

SECTION VII

TORQUE-O-MATIC DRIVE

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DRIVE BELT PART NUMBERS AND APPLICATIONS

- 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 — 1981–1982
- 3211031 — Charger, Mustang, and Custom Charger Models — 1972–1973
All Custom II Models
All Electra Models
- 3211037 — 1973 Starfire
- 3211039 — All TC Models
- 3211041 — TX Models — 1972–1975
- 3211042 — TX Models — 1976–1980 and 1976 Starfire
TX-C Models — 1979–1980
All TX-L, Centurion, Cobra and Galaxy Models
Star, Star Trak, Long Track (RLR) — 1983–1987
All Indy Models Except Indy Sport
- 3211045 — Close Tolerance Version of 3211042
- 3211046 — Indy Sport — 1987
All Direct Drive Models Except 1983–1987 Star

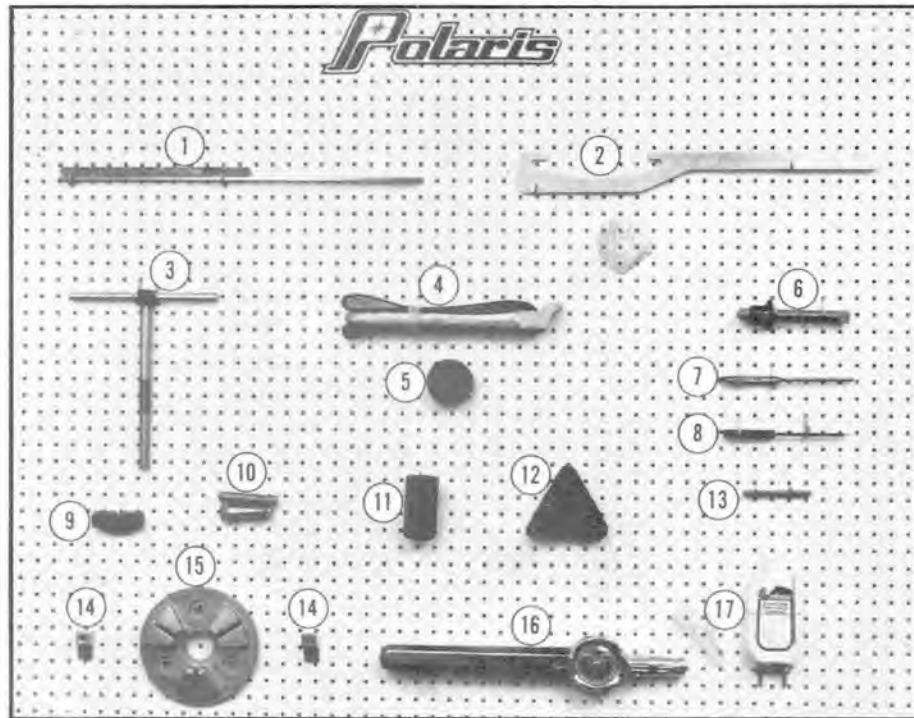
P-85 DRIVE CLUTCH INFORMATION

<u>Model Year</u>	<u>Machine Model</u>	<u>P-85 Number</u>	<u>Basic Number</u>
1985	Star 250	1321440	13
	SS 440	1321463	17
	Indy Trail 440	1321463	17
	Indy 400	1321440	13
	Indy 600	1321464	18
	Long Track 440	1321440	13
1986	Star 250	1321463	17
	Sprint 340	1321463	17
	Indy Trail	1321463	17
	Indy 400	1321440	13
	Indy 600	1321464	18
	Indy 600 LE	1321464	18
1987	Long Track 440	1321463	17
	Star 250	1321463	17
	Sprint	1321463	17
	Indy Sport	1321463	17
	Indy Trail	1321463	17
	Indy 400	1321481	22
	Indy 600	1321480	21
	Long Track	1321463	17

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
18. 0-600 in./lb. Torque Wrench	Not available through Polaris
19. Tapered Reamer	2870576 (Not Pictured)

TORQUE—O—MATIC DRIVE

Data

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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

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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

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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

TORQUE—O—MATIC DRIVE

Data

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

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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		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/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

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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 lower or higher altitude than 6,500 feet.

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					
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

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.

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					
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

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.

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					
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	O2	49	7041132	White/.177
Cutlass SS	EC44-2PM-3300	---	---	292.1	11.5	1321365	O2	49	7041132	White/.177
TX-C	EC44-2PM-1100	19/35	64/Silent 11L	281.94	11.1	1321368	O1	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

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*2 A*3	5610088*2 5610080*3	Blue*2 Red*3	7041080*2 7041083*3
Cutlass SS	EC44-2PM-3100/3300	O2	5630225	Silver	7041062
TX-C	EC44-2PM-1100	O2	5630225	Silver	7041062
TX-L/TX-L Indy*1	EC34PL-05	O3	5630227	White*2 Yellow*3	7041132*2 7041102*3
Centurion Indy	EC51PL-02	A*2 B*3	5610080*2 5610084*3	Red*2 Blue*3	7041083*2 7041080*3

*1 — Requires 2200193 mass kit and 1321372 roller

*2 — 5,000–8,000 feet elevation

*3 — 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.

MACHINE MODEL	ENGINE MODEL	SPROCKET RATIO	CHAIN PITCH/TYPE	CENTER DISTANCE		CLUTCH PART NO.	BORE TAPER DIAMETER
				MM	INCHES		
Cutlass SS	EC44-2PM-3100	---	----	292.1	11.5	1321364	1.174
TX-C	EC44-2PM-1100	19/35	64/Silent 11L.	281.94	11.1	1321368	1.203
TX-L/TX-L Indy	EC34PL-05	19/39	66/Silent 11L.	304.8	12.0	1321367	1.203
Centurion Indy	EC51PL-02	19/35	64/Silent 11L.	304.8	12.0	1321366	1.270

1
9
8
2

ENGINE MODEL	WEIGHT LETTER	WEIGHT GRAMS	SPRING PART NO.	SPRING COLOR & WIRE DIAMETER
EC44-2PM-3100	O2	49	7041132	White/.177
EC44-2PM-1100	O1	48.5	7041063	Purple/.168
EC34PL-05	B	43	7041062	Silver/.208
EC51PL-02	A	47.5	7041060	Orange/.196

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
Cutlass SS	EC44-2PM-3100	O2	5630225	Orange	7041060
TX-C	EC44-2PM-1100	O2	5630225	Silver	7041062
TX-L/TX-L Indy*1	EC34PL-05	O3	5630227	White*2 Yellow*3	7041132*2 7041102*3
Centurion Indy	EC51PL-02	A*2 B*3	5610080*2 5610084*3	Red*2 Blue*3	7041083*2 7041080*3

*1 — Requires 2200193 mass kit and 1321372 roller

*2 — 5,000–8,000 feet elevation

*3 — 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.

TORQUE-O-MATIC DRIVE

Data

Machine Model	Engine Model	Operating RPM±200	Clutch Part No.	Spring I.D. Wire Dia.	Shift Wt. I.D./Gram	Bore Taper Diameter	Clutch Center Distance	Driven Helix Angle	Gearing Chain Pitch/Type
Gemini	EC25PS	6300	1321312	White .177"	G/41.5	1.270"	11.1"	30°	13/35 84P 35-2
Star	EC25PS	6300	1321387	Purple .168"	B/43	1.270"	12.0"	36°	Direct Drive
Sport	EC44-2PM 5100	6300	1321385	Brown .200"	04/57.5	1.174"	11.5"	34°	Direct Drive
SS	EC44-2PM 3100	6000	1321364	White .177"	02/49	1.174"	11.5"	36°	Direct Drive
Indy Trail	EC44-2PM 2100	6800	1321388	Green .177"	M1 Mod./46	1.174"	12.0"	36°	19/35 64P Silent
Indy Cross Country	EC34PL-05	8200	1321367	Silver .208"	B/43	1.203"	12.0"	34°	19/39 66P Silent
Indy 600	EC60PL-01	7900	1321397	Silver .208"	N1 Mod./51.5	1.270"	12.0"	34°	21/35 64P Silent
Long Track	EC44-2PM-5000	6300	1321406	Yellow .192"	04/57.5	1.174"	12.0"	36°	19/39 66P Silent

1983 MODEL HIGH ELEVATION RECOMMENDATIONS									
Machine Model	5000 Feet to 8000 Feet				8000 Feet to 12000 Feet				Options - Non Warranty
	Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing	Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing	
Gemini	G	Orange	30°	13-35	G	Orange	30°	13-35	—
Star	G	Silver	36°	Direct Drive	G	Gold	36°	Direct Drive	5 Tooth Front Drive Sp.
Sport	04	Silver	34°	Direct Drive	04	Silver	34°	Direct Drive	5 Tooth Front Sprocket
SS	02	Orange	36°	Direct Drive	02	Orange	36°	Direct Drive	6 Tooth Front Sprocket
Indy Trail	M1 *3 Mod.	Purple	36°	19/35	M1 *3 Mod.	Purple	36°	18/35	—
Indy *1 Cross *2 Country	03	White	34°	19/39	03	Yellow	34°	19/39	Lower Gearing
Indy *2 600	02	Red	34°	21/35	02	Red	34°	19/35	19/39 Gearing
Long Track	04	Orange	36°	19/39	04	Orange	36°	19/39	—

