




TRANSMISSION



Tailshaft Bearing Kit

Transmission tailshaft bushings often seize due to the high rpm seen in competition. The only way to avoid these failures is to install a needle bearing in place of the bushing. Fitment of the needle bearing requires machining out the inside diameter of the tailshaft housing. The tailshaft bearing kit includes needle bearing, snap ring and information regarding the tailshaft machining. Use of a hardened competition driveshaft yoke (Part #4352-25-130) is required with this modification.


TAILSHAFT BEARING KIT

PART NUMBER	CODE	# REQ.	DESCRIPTION	MODEL/ ENGINE TYPE	YEAR	NOTES
0000-02-9411		1	Tailshaft Bearing Kit	RX2, RX3, RX7	1974-85	

Transmission Shift Bushing

One of the small components that can cause problems is the transmission shift bushing on your stock transmission. Under racing conditions, the stock bushing can wear quickly. Our competition aluminum bushing replaces the stock plastic bushing in the shift control lever rod end. A worn shifter bushing causes increased wear to synchro rings which can result in serious damage to other transmission components. It also can create a shifting problem when bushings are severely worn.

TRANSMISSION SHIFT BUSHING

PART NUMBER	CODE	# REQ.	DESCRIPTION	MODEL/ ENGINE TYPE	YEAR	NOTES
0000-02-9401	C	1	Transmission Shift Bushing	RX2, RX3, RX4, RX7	1972-80	Please call for information on bushings for 1981-85 and 1986-91 RX7s.
0000-02-9402		1	Transmission Shift Bushing	RX7 TT Miata	1993-95 1990-97	Same as Part #0000-02-9401 but bushing is shorter (Total height: 1/2").

 = NEW! Competition Part

NT = Non-Turbo

T = Turbo

TT = Twin-Turbo (93-95 RX7)



Ordering Transmission Parts

Because there were many different stock transmissions produced for the various models over the years, a listing of transmission replacement parts cannot be provided in this catalog. If you are planning to rebuild your transmission, please call us in advance to request a transmission diagram and parts listing for your vehicle. It can be faxed or mailed to you. Be sure to use this diagram and parts list to determine the part numbers required for your rebuild. This will simplify ordering and help reduce the possibility of shipment of improper parts.

MAZDA TRANSMISSION RATIOS							
MODEL	YEAR	NOTES+	1ST	2ND	3RD	4TH	5TH
RX2, RX3, RX4, Cosmo	1974-76	1	3.683	2.263	1.397	1.0	.862
RX3 SP, RX4, Cosmo	1977-78	1	3.380	2.002	1.390	1.0	.791
RX7	1979-83	2	3.674	2.217	1.432	1.0	.825
RX7 12A	1984-85	2	3.622	2.186	1.419	1.0	.758*
RX7 GSL-SE 13B	1984-85	2	3.622	2.186	1.419	1.0	.807**
RX7	1986	2	3.475	2.002	1.366	1.0	.711
RX7 (Non-Turbo & Without Viscous Limited Slip)	1987-91	2	3.475	2.002	1.366	1.0	.697
RX7 GTUS	1989	2	3.475	2.002	1.366	1.0	.756
RX7 Turbo	1987-88	3	3.483	2.015	1.391	1.0	.762
RX7 Turbo	1989-91	3	3.483	2.015	1.391	1.0	.719
RX7 Twin-Turbo	1993-95	3	3.483	2.015	1.391	1.0	.719
Miata	1990-97	2	3.136	1.888	1.330	1.0	.814
626 (RWD)	1979-82	2	3.214	1.818	1.296	1.0	.860
PBS MDR-I Competition 5-Speed w/Changeable Ratios	Various	4					

*1985 12A = 0.807 **1985 13B = 0.711 +See reference notes on the following page for information about these transmissions.

Replacement parts for the following transmissions are also available. Complete transmissions must be special ordered. Please call for information and pricing.

- 1) 5-speed Competition Overdrive transmission for rotary applications (complete transmission no longer available).
- 2) PBS GLC & 323 FWD (dog ring) transmission.
- 3) 323 GTX & GTR rally transmission.

Reference Notes

1. Rib Case (Stock) Transmission (1974-78 – 12A & 13B)

- Main case has ribbing for strength and rigidity.
- The bottom of the transmission has an inspection plate.
- The bellhousing is separate/removable.
- This transmission can be used in 1979-80 RX7s with some external modifications.
- For racing purposes, potential weak areas are synchro rings and plastic shift control rod end bushing. The plastic bushing can be replaced by an aluminum bushing (Part #0000-02-9401).

