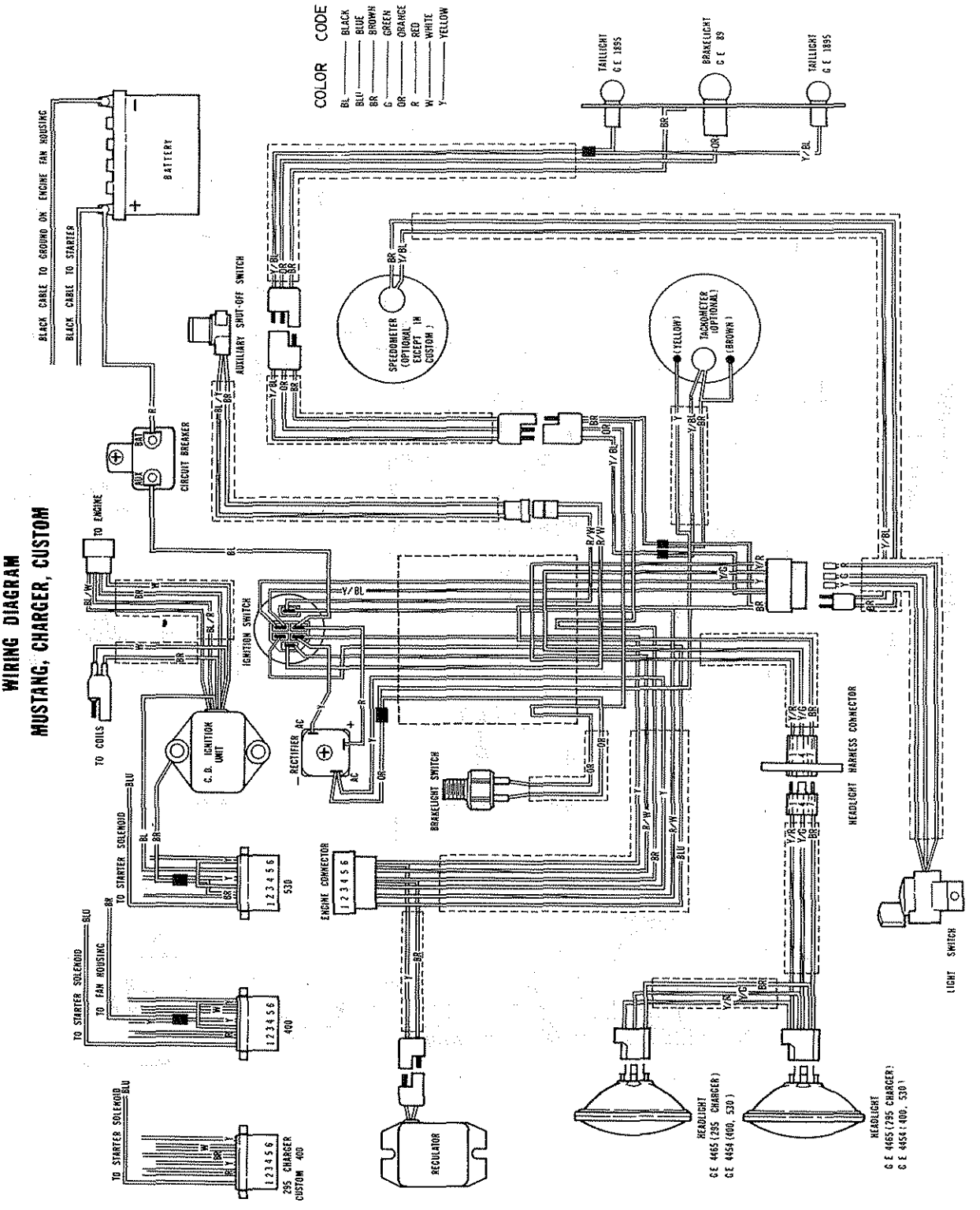


## 1973 Wiring Diagram — Consumer TX

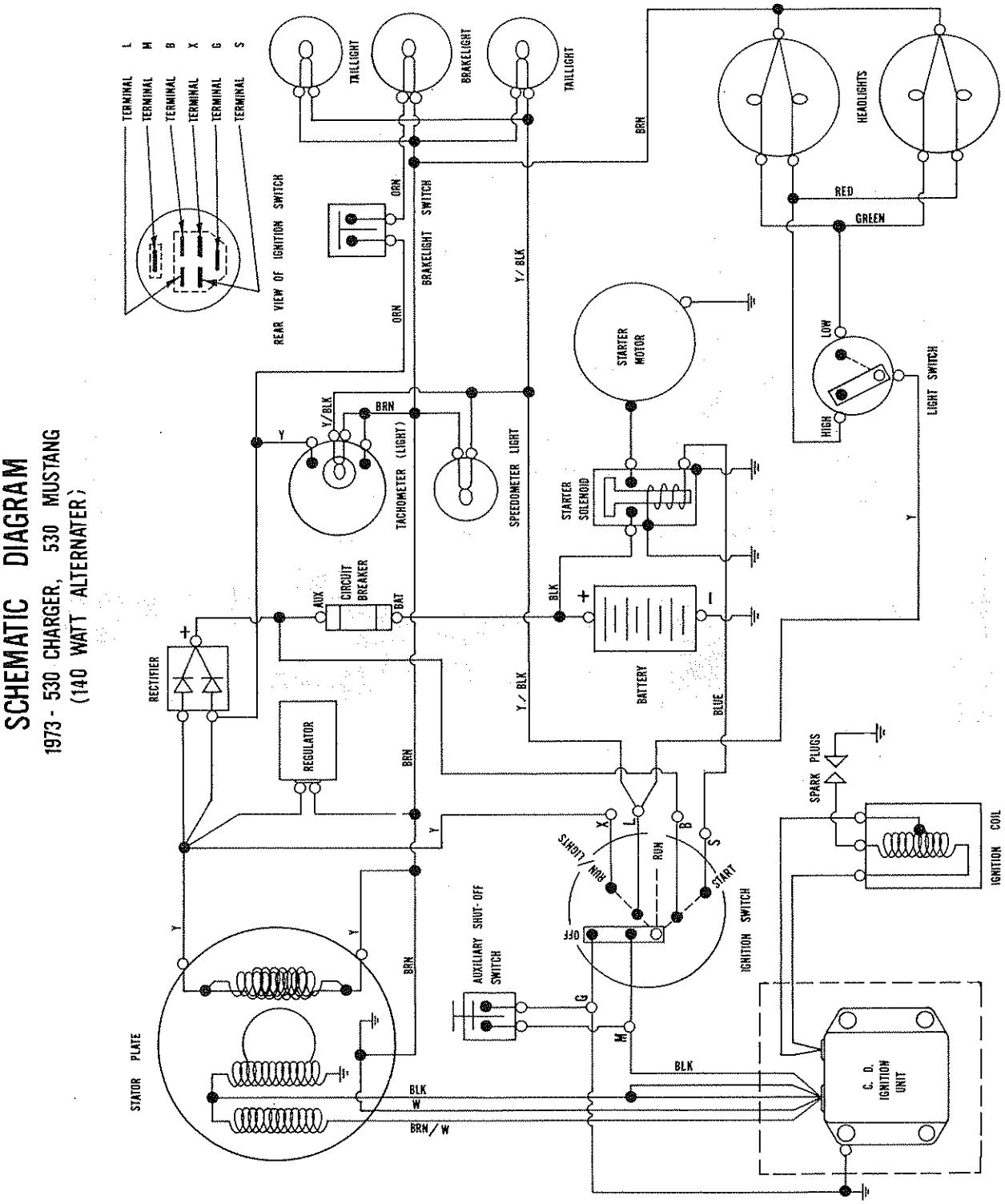



SCHEMATIC DIAGRAM
1973 CONSUMER TX
(140 WATT ALTERNATOR, 2 CYL.)
TACHOMETER (LIGHT)
TAILLIGHT
BRAKELIGHT
TAILLIGHT
BRAKELIGHT SWITCH
LOW
HIGH
LIGHT SWITCH
RED
GREEN
HEADLIGHTS
SPEEDOMETER LIGHT
TERMINAL L
TERMINAL M
TERMINAL B
TERMINAL X
TERMINAL G
TERMINAL S
REAR VIEW OF IGNITION SWITCH
RUN/LIGHTS
RUN
START
OFF
IGNITION SWITCH
REGULATOR
AUXILIARY SHUT-OFF SWITCH
SPARK PLUGS
IGNITION COIL
IGNITION COIL
STATOR PLATE
C. D. IGNITION UNIT
Y
Y/BLK
BRN
ORN
R/W
BLK
W
BRN\W

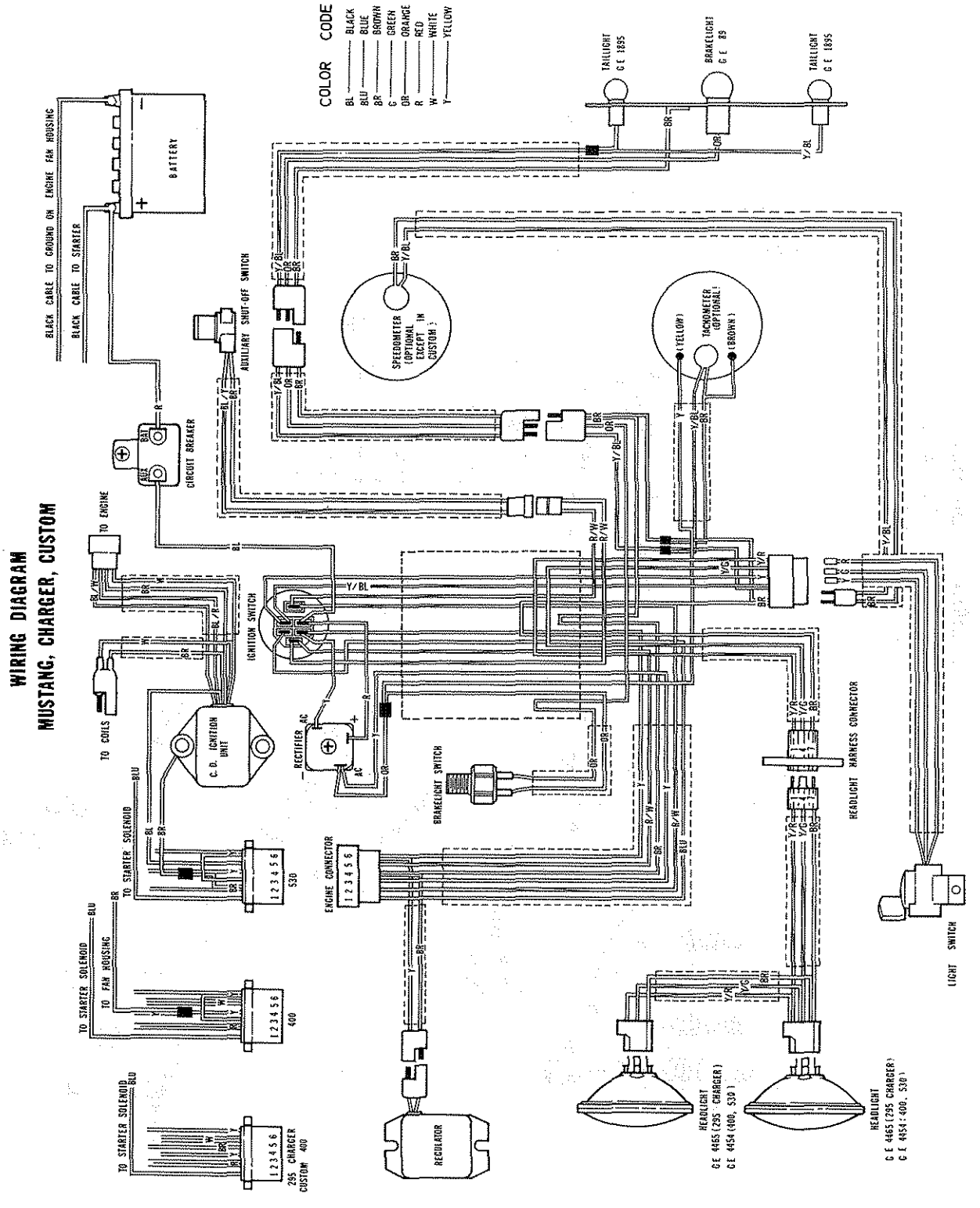
## 1973 Wiring Diagram — Mustang, Charger, Custom



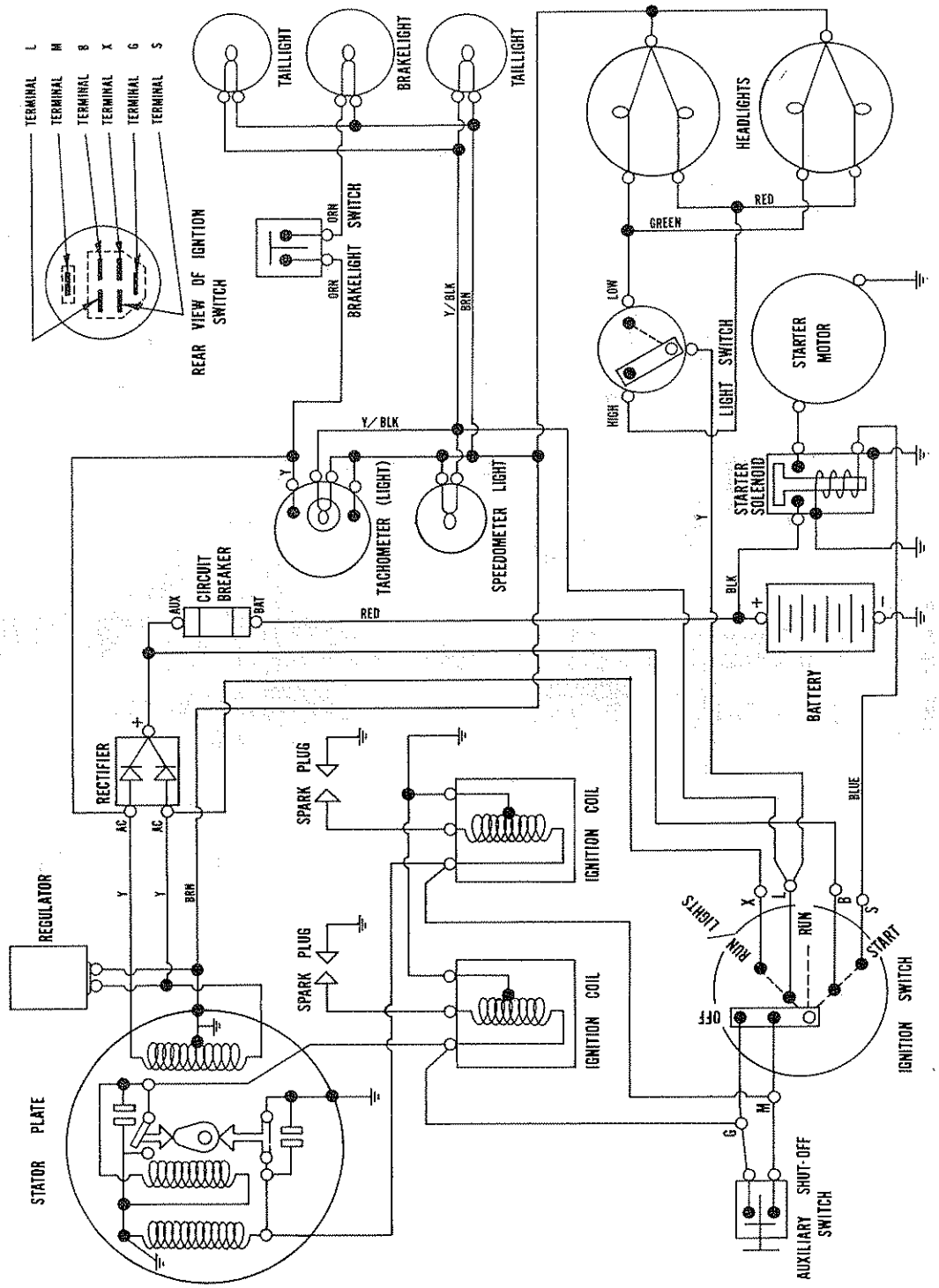
## 1973 Schematic Diagram — Charger, Mustang



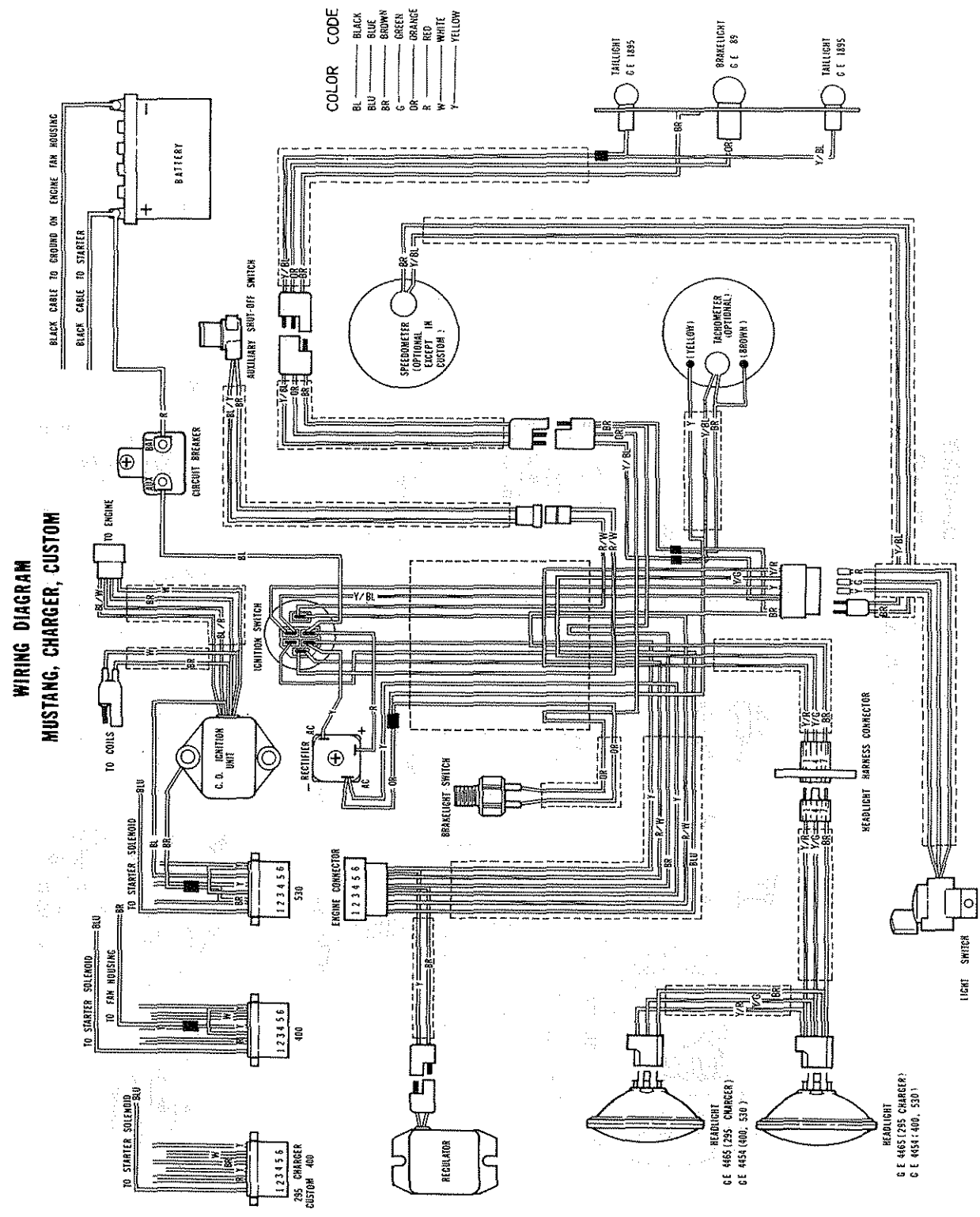
## 1973 Wiring Diagram — Mustang, Charger, Custom



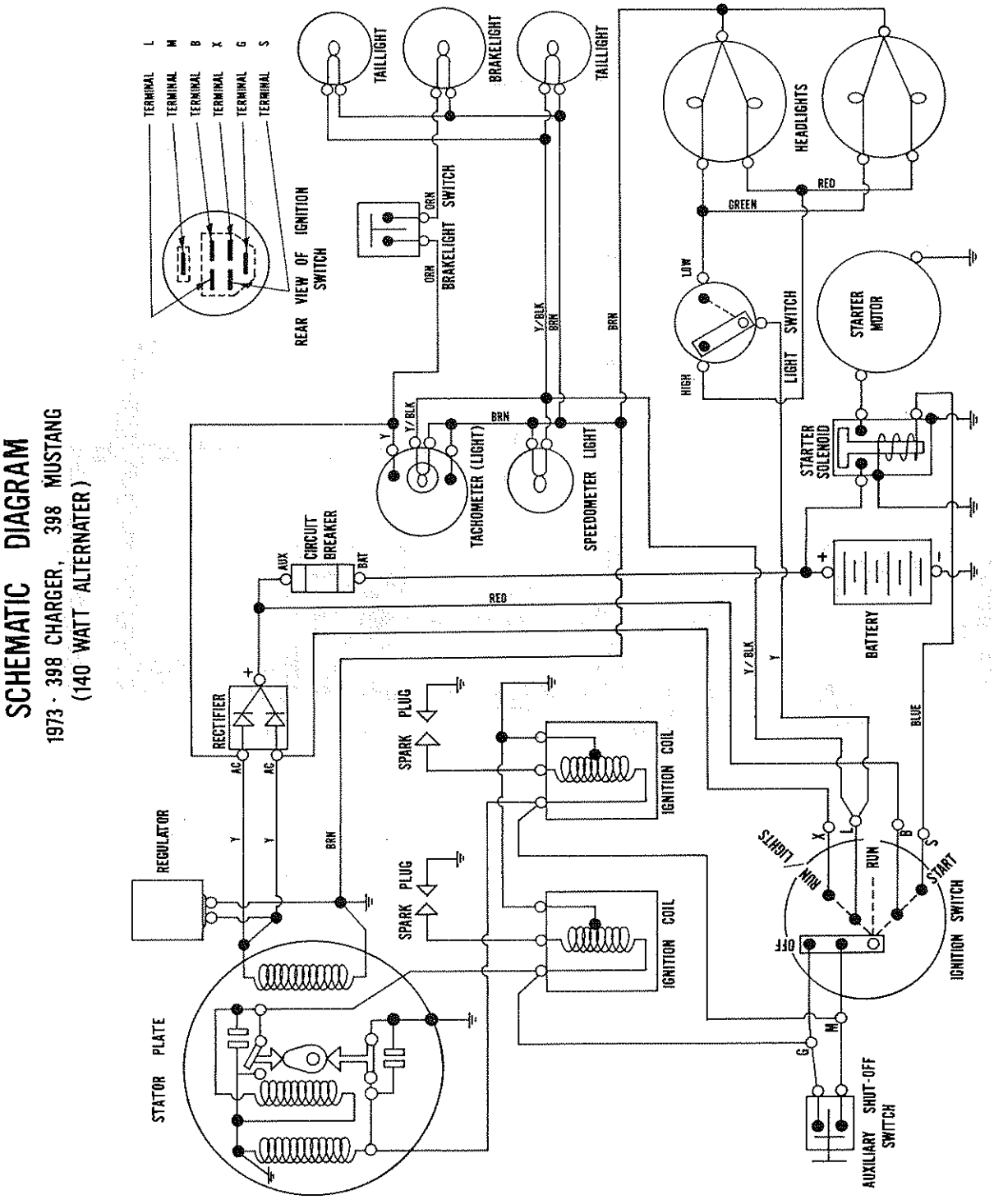
## 1973 Schematic Diagram — Charger, Custom



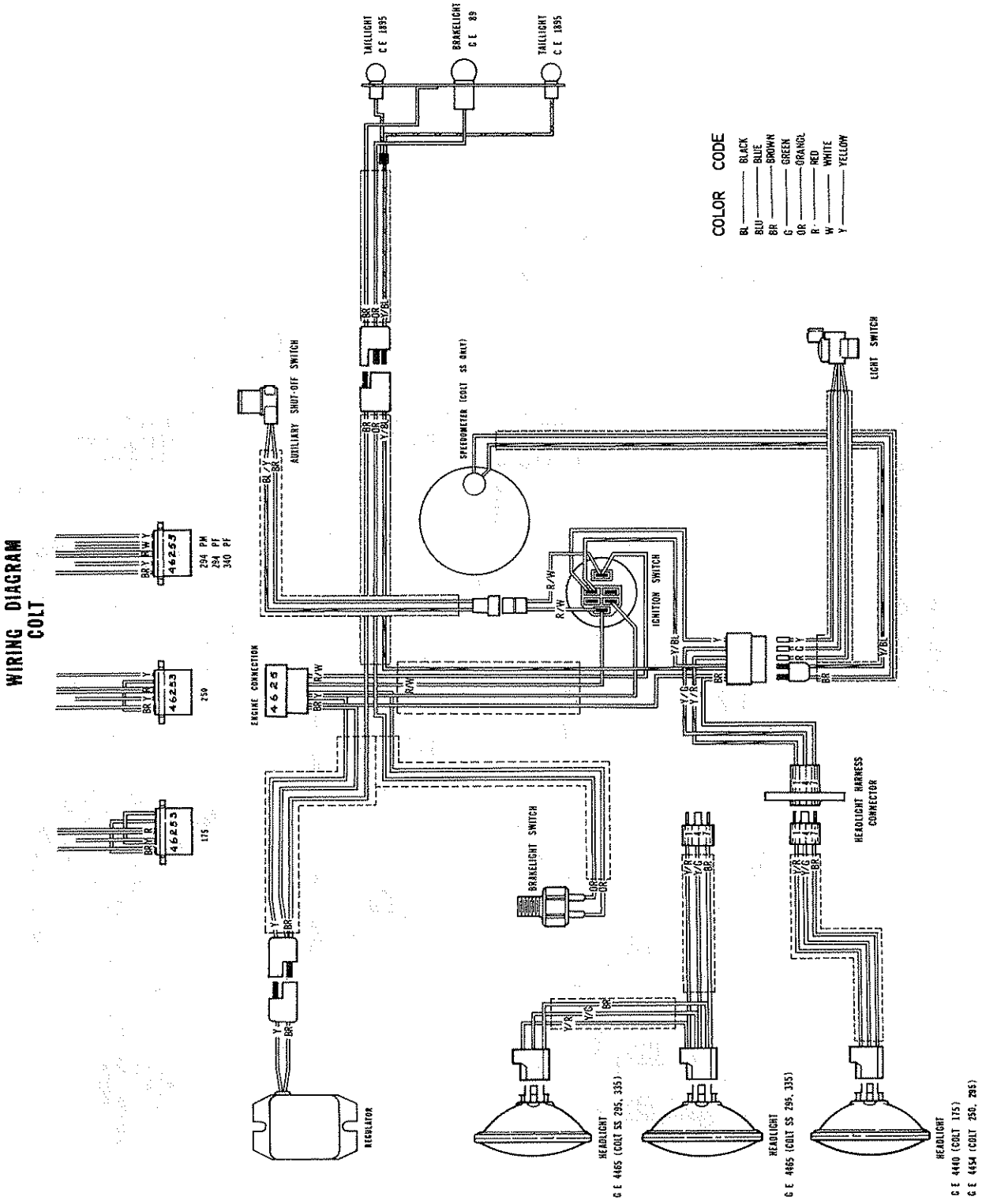
## 1973 Wiring Diagram — Mustang, Charger, Custom

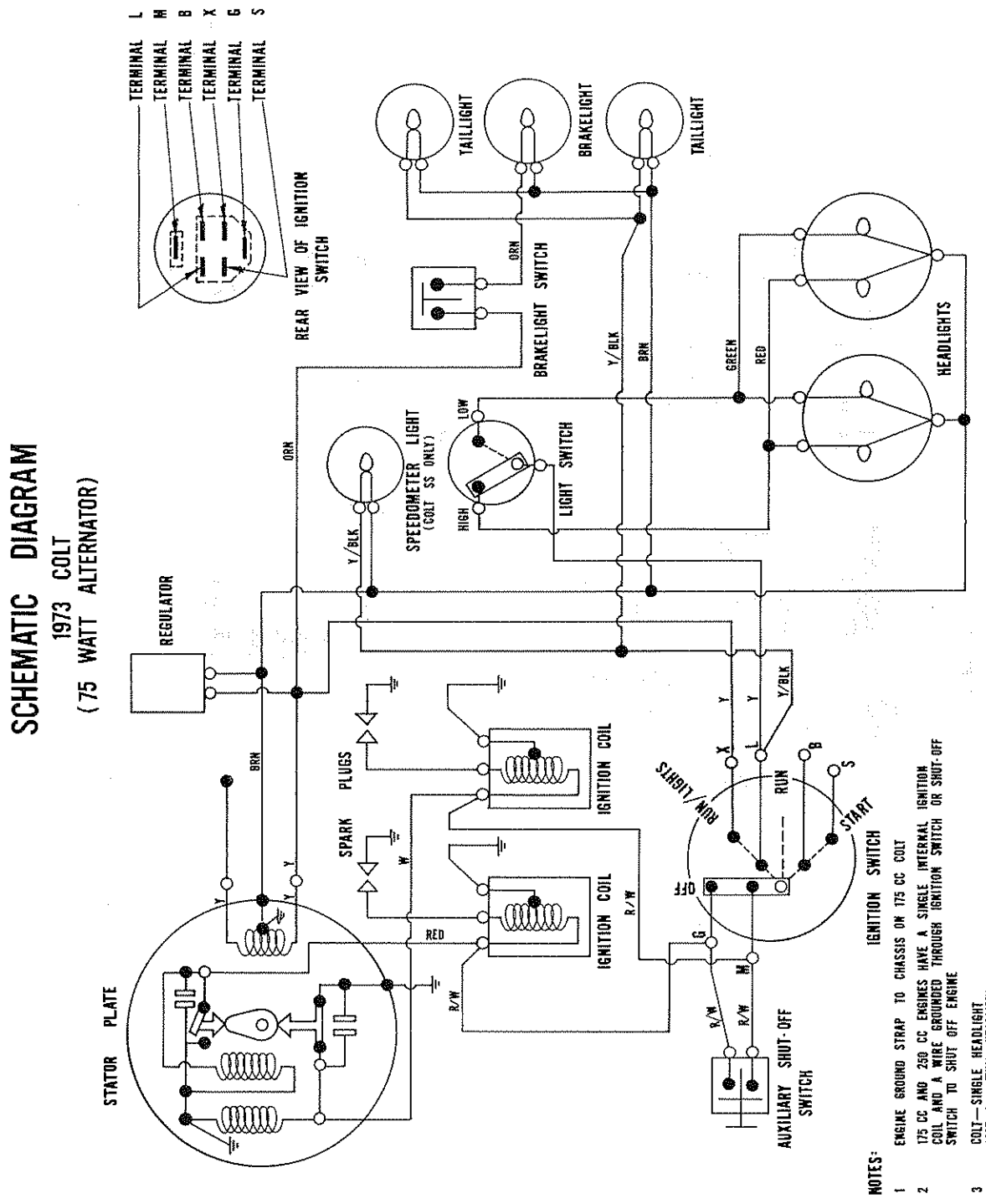


## 1973 Schematic Diagram — Charger, Mustang

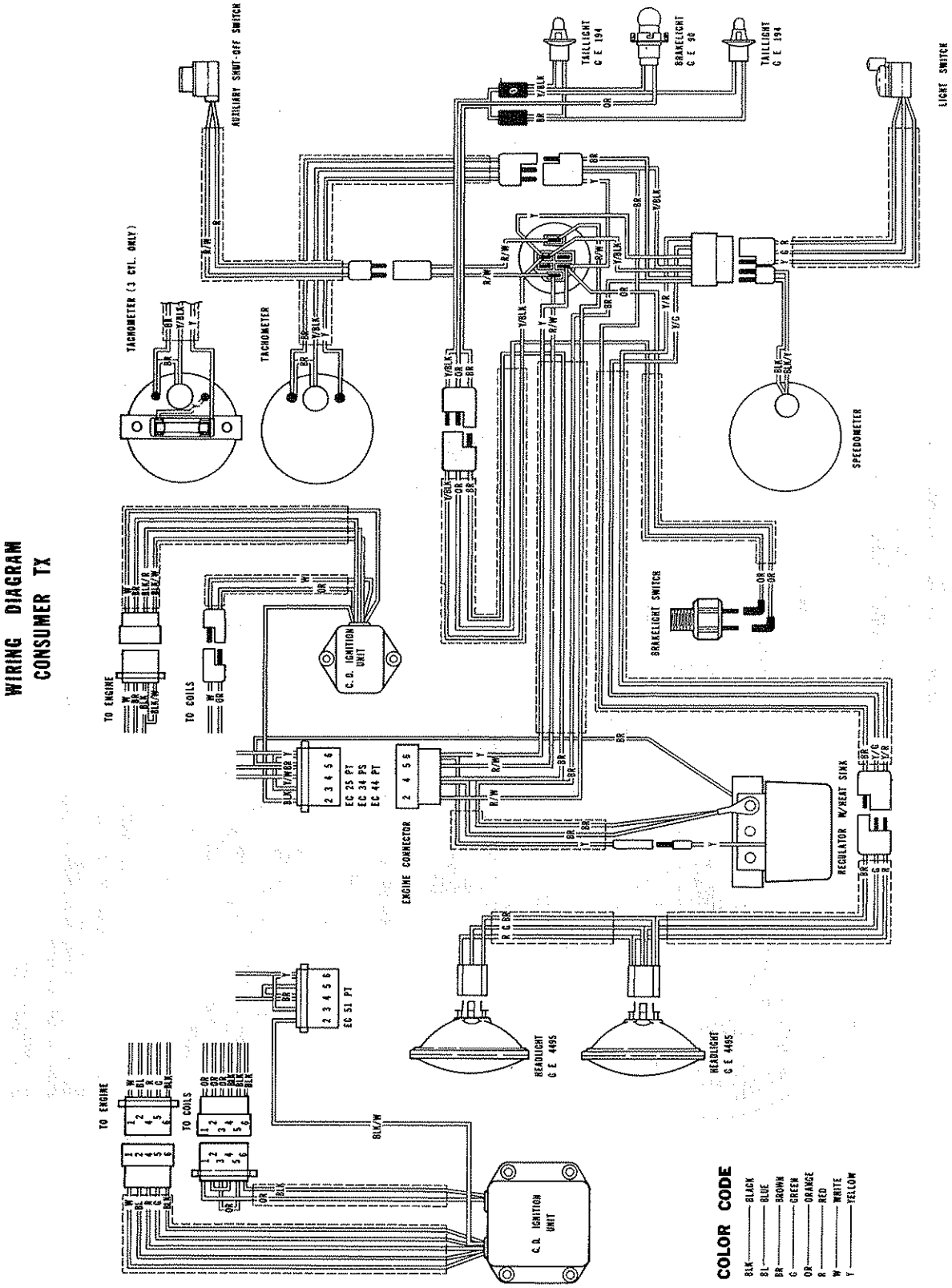


## 1973 Wiring Diagram — Colt



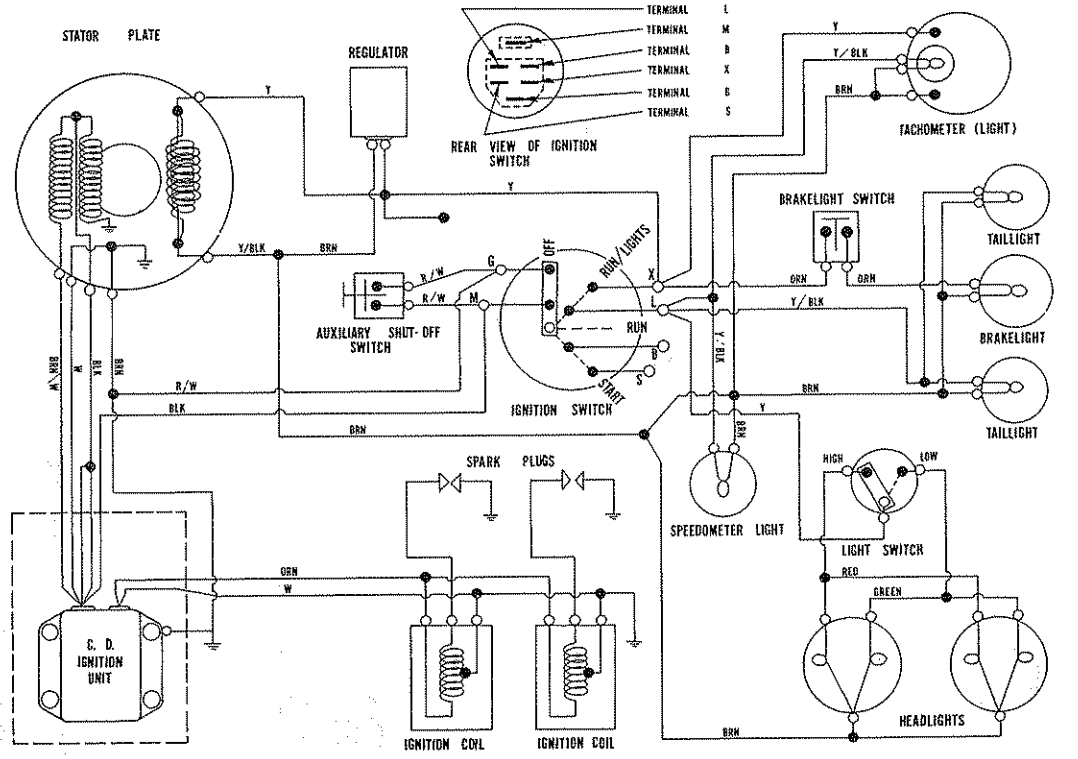

SCHEMATIC DIAGRAM
1973 COLT
(75 WATT ALTERNATOR)
STATOR PLATE
REGULATOR
SPARK PLUGS
IGNITION COIL
IGNITION COIL
IGNITION SWITCH
AUXILIARY SHUT-OFF SWITCH
SPEEDOMETER LIGHT (COLT SS ONLY)
LIGHT SWITCH
BRAKELIGHT SWITCH
TAILLIGHT
BRAKELIGHT
TAILLIGHT
HEADLIGHTS
REAR VIEW OF IGNITION SWITCH
TERMINAL L
TERMINAL M
TERMINAL B
TERMINAL X
TERMINAL G
TERMINAL S
RUN / LIGHTS
RUN
START
OFF
LOW
HIGH
BRN
ORN
Y/BLK
GREEN
RED
R/W
W
Y
G
NOTES:
1 ENGINE GROUND STRAP TO CHASSIS ON 175 CC COLT
2 175 CC AND 250 CC ENGINES HAVE A SINGLE INTERNAL IGNITION COIL AND A WIRE GROUNDED THROUGH IGNITION SWITCH OR SHUT-OFF SWITCH TO SHUT OFF ENGINE
3 COLT—SINGLE HEADLIGHT
COLT SS—TWIN HEADLIGHTS

## 1974 Wiring Diagram — Consumer TX

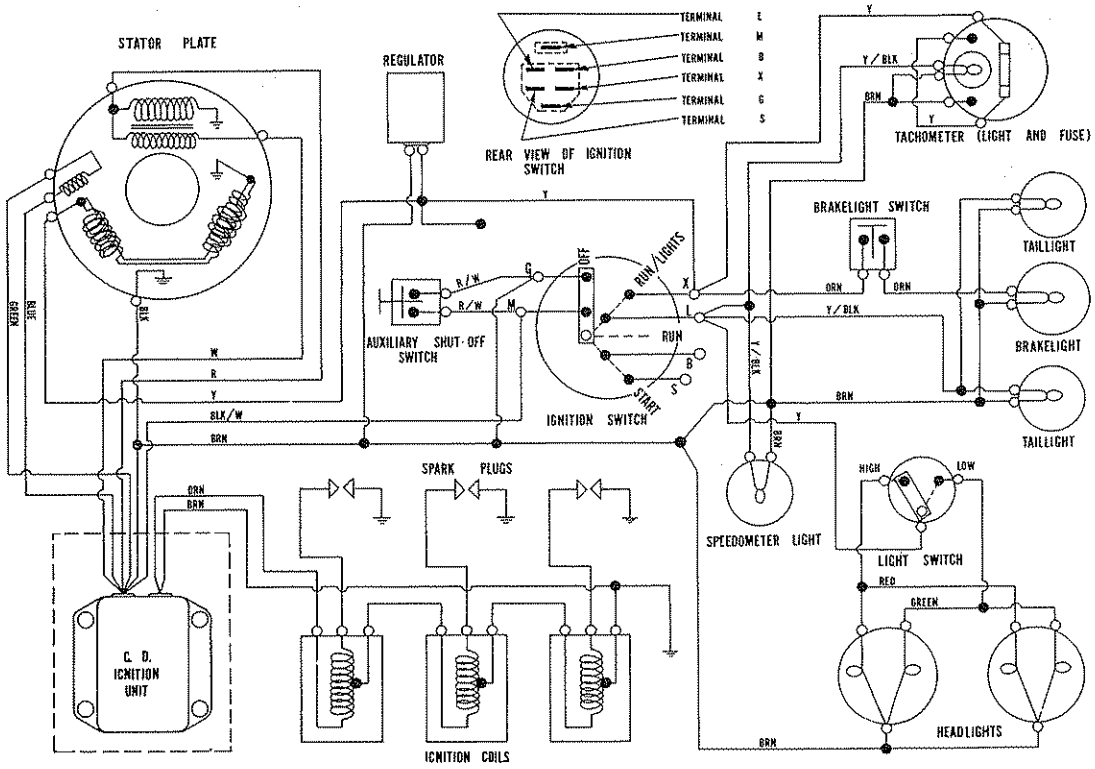


## WIRING SCHEMATIC

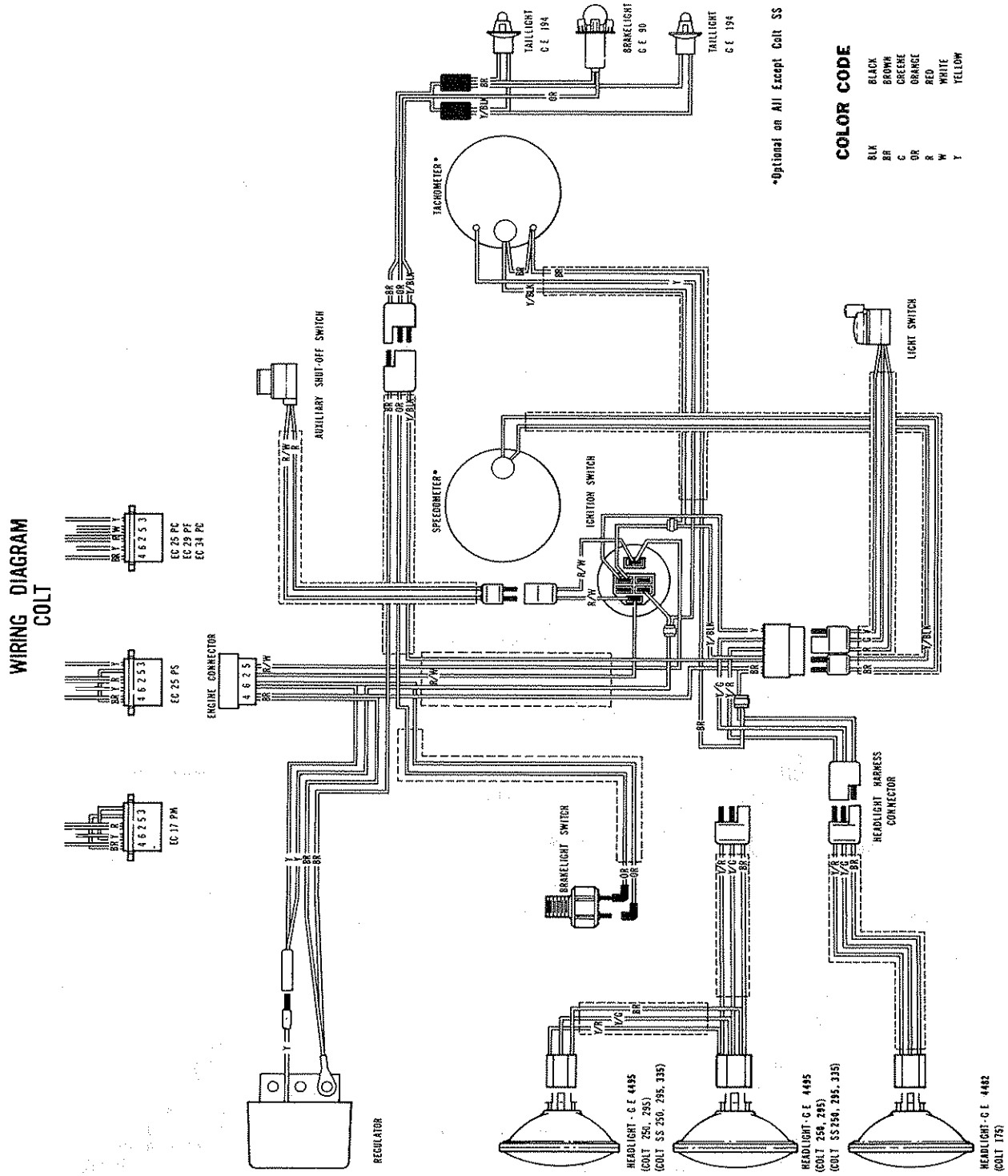
1974 CONSUMER TX
(140 WATT ALTERNATOR, 2 CYL.)

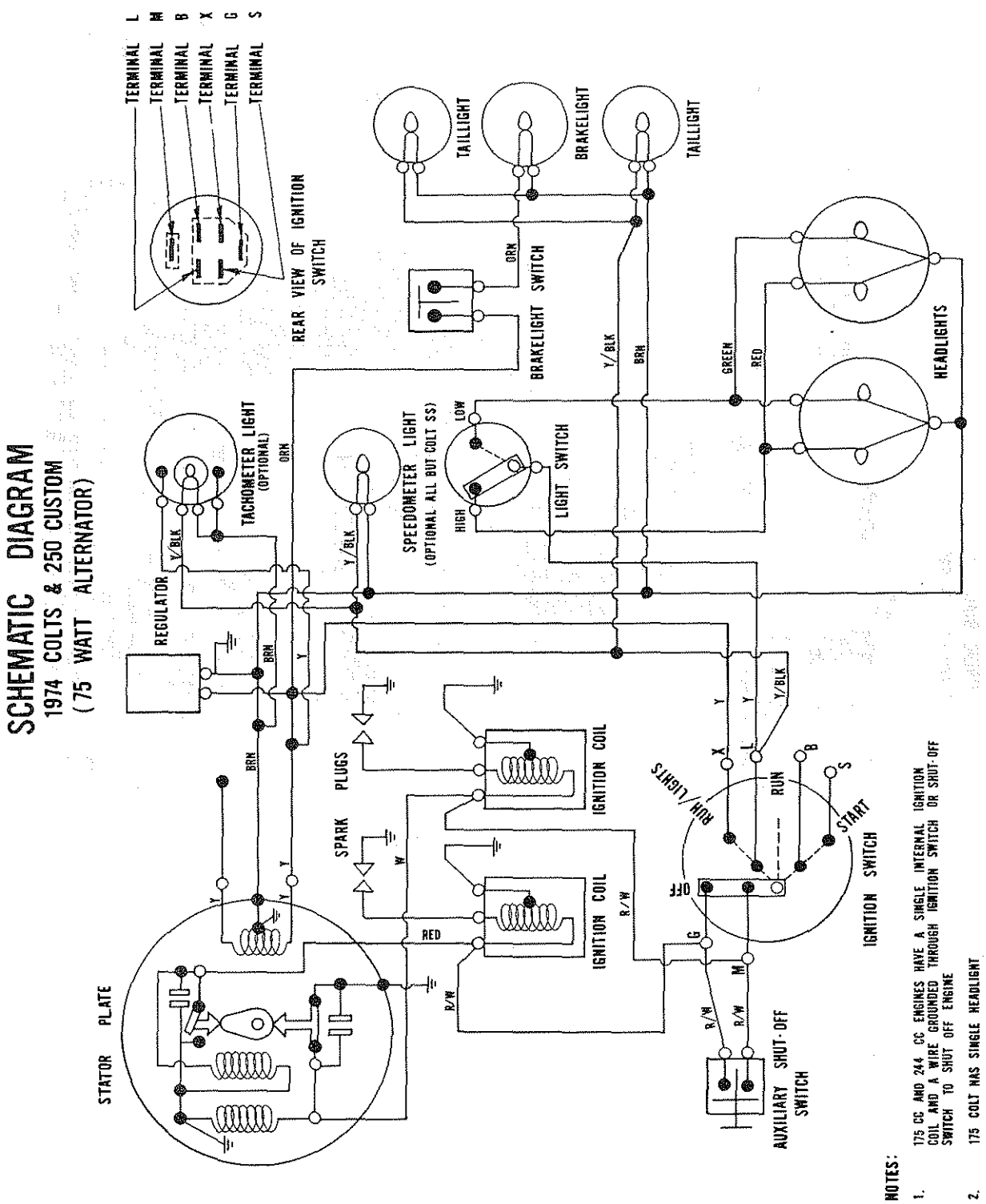



1974 CONSUMER TX
(140 WATT ALTERNATOR, 3 CYL.)



## 1974 Wiring Diagram — Colt

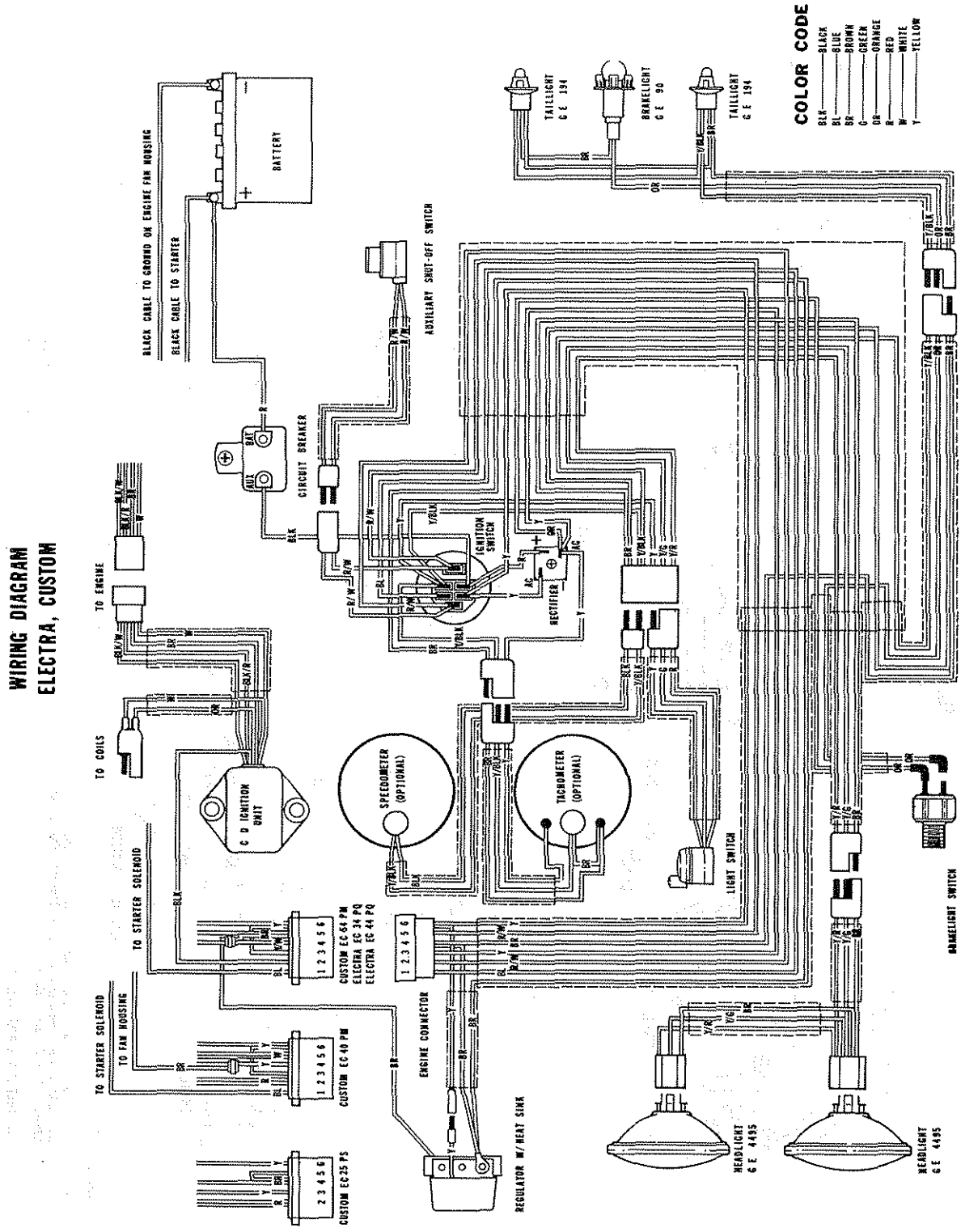




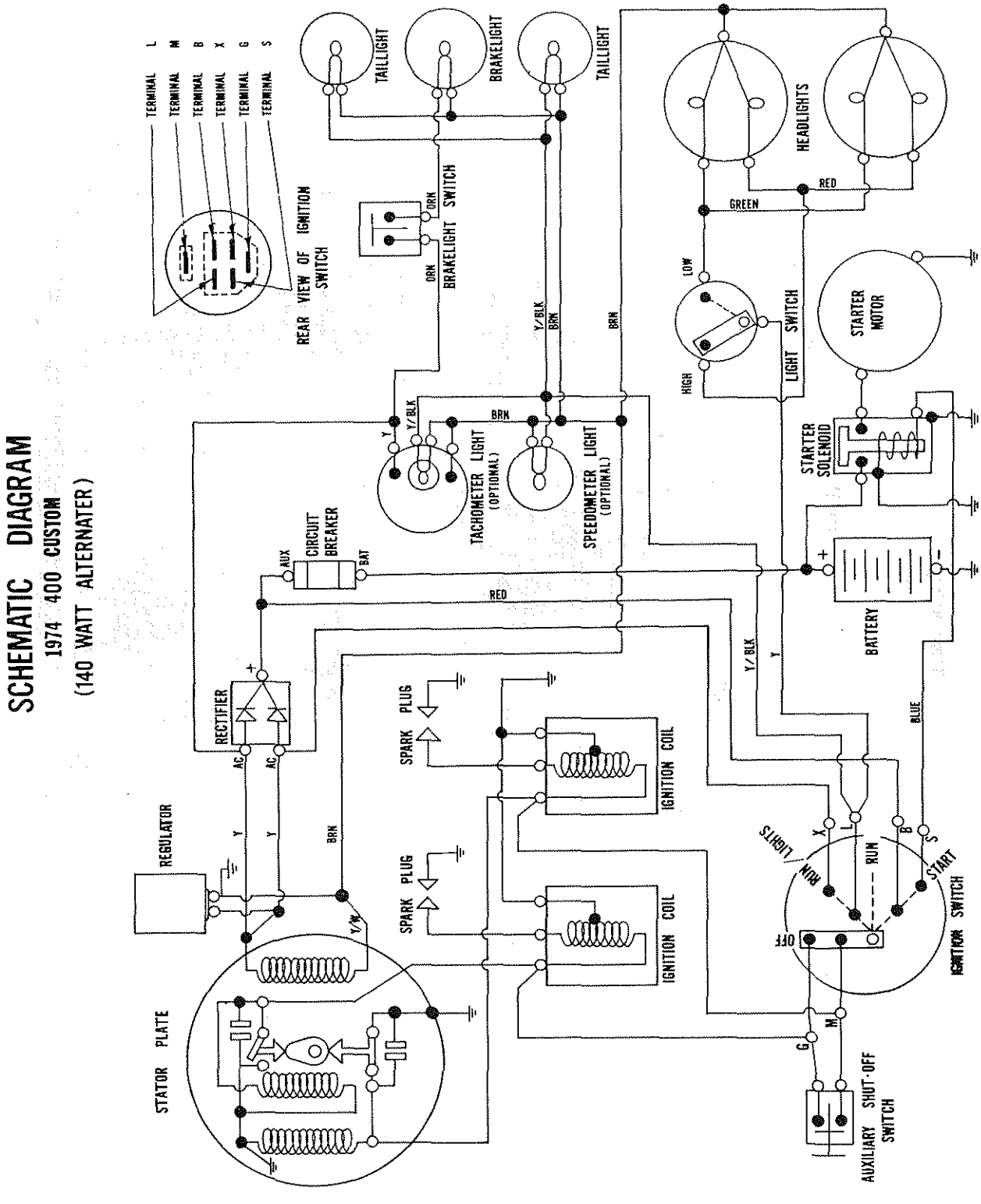

NOTES:

1. 175 CC AND 244 CC ENGINES HAVE A SINGLE INTERNAL IGNITION COIL AND A WIRE GROUNDED THROUGH IGNITION SWITCH OR SHUT-OFF SWITCH TO SHUT OFF ENGINE
2. 175 COLT HAS SINGLE HEADLIGHT

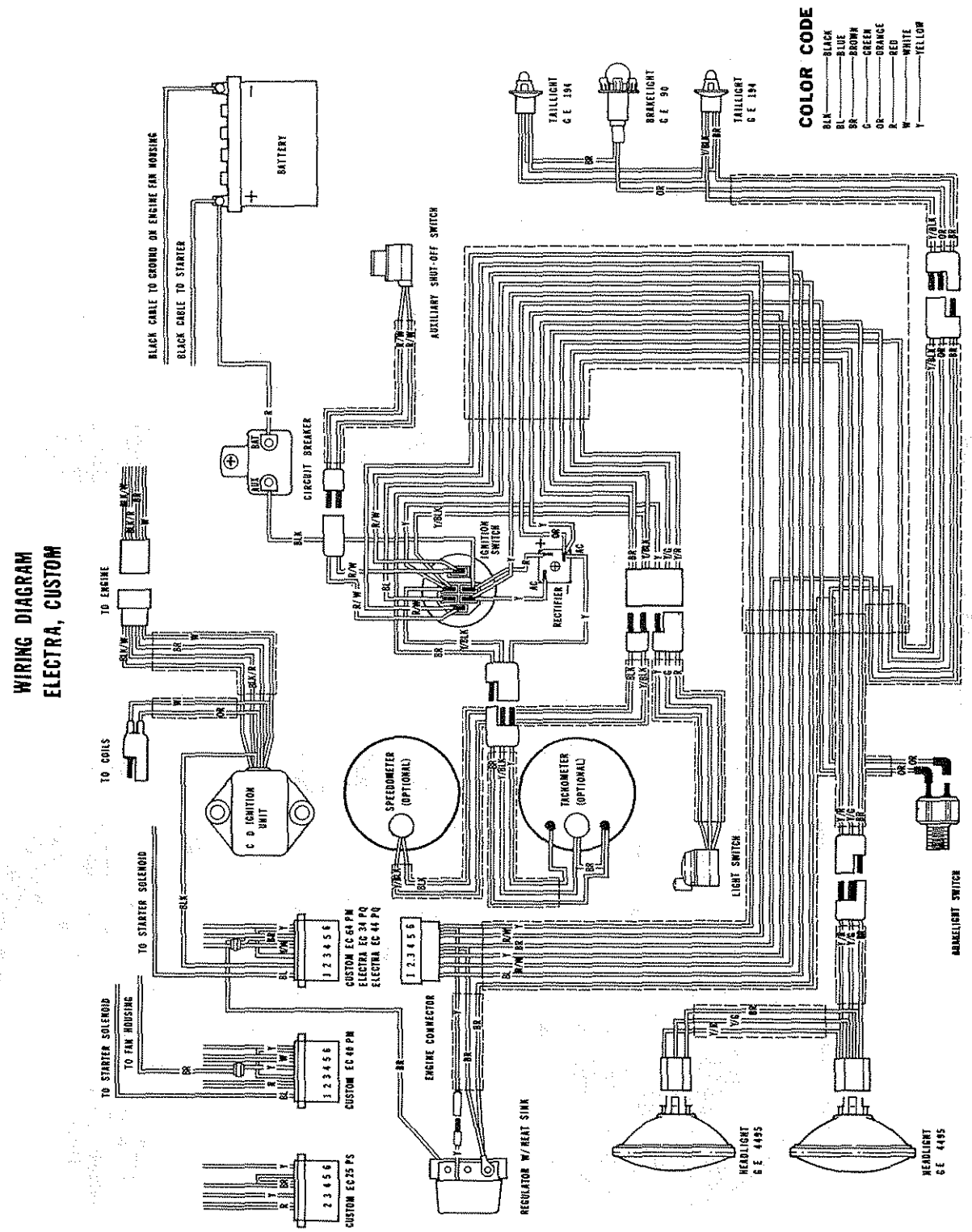
## 1974 Wiring Diagram — Electra, Custom



## 1974 Schematic Diagram — Custom

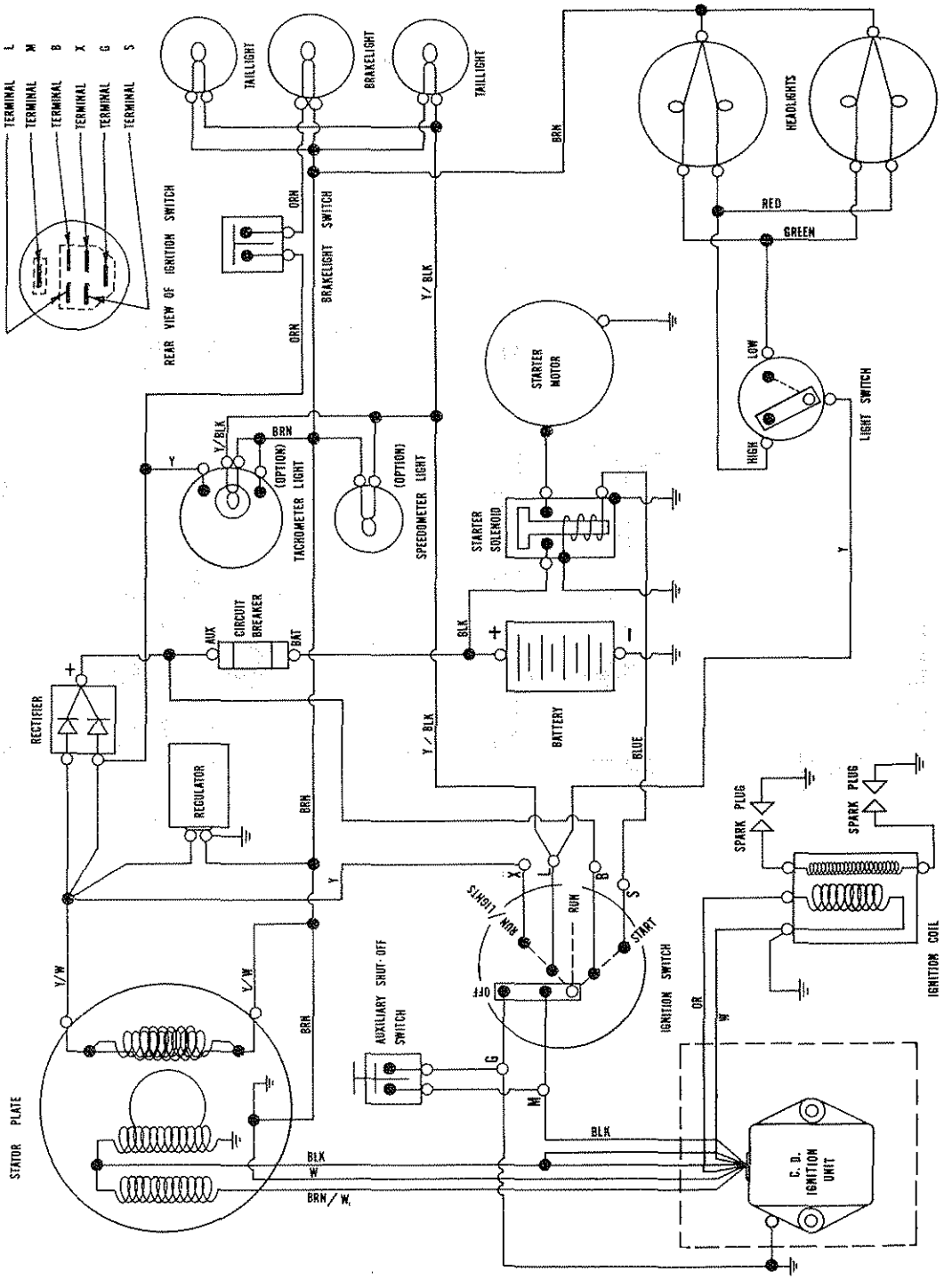


## 1974 Wiring Diagram — Electra, Custom

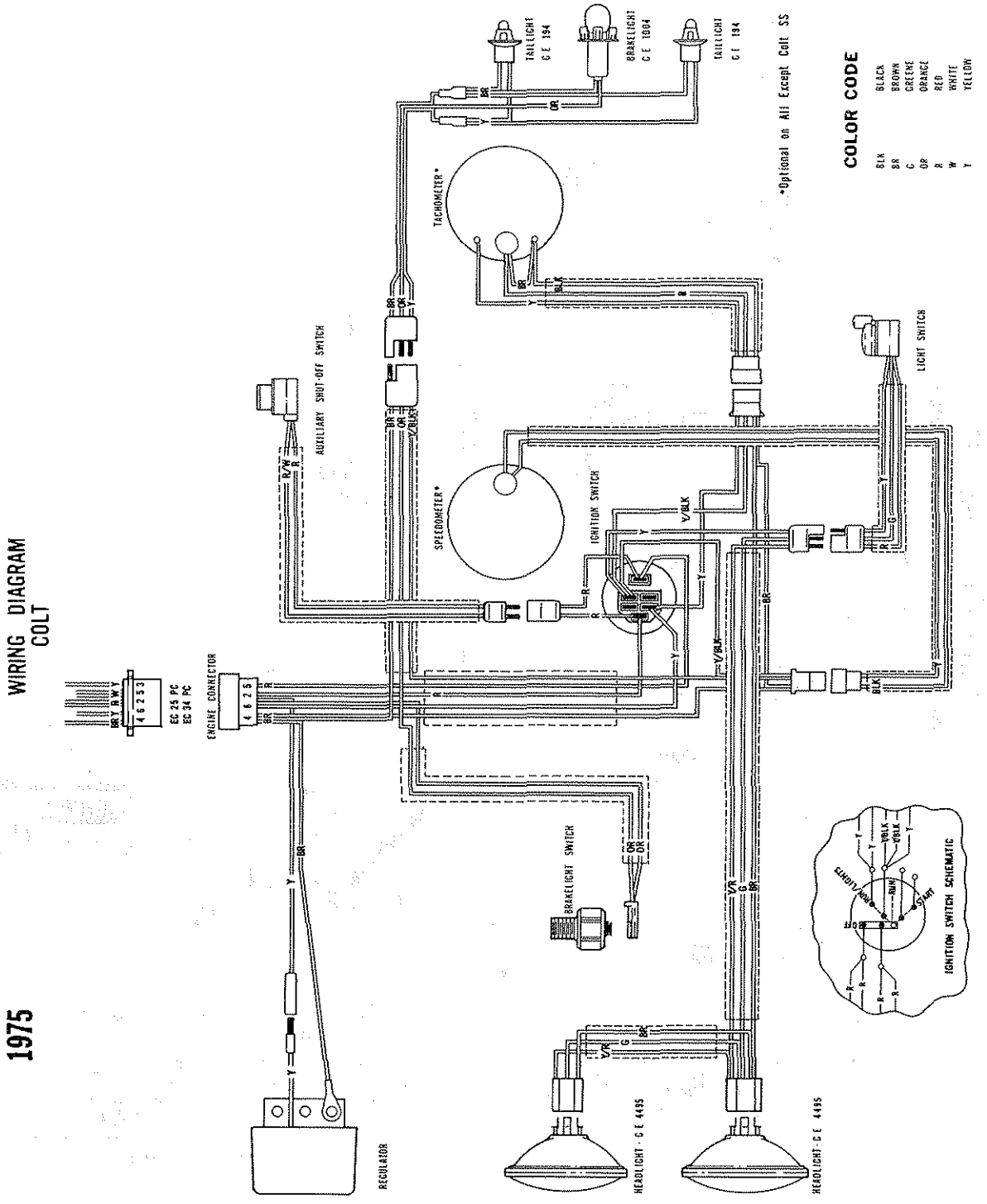


# SCHEMATIC DIAGRAM

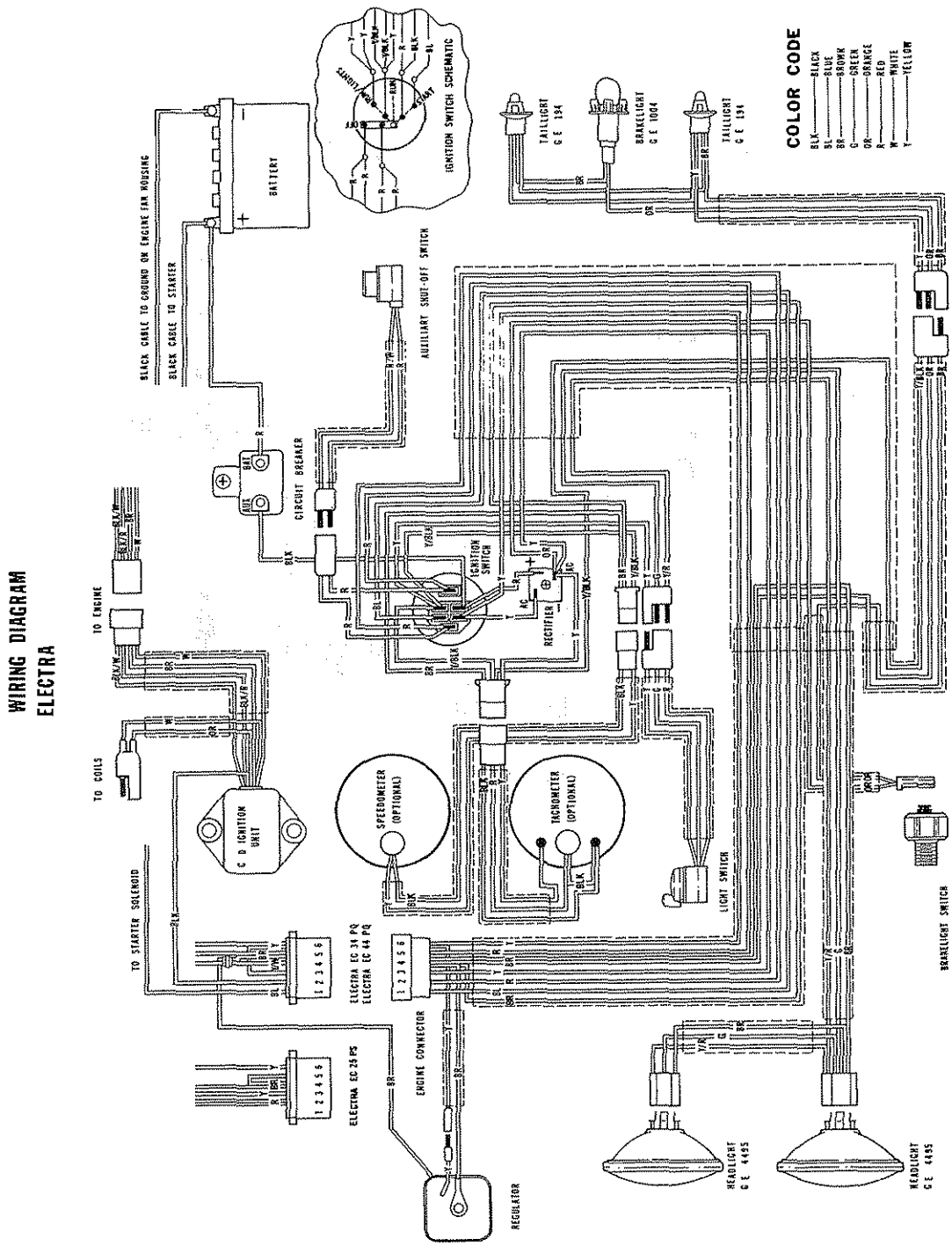
1974 - 340, 440 ELECTRA & 530 CUSTOM
(140 WATT ALTERNATER)



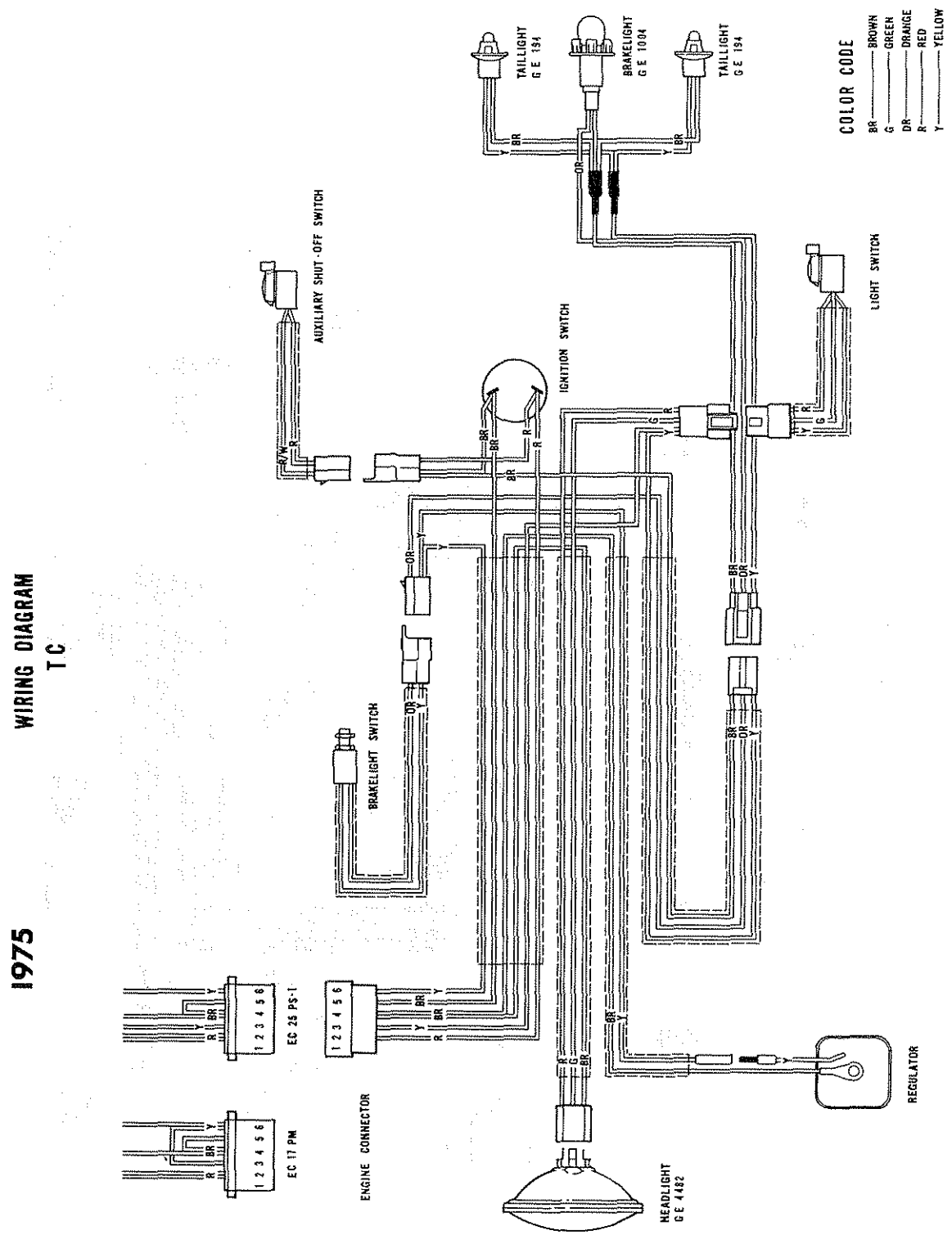
## 1975 Wiring Diagram — Colt



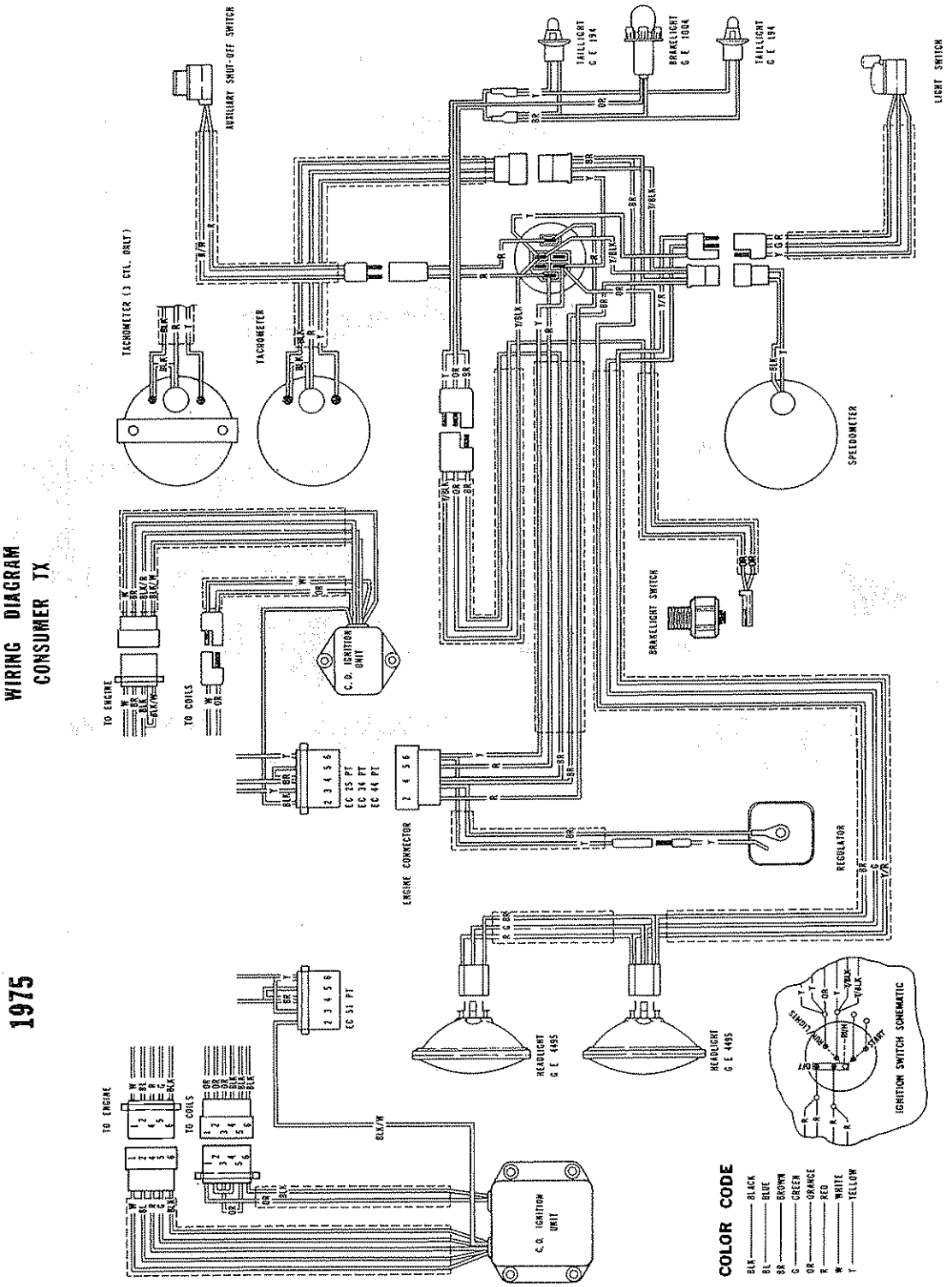
## 1975 Wiring Diagram — Electra



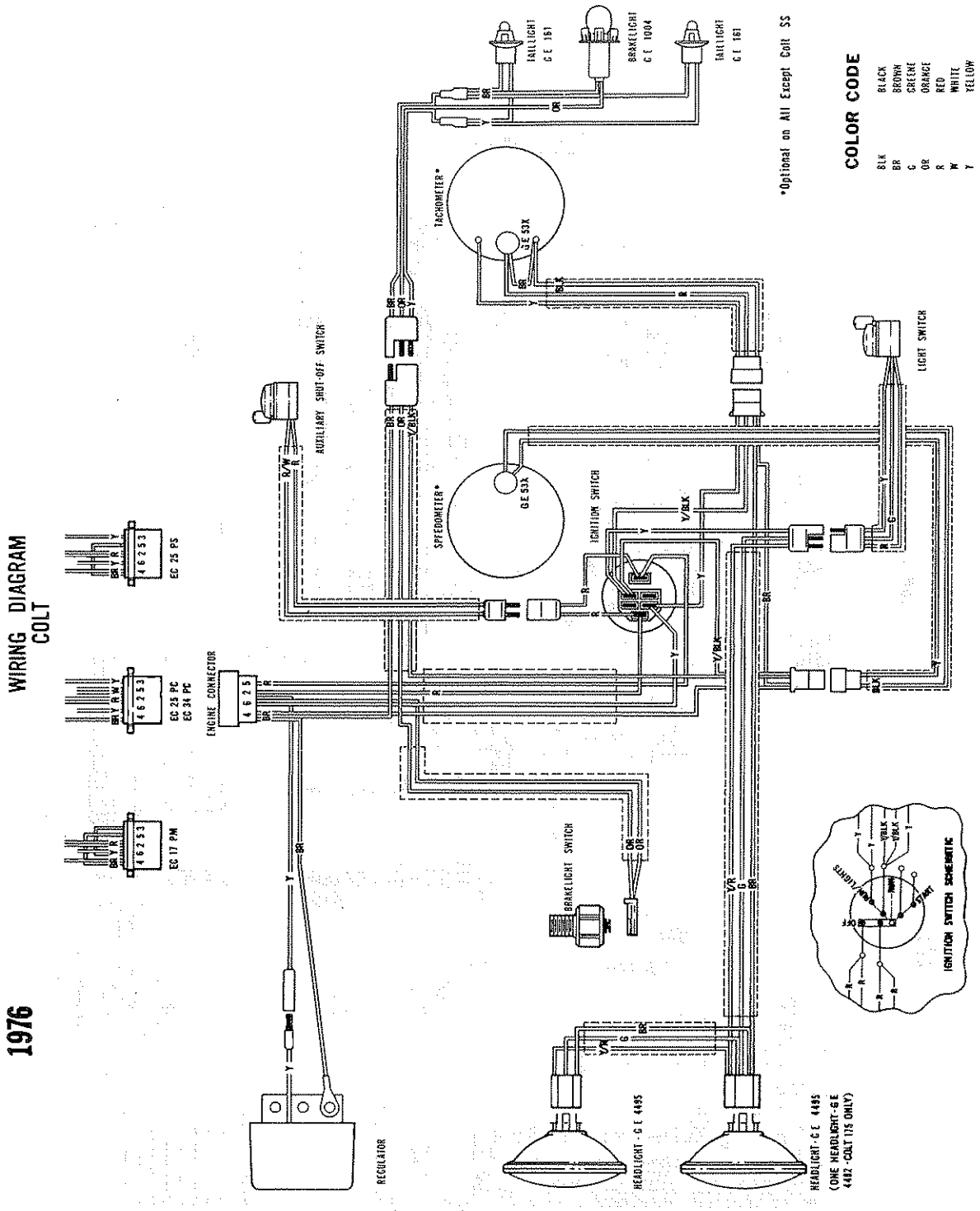
## 1975 Wiring Diagram — TC



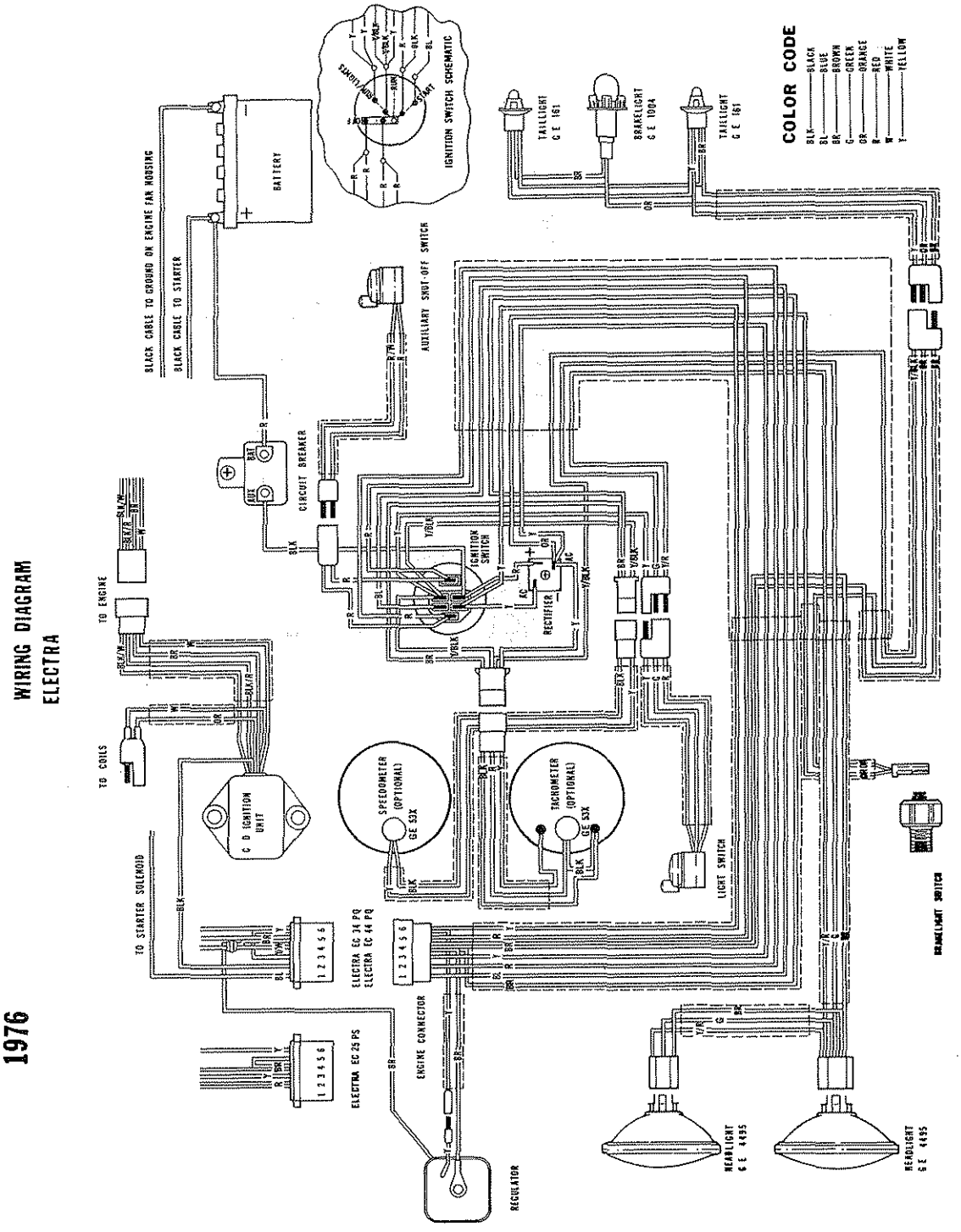
## 1975 Wiring Diagram — Consumer TX



## 1976 Wiring Diagram — Colt



## 1976 Wiring Diagram — Electra

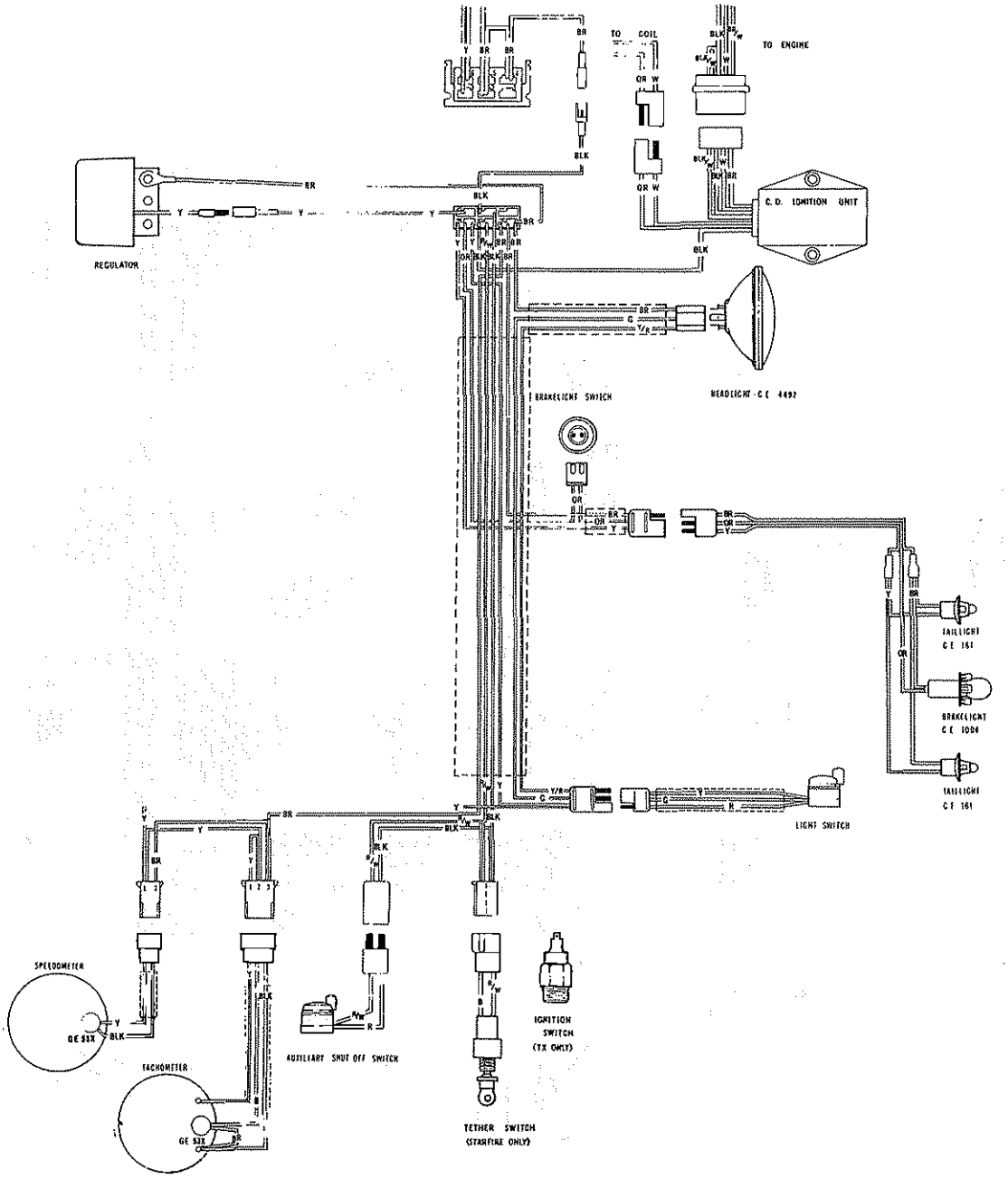


## 1976 Wiring Diagram — TX, Starfire

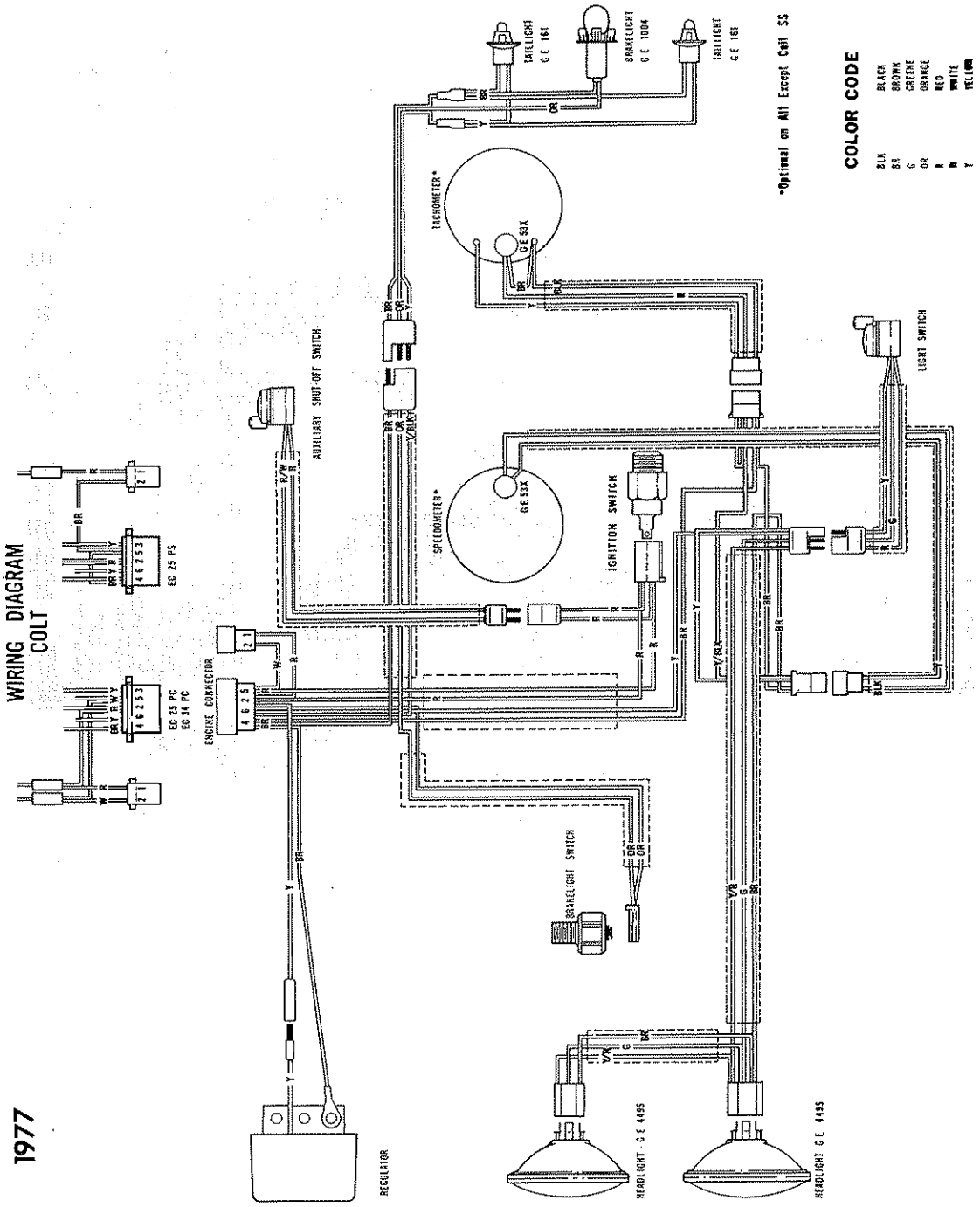
**1976**

WIRING DIAGRAM

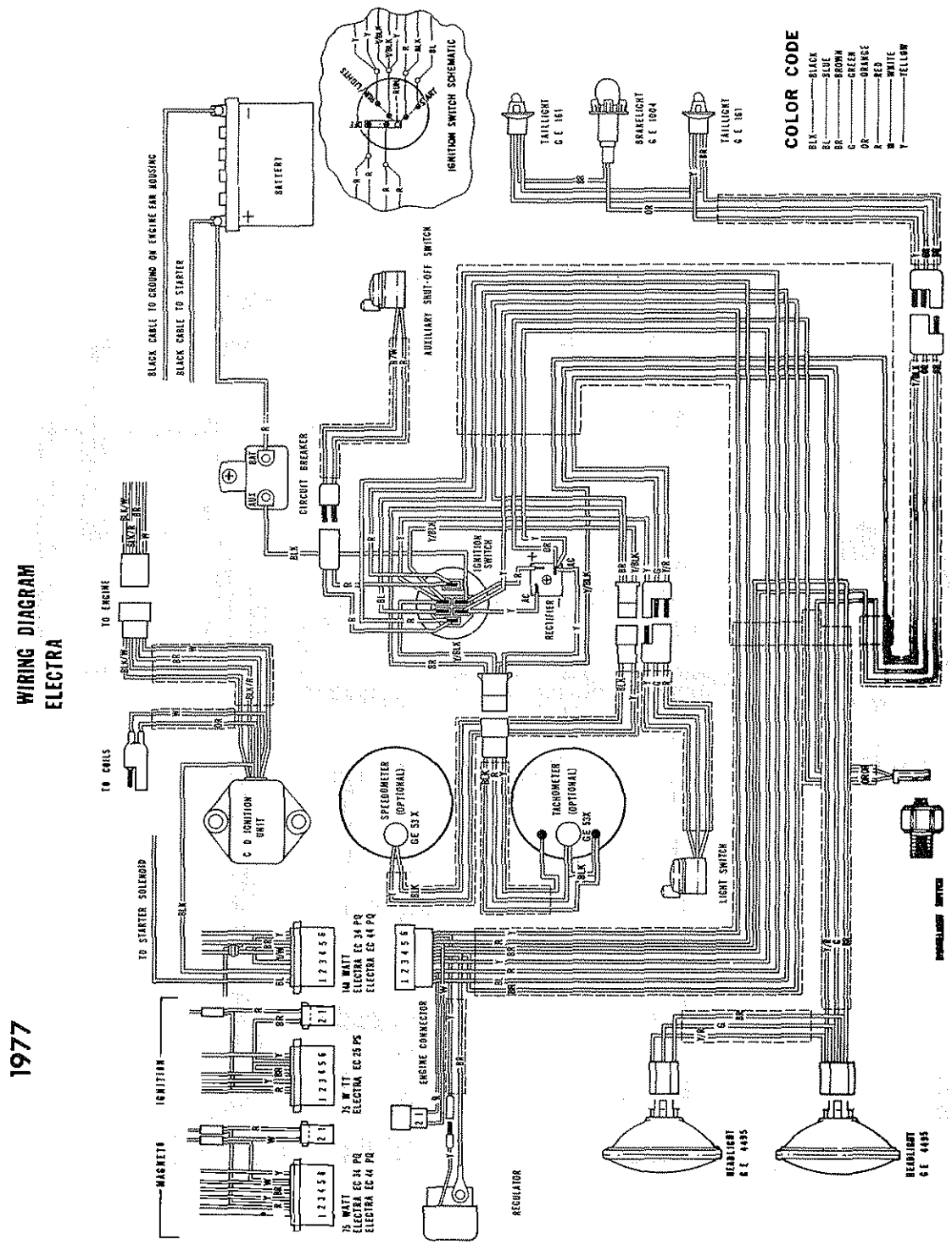
TX—STARFIRE



## 1977 Wiring Diagram — Colt, Colt SS

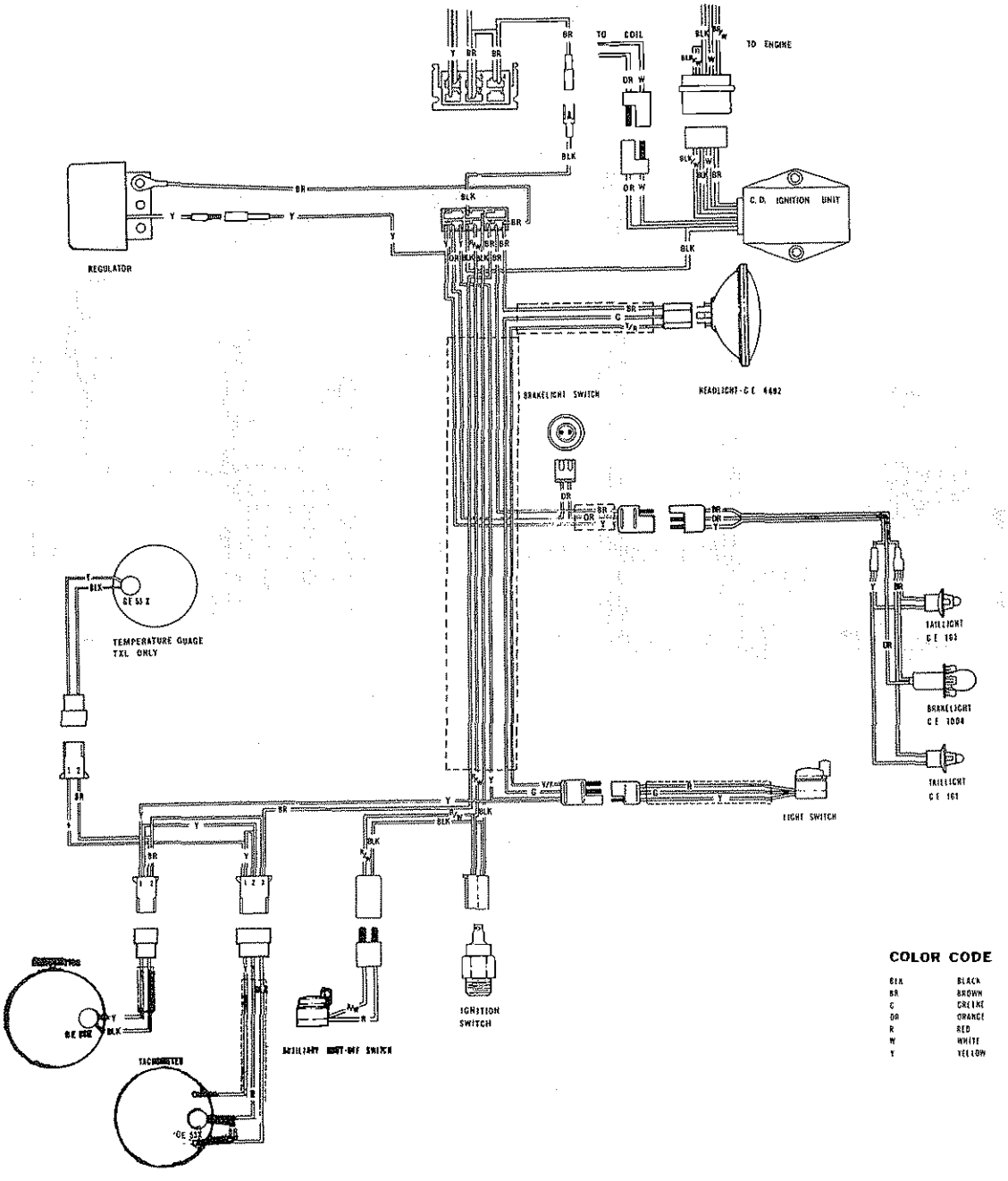


## 1977 Wiring Diagram — Electra

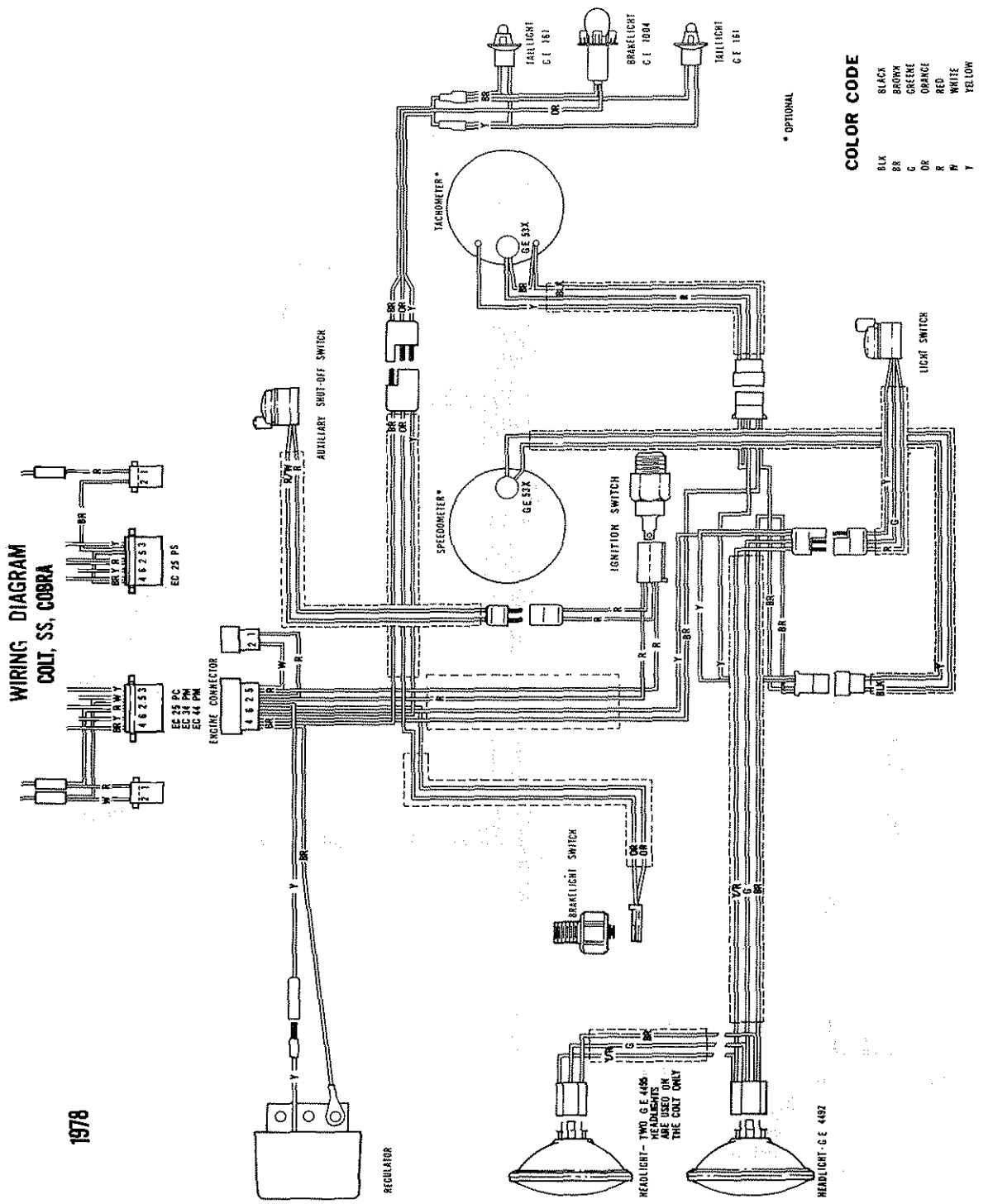


1977

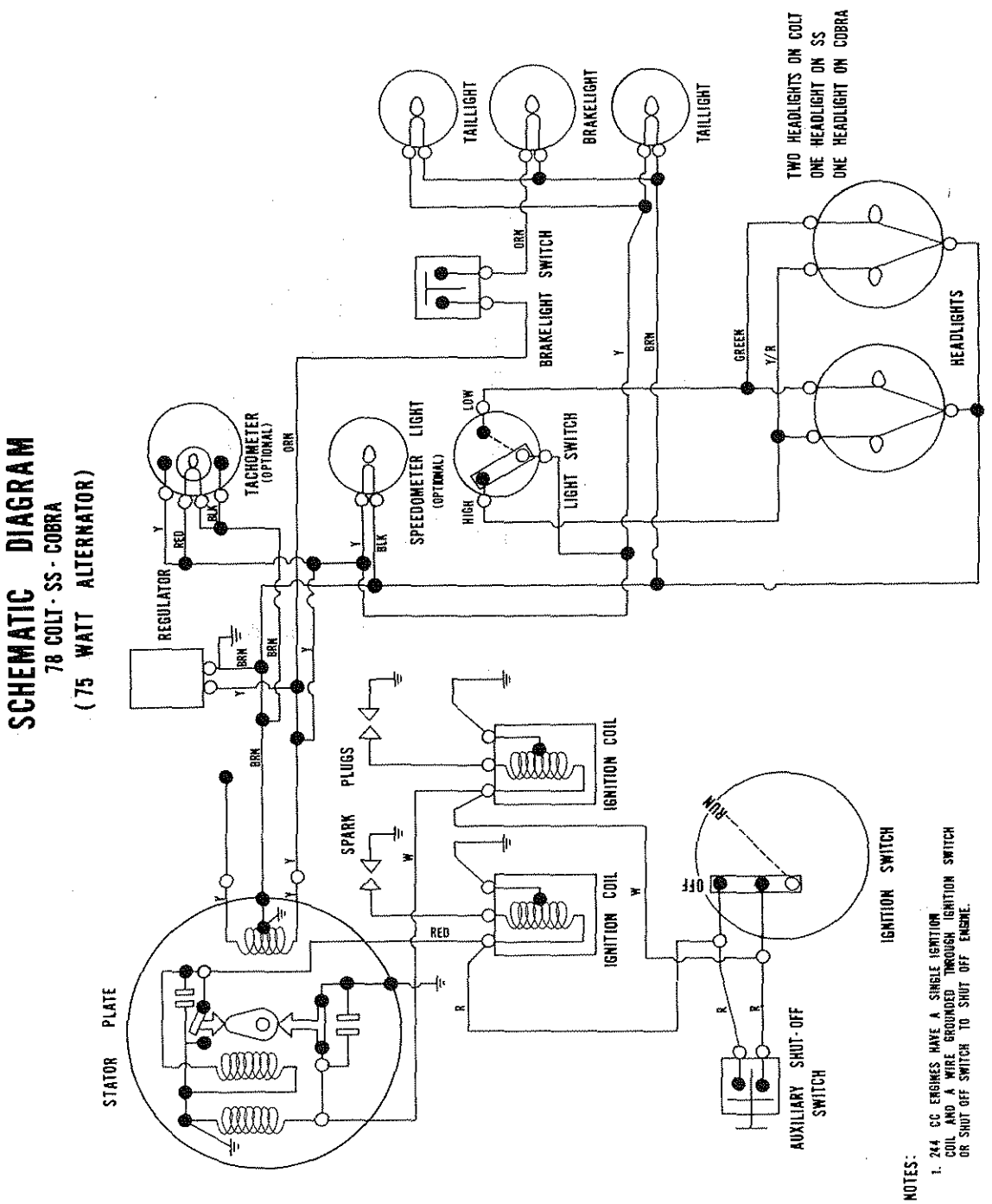
## WIRING DIAGRAM
## TX & TXL



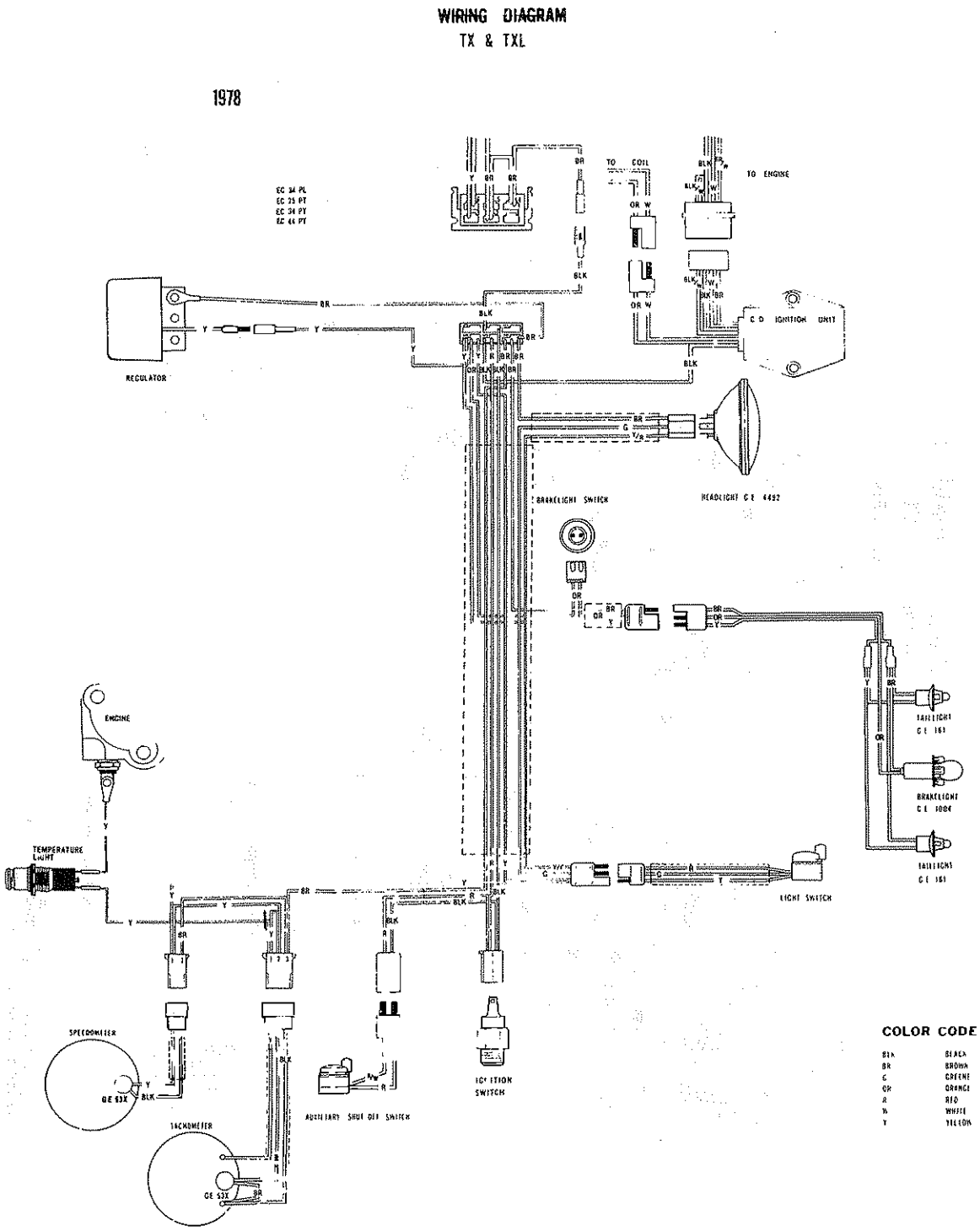
## 1978 Wiring Diagram — Colt, S/S 340, Cobra



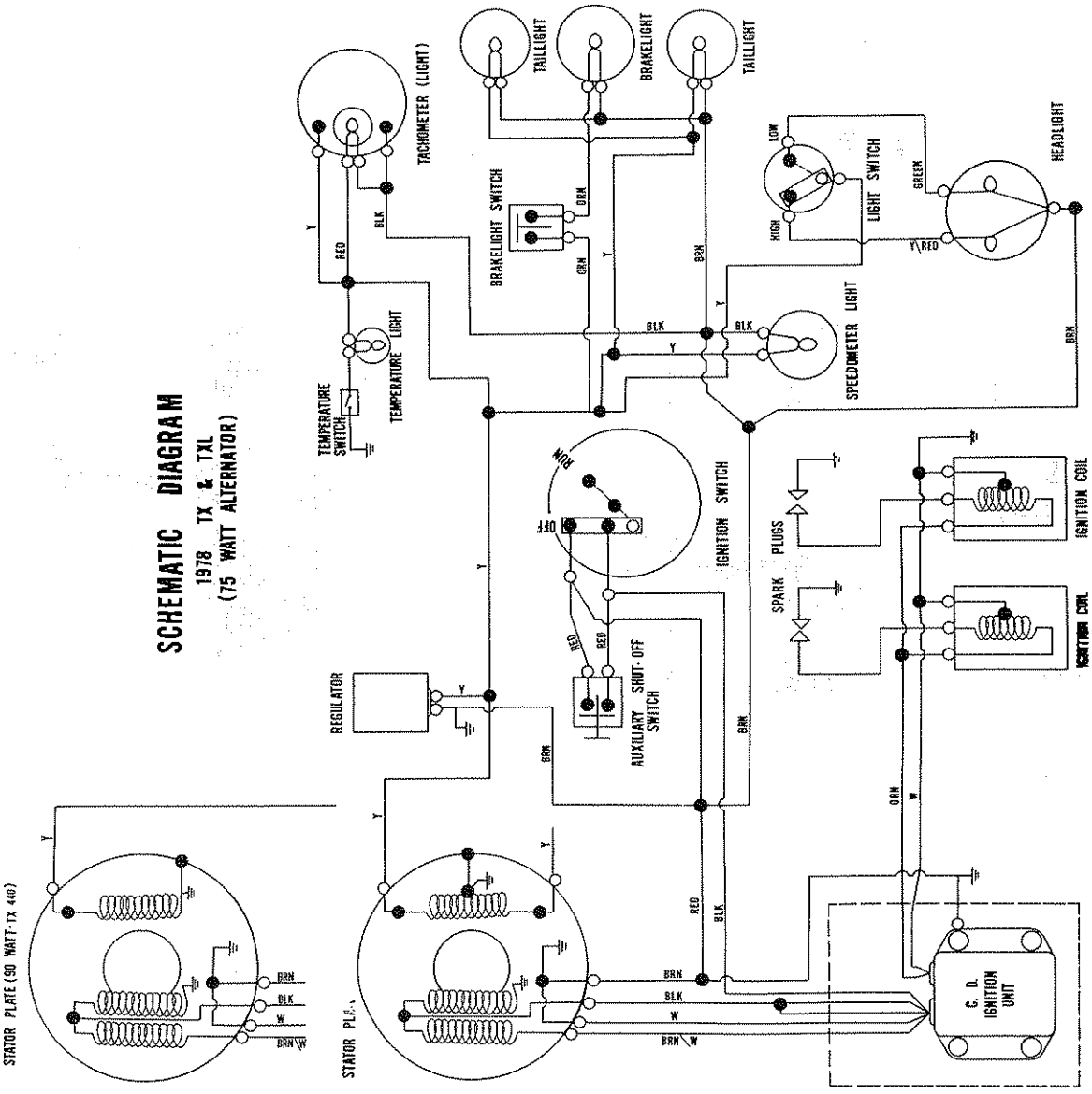
## 1978 Schematic Diagram — Colt, S/S 340, Cobra



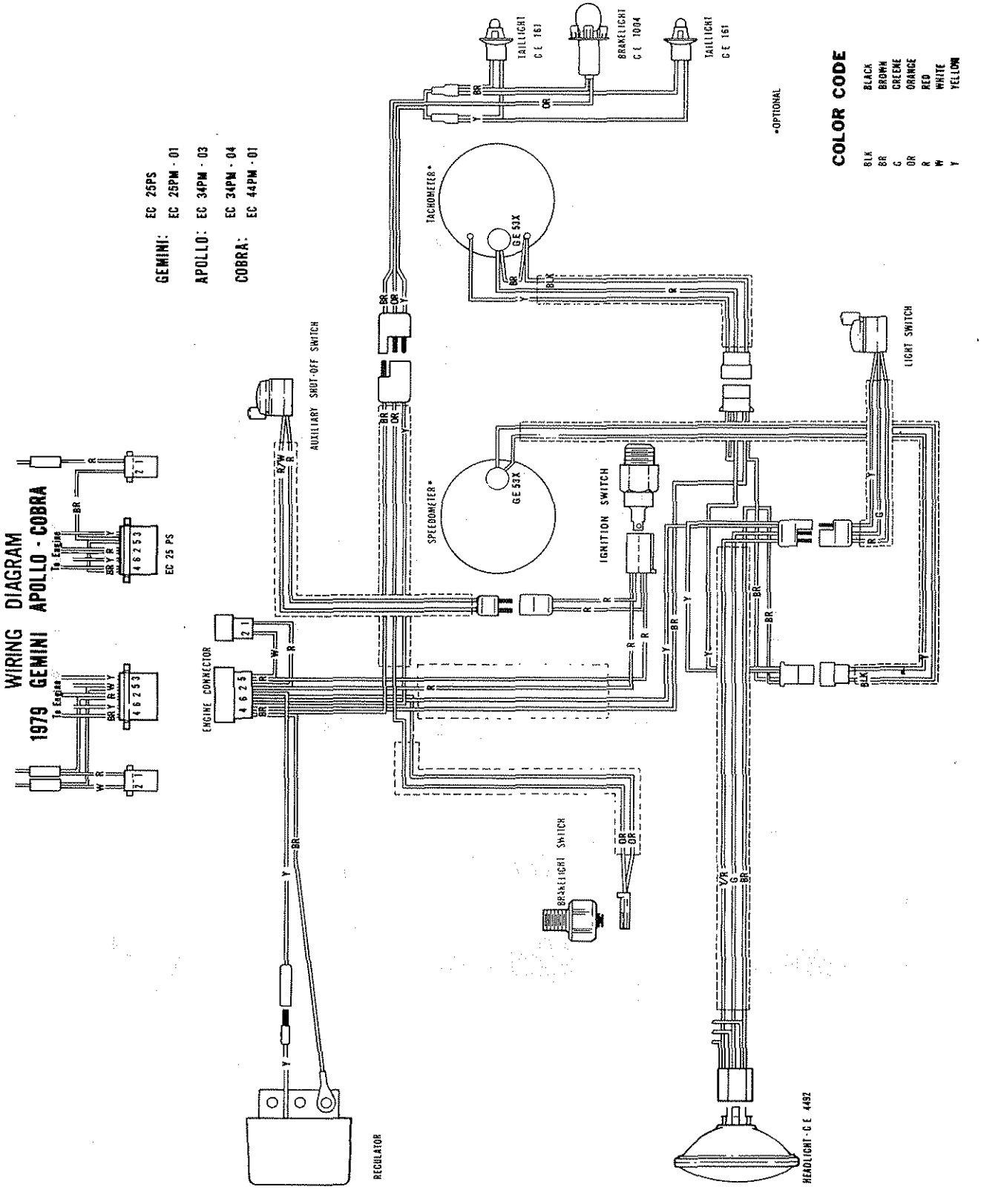
## 1978 Wiring Diagram – TX, TX-L

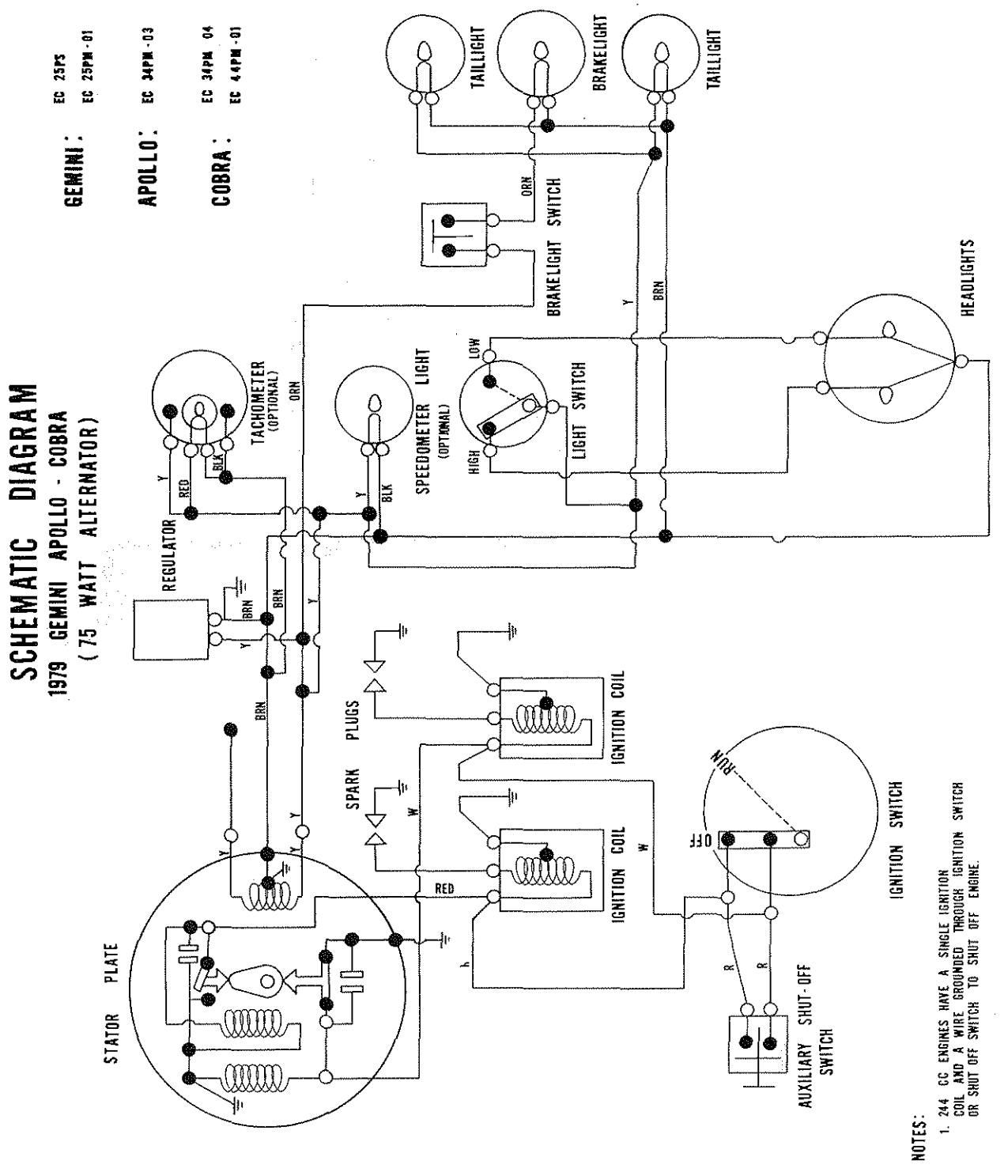


## 1978 Schematic Diagram – TX, TX-L



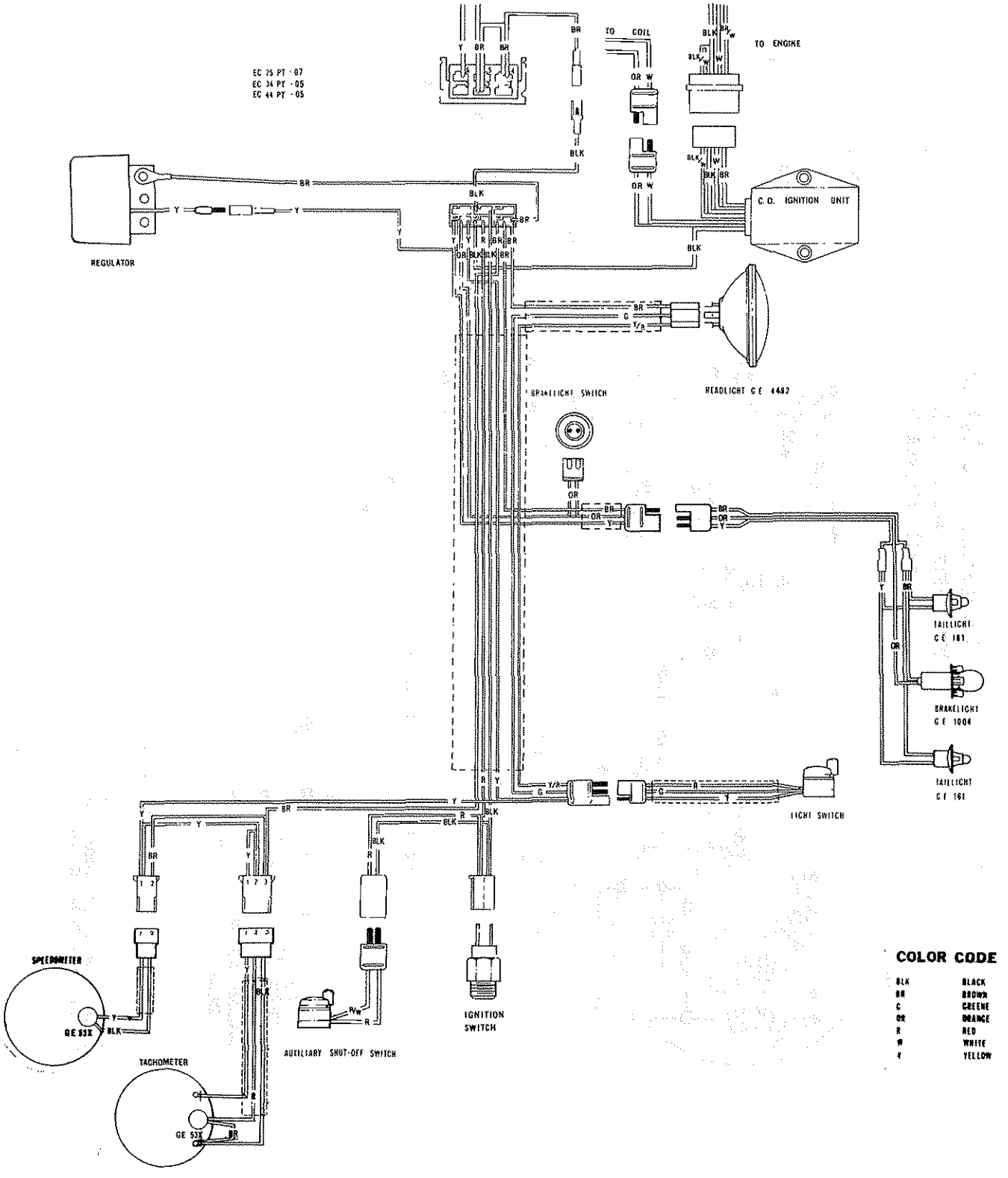
## 1979 Wiring Diagram — Gemini, Apollo, Cobra

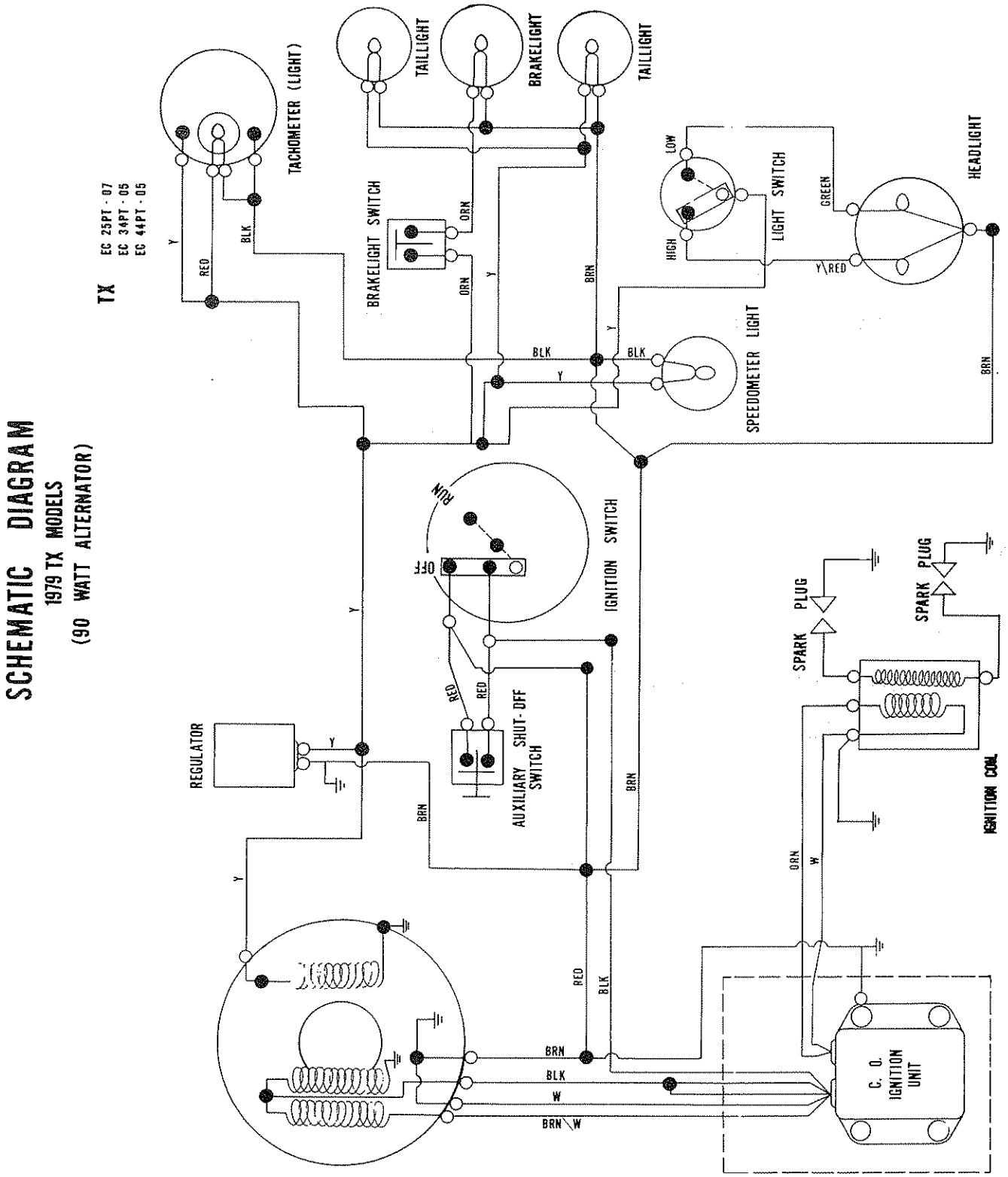



SCHEMATIC DIAGRAM
1979 GEMINI APOLLO - COBRA
(75 WATT ALTERNATOR)
GEMINI: EC 25FS
EC 25PM-01
APOLLO: EC 34PM-03
COBRA: EC 34PM 04
EC 44PM-01
TAILLIGHT
BRAKELIGHT
TAILLIGHT
BRAKELIGHT SWITCH
ORN
BRN
Y
HEADLIGHTS
LOW
HIGH
LIGHT SWITCH
SPEEDOMETER LIGHT
(OPTIONAL)
BLK
TACHOMETER
(OPTIONAL)
RED
REGULATOR
SPARK PLUGS
W
IGNITION COIL
IGNITION COIL
RUN
OFF
IGNITION SWITCH
R
AUXILIARY SHUT-OFF
SWITCH
STATOR PLATE
NOTES:
1. 244 CC ENGINES HAVE A SINGLE IGNITION
COIL AND A WIRE GROUNDED THROUGH IGNITION SWITCH
OR SHUT OFF SWITCH TO SHUT OFF ENGINE.