*1 Requires 2200193 Mass Kit and 1321372 Spider Roller

*2 Use 5430788 Engagement Spacer

*3 Use 1321372 Spider Roller

Machine Model	Engine Model	Operating RPM $\pm$ 200	Clutch Part No.	Spring I.D. Wire Dia.	Shift Wt. I.D./Gram	Bore Taper Diameter	Clutch Center Distance	Driven Helix Angle	Gearing Chain Pitch/Type
Star	EC25PS-05	6300	1321401	Purple .168"	B/43	1.270"	12.0"	36°	Direct Drive
SS	EC44-2PM 3100	6000	1321396	White .177"	02/49	1.174"	11.5"	36°	Direct Drive
Indy Trail	EC44-2PM 2100	6800	1321389	Green .177"	M1 Mod./46	1.174"	12.0	36°	19/35 64P Silent
Indy 600	EC60PL-02	7800	1321390	Gold .207"	05	1.177"	12.0"	34°	19/35 64P Silent
Star LT	EC25PS-05	6300	1321429	Yellow .192"	A/47	1.270"	12.0"	36°	15/39 64P Silent
Long Track	EC44-2PM 5000	6300	1321418	Yellow .192"	04/57.5	1.174"	12.0"	36°	19/39 64P Silent

1984 MODEL HIGH ELEVATION RECOMMENDATIONS

Machine Model	5000 Feet to 8000 Feet				8000 Feet to 12000 Feet				Options - Non Warranty
	Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing	Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing	
Star	G	Silver	36°	—	G	Gold	36°	—	34° Helix
SS	02	Orange	36°	—	02	Orange	36°	—	6 Tooth Front Sprocket
Indy Trail	M1 *1 Mod.	Purple	36°	19/35	M1 *1 Mod.	Purple	36°	18/35	+32° F Brown Spring
600 Indy	06	Red	34°	19/35	M1 Mod.	Red	34°	19/35	*2
Star LT	B	Orange	36°	15/39	G	Orange	36°	14/41	—
Long Track	04	Orange	36°	19/39	04	Silver	36°	19/39	—

*1 Use 1321372 Spider Roller with two Fiber Washers per side

*2 Above 10,000 feet elevation and +32° F use J Weight and Red Spring (19/39 gears optional)

1985 PRODUCTION SETUP

Machine Model	Engine Model	Operating RPM $\pm$ 200	Clutch Part No.	Spring I.D. Wire Dia.	Shift Wt. I.D./Gram	Bore Taper Diameter	Clutch Center Distance	Driven Helix Angle	Gearing Chain Pitch/Type
Star	EC25PS-06	6300	1321449	Brown .200"	08/47.5	1.174"	12.0"	36°	Direct Drive
SS	EC44-2PM 3100	6000	1321450	White .177"	07/52	1.174"	11.5"	36°	Direct Drive
Indy Trail	EC44-2PM 2100	6800	1321455	Brown .200"	N-1 Mod. 51.5	1.174"	12.0	34°	19/35 64P Silent
Indy 400	EC40PL-02	7800	1321459	Gold .207"	N-1 Mod. 51.5	1.174"	12.0"	34°	19/35
Indy 600	EC60PL-02	7800	1321458	Gold .207"	05/53.5	1.177"	12.0"	34°	19/35 64P Silent
Long Track	EC44-2PM 5000	6300	1321454	Yellow .192"	04/57.5	1.174"	12.0"	36°	19/39 64P Silent

1985 HIGH ELEVATION RECOMMENDATIONS

Machine Model	5000 Feet to 8000 Feet				8000 Feet to 12000 Feet				Options - Non Warranty
	Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing	Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing	
Star	08	Brown	36°	—	08	Red/White	36°	—	—
SS	07	Orange	36°	—	07	Orange	36°	—	6 Tooth Front Sprocket
Indy Trail	N-1 Mod.	Gold	34°	19/35	N-1 Mod.	Gold	34°	19/35	—
Indy 400	P-1	Red	34°	19/35	P-1	Red	34°	19/35	—
Indy 600	06	Blue	34°	19/35	06	Blue	34°	19/35	—
Long Track	04	Orange	36°	19/39	04	Silver	36°	19/39	—

1986 PRODUCTION SETUP

Machine Model	Engine Model	Operating RPM $\pm$ 200	Clutch Part No.	Spring Color, Wire Dia.	Shift Wt. I.D./Gram	Bore Taper Diameter	Clutch Center Distance	Driven Helix Angle	Gearing Chain Pitch/Type
Star	EC25PS-06	6300	1321449	Brown .200	08/47.5	1.174	12.0"	36°	Direct Drive
Sprint & Sprint ES	EC34-2PM-01/02	6500	1321451 1321456	Gold .207	05/53.5	1.174	11.5"	36°	Direct Drive
SS	EC44-2PM 3100	6000	1321450	White .177	07/52.0	1.174	11.5"	36°	Direct Drive
Indy Trail	EC50PM 01	7000	1321461	Red/White .192	10/51.5	1.174	12.0"	36°	21/35
Indy 400	EC40PL-02	7700	1321459	Blue/Gold .207	10/Mod. 50.0	1.174	12.0"	34°	19/35
Indy 600, 600 LE	EC60PL-02	7800	1321458	Blue/Gold .207	15/55.5	1.177	12.0"	34°	21/35
Long Track	EC44-2PM 5100	6000	1321454	Yellow .192	04/57.5	1.174	12.0"	36°	19/39

1986 HIGH ELEVATION RECOMMENDATIONS

5000 Feet to 8000 Feet					8000 Feet to 12000 Feet			
Machine Model	Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing	Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing
Star	08	Red/White	36°	----	08	Red/White	36°	----
Sprint & Sprint ES	05	Blue/Gold	36°	----	06	Blue/Gold	36°	----
SS	07	Orange	36°	----	06	Red/White	36°	----
Indy Trail	M-1 Mod.	Orange	36°	21/35	M-1 Mod.	Red/White	36°	21/35
Indy 400	M-1 Mod.	Gold	34°	19/35	P-1 or M-1 Mod.	Red or Blue/Gold	34°	19/35
Indy 600, 600 LE	06	Blue/Gold	34°	21/35	06	Blue/Gold	34°	21/35
Long Track	04	Orange	36°	19/39	04	Silver	36°	19/39

TORQUE-O-MATIC DRIVE

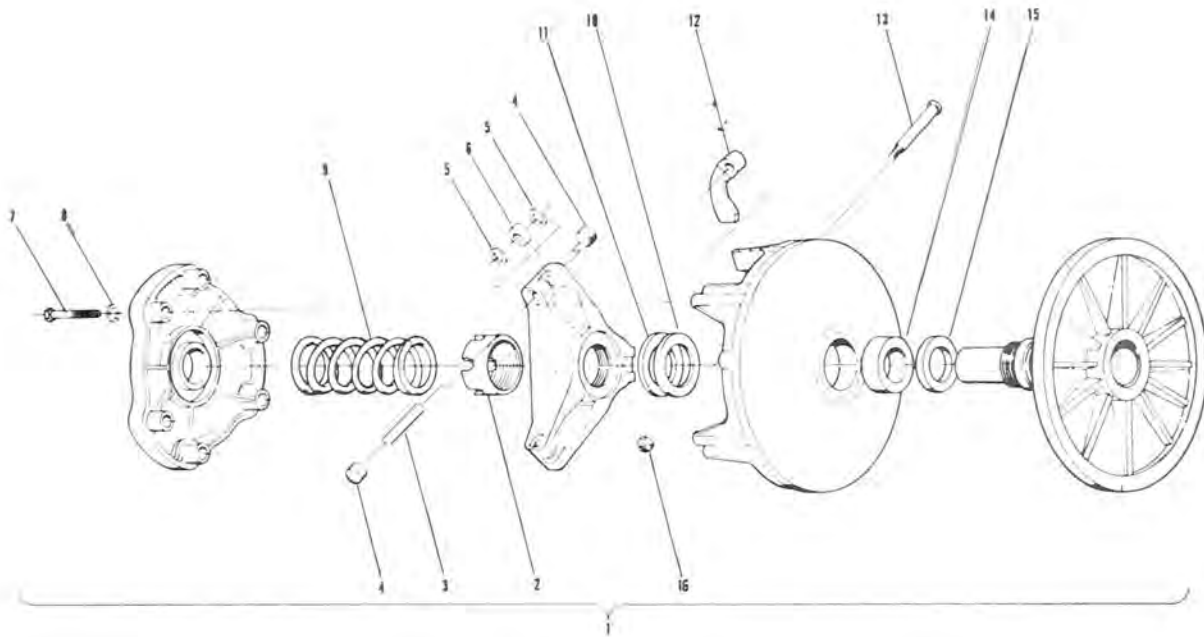
Data

1987 PRODUCTION SETUP									
Machine Model	Engine Model	Operating RPM $\pm$ 200	Clutch Part No.	Spring Color, Wire Dia.	Shift Wt. I.D./Gram	Bore Taper Diameter	Clutch Center Distance	Driven Helix Angle	Gearing Chain Pitch/Type
Star, Star Trak	EC25PS-06	6300	1321449	Brown .200	08/47.5	1.174	12.0"	36°	Direct Drive
Sprint & Sprint ES	EC34-2PM-01/02	6500	1321451 1321456	Gold .207	05/53.5	1.174	11.5"	36°	Direct Drive
Indy Sport	EC34-2PM-03	6500	1321461	Red/White .192	10/51.7	1.174	11.5"	34°	17/35
Indy Trail (All)	EC50PM-01	7000	1321461 1321477	Red/White .192	10/51.7	1.174	12.0"	36°	21/35
Indy 400	EC40PL-02	7700	1321459	Blue/Gold .207	10/M 49.5	1.174	12.0"	34°	19/35
Indy 600	EC60PL-02	7800	1321458	Blue/Gold .207	10/A 55.0	1.177	12.0"	34°	21/35
Long Track (RLR)	EC44-2PM-5100	6000	1321454	Yellow .192	04/57.5	1.174	12.0"	36°	19/39

