

DISASSEMBLY AND ASSEMBLY (Continued)

(13) Fill transmission with recommended fluid and road test vehicle to verify repair.

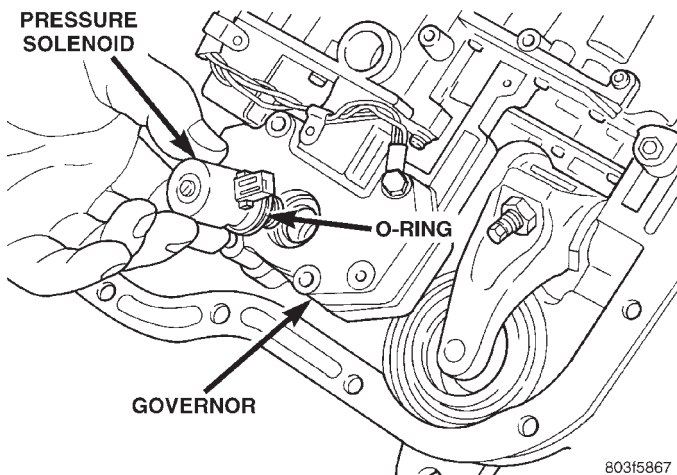


Fig. 118 Governor Pressure Solenoid

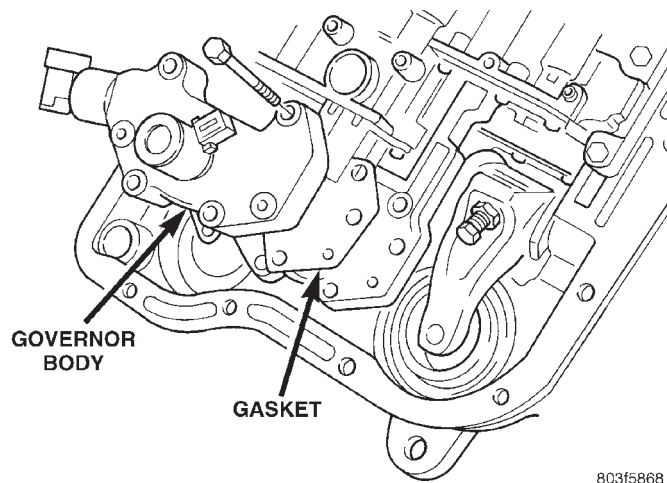


Fig. 119 Governor Body And Gasket

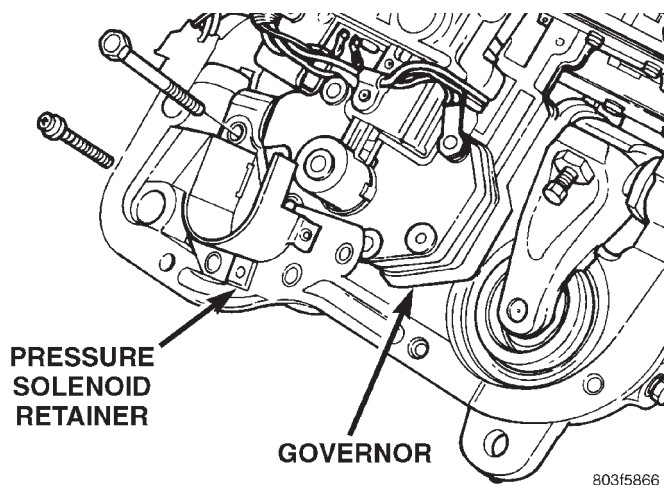


Fig. 120 Pressure Solenoid Retainer

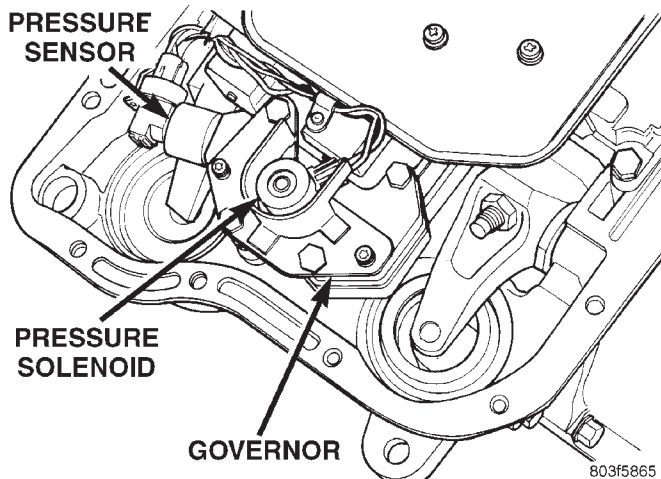


Fig. 121 Governor Pressure Sensor And Solenoid Connectors

TRANSMISSION

DISASSEMBLE

- (1) Remove transmission from vehicle.
- (2) Remove overdrive unit.
- (3) Clean transmission exterior with steam gun or with solvent. Wear eye protection during cleaning operations.
- (4) Remove shift and throttle levers from valve body manual lever shaft.
- (5) Remove transmission speed sensor and O-ring seal from overdrive unit (Fig. 122).

SOCKET AND WRENCH

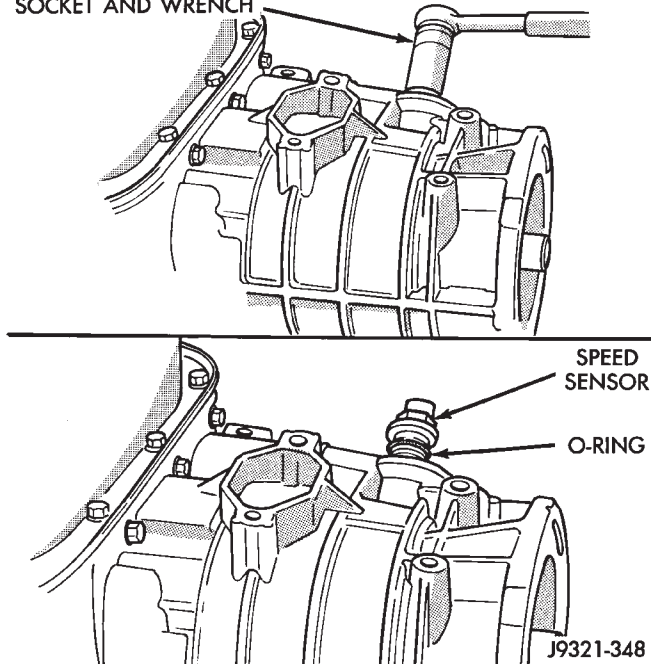


Fig. 122 Transmission Speed Sensor Removal/Installation

DISASSEMBLY AND ASSEMBLY (Continued)

(6) Place transmission in upright position (Fig. 123).

(7) Remove bolts attaching overdrive unit to transmission case (Fig. 123). An 11 mm socket is required. Note position of all wiring clips and bolts for installation reference.

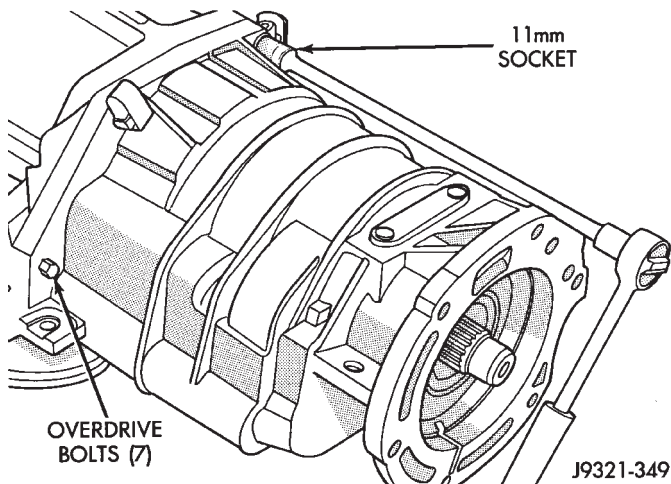


Fig. 123 Removing/Installing Overdrive Unit Attaching Bolts

(8) Lift overdrive unit up and off transmission intermediate shaft (Fig. 124).

(a) If overdrive unit does not require service, insert Alignment Tool 6227-2 in overrunning clutch and planetary gear splines to maintain alignment (Fig. 125). **If clutch and gear splines rotate out of alignment, overdrive unit may have to be disassembled in order to realign splines.**

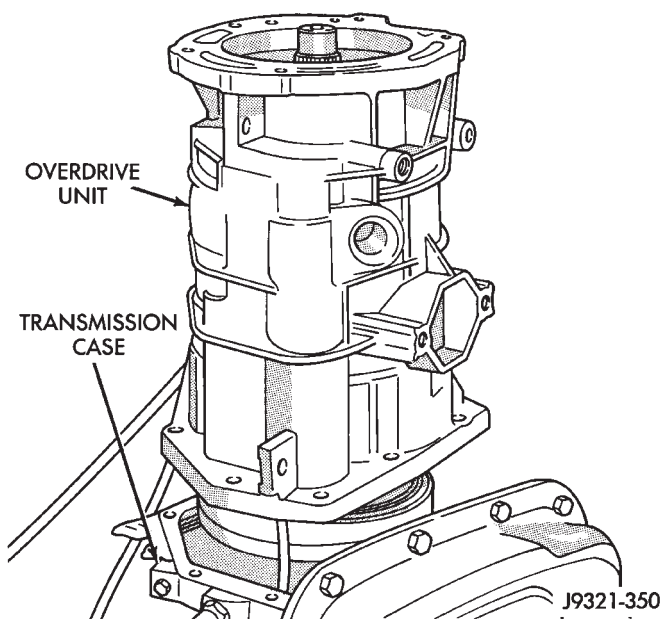


Fig. 124 Overdrive Unit Removal

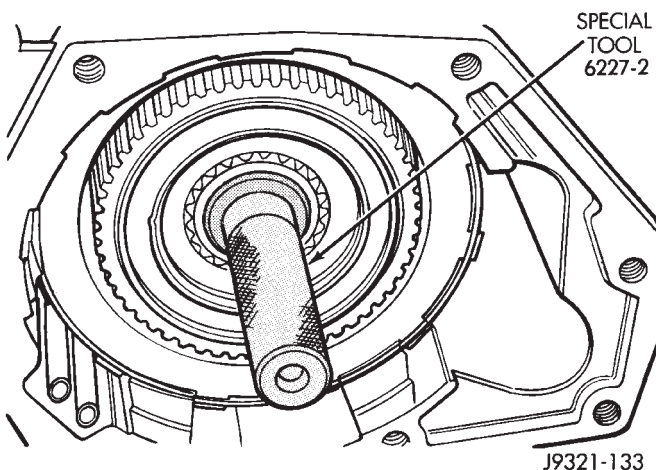


Fig. 125 Overdrive Spline Alignment Tool Installation

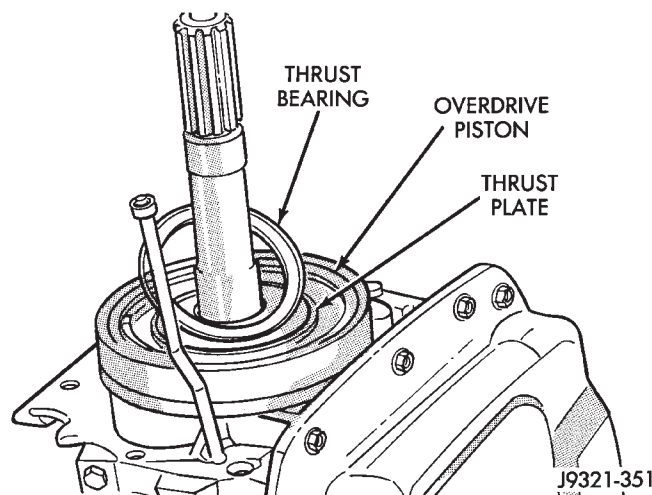


Fig. 126 Thrust Bearing And Plate Removal

(b) If overdrive unit **does** requires service, refer to Overdrive Unit Overhaul section.

(9) Remove thrust bearing and thrust plate from overdrive piston (Fig. 126).

(10) Place transmission in horizontal position.

(11) Remove transmission oil pan and gasket.

(12) Remove oil filter from valve body (Fig. 127). Keep filter screws separate from other valve body screws. Filter screws are longer and should be kept with filter.

(13) Remove overdrive piston from retainer (Fig. 128).

(14) Remove pump oil seal with Special Tool C-3981B (Fig. 129). Be sure to tighten tool threads completely into seal before using puller bolt to withdraw seal.

(15) Remove park/neutral position switch (Fig. 130).

(16) Remove hex head bolts attaching valve body to transmission case (Fig. 131). A total of 10 bolts are

DISASSEMBLY AND ASSEMBLY (Continued)

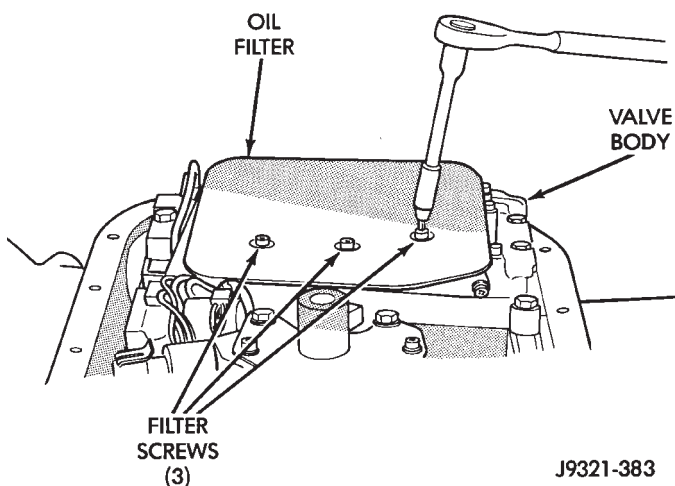


Fig. 127 Oil Filter Removal/Installation

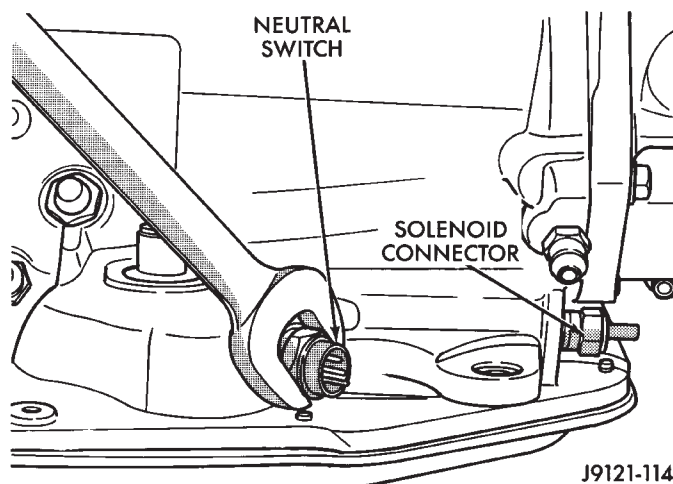


Fig. 130 Park/Neutral Position Switch Removal/Installation

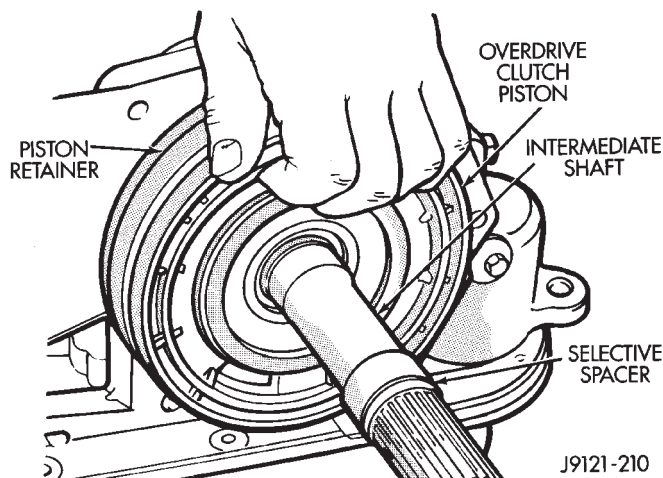


Fig. 128 Overdrive Piston Removal

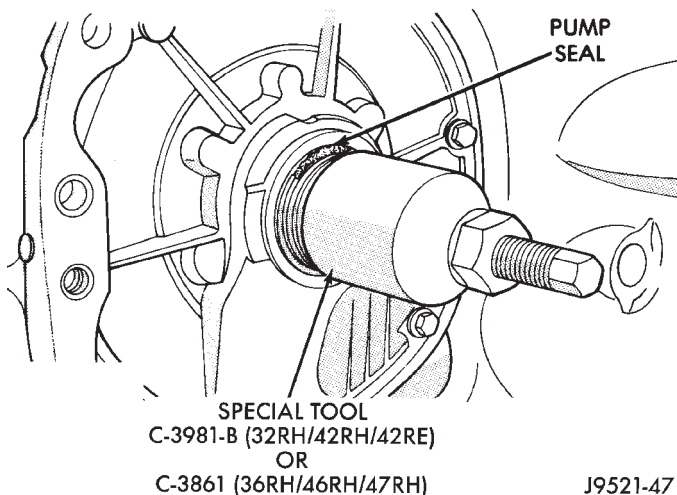


Fig. 129 Oil Pump Seal Removal

used. Note different bolt lengths for assembly reference.

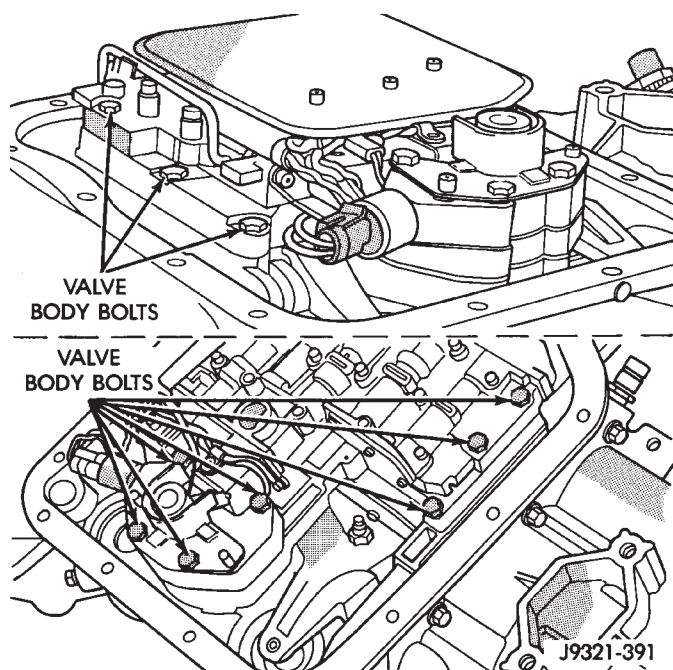


Fig. 131 Valve Body Bolt Locations

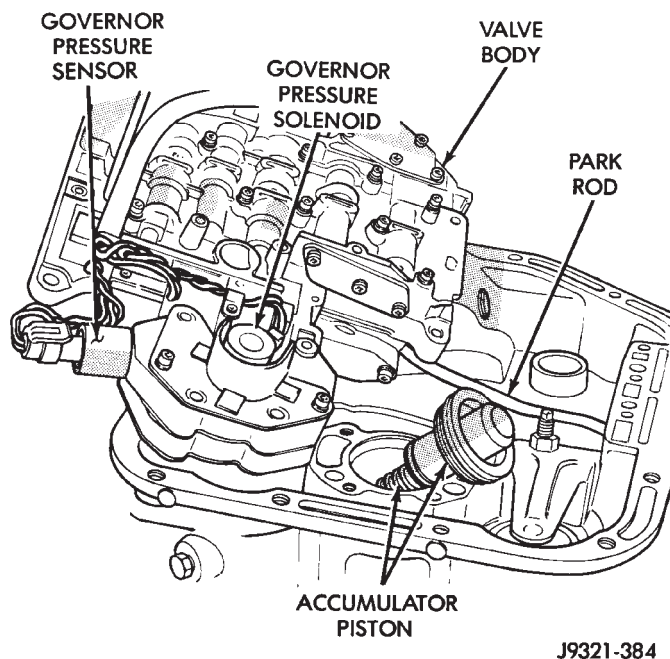
(17) Remove valve body assembly. Push valve body harness connector out of case. Then work park rod and valve body out of case (Fig. 132). **Exercise care during removal as governor pressure solenoid and transducer can both be damaged by rough handling.**

(18) Remove accumulator piston and inner and outer springs (Fig. 133).

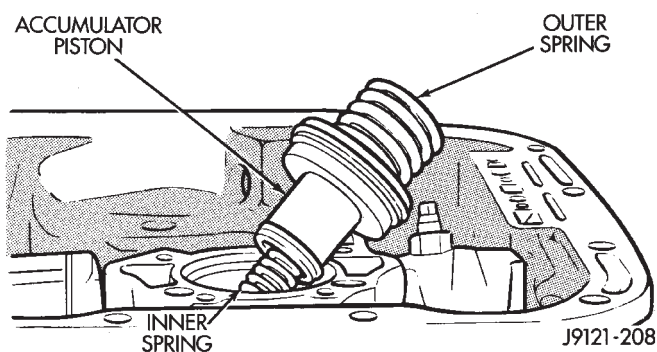
(19) Remove front band lever shaft access plug (Fig. 134). Plug is accessible through converter housing. Use 1/4 inch drive extension to remove plug as shown.

(20) Loosen front band adjusting screw locknut 4-5 turns. Then tighten band adjusting screw until band

DISASSEMBLY AND ASSEMBLY (Continued)



J9321-384

Fig. 132 Valve Body Removal

J9121-208

Fig. 133 Accumulator Piston And Springs

is tight around front clutch retainer. This prevents front/rear clutches from coming out with pump and possibly damaging clutch or pump components.

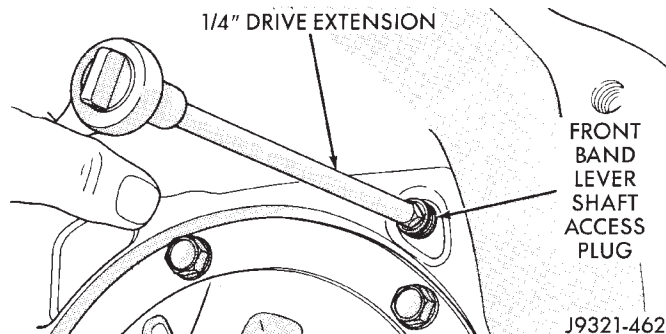
(21) Remove oil pump bolts.

(22) Thread bolts of Slide Hammer Tools C-3752 into threaded holes in pump body flange (Fig. 135).

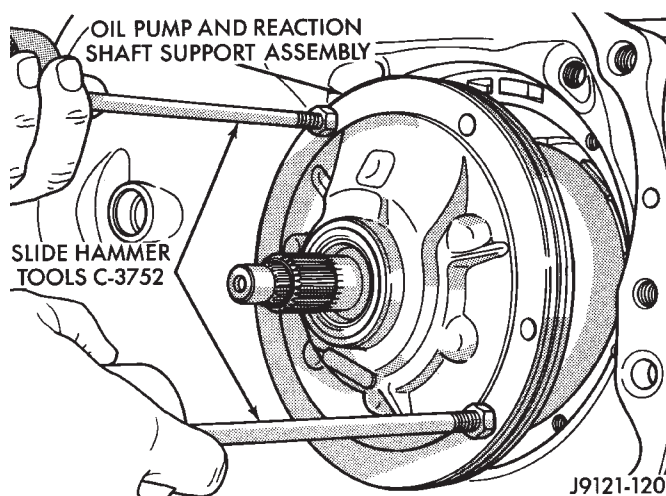
(23) Bump slide hammer weights outward to remove pump and reaction shaft support assembly from case (Fig. 135).

(24) Loosen front band adjusting screw until band is completely loose.

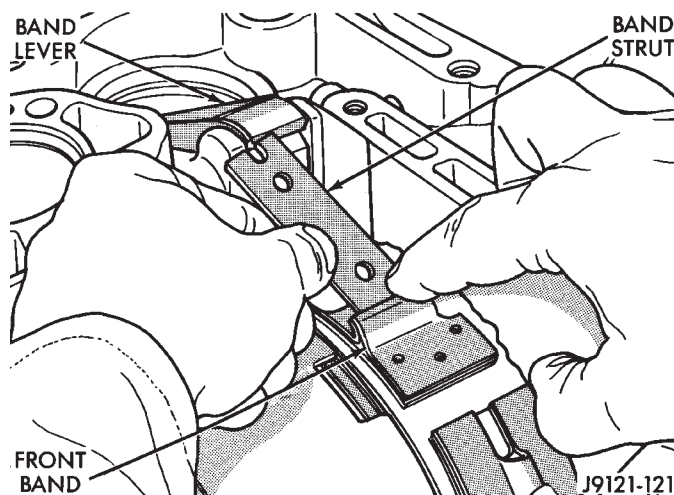
(25) Squeeze front band together and remove band strut (Fig. 136).



J9321-462

Fig. 134 Removing/Installing Front Band Lever Shaft Access Plug

J9121-120

Fig. 135 Removing Oil Pump And Reaction Shaft Support Assembly

J9121-121

Fig. 136 Removing/Installing Front Band Strut

DISASSEMBLY AND ASSEMBLY (Continued)

(26) Remove front band lever shaft with pencil magnet. Shaft is accessible from converter housing side of case (Fig. 137).

(27) Remove front band lever (Fig. 138).

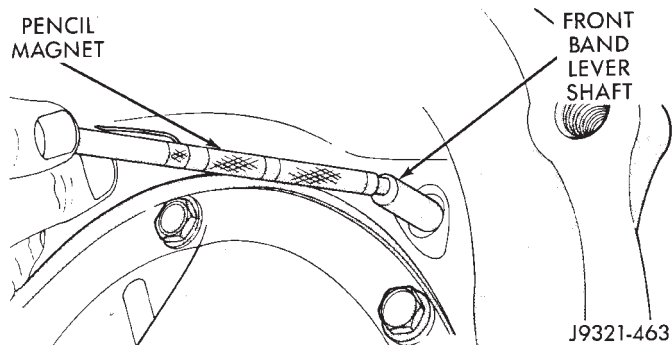


Fig. 137 Removing Front Band Lever Shaft

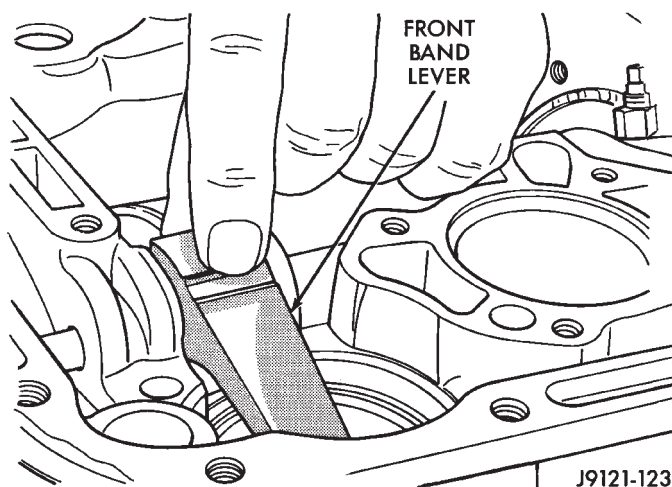


Fig. 138 Removing/Installing Front Band Lever

(28) Slide front band rearward and onto driving shell. Band will not be removed until after front/rear clutch removal.

(29) Remove front and rear clutch units as assembly. Grasp input shaft, hold clutch units together and remove them from case (Fig. 139).

(30) Lift front clutch off rear clutch (Fig. 140). Set clutch units aside for overhaul.

