

**ARTICLE BEGINNING** **APPLICATION** **4-SPEED** **TRANSMISSION APPLICATIONS (4-SPEED)**

Vehicle Application	Transmission Model
Toyota	
Pickup & 4Runner	
1987-88, 2WD	W46
Pickup	
1986 (2WD)	W46
1989-90 (2WD & 4WD)	W46

**5-SPEED** **TRANSMISSION APPLICATIONS (5-SPEED)**

Vehicle Application	Transmission Model
Toyota	
Camry	
1983	W58
Celica	
1983-86	W58
Corona	
1983	W55
Cressida	
1983-87	W58
Pickup	
1986 (2WD)	W55
1986 (4WD)	W56
1991-92 (2WD & 4WD)	W55
Pickup & 4Runner	
1987-90 (2WD)	W55
1987-90 (4WD)	W56
1991-94 (4WD)	W56
1993 (2WD)	W55, W56
1994 (2WD)	W55
Supra	
1983-92	W58
1993-94 (3.0L Non-Turbo)	W58

Vehicle Application	Transmission Model
T100	
1994, 4-Cyl.	W56
Lexus	
SC300	
1993-94	W58

## IDENTIFICATION

Transmission type is identified on ID label. ID label is located on driver's side door post.

## LUBRICATION & ADJUSTMENTS

See appropriate TRANSMISSION SERVICING - M/T article in MANUAL TRANS SERVICE section.

## ON-VEHICLE SERVICE

### DRIVE AXLE SHAFTS

See appropriate AXLE SHAFT article in DRIVE AXLES section.

## TROUBLESHOOTING

See [TROUBLE SHOOTING - BASIC PROCEDURES](#) article in the GENERAL TROUBLE SHOOTING section.

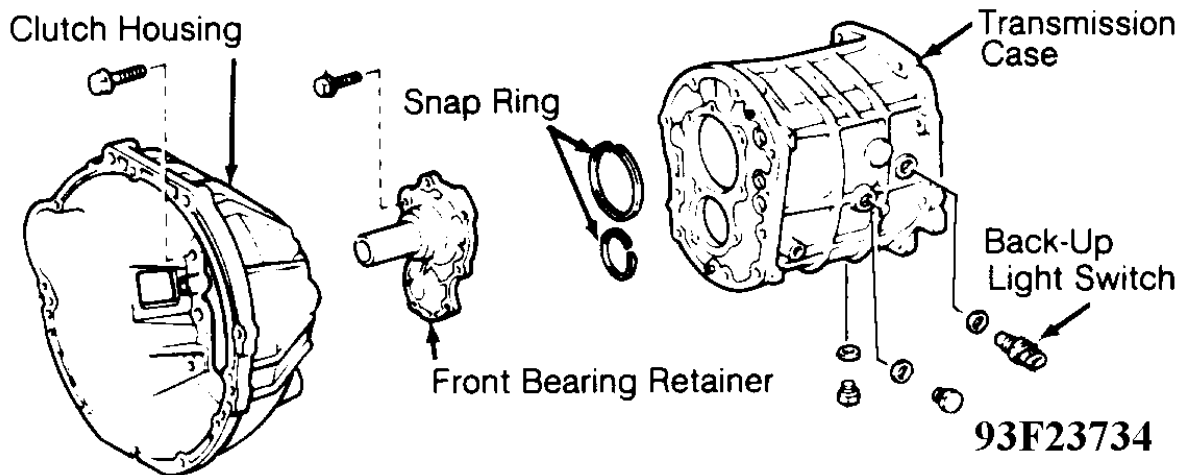
## REMOVAL & INSTALLATION

See appropriate TRANSMISSION REMOVAL & INSTALLATION - M/T article in MANUAL TRANS SERVICE section.

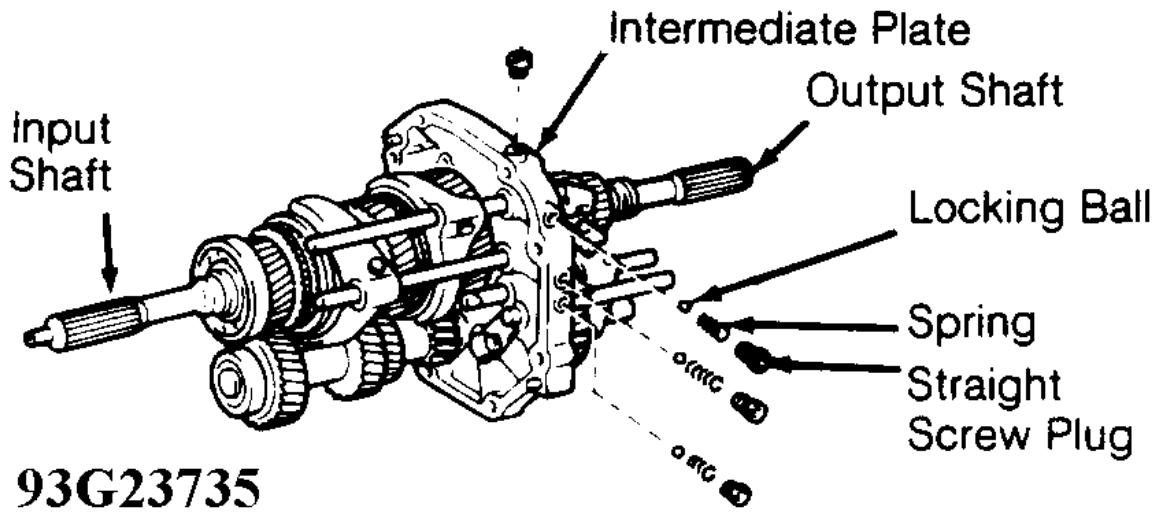
## TRANSMISSION DISASSEMBLY

1. Remove back-up light and speedometer driven gear (2WD). On W58 models equipped with Anti-Lock Brakes (ABS), remove rear speed sensor. On all models, remove clutch housing from transmission case. Remove shift lever retainer and oil baffle plate. Remove restrict pins. Remove shift lever housing set bolt. Remove extension housing (2WD) or transfer adapter (4WD) bolts. See [Fig. 1](#).
2. Using plastic hammer, tap housing or adapter. Disengage shift and select lever from shift head. Remove housing or adapter. Remove front bearing retainer and bearing snap rings. Using plastic hammer, tap transmission case and remove from intermediate plate.
3. On all models, mount intermediate plate in vise. Use 2 bolts with nuts and washers in bottom holes of intermediate plate to prevent damage to sealing surface of intermediate plate. **DO NOT** apply pressure on intermediate plate. Using Socket (09313-30021), remove all plugs from intermediate plate. Using magnet, remove springs and detent balls.

4. On 4WD models, remove sleeve yoke from output shaft using Puller (09950-20017). On all models, remove shift forks, shift fork shafts and reverse idler gear. Remove No. 1 and No. 2 shift fork set bolts and lock washers. Remove No. 1 and No. 2 shift fork shaft snap rings. Remove reverse idler gear shaft stopper, reverse idler gear and shaft. See [Fig. 6](#).
5. Remove No. 1 shift fork and shaft. Using magnet, remove No. 1 and No. 2 interlock pins. See [Fig. 7](#). Remove No. 2 shift fork and shaft. Using a magnet, remove No. 3 interlock pin. Using a punch, drive out pin from No. 3 fork shaft. Remove No. 4 shift fork shaft. Remove No. 3 shift fork, fork shaft and reverse shift arm with pin. On 2WD models, remove speedometer drive gear from shaft.
6. Measure counter 5th gear thrust clearance. See [Fig. 8](#). Standard clearance is .004-.016" (.10-.41 mm). Maximum clearance is .018" (.46 mm). Remove 5th gear snap ring on countershaft. Using 2-jaw puller, remove countershaft rear bearing, spacer, 5th gear, needle bearing and spacer. See [Fig. 1](#).
7. Ensure that output shaft rear bearing roller and counter 5th gear do not contact each other when removing gear. Remove snap ring. Using puller, remove No. 3 clutch hub. Ensure that jaws are not contacting shifting key retainer. See [Fig. 12](#) Remove output shaft snap ring. Using Puller, (09312-20011) remove rear bearing and 5th gear. See [Fig. 1](#).
8. Remove output shaft reverse gear snap ring. Using puller, remove reverse gear. Using Torx (T40) socket, remove bearing retainer screws and retainer. Remove bearing snap ring. Using plastic hammer, tap intermediate plate and remove output shaft with input shaft, and countergear as a unit. Remove input shaft from output shaft.