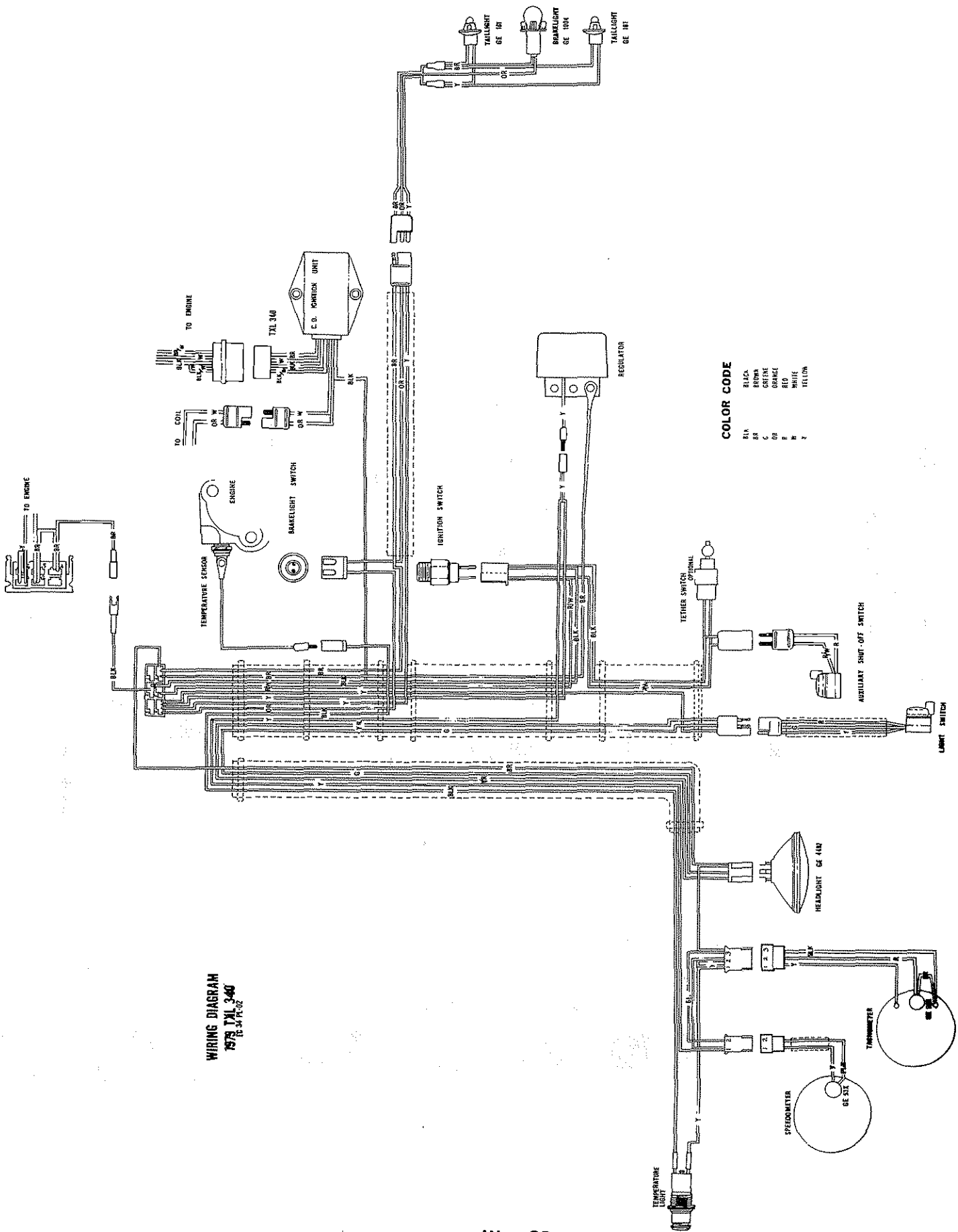
## 1979 Wiring Diagram — TX

**WIRING DIAGRAM**
**1979 TX MODELS**




SCHEMATIC DIAGRAM
1979 TX MODELS
(90 WATT ALTERNATOR)
TX
EC 25PT - 07
EC 34PT - 05
EC 44PT - 05
TACHOMETER (LIGHT)
TAILLIGHT
BRAKELIGHT
TAILLIGHT
BRAKELIGHT SWITCH
LOW
HIGH
LIGHT SWITCH
GREEN
HEADLIGHT
SPEEDOMETER LIGHT
IGNITION SWITCH
RUN
OFF
AUXILIARY SHUT-OFF SWITCH
REGULATOR
SPARK PLUG
SPARK PLUG
IGNITION COIL
C. D. IGNITION UNIT
RED
BLK
BRN
ORN
GRN
W
Y

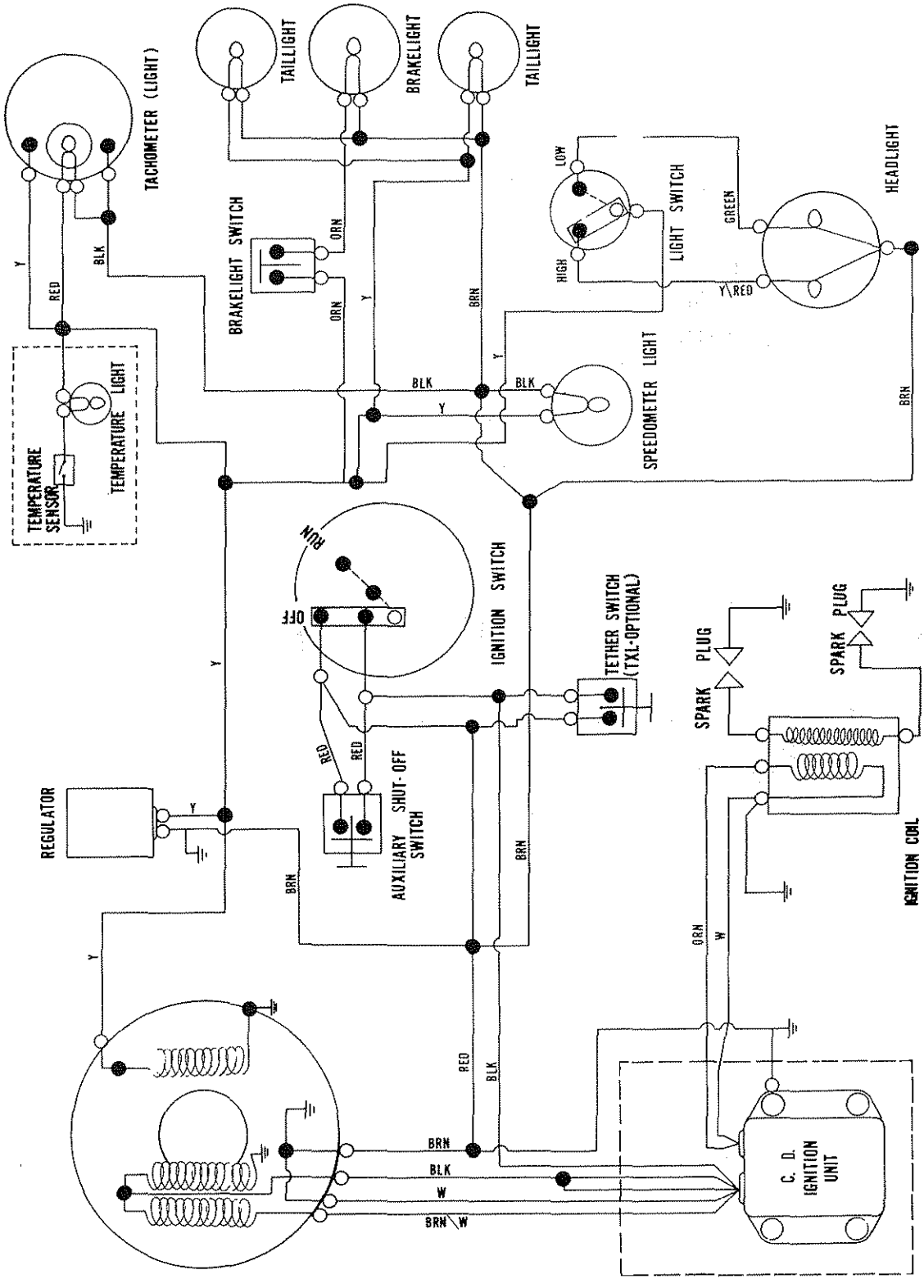
## 1979 Wiring Diagram — TX-L



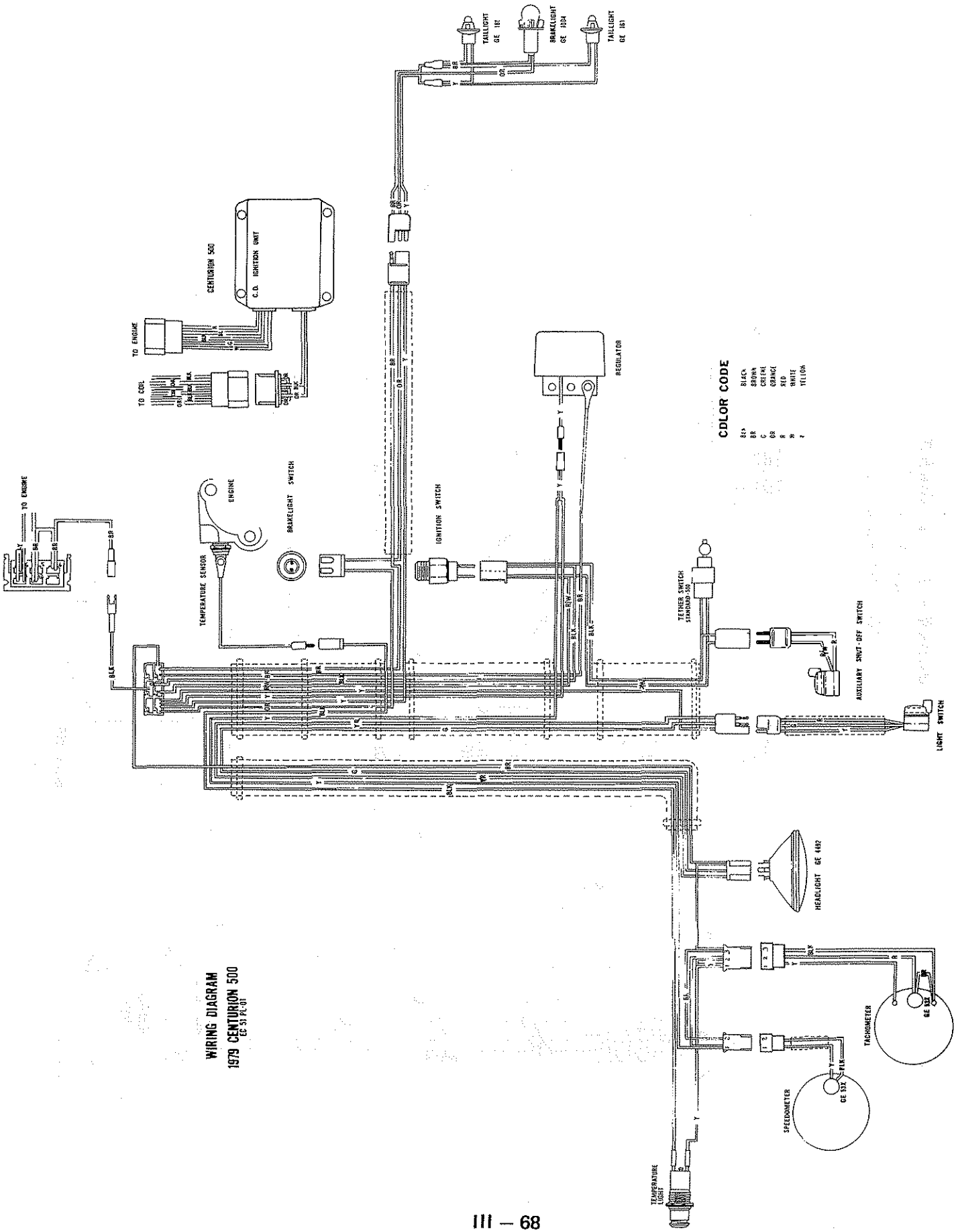
# SCHEMATIC DIAGRAM

1979 TXL 340
(90 WATT ALTERNATOR)

TXL EC 34PL-02



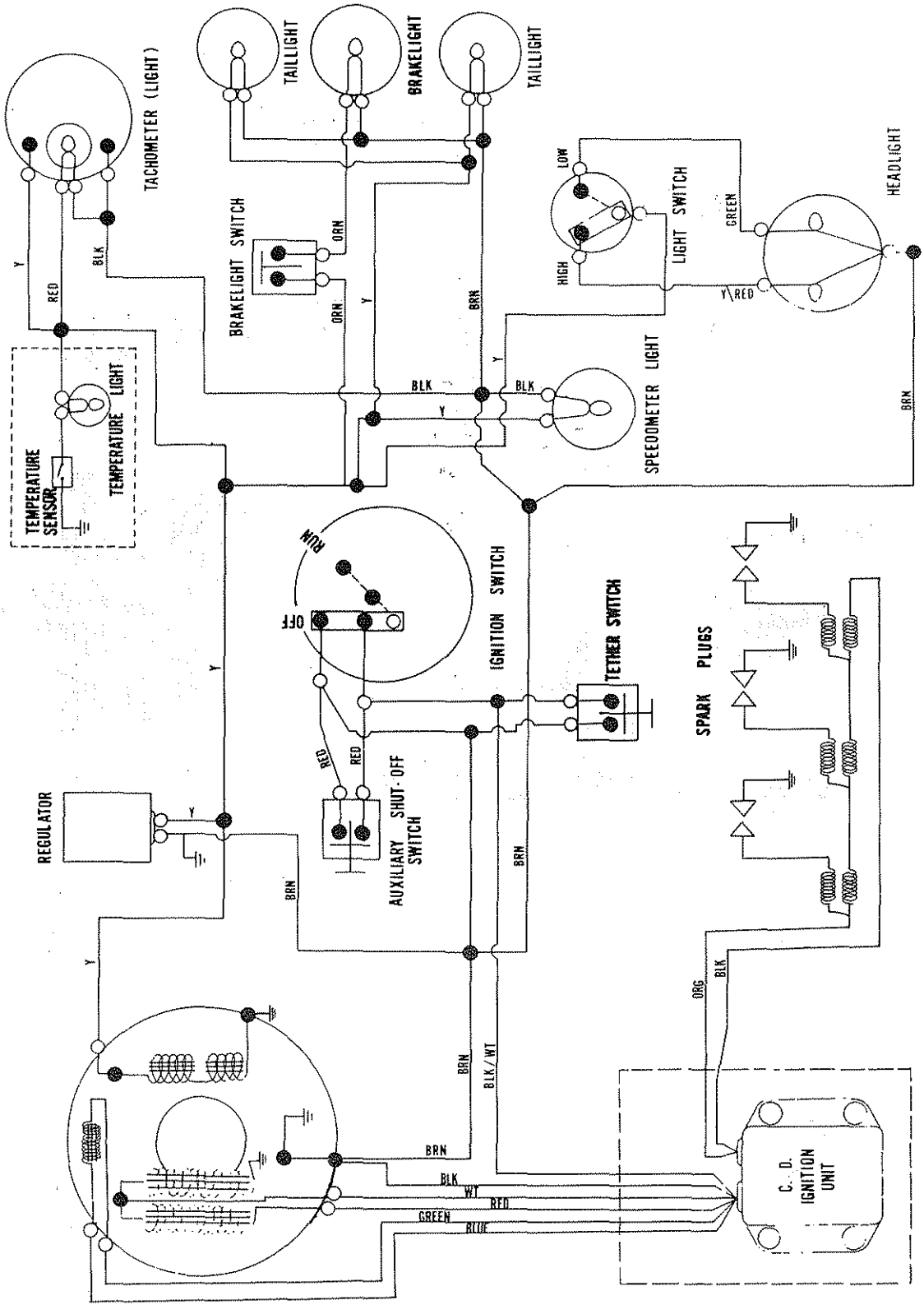
## 1979 Wiring Diagram — Centurion



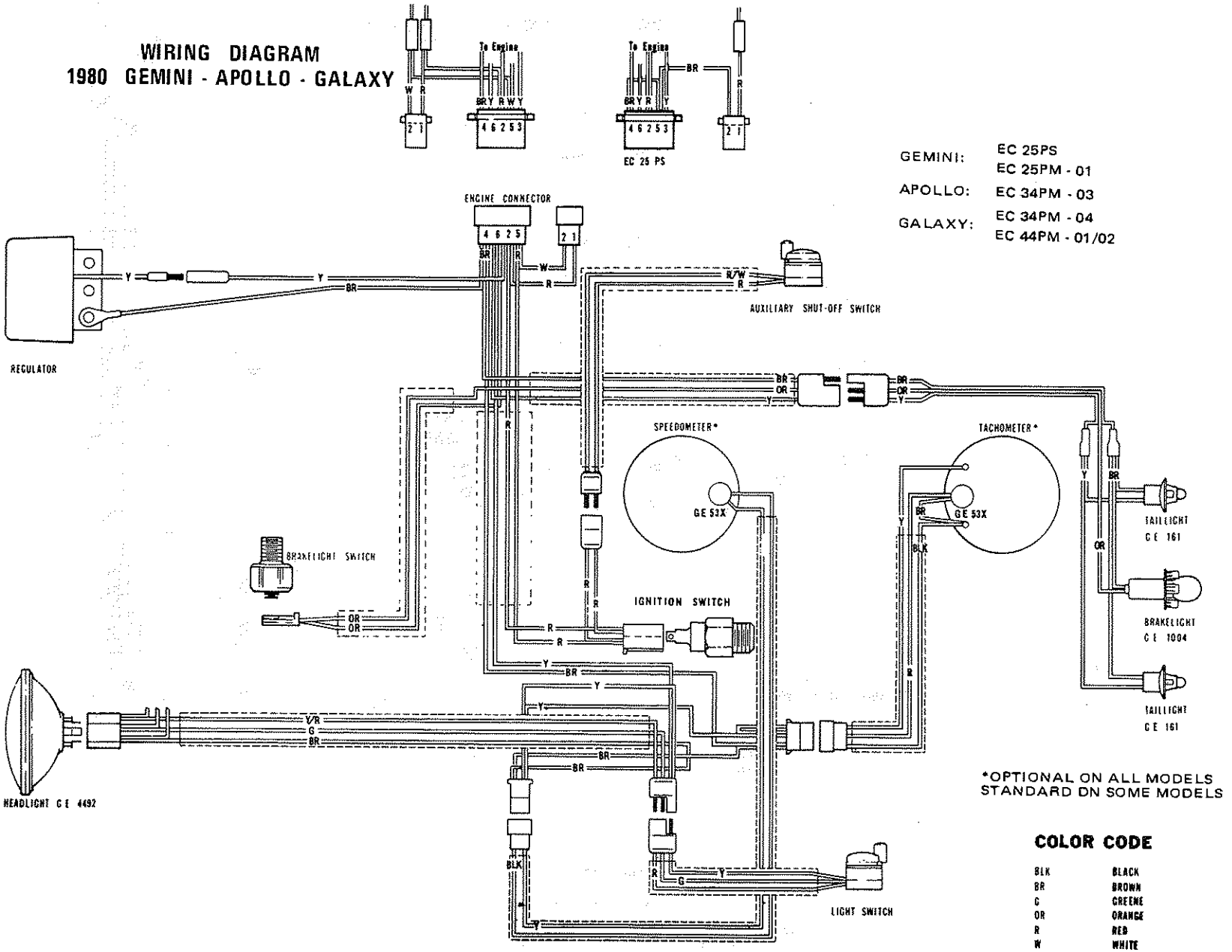
# SCHEMATIC DIAGRAM

1979 CENTURION 500 EC 51 PL

(120 WATT ALTERNATOR)



# WIRING DIAGRAM
## 1980 GEMINI - APOLLO - GALAXY




| | |
|---|---|
| GEMINI: | EC 25PS<br>EC 25PM - 01 |
| APOLLO: | EC 34PM - 03 |
| GALAXY: | EC 34PM - 04<br>EC 44PM - 01/02 |

*OPTIONAL ON ALL MODELS
STANDARD ON SOME MODELS

### COLOR CODE

| | |
|---|---|
| BLK | BLACK |
| BR | BROWN |
| G | GREENE |
| OR | ORANGE |
| R | RED |
| W | WHITE |
| Y | YELLOW |

# SCHEMATIC DIAGRAM

## 1980 GEMINI - APOLLO - GALAXY

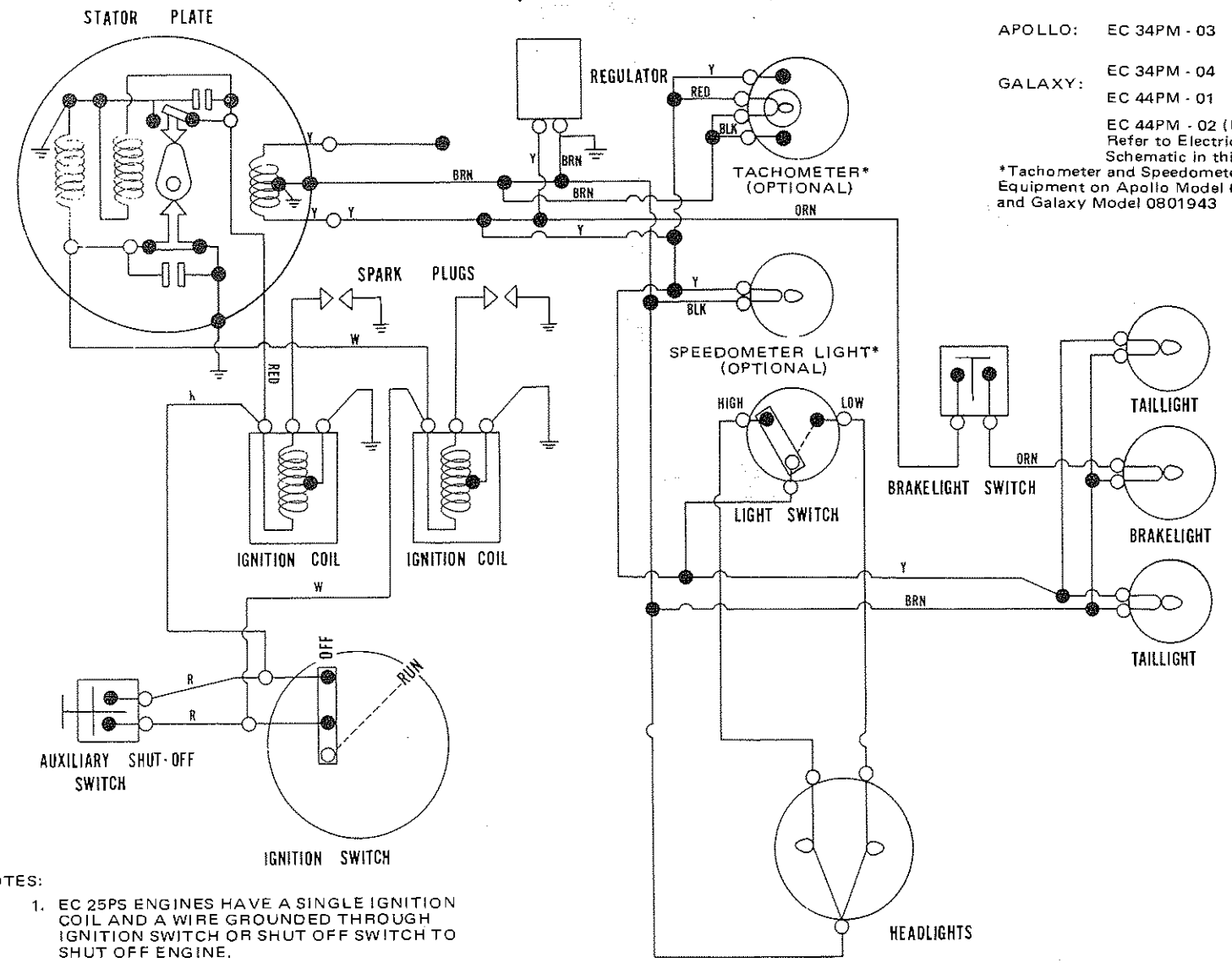
## (75 WATT ALTERNATOR)

GEMINI: EC 25PS
EC 25PM - 01

APOLLO: EC 34PM - 03

GALAXY: EC 34PM - 04
EC 44PM - 01
EC 44PM - 02 (Electric Start - Refer to Electric Start Wiring Schematic in this Section)

*Tachometer and Speedometer Standard Equipment on Apollo Model 0801238 and Galaxy Model 0801943

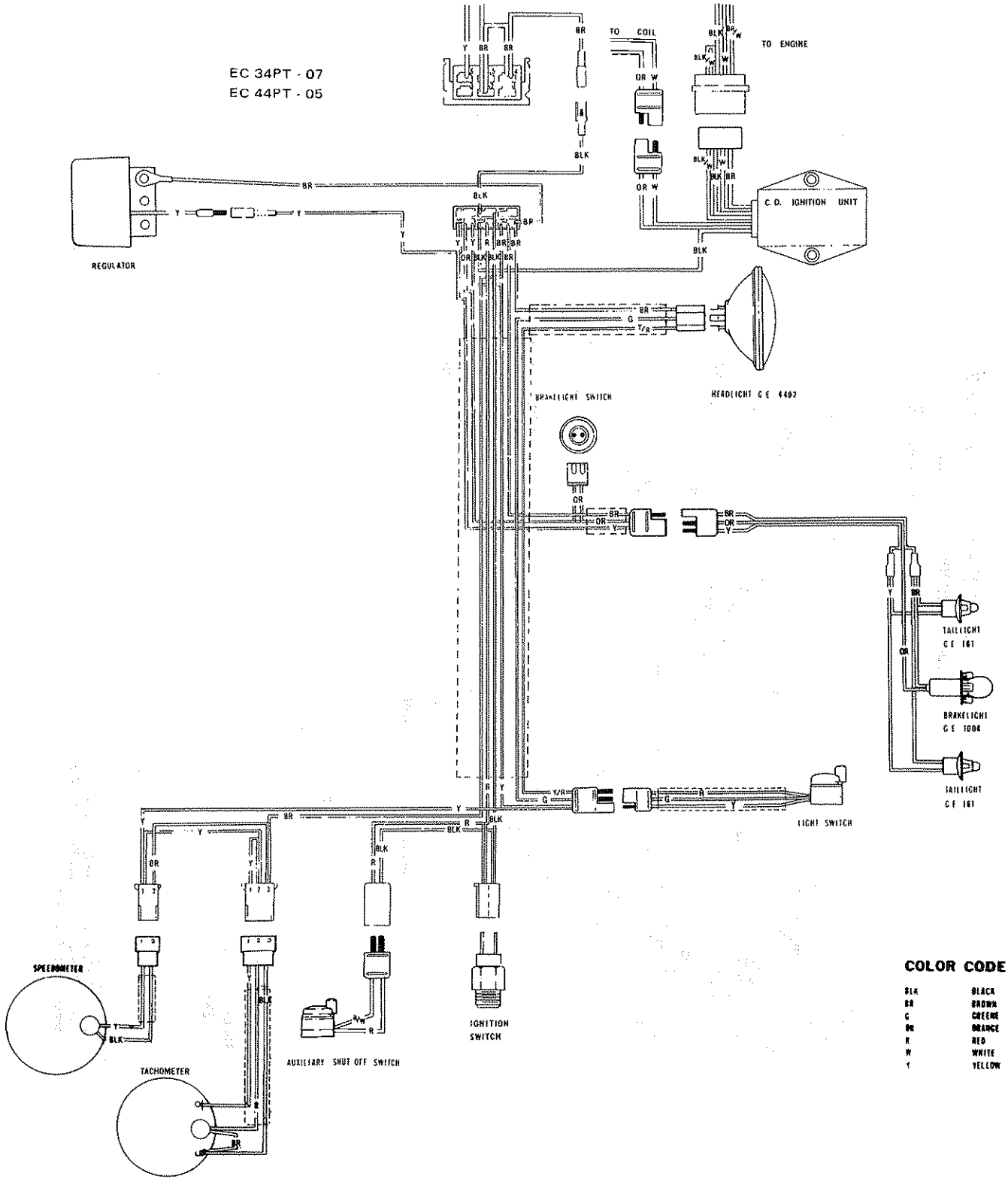



NOTES:

1. EC 25PS ENGINES HAVE A SINGLE IGNITION COIL AND A WIRE GROUNDED THROUGH IGNITION SWITCH OR SHUT OFF SWITCH TO SHUT OFF ENGINE.

## 1980 Wiring Diagram — TX, TX-C

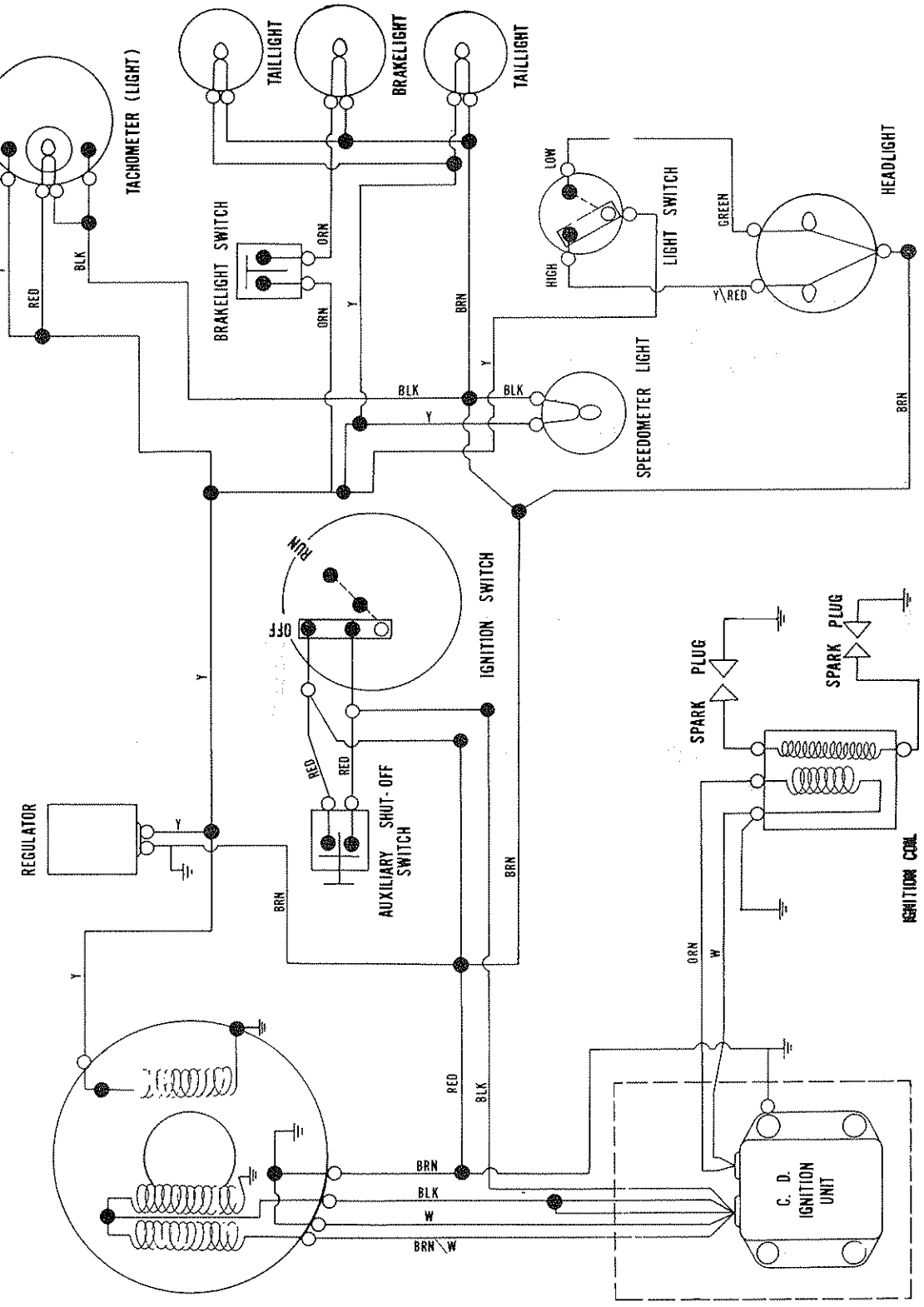
### WIRING DIAGRAM
### 1980 TX - TX-C



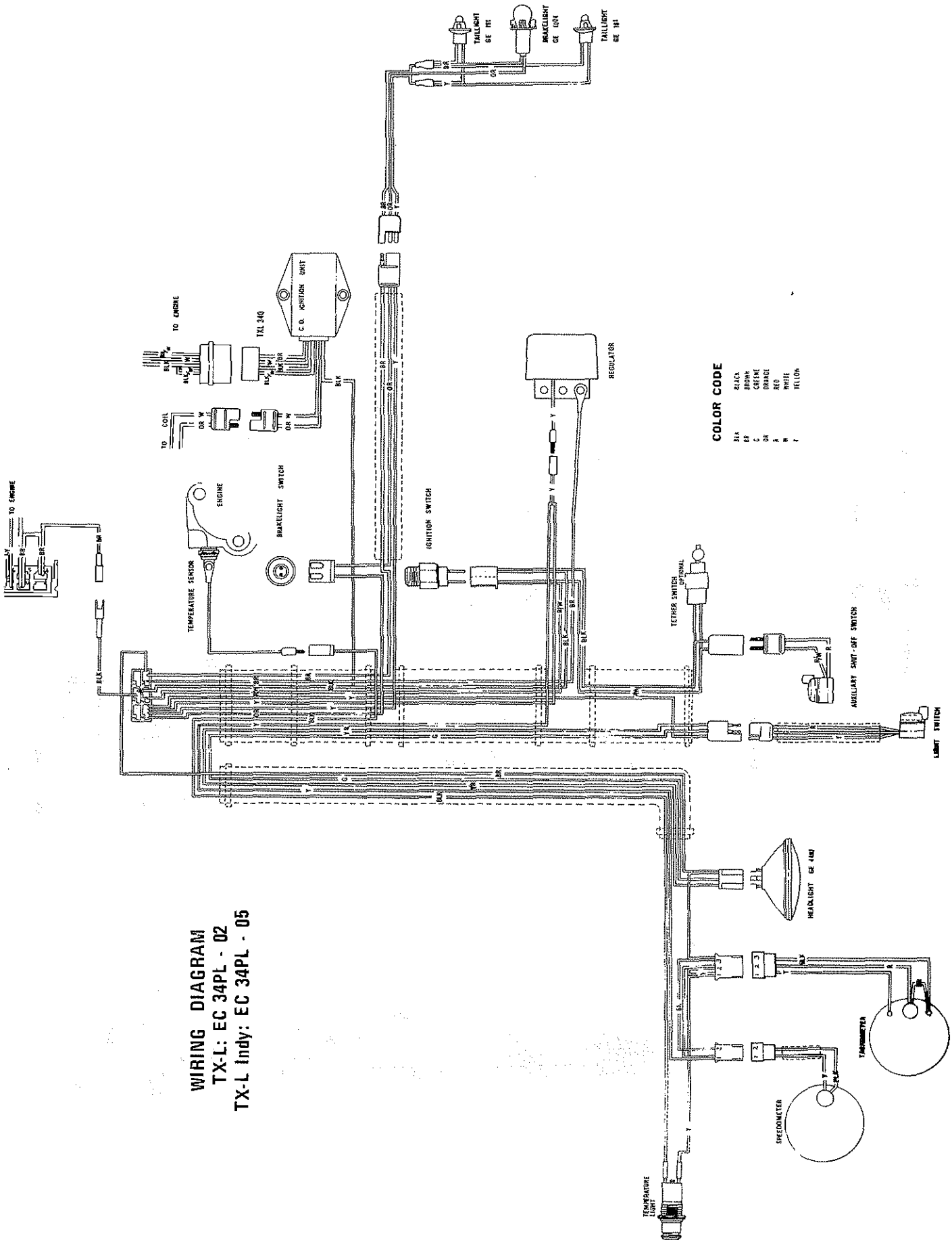
# SCHEMATIC DIAGRAM

1980 TX - TX-C
(90 WATT ALTERNATOR)

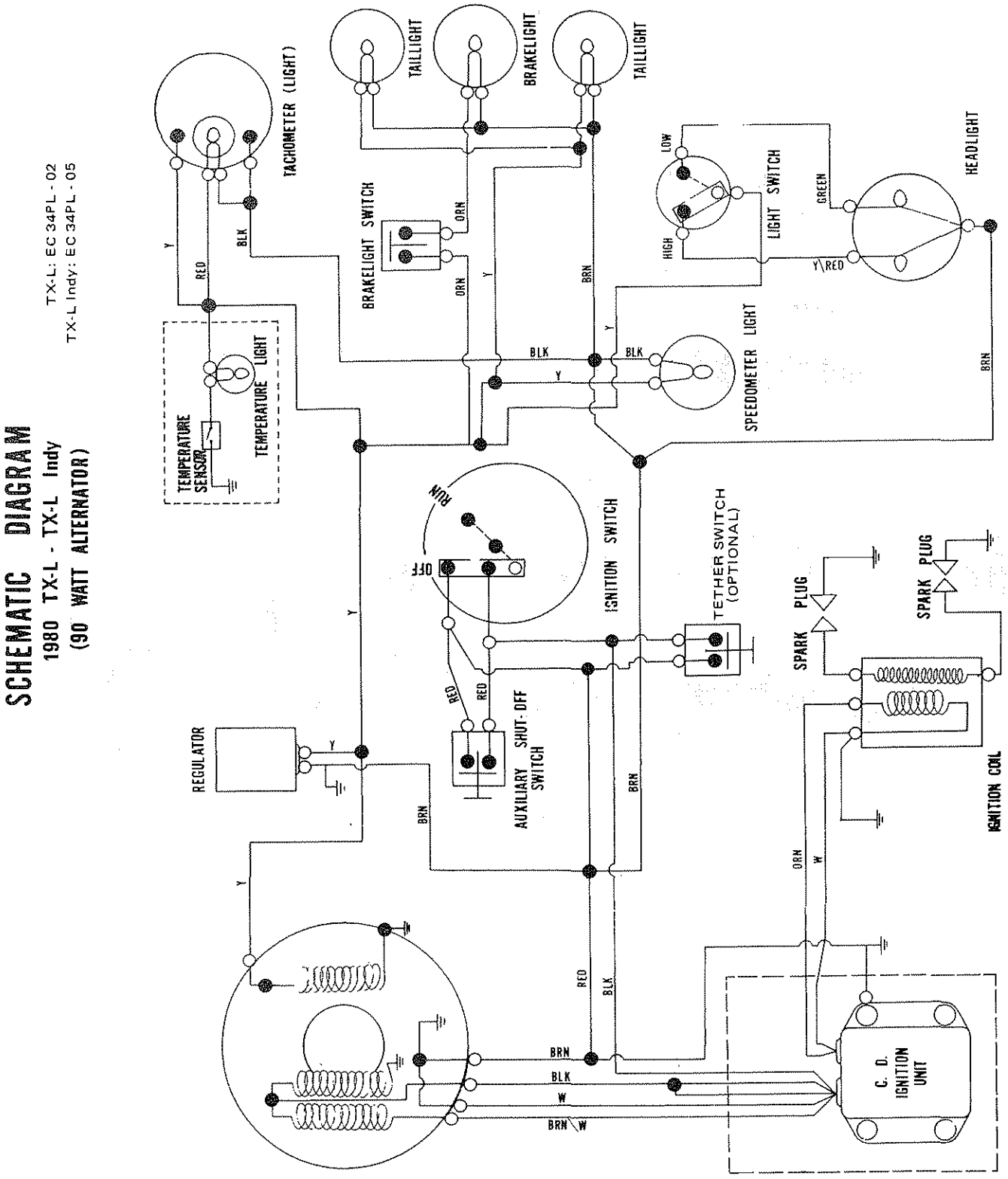
EC 34PT - 07
EC 44PT - 05



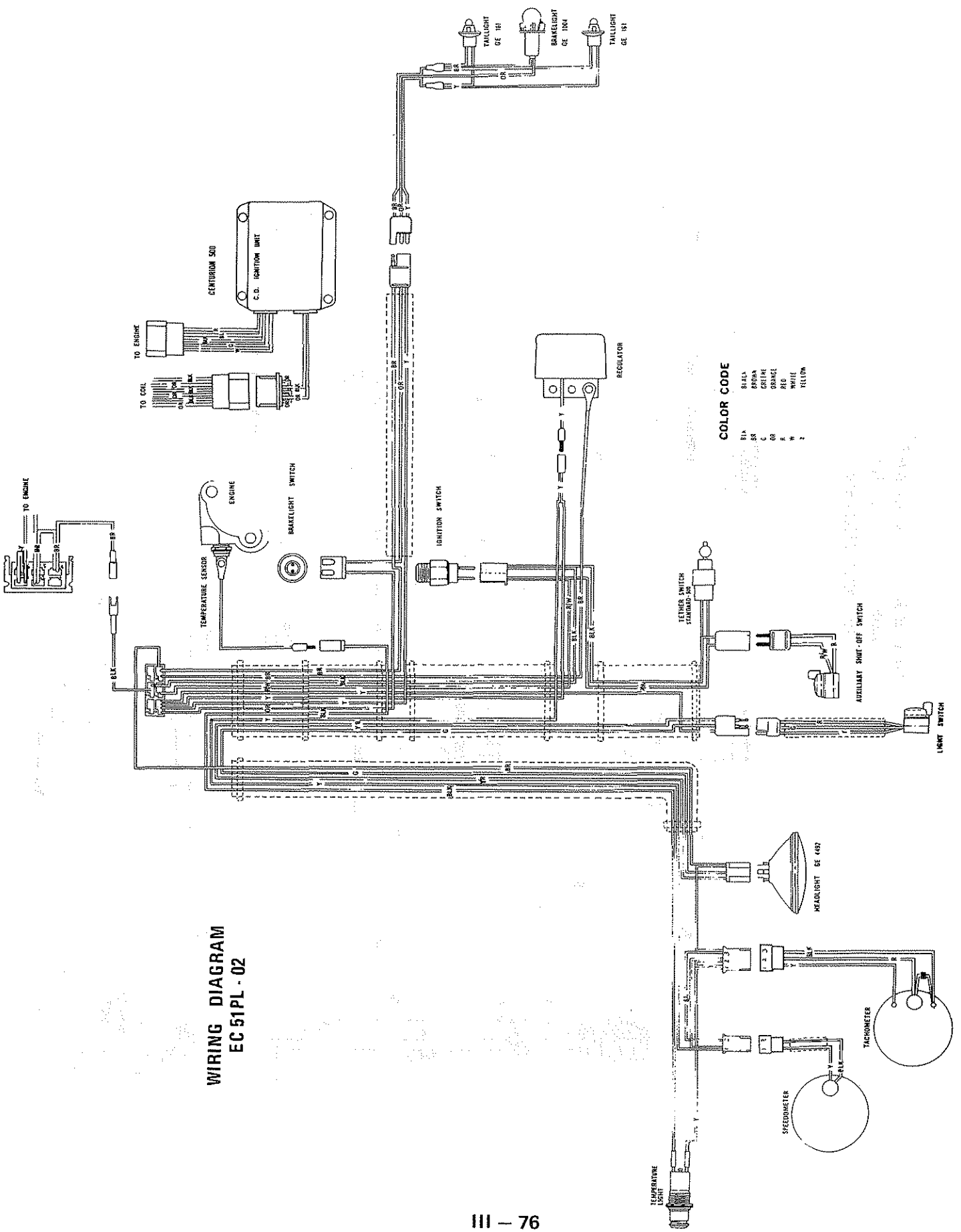
## 1980 Wiring Diagram — TX-L, TX-L Indy



## 1980 Schematic Diagram — TX-L, TX-L Indy



## 1980 Wiring Diagram — Centurion

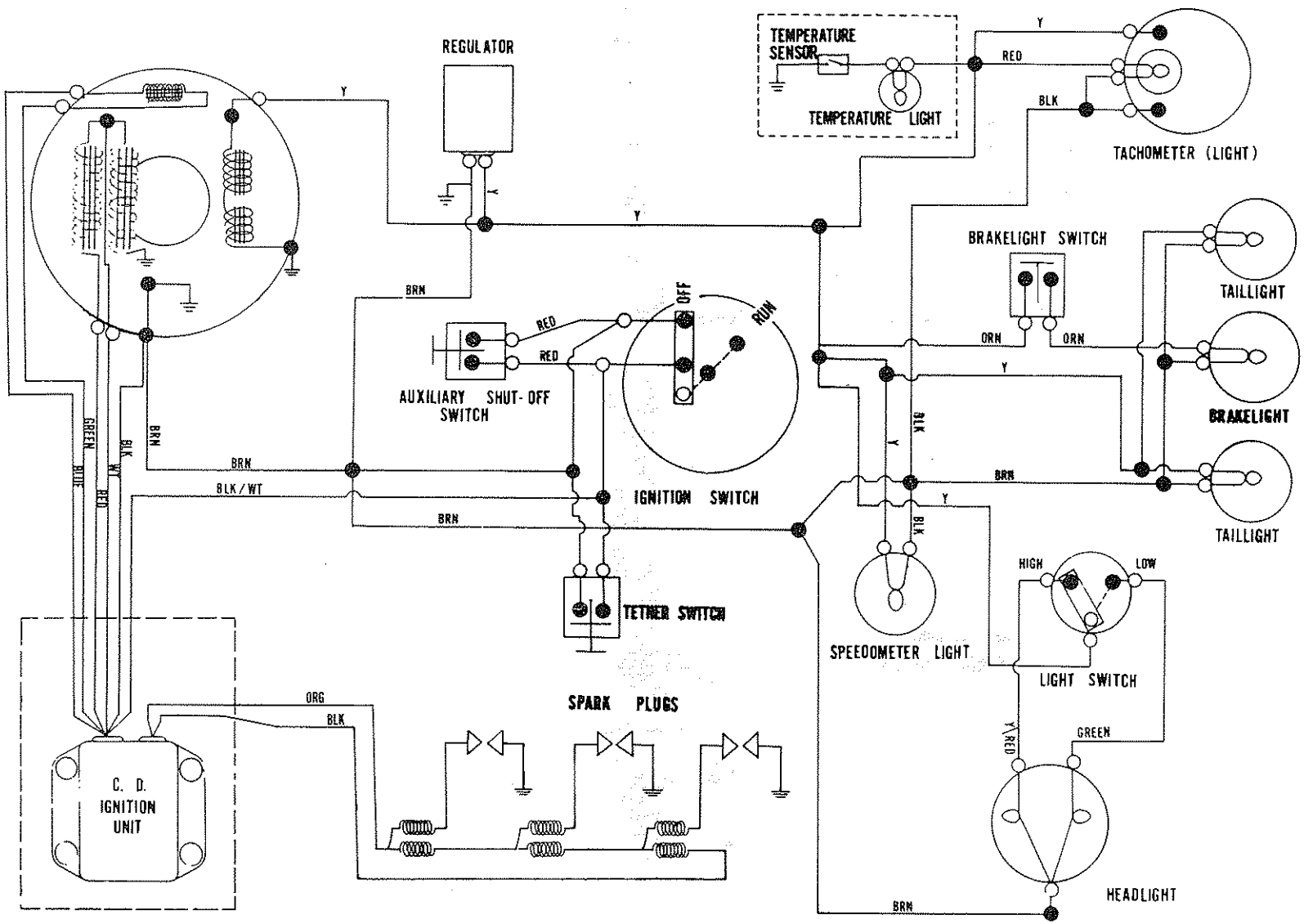


# SCHEMATIC DIAGRAM

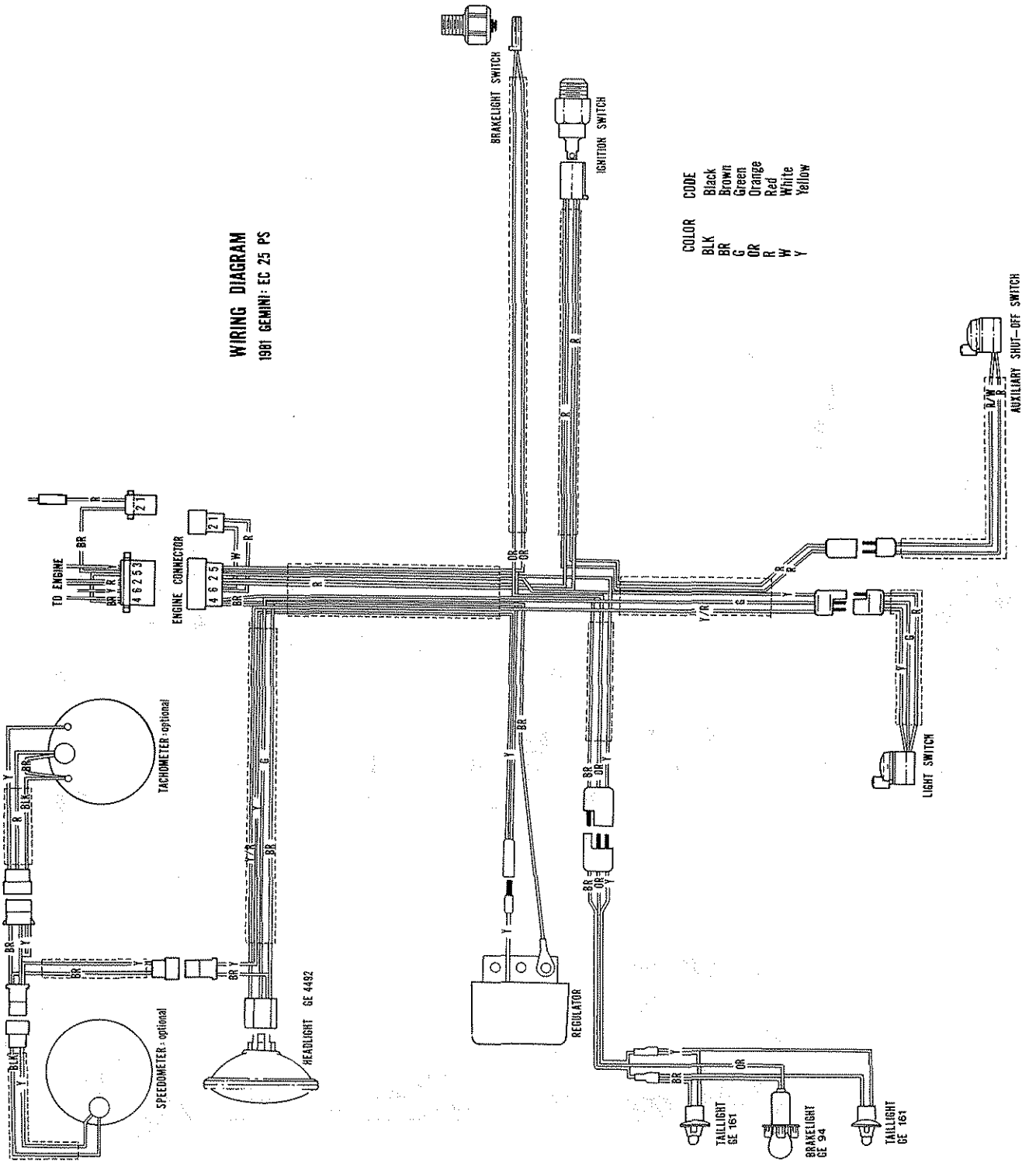
## 1980 CENTURION

## (120 WATT ALTERNATOR)

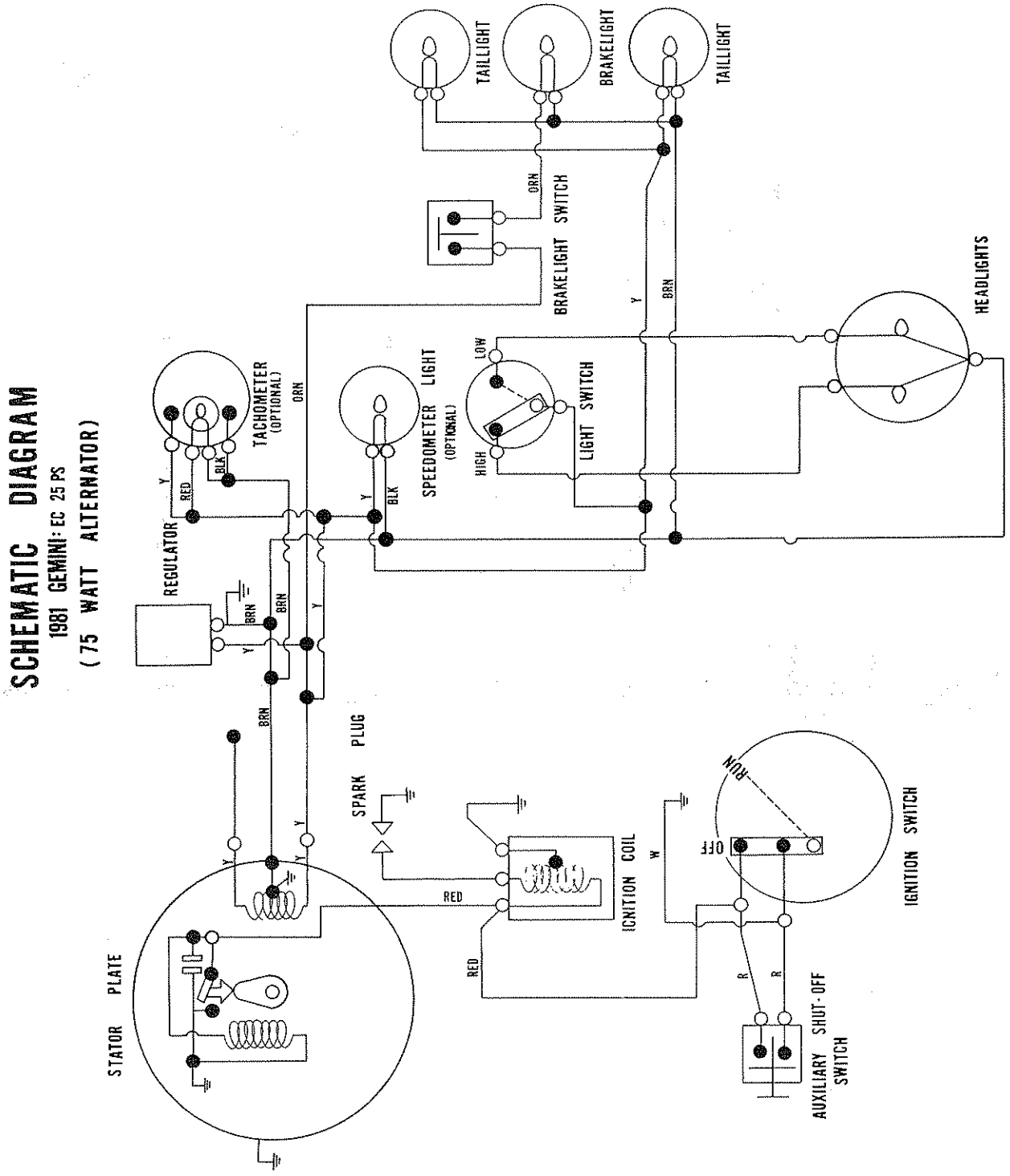
EC 51PL - 02



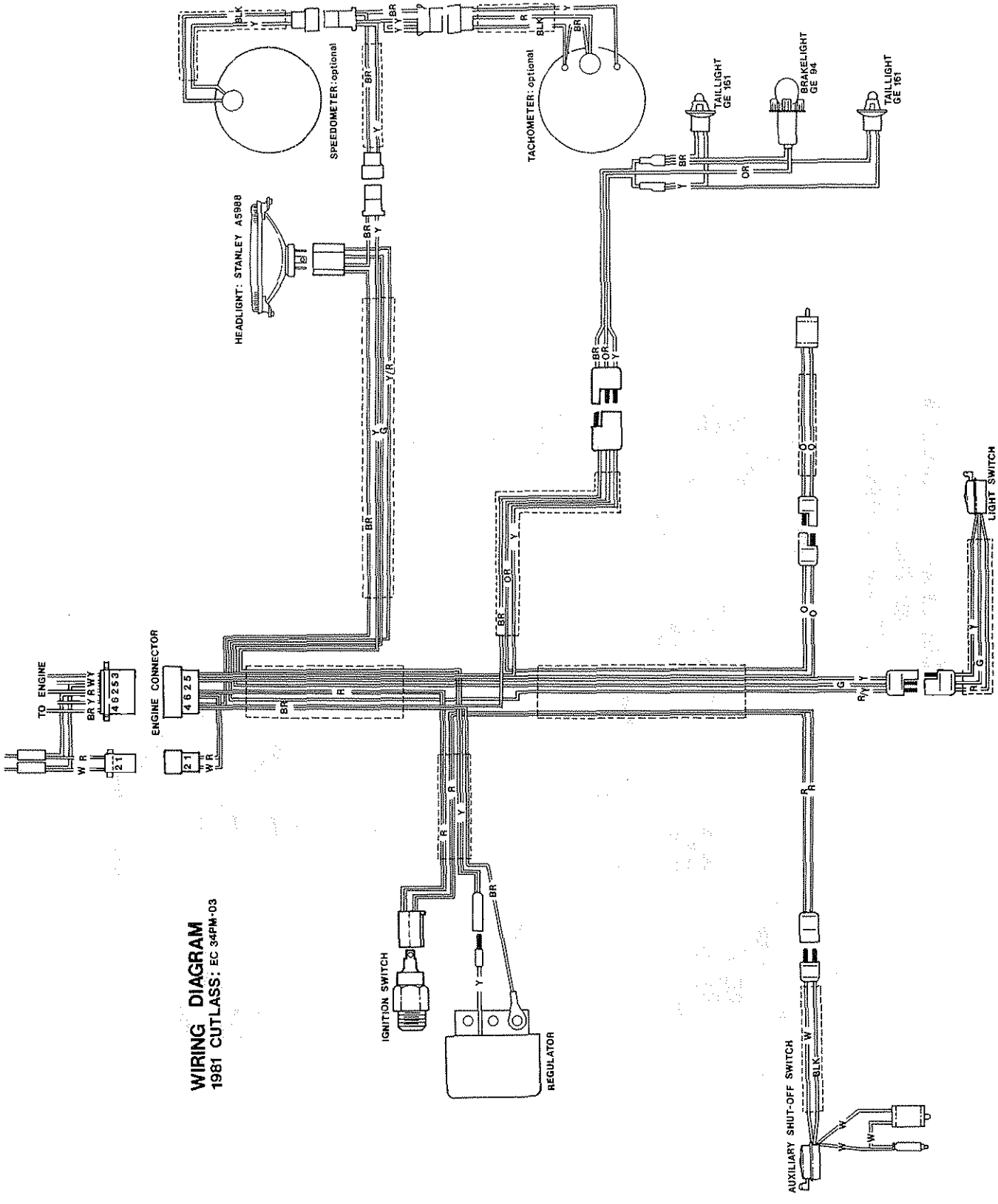
## 1981 Wiring Diagram — Gemini



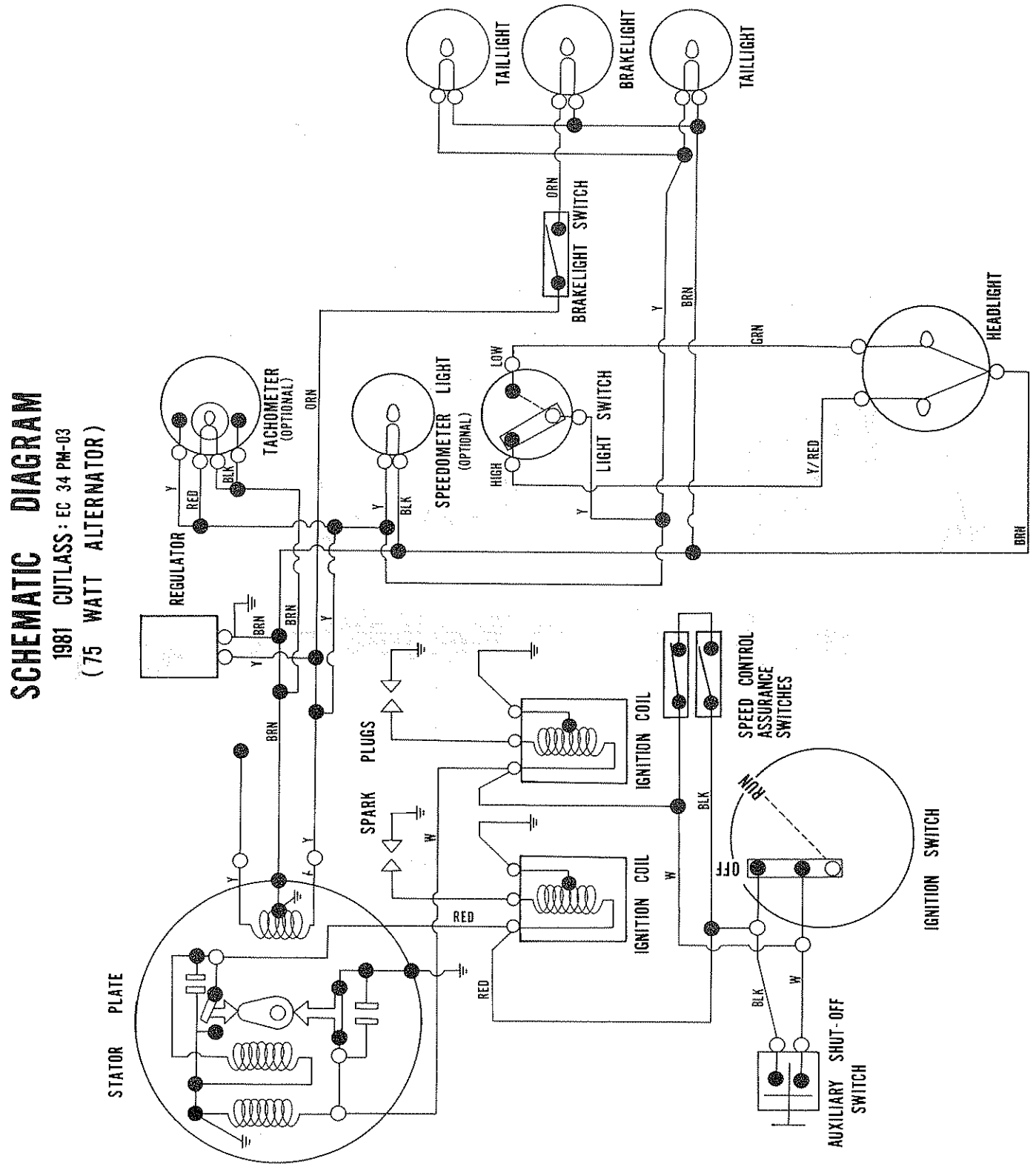
## 1981 Schematic Diagram — Gemini



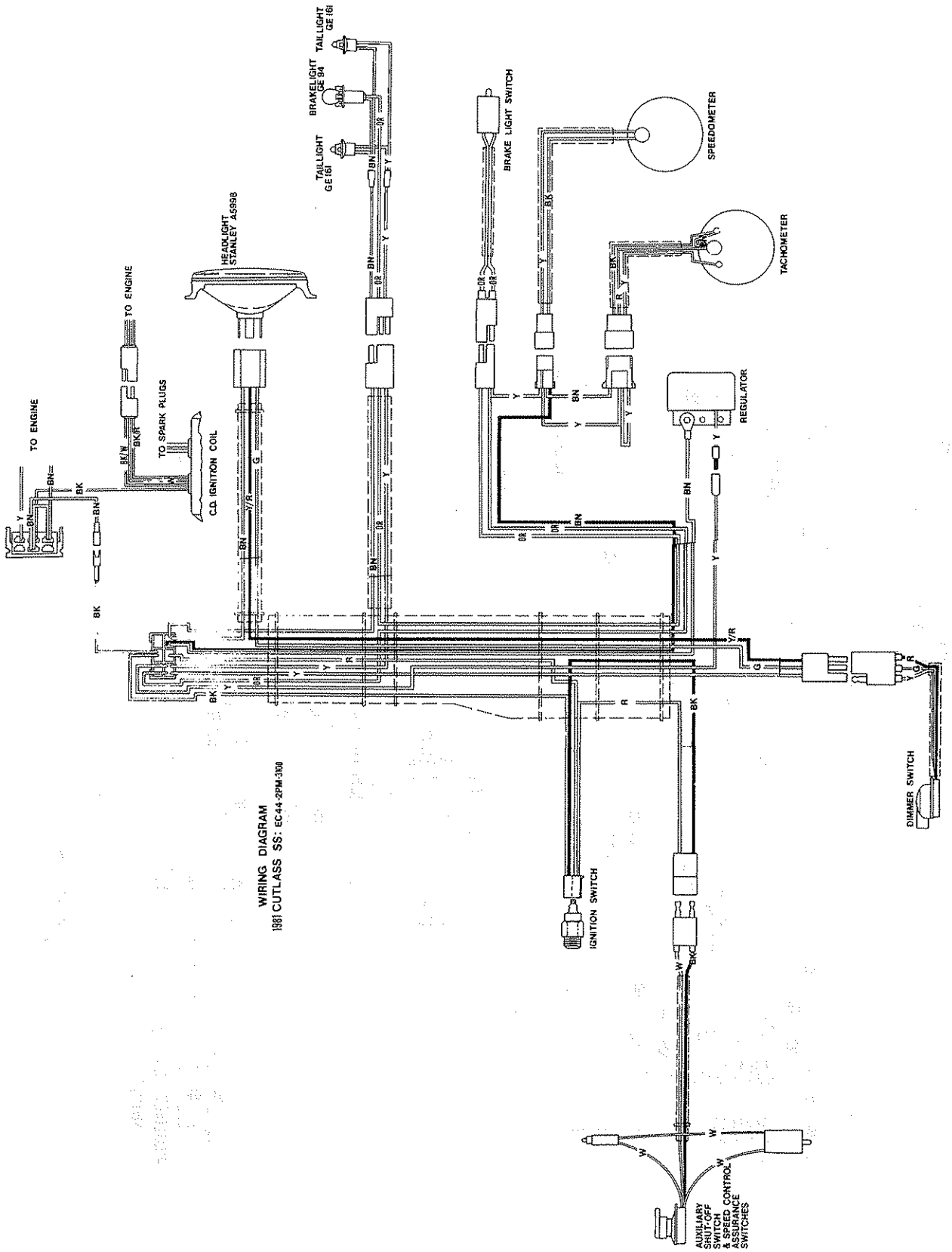
## 1981 Wiring Diagram — Cutlass



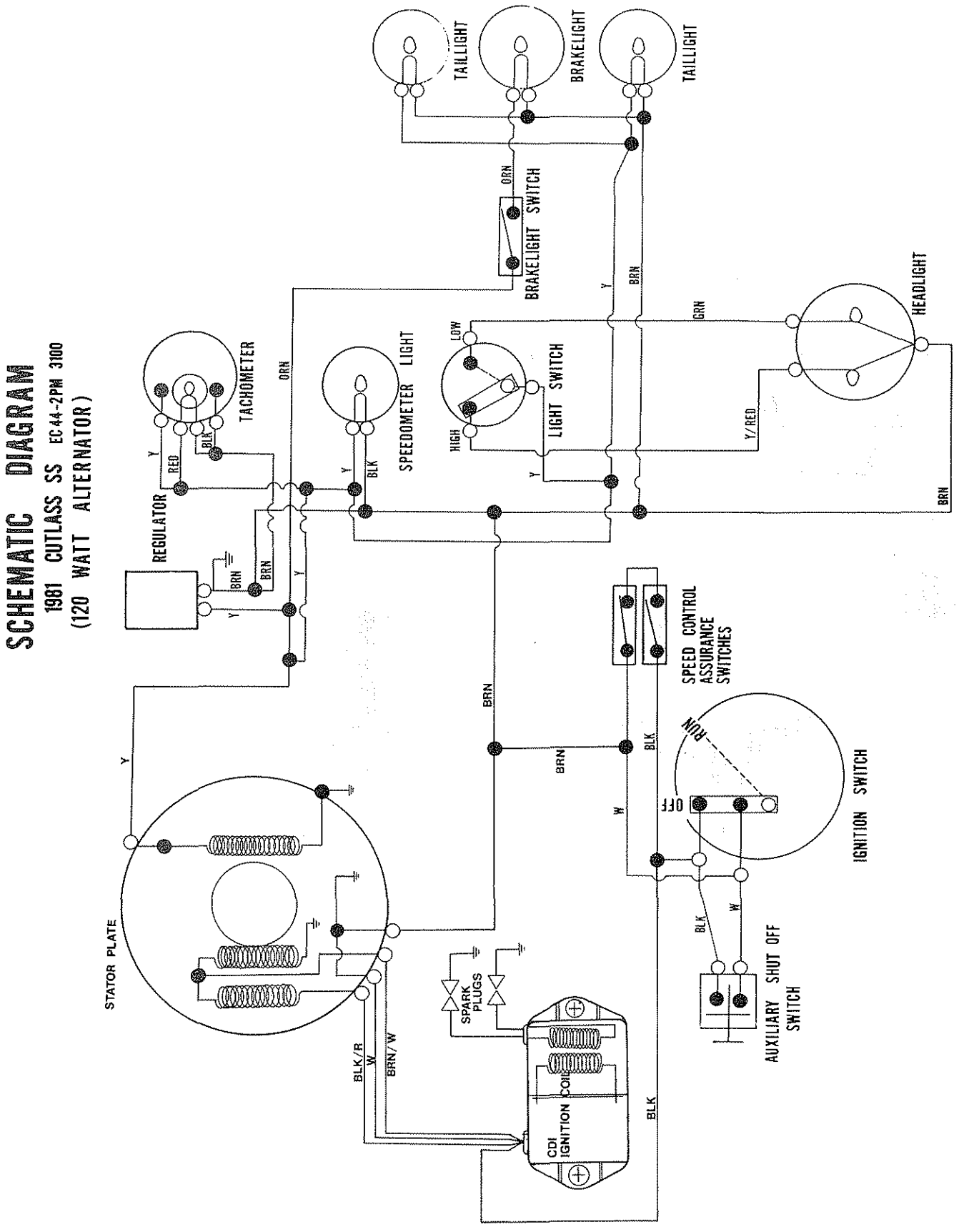
## 1981 Schematic Diagram — Cutlass



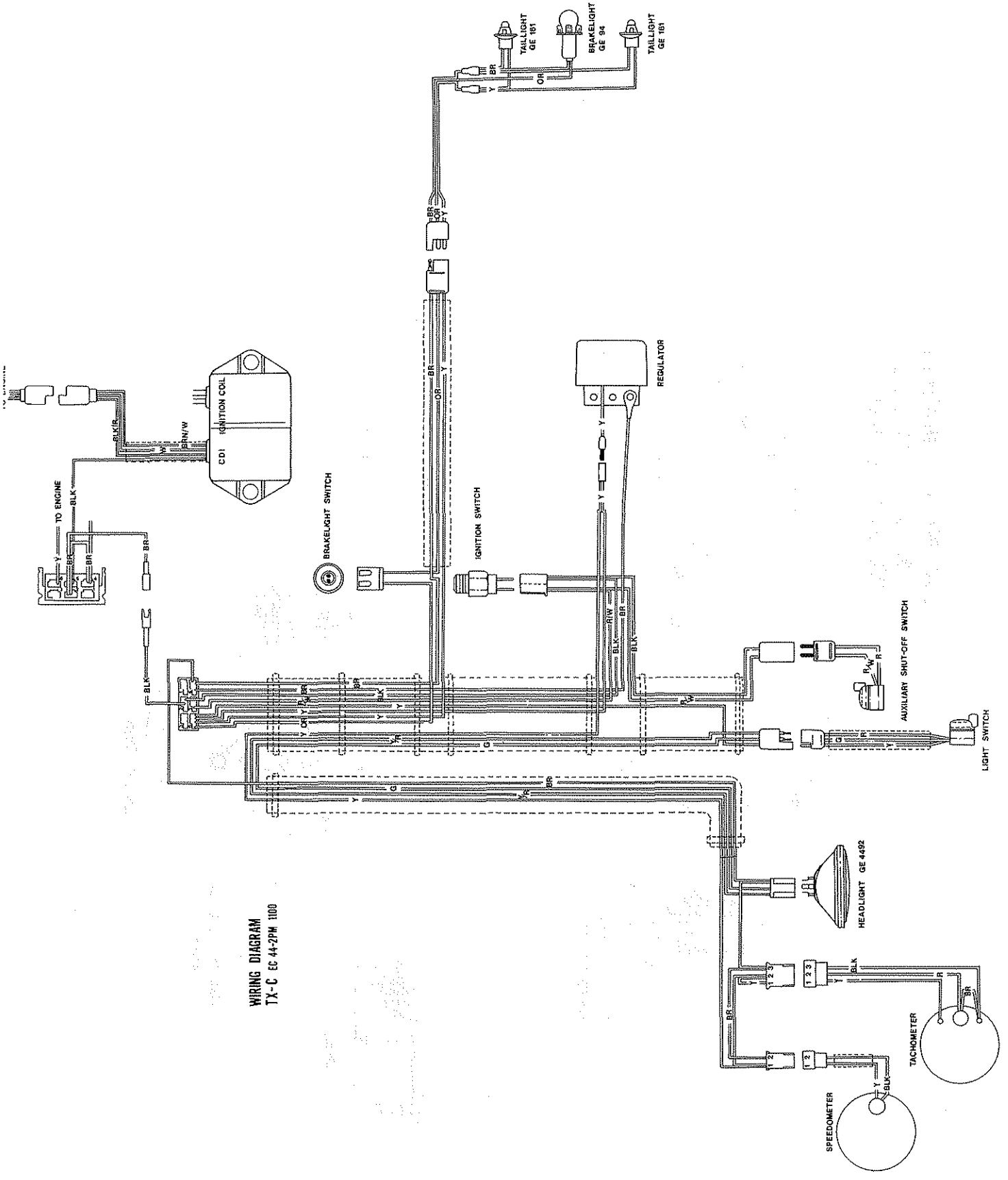
## 1981 Wiring Diagram — Cutlass SS



## 1981 Schematic Diagram — Cutlass SS

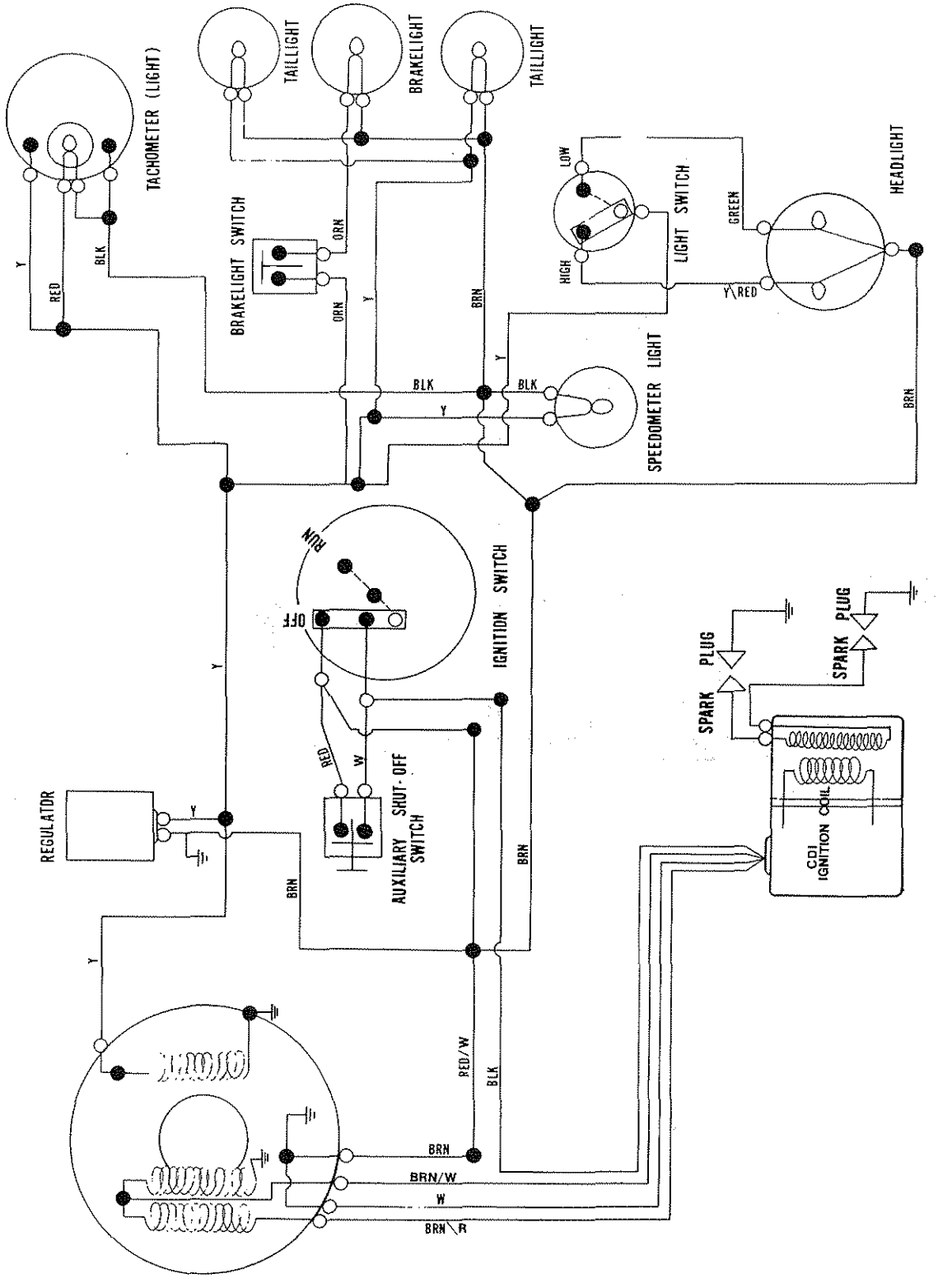


## 1981 Wiring Diagram – TX-C

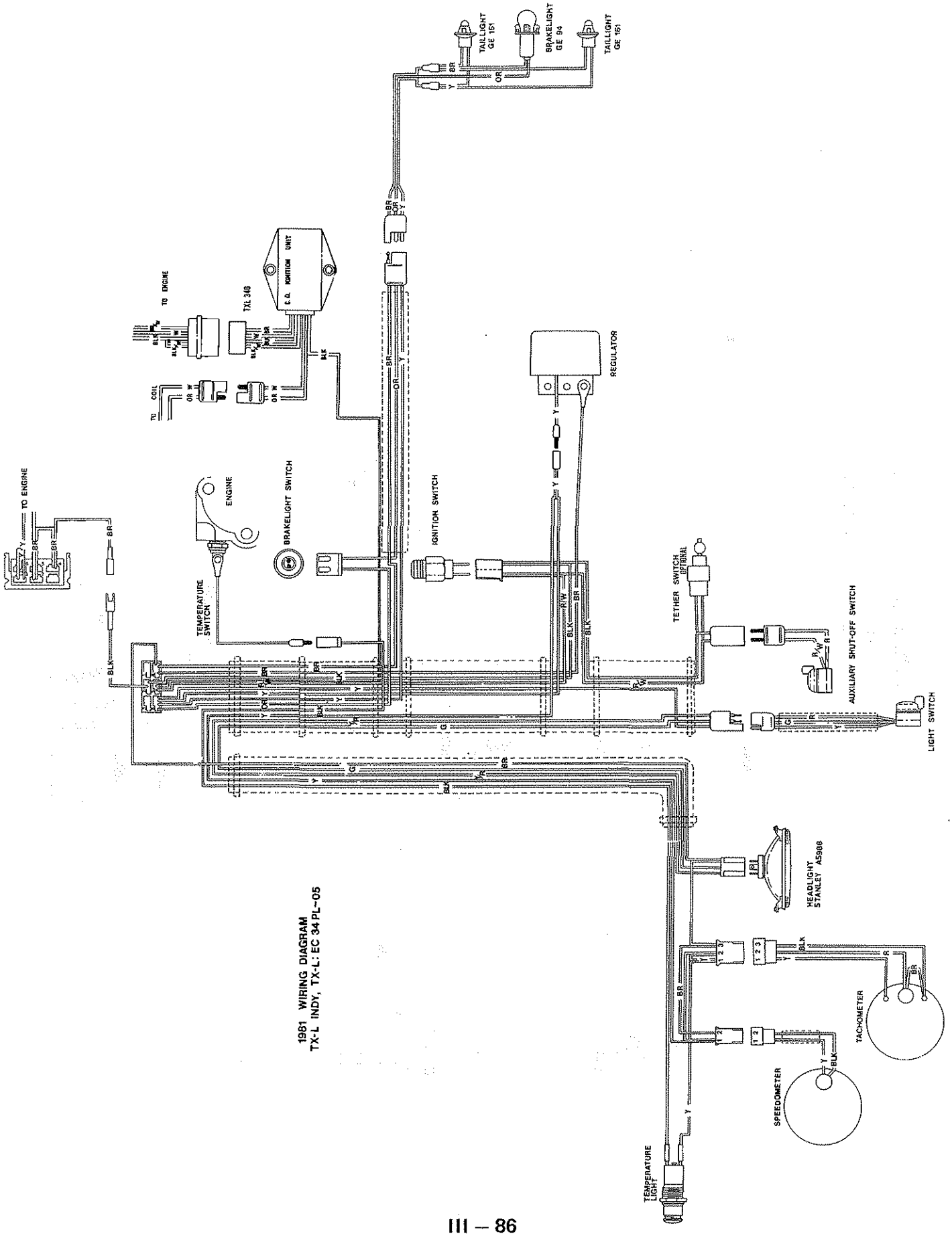


# SCHEMATIC DIAGRAM

1981 TX-C EC 44-2PM 1100
(120 WATT ALTERNATOR)

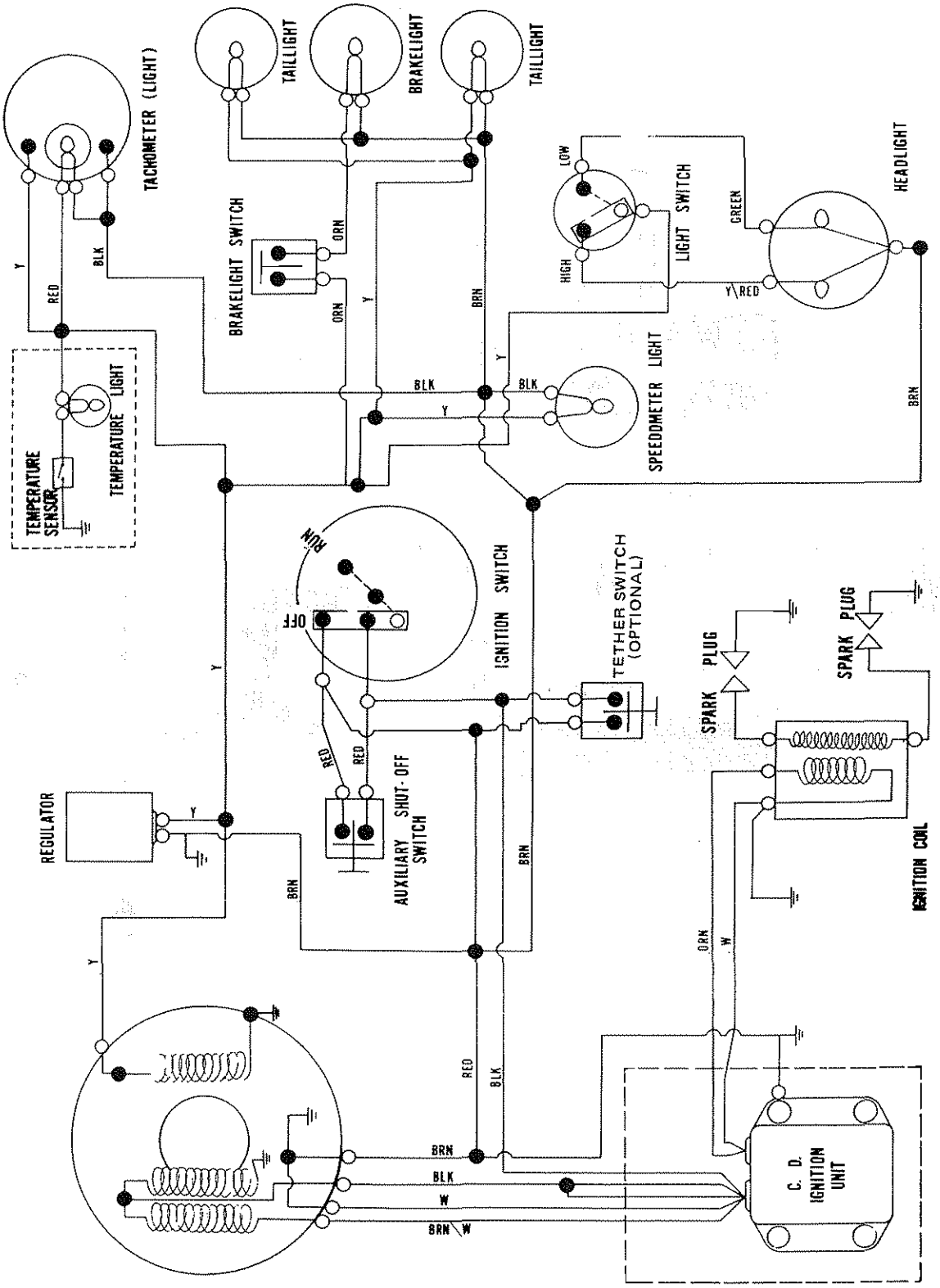


## 1981 Wiring Diagram – TX-L, TX-L Indy

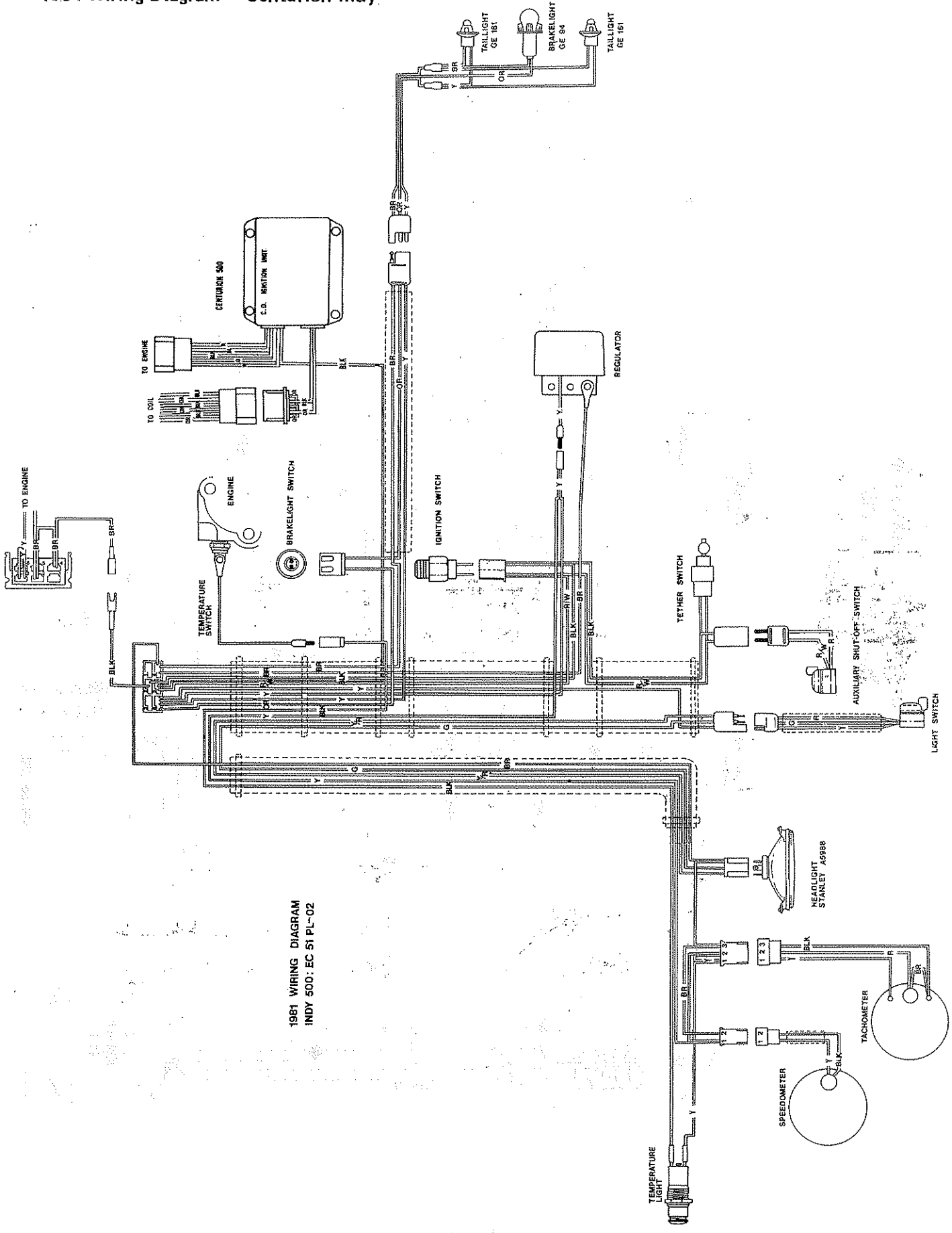


# SCHEMATIC DIAGRAM
## 1981 TX-L; TX-L INDY

TX-L; TX-L INDY: EC 34PL-05



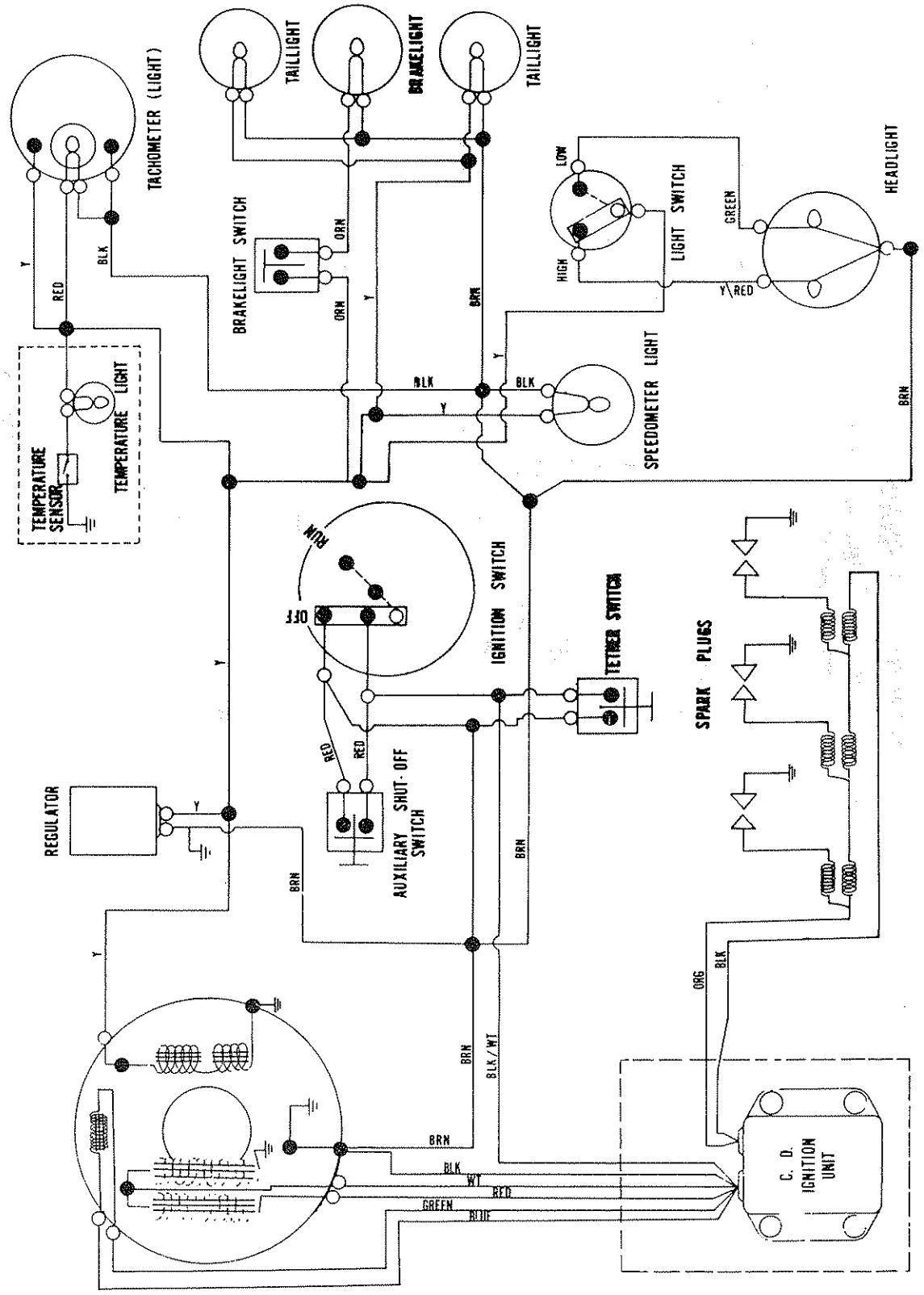
## 1981 Wiring Diagram — Centurion Indy



## 1981 Schematic Diagram — Centurion Indy

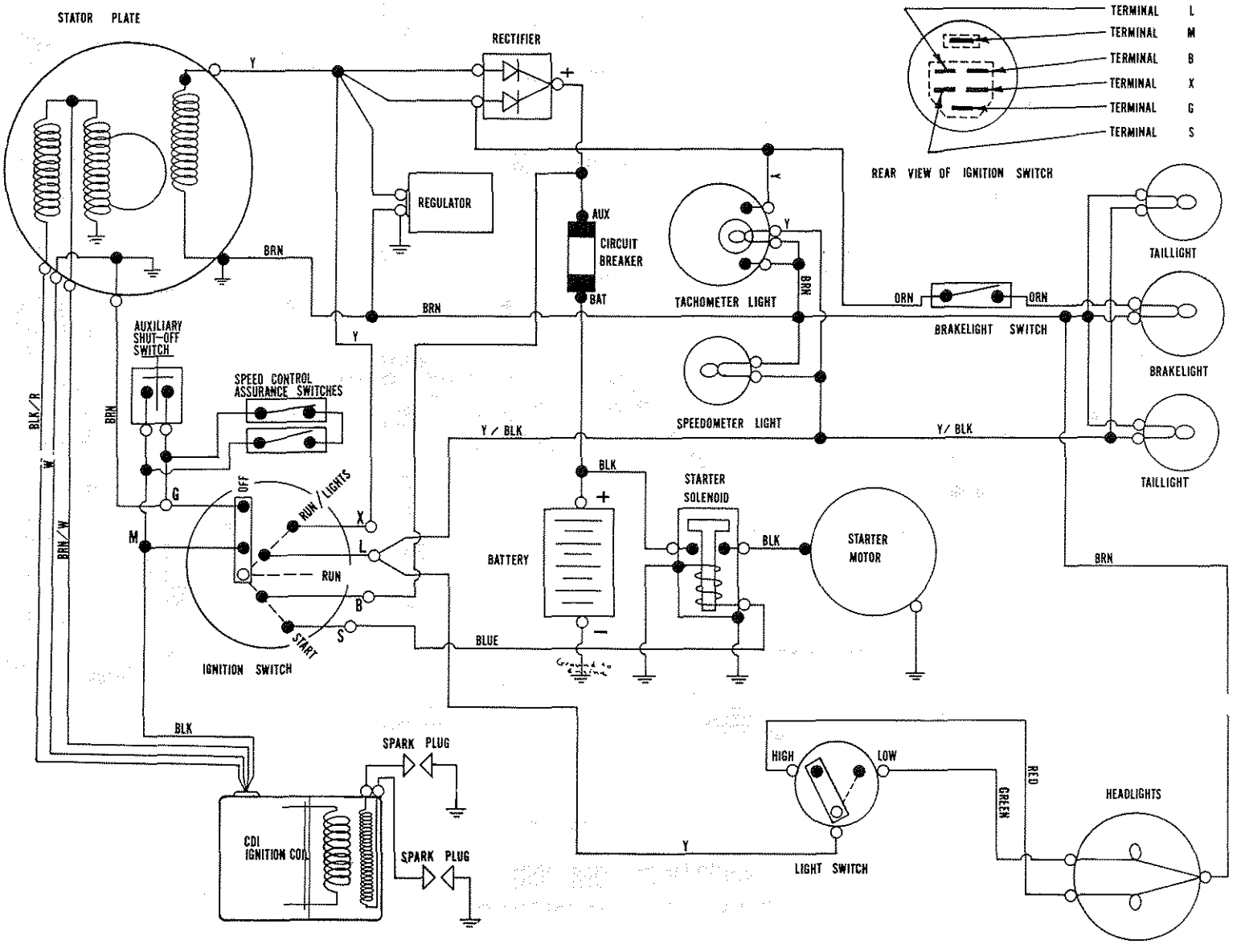
# SCHEMATIC DIAGRAM
## 1981 INDY CENTURION

EC 51PL-02



# SCHEMATIC DIAGRAM

## 1981 CUTLASS SS ELECTRIC START EC 44-2PM 3300
## (120 WATT ALTERNATOR)



# SECTION IV

# ENGINE ELECTRICAL

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1972

| Engine Model | Ignition Type | Alternator Output | Spark Plug Equivalent | Original Timing* | Recommended Timing* |
|---|---|---|---|---|---|
| EC17P | Mag. Pt. | 35 watt | B7ES | .100D | ——— |
| EC25P | Mag. Pt. | 75 watt | B7ES | .012S | ——— |
| EC29P | Mag. Pt. | 75 watt | B7ES | .012S | ——— |
| EC29PF | Mag. Pt. | 75 watt | B7ES | .012S | ——— |
| EC34PS | CDI | 75 watt | N-2 | .130D | .110D |
| EC40P | Mag. Pt. | 75 watt | B7ES | .018S | ——— |
| EC40PF | Mag. Pt. | 75 watt | B7ES | .018S | ——— |
| EC51PS | CDI | 75 watt | N-2 | .130D | ——— |
| EC54P | CDI | 75 watt | B7ES | .140D | .120D |
| EC54PF | CDI | 75 watt | B8ES | .140D | .120D |

1973

| Engine Model | Ignition Type | Alternator Output | Spark Plug Equivalent | Original Timing* | Recommended Timing* |
|---|---|---|---|---|---|
| EC17P | Mag. Pt. | 55 watt | B7ES | .100D | ——— |
| EC25PS | Mag. Pt. | 75 watt | B7ES | .018S | .014S |
| EC29PM | Mag. Pt. | 75 watt | B7ES | .016S | .012S |
| EC29PF | Mag. Pt. | 75 watt | B7ES | .016S | .012S |
| EC29PS | CDI | 140 watt | N-2 | .130D | .120D |
| EC34PF | Mag. Pt. | 75 watt | B7ES | .016S | .012S |
| EC34PS | CDI | 140 watt | N-2 | .130D | .120D |
| EC40PM | Mag. Pt. | 140 watt Custom 75 watt | B7ES | .018S | .016S |
| EC40PS | CDI | 140 watt | N-2 | .140D | .130D |
| EC44PS | CDI | 140 watt | N-2G | .140D | .130D |
| EC51PS | CDI | 140 watt | N-2 | .130D | .120D |
| EC54PM | CDI | 140 watt Custom 75 watt | N-2 | .140D | .130D |

*D — Dynamic timing/5,000 RPM
S — Static timing

## ENGINE ELECTRICAL

### Ignition Data

**1974**

| Engine Model | Ignition Type | Alternator Output | Spark Plug Equivalent | Original Timing* | Recommended Timing* |
|---|---|---|---|---|---|
| EC17PM | Mag. Pt. | 55 watt | B7ES | .100D | — — — |
| EC25PS | Mag. Pt. | 75 watt | B7ES | .018S | .014S |
| EC25PC | Mag. Pt. | 75 watt | N-2 | .016S | .005S |
| EC25PT | CDI | 75 watt | N-2 | .135D | .089D[1] |
| EC25PF | Mag. Pt. | 75 watt | B7ES | .016S | .005S |
| EC34PC | Mag. Pt. | 75 watt | N-2 | .016S | .005S |
| EC34PQ | CDI | 140 watt | N-3 | .110D | — — — |
| EC34PS | CDI | 140 watt | N-2 | .135D | .120D |
| EC40PM | Mag. Pt. | 140 watt | B7ES | .018S | .016S |
| EC44PQ | CDI | 140 watt | N-3 | .110D | — — — |
| EC44PT | CDI | 140 watt | N-2G | .140D | .095D[2] |
| EC51PT | CDI | 140 watt | N-2G | .135D | .095D[2] |
| EC54PM | CDI | 140 watt | B8ES | .140D | .130D |

**1975**

| Engine Model | Ignition Type | Alternator Output | Spark Plug Equivalent | Original Timing* | Recommended Timing* |
|---|---|---|---|---|---|
| EC17PM | Mag. Pt. | 55 watt | B7ES | .100D | — — — |
| EC25PS | Mag. Pt. | 75 watt | B7ES | .018S | .016S |
| EC25PC | Mag. Pt. | 75 watt | N-2 | .012S | .005S |
| EC25PT | CDI | 75 watt | N-2 | .089D | — — — |
| EC34PC | Mag. Pt. | 75 watt | N-2 | .012S | .005S[3] |
| EC34PQ | CDI | 140 watt | B7ES | .089D | — — — |
| EC34PT | CDI | 75 watt | N-2 | .089D | — — — |
| EC44PQ | CDI | 140 watt | B7ES | .089D | — — — |
| EC44PT | CDI | 75 watt | N-57 | .089D | — — — |
| EC51PT | CDI | 140 watt | N-2 | .089D | — — — |

*D — Dynamic timing/5,000 RPM
S — Static timing

1 — Reference Service Bulletin No. 84
2 — Reference Information Bulletin No. 29
3 — Reference Service Bulletin No. 101

## Ignition Data

### 1976

| Engine Model | Ignition Type | Alternator Output | Spark Plug Equivalent | Original Timing* | Recommended Timing* |
|---|---|---|---|---|---|
| EC17PM | Mag. Pt. | 55 watt | B7ES | .113D | ——— |
| EC25PS | Mag. Pt. | 75 watt | B7ES | .014S | ——— |
| EC25PC | Mag. Pt. | 75 watt | B8ES | .005S | ——— |
| EC25PT–06 | CDI | 75 watt | N-2 | .082D | .053D |
| EC25PT–05 | CDI | 75 watt | N-1 or N-57G | .082D | .053D |
| EC34PC | Mag. Pt. | 75 watt | N-3 | .005S | ——— |
| EC34PQ | CDI | 140 watt | B7ES | .083D | ——— |
| EC34PT–05 | CDI | 75 watt | N-2 | .082D | .053D |
| EC34PT–06 | CDI | 75 watt | B10EV | .082D | .053D |
| EC44PQ | CDI | 140 watt | B7ES | .083D | ——— |
| EC44PT–05 | CDI | 75 watt | B8ES | .083D | .057D |

### 1977

| Engine Model | Ignition Type | Alternator Output | Spark Plug Equivalent | Original Timing* | Recommended Timing* |
|---|---|---|---|---|---|
| EC25PS | Mag. Pt. | 75 watt | N-3 | .014S | ——— |
| EC25PC | Mag. Pt. | 75 watt | N-2 | .005S | ——— |
| EC25PM–01 | Mag. Pt. | 75 watt | N-2 | .005S | ——— |
| EC25PT–07 | CDI | 75 watt | B9ES | .042-.067D | .053D |
| EC34PM–03 | Mag. Pt. | 75 watt | N-3 | .005S | ——— |
| EC34PQ | Mag. Pt.<br>CDI | 75 watt<br>140 watt | N-3 | .006S<br>.088D | ———<br>——— |
| EC34PT–05 | CDI | 75 watt | B9ES | .042-.067D | .053D |
| EC34PL–01 | CDI | 75 watt | B9ES | .042-.067D | .053D[4] |
| EC44PQ | Mag. Pt.<br>CDI | 75 watt<br>140 watt | N-3 | .006S<br>.088D | ———<br>——— |
| EC44PT–05 | CDI | 75 watt | B9ES | .050-.072D | .057D |
| EC44PT–06 | CDI | 75 watt | B9ES | .050-.072D | .057D |

*D – Dynamic timing/5,000 RPM
S – Static timing

4 – Reference Racing Bulletin No. 77-2

## ENGINE ELECTRICAL

### Ignition Data

| Machine Model | Engine Model | Ignition Type | Alternator Output | Spark Plug RFI/NGK |
|---|---|---|---|---|
| Colt | EC25PS | Mag. Pt. | 75 watt | BR8ES |
| Colt | EC25PC | Mag. Pt. | 75 watt | BR9ES |
| S/S 340 | EC34PM–03/04N | Mag. Pt. | 75 watt | BR8ES |
| Cobra | EC34PM–04 | Mag. Pt. | 75 watt | BR9ES |
| Cobra | EC44PM–01 | Mag. Pt. | 75 watt | BR9ES |
| TX | EC25PT–07 | CDI | 75 watt | BR9ES |
| TX | EC34PT–05 | CDI | 75 watt | BR9ES |
| TX | EC44PT–05 | CDI | 90 watt | BR9ES |
| TX-L | EC34PL–02 | CDI | 75 watt | BR9ES |

1978

| Engine Model | Point Gap | | Ignition Timing | | | |
|---|---|---|---|---|---|---|
| | | | Static | | Running | |
| | MM | Inches | MM BTDC | Inches BTDC | MM BTDC | Inches BTDC |
| EC25PS | .35 | .014 | .360 | .014 | 2.96 | .116 |
| EC25PC | .35 | .014 | .048 | .002 | 1.69 | .067 |
| EC34PM–03/04N | .35 | .014 | .048 | .002 | 1.69 | .067 |
| EC34PM–04 | .35 | .014 | .048 | .002 | 1.69 | .067 |
| EC44PM–01 | .35 | .014 | .051 | .002 | 1.83 | .072 |
| EC25PT–07 | —— | —— | —— | —— | 4.31*1 | .169*1 |
| EC34PT–05 | —— | —— | —— | —— | 4.31*1 | .169*1 |
| EC44PT–05 | —— | —— | —— | —— | 4.19*2 | .165*2 |
| EC34PL–02 | —— | —— | —— | —— | 5.05*3 | .198*3 |

*Timing specified at 3,000 RPM

1 – EC25PT–07/EC34PT–05
Acceptable Variance
4.02mm – 4.59mm BTDC
.158 in. – .180 in. BTDC
28° –30° BTDC

2 – EC44PT–05
Acceptable Variance
3.76mm – 4.65mm BTDC
.148 in. – .183 in. BTDC
26° –29° BTDC

3 – EC34PL–02
Acceptable Variance
4.60mm – 5.52mm BTDC
.181 in. – .217 in. BTDC
30° –33° BTDC

| Machine Model | Engine Model | Ignition Type | Alternator Output | Spark Plug | | Plug Gap Inches |
|---|---|---|---|---|---|---|
| | | | | RFI NGK | Champion | |
| Gemini | EC25PS | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| Gemini | EC25PM–01 | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| Apollo | EC34PM–03 | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| Cobra | EC34PM–04 | Mag. Pt. | 75 watt | BR9ES | N-2 | .020 |
| Cobra | EC44PM–01 | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| TX | EC25PT–07 | CDI | 75 watt | BR9ES | N-2 | .020 |
| TX | EC34PT–05 | CDI | 90 watt | BR9ES | N-2 | .020 |
| TX | EC44PT–05 | CDI | 90 watt | BR9ES | N-2 | .020 |
| TX-L | EC34PL–02 | CDI | 90 watt | BR9ES | N-2 | .020 |
| Centurion | EC51PL–01 | CDI | 120 watt | BR9ES | N-2 | .020 |

1979

| Engine Model | Point Gap Inches | Ignition Timing | | | | | |
|---|---|---|---|---|---|---|---|
| | | Static | | | Running | | |
| | | MM BTDC | Inches BTDC | Degrees BTDC | MM BTDC | Inches BTDC | Degrees BTDC |
| EC25PS | .014 | .3646 | .014 | 8 ± 3 | 2.958 | .116 | 23 @ 2,000 |
| EC25PM–01 | .014 | .0476 | .002 | 3 ± 3 | 1.690 | .067 | 18 @ 2,000 |
| EC34PM–03 | .014 | .0476 | .002 | 3 ± 3 | 1.690 | .067 | 18 @ 2,000 |
| EC34PM–04 | .014 | .0476 | .002 | 3 ± 3 | 1.690 | .067 | 18 @ 2,000 |
| EC44PM–01 | .014 | .0513 | .002 | 3 ± 3 | 1.826 | .072 | 18 @ 2,000 |
| EC25PT–07 | ——— | ——— | ——— | ——— | 4.305*1 | .169*1 | 29 @ 3,000*1 |
| EC34PT–05 | ——— | ——— | ——— | ——— | 4.305*1 | .169*1 | 29 @ 3,000*1 |
| EC44PT–05 | ——— | ——— | ——— | ——— | 4.192*2 | .164*2 | 27.5 @ 3,000*2 |
| EC34PL–02 | ——— | ——— | ——— | ——— | 5.050*3 | .198*3 | 31.5 @ 3,000*3 |
| EC51PL–01 | ——— | ——— | ——— | ——— | 3.748*4 | .147*4 | 27 @ 3,000*4 |

*Timing specified at 3,000 RPM

1 – EC25PT–07/EC34PT–05
Acceptable Variance
4.02mm – 4.59mm BTDC
.158 in. – .180 in. BTDC
28° –30° BTDC

2 – EC44PT–05
Acceptable Variance
3.76mm – 4.65mm BTDC
.148 in. – .183 in. BTDC
26° –29° BTDC

3 – EC34PL–02
Acceptable Variance
4.60mm – 5.52mm BTDC
.181 in. – .217 in. BTDC
30° –33° BTDC

4 – EC51PL–01
Acceptable Variance
3.48mm – 4.02mm BTDC
.137 in. – .158 in. BTDC
26° –28° BTDC

RFI spark plug cap resistance: 3,700–6,300 ohms

## ENGINE ELECTRICAL

### Ignition Data

1980

| Machine Model | Engine Model | Ignition Type | Alternator Output | Spark Plug | | Plug Gap Inches |
|---|---|---|---|---|---|---|
| | | | | RFI NGK | Champion | |
| Gemini | EC25PS | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| Gemini | EC25PM–01 | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| Apollo | EC34PM–03 | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| Galaxy | EC34PM–04 | Mag. Pt. | 75 watt | BR9ES | N-2 | .020 |
| Galaxy | EC44PM–01/02 | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| TX/TX-C | EC34PT–07 | CDI | 90 watt | BR9ES | N-2 | .020 |
| TX | EC44PT–05 | CDI | 90 watt | BR9ES | N-2 | .020 |
| TX-L/TX-L Indy | EC34PL–02/05 | CDI | 90 watt | BR9ES | N-2 | .020 |
| Centurion | EC51PL–02 | CDI | 120 watt | BR9ES | N-2 | .020 |

| Engine Model | Point Gap Inches | Ignition Timing | | | | | |
|---|---|---|---|---|---|---|---|
| | | Static | | | Running | | |
| | | MM BTDC | Inches BTDC | Degrees BTDC | MM BTDC | Inches BTDC | Degrees BTDC |
| EC25PS | .014 | .3646 | .014 | 8 ± 3 | 2.958 | .116 | 23 @ 2,000 |
| EC25PM–01 | .014 | .0476 | .002 | 3 ± 3 | 1.690 | .067 | 18 @ 2,000 |
| EC34PM–03 | .014 | .0476 | .002 | 3 ± 3 | 1.690 | .067 | 18 @ 2,000 |
| EC34PM–04 | .014 | .0476 | .002 | 3 ± 3 | 1.690 | .067 | 18 @ 2,000 |
| EC44PM–01/02 | .014 | .0513 | .002 | 3 ± 3 | 1.826 | .072 | 18 @ 2,000 |
| EC34PT–07 | ––– | ––– | ––– | ––– | 4.305*1 | .169*1 | 29 @ 3,000*1 |
| EC44PT–05 | ––– | ––– | ––– | ––– | 4.192*2 | .164*2 | 27.5 @ 3,000*2 |
| EC34PL–02/05 | ––– | ––– | ––– | ––– | 5.050*3 | .198*3 | 31.5 @ 3,000*3 |
| EC51PL–02 | ––– | ––– | ––– | ––– | 3.748*4 | .147*4 | 27 @ 3,000*4 |

*Timing specified at 3,000 RPM

1 – EC34PT–07
Acceptable Variance
4.02mm – 4.59mm BTDC
.158 in. – .180 in. BTDC
28° – 30° BTDC

2 – EC44PT–05
Acceptable Variance
3.76mm – 4.65mm BTDC
.148 in. – .183 in. BTDC
26° – 29° BTDC

3 – EC34PL–02/05
Acceptable Variance
4.60mm – 5.52mm BTDC
.181 in. – .217 in. BTDC
30° – 33° BTDC

4 – EC51PL–02
Acceptable Variance
3.48mm – 4.02mm BTDC
.137 in. – .158 in. BTDC
26° – 28° BTDC

RFI spark plug cap resistance: 3,700–6,300 ohms

| Machine Model | Engine Model | Ignition Type | Alternator Output | Spark Plug | | Plug Gap Inches |
|---|---|---|---|---|---|---|
| | | | | RFI NGK | Champion | |
| Gemini | EC25PS | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| Galaxy | EC44PM–02 | Mag. Pt. | 75 watt | BR8ES | N-3 | .020 |
| Cutlass | EC34PM–03 | Mag. Pt. | 75 watt | BR9ES | N-2 | .020 |
| Cutlass SS | EC44–2PM–3100/3300 | CDI | 120 watt | BR9ES | N-2 | .020 |
| TX-C | EC44–2PM–1100 | CDI | 120 watt | BR9ES | N-2 | .020 |
| TX-L/TX-L Indy | EC34PL–05 | CDI | 90 watt | BR9ES | N-2 | .020 |
| Centurion Indy | EC51PL–02 | CDI | 120 watt | BR9ES | N-2 | .020 |

# 1981

| Engine Model | Point Gap Inches | Ignition Timing | | | | | |
|---|---|---|---|---|---|---|---|
| | | Static | | | Running | | |
| | | MM BTDC | Inches BTDC | Degrees BTDC | MM BTDC | Inches BTDC | Degrees BTDC |
| EC25PS | .014 | .3646 | .014 | 8 ± 3 | 2.958 | .116 | 23 @ 2,000 |
| EC44PM–02 | .014 | .0513 | .002 | 3 ± 3 | 1.826 | .072 | 18 @ 2,000 |
| EC34PM–03 | .014 | .0513 | .002 | 3 ± 3 | 1.826 | .072 | 18 @ 2,000 |
| EC44–2PM–3100/3300 | —— | —— | —— | —— | 3.93*1 | .155*1 | 26.5 @ 3,000*1 |
| EC44–2PM–1100 | —— | —— | —— | —— | 3.93*1 | .155*1 | 26.5 @ 3,000*1 |
| EC34PL–05 | —— | —— | —— | —— | 5.050*2 | .198*2 | 31.5 @ 3,000*2 |
| EC51PL–02 | —— | —— | —— | —— | 3.748*3 | .147*3 | 27 @ 3,000*3 |

*Timing specified at 3,000 RPM

*1 – EC44–2PM–3100
EC44–2PM–3300
EC44–2PM–1100
Acceptable Variance
3.39mm–4.56mm BTDC
.133 in.–.179 in. BTDC
24.5° –28.5° BTDC

*2 – EC34PL–05
Acceptable Variance
4.60mm–5.52mm BTDC
.181 in.–.217 in. BTDC
30° –33° BTDC

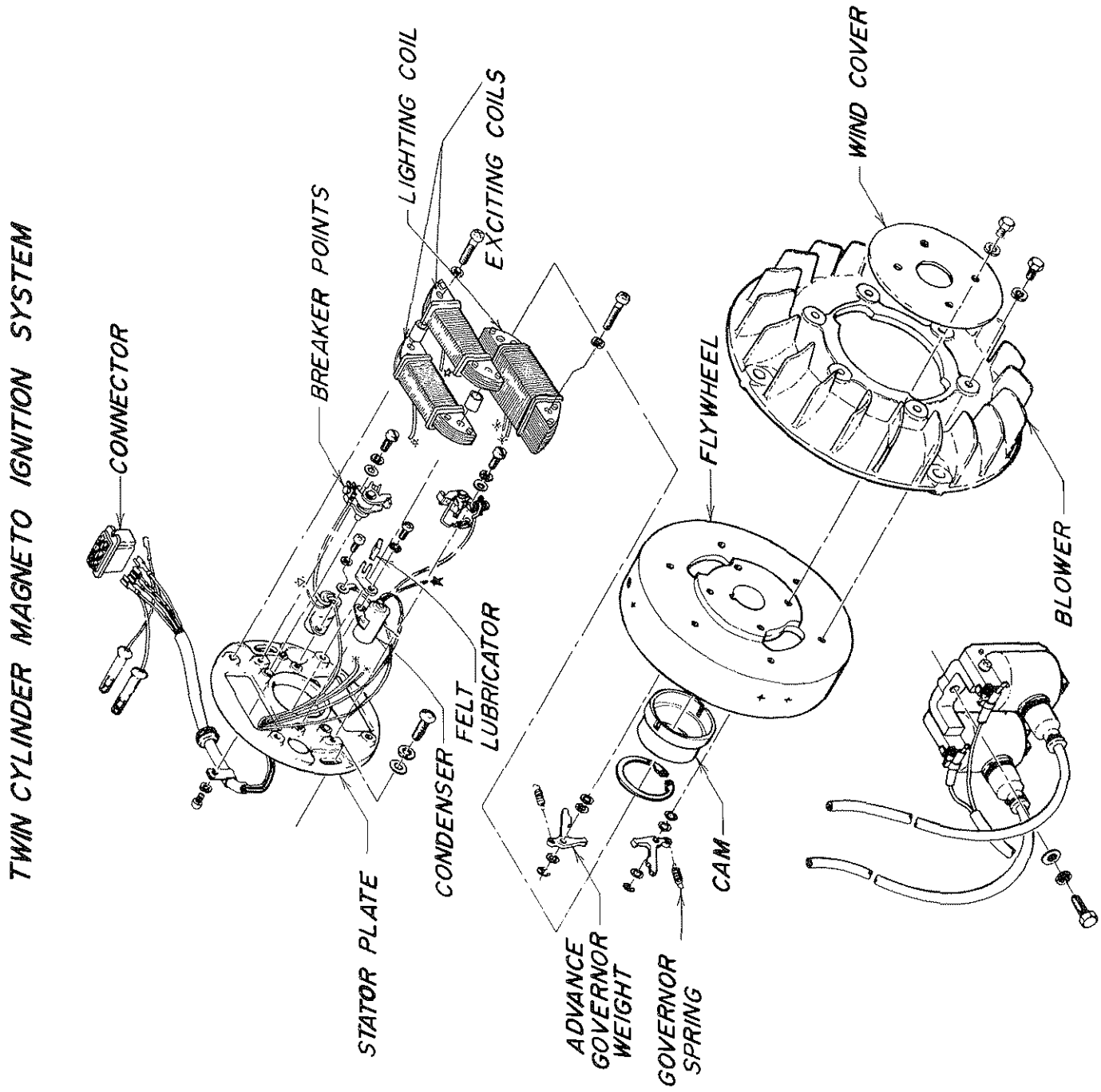
*3 – EC51PL–02
Acceptable Variance
3.48mm–4.02mm BTDC
.137 in.–.158 in. BTDC
26° –28° BTDC

RFI spark plug cap resistance: 3,700–6,300 ohms

## Timing Chart

| Degrees BTDC | 55.6MM Stroke MM | 55.6MM Stroke Inches | 60MM Stroke MM | 60MM Stroke Inches | 60MM Stroke MM | 60MM Stroke Inches |
|---|---|---|---|---|---|---|
| 1 | .0053 | .0002 | .0057 | .0002 | .0058 | .0002 |
| 2 | .0211 | .0008 | .0228 | .0009 | .0232 | .0009 |
| 3 | .0475 | .0019 | .0514 | .0020 | .0521 | .0021 |
| 4 | .0845 | .0033 | .0913 | .0036 | .0926 | .0036 |
| 5 | .1320 | .0052 | .1426 | .0056 | .1447 | .0057 |
| 6 | .1900 | .0075 | .2053 | .0081 | .2083 | .0082 |
| 7 | .2585 | .0102 | .2793 | .0110 | .2833 | .0111 |
| 8 | .3374 | .0133 | .3646 | .0144 | .3698 | .0146 |
| 9 | .4267 | .0168 | .4612 | .0182 | .4677 | .0184 |
| 10 | .5264 | .0207 | .5689 | .0224 | .5770 | .0227 |
| 11 | .6364 | .0251 | .6878 | .0271 | .6976 | .0275 |
| 12 | .7567 | .0298 | .8178 | .0322 | .8294 | .0326 |
| 13 | .8872 | .0349 | .9588 | .0377 | .9724 | .0383 |
| 14 | 1.0279 | .0405 | 1.1108 | .0437 | 1.1265 | .0444 |
| 15 | 1.1786 | .0464 | 1.2737 | .0501 | 1.2917 | .0509 |
| 16 | 1.3394 | .0527 | 1.4474 | .0570 | 1.4678 | .0578 |
| 17 | 1.5100 | .0594 | 1.6318 | .0642 | 1.6548 | .0651 |
| 18 | 1.6906 | .0666 | 1.8269 | .0719 | 1.8526 | .0729 |
| 19 | 1.8809 | .0741 | 2.0326 | .0800 | 2.0611 | .0811 |
| 20 | 2.0809 | .0819 | 2.2487 | .0885 | 2.2802 | .0898 |
| 21 | 2.2904 | .0902 | 2.4752 | .0974 | 2.5098 | .0988 |
| 22 | 2.5095 | .0988 | 2.7119 | .1068 | 2.7497 | .1083 |
| 23 | 2.7380 | .1078 | 2.9587 | .1165 | 3.0000 | .1181 |
| 24 | 2.9757 | .1172 | 3.2156 | .1266 | 3.2603 | .1284 |
| 25 | 3.2226 | .1269 | 3.4824 | .1371 | 3.5307 | .1390 |
| 26 | 3.4785 | .1369 | 3.7590 | .1480 | 3.8110 | .1500 |
| 27 | 3.7434 | .1474 | 4.0452 | .1593 | 4.1010 | .1615 |
| 28 | 4.0171 | .1582 | 4.3410 | .1709 | 4.4007 | .1733 |
| 29 | 4.2995 | .1693 | 4.6461 | .1829 | 4.7098 | .1854 |
| 30 | 4.5904 | .1807 | 4.9604 | .1953 | 5.0282 | .1980 |
| Engine: | EC34PT<br>EC34PL<br>EC34PM<br>EC51PL | | EC44PT<br>EC44PM<br>EC44PQ | | EC44–2PM | |

## Magneto Point Ignition System – Exploded View



## ENGINE ELECTRICAL

### Magneto Point Ignition System Timing Procedures

Ignition timing is the proper time to ignite the compressed gas in the combustion chamber, as the piston reaches the top of its stroke. Timing is usually measured in distance from top dead center or in degrees of crankshaft rotation.

Correct timing greatly influences performance. Improper timing causes a decrease in H.P., overheating and increased fuel consumption and can also shorten engine life.

Standard timing for each individual engine can be found in the general specification section of this manual.

Any ignition setting that is less than the standard setting (measured in distance from top dead center, or degrees of crankshaft rotation) is "retarded timing" and any ignition setting that is more than the standard setting is advanced.

## STANDARD BREAKER POINT ENERGY TRANSFER SYSTEMS

Contact Breaker – The contact breaker (points) on the magneto stator plate is a kind of switch which cuts the primary current generated in the primary coil by the action of the rotating cam inside the flywheel.