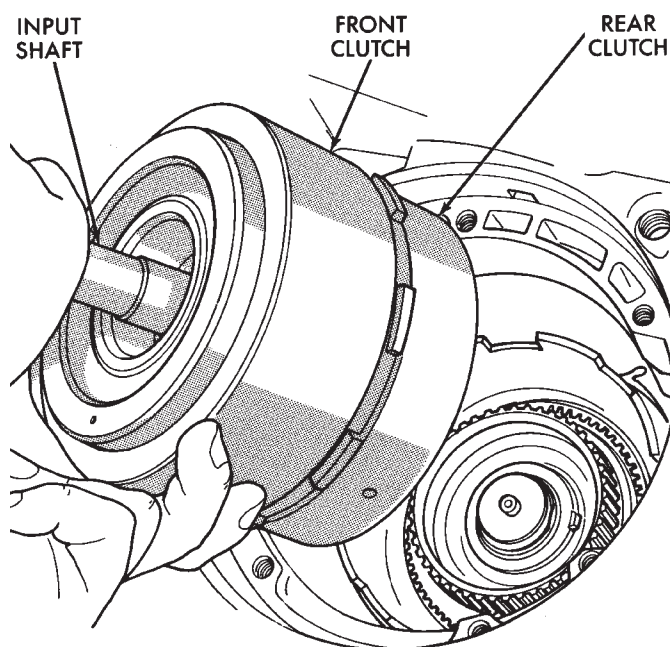


Fig. 139 Removing Front/Rear Clutch Assemblies

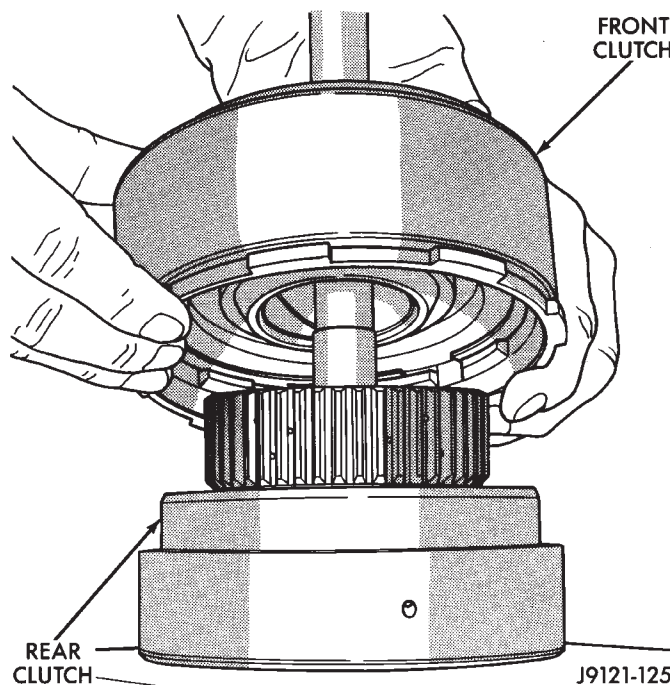


Fig. 140 Separating Front/Rear Clutch Assemblies

DISASSEMBLY AND ASSEMBLY (Continued)

(31) Remove intermediate shaft thrust washer from front end of shaft or from rear clutch hub (Fig. 141).

(32) Remove output shaft thrust plate from intermediate shaft hub (Fig. 142).

(33) Slide front band off driving shell (Fig. 143) and remove band from case.

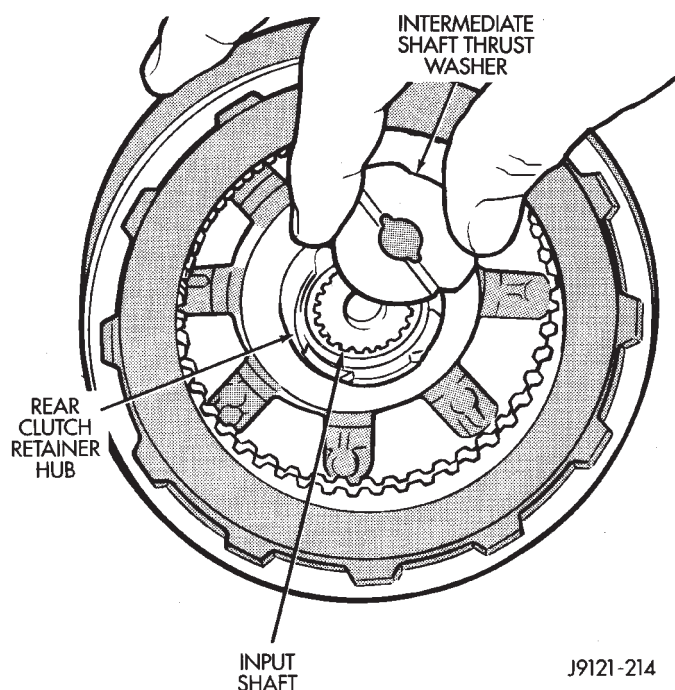


Fig. 141 Removing Intermediate Shaft Thrust Washer

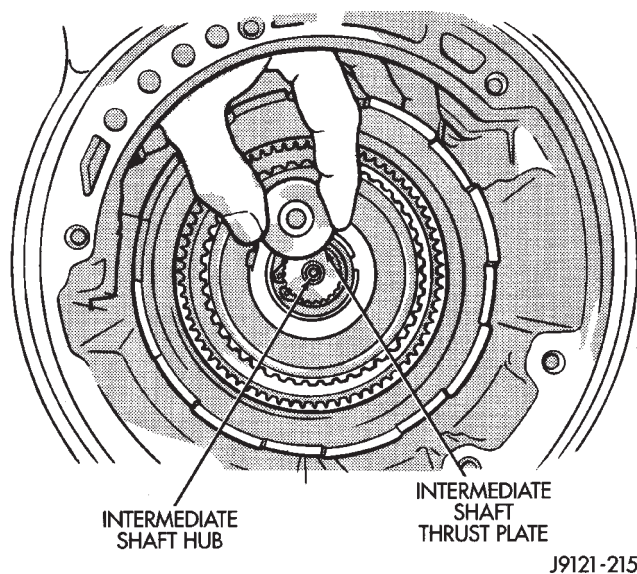


Fig. 142 Removing Intermediate Shaft Thrust Plate

(34) Remove planetary geartrain as assembly (Fig. 144). Support geartrain with both hands during removal. Do not allow machined surfaces on interme-

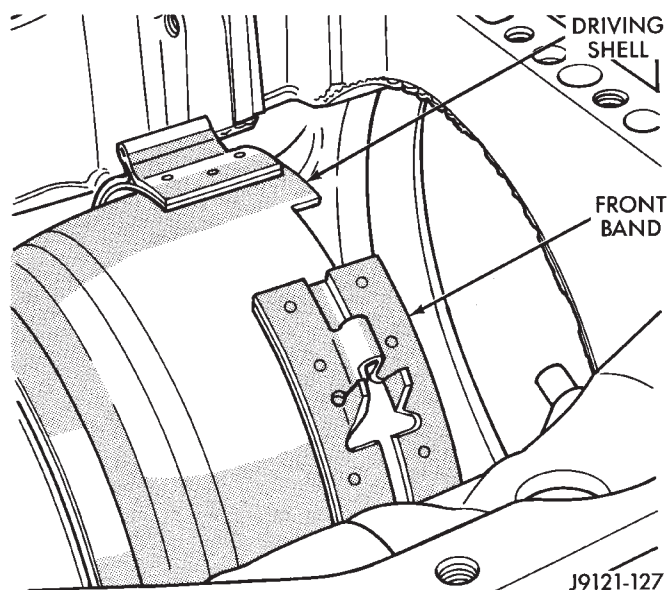


Fig. 143 Front Band Removal/Installation

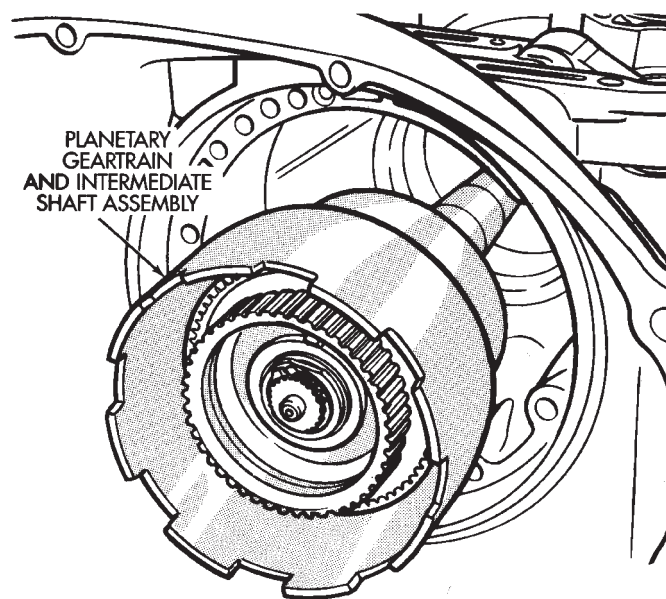


Fig. 144 Removing Planetary Geartrain And Intermediate Shaft Assembly

mediate shaft or overdrive piston retainer to become nicked or scratched.

(35) Loosen rear band adjusting screw 4-5 turns.

DISASSEMBLY AND ASSEMBLY (Continued)

(36) Remove low-reverse drum snap ring (Fig. 145).

(37) Remove bolts attaching overdrive piston retainer to rear of case (Fig. 146). Then remove piston retainer and gasket.

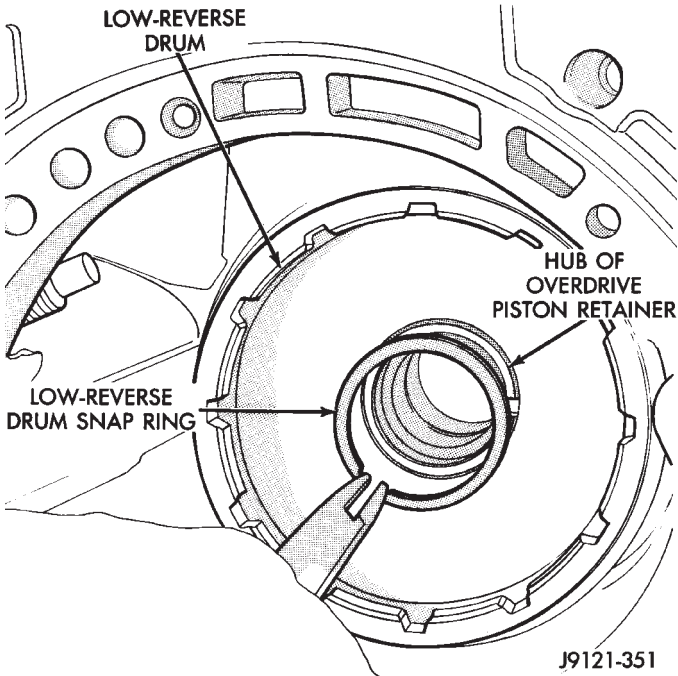


Fig. 145 Removing Low-Reverse Drum Snap Ring

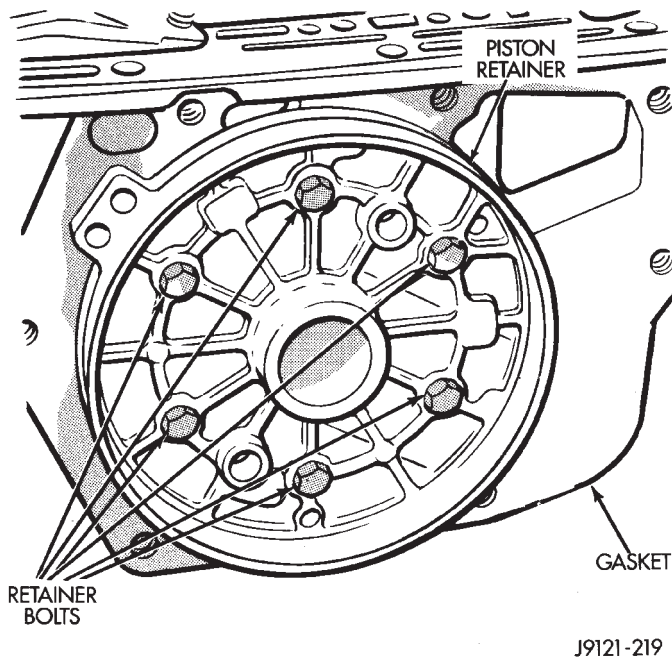


Fig. 146 Overdrive Piston Retainer Bolt Location

(38) Remove rear band pivot and reaction pins (Fig. 147). Use parallel jaw snap ring pliers to remove pins. Insert and spread plier jaws in pin bore to grip pin. Then twist and pull pins to remove them.

(39) Remove rear band lever.

(40) Remove low-reverse drum and rear band as assembly. Turn drum clockwise and pull outward to remove it from overrunning clutch (Fig. 148).

(41) Remove bolts attaching overrunning clutch cam to case (Fig. 149).

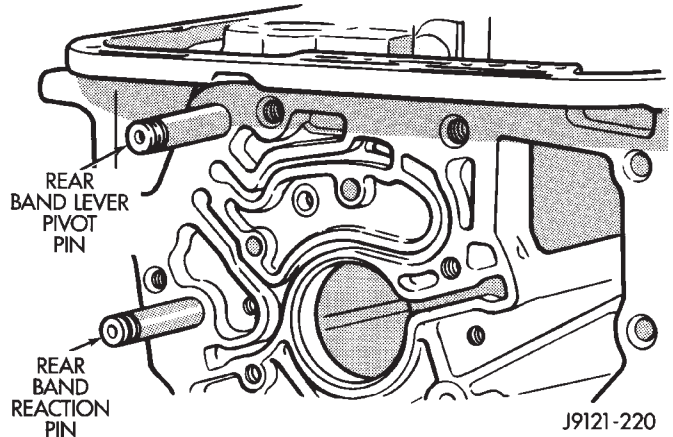


Fig. 147 Rear Band And Lever Pin Location

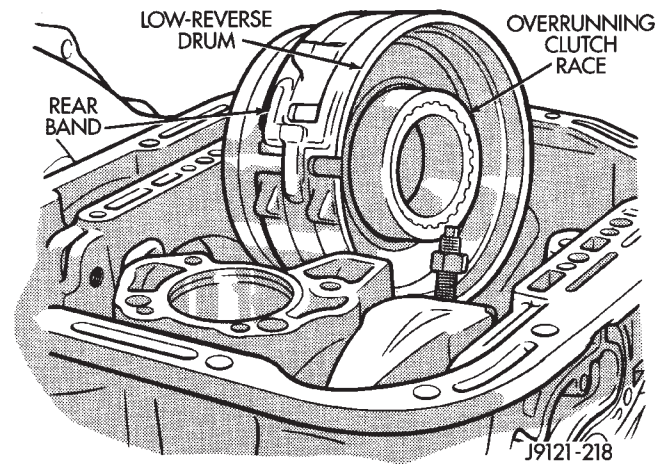


Fig. 148 Low-Reverse Drum And Rear Band Removal

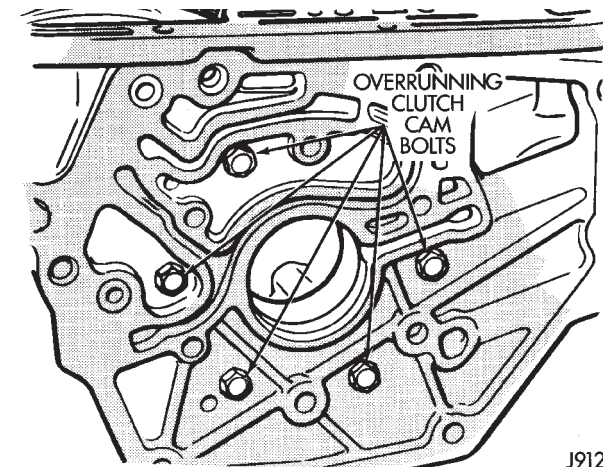


Fig. 149 Overrunning Clutch Cam Bolt Locations

DISASSEMBLY AND ASSEMBLY (Continued)

(42) Remove overrunning clutch cam and roller clutch assembly as a unit (Fig. 150). Turn cam back and forth and tilt it inward to remove it from case.

(43) Compress front servo rod guide about 1/8 inch with Valve Spring Compressor C-3422-B (Fig. 151). A C-clamp and Special Tool C-4470 can also be used to compress rod guide.

(44) Remove front servo rod guide snap ring. **Exercise caution when removing snap ring. Servo bore can be scratched or nicked if care is not exercised.**

(45) Remove compressor tools and remove front servo rod guide, spring and servo piston.

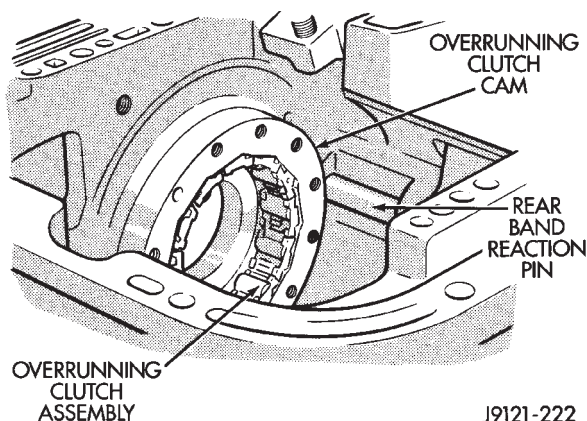


Fig. 150 Overrunning Clutch Assembly Removal

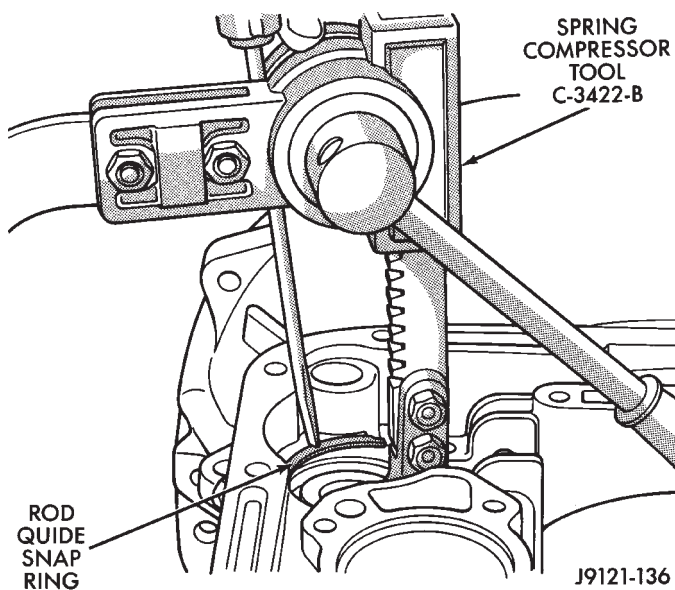


Fig. 151 Compressing Front Servo Rod Guide

(46) Compress rear servo spring retainer about 1/16 inch with Valve Spring Compressor C-3422-B (Fig. 152). A C-clamp and Tool C-4470 or SP-5560 can also be used to compress spring retainer.

(47) Remove rear servo spring retainer snap ring. Then remove compressor tools and remove rear servo spring and piston.

(48) Inspect transmission and overdrive components. **If major components such as the overdrive unit, front clutch, or oil pump require service, refer to appropriate overhaul procedure.**

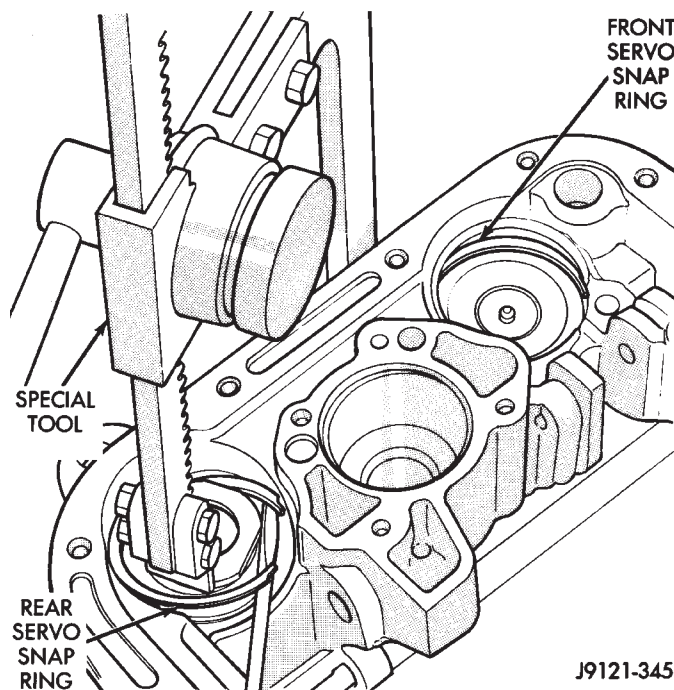


Fig. 152 Compressing Rear Servo Spring

TRANSMISSION ASSEMBLY PREPARATION

Do not allow dirt, grease, or foreign material to enter the case or transmission components during assembly. Keep the transmission case and components clean. Also make sure the tools and workbench area used for assembly operations are equally clean.

Shop towels used for wiping off tools and hands must be made from **lint free** material. Lint will stick to transmission parts and could interfere with valve operation, or even restrict fluid passages.

Lubricate the transmission components with Mopar transmission fluid during reassembly. Use Mopar Door Ease, or Ru-Glyde on seals and O-rings to ease installation.

Petroleum jelly can also be used to hold thrust washers, thrust plates and gaskets in position during assembly. However, **do not** use chassis grease, bearing grease, white grease, or similar lubricants on any transmission part. These types of lubricants can eventually block or restrict fluid passages and interfere with valve operation. Use petroleum jelly only.

Do not force parts into place. The transmission components and subassemblies are easily installed by hand when properly aligned.

If a part seems extremely difficult to install, it is either misaligned or incorrectly assembled. Also verify that thrust washers, thrust plates and seal rings

DISASSEMBLY AND ASSEMBLY (Continued)

are correctly positioned before assembly. These parts can interfere with proper assembly if mis-positioned (or "left out" by accident).

The planetary geartrain, front/rear clutch assemblies and oil pump are all much easier to install when the transmission case is upright or as close to this position as possible. Either tilt the case upward with wood blocks, or cut a hole in the bench large enough for the output shaft. Then lower the shaft through the hole and support the transmission case directly on the bench.

TRANSMISSION ASSEMBLE

(1) Install rear servo piston, spring and retainer (Fig. 153). Install spring on top of servo piston and install retainer on top of spring.

(2) Install front servo piston assembly, servo spring and rod guide (Fig. 154).

(3) Compress front/rear servo springs with Valve Spring Compressor C-3422-B and install each servo snap ring (Fig. 155).

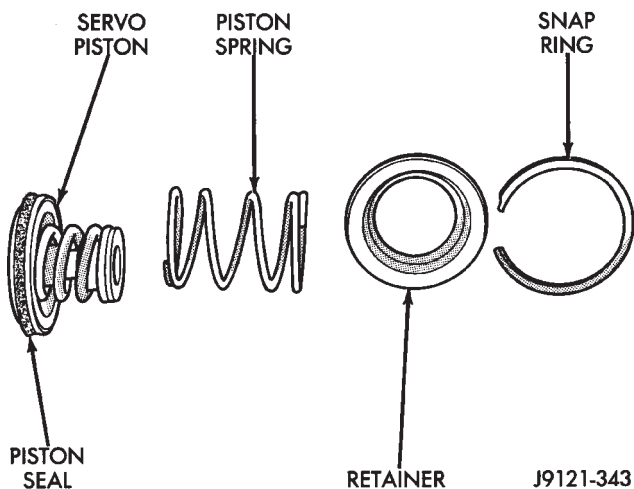


Fig. 153 Rear Servo Components

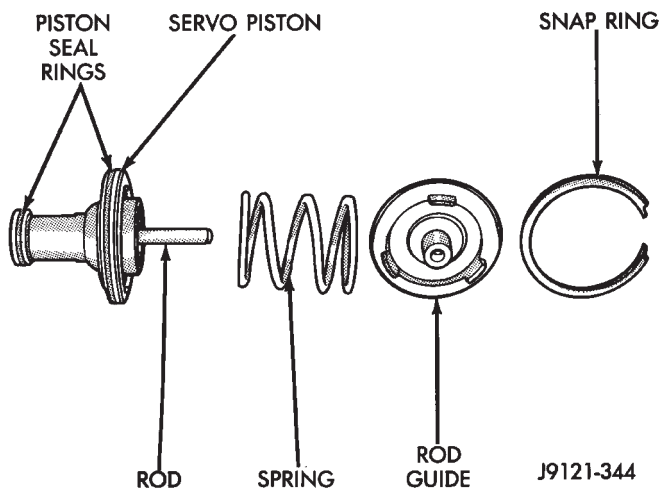


Fig. 154 Front Servo Components

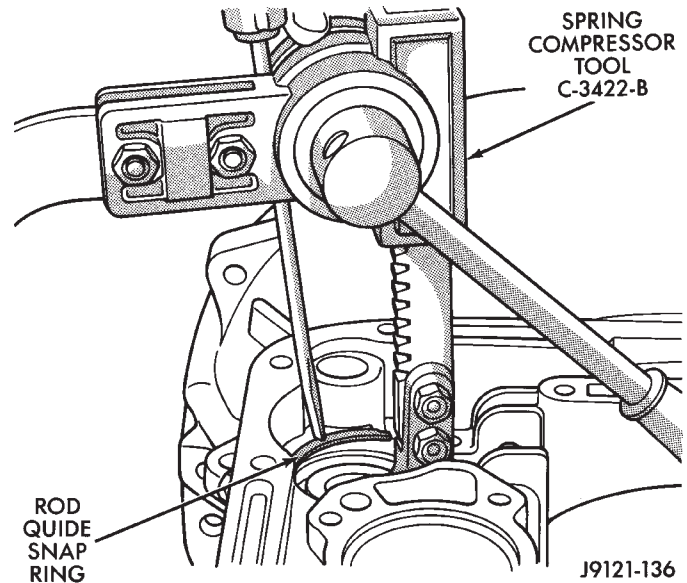


Fig. 155 Compressing Front/Rear Servo Springs

(4) Examine bolt holes in overrunning clutch cam. Note that one hole is **not threaded** (Fig. 156). This hole must align with blank area in clutch cam bolt circle (Fig. 157). Mark hole location on clutch cam and blank area in case with grease pencil, paint stripe, or scribe mark for assembly reference.

(5) Mark location of non-threaded hole in clutch cam and blank area in bolt circle with grease pencil.

(6) Align and install overrunning clutch and cam in case (Fig. 158). **Be sure cam is correctly installed. Bolt holes in cam are slightly counter-sunk on one side. Be sure this side of cam faces rearward (toward piston retainer).**

(7) Verify that non-threaded hole in clutch cam is properly aligned. Check alignment by threading a bolt into each bolt hole. Adjust clutch cam position if necessary.

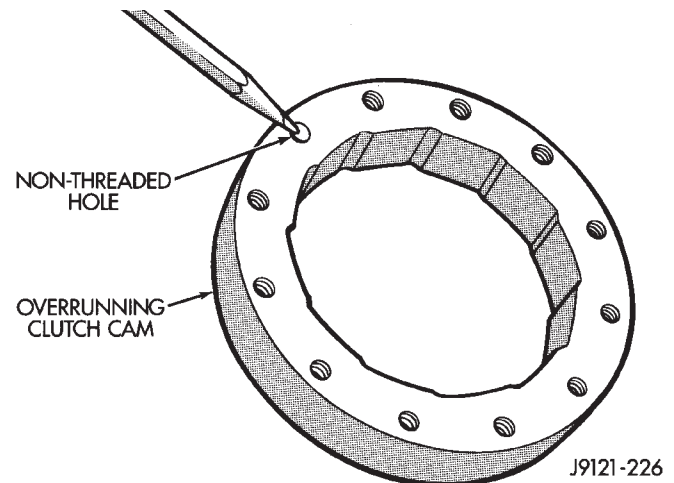


Fig. 156 Location Of Non-Threaded Hole In Clutch Cam

DISASSEMBLY AND ASSEMBLY (Continued)

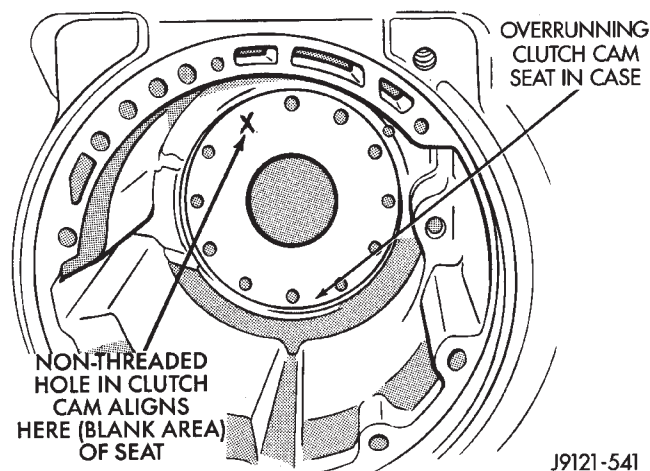


Fig. 157 Location Of Blank Area In Clutch Cam Bolt Circle

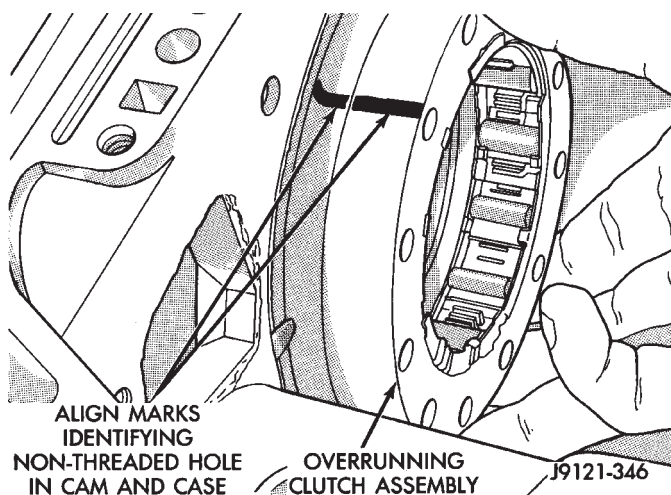


Fig. 158 Overrunning Clutch Installation

(8) Install and tighten overrunning clutch cam bolts to 17 N·m (13 ft. lbs.) torque. Note that clutch cam bolts are shorter than piston retainer bolts.