1987 HIGH ELEVATION RECOMMENDATIONS									
Machine Model	5000 Feet to 8000 Feet					8000 Feet to 12000 Feet			
	Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing		Shift Weight	Clutch Spring	Driven Helix	Chaincase Gearing
Star, Star Trak	08	Red/White	36°	----		08	Red/White	36°	----
Sprint & Sprint ES	05	Blue/Gold	36°	----		06	Blue/Gold	36°	----
Indy Sport	10	Gold	34°	17/35		* 10	Blue/Gold	34°	17/35
Indy Trail (All)	M-1 Mod.	Orange	36°	21/35		M-1 Mod.	Red/White	36°	21/35
Indy 400	M-1 Mod.	Gold	34°	19/35		P-1 or M-1 Mod.	Red or Blue/Gold	34°	19/35
Indy 600	06	Blue/Gold	34°	21/35		06	Blue/Gold	34°	21/35
Long Track (RLR)	04	Orange	36°	19/39		04	Silver	36°	19/39

TORQUE-O-MATIC DRIVE

Drive Clutch Service Parts

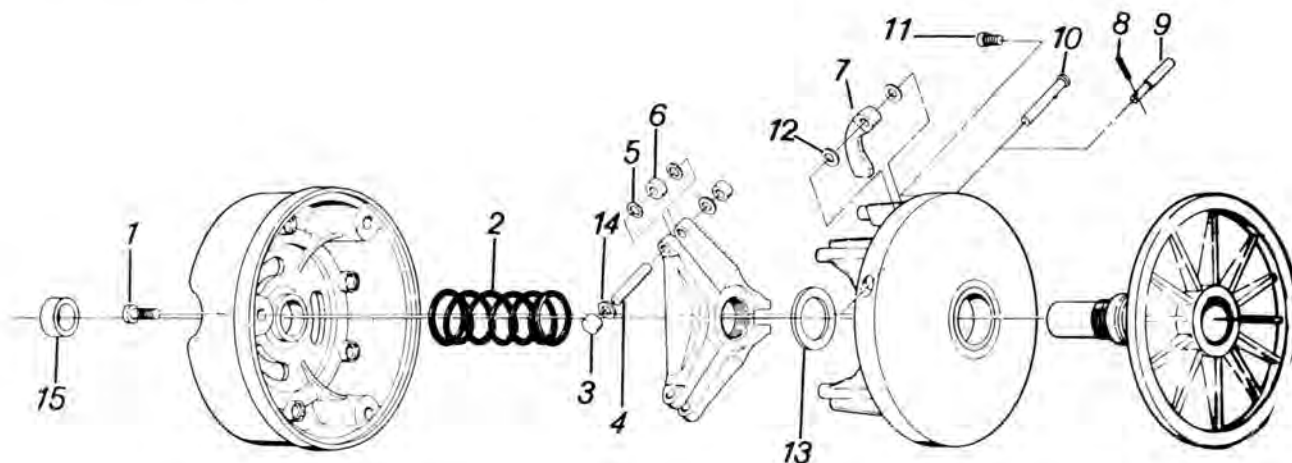


EXPLODED VIEW
P-85 HIGH-PERFORMANCE VERSION

ITEM NO.	PART NO.	DESCRIPTION
1	Assembly — Refer to Drive Data	
2	5020425	Nut — Jam
3	5020422	Pin
4	5430728	Guide Button — Std.
	5430445	Guide Button — H.P.
5	5430702	Washer
6	1321457	Roller
7	7512265	Cover Bolt
8	7552801	Lock Washer
9	Clutch Spring — Refer to Drive Data	
10	5210754	Spacer (.050) Used on All Models
11	5210753	Spacer (.032)
	5210752	Spacer (.020)
12	Shift Weight — Refer to Drive Data	
13	7541906	Nut
14	7512226	Shoulder Screw
15	3576502	Bushing
15	3576503	L.S. Bushing Used without retainer
16	5010188	Bushing Retainer
17	5430788	Engagement Spacer .170"
17	5430790	Engagement Spacer .080"

TORQUE-O-MATIC DRIVE

Drive Clutch Service Parts

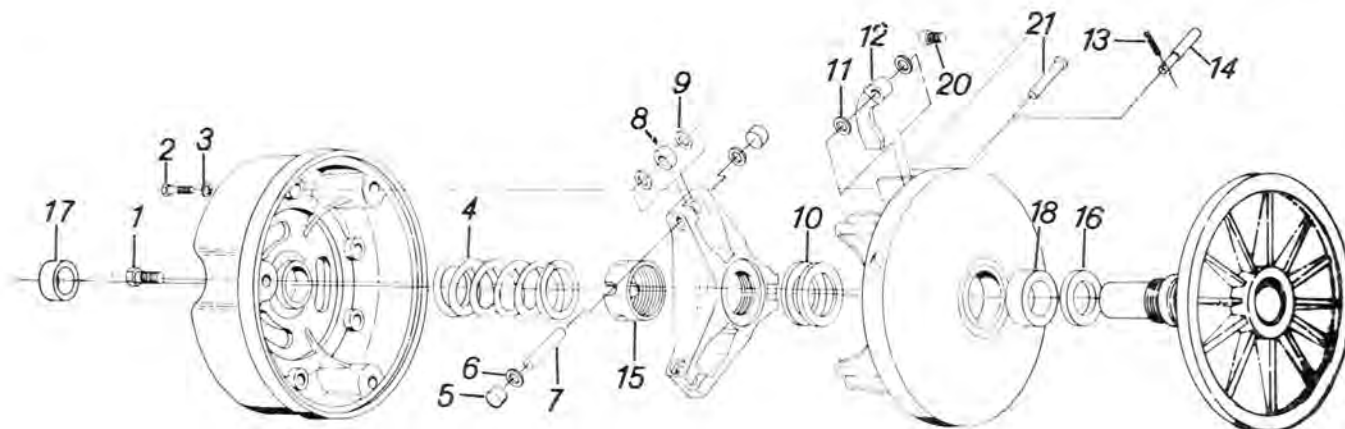


EXPLODED VIEW
STANDARD VERSION

ITEM NO.	PART NO.	DESCRIPTION
1	7512182	Cap Screw
2	Spring — Refer to Drive Data	
3	5430269	Spider Guide Button — 1/4" I.D.
3	5430793	Spider Guide Button — 5/16" I.D.
4	5020279	Spider Roller Pin — .245" O.D.
4	7661905	Spider Roller Pin — .312" O.D.
5	5430399	Spider Roller Washer — Plastic — 1/4" I.D.
5	5430796	Spider Roller Washer — Plastic — 5/16" I.D.
6	5020250	Spider Roller — .248" I.D. x .312" Wide
6	1321405	Spider Roller — .315" I.D. x .312" Wide Inserted
7	Shift Weight — Refer to Drive Data	
8	7661005	Spring Pin
9	5020280	Shift Weight Pin — .245" x 1.781"
9	5020302	Shift Weight Pin — .245" x 2.275"
10	5020431	Shift Weight Pin ('84 Models)
11	7512264	Shift Weight Retaining Cap Screw ('84 Models)
12	5430451	Shift Weight Washer (Where Applicable)
13	5210752	.020" Spider Spacer Washer
13	5210753	.032" Spider Spacer Washer
13	5210754	.050" Spider Spacer Washer
14	5210733	.002" Guide Button Shim (Optional as Required)
15	5430788	Engagement Spacer (Optional as Required) .170"
15	5430790	Engagement Spacer (Optional as Required) .080"

TORQUE-O-MATIC DRIVE

Drive Clutch Service Parts

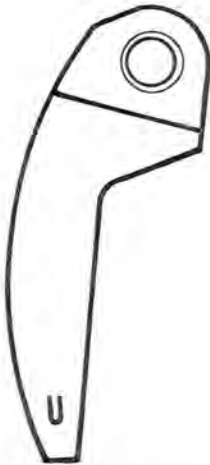


EXPLODED VIEW
HIGH-PERFORMANCE VERSION

ITEM NO.	PART NO.	DESCRIPTION
1	7512182	Cap Screw
2	7511978	Cover Screw 10-32 x 3/4"
2	7511999	Cover Screw 10-32 x 1"
3	7574601	Lock Washer (Used with 10-32 x 3/4" Cover Screw Only)
4	Spring — Refer to Drive Data	
5	5430445	Spider Guide Button
5	5430718	Spider Guide Button ('84 Indy Trail)
6	5210733	.002" Shim (Optional as Required)
7	7661816	Spider Roller Pin — 1/4" O.D.
7	5020422	Spider Roller Pin — 3/8" O.D.
7	5020427	Spider Roller Pin — .250" x 1.25" ('84 Indy Trail)
8	5430399	Spider Roller Washer — Fiber — 1/4" I.D.
8	5430702	Spider Roller Washer — 3/8" I.D.
9	5020299	Spider Roller — .253" I.D. x .312" Wide
9	1321372	Spider Roller Inserted High Performance — .253" I.D. x .312" Wide
9	5020423	Spider Roller — .253" I.D. x .385" Wide
9	1321426	Spider Roller Inserted High Performance — 3/8" I.D. x .385" Wide
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 ('83 Long Track and Starfire Models)
15	5020304	Spider Jam Nut
15	5020425	Spider Jam Nut (w/o Flange)
16	5010188	Movable Bushing Retainer
17	5430788	Engagement Spacer
18	3576502	Bushing
19	7710408	Retainer ('83 Long Track) (Snap Ring type not shown)
20	7512264	Shift Weight Pin Retaining Cap Screw ('84 Models)
21	5020431	Shift Weight Pin ('84 Models)

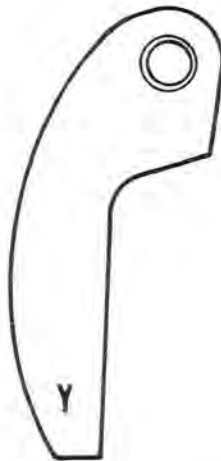
NOTE: Always refer to Parts Manuals when ordering parts.