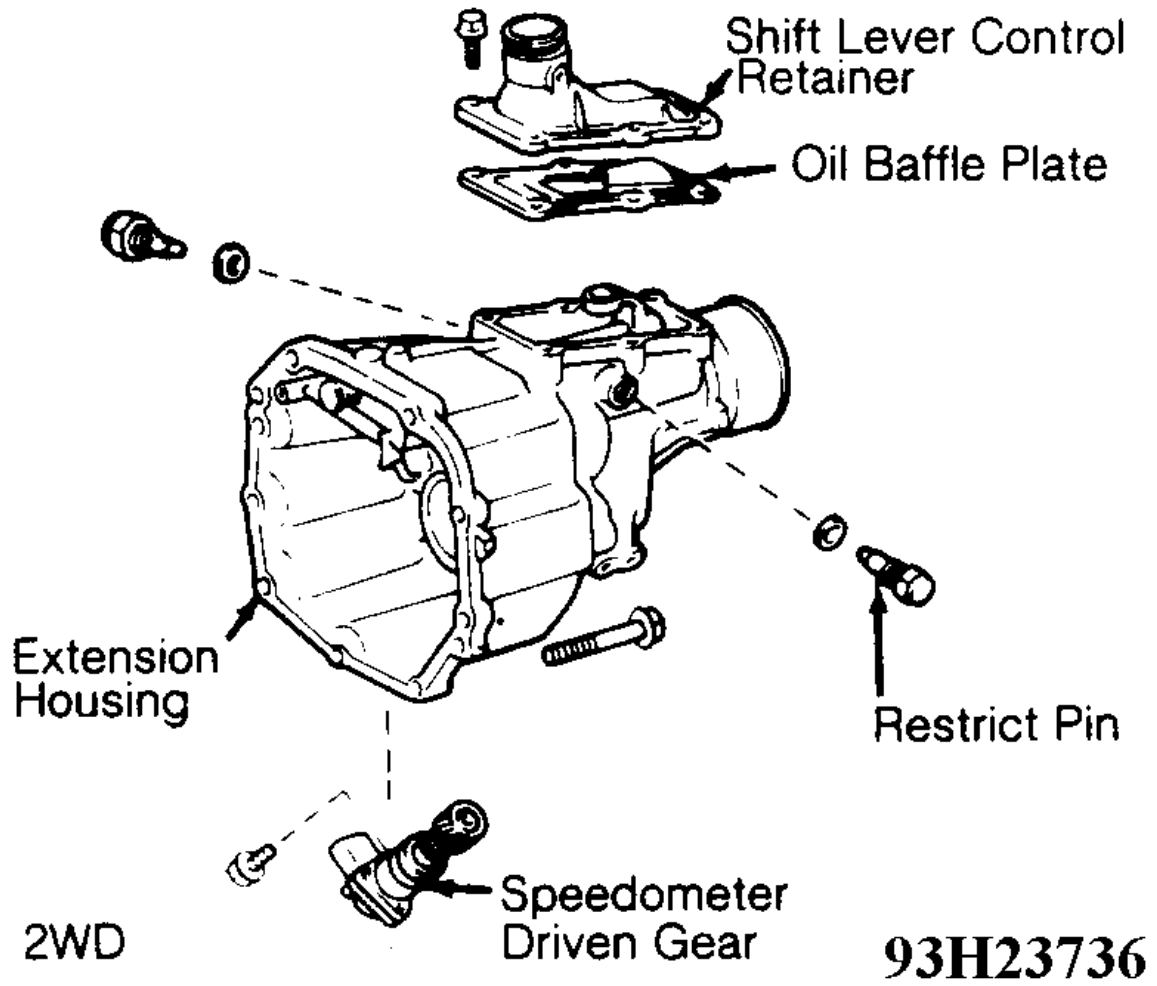


**[Fig. 1: Exploded View Of Transmission Assembly \(1 of 5\)](#)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



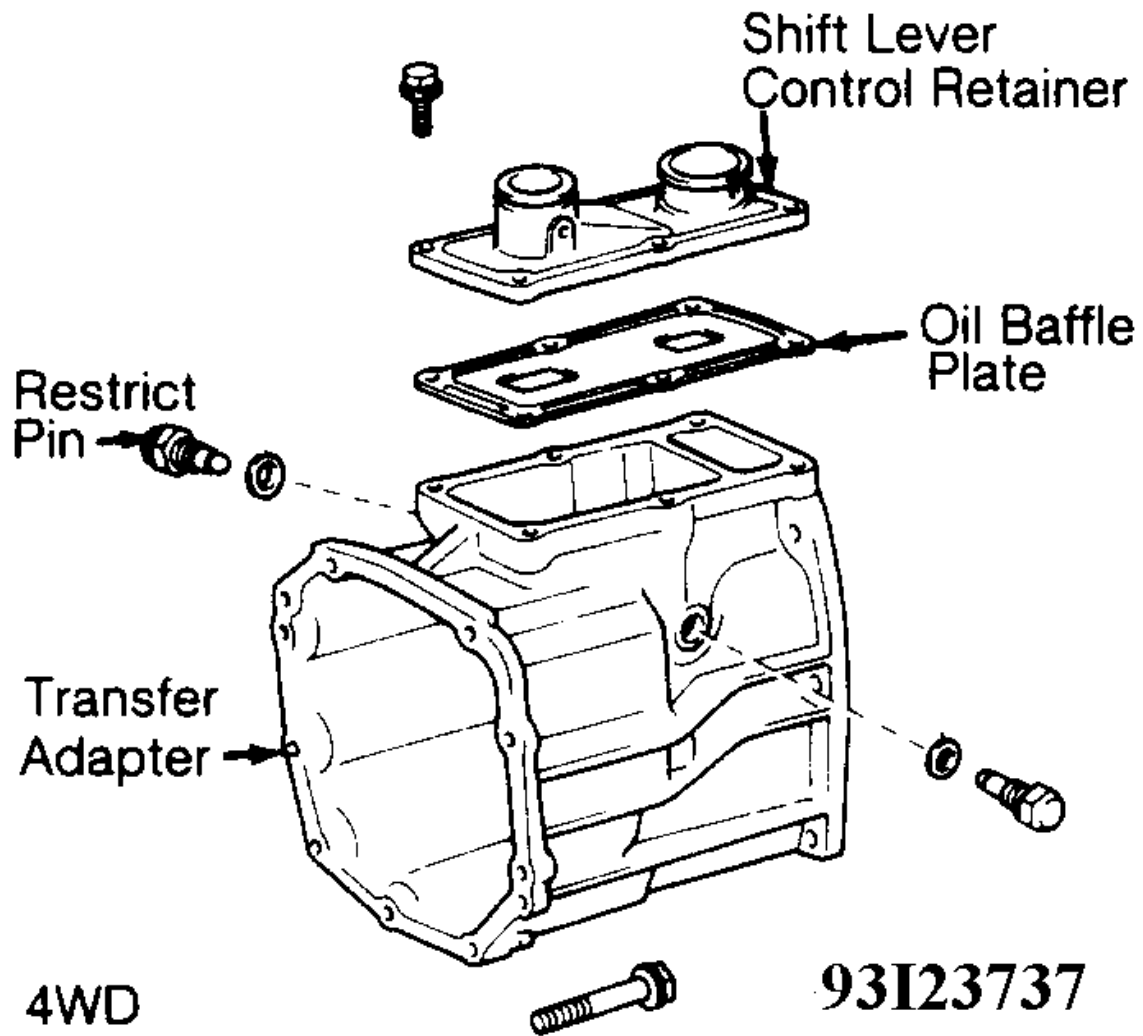
**Fig. 2: Exploded View Of Transmission Assembly (2 of 5)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