(9) Lubricate clutch cam rollers with transmission fluid.

(10) Install rear band reaction pin (Fig. 159). Be sure pin is fully seated in case.

(11) Install rear band in case (Fig. 160). Be sure twin lugs on band are seated against reaction pin.

(12) Install low-reverse drum and check overrunning clutch operation as follows:

(a) Lubricate overrunning clutch race (on drum hub) with transmission fluid.

(b) Guide drum through rear band.

(c) Tilt drum slightly and start race (on drum hub) into overrunning clutch rollers.

(d) Press drum rearward and turn it in clockwise direction until drum seats in overrunning clutch (Fig. 161).

(e) Turn drum back and forth. **Drum should rotate freely in clockwise direction and lock**

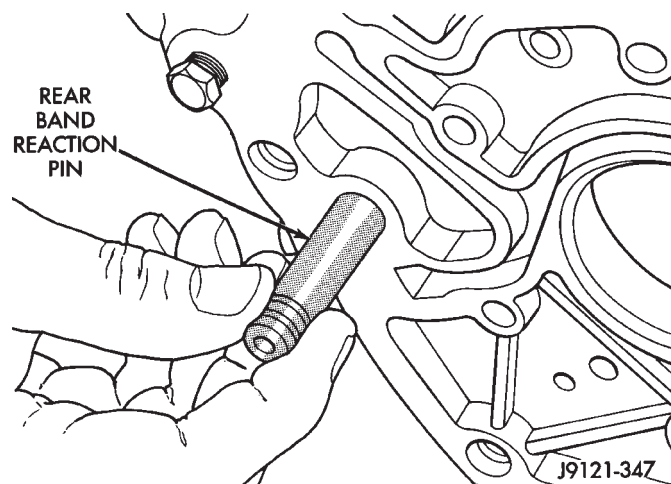


Fig. 159 Installing Rear Band Reaction Pin

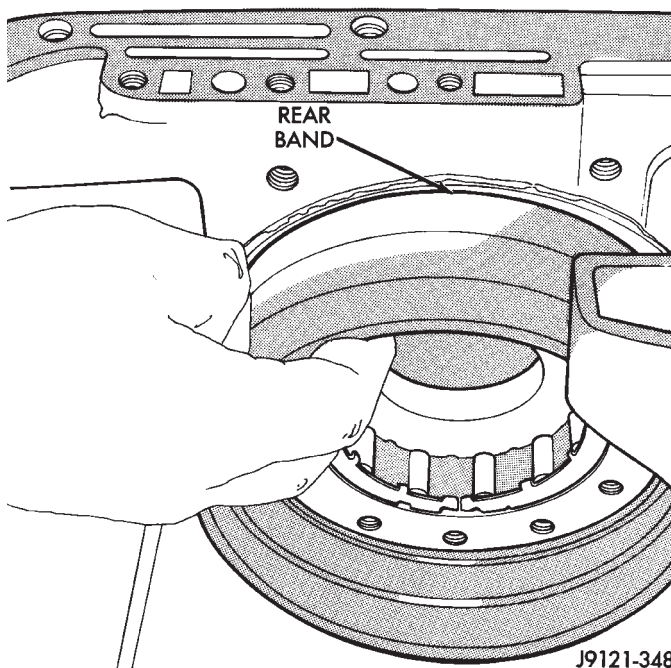


Fig. 160 Rear Band Installation

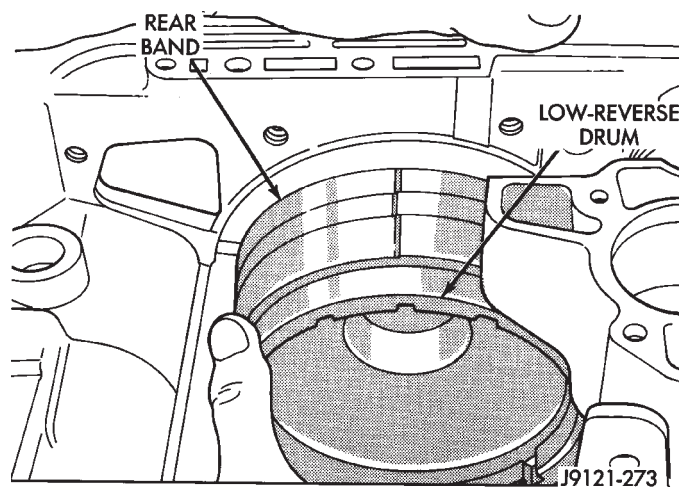


Fig. 161 Installing Low-Reverse Drum

DISASSEMBLY AND ASSEMBLY (Continued)

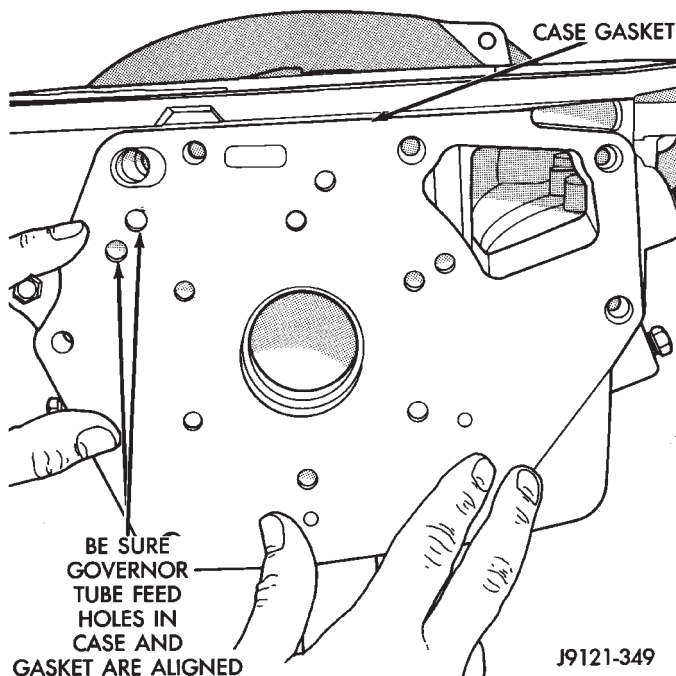


Fig. 162 Installing/Aligning Case Gasket

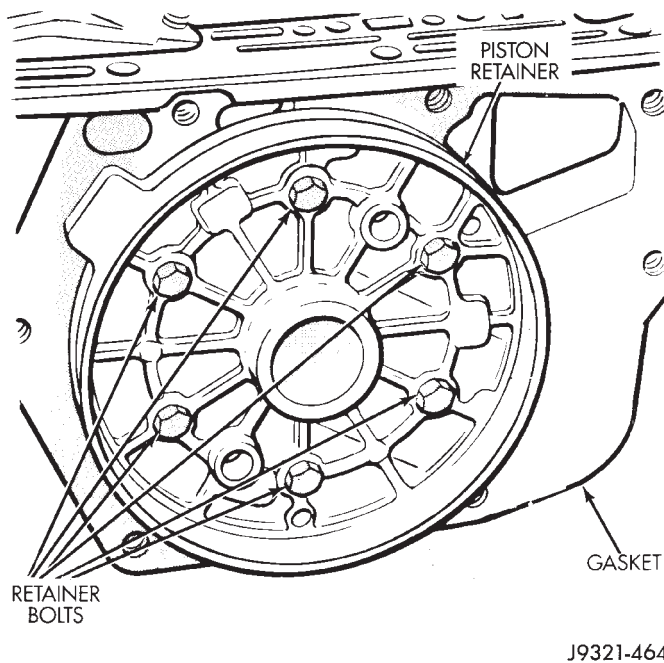


Fig. 163 Aligning Overdrive Piston Retainer in counterclockwise direction (as viewed from front of case).

(13) Install new gasket at rear of transmission case. Use petroleum jelly to hold gasket in place. Be sure to align governor feed holes in gasket with feed passages in case (Fig. 162). Also install gasket before overdrive piston retainer. Center hole in gasket is smaller than retainer and cannot be installed over retainer.

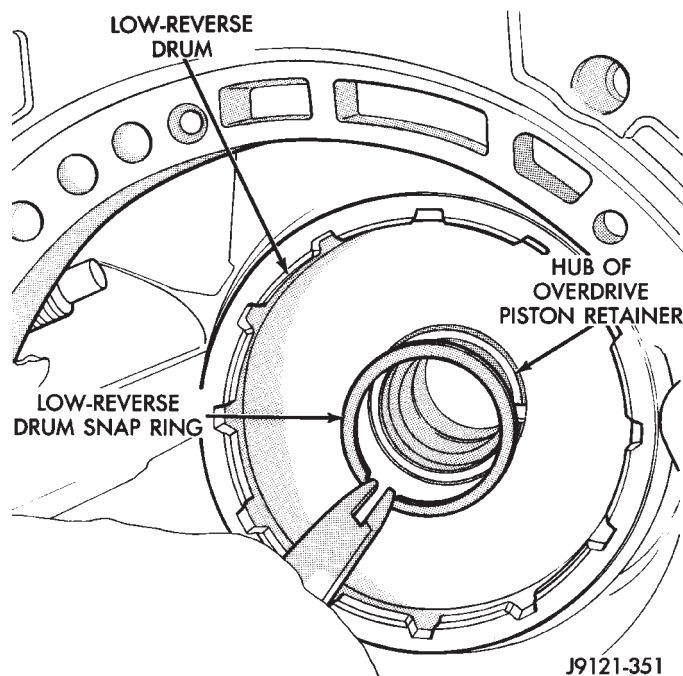


Fig. 164 Installing Low-Reverse Drum Retaining Snap Ring

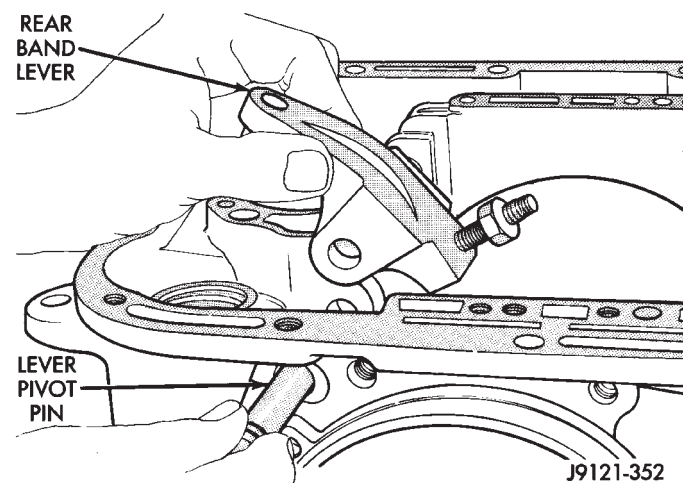


Fig. 165 Rear Band Lever And Pivot Pin Installation

(14) Position overdrive piston retainer on transmission case and align bolt holes in retainer, gasket and case (Fig. 163). Then install and tighten retainer bolts to 17 N·m (13 ft. lbs.) torque.

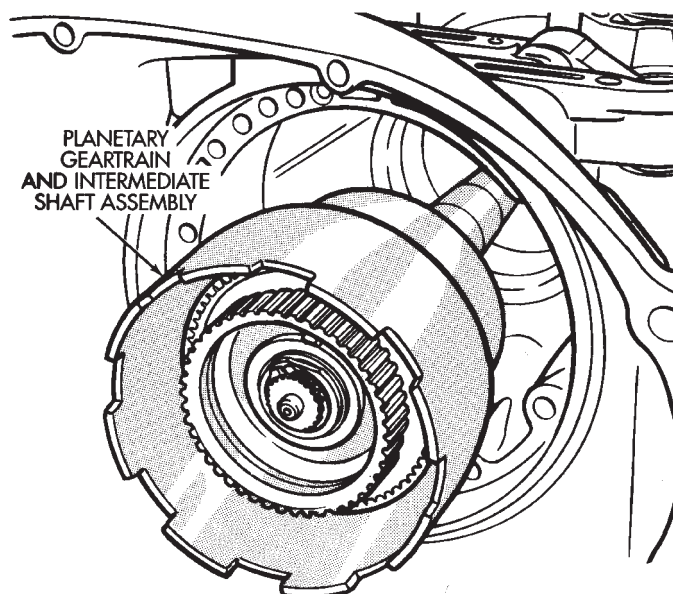
(15) Install snap ring that secures low-reverse drum to hub of piston retainer (Fig. 164).

(16) Install rear band lever and pivot pin (Fig. 165). Align lever with pin bores in case and push pivot pin into place.

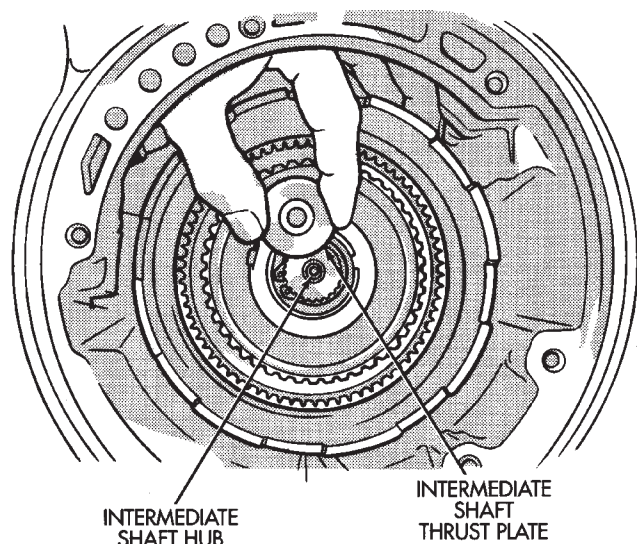
(17) Install planetary geartrain assembly (Fig. 166).

(18) Install thrust plate on intermediate shaft hub (Fig. 167). Use petroleum jelly to hold thrust plate in place.

DISASSEMBLY AND ASSEMBLY (Continued)



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Fig. 166 Installing Planetary Geartrain

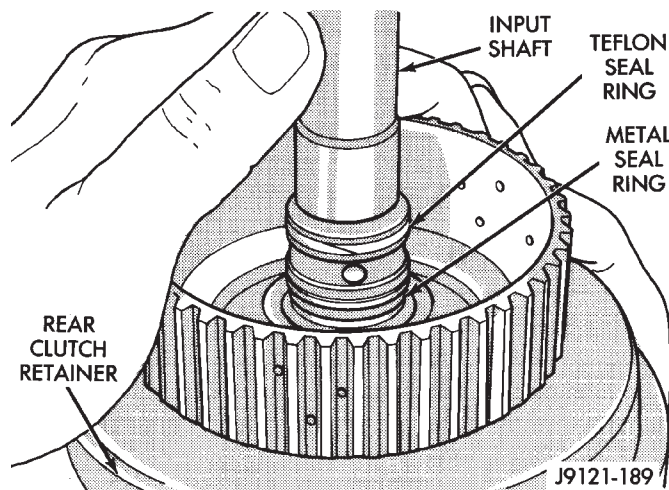
J9121-215

Fig. 167 Installing Intermediate Shaft Thrust Plate

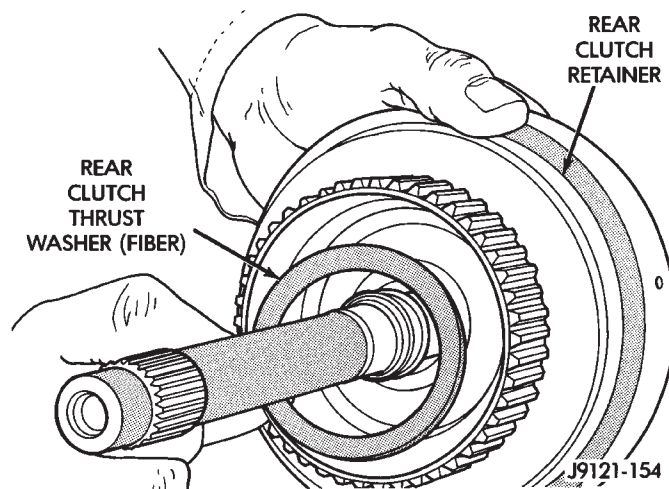
(19) Check seal ring on rear clutch retainer hub and seal rings on input shaft (Fig. 168). Verify that diagonal-cut ends of teflon seal rings are properly joined and ends of metal ring are correctly hooked together. Also verify that shaft seal rings are installed in sequence shown.

(20) Check rear clutch thrust washer (Fig. 169). Use additional petroleum jelly to hold washer in place if necessary.

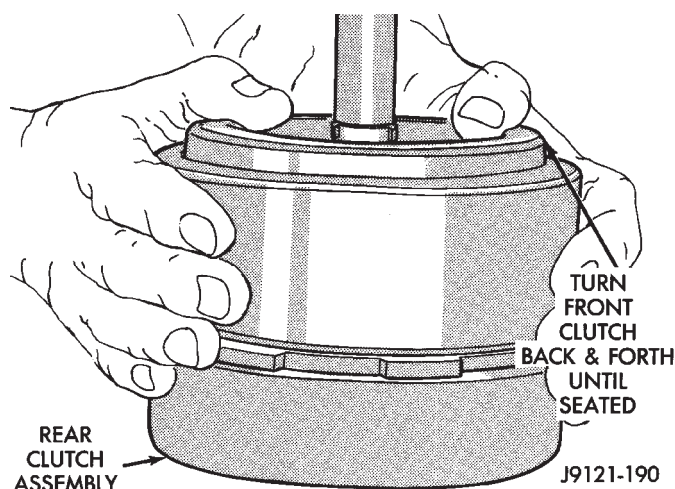
(21) Align clutch discs in front clutch and install front clutch on rear clutch (Fig. 170). Rotate front clutch retainer back and forth until completely seated on rear clutch.



J9121-189

Fig. 168 Input Shaft Seal Ring Location

J9121-154

Fig. 169 Installing Rear Clutch Thrust Washer

J9121-190

Fig. 170 Assembling Front And Rear Clutch Units

DISASSEMBLY AND ASSEMBLY (Continued)

(22) Coat intermediate shaft thrust washer with petroleum jelly. Then install washer in rear clutch hub (Fig. 171). Use enough petroleum jelly to hold washer in place. **Be sure grooved side of washer faces rearward (toward output shaft) as shown.** Also note that washer only fits one way in clutch hub. Note thickness of this washer. It is a select fit part and is used to control transmission end play.

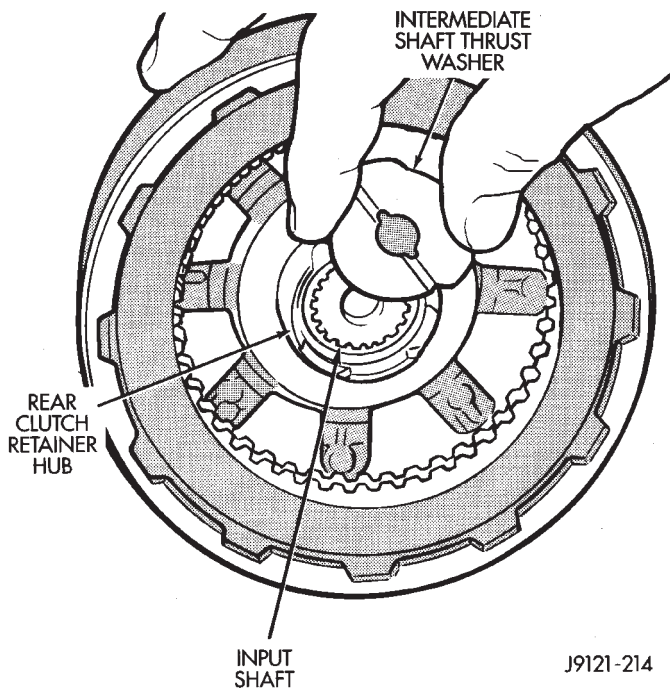


Fig. 171 Installing Intermediate Shaft Thrust Washer

(23) Align drive teeth on rear clutch discs with small screwdriver (Fig. 172). This makes installation on front planetary easier.

(24) Raise front end of transmission upward as far as possible and support case with wood blocks. Front/rear clutch and oil pump assemblies are easier to

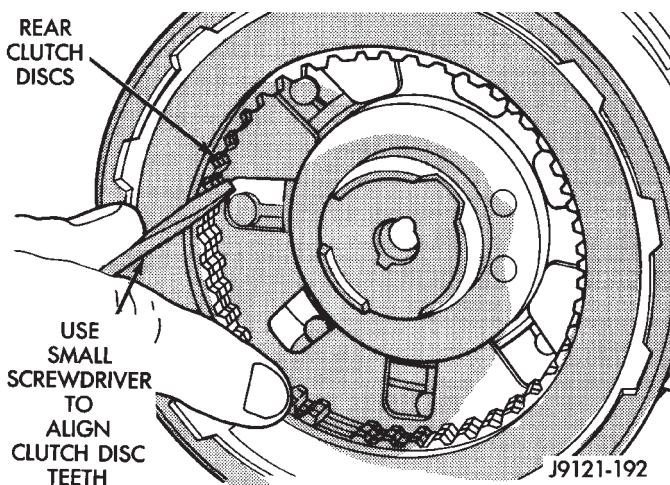


Fig. 172 Aligning Rear Clutch Disc Lugs

install if transmission is as close to upright position as possible.

(25) Install front and rear clutch units as assembly (Fig. 173). Align rear clutch with front annulus gear and install assembly in driving shell. **Be sure output shaft thrust washer and thrust plate are not displaced during installation.**

(26) Carefully work assembled clutches back and forth to engage and seat rear clutch discs on front annulus gear. Also be sure front clutch drive lugs are fully engaged in slots of driving shell after installation.

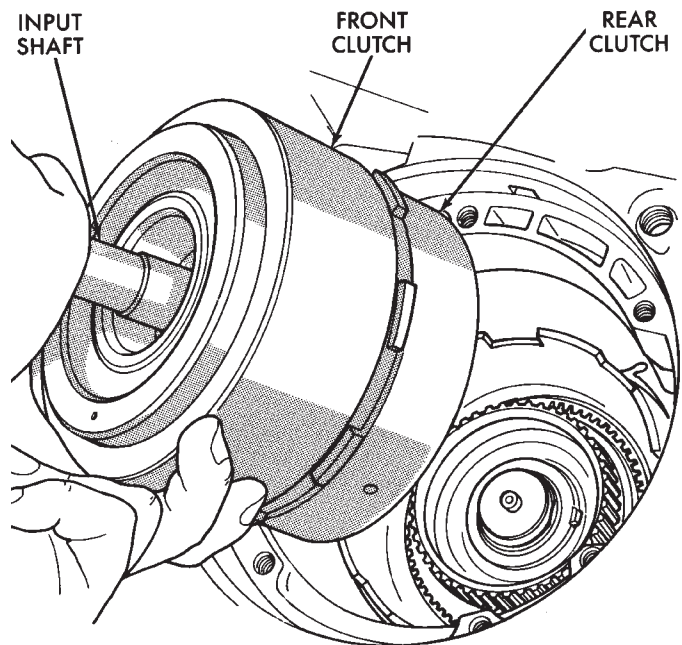


Fig. 173 Installing Front/Rear Clutch Assemblies

(27) Slide front band over front clutch retainer (Fig. 174).

(28) Insert front band lever pivot shaft part way into case (Fig. 174).

(29) Install front band lever, strut and adjusting screw (Fig. 175).

(30) Push front band lever shaft completely into place. Then tighten band adjusting screw until band just grips clutch retainer. Verify that front/rear clutches are still seated before continuing.

(31) Coat band reaction pin access plug with sealer and install plug in converter housing.

(32) Check seal rings on reaction shaft support hub. Verify that seal rings are hooked together and that front clutch thrust washer is properly positioned (Fig. 176). Use extra petroleum jelly to hold thrust washer in place if necessary.

CAUTION: The thrust washer bore ID is chamfered on one side. Make sure this side of the washer is facing toward the front of the transmission.

DISASSEMBLY AND ASSEMBLY (Continued)

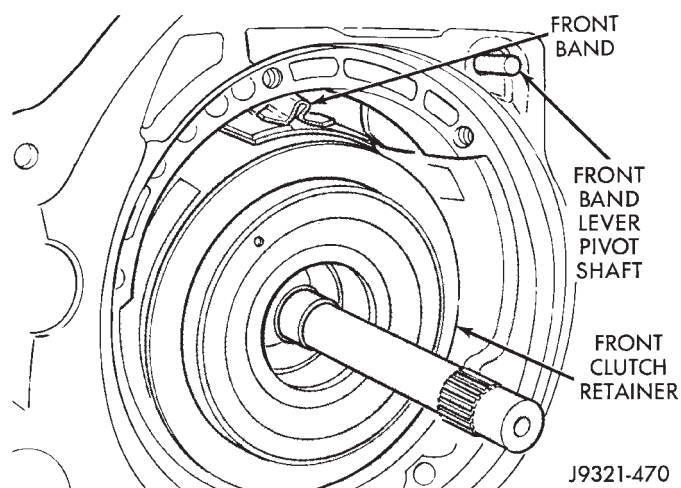


Fig. 174 Installing Front Band And Reaction Pin

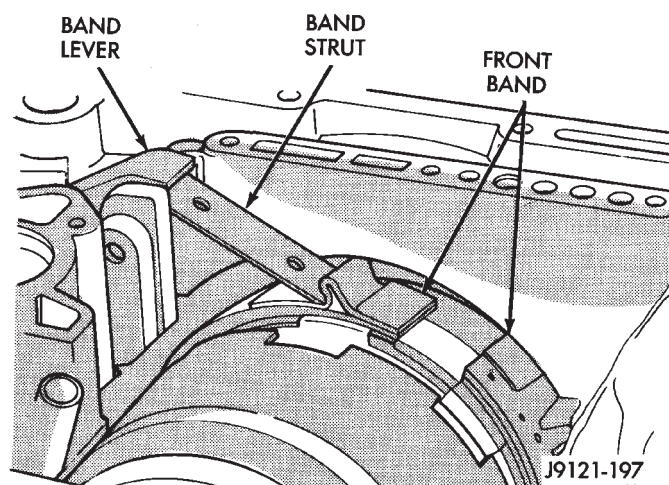


Fig. 175 Front Band Linkage Installation

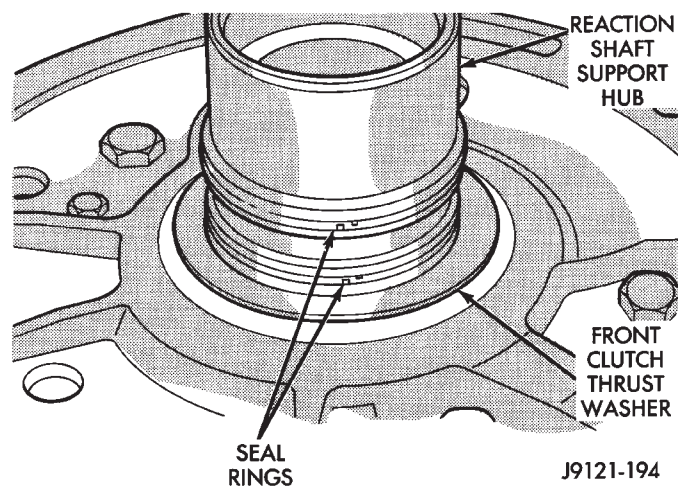


Fig. 176 Reaction Shaft Support Seal Rings And Front Clutch Thrust Washer

(33) Thread two Pilot Stud Tools C-3288-B into bolt holes in oil pump flange (Fig. 177).