TORQUE-O-MATIC DRIVE
Drive Clutch Weight Identification – Actual Size



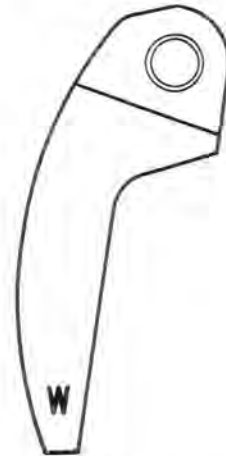
U

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



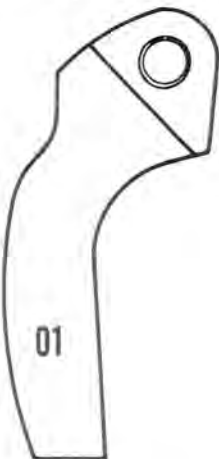
A

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

TORQUE-O-MATIC DRIVE

Drive Clutch Weight Identification – Actual Size



03
Gram weight: 32.5 ± 1
PN 5630227



04
Gram weight: 57.5 ± 1
PN 5630229



M1
(Modified)
Gram weight: 46.0 ± 1
PN 5630301



N1
(Modified)
Gram weight: 51.5 ± 1
PN 5630302



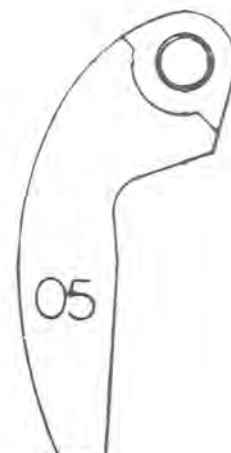
K1
Gram weight: 39 ± 1
PN 5630144



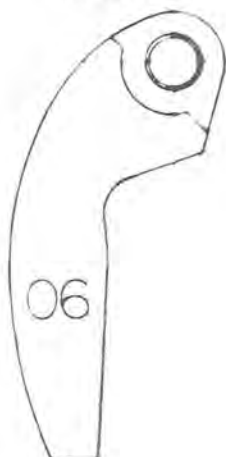
P1
Gram weight: 42 ± 1
PN 5630089



J1
Gram weight: 44 ± 1
PN 5630065



05
Gram weight: 53.5 ± 1
PN 5630234



06
Gram weight: 50 ± 1
PN 5630243



07
Gram weight: 52 ± 1
PN 5630244

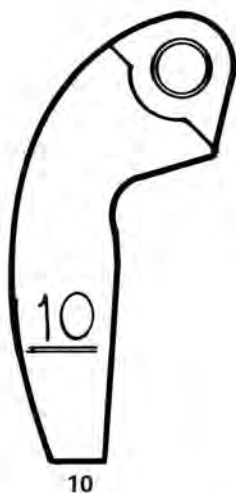


08
Gram weight: 47.5 ± 1
PN 5630245



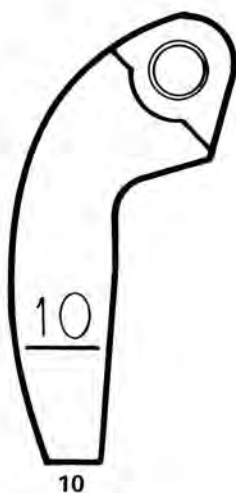
09
Gram weight: 51.5 ± 1
PN 5630249

TORQUE-O-MATIC DRIVE
Drive Clutch Weight Identification – Actual Size



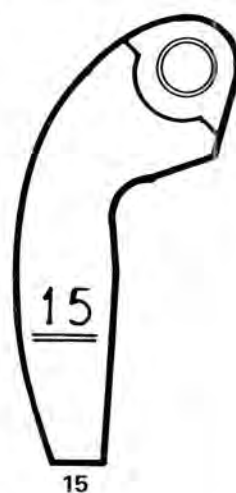
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Gram weight: 51.5 ± 1
PN 5630272



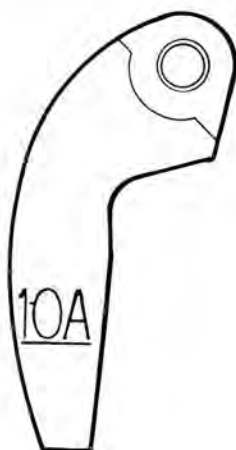
10

(Modified)
Gram weight: 50 ± 1
PN 5630273



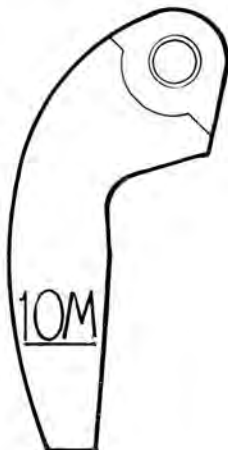
15

Gram weight: 55.5 ± 1
PN 5630274



10A

Gram weight: 55.0 ± 1
PN 5630286



10M

Gram weight: 49.5 ± 1
PN 5630273

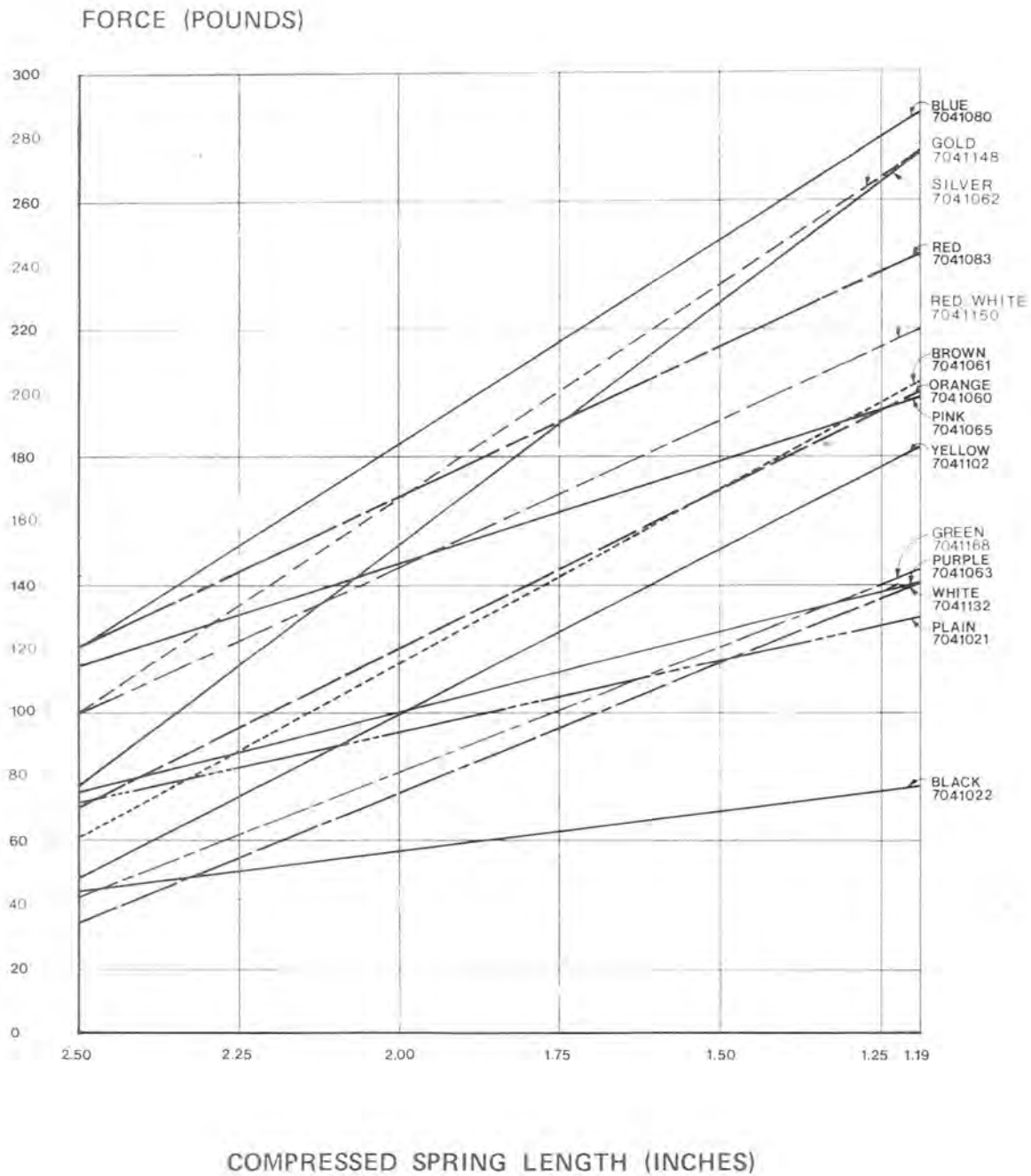
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3.4

TORQUE-O-MATIC DRIVE

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.