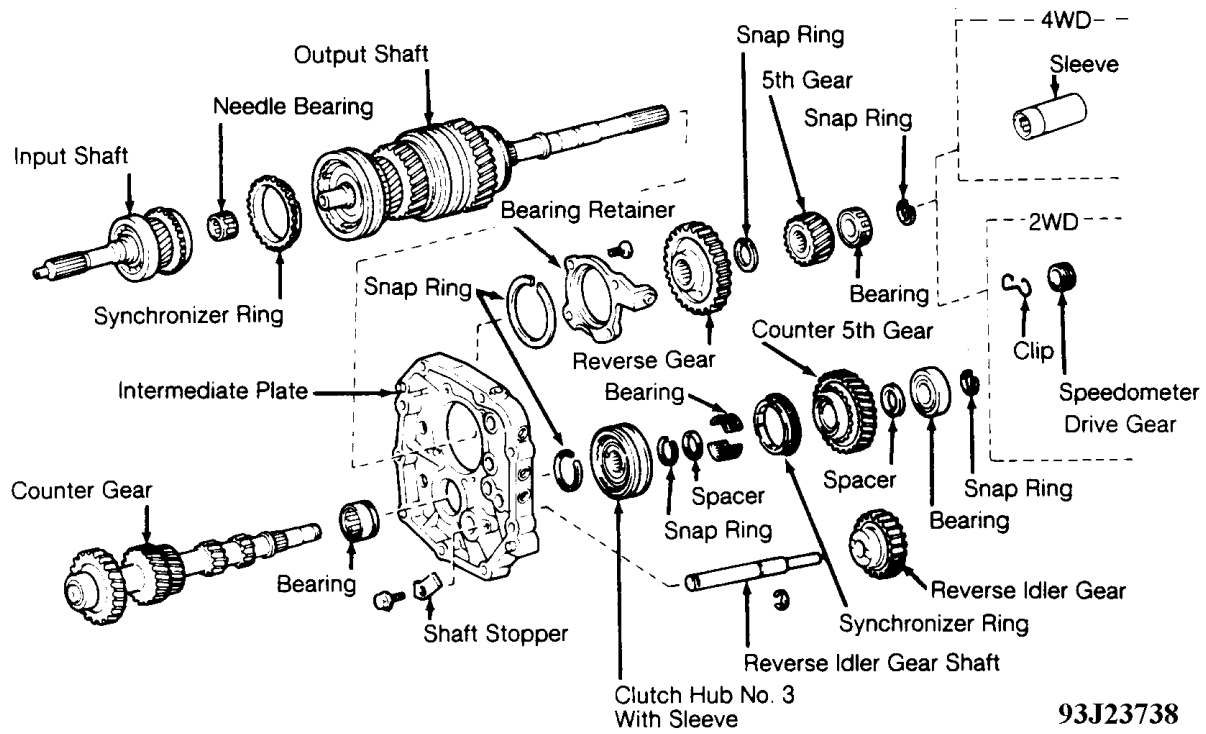


**Fig. 3: Exploded View Of Transmission Assembly (3 of 5)**

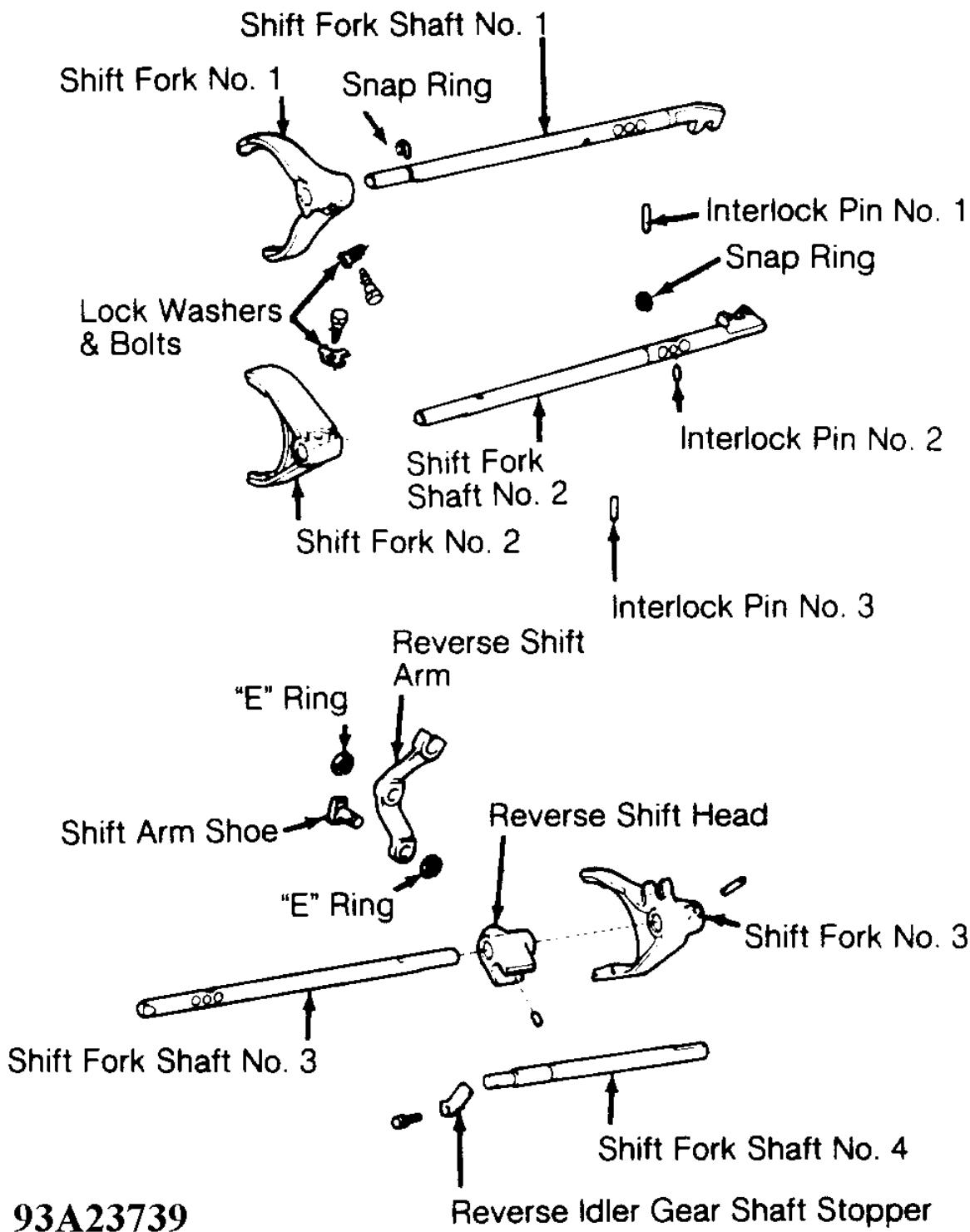
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 4: Exploded View Of Transmission Assembly (4 of 5)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

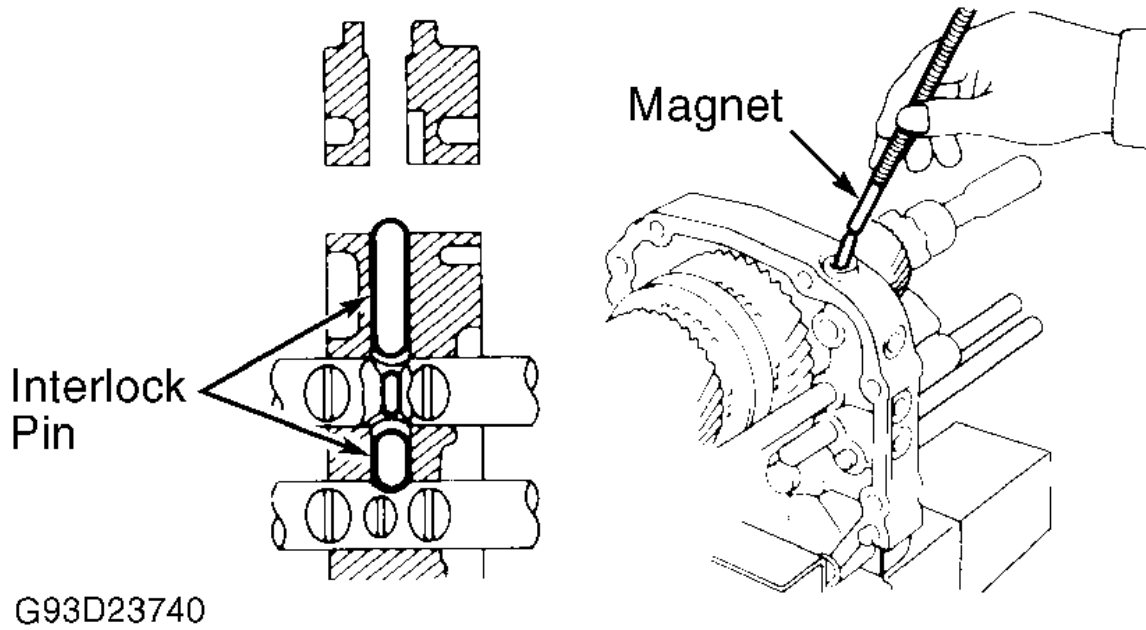


**Fig. 5: Exploded View Of Transmission Assembly (5 of 5)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

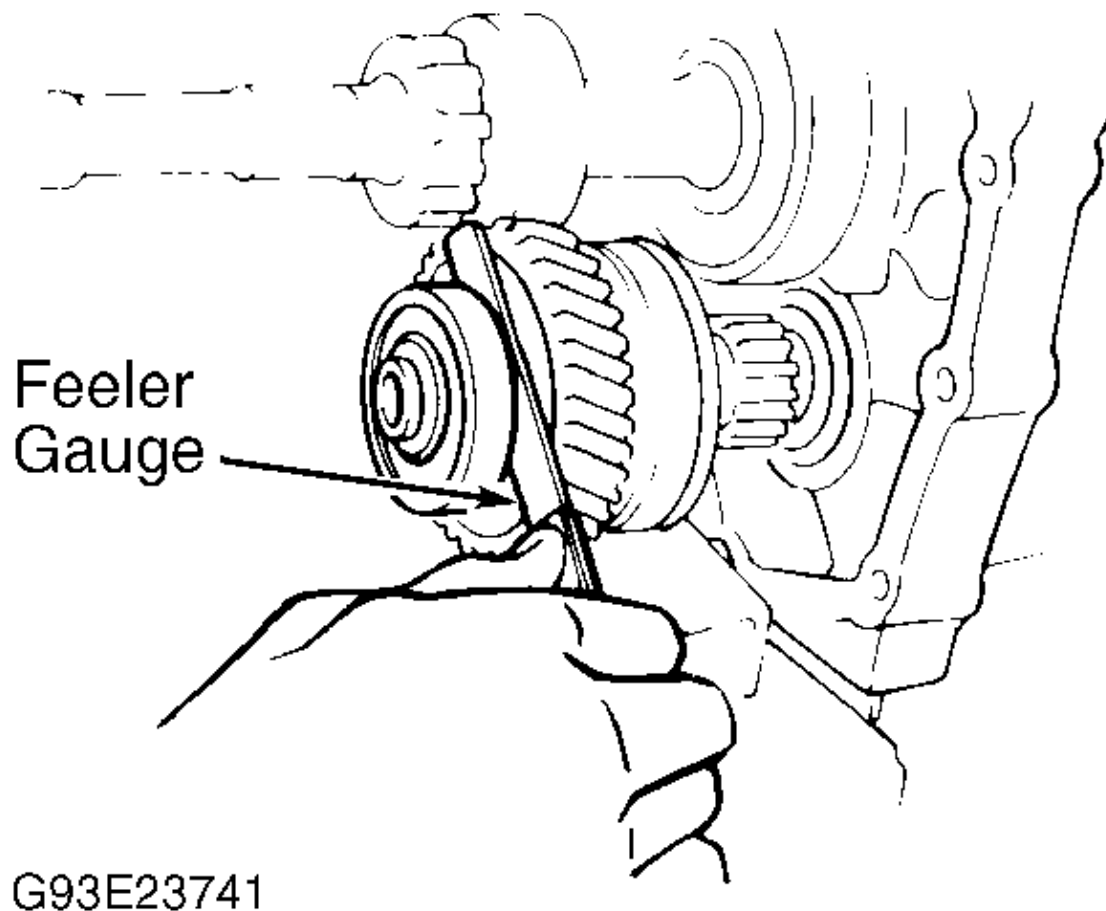


**Fig. 6: Exploded View Of Shifter Assembly**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.





**Fig. 7: Removing & Installing Interlock Pin**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 8: Measuring 5th Gear Thrust Clearance**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## COMPONENT DISASSEMBLY & REASSEMBLY

### INPUT SHAFT

Inspect input shaft, synchronizer ring and input shaft bearing for wear or damage. Rotate bearing by hand. If any roughness or binding is felt, replace input shaft bearing. Support bearing in blocks and press input shaft out of bearing. Reverse procedure to install bearing. Select and install bearing retaining snap ring to allow minimum axial play. See INPUT SHAFT SNAP RING SPECIFICATIONS table.