2. Smooth Case (Stock) Transmission (1979-91 – RX7 Non-Turbo Models, Miata & 626RWD)

- Main case is basically smooth, compared with rib-case design.
- The bellhousing cannot be removed from case.
- The location of the shift lever is further back on 1981-83 models. This transmission can be used on earlier models with modification of the shifter hole in tunnel.
- The breather “vent” is on the right side of the transmission on 1983-85 models.
- For racing purposes, the plastic shift control rod end bushing (on 1990-96 Miatas and 1979-80 RX7s) should be replaced with an aluminum bushing.
- 1979-82 626 gear ratios may be used as an alternative (call for information).
- 1979-80 transmission components are somewhat weaker and more likely to be damaged under racing conditions. Use 1981-85 gearbox.

3. Rib Case (Stock) Transmission (1987-95 – RX7 Turbo)

- Similar in design to early rib-case design transmission.
- The bellhousing diameter is larger than all other transmissions.
- The bolt pattern is identical to other transmissions.

4. “PBS” MDR-1 (Quick Change) 5-Speed Transmission

(See PBS Transmission Listing on T-7 for more information.)

PBS MDR-1 5-Speed Transmission

The PBS MDR-1 (Quick Change) Transmission provides the following benefits:

- Final drive gears can be changed without taking the transmission out of the car (5 different ratios available).
- Gearbox includes the following gear ratios: (1st-2.095/2nd-1.600/3rd-1.407/4th-1.167).
- Alternative ratios also available for each gear (1st to 5th).
- Overall length identical to stock (RX7) transmissions.
- Dog rings provide for a quick-shifting, strong, durable box.
- For GT and Production class applications.