(34) Align and install oil pump gasket (Fig. 177).

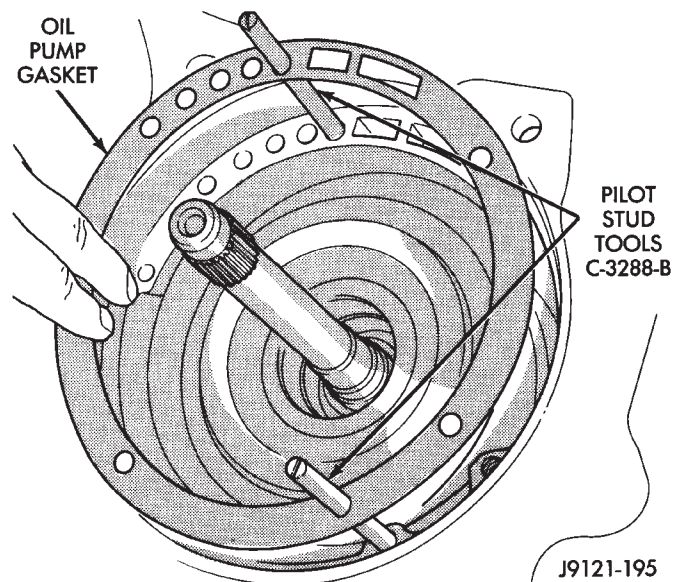


Fig. 177 Installing Pilot Studs And Oil Pump Gasket

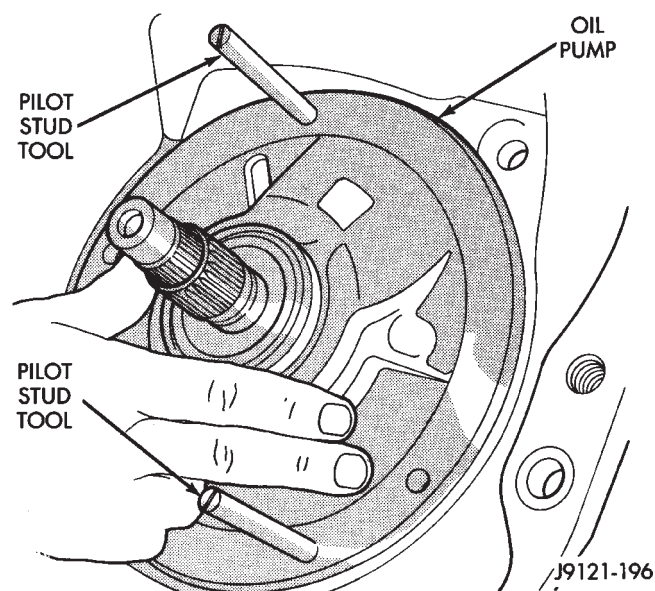


Fig. 178 Installing Oil Pump Assembly In Case

(35) Lubricate oil pump body seal with Ru-Glyde, or petroleum jelly. Lubricate pump shaft seal lip with petroleum jelly.

(36) Install oil pump (Fig. 178). Align and position pump on pilot studs. Slide pump down studs and work it into front clutch hub and case by hand. Then install 2 or 3 pump bolts to hold pump in place.

(37) Remove pilot stud tools and install remaining oil pump bolts. Tighten bolts alternately in diagonal pattern to 20 N·m (15 ft. lbs.).

(38) Install new seals on overdrive piston. Then lubricate seals with Mopar Door Ease, or Ru-Glyde.

(39) Install overdrive piston in retainer. **Align locating lugs on piston in locating bores in**

DISASSEMBLY AND ASSEMBLY (Continued)

retainer (Fig. 179). Use thin plastic strip or feeler gauge to help guide piston outer seal into retainer.

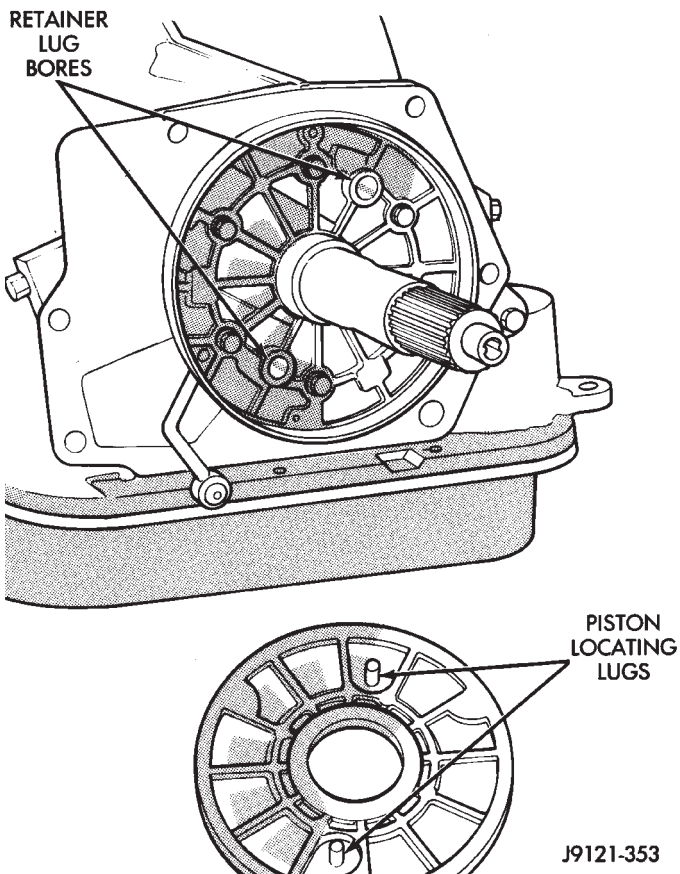


Fig. 179 Overdrive Piston Alignment

(40) Install spacer on intermediate shaft, if not previously installed.

(41) Install overdrive piston thrust plate (Fig. 180). Use liberal quantity of petroleum jelly to hold thrust plate in position on piston.

(42) Install overdrive piston thrust bearing in direct clutch hub (Fig. 181). Use liberal quantity of petroleum jelly to hold thrust bearing in place. **Note that one side of bearing has dark coated surface. This surface faces overdrive piston. Also be sure raised shoulder on inside diameter of bearing faces forward as well.**

(43) Apply small amount of petroleum jelly to pilot hub of intermediate shaft.

(44) Verify alignment of splines in overdrive unit planetary gear and overrunning clutch. Be sure Alignment Tool 6227-2 is still fully seated (Fig. 182). **If planetary gear and overrunning clutch splines become misaligned, overdrive unit cannot be fully installed on intermediate shaft. Overdrive unit may have to be disassembled in order to realign splines.**

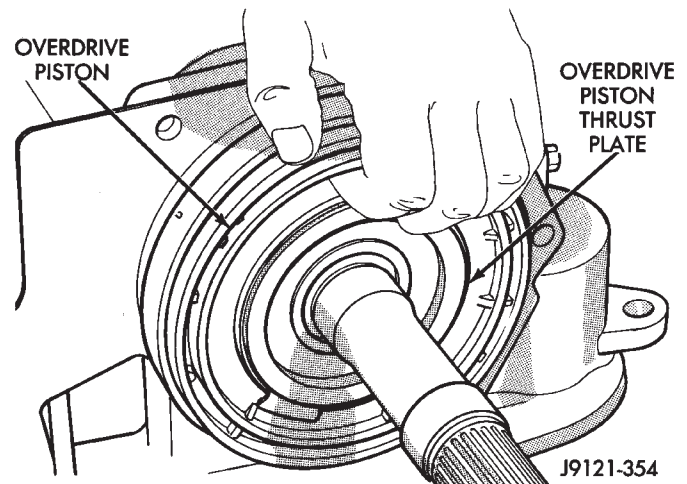


Fig. 180 Installing Overdrive Piston Thrust Plate

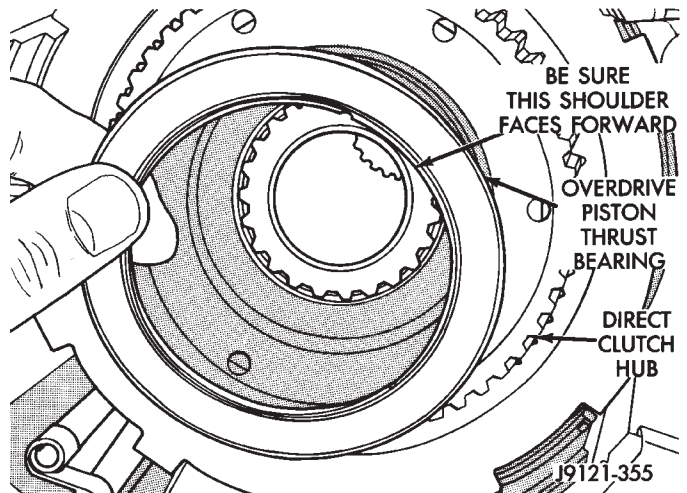


Fig. 181 Installing Overdrive Piston Thrust Bearing

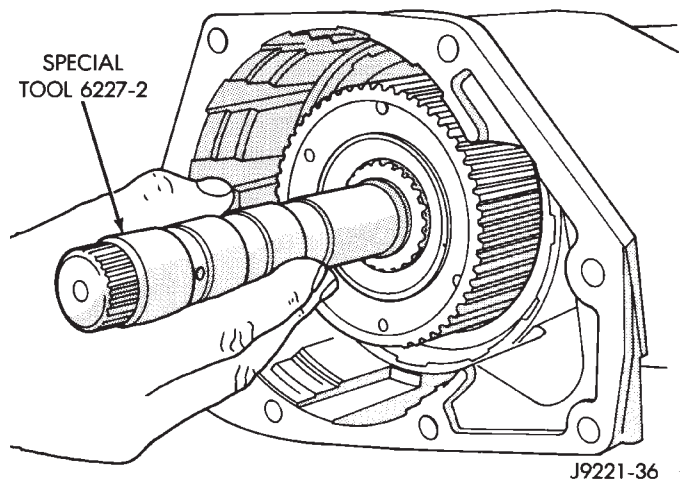


Fig. 182 Checking Alignment Of Overdrive Planetary Gear And Overrunning Clutch Splines

DISASSEMBLY AND ASSEMBLY (Continued)

(45) Carefully withdraw alignment tool from overdrive unit.

(46) Lubricate intermediate shaft splines and bushing surfaces with transmission fluid or petroleum jelly.

(47) Install overdrive unit. Note that intermediate shaft is snug fit in overdrive planetary gear and overrunning clutch. If overdrive unit will not seat, gear and clutch splines are probably misaligned.

(48) Apply 1-2 drops of Mopar thread adhesive (or Loctite 242) to overdrive unit attaching bolts. Then install and tighten bolts to 34 N·m (25 ft. lbs.) torque. **Be sure wire harness clips are placed on appropriate overdrive bolts beforehand.**

(49) Measure and if necessary, correct input shaft end play as follows (Fig. 183):

(a) Be sure overdrive unit is installed on transmission. **End play cannot be properly checked with overdrive unit off transmission.**

(b) Attach dial indicator to converter housing.

(c) Position indicator plunger against input shaft and zero indicator.

(d) Move input shaft in and out and record reading. End play should be 0.56 - 2.31 mm (0.022 - 0.091 in.). Proceed to next step if end play is not within specified limits.

(e) Intermediate shaft thrust washer (in hub of rear clutch retainer) controls end play. Washer is a select fit part and can be changed to adjust end play. If end play turns out to be incorrect, remove oil pump, and clutches. Then install thinner/thicker thrust washer as necessary.

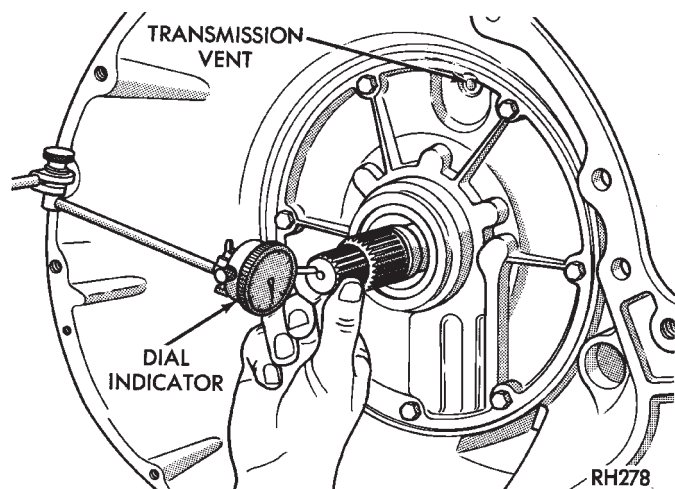


Fig. 183 Measuring Input Shaft End Play

(50) Install accumulator piston and inner and outer springs (Fig. 184).

(51) Verify that park/neutral position switch has **not** been installed in case. Valve body can not be installed if switch is in position.

(52) Verify that valve body solenoid harness is secured in 3-4 accumulator housing cover plate.

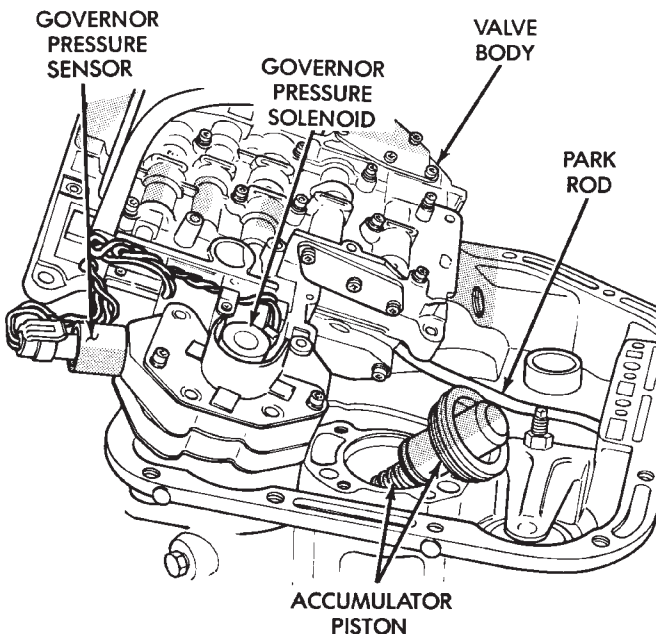


Fig. 184 Accumulator Piston And Springs

(53) Install valve body as follows:

(a) Align and carefully insert park rod into pawl. Rod will make click noise as it enters pawl. Move rod slightly to check engagement.

(b) Align and seat valve body on case. Be sure manual lever shaft and overdrive connector are fully seated in case. Also be sure valve body wiring is not pinched or kinked.

(c) Install and start all valve body attaching bolts by hand. Then tighten bolts evenly, in a diagonal pattern to 12 N·m (105 in. lbs.) torque. **Do not overtighten valve body bolts. This could result in distortion and cross leakage after installation..**

CAUTION: It is possible for the park rod to displace into a cavity just above the pawl sprag during installation. Make sure the rod is actually engaged in the pawl and has not displaced into the cavity. If the rod enters the cavity during installation, it will become bent when the overdrive bolts are tightened. If this occurs, the rod will have to be removed and replaced.

(54) Install new filter on valve body. Tighten filter screws to 4 N·m (35 in. lbs.).

(55) Adjust front and rear bands as follows:

(a) Loosen band adjusting screw locknuts.

(b) Tighten each band adjusting screw to 5 N·m (72 in. lbs.) with torque wrench.

(c) **Back off front band adjusting screw 3-5/8 turns.**

(d) Back off rear band screw 4 turns.

DISASSEMBLY AND ASSEMBLY (Continued)

(e) Tighten each adjusting screw locknut. Hold adjusting screws with wrench to prevent turning when tightening locknut.

(56) Install seal on park/neutral position switch (Fig. 185). Then install and tighten switch to 34 N·m (25 ft. lbs.).

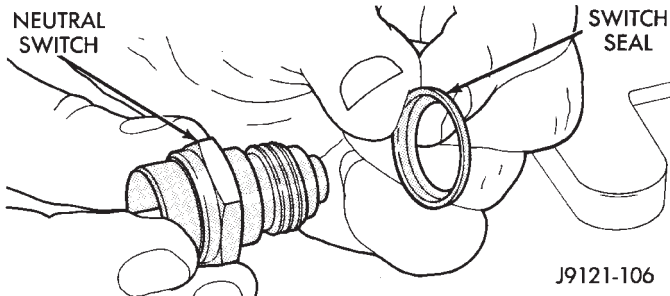


Fig. 185 Park/Neutral Position Switch Seal Position

(57) Install magnet in oil pan. Magnet goes on small protrusion at corner of pan.

(58) Position new oil pan gasket on case and install oil pan. Tighten pan bolts to 17 N·m (13 ft. lbs.).

(59) Install new valve body manual shaft seal in case (Fig. 186). Lubricate seal lip and manual shaft with petroleum jelly. Start seal over shaft and into case. Seat seal with 15/16 inch, deep well socket.

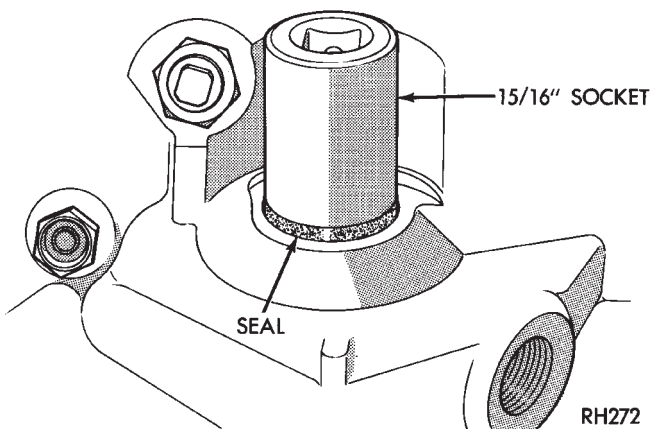


Fig. 186 Installing Manual Lever Shaft Seal

(60) Install throttle valve and shift selector levers on valve body manual lever shaft.

(61) Cap or cover transmission openings (cooler line fittings, filler tube bore, etc.) to prevent dirt entry.

(62) Install torque converter. Use C-clamp or metal strap to hold converter in place for installation.

(63) Install transmission speed sensor in overdrive case (Fig. 187).

(64) Mount transmission on jack for installation in vehicle.

(65) Apply dielectric grease to terminal pins of solenoid case connector and neutral switch.

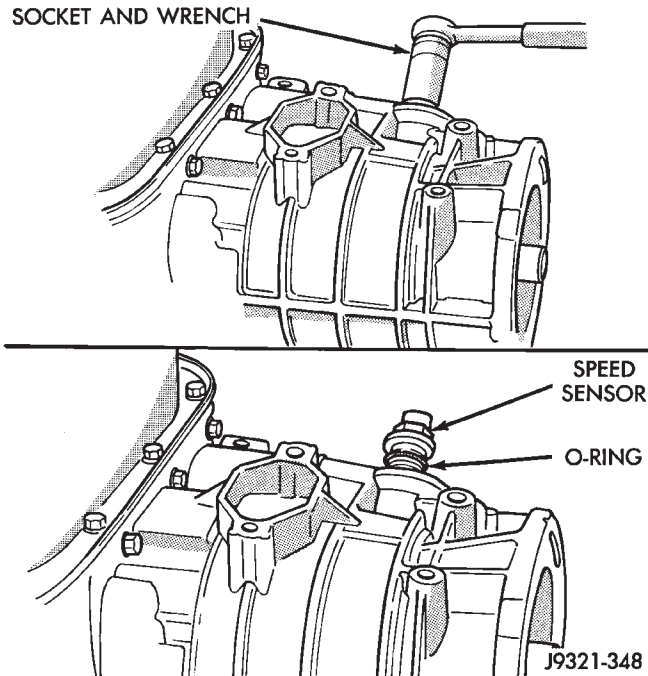


Fig. 187 Transmission Speed Sensor

OVERRUNNING CLUTCH/LOW-REVERSE DRUM**DISASSEMBLE**

If the clutch assembly came out with the low-reverse drum, thread two clutch cam bolts into the cam. Then lift the cam out of the drum with the bolts (Fig. 188). Rotate the cam back and forth to ease removal if necessary. Remove the clutch roller and spring assembly from the race afterward.

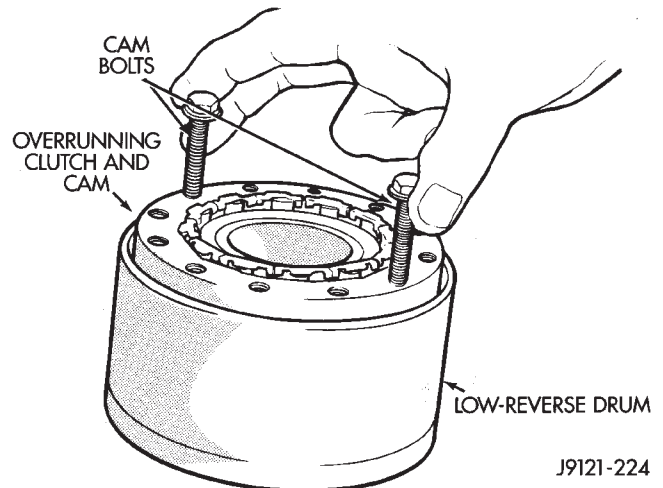
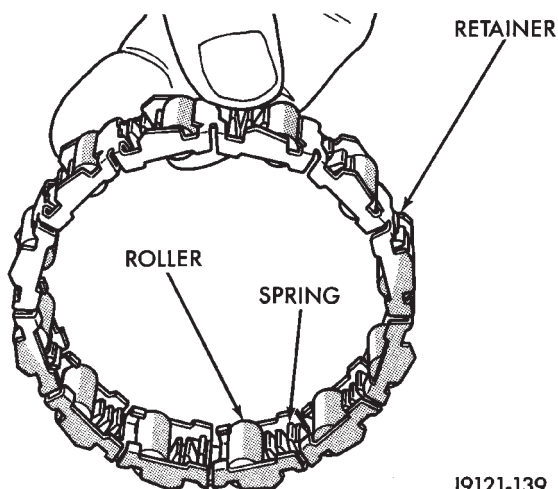


Fig. 188 Removing Overrunning Clutch From Low-Reverse Drum

DISASSEMBLY AND ASSEMBLY (Continued)

OVERRUNNING CLUTCH/LOW-REVERSE DRUM, ASSEMBLE

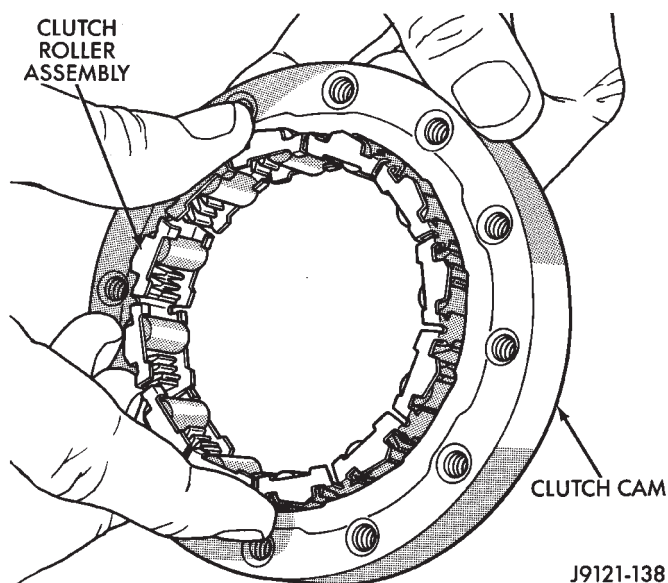
(1) Assemble clutch rollers and springs in retainer if necessary (Fig. 189).



J9121-139

Fig. 189 Overrunning Clutch Rollers, Springs, Retainer

(2) Install overrunning clutch roller, spring and retainer assembly in clutch cam (Fig. 190).

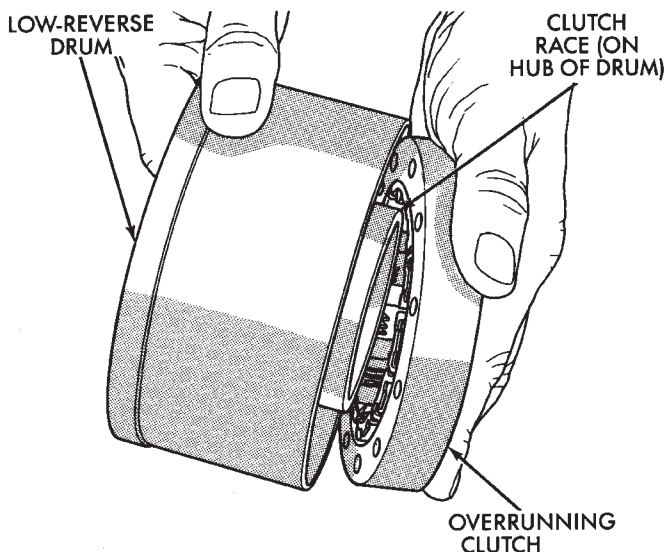


J9121-138

Fig. 190 Assembling Overrunning Clutch And Cam

(3) Temporarily assemble and check overrunning clutch operation as follows:

- (a) Assemble cam and clutch.
- (b) Install clutch assembly on low-reverse drum with twisting motion (Fig. 191).
- (c) Install drum-clutch assembly in case and install clutch cam bolts.
- (d) Install rear support and support attaching bolts.

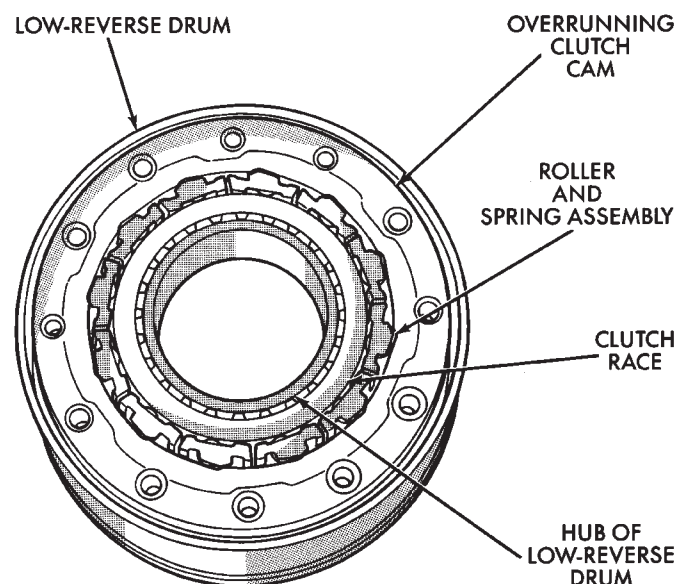


J9121-135

Fig. 191 Temporary Assembly Of Clutch And Drum To Check Operation

(e) Check low-reverse drum rotation. **Drum should rotate freely in clockwise direction and lock when turned in counterclockwise direction (as viewed from front of case).**

(4) Note component position for assembly reference. Bolt holes in clutch cam are countersunk on one side. Be sure this side of cam will face rearward when installed (Fig. 192).



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Fig. 192 Assembled Overrunning Clutch

(5) Remove rear support, overrunning clutch and low-reverse drum. Set components aside for final assembly. **If overrunning clutch will be installed**

DISASSEMBLY AND ASSEMBLY (Continued)

before final assembly, install cam only as described in Transmission Assembly And Adjustment section. Clutch cam must be properly indexed in case to fit and operate properly.