### INPUT SHAFT SNAP RING SPECIFICATIONS

Thickness - In. (mm)	ID Stamp
.081-.083 (2.05-2.10)	1
.083-.085 (2.10-2.15)	2
.085-.087 (2.15-2.20)	3
.087-.089 (2.20-2.25)	4
.089-.091 (2.25-2.30)	5
.091-.093 (2.30-2.35)	11
.093-.095 (2.35-2.40)	12

## OUTPUT SHAFT (MAINSHAFT)

### Disassembly

1. For all output shaft measurement specifications, refer to OUTPUT SHAFT CLEARANCE SPECIFICATIONS table. Using feeler gauge, measure 1st, 2nd and 3rd gear thrust clearances. See [Fig. 9](#) . Secure output shaft in soft-jaw vise. Using dial indicator, measure 1st, 2nd and 3rd gear lateral movement (gear oil clearance). See [Fig. 9](#) . If clearance exceeds maximum, replace gear, needle bearing and/or shaft. See OUTPUT SHAFT CLEARANCE SPECIFICATIONS table.

### OUTPUT SHAFT CLEARANCE SPECIFICATIONS

Application	In. (mm)
Thrust Clearance	
1st, 2nd & 3rd Gear	
Standard Clearance	.004-.010 (.10-.25)
Minimum Clearance	.012 (.30)
Lateral Movement	
1st & 2nd Gear	
Standard Clearance	.0004-.002 (.009-.06)
Minimum Clearance	.006 (.15)
3rd Gear	
Standard Clearance 83-92	.002-.004 (.06-.10)
Minimum Clearance 83-92	.008 (.20)
Standard Clearance 93-94	.0006-.0026 (.015-.066)
Minimum Clearance 93-94	.008 (.20)

2. Shift No. 1 hub sleeve onto 2nd gear. Support 1st gear in blocks. Press output shaft out of center bearing, 1st gear, needle bearing, inner race and synchronizer ring.
3. Remove locking ball with a magnet. Supporting 2nd gear, remove No. 1 hub sleeve assembly, 2nd gear and needle bearing. Remove snap ring. Supporting 3rd gear, remove No. 2 hub sleeve, synchronizer ring and 3rd gear.

## Inspection

Measure output shaft at points "A", "B", "C", "D" and "E". See [Fig. 12](#) Support output shaft on "V" blocks. Using a dial indicator to measure runout, rotate output shaft 2 complete revolutions. Replace output shaft if runout or any part of shaft is not within service limit. See [OUTPUT SHAFT BEARING SURFACE SPECIFICATIONS](#).

### OUTPUT SHAFT BEARING SURFACE SPECIFICATIONS

Application <sup>(1)</sup>	Minimum Diameter: In. (mm)
"A" Needle Bearing Surface	1.488 (37.80)
"B" Shaft Flange Thickness	.187 (4.76)
"C" Needle Bearing Surface	1.687 (42.84)
"D" Needle Bearing Surface	1.687 (42.86)
"E" Shaft Flange Thickness	.187 (4.76)
Runout Limits	.002 (.05)
(1) "A", "B", "C", "D" and "E" refer to measuring points in <a href="#">Fig. 12</a> .	

**NOTE:** Coat all parts with gear oil before assembly.

## Reassembly

1. Install No. 1 and No. 2 clutch hub and shifting keys into hub sleeve. Install shifting key springs so end-gaps are not in line. Apply gear oil to shaft. Place synchronizer ring on gear and align ring slots with shifting keys.
2. Press 3rd gear and No. 2 hub with sleeve, on output shaft. Select No. 2 hub sleeve snap ring that will allow minimum axial play. See [OUTPUT SHAFT FRONT SNAP RING SPECIFICATIONS](#).

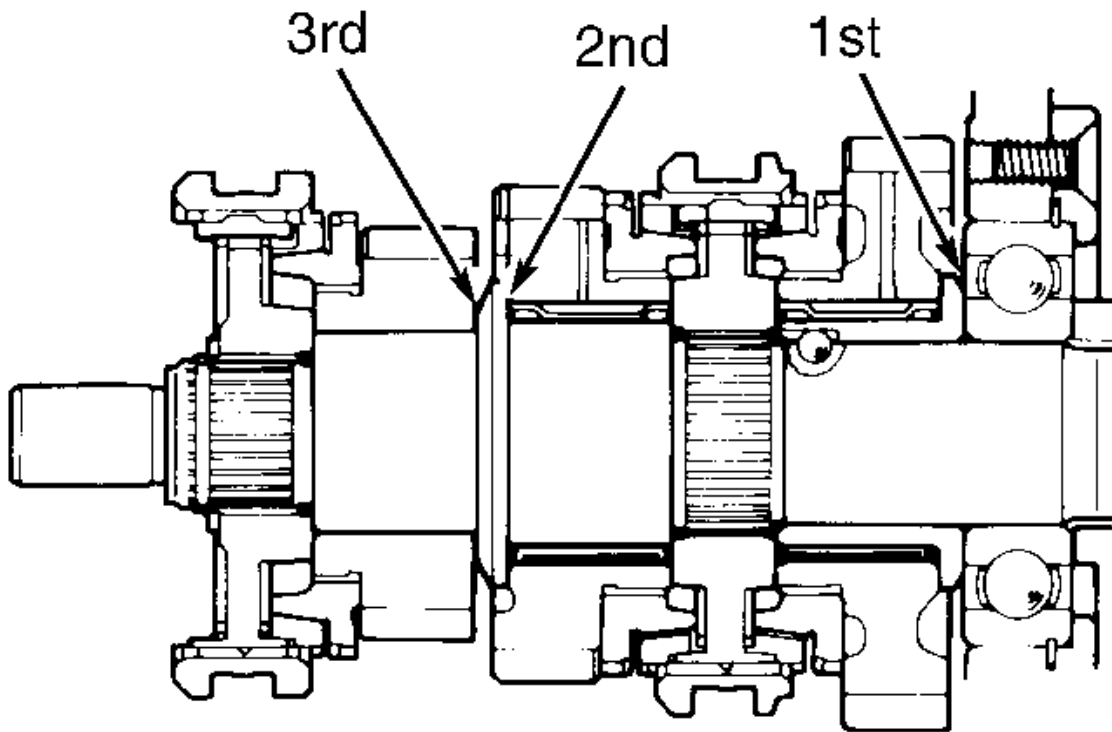
### OUTPUT SHAFT FRONT SNAP RING SPECIFICATIONS

Thickness - In. (mm)	ID Stamp
.0689-.0709 (1.75-1.80)	C-1
.071-.073 (1.80-1.85)	D
.073-.075 (1.86-1.91)	11
.076-.078 (1.92-1.97)	12
.078-.080 (1.98-2.03)	13
.080-.082 (2.04-2.09)	14
.083-.085 (2.10-2.15)	15

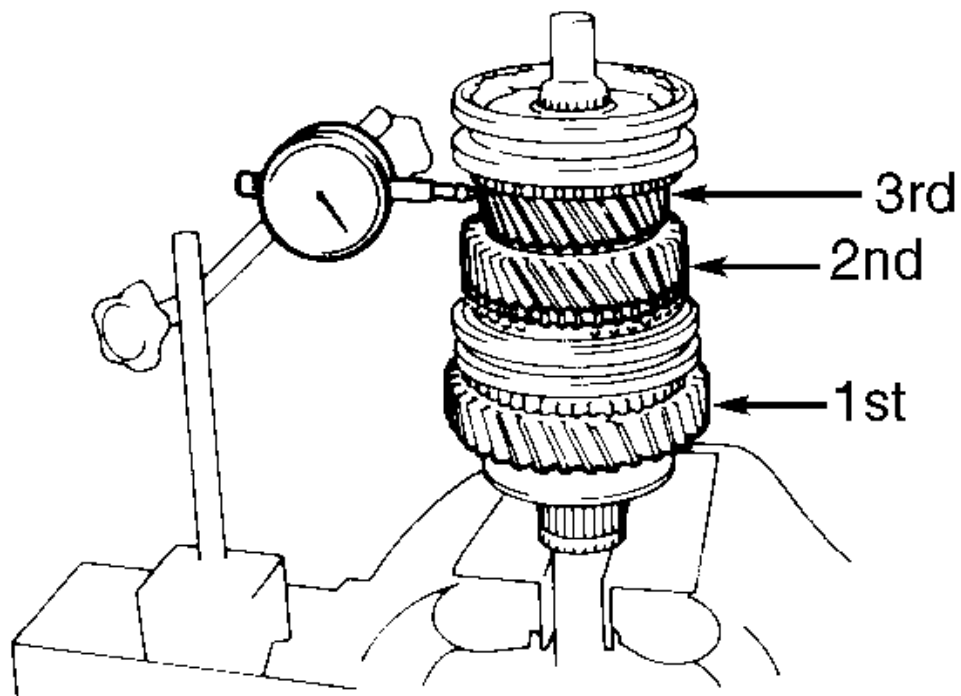
3. Measure 3rd gear thrust clearance. Standard clearance is .004-.010" (.10-.25 mm). Place synchronizer ring on 2nd gear and align ring slots with shifting keys. Install needle bearing in 2nd gear. Support No. 1 hub and press 2nd gear and No. 1 hub with sleeve on output shaft. Measure 2nd gear thrust clearance. Standard clearance should .004-.010" (.10-.25 mm).