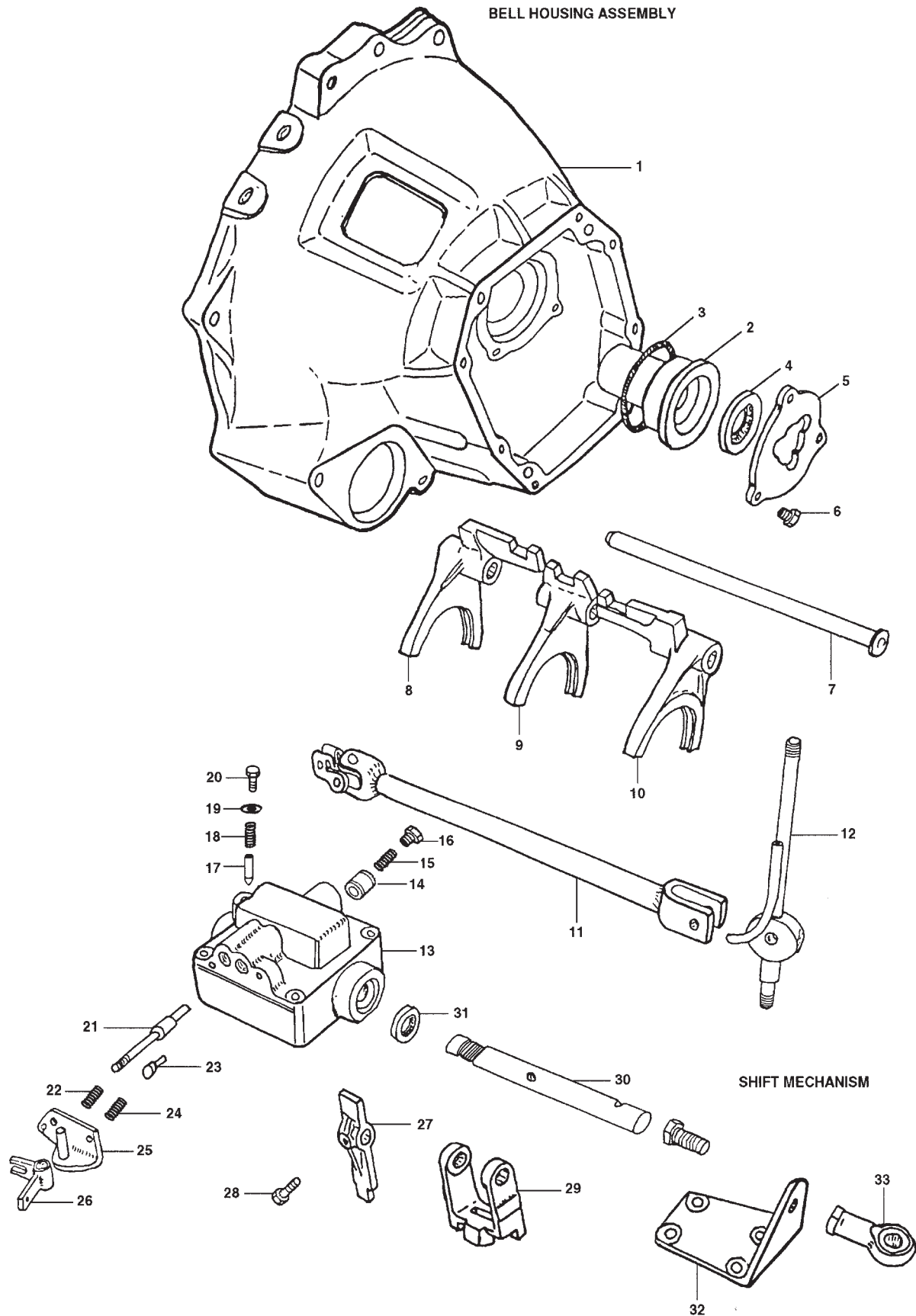


PBS MDR-1 Quick Change Transmission – Part #MANA-17-000

COMPETITION 5-SPEED (QUICK CHANGE) TRANSMISSION