Point Gap – To generate high voltage in the ignition coil, it is necessary to interrupt the flow of current in the primary coil. The current flow is interrupted when the contact points open. If the point gap is too small, the current is not completely interrupted because some current will "jump the gap." If the gap is too large, the quantity of current decreases. In either case performance is influenced because high voltage cannot be produced consistently.

Point Gap should be between .011 and .017 (.014 is a good average).

Point Gap Adjustment – To adjust point gap, rotate the flywheel until the cam opens the points. Stop the flywheel when the point gap is the greatest. Measure the gap with a common feeler type thickness gauge. If the gap must be reset, loosen the point anchor screw and move the point anchor plate in the necessary direction to either increase or decrease the gap as necessary, Fig. 1 (A).

Note: When the flywheel is in the position that opens the point gap to the maximum, this adjustment can be done through the "window" in the flywheel, Fig. 2.

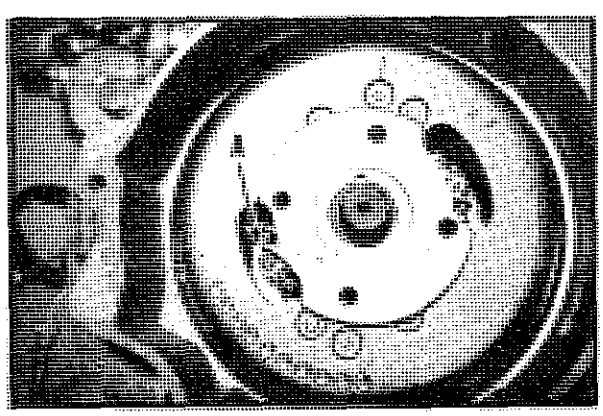


Fig. 1

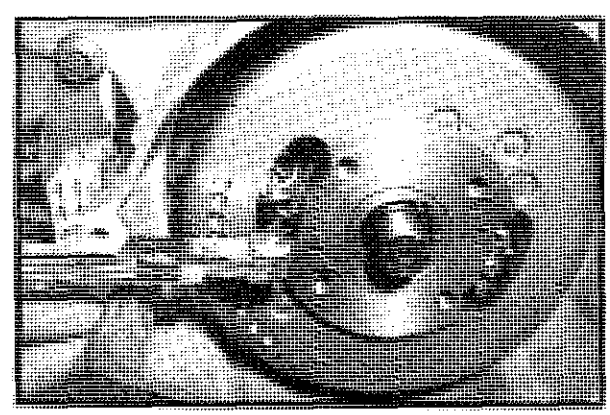


Fig. 2

Timing Adjustment – To check and/or adjust timing it is necessary to know at what instant the breaker points open and where the piston is in relation to top dead center at the same instant.

The timing kit (PN 2870201) contains a dial indicator, which, when properly installed in the cylinder head, gives an accurate indication of piston position; and a flashlight type indicator that, when properly attached, dims at the instant the points open.

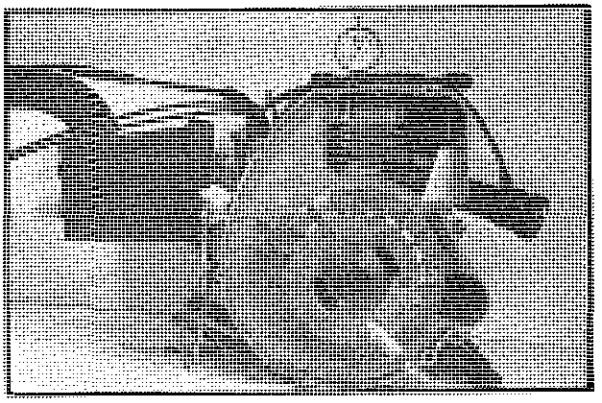
If the points open at the correct crankshaft position the timing is correct. (With the point gap within the correct limitations.)

On all models, the crankshaft should be rotated counterclockwise past the point of correct timing and then rotate the crankshaft clockwise until the light or buzzer changes. This will eliminate slack or free play within the internal workings of the engine.

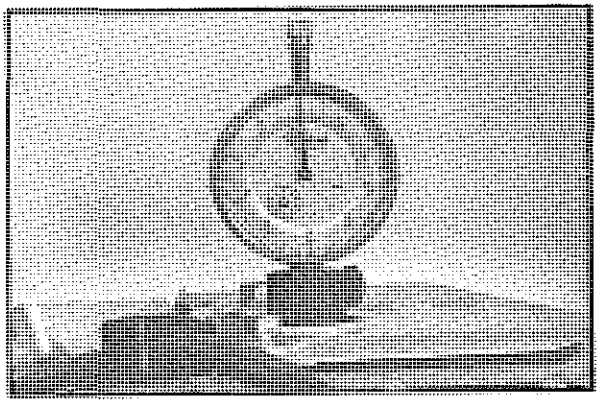
Static (retarded) Timing vs. Running (advanced) Timing:

1. Static timing is performed without the engine running. At this position, the governor weights in the flywheel are in the retarded position.
2. Running timing is done with the governor weights in the flywheel manually locked open, simulating a top RPM situation. This can be done by locking the weights open by inserting a cap screw through one of the rope starter pulley holes in the flywheel.
3. The 175cc engine is timed in the advanced position as there is no cam advance on the 175cc flywheel. All other engines with magneto ignition can be timed in either the static or running position. Check the Engine Specification section in this manual for correct timing specs.

Dial indicator and timing light properly installed on a twin cylinder engine – The timing light and the dial indicator should be attached to the No. 2 cylinder first, (clutch side).
The No. 2 cylinder should be timed first on twin cylinder engines. The No. 2 cylinder wire in the wire loom is the white wire.
The No. 1 cylinder wire is the red wire.



It is good practice to set the point gap (or gaps) at .014 at the beginning of the timing procedure. (This gap setting is only a good average and can be changed if necessary.)
Installing the Dial Indicator – Shown here installed in the No. 2 cylinder of a twin cylinder engine. Once the indicator is installed, rotate the crankshaft to find top dead center, (TDC).
T.D.C. is the point when the pointer of the gauge just begins to change direction of rotation. Once this point is found, loosen the set screw holding the face of the gauge, and rotate until the "zero" aligns with the pointer, as shown. The piston should then be at T.D.C. of its stroke and the dial indicator pointer at "zero." Any movement of the piston (crankshaft rotation) will then be registered by the pointer in thousandths (.001).



Attaching the Timing Light – One lead of the timing light can be attached to ground anywhere on the engine. The remaining lead must be attached to the wire from the stator plate for the cylinder being timed. On the single cylinder models, the ignition wire is the red wire in the engine wire loom. On twin cylinder models the red wire is the No. 1 cylinder lead and the white wire is the No. 2 cylinder lead.

## ENGINE ELECTRICAL

### Magneto Point Ignition System Timing Procedures

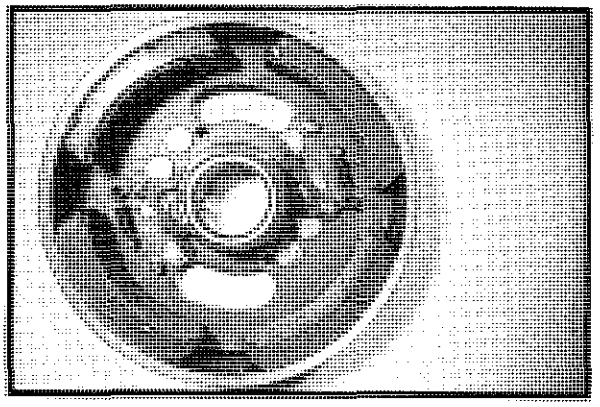
#### TIMING INSTRUCTIONS

175cc

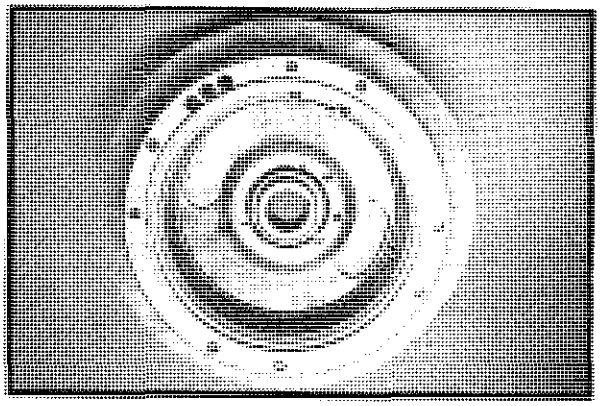
1. Timing checked and set at running specs.
2. No mechanical advance.
3. Cam is on crankshaft (not on flywheel).
4. Timing achieved by setting point gap.
5. Stator plate is not movable.
6. Engine can be timed with flywheel removed.

Procedure:

1. Install dial indicator.
2. Connect one lead of timing light to the red wire and the other wire to ground.
3. Rotate crankshaft to find T.D.C. (top dead center) and zero dial indicator.
4. Rotate crankshaft counterclockwise past the point where the light changes, then rotate clockwise to this point (this will eliminate loose play).
5. If timing is incorrect, adjust point gap.
   A. If timing is too far advanced, closing the point gap will retard the timing.
   B. If timing is retarded, opening the point gap will advance timing.
   C. Point gap should be within .011 – .017.



Twin Cylinder Flywheel
With Automatic Spark Advance



175cc Flywheel Without
Automatic Spark Advance

244cc Single

1. Timed in static position, can be timed in advanced position by locking the cam. See Ignition Data section in this manual for advanced specs.
2. Has mechanical advance on flywheel.
3. Cam is on flywheel.
4. Stator plate is movable.

Procedure:

1. Set point gap at .014 inches at high point of cam.
2. Install dial indicator, rotate crankshaft to find T.D.C., and zero the dial.
3. Connect timing light to red wire and ground.
4. Rotate crankshaft counterclockwise past the place where the light changes, and then rotate clockwise back to the point where the light changed.
5. If timing is incorrect, move the stator plate.
   A. Rotating the stator plate clockwise will retard the timing.
   B. Rotating the stator plate counterclockwise will advance the timing.
   C. Point adjustment can be changed but should remain within .011 – .017.

## Magneto Point Ignition System Timing Procedures

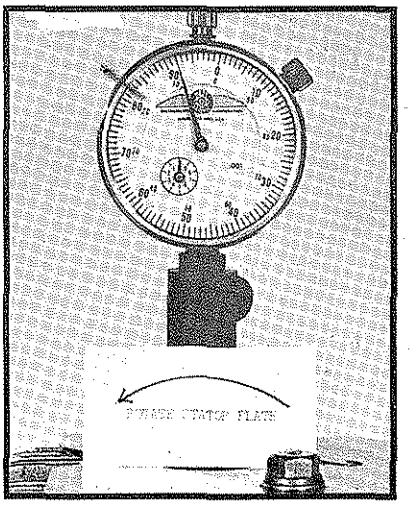
All Twin Cylinders With Magneto Ignition

1. Timed in static position. Can be timed in advanced position by locking the cam. See Ignition Data charts for the advanced specs.
2. Has mechanical advance.
3. Cam on flywheel.
4. Stator plate is movable.

Procedure:

1. No. 2 cylinder (clutch side of engine).
   - A. Set points at .014 in. (No. 2 identified by white wire coming from points and condenser) on the high point of the cam.
   - B. Hook timing light to white wire coming from engine, and also ground timing light.
   - C. Install dial indicator, find T.D.C. and zero.
   - D. Rotate crankshaft counterclockwise past the point where the light changes, then rotate clockwise back to the point where the light changes.
   - E. If the timing is incorrect, the stator plate can be adjusted.
     1. Moving the plate clockwise will retard the timing.
     2. Moving the plate counterclockwise will advance the timing.

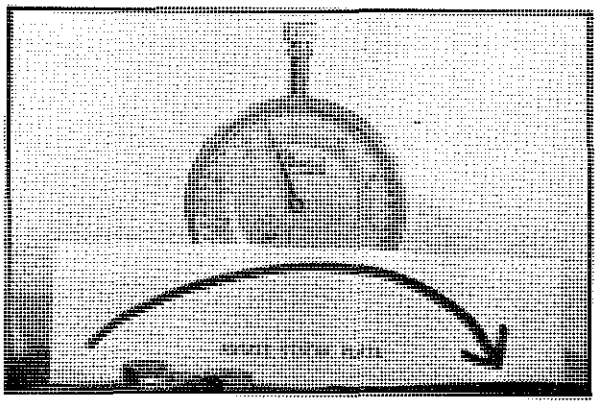
Example: If .018 is the desired static timing and the timing light dims when the pointer is at .008, rotate the stator in the direction shown. (.008 is "retarded" and the stator plate must be advanced until the pointer reads .018 when the light dims.)



NOTE: Refer to the Ignition Data charts in this section for detailed individual engine timing recommendations.

## Magneto Point Ignition System Timing Procedures

If the timing light dims when the pointer is past .018, then the timing is too advanced and the stator plate must be rotated in the direction shown to "retard" it to .018.
Remember: Move the stator plate to time only the No. 2 cylinder on twin cylinder models.

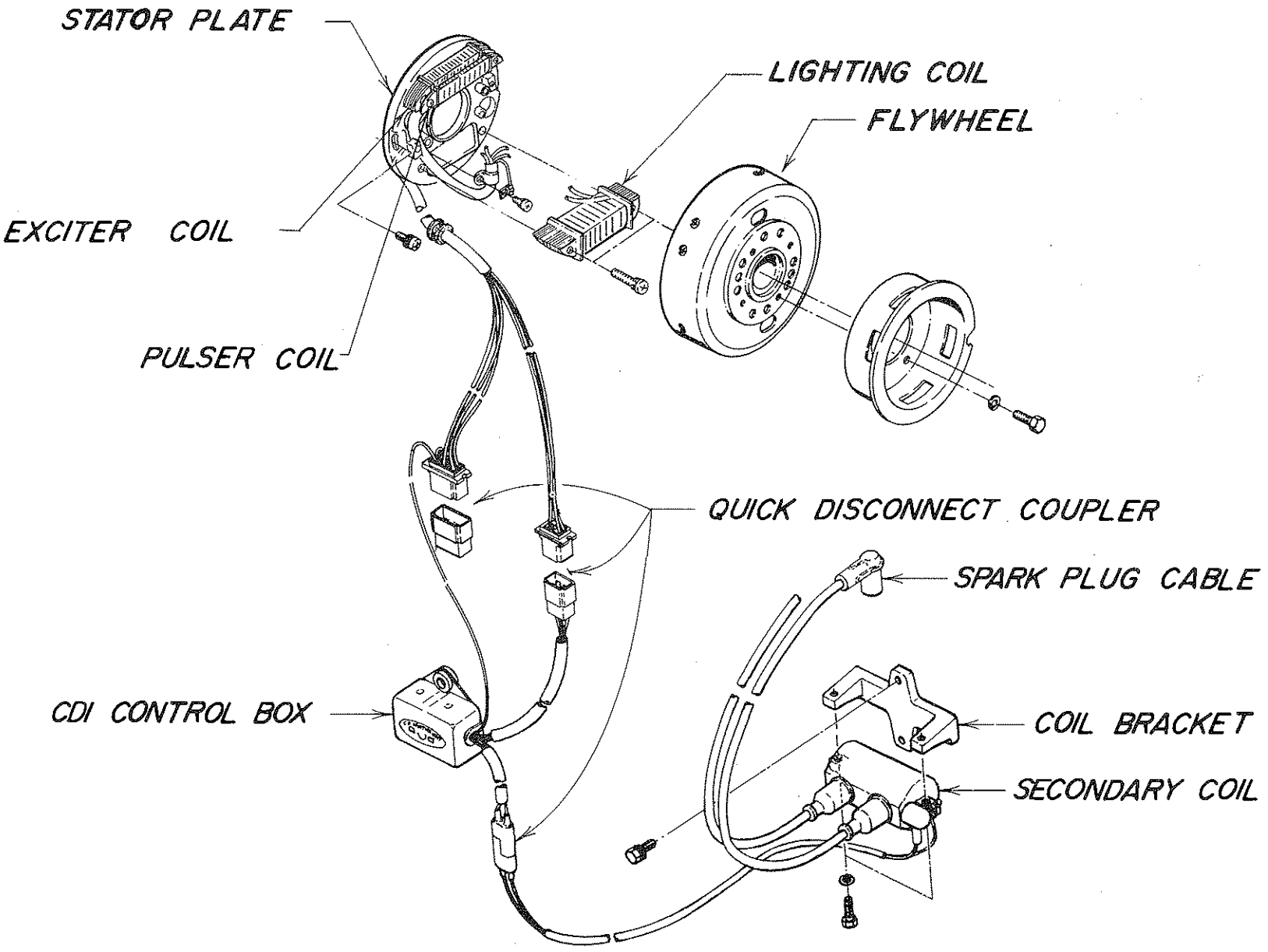


2. No. 1 cylinder (flywheel side of engine).
   - A. Install dial in No. 1 cylinder.
   - B. Find T.D.C. and zero dial.
   - C. Connect timing light to red wire coming from engine.
   - D. Rotate crankshaft counterclockwise past the point where the light changes, then rotate clockwise back to the point of change.
   - E. If the timing is incorrect, the No. 1 set of points must be adjusted.
     1. The No. 1 cylinder points are identified by the red wires connecting the points and condenser.
     2. If the timing is too far advanced, the point gap must be closed.
     3. If the timing is too far retarded, the points must be opened.
     4. After correct timing is achieved, the point gap must be checked to assure that it is within the .011 – .017 range provided.
     5. In the event that the point gap on No. 1 set of points is not within the .011 – .017 range after the correct timing has been achieved, the engine must be retimed using a different point gap on No. 2 cylinder. To correct this should it occur . . . . .

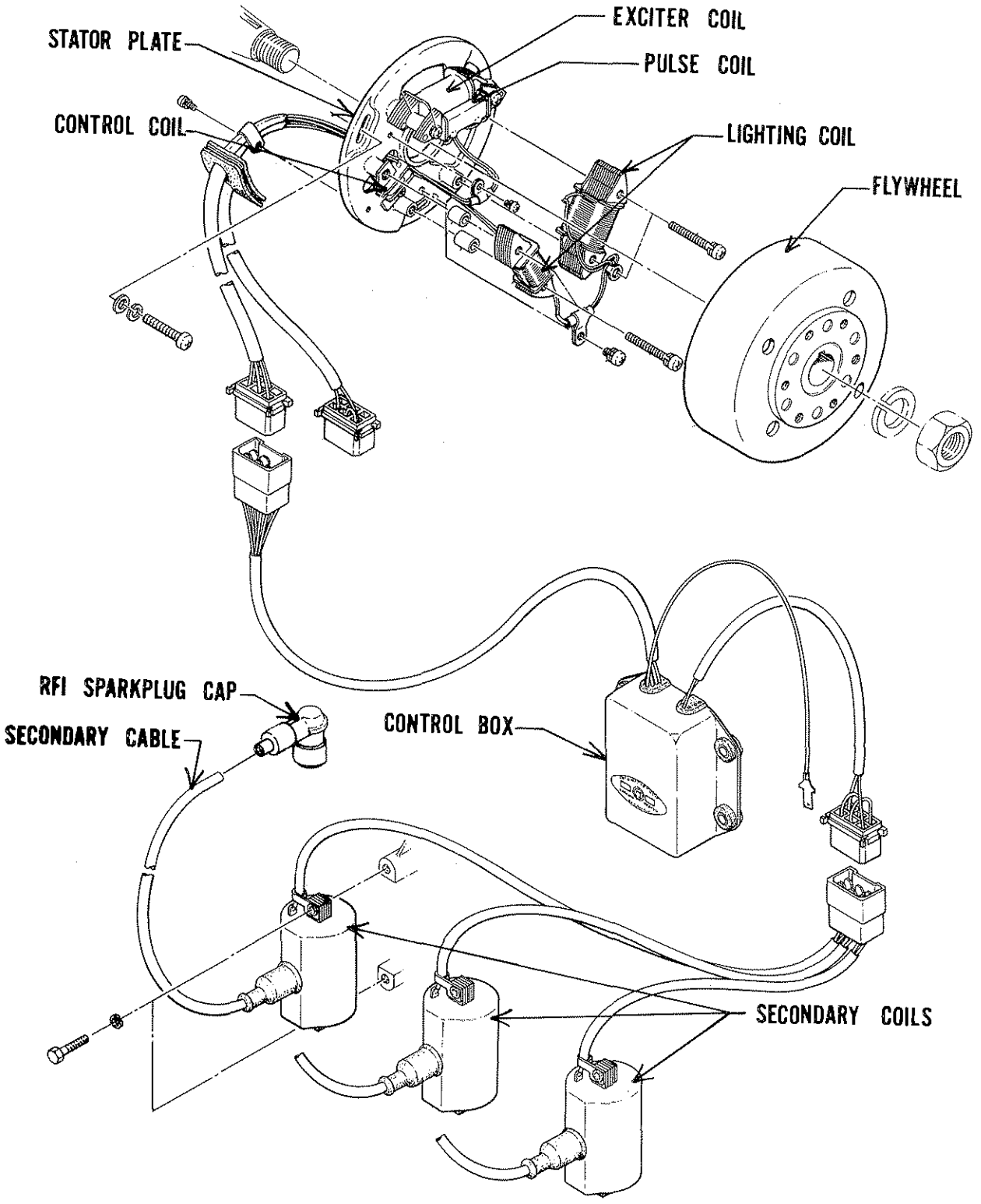
        *Point gap too wide (over .017) on No. 1 cylinder. The point gap on No. 2 cylinder should be closed slightly (.001 – .002). Then the stator plate must be advanced (moved counterclockwise) to maintain the correct timing of No. 2 cylinder. Then No. 1 cylinder can be retimed. After achieving correct timing, check the point gap to assure it is within tolerance (.011 – .017).

        *If point gap on No. 1 cylinder is too close, (under .012). The point gap on No. 2 cylinder should be opened slightly, then the stator plate must be retarded (moved clockwise) to maintain the correct timing on No. 2 cylinder. Then No. 1 cylinder must be retimed. When the correct timing is reached, the point gap on No. 1 cylinder must be checked. Repeat the above procedure if point gap is still incorrect.

# TWIN CYLINDER CAPACITOR DISCHARGE IGNITION SYSTEM

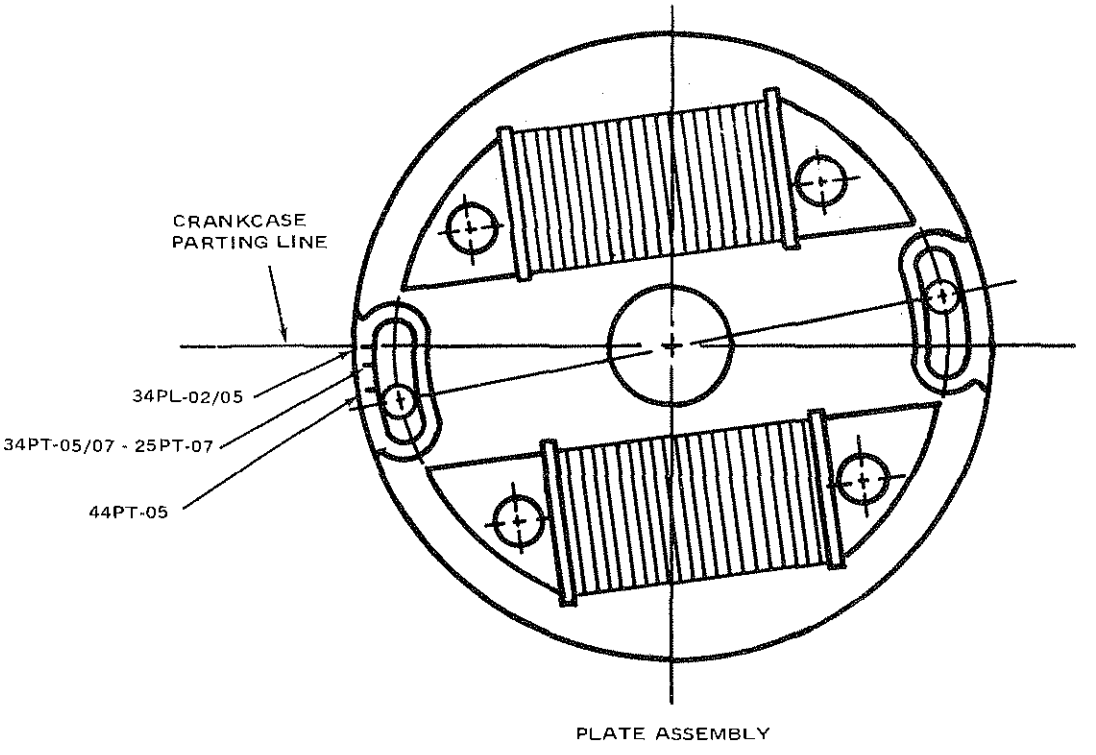


Magneto — 500 — Exploded View




EC 51 PL CAPACITOR DISCHARGE IGNITION SYSTEM

## CDI Stator Plate Installation




The CDI system used on Polaris engines incorporates predetermined static timing settings for three different engine applications. During assembly of the stator plate to engine, observe the following:

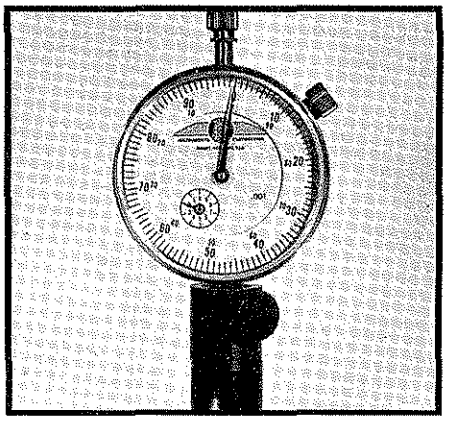
1. Identify engine model number from the tag located on the crankcase.
2. Refer to the above drawing to identify the correct stator plate timing mark to coincide with the engine model number.
3. Install the stator plate and mounting screws, aligning the respective mark with the crankcase half parting line.
4. Tighten plate mounting screws.

## Pre–1978 CDI Dynamic Timing Procedures

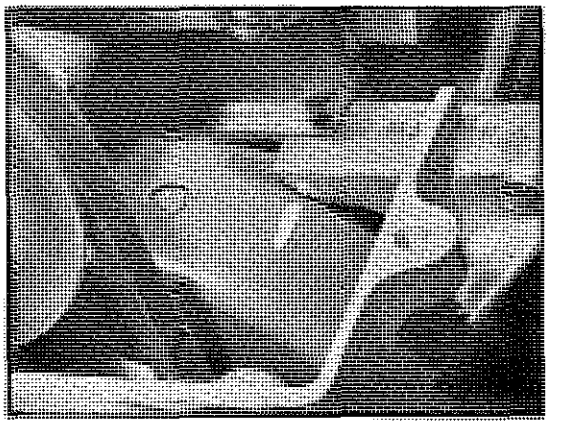
### CAPACITOR DISCHARGE IGNITION

1. Obtain the proper timing specification from the ignition data section of this manual.

2. Install a dial indicator into one of the cylinder heads.* From top dead center (T.D.C.) rotate the engine backward from the normal engine rotation. When the needle of the indicator corresponds with the recommended timing spec (A), a reference mark should be made on the flywheel and recoil housing (B).



A



B

3. Remove drive belt.

4. Use a strobe light to check for proper alignment of the timing marks.

5. When the engine is run at the recommended RPM for checking ignition timing, the two reference marks should line up.

6. If the timing is retarded too much, the stator plate will have to be turned counterclockwise from normal engine rotation. If advanced too much, rotate the stator plate clockwise to normal engine rotation.

7. Access to the stator plate is achieved by removing the recoil or recoil housing and starter cup.

8. After timing is achieved, reassemble the engine.

*Because the spark plugs fire at the same time it is only necessary to time one of the cylinders and it follows that the remaining cylinder(s) must be the same.

1. On engines with CD ignition, each spark plug fires twice per revolution of the crankshaft.

2. The spark advance mechanism is controlled electrically, therefore, there is no cam on the flywheel, nor any governor weights in the flywheel.

3. Because both spark plugs fire at the same time it is only necessary to time one of the two cylinders and it follows that the remaining one must be the same.

4. A strobe light is needed to time engines with CD ignition. Use a strobe light that can withstand high CD voltage.

5. Engines are timed in full advance position with engines running at specified RPM.

Procedure:

⚠ 1. Remove the drive belt or safely support the rear of machine in a secured area prior to performing any checks.

2. Connect positive and negative leads from timing light to power source and clamp the remaining lead to a spark plug wire. Remove the dust cover grommet from the magneto cover to gain access to the timing marks.
NOTE: EC34PL-02 timing is checked from the engine front side using the machined surface provided after the water pump cover is removed.

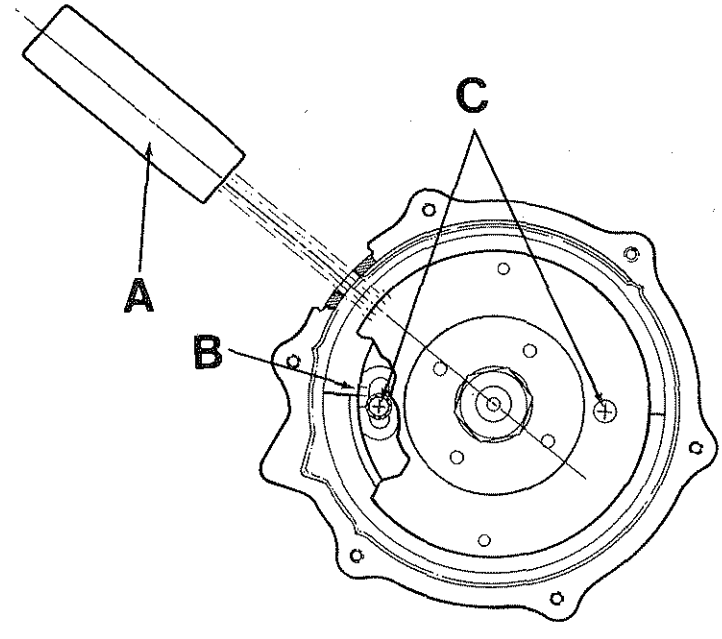
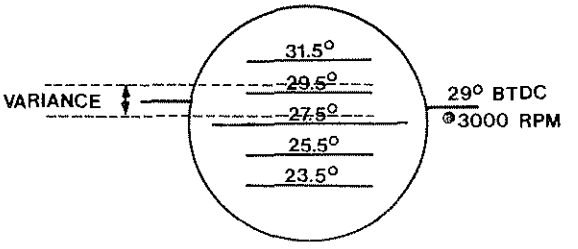



Figure 1

⚠ 3. Start the engine and slowly accelerate to 3,000 RPM. Check the timing by sighting directly above the hole in the magneto cover.
NOTE: On TX engines with the timing access plug provided in the magneto housing, install timing fixture (PN 2870422) to increase timing accuracy.

## CDI Dynamic Timing Procedures — Twin Cylinder

4. Noting the timing mark position from the dynamic check, refer to the timing mark diagram for proper mark identification and allowable variance range.
   NOTE: Identify engine model with respective diagram.




1978/CURRENT
EC25PT
EC34PT

5. If the timing marks are within the variance range shown, engine timing is correct.

6. If the timing needs to be adjusted, proceed as follows:
   (Refer to Figure 1 on IV — 17)

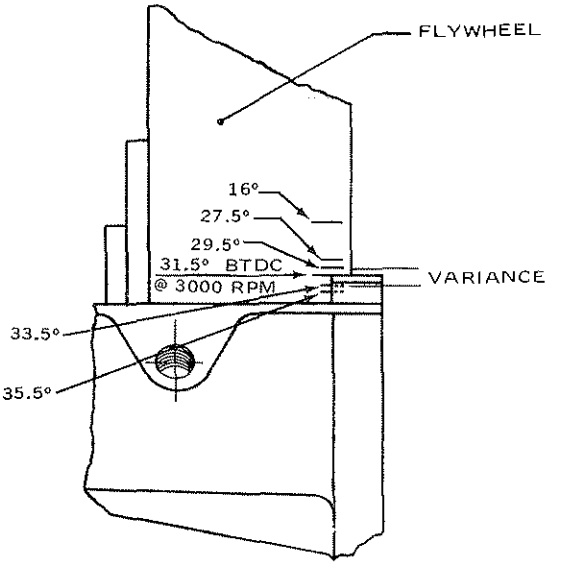
   A. Remove the recoil starter and starter cup.

   B. Using a flashlight, locate and reference the stator plate index marks. These marks are located on the left side of stator plate (B), Fig. 1.

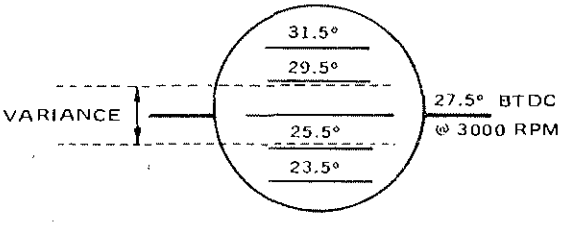
   C. Timing adjustment is accomplished by rotating the stator plate. Loosen the two stator plate fastening screws (C), Fig. 1, and rotate the plate in the direction required. (Counterclockwise advances timing.) Refer to the respective engine timing diagram for mark identification and range.

   D. Tighten the two stator plate screws. Install the starter cup and re-check dynamic timing.

   E. When timing is properly adjusted, re-check the two stator plate attaching screws for tightness and re-assemble engine.




1978/CURRENT
EC34PL



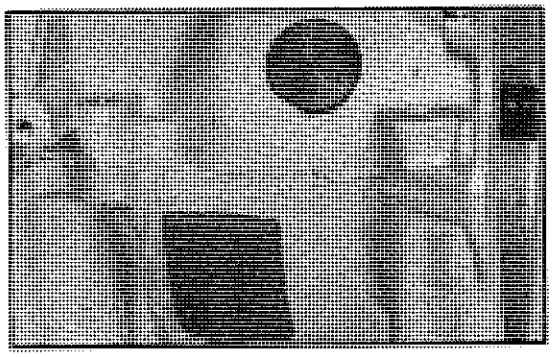

1978/CURRENT
EC44PT

## THREE CYLINDER CAPACITOR DISCHARGE IGNITION

1. The three-cylinder Centurion 500cc engine fires each spark plug three times per revolution, every 120° of rotation.
2. The timing advance mechanism is controlled by the CDI control box.
3. This ignition is designed to gradually retard the spark as engine RPM increases. For example: At 3,000 RPM the timing should be set at 27° or .147". As the RPM increases the ignition will retard automatically to approximately 20° at 7,500 RPM.

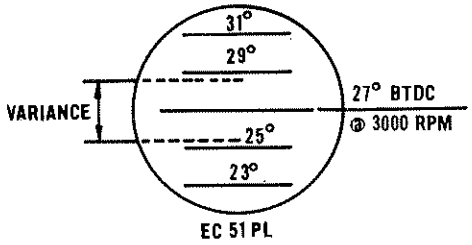
Procedure:

1. Remove the drive belt.
2. Using a strobe light capable of high CDI voltage, connect the positive and negative leads to a power source (6 or 12 volt battery) and the remaining lead to one of the three spark plug leads that run to the spark plugs. Remove the rubber dust cover grommet from the magneto housing to gain access to the timing marks on the flywheel.



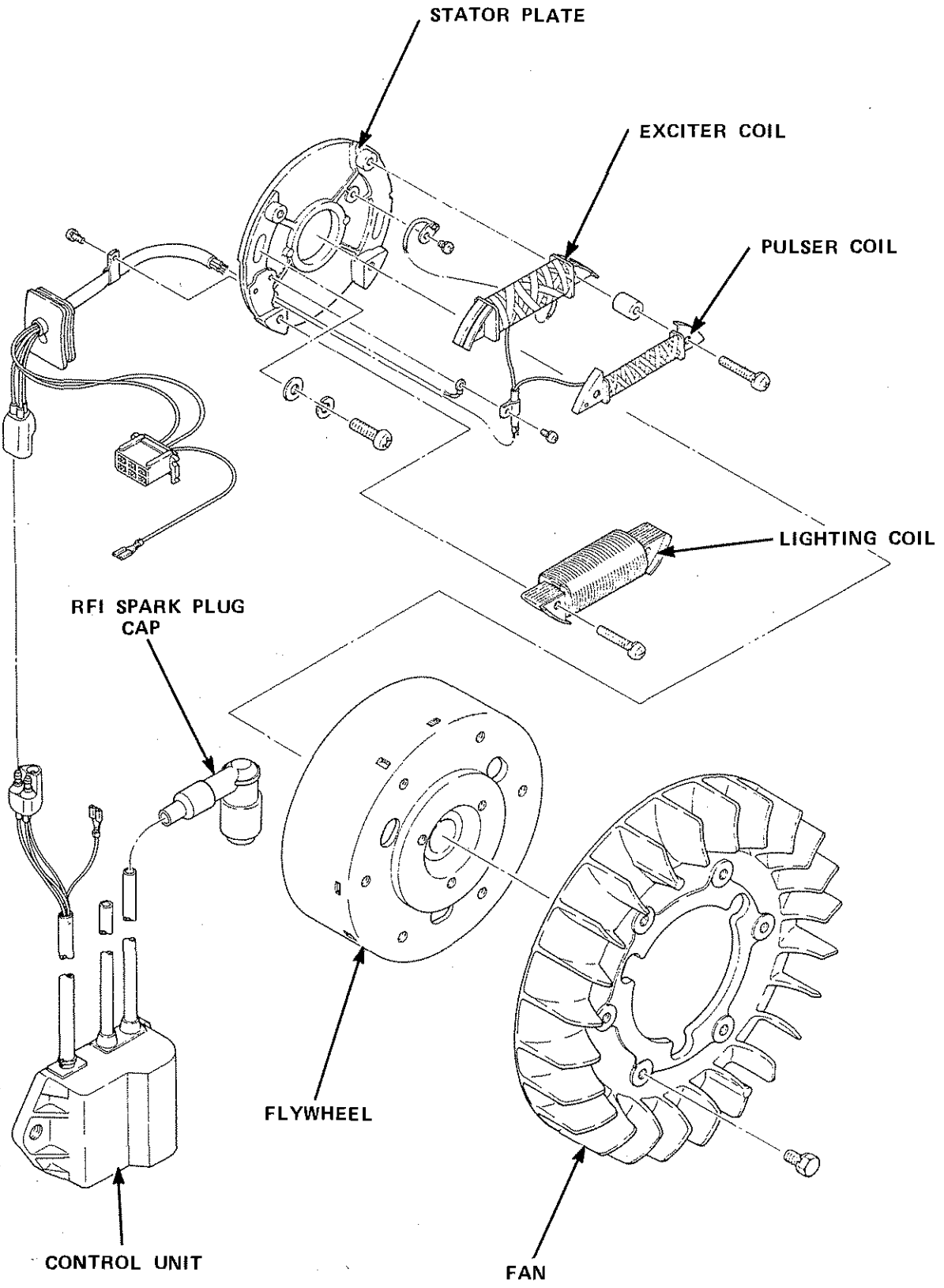
⚠ 3. Start the engine and slowly accelerate to 3,000 RPM. Check the timing with the timing light aimed directly at the hole in the magneto cover.
NOTE: Using the timing light, sight perpendicular to the center line of the crankshaft.

4. Note the timing mark position from the dynamic check. Refer to the timing mark diagram for proper mark identification and allowable variance range.




5. If the timing marks are within the variance range shown, engine timing is correct.
6. If the timing needs to be adjusted, proceed as follows:
   A. Remove the water pump cover, the recoil starter, and the starter cup.
   B. The timing adjustment is changed by rotating the stator plate counterclockwise to advance and clockwise to retard the timing. Loosen the three stator plate hold-down screws and rotate the stator plate in the direction required.
   C. Tighten the three stator hold-down screws. Install the starter cup, recoil starter, and water pump cover. Re-check timing.
   D. When the timing is properly adjusted, re-check the three stator hold-down screws and pump belt tension. Reassemble the engine.

## Magneto – 44–2PM – Exploded View



## PROCEDURE

⚠ Remove the drive belt or safely support the rear of the machine in a secured area prior to performing the timing check.

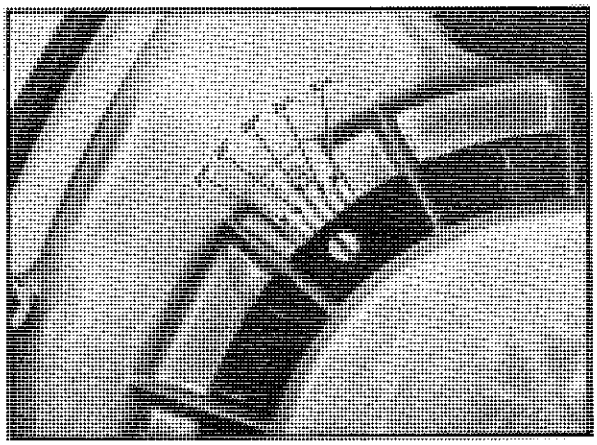
1. Use a quality strobe timing light that can withstand high voltage.

2. Connect the timing light to either spark plug cable.

3. Start the engine and slowly accelerate to 3,000 RPM. Check the timing by directing the strobe timing light at blower housing marks beneath ⚠ the CDI control unit.
   NOTE: To avoid inaccurate readings, always sight directly at the marks.

4. The timing mark on the flywheel blower vane should be in the position as shown. This represents 26.5° of advance @ 3,000 RPM.

5. In the event the marks do not align, refer to the allowable variance range shown to determine if ignition timing is within this range.



## TIMING ADJUSTMENT

If the ignition timing needs adjusting, proceed as follows:

1. Remove the outer blower housing.

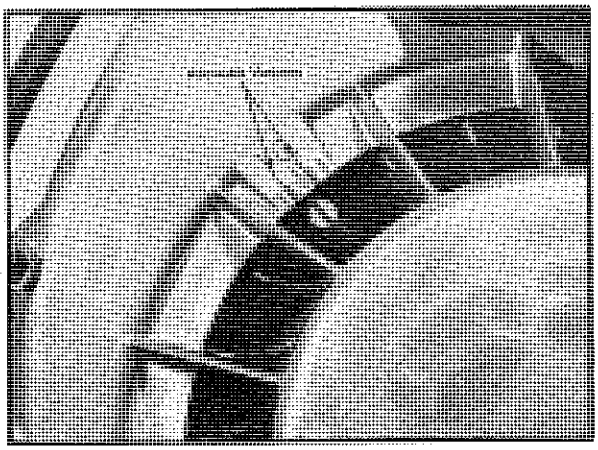
2. Remove the recoil starter cup.

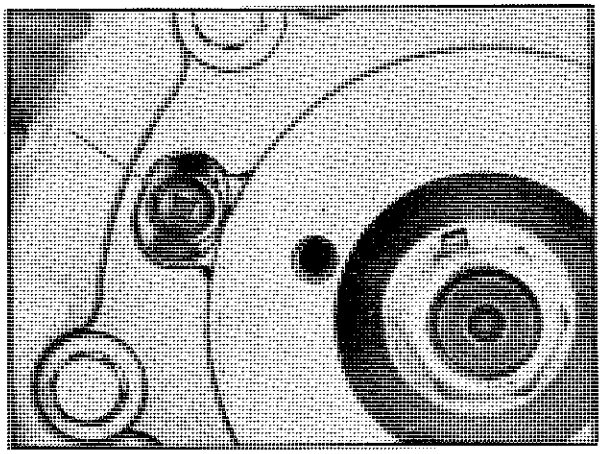
3. Timing adjustment is accomplished by rotating the stator plate. Access to the two stator plate adjusting screws is gained through the windows provided in the flywheel. Loosen the stator attaching screws.

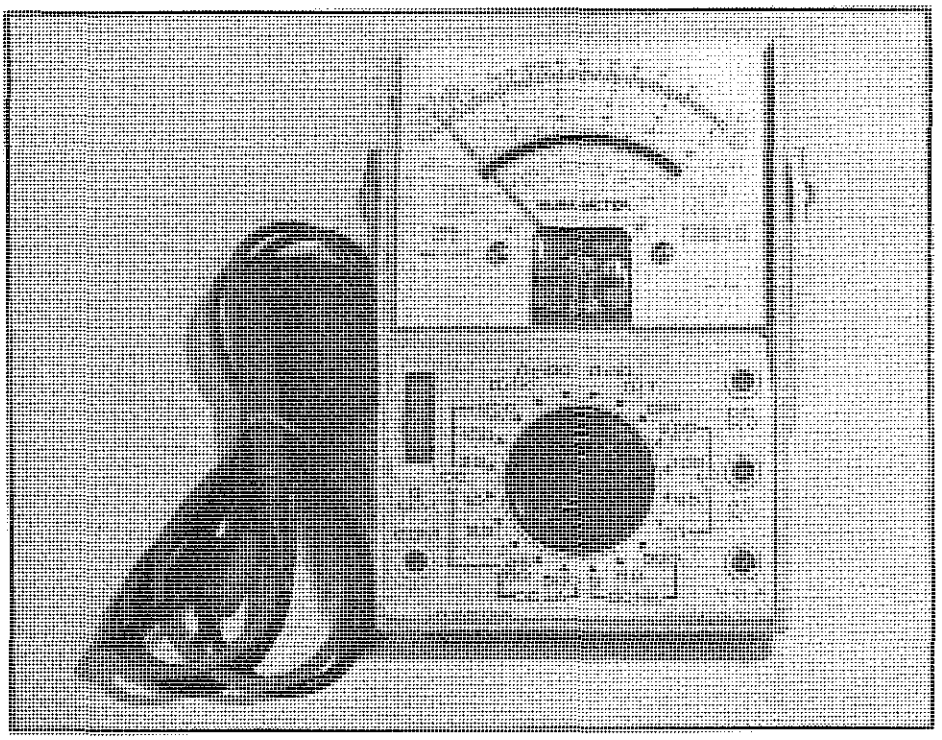
4. Rotate the stator plate in the same direction and approximate distance the timing mark on the flywheel blower vane needed to be moved to be in the allowable timing variance range. Retighten stator attaching screws.

5. Reassemble engine.

6. Recheck timing.







SPECIFICATIONS:

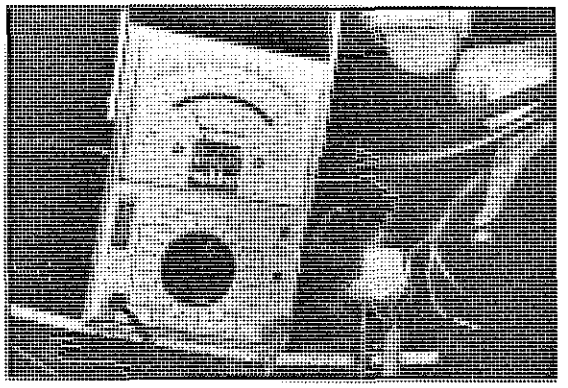
| | |
|---|---|
| DC Voltage: | 0-.25, 1, 2.5, 10, 25, 100, 250, 1000 volts. 20,000 ohms/volt. |
| AC Voltage: | 0-10, 25, 100, 250, 1000 volts. 10,000 ohms/volt. |
| Decibels: | -20 to +22 dB. |
| DC Current: | 0-50, 500 uA; 0-5, 50, 500 mA. |
| Ohmmeter: | 0-6 Megohms in 4 ranges. |
| Power Supply: | One 1.5-volt size "AA" cell for ohmmeter. |

Polaris Multitester (Part No. 2870335)

This tester may be used in the following tests on Polaris CD ignition and alternator components.

## ENGINE ELECTRICAL

### CDI Testing



PROCEDURE

Disconnect the engine primary stator circuit from the CDI control box at the junction block. Adjust the tester in Ohms x 1 position with ohms adjust knob before test by contacting the two test leads together and setting the needle to 0 ohms.

| | EXCITER COIL | | PULSER COIL | |
|---|---|---|---|---|
| | Check Position | Resistance Readings | Check Position | Resistance Readings |
| TWIN CYLINDER MODELS<br>1981-Current Cutlass SS, TX-C | Brown/White to White | 164 Ohms | Brown/White to Black/Red | 45 Ohms |
| 1980-Current TX-L Indy<br>1978-Current TX-L<br>1979-1980 TX-C<br>1978-1980 TX | Brown/White to White | 114 Ohms | Brown/White to Black | 63 Ohms |
| 1977 TX-L | Black to White | 246 Ohms | Brown/White to Black | 61 Ohms |
| 1975-1977 TX | Black to White | 246 Ohms | Brown/White to Black | 61 Ohms |
| 1976 Starfire | Black to White | 246 Ohms | Brown/White to Black | 61 Ohms |
| 1972-1977, Except Above Models | Black to White | 192 Ohms | Brown/White to Black | 24 Ohms |
| THREE CYLINDER MODELS<br>1972 TX 500 Limited<br>1972 Starfire 439, 650, 795<br>1973 Starfire 439, 650 | Red to Stator (Engine Ground) | 470 Ohms | No. 1 Green to Blue<br>No. 2 Green or Blue to Stator (Engine Ground) | 20-22 Ohms<br>Infinity |
| 1973-1975 TX 500 | Red to Stator (Engine Ground) | 275 Ohms | White to Red | 42 Ohms |
| CONTROL COIL — | Blue to Green | 18 Ohms | | |

| EC51PL ENGINE | CHECK POSITION | RESISTANCE READINGS |
|---|---|---|
| Exciter Coil | Black to White | 261 Ohms |
| Pulser Coil | Red to White | 20 Ohms |
| Control Coil | Green to Blue | 29.4 Ohms |
| Ignition Coil Primary | Orange to Black | .106 Ohms |
| Ignition Coil Secondary | Black to High Tension Lead | 2,016 Ohms |

RFI spark plug cap resistance: 3,700–6,300 ohms

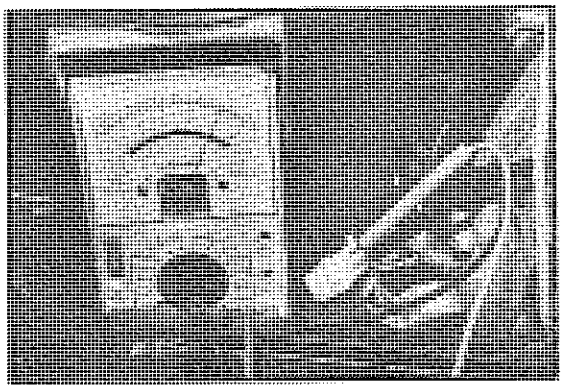
NOTE: All readings have a ± 10% variance.

NOTE: Readings taken at 68° F (20° C).

## ALTERNATOR OUTPUT TESTS – 75 WATT AND 90 WATT

CAUTION: Before performing this test, be sure the Multitester selector is set to the 100 ACV scale to prevent damage to the tester.

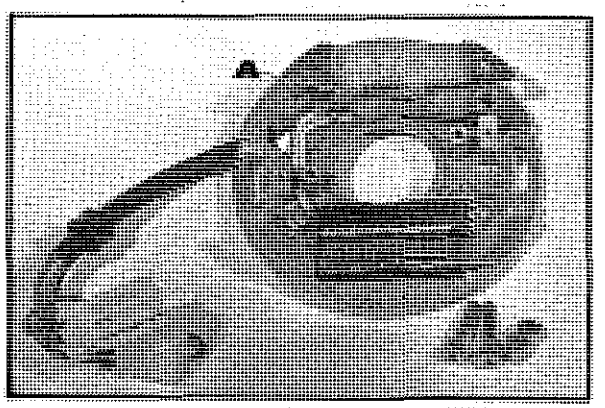
1. Disconnect the alternator connector from the engine.
2. Insert red tester lead into one yellow wire coming from the engine alternator.
3. The black tester lead must be grounded to either the engine or the brown wire at connector block.
4. Start engine; observe AC voltage reading on Multitester; slowly increase engine speed to 3,000 RPM. The voltage should read approximately 20 volts. Readings of 15-45 volts are considered normal.
   NOTE: On lighting systems with two yellow wires at the connector block, each yellow wire must be checked separately as in steps above. If output on one or both sides is zero or low, the lighting coil must be replaced.



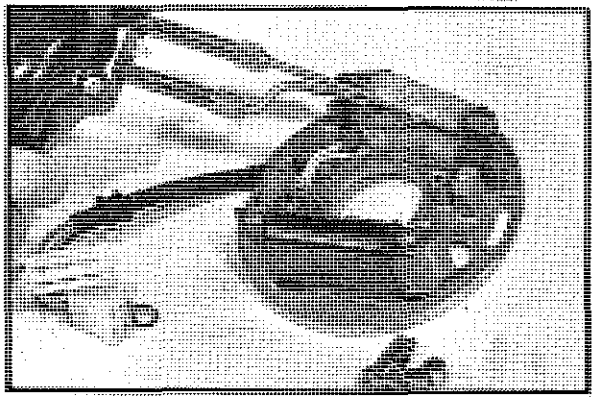
NOTE: On all 140 watt twin cylinder systems alternator output is checked with test leads connected to both yellow wires from the engine.

## Twin Cylinder CDI Exciter and Pulser Coil Replacement

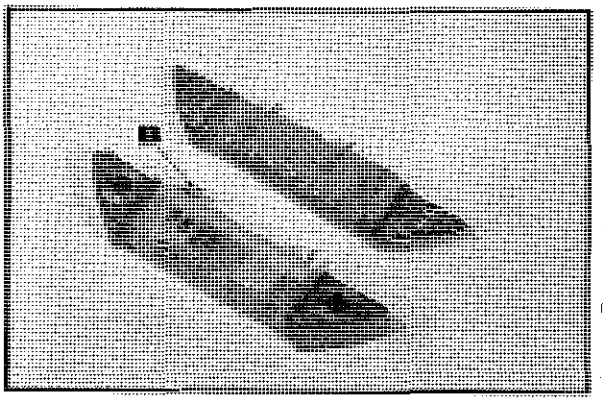
1. Remove the coil retaining screws and spacers Using a pliers, remove the epoxy from the solder joints (A) on the coil to be replaced.



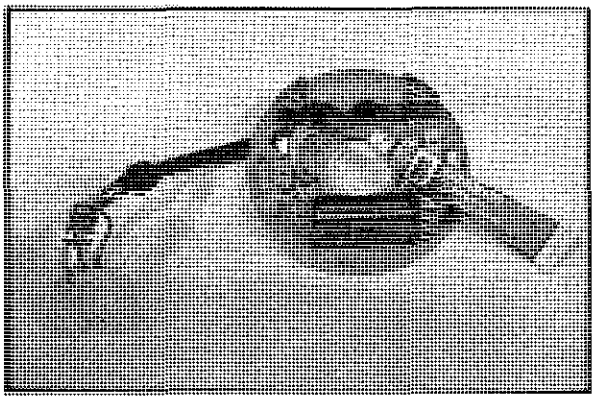

2. Unsolder the connections from the coil.



3. Clean the solder terminals (B) on the replacement coil and resolder to their proper wires.




4. Reinstall the retaining screws and spacers. Using a moisture-proof sealant, seal the solder joints as shown. Test resistance of each coil prior to stator plate installation. Lighting and point ignition exciter coils are replaced in a similar manner. All soldering must be done using rosin core solder.
   IMPORTANT: After the stator plate is reinstalled on the engine check placement of all coil leads to prevent possible contact with the flywheel.



## TESTING POLARIS COILS ON STEVENS MA–75/MA–80 MAGNETO ANALYZER

The following specifications consist of coil number, "A" or "B" switch setting, index number, adaptor if required, and reference to special notes on making the proper hookups:

| | | | |
|---|---|---|---|
| 3080838 | A 28 (Note 1) | 3081954 | A 20 CD-1 (Note 3) |
| 3081177 | A 28 (Note 2) | 3081573 | A 22 |
| 3081272 | A 28 | 3081602 | A 24 CD-1 |
| 3081303 | A 20 CD-1 (Note 3) | | |
| 3081389 | A 24 CD-1 | | |

NOTE

1. Connect Black Test Clip to coil frame, Red Clip to single red lead. Connect Hi Tension clip to secondary of coil which has red leads. For second test, transfer red test clip and Hi Tension clip to other coil.

2. Connect test clips to coil primary leads. Connect Hi Tension clip to secondary of coil to which Red test clip is connected. Other secondary must be grounded to Black test clip. To test other coil, reverse primary leads and reverse secondary leads.

3. Connect test clips to primary leads. Ground one secondary to black test clip. Test other secondary – if no spark is obtained, interchange secondary leads and retest. To test other secondary, reverse primary leads and reverse secondary leads.

Stevens Model AT–100 Volt–Ohmmeter may be used to check Coil Primary and Secondary Resistance.

## Ignition Testing — Secondary Coil Part Number Applications

| Cyl. Disp. | Ignition Type | Original Part Number Coil | Superseded by Part Number Coil | Original Part Number Condenser | Superseded by Part Number Condenser |
|---|---|---|---|---|---|
| **1973** | | | | | |
| 175 | Magneto | 3081573 | 3081980 | 3081569 | |
| 244 | Magneto | 3081272 | 3081974 | 3081254 | 3081970 |
| 294 fan, 398 fan, 294, 335 free | Magneto | 3081177 | | *3081134/3081133 | 3081970 |
| TX 294, 335, 398, 432, 530 | CDI | 3081514 | 3081954 | | |
| TX 500 | CDI | 3081602 | 3081603 | | |
| **1974** | | | | | |
| 175 | Magneto | 3081980 | | 3081569 | |
| Single Cylinder 250 | Magneto | 3081974 | | 3081254 | 3081970 |
| 250 SS, 295, 295 SS, 340 SS | Magneto | 3081958 | 3081177 | *3081254/3081133 | 3081970 |
| 400 | Magneto | 3081177 | | *3081254/3081133 | 3081970 |
| TX 250, 340, 440, Custom 530 | CDI | 3081514 | 3081954 | | |
| Electra 340, 440 | CDI | 3081954 | | | |
| TX 500 | CDI | 3081603 | | | |
| **1975** | | | | | |
| 175 | Magneto | 3081980 | | 3081569 | |
| Single Cylinder 250 | Magneto | 3081974 | | 3081970 | |
| 250 SS, 340 SS | Magneto | 3081177 | | 3081970/3081133 | |
| TX 250, 340, 440 | CDI | 3081627 | 3081954 | | |
| Electra 340, 440 | CDI | 3081954 | | | |
| TX 500 | CDI | 3081603 | | | |
| **1976** | | | | | |
| 175 | Magneto | 3081980 | | 3081569 | |
| Single Cylinder 250 | Magneto | 3081974 | | 3081970 | |
| 250 SS, 340 SS | Magneto | 3081177 | | 3081970/3081133 | |
| TX 250, 340, 440 | CDI | 3081954 | | | |
| Electra 340, 440 | CDI | 3081954 | | | |
| **1977** | | | | | |
| Single Cylinder 250 | Magneto | 3081974 | | 3081970 | |
| Colt Twin Cylinder 250 | Magneto | 3081177 | | 3081970/3081133 | |
| 250 SS, 340 SS | Magneto | 3081177 | | 3081133/3081134 | |
| Electra 340, 440 | CDI | 3081954 | | | |
| Electra 340, 440 | Magneto | 3081177 | | 3081133/3081134 | |
| TX 250, 340, 440 | CDI | 3081954 | | | |
| TXL 340 | CDI | 3081954 | | | |
| **1978** | | | | | |
| Single Cylinder 250 | Magneto | 3081974 | | 3081970 | |
| Colt Twin Cylinder 250 | Magneto | 3081177 | | 3081133/3081134 | |
| S/S 340 | Magneto | 3081177 | | 3081133/3081134 | |
| Cobra 340, 440 | Magneto | 3081177 | | 3081133/3081134 | |
| TX 250, 340, 440 | CDI | 3081954 | | | |
| TX-L 340 | CDI | 3081954 | | | |
| **1979** | | | | | |
| Gemini Single Cylinder 244 | Magneto | 3081974 | | 3081970 | |
| Gemini Twin Cylinder 250 | Magneto | 3081177 | | 3081133/3081134 | |
| Apollo 340 | Magneto | 3081177 | | 3081133/3081134 | |
| Cobra 340, 440 | Magneto | 3081177 | | 3081133/3081134 | |
| TX 250, 340, 440, TX-C 340 | CDI | 3081954 | | | |
| TX-L 340 | CDI | 3081954 | | | |
| Centurion 500 | CDI | 3082974 | | | |
| **1980** | | | | | |
| Gemini Single Cylinder 244 | Magneto | 3081974 | | 3081970 | |
| Gemini Twin Cylinder 250 | Magneto | 3081177 | | 3081133/3081134 | |
| Apollo 340 | Magneto | 3081177 | | 3081133/3081134 | |
| Galaxy 340, 440 | Magneto | 3081177 | | 3081133/3081134 | |
| TX 340, 440, TX-C 340 | CDI | 3081954 | | | |
| TX-L 340, TX-L Indy 340 | CDI | 3081954 | | | |
| Centurion 500 | CDI | 3082974 | | | |
| **1981** | | | | | |
| Gemini 244 | Magneto | 3081974 | | 3081970 | |
| Galaxy 440 | Magneto | 3081177 | | 3081133/3081134 | |
| Cutlass 340 | Magneto | 3081177 | | 3081133/3081134 | |
| Cutlass SS 440 | CDI Control Unit PN 3083154 | | | | |
| TX-C 440 | CDI Control Unit PN 3083154 | | | | |
| TX-L 340, TX-L Indy 340 | CDI | 3081954 | | | |
| Centurion Indy 500 | CDI | 3082974 | | | |

* Indicates which of the two numbers is superseded.

Polaris Specifications for Merc-O-Tronic Instruments Corp.
Model No. 98, 98A, & 73

| POLARIS COIL NO. | MIN. COIL OPERATING AMPERAGE | PRIMARY RESISTANCE MIN. | PRIMARY RESISTANCE MAX. | SECONDARY CONTINUITY MIN. | SECONDARY CONTINUITY MAX. |
|---|---|---|---|---|---|
| *3080838 | 1.7 | 1.4 | 1.8 | 40 | 50 |
| +*3081974 | 1.7 | 1.4 | 1.8 | 40 | 50 |
| 3081573 | 1.9 | .1 | .2 | 45 | 55 |
| 3081980 | 1.6 | .1 | .2 | 45 | 55 |
| ***3081303 | 2.0 | .35 | .45 | 55 | 65 |
| +***3081954 | 2.0 | .35 | .5 | 55 | 65 |
| +*3081177 | 1.9 | 1.4 | 1.8 | 40 | 50 |
| **3081389 | 3.0 | .15 or less | | 20 | 30 |
| 3081603 | 1.2 | .5 | .7 | 60 | 70 |
| *3081272 | 1.7 | 1.4 | 1.8 | 40 | 50 |
| +3082974 | 1.8 | .1 | .2 | 20 | 30 |

## CONDENSER SPECIFICATIONS

| CONDENSER NO. | CAPACITY IN MICROFARADS MIN. | CAPACITY IN MICROFARADS MAX. |
|---|---|---|
| 3081132 | .24 | .28 |
| 3081569 | .24 | .30 |
| 3081133 | .22 | .27 |
| 3081970 | .22 | .27 |

*Disconnect internal battery and connect leads from analyzer to a 12 volt storage battery or equal. This test is for COIL POWER TEST ONLY. DO NOT USE THE 12 VOLTS FOR ANY OTHER TESTS AS READING WILL BE INCORRECT.

**To test this coil, use C.D. Adaptor Part No. 55-980.

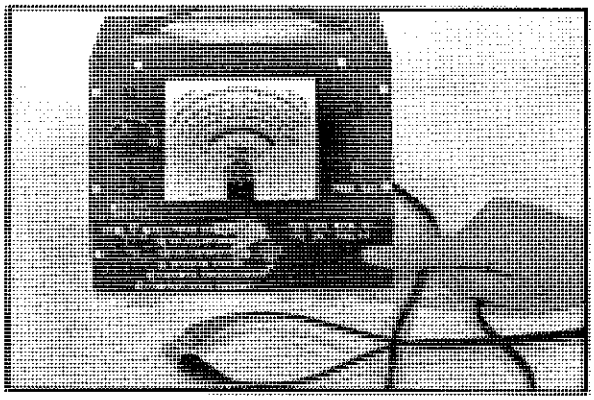
***There is no continuity between primary and secondary leads, however, continuity is between secondary leads.

+Test with RFI spark plug cap disconnected.

## Merc-O-Tronic Coil Test Procedures

The following tests were made with a Model 98A Merc-O-Tronic tester, using the self-contained 7-1/2 volt battery, except where noted.

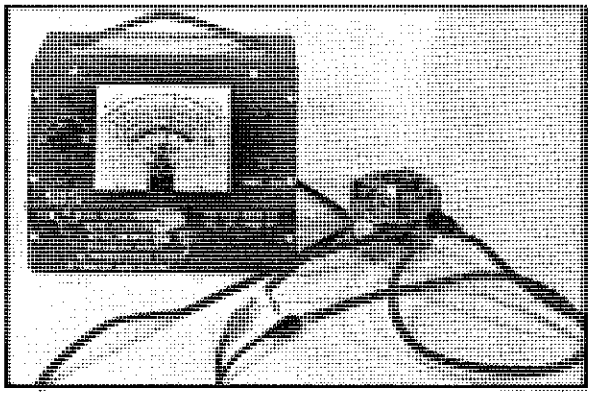
Connect the test leads together and zero the meter as shown.



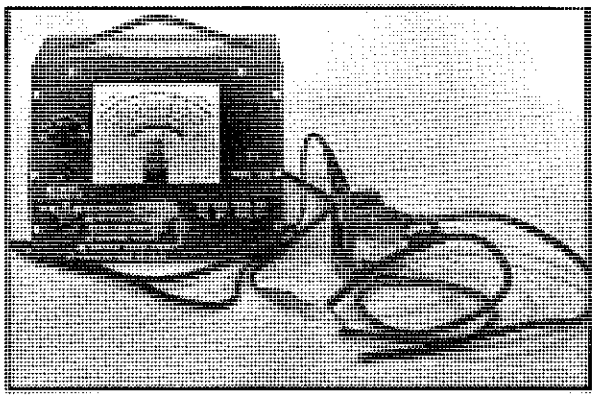
### POINT SYSTEMS SECONDARY COIL TESTS

NOTE: All coils are tested individually.

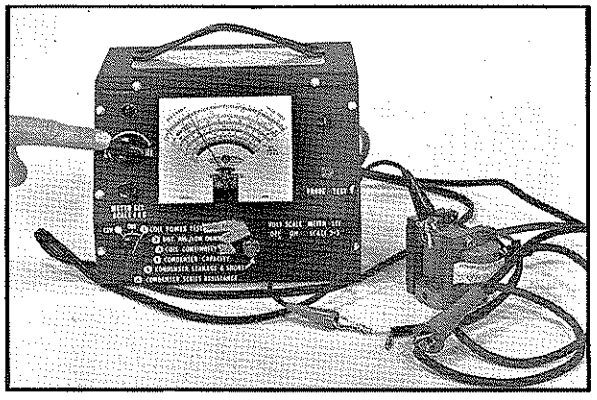
1. Secondary Continuity – Scale No. 3:
   Attach the red test lead to the primary wire on the coil (either red or white). The black test lead is connected to the high tension lead of the coil being tested. Readings are read from the top of scale No. 3 and must be between the two values specified.



2. Primary Resistance – Scale No. 2:
   Without connecting the test leads together, zero the meter. Connect the red test lead to the appropriate primary on the coil to be tested and the black test lead to ground. Readings are taken from the red figures on scale No. 2 and must be within the two values specified.

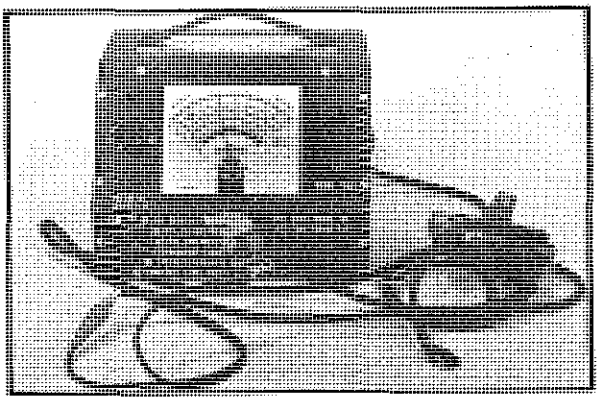


3. Operating Amperage (Coil Power Test) – Scale No. 1:
   The two test leads are connected the same as for resistance. The large single red test lead (coming from the rear of the tester) is attached to the high tension lead of the coil to be tested. The control knob on the upper left-hand side of the tester is then slowly turned clockwise until the value specified is reached. The 5mm spark gap (located in the upper right-hand corner of the tester) should then be firing steadily. If a steady spark occurs below this value, the coil is very good.

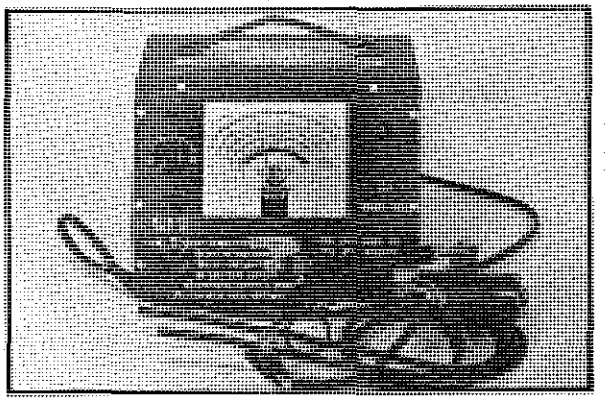


TWIN CYLINDER CDI COIL

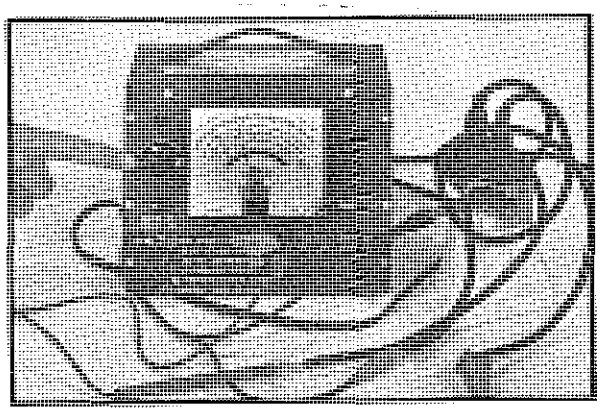
1. Secondary Continuity – Scale No. 3:
Turn the knob to scale No. 3. Connect the two test leads (red and black) together and zero the meter. Connect the red test lead to one high tension lead and the black test lead to the other high tension lead. The readings must be within the values specified. Take the readings from the top of scale No. 3.



2. Primary Resistance – Scale No. 2:
Without connecting the test leads together, turn to scale No. 2 and zero the meter. Attach the red test lead to the orange lead on the coil. The black test lead is connected to the ground on the coil. The readings must fall within the values specified.



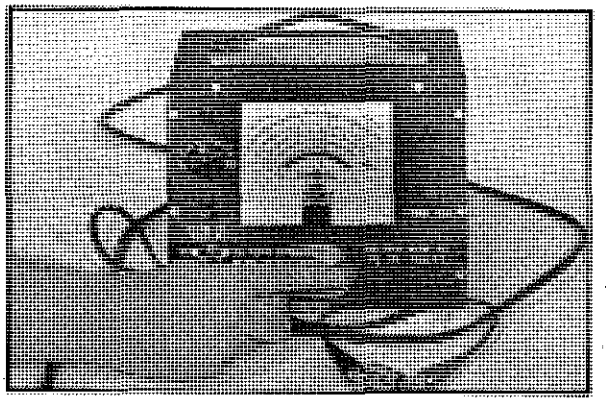
3. Operating Amperage (Coil Power Test) – Scale No. 1:
The red test lead is connected to the orange lead on the coil and the black test lead is attached to ground. The large single red test lead (coming from the rear of the tester) is connected to one high tension lead. One end of the extra test probe that comes with the tester is plugged into the other high tension lead and one end is plugged into the tester located above the words "probe test." The knob (located in the upper left-hand corner) is slowly turned clockwise until the meter reaches the value specified. The 5mm spark gap should then be firing steadily. If a steady spark occurs below the specification, the coil is considered very good.



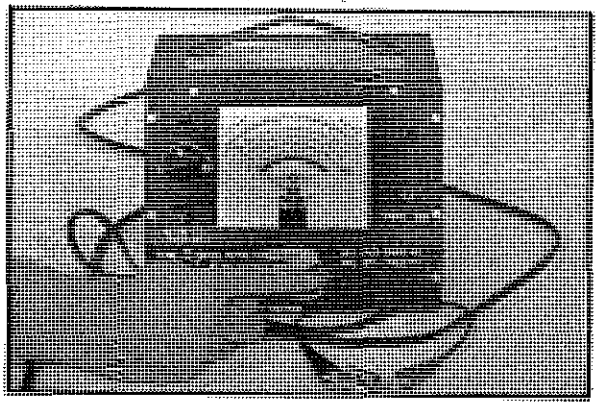
## Merc-O-Tronic Condenser Test Procedures

**The tester must be plugged into a 115 volt AC outlet.**

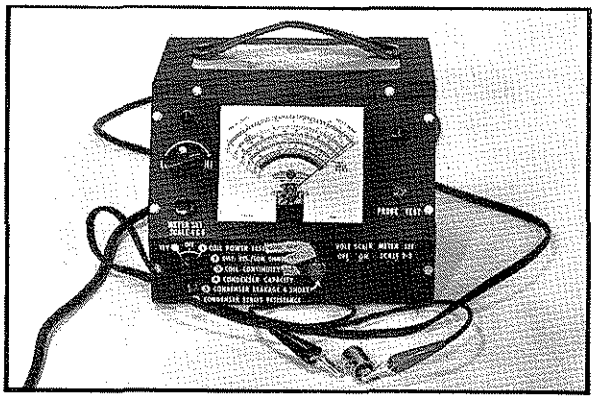
1. Condenser Capacity – Scale No. 4:
   Turn the meter to scale No. 4. Clip the red and black test leads together and zero the meter. The zero adjustment for scale No. 4 is located just above the selector knob. Attach the red test lead to the condenser terminal and the black test lead to the condenser body. Press the red button and read scale No. 4. The values must be within the specifications.



2. Condenser Leakage and Short Test – Scale No. 5:
   Connect the red test lead to the condenser terminal and the black test lead to the condenser body. Turn to scale No. 5; depress the red button and hold for a minimum of 15 seconds. The meter pointer will move to the right and must return within the range of the narrow black bar to the left. Readings other than within this narrow range indicate the condenser is leaking or shorted.



3. Condenser Series Resistance – Scale No. 6:
   Turn the selector to scale No. 6. Clip the test leads together and zero the meter. The zero adjustment for scale No. 6 is located just above the selector switch. Connect the red test lead to the condenser terminal and the black test lead to the condenser body. The meter must be within the "ok green block" on scale No. 6.



## Ignition — Graham–Lee Test Specifications

| Coil No. | Maximum Secondary | Maximum Primary | (Point Test) Maximum Primary DC Ohms | Coil Index | **** Minimum Coil Test **** | Maximum Gap Index |
|---|---|---|---|---|---|---|
| 3080270 | 10,000 | 5.5 | .09 | 60 | 25 | 50 |
| 3080838 | 10,000 | 9.0 | 2.0 | 60 | 24 | 50 |
| 3081177** | 10,000+ | 9.0 | 2.0 | 60 | 24 | 50 |
| 3081303 | 20,000 | 1.8 | .45 | 60 | 18 | 50* |
| 3081514 | 20,000 | 1.0 | .45 | 60 | 19 | 50 |
| 3081602*** | 5,000 | .4 | .09 | 60 | 75 AMPLIFIED | 50 |
| 3081603 | 20,000 | 4.5 | .9 | 50 | 18 | 50 |
| 3081954 | 15,000+ | .8 | .7 | 50 | 16 | 50 |
| 3081974 | 10,000+ | 9.5 | 2.0 | 55 | 21 | 55 |
| 3081980 | 10,000 | 2.0 | .25 | 50 | 13 | 50 |
| 3082974*** | 3,000+ | .5 | .15 | 50 | 70 AMPLIFIED | 50 |

Condensers — All numbers to date — .22 to .30 Mfd.

*One end of secondary must be grounded to most convenient primary terminal.

**Twin ignition number but each coil is tested separately as a single coil.

***Set of three (3) coils with each coil tested separately as a single coil.

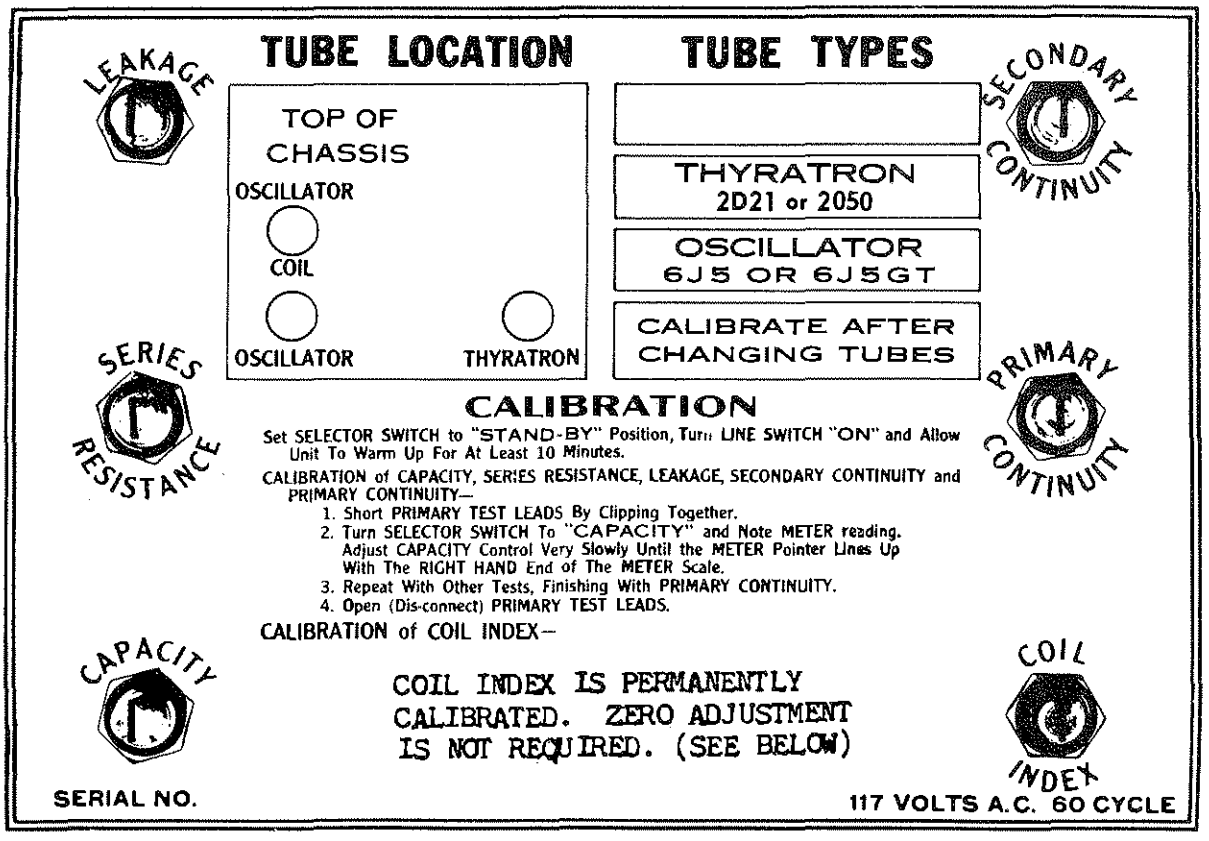
****On this list test limits for "Minimum Coil Test" are given with the secondary cable attached to coil. If secondary cable is removed, reduce test limit two (2) divisions.

+Test with RFI spark plug cap disconnected.

For use with all models Graham-Lee Coil and Condenser Testers.

GRAHAM–LEE ELECTRONICS, INC.
4220 Central Avenue Northeast
Minneapolis, Minnesota 55421

## Graham–Lee Coil-Condenser Test Procedures

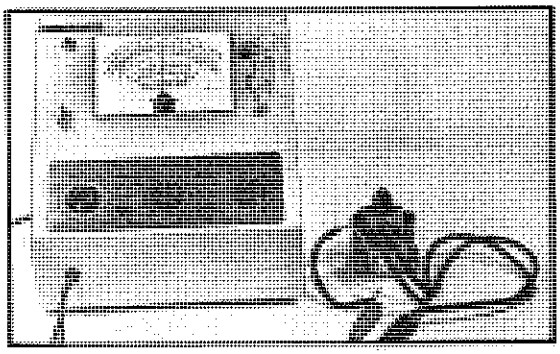



With main selector switch in "Coil Index" position, this unit is calibrated so with normal voltage and a good 2D21 tube meter pointer will go off scale to right when coil index knob is turned to right as far as it will go and "coil tests" spring switch is turned "ON." If line voltage is low or tube is weak, meter reading may be below "100." This is OK if a steady meter reading of 90 or more can be obtained on top meter scale. To check "steadiness" of meter reading when pointer goes off scale, turn coil index knob back slightly to a reading between 95 and 100. If pointer is steady tube and circuits are good.

For maximum tube life, allow tester to "warm up" a couple of minutes before operating the spring switch on coil test. Also, do not hold spring switch "ON" for more than a few seconds at a time. A few seconds "ON" and a few seconds "OFF" is best.

There is a definite reason for the sequence or order of the tests. A coil or condenser must pass each test. Failure on any test in the sequence indicates replacement of the affected part.

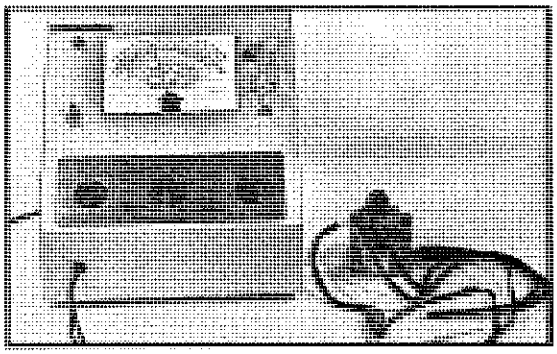
POINT SYSTEMS SECONDARY COIL TESTS



Test No. 1 — Secondary Continuity

Connect the red test to the primary wire (red or white) of the coil to be tested. The black test lead is attached to the high tension lead of the coil to be tested. Refer to the Test Specifications in this manual for Maximum Secondary Ohms. The meter reading must be under maximum specified. No reading or a high reading indicates a defective coil.

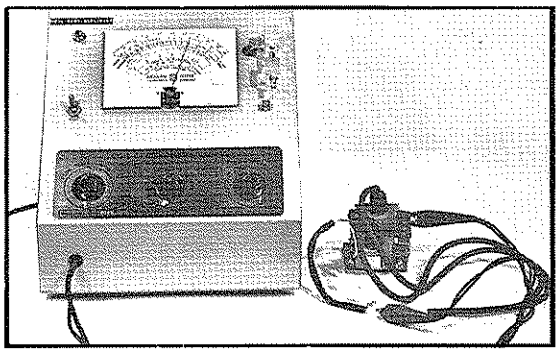
NOTE: Test all coils individually and take meter readings from secondary continuity scale.



Test No. 2 — Primary Continuity

Attach the red test lead to the primary wire of the coil to be tested and connect the black test lead to ground. Meter reading must not exceed specifications or coil is not fit for further service.

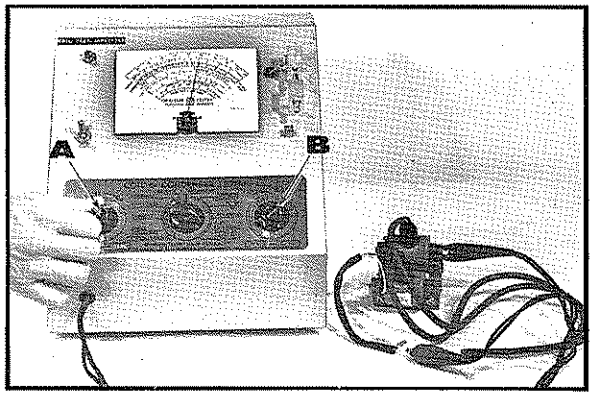
NOTE: The test circuit is powered by alternating current and resultant meter readings are of primary impedance. Do not confuse with the resistance readings obtained with an Ohmmeter.



Test No. 3 — Point Test

Maximum primary DC ohms. The test leads are connected the same as for primary continuity. Readings above the maximum render the coil unusable.

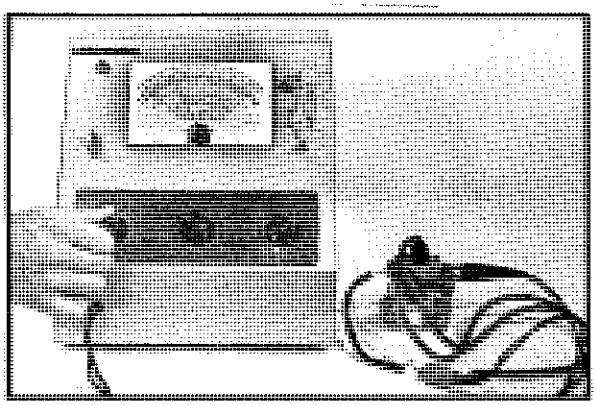
## Graham—Lee Coil Test Procedures




Coil Index Adjustment

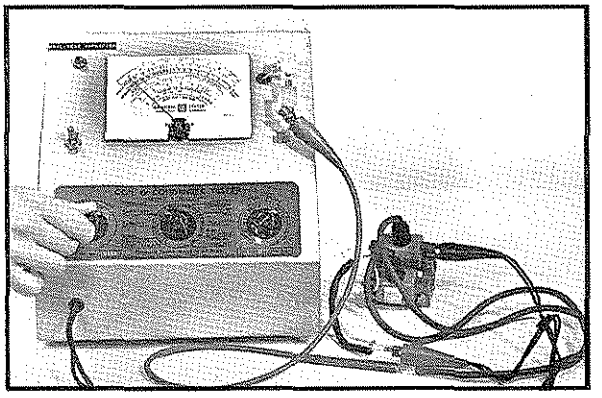
Coil Index Adjustment – Look up the correct coil index setting for coil being tested. Test clips need not be disconnected when setting coil index. Hold the "Coil Tests" knob (A) in the "ON" position and adjust the "Coil Index" knob (B) until the meter reads the selected figure on the "Coil Index" scale. Release the "Coil Tests" knob and do not change index setting during the next test. The coil index setting determines the amount of primary firing power necessary to generate the required secondary open voltage.

CAUTION: Do not exceed the coil index specifications at any time.



Test No. 4 – Minimum Coil Firing Test
(Do not make this test on a metal bench)

Coil index setting must be correct. On this coil test there is nothing connected to the coil secondary terminal. Hold "Coil Test" knob and observe meter reading on "Coil Index" scale. Meter reading must remain steady at or above the figures given in the specifications under "Coil Test." Most good coils will read above the minimum test figures.



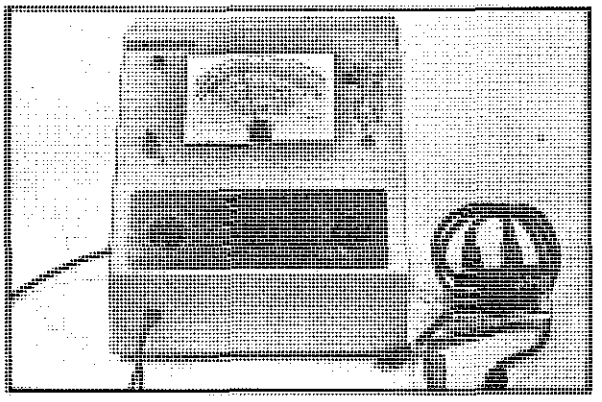
Test No. 5 — Gap Index Test
(Do not make this test on a metal bench)

This test uses practically the same procedure as the regular Coil Firing Test, except that the coil index setting is now called the gap index setting and the coil secondary is connected to and fires across the spark gap on the tester. Connect coil secondary to spark gap, using high tension lead and test probe. Look up the gap index setting and use this figure to set the coil index as described in the coil index adjustment. Fire the coil as described under Coil Firing — Test No. 4. Spark must jump the spark gap regularly. Observe the meter pointer. Regular firing is indicated by a steady pointer. The reading of the meter pointer is not important as long as the pointer remains steady. Missing or failure to jump the gap indicates a defective coil. Before discarding coil, make sure the spark gap points on the tester are clean. If you use a longer test probe lead than the one supplied with the tester, add a few points to the gap index specification (3 to 5) to compensate for the longer lead. Keep the spark gap clean, using a soft brush or cloth. Do not use abrasive materials. The electrodes are made of stainless steel and are factory set to close tolerances.

Test No. 6 — Check for Leaks on Coil Insulation and High Tension Lead:
Leave connected as previous test except the test probe connected to the spark gap. One end of this probe is disconnected from the high tension lead. Hold the "Coil Tests" knob on and run the probe up and down the high tension lead and over the coil. Any time a spark gap is jumped, this indicates a leak.

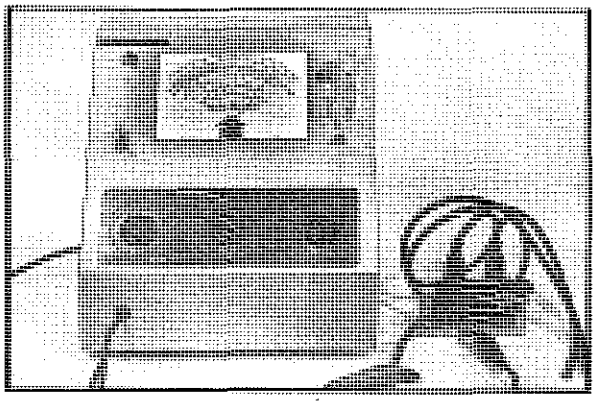
## Graham—Lee Coil Test Procedures

### TWIN CYLINDER CDI COIL



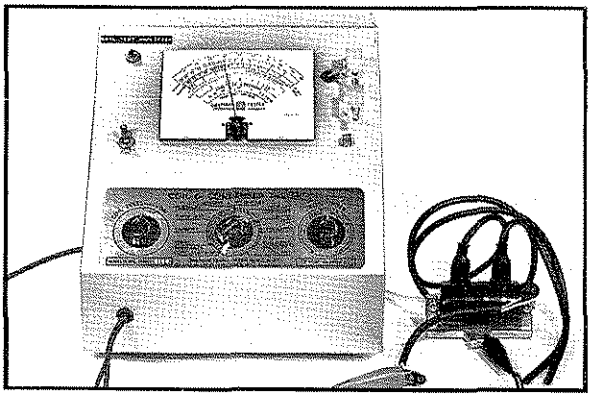
Test No. 1 — Secondary Continuity

Place the scale selector switch to "Reverse — Secondary." Attach one test lead to each high tension lead on the coil as shown. Readings must be below the maximum specified. No reading or a high reading indicates a defective coil.



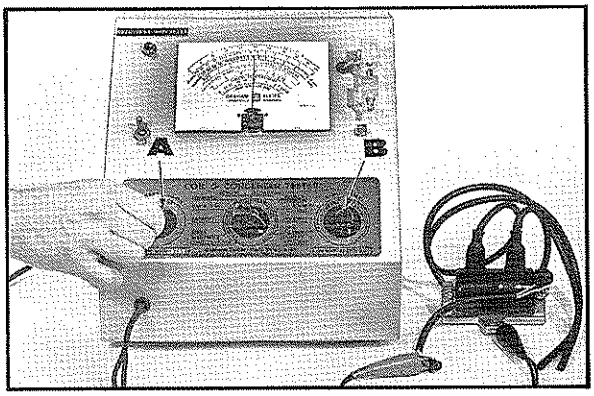
Test No. 2 — Primary Continuity

Place the scale selector to "Primary Continuity." Attach the red test lead to the orange primary lead on the coil and connect the black test lead to ground. Readings must not exceed the maximum specified.



Test No. 3 — Point Test

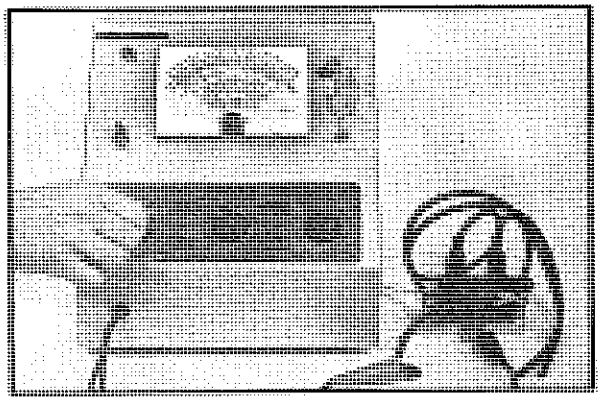
Maximum primary DC ohms. Connect the test leads the same as for primary continuity. Readings must be under the maximum specified.




Coil Index Adjustment

Coil Index Adjustment — Look up the correct coil index setting for coil being tested. Test clips need not be disconnected when setting coil index. Hold the "Coil Tests" knob (A) in the "ON" position and adjust the "Coil Index" knob (B) until the meter reads the selected figure on the "Coil Index" scale. Release the "Coil Tests" knob and do not change index setting during the next test. The coil index setting determines the amount of primary firing power necessary to generate the required secondary open voltage.

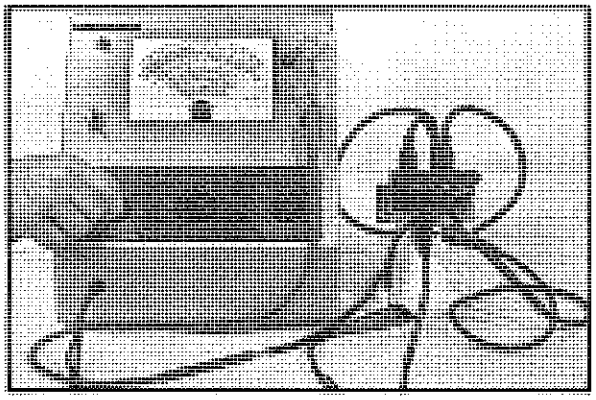
CAUTION: Do not exceed the coil index specifications at any time.



Test No. 4 — Minimum Coil Firing Test
(Do not make this test on a metal bench)

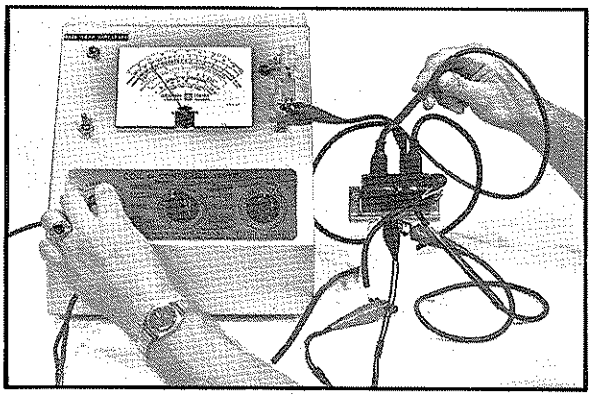
Turn the selector to "Coil Test." Hold "Coil Test" knob on and read meter. Readings should be at or above the minimum specified.

## Graham—Lee Coil Test Procedures



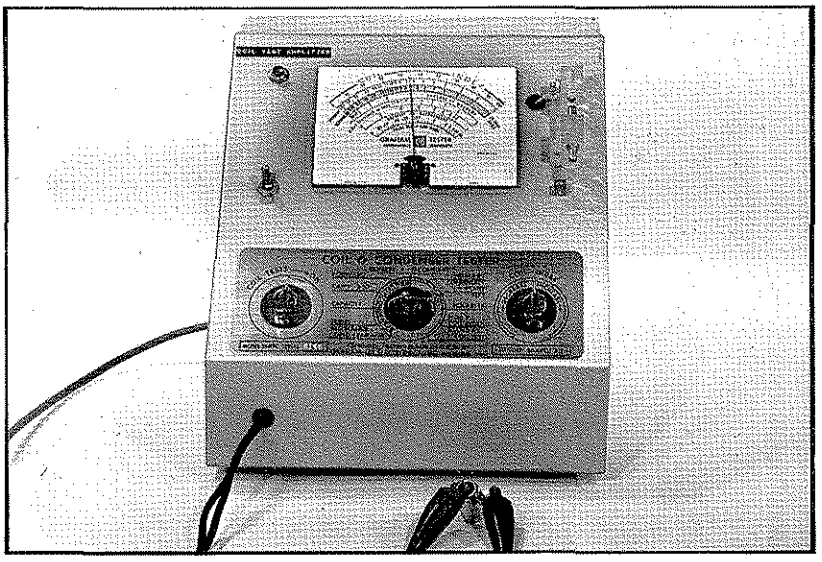
Test No. 5 — Gap Index Test
(Do not make this test on a metal bench)

Connect the red test lead to the orange primary on coil. Connect black test lead to ground. One test probe is connected to the spark gap and one high tension lead. Another test probe is connected to the other high tension lead and ground as shown. The gap index must be set to the proper specification. Hold the "Coil Tests" knob on and a steady spark must jump in the spark gap. The reading on the meter is not important as long as the pointer remains steady.



Test No. 6 — Check for Leaks on Coil Insulation
and High Tension Lead

Leave connected as above except the test probe is connected to the spark gap. One end of this probe is disconnected from the high tension lead. Hold the "Coil Tests" knob on and run the probe up and down the high tension lead and over the coil. Any time a spark gap is jumped, this indicates a leak.

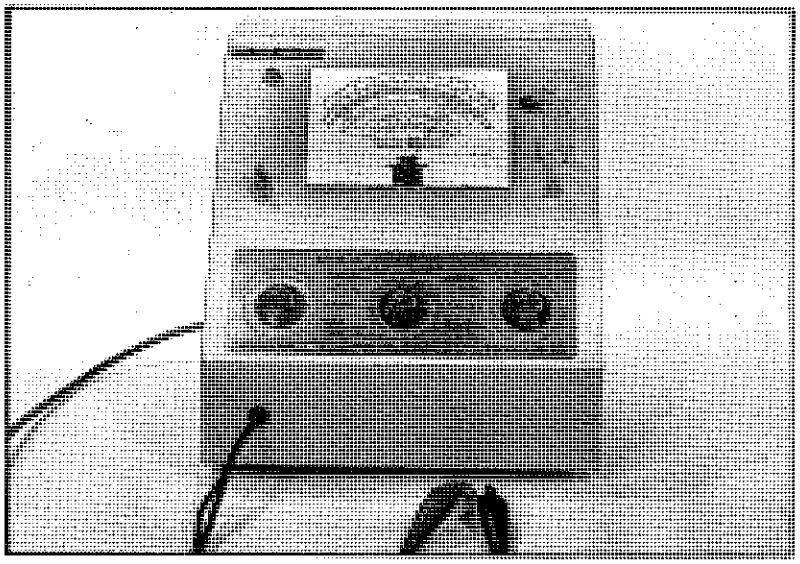


Test No. 1 — Condenser Capacity

Test No. 1 — Condenser Capacity. Turn scale selector switch to "capacity" position. After this is done, attach one test clip to condenser terminal. Attach the other test clip to bracket on body of condenser. Lay condenser with clips attached on any dry insulated surface. Capacity is read directly in Micro-farads. Nominal capacity is .22 Micro-farads. An open condenser will be indicated by no reading. If condenser passes next two tests of Series Resistance and Condenser Leakage, it may be assumed that its capacity has not changed since manufacture. Sometimes a condenser may be of the capacity specified but the type of service may indicate a condenser of another capacity should be used. For instance, if an automobile is used in taxicab service with continual engine idling time, the capacity of the condenser should be higher than when the same vehicle is used mainly for high speed driving. An examination of the breaker points will indicate when a slightly different capacity condenser should be installed. If the negative breaker point is losing material or has a crater in it, the condenser capacity is too small. If the positive point is the one losing material, the capacity is too great.

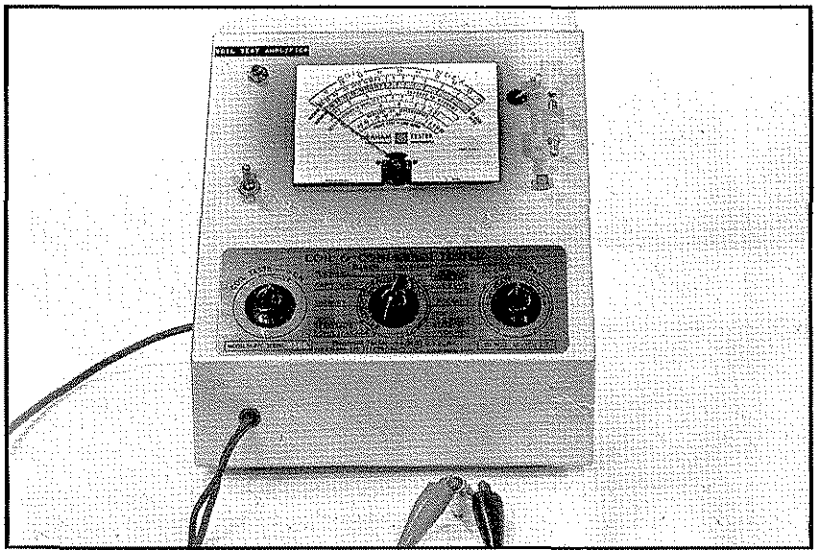
Testing Condenser in Distributor or Magneto — Disconnect condenser from primary circuit, either at terminal or ground. If opened at ground, insulate the condenser body from the housing during tests. It is true that condensers may be tested by opening the breaker points alone, but results are not reliable. Attach one test clip to condenser terminal and attach other test clip to condenser case and use regular procedures in testing.

## Graham—Lee Condenser Test Procedures



Test No. 2 — Condenser Series Resistance

**Test No. 2 — Condenser Series Resistance. Without disturbing connections made for Capacity Test, turn selector switch to "Series Resistance." Normal automotive and magneto condensers will show a meter reading of 1/2 to 3/4 OHMS. Meter reading over 1 OHM indicates high series resistance and the condenser should be replaced. Series Resistance is an important test and must not be confused with the Condenser Leakage Test where the results are also given in terms of resistance. Measurements in the Condenser Leakage test are made with a high voltage, filtered direct current. Meter readings are in MEGOHMS (millions of ohms) and indicate the amount of resistance in the insulation to the passage of current between the terminal side of the condenser and ground. This insulation consists of the paper between the foil layers, the impregnating compound and the bushing where the terminal comes out. The Series Resistance test uses an oscillating circuit tuned to approximately 1600 Kilocycles. The meter readings indicate any resistance to the flow of current into and out of the condenser. Sometimes a condenser will fail on the first Series Resistance Test and after passing Leakage Test will then pass on a Re-Test of Series Resistance. Do not be confused by this. The condenser should still be discarded. Just be sure the tester itself is properly zeroed in for the first test. Any high Series Resistance indication will then be in the condenser.**



Test No. 3 – Condenser Leakage

Test No. 3 – Condenser Leakage. Without disturbing connections after Series Resistance Test, turn selector switch to "Condenser Leakage." Meter will come to rest at some point on the "Leakage in Megohms" scale which will indicate the amount of insulation resistance to leakage. A shorted condenser will cause the meter pointer reading to the extreme right. A good condenser, at room temperature (80° F) is indicated by the meter pointer returning to between 20 megohms and infinity as the condenser becomes fully charged. If the meter shows readings of less than 20 megohms, the condenser should be heated and re-tested. Heat it by the best means available to operating temperature (about 180° F). If it is inconvenient or impossible to heat the condenser, it should be replaced. After heating, the condenser should show resistance equal to or higher than that called for in the specifications. Where no figure is given a minimum resistance of 2 Megohms may be used. Turning selector switch off Condenser Leakage in either direction drains high voltage charge so that condenser will not shock.

## Graham—Lee Rectifier Test Procedures

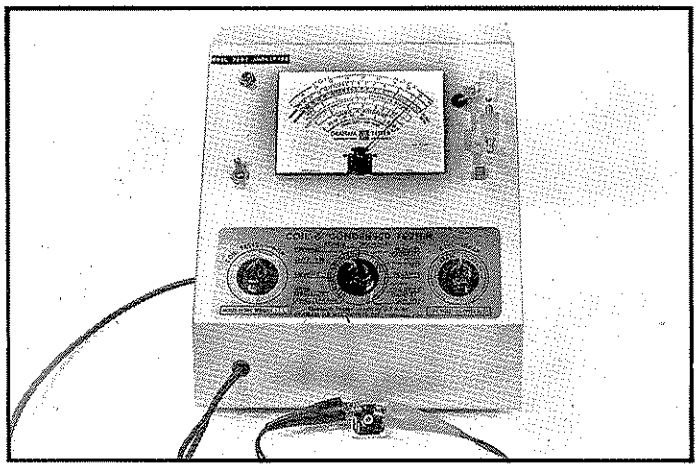


Figure 1 — Forward Test

Rectifier Tests (Model 51-R Only)

Forward Test — Turn selector switch to "Forward." Connect test clips so meter reads up. The better the rectifier, the higher the reading on top meter scale. Alternating current is applied at the test leads. When testing full wave type rectifiers, test one side at a time. Both sides must test "Good." Suggested minimum on top scale — 85. There is no "zero adjust" for this test.

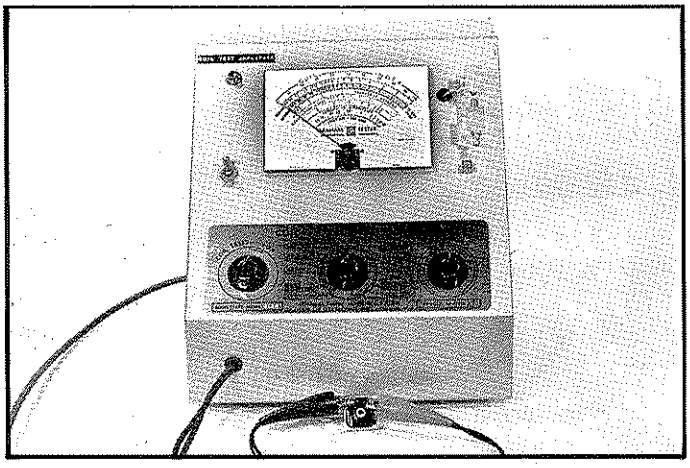
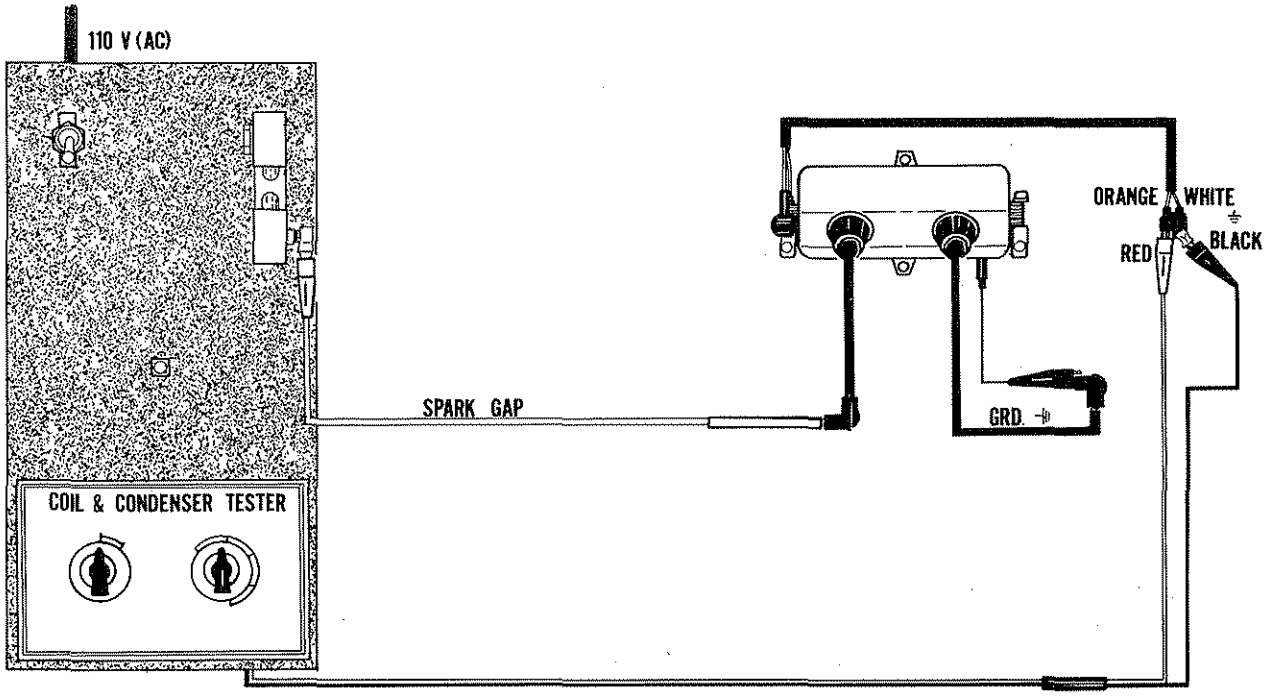


Figure 2 — Reverse Test

Reverse Test — Without changing connections, turn selector switch to "Reverse." On this test direct current is applied at the test leads. To set "Zero," clip leads together and adjust proper potentiometer at back of tester so meter reads "100." Test clips are connected the same as for Forward Test. Make Forward Test first to determine correct polarity. Suggested maximum on top scale for this test is "85." This is for the larger plate type rectifiers. For the smaller rectifiers and diodes, the maximum will be much lower — in some cases 5 may be the maximum permissible.




Testing Connections

Note: It is not necessary to remove coils from engine for test.

Procedure:

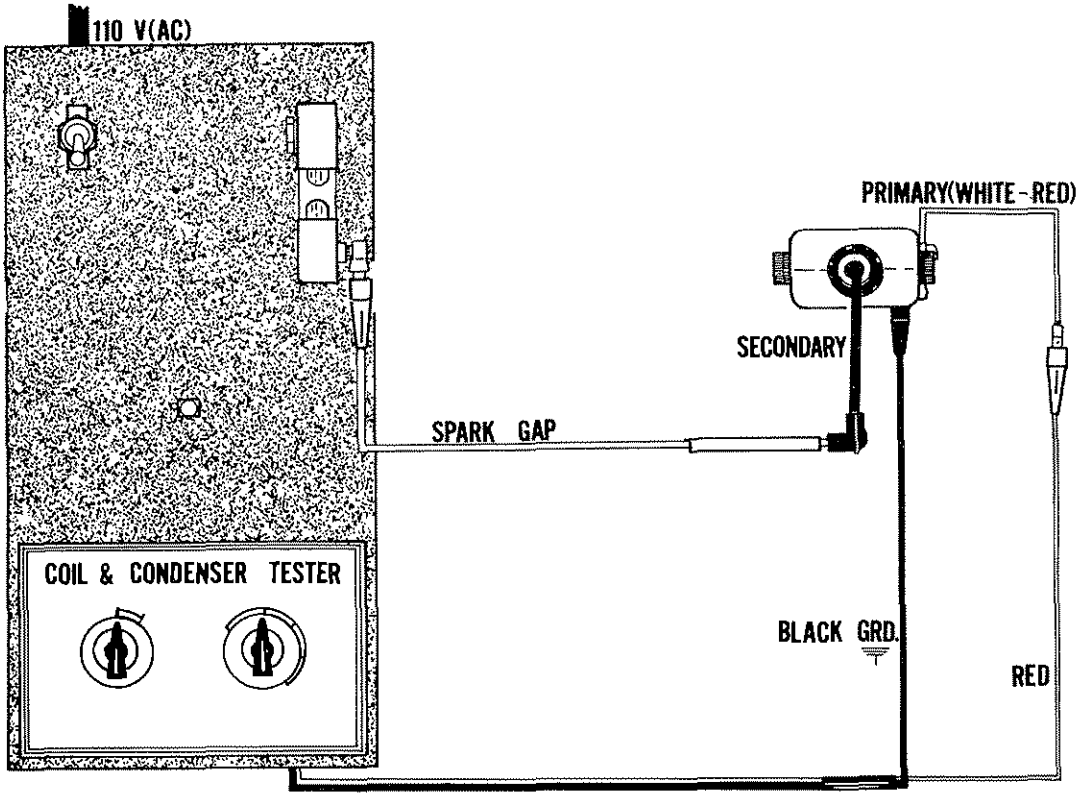
1. Install test leads to coil as shown. Note: It will be necessary to ground one high tension cable to its mounting bracket.

2. Identify coil part number and refer to test specifications for correct tester index setting.

3. Plug tester into 110 V (AC) outlet. (Allow to warm up approximately 30 seconds in "on" position.)

4. Turn tester to "coil tests." Observe the tester spark gap. The coil should fire across the gap regularly at the specified index setting to pass test.

## Graham—Lee Model 31 Magneto Point Ignition Coil Test

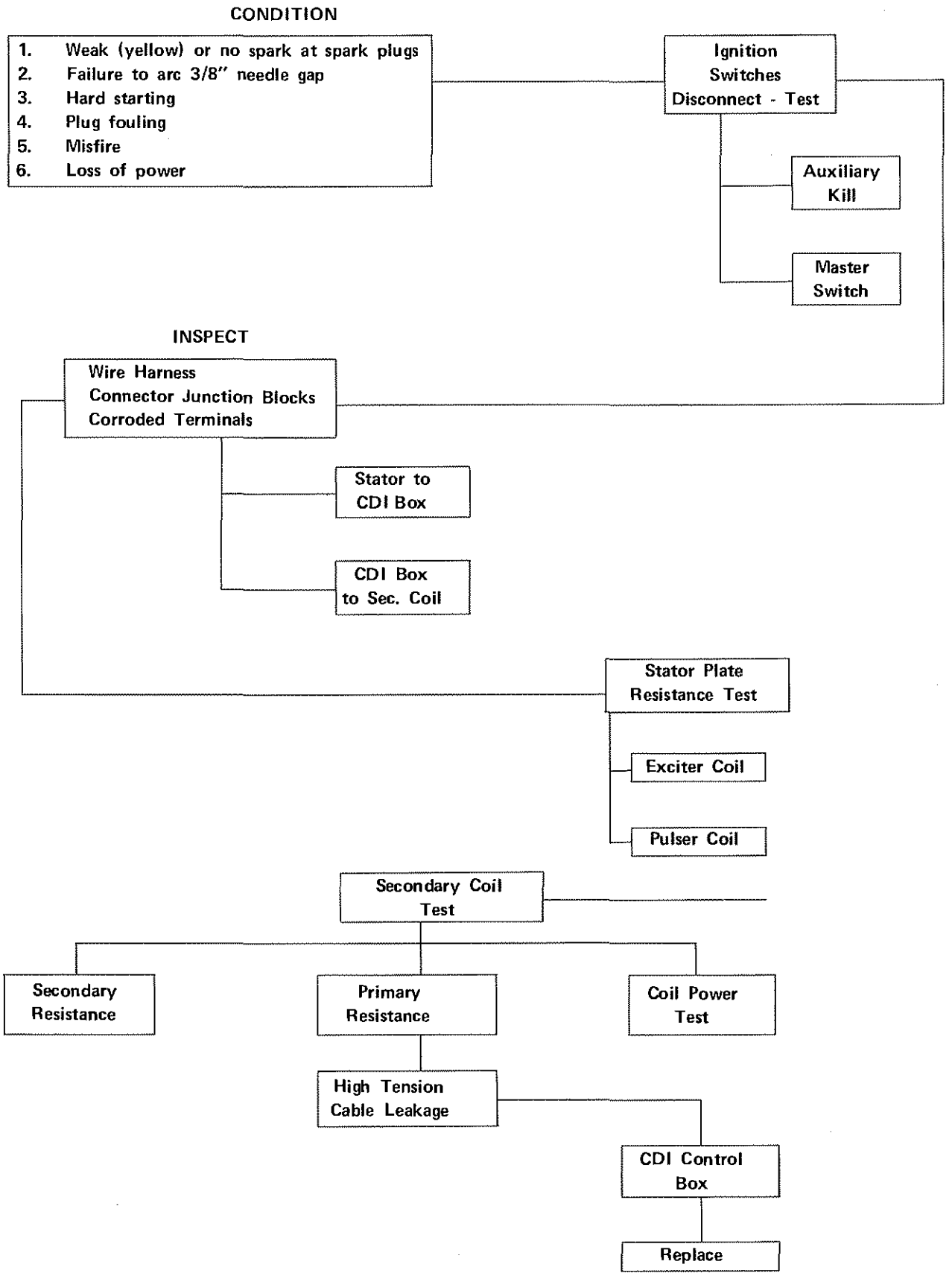



Testing Connections

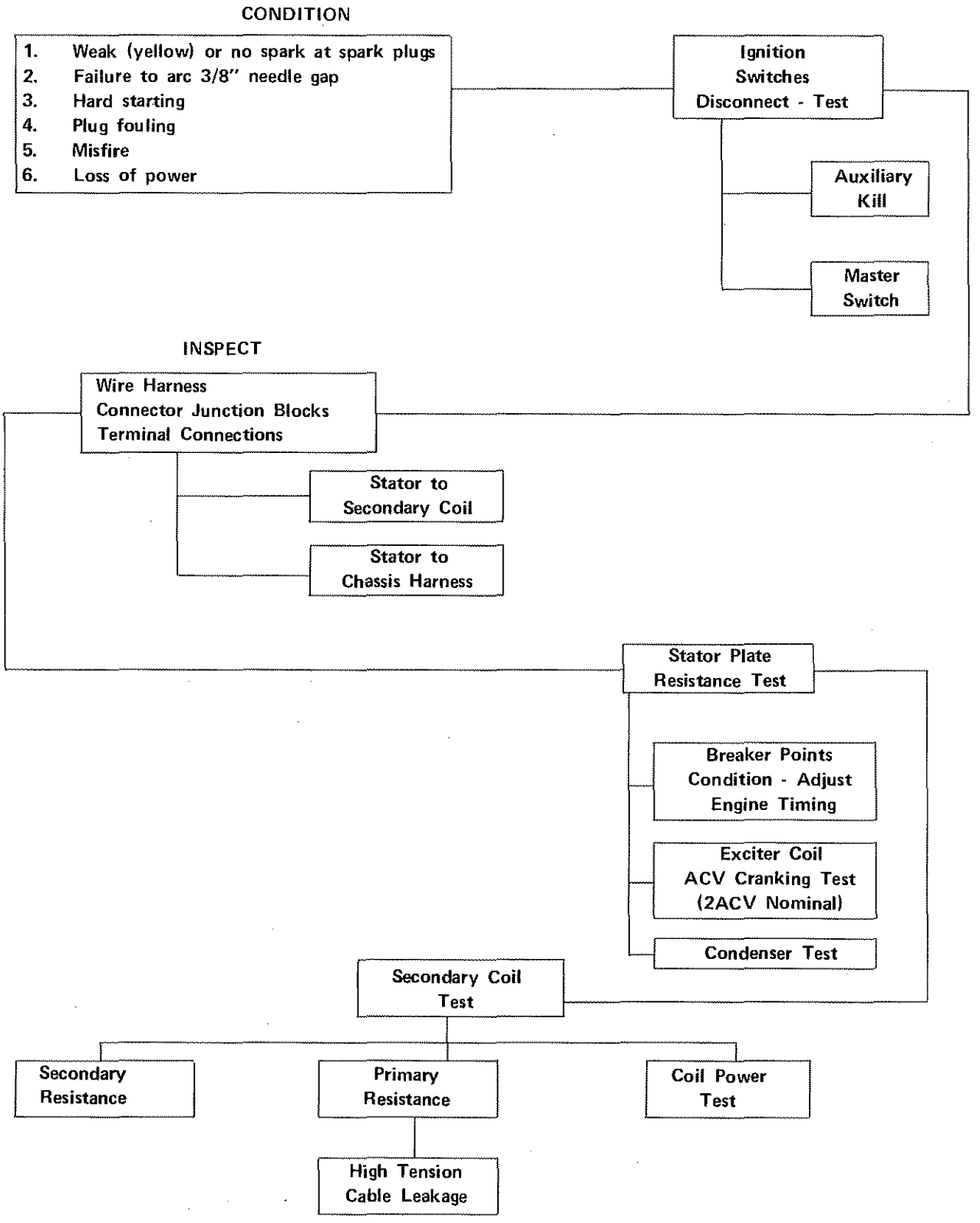
Note: It is not necessary to remove coils from engine for test.

Procedure:

1. Disconnect the coils from the engine using the bullet connectors provided.
2. Install test leads as shown. (Each coil is tested separately.)
3. Identify coil part number and refer to test specifications for correct tester index setting.
4. Plug tester into 110 V (AC) outlet. (Allow to warm up approximately 30 seconds in "on" position.)
5. Turn tester to "coil tests." Observe the tester spark gap. The coil should fire across the gap regularly at the specified index setting to pass test.