4. Install locking ball in output shaft. Assemble 1st gear, synchronizer ring, needle bearing and bearing inner race. Install 1st gear assembly on output shaft with synchronizer ring slots aligned with shifting keys. Turn inner race to align with locking ball.
5. Press rear bearing on output shaft with outer race snap ring groove toward rear. Ensure 1st gear inner race stays in correct position while pressing on bearing. Press 5th gear on end of output shaft. Measure 1st gear thrust clearance. Standard clearance should be .004-.010" (.10-.25 mm).

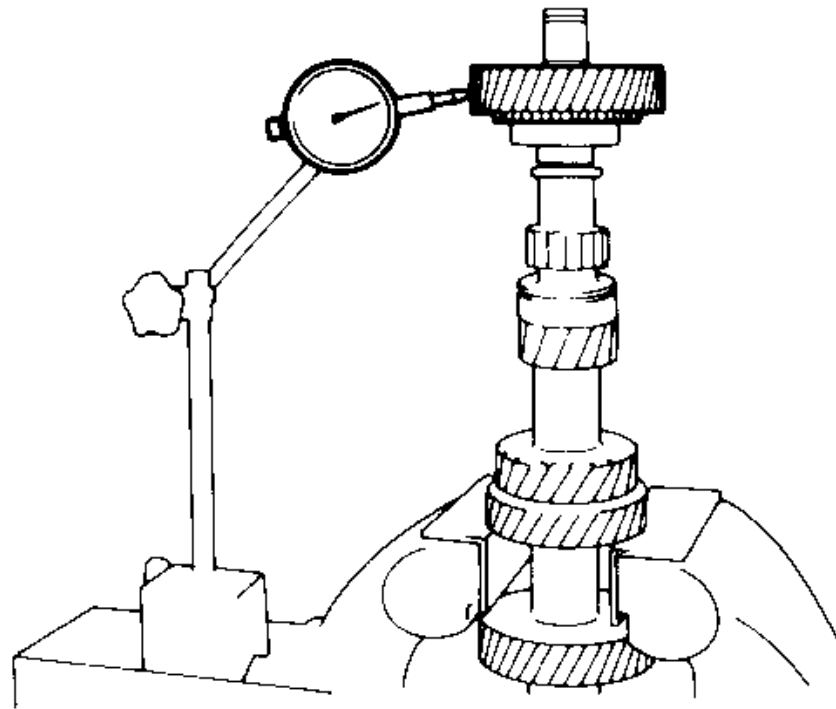




OUTPUT SHAFT



OUTPUT SHAFT



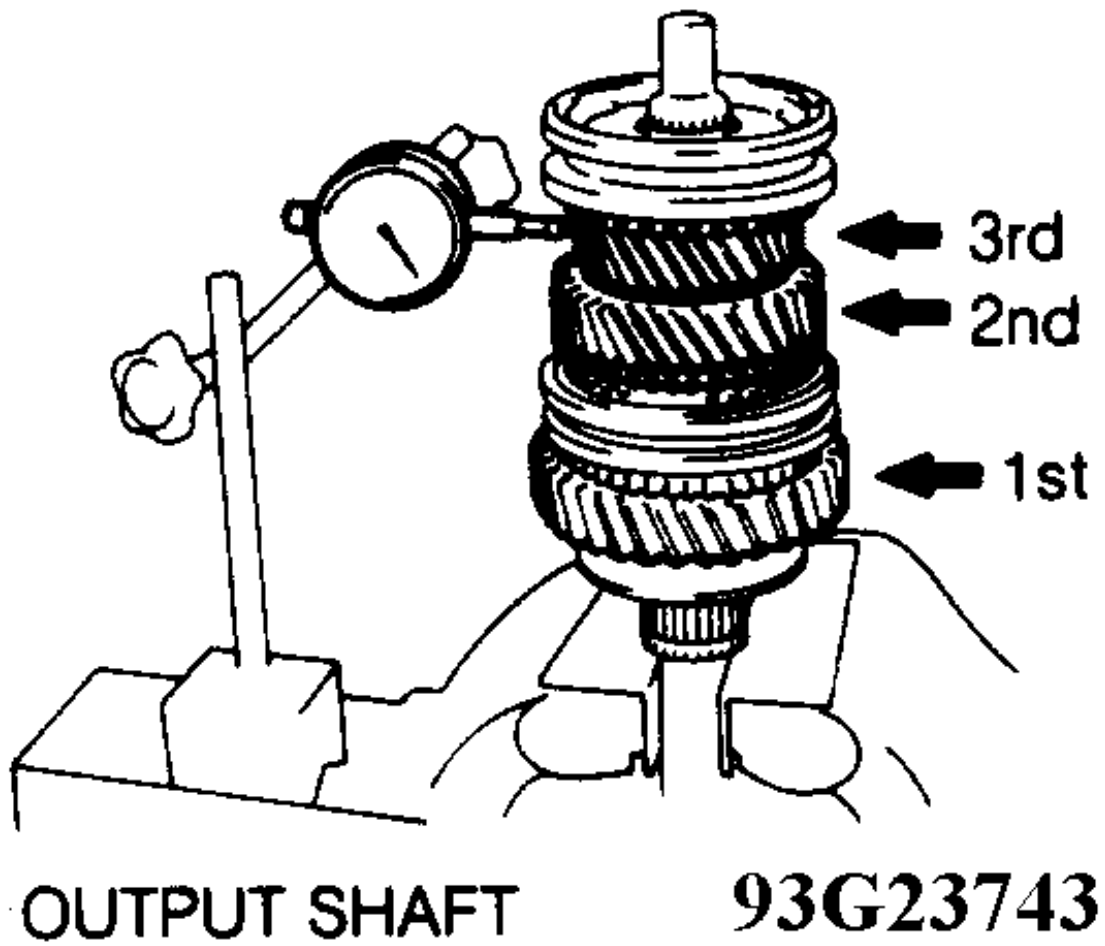
## COUNTERSHAFT

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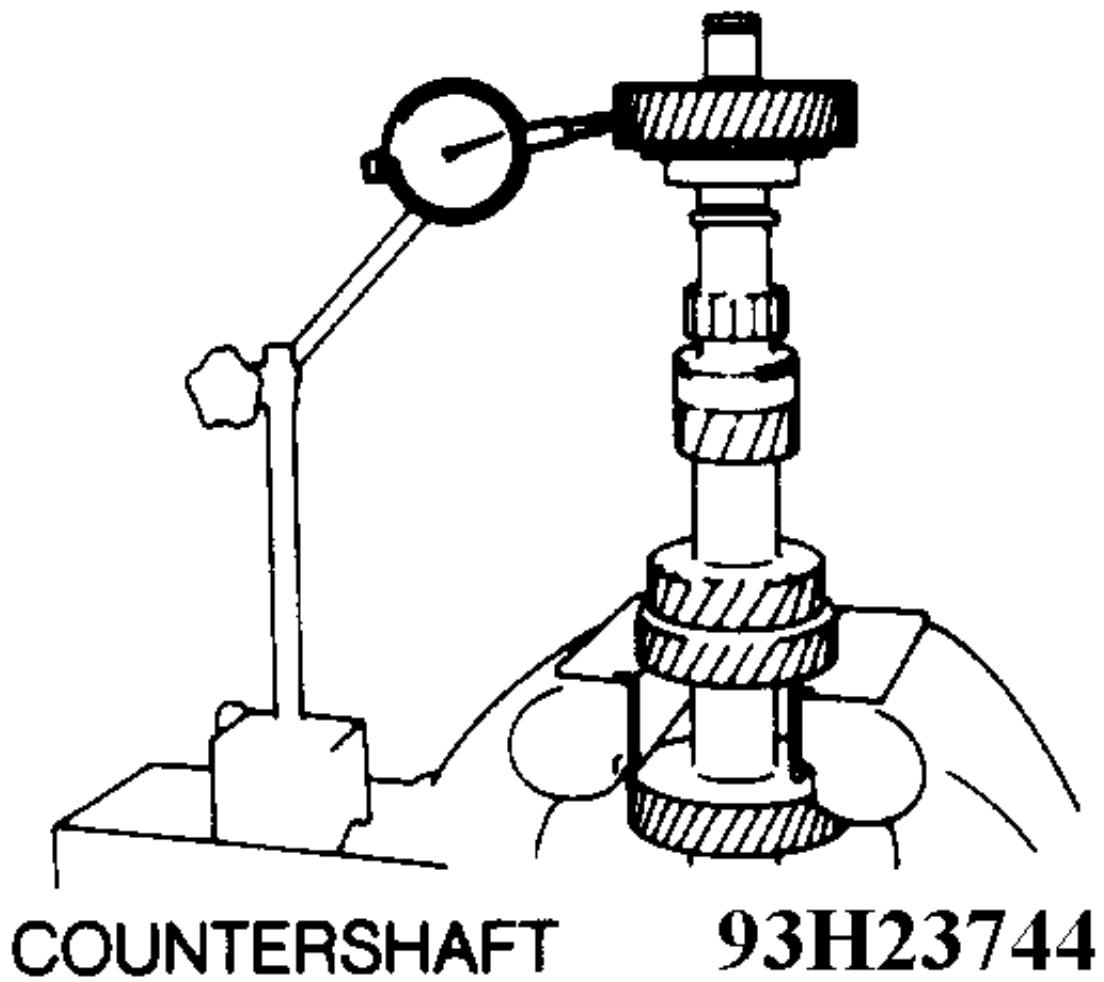
**Fig. 9: Identifying Output & Countershaft Measuring Points (1 of 3)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