PART NUMBER	CODE	# REQ.	DESCRIPTION
MANA-17-000	C	1	Complete Transmission

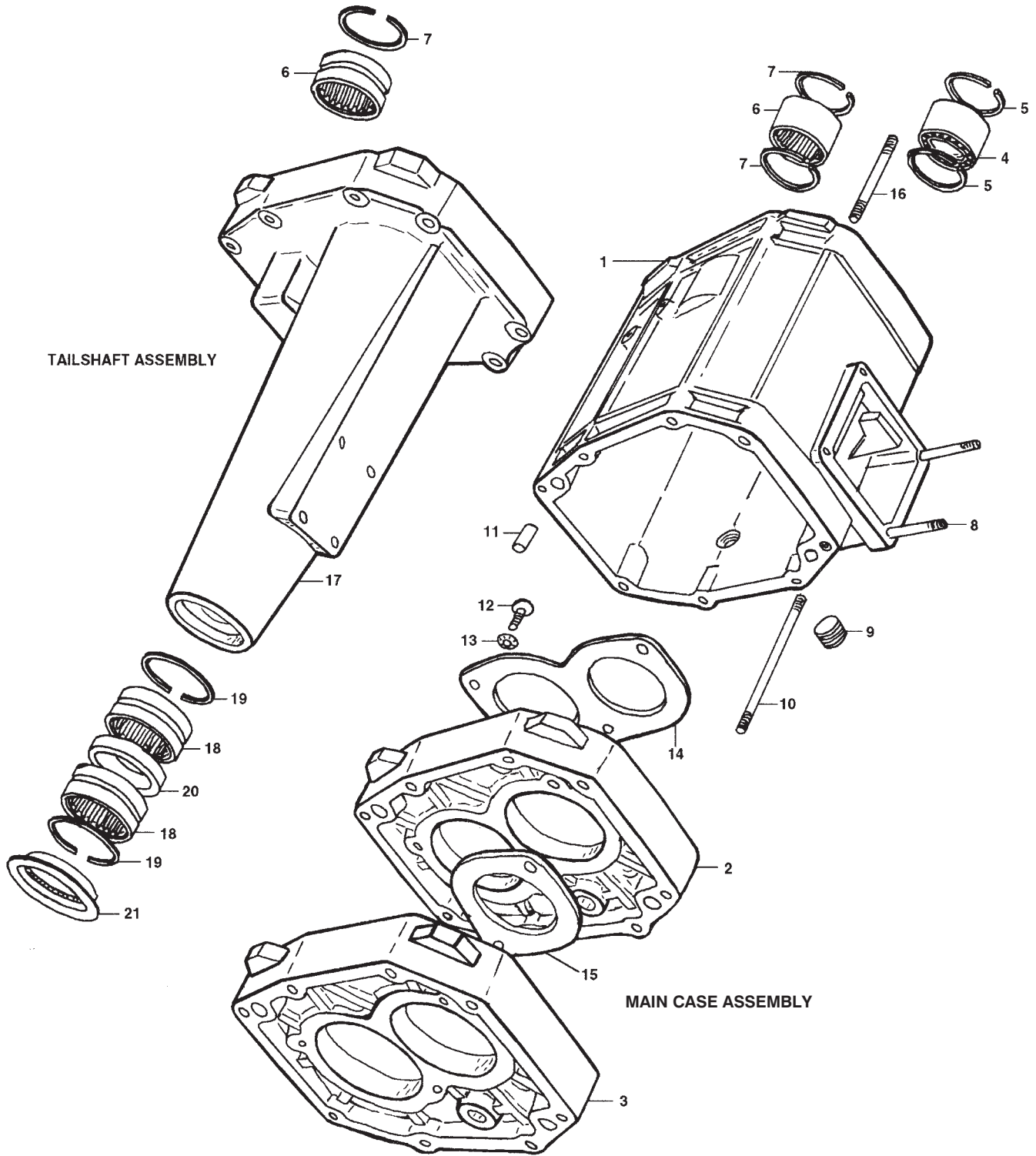
PBS 5-Speed Transmission - Bell Housing & Shift Mechanism