CONDITION
1. Weak (yellow) or no spark at spark plugs
2. Failure to arc 3/8" needle gap
3. Hard starting
4. Plug fouling
5. Misfire
6. Loss of power
Ignition Switches Disconnect - Test
Auxiliary Kill
Master Switch
INSPECT
Wire Harness
Connector Junction Blocks
Corroded Terminals
Stator to CDI Box
CDI Box to Sec. Coil
Stator Plate Resistance Test
Exciter Coil
Pulser Coil
Secondary Coil Test
Secondary Resistance
Primary Resistance
Coil Power Test
High Tension Cable Leakage
CDI Control Box
Replace

## Magneto Point Ignition Diagnostic Test Sequence



# SECTION IX

# SUSPENSIONS

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Type III Front Limiter Assembly Adjustments . . . . . 6

Type III Stamped Steel Slide Rail Assembly (Strap Limiter) . . . . . 7

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Continued

| SUSPENSION IDENTIFICATION | |
|---|---|
| Glass Rail | 1972 TX; 1972-1973 Charger, Charger SS, Mustang, and Custom |
| Stamped Steel Type I | 1972-1978 Colt; 1972-1977 Colt SS<br>Shock Accessory on Some Models |
| Stamped Steel Type II (E Slot) | 1973-1974 TX; 1974 Custom II; 1975 TX with Rear Spring Tensioner; 1974-1977 Electra |
| Stamped Steel Type III (Front Limiter Strap and Rear Spring Tensioner) | 1978 S/S 340 and Cobra (Has Pivoting Front Limiter); 1979 Cobra; 1979-1980 Apollo; 1979-1981 Gemini |
| Extruded Aluminum Type I | 1976 Starfire; 1976-1979 TX |
| Extruded Aluminum Type II | 1977-1978 TX-L |
| Extruded Aluminum Type III | 1979 TX-C, TX-L, and Centurion |
| Extruded Aluminum Type IV | 1980 Galaxy and TX (Cleated Track) |
| Extruded Aluminum Type V | 1980-1981 Galaxy (Rubber Track) |
| Extruded Aluminum Type VI | 1980 Centurion; 1980-1981 TX-C and TX-L |
| Extruded Aluminum Type VII | 1980-1981 TX-L Indy; 1981 Centurion Indy |
| Extruded Aluminum Type VIII | 1981 Cutlass and Cutlass SS |

## Track Tension and Drive Sprocket to Shaft Specifications

### TRACK TENSION SPECIFICATIONS

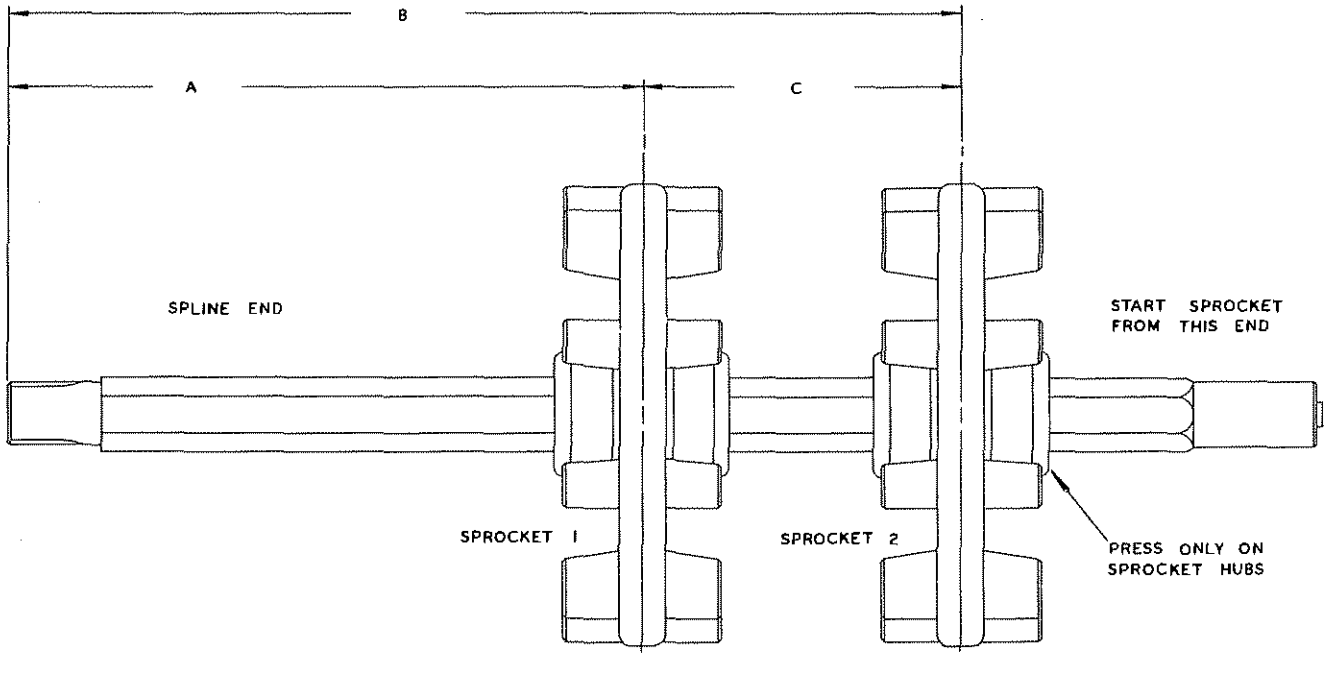
Refer to page IX – 19 for procedures.

| TYPE | TOLERANCE (With 10 Pound Down Weight) |
|---|---|
| Glass Rail | 1/2" between cleat and hi-fax |
| Stamped Steel Types I, II, and III | 3/8" – 3/4" between cleat and hi-fax |
| Extruded Aluminum Types I and IV | 1/2" between cleat and hi-fax |
| Extruded Aluminum Type II | 1/8" – 1/4" between track clip and hi-fax |
| Extruded Aluminum Types III, V, VI, VII, and VIII | 3/8" – 1/2" between track clip and hi-fax |

### DRIVE SPROCKET TO SHAFT SPECIFICATIONS

Refer to page IX – 20 for procedures.

| MODEL | DISTANCE A (Spline End to Sprocket 1) | DISTANCE B (Spline End to Sprocket 2) | DISTANCE C Sprocket C.D. |
|---|---|---|---|
| Apollo, Gemini – Rubber | 6.07" | 13.70" | 7.63" |
| Galaxy – Cleated | 7.61" | 15.61" | 8.00" |
| Galaxy – Rubber | 9.19" | 14.03" | 4.84" |
| TX – Cleated | 7.00" | 15.00" | 8.00" |
| TX-C, TX-L, Centurion, TX-L Indy, Centurion Indy | 8.58" | 13.42" | 4.84" |
| Cutlass, Cutlass SS | (Clutch End to Sprocket 1) 8.93" | (Clutch End to Sprocket 2) 11.35" | 4.84" |



# SUSPENSIONS

## General Specifications

### 1979

| Model | Model Number | Suspension Type | Track Type | Track Width | Track Length (Overall) | Track Length On Ground | Bogie Wheel Diameter | Rear Idler Wheel Diameter | Drive Sprocket Diameter | Ice Growsers |
|---|---|---|---|---|---|---|---|---|---|---|
| Gemini | 0791025<br>0791026 | Stamped Steel Type III | Growser Bar | 15" | 114.44" | 42" | ---- | 5.68" | 6.12" Idler Dia. | Molded Rubber on Track Belt |
| Apollo | 0791138 | Stamped Steel Type III | Molded Rubber | 15" | 114.85" | 42" | 5.68" | 6.38" | 6.25" Idler Dia. | ---- |
| Cobra | 0791838<br>0791843 | Stamped Steel Type III | Growser Bar | 15" | 119.5" | 48.75" | ---- | 6.38" | 7.00" Idler Dia. | Molded Rubber on Track Belt |
| TX | 0790523<br>0790537<br>0790545 | Extruded Aluminum Type I | Growser Bar | 15" | 114.44" | 44.25" | ---- | 7.12" | 7.125" Idler Dia. | Molded Rubber on Track Belt |
| TX-C | 0790637 | Extruded Aluminum Type III | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | ---- |
| TX-L | 0790639 | Extruded Aluminum Type III | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | ---- |
| Centurion | 0790653 | Extruded Aluminum Type III | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | Steel Traction Studs |

### 1980

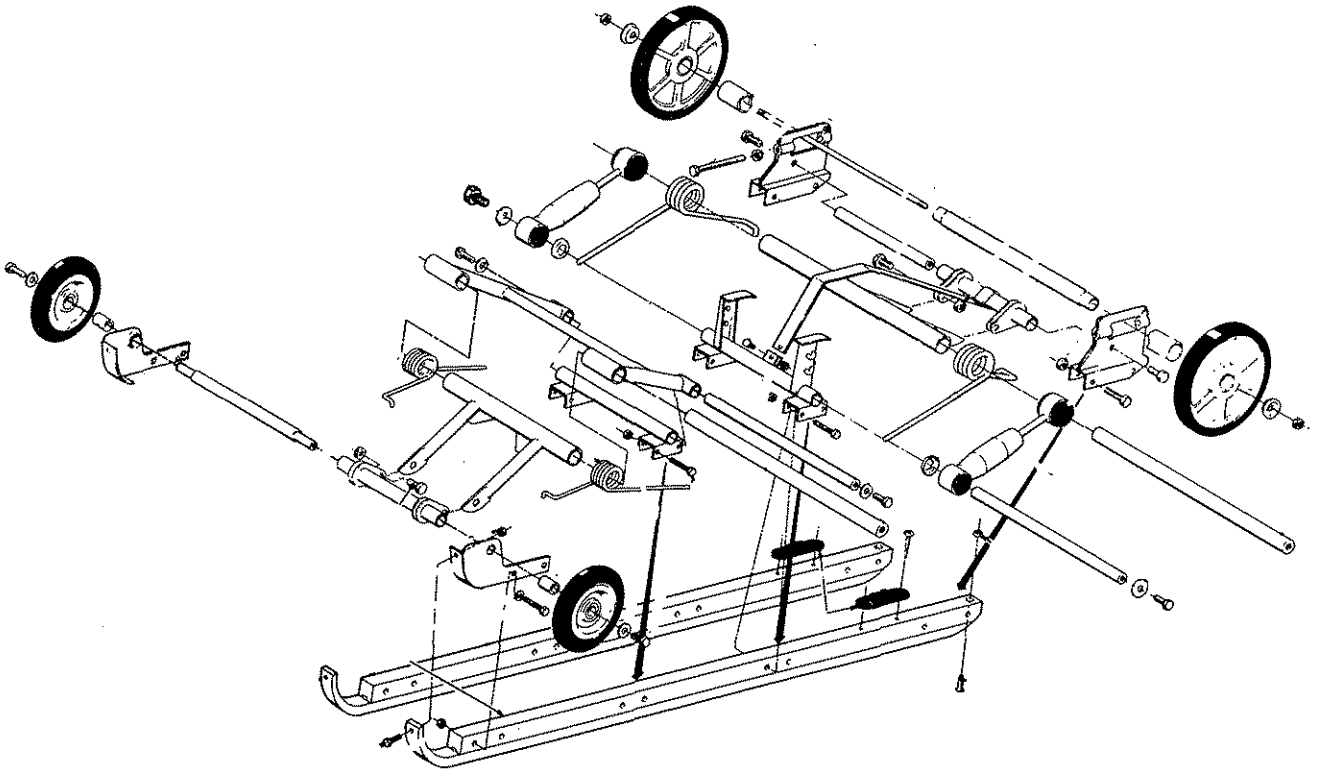
| Model | Model Number | Suspension Type | Track Type | Track Width | Track Length (Overall) | Track Length On Ground | Bogie Wheel Diameter | Rear Idler Wheel Diameter | Drive Sprocket Diameter | Ice Growsers |
|---|---|---|---|---|---|---|---|---|---|---|
| Gemini | 0801025<br>0801026 | Stamped Steel Type III | Growser Bar | 15" | 114.44" | 42" | ---- | 5.68" | 6.12" Idler Dia. | Molded Rubber on Track Belt |
| Apollo | 0801138<br>0801238 | Stamped Steel Type III | Molded Rubber | 15" | 114.85" | 42" | 5.68" | 6.38" | 6.25" Idler Dia. | ---- |
| Galaxy | 0801838<br>0801843<br>0801943 | Extruded Aluminum Type IV | Growser Bar | 15" | 119.5" | 46" | ---- | 6.38" | 7.125" Idler Dia. | Molded Rubber on Track Belt |
| Galaxy | 0802043 | Extruded Aluminum Type V | Molded Rubber | 15" | 120.96" | 46" | 5.25" | 6.88" | 7.06" Outside Dia. | ---- |
| TX | 0800537<br>0800545 | Extruded Aluminum Type IV | Growser Bar | 15" | 119.5" | 46" | ---- | 6.38" | 7.125" Idler Dia. | Molded Rubber on Track Belt |
| TX-C | 0800637 | Extruded Aluminum Type VI | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | ---- |
| TX-L | 0800639 | Extruded Aluminum Type VI | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | ---- |
| Centurion | 0800653 | Extruded Aluminum Type VI | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | Steel Traction Studs |
| TX-L Indy | 0800739 | Extruded Aluminum Type VII | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | ---- |

### 1981

| Model | Model Number | Suspension Type | Track Type | Track Width | Track Length (Overall) | Track Length On Ground | Bogie Wheel Diameter | Rear Idler Wheel Diameter | Drive Sprocket Diameter | Ice Growsers |
|---|---|---|---|---|---|---|---|---|---|---|
| Gemini | 0811025 | Stamped Steel Type III | Growser Bar | 15" | 114.44" | 42" | ---- | 5.68" | 6.12" Idler Dia. | Molded Rubber on Track Belt |
| Gemini | 0811225 | Stamped Steel Type III | Molded Rubber | 15" | 114.85" | 42" | 5.68" | 6.88" | 6.25" Idler Dia. | ---- |
| Galaxy | 0812143 | Extruded Aluminum Type V | Molded Rubber | 15" | 120.96" | 46" | 5.25" | 6.88" | 7.06" Outside Dia. | ---- |
| Cutlass | 0810938 | Extruded Aluminum Type VIII | Molded Rubber | 15" | 110" | 44.25" | 5.25" | 6.38" | 3.69" Outside Dia. | ---- |
| Cutlass SS | 0811349<br>0811341 | Extruded Aluminum Type VIII | Molded Rubber | 15" | 110" | 44.25" | 5.25" | 6.38" | 4.35" Outside Dia. | ---- |
| TX-C | 0810647 | Extruded Aluminum Type VI | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | ---- |
| TX-L | 0810639 | Extruded Aluminum Type VI | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | ---- |
| TX-L Indy | 0810739 | Extruded Aluminum Type VII | Molded Rubber | 15" | 120.96" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | ---- |
| Centurion Indy | 0810753 | Extruded Aluminum Type VII | Molded Rubber | 15" | 120.95" | 47.5" | 5.25" | 6.38" | 7.06" Outside Dia. | Steel Traction Studs |

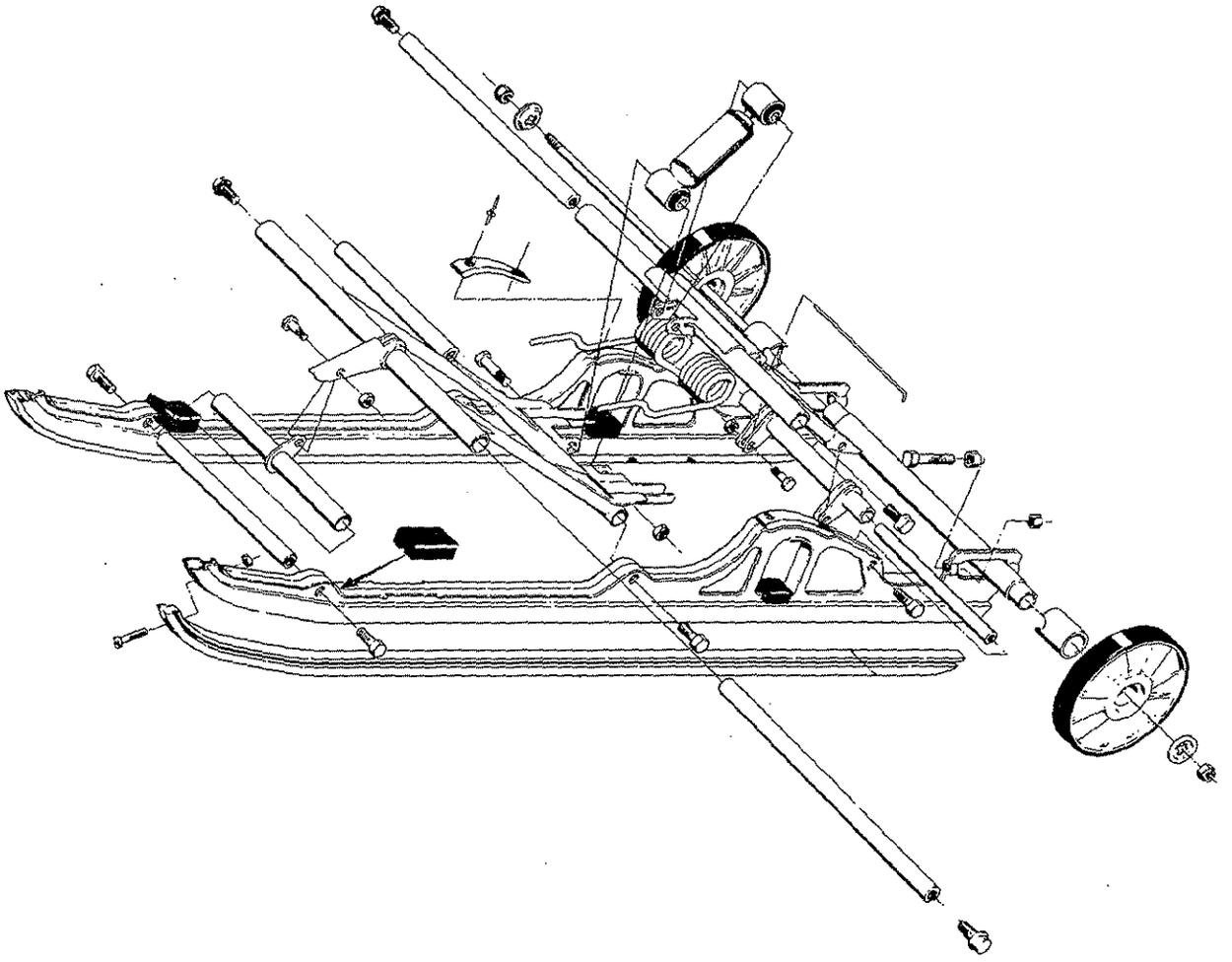
## Slide Rail Assembly – Charger, Charger SS, TX, Mustang, and Custom (Glass Rail)

Rear spring adjustment is basically the only adjustment that can be administered to the suspension. This adjustment is for rider weight only. The highest spring position on the suspension would accommodate a heavy rider or when riding double. The lowest spring position would make a softer ride and would accommodate a lighter rider. Hi-fax should be replaced when no less than 1/8" is remaining at any given point. Failure to do so will result in severe damage to the fiberglass rail.



## Type I Stamped Steel Slide Rail Assembly

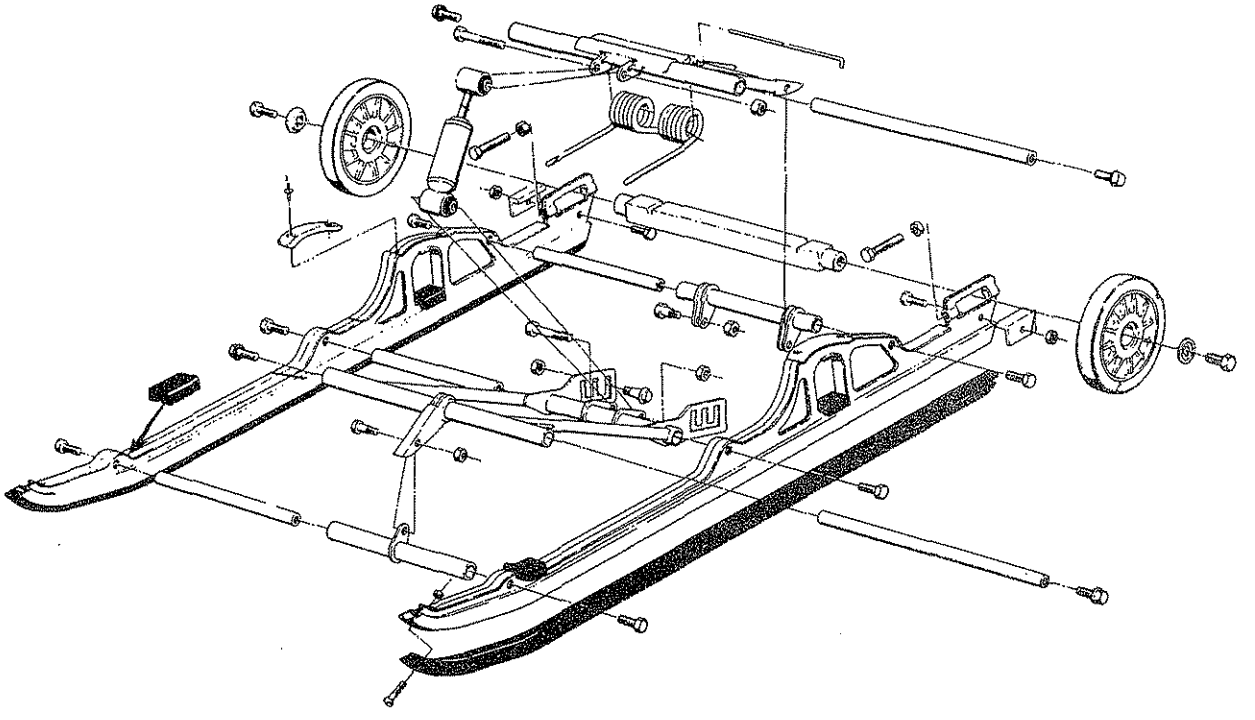
Stamped steel Type I slide suspension without rider weight adjustments. Shock accessory on some applications.



## Type II Stamped Steel Slide Rail Assembly (E Slot)

**This type suspension was introduced into the Polaris line in 1973 and was continued in the following models and years:**

**1973 TX**
**1974 Electra, Custom II, TX**
**1975 TX, Electra**
**1976 Electra**
**1977 Electra**



## Type II Stamped Steel Slide Rail Assembly (E Slot) Adjustments

### ADJUSTMENTS

There are compensating spring adjustments for variations in driver weight and variations in machine performance (weight transfer to the track and ski pressure).

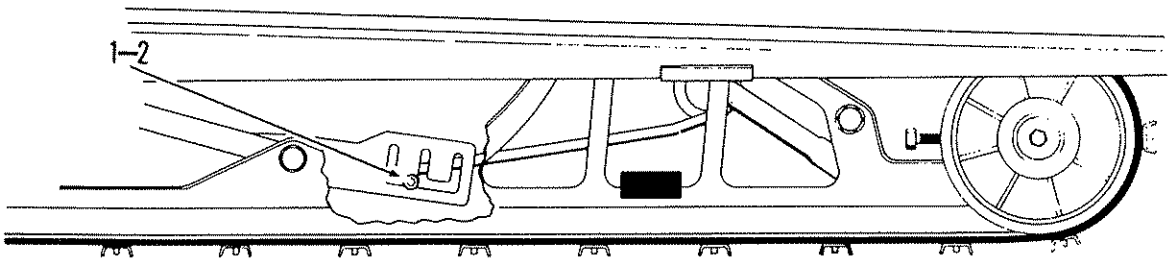
The two basic adjustments are:

1. HORIZONTAL – Variations in weight transfer to track and ski pressure.
2. VERTICAL – Adjustments according to weight of driver.

The farther forward the spring adjusting bolt is placed on the adjusting bracket, the more ski pressure will be obtained. Conversely, the least ski pressure will be obtained by placing the adjuster bolts in the back of the horizontal adjustment.

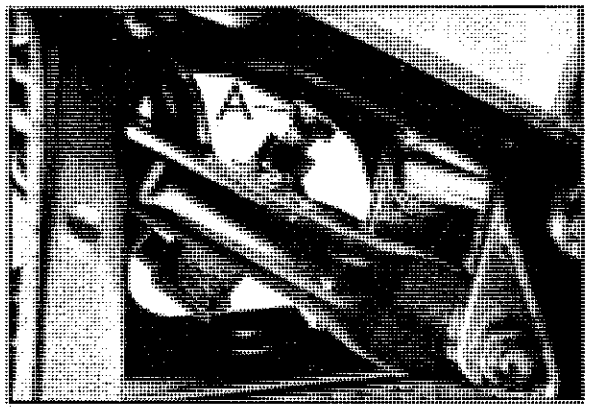
On the vertical adjustments (driver weight), the heavier a driver is, the higher he will place the adjuster bolts in the vertical adjustments.

Track Tension: Distance between the track and slide rail should be approximately 3/8" to 1/2" in the slack position.




### REAR SPRING ADJUSTMENT

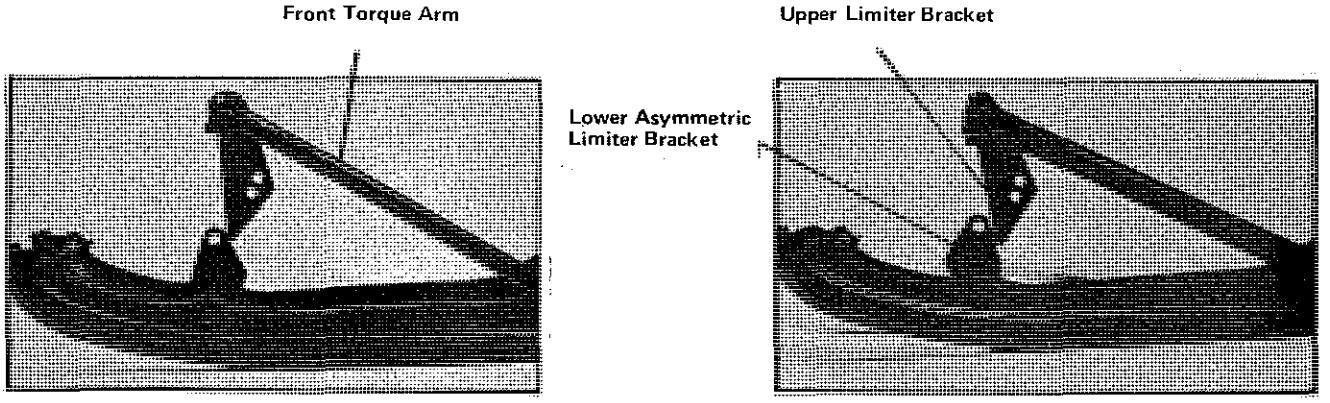
1975 TX introduced this adjustment which is included on all Type III suspensions.
This adjustment is provided to enable the suspension to be adjusted for different passenger and driver weights, which in turn affects ski pressure and handling characteristics. Adjustment is accomplished by turning the cap screw (A). For a firmer ride and less ski to ground pressure, turn the cap screw counterclockwise. For a softer ride resulting in more ski to ground pressure, adjust the cap screw clockwise.



## SUSPENSIONS

### Type III Front Limiter Assembly Adjustments

The torque arm limiter also may be adjusted to work in conjunction with the torque arm to further provide degrees of ski lift and weight transfer. The upper limiter bracket has an upper and a lower hole, while the bottom bracket is asymmetric and may be turned 180° for additional adjustment.




NORMAL POSITION

Lower asymmetric limiter in normal position.

REVERSED POSITION

Lower asymmetric limiter bracket turned 180° to reversed location.

### FRONT TORQUE ARM PIVOTING LIMITER ADJUSTMENT COMBINATIONS

The following are adjustment combinations with resulting ski pressure or lift characteristics.

| Lower Bracket Position | Upper Limiter Hole Position | Ski – Ground Pressure |
|---|---|---|
| Reversed | Lower | Decreasing |
| Reversed | Upper | ↕ |
| Normal | Lower | |
| Normal | Upper | Increasing |

### FRONT TORQUE ARM STRAP LIMITER ADJUSTMENTS

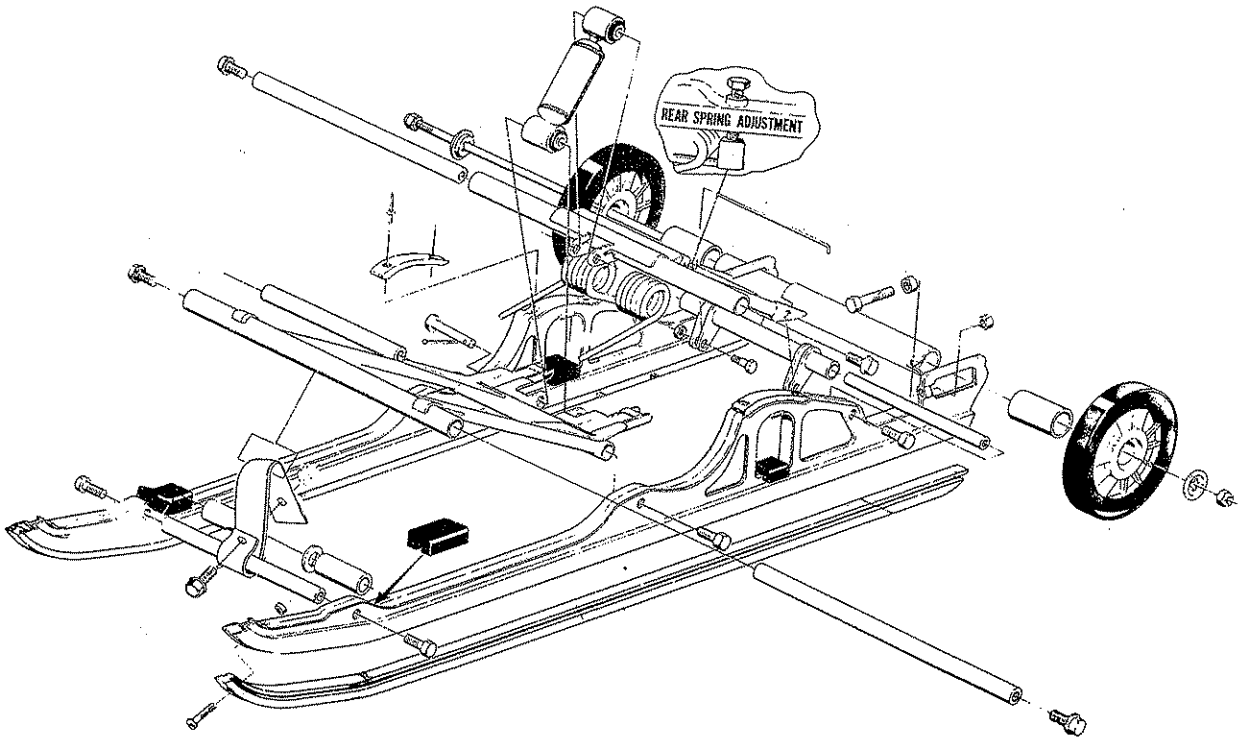
| | Ski – Ground Pressure |
|---|---|
| Lengthen Strap | Decreasing |
| | ↕ |
| Shorten Strap | Increasing |

The limiter strap has a series of holes provided to vary its operating length and in turn affect the amount of ski pressure or lift during machine operation.

Setup Tip: In deep snow or hill climbing operation, less ski pressure is desirable.

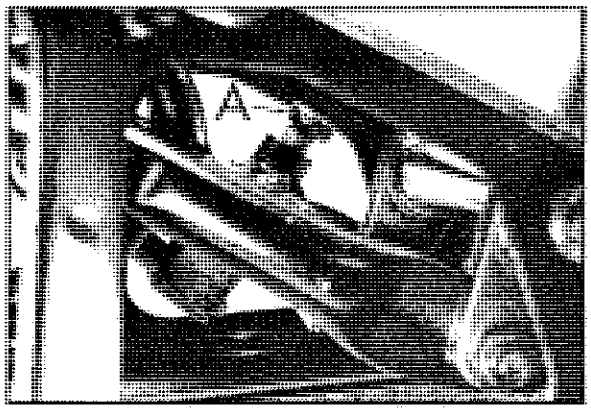
## Type III Stamped Steel Slide Rail Assembly

NOTE: Front limiter-adjustable belting with rear spring adjustment.



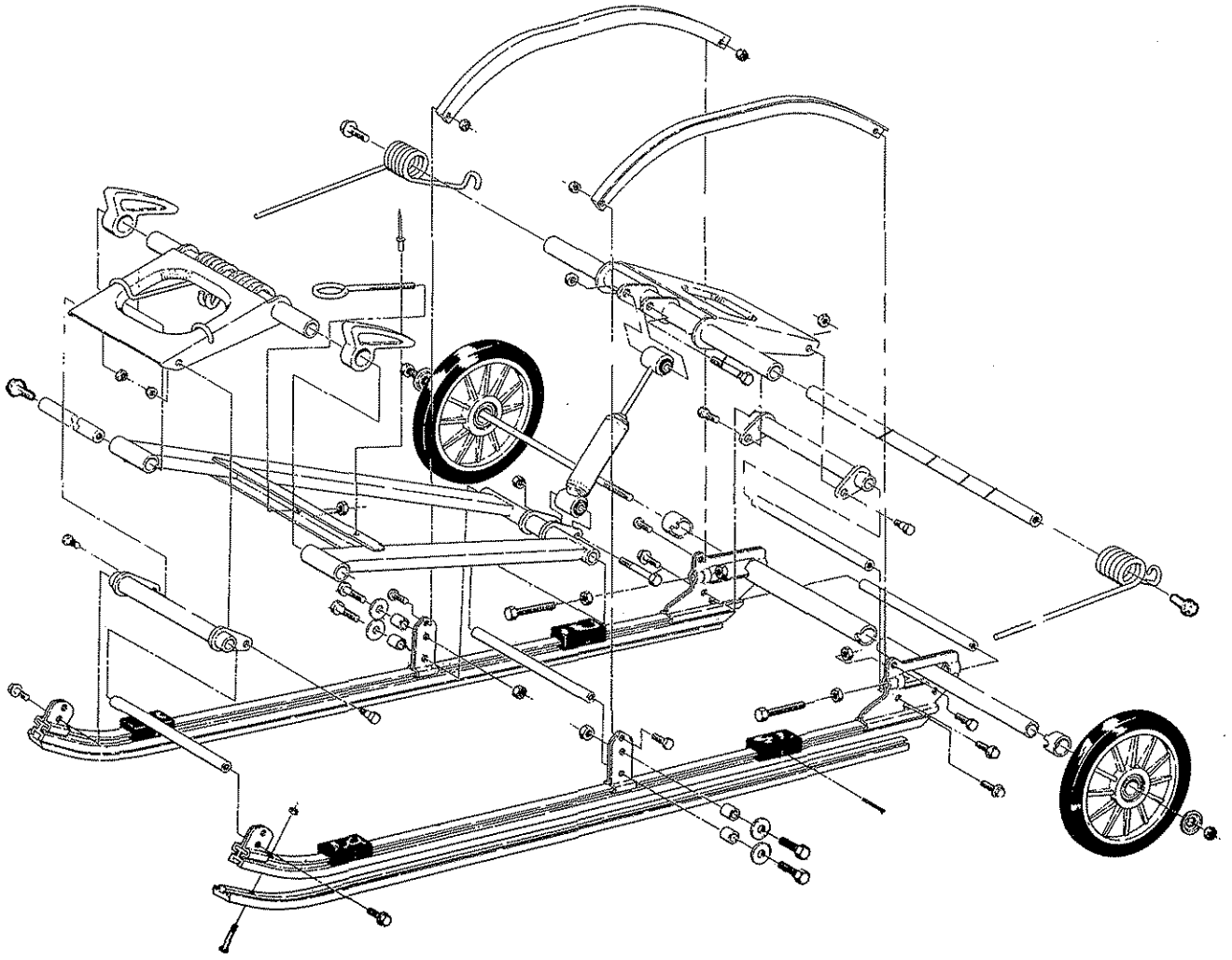

### REAR SPRING ADJUSTMENT

This adjustment is provided to enable the suspension to be adjusted for different passenger and driver weights, which in turn affects ski pressure and handling characteristics. Adjustment is accomplished by turning the cap screw (A). For a firmer ride and less ski to ground pressure, turn the cap screw counterclockwise. For a softer ride resulting in more ski to ground pressure, adjust the cap screw clockwise.



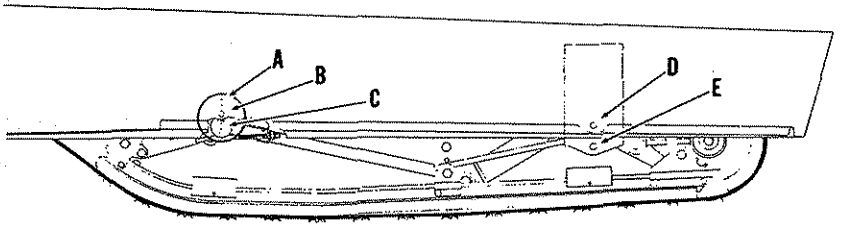
## SUSPENSIONS

### Type I Extruded Aluminum

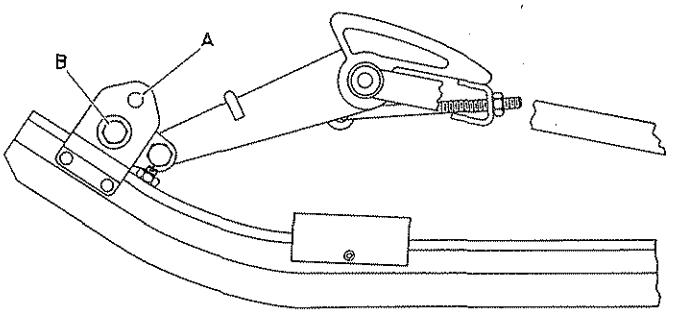


The locations of suspension mountings in the tunnel as shown in figure below are available to owners who wish to tailor their machines for individual riding or handling characteristics.

A – High ski pressure normally not used.
B – Less ski pressure than A, but more than C.
C – Best suited for average conditions.
D – Most normally used for general riding.
E – Deep snow running and climbing.

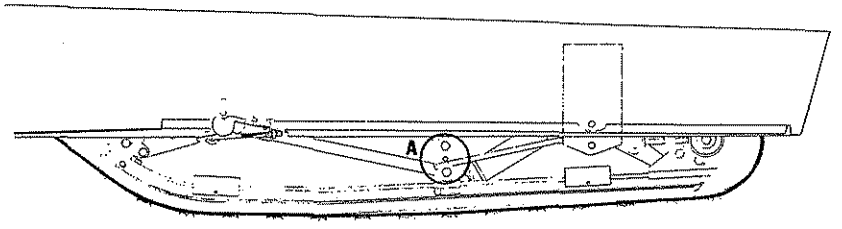


FRONT LIMITER PIVOT ARM




The front limiter pivot arm may be located in either the upper or lower slide rail bracket holes. The upper position (A) provides greater ski lift upon acceleration and is desirable for deep snow running and hill climbing. The lower hole position (B) provides more ski pressure for turning and maneuverability on hard packed surfaces.

REAR SPRING ADJUSTMENTS



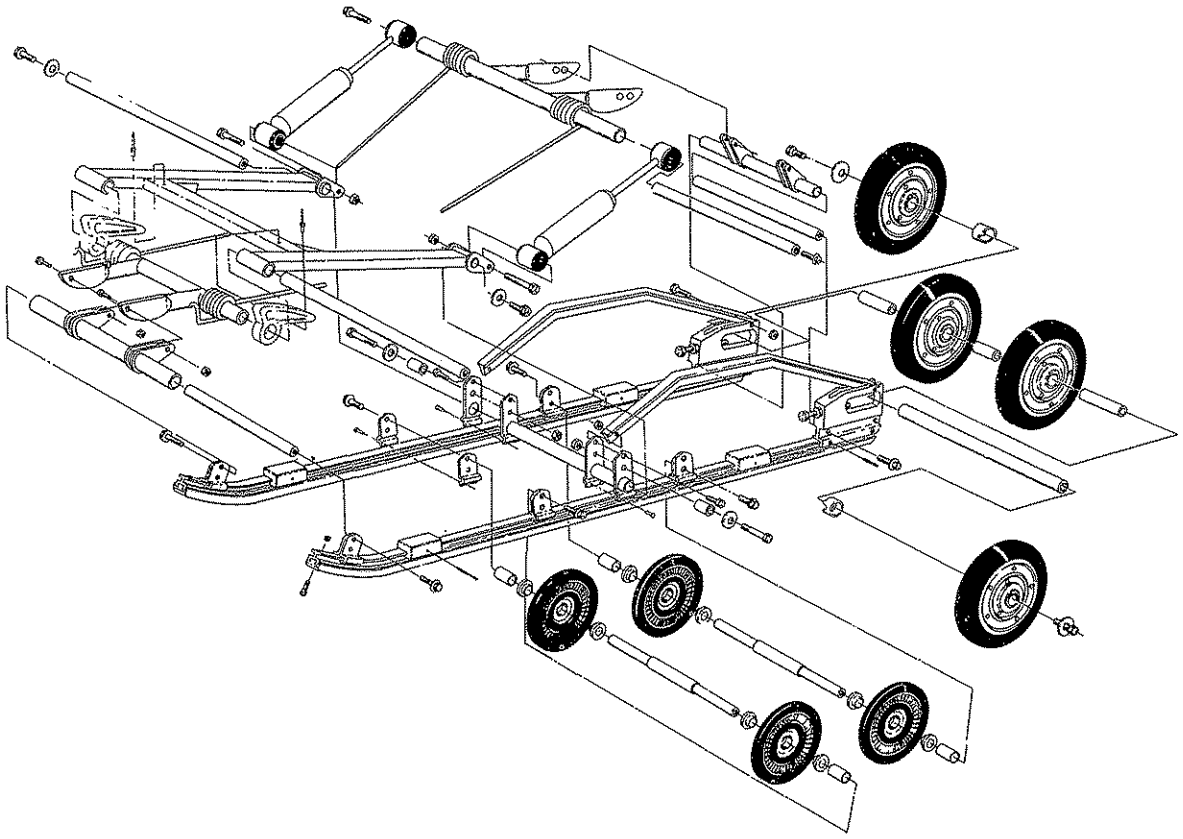

There are two adjustment positions (A) for the rear springs which are located in the center of the suspension on either side. Adjustment is accomplished by moving the spring leg from one shoulder bolt to another. The lower position is for normal riding qualities, while the upper is reserved for loads in excess of 190 pounds.

⚠ Each spring should be located in the same position on either side.

NOTE: Front suspension torque arm spring adjustment is sufficiently adjusted before machine crating at the factory; increasing spring tension is not necessary.

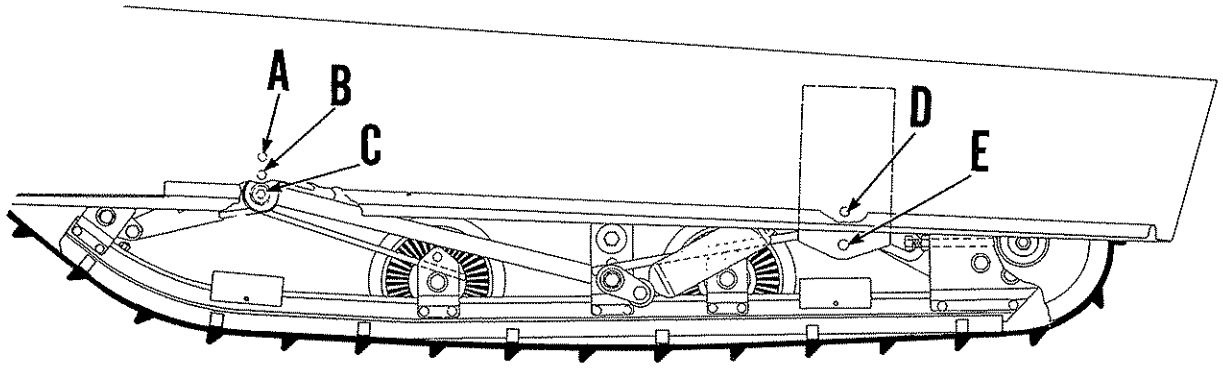
## SUSPENSIONS

### Type II Extruded Aluminum

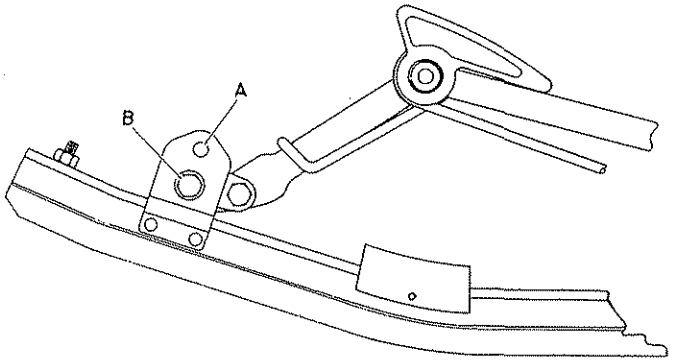


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A — High ski pressure normally not used.
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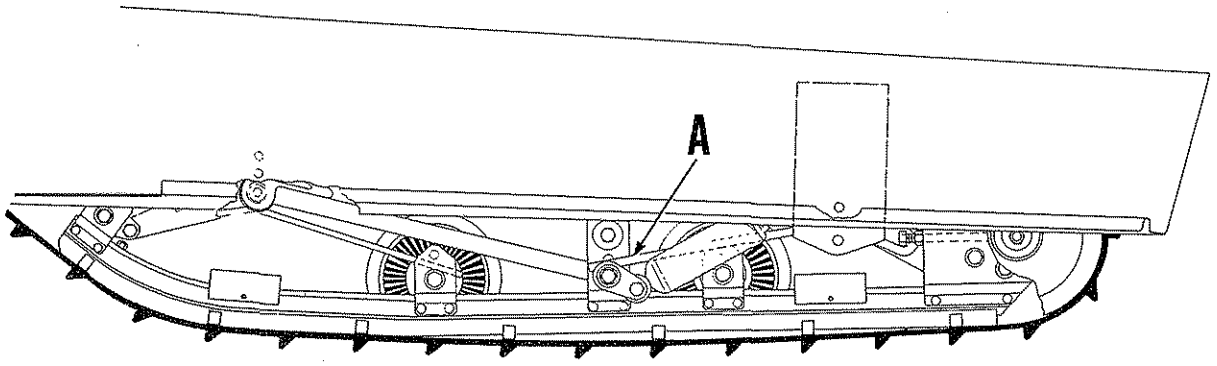


## FRONT LIMITER PIVOT ARM



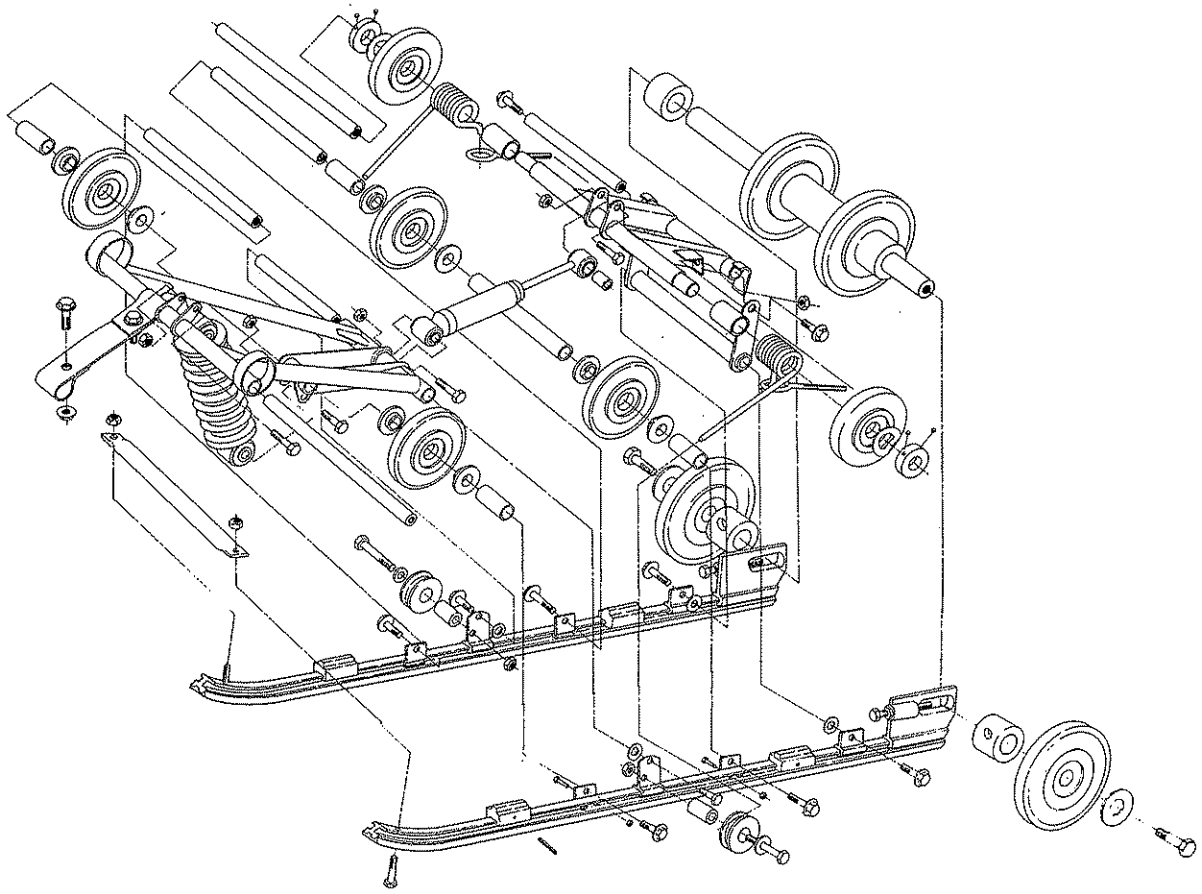

The front limiter pivot arm may be located in either the upper or lower slide rail bracket holes. The upper position (A) provides greater ski lift upon acceleration and is desirable for deep snow running and hill climbing. The lower hole position (B) provides more ski pressure for turning and maneuverability on hard packed surfaces.

## REAR SPRING ADJUSTMENTS



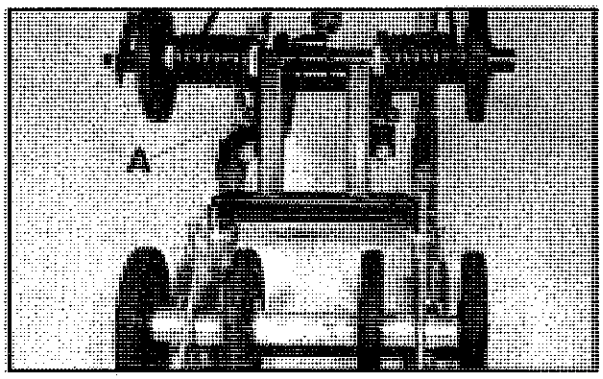

Compensation for rider weight and terrain conditions may be made by moving the rear spring (A) in either the upper position resting on the shoulder bolt or in the lower setting between the shock absorber bracket and mount. The upper position provides a firmer ride and the lower may be used for lighter riders and general conditions.

## Type III Extruded Aluminum



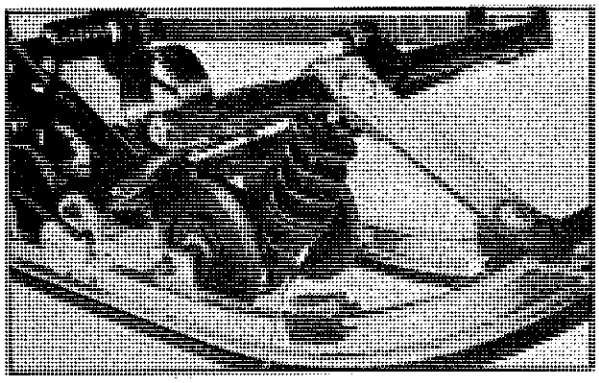
### REAR SPRING ADJUSTMENT

Rear spring adjustment is primarily a control for rider comfort. A check for correct or recommended settings is as follows. Lift the rear of the machine to release all tolerance in the suspension. Adjust the preload with eyebolts (A) so there is approximately 1/2" – 1" drop from normal raised chassis height with the weight of the rider on the machine.



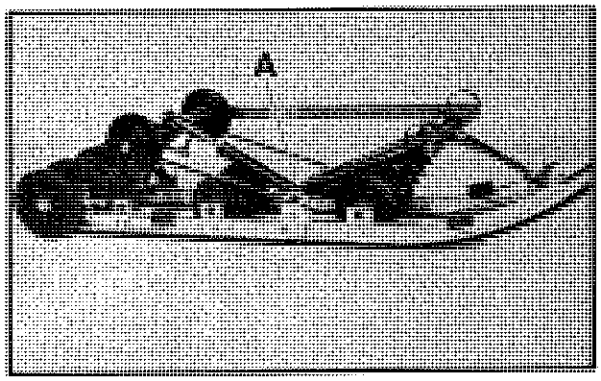
## FRONT SPRING AND LIMITER ADJUSTMENT

A high preload tension on the rear spring may cause an increase in ski pressure, especially while trail riding at a low speed. If ski pressure is too severe for this type of riding, increase the preload on the front shock spring by adjusting the cam. To increase ski pressure, limiter adjustment can also be changed. More ski pressure will result by shortening the travel of the limiter belt. Setting of the front limiter belt in the longest position will decrease ski pressure.

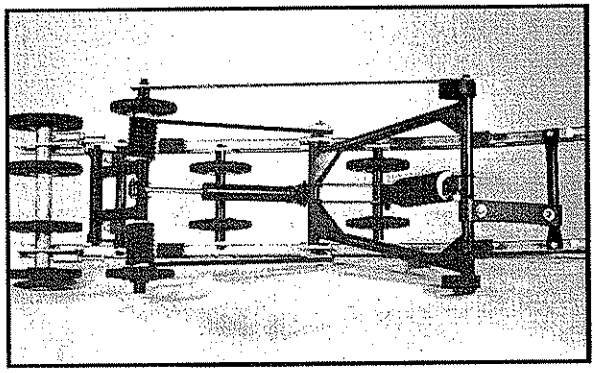


## REAR SHOCK POSITION

After all adjustments have been made and the ride seems to be a little firm, it is recommended to reposition the rear shock. To maintain the full travel of the rear suspension, move the shock to the higher mounting position (A). By repositioning the rear shock the usable shock angle is less, resulting in a softer ride.

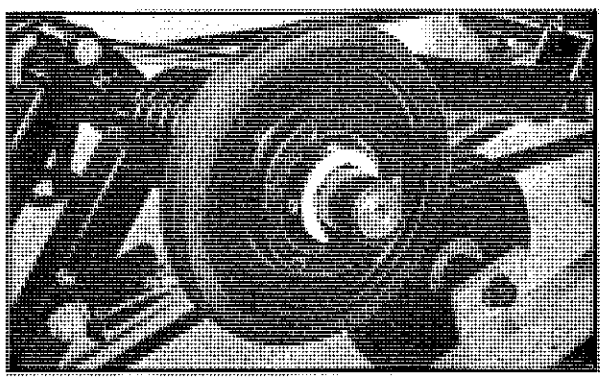



Because of the long travel incorporated into this suspension, pivot shaft movement is increased. To retard the chances of premature wear, lubrication fittings (5) have been provided. A low temperature high adhesion grease is recommended every 300 miles.



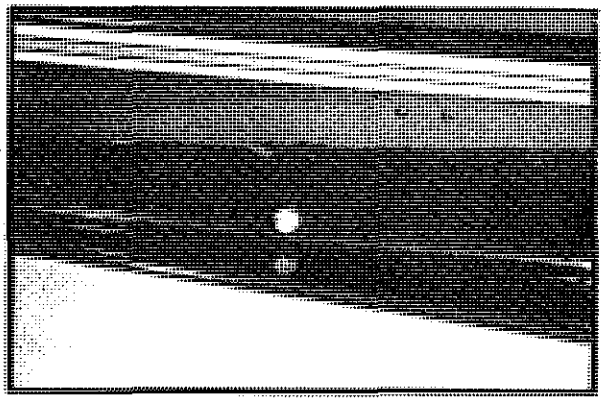
It is necessary to remove the lock collar retainer, wave washer, and idler wheel when replacing the rear suspension springs.

When reassembling, install the spring, idler wheel wave washer, and the lock collar retainer. An inward thrust of approximately 80 pounds must be applied and held on the lock collar when it is tightened. This thrust on the lock collar collapses the wave washer against the inner race of the bearing to keep it from turning.

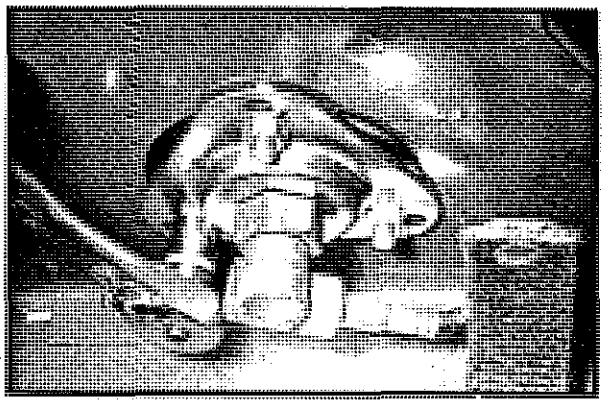


## Type I Track Removal

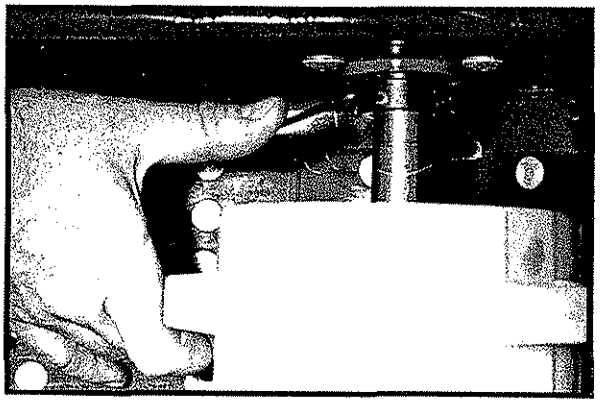
1. Remove the front and rear suspension bolts, then turn the machine on its side to remove the suspension.



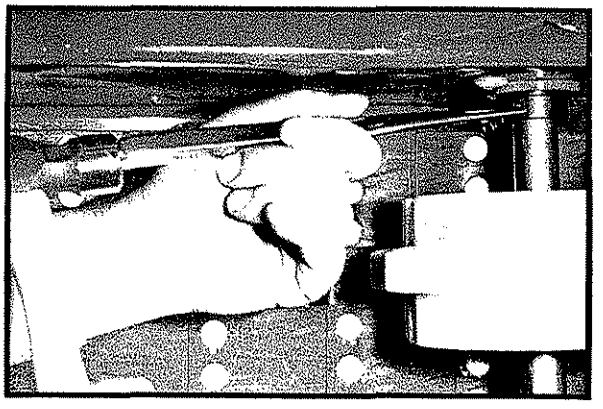
2. Remove muffler. Remove three (3) cap screws that hold flangette and bearing in place on the right side of the machine.



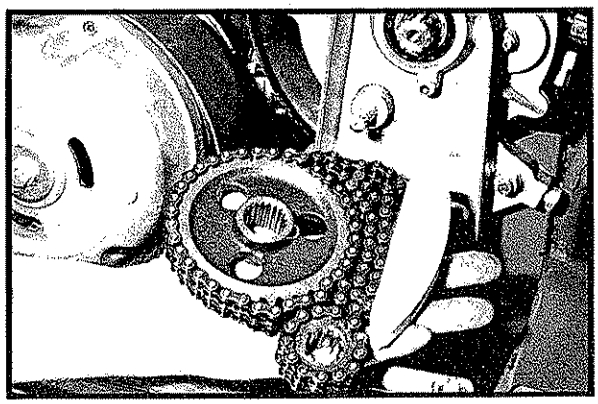
3. With the machine on its side, use an Allen wrench to loosen the set screw on the lock collar.



4. To loosen the lock collar, tap with a hammer and punch. Rotate the lock collar with the normal direction of rotation to loosen and against normal rotation to tighten.

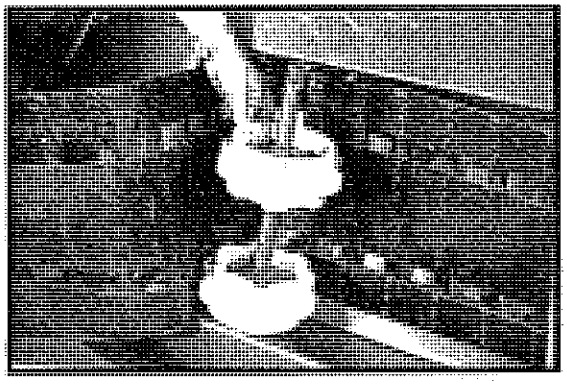


5. Remove the chaincase cover. Remove top and bottom sprockets.

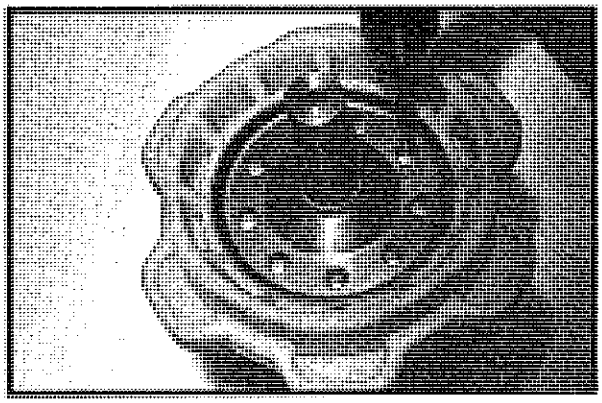


6. The drive shaft can now be removed by first pushing the drive sprocket end from the chaincase, then pull the shaft from the machine.

Reverse procedure for reassembly. When placing suspension into body weldment, bolt front suspension arm to body first, then the rear suspension arm.

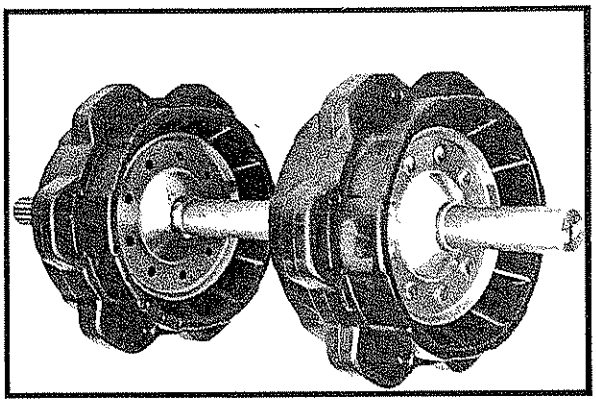


7. Removing sprocket from drive shaft weldment. First use a center punch and center punch rivet head as shown. Then use 1/4" drill and drill to a depth of 1/4". If rivet head does not come off, use hammer and chisel lightly.



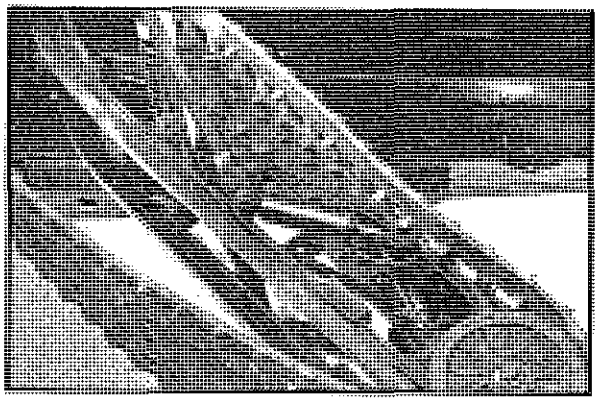
8. Replace rivets (9 per sprocket) with bolts (PN 7511967), nuts (PN 7541906) and spacers (PN 5332417).

When replacing sprockets on drive shaft weldment, it is very important to index them. On a level surface two of the teeth on each drive sprocket must be resting equally against the surface. Rotate the sprocket assembly, inspecting to insure all teeth are synchronized. If not, it will be necessary to rotate the sprocket in the flanges until tooth alignment is achieved.

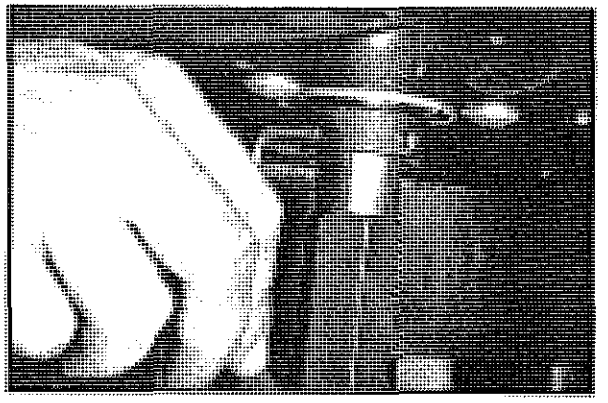


## Types II and III Track Removal

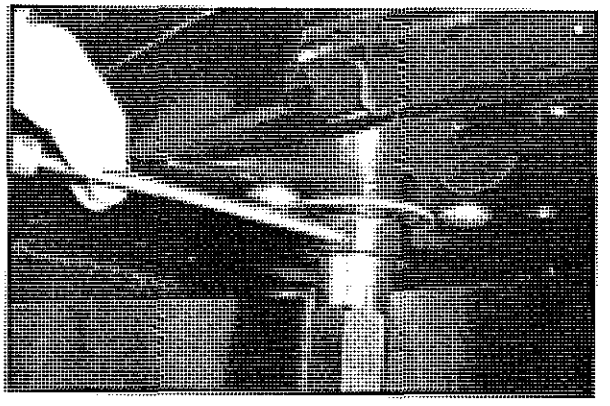
1. Remove the front and rear suspension bolts, then turn the machine on its side to remove the suspension.



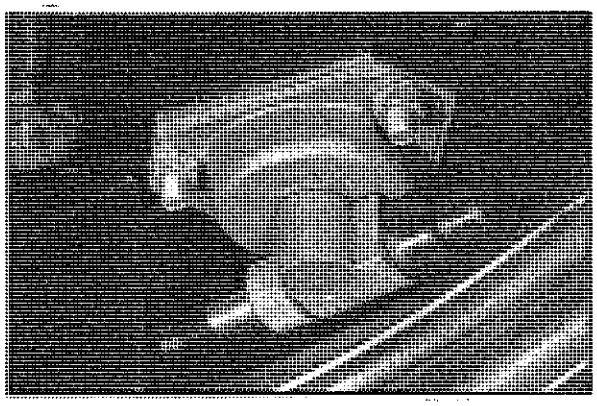
2. Using an Allen wrench, loosen the set screw on the lock collar.



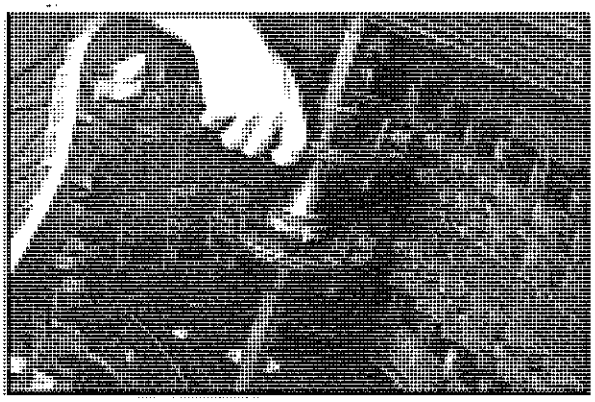
3. Tap the lock collar with a hammer and punch to loosen it. Rotate the lock collar with the normal direction of rotation to loosen and against normal rotation to tighten.



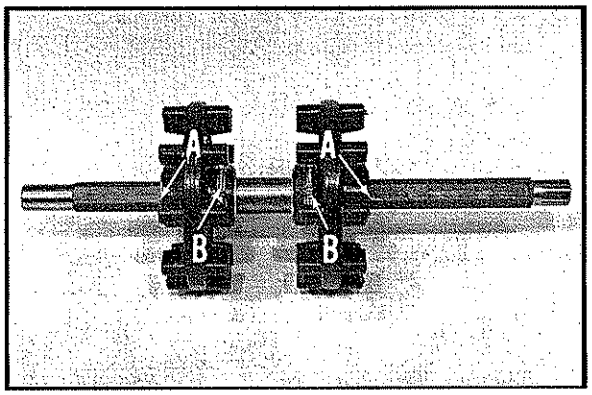
4. Remove the three (3) cap screws that hold the flangette and bearing in place on the left hand side of the machine.



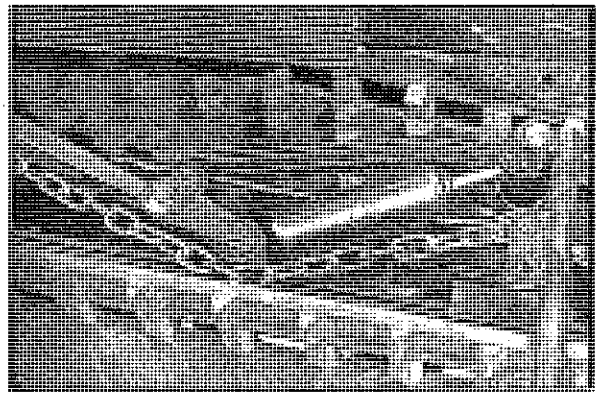
5. Remove the chaincase cover and remove the top and bottom sprockets. The drive shaft can now be removed from the sled by pulling the shaft first from the chaincase and then from the left side of the machine.



To remove the drive sprockets from the drive shaft, remove the outer snap rings (A) and washers. Loosen the spring clamps (B) and pull the sprockets from the shaft. When replacing the sprockets, it is very important to index the sprockets to ensure they are properly synchronized.




SUSPENSION INSTALLATION – ALL MODELS
Install the front suspension bolts. Use the suspension tool (PN 2870354) to compress the rear torque arm to achieve proper alignment.



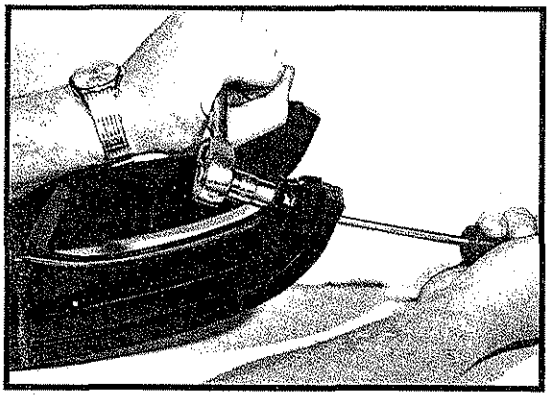
## SUSPENSIONS

### Hi-Fax and Rubber Track Clip Replacement

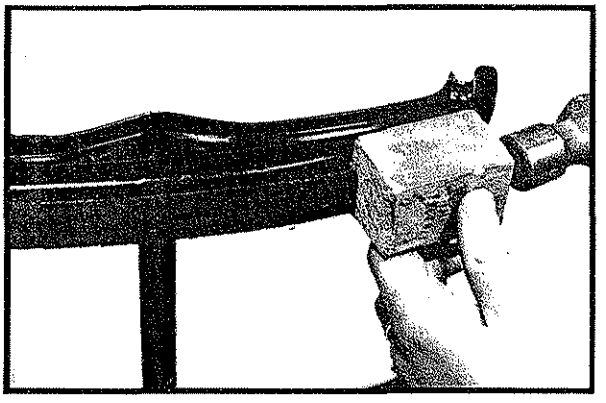
#### HI–FAX REPLACEMENT

Slide rail material replacement on all Polaris models is similar. When any area of the slide rail material is worn to 1/8", it should be replaced. This will save on other vital components.
NOTE: The slide rail is designed to operate in conditions with adequate snow cover to provide sufficient lubrication. Excessive wear may be due to improper alignment or machine operation on surfaces without snow.

1. Remove the suspension from the machine.
2. Remove the front hi-fax retaining bolt as shown.

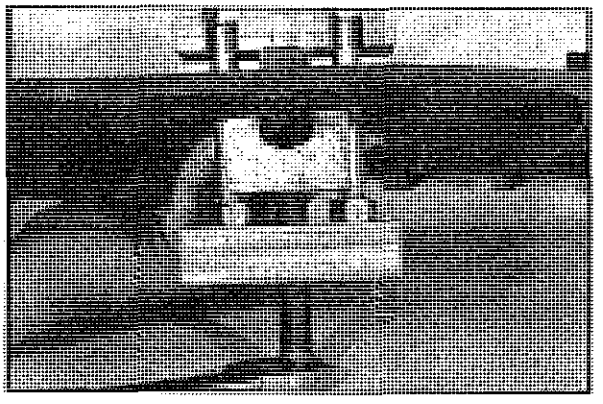


3. Use a block of wood and a hammer to drive the hi-fax rearward from the slide rail.
4. With the hi-fax material at room temperature, reinstall in the reverse procedure.

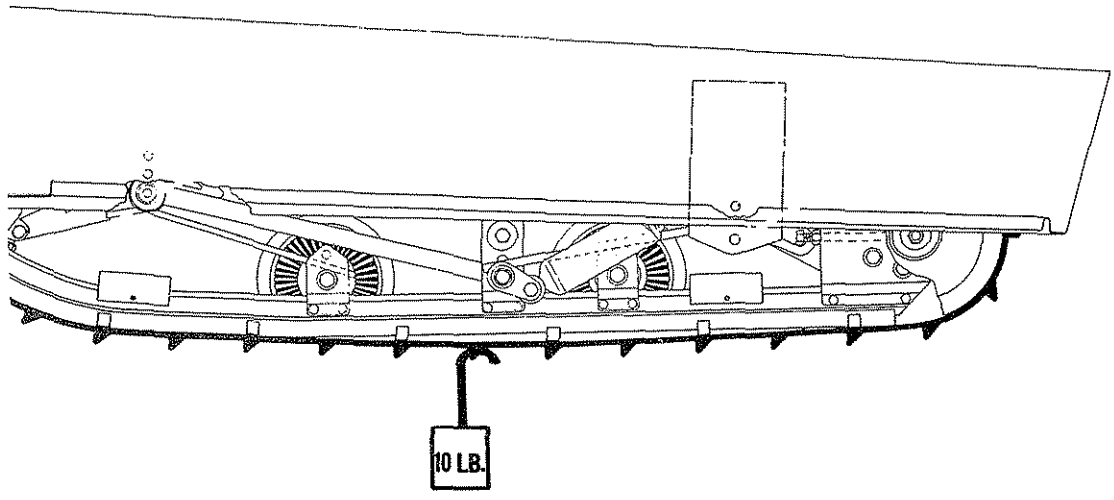


#### RUBBER TRACK CLIP REPLACEMENT

Install the replacement clip and clipping tool (PN 2870380) as shown. Tighten the drive bolt against the forming die until the clip is formed. The tool may be placed in a vice for ease of operation.



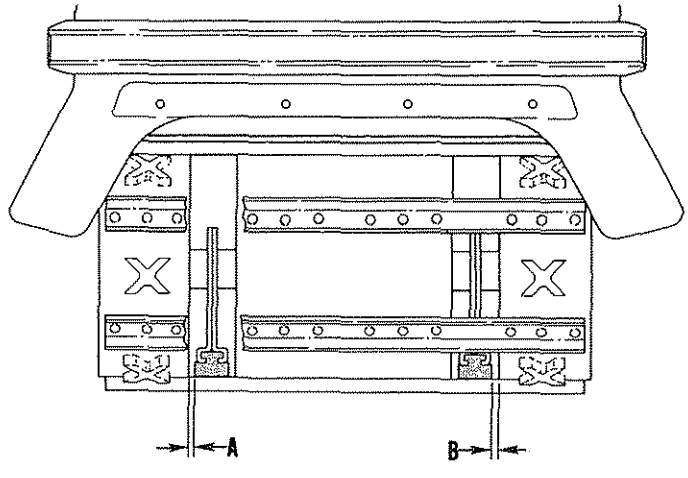
## TRACK TENSION – ALL MODELS




Track tension on all models and suspension types can be adjusted using the same procedure for all types and models. Check with a 10 pound down load on the track at a point approximately 16" ahead from the center of the rear idler wheel. Refer to track tension specifications on page IX – 1.

## TRACK ALIGNMENT – ALL MODELS

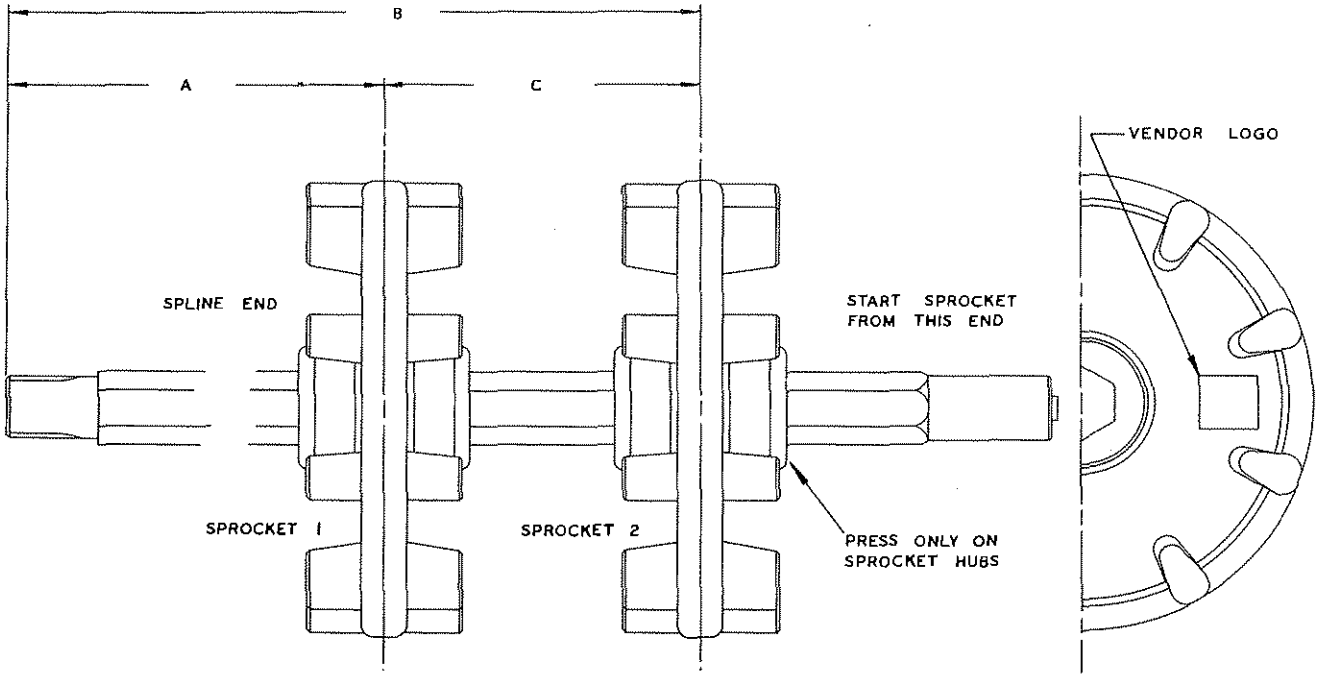
NOTE: It is necessary to loosen idler shaft nut prior to making adjustments and re-tighten after adjustments are made.




The rear of the machine should be suspended when aligning the track. Track alignment affects track tension. If the track runs to the left and is not properly tensioned, the left side should be tightened. Use the same procedure for the right side until the track is properly aligned and is correctly tensioned. Tolerances at points (A) and (B) should be as close to the same as possible.

⚠ CAUTION: WHEN PERFORMING CHECKS OR ADJUSTMENTS, STAY CLEAR OF ALL MOVING PARTS.

## Sprocket Installation




### PROCEDURE

Due to the interference fit between the sprocket and shaft, it is important that the sprocket be pressed or held by the hub portion only.

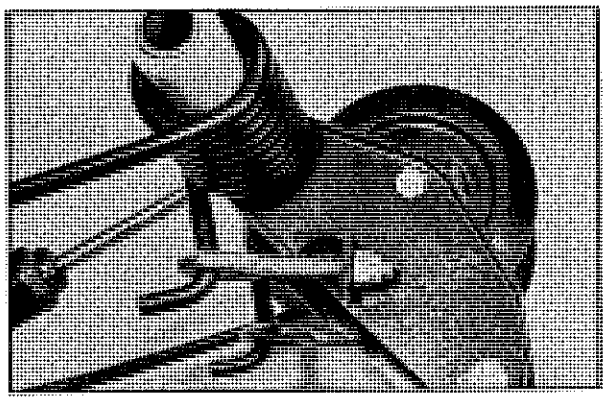
The sprockets must be started opposite the spline end. This end has a smooth entry onto the hex of the shaft. This smooth entry will have a self-aligning effect as the sprockets move onto the hex portion of the shaft.

To ensure proper sprocket tooth alignment, be sure the vendor logos on the two sprockets are oriented in the same positions.

Refer to the front of this section for sprocket tooth center distance and placement. Measurements are given from spline end of shaft to center of sprocket tooth. Specifications are on page IX – 1.

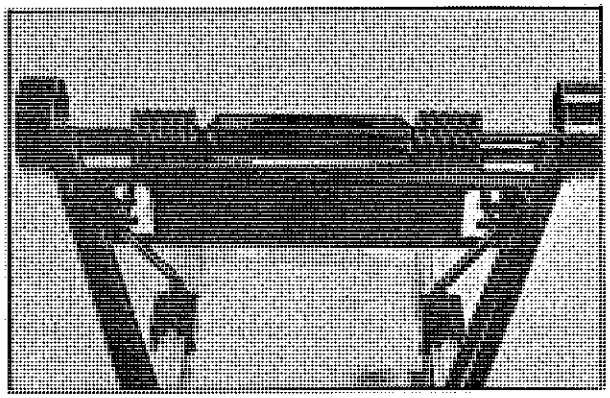
## REAR SPRING ADJUSTMENT – TYPES IV, V, VI, VII

Rear springs are adjusted primarily for rider(s) weight. Recommended setting is: Raise the rear of the machine to relieve the rear springs. Slowly lower the machine and measure the distance from the floor to a mark on the running board. Have the rider(s) carefully mount the machine. Adjust the eye bolts so there is approximately 1 1/2" drop as the rider(s) mounts.



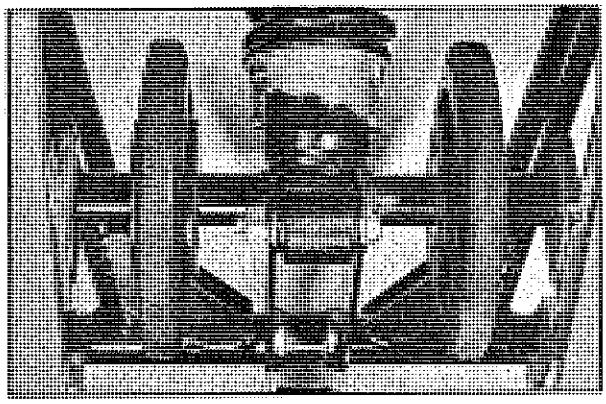
## FRONT SPRING ADJUSTMENT – TYPES IV, V

The front springs can be tailored for differing ski to ground pressure at low speeds. Raising the springs to the upper position will decrease ski to ground pressure. Front springs also affect high speed bumps. If the rider feels the front of the machine pitches severely upward while hitting bumps at high speeds, the springs should be in their softest positions (bottom slot).



## FRONT SPRING ADJUSTMENT – TYPES VI, VII

The front spring can be tailored for differing ski to ground pressure at low speeds. Adjustment is accomplished by rotating the shock cam preload setting. Higher preload setting will result in decreasing ski to ground pressure. The front spring also affects high speed bumps. If the rider feels the front of the machine pitches severely upward on high speed bumps, the cam should be adjusted to a softer position.

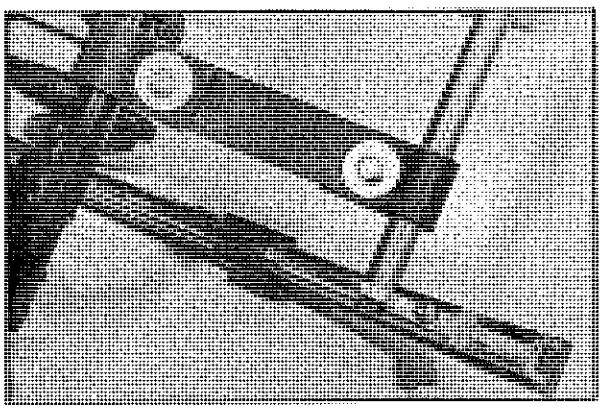


## LIMITER STRAP ADJUSTMENT – TYPES VI, VII

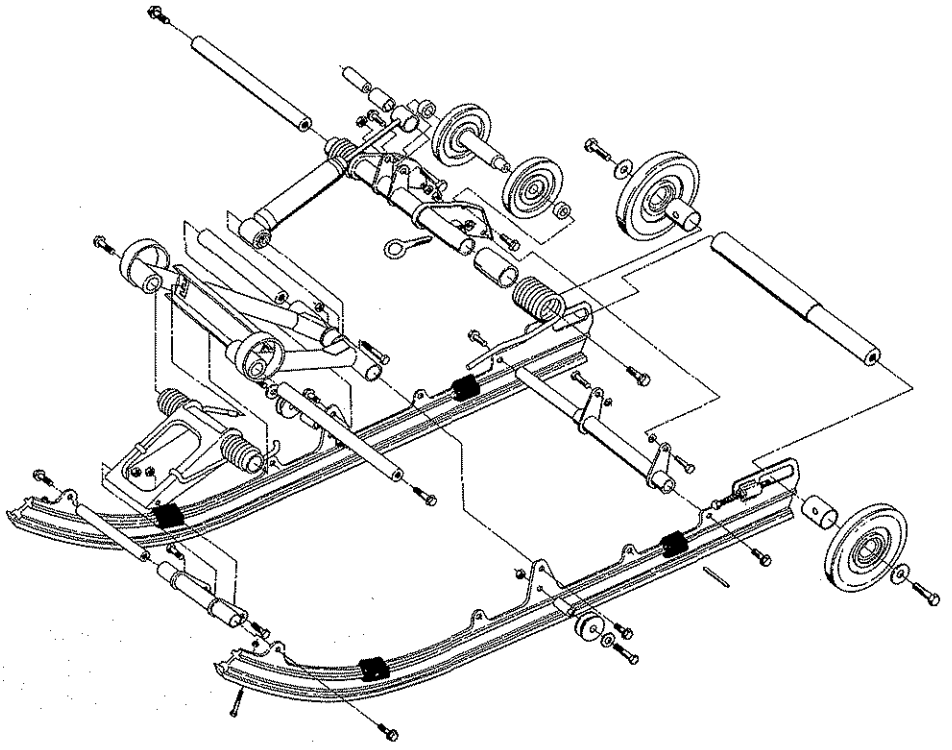
To increase ski to ground pressure and maintain front spring settings, the limiter strap can be adjusted. More ski pressure will result by shortening the limiter belt travel. A setting with the strap in its longest position will decrease ski to ground pressure.

## REAR SHOCK ADJUSTMENT – TYPES VI, VII

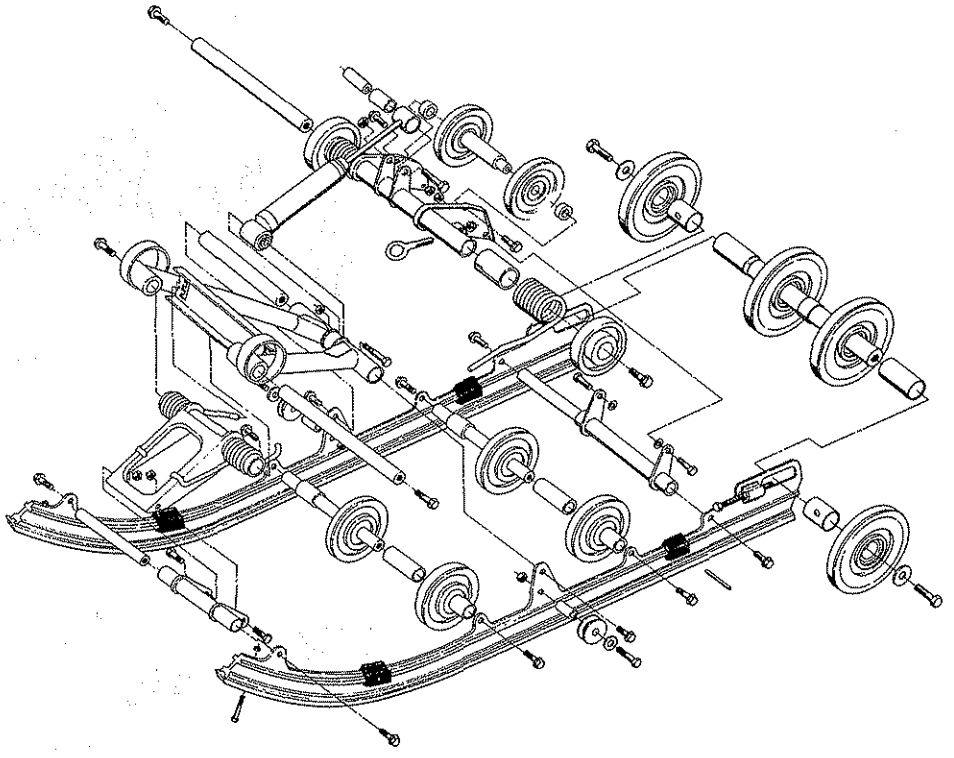
After all adjustments have been made and the ride seems a little firm, it is recommended to reposition the rear shock. Repositioning the lower rear shock mounting to the upper position will result in a slightly softer ride.



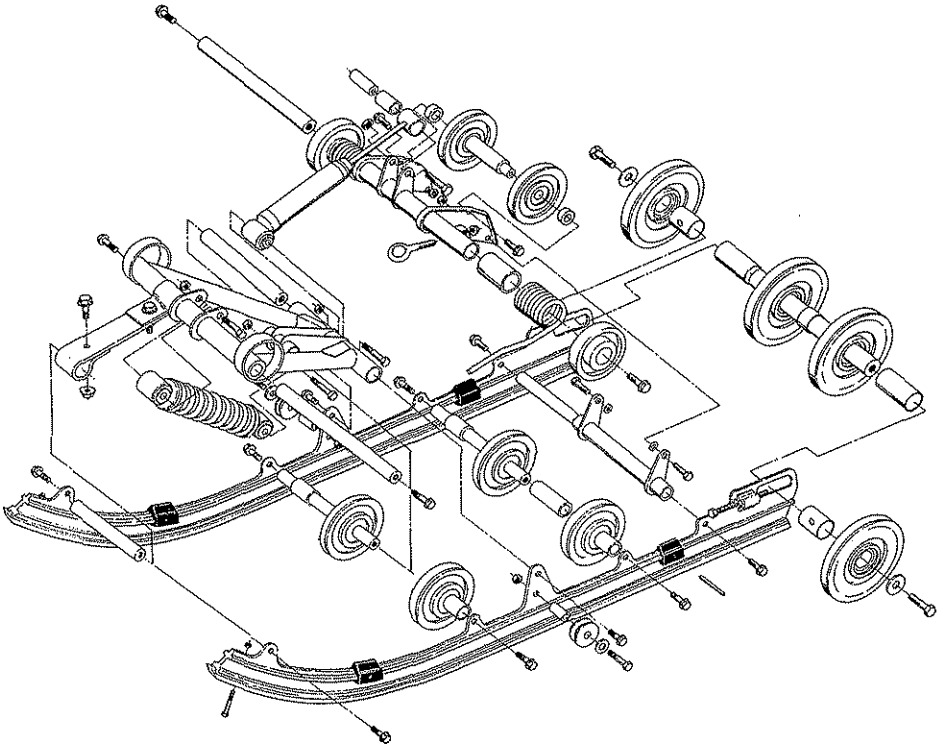
## Types IV and V Extruded Aluminum



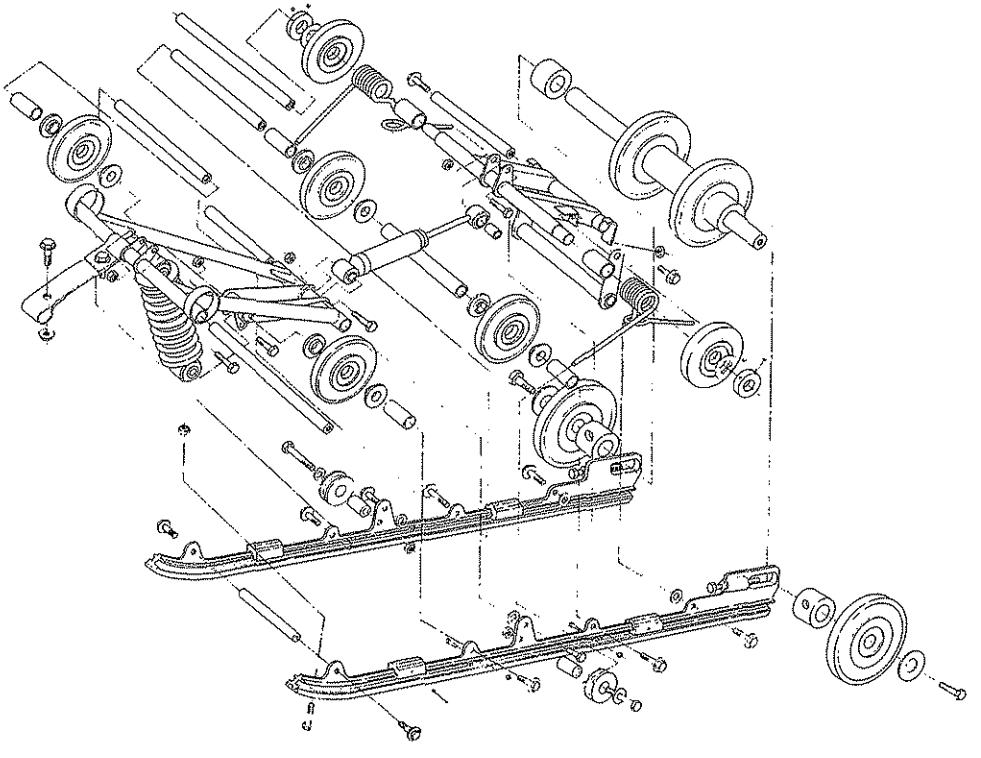
TYPE IV EXPLODED VIEW



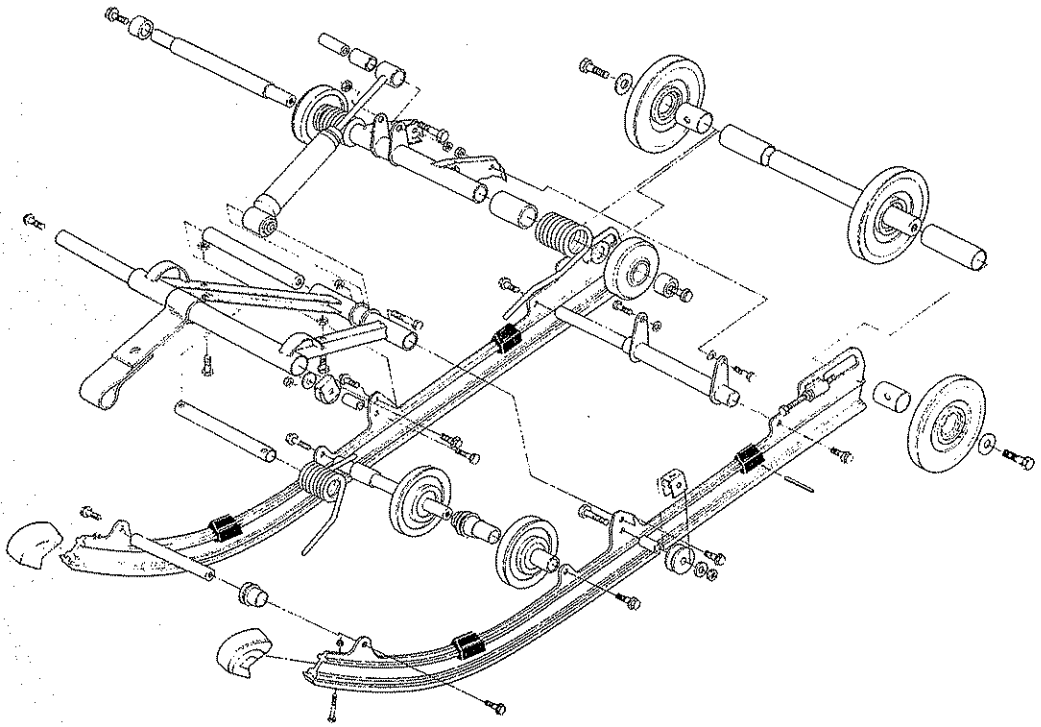
TYPE V EXPLODED VIEW



TYPE VI EXPLODED VIEW



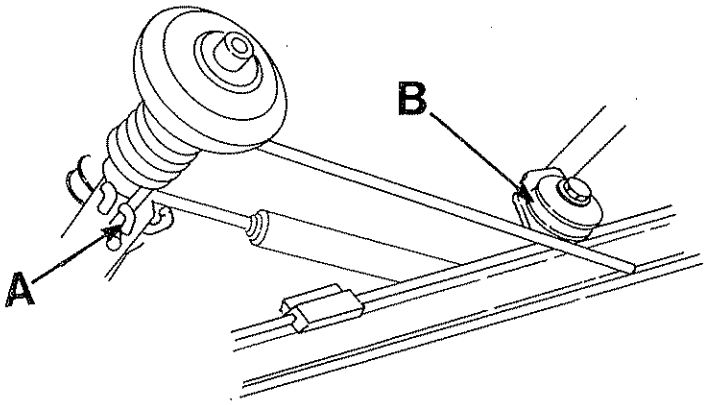
TYPE VII EXPLODED VIEW



TYPE VIII EXPLODED VIEW

## ADJUSTMENTS

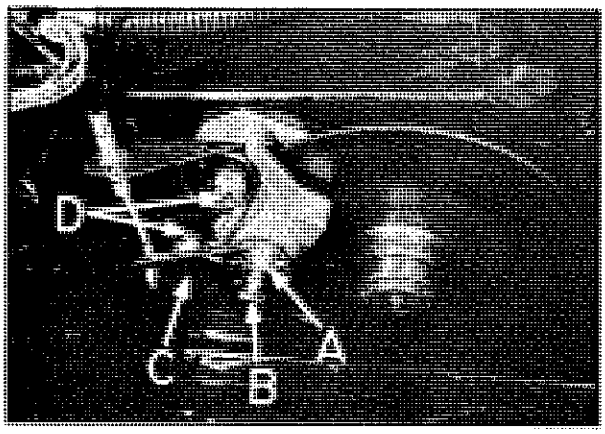
Rear springs are changed or adjusted primarily for different rider weight. Adjustment is accomplished by releasing the front leg from the carrier wheel (B), inserting screwdriver under spring leg (A), and either raising or lowering the short spring leg. Raising the spring leg will increase spring preload and lowering it will decrease preload setting.



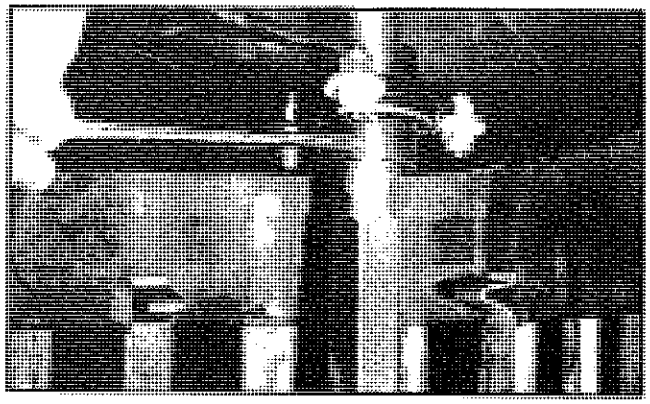

The front torque arm limiter strap can also be altered for varying ski to ground pressure. Lengthening limiter strap will decrease ski to ground pressure. Shortening the strap will increase ski to ground pressure.

## Direct Drive Track and Front Drive Shaft Removal and Installation

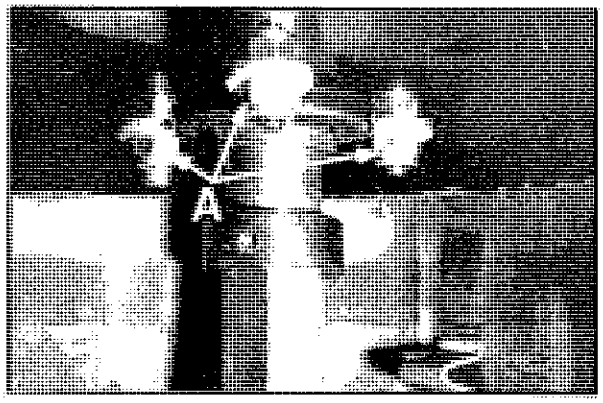
1. Remove the drive belt, driven clutch, and driven clutch spacer washers.
2. Open the adjuster bolt jam nut locking tab (A). Loosen the jam nut and remove the adjuster bolt (B).
3. Remove the actuating lever (C) and return spring.
4. Remove the two brake caliper attaching nuts (D).
5. Remove the cable bracket and caliper assembly. Check cable condition at both ends – frayed or binding brake cables must be replaced.



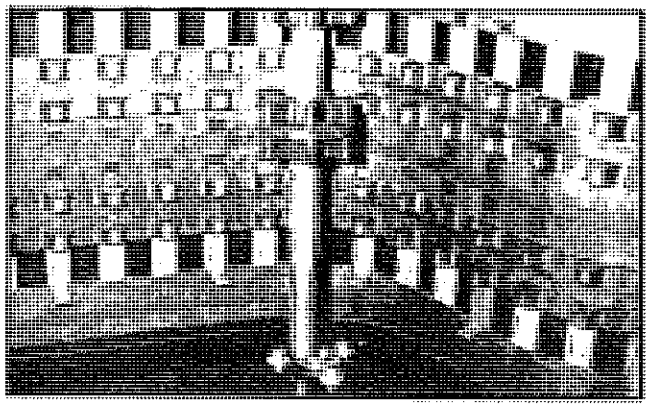

6. Slide the brake disc off the front drive shaft and remove the half moon key.
7. Remove the four suspension mounting bolts and the suspension. For reassembly, note the placement of the two rear torque arm idler wheel thrust spacers.



8. Loosen the lock collar allen head set screw. With a punch and hammer, loosen the bearing lock collar located on the brake end of drive shaft.



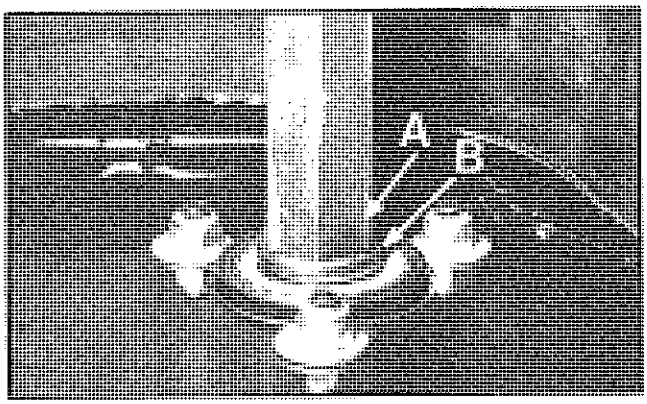

9. Remove the three flangette attaching bolts (A). NOTE: The stationary brake pad is attached with the longest of these three bolts.



10. Slide the drive shaft toward the brake side of chassis until the driven clutch end is free. Tilt the shaft and remove it from the brake end bearing. The track can now be removed.

11. Before reassembly check the drive shaft, drive shaft sprocket, and drive shaft bearings.

12. Reverse the above procedures for reassembly. Note that sprocket or drive shaft centering is controlled by the hex portion of drive shaft (A) being bottomed on the driven clutch side bearing (B).




⚠ The driven clutch must be installed and torqued before the lock collar is tightened.

Refer to Section VIII for proper brake adjustments.

# SECTION V

# ENGINES

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## Engine Specifications

### 1972

| Cyl. Disp. CC's | Engine Model | Model Year | Bore MM | Stroke MM | No. of Cyl. | Comp. Ratio | Bolt Torque | | Piston Skirt to Bore | Engine Operating RPM |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Cyl. Hds. ft./lbs. | Crank-case ft./lbs. | | |
| 175 | EC17P | 1969 - 1972 | 62 | 58 | 1 | 7.5:1 | 21-23 | 11-13 | .004/.006 | 5500 |
| 244 | EC25P | 1972 | 72 | 60 | 1 | 7.6:1 | 18 | 21-23 | .0055/.0075 | 6000 |
| 294 | EC29P | 1969 - 1972 | 58 | 55.6 | 2 | 7.5:1 | 18 | 21-23 | .0035/.0055 | 6500 |
| 294 | EC29PF | 1969 - 1972 | 58 | 55.6 | 2 | 7.5:1 | 18 | 21-23 | .0035/.0055 | 6500 |
| 335 | EC35PS | 1970 - 1972 | 62 | 55.5 | 2 | 7.5:1 | 18 | 21-23 | .0035/.0055 | 6000 |
| 398 | EC40P | 1969 - 1972 | 65 | 60 | 2 | 7.5:1 | 18 | 21-23 | .0045/.0065 | 6000 |
| 398 | EC40PF | 1969 - 1972 | 65 | 60 | 2 | 7.5:1 | 18 | 21-23 | .0045/.0065 | 6000 |
| 500 | EC51PS | 1972 | 62 | 55.5 | 3 | 7.5:1 | 18 | 21-23 | .0035/.0055 | 6500 |
| 530 | EC54P | 1972 | 75 | 60 | 2 | 7.5:1 | 19 | 21-23 | .0065/.008 | 6500 |
| 530 | EC54PF | 1972 | 75 | 60 | 2 | 7.5:1 | 19 | 21-23 | .0065/.008 | 6500 |

### 1973

| Cyl. Disp. CC's | Engine Model | Bore MM | Stroke MM | No. of Cyl. | Comp. Ratio | Bolt Torque | | Piston Skirt to Bore | Engine Operating RPM |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Cyl. Hds. ft./lbs. | Crank-case ft./lbs. | | |
| 175 | EC17P | 62 | 58 | 1 | 7.5:1 | 21-23 | 11-13 | .004/.006 | 5500 |
| 244 | EC25PS | 72 | 60 | 1 | 6.8:1 | 18 | 21-23 | .0055/.0075 | 6000 |
| 294 | EC29PM | 58 | 55.6 | 2 | 7.5:1 | 18 | 21-23 | .0035/.0055 | 6500 |
| 294 | EC29PF | 58 | 55.6 | 2 | 7.5:1 | 18 | 21-23 | .0035/.0055 | 6500 |
| 294 | EC29PS | 58 | 55.6 | 2 | 6.8:1 | 18 | 21-23 | .0035/.0055 | 7000 |
| 335 | EC34PF | 62 | 55.6 | 2 | 6.8:1 | 18 | 21-23 | .0035/.0055 | 6500 |
| 335 | EC34PS | 62 | 55.6 | 2 | 6.8:1 | 18 | 21-23 | .0035/.0055 | 7000 |
| 398 | EC40PM | 65 | 60 | 2 | 7.5:1 | 18 | 21-23 | .0045/.0065 | 6500 |
| 398 | EC40PS | 65 | 60 | 2 | 6.8:1 | 18 | 21-23 | .0045/.0065 | 7000 |
| 432 | EC44PS | 67.75 | 60 | 2 | 6.8:1 | 18 | 21-23 | .0045/.0065 | 7000 |
| 500 | EC51PS | 62 | 55.6 | 3 | 6.8:1 | 18 | 21-23 | .0035/.0055 | 6500 |
| 530 | EC54PM | 75 | 60 | 2 | 6.8:1 | 19 | 21-23 | .0065/.008 | 6500 |

## ENGINES

### Engine Specifications

1974

| Cyl. Disp. CC's | Engine Model | Bore MM | Stroke MM | No. of Cyl. | Comp. Ratio | Cyl. Head CC's Uninstalled | Piston Rings | Piston Skirt to Bore ± .002" | Ring End Gap Clearance | Engine Operating RPM ± 250 RPM |
|---|---|---|---|---|---|---|---|---|---|---|
| 175 | EC17PM | 62 | 58 | 1 | 6.7:1 | 19.5 | Standard 2 Ring | .006 | .005/.008 | 5500 |
| 244 | EC25PS | 72 | 60 | 1 | 6.6:1 | 26.5 | Standard 2 Ring | .006 | | 6000 |
| 250 | EC25PC | 53.5 | 55.6 | 2 | 7.2:1 | 10.3 | Standard L Ring | .006 | | 6000 |
| 250 | EC25PT | 53.5 | 55.6 | 2 | 7.2:1 | 10.3 | L + 1.2mm | .006 | | 6500 |
| 294 | EC29PF | 58 | 55.6 | 2 | 7.0:1 | 15.5 | Standard 2 Ring | .006 | | 6000 |
| 335 | EC34PC | 62 | 55.6 | 2 | 6.7:1 | 19.5 | Standard L Ring | .006 | | 6000 |
| 335 | EC34PS | 62 | 55.6 | 2 | 6.8:1 | 19.5 | Standard L Ring | .006 | | 6500 |
| 336 | EC34PQ | 60 | 60 | 2 | 7.0:1 | 19.5 | Standard L Ring | .006 | | 6000 |
| 398 | EC40PM | 65 | 60 | 2 | 7.5:1 | 22 | Standard 2 Ring | .006 | | 6500 |
| 432 | EC44PQ | 67.75 | 60 | 2 | 7.1:1 | 21 | Standard L Ring | .006 | | 6000 |
| 432 | EC44PT* | 67.75 | 60 | 2 | 6.5:1 | 20.5 | L + 1.2mm | — | | 7500 |
| 500 | EC51PT* | 62 | 55.6 | 3 | 6.5:1 | 18.5 | L + 1.2mm | — | | 7500 |
| 530 | EC54PM | 75 | 60 | 2 | 6.8:1 | 30.5 | Standard L Ring | .006 | | 6500 |

**Engine Model Codes**

PM — Standard Fan Cooled
PF — Standard Free Air
PS — High Performance
PC — Free Air Colt Series
PQ — Fan Cooled Silent Star Single Carb.
PT — TX Free Air
* — Chrome Bore

Clearance cannot be changed on the 440PT and 500PT engines; however, chrome cylinders may be de-glazed and refinished using fine stones.

## Engine Specifications

1975

| Cyl. Disp. CC's | Engine Model | Bore MM | Stroke MM | No. of Cyl. | Cyl. Head CC's Uninstalled | Piston Rings | Piston Skirt to Bore ± .002" | Ring End Gap Clearance | Engine Operating RPM ± 250 RPM |
|---|---|---|---|---|---|---|---|---|---|
| 175 | EC17PM | 62 | 58 | 1 | 19.5 | Standard 2 Ring | .006 | | 5500 |
| 244 | EC25PS | 72 | 60 | 1 | 26.5 | Standard 2 Ring | .006 | | 6000 |
| 250 | EC25PC | 53.5 | 55.6 | 2 | 11.0 | L + 1.2mm | .006 | | 7000 |
| 250 | EC25PT | 53.5 | 55.6 | 2 | 11.3 | L + 1.2mm | .006 | | 7200 |
| 336 | EC34PC | 62 | 55.6 | 2 | 20.0 | L + 1mm | .006 | .005/.008 | 7200 |
| 335 | EC34PT* | 62 | 55.6 | 2 | 19.5 | 1mm Keystone | — | | 8200 |
| 336 | EC34PQ | 60 | 60 | 2 | 15.5 | L + 1.2mm | .006 | | 7500 |
| 439 | EC44PQ | 67.75 | 60 | 2 | 22.9 | L + 1mm | .006 | | 7500 |
| 432 | EC44PT* | 67.75 | 60 | 2 | 21.5 | 1mm Keystone | — | | 8500 |
| 500 | EC51PT* | 62 | 55.6 | 3 | 19.7 | 1mm Keystone | — | | 7500 |

Engine Model Codes

PM — Standard Fan Cooled
PS — High Performance
PC — Free Air Colt Series
PQ — Fan Cooled Silent Star Electra
PT — TX Free Air
* — Chrome Bore

Clearance cannot be changed on the 340PT, 440PT, and 500PT engines; however, chrome cylinders may be de-glazed and refinished using fine stones.

## ENGINES

### Engine Specifications

1976

| Machine Model | Engine Model | Cyl. Disp. CC's | Bore MM | Stroke MM | No. of Cyl. | Cyl. Head CC's Uninstalled | Piston Rings |
|---|---|---|---|---|---|---|---|
| Colt | EC17PM | 175 | 62 | 58 | 1 | 19.5 | Standard 2 Ring |
| Colt/Electra | EC25PS | 244 | 72 | 60 | 1 | 26.5 | Standard 2 Ring |
| Colt | EC25PC | 250 | 53.5 | 55.6 | 2 | 11.0 | L + 1.0mm Standard |
| Colt | EC34PC | 336 | 62 | 55.6 | 2 | 20.0 Small Fin 20.0 Large Fin | L + 1.0mm Standard |
| Electra | EC34PQ | 339 | 60 | 60 | 2 | 15.5 | L + 1.0mm Standard |
| Electra | EC44PQ | 433 | 67.75 | 60 | 2 | 22.9 | L + 1.0mm Standard |
| TX | EC25PT–06* | 250 | 53.4 | 55.6 | 2 | 11.3 | 1.2mm Keystone |
| TX | EC34PT–05* | 336 | 62 | 55.6 | 2 | 19.7 | 1.2mm Keystone |
| TX | EC44PT–05* | 433 | 67.75 | 60 | 2 | 22.8 | 1.2mm Keystone |
| Starfire | EC25PT–05* | 250 | 53.4 | 55.6 | 2 | 11.3 | 1.2mm Keystone |
| Starfire | EC34PT–06* | 336 | 62 | 55.6 | 2 | 19.7 | 1.2mm Keystone |

| Engine Model | Piston Skirt to Bore ± .002" | Ring End Gap Clearance | Engine Operating RPM ± 250 RPM |
|---|---|---|---|
| EC17PM | .006 | .005/.008 | 5500 |
| EC25PS | .006 | | 6000 |
| EC25PC | .006 | | 7500 |
| EC34PC | .006 | | 7500 |
| EC34PQ | .006 | | 7500 |
| EC44PQ | .006 | | 7500 |
| EC25PT–06* | – | | 7500 |
| EC34PT–05* | – | | 7500 |
| EC44PT–05* | – | | 7000 |
| EC25PT–05* | – | | 8500 |
| EC34PT–06* | – | | 9500 |

Engine Model Codes

PM – Standard Fan Cooled
PF – Standard Free Air
PS – High Performance
PC – Free Air Colt Series
PQ – Fan Cooled Silent Star
25PT–06, 34PT–05, 44PT–05 – TX Free Air
25PT–05, 34PT–06 – Starfire Free Air
*Chrome Bore

Clearance cannot be changed on TX and Starfire engines; however, de-glazing and refinishing is allowed using fine stones.

1977

| Machine Model | Engine Model | Cyl. Disp. CC's | Bore | | Stroke | | No. of Cyl. | Type of Cooling | Cyl. Head CC's Uninstalled |
|---|---|---|---|---|---|---|---|---|---|
| | | | MM | Inches | MM | Inches | | | |
| Colt/Electra | EC25PS | 244 | 72 | 2.8346 | 60 | 2.362 | 1 | Fan | 19.5 |
| Colt | EC25PC | 250 | 53.5 | 2.1063 | 55.6 | 2.1886 | 2 | Free Air | 11.0 |
| Colt SS | EC25PM–01 | 244 | 52.9 | 2.0824 | 55.6 | 2.1886 | 2 | Fan | 11.5 |
| TX | EC25PT–07* | 249 | 53.4 | 2.1017 | 55.6 | 2.1886 | 2 | Free Air | 11.3 |
| Colt SS | EC34PM–03 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Fan | 21.0 |
| Electra | EC34PQ | 339 | 60 | 2.362 | 60 | 2.362 | 2 | Fan | 15.5 |
| TX | EC34PT–05* | 336 | 62 | 2.441 | 55.6 | 2.1886 | 2 | Free Air | 19.7 |
| TXL | EC34PL–01 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Liquid | 17.5 |
| Electra | EC44PQ | 432 | 67.75 | 2.6673 | 60 | 2.362 | 2 | Fan | 22.9 |
| TX | EC44PT–05* | 432 | 67.75 | 2.6673 | 60 | 2.362 | 2 | Free Air | 22.8 |
| TX | EC44PT–06* | 432 | 67.75 | 2.6673 | 60 | 2.362 | 2 | Free Air | 22.8 |

| Engine Model | Piston Rings | Piston Skirt to Bore ± .002" | Engine Operating RPM ± 250 RPM |
|---|---|---|---|
| EC25PS | (2) 2.0mm Standard | .009 | 6000 |
| EC25PC | L + 1.5mm Standard | .006 | 7500 |
| EC25PM–01 | (2) 1.5mm Keystone | .005 | 7000 |
| EC25PT–07* | (1) 1.2mm Keystone | — | 8000 |
| EC34PM–03 | (2) 1.5mm Keystone | .006 | 6500 |
| EC34PQ | L + 1.2mm Standard | .0065 | 7500 |
| EC34PT–05* | (1) 1.2mm Keystone | — | 7500 |
| EC34PL–01 | (1) 1.2mm Keystone | .005 | 8000 |
| EC44PQ | L + 1.0mm Standard | .008 | 7500 |
| EC44PT–05* | (1) 1.2mm Keystone | — | 7000 |
| EC44PT–06* | (1) 1.2mm Keystone | — | 7000 |

Engine Model Codes

PM – Standard Fan Cooled
PS – High Performance
PC – Free Air
PQ – Fan Cooled Silent Star
PT – TX Series
PL – Liquid Cooled
*Chrome Bore

Clearance cannot be changed on chrome cylinders; however, they may be de-glazed and refinished using fine stones.

## ENGINES

### Engine Specifications

1978

| Machine Model | Engine Model | Cyl. Disp. CC's | Bore | | Stroke | | No. of Cyl. | Type of Cooling | Cyl. Head CC's Uninstalled |
|---|---|---|---|---|---|---|---|---|---|
| | | | MM | Inches | MM | Inches | | | |
| Colt | EC25PS | 244 | 72 | 2.8346 | 60 | 2.362 | 1 | Fan | 19.5 |
| Colt | EC25PC | 250 | 53.5 | 2.1063 | 55.6 | 2.1886 | 2 | Free Air | 11.0 |
| TX | EC25PT–07 | 249 | 53.4 | 2.1017 | 55.6 | 2.1886 | 2 | Free Air | 11.3 |
| S/S 340 | EC34PM–03 /04N | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Fan | 21.0 |
| Cobra | EC34PM–04 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Fan | 21.0 |
| TX | EC34PT–05 | 336 | 62 | 2.441 | 55.6 | 2.1886 | 2 | Free Air | 19.7 |
| TX-L | EC34PL–02 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Liquid | 18.5 |
| Cobra | EC44PM–01 | 432 | 67.72 | 2.6557 | 60 | 2.362 | 2 | Fan | 22.9 |
| TX | EC44PT–05 | 432 | 67.75 | 2.6673 | 60 | 2.362 | 2 | Free Air | 22.8 |

| Engine Model | Piston Rings | Piston/Cylinder Bore Clearance ± .002" | Engine Operating RPM ± 250 RPM |
|---|---|---|---|
| EC25PS | (2) 2.0mm Standard | .009 | 6000 |
| EC25PC | L + 1.5mm Standard | .006 | 7500 |
| EC25PT–07 | (1) 1.2mm Keystone | Dress with fine stone only* | 8000 |
| EC34PM–03/ 04N | (2) 1.5mm Keystone | .006 | 6500 |
| EC34PM–04 | (2) 1.5mm Keystone | .006 | 6750 |
| EC34PT–05 | (1) 1.2mm Keystone | Dress with fine stone only* | 7500 |
| EC34PL–02 | (1) 1.2mm Keystone | .005 | 8500 |
| EC44PM–01 | (2) 1.5mm Keystone | .008 | 6500 |
| EC44PT–05 | (1) 1.2mm Keystone | Dress with fine stone only* | 7000 |

*Chrome cylinders may be de-glazed and refinished using fine stones.

1979

| Machine Model | Engine Model | Cyl. Disp. CC's | Bore | | Stroke | | No. of Cyl. | Type of Cooling | Cyl. Head CC's Uninstalled |
|---|---|---|---|---|---|---|---|---|---|
| | | | MM | Inches | MM | Inches | | | |
| Gemini | EC25PS | 244 | 72 | 2.8346 | 60 | 2.362 | 1 | Fan | 26.5 |
| Gemini | EC25PM–01 | 244 | 52.9 | 2.0824 | 55.6 | 2.1886 | 2 | Fan | 11.5 |
| Apollo | EC34PM–03 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Fan | 21.0 |
| Cobra | EC34PM–04 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Fan | 21.0 |
| Cobra | EC44PM–01 | 432 | 67.72 | 2.6557 | 60 | 2.362 | 2 | Fan | 22.9 |
| TX | EC25PT–07 | 249 | 53.4 | 2.1017 | 55.6 | 2.1886 | 2 | Free Air | 11.8 |
| TX | EC34PT–05 | 336 | 62 | 2.441 | 55.6 | 2.1886 | 2 | Free Air | 19.7 |
| TX | EC44PT–05 | 432 | 67.75 | 2.6673 | 60 | 2.362 | 2 | Free Air | 22.8 |
| TX-L | EC34PL–02 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Liquid | 18.5 |
| Centurion | EC51PL–01 | 500 | 61.78 | 2.432 | 55.6 | 2.1886 | 3 | Liquid | 19.5 |

| Engine Model | Piston Rings | Piston/Cylinder Bore Clearance ± .002" | Engine Operating RPM ± 250 RPM |
|---|---|---|---|
| EC25PS | (2) 2.0mm Standard | .009 | 6000 |
| EC25PM–01 | (2) 1.5mm Keystone | .005 | 7000 |
| EC34PM–03 | (2) 1.5mm Keystone | .006 | 6500 |
| EC34PM–04 | (2) 1.5mm Keystone | .006 | 6750 |
| EC44PM–01 | (2) 1.5mm Keystone | .008 | 6500 |
| EC25PT–07 | (1) 1.2mm Keystone | Dress with fine stone only* | 8000 |
| EC34PT–05 | (1) 1.2mm Keystone | Dress with fine stone only* | 7500 |
| EC44PT–05 | (1) 1.2mm Keystone | Dress with fine stone only* | 6750 |
| EC34PL–02 | (1) 1.2mm Keystone | .005 | 8000 |
| EC51PL–01 | (1) 1.2mm Keystone | .005 | 7750 |

*Chrome cylinders may be de-glazed and refinished using fine stones.

## Metric Conversion Factors

### Metric - English Conversion

| MM. | INCHES | | | MM. | INCHES | | | MM. | INCHES | | | MM. | INCHES | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0394 | 1/32 | + | 26 | 1.0236 | 1 1/32 | − | 51 | 2.0079 | 2.0 | + | 76 | 2.9921 | 3.0 | − |
| 2 | 0.0787 | 3/32 | − | 27 | 1.0630 | 1 1/16 | + | 52 | 2.0472 | 2 1/16 | − | 77 | 3.0315 | 3 1/32 | + |
| 3 | 0.1181 | 1/8 | − | | | | | 53 | 2.0866 | 2 3/32 | − | | | | |
| | | | | 28 | 1.1024 | 1 3/32 | + | | | | | 78 | 3.0709 | 3 1/16 | + |
| 4 | 0.1575 | 5/32 | + | 29 | 1.1417 | 1 5/32 | − | 54 | 2.1260 | 2 1/8 | + | 79 | 3.1102 | 3 1/8 | − |
| 5 | 0.1969 | 3/16 | + | 30 | 1.1811 | 1 3/16 | − | 55 | 2.1654 | 2 5/32 | + | 80 | 3.1496 | 3 5/32 | − |
| 6 | 0.2362 | 1/4 | − | | | | | 56 | 2.2047 | 2 3/32 | − | | | | |
| | | | | 31 | 1.2205 | 1 7/32 | + | | | | | 81 | 3.1890 | 3 3/16 | + |
| 7 | 0.2756 | 9/32 | − | 32 | 1.2598 | 1 1/4 | + | 57 | 2.2441 | 2 1/4 | − | 82 | 3.2283 | 3 7/32 | + |
| 8 | 0.3150 | 5/16 | + | 33 | 1.2992 | 1 5/16 | − | 58 | 2.2835 | 2 9/32 | + | 83 | 3.2677 | 3 9/32 | − |
| 9 | 0.3543 | 11/32 | + | | | | | 59 | 2.3228 | 2 5/16 | + | | | | |
| | | | | 34 | 1.3386 | 1 11/32 | − | | | | | 84 | 3.3071 | 3 5/16 | − |
| 10 | 0.3937 | 13/32 | − | 35 | 1.3780 | 1 3/8 | + | 60 | 2.3622 | 2 3/8 | − | 85 | 3.3465 | 3 11/32 | + |
| 11 | 0.4331 | 7/16 | − | 36 | 1.4173 | 1 13/32 | + | 61 | 2.4016 | 2 13/32 | − | 86 | 3.3858 | 3 3/8 | + |
| 12 | 0.4724 | 15/32 | + | | | | | 62 | 2.4409 | 2 7/16 | + | | | | |
| | | | | 37 | 1.4567 | 1 15/32 | − | | | | | 87 | 3.4252 | 3 7/16 | − |
| 13 | 0.5118 | 1/2 | + | 38 | 1.4961 | 1 1/2 | − | 63 | 2.4803 | 2 15/32 | + | 88 | 3.4646 | 3 15/32 | − |
| 14 | 0.5512 | 9/16 | − | 39 | 1.5354 | 1 17/32 | + | 64 | 2.5197 | 2 17/32 | − | 89 | 3.5039 | 3 1/2 | + |
| 15 | 0.5906 | 19/32 | − | | | | | 65 | 2.5591 | 2 9/16 | − | | | | |
| | | | | 40 | 1.5748 | 1 9/16 | + | | | | | 90 | 3.5433 | 3 17/32 | + |
| 16 | 0.6299 | 5/8 | + | 41 | 1.6142 | 1 5/8 | − | 66 | 2.5984 | 2 19/32 | + | 91 | 3.5827 | 3 19/32 | − |
| 17 | 0.6693 | 21/32 | + | 42 | 1.6535 | 1 21/32 | − | 67 | 2.6378 | 2 5/8 | + | 92 | 3.6220 | 3 5/8 | − |
| 18 | 0.7087 | 23/32 | − | | | | | 68 | 2.6772 | 2 11/16 | − | | | | |
| | | | | 43 | 1.6929 | 1 11/16 | + | | | | | 93 | 3.6614 | 3 21/32 | + |
| 19 | 0.7480 | 3/4 | − | 44 | 1.7323 | 1 23/32 | + | 69 | 2.7165 | 2 23/32 | − | 94 | 3.7008 | 3 11/16 | + |
| 20 | 0.7874 | 25/32 | + | 45 | 1.7717 | 1 25/32 | − | 70 | 2.7559 | 2 3/4 | + | 95 | 3.7402 | 3 3/4 | − |
| 21 | 0.8268 | 13/16 | + | | | | | 71 | 2.7953 | 2 25/32 | + | | | | |
| | | | | 46 | 1.8110 | 1 13/16 | − | | | | | 96 | 3.7795 | 3 25/32 | − |
| 22 | 0.8661 | 7/8 | − | 47 | 1.8504 | 1 27/32 | + | 72 | 2.8346 | 2 27/32 | − | 97 | 3.8189 | 3 13/16 | + |
| 23 | 0.9055 | 29/32 | − | 48 | 1.8898 | 1 7/8 | + | 73 | 2.8740 | 2 7/8 | − | 98 | 3.8583 | 3 27/32 | + |
| 24 | 0.9449 | 15/16 | + | | | | | 74 | 2.9134 | 2 29/32 | + | | | | |
| | | | | 49 | 1.9291 | 1 15/16 | − | | | | | 99 | 3.8976 | 3 29/32 | − |
| 25 | 0.9843 | 31/32 | + | 50 | 1.9685 | 1 31/32 | − | 75 | 2.9528 | 2 15/16 | + | 100 | 3.9370 | 3 15/16 | − |

### Comparing the Commonest Measurement Units

| | Approximate conversions from Customary to metric and vice versa. | | |
|---|---|---|---|
| | When you know: | You can find: | If you multiply by: |
| LENGTH | inches | millimeters | 25 |
| | feet | centimeters | 30 |
| | yards | meters | 0.9 |
| | miles | kilometers | 1.6 |
| | millimeters | inches | 0.04 |
| | centimeters | inches | 0.4 |
| | meters | yards | 1.1 |
| | kilometers | miles | 0.6 |
| AREA | square inches | square centimeters | 6.5 |
| | square feet | square meters | 0.09 |
| | square yards | square meters | 0.8 |
| | square miles | square kilometers | 2.6 |
| | acres | square hectometers (hectares) | 0.4 |
| | square centimeters | square inches | 0.16 |
| | square meters | square yards | 1.2 |
| | square kilometers | square miles | 0.4 |
| | square hectometers (hectares) | acres | 2.5 |
| MASS | ounces | grams | 28 |
| | pounds | kilograms | 0.45 |
| | short tons | megagrams (metric tons) | 0.9 |
| | grams | ounces | 0.035 |
| | kilograms | pounds | 2.2 |
| | megagrams (metric tons) | short tons | 1.1 |
| LIQUID VOLUME | ounces | milliliters | 30 |
| | pints | liters | 0.47 |
| | quarts | liters | 0.95 |
| | gallons | liters | 3.8 |
| | milliliters | ounces | 0.034 |
| | liters | pints | 2.1 |
| | liters | quarts | 1.06 |
| | liters | gallons | 0.26 |
| TEMP | degrees Fahrenheit | degrees Celcius | 5/9 (after subtracting 32) |
| | degrees Celcius | degrees Fahrenheit | 9/5 (then add 32) |

1980

| Machine Model | Engine Model | Cyl. Disp. CC's | Bore | | Stroke | | No. of Cyl. | Type of Cooling |
|---|---|---|---|---|---|---|---|---|
| | | | MM | Inches | MM | Inches | | |
| Gemini | EC25PS | 244 | 72 | 2.8346 | 60 | 2.362 | 1 | Fan |
| Gemini | EC25PM–01 | 244 | 52.9 | 2.0824 | 55.6 | 2.1886 | 2 | Fan |
| Apollo | EC34PM–03 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Fan |
| Galaxy | EC34PM–04 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Fan |
| Galaxy | EC44PM–01/02 | 432 | 67.72 | 2.6557 | 60 | 2.362 | 2 | Fan |
| TX/TX-C | EC34PT–07 | 336 | 62 | 2.441 | 55.6 | 2.1886 | 2 | Free Air |
| TX | EC44PT–05 | 432 | 67.75 | 2.6673 | 60 | 2.362 | 2 | Free Air |
| TX-L/TX-L Indy | EC34PL–02/05 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Liquid |
| Centurion | EC51PL–02 | 500 | 61.78 | 2.432 | 55.6 | 2.1886 | 3 | Liquid |

| Engine Model | Cyl. Head CC's Uninstalled | Cyl. Head CC's Installed | Piston Rings | Piston/Cylinder Bore Clearance ± .002" | Engine Operating RPM ± 250 RPM |
|---|---|---|---|---|---|
| EC25PS | 26.5 | 23.7 | (2) 2.0mm Standard | .009 | 6000 |
| EC25PM–01 | 11.5 | 11.8 | (2) 1.5mm Keystone | .005 | 7000 |
| EC34PM–03 | 21.0 | 16.8 | (2) 1.5mm Keystone | .006 | 6500 |
| EC34PM–04 | 21.0 | 16.8 | (2) 1.5mm Keystone | .006 | 6750 |
| EC44PM–01/02 | 22.9 | 21.4 | (2) 1.5mm Keystone | .008 | 6500 |
| EC34PT–07 | 19.7 | 15.5 | (1) 1.2mm Keystone | Dress with fine stone only* | 7500 |
| EC44PT–05 | 22.8 | 21.2 | (1) 1.2mm Keystone | Dress with fine stone only* | 6750 |
| EC34PL–02/05 | 18.5 | 15.1 | (1) 1.2mm Keystone | .005 | 8000 |
| EC51PL–02 | 19.5 | 15.5 | (1) 1.2mm Keystone | .005 | 7750 |

*Chrome cylinders may be de-glazed and refinished using fine stones.

1981

| Machine Model | Engine Model | Cyl. Disp. CC's | Bore | | Stroke | | No. of Cyl. | Type of Cooling |
|---|---|---|---|---|---|---|---|---|
| | | | MM | Inches | MM | Inches | | |
| Gemini | EC25PS | 244 | 72 | 2.8346 | 60 | 2.362 | 1 | Fan |
| Galaxy | EC44PM–02 | 432 | 67.72 | 2.6557 | 60 | 2.362 | 2 | Fan |
| Cutlass | EC34PM–03 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Fan |
| Cutlass SS | EC44–2PM–3100/3300 | 432 | 67.72 | 2.6557 | 60 | 2.362 | 2 | Fan |
| TX-C | EC44–2PM–1100 | 432 | 67.72 | 2.6557 | 60 | 2.362 | 2 | Fan |
| TX-L/TX-L Indy | EC34PL–05 | 333 | 61.78 | 2.432 | 55.6 | 2.1886 | 2 | Liquid |
| Centurion Indy | EC51PL–02 | 500 | 61.78 | 2.432 | 55.6 | 2.1886 | 3 | Liquid |

| Engine Model | Cyl. Head CC's Uninstalled | Cyl. Head CC's Installed | Piston Rings | Piston/Cylinder Bore Clearance ± .002" | Engine Operating RPM ± 250 RPM | Recommended Idle RPM |
|---|---|---|---|---|---|---|
| EC25PS | 26.5 | 23.7 | (2) 2.0mm Standard | .009 | 6000 | 600 |
| EC44PM–02 | 22.9 | 21.4 | (2) 1.5mm Keystone | .008 | 6500 | 1800 |
| EC34PM–03 | 21.0 | 16.8 | (2) 1.5mm Keystone | .006 | 6500 | 2200 |
| EC44–2PM–3100/3300 | 22.6 | 21.1 | (1) 1.5mm Keystone | .006 | 6250 | 2300 |
| EC44–2PM–1100 | 22.6 | 21.1 | (1) 1.5mm Keystone | .006 | 6750 | 2300 |
| EC34PL–05 | 18.5 | 15.1 | (1) 1.2mm Keystone | .005 | 8250 | 2500 |
| EC51PL–02 | 19.5 | 15.5 | (1) 1.2mm Keystone | .005 | 8000 | 2200 |

## Two-Cycle Operation

Your Polaris snowmobile is equipped with a dependable, high-performance two-cycle engine. Treat it right; give it reasonable care. The first step is to have a basic comprehension of the mechanics involved in its operation. Understanding your two-cycle engine and how it functions will enable you to better maintain your engine, resulting in longer and better performance and life at less cost to you.

A basic component of the two-cycle engine is the piston. When the piston moves upward in the cylinder (1st stroke), it draws fuel into the crankcase while also compressing fuel in the combustion chamber. The spark plug then ignites the fuel, which expands and forces the piston downward.

The down-stroke provides the power which turns the crankshaft. It also compresses the fuel in the crankcase, clears the transfer ports, and releases a new supply of fuel through the ports and into the combustion chamber. This forces the burned gases out through the exhaust ports. See sketches of 2-cycle principle.

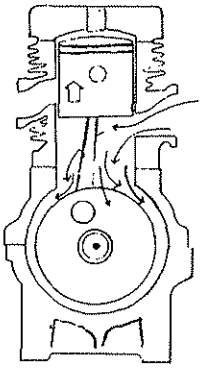
When you realize that at 6,000 RPM this happens 100 times a second, you can appreciate the importance of proper lubrication, fuel mixture, and carburetor adjustments.

Oil provides the only lubrication your engine gets. Keep in mind the manufacturer's recommendations:

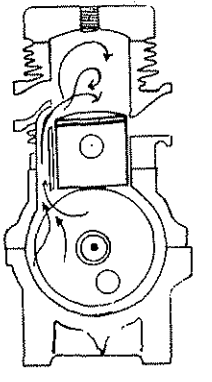
1. Use a good grade of both oil and gasoline.
2. Always mix them in proper proportions – thoroughly – and in a clean container.
3. Keep surplus fuel tightly capped to prevent evaporation, loss of volatility and power.