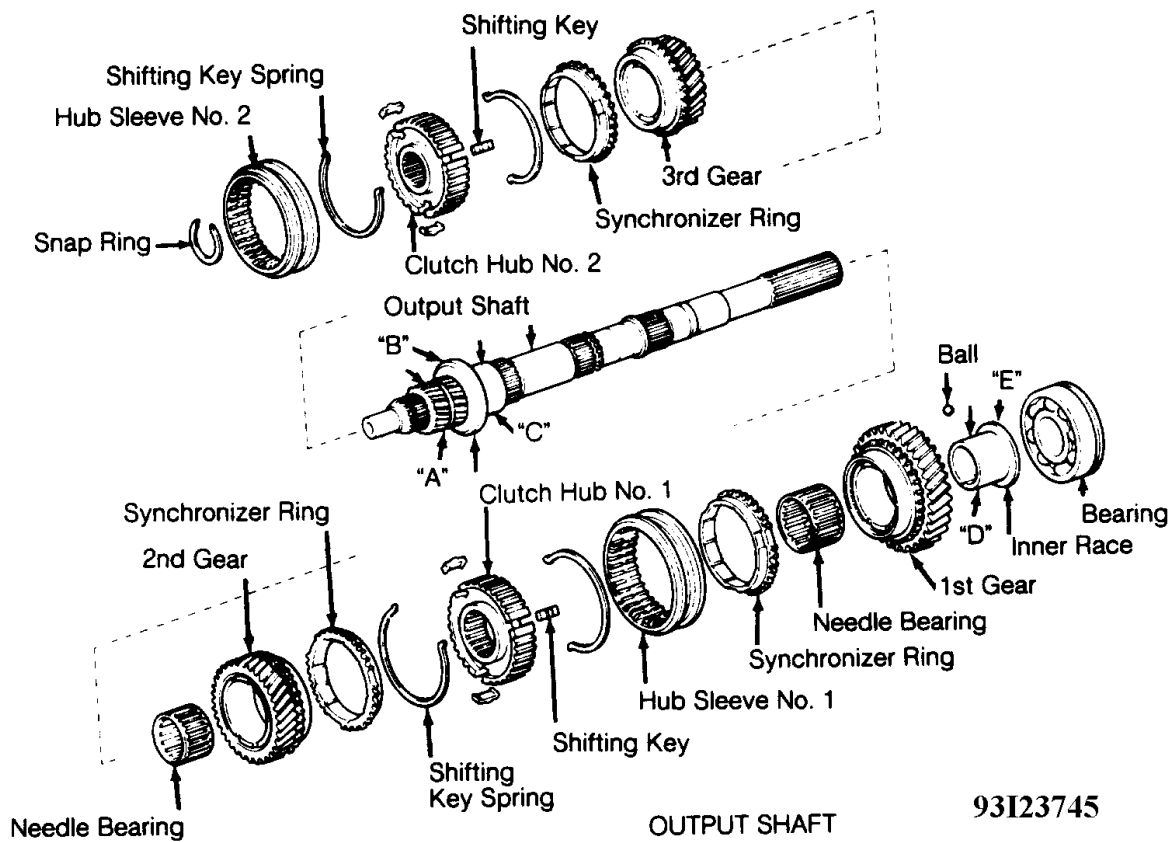




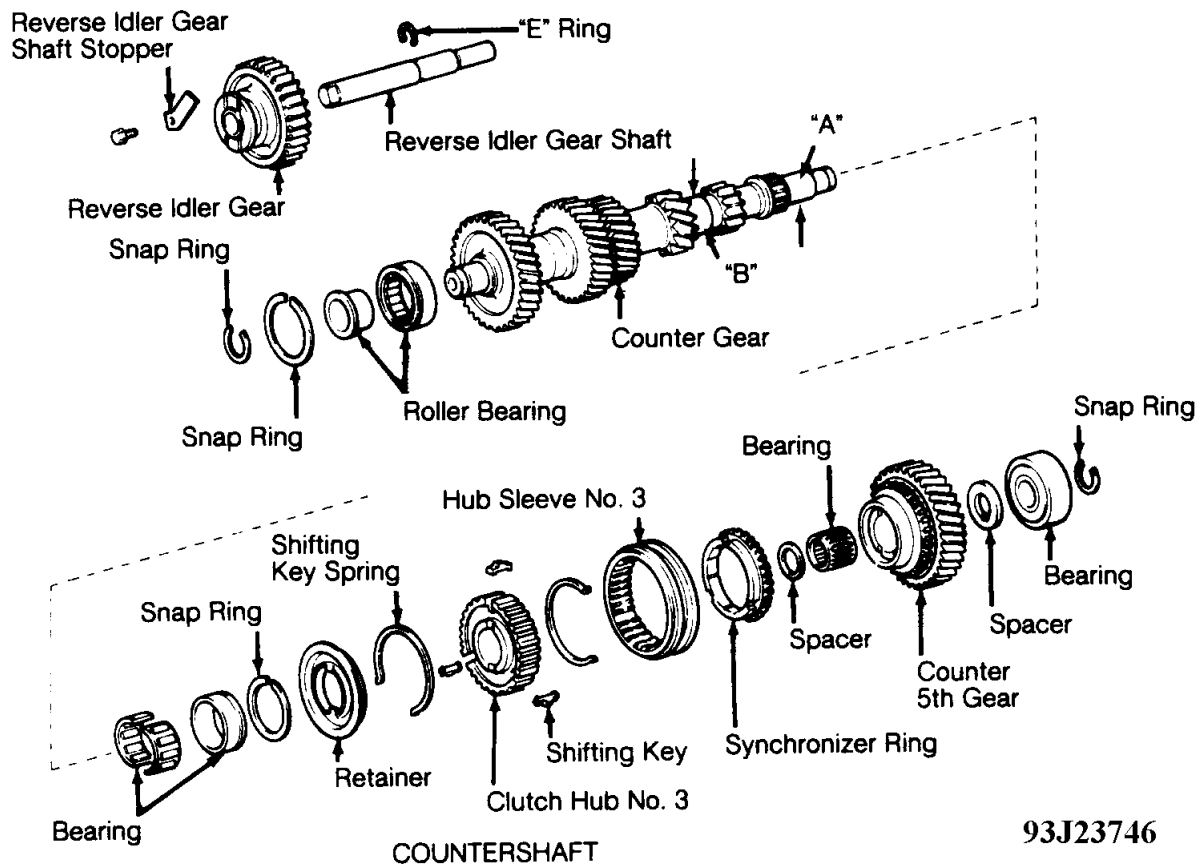
**Fig. 10: Identifying Output & Countershaft Measuring Points (2 of 3)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 11: Identifying Output & Countershaft Measuring Points (3 of 3)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 12: Exploded View of Output Shaft**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 13: Exploded View of Countershaft**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## COUNTERSHAFT & REVERSE IDLER GEAR

### Inspection

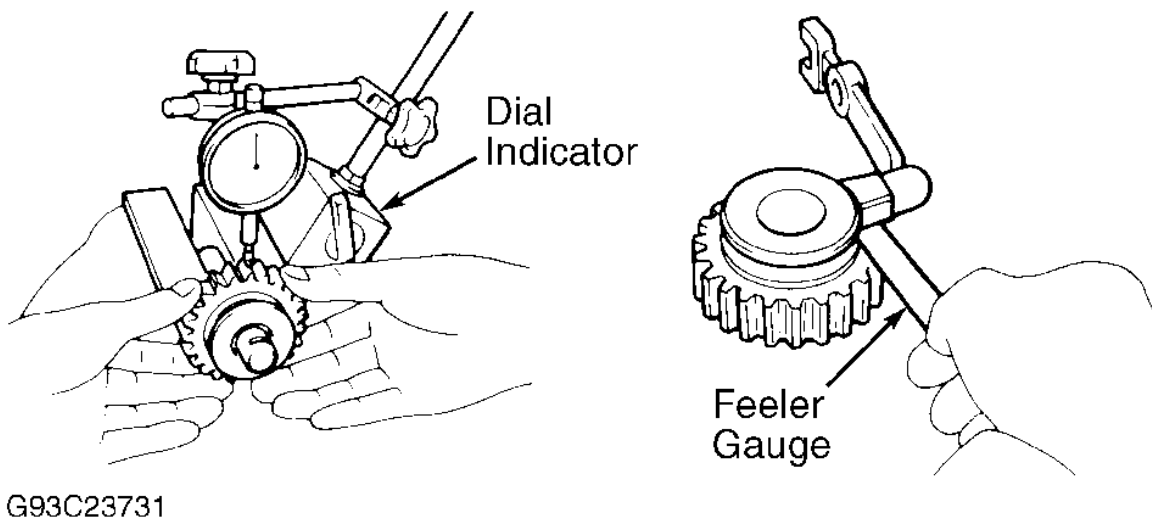
1. Measure outer diameter of countershaft at points "A" and "B". See [Fig. 12](#) . Minimum diameter for "A" is 1.056" (26.84 mm). Minimum diameter for "B" is 1.174" (29.81 mm). Install spacer, needle bearing and counter 5th gear to countergear.
2. Measure counter 5th lateral movement (gear oil clearance). See [Fig. 1](#) . Standard clearance should be .0004-.002" (.009-.062 mm). Maximum clearance is .006" (.15 mm).
3. Press on front bearing on countershaft. Select and install the snap ring that will allow minimum axial play. See COUNTERSHAFT FRONT BEARING SNAP RING SPECIFICATIONS table.