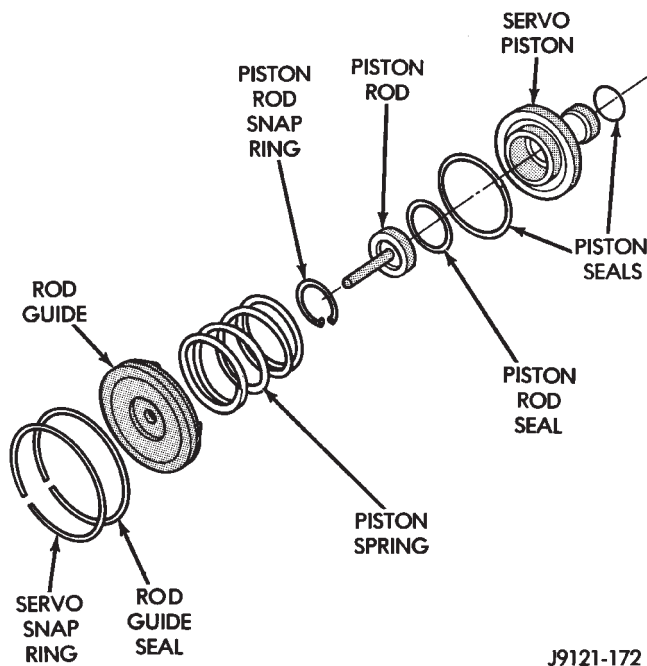
FRONT SERVO PISTON**DISASSEMBLE**

- (1) Remove seal ring from rod guide (Fig. 193).
- (2) Remove small snap ring from servo piston rod. Then remove piston rod, spring and washer from piston.
- (3) Remove and discard servo component O-ring and seal rings.

ASSEMBLE

Clean and inspect front servo components.

- (1) Lubricate new O-ring and seal rings with petroleum jelly and install them on piston, guide and rod.
- (2) Install rod in piston. Install spring and washer on rod. Compress spring and install snap ring (Fig. 193).
- (3) Set servo components aside for installation during transmission reassembly.



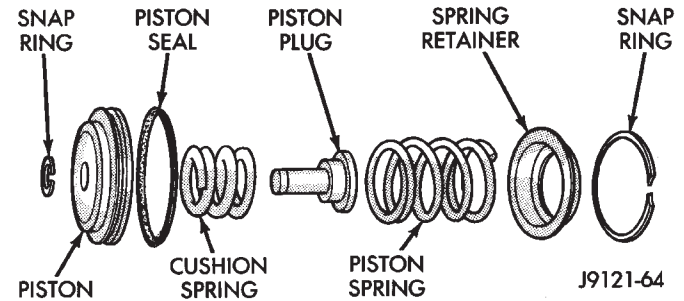
J9121-172

Fig. 193 Front Servo**REAR SERVO PISTON****DISASSEMBLE**

- (1) Remove small snap ring and remove plug and spring from servo piston (Fig. 194).
- (2) Remove and discard servo piston seal ring.
- (3) Lubricate piston and guide seals with petroleum jelly. Lubricate other servo parts with Mopar ATF Plus transmission fluid.

ASSEMBLE

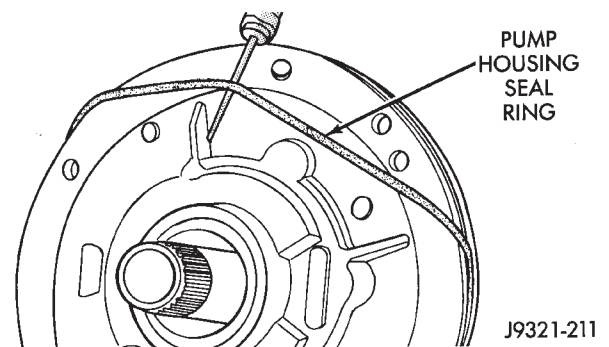
- (1) Install new seal ring on servo piston.
- (2) Assemble piston, plug, spring and new snap ring.
- (3) Lubricate piston seal lip with petroleum jelly.
- (4) Set servo components aside for assembly installation.



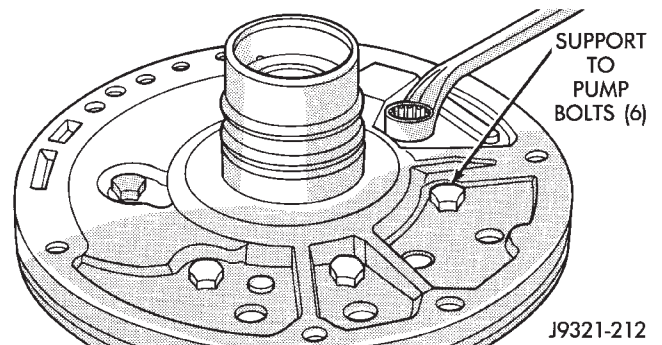
J9121-64

Fig. 194 Rear Servo Components**OIL PUMP AND REACTION SHAFT SUPPORT****DISASSEMBLE**

- (1) Remove seal ring from housing and reaction shaft support (Fig. 195).
- (2) Mark pump housing and support assembly for alignment reference.
- (3) Loosen bolts that attach pump body to support (Fig. 196).



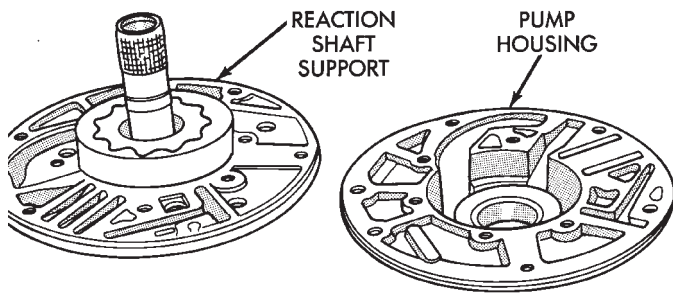
J9321-211

Fig. 195 Removing Pump Seal Ring

J9321-212

Fig. 196 Loosening Pump Support Bolts

DISASSEMBLY AND ASSEMBLY (Continued)



J9321-213

Fig. 197 Separating Pump Housing From Reaction Shaft Support

(4) Remove pump-to-support bolts and separate support from pump housing (Fig. 197).

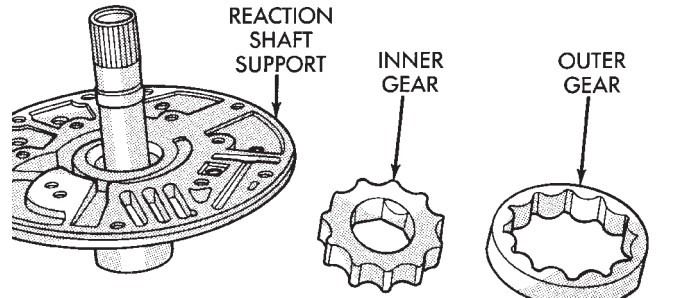
(5) Remove inner and outer gears from reaction shaft support (Fig. 198).

(6) If pump seal was not removed during transmission disassembly, remove seal with punch and hammer.

(7) Remove front clutch thrust washer from support hub (Fig. 199).

OIL PUMP BUSHING REPLACEMENT

(1) Remove pump bushing with Tool Handle C-4171 and Bushing Remover SP-3551 (Fig. 200).



J9321-214

Fig. 198 Pump Gear Removal

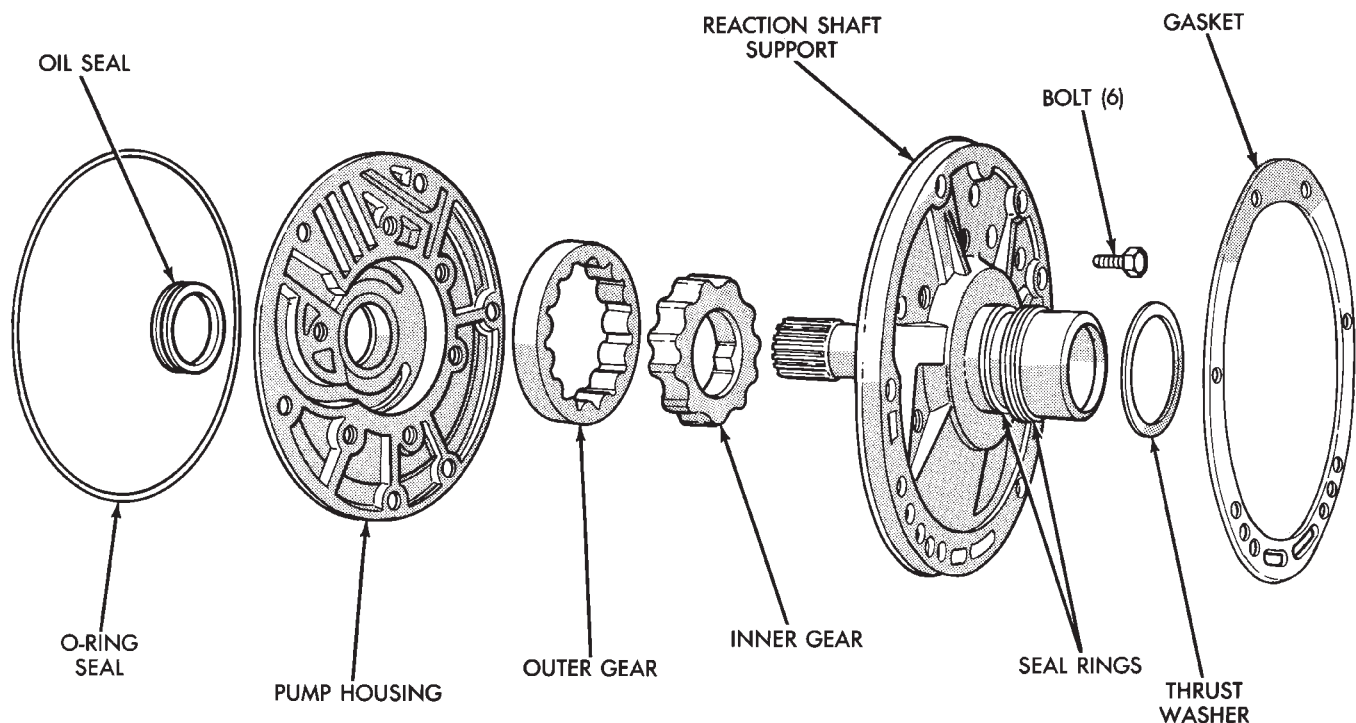
(2) Install new pump bushing with Tool Handle C-4171 and Bushing Installer SP-5117 (Fig. 200). Bushing should be flush with pump housing bore.

(3) Stake new pump bushing in two places with blunt punch (Fig. 201). Remove burrs from stake points with knife blade afterward.

REACTION SHAFT SUPPORT BUSHING REMOVAL

(1) Assemble Bushing Remover Tools SP-1191, 3633 and 5324 (Fig. 202). **Do not clamp any part of reaction shaft or support in vise.**

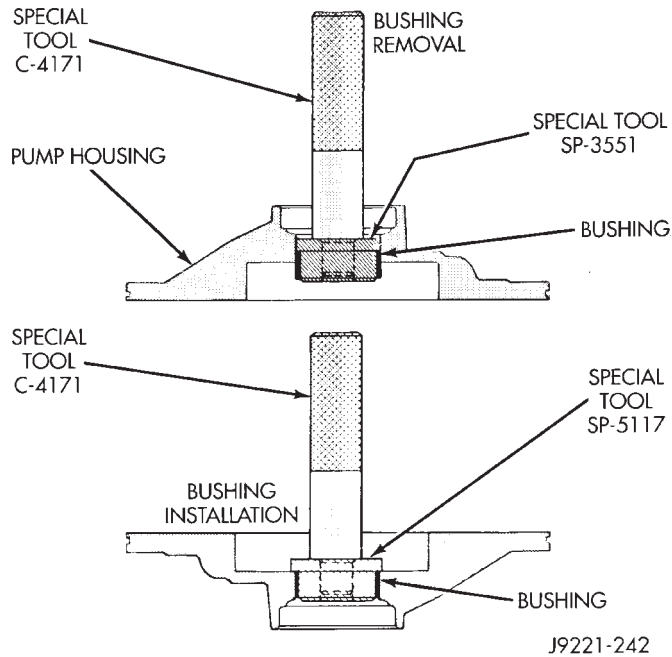
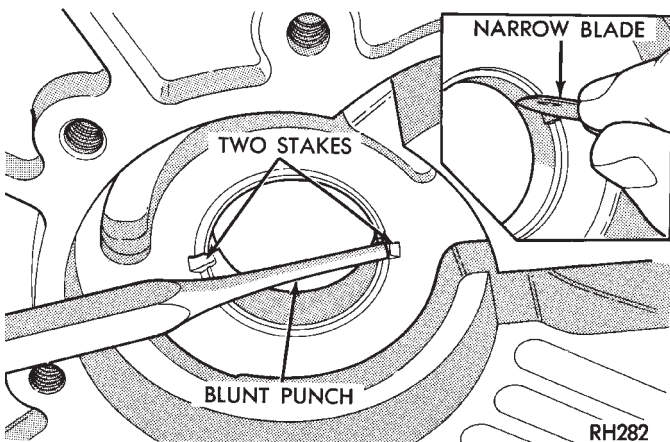
(2) Hold Cup Tool SP-3633 firmly against reaction shaft and thread remover SP-5324 into bushing as



J9421-151

Fig. 199 Oil Pump And Reaction Shaft Support Components

DISASSEMBLY AND ASSEMBLY (Continued)

**Fig. 200 Removing Oil Pump Bushing****Fig. 201 Staking Oil Pump Bushing**

far as possible by hand. Then thread remover tool 3-4 additional turns into bushing with a wrench.

(3) Turn remover tool hex nut down against remover cup to pull bushing from shaft. Clean all chips from shaft after bushing removal.

(4) Lightly grip old bushing in vise or with pliers and back remover tool out of bushing.

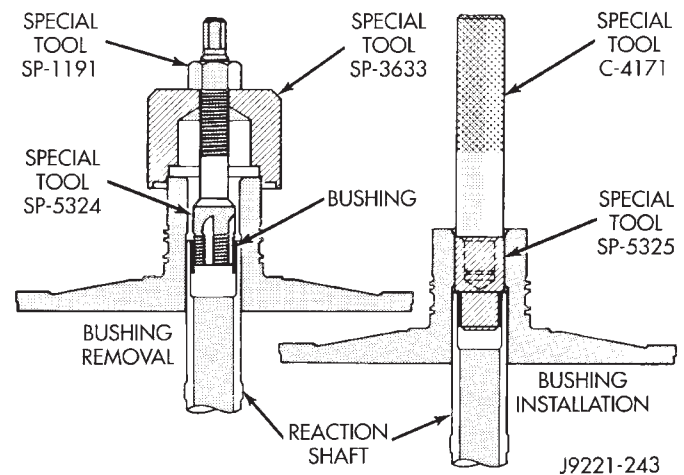
(5) Assemble Bushing Installer Tools C-4171 and SP-5325 (Fig. 202).

(6) Slide new bushing onto Installer Tool SP-5325.

(7) Position reaction shaft support upright on a clean smooth surface.

(8) Align bushing in bore. Then tap bushing into place until Bushing Installer SP-5325 bottoms.

(9) Clean reaction shaft support thoroughly after installing bushing.

**Fig. 202 Replacing Reaction Shaft Support Bushing**
OIL PUMP AND REACTION SHAFT SUPPORT ASSEMBLE

(1) Lubricate gear bore in pump housing with transmission fluid.

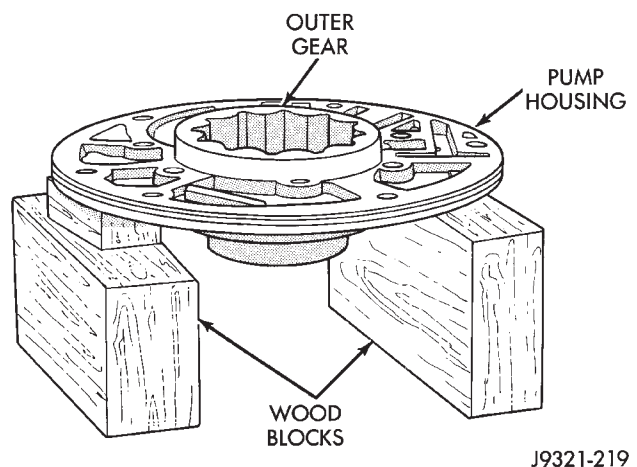
(2) Lubricate pump gears with transmission fluid.

(3) Support pump housing on wood blocks (Fig. 203).

(4) Install outer gear in pump housing (Fig. 203). Gear can be installed either way (it is not a one-way fit).

(5) Install pump inner gear (Fig. 204).

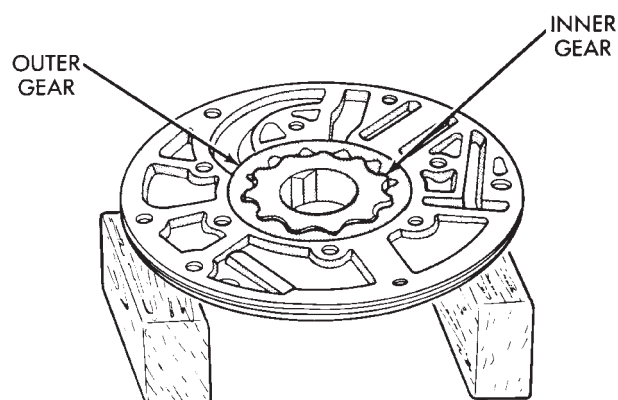
CAUTION: The pump inner gear is a one way fit. The bore on one side of the gear inside diameter (I.D.) is chamfered. Be sure the chamfered side faces forward (to front of pump).

**Fig. 203 Supporting Pump And Installing Outer Gear**

(6) Install new thrust washer on hub of reaction shaft support. Lubricate washer with transmission fluid or petroleum jelly.

(7) If reaction shaft seal rings are being replaced, install new seal rings on support hub (Fig. 205).

DISASSEMBLY AND ASSEMBLY (Continued)

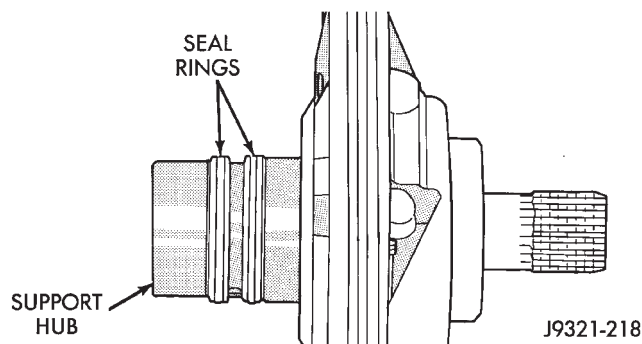


J9321-465

Fig. 204 Pump Inner Gear Installation

Lubricate seal rings with transmission fluid or petroleum jelly after installation. Squeeze each ring until ring ends are securely hooked together.

CAUTION: The reaction shaft support seal rings will break if overspread, or twisted. If new rings are being installed, spread them only enough for installation. Also be very sure the ring ends are securely hooked together after installation. Otherwise, the rings will either prevent pump installation, or break during installation.



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Fig. 205 Hub Seal Ring Position

(8) Install reaction shaft support on pump housing (Fig. 206).

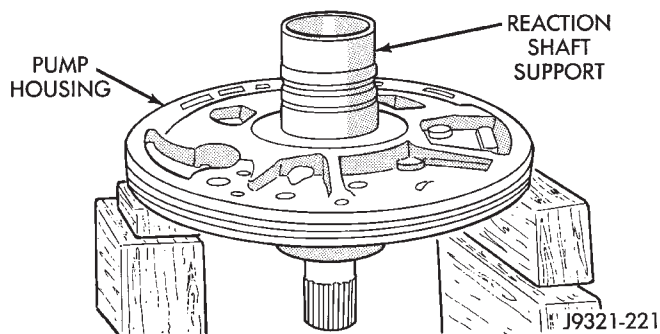
(9) Align reaction support on pump housing. Use alignment marks made at disassembly. Or, rotate support until bolt holes in support and pump housing are all aligned (holes are offset for one-way fit).

(10) Install all bolts that attach support to pump housing. Then tighten bolts finger tight.

(11) Tighten support-to-pump bolts to required torque as follows:

(a) Reverse pump assembly and install it in transmission case. Position pump so bolts are facing out and are accessible.

(b) Secure pump assembly in case with 2 or 3 bolts, or with pilot studs.



J9321-221

Fig. 206 Assembling Reaction Shaft Support And Pump Housing

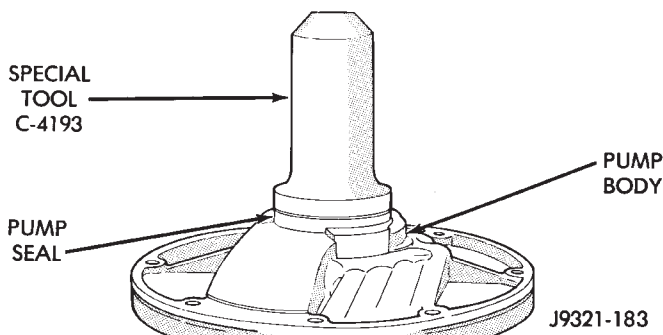
(c) Tighten support-to-pump bolts to 20 N·m (15 ft. lbs.).

(d) Remove pump assembly from transmission case.

(12) Install new oil seal in pump with Special Tool C-4193 and Tool Handle C-4171 (Fig. 207). Be sure seal lip faces inward.

(13) Install new seal ring around pump housing. Be sure seal is properly seated in groove.

(14) Lubricate lip of pump oil seal and O-ring seal with transmission fluid.



J9321-183

Fig. 207 Pump Oil Seal Installation**FRONT CLUTCH****DISASSEMBLE**

(1) Remove waved snap ring and remove pressure plate, clutch plates and clutch discs (Fig. 208).

(2) Compress clutch piston spring with Compressor Tool C-3575-A (Fig. 209). Be sure legs of tool are seated squarely on spring retainer before compressing spring.

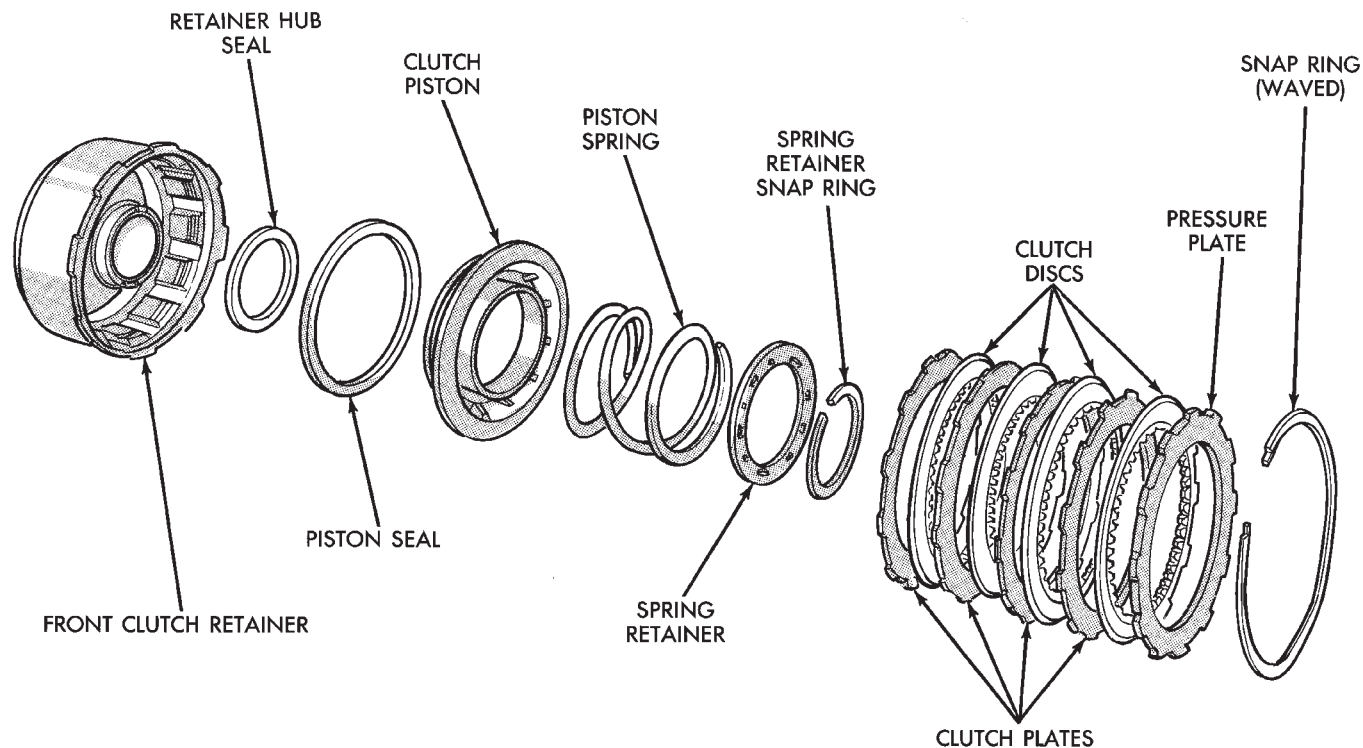
(3) Remove retainer snap ring and remove compressor tool.

(4) Remove spring retainer and clutch spring. Note position of retainer on spring for assembly reference.

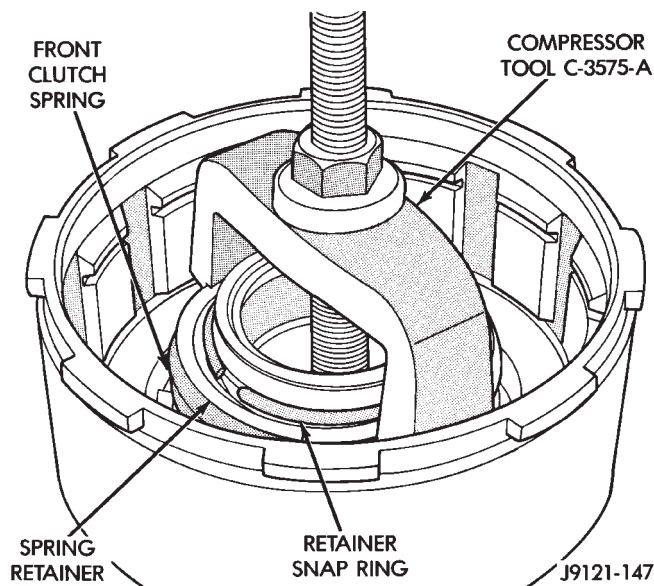
(5) Remove clutch piston from clutch retainer. Remove piston by rotating it up and out of retainer.

(6) Remove seals from clutch piston and clutch retainer hub. Discard both seals as they are not reusable.

DISASSEMBLY AND ASSEMBLY (Continued)



J9321-222

Fig. 208 Front Clutch Components

J9121-147

Fig. 209 Compressing Front Clutch Piston Spring ASSEMBLE

(1) Soak clutch discs in transmission fluid while assembling other clutch parts.

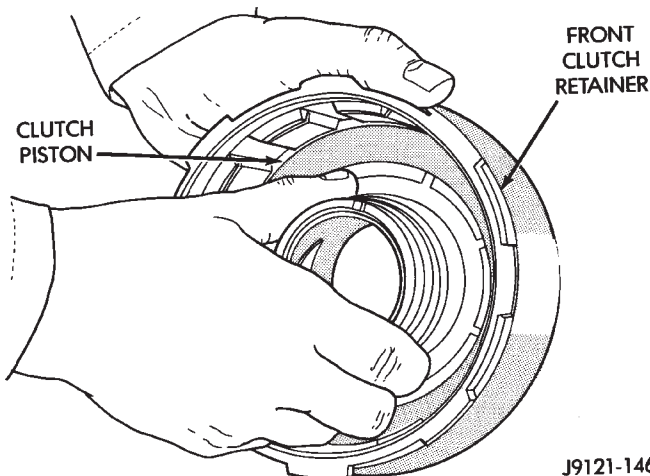
(2) Install new seals on piston and in hub of retainer. Be sure lip of each seal faces interior of clutch retainer.

(3) Lubricate lips of piston and retainer seals with liberal quantity of Mopar Door Ease, or Ru-Glyde.

Then lubricate retainer hub, bore and piston with light coat of transmission fluid.

(4) Install clutch piston in retainer (Fig. 210). Use twisting motion to seat piston in bottom of retainer. A thin strip of plastic (about 0.020" thick), can be used to guide seals into place if necessary.

CAUTION: Never push the clutch piston straight in. This will fold the seals over causing leakage and clutch slip. In addition, never use any type of metal tool to help ease the piston seals into place. Metal tools will cut, shave, or score the seals.