TORQUE-O-MATIC DRIVE

Drive Clutch Spring Data

PART NUMBER	COLOR CODE	WIRE DIAMETER	FREE LENGTH $\pm .125''$
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/Gold	.207''	3.50''
7041083	Red	.192''	3.77''
7041102	Yellow	.192''	2.92''
7041061	Brown	.200''	3.06''
7041132	White	.177''	2.92''
7041168	Green	.177''	3.05''
7041148	Gold	.207''	3.25''
7041150	Red/White	.192''	3.59''

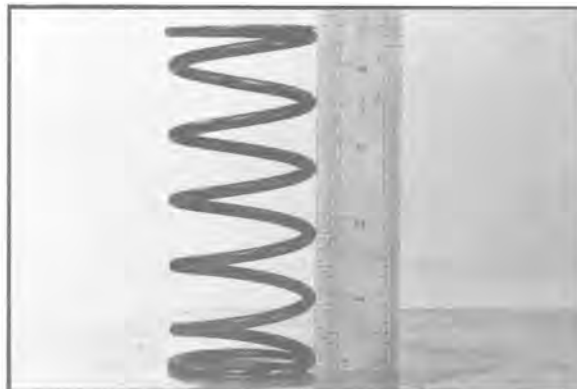


CAUTION:

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

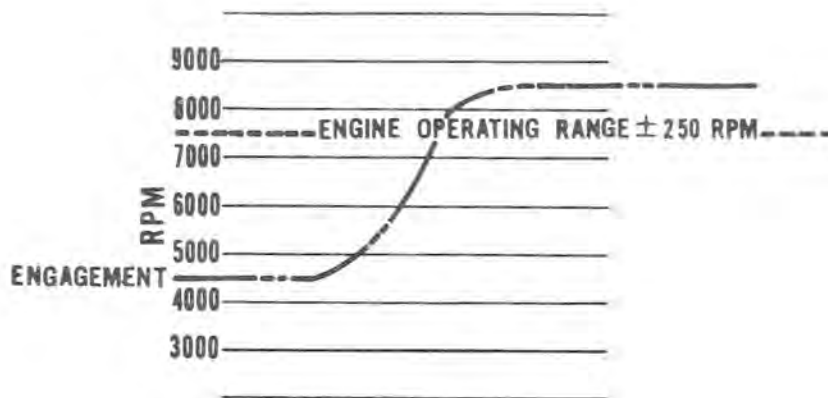
The Polaris torque-o-matic drive system is a centrifugally actuated variable speed belt drive unit. The drive clutch, driven clutch, and belt make up the torque converter system. Each clutch has the proper internal components installed for the specific engine model on which it is installed at the factory. 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

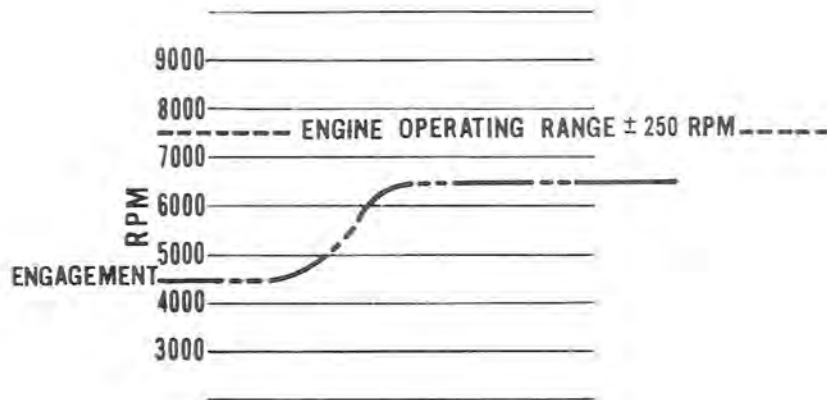
The drive clutch is an RPM and torque sensing unit designed to transfer the maximum amount of horsepower from the engine to the ground. This is accomplished by weights and a spring inside the unit reacting to the centrifugal force applied to it from the engine RPM.

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.

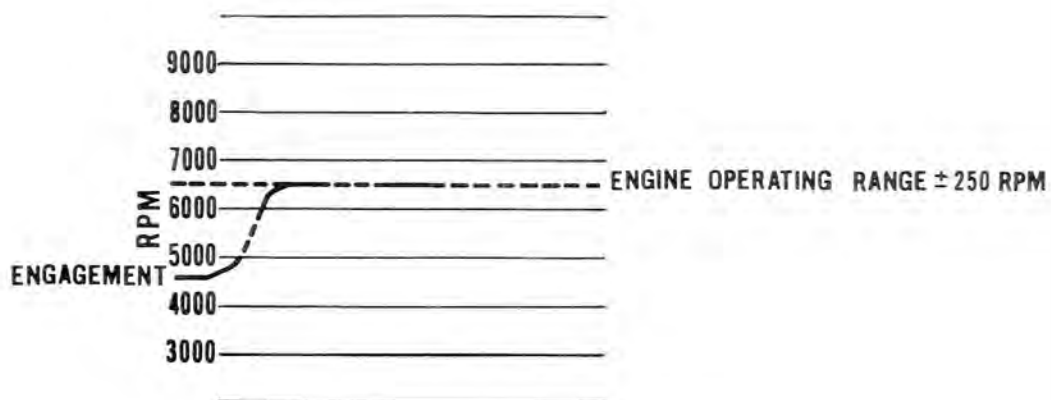


If the weights are too light, or spring rate too high, the maximum RPM will be too great and the drive belt will not go into high gear (top of the clutch).

TORQUE—O—MATIC DRIVE Operation and Tuning



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

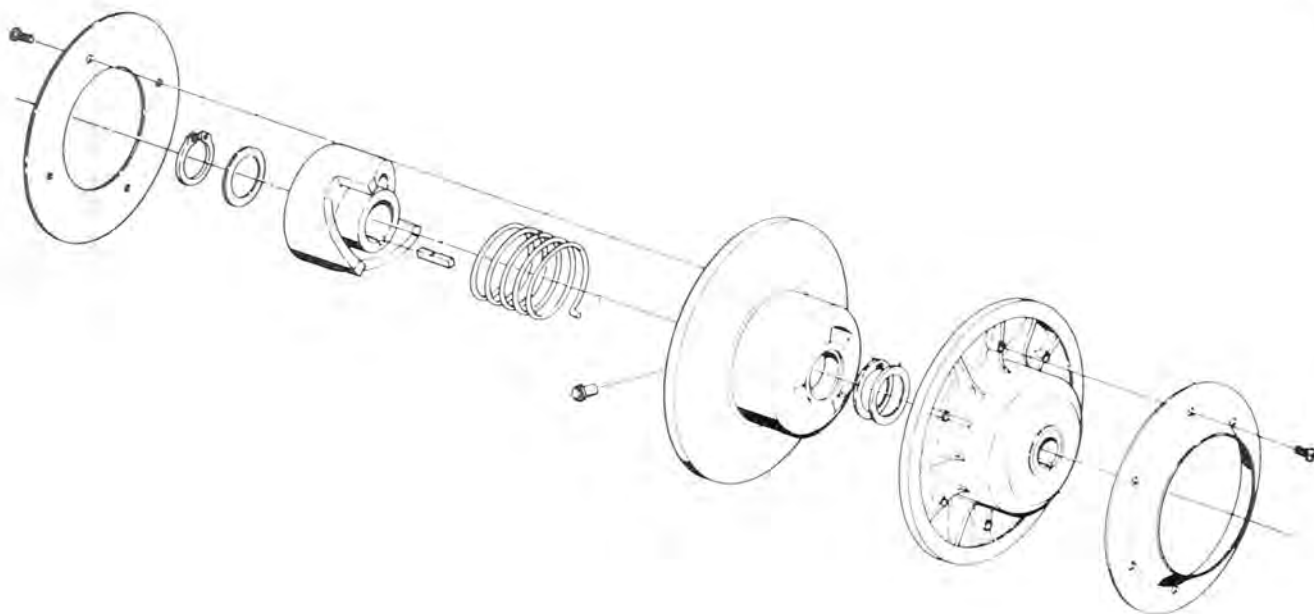
Driven Clutch Operation

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.