### COUNTERSHAFT FRONT BEARING SNAP RING SPECIFICATIONS

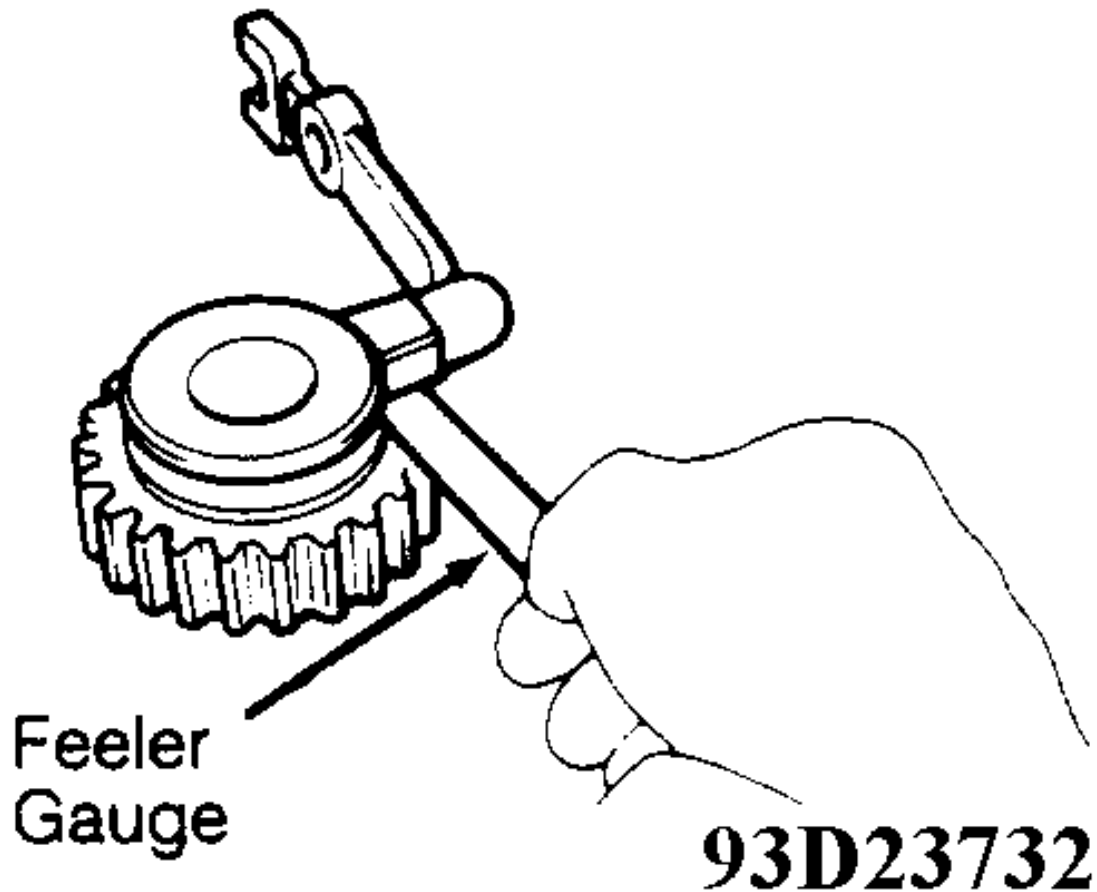
Thickness - In. (mm)	ID Stamp
.081-.083 (2.05-2.10)	1

Thickness - In. (mm)	ID Stamp
.083-.085 (2.10-2.15)	2
.085-.087 (2.15-2.20)	3
.087-.089 (2.20-2.25)	4
.089-.091 (2.25-2.30)	5
.091-.093 (2.30-2.35)	6
.093-.095 (2.35-2.40)	7

4. Measure reverse idler lateral movement (gear oil clearance). See [Fig. 14](#) . Standard clearance should be .002-.003" (.04-.07 mm). Maximum clearance is .008" (.19 mm). Measure clearance between reverse idler gear and shift arm shoe. See [Fig. 14](#) . Standard clearance should be .008-.016" (.20-.41 mm). Maximum clearance is .035" (.90 mm).



**[Fig. 14: Identifying Reverse Idler Gear Measuring Points \(1 of 2\)](#)**  
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 15: Identifying Reverse Idler Gear Measuring Points (2 of 2)**

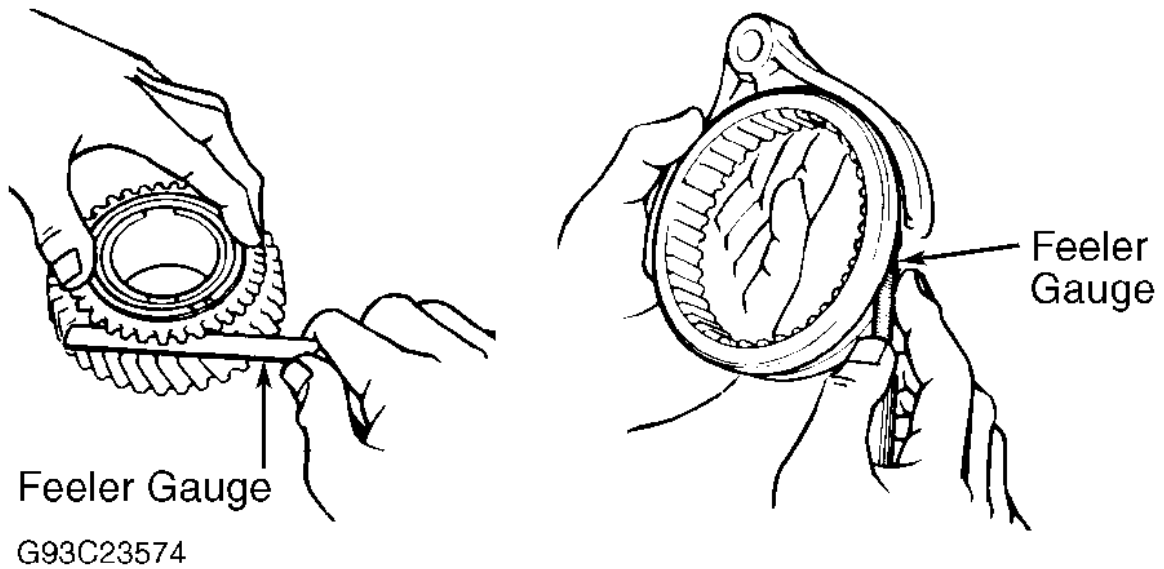
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

### **SHIFT FORK ASSEMBLY**

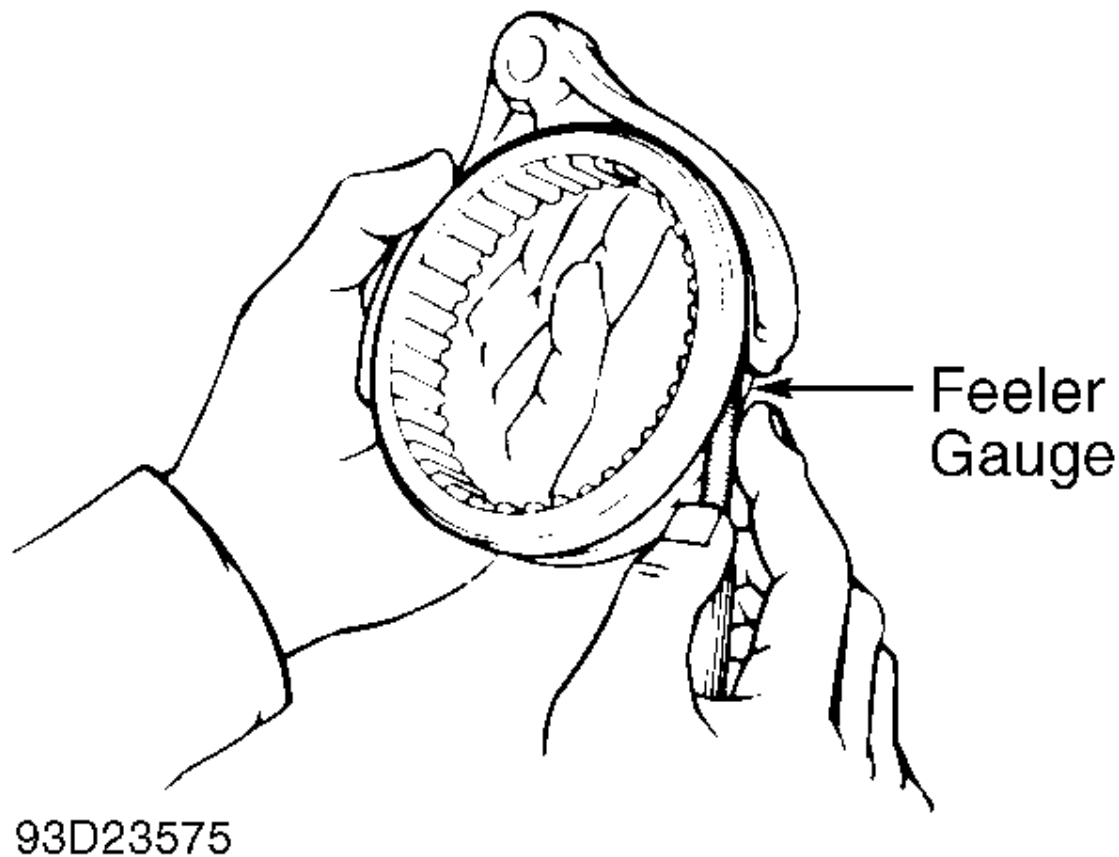
Measure clearance between hub sleeve and shift fork. Maximum clearance is .039" (1.00 mm). If clearance exceeds specification, replace shift fork or hub sleeve. See [Fig. 16](#) .