J9121-146

Fig. 210 Front Clutch Piston Installation

DISASSEMBLY AND ASSEMBLY (Continued)

(5) Position spring in clutch piston (Fig. 211).

(6) Position spring retainer on top of piston spring (Fig. 212). **Make sure retainer is properly installed. Small raised tabs should be facing upward. Semicircular lugs on underside of retainer are for positioning retainer in spring.**

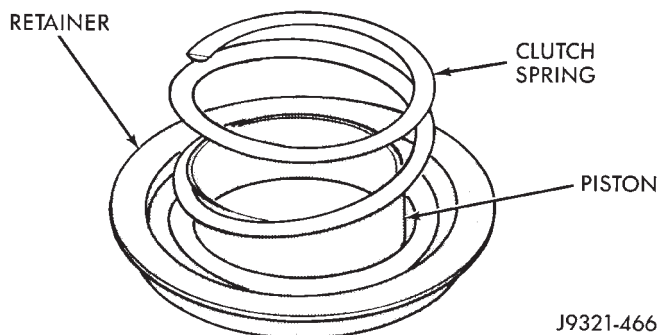


Fig. 211 Clutch Piston Spring Installation

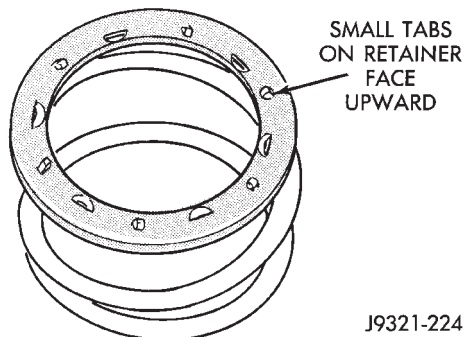


Fig. 212 Correct Spring Retainer Installed Position

(7) Compress piston spring and retainer with Compressor Tool C-3575-A (Fig. 209). Then install new snap ring to secure spring retainer and spring.

(8) Install clutch plates and discs (Fig. 208). Install steel plate then disc until all plates and discs are installed. The front clutch uses 4 clutch discs.

(9) Install pressure plate and waved snap ring (Fig. 208).

(10) Check clutch plate clearance (Fig. 213). Clearance should be 1.70 to 3.40 mm (0.067 to 0.134 in.). If clearance is incorrect, clutch discs, plates pressure plates and snap ring may have to be changed.

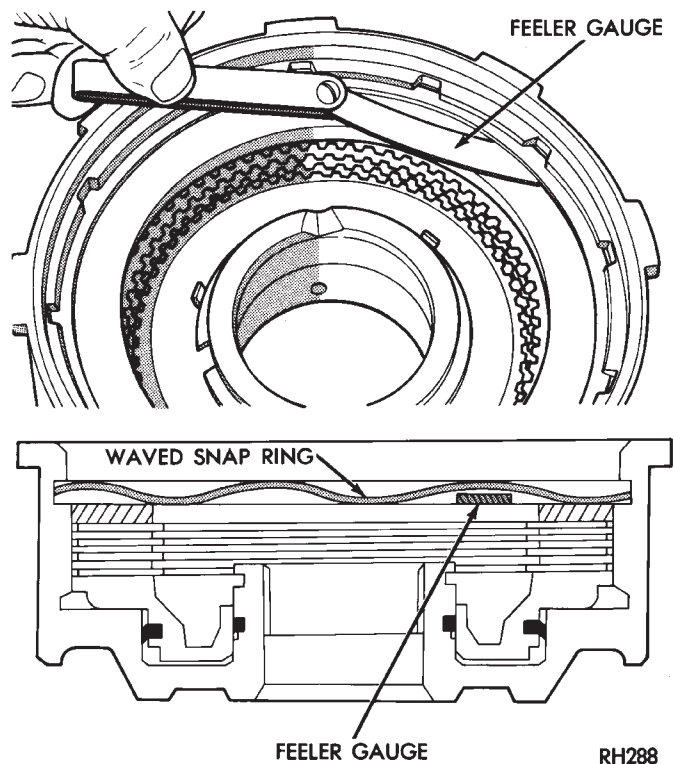
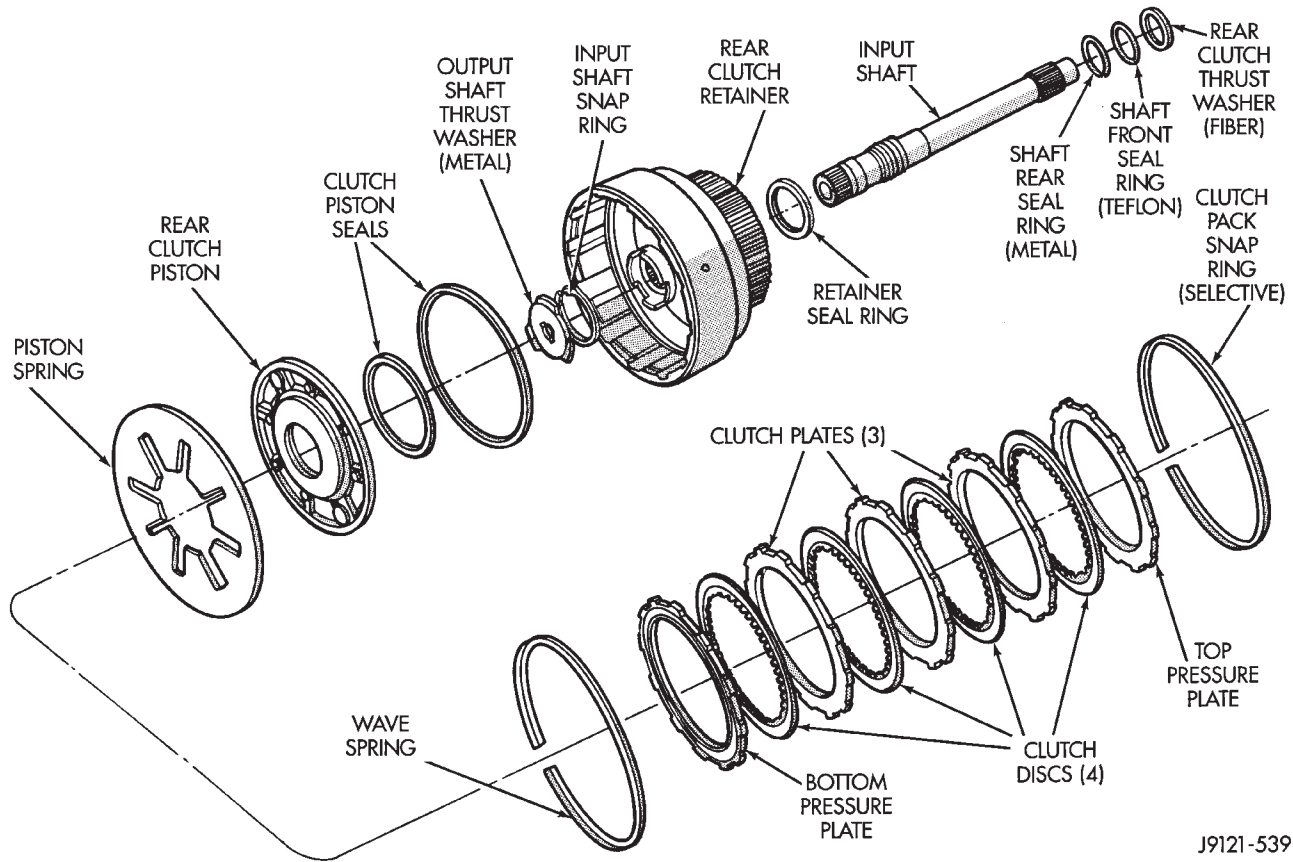


Fig. 213 Typical Method Of Measuring Front Clutch Pack Clearance

DISASSEMBLY AND ASSEMBLY (Continued)



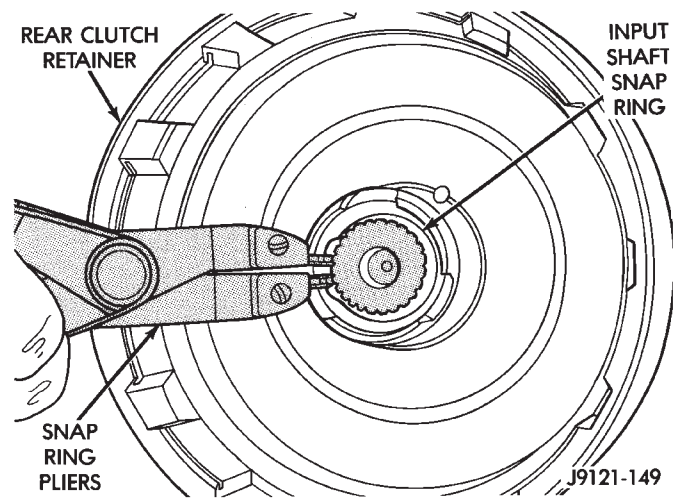
J9121-539

Fig. 214 Rear Clutch Components**REAR CLUTCH****DISASSEMBLE**

- (1) Remove fiber thrust washer from forward side of clutch retainer.
- (2) Remove selective clutch pack snap ring (Fig. 214).
- (3) Remove top pressure plate, clutch discs, steel plates, bottom pressure plate and wave spring (Fig. 214).
- (4) Remove clutch piston with rotating motion.
- (5) Remove and discard piston seals.
- (6) Remove input shaft snap ring (Fig. 215).
- (7) Press input shaft out of retainer with shop press and suitable size press tool (Fig. 216).
- (8) Remove input shaft front/rear seal rings.

ASSEMBLE

- (1) Soak clutch discs in transmission fluid while assembling other clutch parts.
- (2) Install new seal rings on clutch retainer hub and input shaft if necessary (Fig. 217).
 - (a) Be sure clutch hub seal ring is fully seated in groove and is not twisted.
 - (b) Note that input shaft front seal ring is teflon and rear seal ring is metal (Fig. 218). Be sure chamfered ends of teflon ring are properly joined



J9121-149

Fig. 215 Removing/Installing Input Shaft Snap Ring

and that ends of rear ring are securely hooked together. Lubricate both rings with transmission fluid after installation.

- (3) Lubricate splined end of input shaft and clutch retainer with transmission fluid. Then press input shaft into retainer (Fig. 219).
- (4) Install input shaft snap ring (Fig. 215).
- (5) Install new seals on clutch piston. Be sure lip of each seal faces interior of clutch retainer.

DISASSEMBLY AND ASSEMBLY (Continued)

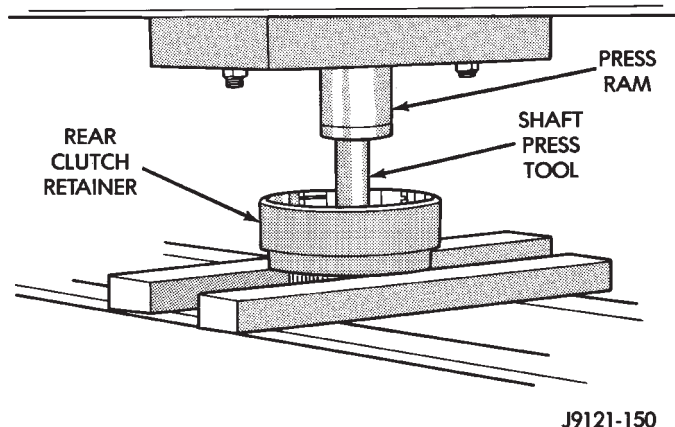


Fig. 216 Pressing Input Shaft Out Of Rear Clutch Retainer

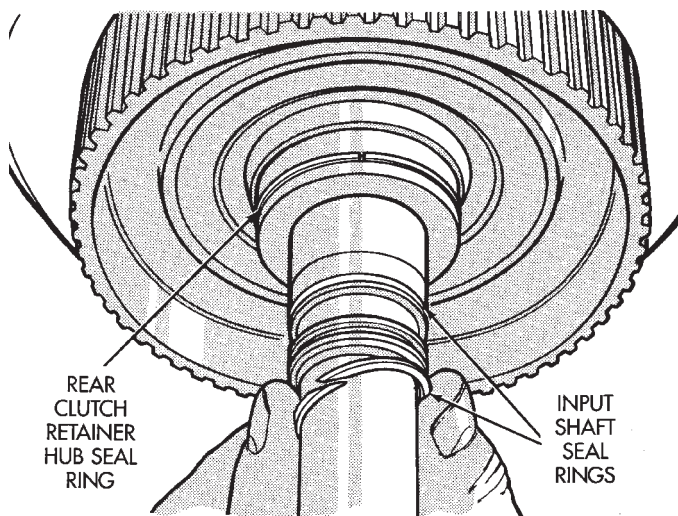


Fig. 217 Rear Clutch Retainer And Input Shaft Seal Ring Installation

(6) Lubricate lip of piston seals with generous quantity of Mopar Door Ease, or Ru-Glyde. Then lubricate retainer hub and bore with light coat of transmission fluid.

(7) Install clutch piston in retainer. Use twisting motion to seat piston in bottom of retainer. A thin strip of plastic (about 0.020" thick), can be used to guide seals into place if necessary.

CAUTION: Never push the clutch piston straight in. This will fold the seals over causing leakage and clutch slip. In addition, never use any type of metal tool to help ease the piston seals into place. Metal tools will cut, shave, or score the seals.

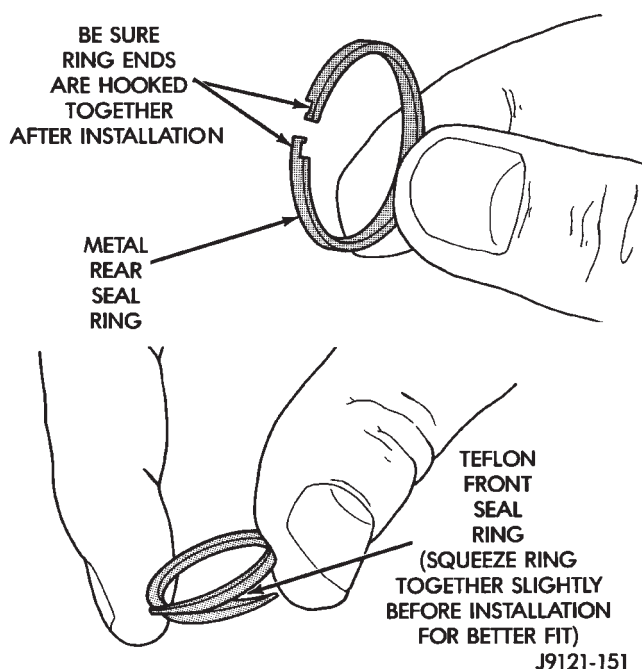


Fig. 218 Input Shaft Seal Ring Identification

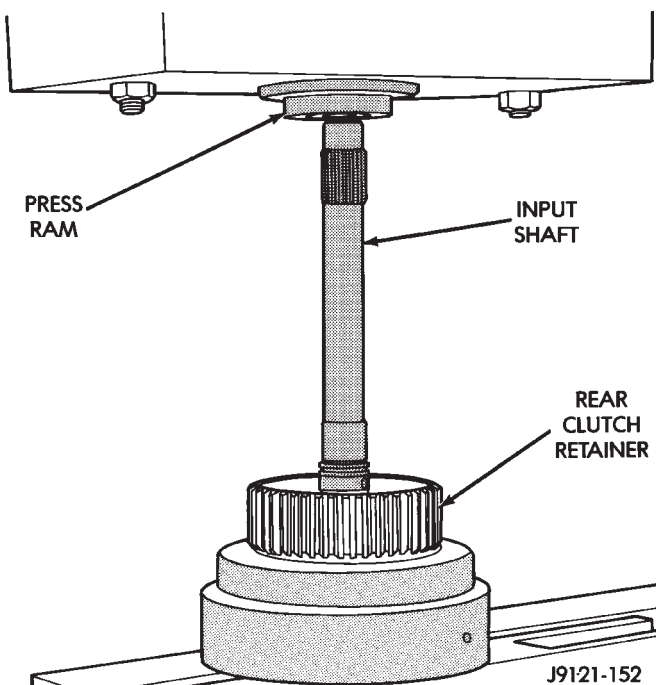


Fig. 219 Pressing Input Shaft Into Rear Clutch Retainer

(8) Install piston spring in retainer and on top of piston (Fig. 220). Concave side of spring faces downward (toward piston).

(9) Install wave spring in retainer (Fig. 220). Be sure spring is completely seated in retainer groove.

(10) Install bottom pressure plate (Fig. 214). Ridged side of plate faces downward (toward piston) and flat side toward clutch pack.

DISASSEMBLY AND ASSEMBLY (Continued)

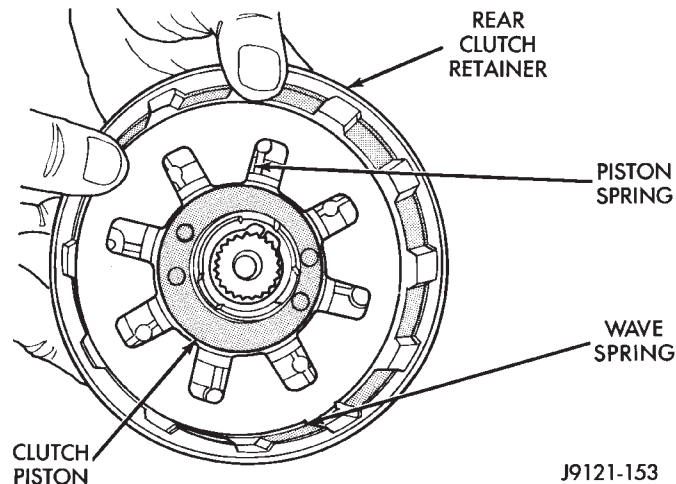


Fig. 220 Piston Spring/Wave Spring Position

(11) Install first clutch disc in retainer on top of bottom pressure plate. Then install a clutch plate followed by a clutch disc until entire clutch pack is installed (4 discs and 3 plates are required) (Fig. 214).

(12) Install top pressure plate.

(13) Install selective snap ring. Be sure snap ring is fully seated in retainer groove.

(14) Measure clutch pack clearance (Fig. 221). Clearance should be 0.64 - 1.14 mm (0.025 - 0.045 in.). If clearance is incorrect, steel plates, discs, snap ring and pressure plates may have to be changed.

(15) Coat rear clutch fiber thrust washer with petroleum jelly and install washer over input shaft and into clutch retainer (Fig. 222). Use enough petroleum jelly to hold washer in place.

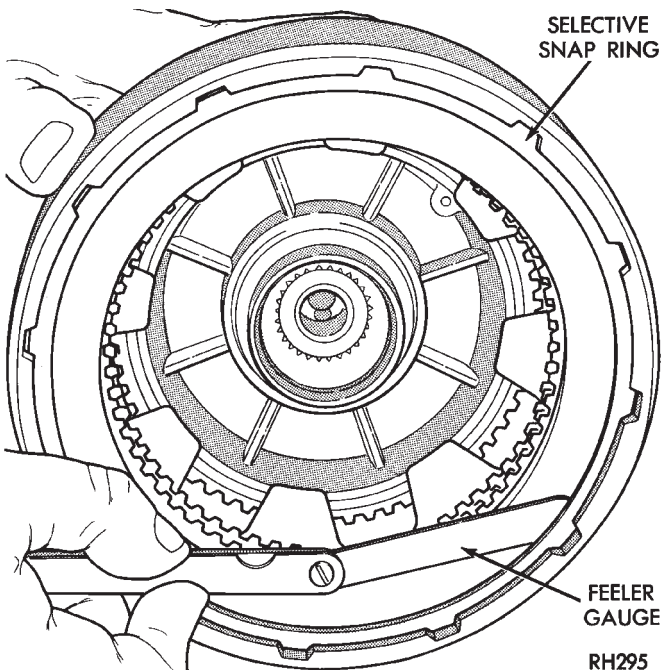


Fig. 221 Typical Method Of Checking Rear Clutch Pack Clearance

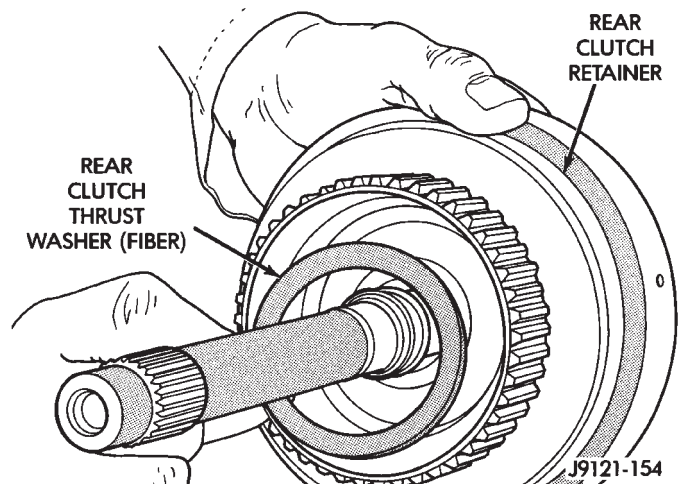


Fig. 222 Installing Rear Clutch Thrust Washer

(16) Set rear clutch aside for installation during final assembly.

PLANETARY GEARTRAIN/OUTPUT SHAFT

DISASSEMBLE

(1) Remove planetary snap ring (Fig. 223).

(2) Remove front annulus and planetary assembly from driving shell (Fig. 223).

(3) Remove snap ring that retains front planetary gear in annulus gear (Fig. 224).

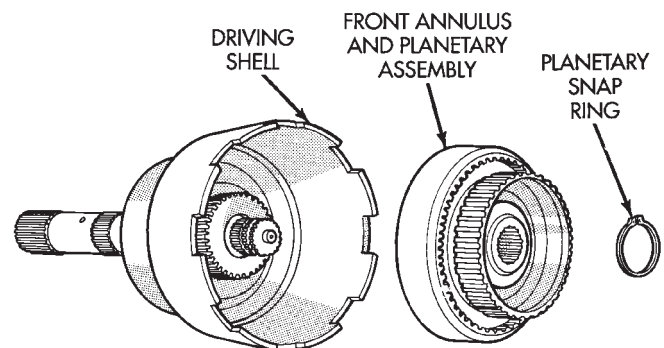


Fig. 223 Front Annulus And Planetary Assembly Removal

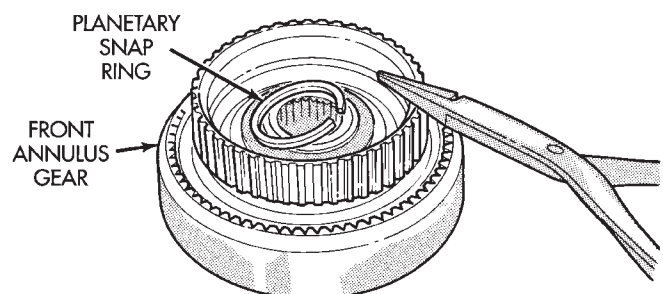
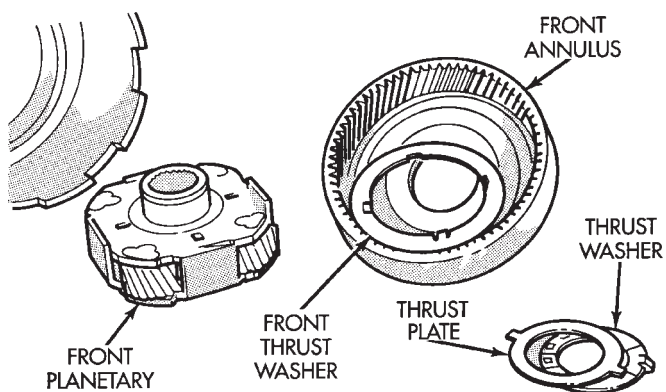


Fig. 224 Front Planetary Snap Ring Removal

DISASSEMBLY AND ASSEMBLY (Continued)



J9421-177

Fig. 225 Front Planetary And Annulus Gear Disassembly

(4) Remove tabbed thrust washer and tabbed thrust plate from hub of front annulus (Fig. 225).

(5) Separate front annulus and planetary gears (Fig. 225).

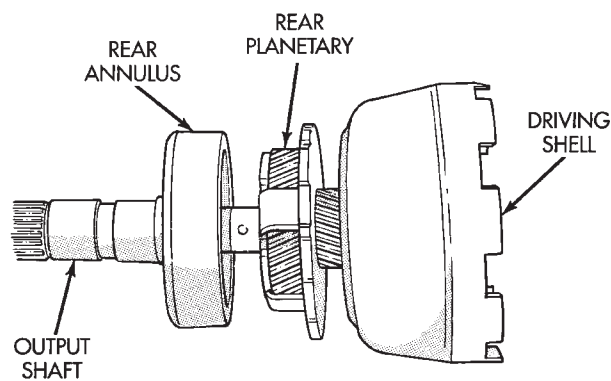
(6) Remove front planetary gear front thrust washer from annulus gear hub.

(7) Remove front planetary rear thrust washer from driving shell.

(8) Separate and remove driving shell, rear planetary and rear annulus from output shaft (Fig. 226).

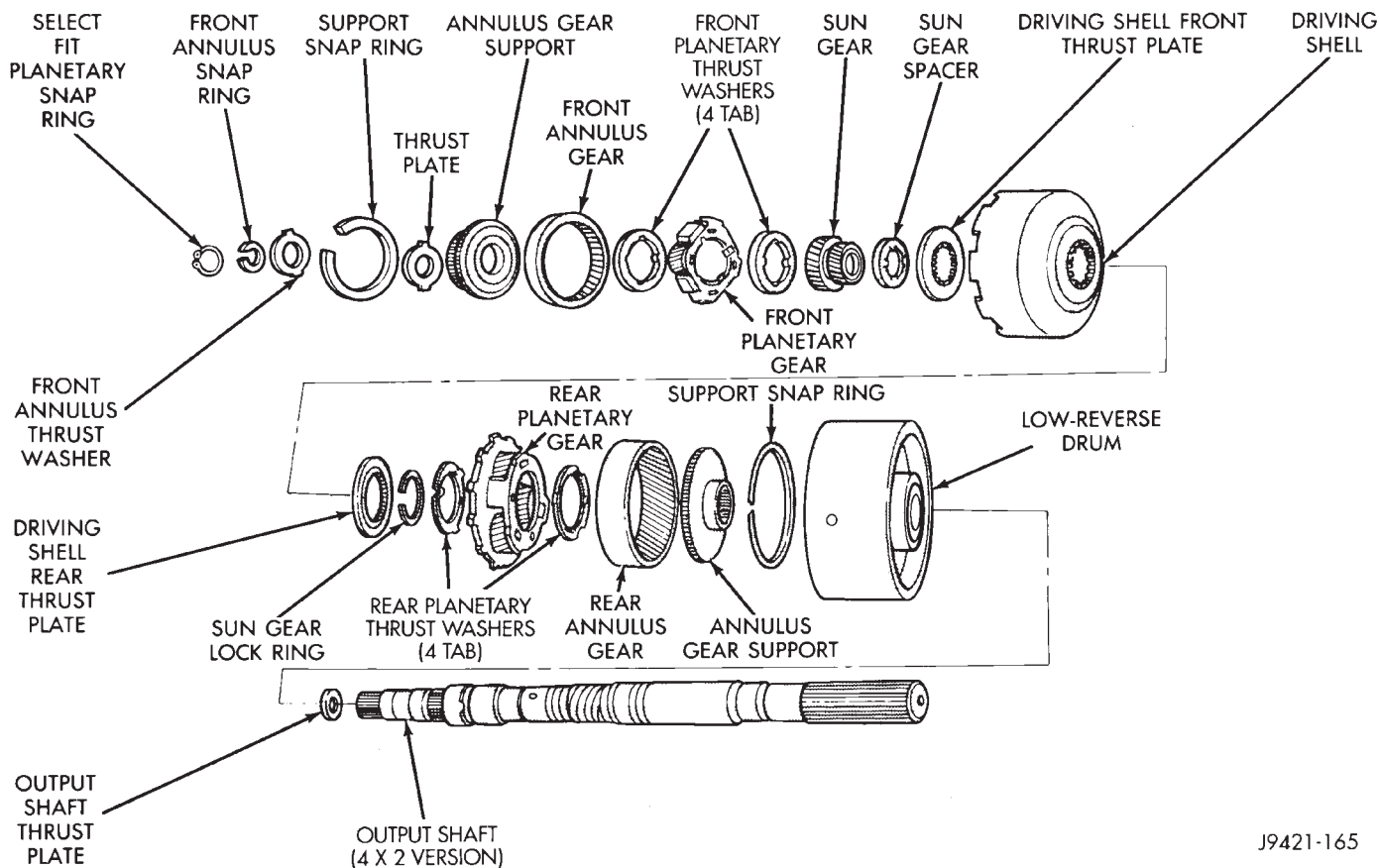
(9) Remove tabbed thrust washers from rear planetary gear.