Too little oil means inadequate lubrication; too much oil means spark plug fouling, rapid carbonization, and overheated pistons, all which may lead to engine damage and costly repairs.

The carburetor feeds the gas-oil mixture to the engine, mixing fuel and air to obtain the correct volatile mixture, thus providing fuel for combustion, a lubricant, and a coolant for internal surfaces.



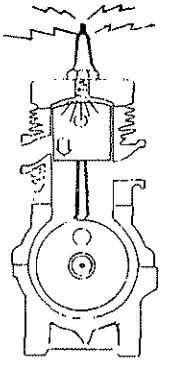
INTAKE



FUEL TRANSFER

POWER

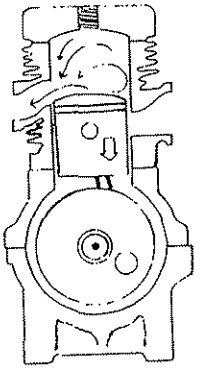
Immediately after the piston starts downward, peak combustion pressure from the burning gases is applied against the piston, driving it downward with maximum force. This inline motion is transmitted thru the connecting rod to radial motion by the crankshaft. The force of combustion continues until the piston is further down in the cylinder when the exhaust port becomes exposed.



POWER

EXHAUST

Actually, several functions take place simultaneously during the exhaust phase. When the piston moves downward far enough to expose the exhaust port, most of the burned exhaust gases are expelled from the cylinder . . complete exhaust takes place after the piston drops low enough to expose the transfer ports which completes one cycle.



EXHAUST

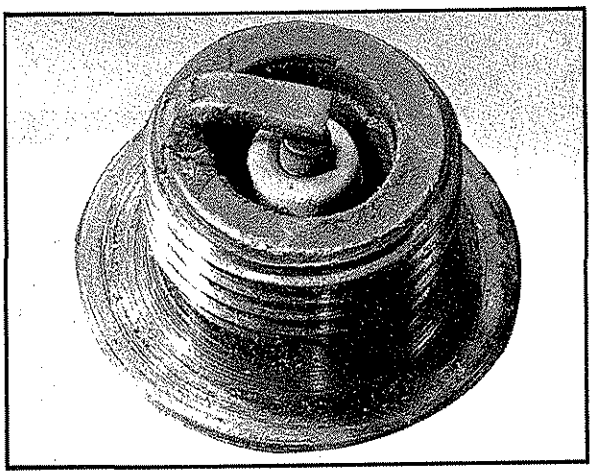
# ENGINES

## Troubleshooting

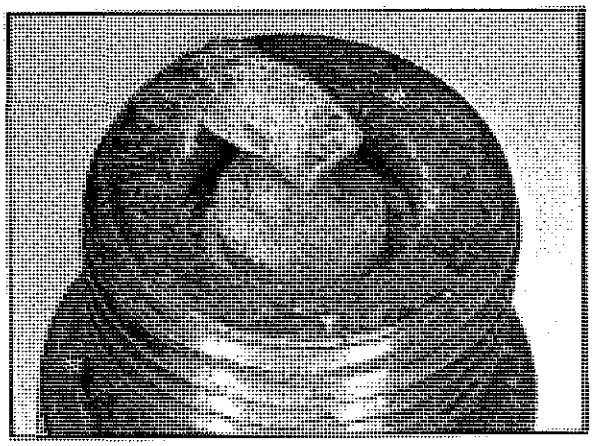
| PROBLEM | PROBABLE CAUSE: |
|---|---|
| 1. Will not start | 1. Check ignition switch for run position.<br>2. Check auxiliary shut-off switch.<br>3. Check fuel supply.<br>4. Check wiring from engine to coil(s) or spark plug(s).<br>5. Check spark plug(s).<br>6. Disconnect the engine connector to eliminate any shorts that might be in the system.<br>7. If starter won't work on electric models, check wires from starter solenoid and battery or check battery and battery cables. |
| 2. No spark | 1. Spark plug fouled.<br>2. Secondary coil bad or wires disconnected.<br>3. Primary coil shorted or open.<br>4. Ignition points pitted or dirty.<br>5. Ignition switch shorted. |
| 3. No compression | 1. Crankcase plug is out.<br>2. Head gasket is blown.<br>3. Bad rings or piston. |
| 4. Engine idles but no acceleration | 1. Restricted fuel flow.<br>2. Clogged main jet. |
| 5. Engine runs but fails to reach maximum R.P.M. | 1. Clogged fuel filter.<br>2. Incorrect track tension.<br>3. Incorrect main jet.<br>4. Throttle slides not fully open.<br>5. Chain too tight. |
| 6. Engine runs but fails to idle | 1. Incorrect air mixture setting.<br>2. Throttle stop screw incorrectly adjusted.<br>3. Dirt in pilot jet. |
| 7. Engine runs, but overloads with fuel | 1. Chokes are not seating.<br>2. Fuel pump diaphragm is ruptured (caused by engine backfiring).<br>3. Carburetor slides are not synchronized.<br>4. Too large main jet.<br>5. Needle and seat not seating properly.<br>6. Incorrect float level. |
| 8. Carburetion and plug fouling | 1. If you do a lot of trail riding and your plugs foul and get black when doing so, lower the jet needle by placing the E clip in 2nd notch from top of needle. Float arms should be level when holding the carburetor upside down. Also, the air set screw should be from 3/4 to 1 turn open, and again, slide valves must be synchronized to rise and lower evenly. Maintain a .017 to .020 spark plug gap. |
| 9. Engine runs but overheats | 1. Incorrect main jet.<br>2. Incorrect timing.<br>3. Incorrect spark plug. |
| 10. Battery will not charge (Electric models only) | 1. Check for bad connections.<br>2. Check alternator output.<br>3. Check diodes. |
| 11. Lights don't work | 1. Engine must be running.<br>2. Check wiring harness connector.<br>3. Check for burned out bulbs.<br>4. Check wiring for shorts or loose connections.<br>5. Disconnect taillight if headlight works, short is in taillight wiring or taillight. |
| 12. Unit fails to propel itself | 1. Check belt (check center distance).<br>2. Check torque-o-matic unit.<br>3. Check secondary pulley.<br>4. Check chain.<br>5. Check drive sprocket assembly. |
| 13. Track wears unevenly | 1. Check tension.<br>2. Check for proper alignment. |
| 14. Chaincase gets hot | 1. Check oil level.<br>2. Check chain tension.<br>3. Check track assembly. |
| 15. Unit steers hard | 1. Check lubrication on spindles.<br>2. Check ski alignment.<br>3. Check spindle bearings. |

1. Normal:
The insulator tip is gray, tan, or light brown. There will be few combustion deposits and the electrodes are not burned or eroded.

This indicates the proper type and heat range for the engine and the service.

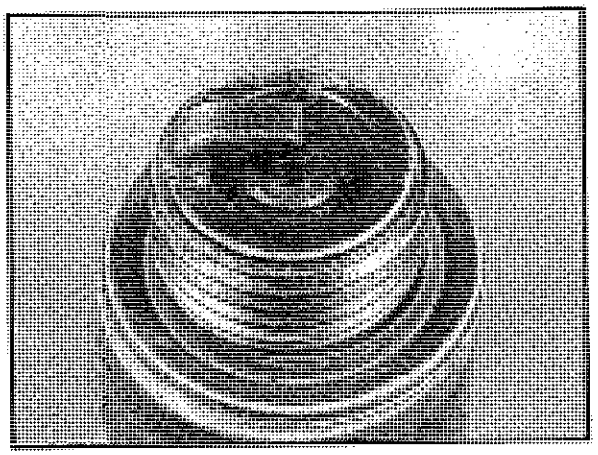


2. Worn Out:
Corrosive gases formed by combustion and the high voltage spark have eroded the electrodes. Spark plugs in this condition require more voltage to fire, often more than the ignition system can produce.



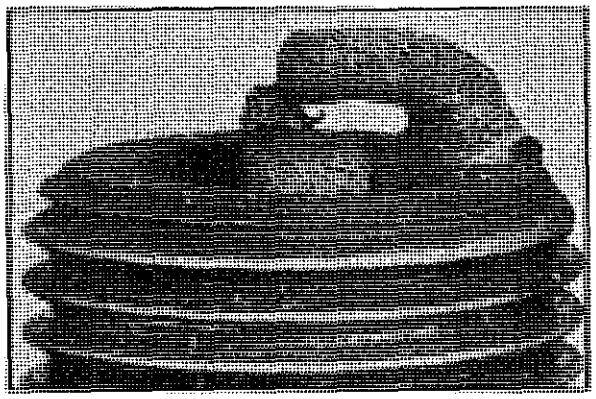
3. Wet Fouled:
The insulator tip is black. A damp oily film covers the firing end. There also may be a carbon layer over the entire nose. Generally the electrodes are not worn.

General causes are excessive oil or use of a non-recommended oil in the fuel, excessive idling, idle too low or too rich. Weak ignition output can also cause wet fouling.



## Spark Plug Information

4. Gap Bridging:
   This is usually a "whisker" or filament of lead-carbon compounds and completely short-circuits the spark, rendering the plug inoperative.



When replacing spark plugs, original equipment parts, or their equivalent, should always be used. Because of different brands intended for various applications, it is extremely important when replacing the spark plugs to install only those which are factory tested and recommended.

The correct plug for your engine will improve both starting and all-around performance.
CAUTION: Do not experiment with different heat ranges of spark plugs. Spark plug failure may be the result of contributing factors, such as wrong fuel-air mixture, available ignition voltage, carburetion adjustment, etc.

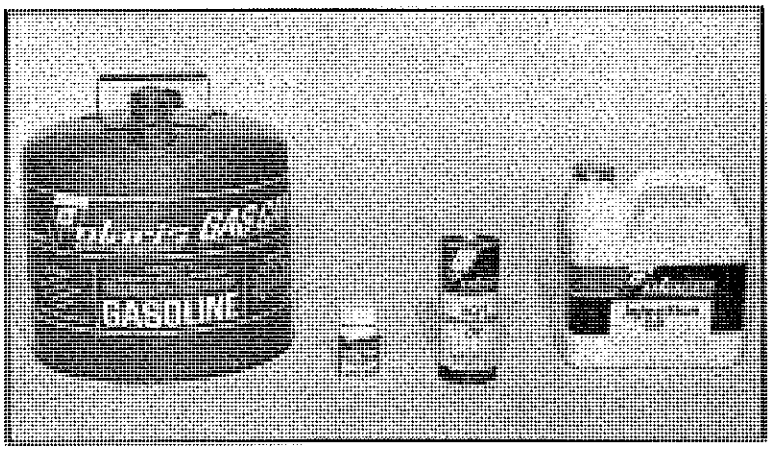
NOTES:

## Fuel Mixtures

A good two-cycle lubricant must provide anti-friction protection to pistons, cylinder walls and bearings but no flushing action is involved. The oil must therefore contain or be provided with an affinity for metal. It must burn cleanly with a minimum of smoke. It must mix easily with gasoline and remain in suspension. It must inhibit the formation of varnish, rust or other engine deposits.

Base oils vary in their ability to meet these requirements and most good two-cycle oils are blends, with carefully selected additives as required to provide the necessary operating characteristics.

Polaris Snowmobile Oil has been subjected to a series of severe tests covering a broad range of operating conditions and meets all requirements. Because of this Polaris strongly recommends the exclusive use of Polaris Snowmobile Oil in its engines.




### FUEL RECOMMENDATION

Use a good grade of regular leaded or premium unleaded gasoline and "Polaris Snowmobile Oil" on all machines.

Mix fuel in a clean container. Pour about one-half of the gasoline into a container. Add all of the oil and mix well. Then add remainder of gasoline and mix thoroughly.

### BREAK-IN FUEL/OIL RATIOS

Oil-Injection Models:
Models equipped with oil-injection are required to have the first tank of fuel pre-mixed at a 40:1 ratio in addition to the normal lubrication received from the injector system.

Pre-Mix Models:
The break-in fuel/oil ratio for all pre-mix engines is 20:1 for the first tank of fuel.

### AFTER BREAK-IN

All pre-mix engines are designed to operate at a 40:1 fuel mixture ratio after break-in.

### FUEL DEICERS

Polaris recommends the use of its fuel system deicer to prevent icing and possible engine damage due to fuel starvation. Mix three ounces deicer to five gallons of gasoline.

CAUTION: Never add fuel while snowmobile is running.

⚠ Never pour oil or gasoline into fuel tank unless mixed.

Do not use low grade multi-viscosity oil.

NOTE: Excess oil will cause carbonization of pistons, spark plugs, ports, and exhaust systems, causing loss of power.

Too little oil will cause a lean condition and may cause piston seizure, over heating and rod end bearing failure. If oil brands are changed, it is advisable to clean excess carbon from pistons, heads and exhaust ports.

## ENGINES

### Torque Specifications

When tightening bolts, nuts, or screws, a torque pattern should be followed to insure uniform equal tension is applied to all fasteners. Proper torque application prevents fasteners from loosening or breaking in critical service. It also minimizes wear and eliminates premature or needless repair costs. Following uniform torque application sequence patterns assures optimum performance from precision machined close tolerance assemblies. On vital engine parts, torquing negligence could be costly.

Torque is a force which tends to produce rotation. The measurement of this force is expressed in units of force and length. There are at present two basic systems of units used to express torque: the English and the Metric. In the English System, the units of force are the pound or ounce and the length is the foot or inch.

In the Metric System, the unit of force is expressed in grams (GM.) or Kilograms (KG.) and length as Centimeters (CM.) or Meters (M.). The most common units of torque in the English System are the FT./LB. or the IN./LB. In the Metric System, torque is commonly expressed in units of KG./M.

| Multiply | by | To Obtain |
|---|---|---|
| IN.-LBS. | .0834<br>1150<br>.01150 | FT.-LBS.<br>GM.-CM.<br>KG.-M. |
| FT.-LBS. | 12<br>13,800<br>.138 | IN.-LBS.<br>GM.-CM.<br>KG.-M. |
| KG.-M. | 86.8<br>7.24 | IN.-LBS.<br>FT.-LBS. |

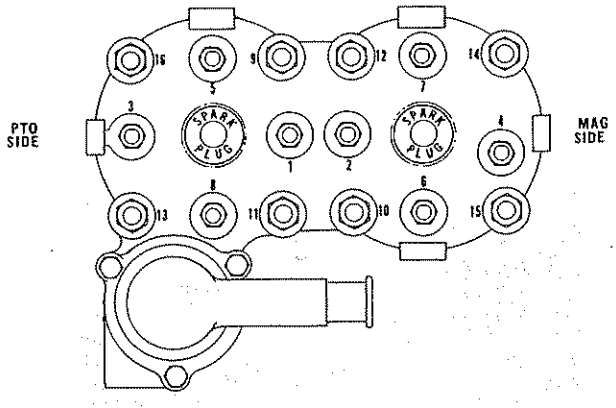
CELSIUS/FAHRENHEIT CONVERSION TABLE

C-Centigrade F-Fahrenheit

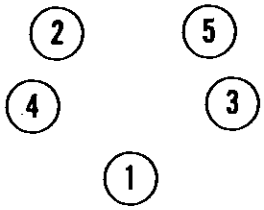
| C | F | C | F | C | F | C | F |
|---|---|---|---|---|---|---|---|
| -40 | -40 | -20 | -4 | 0 | 32 | 20 | 68 |
| -39 | -38 | -19 | -2 | 1 | 34 | 21 | 70 |
| -38 | -36 | -18 | 0 | 2 | 36 | 22 | 72 |
| -37 | -35 | -17 | 1 | 3 | 37 | 23 | 73 |
| -36 | -33 | -16 | 3 | 4 | 39 | 24 | 75 |
| -35 | -31 | -15 | 5 | 5 | 41 | 25 | 77 |
| -34 | -29 | -14 | 7 | 6 | 43 | 26 | 79 |
| -33 | -27 | -13 | 9 | 7 | 45 | 27 | 81 |
| -32 | -26 | -12 | 10 | 8 | 46 | 28 | 82 |
| -31 | -24 | -11 | 12 | 9 | 48 | 29 | 84 |
| -30 | -22 | -10 | 14 | 10 | 50 | 30 | 86 |
| -29 | -20 | -9 | 16 | 11 | 52 | 31 | 88 |
| -28 | -18 | -8 | 18 | 12 | 54 | 32 | 90 |
| -27 | -17 | -7 | 19 | 13 | 55 | 33 | 91 |
| -26 | -15 | -6 | 21 | 14 | 57 | 34 | 93 |
| -25 | -13 | -5 | 23 | 15 | 59 | 35 | 95 |
| -24 | -11 | -4 | 25 | 16 | 61 | 36 | 97 |
| -23 | -9 | -3 | 27 | 17 | 63 | 37 | 99 |
| -22 | -8 | -2 | 28 | 18 | 64 | 38 | 100 |
| -21 | -6 | -1 | 30 | 19 | 66 | 39 | 102 |

ENGINE BOLT TORQUE – FT./LBS. AND KG.–M–COLD

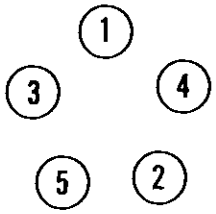
| Engine | Cylinder Head | Crankcase | | Flywheel | Cylinder Base Studs |
|---|---|---|---|---|---|
| | | 8MM | 10MM | | |
| EC25PS | 17-18 Ft./Lbs.<br>2.3-2.5 KG.–M | 18-20 Ft./Lbs.<br>2.5-2.8 KG.–M | 23-25 Ft./Lbs.<br>3.2-3.5KG.–M | 60-65 Ft./Lbs.<br>8.3-9.0–KG.–M | 24-28 Ft./Lbs.<br>3.3-3.9KG.–M |
| All Twin Cylinder | 17-18 Ft./Lbs.<br>2.3-2.5 KG.–M | 18-20 Ft./Lbs.<br>2.5-2.8 KG.–M | 23-25 Ft./Lbs.<br>3.2-3.5 KG.–M | 60-65 Ft./Lbs.<br>8.3-9.0 KG.–M | 24-28 Ft./Lbs.<br>3.3-3.9 KG.–M |
| EC34PL Liquid Cooled<br><br>EC51PL Liquid Cooled | 8MM<br>16-17 Ft./Lbs.<br>2.2-2.3 KG.–M<br><br>10MM<br>26-29 Ft./Lbs.<br>3.6-4.0 KG.–M | 18-20 Ft./Lbs<br>2.5-2.8 KG.–M | 23-25 Ft./Lbs.<br>3.2-3.5 KG.–M | 60-65 Ft./Lbs<br>8.3-9.0 KG.–M | |



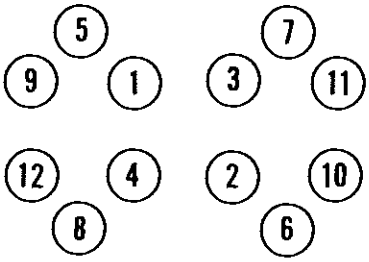

EC34PL Cylinder Head



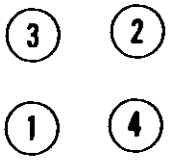

244 Crankcase



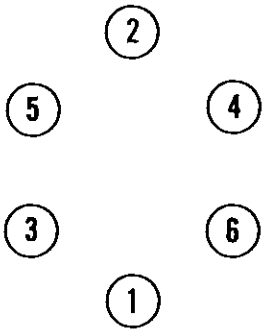

5 Stud Cylinder Head



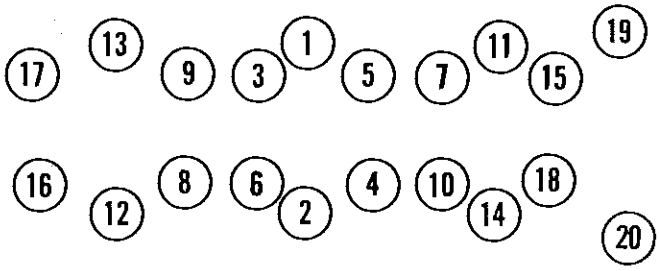

Twin Cylinder Crankcase



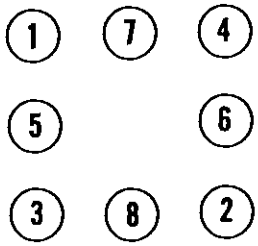

All Cylinder Base Studs




6 Stud Cylinder Head




3 Cylinder Crankcase



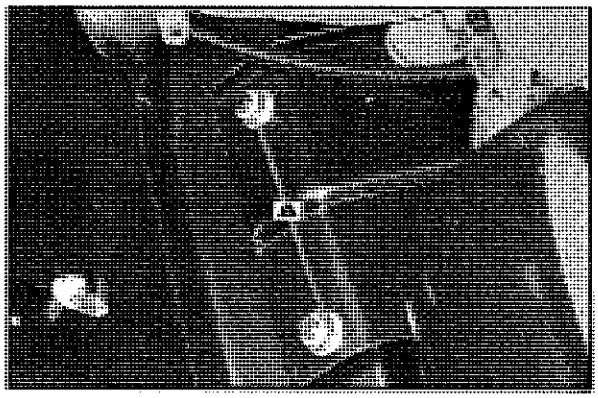

3 Cylinder Head

## Engine Removal – All Models Except Liquid Cooled

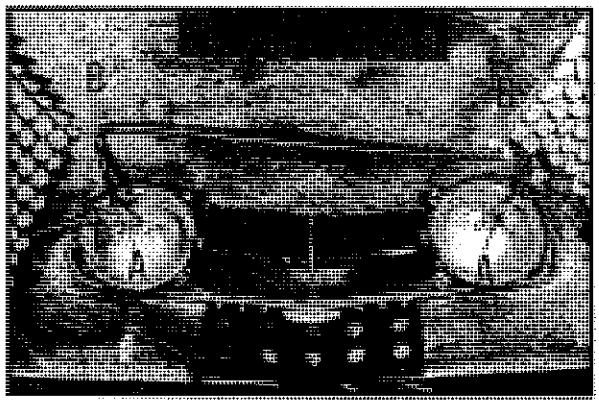
Removal of the engine from the chassis is basically the same on all models. Operations of removal follow a certain pattern, and while minor details may require a variation of technique, the following procedures will establish a guideline for the serviceman which will be valuable in all instances during this operation.

1. Remove the muffler by disconnecting the hold-down springs.

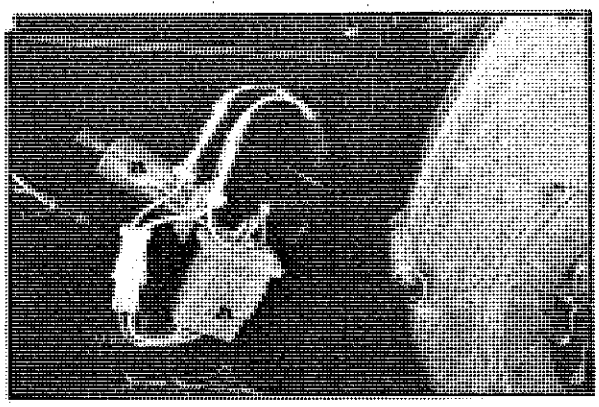
   Remove the engine motor mount bolt nuts that secure the engine to the chassis (A).



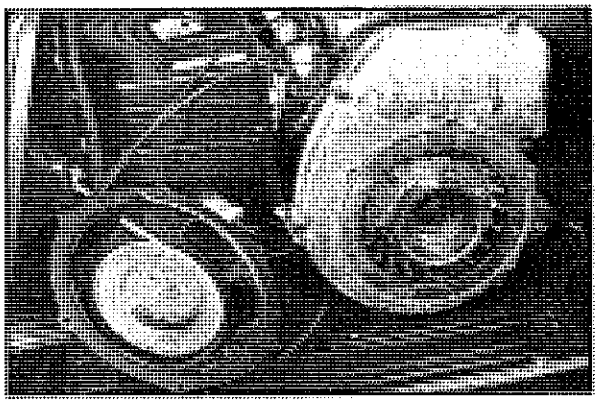
2. Remove the headlight wiring by disconnecting from the headlights (A) and by bending the retaining clips that secure the wiring loom to the hood (B). Next pull the entire wire harness rearward from between the engine and its mount plate placing it out of the way on the machine.



3. The air silencer need not be removed on all models. Disconnect the wire harness receptacle from the engine (A). Disconnect the fuel line from the filter (B), plugging the line to prevent fuel spillage and a fire hazard.
NOTE: CDI units also require the black wire to the CDI box be disconnected from the receptacle. Remove the hood stop cable from the engine.

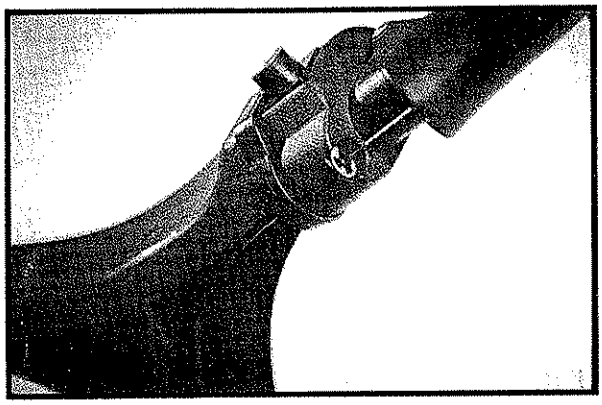


4. Remove the recoil assembly from the engine and set it aside in the nosepan.



5. Disconnect the choke cable from the instrument panel.

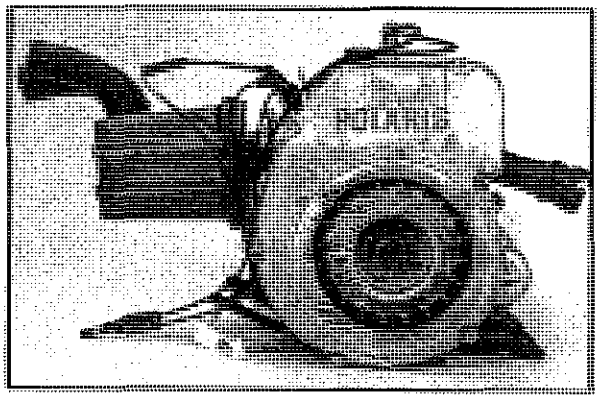
6. Remove the throttle cable retainer. Clip to allow passage of the throttle cable through the block. Remove the throttle cable. Remove the drive belt. The engine is now ready for removal from the chassis.
NOTE: Upon engine reinstallation, the drive clutch must be realigned. Refer to Section VII, Torque-O-Matic Drive, for further information.



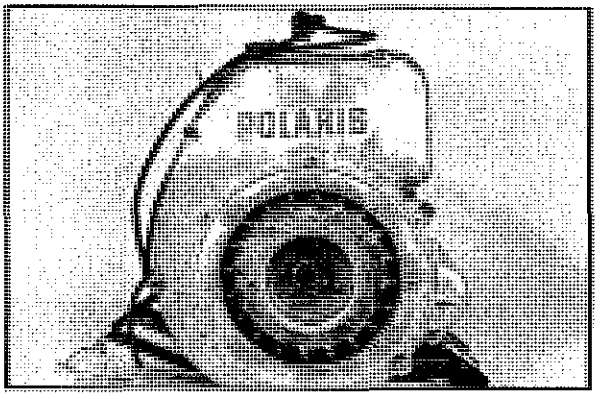
## Disassembly Procedures — PM Series

Disassembly of all engines for diagnosis and replacement of parts is basically the same. While engine features may vary; i.e., fan or free air models, the techniques used on crankcases, cylinders, pistons, etc., follow certain guidelines for all. The following will be an aid to the serviceman during diagnosis and repair.

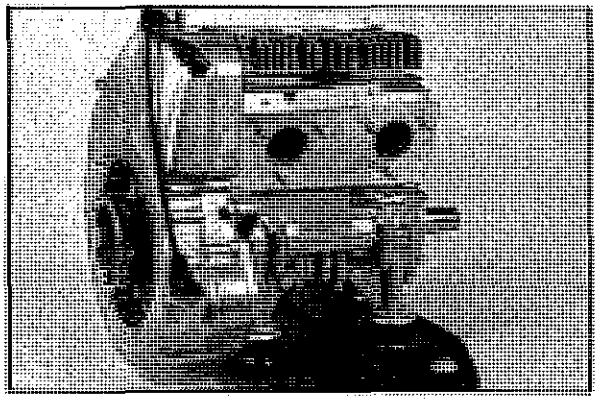
1. A complete EC34PM–03 engine, less recoil starter and muffler.



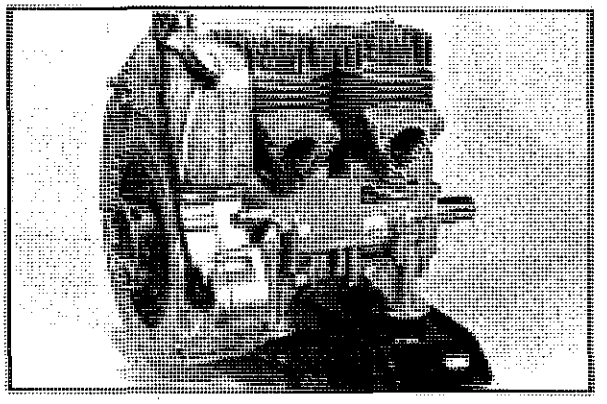
2. Remove the carburetors, intake silencer, and exhaust manifold.



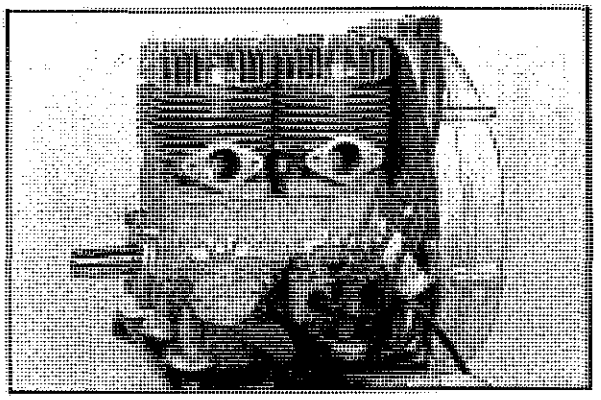
3. Remove the top cooling shroud.



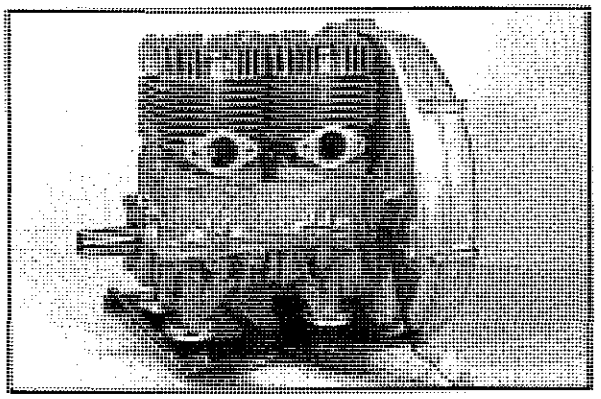
4. Remove the cooling shroud from the front of the engine.



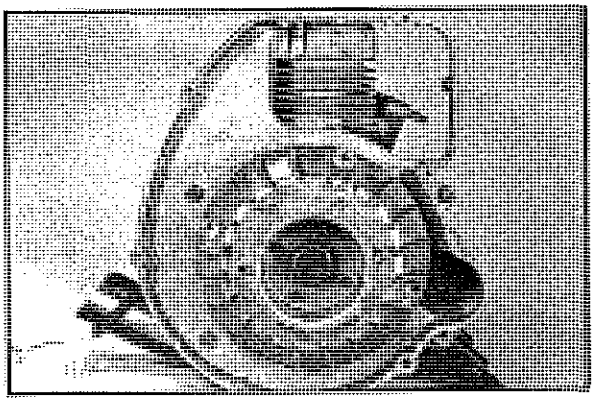
5. Remove the carburetor rubber mounts and the cooling shroud from the rear of the cylinders.



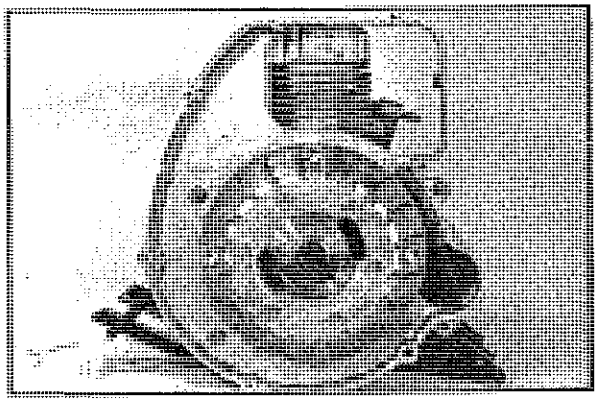
6. Remove the fuel pump and ignition coils.



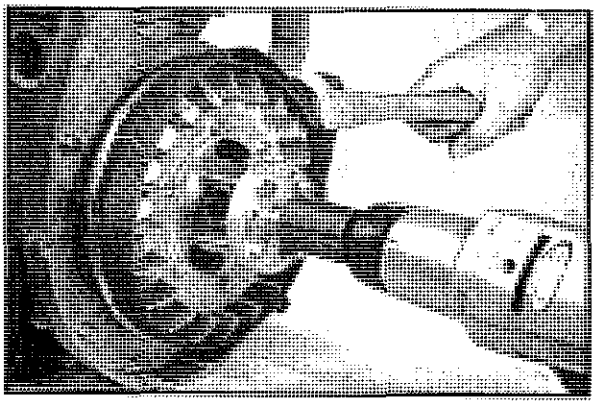
7. Remove the outer blower housing.



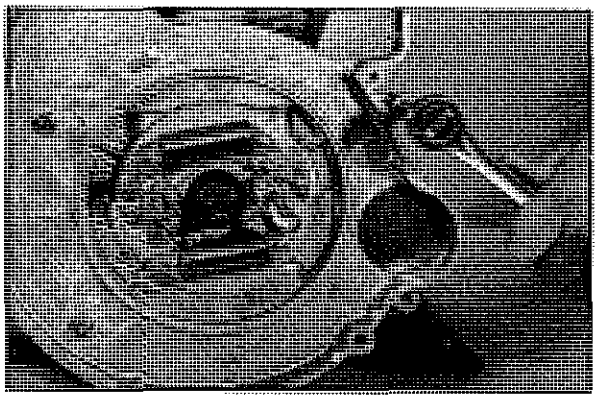
8. Remove the starter cup and the dust shield from the flywheel.



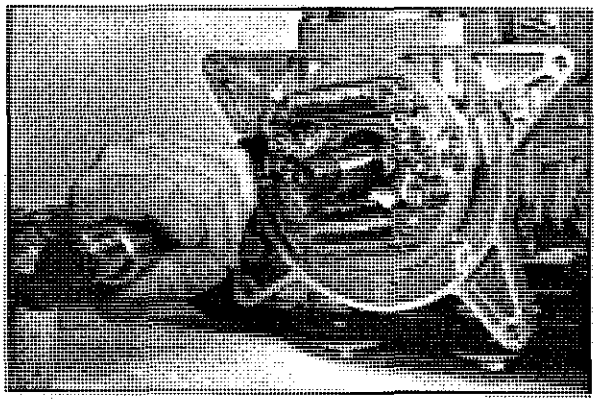
9. Remove the flywheel nut. Install the flywheel puller (PN 2870159) to the flywheel, holding with the strap wrench during removal.



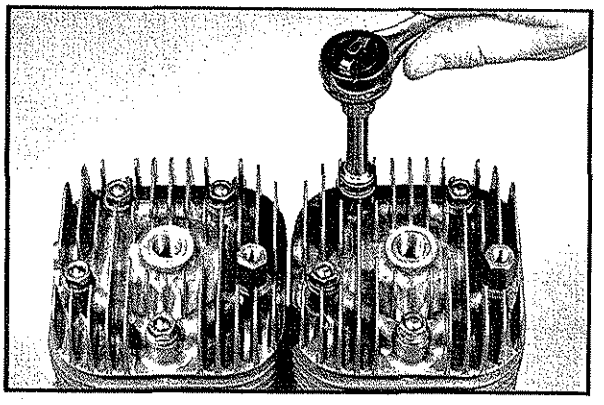
10. Remove the inner half of the blower housing from the crankcase.



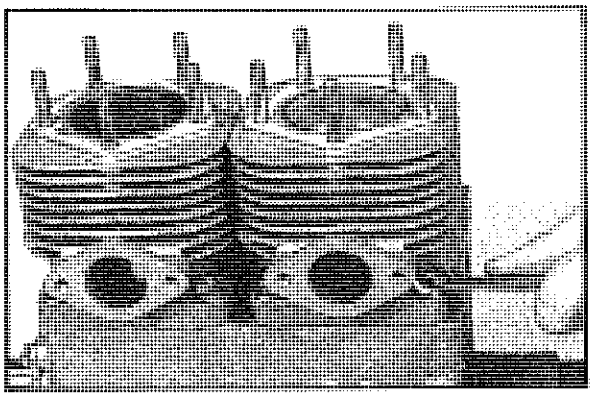
11. Using an impact screwdriver, remove the two stator plate retaining screws and remove the stator plate.



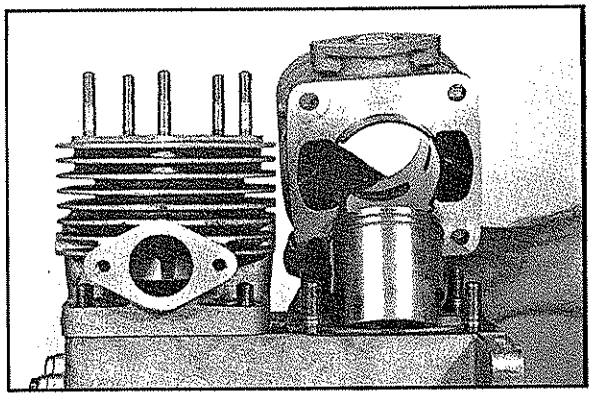
12. Remove the head, noting the location of the two special cooling shroud mounting nuts.



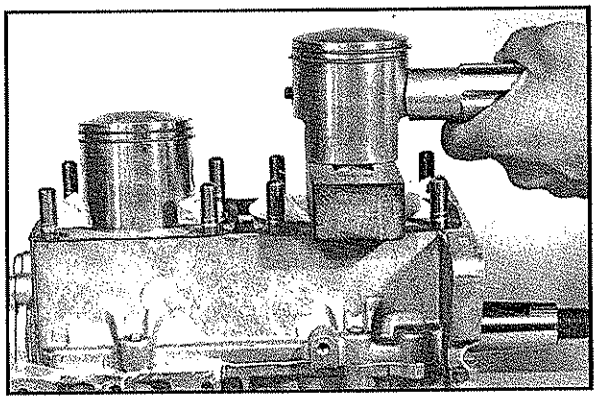
13. Remove the cylinder base nuts.



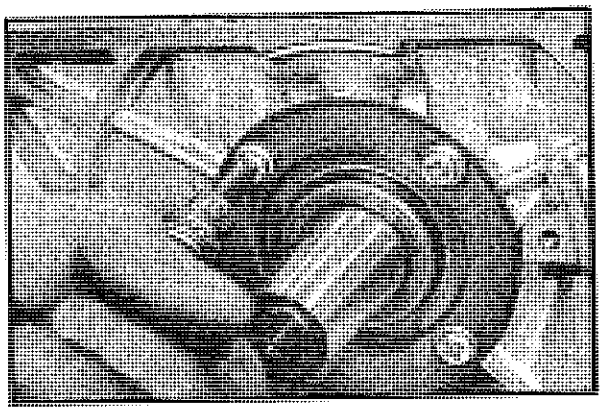
14. Remove the cylinders.



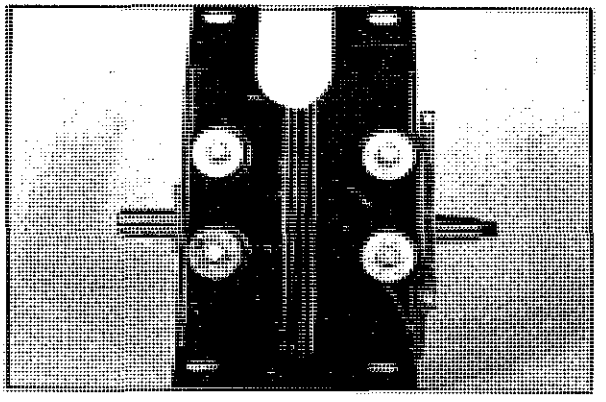
15. Using the piston support block (PN 2870390) and supporting the piston as shown, remove the piston pin retainers. Then using the piston pin puller (PN 2870386), remove the piston pin.



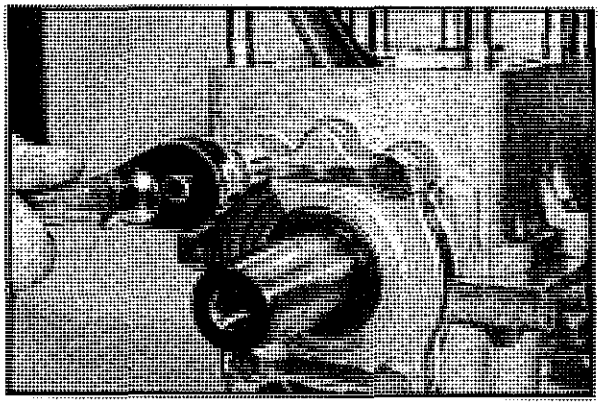
16. Remove the flywheel side crankshaft end seal.



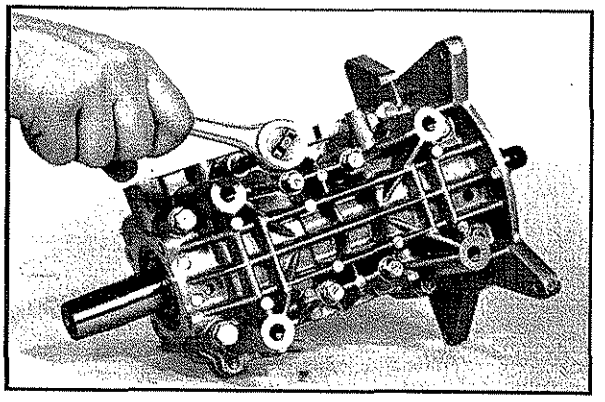
17. Remove the four (4) bolts fastening the engine mount plate and remove the plate.



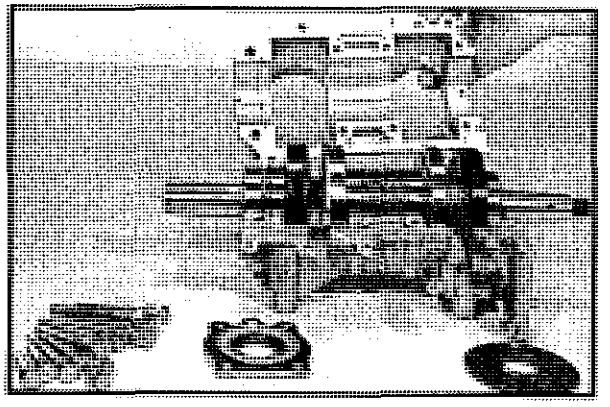
18. Remove the PTO side crankshaft seal by bending the locking tabs and removing the four (4) cap screws.



19. Remove the crankcase bolts, and using a plastic hammer, tap the crankcase at the fan housing bracket to split the case.

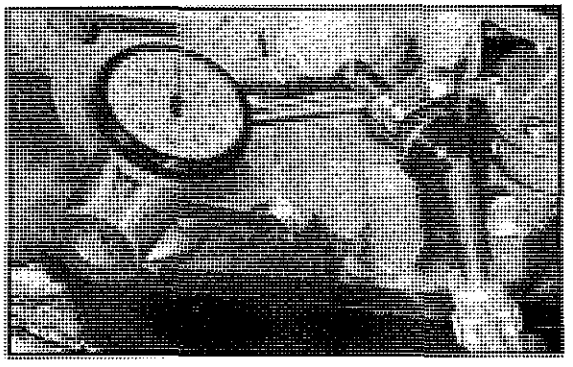


20. Crankcase split showing the bearing and center labyrinth seal arrangement.



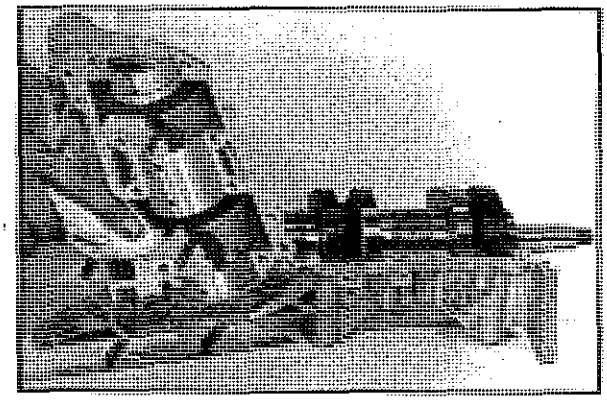
With the engine disassembled inspect the following items:

| ITEM: | | PROCEDURE: |
|---|---|---|
| 1. | Crankshaft Bearings | Spin by hand and check for roughness. |
| 2. | Crankcase | Check bearing mating surfaces and labyrinth seal area. In some instances the labyrinth seal rings gouge into the case halves and cause a small amount of metal to flare to each side. This condition is not necessarily damaging to the engine. In most instances the rough edges can be sanded by hand with a grit wet sandpaper; however, if the case halves are severely gouged (1/16" or more) the cases should be replaced. |
| 3. | Crankshaft Seals | Inspect for hardness or cracking. Always install new seals upon reassembly. |
| 4. | Connecting Rod Small End Bearings | Check for roughness. |
| 5. | Connecting Rod Large End Bearings | Check by rotating the rod and moving from side to side. |
| 6. | Magneto Breaker Points | Inspect for pitting, install new points. |
| 7. | Cylinder Bore | Inspect for scoring or distortion. Refer to cylinder service in this section for detailed procedures. |
| 8. | Piston and Rings | Check for stuck rings and signs of piston damage from detonation. |
| 9. | Cylinder Heads and Gaskets | Check for leakage. Always install new gaskets and torque the heads according to the torque chart in this section. |

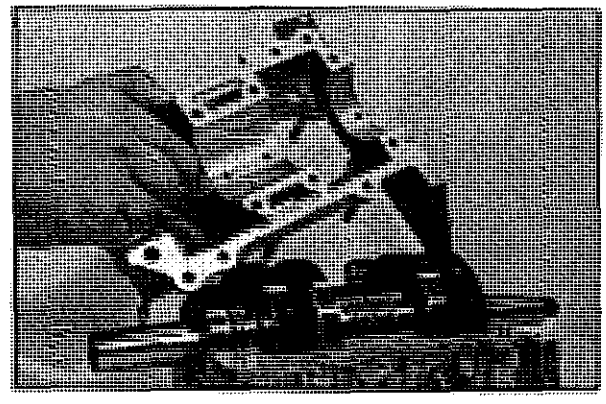


| | | |
|---|---|---|
| 10. | Crankshaft Runout | With the crankshaft installed and case halves torqued, polish the PTO end of shaft with fine emery cloth to remove nicks or foreign material which will result in inaccurate readings. Measure indicated crankshaft runout 1/2" from the PTO end as shown.<br>NOTE: Serviceable shaft total runout reading should not exceed .006" on all models. |

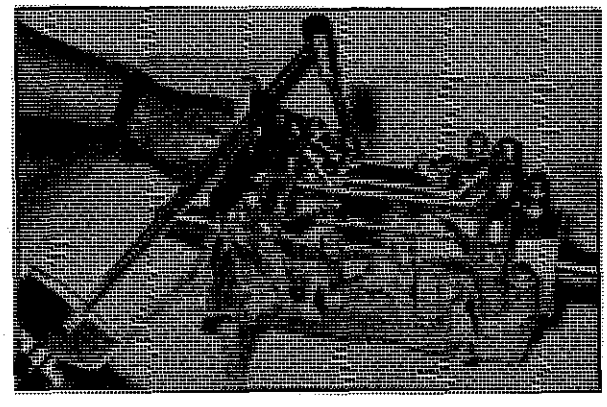
1. Before reassembling the engine, clean all parts with solvent. Remove the old sealer from the crankcase halves.



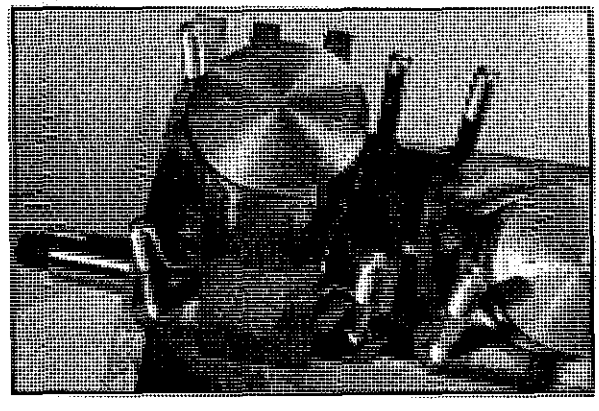
2. Apply a small amount of an appropriate sealer to the crankcase halves. Grease the labyrinth seal and crankshaft end seals.



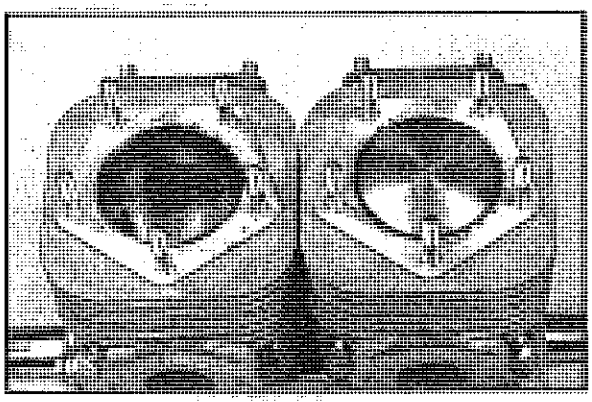
3. Torque the crankcase bolts following the torque patterns in this section.



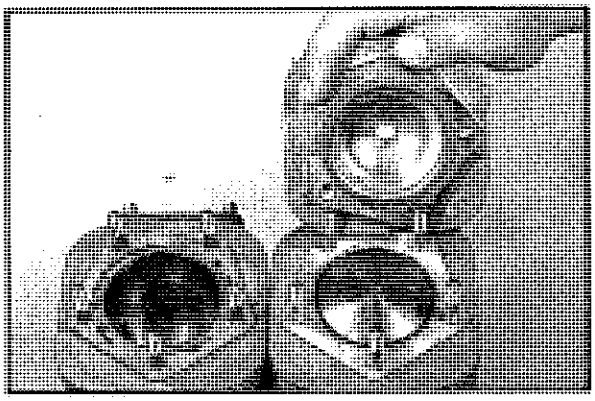
4. Install the piston pin bearings and spacers to the rod and install the pistons with the "F" marking toward the flywheel side. Install new piston pin retainer locks.



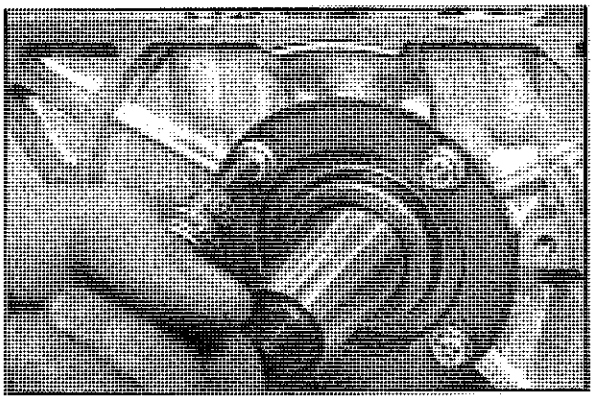
5. Oil the pistons and install the cylinders.



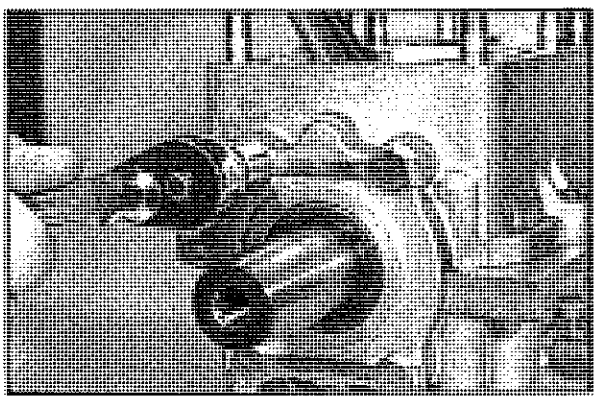
6. Install the cylinder head gaskets with the large diameter metal surface toward the cylinder. Install the cylinder heads. Torque according to the sequence and values given in this section.



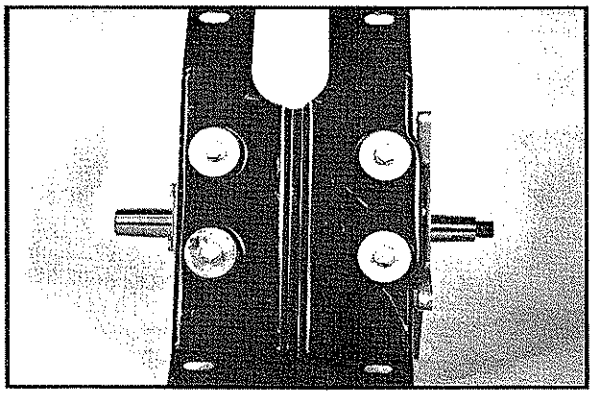
7. Grease the flywheel crankshaft end and seal and install.



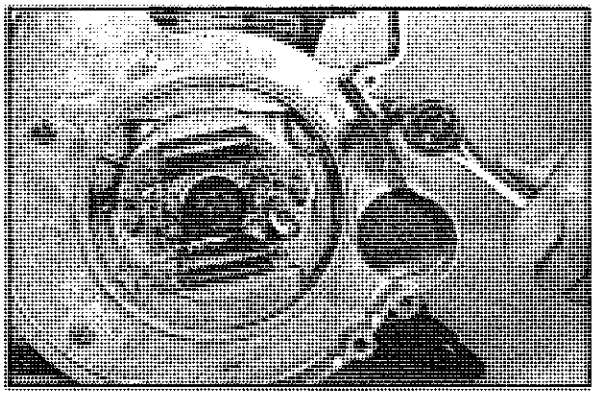
8. Apply grease to the PTO crankshaft seal and install as shown. Bend the cap screw retaining lock tabs.



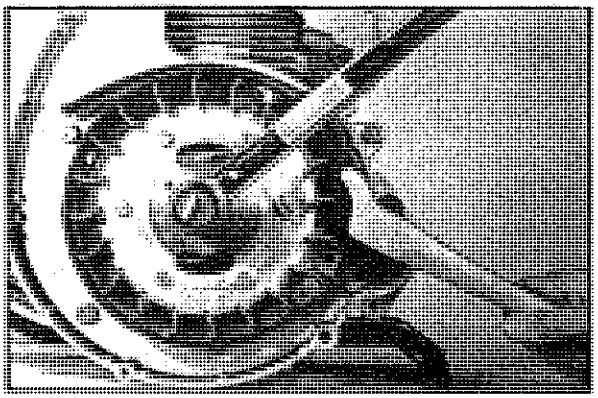
9. Install the engine mounting plate, torquing bolts to 55 - 60 ft./lbs.



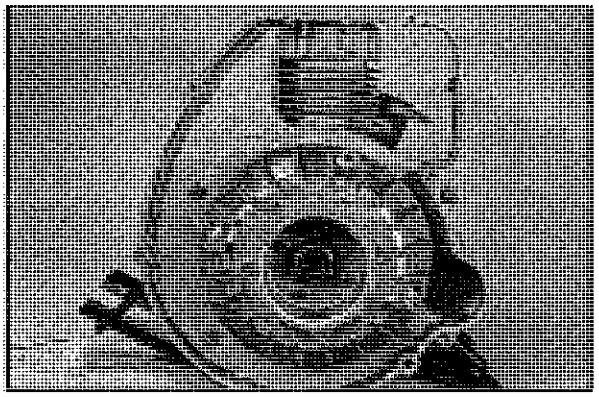
10. Install the stator plate and inside blower housing half to the crankcase.



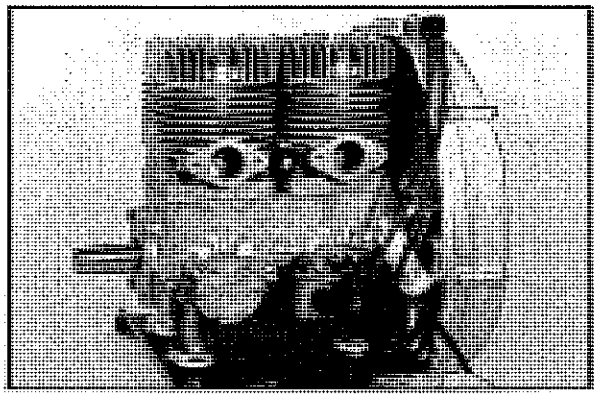
11. Install the flywheel and torque to 60 - 65 ft./lbs. Re-time the ignition system.



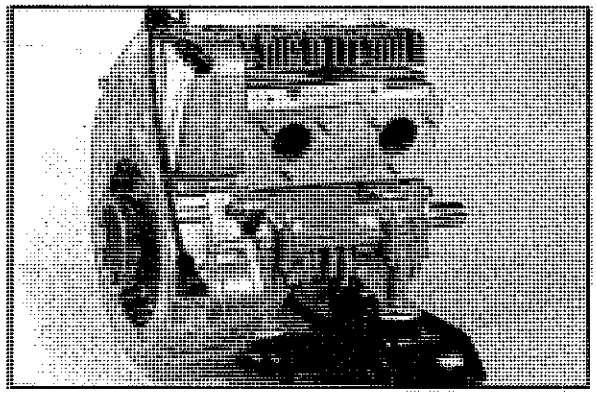
12. Install the recoil starter cup.



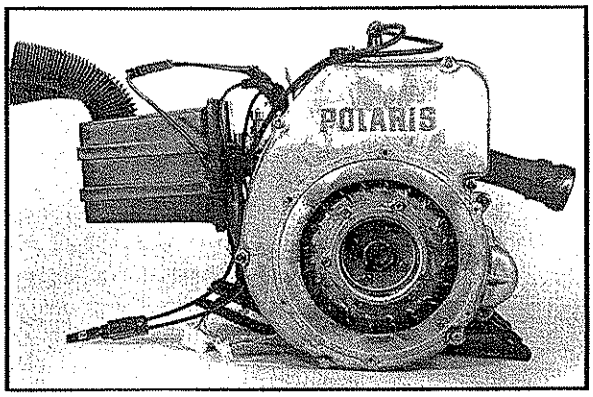
13. Install the outer blower housing half, the secondary coils, and the fuel pump.



14. Install the cooling shrouds.



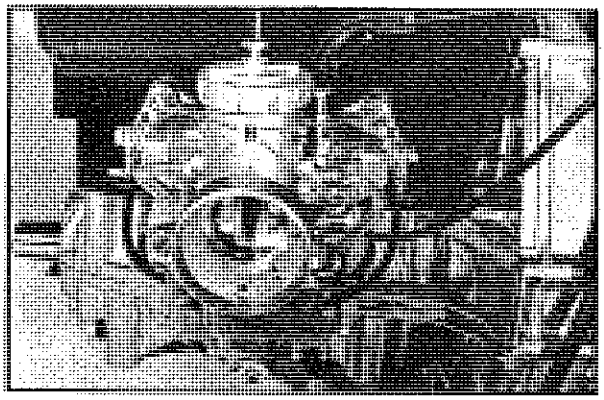
15. Install the carburetors, air silencer, and exhaust manifold. The engine can now be installed in the chassis in the reverse sequence of removal.



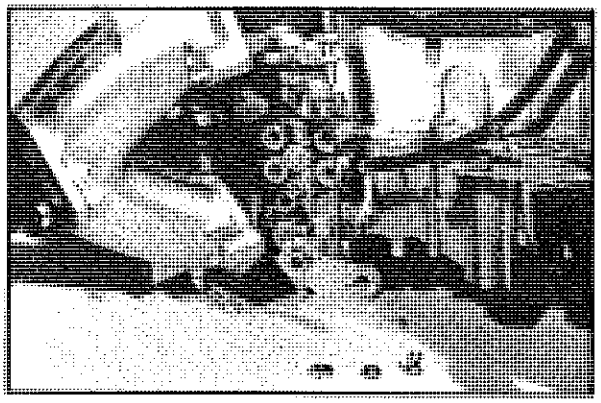
## Disassembly Procedures — 44—2PM Series

1. Remove the engine mount plate.

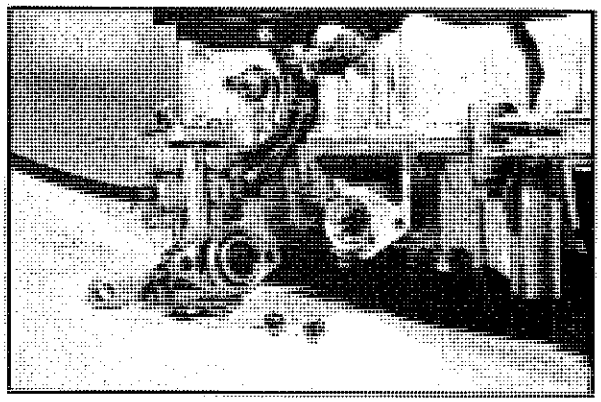
2. Disconnect the two oil-injection lines (A) from the manifold. Remove the four nuts and washers (B) securing the manifold to the cylinders and remove the manifold and carburetor.



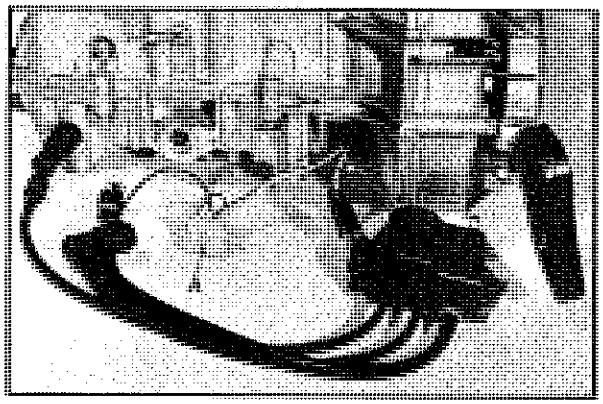
3. Remove the oil pump control cable from its attaching bracket and the pump control lever.



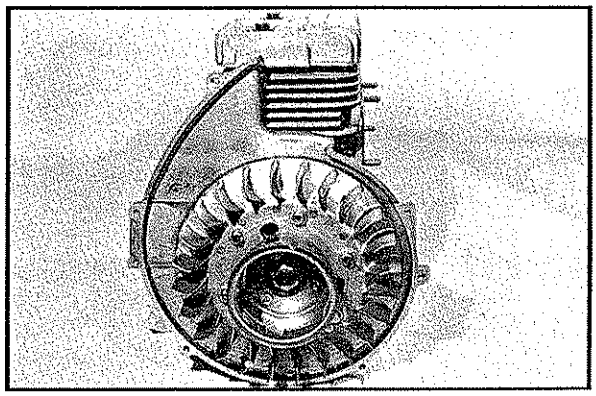
4. Remove the two phillips-head screws holding the oil pump to the crankcase. Disconnect the oil line at the crankcase and remove the pump.



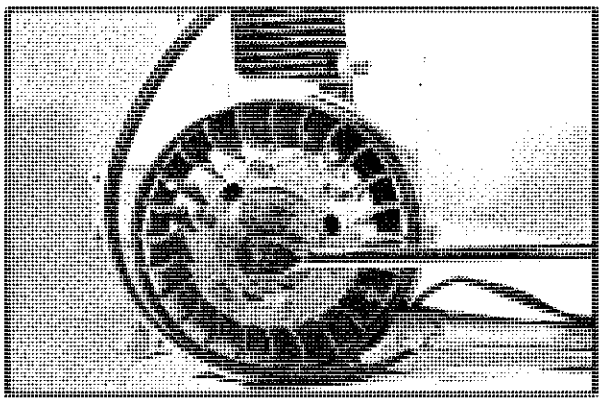
5. Remove the exhaust manifold, cooling shrouds, spark plugs, and CDI control unit. Mark the auxiliary kill wire location (A) at the connector block and remove it so the control unit can be set aside.



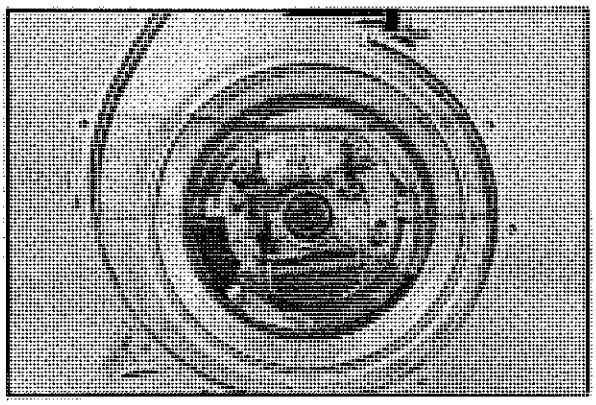
6. Remove the seven blower housing attaching bolts and outer blower housing from the engine.



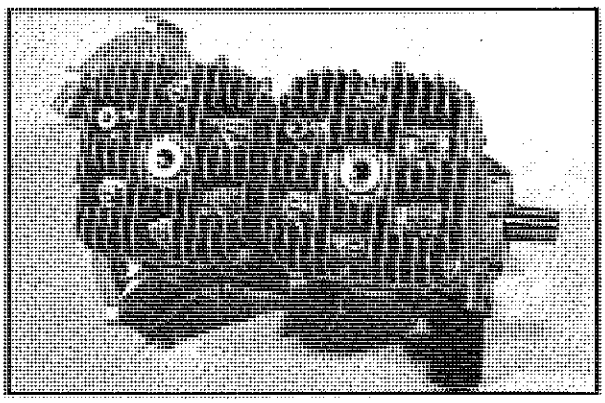
7. Remove the flywheel nut. Install the flywheel puller (PN 2870159) and strap wrench to the flywheel and remove the flywheel as shown. NOTE: Prior to attempting flywheel removal, be sure the three puller bolts are threaded into the flywheel equally to prevent binding.



8. Mark the stator plate to crankcase position for reassembly reference. Remove the two stator plate attaching screws (A), dislodge the dust cover from the crankcase housing, and remove the stator assembly.

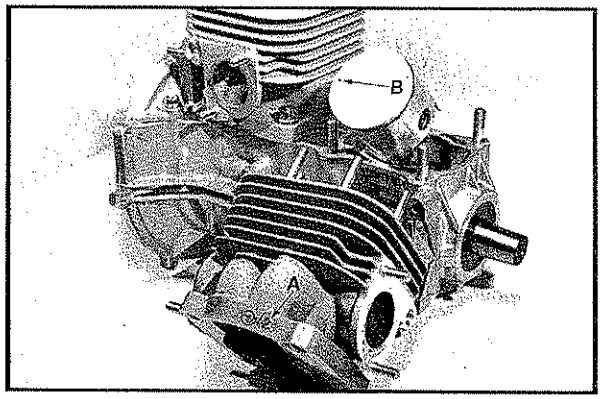


9. Remove the cylinder heads, noting the position of the two deep nuts used for attaching the cooling shroud.

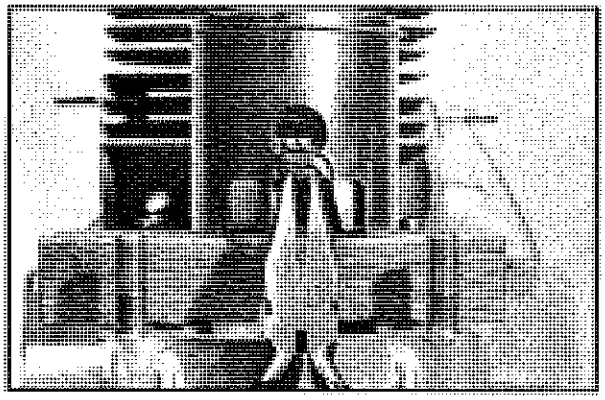


## Disassembly Procedures — 44—2PM Series

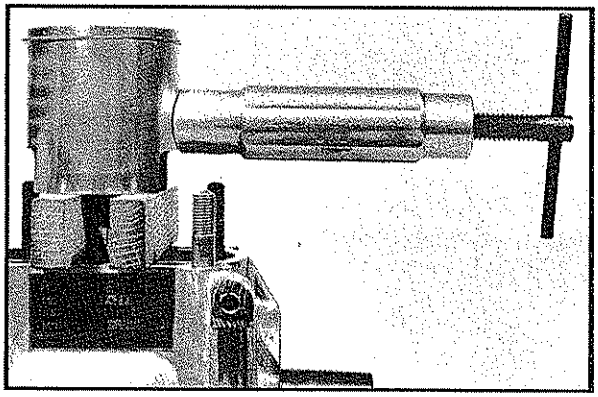
10. Remove the cylinder base nuts and washers. Remove one cylinder and base gasket.
NOTE: The cylinders are numbered at the transfer base (A) with No. 1 being the flywheel side and No. 2 the PTO side. In addition, the identifying mark on the piston head (B) is always positioned toward the flywheel side of the crankshaft.



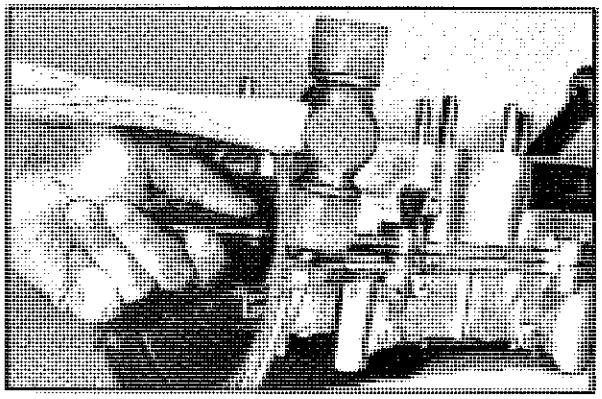

11. Using a needle-nose pliers, compress and remove the piston pin retainer clips.



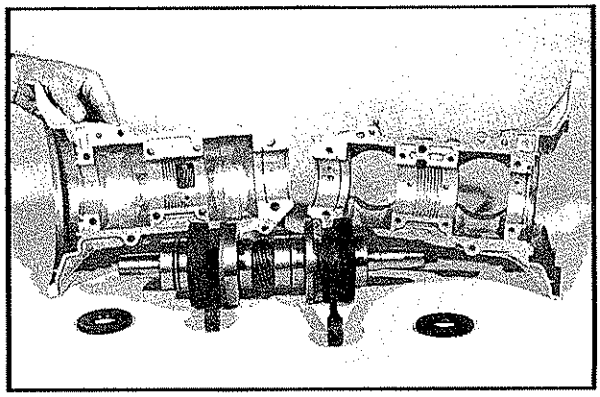
12. Supporting the piston with the support block (PN 2870390), install the piston pin puller (PN 2870386) and remove the piston pin. Remove the remaining cylinder in the same sequence.



13. Remove the 12 bolts located on the bottom of the crankcase. Supporting the case as shown, use a soft hammer to separate the case halves.

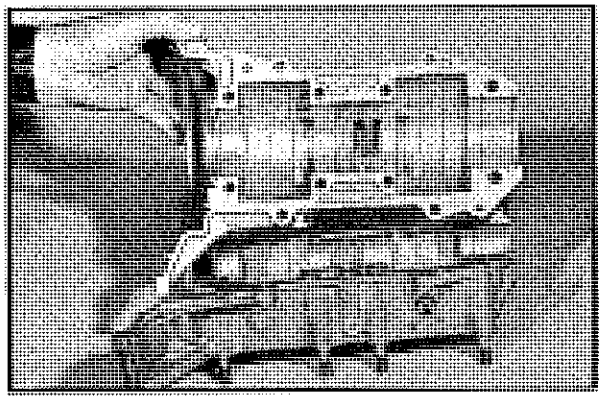


14. Split crankcase and crankshaft.

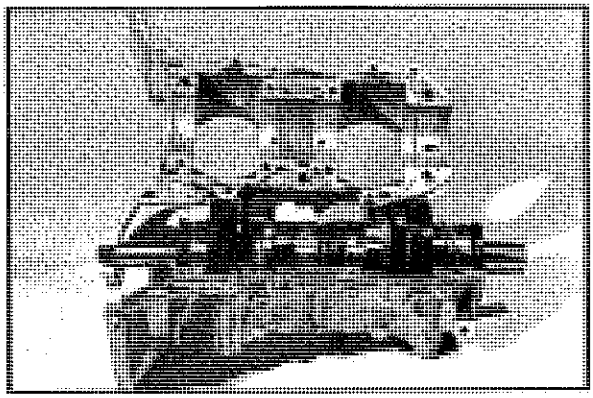


## REASSEMBLY PROCEDURES

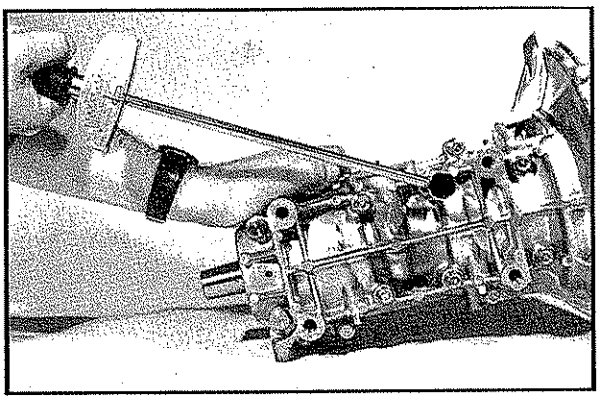
1. Before reassembling, clean all parts with a suitable solvent, taking care to remove all the old crankcase sealer from the crankcase halves.



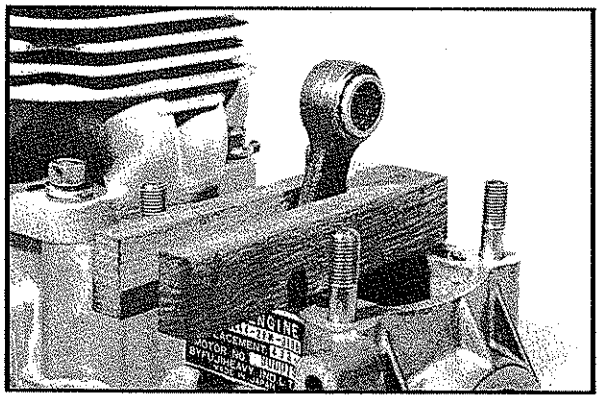
2. Wipe a small amount of an appropriate sealer (Casite Make-A-Gasket) to the crankcase halves. Grease the labyrinth seal grooves in the case and the crankshaft end seals (use general purpose automotive chassis grease).



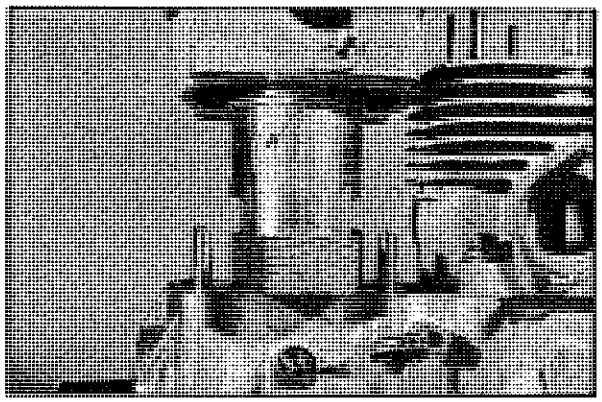
3. Torque the crankcase bolts according to the torque patterns in this section.



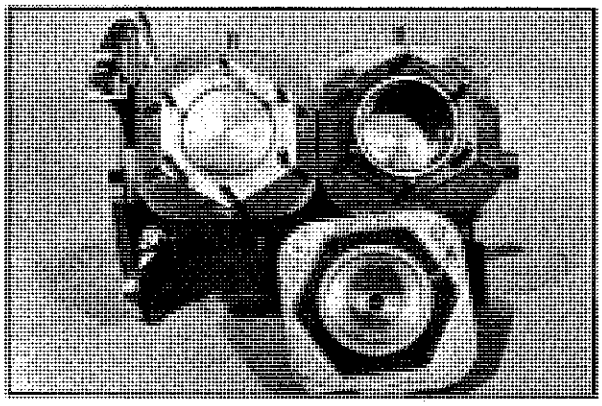
4. Apply a light coat of grease to the piston pin bearing. Support the rod with the piston block as shown. Install the piston to the rod with the identifying mark toward the flywheel side. Always use new piston pin retainer clips and position their openings down.
   NOTE: The piston pins are a press fit and pre-heating the pistons using a heat lamp or gun to the point where they are hot to the touch will aid in pin installation.
   ⚠ CAUTION: Never drive the pins in as damage to the bearing cage and subsequent failure will result.



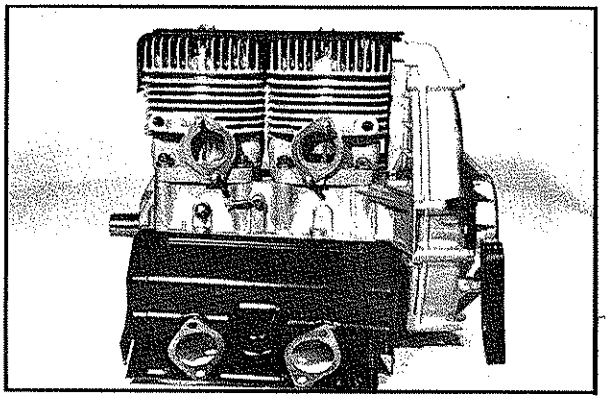
5. Install the rings (beveled side up) and cylinder base gaskets. Oil the pistons and install the cylinders, taking care to position the ring end gap over its pin (A) in the ring groove to prevent breakage. Compress the ring by hand and slide the cylinder straight down over the base studs as shown. Torque cylinder base stud nuts to 24–28 ft./lbs.



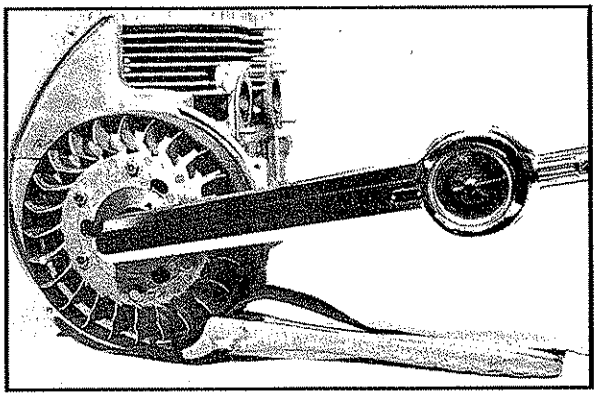
6. Install the cylinder head gaskets with the large diameter metal surface (A) toward the cylinder. Install the cylinder heads. Torque according to the sequence and values given in this section. Observe placement of deep nuts for shroud attachment. Install the spark plugs.



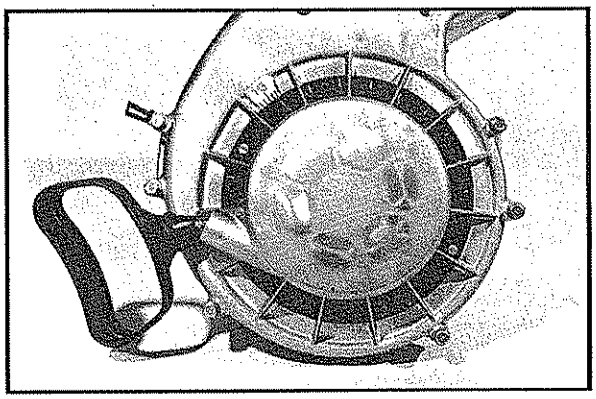
7. Install the cooling shrouds.
   NOTE: Intake and exhaust gaskets are installed between cylinders and shrouds as well as between shrouds and manifolds.



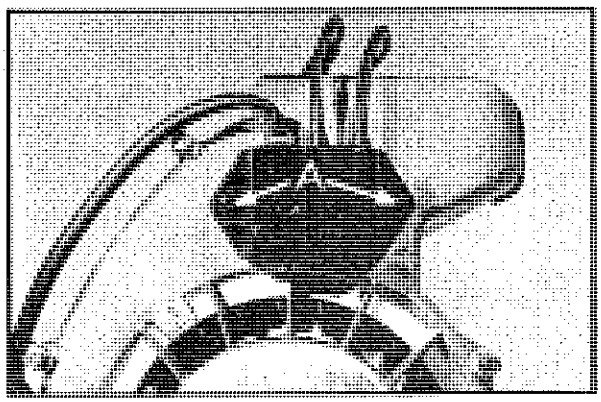
8. Install the stator plate (note reference mark) and flywheel. Torque the flywheel to 65 ft./lbs. as shown.



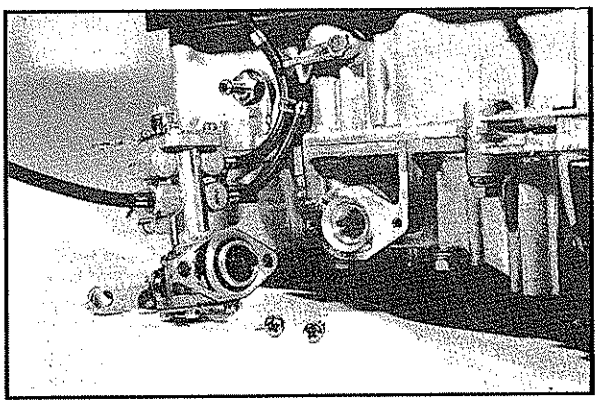
9. Install the starter cup and outer blower housing.

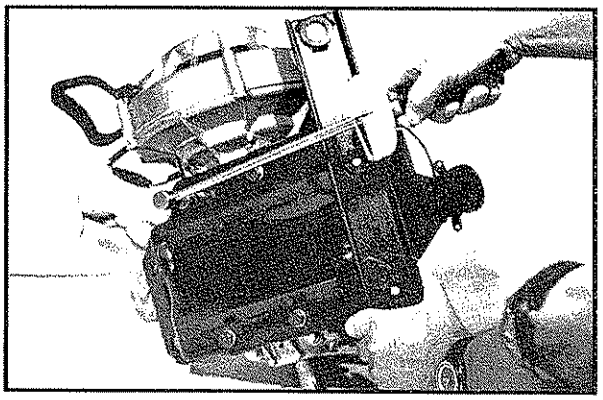


10. Install the CDI control unit to the blower housing. Torque on the well nut screws (A) is 8–10 in./lbs.



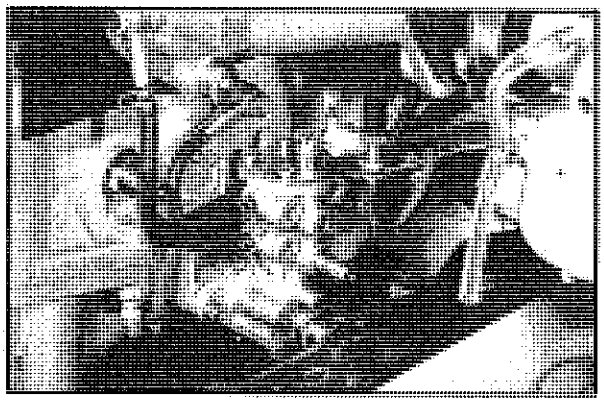
11. Install the oil pump, taking care to position the drive tab so it enters properly. Install the intake manifold and oil feed lines. Install the exhaust manifold. Hook up the oil pump control cable.





12. Install the engine mounting plate. Torque the four bolts to 55–60 ft./lbs. The engine is now ready for installation into the chassis.

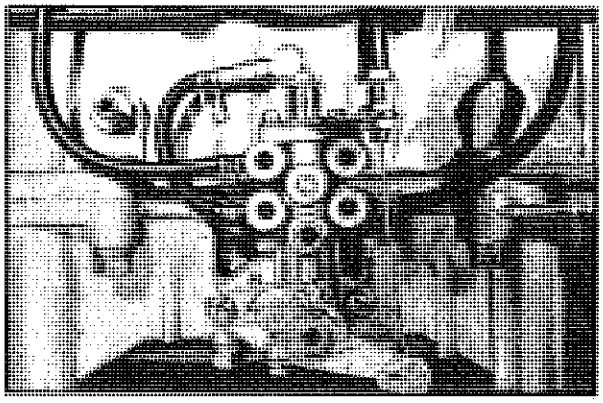
13. After the installation is complete the oil pump must be bled of any entrapped air. Proceed as follows:



   A. Fill the oil reservoir with Polaris injector oil.
   B. Crack the brass hex head screw (A) loose. After a short period of time oil should flow from beneath the screw head to indicate the pump is free of air.
   C. Retighten the bleed screw.

14. Check the following items:

   A. Timing – dynamic @ 3,000 RPM (see Section IV).
   B. Idle RPM and carburetor adjustments (see Section VI).

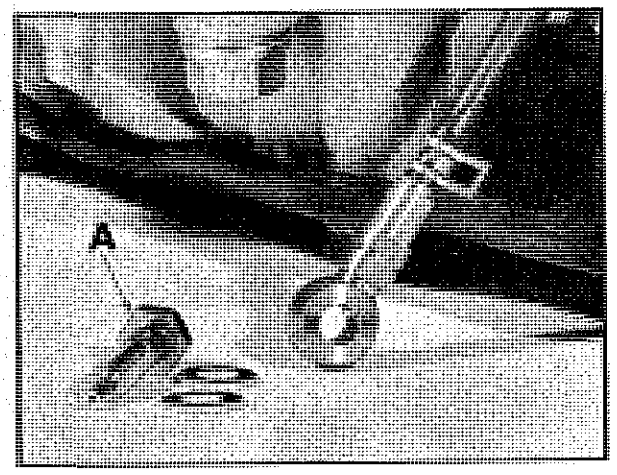


15. After the engine RPM and carburetor adjustments have been made the oil pump must also be adjusted. With the engine shut off and the throttle in its idle position, the pump lever index mark (A) must align with the pump housing boss index mark (B). Adjustment is accomplished by loosening the lock nuts on the cable housing sleeve and varying the cable housing length as required.
NOTE: Confirm that the pump lever is actuated upon initial throttle opening.

## Oil Pump Operation and Troubleshooting

Any time the engine is disassembled or repaired it is important that the oil supply from the pump to the engine be checked. This can be accomplished as follows:

1. With the engine in the chassis, the oil reservoir full, and the pump bled, remove the two oil feed line banjo bolts (A) from their location on the manifold or carburetors.
   NOTE: Use care so as not to lose the two washers located on either side of the banjo check valve.



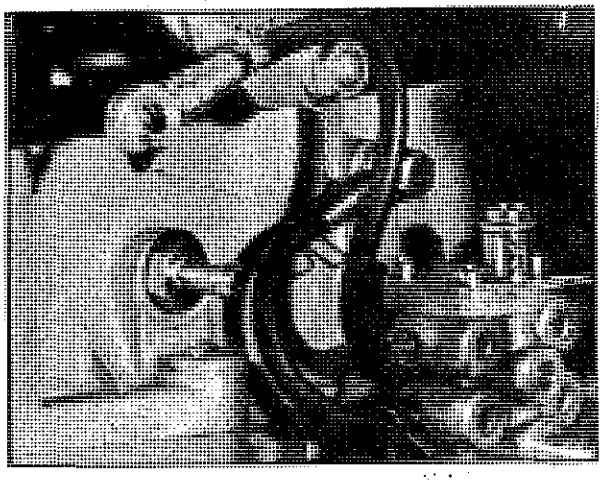

2. Blow through the banjo bolts to determine that they are not plugged or restricted.

3. Loosely thread only the banjo bolts back into the manifold or carburetors.

4. ⚠ Place the oil feed lines with their check valves away from the clutch area. Start the engine and let idle at the normal idle RPM.

5. Lift the oil pump control lever up to its maximum flow position.

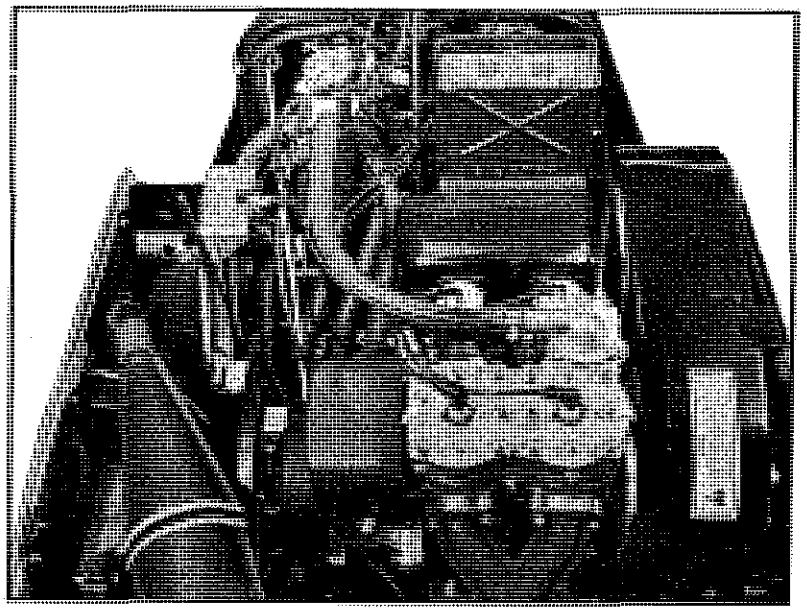
6. Drops of oil should be visible from the banjo check valves after the engine is idled 1–2 minutes, with a drop occurring approximately every few seconds.



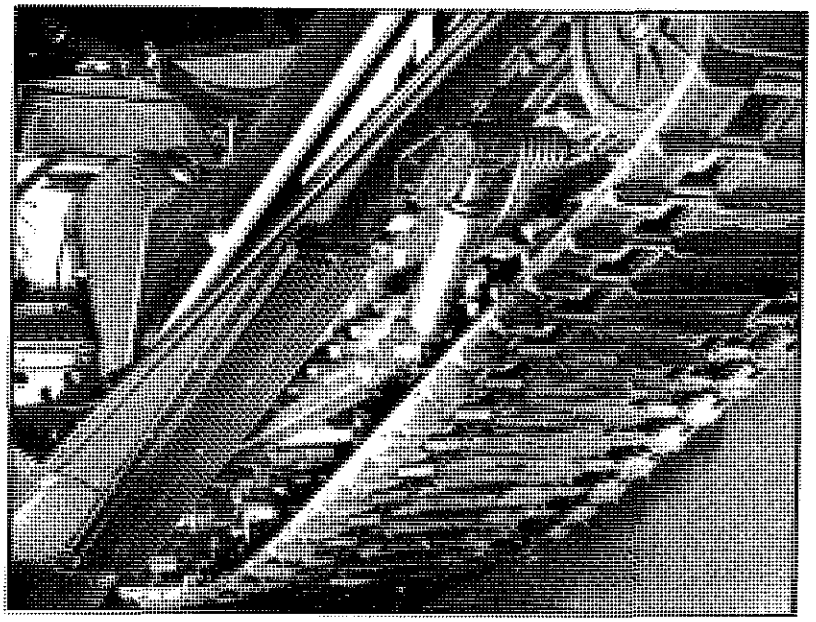
7. In the event oil does not flow from one of the check valves, remove the oil line from the check valve and again idle the engine. If oil now flows, the check valve is defective and must be replaced.

8. If oil does not flow with the check valves removed from their feed lines, the malfunction is one of the following:

   A. Inline filter blocked.
   B. Feed lines leaking.
   C. Defective pump.

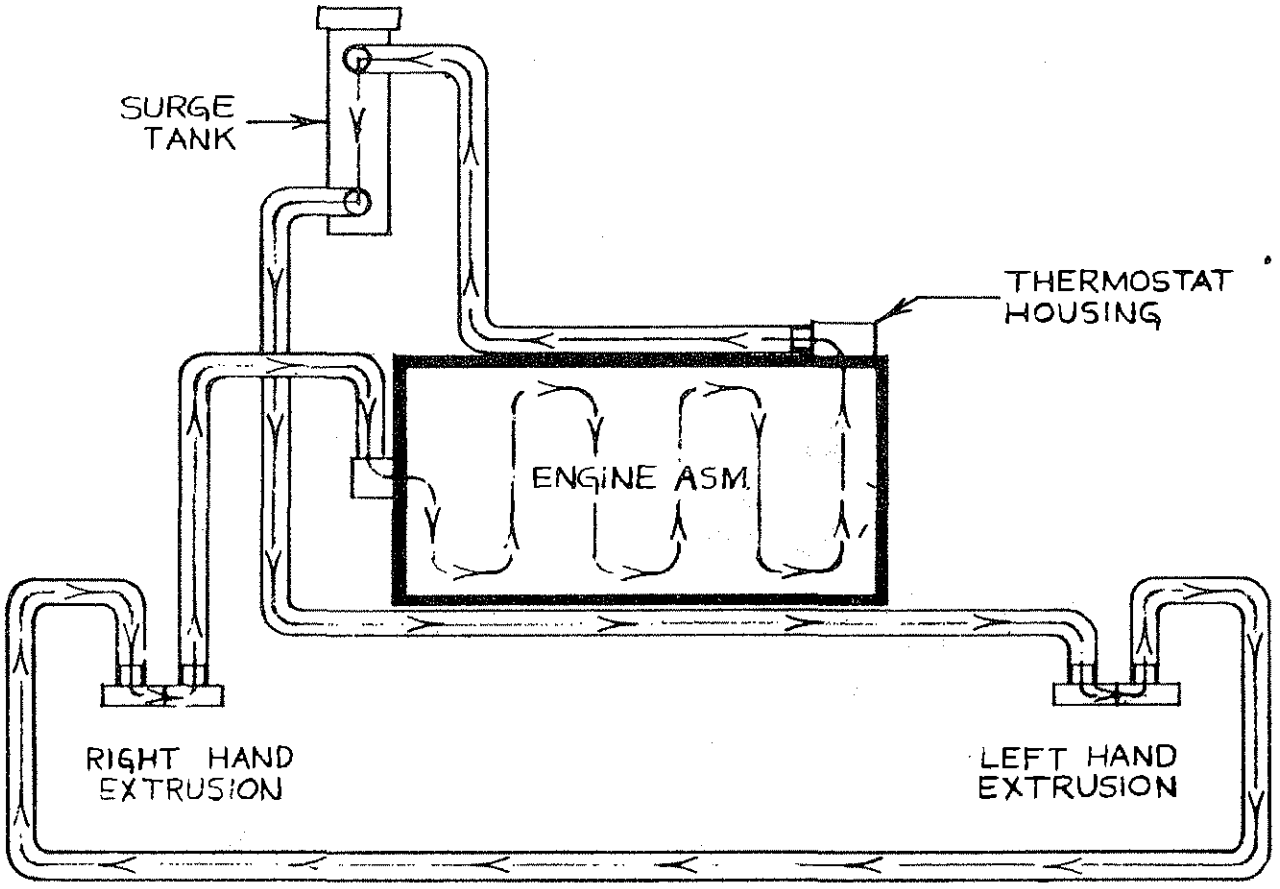


CHASSIS INSTALLATION



**Coolant temperature is lowered as the coolant is circulated through heat exchangers fastened under the chassis running boards.**

The cooling system consists of the following major components: surge tank, water pump, cylinder, cylinder head, thermostat, and heat exchangers. When the engine is started, the thermostat will be closed and coolant will circulate through the pump, cylinder, and by-pass hose. When the coolant temperature warms up to 126° F (52° C), the thermostat will open and coolant will circulate through the heat exchangers where its temperature is lowered before recycling.



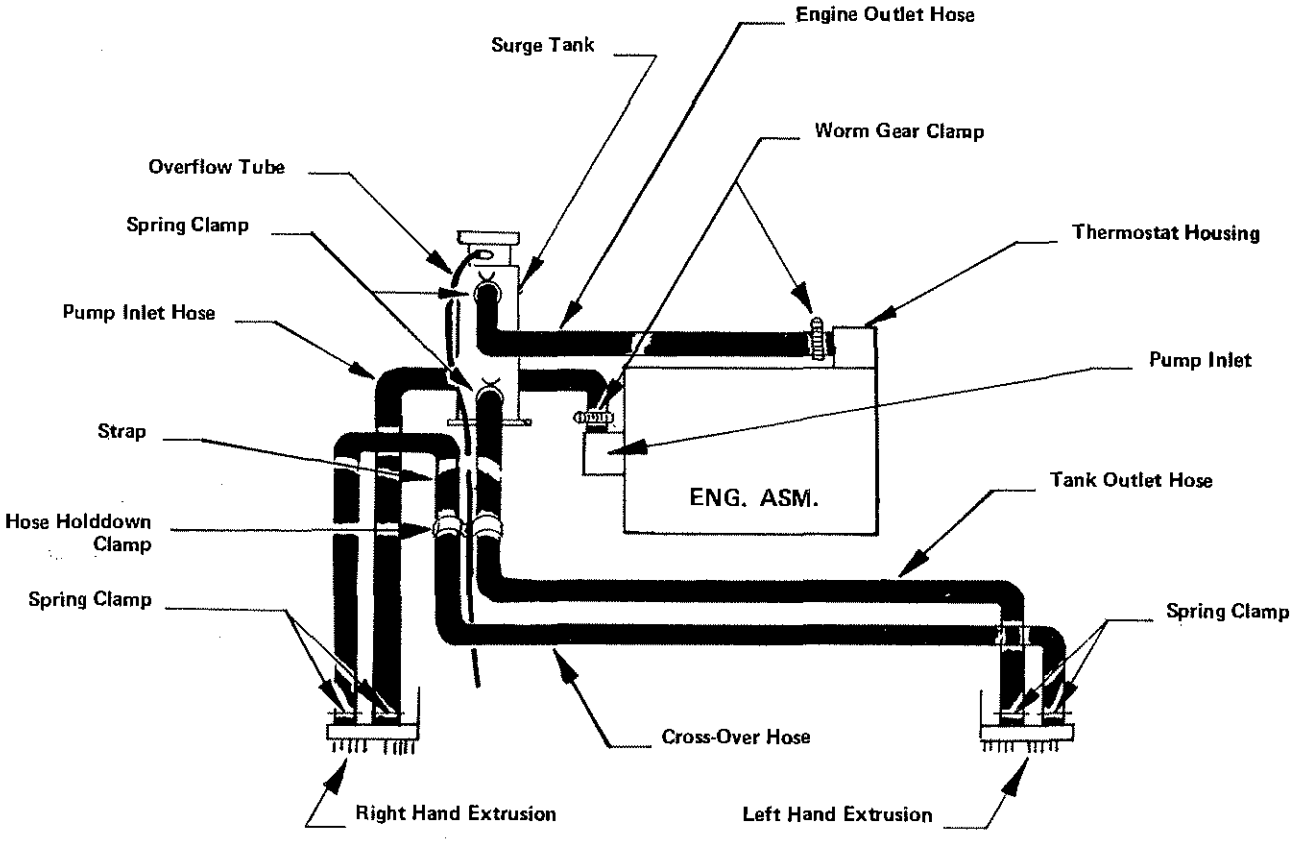

Coolant Flow Schematic

## COOLANT

The coolant supplied is a 50-50 mixture of tap water and automotive anti-freeze (ethylene glycol). This coolant mixture will provide protection against freezing at temperatures down to –34° F.

The capacity of the cooling system is four quarts. Always pre-mix the water and anti-freeze in the proper proportion before adding to cooling system.

IMPORTANT: Do not exceed a 60 percent concentration of anti-freeze in the coolant mixture.




FRONT VIEW

Coolant Line Schematic

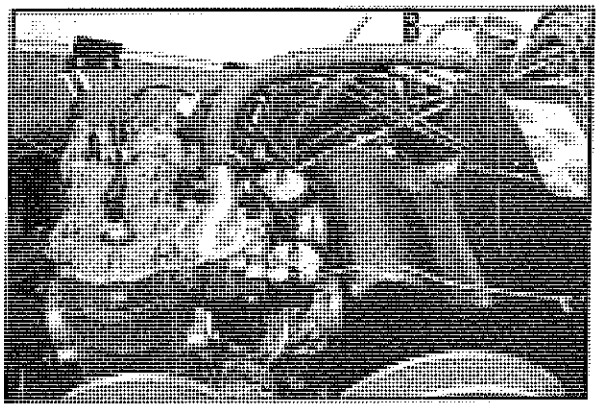
## DRAINING THE COOLING SYSTEM

Remove the pressure cap and both rear caps from the heat exchangers (bolted versions). Remove the drain plug from the front of the cylinder block.



## FILLING AND BLEEDING PROCEDURE

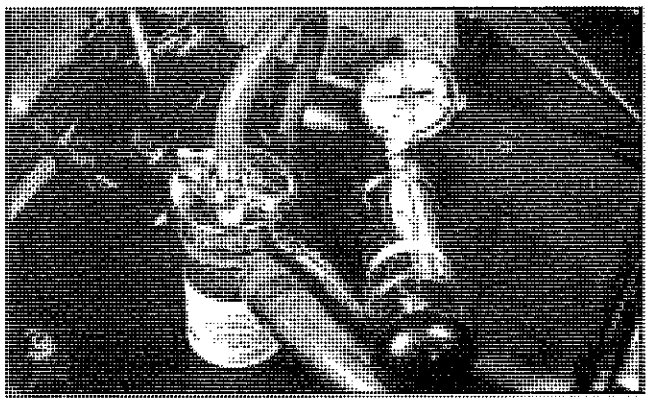
Remove the bleeder plug (A) from top of cylinder with a 14mm wrench. Remove the pressure cap and fill coolant into surge tank (B). Continue filling until coolant comes out of the bleeder vent. Reinstall the bleeder plug and fill surge tank to filler neck. To avoid leakage, always use a new gasket on the bleeder plug.



Start engine and idle at 4,000 RPM until the thermostat opens. Coolant can be seen flowing into the top of the surge tank when the thermostat opens. If the coolant level drops in the surge tank with continued idling, fill coolant to level indicated on the tank decal. Continue idle and filling procedure until coolant stabilizes at the level specified. The same basic procedure is used on the three cylinder engine, with the exception the bleed vent is located on the water outlet manifold near the thermostat housing.

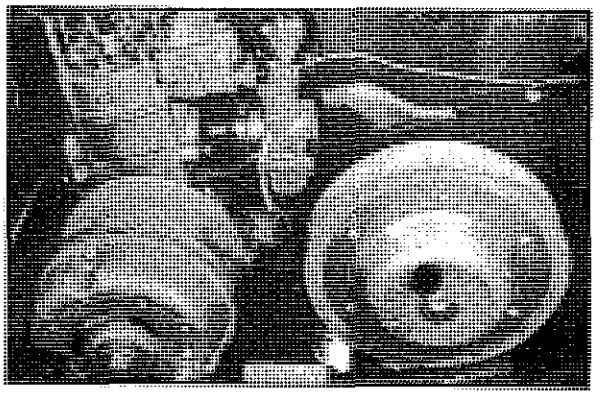
## PRESSURE TESTING THE SYSTEM

Polaris recommends that a pressure test be performed on all machines during the pre-delivery and maintenance inspections. This procedure calls for pressurizing the system to 14 pounds using an automotive-type pressure tester and holding the pressure at 14 pounds for three to four minutes. The coolant must be at operating temperature while performing the pressure test. During this time visually inspect all connections for any leakage. Tighten all loose hose fittings. Upon completion of this test, run the machine up to operating temperature. Shut the machine off and recheck hose connections for any further leakage.

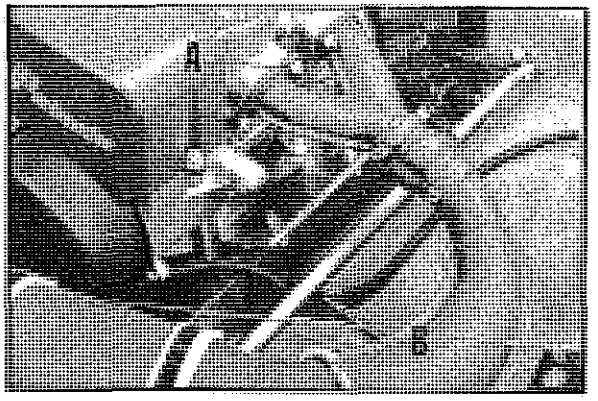


## Engine Removal – PL Twin Cylinder Series

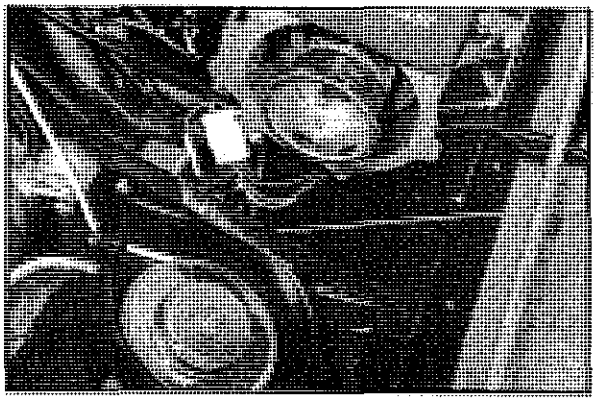
1. Open the clutch guard and remove the drive belt.



2. Remove the four (4) exhaust manifold nuts (A). Release the spring clamp (B). The manifold and muffler are removed as a unit. It is not necessary to remove the lower resonator.

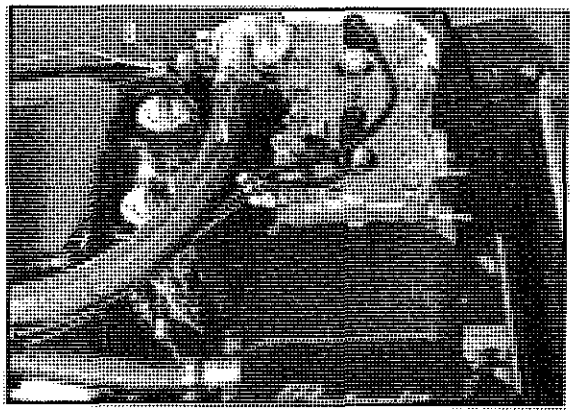


3. Remove the recoil starter and set it aside in the nosepan.

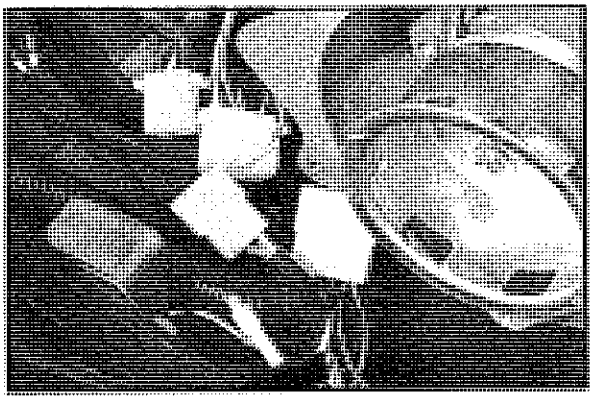


4. Drain the cooling system. Follow draining the cooling system instructions in this section.

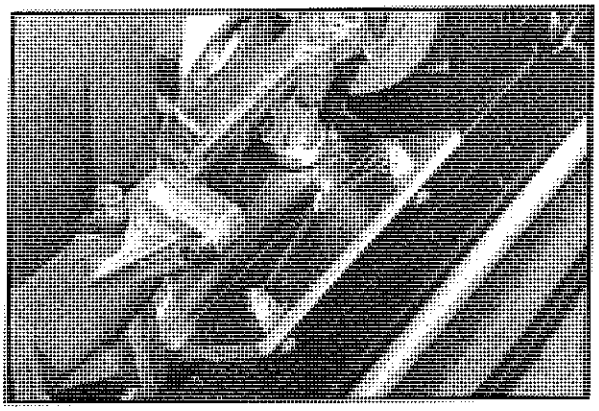
5. After proper draining, remove the coolant hoses (A), the temperature warning switch wire (B), spark plug wires, choke and throttle cables.



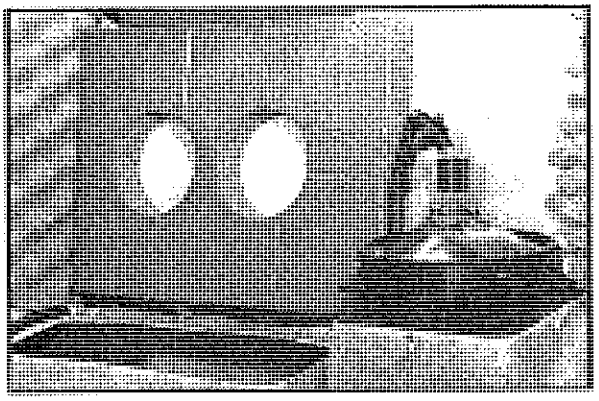
6. Disconnect the engine electrical couplers. Remove and plug the fuel line from the fuel pump.



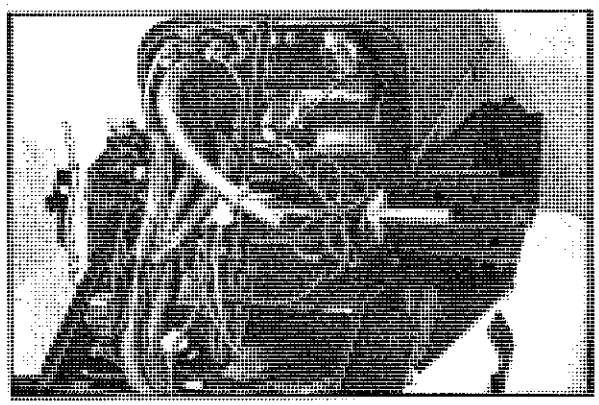
7. Remove the engine mount plate bolts.



8. Disconnect the headlight harness from the headlamps and pull the harness from between the engine and mounting plate.

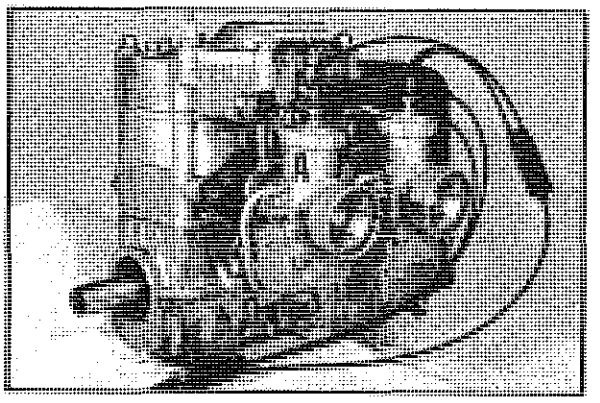


9. The engine can now be removed.

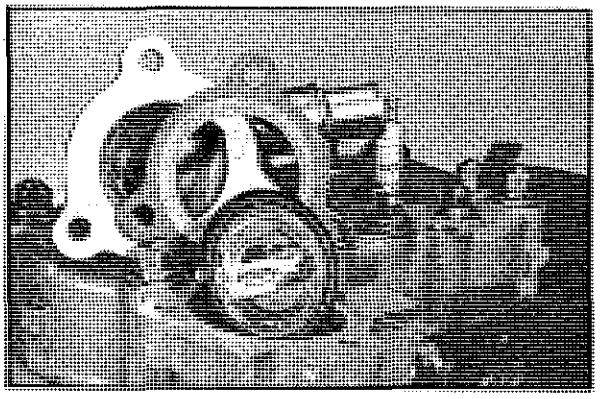


## Disassembly Procedures – PL Twin Cylinder Series

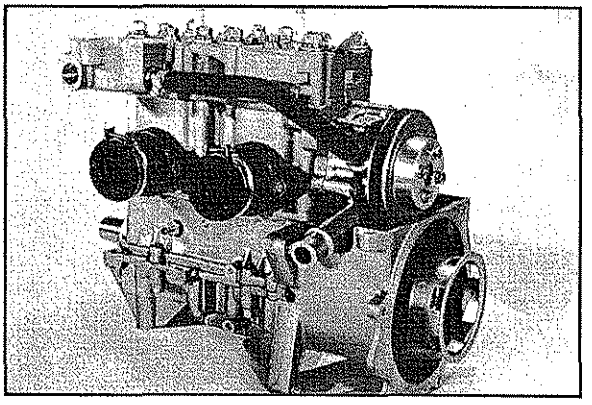
1. EC34PL–02 engine as lifted from chassis. Temperature warning switch (A) should now be removed.



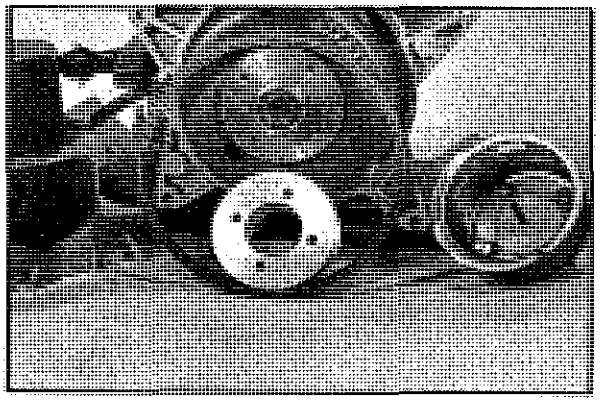

2. Remove the water outlet housing, gasket, and thermostat.



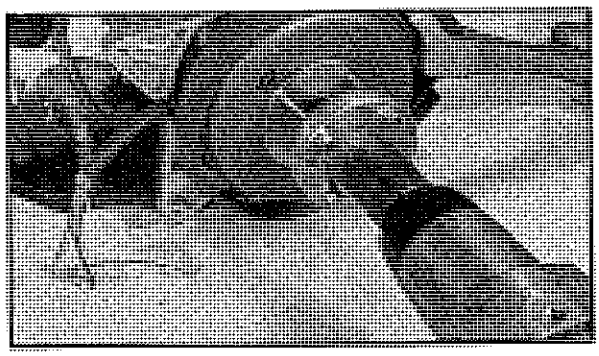
3. Remove the carburetors and the water pump housing.



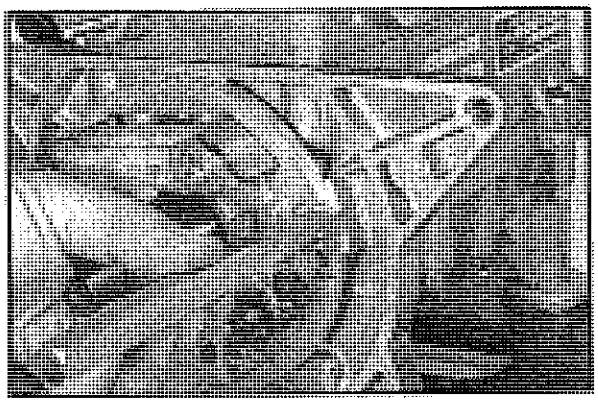
4. Remove the starter cup, the water pump drive pulley, and the flywheel housing.



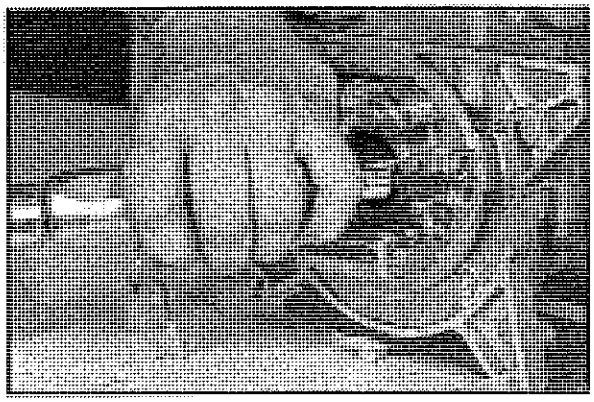
5. With the strap wrench (PN 2870336) secured to the flywheel, remove the flywheel nut. Install the flywheel puller (PN 2870384) and remove the flywheel.



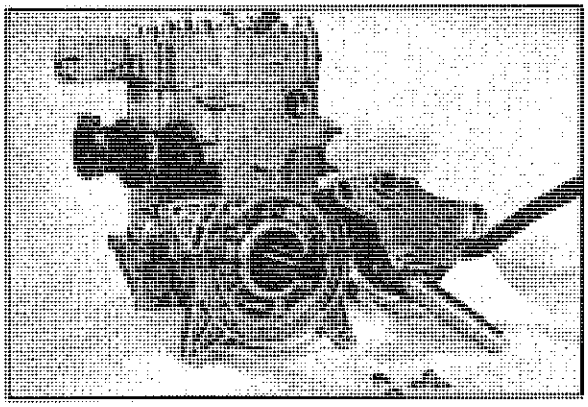
6. With a hammer and a chisel, make a reference mark on the stator plate and housing for future reassembly.



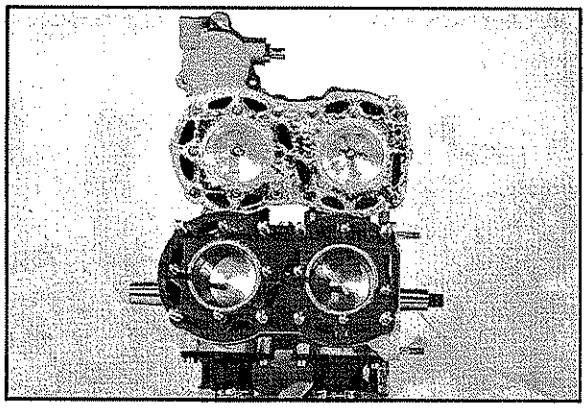
7. Using an impact screwdriver, remove the two (2) stator plate retaining screws as shown. Remove the stator plate.



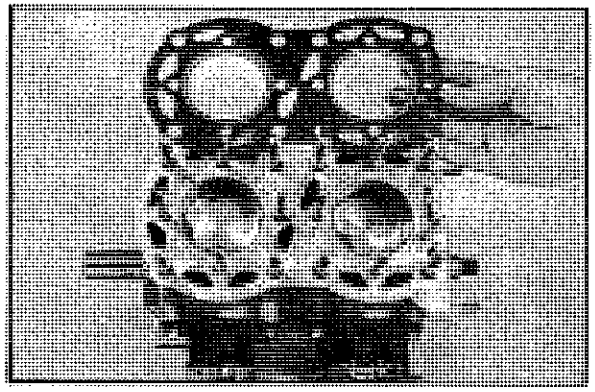
8. Remove the water pump.



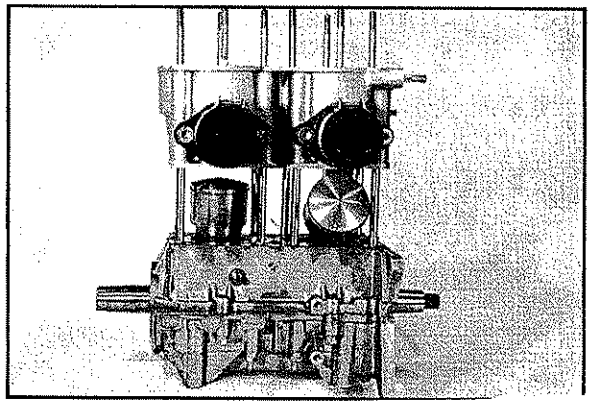
9. Remove the cylinder head.



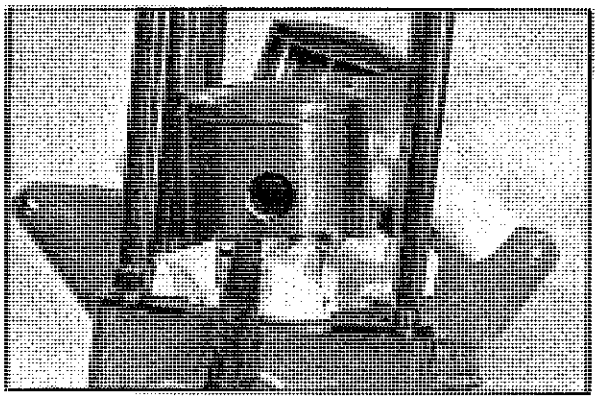
10. Remove the cylinder head gasket.



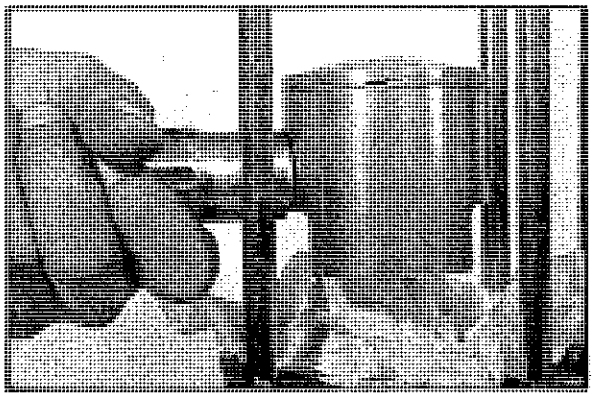
11. Lift the cylinder assembly from the crankcase.



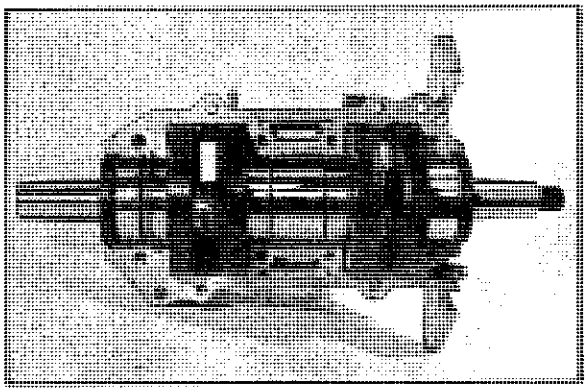
12. Place a shop cloth under the piston. Using a knife blade or sharp object, remove the spiral lock piston pin retainers.



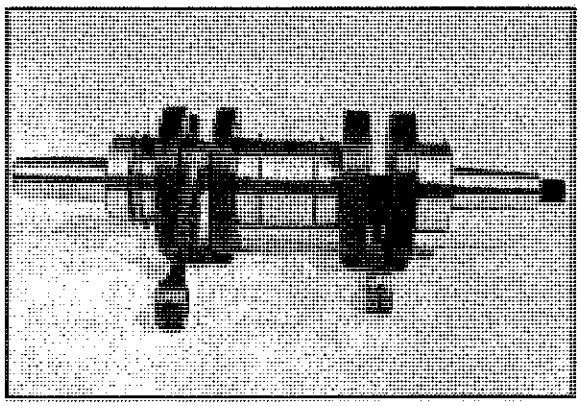
13. Use the piston pin puller (PN 2870386) to remove the piston pin.



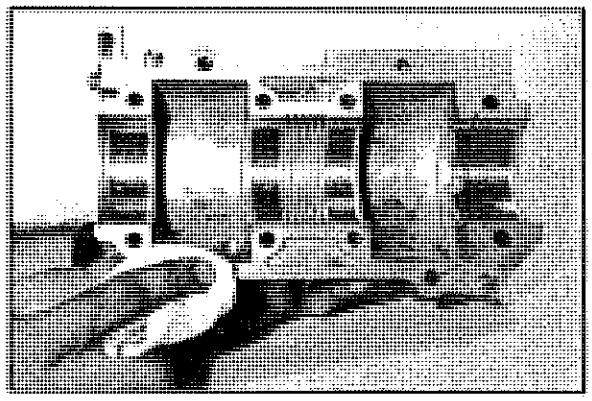
14. Remove the crankcase bolts from the bottom of the crankcase. With a soft hammer, tap the case to separate the halves.



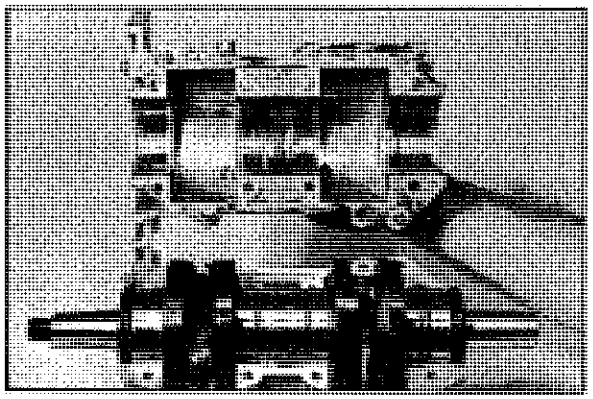
15. TX-L crankshaft. Note the special bearings and anti-rotation pins on the outer bearing race.



1. Before reassembling the engine, clean all parts with solvent. Remove the old sealer from the crankcase halves.

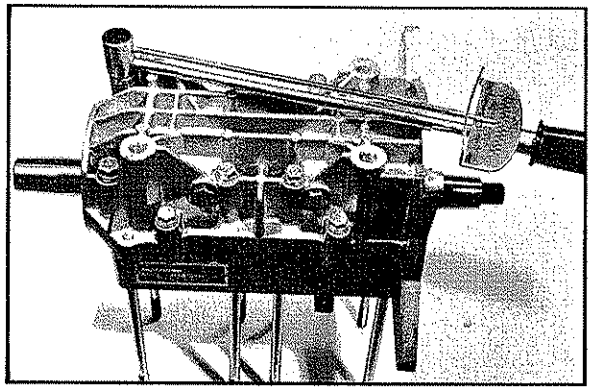


2. Apply a small amount of an appropriate sealer to the crankcase halves. Grease the labyrinth seal and crankshaft end seals.

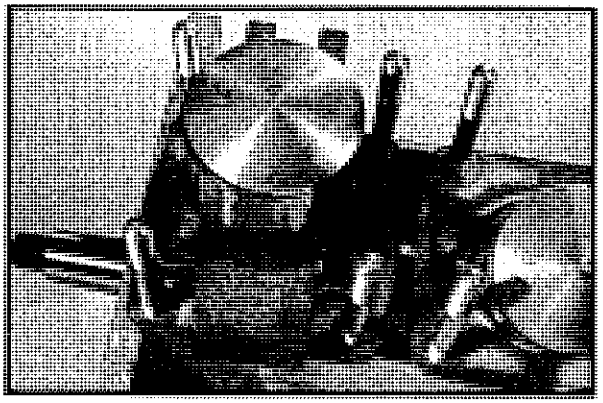


3. Torque the crankcase bolts following the torque patterns in this section.

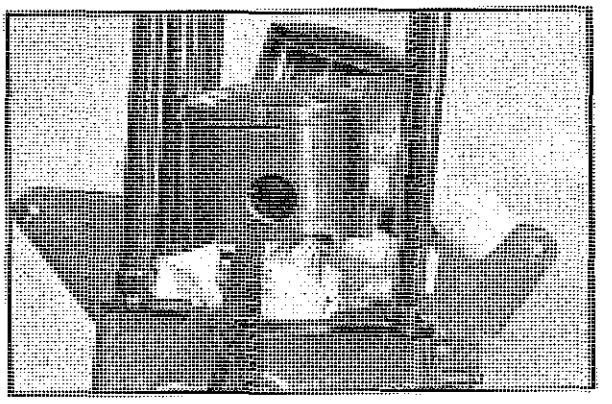
| | |
|---|---|
| 8mm bolts: | 18 - 20 ft./lbs.<br>2.5 - 2.8 Kg.-M |
| 10mm bolts: | 23 - 25 ft./lbs.<br>3.2 - 3.5 Kg.-M |



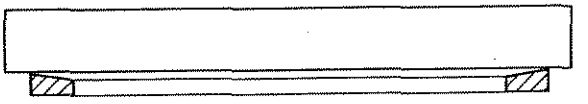
4. Install the piston pin bearings and spacers to the rod and install the pistons with the "F" marking toward the flywheel side.



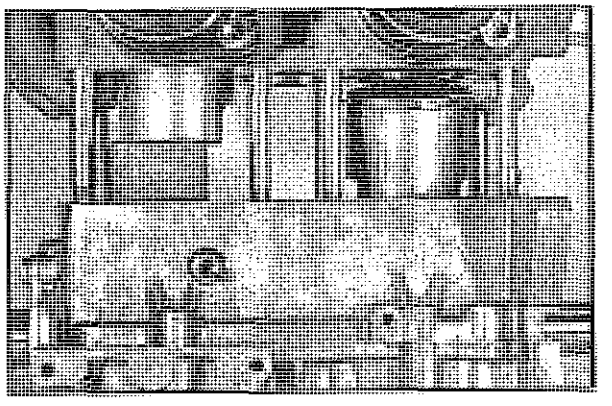
5. Install the piston pin locks and rings.