BELL HOUSING & SHIFT MECHANISM

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION
1	MANA-17-403	C	1	Bell Housing
1	MANA-17-403A	C	1	Bell Housing (GTO-Heavy Duty)
2	MANA-17-2121	C	1	Release Bearing Collar
2	MANA-17-2121-AA	C	1	Release Bearing Collar (GTO-Heavy Duty)
3	MANA-17-9003-60	C	1	O-Ring – Release Bearing Collar
4	MANA-17-9002-90	C	1	Oil Seal – Input Shaft
5	MANA-17-2122	C	1	Input Shaft Retainer (Includes Tube)
6	MANA-17-9003-80	C	3	Cap Screw (1/4" - 20 x 3/4")
7	MANA-17-304	C	1	Shift Rail
8	MANA-17-3031-AA	C	1	Shift Fork (1st/Reverse)
9	MANA-17-3032-AA	C	1	Shift Fork (2nd/3rd)
10	MANA-17-3033-AA	C	1	Shift Fork (4th/5th)
11	MANA-17-307	C	1	Control Lever Shift
12	MANA-17-308	C	1	Shift Lever
13	MANA-17-301	C	1	Shift Selector Cover
14	MANA-17-3024	C	1	Plunger-Straight
15	MANA-17-9004-50	C	1	Spring
16	MANA-17-3029	C	1	Cap Screw – 6 mm
17	MANA-17-9004-30	C	1	Plunger
18	MANA-17-9004-20	C	1	Spring
19	MANA-17-9004-10	C	1	Washer – Special
20	MANA-17-9004-00	C	1	Cap-Retainer
21	MANA-17-313	C	1	Plunger – Reverse Lock-Out
22	MANA-17-9004-70	C	1	Spring – Plunger
23	MANA-17-3025	C	1	Plunger – Shoulder
24	MANA-17-9004-40	C	1	Spring – Plunger
25	MANA-17-311	C	1	Support – Reverse Lock-Out
26	MANA-17-312	C	1	Lever – Reverse Lock-Out
27	MANA-17-3021	C	1	Finger – Shift Selector
28	MANA-17-9003-90	C	1	Cap Screw (1/4" - 28 x 1")
29	MANA-17-3022	C	1	Shift Selector Yoke
30	MANA-17-3023	C	1	Shift Selector Rod
31	MANA-17-9003-30	C	1	Oil Seal – Shift Selector Rod
32	MANA-17-309	C	1	Support Bracket – Selector Rod
33	MANA-17-310	C	1	Heim Joint-Selector Rod