(10) Remove snap ring that retains sun gear in driving shell. Then remove sun gear, spacer and thrust plates.



J9421-178

Fig. 226 Removing Driving Shell, Rear Planetary And Rear Annulus



J9421-165

Fig. 227 Planetary Geartrain Components

DISASSEMBLY AND ASSEMBLY (Continued)

ASSEMBLE

(1) Lubricate output shaft and planetary components with transmission fluid. Use petroleum jelly to lubricate and hold thrust washers and plates in position.

(2) Assemble rear annulus gear and support if disassembled. Be sure support snap ring is seated and that shoulder-side of support faces rearward (Fig. 228).

(3) Install rear thrust washer on rear planetary gear (Fig. 227). Use enough petroleum jelly to hold washer in place. Also be sure all four washer tabs are properly engaged in gear slots.

(4) Install rear annulus over and onto rear planetary gear (Fig. 228).

(5) Install assembled rear planetary and annulus gear on output shaft (Fig. 229). Verify that assembly is fully seated on shaft.

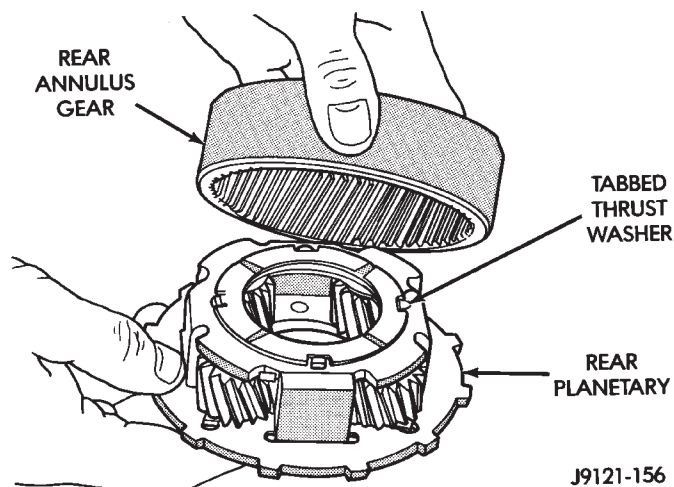


Fig. 228 Assembling Rear Annulus And Planetary Gear

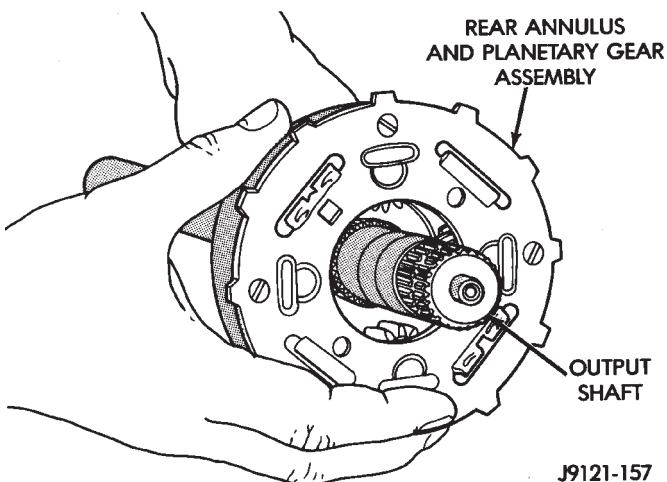


Fig. 229 Installing Rear Annulus And Planetary On Output Shaft

(6) Install front thrust washer on rear planetary gear (Fig. 230). Use enough petroleum jelly to hold washer on gear. Be sure all four washer tabs are seated in slots.

(7) Install spacer on sun gear (Fig. 231).

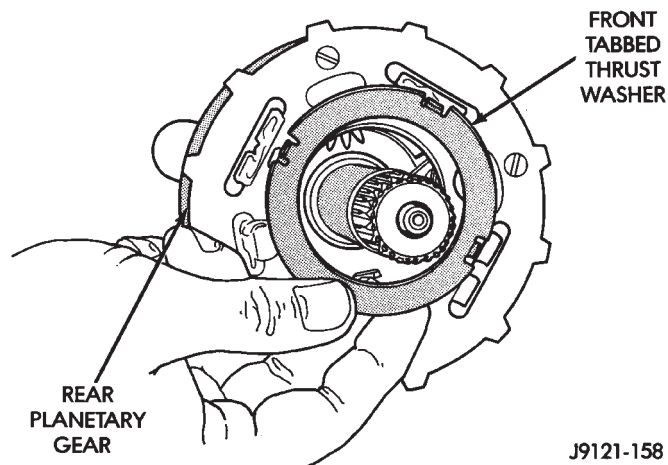


Fig. 230 Installing Rear Planetary Front Thrust Washer

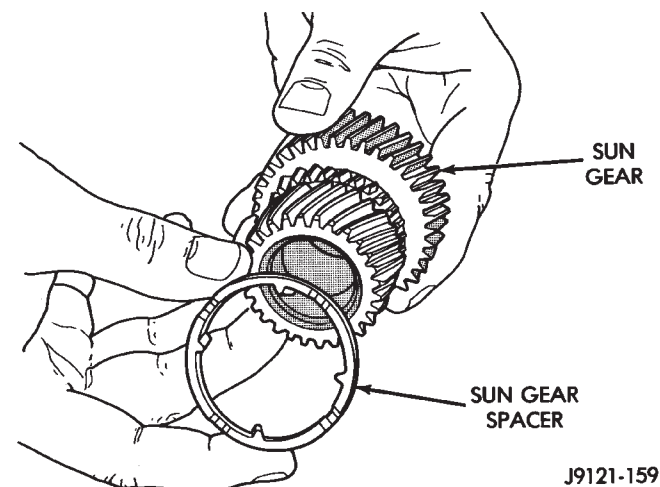


Fig. 231 Installing Spacer On Sun Gear

DISASSEMBLY AND ASSEMBLY (Continued)

(8) Install thrust plate on sun gear (Fig. 232). Note that driving shell thrust plates are interchangeable. Use either plate on sun gear and at front/rear of shell.

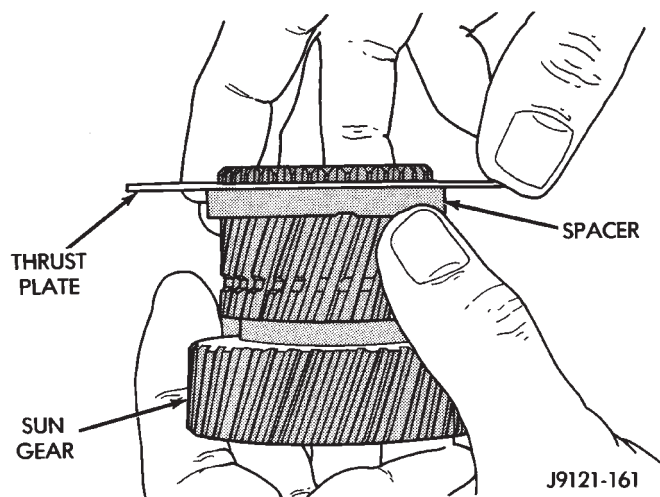


Fig. 232 Installing Driving Shell Front Thrust Plate On Sun Gear

(9) Hold sun gear in place and install thrust plate over sun gear at rear of driving shell (Fig. 233).

(10) Position wood block on bench and support sun gear on block (Fig. 234). This makes it easier to align and install sun gear lock ring. Keep wood block handy as it will also be used for geartrain end play check.

(11) Align rear thrust plate on driving shell and install sun gear lock ring. Be sure ring is fully seated in sun gear ring groove (Fig. 235).

(12) Install assembled driving shell and sun gear on output shaft (Fig. 236)..

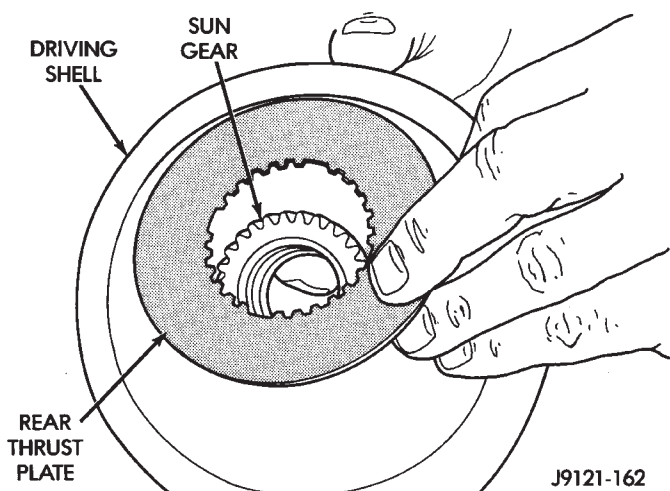


Fig. 233 Installing Driving Shell Rear Thrust Plate

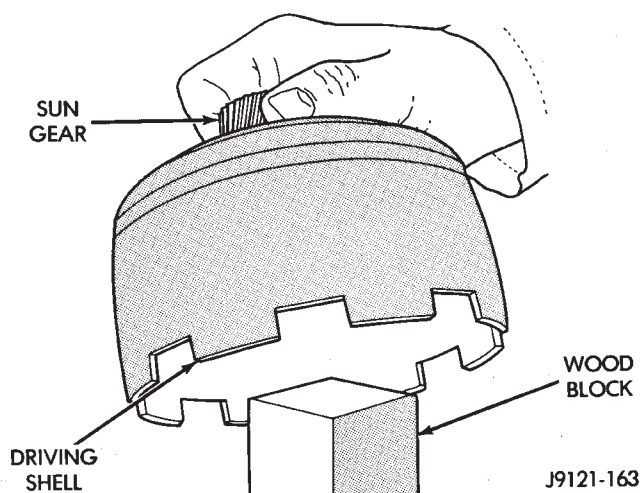


Fig. 234 Supporting Sun Gear On Wood Block

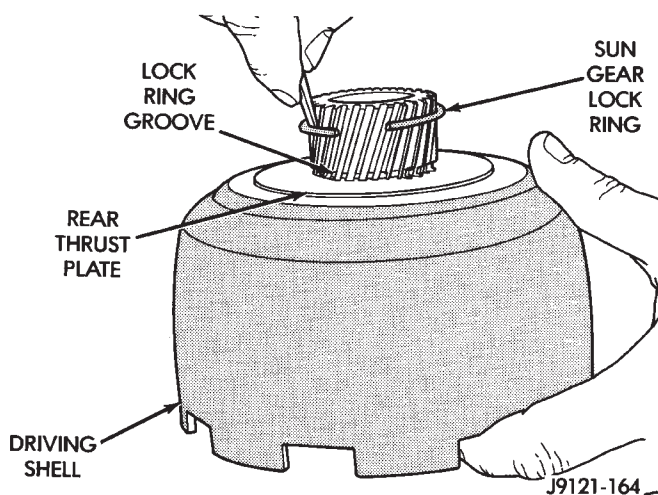


Fig. 235 Installing Sun Gear Lock Ring

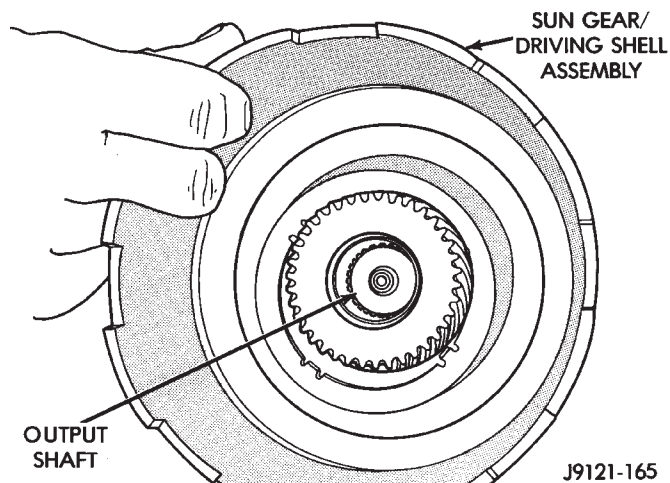


Fig. 236 Installing Assembled Sun Gear And Driving Shell On Output Shaft

DISASSEMBLY AND ASSEMBLY (Continued)

(13) Install rear thrust washer on front planetary gear (Fig. 237). Use enough petroleum jelly to hold washer in place and be sure all four washer tabs are seated

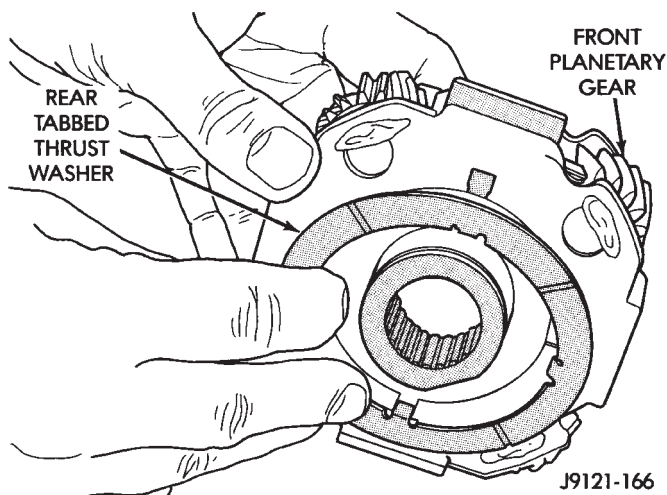


Fig. 237 Installing Rear Thrust Washer On Front Planetary Gear

(14) Install front planetary gear on output shaft and in driving shell (Fig. 238).

(15) Install front thrust washer on front planetary gear. Use enough petroleum jelly to hold washer in place and be sure all four washer tabs are seated.

(16) Assemble front annulus gear and support, if necessary. Be sure support snap ring is seated.

(17) Install front annulus on front planetary (Fig. 238).

(18) Position thrust plate on front annulus gear support (Fig. 239). **Note that plate has two tabs on it. These tabs fit in notches of annulus hub.**

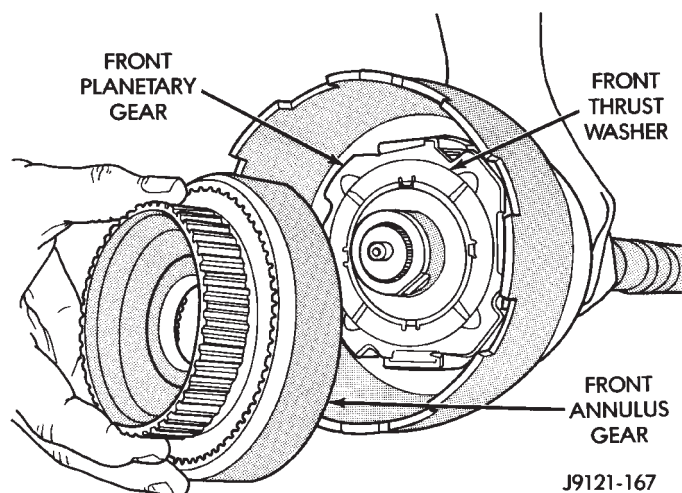


Fig. 238 Installing Front Planetary And Annulus Gears

(19) Install thrust washer in front annulus (Fig. 240). **Align flat on washer with flat on planetary hub. Also be sure washer tab is facing up.**

(20) Install front annulus snap ring (Fig. 241). Use snap ring pliers to avoid distorting ring during installation. Also be sure ring is fully seated.

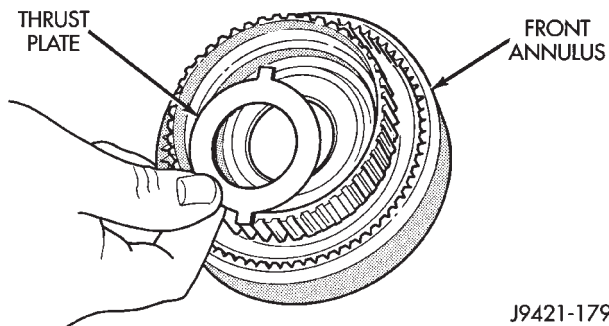


Fig. 239 Positioning Thrust Plate On Front Annulus Support

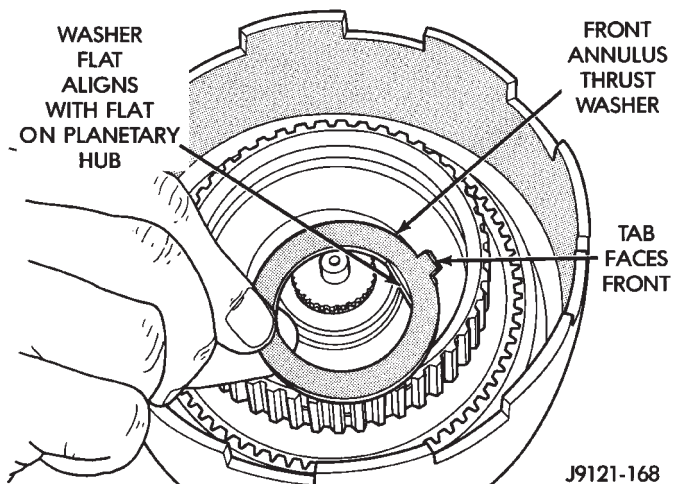


Fig. 240 Installing Front Annulus Thrust Washer

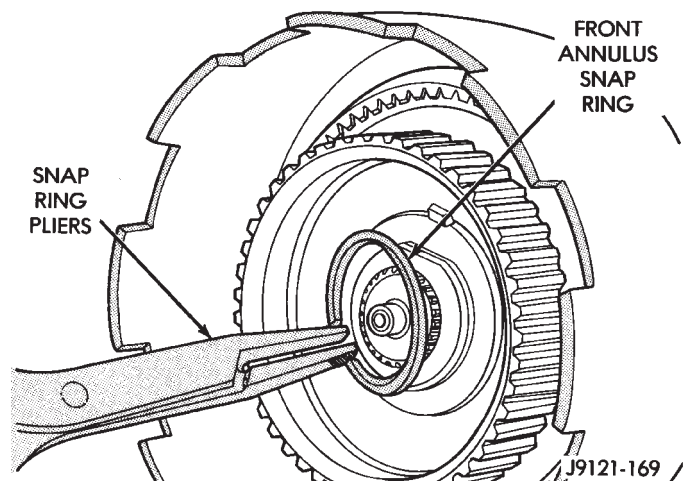


Fig. 241 Installing Front Annulus Snap Ring

DISASSEMBLY AND ASSEMBLY (Continued)

(21) Install planetary selective snap ring with snap ring pliers (Fig. 242). Be sure ring is fully seated.

(22) Turn planetary geartrain assembly over so driving shell is facing workbench. Then support geartrain on wood block positioned under forward end of output shaft. This allows geartrain components to move forward for accurate end play check.

(23) Check planetary geartrain end play with feeler gauge (Fig. 243). Gauge goes between shoulder on output shaft and end of rear annulus support.

(24) Geartrain end play should be 0.12 to 1.22 mm (0.005 to 0.048 in.). If end play is incorrect, snap ring (or thrust washers) may have to be replaced. Snap

ring is available in three different thicknesses for adjustment purposes.

OVERDRIVE UNIT**DISASSEMBLE****OVERDRIVE REMOVAL**

(1) Remove transmission speed sensor and O-ring seal from overdrive case (Fig. 244).

(2) Place transmission in upright position (Fig. 245).

(3) Remove bolts attaching overdrive unit to transmission case (Fig. 245). Note position of wire harness clips for installation reference.

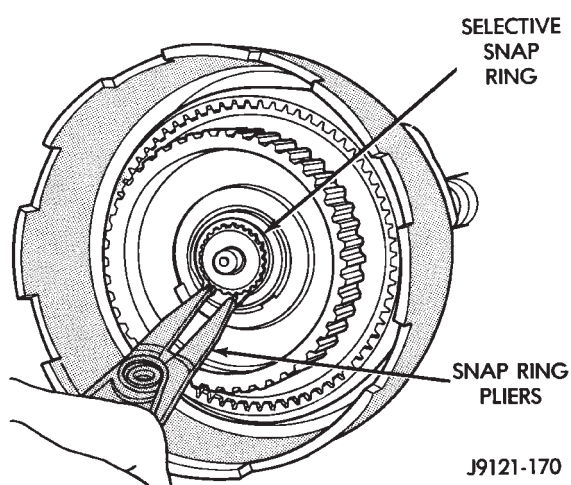


Fig. 242 Installing Planetary Selective Snap Ring

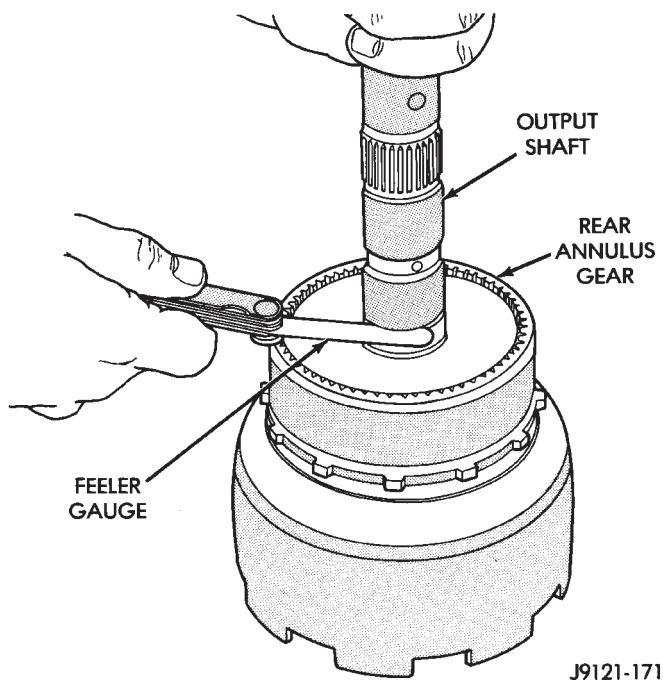


Fig. 243 Checking Planetary Geartrain End Play

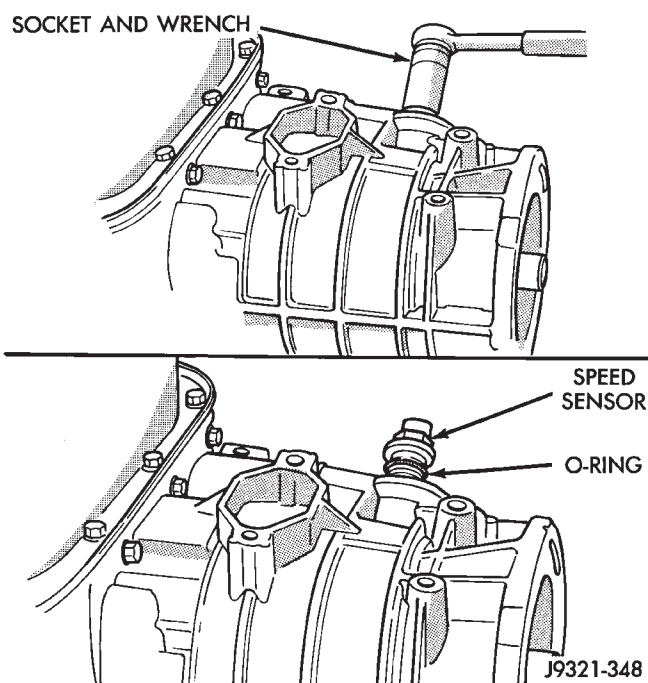


Fig. 244 Transmission Speed Sensor Removal/Installation

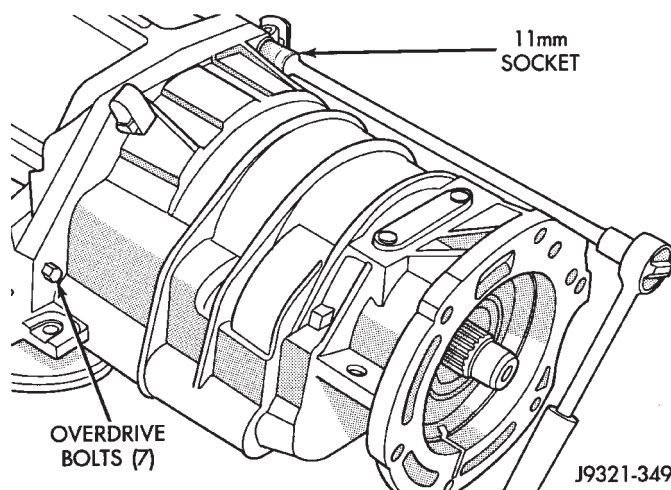


Fig. 245 Overdrive Unit Attaching Bolt Removal

DISASSEMBLY AND ASSEMBLY (Continued)

(4) Lift overdrive unit up and off transmission case and intermediate shaft (Fig. 246).

(5) Remove overdrive piston thrust bearing (Fig. 247).

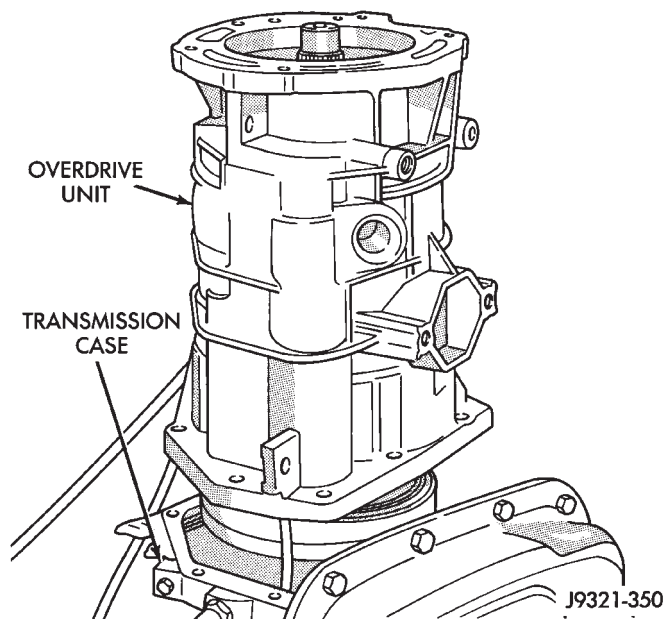


Fig. 246 Overdrive Unit Removal/Installation

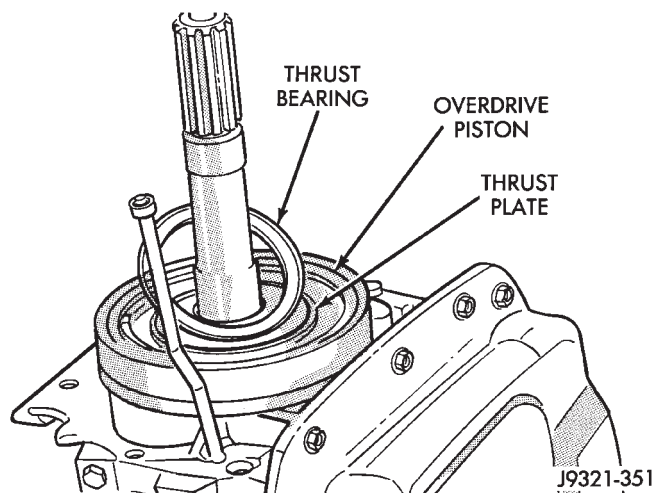


Fig. 247 Overdrive Piston Thrust Bearing Removal/Installation

OVERDRIVE PISTON REMOVAL

(1) Remove overdrive piston thrust plate (Fig. 248). Retain thrust plate. It is a select fit part and may possibly be reused.

(2) Remove intermediate shaft spacer (Fig. 249). Retain spacer. It is a select fit part and may possibly be reused.

(3) Remove overdrive piston from retainer (Fig. 250).