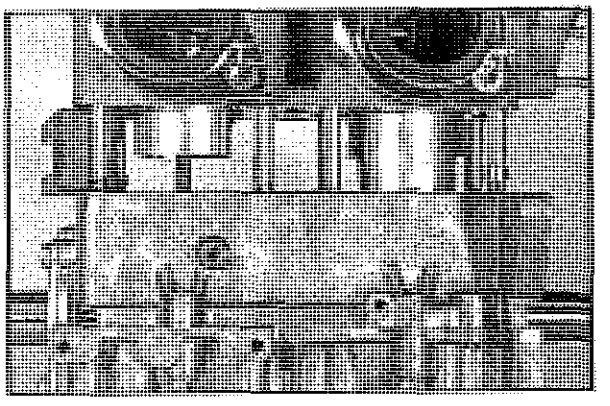
Keystone Ring Installation:
Keystone rings are beveled to the inside. This bevel must be toward the top of the piston. See diagram.



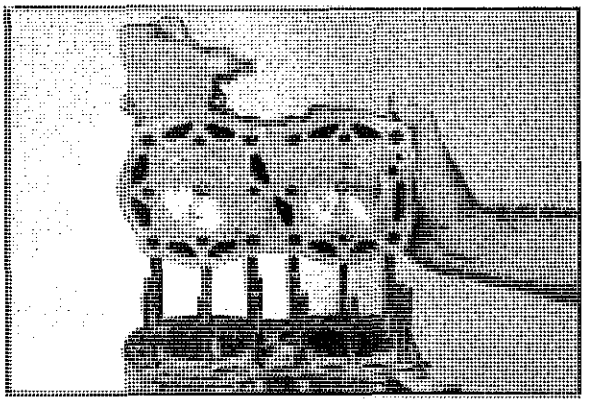
6. Install the cylinder base gasket; oil the pistons. Support one piston as shown. Compress the ring and install the cylinder over the piston.



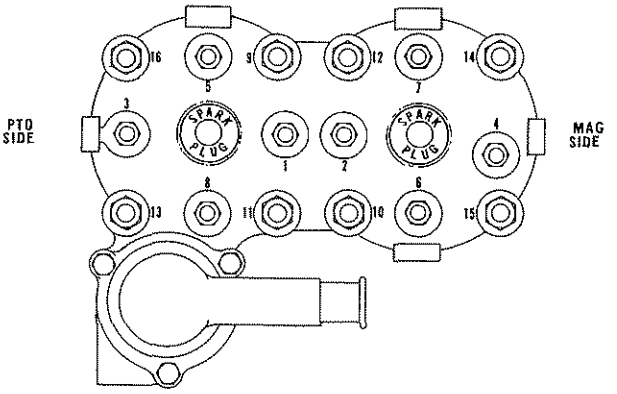
7. Move the support block from under the piston to the cylinder. Compress the ring, and rotating the crankshaft, guide the piston into the cylinder.



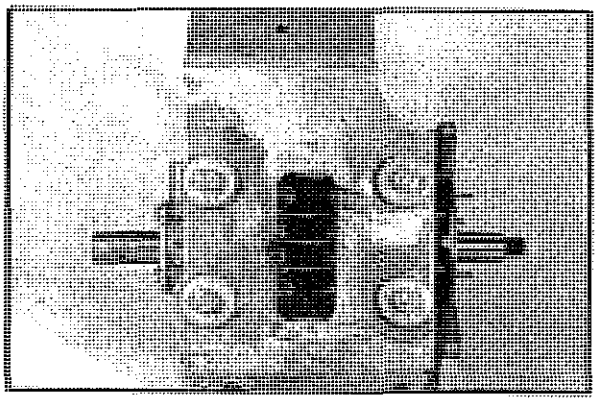
8. Install the cylinder head and gasket.



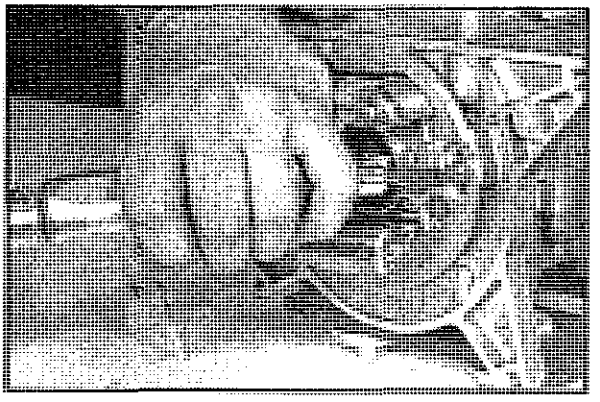
9. Torque the 8mm nuts to 16-17 ft./lbs. The 10mm nuts are torqued to 26-29 ft./lbs. Re-torque the 8mm nuts. Install the thermostat.



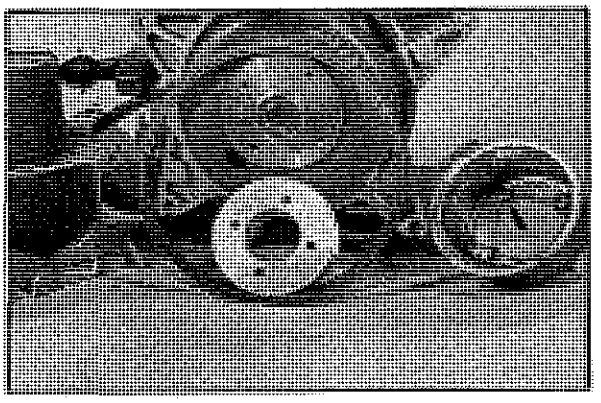

10. Install the engine mount plate, torquing bolts to 55 - 60 ft./lbs.



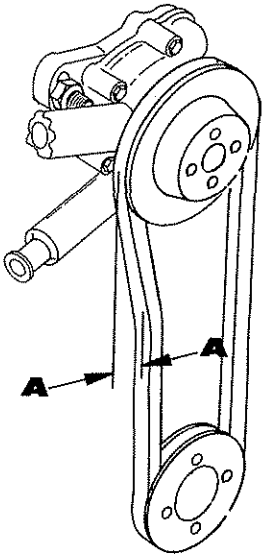
11. Install the stator. Note the chisel marks for timing reference.



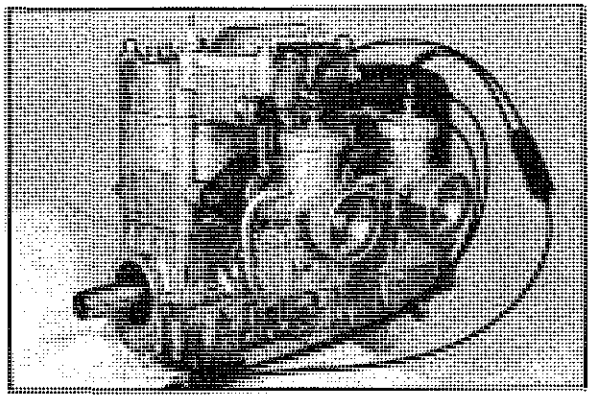
12. Install the flywheel and key. Torque the flywheel nut to 60 ft./lbs. using the strap wrench (PN 2870336) to secure the flywheel. Install the water pump drive pulley, starter cup, and flywheel housing.



13. Install the water pump to the cylinder. Apply a light coat of grease to the O-ring between the cylinder and pump fitting. Install the drive belt and adjust the deflection to 1/4" (A). Torque the 8mm pump retaining stud nuts to 15 ft./lbs.



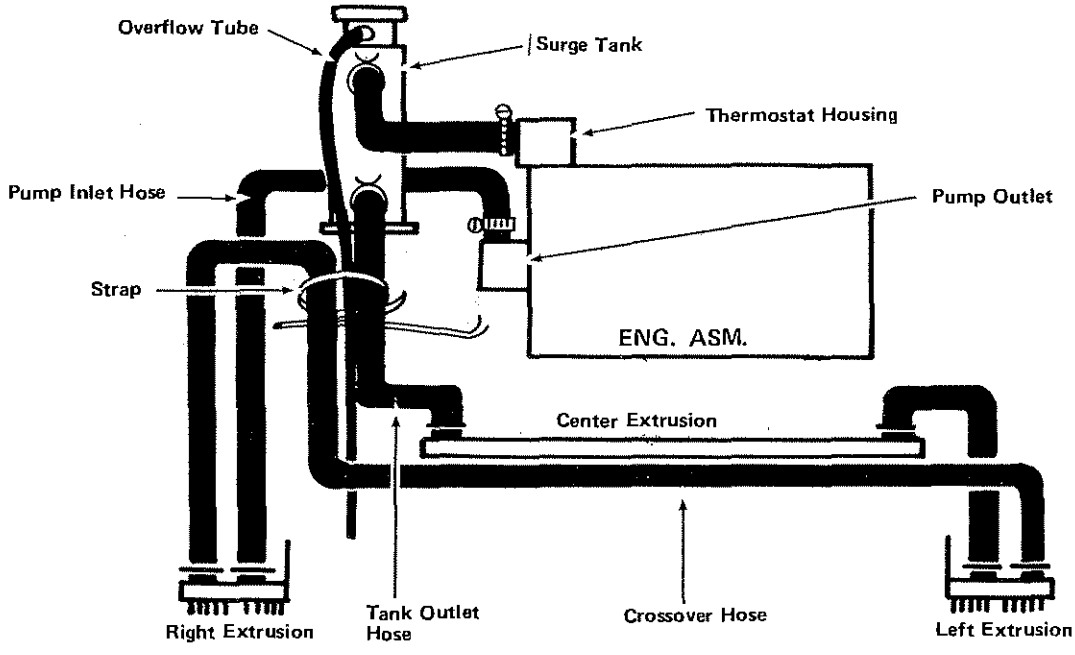

14. Install temperature warning switch, thermostat, and water outlet housing with new gasket. Install carburetors and water pump housing. The engine can now be installed in chassis.



## ENGINES

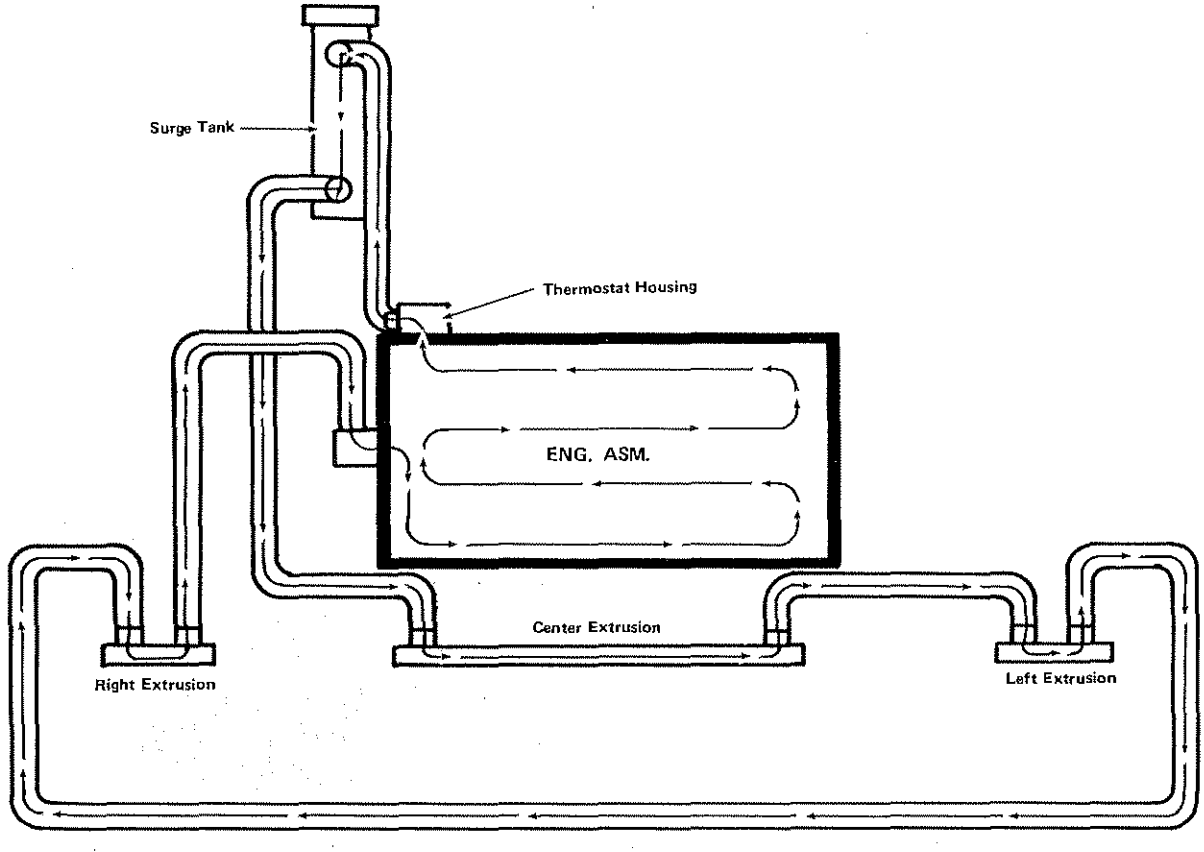
### EC51PL Cooling System

The recommended mixture of anti-freeze (ethylene glycol) and water is 50-50.




FRONT VIEW

Coolant Line Schematic

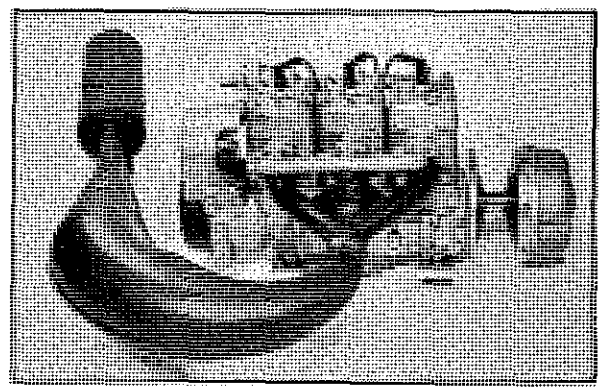



Coolant Flow Schematic

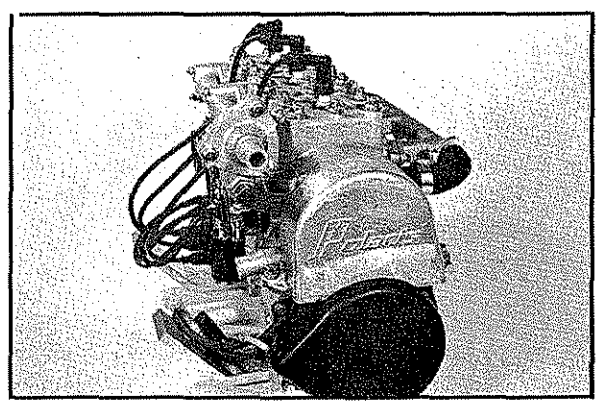
## Disassembly Procedures — PL Three Cylinder Series

The following sequence of disassembly and reassembly procedures will be an aid to the serviceman during diagnosis and repair. Care should be taken to ensure that internal parts and external parts are kept extremely clean when service work is being completed.

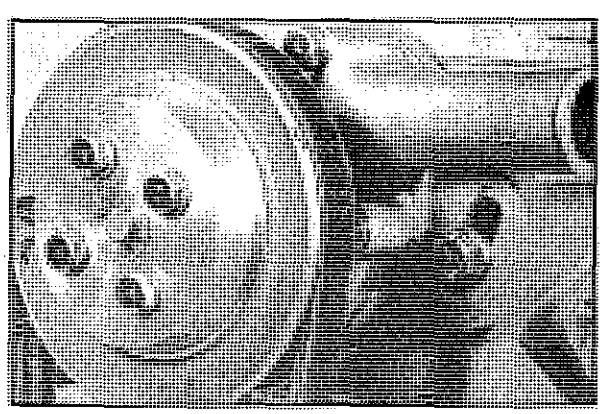
1. Complete EC51PL-01 three cylinder engine, less air silencer.



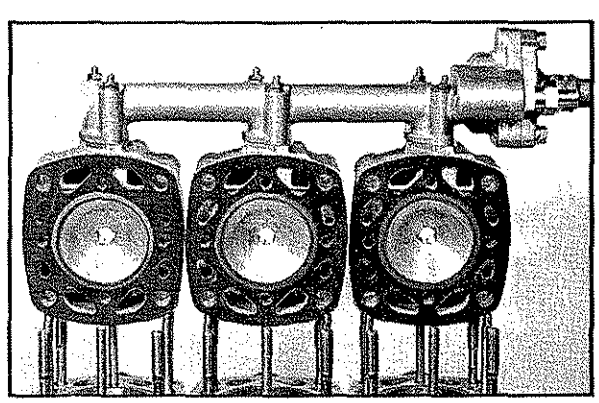
2. Remove the carburetors, intake silencer, and exhaust manifold.



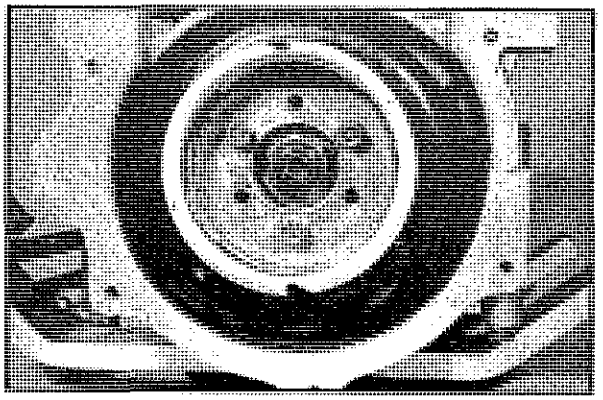
3. Remove the water pump cover. Remove the water pump by removing one cap screw and one nut.



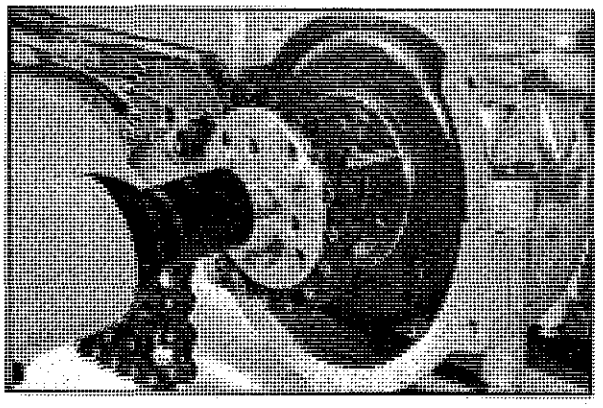
4. Remove the cylinder head nuts.
   NOTE: The cylinder heads can be removed separately by removing the water manifold or as a unit as shown in this photo. The heads should be marked to correspond with the same cylinder during reassembly.



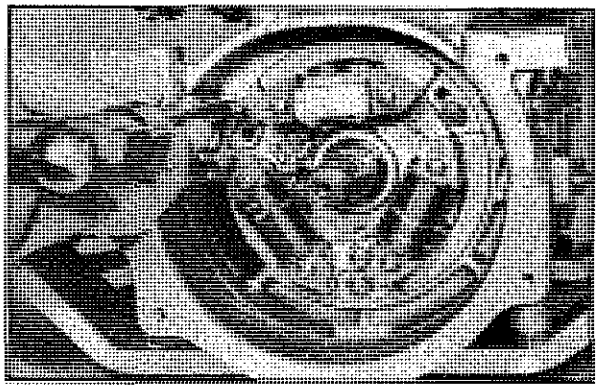
5. Remove the recoil, starter cup, and flywheel nut.



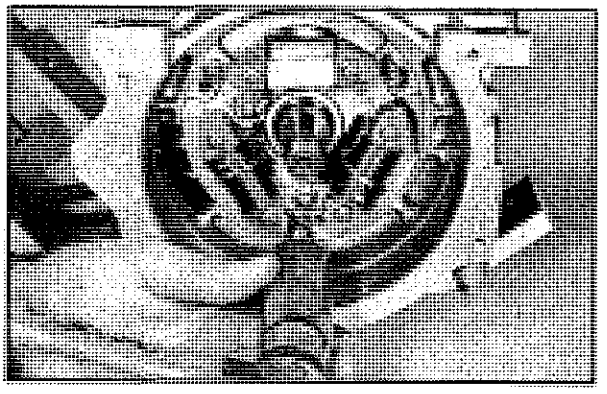
6. Install flywheel puller (PN 2870384) to the flywheel. Secure the puller with chain wrench (PN 2870203). Use an impact gun or appropriate driver to remove the flywheel.



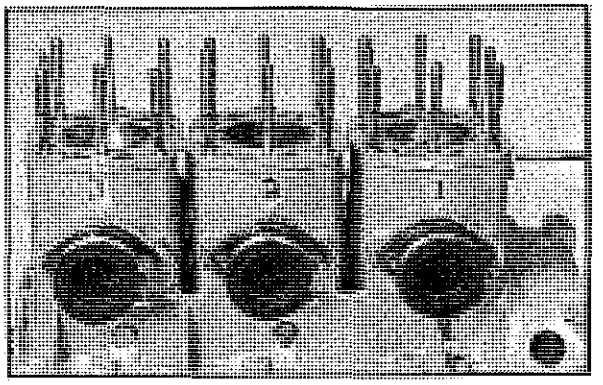
7. Mark the stator plate and crankcase as shown to retain the same engine timing when reassembling. Note the three retaining screws.



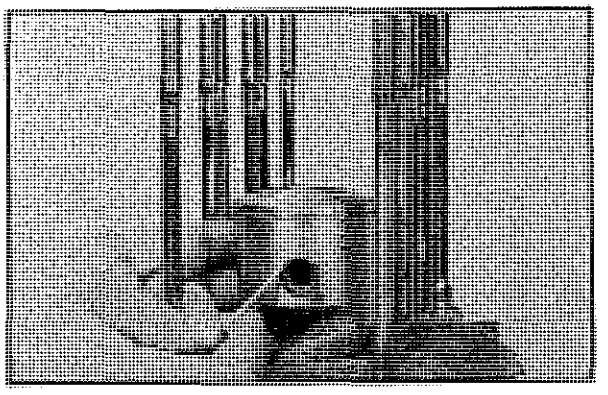
8. Using an appropriate driver, remove the stator plate. It will be necessary to force the rubber wire harness grommet through the magneto housing.



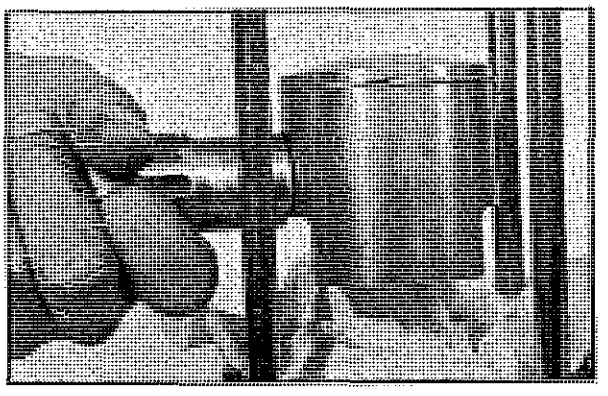
9. Mark the cylinders and pistons to maintain the same position during reassembly.



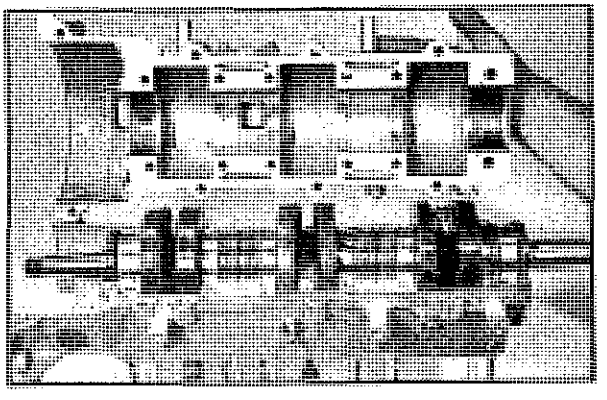
10. Remove the spiral lock rings from each piston. Use a sharp pointed object to make this an easier procedure.



11. Use the piston pin puller (PN 2870386) to remove the piston pin.



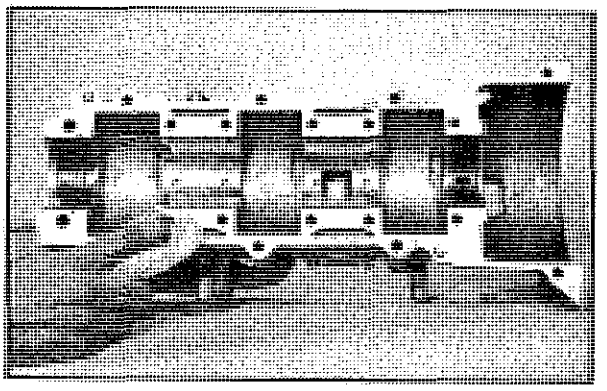
12. Remove the crankcase attaching bolts (20). It may be necessary to tap the crankcase lightly to split the halves. Tap in areas that will not danger the sealing of the two halves during reassembly.



## Reassembly Procedures — PL Three Cylinder Series

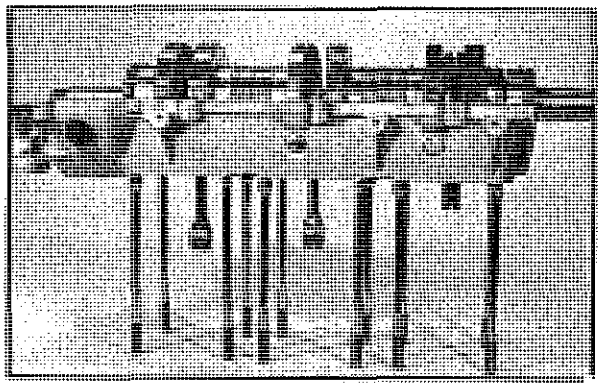
1. Before reassembling the engine, clean all parts with solvent and remove the old sealer from the crankcase halves.

   If the reason for disassembly was from crankshaft bearing failure or piston seizure, check the crankcase for damaged bearing surfaces.

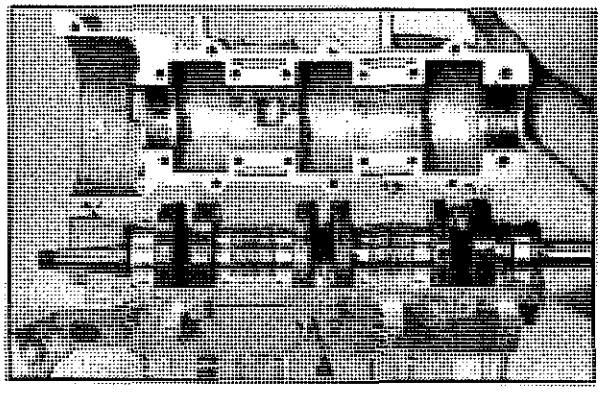


2. Crankcase reassembly is made easier by turning the upper case half upside down as shown. Grease the labyrinth seals and end seals. Use extreme care when positioning the crankshaft in the case. Make sure the seals are properly seated in the crankcase groove provided for the seal.

⚠ Make sure the seven bearing locator pins are in direct line with the pin holes in the lower crankcase half.

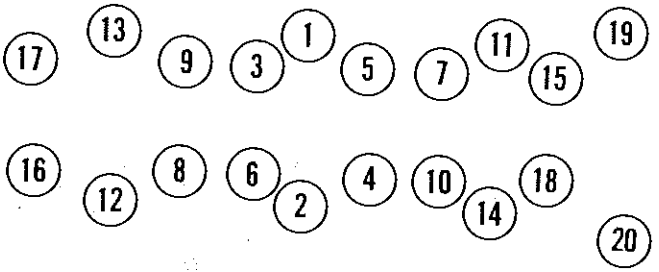


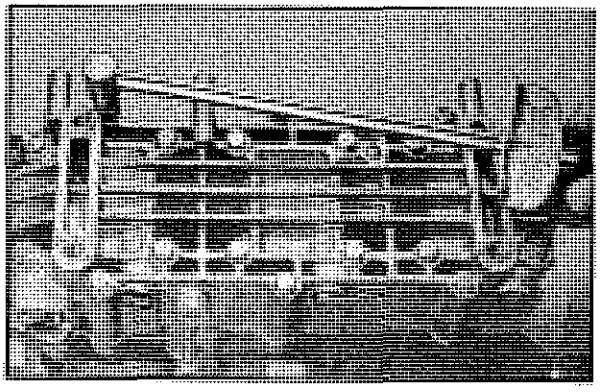
3. Use a small amount of appropriate sealer on each crankcase half.

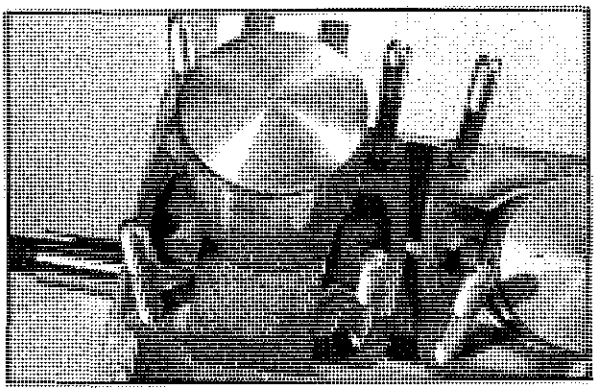


4. Torque the crankcase bolts following the torque pattern.

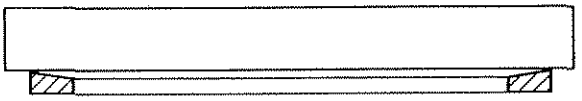
| | |
|---|---|
| 8mm bolts: | 18 — 20 ft./lbs. |
| | 2.5 — 2.8 Kg.-M |
| 10mm bolts: | 23 — 25 ft./lbs. |
| | 3.2 — 3.5 Kg.-M |



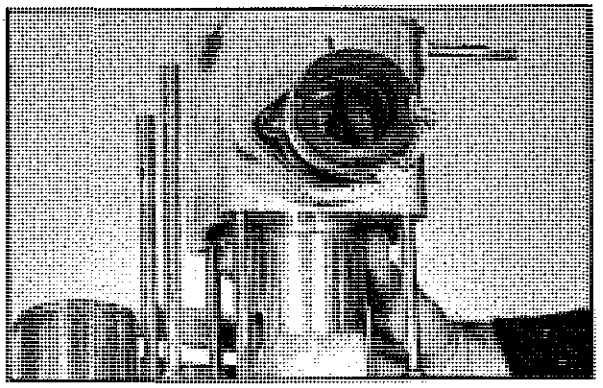


5. Install the piston pin bearings and spacers to the rod and install the pistons with the "F" marking toward the flywheel side or with the ring locator pin to the intake port.

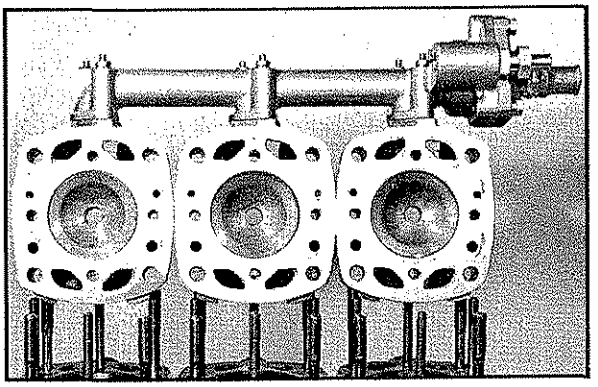


6. Install the spiral lock rings and piston rings.

   Keystone Ring Installation:
   Keystone rings are beveled to the inside. This bevel must be toward the top of the piston. See diagram.



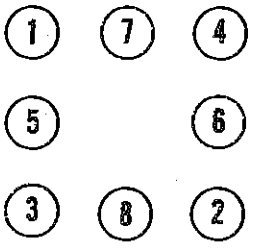
7. Install the cylinder base gaskets; oil the pistons. Support the piston. Compress the ring and install the cylinder over the piston. Use the same procedure for the remaining two cylinders.



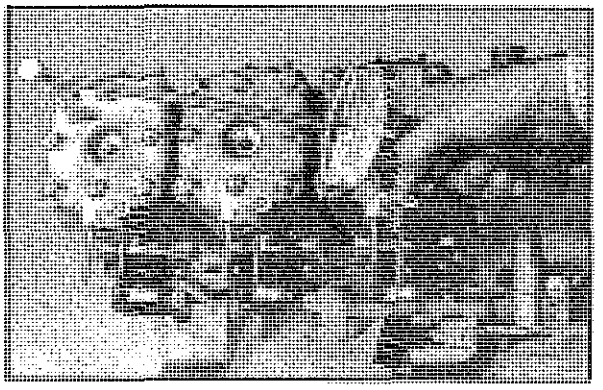
8. Before installing head gaskets, spray each gasket with aluminum high-temperature paint. Install the gasket with the small discharge hole toward the intake side of motor. Install the heads as a unit or individually.

## Reassembly Procedures – PL Three Cylinder Series

9. Torque the cylinder head nuts. Torque the 10mm nuts first, then torque the 8mm nuts. Follow torque pattern.

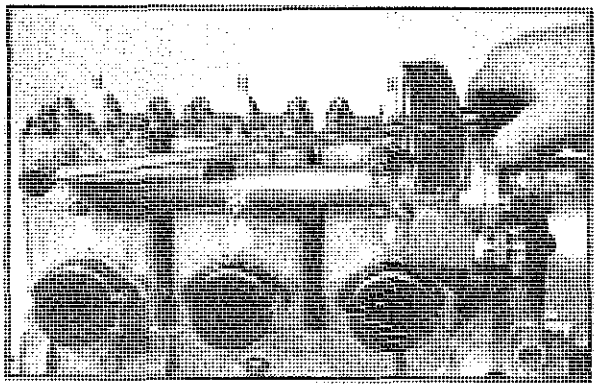



3 Cylinder Head

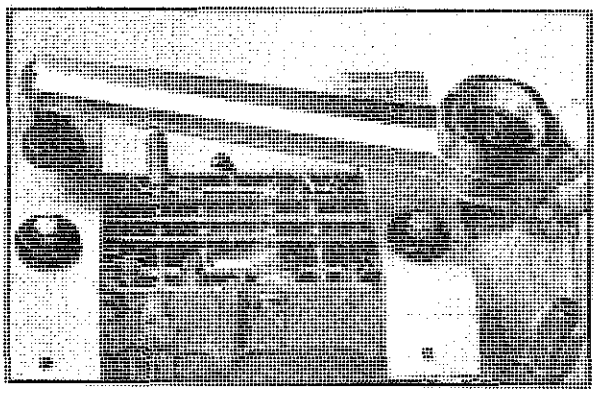


10. Install the water manifold gaskets and water manifolds.

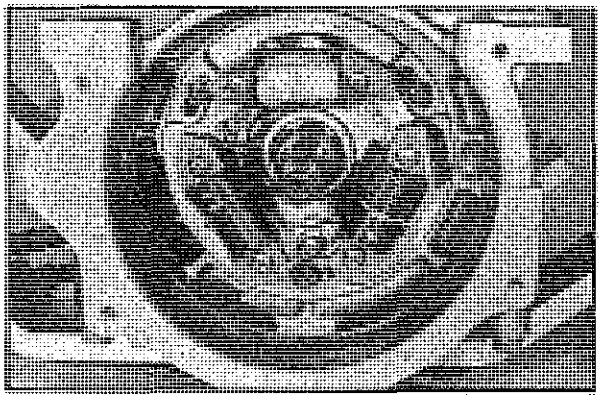
⚠ Be extremely careful when torquing these nuts (5-6 ft./lbs.).



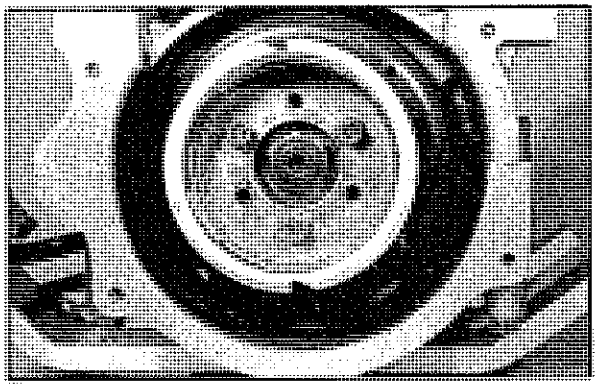
11. Install the engine mount straps, torquing bolts to 55-60 ft./lbs.



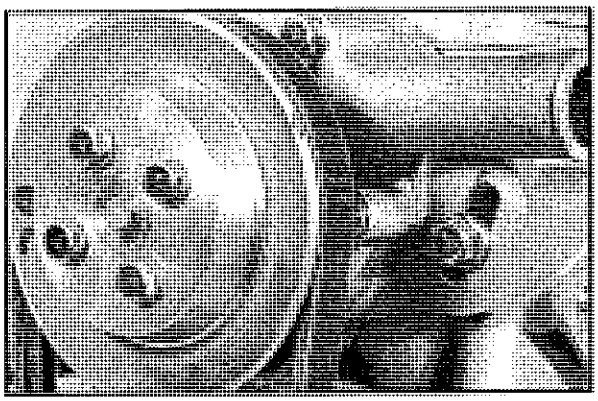
12. Install the stator plate. Note the chisel marks for timing reference.

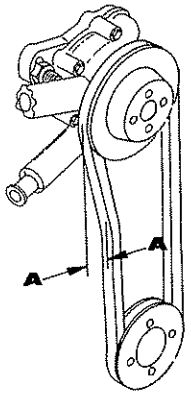


13. Install the flywheel key, the flywheel, the water pump pulley, and the starter cup. Torque the flywheel nut to 60 ft./lbs. Use the chain wrench (PN 2870203) to secure the flywheel while torquing.

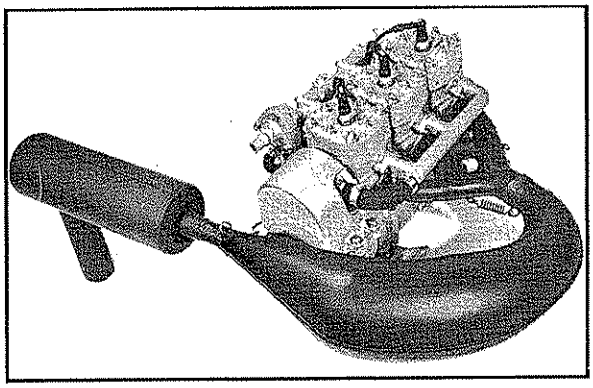


14. Install the water pump and water pump belt. Adjust the belt deflection to 1/4" (A). Torque the 8mm pump retaining bolt and nut to 15 ft./lbs. Install the bypass hose and the water pump to manifold hose elbow.






15. Install recoil and water pump cover. Install coils, carburetors, and exhaust manifold.
IMPORTANT: Refer to page V – 31 for filling and bleeding procedure.



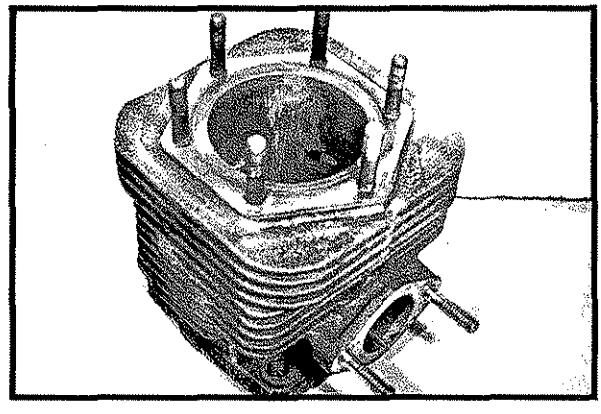
## Cylinder Service

Maximum performance of an engine and easy starting are directly related to the compression of the fuel and air mixture in the combustion chamber. It is important that the cylinder walls are concentric, smooth and perpendicular to the crankshaft center line. All new engines have these characteristics inherently built into them, however, with the stresses and heat of operation the bore may distort or score resulting in loss of compression and power. It is then that the serviceman's job of reconditioning the cylinder and restoring it to its new condition must be performed.

### INSPECTION

A simple way of checking for cylinder/piston condition is to remove the exhaust manifold and look into the exhaust port. If there is a considerable amount of blow-by (carbon deposit usually brown or black) under the piston rings, the cylinder should be removed and honed. The piston rings should be replaced also.

The cylinder should always be inspected whenever an engine has been disassembled for repair or any time a loss of power or cylinder cranking compression is noted. A visual inspection after the cylinder head is removed will reveal if the cylinder should be removed for honing. Inspect for any scratches or signs of scoring or brown areas which indicate ring leakage and distortion.

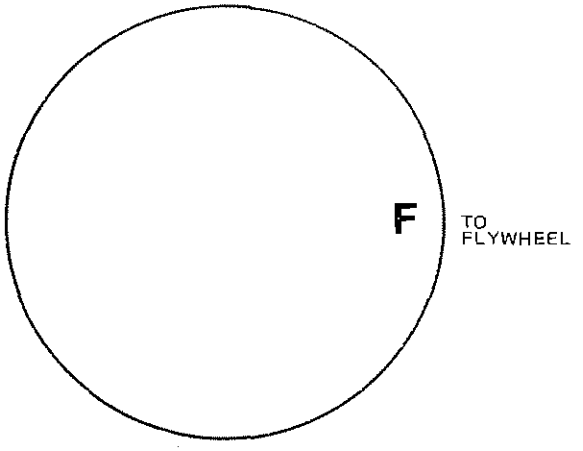


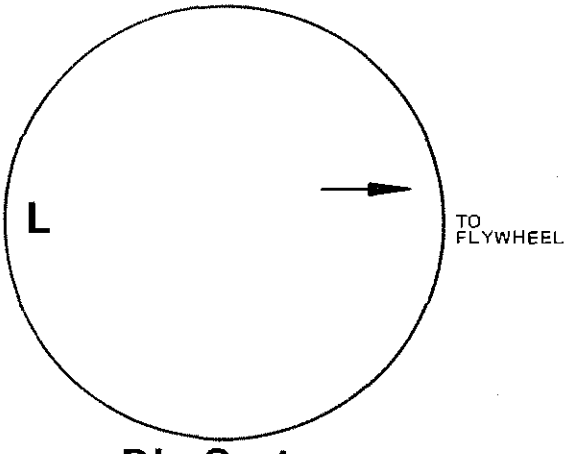
This cylinder has been damaged by the engine overheating to the point of piston seizure. Honing this cylinder would restore it to service. Damage such as this may be the result of improper fuel/oil mixture, carburetor jetting, or ignition timing too far advanced.

## Cylinder Service — Piston Identification

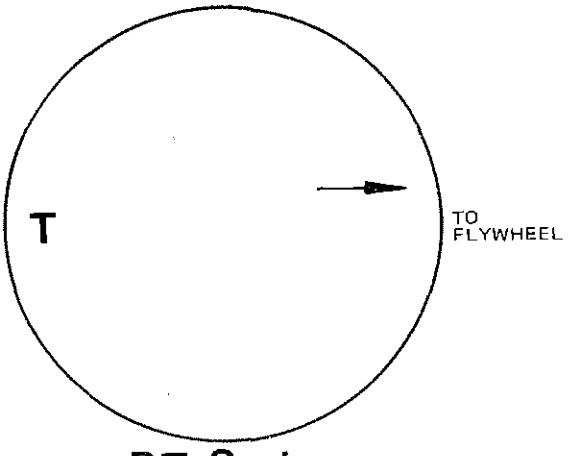
Correct installation of pistons into the cylinders during assembly is required to prevent ring breakage and seizure due to the ring ends passing over open ports. Viewing the pistons from the top, note the directional and engine model series identification marks.

The letter "F," "——►," or " ► " must always be toward the flywheel side of engine. Pistons may carry a letter such as "L," "T," "M," "M1," or "M2" to indicate its engine series designation. Oversize pistons and rings carry an additional marking of "25" indicating .010 oversize or "50" indicating .020 oversize. Piston identifications are shown below.

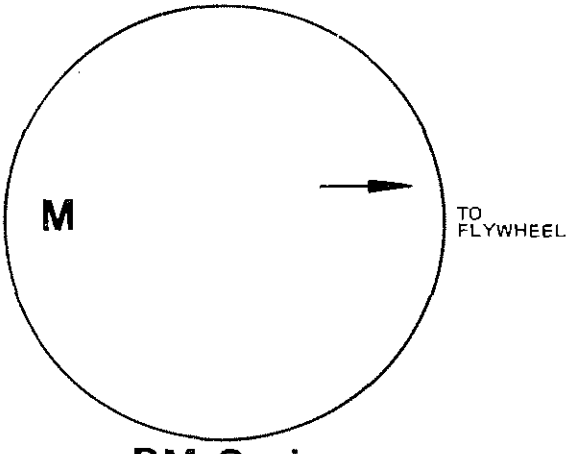



**PL Series**




**PT Series**




**PM Series**

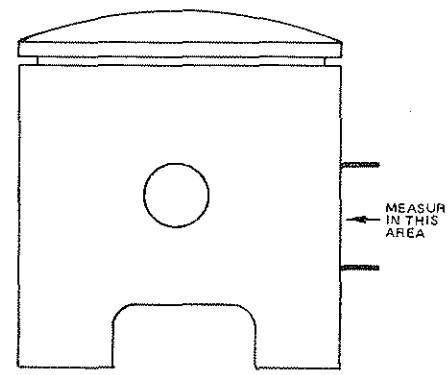
M1 designates 44—2PM—1100

M2 designates 44—2PM—3100/3300

## Cylinder Service — Piston/Cylinder Clearance

### PISTON MEASUREMENT

Whenever cylinders are honed or bore clearance checked, it is important to measure the piston diameter to arrive at its major dimension. The pistons used in Polaris engines should be measured at right angles to the pin as shown.




The cylinder bore must be straight and concentric. Refer to the honing information outlined in this section for specific procedures. The chart below indicates engine model bore size and recommended rebuild clearances.

NOTE: These are total piston to cylinder clearances, which will result in an installed clearance of one-half the specified dimension.

| Engine Model | Standard Bore | | Piston/Cylinder Clearance ± .002" |
|---|---|---|---|
| | Inches | MM | |
| EC17PM | 2.4409 | 62 | .007" |
| EC25PS | 2.8346 | 72 | .009" |
| EC29PF | 2.283 | 58 | .005" |
| EC25PT-06/07 | 2.1017 | 53.4 | Chrome* |
| EC25PT | 2.1063 | 53.5 | .005" |
| EC25PC | 2.1063 | 53.5 | .006" |
| EC25PM | 2.082 | 52.9 | .005" |
| EC34PC/PS | 2.4409 | 62 | .006" |
| EC34PM | 2.432 | 61.78 | .006" |
| EC34PQ | 2.3622 | 60 | .0065" |
| EC34PT | 2.441 | 62 | Chrome* |
| EC34PL | 2.432 | 61.78 | .005" |
| EC40PM | 2.556 | 65 | .008" |
| EC44PM | 2.6557 | 67.72 | .008" |
| EC44PQ | 2.6673 | 67.75 | .008" |
| EC44PT | 2.6673 | 67.75 | Chrome* |
| EC54PM | 2.952 | 75 | .008" |
| EC51PL | 2.432 | 61.78 | .005" |
| EC44–2PM | 2.6557 | 67.72 | .006" |

*Chrome cylinders may be de-glazed and refinished using fine stones.

**Before discarding any cylinder it should be honed. If the cylinder is damaged so that it cannot be cleared without exceeding the maximum standard piston-cylinder clearance recommendations, it may be oversized .020 and a new .020 oversize piston installed. Polaris supplies .020 oversize pistons and rings for the following engines.**

**NOTE: When ordering oversize cylinders and pistons, refer to the engine model tag located on the engine crankcase or fan housing for the correct application.**

## .020 OVERSIZE PISTON AND RING CHART TO FIT ALL ENGINES AS DESIGNATED BELOW

| Part Number | Description | Engine | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | PT, PC 250 | PM 175 | PS 244 | PM 250 | PM 294 | PF 294 | PS 294 | PM 335 | PF 335 | PS, PC 335 | PM 340 | PL 340 | PM 398 | PS 398 | PS 432 | PM 440 | 44-2 PM 3100/ 3300 | 44-2 PM 1100 | PF 530 | PM 530 | PL 500 |
| 3081721 | Piston | | X | | | | | | | | | | | | | | | | | | | |
| 3081722 | Ring | | X | | | | | | X | X | | | | | | | | | | | | |
| 3081723 | Ring | | | | | | | | | | | | | X | | | | | | | | |
| 3081724 | Ring | | | X | | | | | | | | | | | | | | | | | | |
| 3081725 | Piston | | | | | | | | | | | | | X | | | | | | | | |
| 3081726 | Piston | | | | | X | X | | | | | | | | | | | | | | | |
| 3081727 | Ring | | | | | X | X | | | | | | | | | | | | | | | |
| 3081728 | Ring | | | | | | | X | | | | | | | | | | | | | | |
| 3081729 | Ring | | | | | | | | | | X | | | | | | | | | | | |
| 3081730 | Piston | | | | | | | | X | X | | | | | | | | | | | | |
| 3081731 | Piston | | | | | | | | | | | | | | | | | | | X | | |
| 3081732 | Piston | | | X | | | | | | | | | | | | | | | | | | |
| 3081733 | Ring | | | | | | | | | | | | | | | | | | | X | | |
| 3081734 | Piston | | | | | | | X | | | | | | | | | | | | | | |
| 3081735 | Piston | | | | | | | | | | X | | | | | | | | | | | |
| 3081736 | Ring | | | | | | | X | | | | | | | | | | | | | | |
| 3081737 | Ring | | | | | | | | | | X | | | | | | | | | | | |
| 3081738 | Piston | | | | | | | | | | | | | | | | | | | | X | |
| 3081739 | Ring | | | | | | | | | | | | | | | X | | | | | | |
| 3081740 | Ring | | | | | | | | | | | | | | | | | | | | X | |
| 3081741 | Ring | | | | | | | | | | | | | | | | | | | | X | |
| 3081742 | Piston | | | | | | | | | | | | | | X | | | | | | | |
| 3081743 | Piston | | | | | | | | | | | | | | | X | | | | | | |
| 3081744 | Ring | | | | | | | | | | | | | | X | | | | | | | |
| 3081745 | Ring | | | | | | | | | | | | | | X | | | | | | | |
| 3081746 | Ring | | | | | | | | | | | | | | | X | | | | | | |
| 3082273 | Piston | X | | | | | | | | | | | | | | | | | | | | |
| 3082274 | Top Ring | X | | | | | | | | | | | | | | | | | | | | |
| 3082275 | Second Ring | X | | | | | | | | | | | | | | | | | | | | |
| 3082701 | Piston | | | | X | | | | | | | | | | | | | | | | | |
| 3082702 | Ring | | | | X | | | | | | | | | | | | | | | | | |
| 3082703 | Piston | | | | | | | | | | | X | | | | | | | | | | |
| 3082704 | Ring | | | | | | | | | | | X | | | | | | | | | | |
| 3082705 | Piston | | | | | | | | | | | | X | | | | | | | | | X |
| 3082706 | Ring | | | | | | | | | | | | X | | | | | | | | | X |
| 3082845 | Piston | | | | | | | | | | | | | | | | X | | | | | |
| 3082846 | Ring | | | | | | | | | | | | | | | | X | X | X | | | |
| 3083173 | Piston | | | | | | | | | | | | | | | | | | X | | | |
| 3083174 | Piston | | | | | | | | | | | | | | | | | X | | | | |

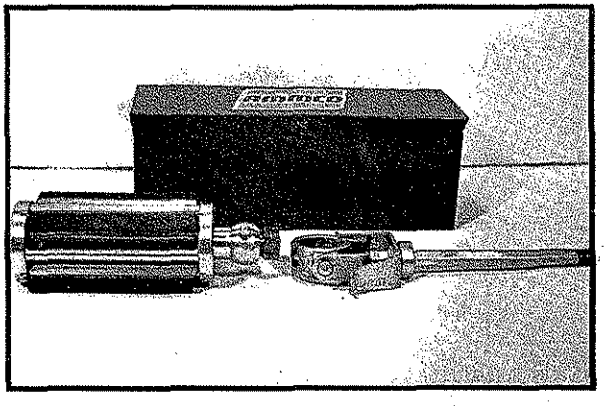
| Part Number | Description | Engine | |
|---|---|---|---|
| | | PL 340 | PL 500 |
| 3082849 | Piston | X | X |
| 3082559 | Ring | X | X |

## .010 OVERSIZE PISTON AND RING CHART

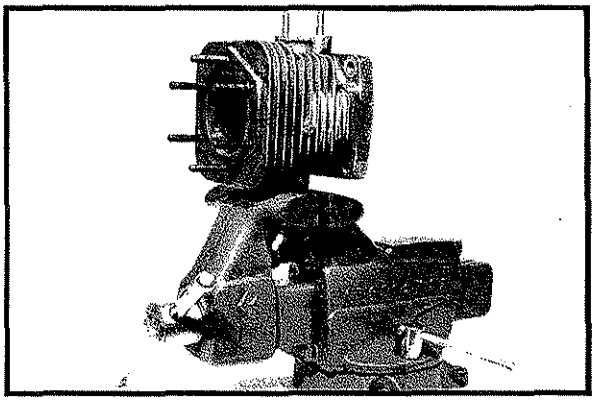
NOTE: OVERSIZE PISTONS AND RINGS ARE AVAILABLE FOR CAST–IRON LINED CYLINDERS ONLY.

## Cylinder Hone Selection and Honing

Selecting a hone which will straighten as well as remove material from the cylinder is very important. Honing a cylinder with a common spring loaded finger type glaze breaker is never advised. Polaris recommends using a rigid type hone which also has the capability of oversizing. Such hones are manufactured by Sunnen Products Company of St. Louis, Missouri; Ammco Tools, Inc., North Chicago, Illinois; or others.

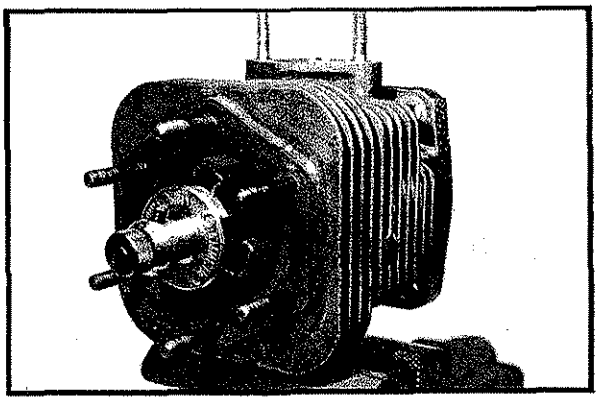


Shown is the Ammco No. 3950 hone which has roughing and finishing stone sets available to include the large 75MM bore engines.

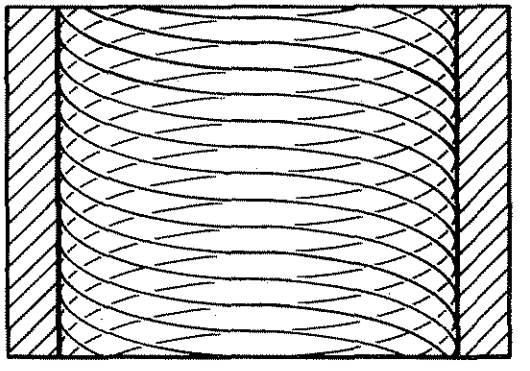


Honing:

1. Wash the cylinder with solvent and clamp in a vice around the exhaust port studs protecting them from the vice jaw serrations with brass stock, wood or cardboard.

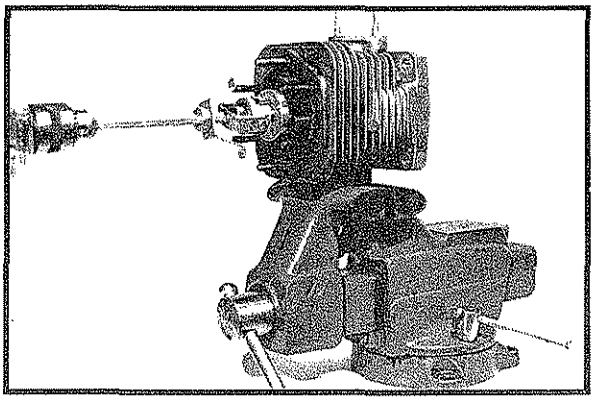


2. Place the hone in the cylinder, tighten the stone adjusting knob until the stone contacts the cylinder walls (DO NOT OVER TIGHTEN).



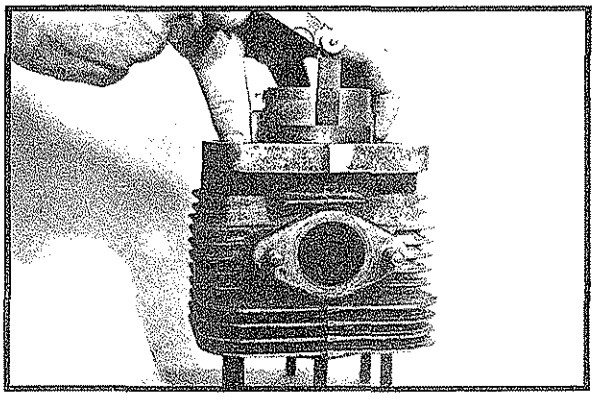
3. Cylinders may be wet or dry honed depending on the hone manufacturer's recommendations. Wet honing removes more material faster and leaves a more distinct pattern in the bore. A finished cylinder should have a cross-hatch pattern. This aids in the retention of fuel/oil mixture and initial break-in.

4. With a 1/2" drill motor using a speed of 300 - 500 RPM run the hone in and out of the cylinder rapidly until cutting tension decreases. Remember to keep the hone drive shaft centered and to bring the stone approximately 1/2" beyond the bore at the end of each stroke. Release the hone at regular intervals inspecting the bore to determine if it has been cleared and to check piston fit.



Measuring Piston Clearance:

5. With the cylinder thoroughly cleaned install a new piston into the bore as shown, slipping a feeler thickness gauge alongside the skirt at right angles to the pin. Start with a thinner gauge and progressively work up to the thickest which may be inserted between the piston and wall. The thickest gauge which may be inserted as a sliding fit will be the total cylinder-piston clearance.
   NOTE: Refer to the Engine Data Chart to determine if the clearance is within tolerance for that engine.



HONING TO OVERSIZE

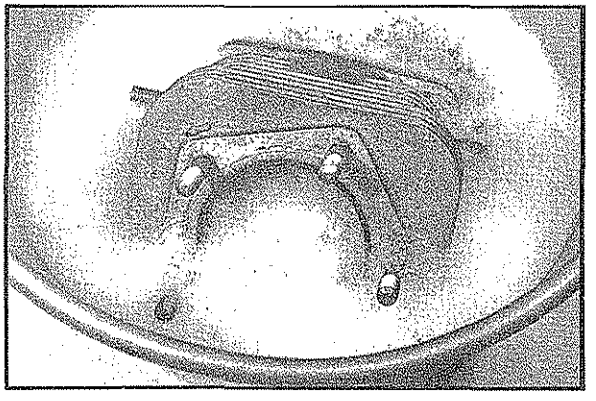
If the piston-cylinder clearance measures greater than that in the chart for a standard bore, it will be necessary to oversize the cylinder to .020 using a new .020 oversize piston and rings. This may be done either by boring or honing.

For oversize honing always wet hone using honing oil and a coarse roughing stone. Hone until a check with a new piston indicates you are within .003 of the clearance recommended, then complete the sizing with fine grit stones to provide the proper cross-hatch finish and clearance.

IMPORTANT:

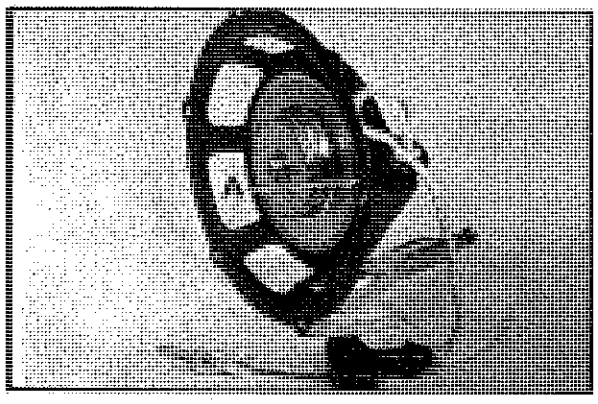
Cleaning the Cylinder After Honing:

It is very important that the cylinder be thoroughly cleaned after honing to remove all grindings. Wash the cylinder in a solvent, then in hot soapy water, rinse, blow dry and lightly oil.

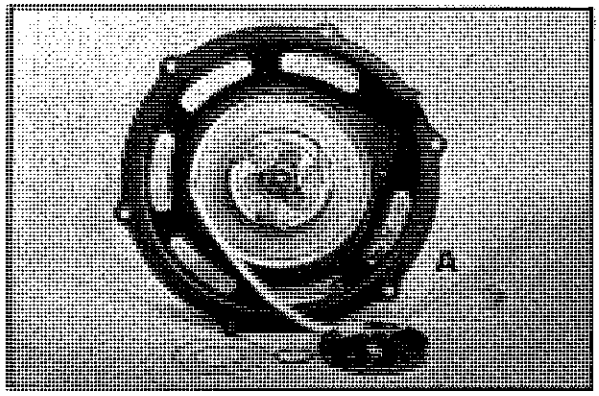


## Recoil Starter Rope Replacement

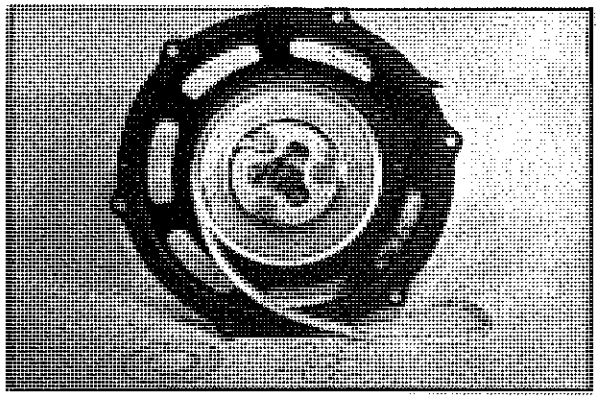
1. Tie the rope in a slip knot. Pull the rope out of the handle. Untie the knot and remove the handle. Pull the rope into the notch (A) on the reel and slowly unwind the spring. Remove the retaining nut.



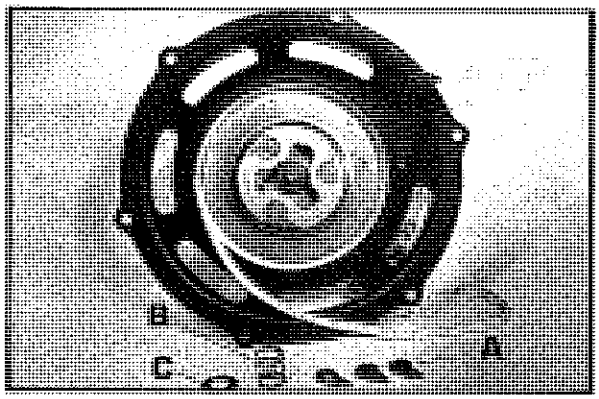

2. Remove the ratchet retainer (A), the spring, and the retainer disc.



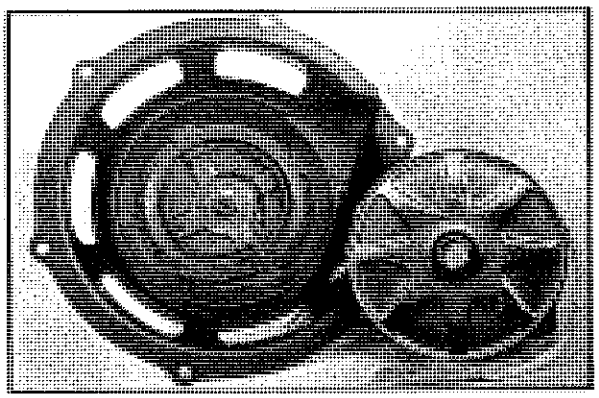

3. Remove the three ratchet return springs and the smaller plastic disc.



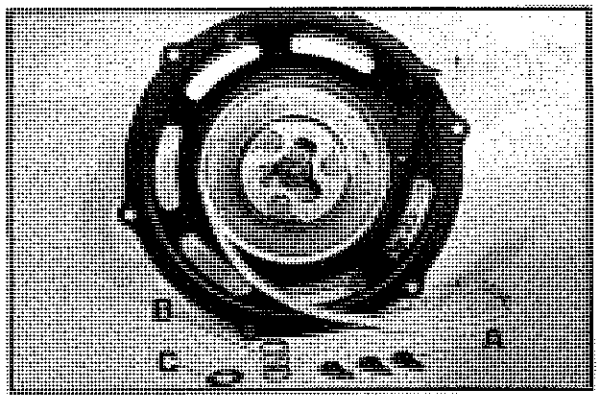
4. Remove the three ratchets (A), the small spring (B), and the washer (C).



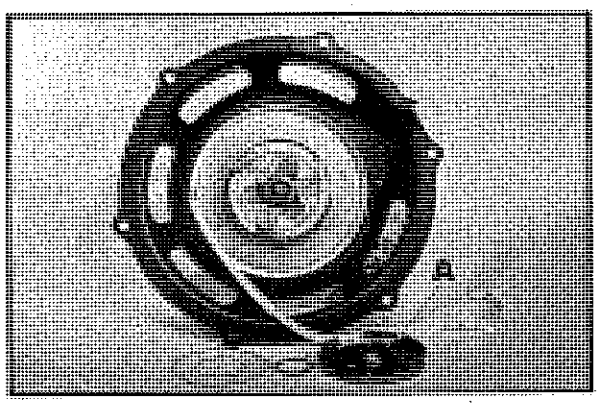
5. Lift the reel from the housing, taking care that the reel is free of the recoil spring. Install a new rope and replace the reel.



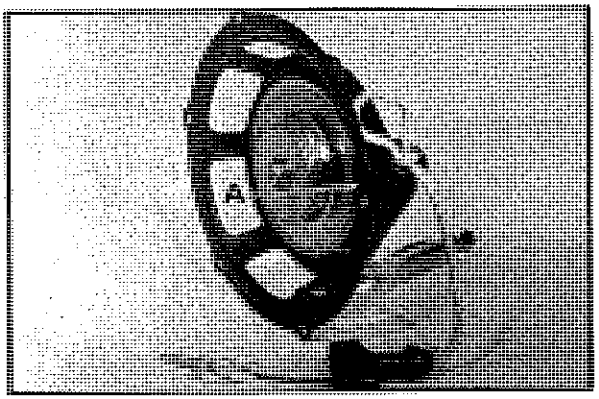
6. Install the ratchets (A), the spring (B), and the washer (C).




7. Install the small plastic disc and the three ratchet return springs. Install the large plastic disc, the return spring, and the ratchet retainer (A).

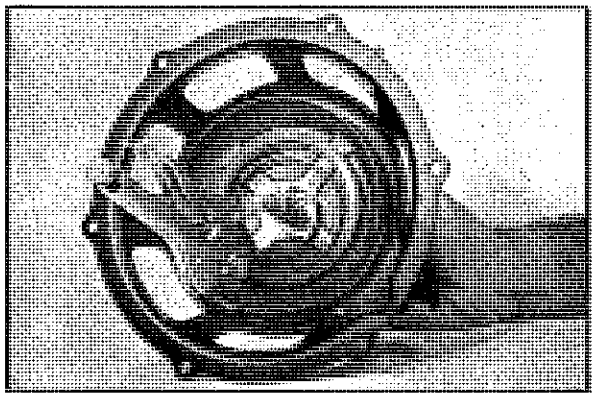



8. Install the retaining nut. Tighten the recoil spring by putting the rope in the notch (A). Three to four turns will give sufficient spring tension. Tie a slip knot in the rope to prevent it from rewinding. Attach the handle and tie a figure eight knot on the rope end and push into the handle. Loosen the slip knot and re-install.

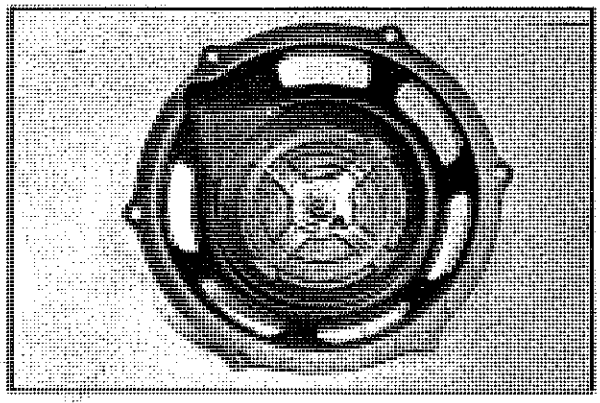


## Recoil Starter Spring Replacement

1. To replace the spring, follow the disassembly procedures. Clamp the defective spring with a small vice grip. Use caution when removing the spring.



2. Rewind the spring and install in the housing, hooking the end of the spring (A) as shown.



3. Continue reassembly as outlined in rope replacement instructions.

NOTES:

# SECTION VI

# CARBURETION

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## 1972

| Engine Model | No. of Cyl. | Carb. Size Type and Number | Original Jetting | | Recommended Jetting/0'-5,000' | | Recommended Jetting/5,000'-10,000' | |
|---|---|---|---|---|---|---|---|---|
| | | | Main | Pilot | Main | Pilot | Main | Pilot |
| EC17P | 1 | VM24SH (1) | 300H | 40 | —— | 35 | —— | —— |
| EC25P | 1 | VM30SH (1) | 125 | 40 | 120 | 35 | 115 | 35 |
| EC29P | 2 | VM26SH (2) | 107.5 | 40 | —— | 35 | 105 | 35 |
| EC29PF | 2 | VM26SH (2) | 107.5 | 40 | —— | 35 | 105 | 35 |
| EC34PS | 2 | VM26SS (2) | 125 | 40 | 120 | 35 | 105 | 35 |
| EC40P | 2 | VM30SH (2) | 120 | 40 | —— | 35 | 110 | 35 |
| EC40PF | 2 | VM30SH (2) | 120 | 40 | —— | 35 | 110 | 35 |
| EC51PS | 3 | VM26SH (3) | 125 | 40 | 120 | 35 | 115 | 35 |
| EC54P | 2 | VM32SH (2) | 140 | 40 | 132.5 | 35 | 125 | 35 |
| EC54PF | 2 | VM32SH (2) | 140 | 40 | 132.5 | 35 | 125 | 35 |

## 1973

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| EC17P | 1 | VM24SH (1) | 102.5 | 40 | —— | 35 | —— | —— |
| EC25PS | 1 | VM30SH (1) | 125 | 40 | 120 | 35 | 115 | 35 |
| EC29PM | 2 | VM26SH (2) | 110 | 40 | —— | 35 | 100 | 35 |
| EC29PF | 2 | VM26SH (2) | 115 | 40 | 110 | 35 | 100 | 35 |
| EC29PS | 2 | VM30SS (2) | 127.5 | 40 | 120 | 35 | 105 | 35 |
| EC34PF | 2 | VM26SH (2) | 115 | 40 | 110 | 35 | 107.5 | 35 |
| EC34PS | 2 | VM30SS (2) | 127.5 | 40 | 120 | 35 | 110 | 35 |
| EC40PM | 2 | VM30SH (2) | 120 | 40 | —— | 35 | 117.5 | 35 |
| EC40PS | 2 | VM32SS (2) | 145 | 40 | 132.5 | 35 | 120 | 35 |
| EC44PS | 2 | VM32SS (2) | 145 | 40 | 137.5 | 35 | 120 | 35 |
| EC51PS | 3 | VM30SS (3) | 127.5 | 40 | 120 | 35 | 115 | 35 |
| EC54PM | 2 | VM32SS (2) | 145 | 40 | 132.5 | 35 | 125 | 35 |

## 1974

| Engine Model | No. of Cyl. | Carb. Size Type and Number | Original Jetting | | Recommended Jetting/0'-5,000' | | Recommended Jetting/5,000'-10,000' | |
|---|---|---|---|---|---|---|---|---|
| | | | Main | Pilot | Main | Pilot | Main | Pilot |
| EC17PM | 1 | VM24SH (1) | 102.5 | 35 | ---- | ---- | ---- | ---- |
| EC25PS | 1 | VM30SH (1) | 125 | 35 | 120 | ---- | 115 | 35 |
| EC25PC | 2 | VM26SS (2) | 110 | 35 | ---- | ---- | 100 | 35 |
| EC25PT | 2 | VM30SS (2) | 125 | 35 | 115 | ---- | 105 | 35 |
| EC29PF | 2 | VM26SH (2) | 115 | 35 | 110 | ---- | 107.5 | 35 |
| EC34PC | 2 | VM26SH (2) | 125 | 35 | 112.5 | ---- | 110 | 35 |
| EC34PQ | 2 | VM32SS (1) | 125 | 40 | 120 | 35[C] | 107.5 | 35[C] |
| EC34PS | 2 | VM30SS (2) | 127.5 | 35 | 120 | ---- | 110 | 35 |
| EC40PM | 2 | VM30SH (2) | 120 | 40 | ---- | 35 | 115 | 35 |
| EC44PQ | 2 | VM38SS (1) | 135 | 40 | ---- | 35[C] | 117.5 | 35[C] |
| EC44PT | 2 | VM38SS (2) | 135 | 35 | ---- | ---[C1] | 115 | 35[C1] |
| EC51PT | 3 | VM32SS (3) | 117.5 | 35 | ---- | ---[C] | 110 | 35[C] |
| EC54PM | 2 | VM32SS (2) | 145 | 40 | 130 | 35[C] | 117.5 | 35[C] |

C - With air silencer installed

1 - Reference Service Bulletin No. 93

4 - Reference Service Bulletin No. 96

5 - Reference Service Bulletin No. 101

## 1975

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| EC17PM | 1 | VM24SH (1) | 102.5 | 35 | ---- | ---- | ---- | ---- |
| EC25PS | 1 | VM30SH (1) | 125 | 35 | 117.5 | ---[C] | 115 | 35[C] |
| EC25PC | 2 | VM26SS (2) | 105 | 35 | 112.5[4] | ---[C] | 95 | 35[C] |
| EC25PT | 2 | VM30SS (2) | 120 | 35 | ---- | ---[C] | 112.5 | 35[C] |
| EC34PC | 2 | VM26SS (2) | 112.5 | 35 | 107.5 | ---[C5] | 100 | 35[C5] |
| EC34PQ | 2 | VM30SS (2) | 122.5 | 30 | 117.5 | ---[C] | 110 | 30[C] |
| EC34PT | 2 | VM32SS (2) | 140 | 30 | 130 | ---[C] | 115 | 35[C] |
| EC44PQ | 2 | VM30SS (2) | 125 | 25 | 115 | ---[C] | 110 | 25[C] |
| EC44PT | 2 | VM38SS (2) | 140 | 40 | 132.5 | 45[C] | 120 | 40[C] |
| EC51PT | 3 | VM32SS (3) | 120 | 40 | ---- | ---[C] | 115 | 40[C] |

# 1976

| Engine Model | No. of Cyl. | Carb. Size Type and Number | Original Jetting | | Recommended Jetting/0'-5,000' | | Recommended Jetting/5,000'-10,000' | |
|---|---|---|---|---|---|---|---|---|
| | | | Main | Pilot | Main | Pilot | Main | Pilot |
| EC17PM | 1 | VM24SH (1) | 102.5 | 35 | ——— | ——— | ——— | ——— |
| EC25PS | 1 | VM30SH (1) | 125 | 35 | 117.5 | ——C | 115 | 35C |
| EC25PC | 2 | VM26SS (2) | 112.5 | 35 | ——— | ——C | 95 | 35C |
| EC25PT-06 | 2 | VM32SS (2) | 260H | 30 | ——— | 35C | 190H | 30C |
| EC25PT-05 | 2 | VM32SS (2) | 230H | 35 | ——— | ——C | ——— | ——C |
| EC34PC | 2 | VM26SS (2) | 107.5 | 35 | ——— | ——C | 105 | 35C |
| EC34PQ | 2 | VM30SS (2) | 122.5 | 30 | 117.5 | ——C | 110 | 30C |
| EC34PT-05 | 2 | VM32SS (2) | 270H | 30 | 260H6 | ——C | 230 | 30C |
| EC34PT-06 | 2 | VM34SS (2) | 270H | 30 | ——— | ——C | ——— | ——C |
| EC44PQ | 2 | VM30SS (2) | 125 | 25 | 115 | ——C | 115 | 25C |
| EC44PT-05 | 2 | VM34SS (2) | 320H | 35 | ——— | ——C | 270 | 35C |

C - With air silencer installed

H - Hex head

6 - Lower "E" clip to No. 4 position

7 - Lower "E" clip to No. 4 position

# 1977

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| EC25PS | 1 | VM30SH (1) | 117.5 | 35 | ——— | ——C | REFER TO THE |
| EC25PC | 2 | VM26SS (2) | 112.5 | 35 | ——— | ——C | 1977 SHOP MANUAL |
| EC25PM-01 | 2 | VM26SS (2) | 130H | 35 | ——— | ——C | FOR SPECIFIC |
| EC25PT-07 | 2 | VM30SS (2) | 220H | 35 | ——— | ——C | ALTITUDE |
| EC34PM-03 | 2 | VM26SS (2) | 150H | 35 | 130H | ——C | TEMPERATURE |
| EC34PQ | 2 | VM30SS (2) | 122.5 | 30 | 117.5 | ——C | COMPENSATION |
| EC34PT-05 | 2 | VM32SS (2) | 280H | 30 | 270H | ——C | ADJUSTMENTS |
| EC34PL-01 | 2 | VM38SS (2) | 340H | 45 | 320H7 | ——C | |
| EC44PQ | 2 | VM30SS (2) | 115 | 25 | ——— | ——C | |
| EC44PT-05 | 2 | VM34SS (2) | 320H | 35 | ——— | ——C | |
| EC44PT-06 | 2 | VM34SS (2) | 320H | 35 | ——— | ——C | |

Condensed Data

| Machine Model | Engine Model | Cyl. Disp. CC's | Carburetor Model, Mount Type & No. | Std. Main Jet & Type | Std. Pilot Jet | Air Screw Adjust. (counterclock wise from seat) |
|---|---|---|---|---|---|---|
| Colt | EC25PS | 244 | VM30SH (1) Flange | 117.5 Round | 35 | 1 turn |
| Colt | EC25PC | 250 | VM26SS (2) Rubber | 112.5 Round | 35 | 1 turn |
| S/S 340 | EC34PM–03<br>EC34PM–04N | 333 | VM26SS (2) Rubber | 130 Hex | 35 | 1 turn<br>1/2 turn |
| Cobra | EC34PM–04 | 333 | VM26SS (2) Rubber | 130 Hex | 35 | 1 turn |
| Cobra | EC44PM–01 | 432 | VM34SS (2) Rubber | 200 Hex | 35 | 1 turn |
| TX | EC25PT–07 | 249 | VM30SS (2) Rubber | 220 Hex | 35 | 1 turn |
| TX | EC34PT–05 | 336 | VM32SS (2) Rubber | 280 Hex | 30 | 1 turn |
| TX | EC44PT–05 | 432 | VM34SS (2) Rubber | 370 Hex | 45 | 1 turn |
| TX-L | EC34PL–02 | 333 | VM38SS (2) Rubber | 310 Hex | 45 | 1 turn |

1978

| Engine Model | Jet Needle No. "E" Clip Position | Needle Jets | Throttle Valve Cutaway | Valve Seat | Fuel Mixture |
|---|---|---|---|---|---|
| EC25PS | 5DP7 – 4 | O–8 (171) | 3.0 | ↑ | ↑ |
| EC25PC | 5DP7 – 5 or<br>5DP3 – 3 | O–8 (164) | 3.0 | | |
| EC34PM–03<br>EC34PM–04N | 5DP7 – 2<br>5EP6 – 3 | O–8 (259)<br>P–2 (259) | 2.5<br>3.0 | | |
| EC34PM–04 | 5DP7 – 3 | P–2 (259) | 3.0 | 1.5MM | 40:1 |
| EC44PM–01 | 6DP1 – 3 | P–6 (166) | 2.5 | | |
| EC25PT–07 | 5DP7 – 3 | P–2 (171) | 2.5 | | |
| EC34PT–05 | 6DH7 – 3 | P–4 (159) | 2.0 | | |
| EC44PT–05 | 6DH7 – 3 | P–6 (166) | 2.5 | | |
| EC34PL–02 | 6DH4 – 3 | Q–2 (247) | 2.5 | ↓ | ↓ |

1979

| Machine Model | Engine Model | Cyl. Disp. CC's | Carburetor Model, Mount Type & No. | Std. Main Jet & Type | Std. Pilot Jet | Air Screw Adjust. (counterclockwise from seat) |
|---|---|---|---|---|---|---|
| Gemini | EC25PS | 244 | VM30SH (1) Flange | 117.5 Round | 35 | 1 turn |
| Gemini | EC25PM–01 | 244 | VM26SS (2) Rubber | 120 Hex | 35 | 1 turn |
| Apollo | EC34PM–03 | 333 | VM26SS (2) Rubber | 130 Hex | 35 | 1 turn |
| Cobra | EC34PM–04 | 333 | VM26SS (2) Rubber | 130 Hex | 35 | 1 turn |
| Cobra | EC44PM–01 | 432 | VM34SS (2) Rubber | 200 Hex | 35 | 1 turn |
| TX | EC25PT–07 | 249 | VM30SS (2) Rubber | 220 Hex | 35 | 1 turn |
| TX | EC34PT–05 | 336 | VM32SS (2) Rubber | 290 Hex | 30 | 1 turn |
| TX | EC44PT–05 | 432 | VM34SS (2) Rubber | 320 Hex | 30 | 1 turn |
| TX-L | EC34PL–02 | 333 | VM38SS (2) Rubber | 260 Hex | 45 | 1 turn |
| Centurion | EC51PL–01 | 500 | VM34SS (3) Rubber | 220 Hex | 35 | 1 1/2 turn |

| Engine Model | Jet Needle No. "E" Clip Position | Needle Jets | Throttle Valve Cutaway | Valve Seat | Fuel Mixture |
|---|---|---|---|---|---|
| EC25PS | 5DP7 – 4 | O–8 (177) | 3.0 | ↑ | ↑ |
| EC25PM–01 | 5DP7 – 2 | O–8 | 2.5 | | |
| EC34PM–03 | 5DP7 – 2 | O–8 | 2.5 | | |
| EC34PM–04 | 5DT49 – 2* | P–2 (259) | 3.0 | | |
| EC44PM–01 | 6DP1 – 3 | P–6 (166) | 2.5 | 1.5MM | 40:1 |
| EC25PT–07 | 5DP7 – 3 | P–2 (171) | 2.5 | | |
| EC34PT–05 | 6DH7 – 2 | P–4 (159) | 2.0 | | |
| EC44PT–05 | 6DH7 – 2 | Q–0 (166) | 2.5 | | |
| EC34PL–02 | 6DH4 – 3 | Q–2 (247) | 2.5 | | |
| EC51PL–01 | 6DH7 – 2 | Q–2 (166) | 3.0 | ↓ | ↓ |

*Reference Information Bulletin No. I–78–5

## CARBURETION

### Condensed Data

1980

| Machine Model | Engine Model | Cyl. Disp. CC's | Carburetor Model, Mount Type & No. | Std. Main Jet & Type | Std. Pilot Jet | Air Screw Adjust. (counterclockwise from seat) |
|---|---|---|---|---|---|---|
| Gemini | EC25PS | 244 | VM30SS (1) Rubber | 120 Hex | 60 | 1 turn |
| Gemini | EC25PM–01 | 244 | VM26SS (2) Rubber | 120 Hex | 35 | 1 turn |
| Apollo | EC34PM–03 | 333 | VM26SS (2) Rubber | 130 Hex | 35 | 1 turn |
| Galaxy | EC34PM–04 | 333 | VM26SS (2) Rubber | 110 Hex | 35 | 1 turn |
| Galaxy | EC44PM–01/02 | 432 | VM34SS (2) Rubber | 200 Hex | 35 | 1 turn |
| TX/TX-C | EC34PT–07 | 336 | VM32SS (2) Rubber | 280 Hex | 30 | 1 turn |
| TX | EC44PT–05 | 432 | VM34SS (2) Rubber | 320 Hex | 30 | 1 turn |
| TX-L/TX-L Indy | EC34PL-02/05 | 333 | VM38SS (2) Rubber | 260 Hex | 45 | 1 turn |
| Centurion | EC51PL–02 | 500 | VM34SS (3) Rubber | 220 Hex | 35 | 1 1/2 turn |

| Engine Model | Jet Needle No. "E" Clip Position | Needle Jets | Throttle Valve Cutaway | Valve Seat | Fuel Mixture |
|---|---|---|---|---|---|
| EC25PS | 5DT49–2 | O–8 (177) | 3.0 | 1.5MM | 40:1 |
| EC25PM–01 | 5DP7 – 2 | O–8 | 2.5 | | |
| EC34PM–03 | 5DP7 – 2 | O–8 | 2.5 | | |
| EC34PM–04 | 5DT49–2 | P–2 (259) | 3.0 | | |
| EC44PM–01/02 | 6DP1 – 3 | P–6 (166) | 2.5 | | |
| EC34PT–07 | 6DH7 – 2 | P–4 (159) | 2.0 | | |
| EC44PT–05 | 6DH7 – 2 | Q–0 (166) | 2.5 | | |
| EC34PL–02/05 | 6DH4 – 3 | Q–2 (247) | 2.5 | | |
| EC51PL–02 | 6DH7 – 2 | Q–2 (166) | 3.0 | | |

| Machine Model | Engine Model | Cyl. Disp. CC's | Carburetor Model, Mount Type & No. | Std. Main Jet & Type | Std. Pilot Jet | Air Screw Adjust. (counterclockwise from seat) |
|---|---|---|---|---|---|---|
| Gemini | EC25PS | 244 | VM30SS (1) Rubber | 120 Hex | 60 | 1 turn |
| Galaxy | EC44PM–02 | 432 | VM34SS (2) Rubber | 200 Hex | 35 | 1 turn |
| Cutlass | EC34PM–03 | 333 | VM26SS (2) Rubber | 130 Hex | 30 | 1 turn |
| Cutlass SS | EC44–2PM–3100/3300 | 432 | VM38SS (1) Rubber | 290 Hex | 40 | 1 turn |
| TX-C | EC44–2PM–1100 | 432 | VM34SS (2) Rubber | 270 Hex | 35 | 1 turn |
| TX-L/TX-L Indy | EC34PL–05 | 333 | VM38SS (2) Rubber | 260 Hex | 45 | 1 turn |
| Centurion Indy | EC51PL–02 | 500 | VM34SS (3) Rubber | 220 Hex | 35 | 1 1/2 turn |

# 1981

| Engine Model | Jet Needle No. "E" Clip Position | Needle Jets | Throttle Valve Cutaway | Valve Seat | Fuel Mixture |
|---|---|---|---|---|---|
| EC25PS | 5DT49–2 | O–8 (177) | 3.0 | 1.5mm | 40:1 |
| EC44PM–02 | 6DP1–3 | P–6 (166) | 2.5 | 1.5mm | 40:1 |
| EC34PM–03 | 5DP7–3 | O–8 (259) | 2.5 | 1.5mm | 40:1 |
| EC44–2PM–3100/3300 | 6DH7–3 | Q–2 (247) | 2.0 | 1.5mm | Variable Ratio/ Automatic Injection |
| EC44–2PM–1100 | 6DH7–3 | P–6 (166) | 3.5 | 1.5mm | Variable Ratio/ Automatic Injection |
| EC34PL–05 | 6DH4–3 | Q–2 (247) | 2.5 | 1.5mm | 40:1 |
| EC51PL–02 | 6DH7–2 | Q–2 (166) | 3.0 | 1.5mm | 40:1 |

# CARBURETION

## Systems

### FUNCTION OF A CARBURETOR

The function of a carburetor is to produce combustible air-fuel mixture, by breaking fuel into tiny particles (in the form of vapor) and by mixing the fuel with air in a proper ratio, and to deliver the mixture to the engine. A proper ratio (mixture ratio or air-fuel ratio) means an ideal air-fuel mixture that can burn without leaving an excess of fuel or air. Whether the proper mixture ratio is maintained or not holds the key to the efficient engine operation.

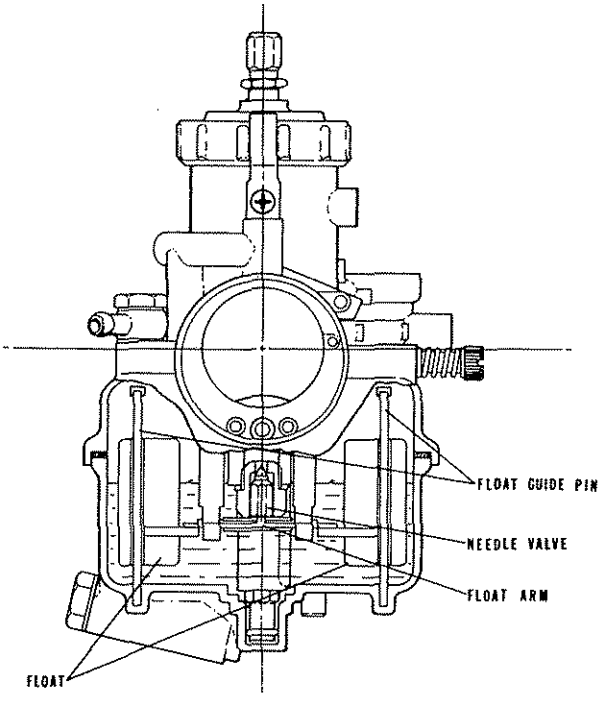
### FUNCTIONS AND CONSTRUCTION

The engine of a vehicle is operated under a wide range of conditions, from idling with the throttle valve remaining almost closed to the full load (the maximum output) with the throttle valve fully opened. In order to meet the requirements for the proper mixture ratio under these varying conditions, a low-speed fuel system (the pilot system) and a main fuel system (the main system) are provided in Mikuni VM-type carburetors.

The Mikuni carburetor has varying operations depending upon varying driving conditions. It is constructed with the float system, the pilot system, the main system, and the starter system (initial starting device).

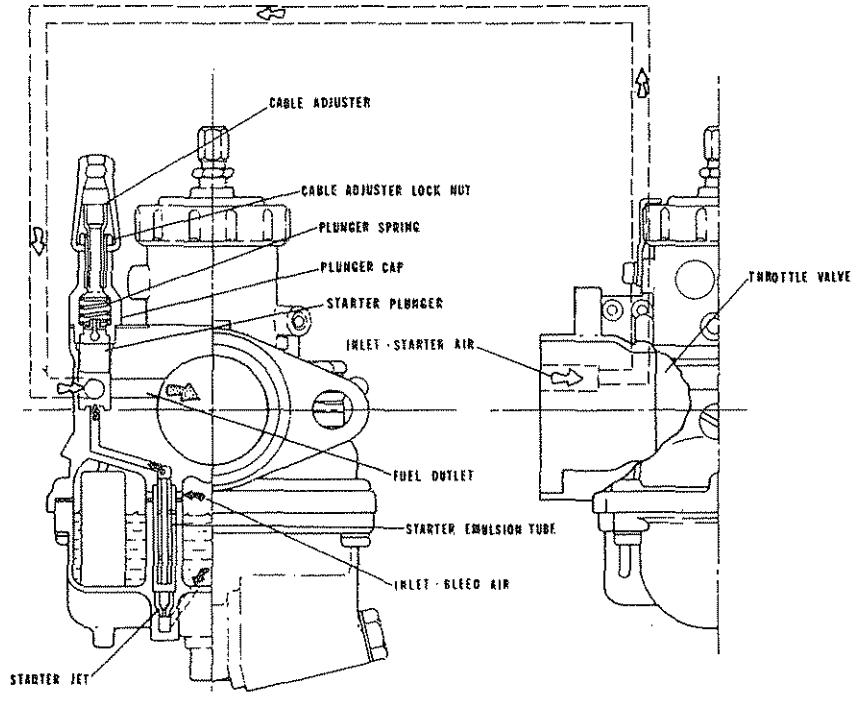
### FLOAT SYSTEM – No. 1

The float system is designed to maintain a constant height of gasoline during operation. When the fuel flowing from the fuel pump into the float chamber through the needle valve reaches the constant fuel level, the floats rise. When the buoyancy of the float and the fuel pressure of the fuel pump balance, the needle valve sticks fast to the needle seat preventing further delivery of gasoline, thereby holding the standard level of gasoline.
The fuel level in the bowl controls the amount of fuel in the fuel mixture. Too high a level allows more fuel than necessary to leave the nozzle, enriching the mixture. Too low a level results in a leaner mixture, as not enough fuel leaves the nozzle. Therefore, the predetermined fuel level should not be changed arbitrarily.



STARTER SYSTEM – No. 2

Starting device (starter system) – In the place of the choke, the starter system is employed for Mikuni carburetors. In the starter type, fuel and air for starting the engine are metered with entirely independent jets. The fuel metered in the starter jet is mixed with air and is broken into tiny particles in the emulsion tube. The mixture then flows into the plunger area, mixes again with air coming from the air intake port for starting and is delivered to the engine in the optimum air-fuel ratio through the fuel discharge nozzle. The starter is opened and closed by means of the starter plunger. Since the starter type is constructed so as to utilize the negative pressure of the inlet pipe, it is important that the throttle valve is closed when starting the engine.



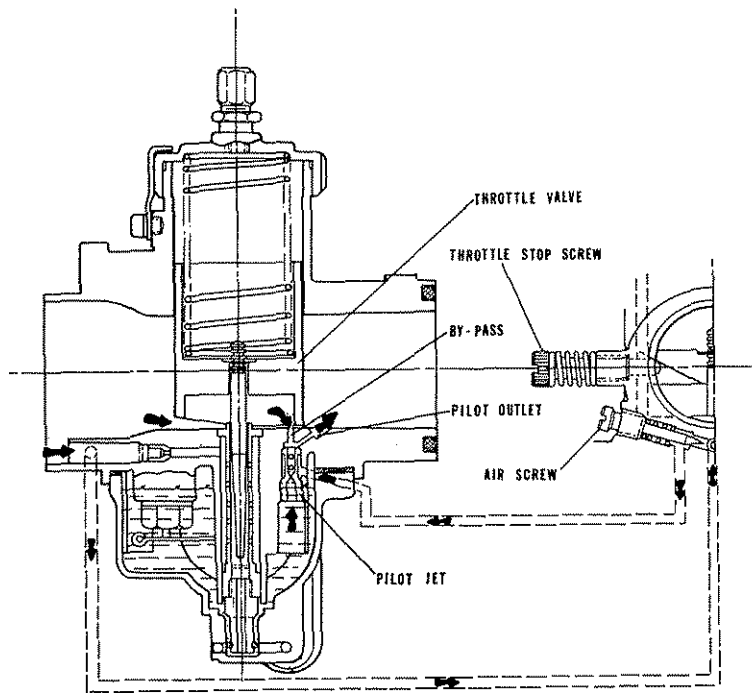
## Systems

### PILOT SYSTEM – No. 3

**The pilot system's main function is that of a low speed jet, to meter fuel at idle and low speed driving. Though its main function is to supply fuel at low speed, it does feed fuel continuously throughout the entire operating range.**

**Fuel for pilot jet is drawn from the float bowl, mixed with air regulated by the air screw, and delivered to the engine through the pilot outlet.**

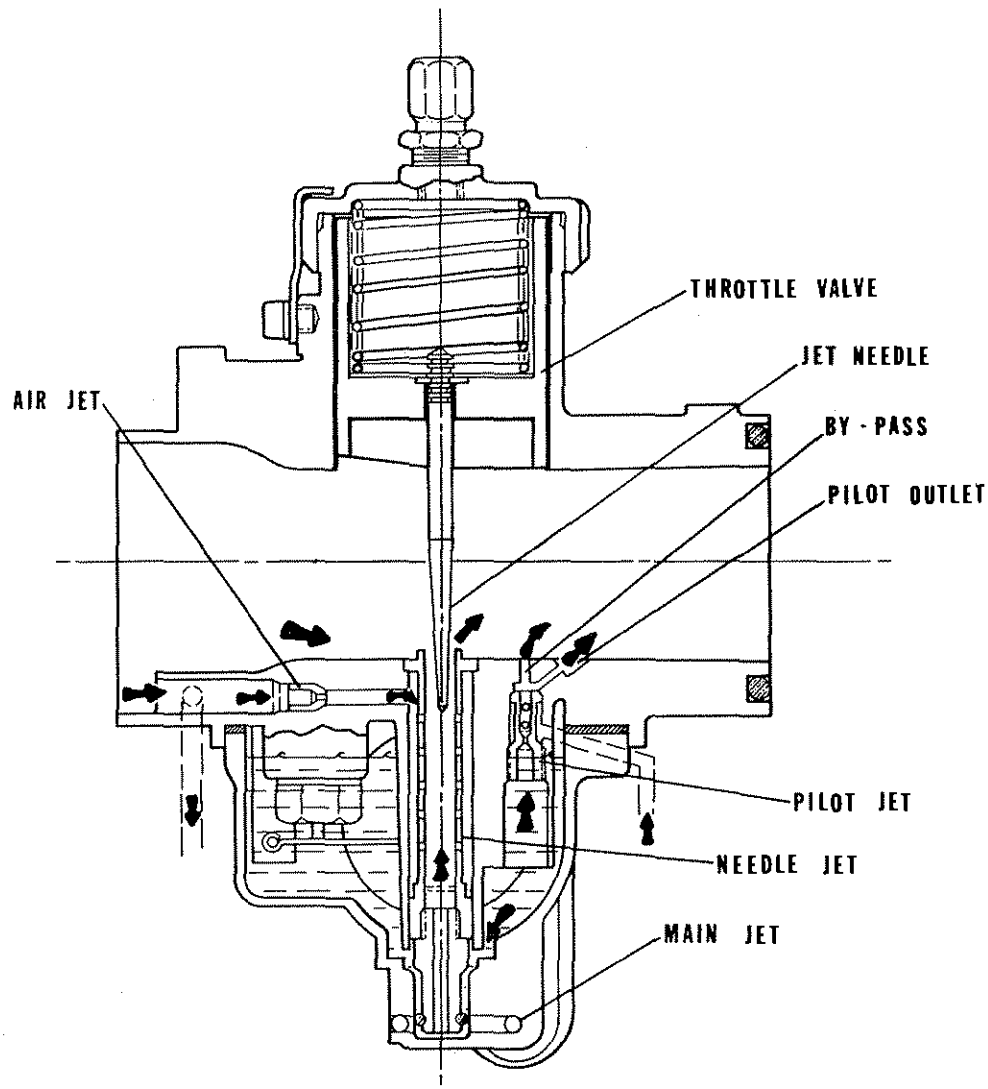
**The mixture is regulated to some degree by adjusting the air screw. When the air screw is closed, the fuel mixture is made richer as the amount of air is reduced. When the air screw is opened, the mixture is leaned as the amount of air is increased.**



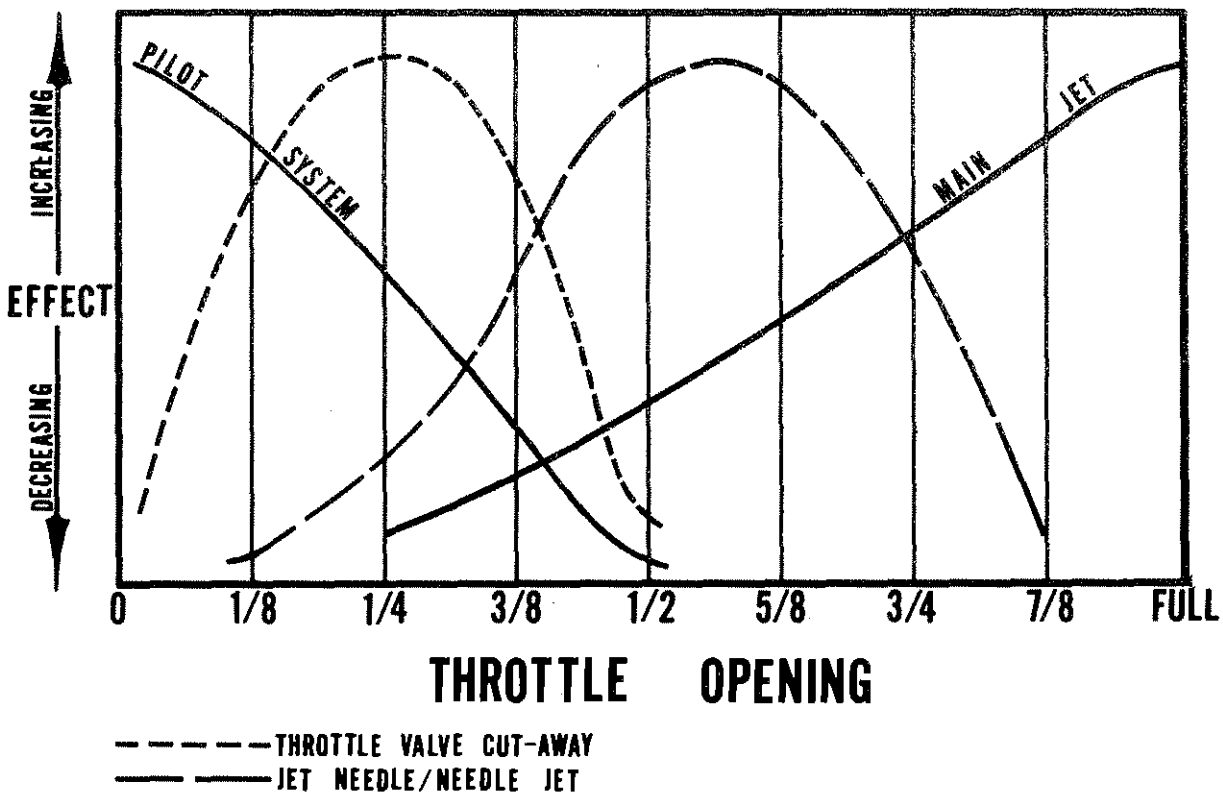
MAIN SYSTEM – No. 4

The main system is designed for delivering fuel between low speed and high speed operation. This system is made up of the jet needle, needle jet, and main jet. The main system begins to take effect as soon as there is enough air flow into the carburetor venturi to draw fuel up through the main jet and needle jet assembly.

During low-speed driving there is very little clearance between the jet needle and the needle jet; therefore, very little fuel from the main jet can pass between the jet needle and the needle jet. As the throttle valve opening is increased, the tapered jet needle is raised farther out of the needle jet, allowing greater fuel flow. Under full throttle opening, the cross-sectioned area of clearance between the jet needle and the needle jet becomes greater than the cross-sectioned area of the main jet. Thus the main jet is now controlling the amount of fuel flow.



Component Effect VS Throttle Opening




The preceding throttle opening chart demonstrates component relationship to fuel flow versus throttle valve opening.

——————————— Pilot System

The pilot system's main function is that of a low speed jet. Its most effective range of fuel delivery is from idle to approximately 3/8 throttle valve opening.

— — — — — — — — Throttle Valve Cutaway

The throttle valve controls the rate of engine air by its movement up and down in the carburetor venturi. At small throttle openings the air flow is regulated chiefly by the valve cutaway as shown, with its greatest effectiveness at 1/4 throttle opening. Throttle valves are number 1.0, 1.5, 2.0, etc., according to the size of the cutaway. Decreasing the cutaway number will increase the amount of fuel delivered in its effective range.

—— —— —— —— Jet Needle/Needle Jet

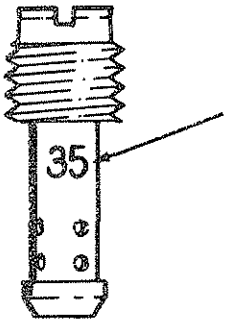
The jet needle and needle jet have an effective operating range from approximately 1/8 to 7/8 throttle opening. The amount of fuel delivered during this range relies upon the jet needle clip position, as well as the needle jet size and other specifications.

——————————— Main Jet

The main jet affects fuel delivery at 1/4 throttle and consistently increases to full throttle opening.

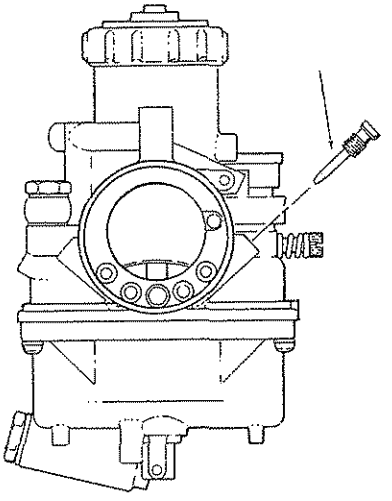
PILOT JET

From idling to low speeds, the fuel supply is measured out chiefly by the pilot jet. In the sides of the pilot jet, there are several air bleed openings which serve the same purpose as the air bleed in the needle jet, that is, to reduce the fuel to mist. The number stamped on the jet is an indication of the amount of fuel in cc's which passes through the jet during a one minute interval under a given set of conditions.




PILOT AIR SCREW

This air screw controls the mixture from idling to low speeds. The tapered tip of the air screw projects into the air passage leading to the pilot jet air bleeds, and by turning the screw in or out, the cross-sectional area of the air passage is varied, in turn varying the pilot jet air supply and changing the mixture ratio.

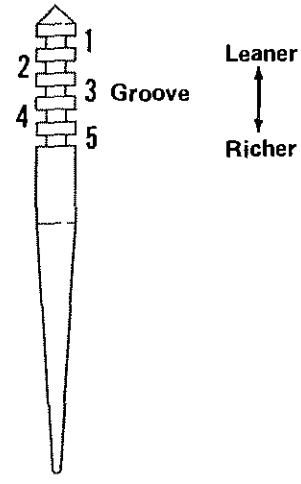


# CARBURETION

## Component Functions

### JET NEEDLE

The jet needle has 5 grooves for adjustment cut in the upper portion, and is tapered from approximately the middle of the needle to the lower end. The top is fixed to the center of the throttle valve by the needle clip, and the tapered end extends into the needle jet. Fuel flows through the space between the needle jet and jet needle, which space is unvarying until the throttle reaches the 1/4 open point. At this time the tapered portion of the needle begins to move out of the jet and affect fuel flow as the opening enlarges. It follows that taper wear, and the position of the needle clip in the grooves also affect fuel flow rate. If the needle clip is changed from the standard position to a lower groove, the needle taper starts coming out of the jet sooner, resulting in a richer mixture; moving the clip higher produces a leaner mixture.

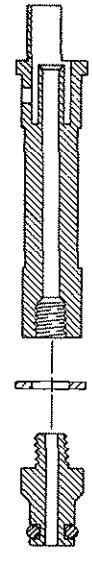



### NEEDLE JET

The needle jet works in conjunction with the jet needle to regulate fuel flow rate.

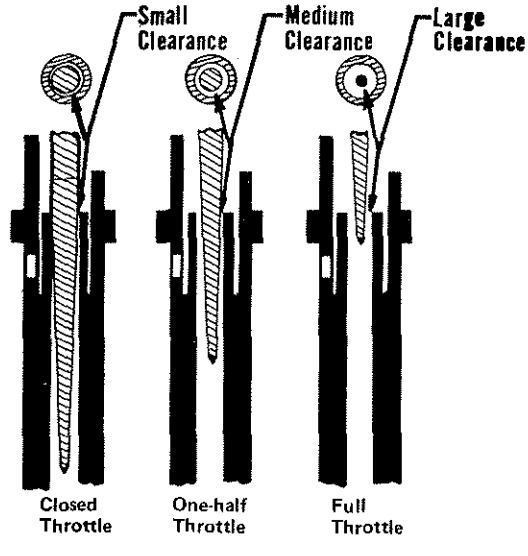
In the side of the needle jet, there is an air bleed opening which brings in air measured by the air jet. This air initiates the mixing and atomizing process inside the needle jet, and mixing is augmented by a projection at the needle jet outlet, called the primary choke.

The letter number code stamped on the jet indicates jet inside diameter.



### THROTTLE OPENING VS FUEL FLOW

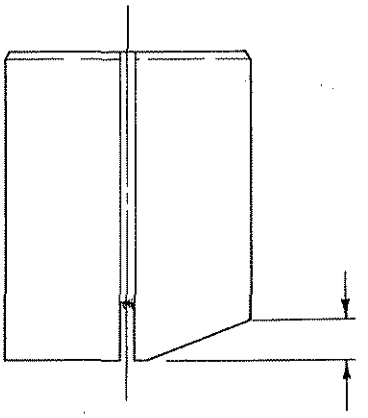
In the full throttle condition, the cross-sectioned area between the jet needle and the needle jet is larger than the cross-sectioned area of the main jet; therefore, the main jet has greater control over fuel flow.

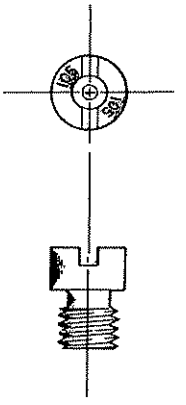


## THROTTLE VALVE

The throttle valve controls the rate of engine air intake by moving up and down inside the main bore. At small throttle openings air flow control is performed chiefly by the cutaway in the valve, and by controlling air flow, the negative pressure over the needle valve is regulated, in turn governing fuel intake.

The throttle valves are numbered 1.0, 1.5, 2.0, etc., according to the size of the cutaway; the higher the number, the leaner the gasoline/air mixture.

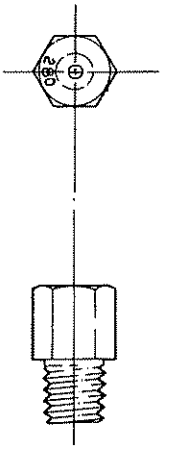




## MAIN JET

When the area between the needle jet and jet needle increases as the throttle opening becomes greater, fuel flow is metered chiefly by the main jet. The number on the jet indicates the approximate amount of fuel in cc's which will pass through it in one minute, with the larger numbers consequently giving a greater flow resulting in a richer mixture.

Main jets are located either in their banjo bolt holders in the carburetor bowl or are screwed directly into the needle jet base.



## CARBURETION

### Jetting Guidelines and Part Numbers

The number of the main jet is stamped on each jet. The jet size is also stamped on the banjo bolt, but NEVER assume that this is correct, always remove the banjo bolt and check the main jet itself.

The original main jet is not necessarily the correct main jet for that particular engine or altitude.

NOTE: Each engine has slightly different characteristics, therefore, two engines of one particular cc may not necessarily be jetted exactly the same.

Pilot jets are instrumental in low RPM performance. If the fuel flow is too great at low RPM, the excess fuel will build up in the crankcase, and only with increased RPM will the fuel be transferred to the combustion chamber.

CAUTION: TOO SMALL A MAIN JET AND TOO SMALL A PILOT JET CAN CAUSE SERIOUS ENGINE DAMAGE. JET THE CARBURETORS CAREFULLY.

IT IS THE DEALER'S RESPONSIBILITY TO INSURE THAT THE CORRECT JETS ARE INSTALLED IN A MACHINE. BE VERY CAREFUL WHEN JETTING DOWN IN WARM WEATHER; AS THE WEATHER TURNS COLDER IT WILL BE NECESSARY TO REJET UPWARD TO PREVENT ENGINE DAMAGE.

The following chart lists all main and pilot jets and the part number of each that are presently available.

| PILOT JET NO. | PART NO. |
|---|---|
| 25 | 3130064 |
| 30 | 3130065 |
| 35 | 3130066 |
| 40 | 3130067 |
| 45 | 3130068 |
| 50 | 3130069 |
| 55 | 3130070 |
| 60 | 3130071 |
| 65 | 3130072 |

| ROUND HEAD MAIN JET NO. | PART NO. |
|---|---|
| 90 | 3130073 |
| 95 | 3130074 |
| 100 | 3130075 |
| 102.5 | 3130076 |
| 105 | 3130077 |
| 107.5 | 3130078 |
| 110 | 3130079 |
| 112.5 | 3130080 |
| 115 | 3130081 |
| 117.5 | 3130082 |
| 120 | 3130083 |
| 122.5 | 3130084 |
| 125 | 3130085 |
| 127.5 | 3130086 |
| 130 | 3130087 |
| 132.5 | 3130088 |
| 135 | 3130089 |
| 137.5 | 3130090 |
| 140 | 3130091 |
| 145 | 3130092 |
| 150 | 3130093 |

| ROUND HEAD MAIN JET NO. | PART NO. |
|---|---|
| 160 | 3130094 |
| 165 | 3130095 |
| 170 | 3130096 |
| 175 | 3130097 |
| 180 | 3130098 |

| HEX HEAD MAIN JET NO. | PART NO. |
|---|---|
| 80 | 3130099 |
| 85 | 3130000 |
| 90 | 3130101 |
| 95 | 3130102 |
| 100 | 3130103 |
| 105 | 3130104 |
| 110 | 3130105 |
| 115 | 3130106 |
| 120 | 3130107 |
| 125 | 3130108 |
| 130 | 3130109 |
| 135 | 3130110 |
| 140 | 3130111 |
| 145 | 3130112 |
| 150 | 3130113 |
| 155 | 3130114 |
| 160 | 3130115 |
| 165 | 3130116 |
| 170 | 3130117 |
| 175 | 3130118 |
| 180 | 3130119 |
| 185 | 3130120 |
| 190 | 3130121 |
| 195 | 3130122 |
| 200 | 3130123 |

| HEX HEAD MAIN JET NO. | PART NO. |
|---|---|
| 210 | 3130124 |
| 220 | 3130125 |
| 230 | 3130126 |
| 240 | 3130127 |
| 250 | 3130128 |
| 260 | 3130129 |
| 270 | 3130130 |
| 280 | 3130131 |
| 290 | 3130132 |
| 300 | 3130133 |
| 310 | 3130134 |
| 320 | 3130135 |
| 330 | 3130136 |
| 340 | 3130137 |
| 350 | 3130138 |
| 360 | 3130139 |
| 380 | 3130140 |
| 400 | 3130141 |
| 420 | 3130142 |
| 430 | 3130143 |
| 440 | 3130144 |
| 450 | 3130145 |
| 460 | 3130146 |
| 470 | 3130147 |
| 490 | 3130148 |
| 500 | 3130149 |
| 530 | 3130150 |
| 560 | 3130151 |
| 590 | 3130152 |
| 620 | 3130153 |

## 1979 Jetting Compensation for Altitude/Temperature

Maximum engine efficiency and horsepower are directly related to proper carburetion settings. The following charts are established as a guideline for selecting optimum jetting at varying temperature and altitude conditions for the 1979 Polaris.

IMPORTANT: The following guidelines must be followed when establishing a main jet setting:

1. Select the lowest anticipated temperature at which the machine will be operated.
2. Determine the lowest approximate altitude at which the machine will be operated.
3. Tracing down and across on the chart, use the intersecting main jet recommendation.

1979

### EC25PS

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 122.5 | 120 | 117.5 | 115 | 112.5 | 110 |
| 3000 | 120 | 117.5 | 115 | 112.5 | 110 | 107.5 |
| 5000 | 115 | 115 | 112.5 | 110 | 107.5 | 105 |
| 7000 | 112.5 | 110 | 110 | 107.5 | 105 | 102.5 |
| 9000 | 110 | 107.5 | 107.5 | 105 | 102.5 | 100 |

Main Jet Number

Production Setting
Main Jet – 117.5
Cut Away – 3.0
Jet Needle – 5DP7–4
Pilot Jet – 35
Air Screw – 1.0 turn

### EC25PM–01

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 130 | 120 | 120 | 120 | 110 | 110 |
| 3000 | 120 | 120 | 110 | 110 | 110 | 100 |
| 5000 | 120 | 110 | 110 | 100 | 100 | 90 |
| 7000 | 110 | 100 | 100 | 100 | 90 | 90 |
| 9000 | 100 | 100 | 90 | 90 | 90 | 80 |

Main Jet Number

Production Setting
Main Jet – 120
Cut Away – 2.5
Jet Needle – 5DP7–2
Pilot Jet – 35
Air Screw – 1.0 turn

### EC34PM–03

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 140 | 140 | 130 | 130 | 120 | 110 |
| 3000 | 130 | 130 | 120 | 120 | 110 | 110 |
| 5000 | 130 | 120 | 120 | 120 | 110 | 100 |
| 7000 | 120 | 120 | 110 | 110 | 100 | 100 |
| 9000 | 110 | 110 | 100 | 100 | 90 | 90 |

Main Jet Number

Production Setting
Main Jet – 130
Cut Away – 2.5
Jet Needle – 5DP7–2
Pilot Jet – 35
Air Screw – 1.0 turn

## 1979 Jetting Compensation for Altitude/Temperature

1979

### EC34PM–04

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 140 | 130 | 120 | 120 | 110 | 110 |
| 3000 | 130 | 120 | 120 | 110 | 110 | 100 |
| 5000 | 120 | 110 | 110 | 110 | 100 | 100 |
| 7000 | 110 | 110 | 100 | 100 | 100 | 90 |
| 9000 | 110 | 100 | 100 | 90 | 90 | 90 |

Main Jet Number

Production Setting
Main Jet – 130 Pilot Jet – 35
Cut Away – 3.0 Air Screw – 1.0 turn
Jet Needle – 5DT49–2*
*Reference Information Bulletin No. I–78–5

### EC44PM–01

Outside Air Temperature ° F

| –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|
| 210 | 200 | 190 | 180 | 180 | 170 |
| 200 | 190 | 180 | 170 | 170 | 160 |
| 190 | 180 | 170 | 160 | 160 | 150 |
| 170 | 170 | 160 | 150 | 150 | 140 |
| 160 | 160 | 150 | 140 | 140 | 130 |

Main Jet Number

Production Setting
Main Jet – 200 Pilot Jet – 35
Cut Away – 2.5 Air Screw – 1.0 turn
Jet Needle – 6DP1–3

### EC25PT–07

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 230 | 220 | 210 | 200 | 190 | 180 |
| 3000 | 220 | 210 | 200 | 190 | 180 | 170 |
| 5000 | 200 | 200 | 190 | 180 | 170 | 160 |
| 7000 | 190 | 180 | 180 | 170 | 160 | 150 |
| 9000 | 180 | 170 | 170 | 160 | 150 | 140 |

Main Jet Number

Production Setting
Main Jet – 220 Pilot Jet – 35
Cut Away – 2.5 Air Screw – 1.0 turn
Jet Needle – 5DP7–3

### EC34PT–05

Outside Air Temperature ° F

| –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|
| 310 | 300 | 290 | 280 | 270 | 260 |
| 300 | 290 | 280 | 270 | 260 | 240 |
| 280 | 270 | 260 | 250 | 240 | 230 |
| 260 | 250 | 240 | 240 | 230 | 220 |
| 250 | 240 | 230 | 220 | 210 | 200 |

Main Jet Number

Production Setting
Main Jet – 290 Pilot Jet – 30
Cut Away – 2.0 Air Screw – 1.0 turn
Jet Needle – 6DH7–2

## 1979 Jetting Compensation for Altitude/Temperature

1979

### EC44PT–05

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 340 | 330 | 320 | 310 | 300 | 280 |
| 3000 | 330 | 310 | 300 | 290 | 280 | 270 |
| 5000 | 310 | 300 | 290 | 280 | 260 | 250 |
| 7000 | 290 | 280 | 270 | 260 | 250 | 240 |
| 9000 | 270 | 260 | 250 | 240 | 230 | 220 |

Main Jet Number

Production Setting
Main Jet – 320
Cut Away – 2.5
Jet Needle – 6DH7–2
Pilot Jet – 30
Air Screw – 1.0 turn

### EC34PL–02

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 280 | 270 | 260 | 250 | 240 | 230 |
| 3000 | 270 | 260 | 250 | 240 | 230 | 220 |
| 5000 | 250 | 240 | 230 | 220 | 220 | 200 |
| 7000 | 240 | 230 | 220 | 210 | 200 | 190 |
| 9000 | 220 | 210 | 200 | 200 | 190 | 180 |

Main Jet Number

Production Setting
Main Jet – 260
Cut Away – 2.5
Jet Needle – 6DH4–3
Pilot Jet – 45
Air Screw – 1.0 turn

### EC51PL–01

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 240 | 230 | 220 | 210 | 210 | 200 |
| 3000 | 220 | 220 | 210 | 200 | 200 | 190 |
| 5000 | 210 | 200 | 200 | 190 | 190 | 180 |
| 7000 | 200 | 190 | 180 | 180 | 180 | 170 |
| 9000 | 190 | 180 | 170 | 170 | 170 | 160 |

Main Jet Number

Production Setting
Main Jet – 220
Cut Away – 3.0
Jet Needle – 6DH7–2
Pilot Jet – 35
Air Screw – 1.5 turn

## 1980 Jetting Compensation for Altitude/Temperature

Maximum engine efficiency and horsepower are directly related to proper carburetion settings. The following charts are established as a guideline for selecting optimum jetting at varying temperature and altitude conditions for the 1980 Polaris.

IMPORTANT: The following guidelines must be followed when establishing a main jet setting:

1. Select the lowest anticipated temperature at which the machine will be operated.
2. Determine the lowest approximate altitude at which the machine will be operated.
3. Tracing down and across on the chart, use the intersecting main jet recommendation.

1980

### EC25PS

Outside Air Temperature ° F

| Altitude – Feet | –30 | –10 | +10 | +30 | +50 |
|---|---|---|---|---|---|
| 1000 | 125 | 120 | 115 | 110 | 105 |
| 3000 | 120 | 115 | 110 | 105 | 100 |
| 5000 | 110 | 105 | 100 | 100 | 95 |
| 7000 | 105 | 100 | 95 | 95 | 90 |
| 9000 | 100 | 95 | 90 | 85 | 85 |

Main Jet Number

Production Setting
Main Jet – 120
Cut Away – 3.0
Jet Needle – 5DT49–2
Pilot Jet – 60
Air Screw – 1.0 turn

### EC25PM–01

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 130 | 120 | 120 | 120 | 110 | 110 |
| 3000 | 120 | 120 | 110 | 110 | 110 | 100 |
| 5000 | 120 | 110 | 110 | 100 | 100 | 90 |
| 7000 | 110 | 100 | 100 | 100 | 90 | 90 |
| 9000 | 100 | 100 | 90 | 90 | 90 | 80 |

Main Jet Number

Production Setting
Main Jet – 120
Cut Away – 2.5
Jet Needle – 5DP7–2
Pilot Jet – 35
Air Screw – 1.0 turn

### EC34PM–03

Outside Air Temperature ° F

| –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|
| 140 | 140 | 130 | 130 | 120 | 110 |
| 130 | 130 | 120 | 120 | 110 | 110 |
| 130 | 120 | 120 | 120 | 110 | 100 |
| 120 | 120 | 110 | 110 | 100 | 100 |
| 110 | 110 | 100 | 100 | 90 | 90 |

Main Jet Number

Production Setting
Main Jet – 130
Cut Away – 2.5
Jet Needle – 5DP7–2
Pilot Jet – 35
Air Screw – 1.0 turn

# 1980 Jetting Compensation for Altitude/Temperature

1980

## EC34PM–04

Outside Air Temperature ° F

| Altitude – Feet | –30 | –10 | +10 | +30 | +50 |
|---|---|---|---|---|---|
| 1000 | 115 | 110 | 105 | 100 | 95 |
| 3000 | 110 | 105 | 100 | 95 | 90 |
| 5000 | 105 | 100 | 95 | 90 | 85 |
| 7000 | 95 | 95 | 90 | 85 | 80 |
| 9000 | 90 | 85 | 85 | 80 | 80 |

Main Jet Number

Production Setting
Main Jet – 110
Cut Away – 3.0
Jet Needle – 5DT49–3
Pilot Jet – 35
Air Screw – 1.0 turn

## EC44PM–01/02

Outside Air Temperature ° F

| –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|
| 210 | 200 | 190 | 180 | 180 | 170 |
| 200 | 190 | 180 | 170 | 170 | 160 |
| 190 | 180 | 170 | 160 | 160 | 150 |
| 170 | 170 | 160 | 150 | 150 | 140 |
| 160 | 160 | 150 | 140 | 140 | 130 |

Main Jet Number

Production Setting
Main Jet – 200
Cut Away – 2.5
Jet Needle – 6DP1–3
Pilot Jet – 35
Air Screw – 1.0 turn

## EC34PT–07

Outside Air Temperature ° F

| Altitude – Feet | –30 | –10 | +10 | +30 | +50 |
|---|---|---|---|---|---|
| 1000 | 290 | 280 | 270 | 260 | 250 |
| 3000 | 280 | 270 | 260 | 250 | 230 |
| 5000 | 260 | 250 | 240 | 230 | 220 |
| 7000 | 250 | 240 | 230 | 220 | 210 |
| 9000 | 230 | 220 | 210 | 200 | 195 |

Main Jet Number

Production Setting
Main Jet – 280
Cut Away – 2.0
Jet Needle – 6DH7–2
Pilot Jet – 30
Air Screw – 1.0 turn

## EC44PT–05

Outside Air Temperature ° F

| –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|
| 340 | 330 | 320 | 310 | 300 | 280 |
| 330 | 310 | 300 | 290 | 280 | 270 |
| 310 | 300 | 290 | 280 | 260 | 250 |
| 290 | 280 | 270 | 260 | 250 | 240 |
| 270 | 260 | 250 | 240 | 230 | 220 |

Main Jet Number

Production Setting
Main Jet – 320
Cut Away – 2.5
Jet Needle – 6DH7–2
Pilot Jet – 30
Air Screw – 1.0 turn

## 1980 Jetting Compensation for Altitude/Temperature

**EC34PL–02/05**

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 280 | 270 | 260 | 250 | 240 | 230 |
| 3000 | 270 | 260 | 250 | 240 | 230 | 220 |
| 5000 | 250 | 240 | 230 | 220 | 220 | 200 |
| 7000 | 240 | 230 | 220 | 210 | 200 | 190 |
| 9000 | 220 | 210 | 200 | 200 | 190 | 180 |

Main Jet Number

Production Setting
Main Jet – 260
Cut Away – 2.5
Jet Needle – 6DH4–3
Pilot Jet – 45
Air Screw – 1.0 turn

**EC51PL–02**

Outside Air Temperature ° F

| –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|
| 240 | 230 | 220 | 210 | 210 | 200 |
| 220 | 220 | 210 | 200 | 200 | 190 |
| 210 | 200 | 200 | 190 | 190 | 180 |
| 200 | 190 | 180 | 180 | 180 | 170 |
| 190 | 180 | 170 | 170 | 170 | 160 |

Main Jet Number

Production Setting
Main Jet – 220
Cut Away – 3.0
Jet Needle – 6DH7–2
Pilot Jet – 35
Air Screw – 1.5 turn

1980

## 1981 Jetting Compensation for Altitude/Temperature

Maximum engine efficiency and horsepower are directly related to proper carburetion settings. The following charts are established as a guideline for selecting optimum jetting at varying temperature and altitude conditions for the 1981 Polaris.

IMPORTANT: The following guidelines must be followed when establishing a main jet setting:

1. Select the lowest anticipated temperature at which the machine will be operated.
2. Determine the lowest approximate altitude at which the machine will be operated.
3. Tracing down and across on the chart, use the intersecting main jet recommendation.