PBS 5-Speed Transmission - Main Case & Tailshaft Assembly



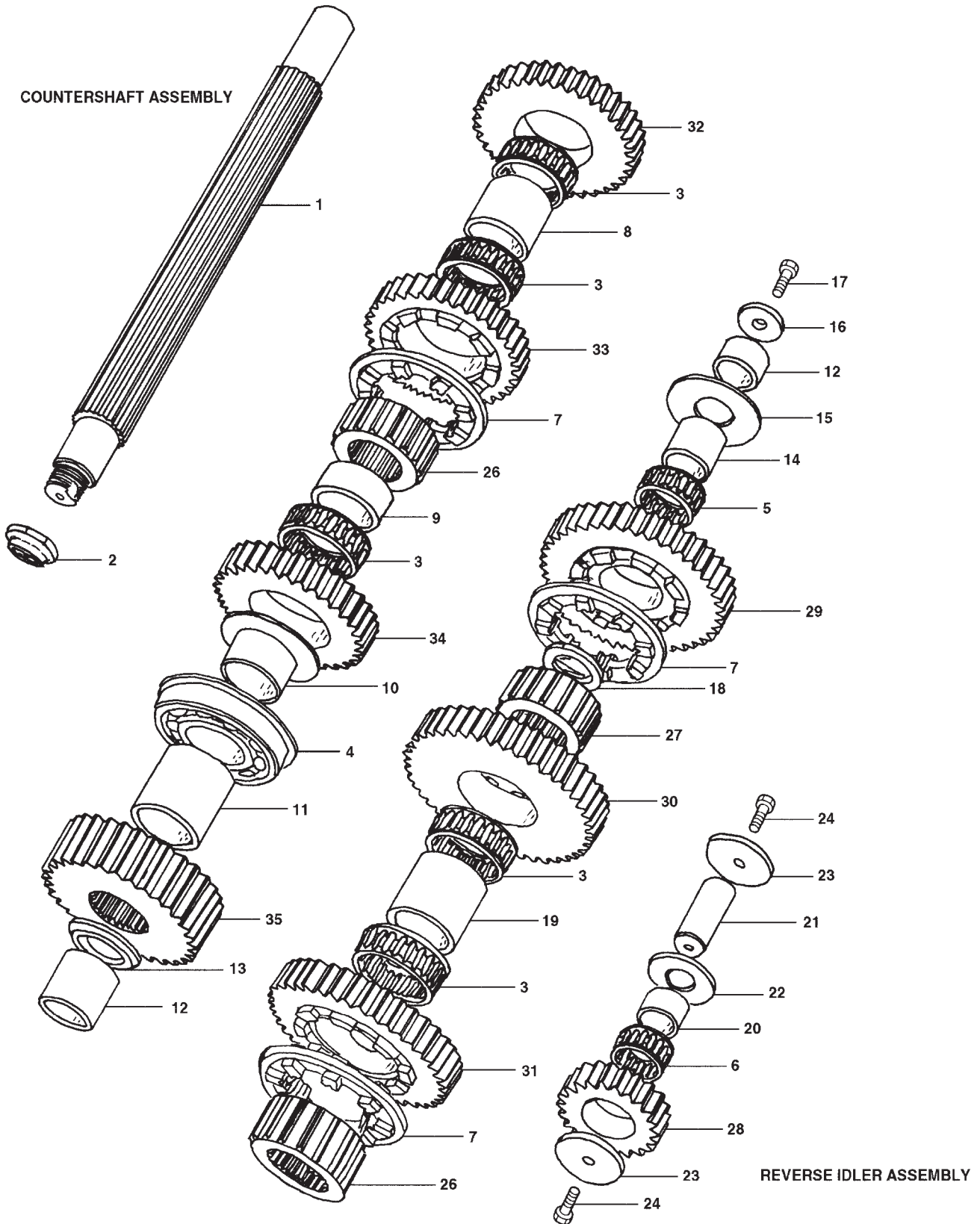
BELLHOUSING & SHIFT MECHANISM, continued ...

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION
	MANA-17-314	C	1	Shifter Cable (Not Shown)
	MANA-17-315	C	1	Spacer (Not Shown)
	MANA-17-9005-0B	C	1	Sliding Yoke (Not Shown) (GTO-Heavy Duty)

MAIN CASE & TAILSHAFT ASSEMBLY

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION
1	MANA-17-101	C	1	Main Case
2	MANA-17-103F	C	1	Bearing Carrier - Front
3	MANA-17-103R	C	1	Bearing Carrier - Rear
4	MANA-17-9001	C	1	Bearing 1st Motion Shaft-Front
5	MANA-17-9001-50	C	2	Snap Ring - 1st Motion Shaft
6	MANA-17-9002	C	2	Bearing - Countershaft - Front & Rear
7	MANA-17-9001-60	C	3	Snap Ring - Countershaft Bearing - Front & Rear
8	MANA-17-8003	C	4	Stud-Selector Cover Mounting (1/4" x 2-7/16")
9	MANA-17-9004-60	C	1	Plug-Oil Filler
10	MANA-17-8001	C	1	Stud-Main Case/Tail Housing (5/16" x 5-1/2")
11	MANA-17-9003-40	C	9	Dowel Pin (.5" dia. + 0/-.0002 x 3/4")
12	MANA-17-9003-00	C	5	Screw-Bearing Retainer
13	MANA-17-9003-10	C	5	Lock Washer-Bearing Retainer
14	MANA-17-2081	C	1	Retainer Plate-Countershaft Bearing
15	MANA-17-2082	C	1	Retainer Plate-Output Shaft Bearing
16	MANA-17-8002	C	8	Stud-Main Case/Bell Housing (5/16" x 2-5/16")
17	MANA-17-102	C	1	Extension Housing
17	MANA-17-102A	C	1	Extension Housing (GTO-Heavy Duty)
18	MANA-17-9003-50	C	2	Bearing-Extension Housing
18	MANA-17-9003-5A	C	2	Bearing-Extension Housing (GTO-Heavy Duty)
19	MANA-17-9001-70	C	2	Snap Ring-Extension Housing
19	MANA-17-9001-7A	C	2	Snap Ring-Extension Housing (GTO-Heavy Duty)
20	MANA-17-9002-80	C	1	Spacer-Extension Housing
20	MANA-17-9002-8A	C	1	Spacer-Extension Housing (GTO-Heavy Duty)
21	0837-17-335	C	1	Oil Seal-Extension Housing
21	MANA-17-9002-0A	C	1	Oil Seal-Extension Housing (GTO-Heavy Duty)