### **SYNCHRO RING & GEAR**

Check synchronizer rings for wear or damage. Turn and push ring to check braking action. Measure clearance between synchronizer ring back and gear spline end. Minimum clearance is .020" (.50 mm). If clearance is less than specification, replace synchronizer ring. See [Fig. 16](#) .



**Fig. 16: Measuring Shift Fork & Synchro Ring Assemblies (1 of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



**Fig. 17: Measuring Shift Fork & Synchro Ring Assemblies (2 of 2)**  
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

## TRANSMISSION REASSEMBLY

**NOTE:** Coat all parts with gear oil before assembly.

1. Before installing output shaft, use Bearing Driver (09608-35014) to remove countergear center bearing race. Install outer race after installing countergear. Install output shaft into intermediate plate by pulling on output shaft and tapping on intermediate plate with plastic hammer.
2. Install needle bearing into input shaft. Install input shaft and countergear together. Install countershaft center bearing outer race using Bearing Installer (09316-60010). Ensure bearing rollers are not damaged.
3. Install bearing retainer snap ring. Ensure snap ring is flush with intermediate plate surface. Install output shaft bearing retainer. Using Installer (09312-20011), install reverse gear.



Select and install snap ring that will allow minimum axial play from REVERSE GEAR SNAP RING SPECIFICATIONS table.

#### REVERSE GEAR SNAP RING SPECIFICATIONS

Thickness - In. (mm)	ID Stamp
.089-.091 (2.25-2.30)	5
.091-.093 (2.30-2.35)	11
.093-.095 (2.35-2.40)	12
.095-.097 (2.40-2.45)	13
.097-.099 (2.45-2.50)	14
.098-.100 (2.50-2.55)	15
.100-.102 (2.55-2.60)	16
.103-.105 (2.61-2.66)	17
.105-.107 (2.67-2.72)	18
.108-.109 (2.73-2.78)	19
.110-.112 (2.79-2.84)	20
.112-.114 (2.85-2.90)	21
.115-.117 (2.91-2.96)	22
.117-.119 (2.97-3.02)	23

4. Using Installer (09312-20011), install 5th gear and rear bearing. Select and install snap ring that will allow minimum axial play from **OUTPUT SHAFT REAR BEARING SNAP RING SPECIFICATIONS** .

#### OUTPUT SHAFT REAR BEARING SNAP RING SPECIFICATIONS

Thickness - In. (mm)	ID Stamp
.091-.093 (2.31-2.36)	8
.093-.095 (2.37-2.42)	9
.096-.098 (2.43-2.48)	10
.098-.100 (2.49-2.54)	11
.100-.102 (2.55-2.60)	12
.103-.105 (2.61-2.66)	13
.106-.108 (2.68-2.73)	14
.108-.110 (2.74-2.79)	15

5. Using Bearing Installer (09316-60010), install the No. 3 clutch hub onto the countershaft. When installing the clutch hub, support the countershaft with a 3-5 lb. hammer. Select and install snap ring that will allow minimum axial play from NO. 3 CLUTCH HUB SNAP RING SPECIFICATIONS table.

#### NO. 3 CLUTCH HUB SNAP RING SPECIFICATIONS

Thickness - In. (mm)	ID Stamp
.081-.083 (2.06-2.11)	2
.083-.085 (2.12-2.17)	3

Thickness - In. (mm)	ID Stamp
.086-.088 (2.18-2.23)	4
.088-.090 (2.24-2.29)	5

6. Install bearing spacer on countershaft. Assemble counter 5th gear, synchronizer ring and needle bearings. Install 5th gear assembly with synchronizer ring slots aligned with shift keys. Install spacer and bearing with bearing shield toward rear of shaft. Support front of countershaft with 3-5 lb. hammer and drive in bearing. Select and install snap ring that will allow minimum axial play from COUNTER 5TH GEAR SHAFT SNAP RING SPECIFICATIONS table .

### COUNTER 5TH GEAR SHAFT SNAP RING SPECIFICATIONS

Thickness - In. (mm)	ID Stamp
.075-.077 (1.90-1.95)	1
.077-.079 (1.96-2.01)	2
.080-.082 (2.02-2.07)	3
.082-.084 (2.08-2.13)	4
.085-.086 (2.14-2.19)	5
.087-.089 (2.20-2.25)	6
.089-.091 (2.26-2.31)	7

7. On 2WD models, install speedometer drive gear clip into slot on output shaft. Slide drive gear with clip and fit clip into holes. Measure counter 5th gear thrust clearance. Standard clearance should be .004-.016" (.10-.41 mm).
8. Install No. 3 shift fork shaft to intermediate plate. Apply multipurpose grease to No. 3 interlock pin. Install pin into intermediate plate hole. Align reverse idler gear groove to reverse shift arm shoe. Install reverse idler gear shaft to intermediate plate.
9. Install reverse idler gear and shaft. Coat reverse shift head pin with multipurpose grease and insert into reverse shift head hole. Insert No. 3 shift fork shaft through No. 3 shift fork and reverse shift arm. Align No. 3 shift fork with No. 3 hub sleeve groove. Put reverse shift arm into pivot of bearing retainer and align reverse shift arm shoe with reverse idler gear groove. Install No. 3 shift fork shaft to intermediate plate.
10. Push reverse shift head pin into groove of No. 3 shift fork shaft. Install No. 4 shift fork shaft to intermediate plate over reverse shift arm. Install slotted spring pin until flush with fork. Apply multipurpose grease to No. 3 interlock pin. Install pin into intermediate plate hole. Install No. 2 interlock pin and install pin into shaft hole. Place No. 2 shift fork into groove of No. 2 hub sleeve. Install No. 2 fork shaft to shift fork through intermediate plate. Install No. 2 shift fork shaft snap ring.
11. Install No. 1 interlock pin. See [Fig. 7](#) . Install No. 1 shift fork into groove of No. 1 hub sleeve. Insert No. 1 fork shaft to shift fork through intermediate plate. Install No. 1 shift fork shaft snap ring. Install No. 1 and No. 2 set bolts with lock washers. Stake lock bolts.
12. Install locking balls and springs into holes in intermediate plate. Apply Three Bond (1344) sealant to plug threads and install. Install reverse idler gear shaft stopper. Remove intermediate plate from vise.

**NOTE:** This transmission uses no gasket between major housings; use Three Bond (1281) sealant. Assemble housing immediately

**after applying liquid gasket. Allow 30 minutes curing time before filling with oil.**

13. On 4WD models, using 2-jaw puller, install sleeve yoke to output shaft. Apply Three Bond (1281) sealant to transmission case. Align each bearing outer race and shift fork shaft end with case holes. Install case using plastic hammer. Install front bearing snap rings. Apply Three Bond (1281) sealant to front bearing retainer and install.
14. Insert shift and select lever into extension housing (2WD) or transfer adapter (4WD). Apply Three Bond (1281) sealant to extension housing (2WD) or transfer adapter (4WD). Connect shift and select lever to shift fork shaft. Install shift lever housing to shift and select lever shaft. Push in extension housing (2WD) or transfer adapter (4WD). Install and torque shift lever bolt to 29 ft. lbs. (39 N.m).
15. Install extension housing or transfer adapter. Ensure that input and output shafts rotate smoothly and shifting is smooth in all positions. Install restrict pins with gasket. Install Black restrict pin on reverse gear/5th gear side. Install clutch housing.
16. Install shift lever retainer with oil baffle. On 2WD models, install speedometer driven gear. Install and tighten back-up light switch to 30 ft. lbs. (40 N.m). On W58 models, install rear speed sensor on vehicles with ABS.

## TORQUE SPECIFICATIONS

### TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Back-Up Light Switch	30 (40)
Clutch Housing Bolts	27 (37)
Extension Housing Bolts	29 (39)
Extension Housing Bolts (1988-90)	27 (37)
Front Bearing Retainer Bolts	18 (25)
Rear Bearing Retainer Bolts	9 (13)
Restrict Pin	30 (40)
Reverse Idler Gear Shaft Stopper Bolt	18 (25)
Reverse Shift Arm Bracket Bolt	13 (18)
Shift Fork Set Bolt	9 (13)
Shift Lever Housing Bolt	28 (38)
Shift Lever Retainer	13 (18)
Straight Screw Plug	18 (25)
Transfer Adapter	29 (39)
Transmission Housing Bolt	27 (37)
Speedometer Gear Lock Plate (2WD) Bolt	9 (13)

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