**1981**

### EC25PS

Outside Air Temperature ° F

| Altitude – Feet | –30 | –10 | +10 | +30 | +50 |
|---|---|---|---|---|---|
| 1000 | 125 | 120 | 115 | 110 | 105 |
| 3000 | 120 | 115 | 110 | 105 | 100 |
| 5000 | 110 | 105 | 100 | 100 | 95 |
| 7000 | 105 | 100 | 95 | 95 | 90 |
| 9000 | 100 | 95 | 90 | 85 | 85 |

Main Jet Number

Production Setting
Main Jet – 120
Cut Away – 3.0
Jet Needle – 5DT49–2
Pilot Jet – 60
Air Screw – 1.0 turn

### EC44PM–02

Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 210 | 200 | 190 | 180 | 180 | 170 |
| 3000 | 200 | 190 | 180 | 170 | 170 | 160 |
| 5000 | 190 | 180 | 170 | 160 | 160 | 150 |
| 7000 | 170 | 170 | 160 | 150 | 150 | 140 |
| 9000 | 160 | 160 | 150 | 140 | 140 | 130 |

Main Jet Number

Production Setting
Main Jet – 200
Cut Away – 2.5
Jet Needle – 6DP1–3
Pilot Jet – 35
Air Screw – 1.0 turn

### EC34PM–03

Outside Air Temperature ° F

| –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|
| 135 | 130 | 125 | 120 | 115 | 110 |
| 130 | 125 | 120 | 115 | 110 | 105 |
| 120 | 115 | 110 | 105 | 105 | 100 |
| 115 | 110 | 105 | 100 | 95 | 90 |
| 105 | 105 | 100 | 95 | 90 | 85 |

Main Jet Number

Production Setting
Main Jet – 130
Cut Away – 2.5
Jet Needle – 5DP7–3
Pilot Jet – 30
Air Screw – 1.0 turn

## 1981 Jetting Compensation for Altitude/Temperature

EC44–2PM–3100/3300
Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 310 | 300 | 290 | 280 | 270 | 260 |
| 3000 | 300 | 290 | 280 | 270 | 260 | 240 |
| 5000 | 280 | 270 | 260 | 250 | 240 | 230 |
| 7000 | 260 | 250 | 240 | 240 | 230 | 220 |
| 9000 | 250 | 240 | 230 | 220 | 210 | 200 |

Main Jet Number

Production Setting
Main Jet – 290
Cut Away – 2.0
Jet Needle – 6DH7–3
Pilot Jet – 40
Air Screw – 1.0 turn

EC44–2PM–1100
Outside Air Temperature ° F

| –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|
| 280 | 270 | 260 | 250 | 240 | 230 |
| 270 | 260 | 250 | 240 | 230 | 220 |
| 250 | 240 | 230 | 220 | 220 | 200 |
| 240 | 230 | 220 | 210 | 200 | 190 |
| 220 | 210 | 200 | 200 | 190 | 180 |

Main Jet Number

Production Setting
Main Jet – 270
Cut Away – 3.5
Jet Needle – 6DH7–3
Pilot Jet – 35
Air Screw – 1.0 turn

1981

EC34PL–05
Outside Air Temperature ° F

| Altitude – Feet | –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|---|
| 1000 | 280 | 270 | 260 | 250 | 240 | 230 |
| 3000 | 270 | 260 | 250 | 240 | 230 | 220 |
| 5000 | 250 | 240 | 230 | 220 | 220 | 200 |
| 7000 | 240 | 230 | 220 | 210 | 200 | 190 |
| 9000 | 220 | 210 | 200 | 200 | 190 | 180 |

Main Jet Number

Production Setting
Main Jet – 260
Cut Away – 2.5
Jet Needle – 6DH4–3
Pilot Jet – 45
Air Screw – 1.0 turn

EC51PL–02
Outside Air Temperature ° F

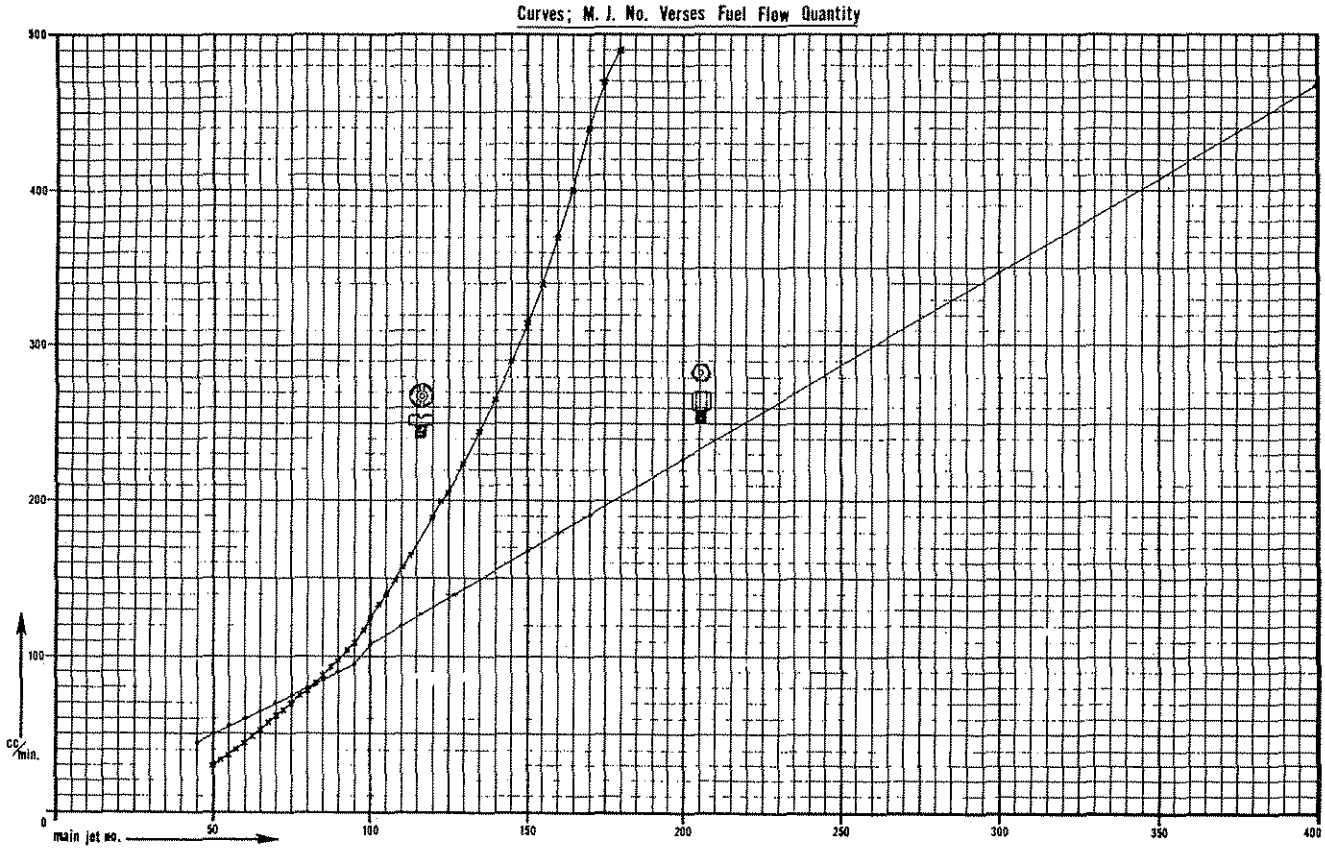
| –40 | –20 | 0 | +20 | +40 | +60 |
|---|---|---|---|---|---|
| 240 | 230 | 220 | 210 | 210 | 200 |
| 220 | 220 | 210 | 200 | 200 | 190 |
| 210 | 200 | 200 | 190 | 190 | 180 |
| 200 | 190 | 180 | 180 | 180 | 170 |
| 190 | 180 | 170 | 170 | 170 | 160 |

Main Jet Number

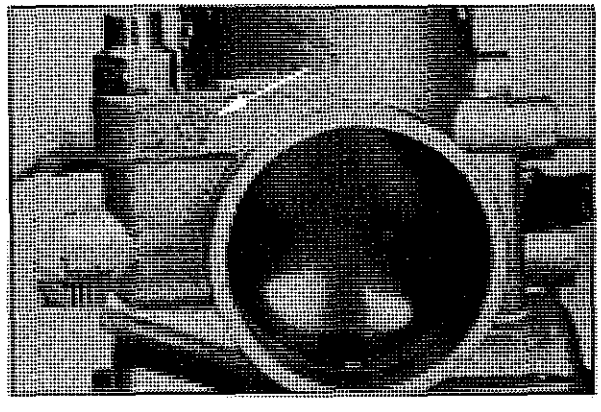
Production Setting
Main Jet – 220
Cut Away – 3.0
Jet Needle – 6DH7–2
Pilot Jet – 35
Air Screw – 1.5 turn

## Main Jet Number VS Fuel Flow and Carburetor Identification

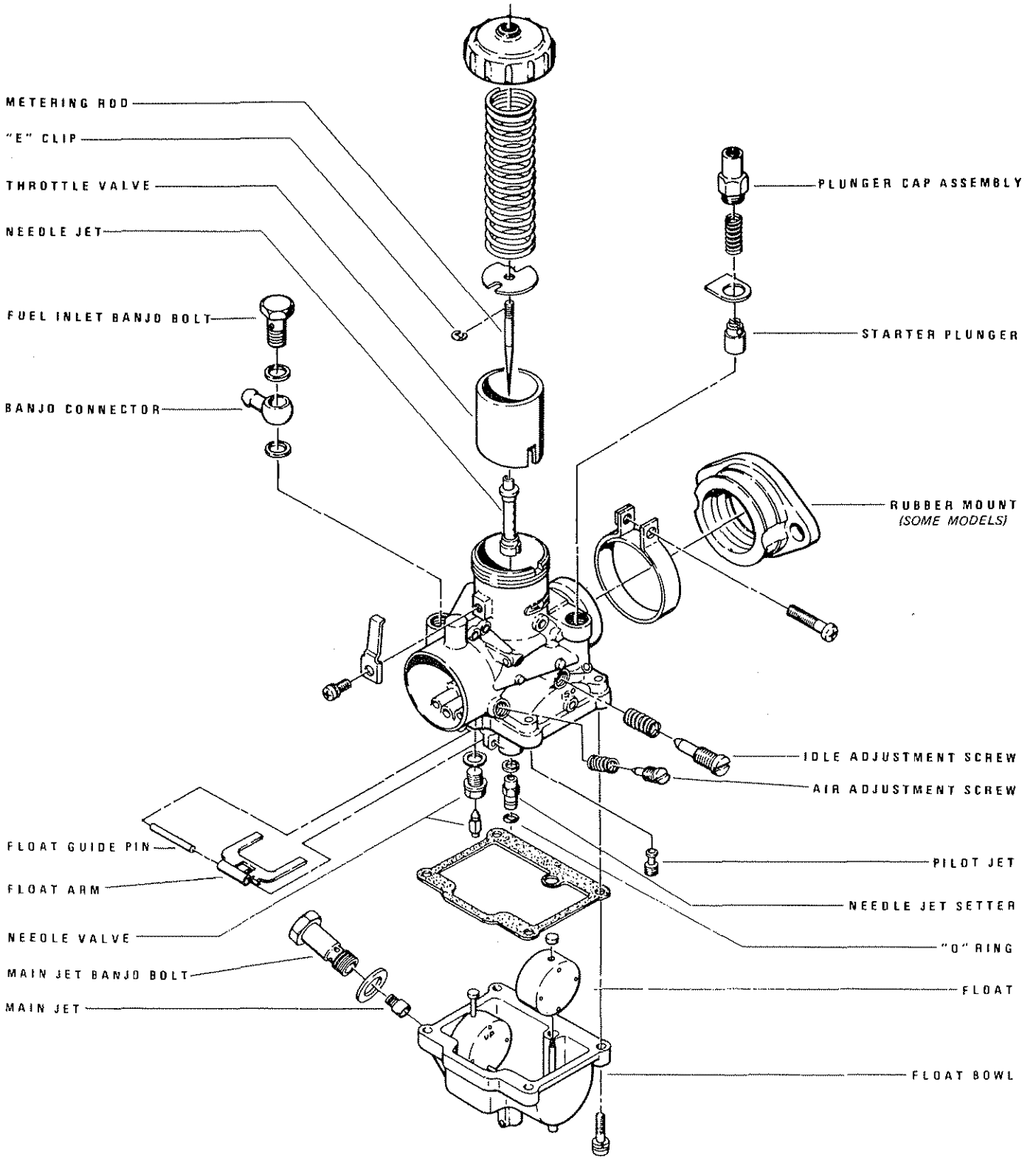
### Main Jet Number VS Fuel Flow




Each Polaris engine has a carburetor that has been calibrated for certain characteristics and model design. The carburetor is stamped with the engine model designation on the carburetor body. Example: EC34PL—02 TX-L engine would have the designation 34L-02. The designation is usually stamped on the front side of the choke housing chamber.



## Exploded View — VM26SS



## JETTING IN ACCORDANCE WITH ALTITUDE

The amount of the incoming air in relation to meteorological conditions. The amount of air drawn into the cylinders is influenced by such factors as the altitude, temperature, humidity, etc. Suppose that the amount of air drawn into the cylinders at an elevation of zero is taken as 100 (the temperature and humidity in this case are considered constant). The amount of air in question decreases in proportion to a rise in elevation as shown in Chart A. Reduction in the amount of air drawn into the cylinders changes the air-fuel mixture ratio, with the result that the power output drops markedly. Chart B shows the relations between a rise in temperature and the amount of air drawn into the cylinders. In this case, the atmospheric pressure (elevation) and the humidity are considered unchanged and the amount of air going into the cylinders at 32 degrees F (0 degrees C) is taken as 100.

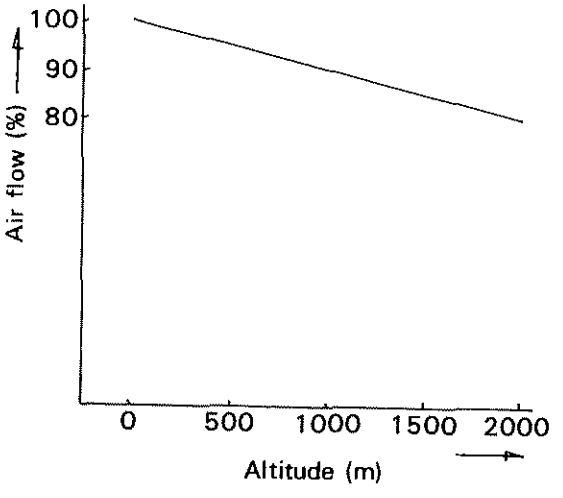



Chart A

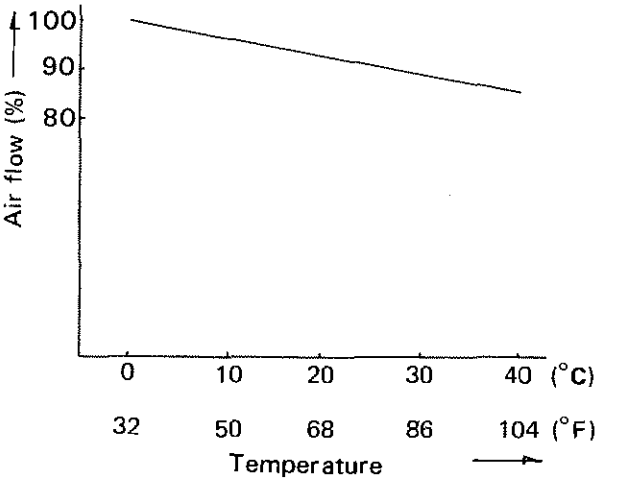



Chart B

On Mikuni VM-type carburetors, the pilot system and the main system are of independent construction. The fuel flow in these two systems is shown on Chart C.

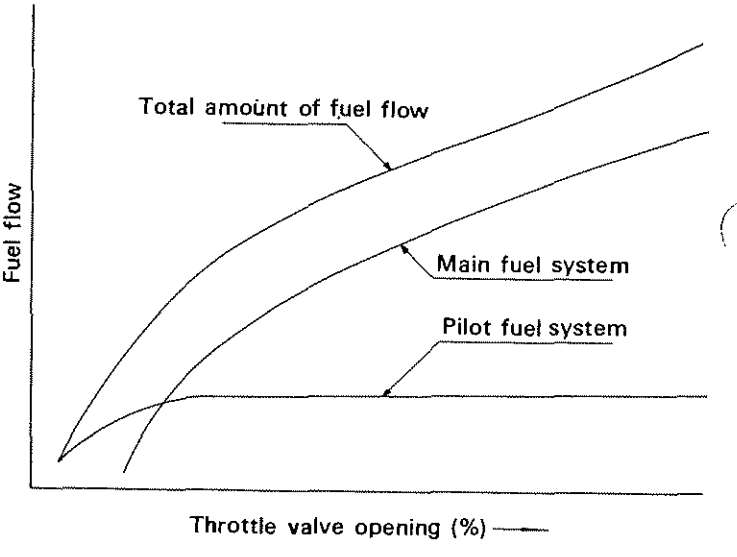



Chart C

When the fuel-air mixture is diagnosed as improper due to spark plug readings, possible correction may result if the carburetor is cleaned and its passages blown clear with compressed air.

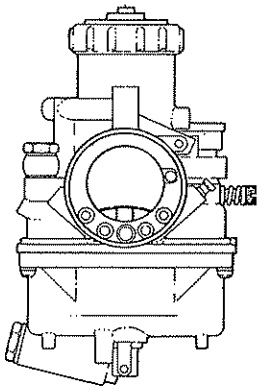
When the problem exists, further determine whether the mixture is too rich or too lean, again using the spark plug firing end condition as a guide.

Next use the throttle lever to determine at what degree of throttle valve opening the problem exists.

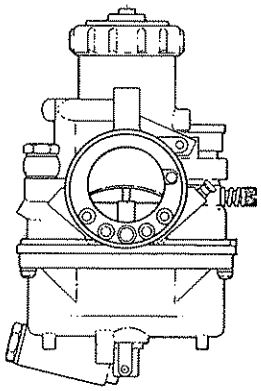
| Mixture Too Rich |
| --- |
| Black spark plug tip<br>Heavy exhaust smoke<br>Engine runs worse after warm-up<br>Runs better without air silencer<br>Combustion chamber has heavy deposits of carbon |

| Mixture Too Lean |
| --- |
| Spark plug electrodes white<br>Fluctuation in engine speed<br>Power loss<br>Engine overheats<br>Cylinder scoring<br>Back firing – detonation<br>Throttle diagnostic opening check points |

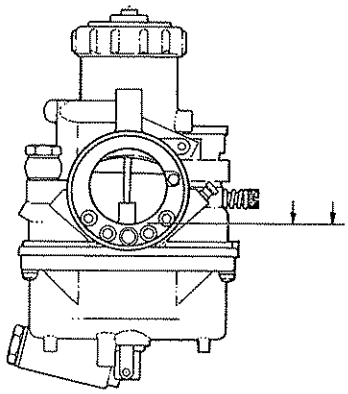
0 – 1/4 THROTTLE
Pilot air screw misadjusted
Pilot jet of wrong size
Obstruction of pilot jet
Pilot jet loose
Choke plunger not seating (rich)
Carburetor mounting air leak (lean)



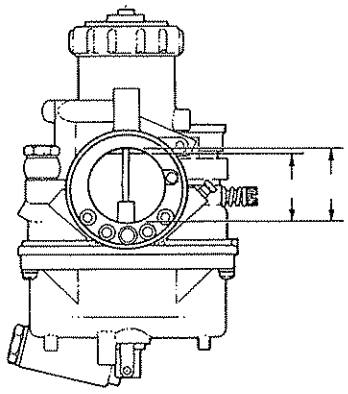
**1/4 – 3/8 THROTTLE**
**Obstruction in main jet or needle jet**
**Jet needle worn or out of adjustment**
**Pilot system malfunction**



**3/8 – 3/4 THROTTLE**
**Main jet incorrect size – clogged**
**Needle jet setter O-ring damaged or loose**

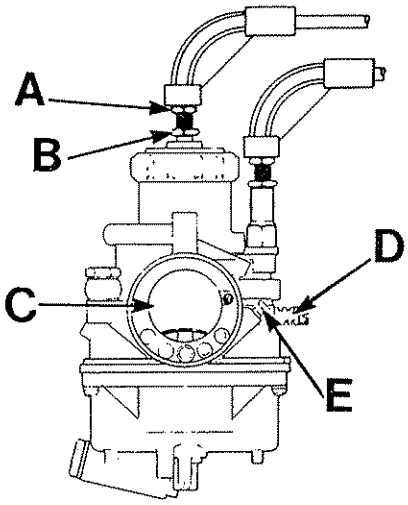


**3/4 – FULL THROTTLE**
**Main jet size – rich or lean**
**Fuel filter blocked – lean**



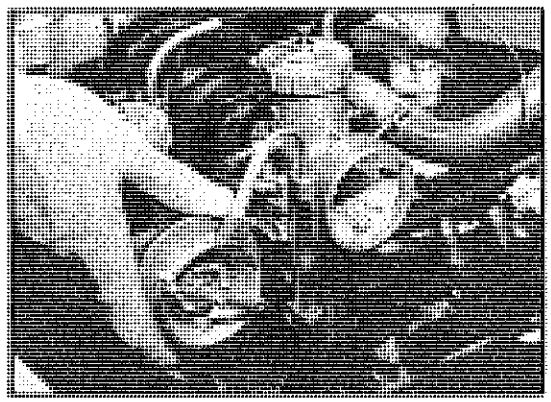
On engines which have more than one carburetor, it is of the utmost importance that carburetor systems be synchronized. The steps listed below should be followed in sequence for best engine performance and throttle response.

1. Machine preparation: Support the rear of the machine off floor. Check drive belt condition and tension – these will have an affect on engine idle RPM.
2. Remove air silencer and back out idle screws until the slide valves (C) are seated in carburetor bore.
3. Loosen cable sleeve jam nuts (B) and adjust cable sleeves (A) until slide valves rise equally or at the same time as throttle control flipper is actuated.
4. Adjust idle screws (D) in until they contact the slide valves and turn in an additional two turns.
5. Adjust pilot air screws (E) to the recommended settings. (Refer to carburetion data.)
6. Start engine and allow it to reach operating temperature.
7. Using a tachometer, adjust idle screws in equal amounts until a desired engine idle RPM is reached.

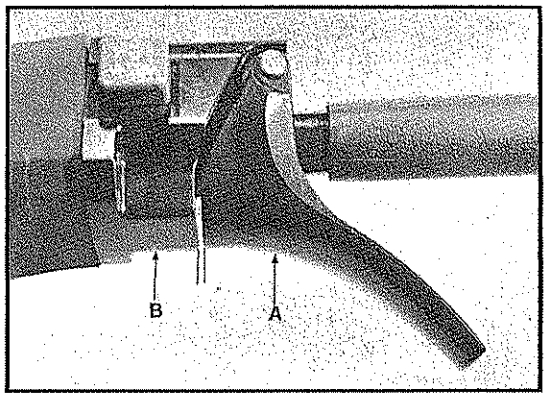



8. With Uni-Syn gauge, move from carb to carb and adjust idle screws until the float rises an equal amount at each carburetor.

   Tips on Uni-Syn operations:
   a. The Uni-Syn gauge as shown must be centered on carburetor air horn.
   b. The gauge sight tube should always be held vertical.
   c. The gauge must be held on each carburetor for short equal periods of time.
   d. Initial Uni-Syn float adjustment is controlled by turning the air flow valve in or out (A). Before adjusting carburetors, Uni-Syn float should be centered in the sight tube.



9. Adjust throttle lever free play. Throttle lever (A) to throttle block (B) clearance should be between .010"–.030". This is most critical on machines equipped with throttle safety switch.
10. Equalize air flow or vacuum at off idle throttle position. Start engine and block throttle to approximately 1,000 RPM above idle RPM. Install and adjust Uni-Syn gauge air flow control valve. Synchronize carburetor slide valves by adjusting cable sleeves. The float should rise an equal amount on all carburetors. Release blocked throttle and shut off engine.




11. Re-check throttle lever free play. If adjustment is required, the cable sleeves must be turned equally to maintain off idle synchronization. Hold cable sleeves and lock jam nuts. Install air silencer.
12. On models with oil-injection, the adjustments on pump lever cable should also be checked and adjusted at this time. Refer to Section V for specific oil pump settings.

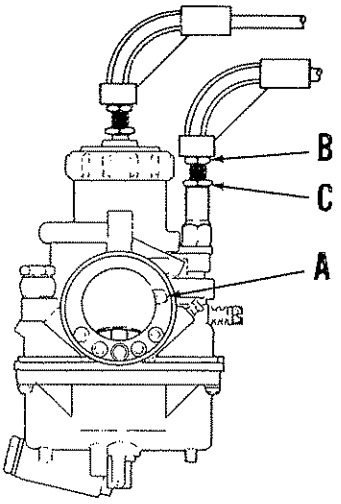
## Adjustments — Choke

Choke adjustment — (To be performed with air silencer removed)

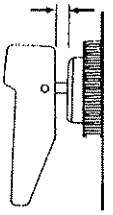
With the dash mounted choke control toggle flipped to full off position, the choke plunger must be seated on fuel passage-way in carburetor. If plunger is not seated on passage-way, the engine will flood or run too rich, causing plug fouling and very poor engine performance.

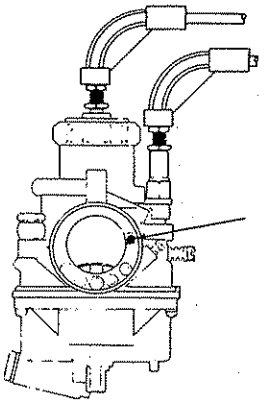
To inspect choke adjustment, flip choke toggle switch to full off position. By using a flashlight and a mirror, a visual inspection can be made to see if the choke plunger is seated properly (all the way down) in the off position.

When the choke toggle is in full open position, the choke plunger should be up just far enough so that the choke passage is fully open. This can be determined by inserting a .150" diameter wire into the choke passage (A). NOTE: This wire must have a rounded polished end to prevent damage to the choke plunger and seat. With a slight inward pressure on the wire, turn the choke cable adjustment nut (B) counterclockwise until the gauge wire slips beneath plunger, then secure the lock nut (C). Proper free play of the choke lever after adjustments should be as shown.

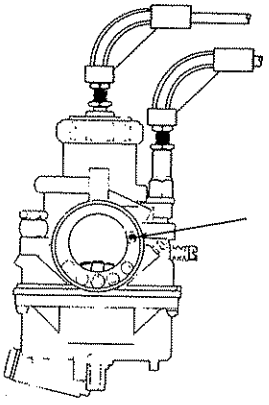



1/8"–1/4" Freeplay

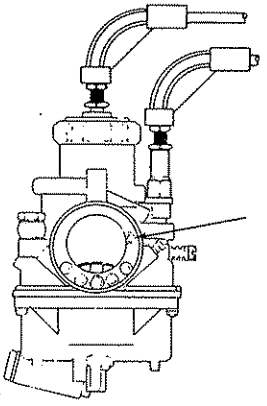




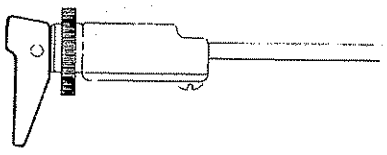
Off

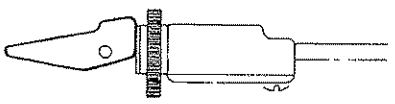


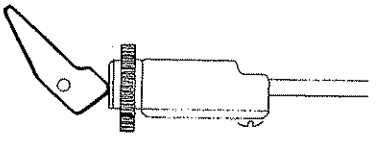
Half-On



Full-On

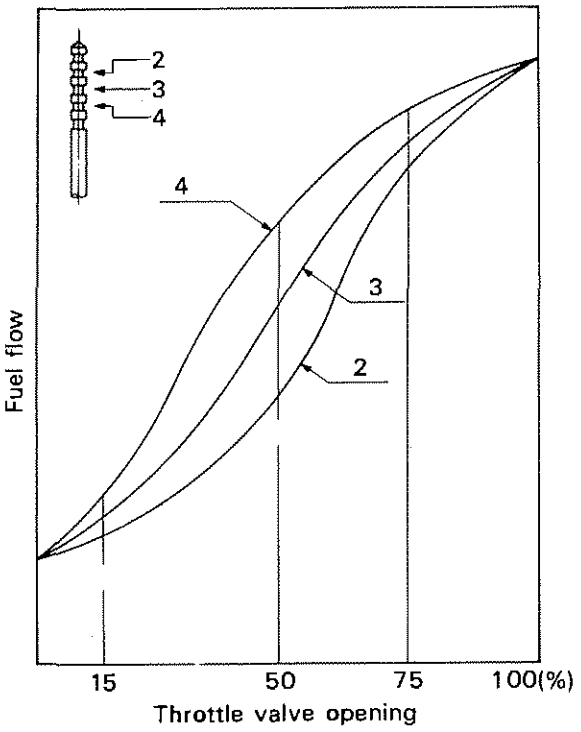






## FINE TUNING THE MIKUNI CARBURETOR

Selection of the Needle Jet and the Jet Needle - A carburetor with a piston-type throttle valve is also called a variable venturi-type carburetor. In this type of carburetor, the needle jet and the jet needle serve to control a proper air-fuel mixture ratio during the so-called medium throttle valve opening (between 1/4 and 3/4 opening). Whether or not the right size of these parts is used gives a big bearing on the engine performance at partial load. The jet needle tapers off at one end and the clearance between the jet needle and the needle jet increases as the throttle valve opening gets wider. The air-fuel mixture ratio is controlled by the height of "E" ring that is inserted into one of the five slots provided in the head of the jet needle. The variation of fuel flow based on the height of "E" ring is shown on chart to the right.




## ADJUSTMENT OF FLOAT LEVEL

To adjust the float level on a Mikuni carburetor, it is necessary to remove the float bowl. With the carburetor in an inverted position the float arm (A) should be parallel with the body (B) on the carburetor as indicated in Figure 1.

NOTE: To adjust the float arm never bend the arm itself, always bend the tang which contacts the inlet needle.

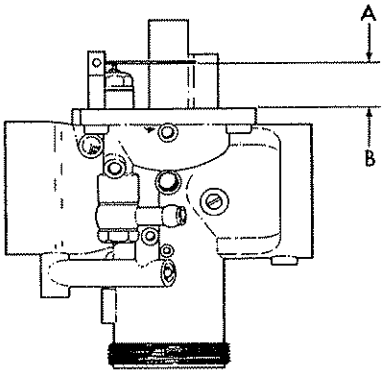


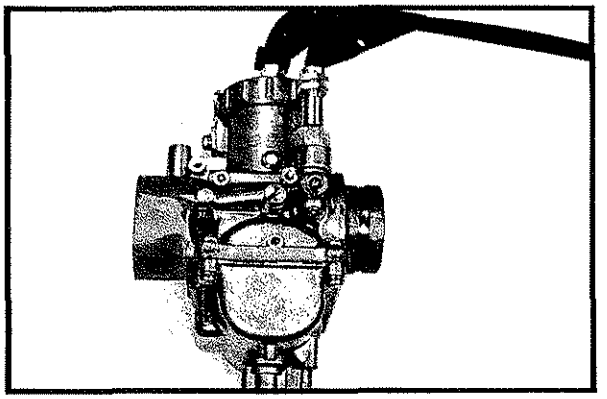

Fig. 1

## CARBURETION

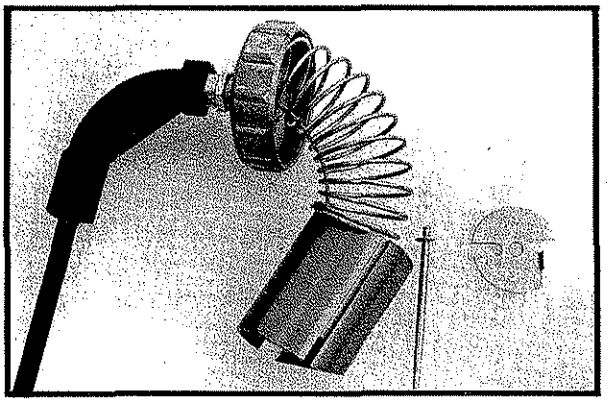
### Overhaul Service

The Mikuni carburetor consists of various precision-machined parts. Therefore, care should be exercised when removing jets or disassembling the carburetor for cleaning. With few mechanical functions in this type carburetor, troubles are mostly due to wear of parts and clogging by dirt. In overhauling the carburetor, use a solvent or gasoline to wash all parts and blow dry using compressed air. Observe the following instructions:

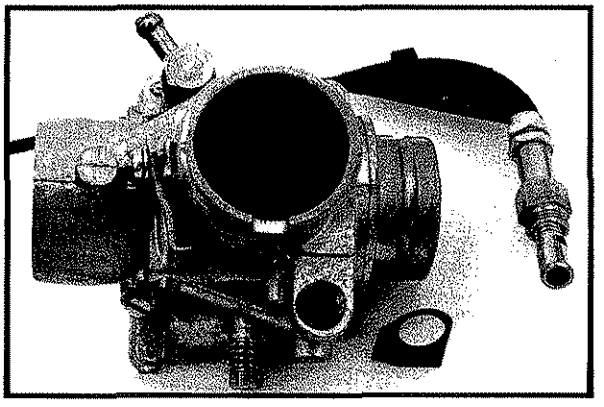
1. Remove the carburetor from the engine. Before disassembling, clean the outside of the carburetor thoroughly with solvent.



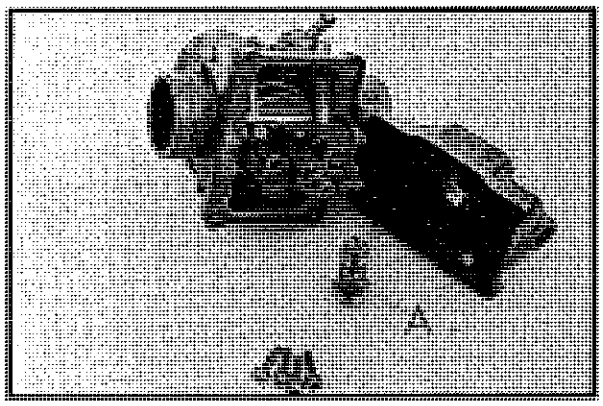
2. Remove the slide valve, inspecting it for nicks or burrs which may cause sticking. Remove the jet needle noting the "E" clip location.



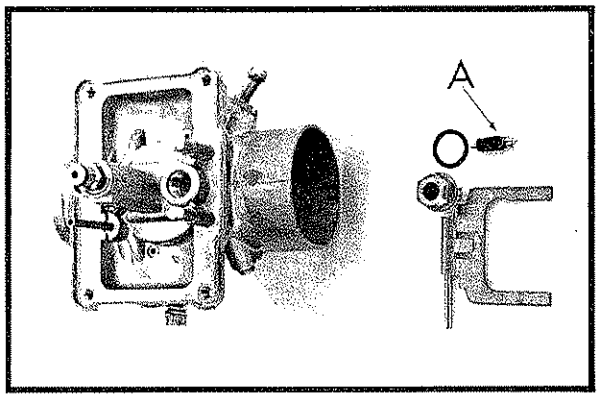
3. Remove the choke plunger, checking the condition of the neoprene seal at its tip. Any nicks or cuts will cause leakage and overfueling of the engine.



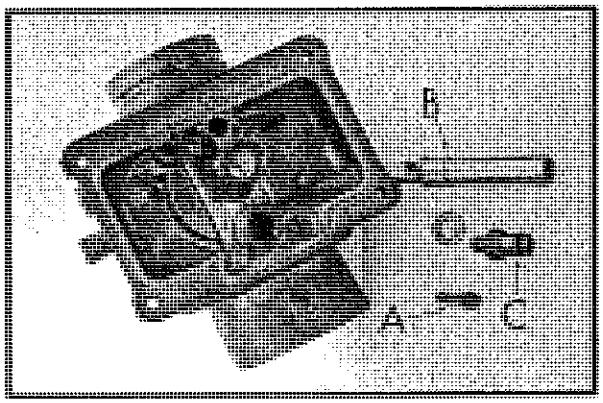
4. Remove the float bowl and main jet banjo bolt (A).




5. Remove the inlet needle and seat assembly inspecting the needle (A) for any wear at its tip.
NOTE: Do not bend the float arm during disassembly.




6. Remove the pilot jet (A) and needle jet (B) by removing the jet setter and pushing the needle jet into the slide valve chamber. Inspect the neoprene "O" ring (C) located on the needle jet setter for nicks or cuts.
Wash all parts in solvent and blow all passages and jets with compressed air. Replace gaskets and parts which show wear or damage.
Reassemble the carburetor, adjusting the float level before installing the float bowl.
NOTE: Refer to page in this section for correct float level adjustment procedures.



## CARBURETION

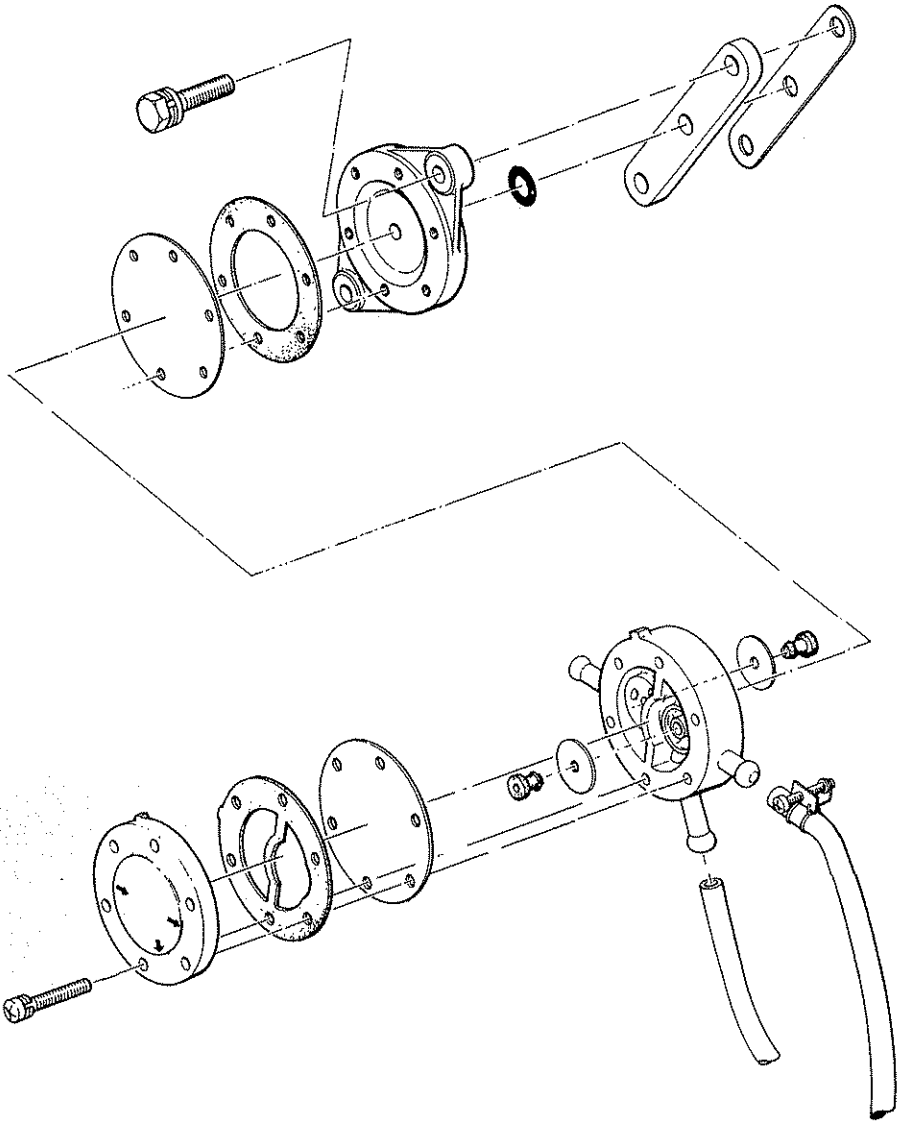
### Fuel Pump

The fuel pumps for all Polaris engines are basically the same. The differences are in the size and location of the pumps. Pumps may be mounted on the crankcase or on the machine using an impulse hose.

In the two cycle engine, the pressure in the crankcase changes with the up and down stroke of the piston. The amplitudes of pressure vary according to the RPM and degree of throttle opening. Whether idling or full throttle, the pressure built up in the crankcase has enough amplitude to operate the pump.

When the piston is on the upstroke, crankcase pressure in that cylinder becomes less positive, the diaphragm in the fuel pump moves toward the engine causing a negative pressure or suction in the pump chamber which causes the inlet valve from the fuel supply to open and permits fuel to enter the chamber; this same suction causes the outlet valve (to the carburetor) to close so fuel cannot return from the carburetor.

When the piston begins its downward stroke, the pressure from the crankcase becomes positive, causing the fuel pump diaphragm to move in the opposite direction, reversing the pressure in the fuel pump chamber. This causes the inlet valve in the pump to close and the outlet valve (to the carburetor) to open, filling the float bowl in the carburetor. When the float level in the carburetor reaches its standard level the needle valve will close, preventing more fuel from entering the carburetor, even though the fuel pump continues to try to provide the carburetor with fuel.



# SECTION VII

# TORQUE–O–MATIC DRIVE

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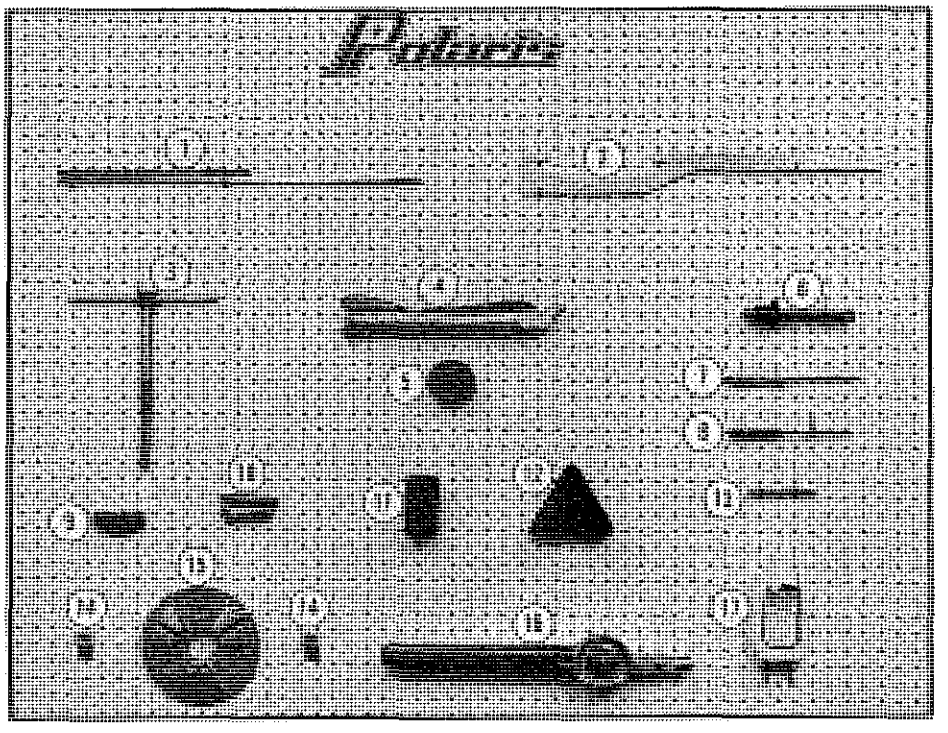
## DRIVE BELT PART NUMBERS

| | | |
|---|---|---|
| 3211007 | — | All Models (Except Voyager) — 1969—1971 |
| 3211003 | — | Voyager Models — 1969—1971 |
| 3211021 | — | Colt, Colt SS, and S/S 340 Models — 1972—1978 |
| | | All Gemini Models |
| 3211044 | — | All Apollo Models |
| | | TX-C Models — 1981 |
| 3211031 | — | Charger, Mustang, and Custom Charger Models — 1972—1973 |
| | | All Custom II Models |
| | | All Electra Models |
| 3211039 | — | All TC Models |
| 3211041 | — | TX Models — 1972—1975 |
| 3211042 | — | TX Models — 1976—1980 |
| | | TX-C Models — 1979—1980 |
| | | All Starfire, TX-L, Centurion, TX-L Indy, Centurion Indy, Cobra, and Galaxy Models |
| 3211043 | — | All Cutlass and Cutlass SS Models |

WARNING: ALL DRIVE CLUTCH MAINTENANCE, DISASSEMBLY AND ASSEMBLY MUST BE PERFORMED ONLY BY AN AUTHORIZED POLARIS DEALER WHO HAS ATTENDED CURRENT MODEL DEALER SERVICE SEMINARS, HAS RECEIVED A CERTIFICATE OF COMPLETION AND DISPLAYS THE POLARIS SERVICING DEALER DECAL IN HIS SHOW WINDOW.

Because of the critical nature and precision balance incorporated into the drive clutch, it is absolutely essential that no attempt at clutch disassembly and/or repair be made without factory authorized tools and service procedures.

DRIVE CLUTCH ESSENTIAL TOOLS



| | | Part Number |
|---|---|---|
| 1. | Offset Alignment Tool – 9/16" | 2870161 |
| 2. | Offset Alignment Tool – 5/8" | 2870426 |
| 3. | "T" Handle Clutch Puller | 2870506 |
| 4. | Strap Wrench | 2870336 |
| 5. | Strap Replacement | 2870389 |
| 6. | Steel Clutch Puller | 2870030 |
| 7. | Snap-On Punch | 2870507 |
| 8. | Clutch Pin Punch | 2870402 |
| 9. | Roller Pin Gauge Block | 2870310 |
| 10. | Aluminum Clutch Puller | 2870130 |
| 11. | Spider Spanner Nut Driver | 2870338 |
| 12. | Spider Torquing Tool | 2870341 |
| 13. | Roller Pin Centering Punch | 2870401 |
| 14. | Holding Fixture Tab | 5130518 |
| 15. | Holding Fixture | 2870461 |
| 16. | 250 ft./lb. Torque Wrench | Not available through Polaris |
| 17. | Clutch Lubricant | 2870510 |

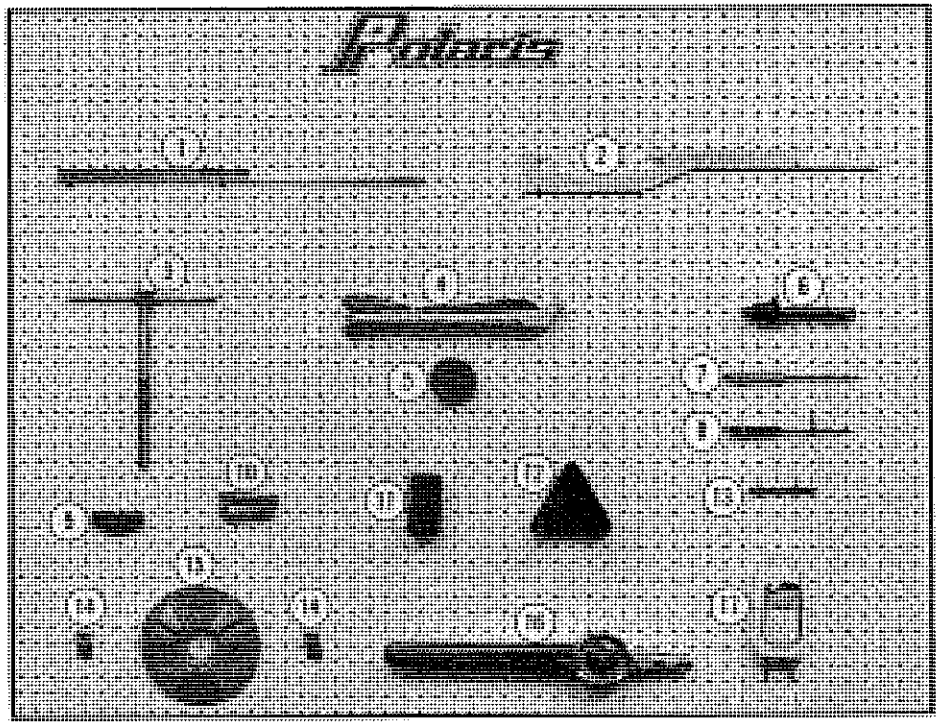
# DRIVE BELT PART NUMBERS

| | | |
|---|---|---|
| 3211007 | — | All Models (Except Voyager) — 1969–1971 |
| 3211003 | — | Voyager Models — 1969–1971 |
| 3211021 | — | Colt, Colt SS, and S/S 340 Models — 1972–1978 |
| | | All Gemini Models |
| 3211044 | — | All Apollo Models |
| | | TX-C Models — 1981 |
| 3211031 | — | Charger, Mustang, and Custom Charger Models — 1972–1973 |
| | | All Custom II Models |
| | | All Electra Models |
| 3211039 | — | All TC Models |
| 3211041 | — | TX Models — 1972–1975 |
| 3211042 | — | TX Models — 1976–1980 |
| | | TX-C Models — 1979–1980 |
| | | All Starfire, TX-L, Centurion, TX-L Indy, Centurion Indy, Cobra, and Galaxy Models |
| 3211043 | — | All Cutlass and Cutlass SS Models |

WARNING: ALL DRIVE CLUTCH MAINTENANCE, DISASSEMBLY AND ASSEMBLY MUST BE PERFORMED ONLY BY AN AUTHORIZED POLARIS DEALER WHO HAS ATTENDED CURRENT MODEL DEALER SERVICE SEMINARS, HAS RECEIVED A CERTIFICATE OF COMPLETION AND DISPLAYS THE POLARIS SERVICING DEALER DECAL IN HIS SHOW WINDOW.

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| 2. | Offset Alignment Tool – 5/8" | 2870426 |
| 3. | "T" Handle Clutch Puller | 2870506 |
| 4. | Strap Wrench | 2870336 |
| 5. | Strap Replacement | 2870389 |
| 6. | Steel Clutch Puller | 2870030 |
| 7. | Snap-On Punch | 2870507 |
| 8. | Clutch Pin Punch | 2870402 |
| 9. | Roller Pin Gauge Block | 2870310 |
| 10. | Aluminum Clutch Puller | 2870130 |
| 11. | Spider Spanner Nut Driver | 2870338 |
| 12. | Spider Torquing Tool | 2870341 |
| 13. | Roller Pin Centering Punch | 2870401 |
| 14. | Holding Fixture Tab | 5130518 |
| 15. | Holding Fixture | 2870461 |
| 16. | 250 ft./lb. Torque Wrench | Not available through Polaris |
| 17. | Clutch Lubricant | 2870510 |

## Data

### 1972

| Engine | Clutch Part Number | Weight Letter | Weight Grams | Spring Number | Spring Color | Wire Diameter |
|---|---|---|---|---|---|---|
| Stock: | | | | | | |
| 175 | 1321160 | A | 47.5 | 7041021 | Plain | .157 |
| 244 | 1321186 | A | 47.5 | 7041021 | Plain | .157 |
| 294 | 1321159 | B | 43 | 7041021 | Plain | .157 |
| 335 S | 1321159 | B | 43 | 7041021 | Plain | .157 |
| 335 TX | 1321187 | B/Mod | | 7041022 | Black | .140 |
| 398 | 1321178 | B | 43 | 7041017 | Red | .125 |
| 432 S | 1321178 | B | 43 | 7041017 | Red | .125 |
| 502 TX | 1321178 | B | 43 | 7041017 | Red | .125 |
| 530 | 1321178 | B | 43 | 7041017 | Red | .125 |
| 530 SS | 1321204 | A | 47.5 | 7041017 | Red | .125 |
| Racer: | | | | | | |
| 294 | 1322066 | L | 34.5 | 7041036 | Pink | .170 |
| 340 | 1322066 | L | 34.5 | 7041036 | Pink | .170 |
| 398 | 1322065 | K | 40 | 7041037 | Yellow | .192 |
| 440 | 1322065 | K | 40 | 7041037 | Yellow | .192 |
| 650 | 1322064 | J | 44 | 7041036 | Pink | .170 |
| 795 | 1322063 | H | 50 | 7041036 | Pink | .170 |

### 1973

| Model | Engine | Clutch Part Number | Weight Letter | Weight Grams | Spring Number | Spring Color | Wire Diameter |
|---|---|---|---|---|---|---|---|
| Colt | 175 | 1321205 | A | 47.5 | 7041022 | Black | .140 |
| | 250 | 1321187 | B/Mod G | 41-42 | 7041022 | Black | .140 |
| | 294 | 1321159 | B | 43 | 7041021 | Clear | .157 |
| | 340 | 1321159 | B | 43 | 7041021 | Clear | .157 |
| Charger (Custom) | 294 | 1321159 | B | 43 | 7041021 | Clear | .157 |
| | 398 | 1321206 | A | 47.5 | 7041022 | Black | .140 |
| | 530 | 1321207 | O/new hvy. | 50 & 51 | 7041022 | Black | .140 |
| Mustang | 398 | 1321206 | A | 47.5 | 7041022 | Black | .140 |
| | 530 | 1321207 | O/new hvy. | 50 & 51 | 7041022 | Black | .140 |
| TX | 294 | 1321187 | B/Mod G | 41-42 | 7041022 | Black | .140 |
| | 340 | 1321187 | B/Mod G | 41-42 | 7041022 | Black | .140 |
| | 398 | 1321209 | B | 43 | 7041022 | Black | .140 |
| | 440 | 1321159 | B | 43 | 7041021 | Clear | .157 |
| | 502 | 1321209 | B | 43 | 7041022 | Black | .140 |

### 1974

| Model | Engine | Sprocket Ratio | Chain Pitch | Center Distance | Clutch Part No. | Weight Letter | Weight Grams | Spring Number | Spring Color & Wire Diameter |
|---|---|---|---|---|---|---|---|---|---|
| Colt | EC17PM | 12/35 | 84 | 11.1 | 1321229 | A | 47-48 | 7041022 | Black/.140 |
| | EC25PS | 13/35 | 84 | 11.1 | 1321230 | G | 41-42 | 7041022 | Black /.140 |
| | EC29PF | 13/35 | 84 | 11.1 | 1321231 | B | 42.5-43.5 | 7041021 | Clear/.157 |
| Colt SS | EC25PC | 13/35 | 84 | 11.1 | 1321247 | G | 41-42 | 7041021 | Clear/.157 |
| | EC29PF | 13/35 | 84 | 11.1 | 1321231 | B | 42.5-43.5 | 7041021 | Clear/.157 |
| | EC34PC | 13/35 | 86 | 11.1 | 1321231 | B | 42.5-43.5 | 7041021 | Clear/.157 |
| Electra | EC34PQ | 15/39 | 90 | 12.15 | 1321242 | B | 42.5-43.5 | 7041022 | Black/.140 |
| | EC44PQ | 15/39 | 90 | 12.15 | 1321238 | A | 47-48 | 7041022 | Black/.140 |
| Custom | EC25PS | 13/39 | 90 | 12.15 | 1321230 | G | 41-42 | 7041022 | Black/.140 |
| | EC40PM | 15/39 | 90 | 12.15 | 1321238 | A | 47-48 | 7041022 | Black/.140 |
| | EC54PM | 17/39 | 92 | 12.15 | 1321239 | O | 50-51 | 7041022 | Black/.140 |
| TX | EC25PT | 13/39 | 90 | 13 | 1321247 | G | 41-42 | 7041021 | Clear/.157 |
| | EC34PS | 15/39 | 90 | 13 | 1321247 | G | 41-42 | 7041021 | Clear/.157 |
| | EC44PT | 17/39 | 92 | 13 | 1321231 | B | 42.5-43.5 | 7041021 | Clear/.157 |
| | EC51PT | 19/39 | 92 | 13 | 1321231 | B | 42.5-43.5 | 7041021 | Clear/.157 |

## 1975

| Model | Engine | Sprocket Ratio | Chain Pitch | Center Distance | Clutch Part No. | Weight Letter | Weight Grams | Spring Part No. | Spring Color & Wire Diameter |
|---|---|---|---|---|---|---|---|---|---|
| Colt & | EC25PC | 15 - 35 | 86 | 11.1 | 1321260 | U | 33.5-34.5 | 7041021 | Clear / .157 |
| Colt SS | EC34PC | 15 - 35 | 86 | 11.1 | 1321261 | W | 37 - 38 | 7041021 | Clear / .157 |
| Electra | EC25PS | 13 - 39 | 90 | 12.1 | 1321231 | B | 43 | 7041021 | Clear / .157 |
| Electra | EC34PQ | 15 - 39 | 90 | 12.1 | 1321231 | B | 43 | 7041021 | Clear / .157 |
| Electra | EC44PQ | 17 - 39 | 92 | 12.1 | 1321231 | B | 43 | 7041021 | Clear / .157 |
| TC | EC17PM | 14 - 39 | 82 | 9.5 | 1321229 | A | 47.5 | 7041022 | Black / .140 |
| TC | EC25PS | 14 - 39 | 82 | 9.5 | 1321231 | B | 43 | 7041021 | Clear / .157 |
| TX | EC25PT | 13 - 39 | 90 | 13 | 1321260 | U | 33.5-34.5 | 7041021 | Clear / .157 |
| TX | EC34PT | 15 - 39 | 90 | 13 | 1321261 | W | 37 - 38 | 7041021 | Clear / .157 |
| TX | EC44PT | 17 - 39 | 92 | 13 | 1321289 | G (B Mod.) | 39.5-40.5 | 7041021 | Purple / .168 |
| TX | EC51PT | 19 - 39 | 92 | 13 | 1321231 | B | 43 | 7041021 | Clear / .157 |

## 1976

| MODEL | ENGINE | SPROCKET RATIO | CHAIN PITCH | CENTER DISTANCE | CLUTCH PART NO. | WEIGHT LETTER | WEIGHT GRAMS | SPRING PART NO. | SPRING COLOR & WIRE DIAMETER |
|---|---|---|---|---|---|---|---|---|---|
| Colt 175cc | EC17PM | 12 - 35 | 84 | 11.1 | 1321229 | A | 47.5 | 7041022 | Black/.140 |
| Colt 244cc | EC25PS | 13 - 35 | 84 | 11.1 | 1321230 | G | 41 - 42 | 7041022 | Black/.140 |
| Colt 250cc | EC25PC | 15 - 35 | 86 | 11.1 | 1321260 | U | 34 | 7041021 | Clear/.157 |
| Colt 340cc | EC34PC | 15 - 35 | 86 | 11.1 | 1321261 | W | 37.5 | 7041021 | Clear/.157 |
| Electra 244cc | EC25PS | 13 - 39 | 90 | 12.1 | 1321231 | B | 43 | 7041021 | Clear/.157 |
| Electra 339cc | EC34PQ | 15 - 39 | 90 | 12.1 | 1321231 | B | 43 | 7041021 | Clear/.157 |
| Electra 433cc | EC44PQ | 17 - 39 | 92 | 12.1 | 1321231 | B | 43 | 7041021 | Clear/.157 |
| TX 250cc | EC25PT—06 | 14 - 39 | 64 | 12.0 | 1321272 | G | 41 - 42 | 7041060 | Orange/.196 |
| TX 336cc | EC34PT—05 | 17 - 39 | 66 | 12.0 | 1321273 | A | 47.5 | 7041061 | Brown/.200 |
| TX 433cc | EC44PT—05 | 19 - 39 | 66 | 12.0 | 1321274 | A | 47.5 | 7041063 | Purple/.168 |
| Starfire 250cc | EC25PT—05 | 14 - 39 | 64 | 12.0 | 1321275 | W | 37.5 | 7041062 | Silver/.218 |
| Starfire 336cc | EC34PT—06 | 15 - 39 | 64 | 12.0 | 1321276 | Y | 35 | 7041061 | Brown/.200 |

## TORQUE—O—MATIC DRIVE

### Data

| MACHINE MODEL | ENGINE MODEL | SPROCKET RATIO | CHAIN PITCH/TYPE | CENTER DISTANCE | | CLUTCH PART NO. | WEIGHT LETTER | WEIGHT GRAMS | SPRING PART NO. | SPRING COLOR & WIRE DIAMETER |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MM | Inches | | | | | |
| Colt 244 | EC25PS | 13/35 | 84/35—2 | 281.94 | 11.1 | 1321312 | G | 41.5 | 7041063 | Purple/.168 |
| Colt 250 | EC25PC | 15/35 | 86/35—2 | 281.94 | 11.1 | 1321305 | W | 37.5 | 7041063 | Purple/.168 |
| Colt SS 250 | EC25PM—01 | 15/35 | 86/35—2 | 281.94 | 11.1 | 1321298 | G | 41.5 | 7041060 | Orange/.196 |
| Electra 250 | EC25PS | 13/39 | 90/35—2 | 308.61 | 12.15 | 1321311 | B | 43 | 7041063 | Purple/.168 |
| TX 250 | EC25PT—07 | 15/39 | 64/Silent | 304.8 | 12.0 | 1321306 | W | 37.5 | 7041062 | Silver/.208 |
| Colt SS 340 | EC34PM—03 | 17/35 | 86/35—2 | 281.94 | 11.1 | 1321299 | A | 47.5 | 7041060 | Orange/.196 |
| Electra 340 | EC34PQ | 15/39 | 90/35—2 | 308.61 | 12.15 | 1321311 | B | 43 | 7041063 | Purple/.168 |
| TX 340 | EC34PT—05 | 17/39 | 66/Silent | 304.8 | 12.0 | 1321307 | B | 43 | 7041065 | Pink/.177 |
| TXL 340 | EC34PL—01 | 19/39 | 66/Silent | 304.8 | 12.0 | 1321313 | G | 41.5 | 7041065 | Pink/.177 |
| Electra 440 | EC44PQ | 17/39 | 92/35—2 | 308.61 | 12.15 | 1321311 | B | 43 | 7041063 | Purple/.168 |
| TX 440 | EC44PT—05/06 | 19/39 | 66/Silent | 304.8 | 12.0 | 1321308 | A | 47.5 | 7041060 | Orange/.196 |

1977

### HIGH ELEVATION MODIFICATIONS

**The following are weight and spring combinations for elevations above 6,500 feet.**

| MACHINE MODEL | ENGINE MODEL | DRIVE CLUTCH | | | |
|---|---|---|---|---|---|
| | | WEIGHT | WEIGHT KIT PN | SPRING | SPRING PN |
| Colt 244 | EC25PS | G | 2200119 | Orange | 7041060 |
| Colt 250 | EC25PC | W | 2200108 | Purple | 7041063 |
| Colt SS 250 | EC25PM—01 | G | 2200119 | Silver | 7041062 |
| Electra 250 | EC25PS | B | 2200106 | Orange | 7041060 |
| TX 250 | EC25PT—07 | U | 2200107 | Orange | 7041060 |
| Colt SS 340 | EC34PM—03 | B | 2200106 | Orange | 7041060 |
| Electra 340 | EC34PQ | B | 2200106 | Orange | 7041060 |
| TX 340 | EC34PT—05 | G | 2200119 | Pink | 7041065 |
| TXL 340 | EC34PL—01 | W | 2200108 | Pink | 7041065 |
| Electra 440 | EC44PQ | B | 2200106 | Orange | 7041060 |
| TX 440 | EC44PT—05/06 | B | 2200106 | Purple | 7041063 |

**NOTE: 6,500 feet is normally the height at which the low altitude to high altitude or the high altitude to low altitude clutch change is made. However, variations in snow conditions, ambient temperature, driver weight, individual machine performance, etc., may make it desirable to change clutching at a slightly lower or higher altitude than 6,500 feet.**

| MACHINE MODEL | ENGINE MODEL | SPROCKET RATIO | CHAIN PITCH/TYPE | CENTER DISTANCE MM | CENTER DISTANCE Inches | CLUTCH PART NO. | WEIGHT LETTER | WEIGHT GRAMS | SPRING PART NO. | SPRING COLOR & WIRE DIAMETER |
|---|---|---|---|---|---|---|---|---|---|---|
| Colt 244 | EC25PS | 13/35 | 84/35—2 | 281.94 | 11.1 | 1321312 | G | 41.5 | 7041063 | Purple/.168 |
| Colt 250 | EC25PC | 15/35 | 86/Silent | 281.94 | 11.1 | 1321305 | W | 37.5 | 7041063 | Purple/.168 |
| TX 250 | EC25PT—07 | 15/39 | 64/Silent | 304.8 | 12.0 | 1321306 | W | 37.5 | 7041062 | Silver/.208 |
| S/S 340 | EC34PM—03/04N | 17/35 | 86/Silent | 281.94 | 11.1 | 1321299 | A | 47.5 | 7041060 | Orange/.196 |
| Cobra 340 | EC34PM—04 | 15/35 | 88/Silent | 304.8 | 12.0 | 1321318 | A | 47.5 | 7041063 | Purple/.168 |
| TX 340 | EC34PT—05 | 17/39 | 66/Silent | 304.8 | 12.0 | 1321307 | B | 43 | 7041065 | Pink/.177 |
| TX-L 340 | EC34PL—02 | 19/39 | 66/Silent | 304.8 | 12.0 | 1321313 | G | 41.5 | 7041083 | Red/.192 |
| Cobra 440 | EC44PM—01 | 17/33 | 88/Silent | 304.8 | 12.0 | 1321316 | ◎ | 53 | 7041022 | Black/.140 |
| TX 440 | EC44PT—05 | 19/39 | 66/Silent | 304.8 | 12.0 | 1321308 | A | 47.5 | 7041060 | Orange/.196 |

1978

## HIGH ELEVATION MODIFICATIONS

**The following are weight and spring combinations for elevations above 6,500 feet.**

| MACHINE MODEL | ENGINE MODEL | DRIVE CLUTCH | | | |
|---|---|---|---|---|---|
| | | WEIGHT | WEIGHT KIT PN | SPRING | SPRING PN |
| Colt 244 | EC25PS | G | 2200119 | Orange | 7041060 |
| Colt 250 | EC25PC | G | 2200119 | Silver | 7041062 |
| TX 250 | EC25PT—07 | U | 2200107 | Pink | 7041065 |
| S/S 340 | EC34PM—03/04N | B | 2200106 | Orange | 7041060 |
| Cobra 340 | EC34PM—04 | A | 2200105 | Silver | 7041062 |
| TX 340 | EC34PT—05 | G | 2200119 | Red | 7041083 |
| TX-L 340 | EC34PL—02 | W | 2200108 | Red | 7041083 |
| Cobra 440 | EC44PM—01 | ◎ | 2200162 | Purple | 7041063 |
| TX 440 | EC44PT—05 | A | 2200105 | Orange | 7041060 |

**NOTE: 6,500 feet is normally the height at which the low altitude to high altitude or the high altitude to low altitude clutch change is made. However, variations in snow conditions, ambient temperature, driver weight, individual machine performance, etc., may make it desirable to change clutching at a slightly lowar or higher altitude than 6,500 feet.**

| MACHINE MODEL | ENGINE MODEL | SPROCKET RATIO | CHAIN PITCH/TYPE | CENTER DISTANCE MM | CENTER DISTANCE Inches | CLUTCH PART NO. | WEIGHT LETTER | WEIGHT GRAMS | SPRING PART NO. | SPRING COLOR & WIRE DIAMETER |
|---|---|---|---|---|---|---|---|---|---|---|
| Gemini 244 | EC25PS | 13/35 | 84/35—2 | 281.94 | 11.1 | 1321312 | G (B Mod.) | 41.5 | 7041063 | Purple/.168 |
| Gemini 250 | EC25PM—01 | 15/35 | 86/Silent | 281.94 | 11.1 | 1321298 | G (B Mod.) | 41.5 | 7041060 | Orange/.196 |
| Apollo 340 | EC34PM—03 | 18/35 | 88/Silent | 281.94 | 11.1 | 1321299 | A | 47.5 | 7041060 | Orange/.196 |
| Cobra 340 | EC34PM—04 | 15/35 | 88/Silent | 304.8 | 12.0 | 1321318 | A | 47.5 | 7041063 | Purple/.168 |
| Cobra 440 | EC44PM—01 | 17/33 | 88/Silent | 304.8 | 12.0 | 1321316 | ◎ | 53 | 7041022 | Black/.140 |
| TX 250 | EC25PT—07 | 15/39 | 64 Silent | 304.8 | 12.0 | 1321306 | W | 37.5 | 7041062 | Silver/.208 |
| TX 340 | EC34PT—05 | 17/39 | 66/Silent | 304.8 | 12.0 | 1321324 | B | 43 | 7041102 | Yellow/.192 |
| TX 440 | EC44PT—05 | 19/39 | 66/Silent | 304.8 | 12.0 | 1321325 | A/P | 47.5 | 7041102 | Yellow/.192 |
| TX-L 340 | EC34PL—02 | 19/39 | 66/Silent | 304.8 | 12.0 | 1321327 | B | 43 | 7041062 | Silver/.208 |
| Centurion | EC51PL—01 | 19/35 | 64/Silent | 304.8 | 12.0 | 1321328 | A | 47.5 | 7041083 | Red/.192 |

1979

⚠CAUTION: 1979 Apollo models beginning with serial number 0503733 are equipped with drive belt part number 3211044. Due to belt construction and length, it is important not to use substitutes. Failure to comply can result in drive system damage. Correct converter center distance for this belt is 11".

## HIGH ELEVATION MODIFICATIONS

The following are weight and spring combinations for elevations above 6,500 feet.

| MACHINE MODEL | ENGINE MODEL | DRIVE CLUTCH | | | |
|---|---|---|---|---|---|
| | | WEIGHT | WEIGHT KIT PN | SPRING | SPRING PN |
| Gemini 244 | EC25PS | G | 2200119 | Orange | 7041060 |
| Gemini 250 | EC25PM—01 | W | 2200108 | Red | 7041083 |
| Apollo 340 | EC34PM—03 | B | 2200106 | Orange | 7041060 |
| Cobra 340 | EC34PM—04 | A | 2200105 | Silver | 7041062 |
| Cobra 440 | EC44PM—01 | ◎ | 2200162 | Purple | 7041063 |
| TX 250 | EC25PT—07 | U | 2200107 | Pink | 7041065 |
| TX 340 | EC34PT—05 | G | 2200119 | Red | 7041083 |
| TX 440 | EC44PT—05 | A | 2200105 | Orange | 7041060 |
| TX-L 340 | EC34PL—02 | W | 2200108 | Red | 7041083 |
| Centurion* | EC51PL—01 | B | 2200106 | Red | 7041083 |

*Above 8,500 feet altitude and +35°F, change to 19-39 gearing and .64 pitch chain for optimum performance.

NOTE: 6,500 feet is normally the height at which the low altitude to high altitude or the high altitude to low altitude clutch change is made. However, variations in snow conditions, ambient temperature, driver weight, individual machine performance, etc., may make it desirable to change clutching at a slightly lower or higher altitude than 6,500 feet.

| MACHINE MODEL | ENGINE MODEL | SPROCKET RATIO | CHAIN PITCH/TYPE | CENTER DISTANCE MM | CENTER DISTANCE Inches | CLUTCH PART NO. | WEIGHT LETTER | WEIGHT GRAMS | SPRING PART NO. | SPRING COLOR & WIRE DIAMETER |
|---|---|---|---|---|---|---|---|---|---|---|
| Gemini | EC25PS | 13/35 | 84/35-2 | 281.94 | 11.1 | 1321312 | G (B Mod.) | 41.5 | 7041063 | Purple/.168 |
| Gemini | EC25PM–01 | 15/35 | 86/Silent 8L. | 281.94 | 11.1 | 1321298 | G (B Mod.) | 41.5 | 7041060 | Orange/.196 |
| Apollo | EC34PM–03 | 18/35 | 88/Silent 8L. | 281.94 | 11.1 | 1321299 | A | 47.5 | 7041060 | Orange/.196 |
| Galaxy | EC34PM–04 | 15/35 | 88/Silent 8L. | 304.8 | 12.0 | 1321318 | A | 47.5 | 7041063 | Purple/.168 |
| Galaxy | EC44PM–01/02 | 17/33 | 88/Silent 8L. | 304.8 | 12.0 | 1321316 | ◎ | 53 | 7041022 | Black/.140 |
| TX/TX-C | EC34PT–07 | 17/39 | 66/Silent 11L. | 304.8 | 12.0 | 1321324 | B | 43 | 7041102 | Yellow/.192 |
| TX | EC44PT–05 | 19/39 | 66/Silent 11L. | 304.8 | 12.0 | 1321325 | A/P | 47.5 | 7041102 | Yellow/.192 |
| TX-L | EC34PL–02 | 19/39 | 66/Silent 11L. | 304.8 | 12.0 | 1321327 | B | 43 | 7041062 | Silver/.208 |
| Centurion | EC51PL–02 | 19/35 | 64/Silent 11L. | 304.8 | 12.0 | 1321328 | A | 47.5 | 7041060 | Orange/.196 |
| TX-L Indy | EC34PL–05 | 19/39 | 66/Silent 11L. | 304.8 | 12.0 | 1321337 | B | 43 | 7041062 | Silver/.208 |

1980

## HELIX SPRING HOLE LOCATION

| MODEL | LOCATION |
|---|---|
| TX 340, TX-C 340 | Hole No. 1 |
| TX 440, TX-L 340, Centurion 500, TX-L Indy 340 | Hole No. 2 |

## HIGH ELEVATION MODIFICATIONS

The following are weight and spring combinations for elevations above 6,500 feet.

| MACHINE MODEL | ENGINE MODEL | DRIVE CLUTCH | | | |
|---|---|---|---|---|---|
| | | WEIGHT | WEIGHT KIT PN | SPRING | SPRING PN |
| Gemini | EC25PS | G | 2200119 | Orange | 7041060 |
| Gemini | EC25PM–01 | W | 2200108 | Red | 7041083 |
| Apollo | EC34PM–03 | B | 2200106 | Orange | 7041060 |
| Galaxy | EC34PM–04 | A | 2200105 | Silver | 7041062 |
| Galaxy | EC44PM–01/02 | ◎ | 2200162 | Purple | 7041063 |
| TX/TX-C | EC34PT–07 | G | 2200119 | Red | 7041083 |
| TX | EC44PT–05 | A | 2200105 | Orange | 7041060 |
| TX-L/TX-L Indy | EC34PL–02/05 | W | 2200108 | Red | 7041083 |
| Centurion | EC51PL–02 | A | 2200105 | Red | 7041083 |

NOTE: 6,500 feet is normally the height at which the low altitude to high altitude or the high altitude to low altitude clutch change is made. However, variations in snow conditions, ambient temperature, driver weight, individual machine performance, etc., may make it desirable to change clutching at a slightly lower or higher altitude than 6,500 feet.

| MACHINE MODEL | ENGINE MODEL | SPROCKET RATIO | CHAIN PITCH/TYPE | CENTER DISTANCE MM | CENTER DISTANCE Inches | CLUTCH PART NO. | WEIGHT LETTER | WEIGHT GRAMS | SPRING PART NO. | SPRING COLOR & WIRE DIAMETER |
|---|---|---|---|---|---|---|---|---|---|---|
| Gemini | EC25PS | 13/35 | 84/35–2 | 281.94 | 11.1 | 1321312 | G (B Mod.) | 41.5 | 7041063 | Purple/.168 |
| Galaxy | EC44PM–02 | 17/33 | 88/Silent 8L. | 304.8 | 12.0 | 1321335 | ◎ | 53 | 7041022 | Black/.140 |
| Cutlass | EC34PM–03 | —— | —— | 292.1 | 11.5 | 1321363 | O | 51 | 7041060 | Orange/.196 |
| Cutlass SS | EC44–2PM–3100 | —— | —— | 292.1 | 11.5 | 1321364 | 02 | 49 | 7041132 | White/.177 |
| Cutlass SS | EC44–2PM–3300 | —— | —— | 292.1 | 11.5 | 1321365 | 02 | 49 | 7041132 | White/.177 |
| TX-C | EC44–2PM–1100 | 19/35 | 64/Silent 11L. | 281.94 | 11.1 | 1321368 | 01 | 48.5 | 7041063 | Purple/.168 |
| TX-L/TX-L Indy | EC34PL–05 | 19/39 | 66/Silent 11L. | 304.8 | 12.0 | 1321367 | B | 43 | 7041062 | Silver/.208 |
| Centurion Indy | EC51PL–02 | 19/35 | 64/Silent 11L. | 304.8 | 12.0 | 1321366 | A | 47.5 | 7041060 | Orange/.196 |

1981

## DRIVEN HELIX SPRING HOLE LOCATION

| MODEL | LOCATION |
|---|---|
| Cutlass, Cutlass SS | Hole No. 2 |
| TX-C | |
| TX-L, TX-L Indy | |
| Centurion Indy | |

## HIGH ELEVATION MODIFICATIONS

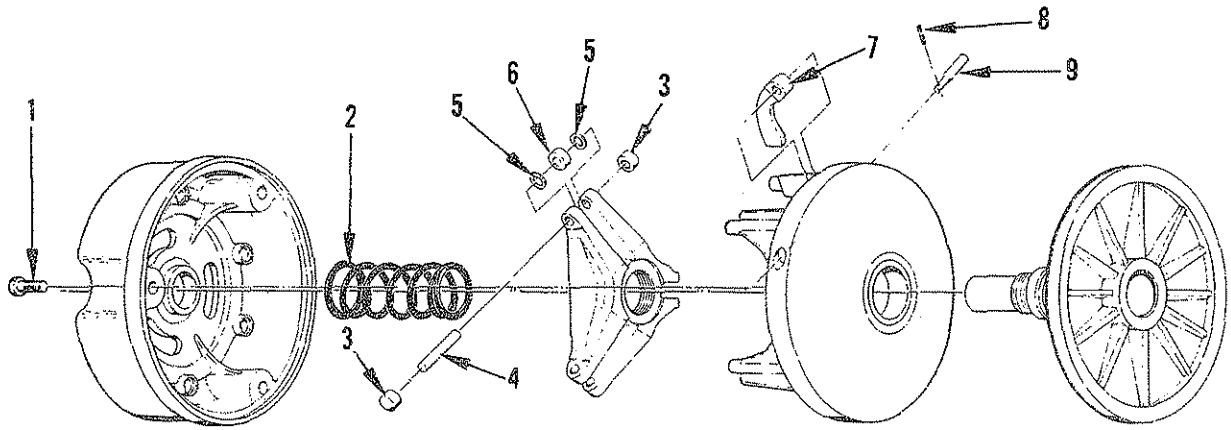
**The following are weight and spring combinations for elevations above 6,500 feet.**

| MACHINE MODEL | ENGINE MODEL | DRIVE CLUTCH | | | |
|---|---|---|---|---|---|
| | | WEIGHT | WEIGHT PN | SPRING | SPRING PN |
| Gemini | EC25PS | G | 5630063 | Orange | 7041060 |
| Galaxy | EC44PM–02 | ◎ | 2200162 | Purple | 7041063 |
| Cutlass | EC34PM–03 | O*1<br>A*2 | 5610088*1<br>5610080*2 | Blue*1<br>Red*2 | 7041080*1<br>7041083*2 |
| Cutlass SS | EC44–2PM–3100/3300 | O2 | 5630225 | Silver | 7041062 |
| TX-C | EC44–2PM–1100 | O2 | 5630225 | Silver | 7041062 |
| TX-L/TX-L Indy | EC34PL–05 | Install Kit PN 2200193 and PN 2200194 | | | |
| Centurion Indy | EC51PL–02 | A*1<br>B*2 | 5610080*1<br>5610084*2 | Red*1<br>Blue*2 | 7041083*1<br>7041080*2 |

*1 – 5,000–8,000 feet elevation
*2 – Above 8,000 feet elevation

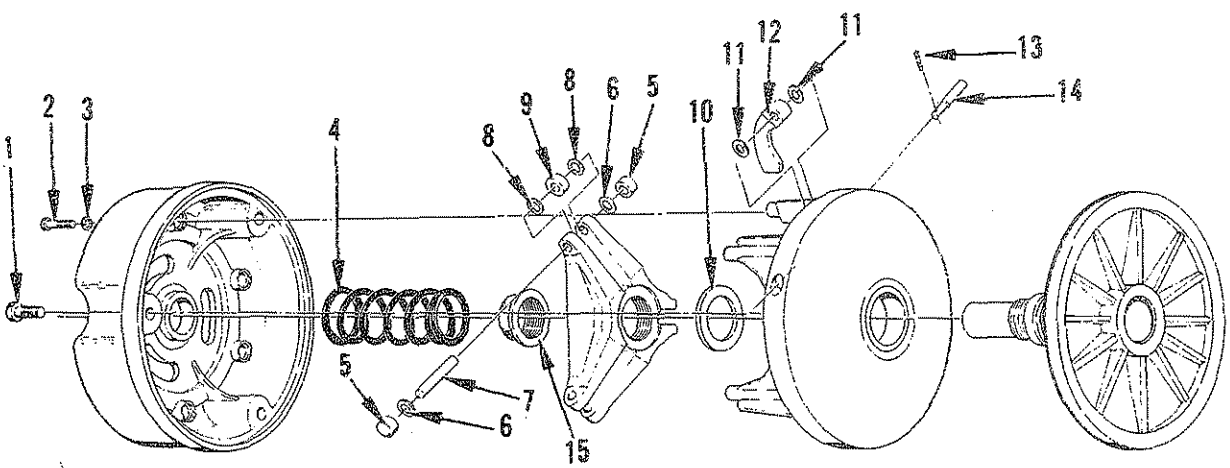
NOTE: 6,500 feet is normally the height at which the low altitude to high altitude or the high altitude to low altitude clutch change is made. However, variations in snow conditions, ambient temperature, driver weight, individual machine performance, etc., may make it desirable to change clutching at a slightly lower or higher altitude than 6.500 feet.

## Drive Clutch Service Parts




EXPLODED VIEW
STANDARD VERSION

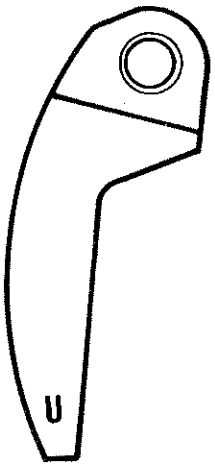
| ITEM NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 7512182 | Cap Screw |
| 2 | Spring – Refer to Drive Data | |
| 3 | 5430269 | Spider Guide Button |
| 4 | 5020279 | Spider Roller Pin |
| 5 | 5430399 | Spider Roller Washer-Plastic |
| 6 | 5020250 | Spider Roller |
| 7 | Shift Weight – Refer to Drive Data | |
| 8 | 7661005 | Spring Pin |
| 9 | 5020280 | Shift Weight Pin |




EXPLODED VIEW
HIGH–PERFORMANCE VERSION

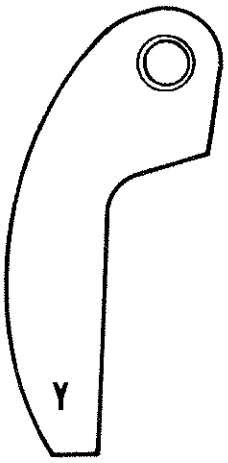
| ITEM NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 7512182 | Cap Screw |
| 2 | 7511978 | Cover Screw 10–32 |
| 3 | 7574601 | Lock Washer |
| 4 | Spring – Refer to Drive Data | |
| 5 | 5430445 | Spider Guide Button |
| 6 | 5210733 | .002" Shim (Optional as Required) |
| 7 | 7661816 | Spider Roller Pin |
| 8 | 5430399 | Spider Roller Washer–Fiber |
| 9 | 5020299 | Spider Roller |
| 10 | 5210752 | .020" Spider Spacer Washer |
| 10 | 5210753 | .032" Spider Spacer Washer |
| 10 | 5210754 | .050" Spider Spacer Washer |
| 11 | 5430451 | Shift Weight Washer (Where Applicable) |
| 12 | Shift Weight – Refer to Drive Data | |
| 13 | 7661005 | Spring Pin |
| 14 | 5020280 | Shift Weight Pin |
| 14 | 5020302 | Shift Weight Pin (Starfire Models) |
| 15 | 5020304 | Spider Jam Nut |

## Drive Clutch Weight Identification – Actual Size



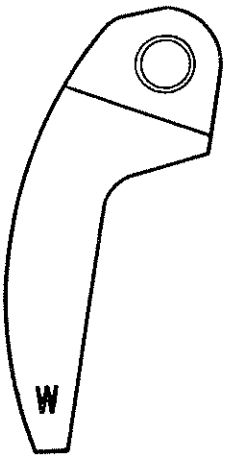

U

Gram weight: 34 ± 1
PN 5630107



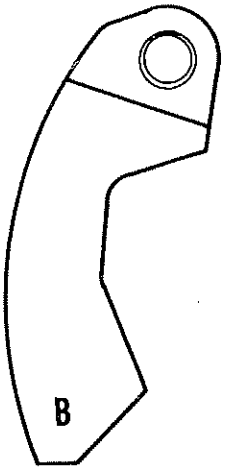

Y

Gram weight: 35 ± 1
PN 5630139



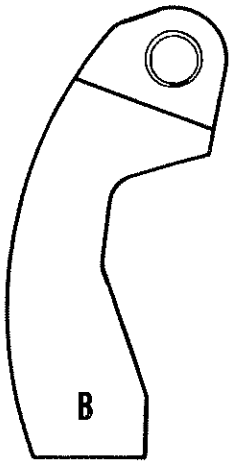

W

Gram weight: 37.5 ± 1
PN 5630109



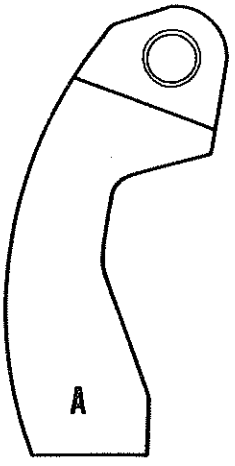

G – (B Modified)

Gram weight: 41.5 ± 1
PN 5630063



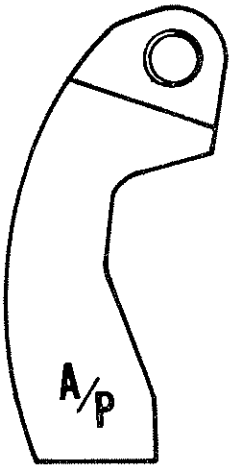

B

Gram weight: 43 ± 1
PN 5610084



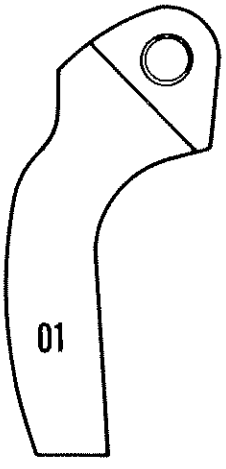

A

Gram weight: 47.5 ± 1
PN 5610080



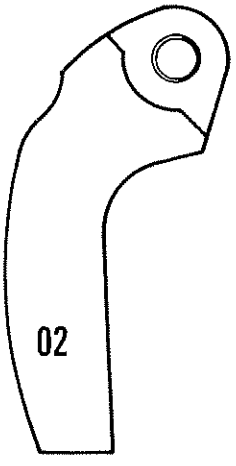

A/P

Gram weight: 47.5 ± 1
PN 5610094



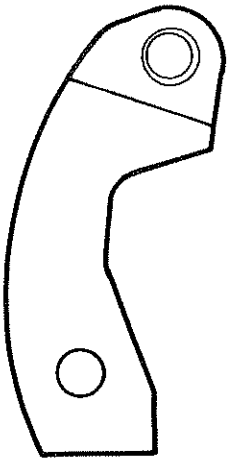

01

Gram weight: 48.5 ± 1
PN 5630224



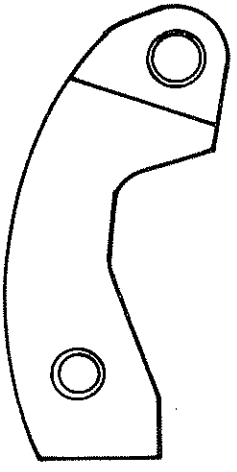

02

Gram weight: 49 ± 1
PN 5630225



O

Gram weight: 51
PN 5610088

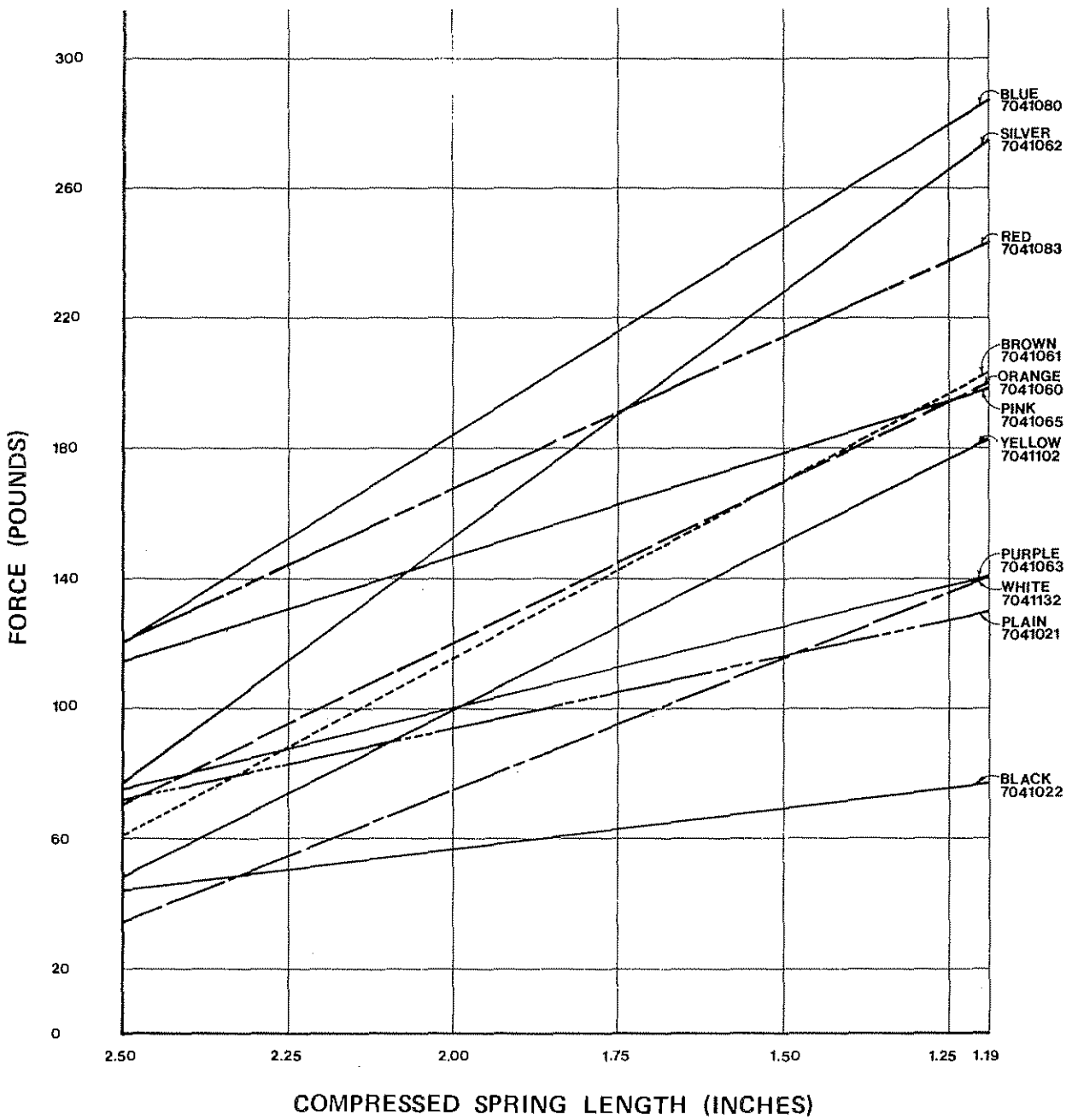


◎

Gram weight: 53 ± 1
PN 5630174

## Drive Clutch Spring Rates

The following drive clutch spring compression rate chart will enable the serviceman to setup and balance engine RPM power curves to meet special converter tuning requirements for maximum machine performance; i.e., high operating altitude, heavy loads, mountainous terrain, etc.

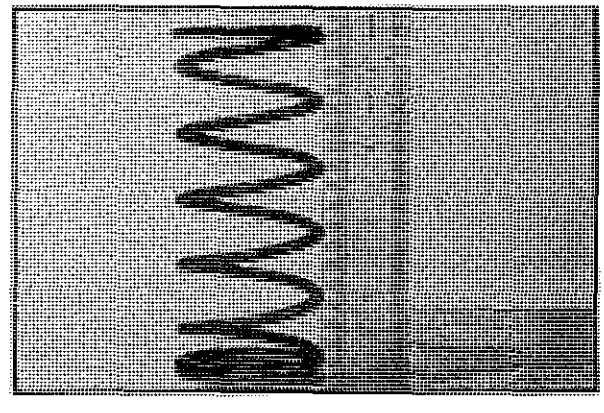


| PART NUMBER | COLOR CODE | WIRE DIAMETER | FREE LENGTH ± .125" |
|---|---|---|---|
| 7041021 | Clear | .157" | 4.38" |
| 7041022 | Black | .140" | 4.25" |
| 7041063 | Purple | .168" | 4.37" |
| 7041062 | Silver | .208" | 3.12" |
| 7041065 | Pink | .177" | 4.69" |
| 7041060 | Orange | .196" | 3.37" |
| 7041080 | Blue | .207" | 3.44" |
| 7041083 | Red | .192" | 3.77" |
| 7041102 | Yellow | .192" | 2.92" |
| 7041061 | Brown | .200" | 3.06" |
| 7041132 | White | .177" | 2.92" |

**⚠ CAUTION:**
Never shim a drive clutch spring to increase its compression rate. This may result in complete stacking of the coils and subsequent clutch cover failure.

Maximum efficiency of the variable speed drive system is dependent upon many factors. Included in these are converter alignment, belt tension, and internal condition of the drive and driven clutch components. One of the most critical and easily serviced parts is the drive clutch spring. Due to the severe stress the spring is subject to during operation, it should always be inspected and checked for tolerance limits during any clutch operation diagnosis or repair.

With the spring resting on a flat surface, measure its free length from its outer coil surfaces as indicated. Refer to the spring specification chart for specific free length measurements and tolerances.



In addition to proper free length, the spring coils should be parallel to one another when placed on a flat surface. Distortion of the spring indicates stress fatigue and replacement is required.

# TORQUE—O—MATIC DRIVE
## Operation and Tuning

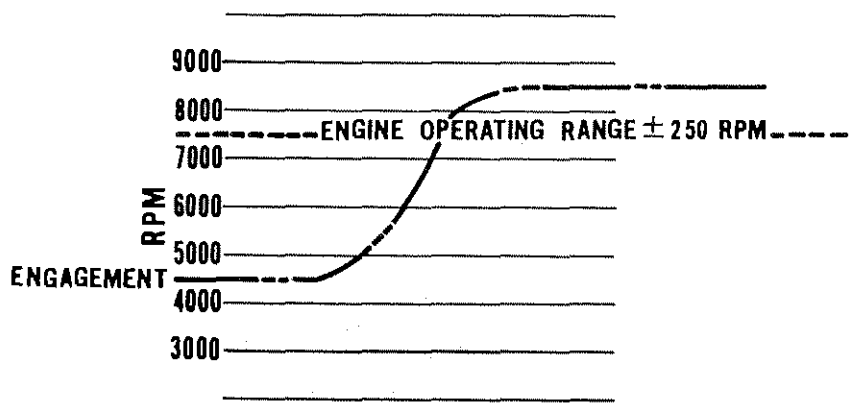
The Polaris torque-o-matic drive system is a centrifugally actuated variable speed belt drive unit. The drive clutch, driven clutch, and belt make up the torque converter system. Each clutch has the proper internal components installed for the specific engine model on which it is installed at the factory. Therefore, modifications or variations of components at random are never recommended. Proper converter setup and adjustments of existing components must be the primary objective in converter operation diagnosis.

⚠ All converter maintenance repairs must be performed only by an authorized Polaris service technician who has attended a Polaris sponsored service training seminar and understands the proper procedures as outlined in this manual. Because of the critical nature and precision balance incorporated into the drive clutch, it is absolutely essential that no attempt at clutch disassembly and/or repair be made without factory authorized special tools and service procedures.

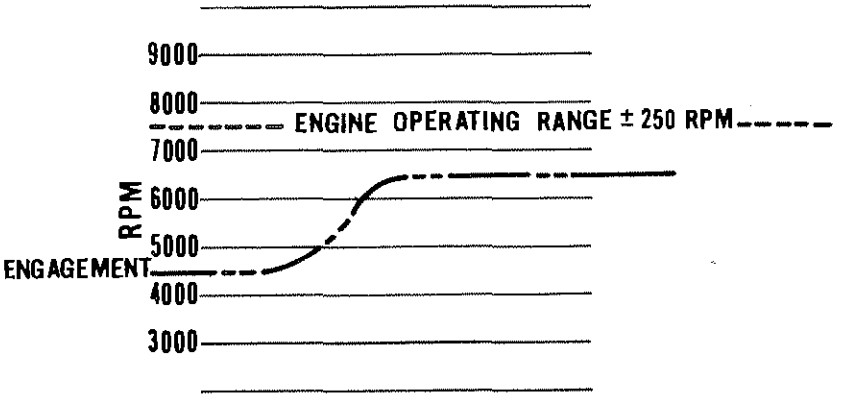
### DRIVE CLUTCH WEIGHTS/SPRING RELATIONSHIP TO MAINTAIN OPERATING RPM

The drive clutch is an RPM and torque sensing unit designed to transfer the maximum amount of horsepower from the engine to the ground. This is accomplished by weights and a spring inside the unit reacting to the centrifugal force applied to it from the engine RPM.

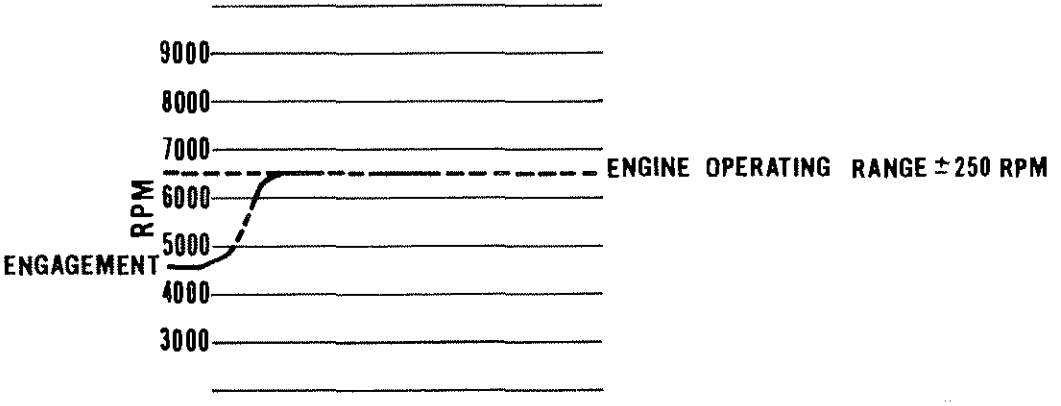
The spring and weights work in combination. In a properly setup clutch, the maximum desired operating RPM will be reached immediately after clutch engagement (full throttle conditions). This RPM should be maintained to gain optimum power. As centrifugal force pushes the weights against the rollers, the movable sheave will force the belt to climb up the drive clutch sheave to increase vehicle speed.




If the weights are too light, or spring rate too high, the maximum RPM will be too great and the drive belt will not go into high gear (top of the clutch).




If the weights are too heavy, or spring rate too low, the engine RPM will be low and the drive clutch will upshift too fast, keeping the engine out of its power band.




If the weights and spring are matched properly, the engine RPM will go to the desired range and remain there on both upshift and backshift.

## TORQUE—O—MATIC DRIVE

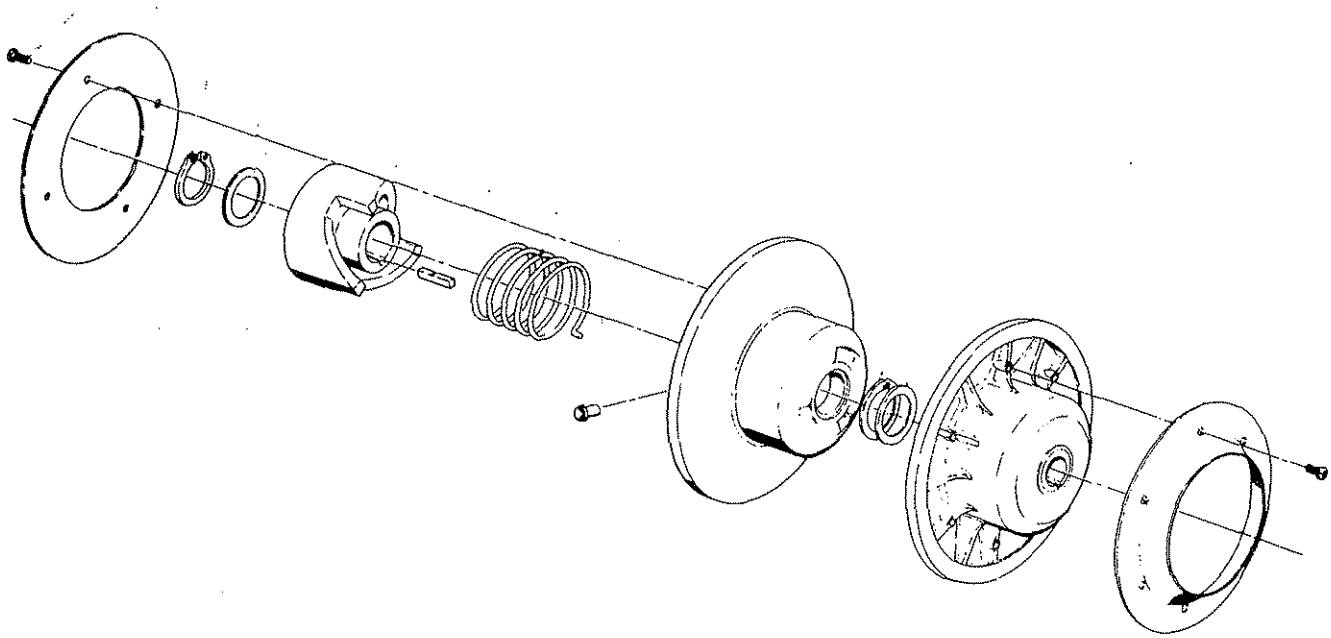
### Driven Clutch Operation

The driven clutch operates in conjunction with the drive clutch. Output torque is transmitted through the chaincase jackshaft and chaincase to the front drive shaft and track. Its function is to maintain drive belt tension to prevent slippage and to sense variations in load requirements necessary to maintain optimum engine operating RPM. The driven clutch, unlike the drive clutch, is only torque sensing. This means it will react to both engine torque output and load requirements from the track. When the load on the driven clutch is increased and becomes greater than the torque delivered from the engine, the driven clutch becomes dominant and overrides the drive clutch. The driven clutch "downshifts" into a ratio that will supply the amount of torque needed for the increased load.

Because the driven clutch can sense and shifts into the proper ratio (up or down), engine RPM will remain in the specified range.

#### DRIVEN CLUTCH ADJUSTMENTS

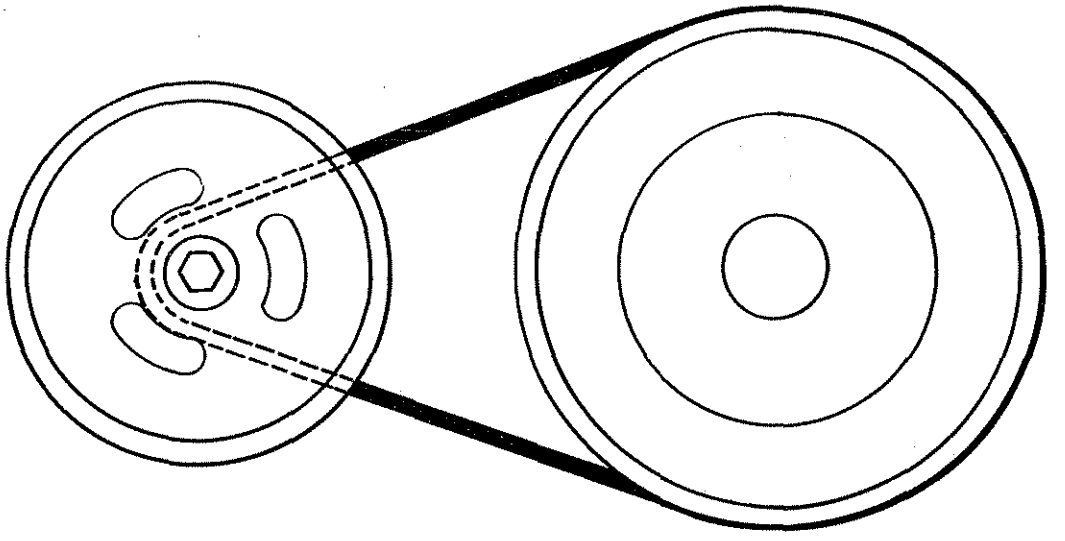
The aluminum Polaris driven clutch has a provision for varying the torque requirements to change its ratio. This is obtained by relocating the spring in the helix, which in turn will increase or decrease the amount of load required to change its ratio.



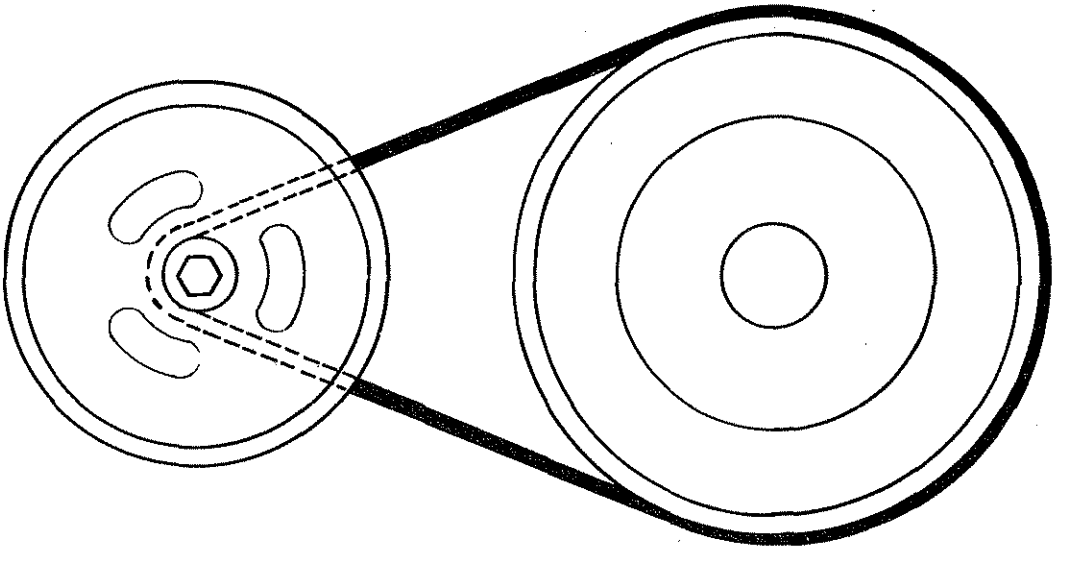
ALUMINUM DRIVEN CLUTCH

## Drive Belt Adjustments

The drive belt is an important component of the converter system. Critical dimensions and construction have been provided for at the time of manufacture. In order to achieve maximum efficiency from the convertar, the drive belt must be adjusted properly for tension and clutch offset.



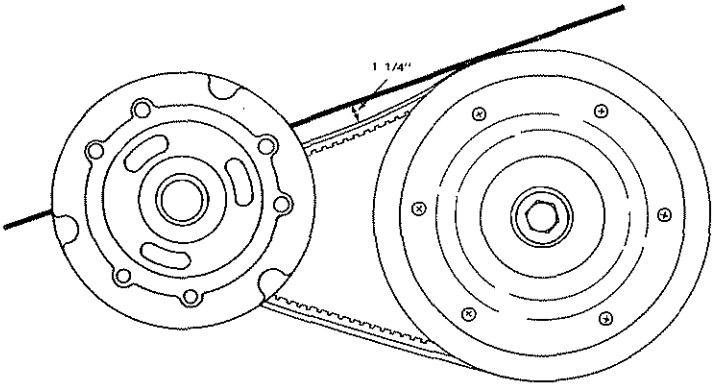
If the belt is too long or center distance too short, the initial starting ratio will be too low resulting in performance loss. This is due to the belt raising too high in the drive clutch sheaves upon engagement.



If the drive belt is too short or center distance too long, the ratio will again be incorrect. In addition, the machine may creep with the engine idling and cause damage to the internal face of the drive belt.

## TORQUE—O—MATIC DRIVE

### Drive Belt Adjustments

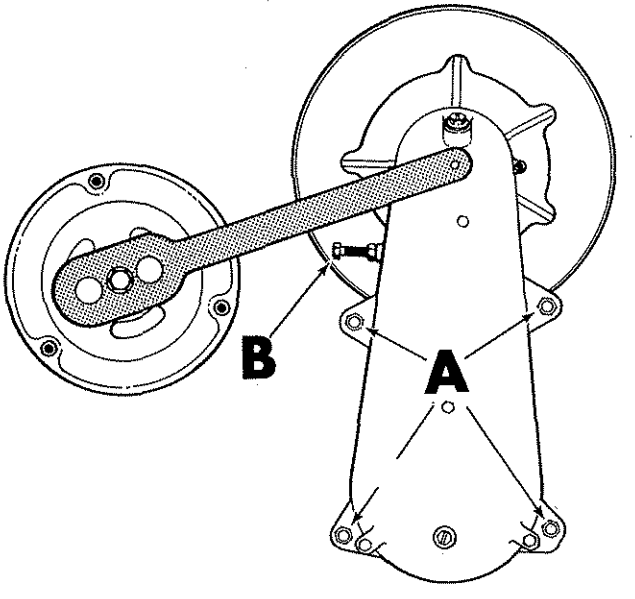



ALUMINUM DRIVEN

The ideal belt deflection is 1 1/4". Measure belt deflection with both clutches at rest and in their full neutral position. Place a straight edge on the belt and apply downward pressure while measuring at the point shown. To change belt deflection, thrust washers in the driven clutch can be added or subtracted.

IMPORTANT: Do not apply excessive pressure so as to force the belt into the driven sheaves which will result in an improper measurement.

NOTE: One thrust washer should always be left between the driven clutch sheaves (aluminum clutch only).




STEEL DRIVEN

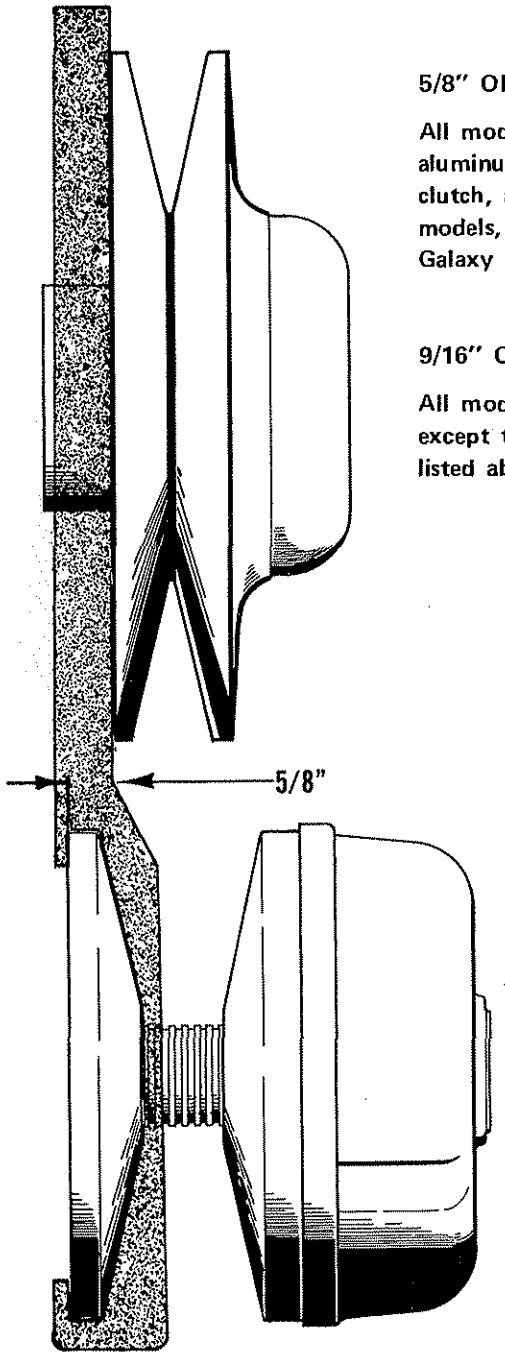
On all machines using steel driven clutch, the chaincase can be adjusted either forward or rearward by loosening the four chaincase mounting bolts (A) and setting with the adjusting bolt (B).

NOTE: On some models, before the above adjustments can be made, the driven clutch must be slid partially inboard on its shaft to provide access to the two 5/16" x 7/8" cap screws which secure the chaincase to its mounting plate.

## Clutch Alignment

Use the proper clutch alignment tool to arrive at the correct clutch offset. When the clutches are properly aligned, the tool will contact all sheave surfaces equally. The motor mounts on some models are slotted so the necessary adjustments can be made or one or two washers may also be installed behind the driven clutch on the jackshaft to arrive at correct offset.

NOTE: The drive belt must be removed when this measurement is made.

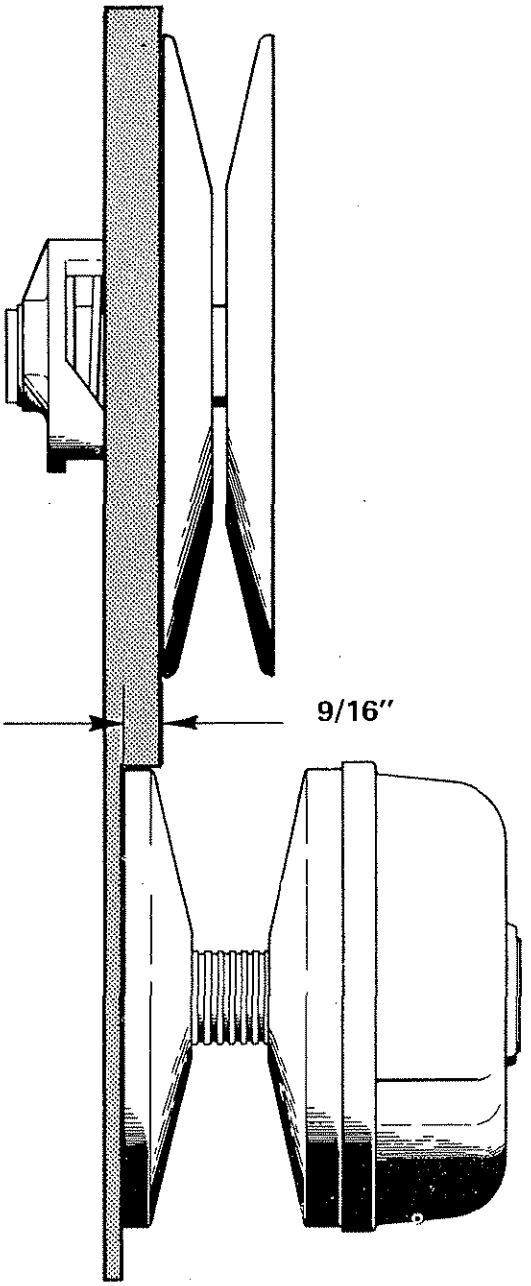



5/8" OFFSET

All models with aluminum driven clutch, all Cobra models, and all Galaxy models.

9/16" OFFSET

All models, except those listed above.

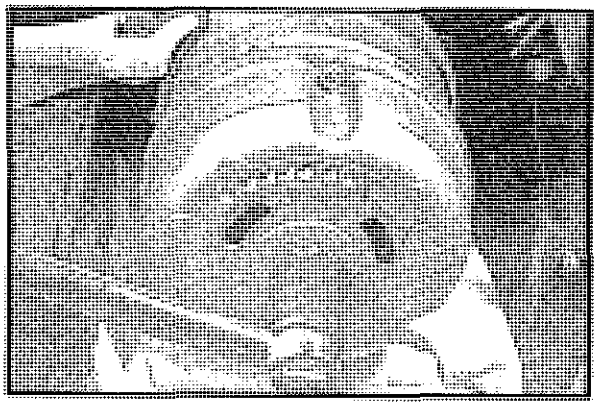


## TORQUE—O—MATIC DRIVE

### Drive Clutch Removal, Installation, and Identification

#### REMOVAL

1. Install the strap wrench (PN 2870336) to the stationary sheave as shown. Remove the drive clutch retaining bolt and install puller (PN 2870130) into the clutch; tighten the puller until the clutch is removed.

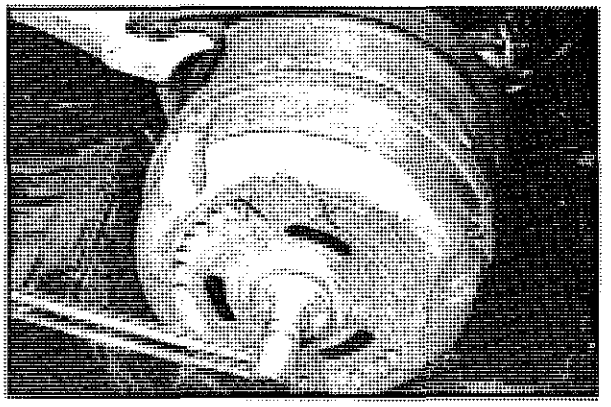


#### INSTALLATION

1. Position the clutch on the engine crankshaft. Install the retaining bushing and bolt. Using the strap wrench (PN 2870336) to hold the clutch, torque the retaining bolt to 40-45 ft./lbs.

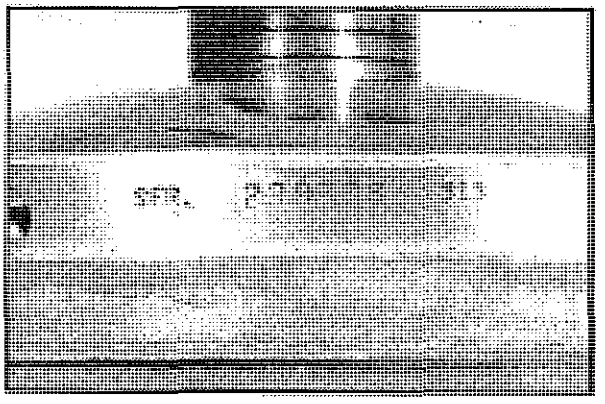
#### SERVICE TIPS

Never use an air impact wrench for installing a drive clutch as it will loosen the spider torque value.



#### IDENTIFICATION

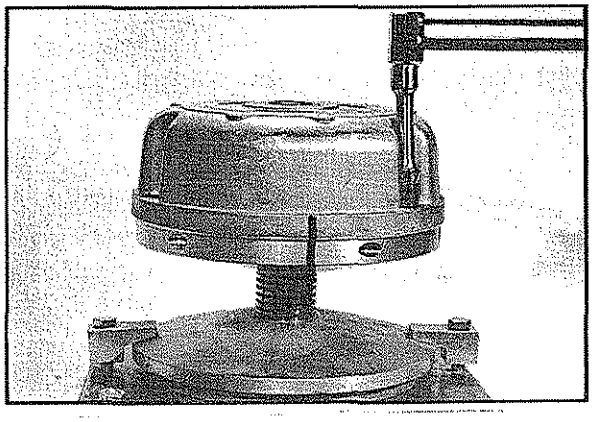
While all drive clutches may look alike, each bears a different part number, which in turn indicates internal clutch component variation for individual engines. For easy identification, refer to the three numbers behind the serial number on the movable sheave. These numbers are the last three digits of that clutch part number.



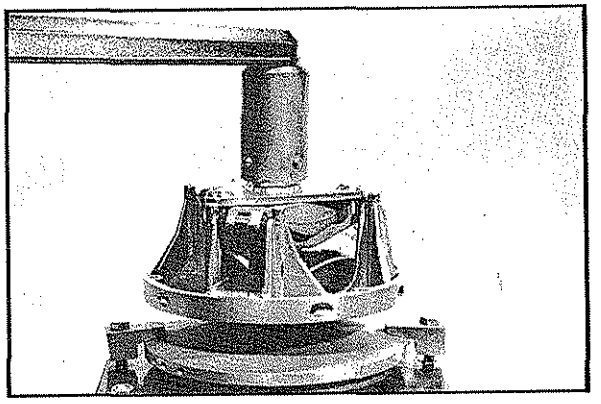
## Spider Removal, Lubrication, and Reassembly - Except 1975-Current TX, TX-L, Centurion

1. Remove the clutch from the engine using clutch puller (PN 2870130). Fasten the drive clutch to the clutch holding fixture (PN 2870379). Before disassembling the clutch, it is very important to mark the outside cover and movable face using a marking pen or scriber.

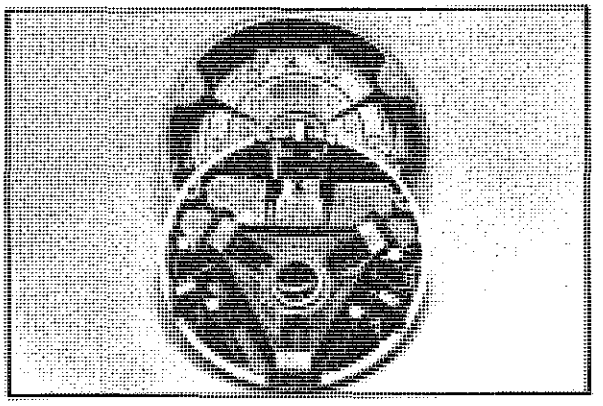
⚠ USING CAUTION, remove the three screws which hold the cover to the movable face. Keep in mind there is spring tension on the cover.



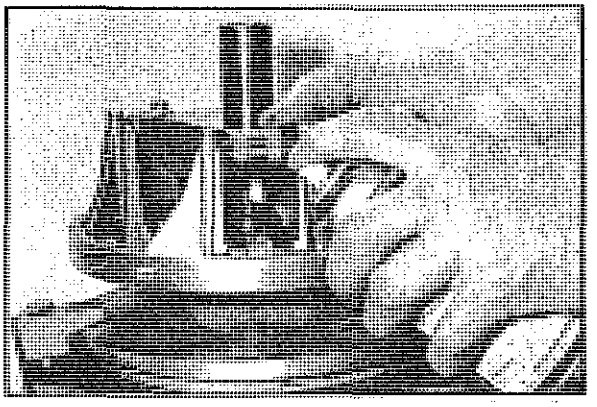
2. Remove the spider using special service tools (PN 2870338 and PN 2870341).



3. With the clutch disassembled, locate the three (3) alignment X's. Upon reassembly, these X's must be aligned for proper clutch balance. Clean and inspect all moving parts, replacing where needed. Refer to pages in this section for replacement of worn parts.

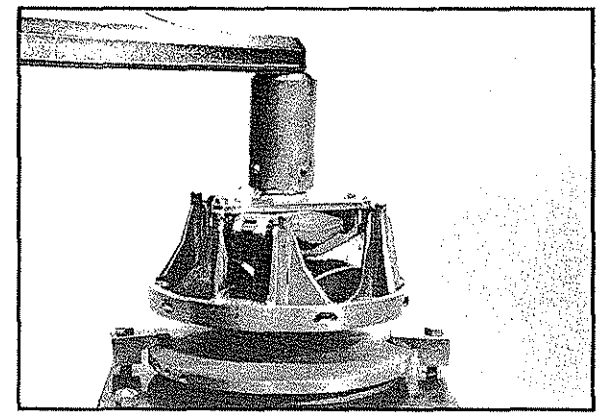


4. REASSEMBLY: Lubricate all moving parts; weights and rollers must move freely. Some recommended lubricants are WD-40, CRC 5-56, Kendall CML, LPS-2, or Dri-Slide.

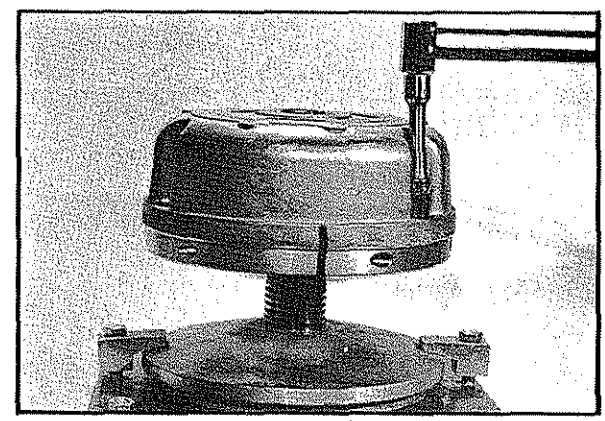


## Spider Removal, Lubrication, and Reassembly - Except 1975-Current TX, TX-L, Centurion

5. With the spider and movable sheave X's aligned, torque the spider to 200 ft./lbs. using special service tools (PN 2870338 and PN 2870341).

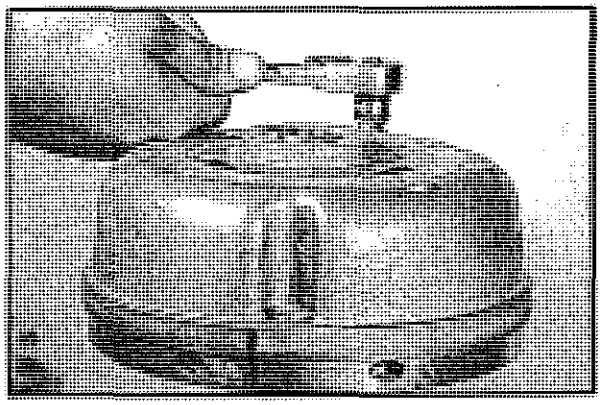


6. ⚠ Install the spring and cover with index marks aligned. Torque the three (3) cover bolts to 6 ft./lbs.

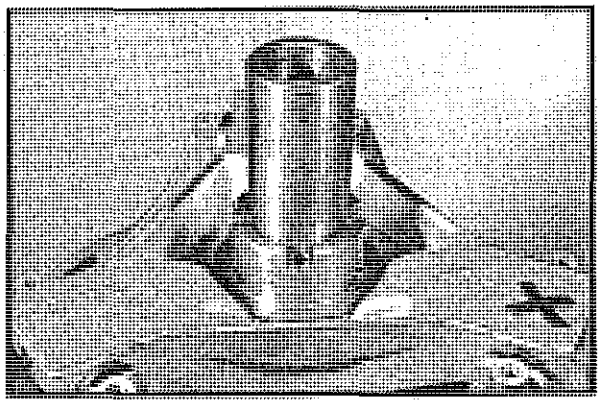


## Spider Removal - 1975-Current TX, TX-L, Centurion

1. Remove the drive clutch from the engine using the clutch puller (PN 2870130).
   IMPORTANT: Before disassembly of the clutch, it is very important to mark the cover and movable face with a marking pen or scriber. Install the clutch on the disassembly tool (PN 2870239). Remove the six (6) 10-32 screws and the three (3) 1/4 x 20 cover attaching cap screws.
   ⚠ CAUTION: Keep in mind there is spring tension on the cover.

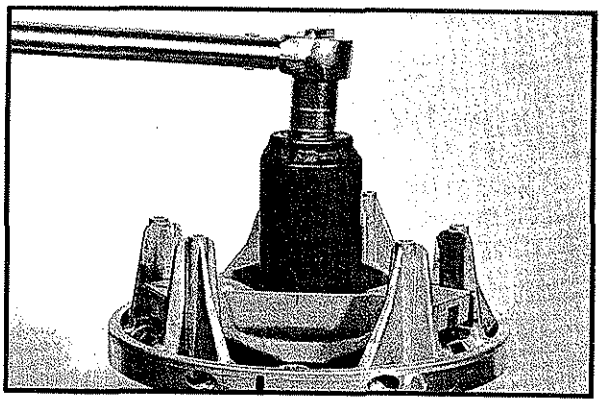


2. With the cover removed, note the (X) balance marks in the cover and under a shift weight. Make a reference (X) directly above the shift weight end a (X) on the spider leg for reassembly, as shown, with scriber or marking pen.

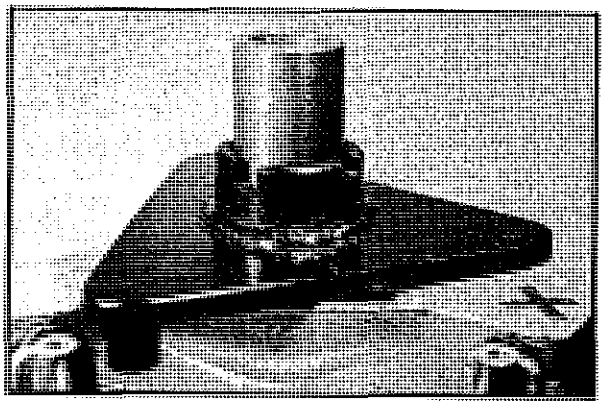


## Spider Removal - 1975-Current TX, TX-L, Centurion

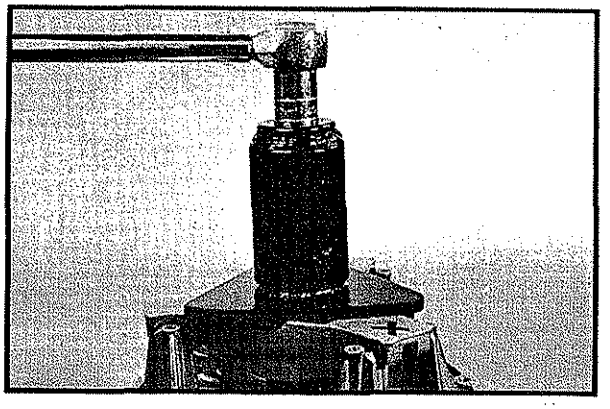
3. Remove the spider jam nut using tool (PN 2870338).