PBS 5-Speed Transmission - Countershaft & Reverse Idler Assembly

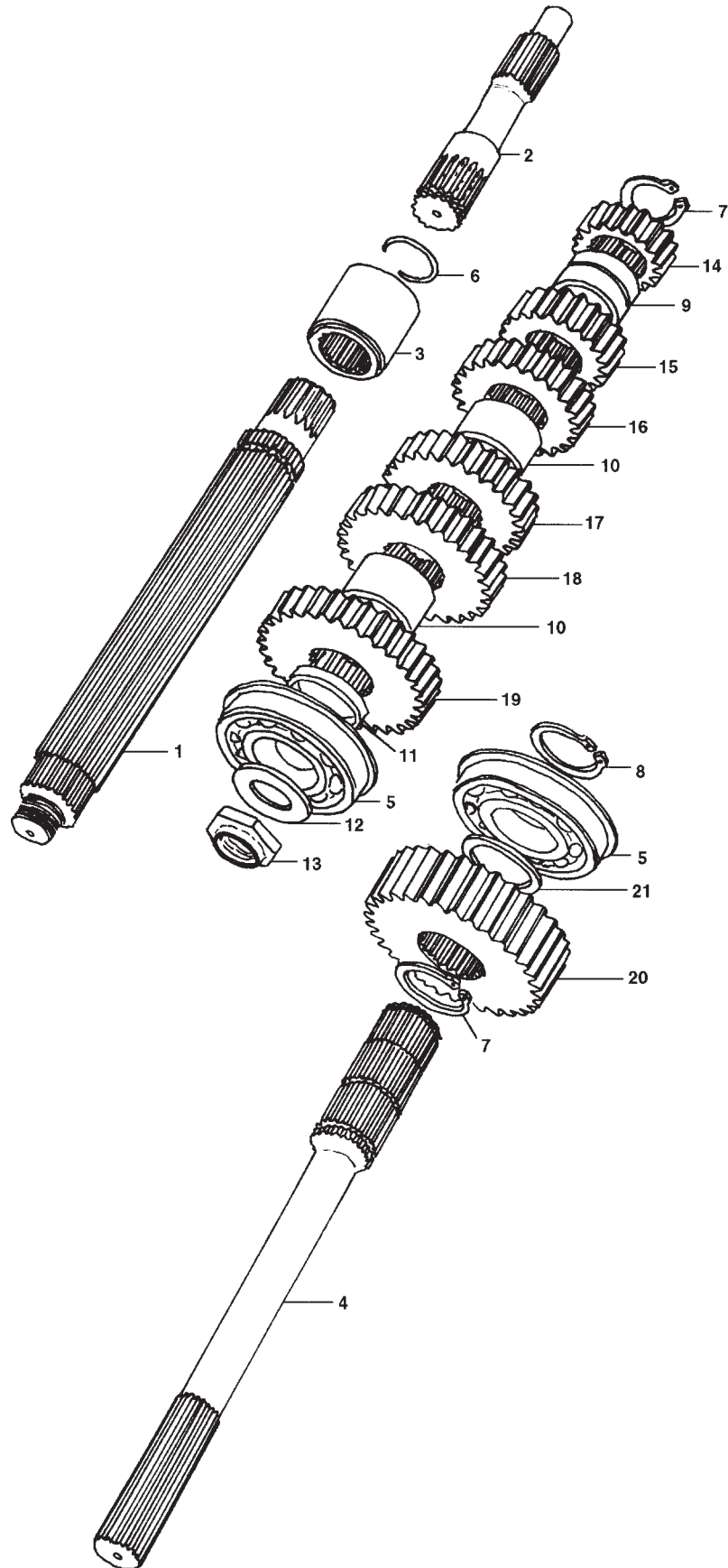


COUNTERSHAFT & REVERSE IDLER ASSEMBLY

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION
1	MANA-17-2063	C	1	Countershaft
2	MANA-17-9002-30	C	1	Lock Nut-Countershaft
3	MANA-17-9008	C	5	Needle Bearing-1st thru 5th
4	MANA-17-9001-90	C	1	Bearing-Countershaft Intermediate
5	MANA-17-9005	C	1	Needle Bearing (Reverse Driven Gear)
6	MANA-17-9007	C	1	Needle Bearing (Reverse Idler Gear)
7	MANA-17-305 -AA	C	3	Dog Ring
8	MANA-17-2042	C	1	Bearing Sleeve (3rd/4th Gear)
9	MANA-17-2043	C	1	Bearing Sleeve (5th Gear)
10	MANA-17-2034	C	1	Bearing Spacer (Countershaft)
11	MANA-17-2035	C	1	Bearing Spacer (Countershaft - Long)
12	MANA-17-9003	C	2	Inner Bearing Race Countershaft (Front & Rear)
13	MANA-17-2037	C	1	Rear Spacer (Countershaft)
14	MANA-17-9004	C	1	Inner Bearing Race-Reverse Driven Gear
15	MANA-17-2031	C	1	Thrust Washer (Reverse Driven Gear)
16	MANA-17-2032	C	1	Retainer/Washer-Countershaft
17	MANA-17-9003-70	C	1	Cap Screw (3/8"-24 x 1")
18	MANA-17-2033	C	1	Spacer/Washer-Countershaft
19	MANA-17-2041	C	1	Bearing Sleeve (1st/2nd)
20	MANA-17-9006	C	1	Inner Bearing Race-Reverse Idler
21	MANA-17-2074	C	1	Reverse Idler Shaft
22	MANA-17-2075	C	1	Spacer-Reverse Idler
23	MANA-17-2076	C	1	Washer-Reverse Idler
24	MANA-17-9003-20	C	1	Cap Screw (1/4"-28 x 5/8")
25	MANA-17-2076	C	2	Washer-Reverse Idler
26	MANA-17-2021	C	2	Hub (2nd/3rd & 4th/5th)
27	MANA-17-2022	C	1	Hub (1st/Reverse)
28	MANA-17-2072	C	1	Reverse Idler Gear (22T)
29	MANA-17-2073	C	1	Reverse Driver Gear (42T)
30	*	C	1	1st Driven Gear (see page T-13 - Item No. 15)
31	*	C	1	2nd Driven Gear (see page T-13 - Item No. 16)
32	*	C	1	3rd Driven Gear (see page T-13 - Item No. 17)
33	*	C	1	4th Driven Gear (see page T-13 - Item No. 18)
34	*	C	1	5th Driven Gear (see page T-15 - Item No. 19)
35	*	C	1	Change Gear Driver (Quick Change-Final) (see page T-15 - Item No. 20)

*See page T-13 and T-15 for part numbers of available gear sets.