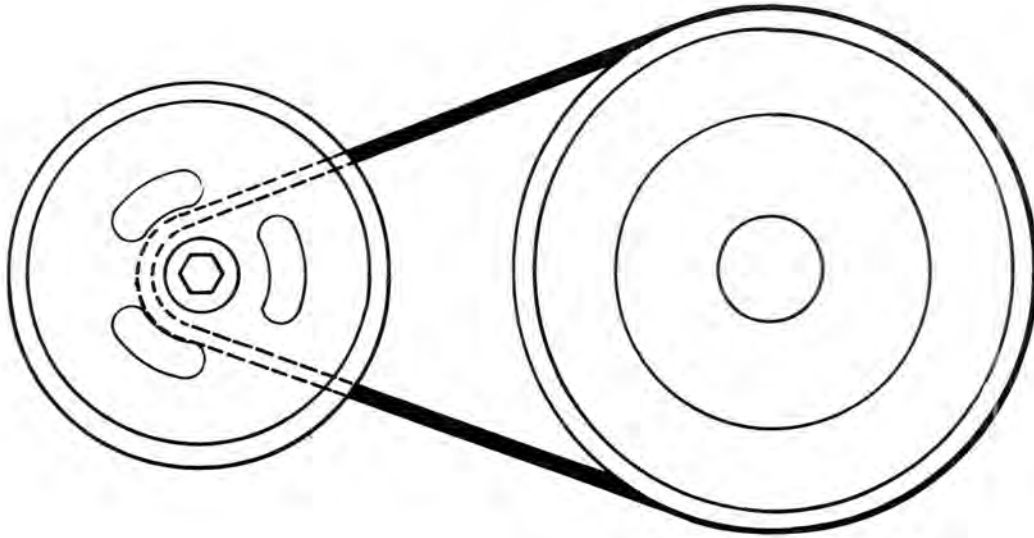


ALUMINUM DRIVEN CLUTCH

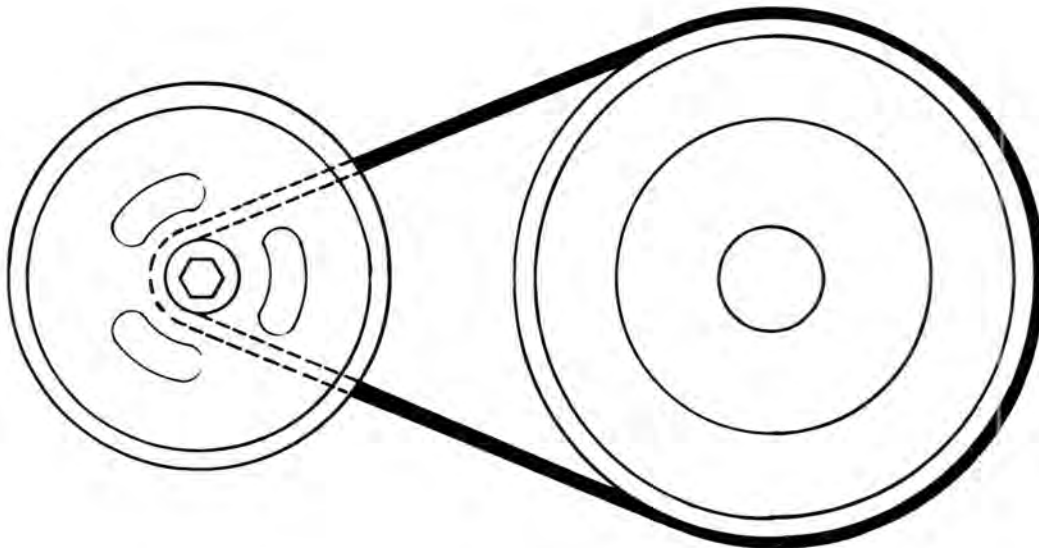
TORQUE—O—MATIC DRIVE

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 converter, the drive belt must be adjusted properly for tension and clutch offset.



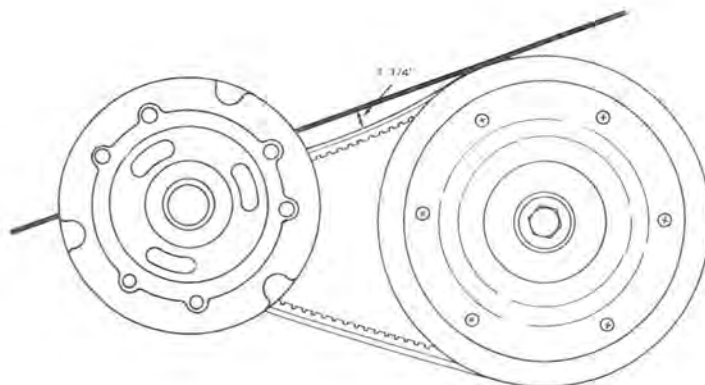
If the belt is too long or center distance too short, the initial starting ratio will be too low resulting in performance loss. This is due to the belt raising too high in the drive clutch sheaves upon engagement.



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

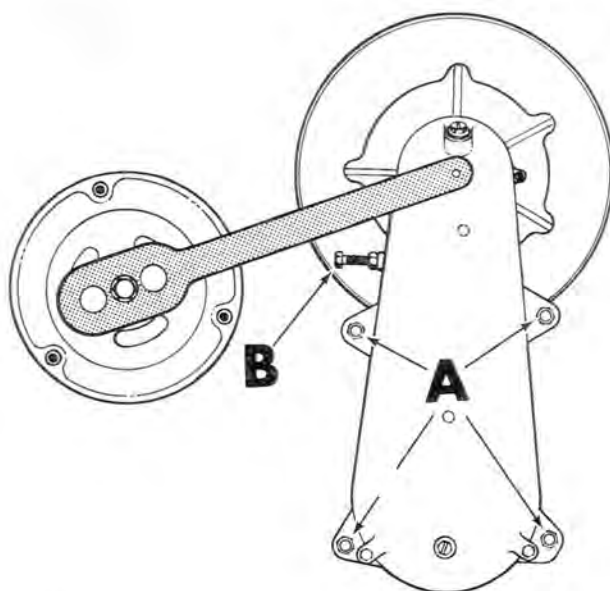


ALUMINUM DRIVEN

The ideal belt deflection is $1\frac{1}{4}''$. 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).

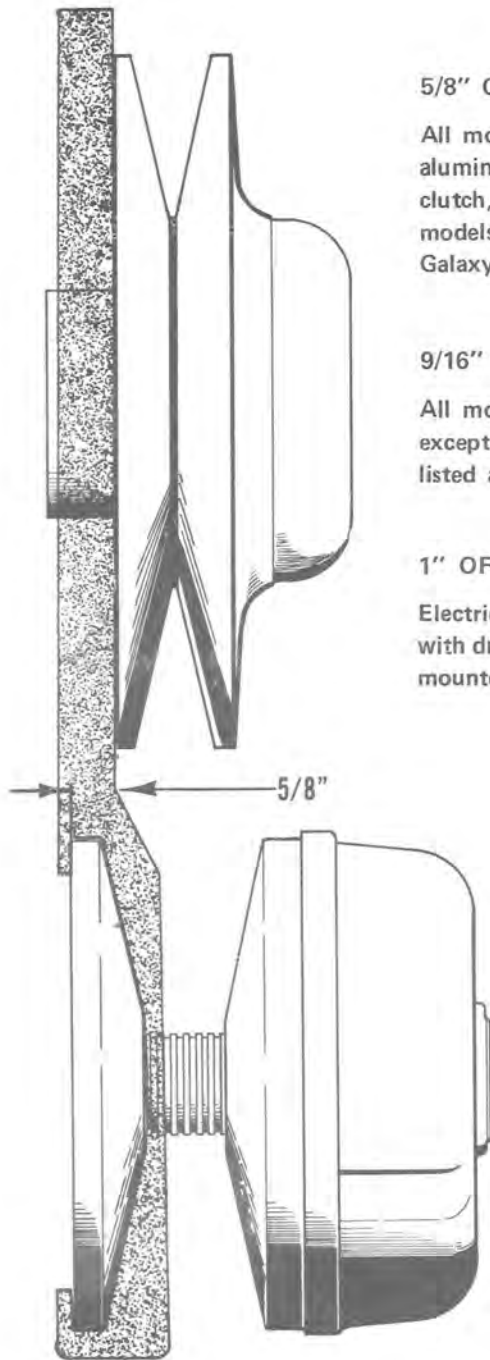
NOTE: On some models, before the above adjustments can be made, the driven clutch must be slid partially inboard on its shaft to provide access to the two $\frac{5}{16}'' \times \frac{7}{8}''$ cap screws which secure the chaincase to its mounting plate.

TORQUE—O—MATIC DRIVE

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

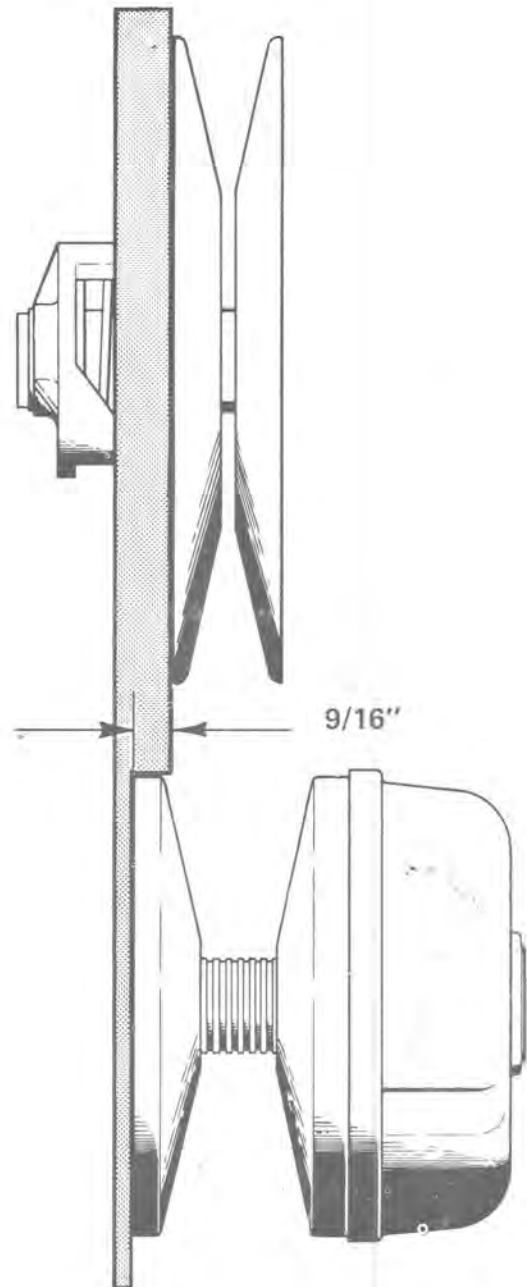
All models with aluminum driven clutch, all Cobra models, and all Galaxy models.

9/16" OFFSET

All models, except those listed above.

1" OFFSET

Electric start models with drive clutch mounted ring gear.

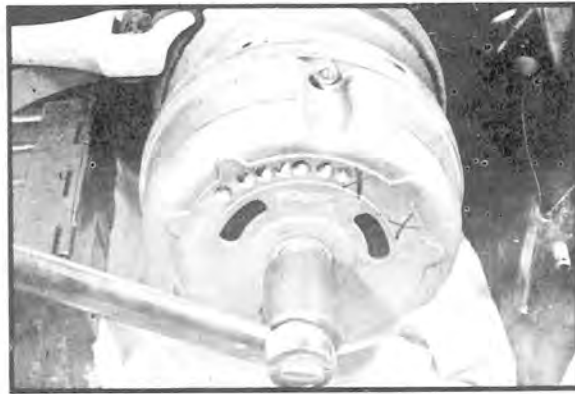


TORQUE-O-MATIC DRIVE

Drive Clutch Removal, Installation, and Identification

REMOVAL

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.