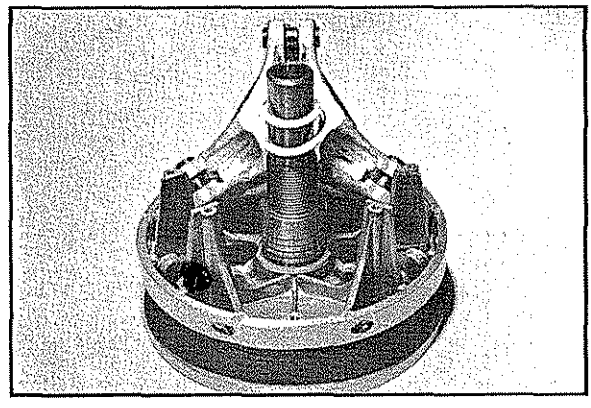


4. Install spider tool (PN 2870341) to the spider.



5. With the spider tool installed, loosen the spider using the jam nut driver as shown.





TX, TX-L, CENTURION

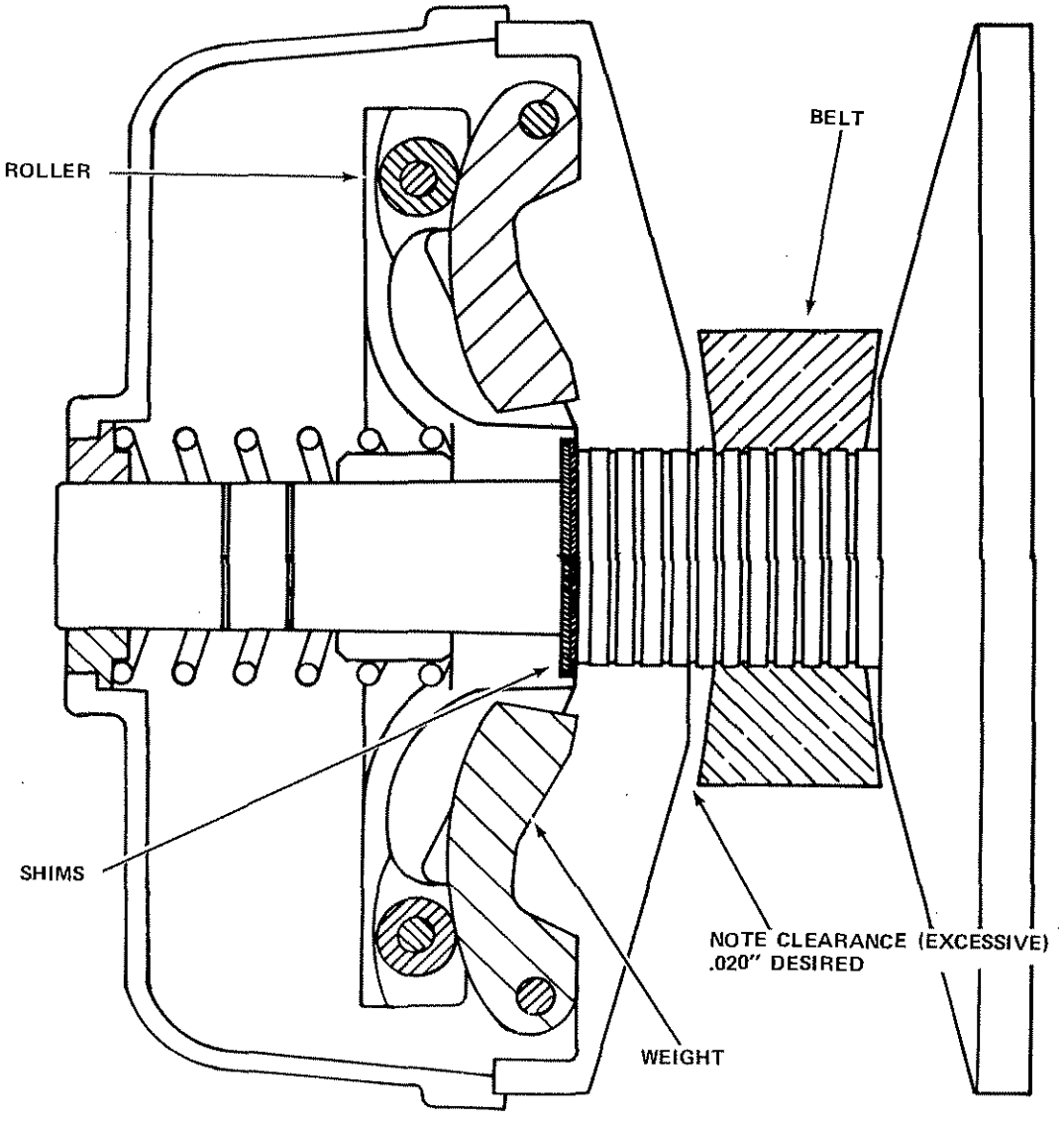
6. FINE TUNING: The distance between the belt and the movable sheave on the drive clutch is very important. This distance controls the starting ratio (lowest starting ratio is most preferable) and also controls the position of the clutch weight to engine RPM. The distance between the belt and movable sheave should be .020'' or as close as possible without letting the machine creep forward at engine idle. The adjustment for obtaining this distance is controlled by the washers behind the spider.

The following thickness washers are available for fine tuning purposes:

| Part No. | Thickness |
|---|---|
| 5210754 | .050'' |
| 5210753 | .032'' |
| 5210752 | .020'' |

## TORQUE—O—MATIC DRIVE

### Belt-Sheave Adjustment - 1975-Current TX, TX-L, Centurion



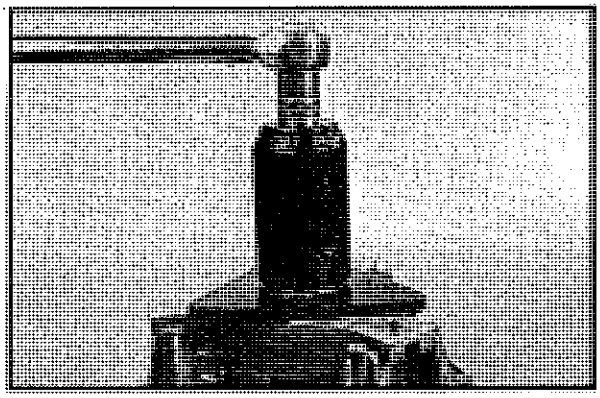

In addition to correct belt tension and alignment, the drive clutch belt-sheave clearance also contributes to maximum efficient converter operation. Whenever the drive clutch is disassembled or fine tuned, the belt-sheave clearance should be adjusted using available shims beneath the spider.

NOTE: Always use a new belt for accuracy and to prevent lack of clearance when a new belt is eventually installed.

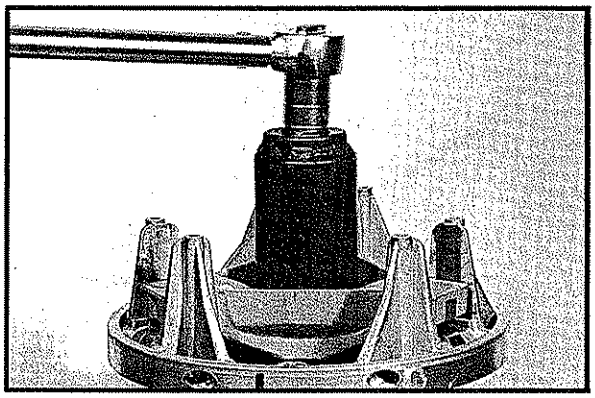
## Spider Reassembly - 1975-Current TX, TX-L, Centurion

After cleaning, inspecting, and lubricating the clutch, follow the steps as listed for correct reassembly:

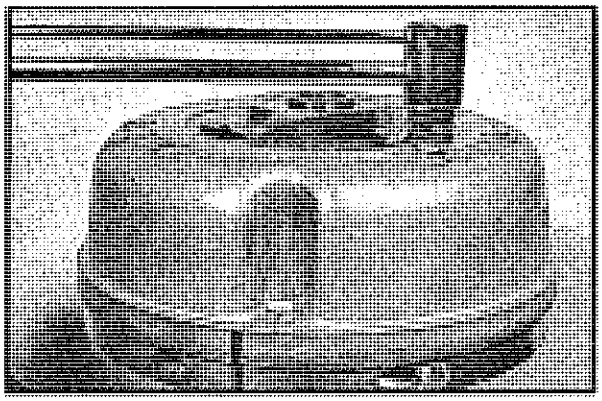
1. Reinstall the spider, taking care to align the (X) balance marks. Torque the spider to 200 ft./lbs. using the spider tool (PN 2870341) and jam nut tool (PN 2870338) as shown.



2. Install and torque the jam nut to 235 ft./lbs.



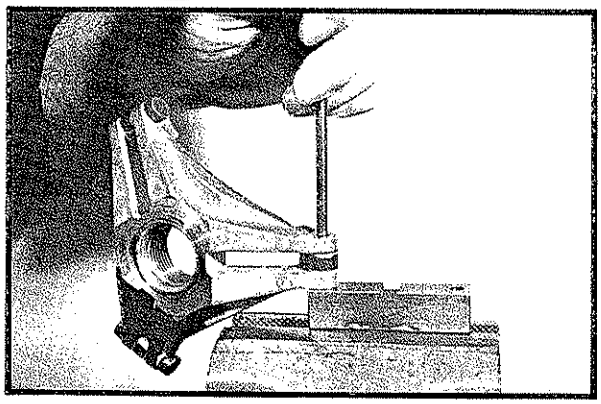
3. Install the spring and cover, torquing the cover screws as follows:
   Six (6) 10-32 cover screws - 16 in./lbs.
   Three (3) 1/4 x 20 cover bolts - 4 ft./lbs.



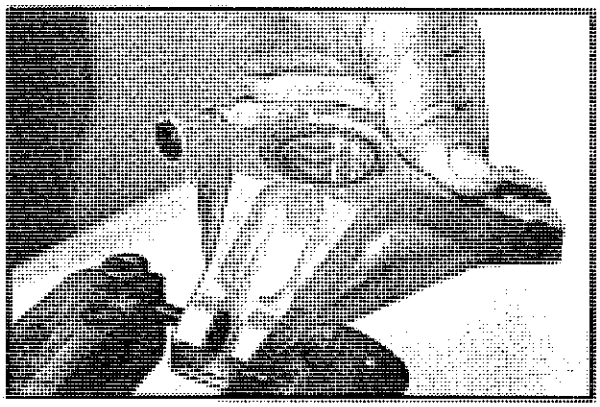
## TORQUE—O—MATIC DRIVE

### Spider Rebuilding Procedures

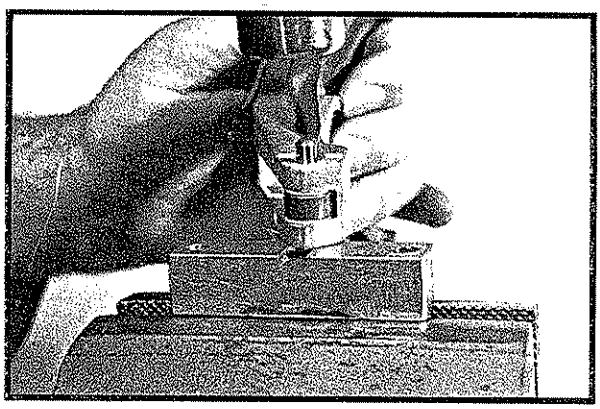
1. Remove the six (6) guide buttons from the spider and discard. Place the roller pin gauge block (PN 2870310) in a vice and with the pin punch (PN 2870402) drive out and discard the old rollers and pins as shown.



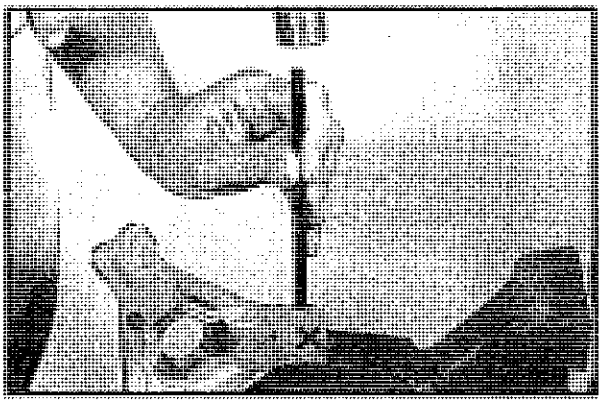
2. Using the vice as a press, start the new pin (smooth end first) into the spider, progressively pressing and installing the new washer, roller, and remaining washer, in that order, on all three legs.



3. With the roller pin gauge block in a vice, center each pin in the spider by locating the spider pin over the gauged keyway of the block and tapping until it bottoms.
IMPORTANT: This operation assures that each pin is centered in the spider to prevent any binding of the buttons to the towers when the clutch is reassembled. Install new buttons to complete spider.



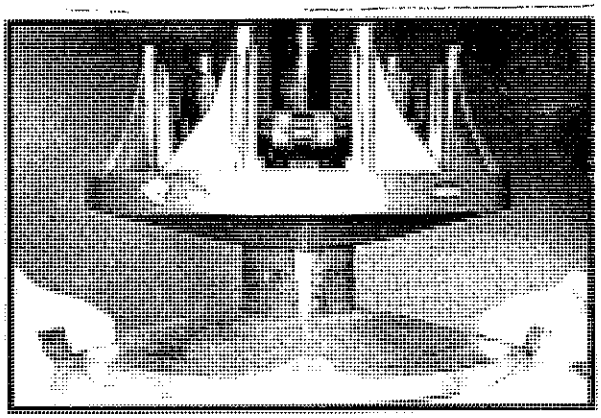
4. IMPORTANT: On the TX, TX-L and Centurion spider, it will be necessary to center the roller pin using the special roller pin centering punch (PN 2870401) as shown. This punch assures that each pin is centered in the spider for balance purposes.



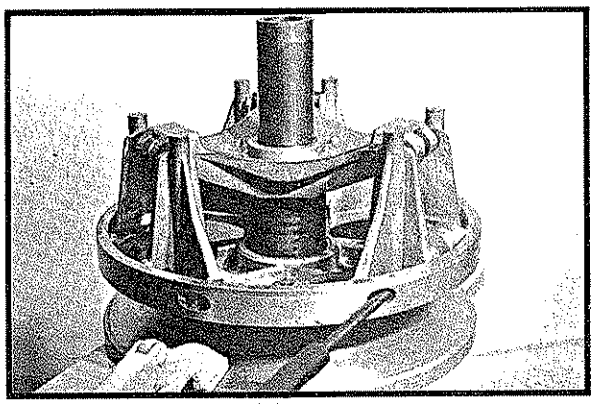
## Drive Clutch Weight Kit Installation

IMPORTANT: Select the proper weight kit from the charts before doing anything else.

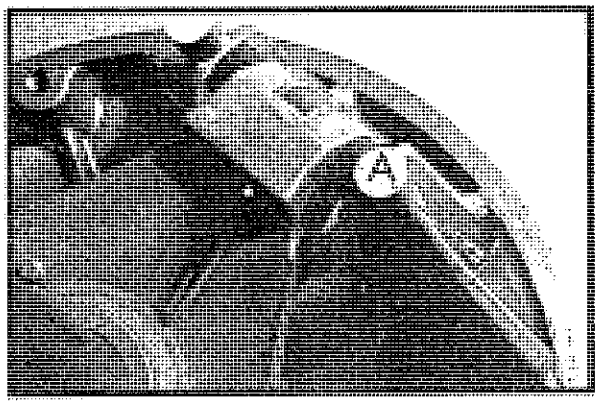
1. Position the clutch as shown. Note that the movable sheave is blocked in its wide open position using a piece of radiator hose. This will prevent any spreading effect on the towers while driving the weight pins.



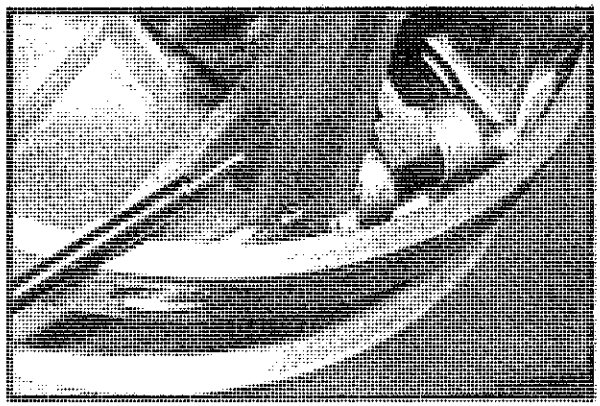
2. Using the pin punch (PN 2870402), drive the three (3) pins from the weights through the access holes provided.
   NOTE: The pins must be driven out from their small hole end only. Discard the old weights and pins.



3. Install the proper new weights and pins into the movable sheave using the pin punch.
   NOTE: Before driving the pin, position it so the hole in the small end (A) will be exposed to accept its spring pin.

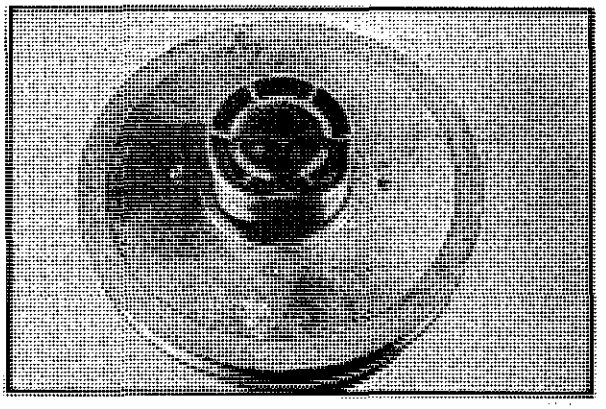



4. Using the weight pin punch, insert one of the spring pins provided in the kit into its end and tap into the hole of the exposed small end of the pin until the punch bottoms. Install all three (3) pins in this manner.

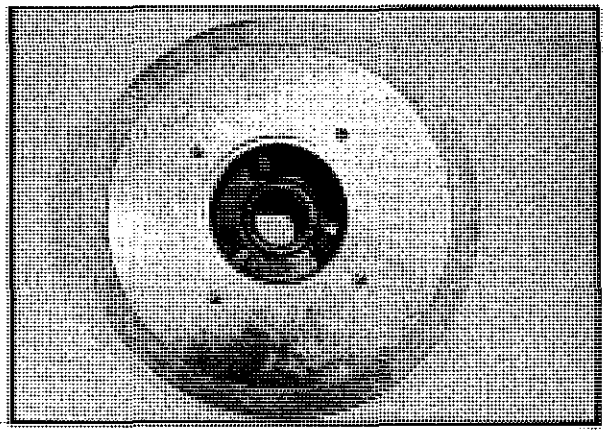


## Aluminum Driven Clutch Service

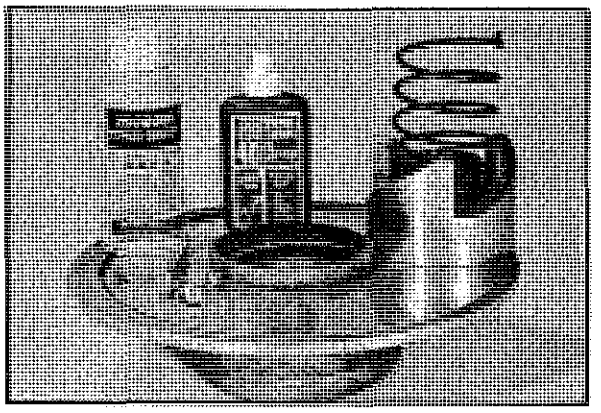
1. Remove the snap ring and washer.



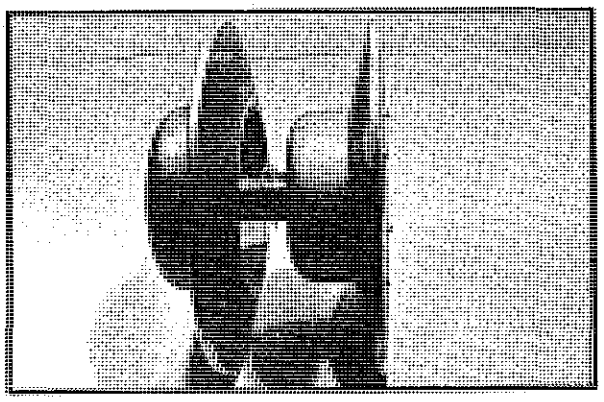
2. Inspect the ramp buttons and bushing for wear. Note the condition of the movable sheave fiber bushing. Install the helix into the bushing; it should slide freely without binding. Polish the helix with fine emery cloth to ramove any sharp edges which may cause sticking.



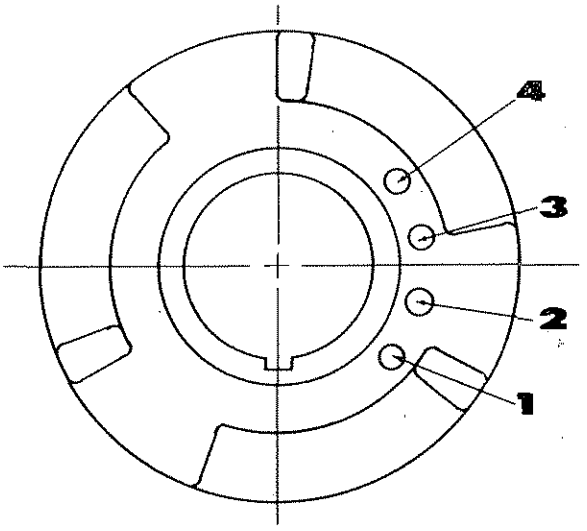
3. In the event the bushing is damaged or excessive clearance is evident, it may be replaced (PN 3569802). Remove the old bushing, cleaning the hub thoroughly using Loctite and primer (PN 2870327). Place a bead of Loctite RC 40 (PN 2870326) in the hub before installation. Again check free movement of the helix after the Loctite has cured.



4. Clean all parts. Reassemble the stationary and movable sheaves. Note the placement of the two thrust washers shown. These washers may be used to adjust effective belt tension measurements as described earlier. Removal of a thrust washer increases neutral belt tension.
NOTE: Re-check alignment offset after adjustments are made.



5. Reassemble the clutch; install the spring into the helix. The correct tension of the spring is 1/3 turn counterclockwise. Refer to the following chart for proper spring location in the helix for 1977, 1978, and 1979 models. For 1980-Current models, refer to the Data pages at the beginning of this section.




| YEAR | MODEL | LOCATION |
|---|---|---|
| 1977 | TX 250, TX 440, TX-L 340 | Hole No. 2 |
| 1977 | TX 340 | Hole No. 1 |
| 1978 | TX 250, TX 440, TX-L 340 | Hole No. 2 |
| 1978 | TX 340 | Hole No. 1 |
| 1979 | TX 250, TX 440, TX-L 340, Centurion | Hole No. 2 |
| 1979 | TX 340, TX-C 340 | Hole No. 1 |

Refer to the Data pages at the beginning of this section for 1980-Current models.

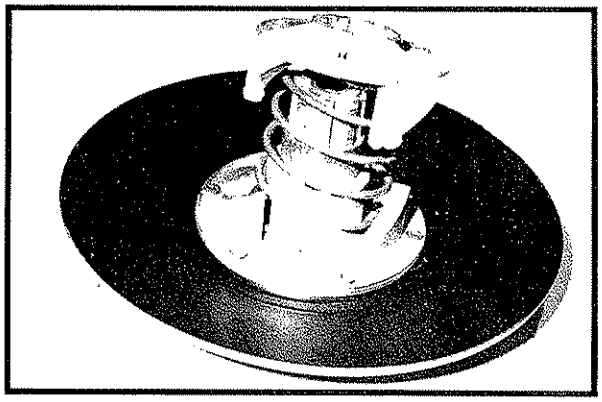
Increasing spring windup tension will produce clutch upshift delay causing the engine to rev more upon acceleration.

## Steel Driven Clutch Service

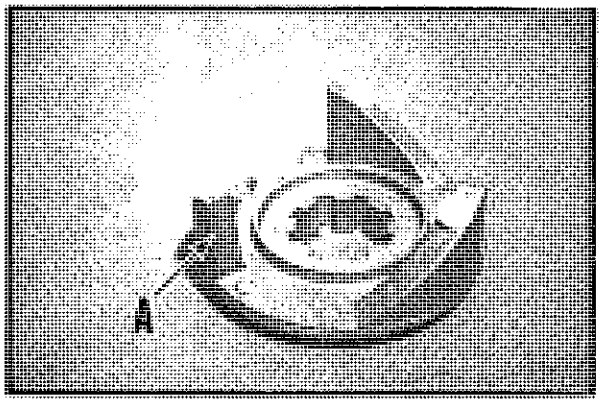
1. Remove the retaining ring as shown. Care should be taken, as snap ring is under spring pressure.



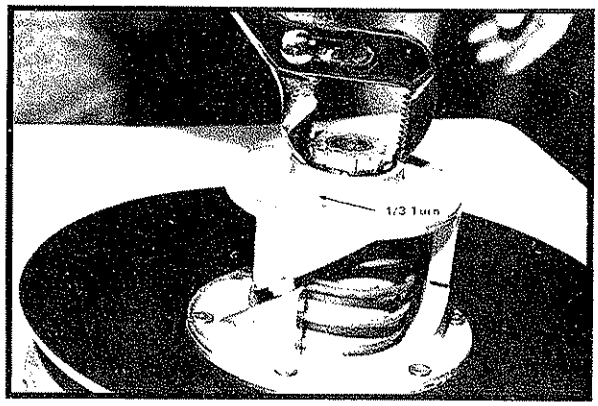
2. Ramp assembly removed. Note position of tension spring when removing the ramp assembly. Inspect the movable sheave and bushing for wear or excessive clearance, replacing as necessary.



3. Apply heat in this area (A) to remove a broken or damaged ramp bushing. Heat will cause the bushing to protrude from the positioning hole. Replace all three ramp bushings when replacement of one is necessary.




4. Reassemble the driven clutch. When installing the ramp and tension spring, preload the tension spring 1/3 turn clockwise while holding the movable face stationary. Assemble the split snap ring as shown. Reinstall the clutch, checking alignment offset.



| SITUATION | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Engine RPM below specified operating range, although engine is in proper state of tune. | 1. Wrong or broken drive clutch spring. | Replace with recommended spring. |
| | 2. Drive clutch shift weight too heavy. | Install correct shift weight kit to match engine application. |
| | 3. Driven clutch spring broken or installed in wrong helix location (aluminum clutch). | Replace spring; refer to proper installation location. |
| | 4. Drive belt too long. | Clean clutches; install new belt. |
| | 5. Converter sheaves greasy; belt slippage. | Install new belt and/or adjust belt tension. |
| Erratic engine operating RPM during acceleration or load variations. | 1. Drive clutch binding. | a. Disassemble drive clutch; inspect shift weights for wear and free operation. |
| | | b. Clean and polish stationary shaft hub; reassemble clutch without spring to determine problem area. |
| | 2. Driven clutch malfunction. | a. Replace ramp buttons. |
| | | b. Inspect movable sheave for excessive bushing clearance/ replace. |
| Engine RPM above specified operating range. | 1. Incorrect drive clutch spring (too high spring rate). | Install correct recommended spring. |
| | 2. Drive clutch shift weights incorrect for application (too light). | Install correct recommended shift weights. |
| | 3. Drive clutch binding. | Disassemble and clean clutch, inspecting shift weights and buttons. Reassemble without the spring to further determine probable cause. |
| | 4. Driven clutch binding. | Disassemble, clean, and inspect driven clutch, noting worn sheave bushing and ramp buttons and helix spring location. |

CONTINUED

## TORQUE—O—MATIC DRIVE

### Troubleshooting

| SITUATION | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Harsh drive clutch engagement. | 1. Drive belt worn too narrow. | Replace. |
| | 2. Excessive belt/sheave clearance (TX, TX-L, Centurion) with new belt. | Perform belt/sheave clearance adjustment with shim washers beneath spider. |
| Drive belt turns over. | 1. Wrong belt for application. | Replace. |
| | 2. Clutch alignment out of spec. | Adjust alignment offset. |
| | 3. Engine mount broken or loose. | Inspect/adjust or replace. |
| | 4. Driven clutch sheaves have excessive run-out, bent, or damaged. | Measurement should be taken 12'' in from the outer circumference on the sheave face. Maximum allowable tolerance is .025''. |
| Noise in drive system. | 1. Broken drive clutch components. | Inspect/replace. |
| | 2. Excessive drive clutch button-tower clearance. | Install new buttons or shim out existing (see Information Bulletin No. 31). |
| | 3. Bearing failure/chaincase, jackshaft, or front drive shaft. | Inspect/replace. |
| | 4. Drive chain loose or worn, sprocket teeth broken. | Inspect/adjust or replace. |
| | 5. Driven clutch bushing worn excessively or spring broken. | Inspect/repair. |
| | 6. Drive belt surface flat spots. | Inspect/replace. |

# SECTION VIII

# CHAINCASE AND BRAKE

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| BRAKE SYSTEMS IDENTIFICATION | |
|---|---|
| CHAINCASE SLAVE CYLINDER | APPLICATION |
| Type I | All 1972-Current Models, Except 1973 and 1976 Starfire and 1976-Current TX, TX-C, TX-L, Centurion, TX-L Indy, Centurion Indy, Cutlass, and Cutlass SS |
| Type II | 1973 and 1976 Starfire and 1976-1978 TX and TX-L |
| Type III | 1979-Current TX, TX-C, TX-L, Centurion, TX-L Indy, and Centurion Indy |
| Type IV | 1981 Cutlass and Cutlass SS |

## 1972

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain | |
|---|---|---|---|---|
| | | | Type | Pitch |
| Colt | EC17P | 12/35 | 35-2 | 84 |
| Colt | EC25P | 13/35 | 35-2 | 84 |
| Colt | EC29P | 13/35 | 35-2 | 84 |
| Colt SS | EC29PF | 13/35 | 35-2 | 84 |
| Colt SS | EC34PF | 13/35 | 35-2 | 84 |
| Charger | EC29P | 13/39 | 35-2 | 90 |
| Charger | EC40P | 15/41 | 35-2 | 90 |
| Charger | EC54P | 17/41 | 35-2 | 92 |
| Cherger SS | EC40PF | 15/41 | 35-2 | 90 |
| Charger SS | EC54PF | 17/41 | 35-2 | 92 |
| Mustang | EC40P | 13/39 | 35-2 | 90 |
| Mustang | EC54P | 15/39 | 35-2 | 90 |
| TX | EC34PS | 13/39 | 35-2 | 90 |
| TX | EC51PS | 17/39 | 35-2 | 92 |

## 1973

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain | |
|---|---|---|---|---|
| | | | Type | Pitch |
| Colt | EC17P | 12/35 | 35-2 | 84 |
| Colt | EC25PS | 13/35 | 35-2 | 84 |
| Colt | EC29PM | 13/35 | 35-2 | 84 |
| Colt SS | EC29PF | 13/35 | 35-2 | 84 |
| Colt SS | EC34PF | 13/35 | 35-2 | 84 |
| Charger | EC29PM | 13/39 | 35-2 | 90 |
| Charger | EC40PM | 15/39 | 35-2 | 90 |
| Charger | EC54PM | 17/39 | 35-2 | 92 |
| Custom | EC40PM | 15/39 | 35-2 | 90 |
| Custom | EC54PM | 17/39 | 35-2 | 92 |
| Mustang | EC40PM | 13/39 | 35-2 | 90 |
| Mustang | EC54PM | 15/39 | 35-2 | 90 |
| TX | EC29PS | 13/39 | 35-2 | 90 |
| TX | EC34PS | 15/39 | 35-2 | 90 |
| TX | EC40PS | 15/39 | 35-2 | 90 |
| TX | EC44PS | 17/39 | 35-2 | 92 |
| TX | EC51PS | 19/39 | 35-2 | 92 |

## 1974

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain | |
|---|---|---|---|---|
| | | | Type | Pitch |
| Colt | EC17PM | 12/35 | 35-2 | 84 |
| Colt | EC25PS | 13/35 | 35-2 | 84 |
| Colt | EC29PF | 13/35 | 35-2 | 84 |
| Colt SS | EC25PC | 13/35 | 35-2 | 84 |
| Colt SS | EC29PF | 13/35 | 35-2 | 84 |
| Colt SS | EC34PC | 15/35 | 35-2 | 86 |
| Electra | EC34PQ | 15/39 | 35-2 | 90 |
| Electra | EC44PQ | 15/39 | 35-2 | 90 |
| Custom II | EC25PS | 13/39 | 35-2 | 90 |
| Custom II | EC40PM | 15/39 | 35-2 | 90 |
| Custom II | EC54PM | 17/39 | 35-2 | 92 |
| TX | EC25PT | 13/39 | 35-2 | 90 |
| TX | EC34PS | 15/39 | 35-2 | 90 |
| TX | EC44PT | 17/39 | 35-2 | 92 |
| TX | EC51PT | 19/39 | 35-2 | 92 |
| TC | EC17PM | 14/39 | 35-2 | 84 |
| TC | EC25PS | 14/39 | 35-2 | 84 |

## 1975

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain | |
|---|---|---|---|---|
| | | | Type | Pitch |
| Colt | EC25PC | 15/35 | 35-2 | 86 |
| Colt | EC34PC | 15/35 | 35-2 | 86 |
| Colt SS | EC25PC | 15/35 | 35-2 | 86 |
| Colt SS | EC34PC | 15/35 | 35-2 | 86 |
| Electra | EC25PS | 13/39 | 35-2 | 90 |
| Electra | EC34PQ | 15/39 | 35-2 | 90 |
| Electra | EC44PQ | 17/39 | 35-2 | 92 |
| TX | EC25PT | 13/39 | 35-2 | 90 |
| TX | EC34PT | 15/39 | 35-2 | 90 |
| TX | EC44PT | 17/39 | 35-2 | 92 |
| TX | EC51PT | 19/39 | 35-2 | 92 |
| TC | EC17PM | 14/39 | 35-2 | 84 |
| TC | EC25PS | 14/39 | 35-2 | 84 |

## CHAINCASE AND BRAKE

### Chaincase Data

**1976**

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain Type | Drive Chain Pitch |
|---|---|---|---|---|
| Colt | EC17PM | 12/35 | 35-2 | 84 |
| Colt | EC25PS | 13/35 | 35-2 | 84 |
| Colt | EC25PC | 15/35 | 35-2 | 86 |
| Colt | EC34PC | 15/35 | 35-2 | 86 |
| Colt SS | EC25PC | 15/35 | 35-2 | 86 |
| Colt SS | EC34PC | 15/35 | 35-2 | 86 |
| Electra | EC25PS | 13/39 | 35-2 | 90 |
| Electra | EC34PQ | 15/39 | 35-2 | 90 |
| Electra | EC44PQ | 17/39 | 35-2 | 92 |
| TX | EC25PT-06 | 14/39 | Silent | 64 |
| TX | EC34PT-05 | 17/39 | Silent | 66 |
| TX | EC44PT-05 | 19/39 | Silent | 66 |
| Starfire | EC25PT-05 | 14/39 | Silent | 64 |
| Starfire | EC34PT-06 | 15/39 | Silent | 64 |

**1977**

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain Type | Drive Chain Pitch |
|---|---|---|---|---|
| Colt | EC25PS | 13/35 | 35-2 | 84 |
| Colt | EC25PC | 15/35 | 35-2 | 86 |
| Colt SS | EC25PM-01 | 15/35 | 35-2 | 86 |
| Colt SS | EC34PM-03 | 17/35 | 35-2 | 86 |
| Electra | EC25PS | 13/39 | 35-2 | 90 |
| Electra | EC34PQ | 15/39 | 35-2 | 90 |
| Electra | EC44PQ | 17/39 | 35-2 | 92 |
| TX | EC25PT-07 | 15/39 | Silent | 64 |
| TX | EC34PT-05 | 17/39 | Silent | 66 |
| TX | EC44PT-05 | 19/39 | Silent | 66 |
| TX | EC44PT-06 | 19/39 | Silent | 66 |
| TX-L | EC34PL-01 | 19/39 | Silent | 66 |

**1978**

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain Type | Drive Chain Pitch |
|---|---|---|---|---|
| Colt | EC25PS | 13/35 | 35-2 | 84 |
| Colt | EC25PC | 15/35 | Silent | 86 |
| S/S 340 | EC34PM-03/04N | 17/35 | Silent | 86 |
| Cobra | EC34PM-04 | 15/35 | Silent | 88 |
| Cobra | EC44PM-01 | 17/33 | Silent | 88 |
| TX | EC25PT-07 | 15/39 | Silent | 64 |
| TX | EC34PT-05 | 17/39 | Silent | 66 |
| TX | EC44PT-05 | 19/39 | Silent | 66 |
| TX-L | EC34PL-02 | 19/39 | Silent | 66 |

**1979**

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain Type | Drive Chain Pitch |
|---|---|---|---|---|
| Gemini | EC25PS | 13/35 | 35-2 | 84 |
| Gemini | EC25PM-01 | 15/35 | Silent | 86 |
| Apollo | EC34PM-03 | 18/35 | Silent | 88 |
| Cobra | EC34PM-04 | 15/35 | Silent | 88 |
| Cobra | EC44PM-01 | 17/33 | Silent | 88 |
| TX | EC25PT-07 | 15/39 | Silent | 64 |
| TX | EC34PT-05 | 17/39 | Silent | 66 |
| TX | EC44PT-05 | 19/39 | Silent | 66 |
| TX-L | EC34PL-02 | 19/39 | Silent | 66 |
| Centurion | EC51PL-01 | 19/35 | Silent | 64 |

Chaincase Data

1980

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain | | |
|---|---|---|---|---|---|
| | | | Type | Pitch | Links Wide |
| Gemini | EC25PS | 13/35 | 35-2 | 84 | — — |
| Gemini | EC25PM-01 | 15/35 | Silent | 86 | 8 |
| Apollo | EC34PM-03 | 18/35 | Silent | 88 | 8 |
| Galaxy | EC34PM-04 | 15/35 | Silent | 88 | 8 |
| Galaxy | EC44PM-01/02 | 17/33 | Silent | 88 | 8 |
| TX/TX-C | EC34PT-07 | 17/39 | Silent | 66 | 11 |
| TX | EC44PT-05 | 19/39 | Silent | 66 | 11 |
| TX-L/TX-L Indy | EC34PL-02/05 | 19/39 | Silent | 66 | 11 |
| Centurion | EC51PL-02 | 19/35 | Silent | 64 | 11 |

## CHAIN AND SPROCKET SPECIFICATIONS FOR MODELS EQUIPPED WITH CROSS-OVER JACKSHAFTS

| Sprocket Combination | Gear Ratio | | Chain Pitch |
|---|---|---|---|
| 21/35 | 1.67 | HIGHER RATIO | 64 |
| 19/35 | 1.84 | | 64 |
| 21/39 | 1.86 | | 66 |
| 18/35 | 1.94 | | 64 |
| 21/41 | 1.95 | | 68 |
| 19/39 | 2.05 | | 66 |
| 17/35 | 2.06 | | 62 |
| 19/40 | 2.11 | | 68 |
| 19/41 | 2.16 | | 66 |
| 18/39 | 2.17 | | 66 |
| 16/35 | 2.19 | | 62 |
| 18/41 | 2.28 | | 68 |
| 17/39 | 2.29 | | 66 |
| 15/35 | 2.33 | | 62 |
| 17/40 | 2.35 | | 66 |
| 17/41 | 2.41 | | 66 |
| 16/39 | 2.44 | | 64 |
| 16/40 | 2.50 | | 66 |
| 14/35 | 2.50 | | 62 |
| 16/41 | 2.56 | | 66 |
| 15/39 | 2.60 | LOWER RATIO | 64 |
| 15/40 | 2.67 | | 64 |
| 15/41 | 2.73 | | 66 |
| 14/39 | 2.79 | | 64 |
| 14/40 | 2.86 | | 64 |
| 14/41 | 2.93 | | 64 |

1981

| Machine Model | Engine Model | Sprocket Ratio | Drive Chain | | |
|---|---|---|---|---|---|
| | | | Type | Pitch | Links Wide |
| Gemini | EC25PS | 13/35 | 35-2 | 84 | — |
| Galaxy | EC44PM–02 | 17/33 | Silent | 88 | 8 |
| Cutlass | EC34PM–03 | — | — | — | — |
| Cutlass SS | EC44–2PM–3100/3300 | — | — | — | — |
| TX-C | EC44–2PM–1100 | 19/35 | Silent | 64 | 11 |
| TX-L/TX-L Indy | EC34PL–05 | 19/39 | Silent | 66 | 11 |
| Centurion Indy | EC51PL–02 | 19/35 | Silent | 64 | 11 |

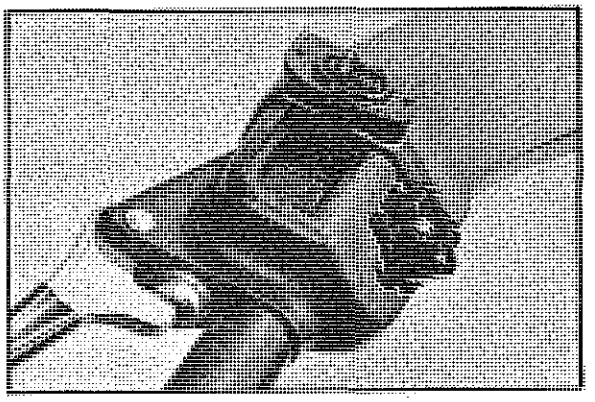
## Bleeding Procedures for Polaris Brake Systems

The Polaris hydraulic brake mechanism consists of a handlebar mounted master cylinder, a hydraulically operated plunger assembly (slave cylinder) integrally mounted in the chaincase rear cover, an adjustable brake pad and a self aligning brake disc mounted in the chaincase.

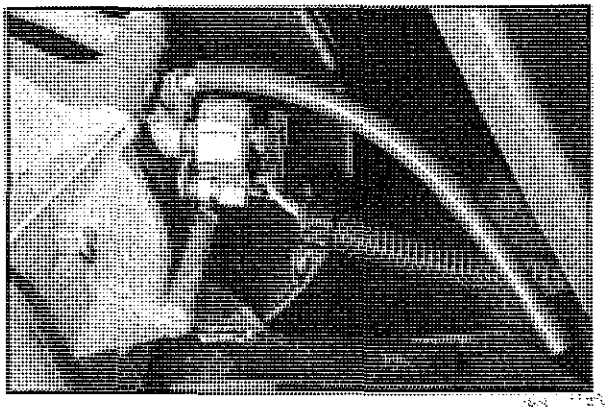
The master cylinder contains a fluid reservoir and a cylindrical pressure chamber in which force applied to the brake lever is transmitted to the fluid which actuates the plunger assembly in the chaincase rear cover. A coil spring, located in the master cylinder, holds the piston assembly against the actuating force of the brake lever. A piston assembly consists of a piston, "U" seal and a rubber "O" ring.

SERVICE

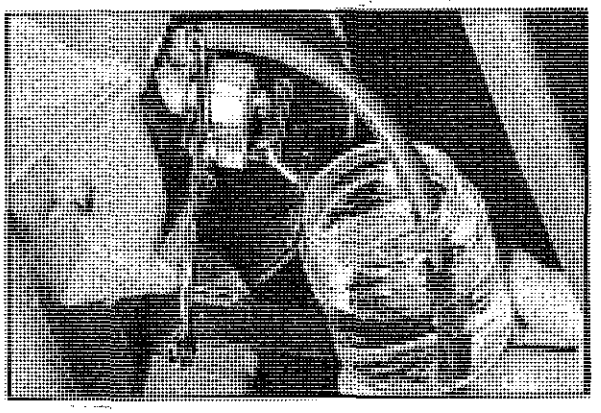
1. Air in the hydraulic system will cause a spring or spongy action of the brake lever. A bleeding operation is necessary to remove air in the system. Fill the master cylinder with standard automotive type brake fluid or Polaris silicone brake fluid (PN 2870251).



2. Slip a rubber tube over the ball of the bleeder valve and direct fluid away from painted areas. NOTE: Care must be taken to wipe any accidentally spilled fluid from painted surfaces.



3. Slowly squeeze brake lever a full stroke and hold. Unscrew bleeder valve 3/4 turn to release air. Close bleeder valve, then release brake lever. Repeat the above procedure until fluid flows from bleeder valve in a solid stream that is free of air. Check master cylinder periodically to make sure that it contains fluid. Fluid should be 1/8" from top of reservoir area. Fill with brake fluid and install new gasket.

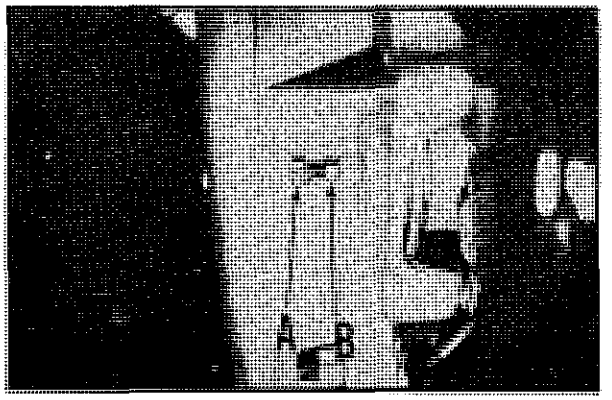


## Hydraulic Brake Adjustment and Master Cylinder Overhaul

### BRAKE ADJUSTMENT – BRAKE SYSTEM TYPE I

⚠ If there is excessive brake pad clearance, turn set screw (A) clockwise until pads are tight against the disc, then back off the screw 1/4 turn counterclockwise. Re-tighten the lock nut (B).

NOTE: When the head of the adjustment screw contacts the locknut, new brake pads should be installed.

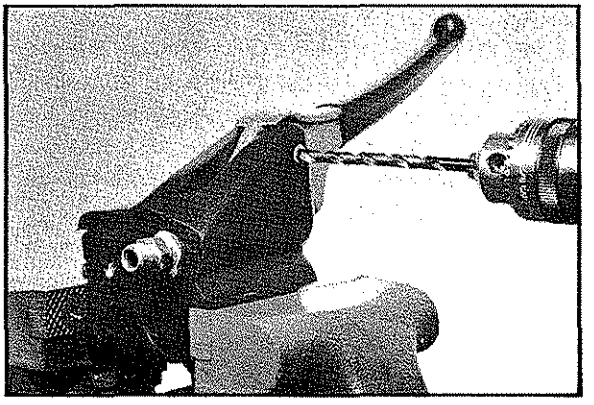



### BRAKE SYSTEMS TYPE II AND III

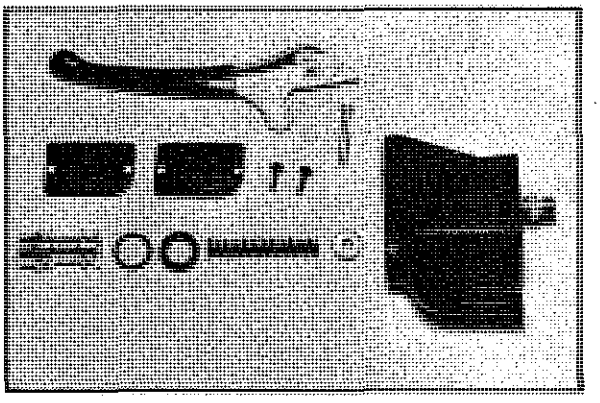
These systems are self adjusting and do not require adjustments.

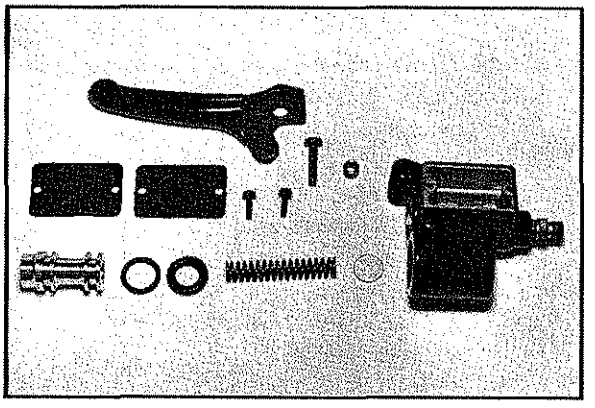
### MASTER CYLINDER OVERHAUL

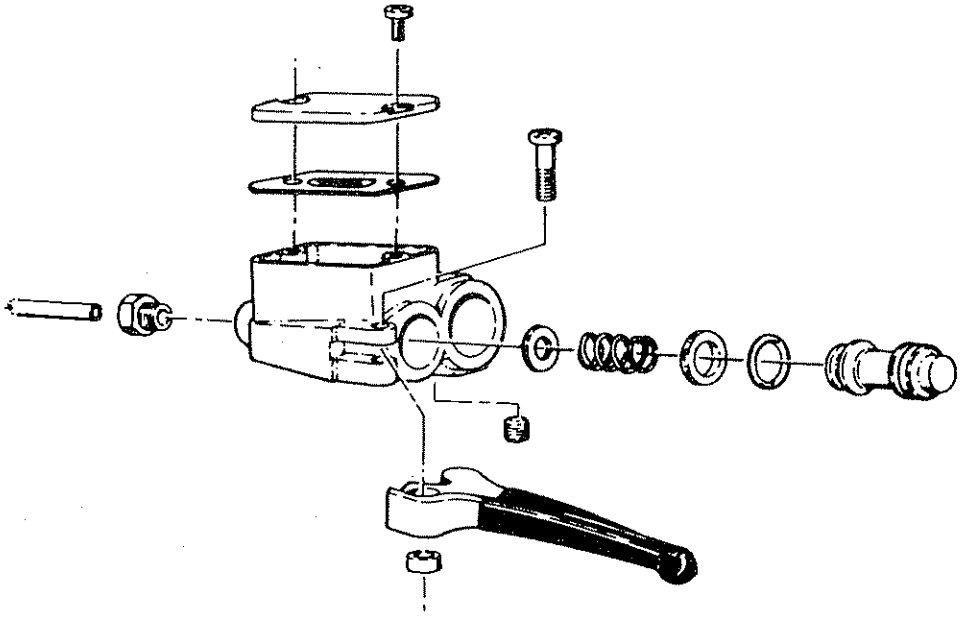
1. Remove the master cylinder assembly from the machine taking care not to spill brake fluid on painted surfaces. On models equipped with molded velox master cylinder, remove existing rivet, as shown. This will have to be replaced with a new pin (PN 7661615) and retaining ring (PN 7710401) upon reassembly.



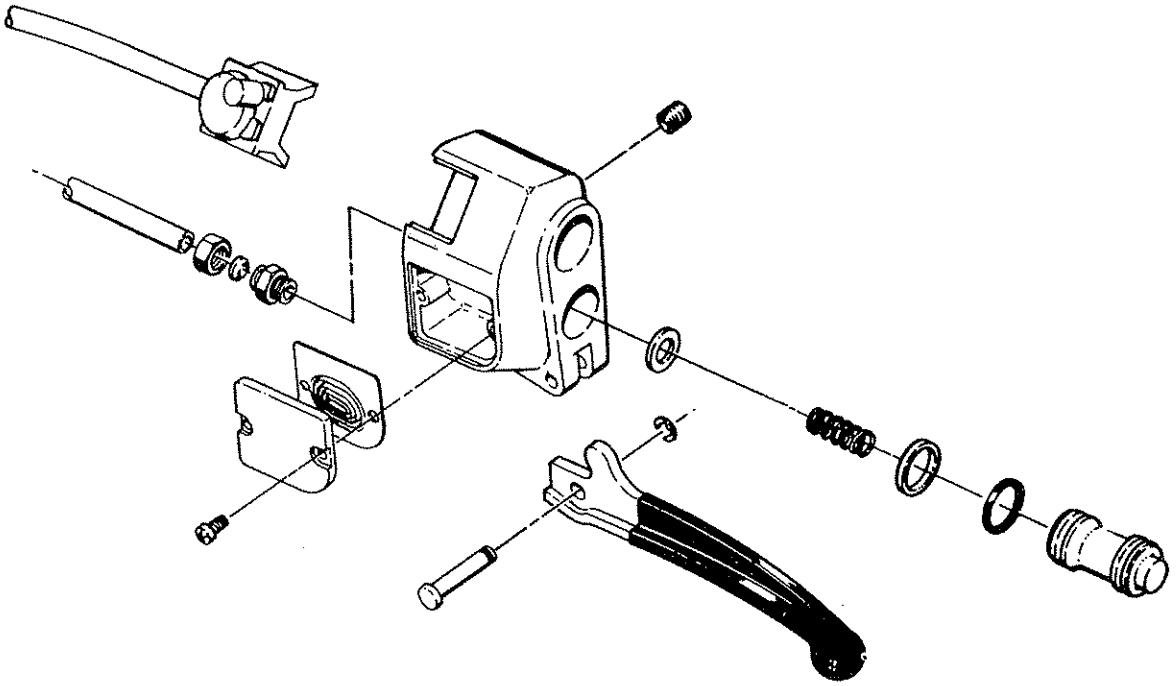
2. Remove the piston and springs from the master cylinder discarding the rubber "U" cup, "O" ring, and cover gasket. Inspect the cylinder bore for scores, scratches or corrosion. All cylinder parts must be very clean and not be allowed to come in contact with any lubricating oil. When reassembling, dip all internal parts in brake fluid, also wet the cylinder bore. Install new "U" cup and "O" ring to the piston. Next install the springs and piston into the master cylinder bore exercising care to insure the seal is not damaged. Install lever with a new pin and retainer. Assemble the master cylinder to the handlebar, adjusting and bleeding air from system as covered in this section. Use a new cover gasket to prevent leakage.







CAST ALUMINUM MASTER CYLINDER

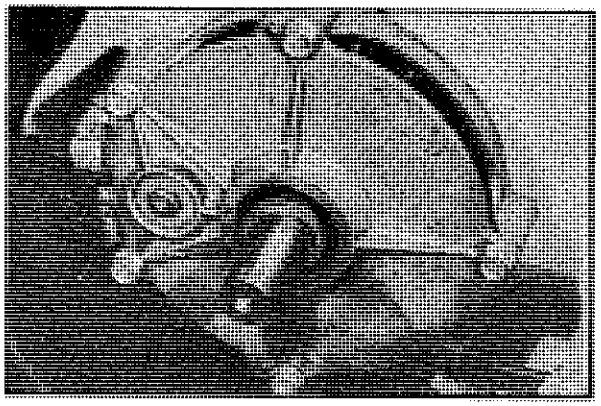


MOLDED VELOX MASTER CYLINDER

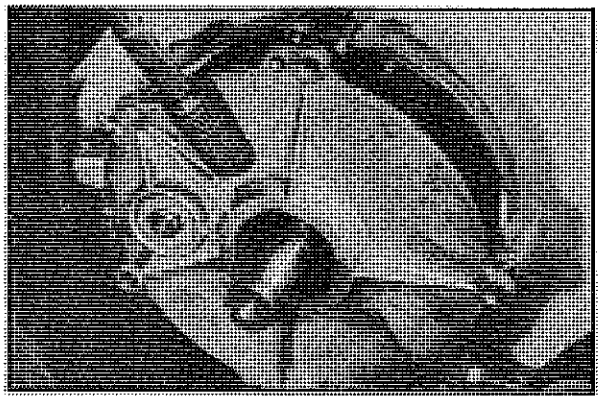
## CHAINCASE AND BRAKE

### Type I Slave Cylinder Removal and Repair

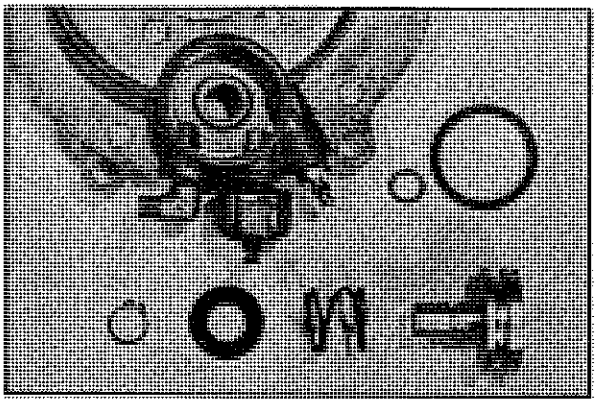
1. Remove the air box, driven clutch, brake line, brake light switch wires, and five cap screws from chaincase rear cover.



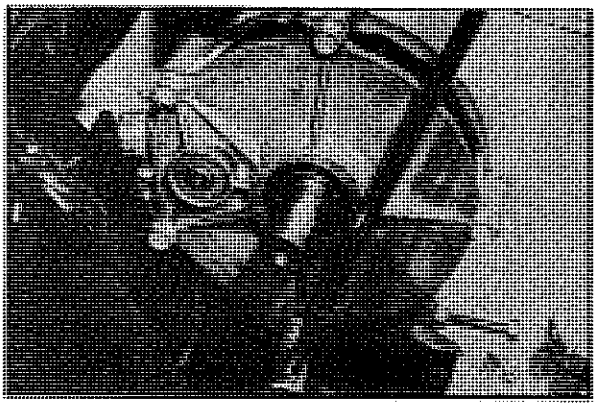
2. Apply heat to bearing area and slide rear cover and slave cylinder assembly from the shaft. NOTE: On some models it may be necessary to loosen chaincase to enable the rear cover to clear the chaincase mounting gussets.



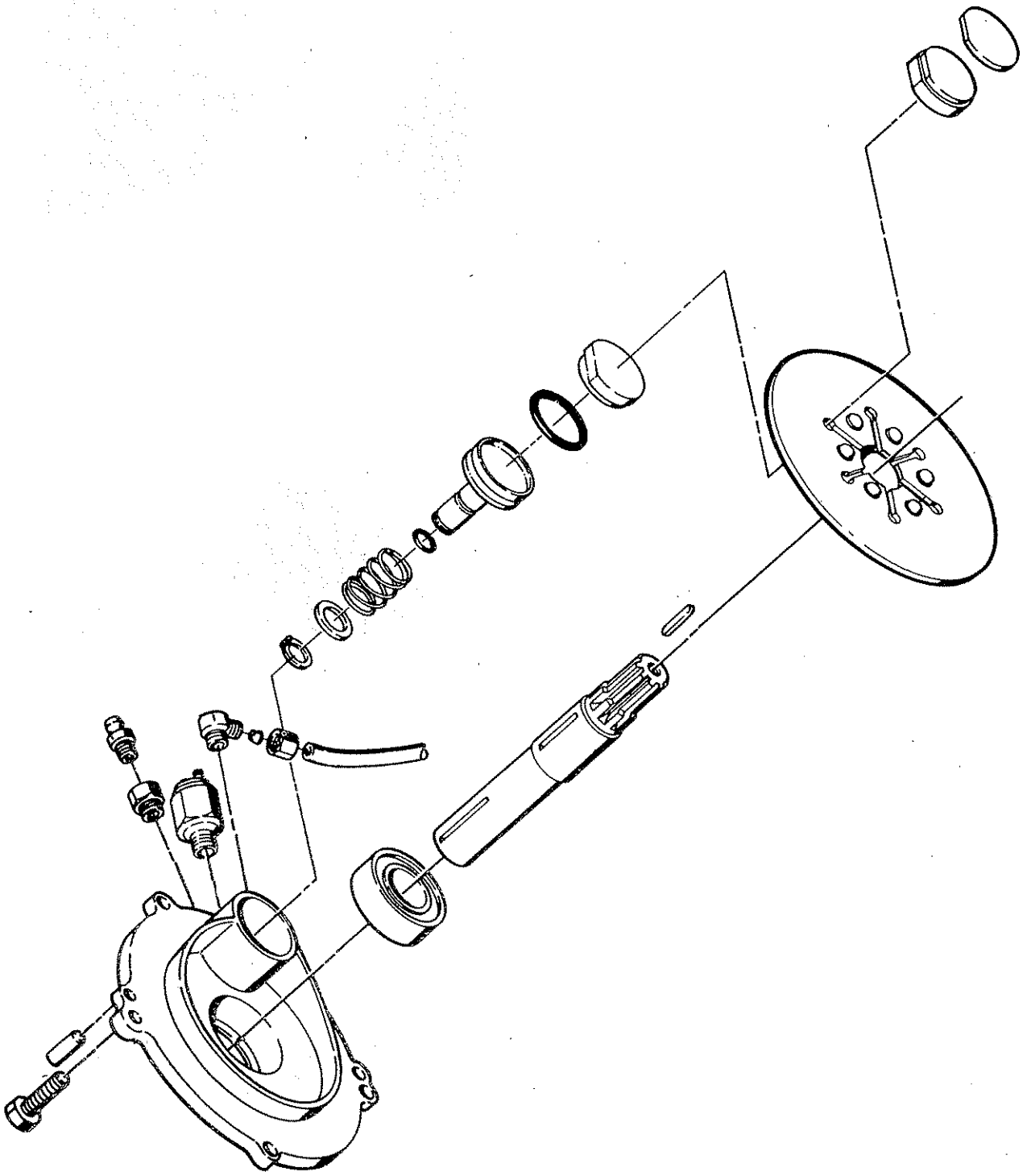
3. Remove piston retaining snap ring. Remove washer, spring, and plunger from rear cover and discard. Clean rear cover thoroughly with brake fluid or denatured alcohol.
   CAUTION: Do not use methanol-base anti-freeze or any other cleaning fluid that may contain even a trace of mineral oil. Inspect bore for scores, scratches, or corrosion. Slight corrosion may be cleaned with fine crocus cloth and alcohol.



4. Dip all internal parts in clean brake fluid. Use automotive brake fluid or Polaris silicone brake fluid (PN 2870251). Wet cylinder bore and install "O" rings on plunger and insert into rear cover.
   ⚠ Care must be taken not to damage "O" rings. Torque rear cover bolts evenly as numbered. Bleed system as outlined on page VIII – 3.



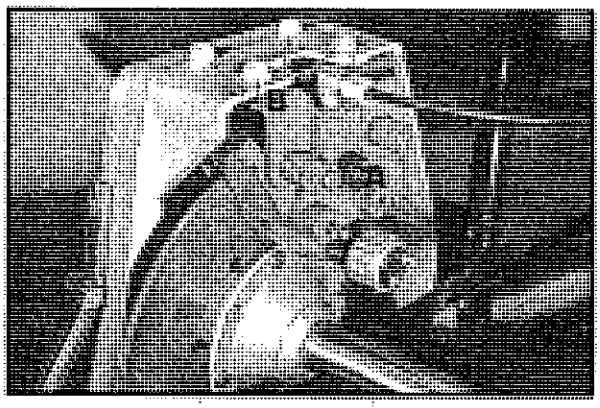
## Type I Slave Cylinder Exploded View



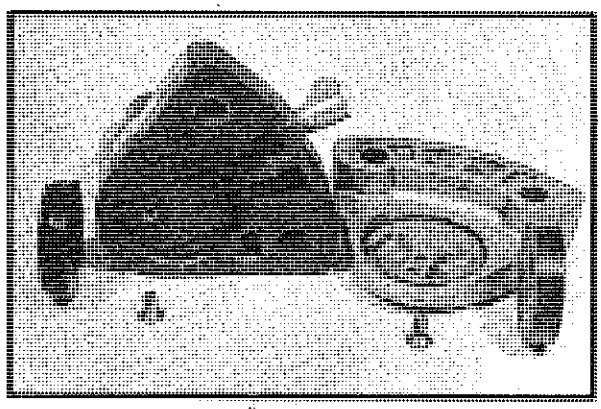
## Type II Brake Caliper Removal and Repair

1. Remove the hydraulic line, exercising care to prevent fluid spillage on painted surfaces.

2. Remove the two bolts (A) which hold the caliper halves together and the four bracket mounting screws (B).

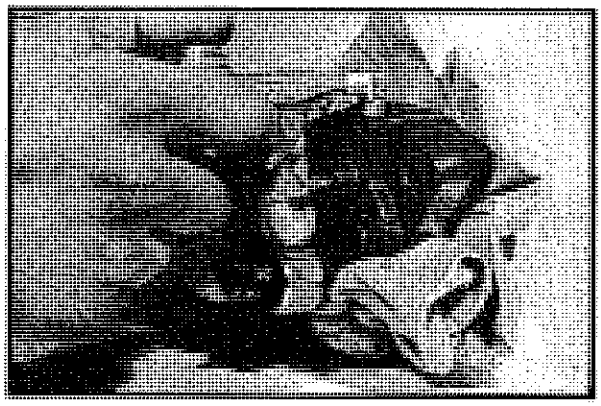



3. Remove the friction pads, noting the difference between the stationary side and piston side pads.
   NOTE: When replacing friction pads only, it is important to make room for new pads. The piston must be pushed back into the slave cylinder bore. Use Loctite on the two friction pad attaching screws.

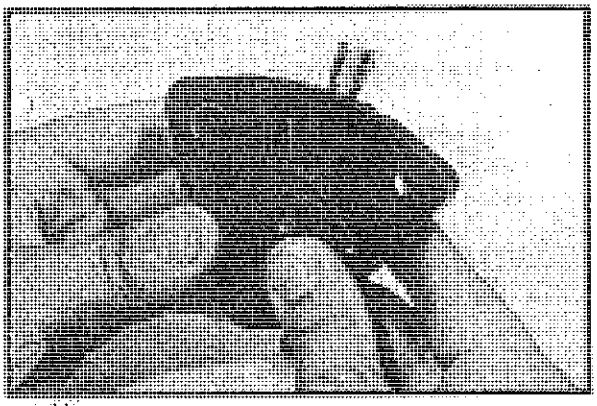


4. ⚠ Piston removal is facilitated by the use of compressed air at the inlet fitting. Extreme caution must be exercised to prevent fluid from getting in eyes. Cover the assembly with a shop rag as shown.

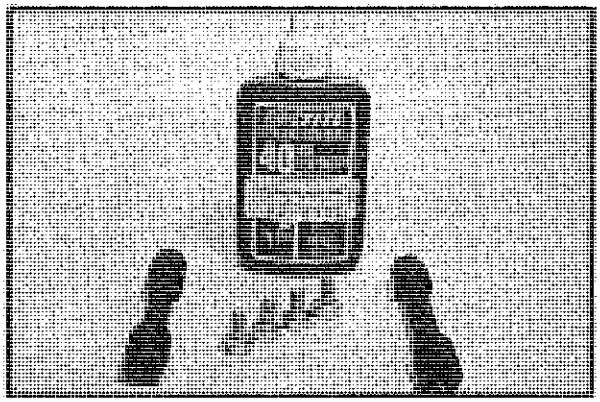
5. Inspect the cylinder and piston for scoring. Evidence of severe scoring in the caliper bore will mean replacing the housing and piston to obtain a proper piston seal.



6. Dip the piston assembly and the "O" ring seal in brake fluid; assemble the seal to the piston. Press the piston into the caliper bore keeping it square to avoid scoring the bore. Push it firmly all the way in.



7. Reassembly is basically the reverse of disassembly procedures. Be sure that all components are clean and serviceable before reassembling the unit.



Observe the following:

A. Apply Loctite (PN 2870326) compound on the two (2) caliper carrier bolts and four (4) bracket attaching cap screws.

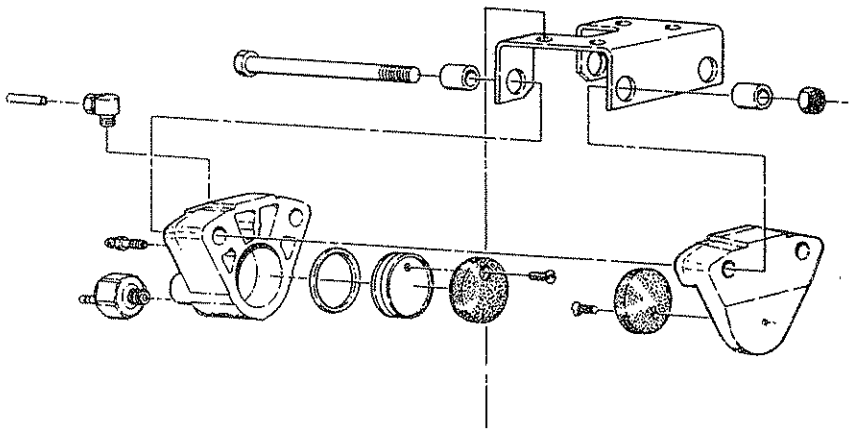
Torque Values

Caliper carrier bolts - 25 - 30 ft./lbs.
Caliper attaching bracket cap screws - 8 ft./lbs.

B. Purge the system of all trapped air by bleeding as outlined on page VIII – 3.

C. Inspect for system leaks.

D. Check caliper unit mount for free floating action.



TYPE II SLAVE CYLINDER EXPLODED VIEW

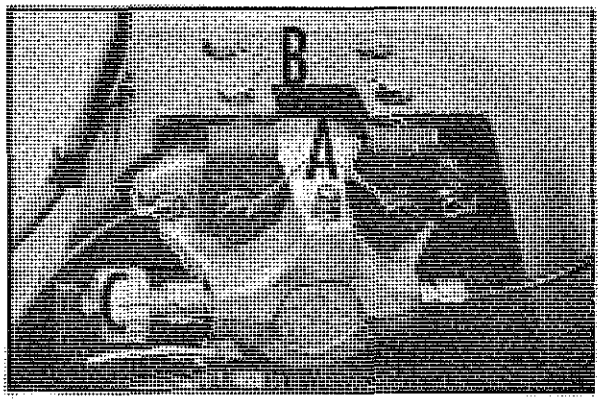
## CHAINCASE AND BRAKE

### Type III Brake Caliper Removal and Repair

1. Remove the hydraulic line, exercising care to prevent fluid spillage on painted surfaces.

2. Remove spring clips (9), figure 1, which hold the pad retaining pins (10).

3. Remove the two bridge bolts (A) holding the caliper halves together and the four bracket mounting screws (B).




IMPORTANT: Note brake light switch adapter (C) which is used on all Type III brake systems, except Centurion. The Centurion has a special brake light switch which does not require the use of an adapter. All brake light switches, except Centurion, have 1/8" NP thread. The Centurion has a 3/8 x 24 NF thread and a flared end. Therefore, care must be taken when replacing these switches so as not to interchange them and cause possible damage to caliper assemblies.

### REPLACING FRICTION PADS

The pad is attached to a pad holder and is replaced as a set.

1. To make room for new pads, the piston must be pushed back into the caliper bore. Loosen the bleeder screw and work the piston back into the bore.

2. Take out pad retaining pins and remove worn friction pads.

3. Install new pad holders. Brake pads should be replaced only as a set.

4. With unit reassembled, apply brakes lightly several times to seat the new pads against the disc.

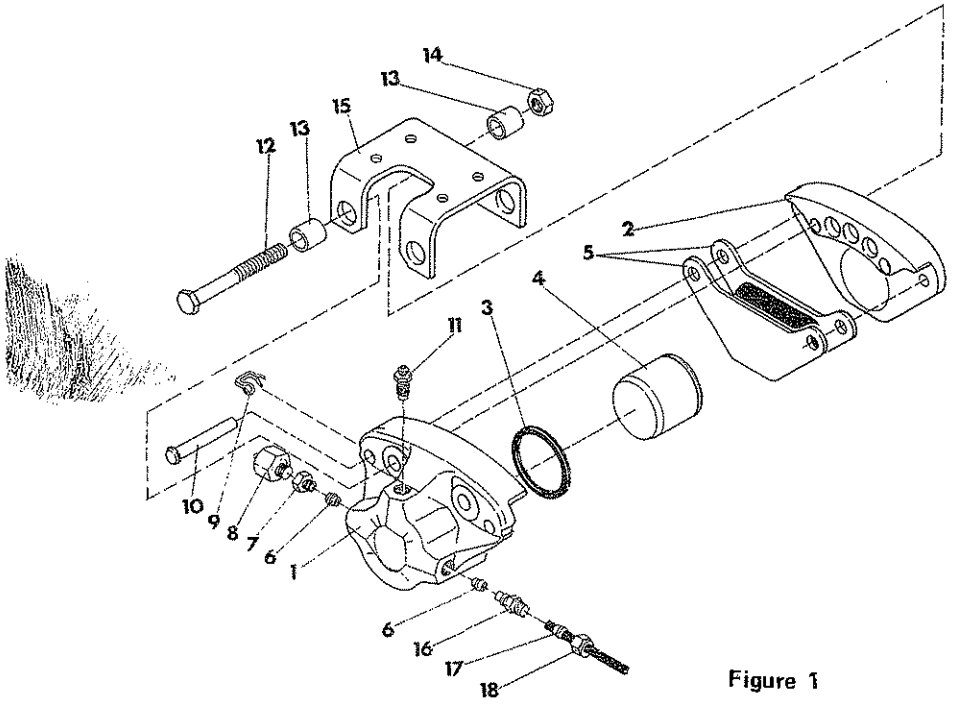



Figure 1

1 — Piston Casting
2 — Carrier Casting
3 — Piston Seal
4 — Piston
5 — Pad Assembly (2)
6 — Seat Insert (2)
7 — Brass Adapter
8 — Stop Light Switch
9 — Spring Clip (2)
10 — Pad Retainer Pin (2)
11 — Bleeder Screw
12 — Bridge Bolt (2)
13 — Spacer Bushing (4)
14 — Nut (2)
15 — Bracket
16 — Male Adapter
17 — Ferrule Fitting
18 — Female Connector

## DISASSEMBLY

Refer to the exploded view while performing steps below. Numbers in parenthesis correspond to callouts in figure 1.

NOTE: Only take apart as far as needed to make repairs.

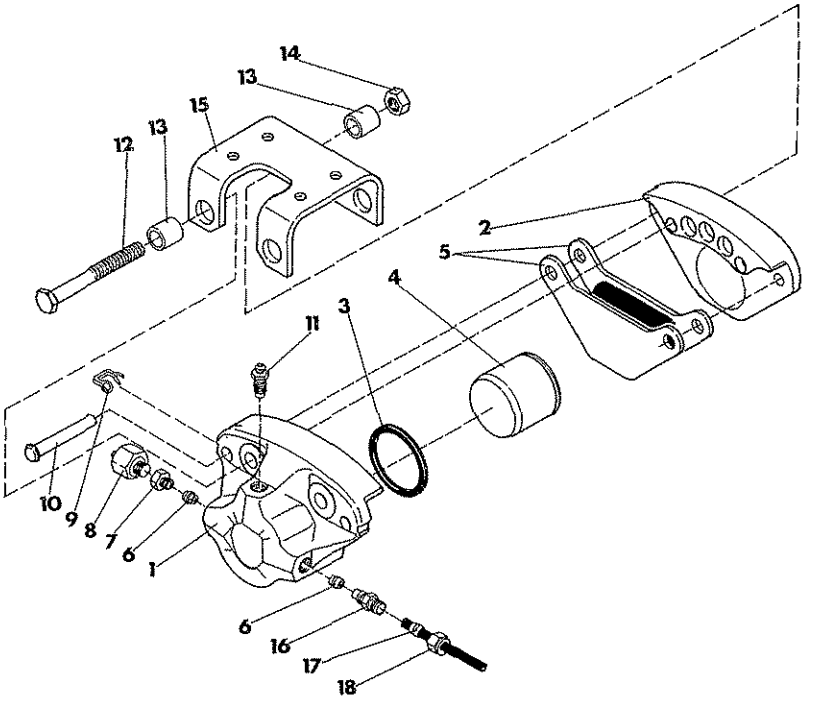
1. Disconnect hydraulic line.
2. Disassemble on a clean bench.
3. Open bleed screw (11) and drain brake fluid from caliper assembly.
   ⚠ CAUTION: PROTECT EYES FROM FLUID.
4. Remove the spring clips (9) that hold the pad retainer pins (10) and remove the pins.
5. Remove the two bridge bolts (12).
6. Separate castings (1) and (2).
7. Place caliper with piston down and remove piston (4) from piston casting (1) by applying compressed air to the hydraulic inlet port.
   ⚠ CAUTION: Use just enough air to do the job. Use extra care not to damage the piston or piston bore.
8. Using a small wood or plastic stick, work out piston seal (3) from its groove in the piston bore. Discard old seal.
   ⚠ CAUTION: To avoid scratching piston or burring edge of seal groove, do not use a metal tool such as a screwdriver.

## CLEANING AND INSPECTING

Check all parts for wear or damage and replace any found defective.

1. Clean all parts with denatured alcohol and wipe dry with a clean, lint-free cloth. Using an air hose, blow out the drilled passages and bores.
2. Inspect casting cylinder bore for scoring, pitting, or corrosion. A corroded or deeply scored casting should be replaced; light scores and stains may be removed.
3. Polish any discolored or stained area with crocus cloth only. Use finger pressure and rotate the crocus cloth in the cylinder bore. Do not slide the cloth in and out of the bore under pressure. Do not use any other kind of abrasive or abrasive cloth. Black stains on the bore walls are caused by the piston seals and do no harm.
4. Check piston to see if it is pitted, scored, or worn. If so, discard and replace the piston. Do not attempt to polish or sand piston.
5. Clean piston with denatured alcohol and wipe dry with a clean, lint-free cloth. Using an air hose, blow dry.
6. Check inlet and bleeder hole threads for damage.
7. Inspect seat insert (6) for damage and replace if necessary.

## Type III Brake Caliper Assembly




1 – Piston Casting
2 – Carrier Casting
3 – Piston Seal
4 – Piston
5 – Pad Assembly (2)
6 – Seat Insert (2)
7 – Brass Adapter
8 – Stop Light Switch
9 – Spring Clip (2)
10 – Pad Retainer Pin (2)
11 – Bleeder Screw
12 – Bridge Bolt (2)
13 – Spacer Bushing (4)
14 – Nut (2)
15 – Bracket
16 – Male Adapter
17 – Ferrule Fitting
18 – Female Connector

Figure 1

### ASSEMBLY

Reassembly is basically the reverse of disassembly. Be sure that all parts are clean and serviceable before reassembling the unit.

1. Dip a new piston seal (3) in clean brake fluid and place in groove in the cylinder bore. Seal should be positioned at one point in groove and then gently worked around the groove by hand until properly seated. Never use an old seal.

2. Install piston (4) into cylinder bore as follows. Coat piston thoroughly with brake fluid and carefully work piston down the bore until bottomed.
   ⚠ CAUTION: Apply force uniformly to avoid cocking piston in bore.

3. Examine pads for wear or damage. If pads are worn to less than half original thickness, install new pad holder assemblies. If pads are okay, they may be reused. Be sure pads are installed in their original positions. If pads are replaced, replace in sets.

4. Replace pad retainer pins (10) and spring clips (9). Observe the following:

   A. Be sure bolts and nuts are clean and dry. Apply Loctite (PN 2870326) compound on the two caliper carrier bolts and four bracket attaching cap screws.

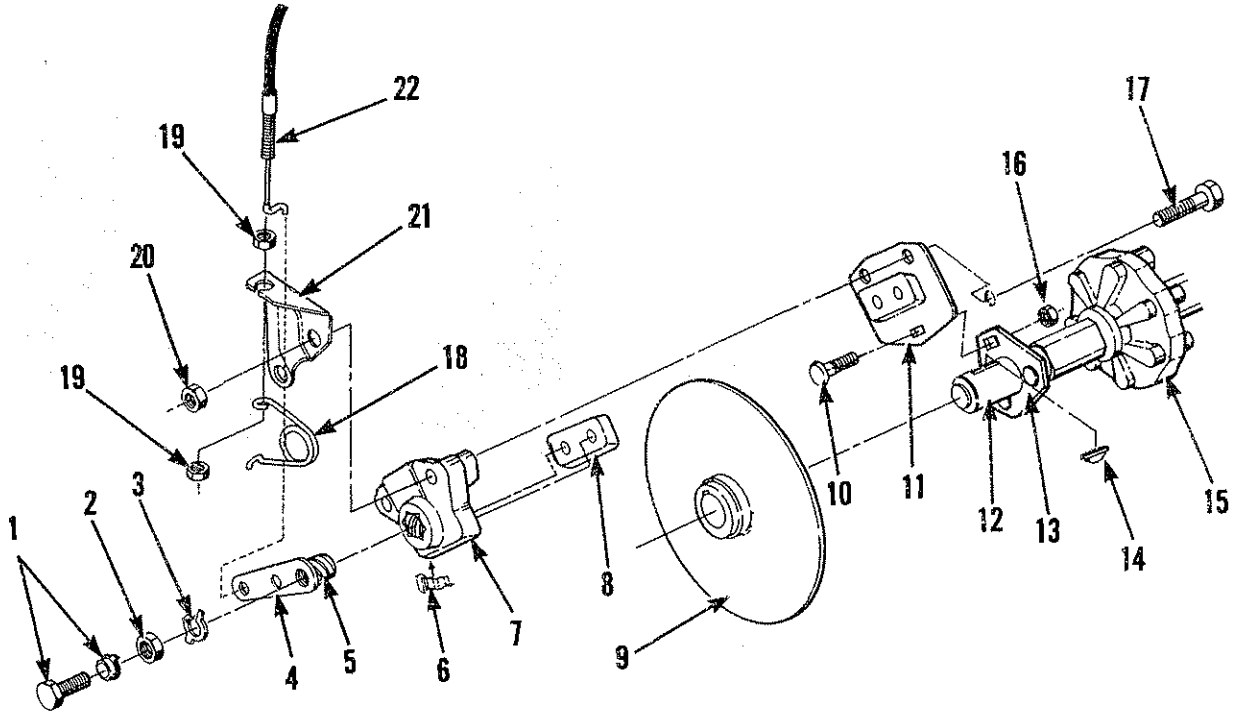
      Torque Values: Caliper carrier bolts – 30 ft./lbs.
      Caliper attaching bracket cap screws – 8 ft./lbs.

   B. Purge the system of all trapped air by bleeding as outlined on page VIII – 3.

   C. Inspect for system leaks.

   D. Check caliper unit mount for free floating action.

## Type IV Brake Overhaul and Pad Replacement



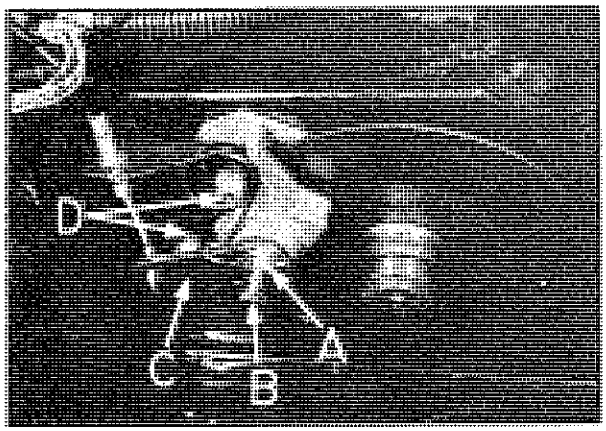

1 — Adjuster Bolt and Stop
2 — Jam Nut
3 — Jam Nut Locking Tab
4 — Actuating Lever
5 — Helix Shaft
6 — Brake Pad Retainer
7 — Caliper Casting
8 — Movable Brake Pad
9 — Brake Disc
10 — Carriage Bolt
11 — Stationary Pad Assembly
12 — Front Drive Shaft
13 — Drive Shaft Bearing Flangette
14 — Brake Disc Key
15 — Front Drive Sprocket
16 — Nut 5/16
17 — Caliper Attaching Bolt (2)
18 — Return Spring
19 — Cable Sleeve Jam Nut (2)
20 — Caliper Attaching Nut (2)
21 — Brake Cable Bracket
22 — Brake Cable

1. Open the adjuster bolt jam nut locking tab (A). Loosen the jam nut and remove the adjuster bolt (B).

2. Remove the actuating lever (C) and return spring.

3. Remove the two brake caliper attaching nuts (D).

4. Remove the cable bracket and caliper assembly. Check cable condition at both ends — frayed or binding brake cables must be replaced.

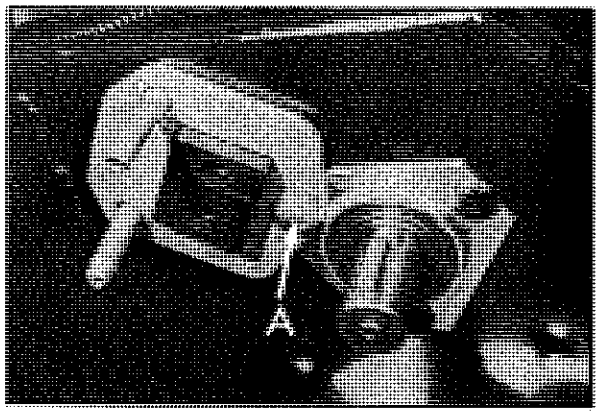


## Type IV Brake Overhaul and Pad Replacement

5. Slide the brake disc off the front drive shaft. NOTE: Check brake disc condition and mounting. Replace disc as needed.

6. Clean the drive shaft in brake disc area. Lightly lubricate with anti-seize.

7. Remove the carriage bolt (A). Remove the pad assembly and replace with a new assembly.

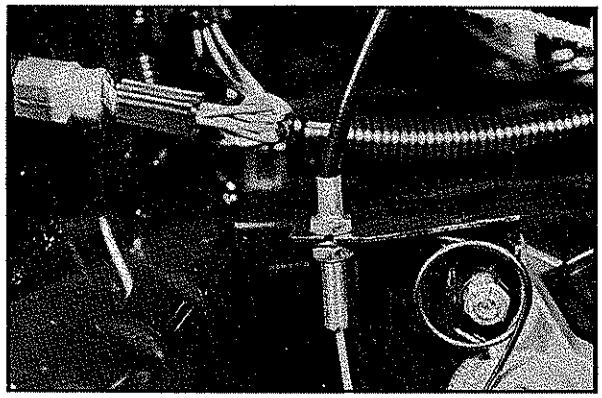



8. Install brake disc.

⚠ CAUTION: The disc must float or slide freely on the front drive shaft.

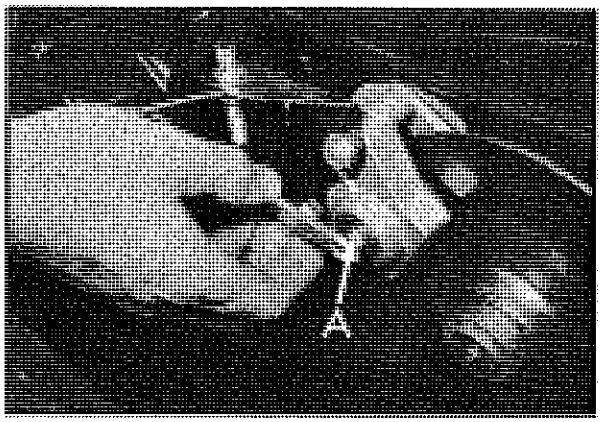
9. Replace the movable pad assembly and install the caliper onto the attaching bolts. Install brake cable bracket and torque the attaching nuts to 30 ft./lbs.

10. Loosen the cable sleeve jam nuts and adjust the brake cable sleeve to its shortest position.

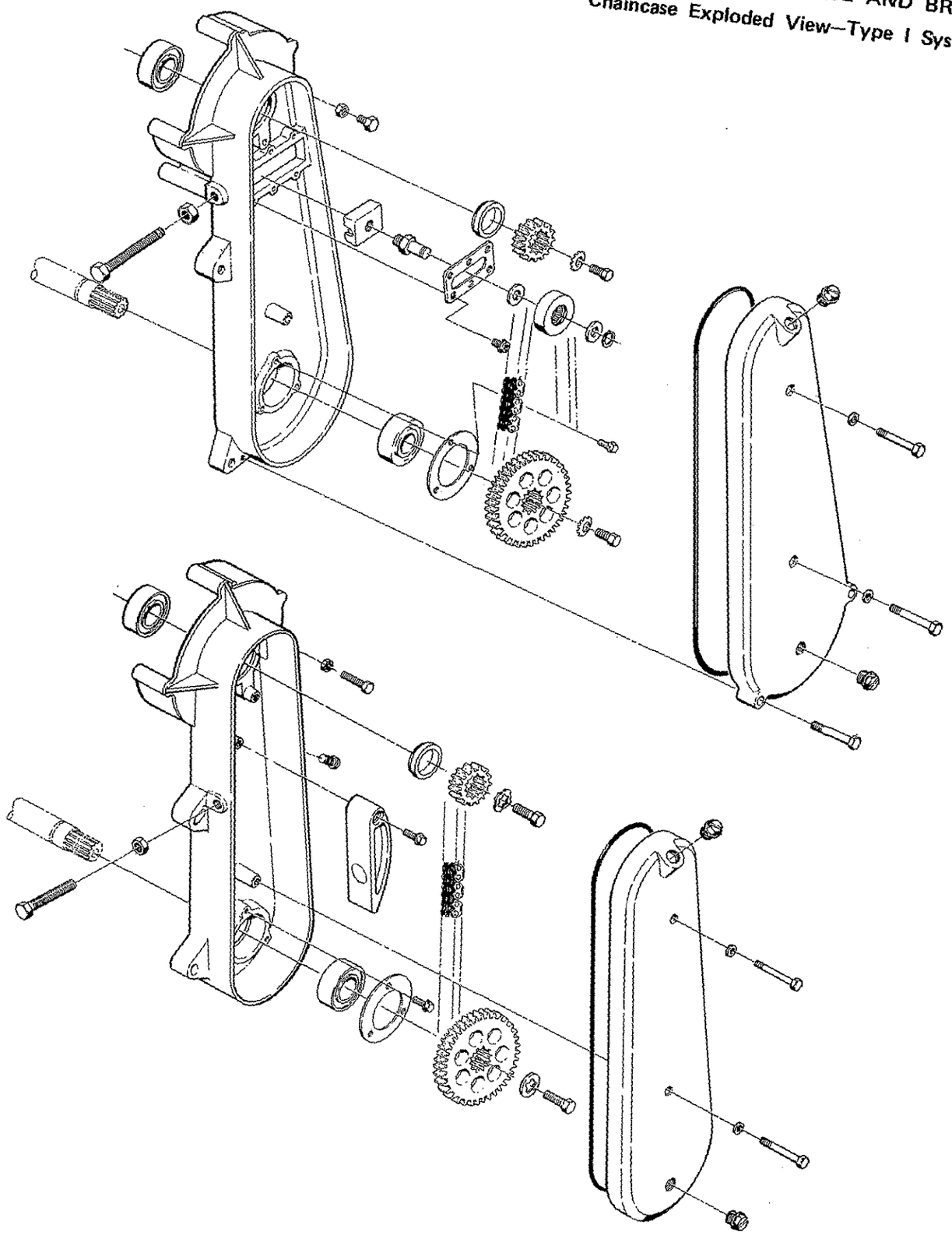


11. With the brake lever bottomed on handlebar and the caliper helix shaft (A) turned in, install the actuating arm, locking tab, jam nut, and adjuster bolt.

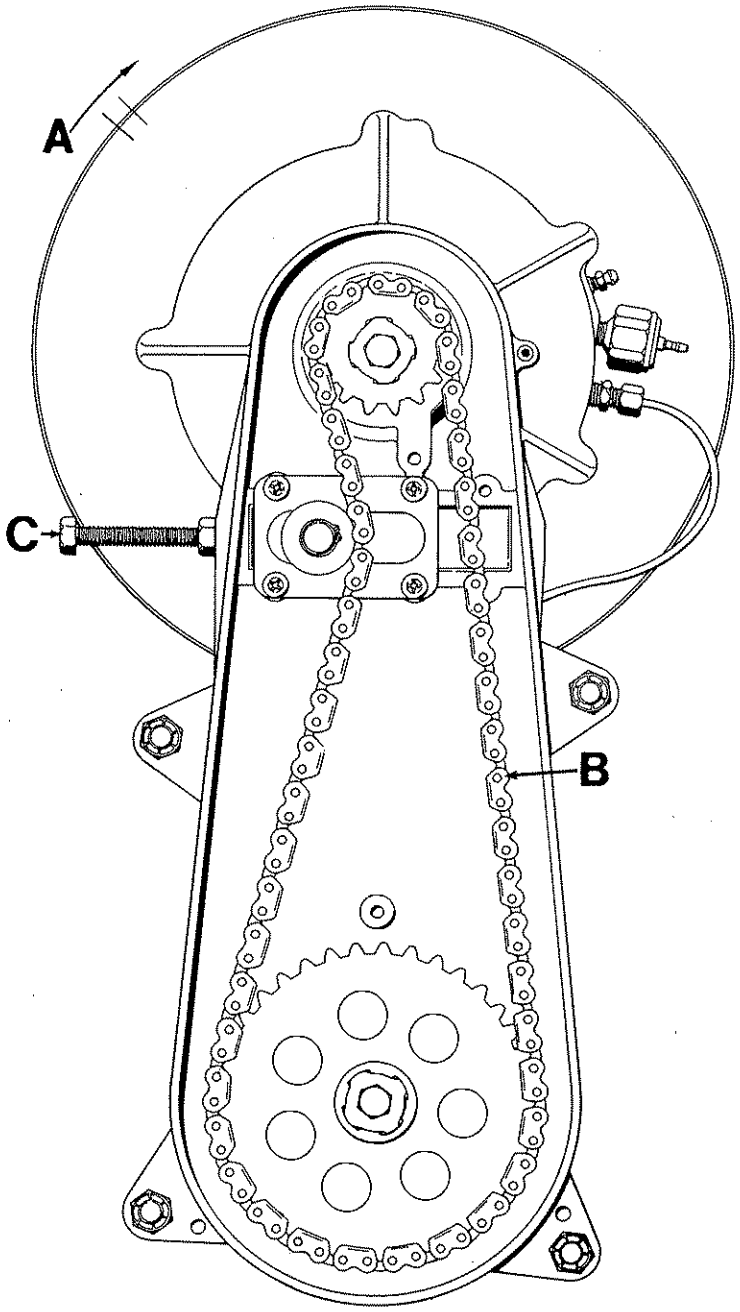
12. Insert a .012" feeler gauge between brake disc and movable brake pad. Turn the adjuster bolt in finger-tight and set the jam nut. Remove the feeler gauge and bend the locking tab. Reinstall the return spring. Field-test unit for proper braking action.



## Chaincase Exploded View—Type I Systems



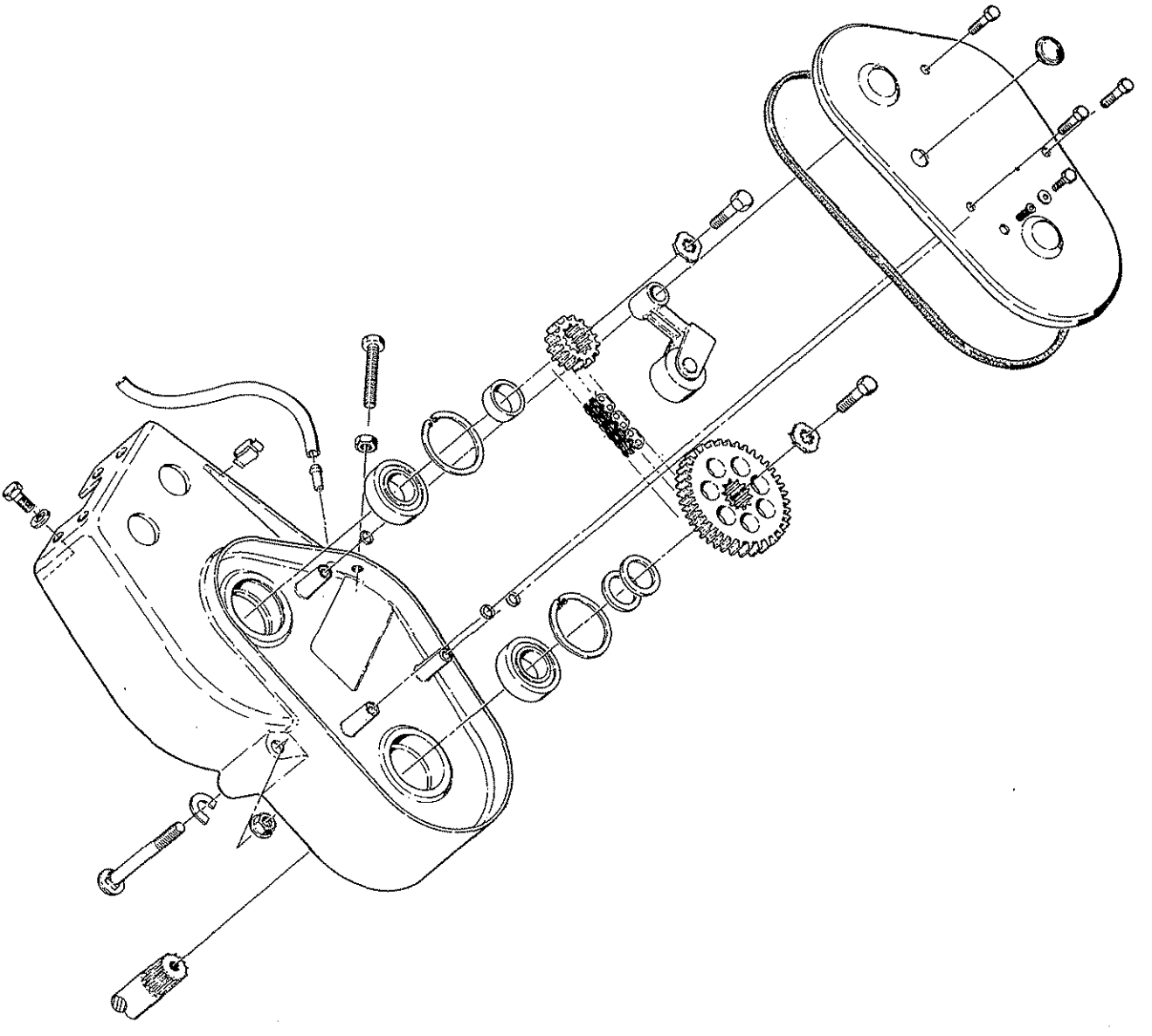
## Drive Chain Adjustment and Lubrication—Type I Systems



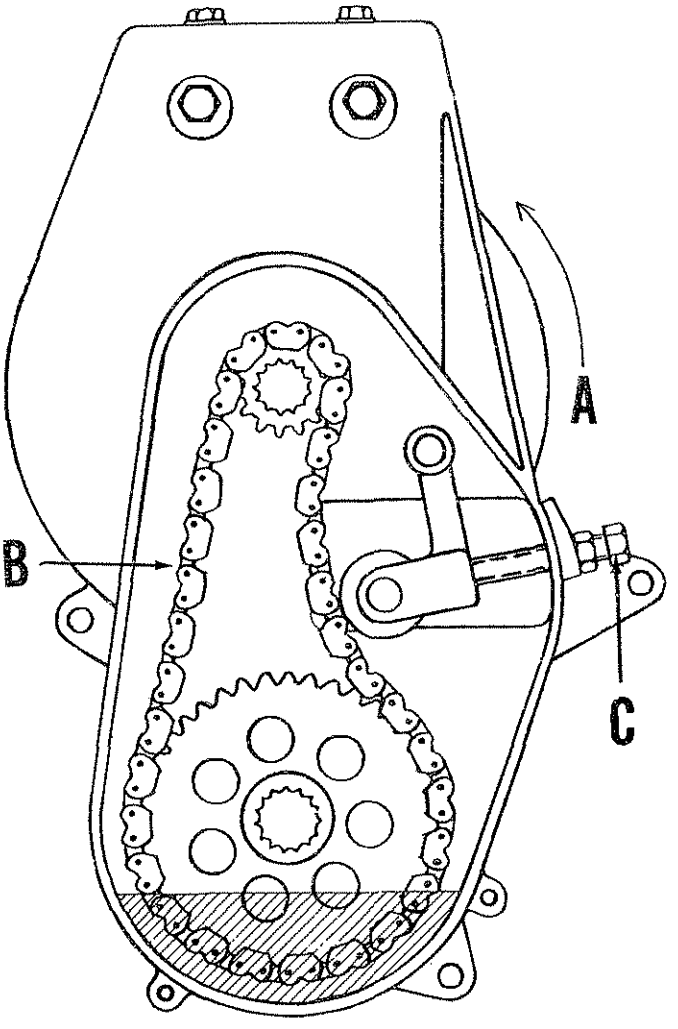

### DRIVE CHAIN TENSION

To obtain correct chain tension, remove the chaincase cover. With a slight reverse tension on the chain, turn driven clutch as indicated (A). There should be approximately 3/8" deflection on the chain at point (B). Chain adjustment is achieved with the adjusting bolt (C). Install the cover and add chaincase oil to lower plug level; install cover plugs (upper vented).

## Chaincase Exploded View—Types II and III Systems

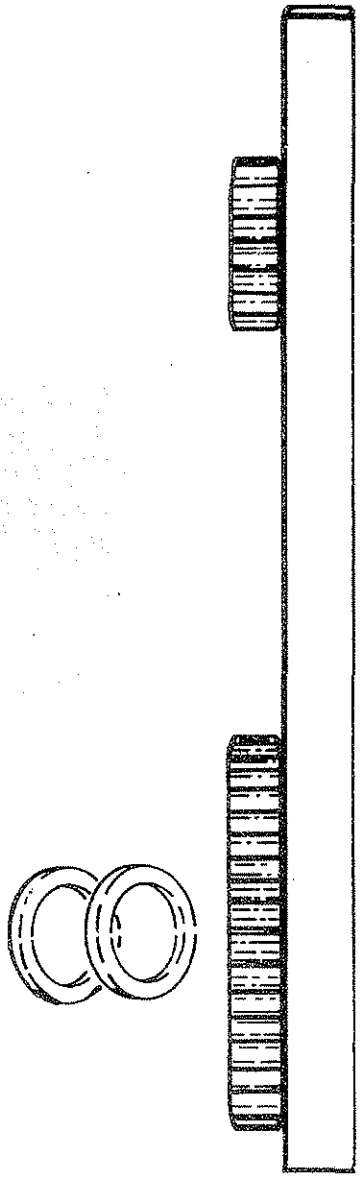


## Drive Chain Adjustment and Lubrication—Types II and III Systems




### DRIVE CHAIN TENSION

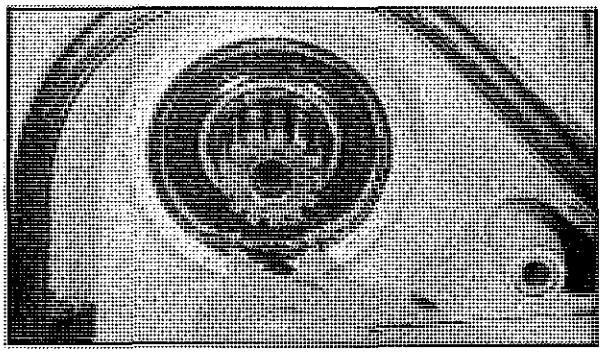
To obtain correct chain tension, remove the chaincase cover with a slight reverse tension on the chain by turning driven clutch as indicated (A). There should be approximately 1/4" – 3/8" free play deflection on the chain at point (B). Chain adjustment is achieved by loosening the adjusting bolt locknut and turning adjusting bolt (C) until correct chain deflection is obtained. Lock the adjusting bolt locknut while holding a wrench on the adjusting bolt at the same time to prevent it from turning and changing your desired chain tension. Install the chaincase cover and add Polaris chaincase lubricant (PN 2870337) through the cover upper plug hole to the lower check plug level.



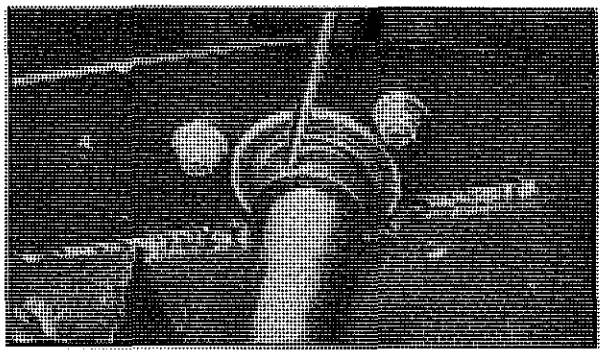
Maximum sprocket and chain life are directly related to proper sprocket alignment. Before installing the drive chain, place a straight edge against the upper and lower installed sprockets. The edge should contact equally on both sprockets. If misalignment is evident, the addition or subtraction of washers (PN 7556509) is necessary behind the bottom sprocket to correct the problem.

## Jackshaft Removal

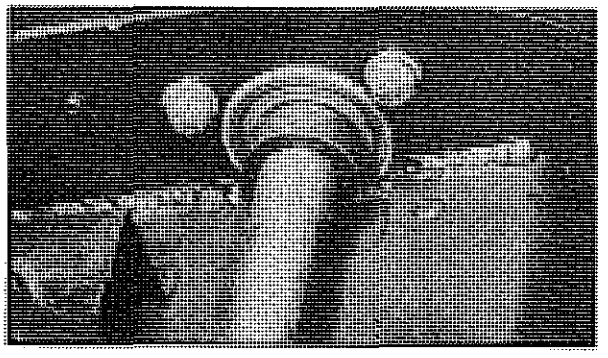
1. Remove the chaincase cover, sprockets, and retaining snap ring.



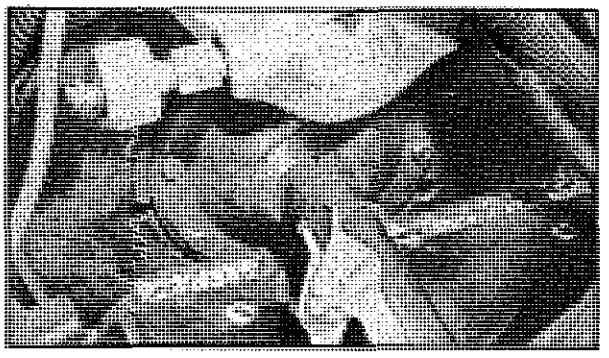
2. Remove the drive belt and driven clutch. Loosen the lock collar set screw and rotate the lock collar with a drift punch.



3. Remove the flangette and bearing from left side of machine. NOTE: The suspension may have to be lowered to gain access to the bottom flangette attaching nut.

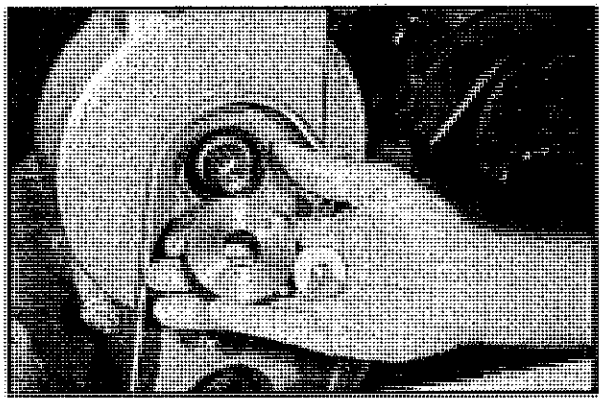


4. Open the brake disc retaining snap ring and slide it off the bearing and flangette end. The jackshaft may now be removed, sliding it out through chaincase.

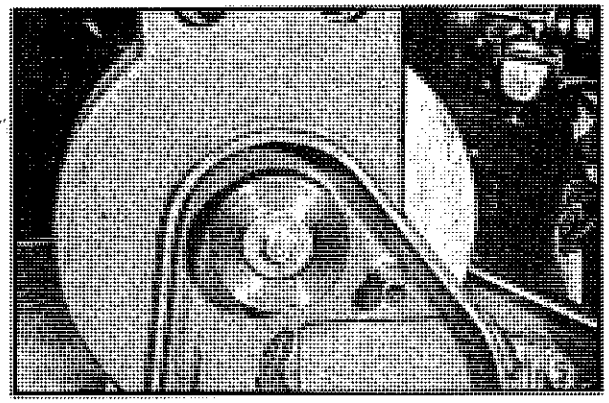


IMPORTANT: Any time the chaincase and/or jackshaft are removed it is necessary that the jackshaft installation procedures are followed to ensure proper alignment into the left side bearing and flangette.

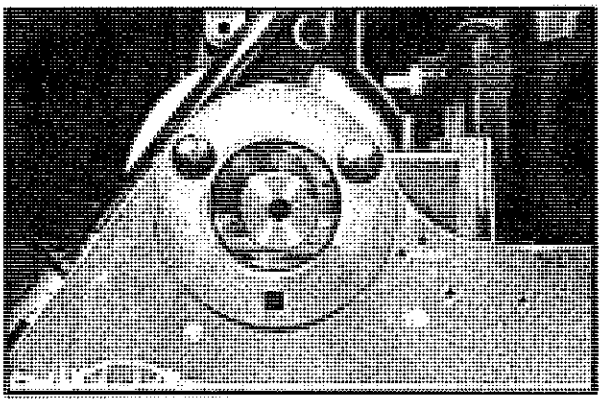
1. Install the chaincase to the chassis with the jackshaft. Do not install the sprockets. Alignment tool (PN 2870399) shown prior to installation.



2. Install the alignment tool to the jackshaft, torquing the cap screw to 5-6 ft./lbs.

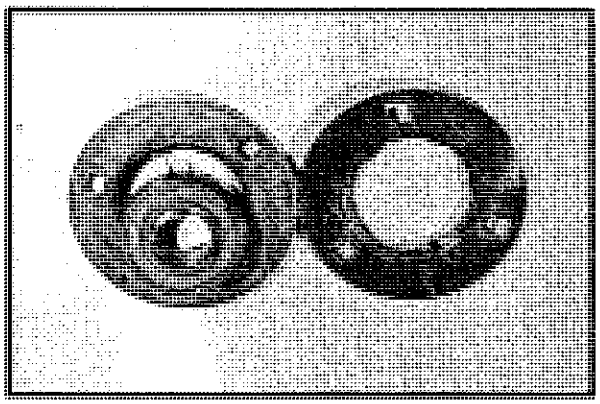


3. Install a flangette into the left bearing support hole. The shaft should center in the flangette. If not, the chaincase will have to be shimmed between the tunnel and case accordingly, using shim kit (PN 2200126) as needed to position the shaft on center.

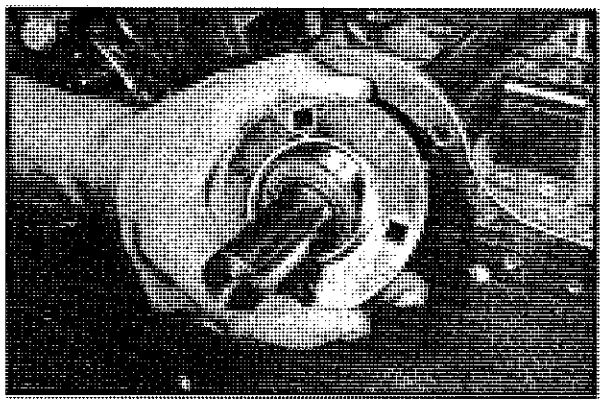


## Jackshaft Installation

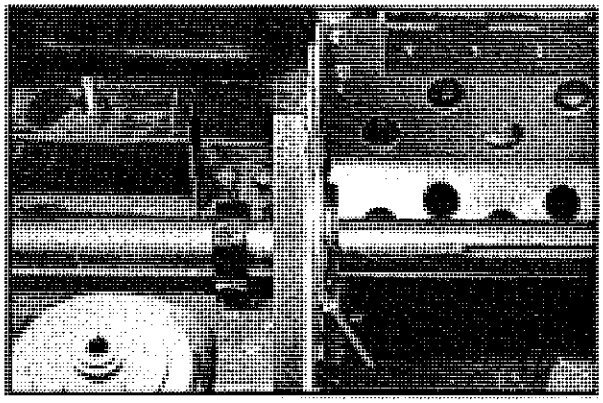
4. Following centering of the jackshaft, the left bearing and flangettes must be greased prior to installation.



5. Slide the bearing onto the shaft, rotate the flangettes as shown to check for any binding which may cause bearing misalignment upon reassembly.



6. After the flangettes have been tightened, lay a straight edge along the support plate as shown and rotate the shaft, noting any movement of the plate.
   IMPORTANT: If the bearing has not centered in the flangettes and movement is evident, it will be necessary to loosen the flangette mounting bolts slightly and gently tap the flangette while rotating the shaft until no movement exists.



# SECTION X

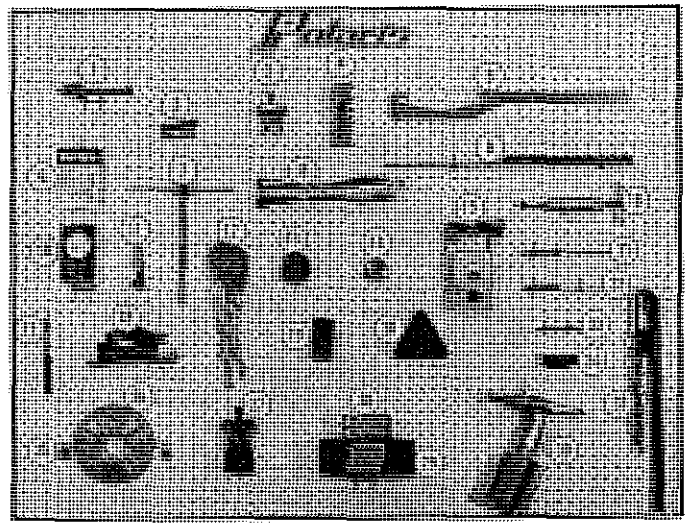
# TOOLS/PUBLICATIONS

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| Item Number | Description | Part Number |
|---|---|---|
| 1 | Steel Clutch Puller | 2870030 |
| 2 | Aluminum Clutch Puller | 2870130 |
| 3 | Flywheel Puller | 2870159 |
| | Flywheel Puller – TX, TX-L, TX-L Indy (Not Pictured) | 2870384 |
| 4 | Piston Support Block | 2870390 |
| 5 | Clutch Alignment Tool – 5/8" | 2870426 |
| 6 | Uni-Syn Gauge | 2870509 |
| 7 | "T" Handle Clutch Puller | 2870506 |
| 8 | Strap Wrench | 2870336 |
| 9 | Clutch Alignment Tool – 9/16" | 2870161 |
| 10 | Ignition Timing Dial Indicator | 2870459 |
| 11 | CDI Timing Fixture | 2870422 |
| 12 | Chain Wrench | 2870203 |
| 13 | Replacement Strap for Strap Wrench | 2870389 |
| 14 | Jackshaft Alignment Tool | 2870399 |
| 15 | Multitester | 2870335 |
| 16 | Piston Pin Puller | 2870386 |
| 17 | Feeler Gauge | 2870208 |
| 18 | Continuity Test Light | 2870466 |
| 19 | Clutch Spider Nut Driver | 2870338 |
| 20 | Clutch Spider Tightener | 2870341 |
| 21 | Shift Weight Pin Punch (Snap-On 7/32 PPC107LA) | 2870507 |
| 22 | Shift Weight Spring Pin Punch | 2870402 |
| 23 | Clutch Spider Roller Pin Centering Punch | 2870401 |
| 24 | Roller Pin Gauge Block | 2870310 |
| 25 | Holding Fixture Tab | 5130518 |
| 26 | Drive Clutch Holding Fixture (12 Strut Stationary Sheaves) | 2870461 |
| | Drive Clutch Holding Fixture (Electric Start Ring Gear Stationary Sheaves) (Not Pictured) | 2870547 |
| 27 | IDL Track Clipping Tool | 2870380 |
| 28 | Cylinder Hone Stone Set Std. Fine (Ammco No. 3952) | 2870305 |
| | Cylinder Hone Stone Set Std. Coarse (Ammco No. 3951) | 2870304 |
| | Cylinder Hone Stone Set O.S. Fine (Ammco No. 3954) | 2870307 |
| | Cylinder Hone Stone Set O.S. Coarse (Ammco No. 3953) | 2870306 |
| 29 | Ammco Cylinder Hone | 2870303 |
| 30 | Pneumatic Rivet Gun | 2870206 |
| 31 | Suspension Compression Tool | 2870354 |
| | Replacement Flywheel Puller Bolt (Not Pictured) | 3080706 |
| | Chaincase Oil – One Gallon (Not Pictured) | 2870464 |
| | Chaincase Oil Pump (Not Pictured) | 2870465 |
| | Clutch and Control Cable Lubricant (Not Pictured) | 2870510 |
| | Suspension Lubricant – One Pound Can (Not Pictured) | 2870511 |
| | Suspension Lubricant – 16 Ounce Aerosol Can (Not Pictured) | 2870512 |
| | Gas Line Deicer (Not Pictured) | 2870505 |

# TOOLS/PUBLICATIONS

## Publications

### TECHNICAL SERVICE TRAINING MATERIAL

| Part Number | Description |
|---|---|
| 9910431 | Polaris Master Service Manual — Contains all Polaris shop manuals from 1974 through 1978 |
| 9910432 | Service and Information Bulletin Package — Complete set of effective service and information bulletins |
| 9910493 | Polaris Master Repair Manual — Includes all 1979 service information and important specifications such as ignition, carburetion, clutch data, etc., from 1972 to present. Its looseleaf design enables additions and updates to be made on a continuing basis |
| 9910620 | 1980 Master Repair Manual Update Packet — Includes all service information and specifications pertinent to 1980 models. Individual pages are numbered by sections for placement into the Master Repair Manual |
| 9910692 | 1981 Master Repair Manual Update Packet — Includes all service information and specifications pertinent to 1981 models. Individual pages are numbered by sections for placement into the Master Repair Manual |
| 9910514 | 150–Mile Initial Maintenance Inspection Forms (Package of 25 Forms) |
| 9910515 | 500–Mile Extended Maintenance Inspection Forms (Package of 25 Forms) |
| 9910516 | 1200–Mile Extended Maintenance Inspection Forms (Package of 25 Forms) |
| 9910525 | 1968–1980 Revised Specifications Serviceman's Handbook |

### OWNERS MANUALS

| Part Number | Description |
|---|---|
| 9910678 | 1981 Gemini Owners Manual |
| 9910677 | 1981 Galaxy Owners Manual |
| 9910681 | 1981 Cutlass, Cutlass SS Owners Manual |
| 9910680 | 1981 TX-C Owners Manual |
| 9910679 | 1981 TX-L Owners Manual |
| 9910682 | 1981 TX-L Indy, Centurion Indy Owners Manual |
| 9910683 | 1981 French Gemini, Galaxy Owners Manual |
| 9910685 | 1981 French Cutlass, Cutlass SS Owners Manual |
| 9910684 | 1981 French TX-C, TX-L, TX-L Indy, Centurion Indy Owners Manual |

## OWNERS MANUALS

| Part Number | Description |
|---|---|
| 9910607 | 1980 Gemini, Apollo Owners Manual |
| 9910608 | 1980 Galaxy Owners Manual |
| 9910609 | 1980 TX, TX–C Owners Manual |
| 9910610 | 1980 TX–L, Centurion Owners Manual |
| 9910611 | 1980 TX–L Indy Owners Manual |
| 9910612 | 1980 French Gemini, Apollo, Galaxy Owners Manual |
| 9910613 | 1980 French TX, TX–C, TX–L, Centurion, TX–L Indy Owners Manual |
| 9910547 | 1979 Gemini, Apollo, Cobra Owners Manual |
| 9910550 | 1979 TX Owners Manual |
| 9910562 | 1979 TX–C Owners Manual |
| 9910554 | 1979 TX–L, Centurion Owners Manual |
| 9910555 | 1979 French Gemini, Apollo, Cobra Owners Manual |
| 9910578 | 1979 French TX, TX–C, TX–L, Centurion Owners Manual |
| 9910433 | 1978 Colt, S/S 340 Owners Manual |
| 9910436 | 1978 Cobra Owners Manual |
| 9910437 | 1978 TX Owners Manual |
| 9910438 | 1978 TX–L Owners Manual |
| 9910442 | 1978 French Owners Manual |
| 9910394 | 1977 Colt, Colt SS, Electra Owners Manual |
| 9910414 | 1977 TX Owners Manual |
| 9910424 | 1977 TX–L Owners Manual |
| 9910425 | 1977 French Owners Manual |
| 9910333 | 1976 Colt, Colt SS, Electra Owners Manual |
| 9910383 | 1976 TX Owners Manual |
| 9910388 | 1976 Starfire Technical Owners Manual |
| 9910375 | 1976 French Owners Manual |
| 9910393 | 1976 French TX Owners Manual |
| 9910293 | 1975 Colt, Colt SS, Electra, TX Owners Manual |
| 9910264 | 1975 TC Owners Manual |
| 9910344 | 1975 TX Modification Manual |
| 9910346 | 1975 French Owners Manual |
| 9910224 | 1974 Owners Manual |
| 9910224 | 1974 French Owners Manual |
| 9910163 | 1973 Owners Manual |
| 9910163 | 1973 French Owners Manual |
| 9910206 | 1973 TX Starfire Owners Technical Manual |
| 9910130 | 1972 Owners Manual |
| 9910130 | 1972 French Owners Manual |

## SHOP MANUALS

| Part Number | Description |
|---|---|
| 9910513 | 1978 Shop Manual |
| 9910415 | 1977 Shop Manual |
| 9910379 | 1976 Shop Manual |
| 9910307 | 1975 Shop Manual |
| 9910263 | 1975 TC Shop Manual |
| 9910226 | 1974 Shop Manual |
| 9910262 | 1974 TX Shop Manual Supplement |
| 9910167 | 1973 Shop Manual |

## Glossary

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|---|---|
| Air Gap Spark Test: | A good check for ignition voltage and general ignition system condition. Spark should arc 3/8" minimum from end of high tension lead to ground (several testers are available). |
| Alternator: | Electrical generator producing voltage alternating current. |
| BTDC: | Before top dead center. |
| CDI: | Capacitor discharge ignition. Ignition system which stores voltage generated by the stator plate exciter coil in a capacitor or condenser (in CDI box). At the proper moment a voltage, generated by the stator plate pulser coil, closes an electronic switch (thyristor) in the CDI box and allows the voltage in the capacitor to discharge into the primary windings of the ignition coil. |
| Center Distance: | Distance between center of crankshaft and center of driven clutch shaft. |
| Chain Pitch: | Distance between chain link pins (No. 35 = 3/8"). Polaris measures chain length in number of pitches; i.e., Colt 250 uses 86 pitch chain. |
| Clutch Buttons: | Plastic bushings which transmit rotation of the clutch to the movable sheave in the drive and driven clutch. |
| Clutch Offset: | Drive and driven clutches are offset so that drive belt will stay nearly straight as it moves along the clutch face. |
| Clutch Weights: | Three levers in the drive clutch which, relative to their weight, profile, and engine RPM, cause the drive clutch to close. |
| Coil: | A winding of wire around an iron core which has the ability to generate an electrical current when a magnetic current passes through it. |
| Condenser/Capacitor: | A storage reservoir for electricity, used in both E.T. and CDI systems. |
| Crankshaft Run-Out: | Run-out or "bend" of crankshaft measured with a dial indicator while crankshaft is supported between centers on V blocks or resting in lower half of crankcase. Measure at various points especially at PTO (.006 maximum run-out is allowable). |
| Detonation: | The spontaneous ignition of the unburned fuel/air mixture after normal spark ignition. Piston looks "hammered" through, rough appearance around hole. Causes: 1) too high a compression ratio for the fuel octane; 2) low octane fuel; 3) over-advanced ignition timing. |
| Dial Bore Gauge: | A cylinder measuring instrument which uses a dial indicator. Good for showing taper and out-of-round in the cylinder bore. |
| E. T. Ignition: | Energy transfer ignition. Magneto type ignition system using an external ignition coil. |
| Effective Compression Ratio: | Compression ratio measured from after the piston closes the exhaust port. |
| Electrical Open: | (Open circuit) An electrical circuit which isn't complete.<br>Example: Poor connections or broken wire at hi-lo beam switch.<br>Result: No head lights. |

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| Electrical Short: | (Short circuit) An electrical circuit which is completed before the current reaches the intended component.<br>Example: A bare wire touching the snowmobile chassis under the seat.<br>Result: No taillights or brake lights. |
| End Seals: | Rubber seals at each end of the crankshaft. |
| Engagement RPM: | Engine RPM at which the drive clutch engages to make contact with the drive belt. |
| Foot Pound: | Ft./lb. or lb./ft. A force of one pound at the end of a lever one foot in length, applied in a rotational direction. |
| g.: | Gram. Unit of weight in the metric system. |
| Head Volume: | Cylinder head capacity in cc, head removed from engine with spark plug installed. |
| Heat Exchanger: | A device used to transfer heat. The TX-L uses two heat exchangers mounted under the running boards. They, in turn, dissipate engine heat to the atmosphere. |
| Hi-fax: | The special slide material which fits onto the bottom of the suspension rails. |
| High Tension Wire: | The heavy insulated wire which carries the high secondary voltage from the coil to the spark plug. |
| Holed or Vented Piston: | Piston which a hole has formed on the dome. Causes: 1) detonation; 2) pre-ignition. |
| Ignition Coil: | A type of transformer which increases voltage in the primary windings ($\sim$ 200 V) to a higher voltage in the secondary windings ($\sim$ 14KV – 32KV) through induction. Secondary voltage is high enough to arc the air gap at the spark plug. |
| Ignition Generating Coil: | (Exciter coil, primary charge coil) Stator plate coil which generates primary ignition voltage. CDI system uses one ignition generating coil. Twin cylinder E.T. ignition systems use two ignition generating coils. Coil is mounted at the top of the stator plate. |
| Inch Pound: | 12 in./lbs. = 1 ft./lb. |
| $Kg/cm^2$: | Kilograms per square centimeter. |
| Keystone Ring: | A piston ring with bevel on upper inside surface. |
| Kilogram/meter: | A force of one kilogram at the end of a lever one meter in length, applied in a rotational direction. |
| L Ring: | A wide face piston ring with an "L" shaped cross section. (Leg of "L" goes up when installing on piston.) |
| Labyrinth Seal: | A pressure-type center seal identified by series of grooves and lands. Polaris engines use this type of seal to separate the cylinders in the crankcase halves. |
| Lighting Coil: | Large coil mounted at the bottom of the stator plate. Generates voltage for lights, battery charging, etc. |
| mm: | Millimeter. Unit of length in the metric system. 1mm = .040". |

## Glossary

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| Magnetic Induction: | As a conductor; i.e., coil, is moved through a magnetic field, a voltage will be generated in the windings. This is how mechanical energy in our engines is converted to electrical energy in the lighting coil, ignition generating coils and trigger coil. |
| No. 1 Cylinder: | Cylinder on flywheel side of engine. |
| No. 2 Cylinder: | Cylinder on PTO side of engine. |
| Ohm: | ( Ω ) The unit of electrical resistance opposing current flow. |
| Piston Clearance: | Total distance between piston and cylinder wall. |
| Piston Erosion: | Piston dome melts. Usually occurs at the exhaust port area.<br>Causes: Lean fuel/air mixture, improper spark plug heat range. |
| Pre-ignition: | A problem in combustion where the fuel/air mixture is ignited before normal spark ignition. Piston looks melted at area of damage. Causes: 1) too hot a spark plug; 2) spark plug not properly torqued; 3) "glowing" piece of head gasket, metal burr, or carbon in the combustion chamber; 4) lean fuel/air mixture. |
| Primary Circuit: | This circuit is responsible for the voltage build-up in the primary windings of the coil. Parts of this circuit include the exciter coil, points and condenser, wires from the stator plate to the small primary winding in the ignition coil. In the CDI system the parts include the exciter coil, the trigger coil, the wires from stator plate to CDI box and to the low resistance primary windings in the ignition coil. |
| Primary Clutch: | Drive clutch on engine. |
| Primary Compression: | Pressure built up in the crankcase of a two stroke engine. |
| psi.: | Pounds per square inch. |
| R & R: | Remove and replace. |
| RFI: | Radio frequency interference. Caused by high voltage from the ignition system. There are special plug caps and spark plugs to help eliminate this problem. (Required in Canada.) |
| RPM: | Revolutions per minute. |
| Resistance: | In the mechanical sense, friction or load. In the electrical sense, ohms. Both result in energy conversion to heat. |
| Right Side & Left Side: | Always referred to based on normal operating position of the driver. |
| Running Timing: | Ignition timing when fully advanced or at specified RPM. |
| Secondary Circuit: | This circuit consists of the large secondary coil windings, high tension wire and to ground through the spark plug air gap. |
| Secondary Clutch: | Driven clutch on chaincase or jackshaft. |
| Seized Piston: | Galling of the sides of a piston. Usually there is a transfer of aluminum from the piston onto the cylinder wall. Causes: 1) improper lubrication; 2) excessive temperatures; 3) insufficient piston clearance; 4) stuck piston rings. |

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| Spark Plug Reach: | Length of thread portion on spark plug. Polaris uses 3/4" reach plugs. |
| Static Timing: | Ignition timing when engine is at zero RPM. |
| Stator Plate: | The plate mounted under the flywheel supporting the primary ignition components and lighting coil. |
| Surge Tank: | The fill tank in the liquid cooling system. |
| TDC: | Top dead center. Piston's most outward travel from crankshaft. |
| Transfer: | The movement of fuel/air from the crankcase to the combustion chamber in a two stroke engine. |
| Trigger Coil: | (Pulser coil) Generates the voltage for triggering (closing) the thyristor and timing the spark in CDI systems. Small coil mounted at the top of the stator plate next to the ignition generating coil. |
| ACV: | Alternating current voltage. |
| DCV: | Direct current voltage. |
| V Regulator: | Voltage regulator. Maintains maximum lighting coil output @ ~ 14.5 ACV as engine RPM increases. |
| Venturi: | An area of air constriction. A venturi is used in carburetors to increase velocity pressure (speed up air flow) which decreases static pressure (lowers pressure in venturi to below atmospheric pressure) causing fuel to be pushed through jets, etc., and into the venturi to be mixed with air and form a combustible air/fuel mixture. |
| Volt: | The unit of measure for electrical pressure or electromotive force. Measured by a Voltmeter in parallel with the circuit. |
| Watt: | The unit of electrical power. Watts = Amperes x Volts. |