PBS 5-Speed Transmission - 1st Motion Shaft Assembly



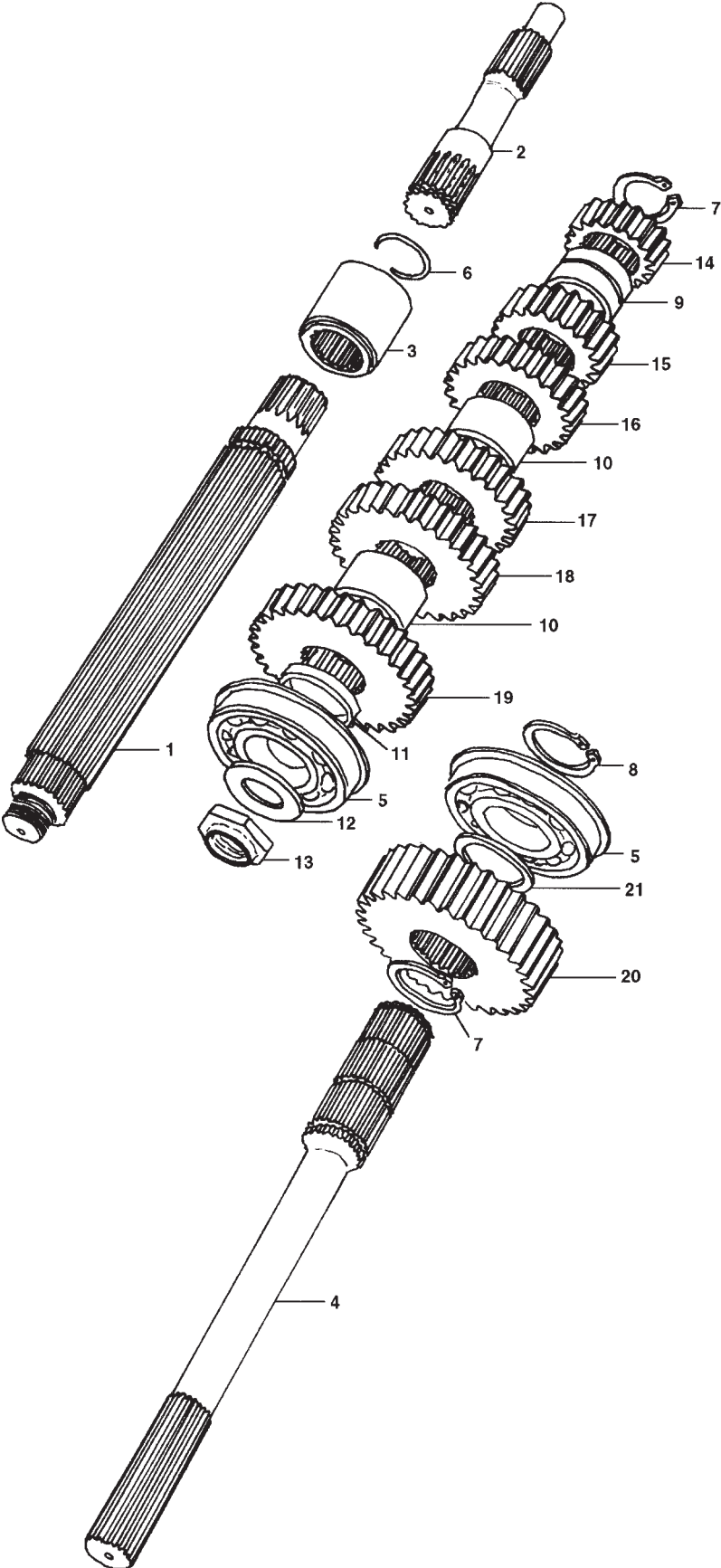
1st MOTION SHAFT ASSEMBLY

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION
1	MANA-17-2062	C	1	1st Motion Shaft
2	MANA-17-2061	C	1	Input Shaft
2	MANA-17-2061-AA	C	1	Input Shaft (GTO-Heavy Duty)
3	MANA-17-2055	C	1	Coupling- 1st Motion Shaft
4	MANA-17-2064	C	1	Tail Shaft
5	MANA-17-9001-80	C	1	Bearing
6	MANA-17-9002-10	C	1	Snap Ring (Input Shaft)
7	MANA-17-9002-50	C	2	Snap Ring - 1st Motion Shaft, Tail Shaft Change Gear
8	MANA-17-9002-40	C	1	Snap Ring - Tail Shaft (Front)
9	MANA-17-2051	C	1	Spacer (1st/Reverse)
10	MANA-17-2052	C	2	Spacer (2nd/3rd & 4th/5th)
11	MANA-17-2053	C	1	Spacer (5th)
12	MANA-17-2054	C	1	Washer (1st Motion Shaft)
13	M501-17-309	S	1	Lock Nut (1st Motion Shaft)
14	MANA-17-2071	C	1	Reverse Gear Driver (18T)
15	MANA-17-2045	C	1	1st Gear Set (20/45-2.250 Ratio)
15	MANA-17-2144	C	1	1st Gear Set (21/44-2.095 Ratio) - w/Transmission
15	MANA-17-2243	C	1	1st Gear Set (22/43-1.954 Ratio)
16	MANA-17-2342	C	1	2nd Gear Set (23/42-1.826 Ratio)
16	MANA-17-2441	C	1	2nd Gear Set (24/41-1.708 Ratio)
16	MANA-17-254	C	1	2nd Gear Set (25/40-1.600 Ratio) - w/Transmission
17	MANA-17-2639	C	1	3rd Gear Set (26/39-1.500 Ratio)
17	MANA-17-2738	C	1	3rd Gear Set (27/38-1.407 Ratio) - w/Transmission
17	MANA-17-2837	C	1	3rd Gear Set (28/37-1.241 Ratio)
18	MANA-17-2936	C	1	4th Gear Set (29/36-1.241 Ratio)
18	MANA-17-3035	C	1	4th Gear Set (30/35-1.167 Ratio) - w/Transmission
18	MANA-17-3134	C	1	4th Gear Set (31/34-1.097 Ratio)
19	MANA-17-3233	C	1	5th Gear Set (32/33-1.031 Ratio) - w/Transmission
19	MANA-17-3332	C	1	5th Gear Set (33/32-0.970 Ratio)
19	MANA-17-3431	C	1	5th Gear Set (34/31-0.912 Ratio)

NOTE 1: Gear set ratios listed "w/Transmission" indicate those ratios that come in complete transmissions.

NOTE 2: Heavy Duty 8 pitch gears also are available in limited ratios. Please call for information.

PBS 5-Speed Transmission - 1st Motion Shaft Assembly



1st MOTION SHAFT ASSEMBLY

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION
20	MANA-17-2626-FG	C	1	Change Gear Set (26/26-1.000 Ratio-8 Pitch) - w/Transmission
20	MANA-17-293-FG	C	1	Change Gear Set (29/30-1.034 Ratio-10 Pitch)*
20	MANA-17-2936-FG	C	1	Change Gear Set (29/36-1.241 Ratio-10 Pitch)*
20	MANA-17-3034-FG	C	1	Change Gear Set (30/34-1.133 Ratio-10 Pitch)*
21	MANA-17-2036	C	1	Spacer

NOTE 1: Gear set ratios listed "w/Transmission" indicate those ratios that come in complete transmissions.

NOTE 2: Heavy Duty 8 pitch gears also are available in limited ratios. Please call for information.



Transmission Tech Tips

To ensure proper shifting, shift fork thickness should not be less than .165".