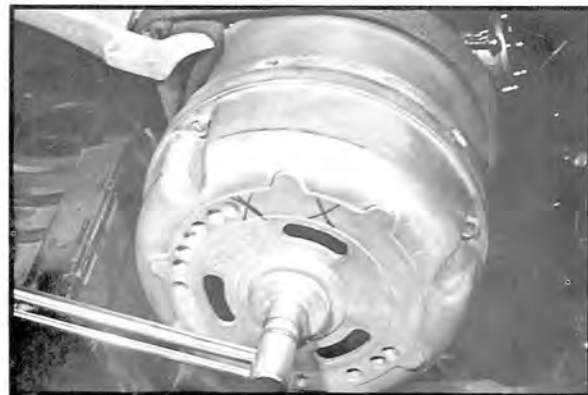
BORE TAPER TRUING

Prior to reinstalling the drive clutch to the engine, the bore taper should be trued using the PN 2870576 tapered reamer. Place the reamer in a vise lubricating with cutting oil and clean-up the taper by manually rotating the clutch clockwise.



INSTALLATION

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 or removing a drive clutch as it will loosen the spider torque value and could cause engine crankshaft damage.

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.



TORQUE-O-MATIC DRIVE

Drive Clutch Disassembly and Inspection

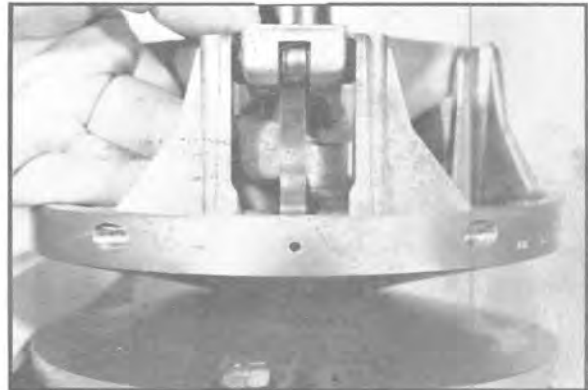
1. Mark the outside cover to the movable sheave with a marking pen or scribe.



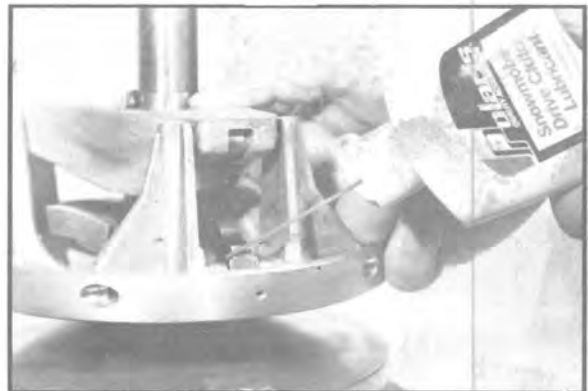
USING CAUTION, remove the cover attaching screws. Keep in mind there is spring tension on the cover.



2. Inspect the rollers, shift weights, and movable sheave bushing for wear. Check the spring for distortion and free length specifications (refer to VII - 11).



3. If all components are serviceable, lubricate the spider rollers and shift weight pins with Polaris lubricant PN 2870510 (weights and rollers must move freely).



4. Reinstall the spring and cover with the index mark aligned, torquing the cover screws as follows:

10-32 x 3/4" - 25 to 30 Inch Lbs. } Where
10-32 x 1" - 40 to 50 Inch Lbs. } Used
1/4" - 20 x 3/4" - 80 to 100 Inch Lbs.
P-85 Tower plate 1/4" - 20 x 2 1/4" cap-
screws - 100 Inch Lbs.



TORQUE-O-MATIC DRIVE

Shift Weight Replacement

In the event wear is evident on either the shift weights or spider rollers, both must be replaced in sets. **NOTE:** The following order of shift weights and spider roller replacement must be performed in the sequence provided.

1. Attach the drive clutch to the holding fixture 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 Snap-On pin punch PN 2870507, drive the three 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. P-85 and high-performance version weight pin nut — 25 Inch Lb.



4. Using the spring pin punch PN 2870402, 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 pins in this manner.

Shift Weight Pin Retention Cap Screw Torque—
60 Inch Lbs. (Where Used)

NOTE: Drive clutches using the 1/4" weight pin retention cap screw which have signs of pulled threads should have the P-85 version pin and nut installed on all weights.



TORQUE-O-MATIC DRIVE

Spider Roller Replacement

1. Locate the "X" balance reference mark beneath one of the shift weights. Mark an "X" directly above this shift weight on the spider leg as shown for reassembly.



2. (HIGH-PERFORMANCE VERSION ONLY)
Remove the spider jam nut using the spider nut driver service tool.



3. Install the clutch spider tool. Rotating counter-clockwise, loosen and remove the spider.
NOTE: Do not discard the spacer washers located beneath the spider, as they must be re-used.



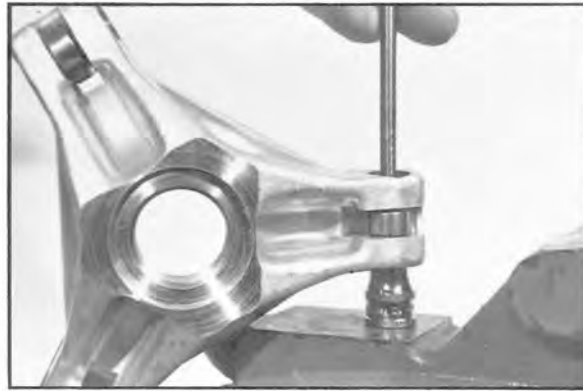
4. Remove the six guide buttons as shown.



TORQUE-O-MATIC DRIVE

Spider Roller Replacement

5. Place a small 3/8" drive socket into the button recess of the spider and position on the anvil portion of a vise as shown. Using a pin punch, drive out and discard the old pins and rollers.



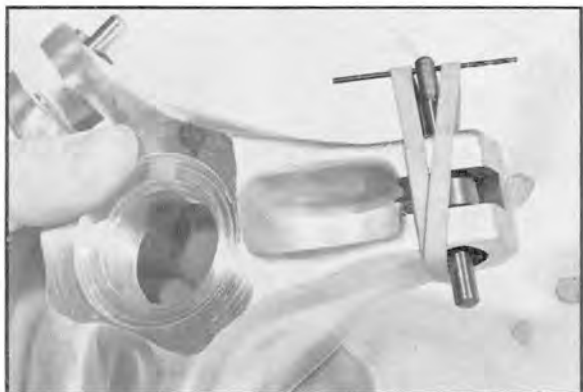
6. Start a new pin (tapered or smooth end first) into an outside leg of each spider arm as shown.



7. Using a replacement shift weight pin, slide a small drill bit through the hole in one end. Slide the opposite end into the spider and place a washer roller and remaining washer into the spider and over the shift weight pin.



8. Take a fairly large rubber band and, while holding the shift weight pin in, slip it around the spider leg and drill bit as shown. Place a few drops of clutch lube on each side of the roller.



TORQUE-O-MATIC DRIVE
Spider Roller Replacement

9. Position the spider leg on the vise anvil and drive the replacement pin in.

NOTE: Use care so as not to damage the spider button recesses.



10. (HIGH-PERFORMANCE VERSION ONLY)

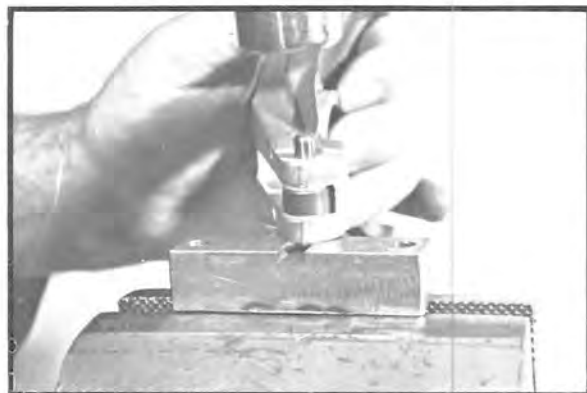
IMPORTANT: On the high-performance spider, it will be necessary to center the roller pin using the special roller pin centering punch (PN 2870401) as shown. This punch assures that each pin is centered in the spider for balance purposes.



11. (STANDARD VERSION ONLY)

With the roller pin gauge block in a vise, 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.



12. Install new buttons into the six locations on the spider, seating the buttons by tapping with a soft hammer as shown.



TORQUE-O-MATIC DRIVE

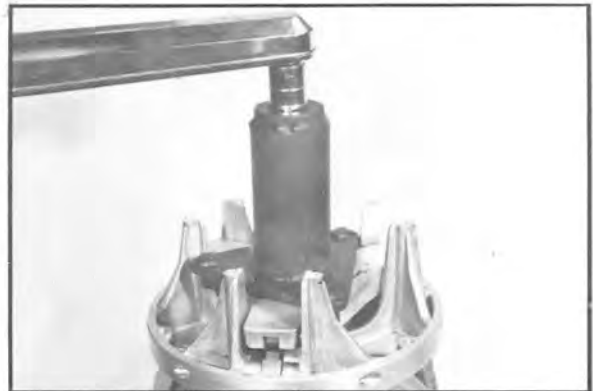
Spider Roller Replacement

13. Reinstall the spider spacer washer(s) and spider, taking care to align the "X" balance marks. On some spiders, the word "Alcoa" is used as a balance mark.

NOTE: Be sure to position the correct number of spider spacer washers beneath the spider. Before tightening, be sure the washers are seated in the recess of the spider. Failure to do this may cause clutch damage.



14. Torque the spider to 200 ft./lbs. Install and torque the spider jam nut (where used) to 235 ft./lbs.



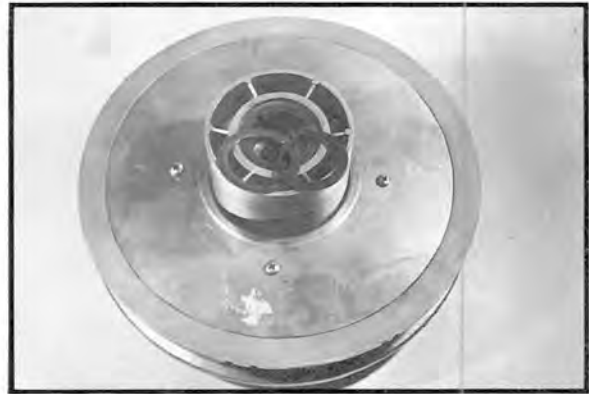
15. Reinstall the spring and cover with the index mark aligned, torquing the cover screws as follows:

10-32 x 3/4" - 25 to 30 Inch Lbs.	} Where Used
10-32 x 1" - 40 to 50 Inch Lbs.	
1/4" - 20 x 3/4" - 80 to 100 Inch Lbs.	
P-85 Tower plate 1/4" - 20 x 2 1/4" cap-screws - 100 Inch Lbs.	

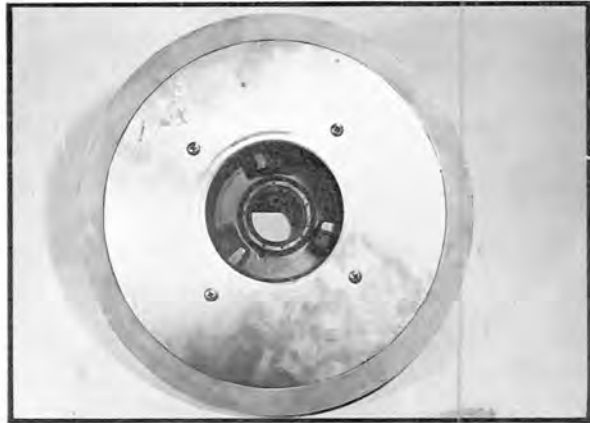


TORQUE-O-MATIC DRIVE Aluminum Driven Clutch Service

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 remove any sharp edges which may cause sticking.



3. In the event the bushing is damaged, loose in the hub, or excessive clearance is evident, it must be replaced. Remove the old bushing, cleaning the hub thoroughly. Apply LOCTITE DEPEND activator and adhesive to the new bushing before installation.

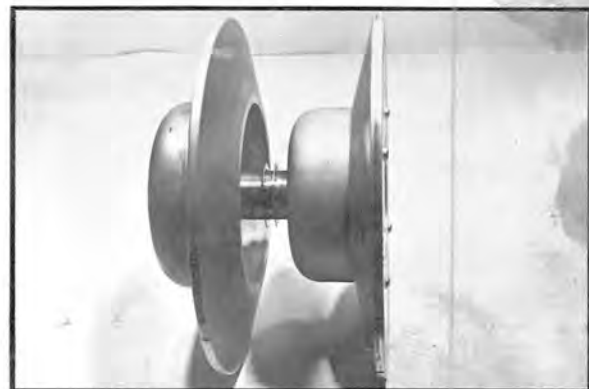
NOTE: Allow ample curing time (4-24 hours) before placing the clutch into service.

Bushing PN's

3569802 Phenolic (Fiber)
3569803 D.U.



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: Addition or subtraction of these washers affects clutch alignment.



TORQUE-O-MATIC DRIVE

Aluminum Driven Clutch Service

HELIX ANGLES AND EFFECTS

The driven clutch helix installed at the time of manufacture was selected for its overall performance in relation to the other drive system components (drive clutch shift weight, spring, gearing, engine power curves, etc.). When encountering situations of fine tuning requiring a slight adjustment of engine operating RPM or to improve backshift, it may be more desirable to perform a helix change rather than other components.

Polaris has three helix angles available for the aluminum driven clutch — 30°, 34°, and 36°. Refer to the chart below for specific helix angle effects and individual identification.

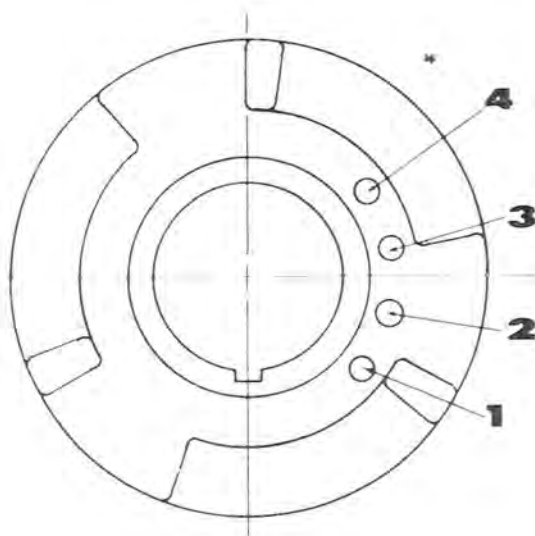
Helix	RPM Effect	Identification
30° PN 5630138	Increasing Decreasing	None except close spacing between ramps
34° PN 5630168		Number "8" stamped on top of one ramp
36° PN 5630185		"S/A" stamped on internal face

The normal rate of change between helix angle steps is 250 engine RPM under full throttle using the previous helix spring position, or approximately the same result as installing the helix spring from No. 1 to No. 4 position. Therefore, the spring should always be adjusted within its limits before a helix change is performed.

NOTE: RPM changes may not be evident in the event other drive or driven clutch components are substandard.

5. Reassemble the clutch; install the spring into the helix. The production helix spring hole location is No. 2 for all models. Tension the spring 1/3 turn; install the helix key, thrust washer, and snap ring.

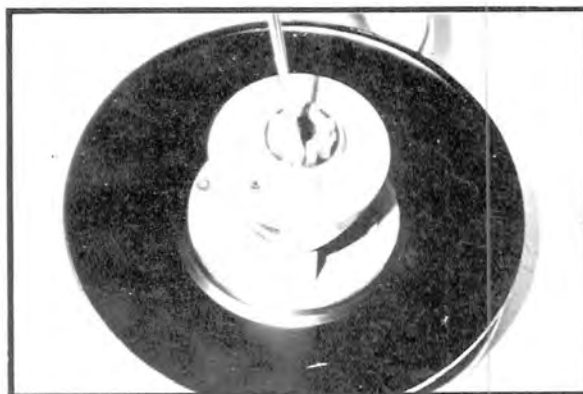
NOTE: Increasing spring tension increases engine RPM.



TORQUE-O-MATIC DRIVE

Steel Driven Clutch Service

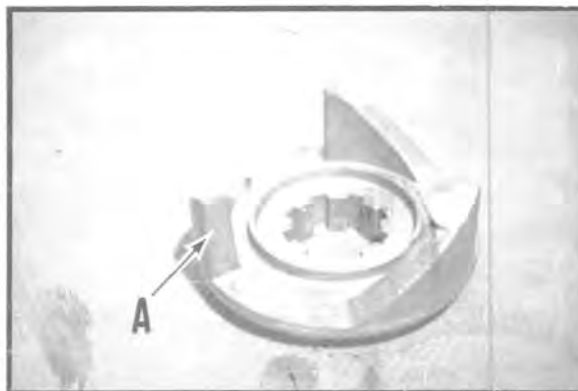
1. Remove the retaining ring as shown. Care should be taken, as snap ring is under spring pressure.



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.



TORQUE-O-MATIC DRIVE

Troubleshooting

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. 2. Drive clutch shift weight too heavy. 3. Driven clutch spring broken or installed in wrong helix location (aluminum clutch). 4. Drive belt too long. 5. Converter sheaves greasy; belt slippage.	Replace with recommended spring. Install correct shift weight kit to match engine application. Replace spring; refer to proper installation location. Clean clutches; install new belt. Install new belt and/or adjust belt tension.
Erratic engine operating RPM during acceleration or load variations.	1. Drive clutch binding. 2. Driven clutch malfunction.	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. 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). 2. Drive clutch shift weights incorrect for application (too light). 3. Drive clutch binding. 4. Driven clutch binding.	Install correct recommended spring. Install correct recommended shift weights. Disassemble and clean clutch, inspecting shift weights and buttons. Reassemble without the spring to further determine probable cause. Disassemble, clean, and inspect driven clutch, noting worn sheave bushing and ramp buttons and helix spring location.

CONTINUED

SITUATION	PROBABLE CAUSE	REMEDY
Harsh drive clutch engagement.	1. Drive belt worn too narrow. 2. Excessive belt/sheave clearance with new belt (high-performance version without detent shift weight).	Replace. Perform belt/sheave clearance adjustment with shim washers beneath spider.
Drive belt turns over.	1. Wrong belt for application. 2. Clutch alignment out of spec. 3. Engine mount broken or loose. 4. Driven clutch sheaves have excessive run-out, bent, or damaged.	Replace. Adjust alignment offset. Inspect/adjust or replace. 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. 2. Excessive drive clutch button-tower clearance. 3. Bearing failure/chaincase, jackshaft, or front drive shaft. 4. Drive chain loose or worn, sprocket teeth broken. 5. Driven clutch bushing worn excessively or spring broken. 6. Drive belt surface flat spots.	Inspect/replace. Install new buttons or shim out existing (see Information Bulletin No. 31). Inspect/replace. Inspect/adjust or replace. Inspect/replace. Inspect/replace.
DETENT SHIFT WEIGHTS Over-rev during initial acceleration or during heavy pulling at low ground speeds. Engine bogs after engagement.	1. Spider roller position remaining in detent. 1. Worn belt. 2. Excessive belt deflection.	a. Add spider shim washers. b. Add driven washers. c. Reduce gear ratio (chaincase models). Replace. Subtract driven clutch washers.