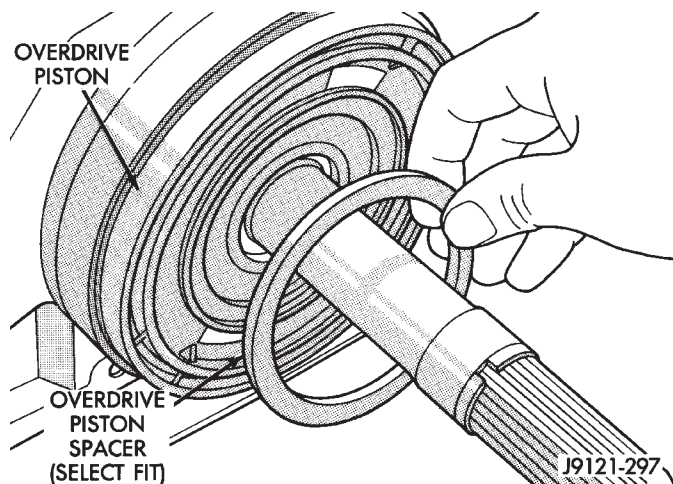


Fig. 248 Overdrive Piston Thrust Plate Removal/Installation

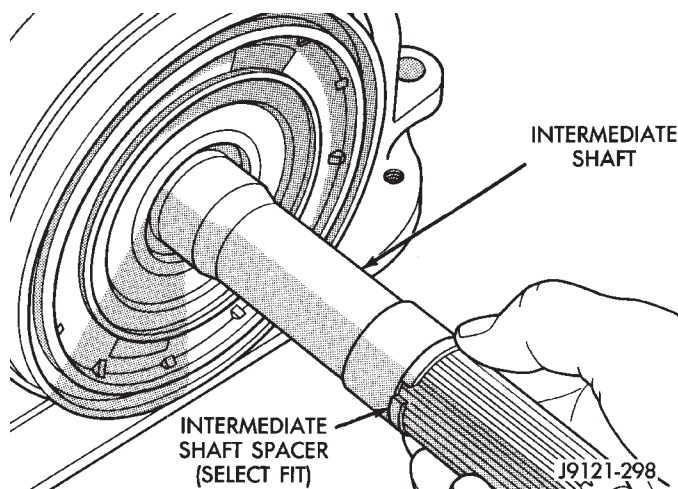


Fig. 249 Intermediate Shaft Spacer Location

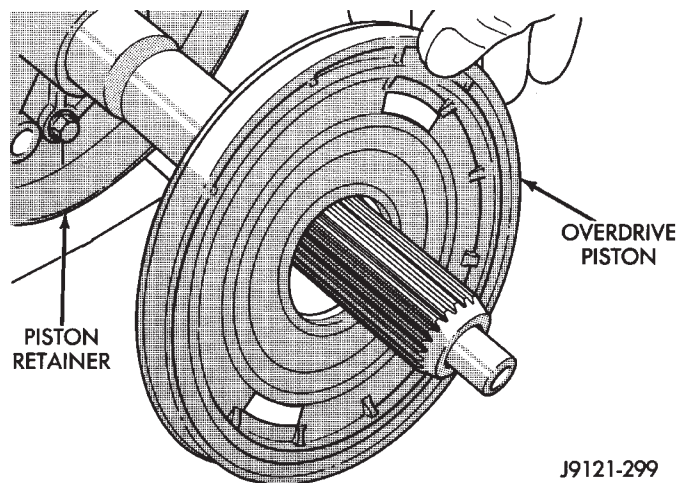


Fig. 250 Overdrive Piston Removal

DISASSEMBLY AND ASSEMBLY (Continued)

OVERDRIVE CLUTCH PACK REMOVAL

- (1) Remove overdrive clutch pack wire retaining ring (Fig. 251).
- (2) Remove overdrive clutch pack (Fig. 252).
- (3) Note position of clutch pack components for assembly reference (Fig. 253). Thick reaction plate goes to front as shown.

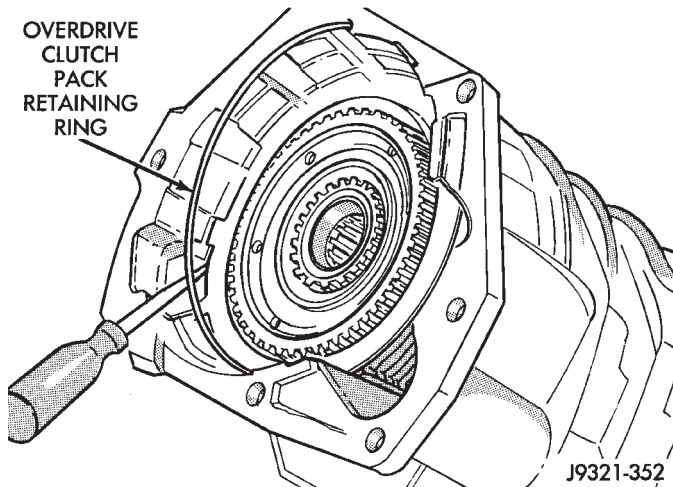


Fig. 251 Removing Overdrive Clutch Pack Retaining Ring

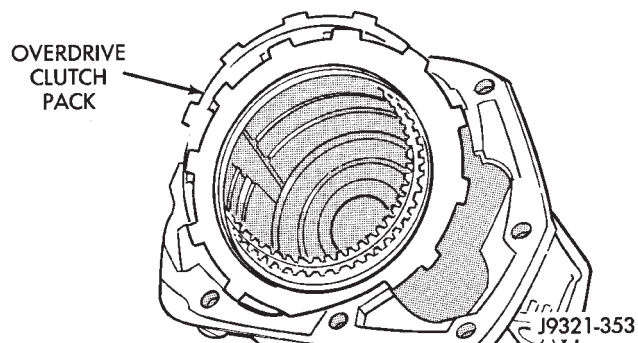


Fig. 252 Overdrive Clutch Pack Removal

OVERDRIVE GEARTRAIN REMOVAL

- (1) Remove overdrive clutch wave spring (Fig. 254).
- (2) Remove overdrive clutch reaction snap ring (Fig. 255). Note that snap ring is located in same groove as wave spring.

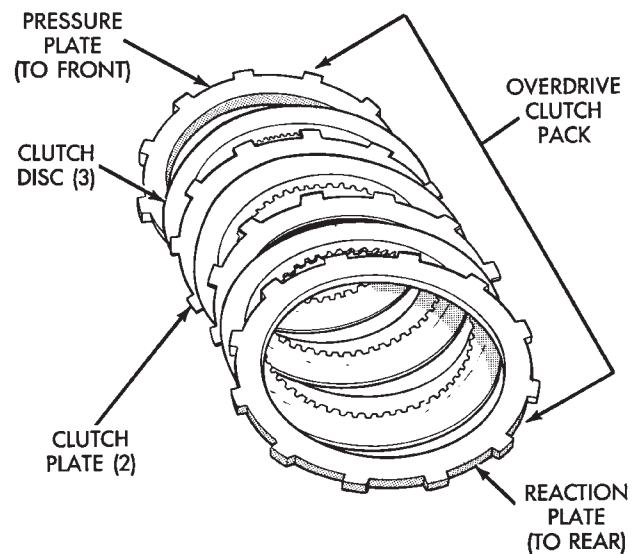


Fig. 253 Overdrive Clutch Component Position

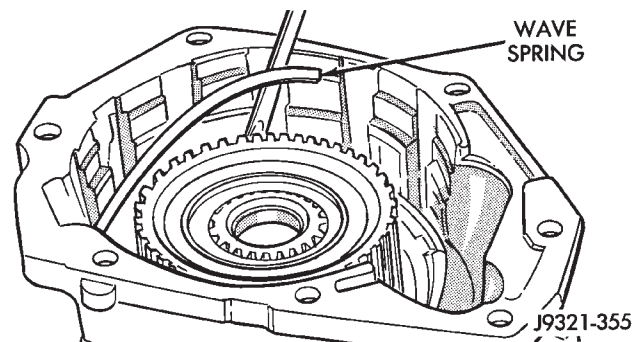


Fig. 254 Overdrive Clutch Wave Spring Removal/Installation

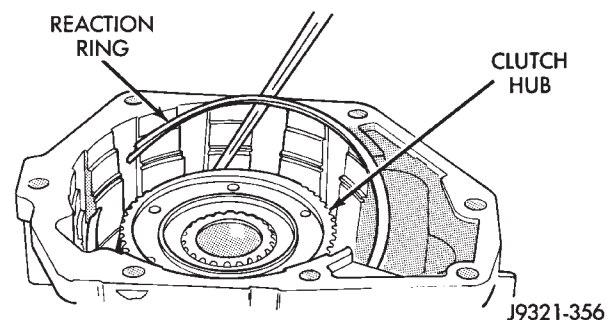


Fig. 255 Overdrive Clutch Reaction Snap Ring Removal/Installation

DISASSEMBLY AND ASSEMBLY (Continued)

(3) Remove Torx head screws that attach access cover and gasket to overdrive case (Fig. 256). A T25 size Torx head bit is required.

(4) Remove access cover and gasket (Fig. 257).

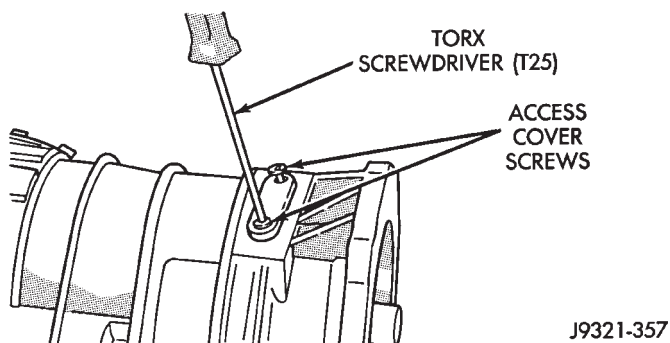


Fig. 256 Access Cover Screw Removal/Installation

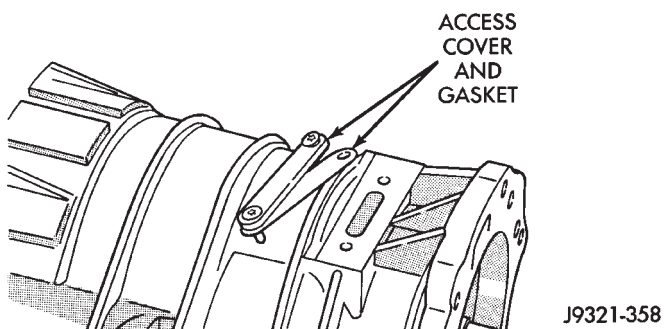


Fig. 257 Access Cover And Gasket Removal/Installation

(5) Expand output shaft bearing snap ring with expanding-type snap ring pliers. Then push output shaft forward to release shaft bearing from locating ring (Fig. 258).

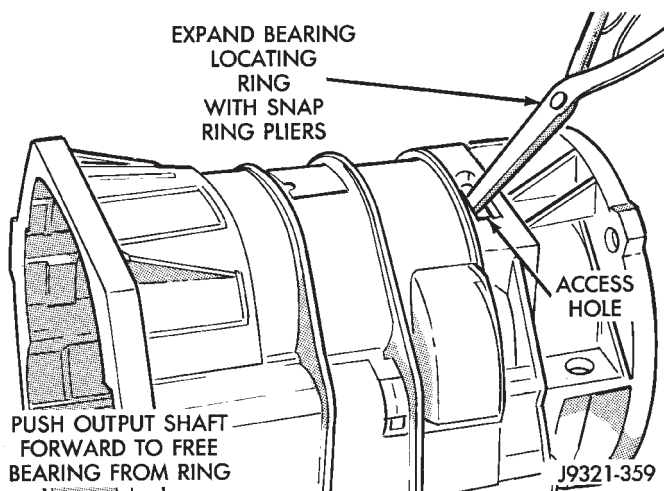


Fig. 258 Releasing Bearing From Locating Ring

(6) Lift gear case up and off geartrain assembly (Fig. 259).

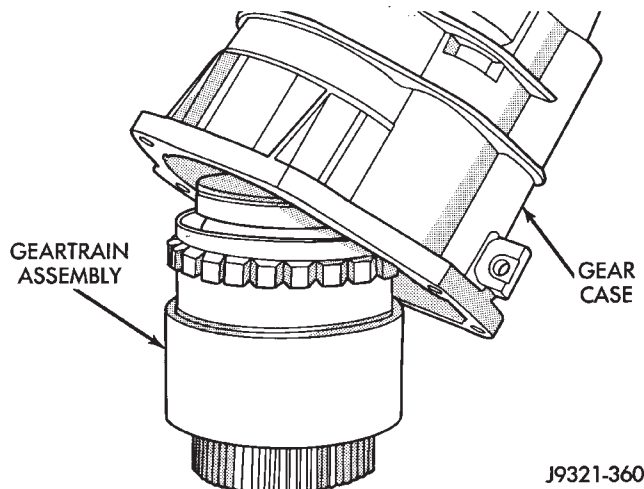


Fig. 259 Removing Gear Case From Geartrain Assembly

(7) Remove snap ring that retains rear bearing on output shaft (Fig. 260).

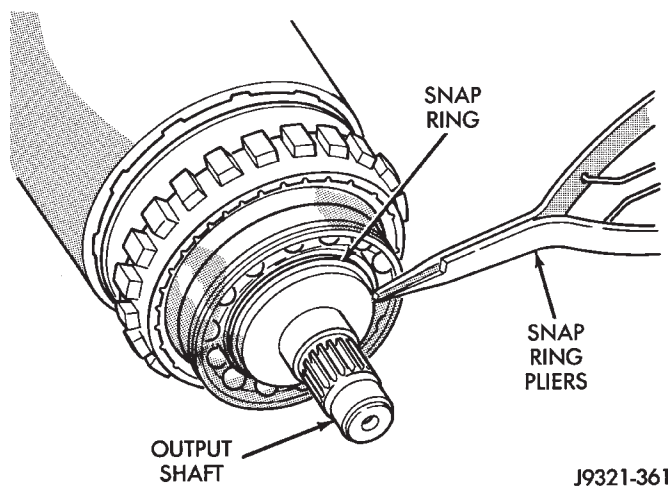


Fig. 260 Rear Bearing Snap Ring Removal/Installation

DISASSEMBLY AND ASSEMBLY (Continued)

(8) Remove rear bearing from output shaft (Fig. 261).

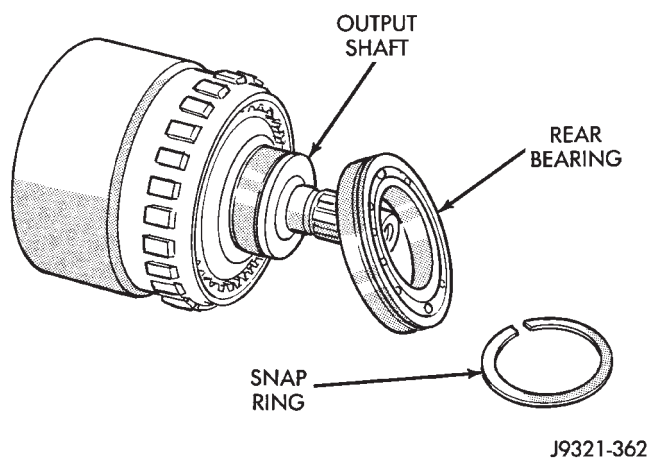


Fig. 261 Rear Bearing Removal

DIRECT CLUTCH, HUB AND SPRING REMOVAL

WARNING: THE NEXT STEP IN DISASSEMBLY INVOLVES COMPRESSING THE DIRECT CLUTCH SPRING. IT IS EXTREMELY IMPORTANT THAT PROPER EQUIPMENT BE USED TO COMPRESS THE SPRING AS SPRING FORCE IS APPROXIMATELY 830 POUNDS. USE SPRING COMPRESSOR TOOL 6227-1 AND A HYDRAULIC SHOP PRESS WITH A MINIMUM RAM TRAVEL OF 5-6 INCHES. THE PRESS MUST ALSO HAVE A BED THAT CAN BE ADJUSTED UP OR DOWN AS REQUIRED. RELEASE CLUTCH SPRING TENSION SLOWLY AND COMPLETELY TO AVOID PERSONAL INJURY.

(1) Mount geartrain assembly in shop press (Fig. 262).

(2) Position Compressor Tool 6227-1 on clutch hub (Fig. 262). Support output shaft flange with steel press plates as shown and center assembly under press ram.

(3) Use Special Tool C-3995-A (or similar size tool) at top of Tool 6227-1 to help distribute load and provide needed extra press length (Fig. 262).

(4) Apply press pressure slowly. Compress hub and spring far enough to expose clutch hub retaining ring and relieve spring pressure on clutch pack snap ring (Fig. 262).

(5) Remove direct clutch pack snap ring (Fig. 263).

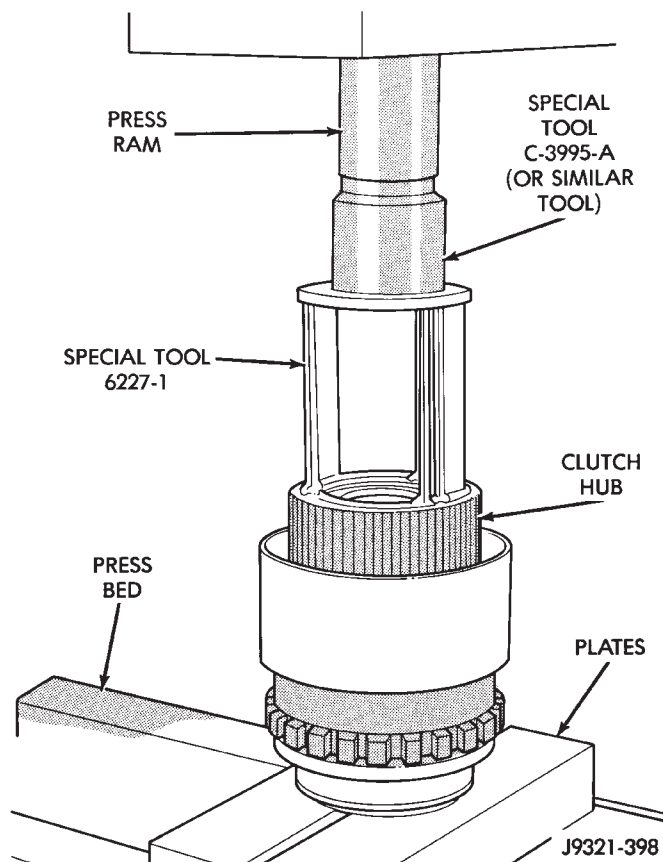


Fig. 262 Geartrain Mounted In Shop Press

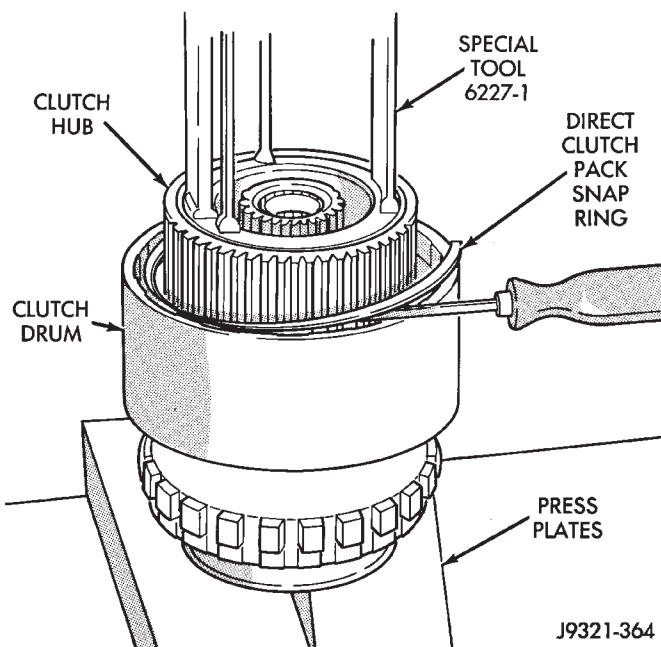


Fig. 263 Direct Clutch Pack Snap Ring Removal

DISASSEMBLY AND ASSEMBLY (Continued)

(6) Remove direct clutch hub retaining ring (Fig. 264).

(7) Release press load **slowly and completely** (Fig. 265).

(8) Remove Special Tool 6227-1. Then remove clutch pack from hub (Fig. 265).

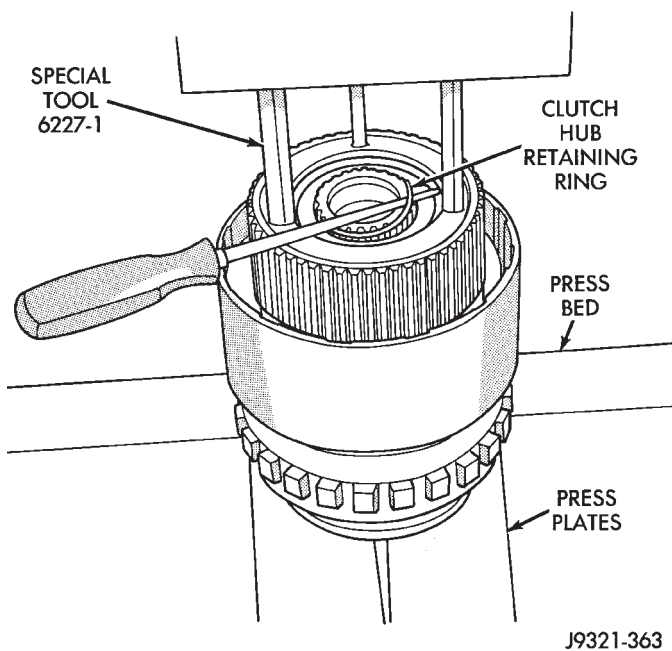


Fig. 264 Direct Clutch Hub Retaining Ring Removal

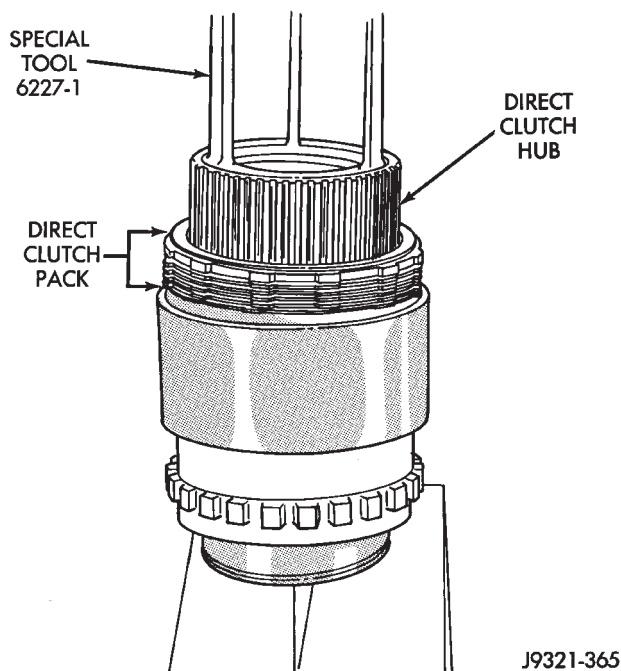


Fig. 265 Direct Clutch Pack Removal

Geartrain Disassembly

(1) Remove direct clutch hub and spring (Fig. 266).

(2) Remove sun gear and spring plate. Then remove planetary thrust bearing and planetary gear (Fig. 267).

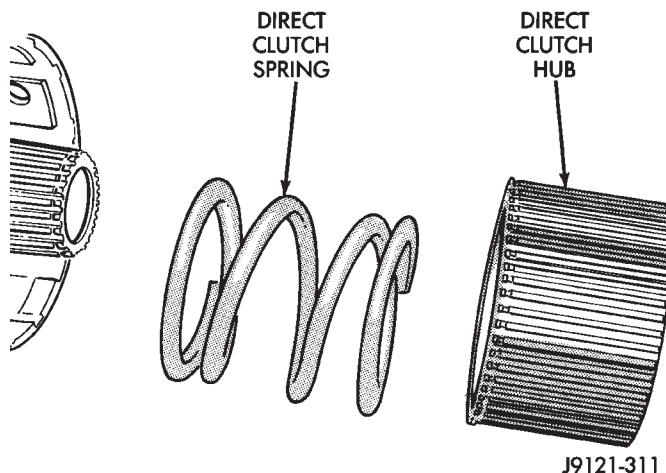


Fig. 266 Direct Clutch Hub And Spring Removal

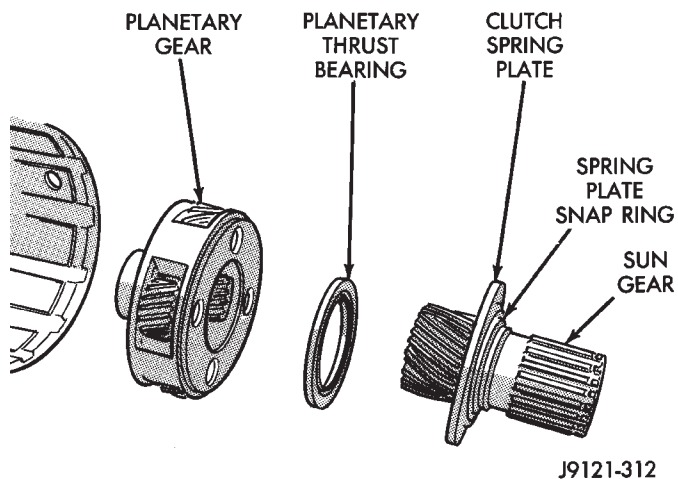


Fig. 267 Removing Sun Gear, Thrust Bearing And Planetary Gear

DISASSEMBLY AND ASSEMBLY (Continued)

(3) Remove overrunning clutch assembly with expanding type snap ring pliers (Fig. 268). Insert pliers into clutch hub. Expand pliers to grip hub splines and remove clutch with counterclockwise, twisting motion.

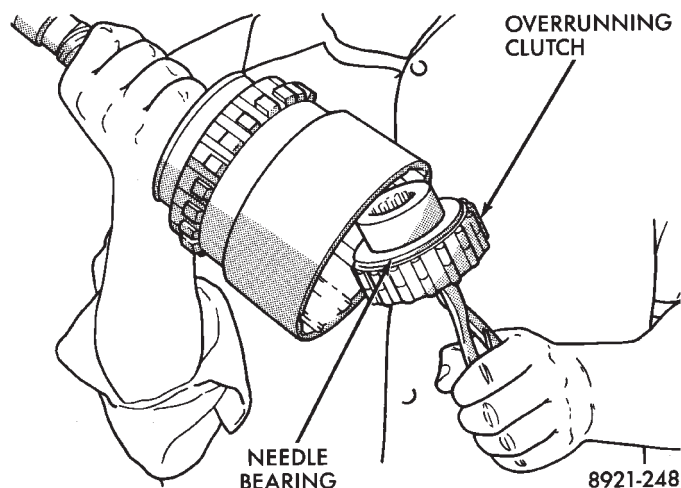


Fig. 268 Overrunning Clutch Assembly Removal/Installation

(4) Remove thrust bearing from overrunning clutch hub (Fig. 269).

(5) Remove overrunning clutch from hub (Fig. 269).

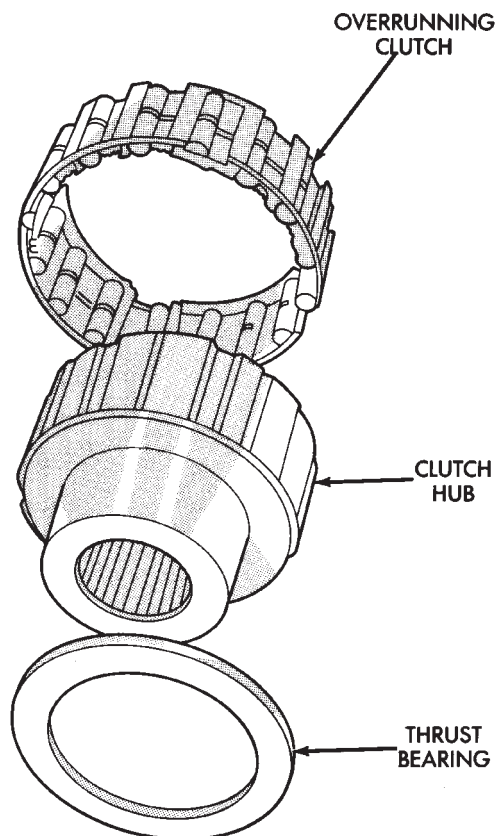


Fig. 269 Overrunning Clutch Components

(6) Mark position of annulus gear and direct clutch drum for assembly alignment reference (Fig. 270). Use small center punch or scribe to make alignment marks.

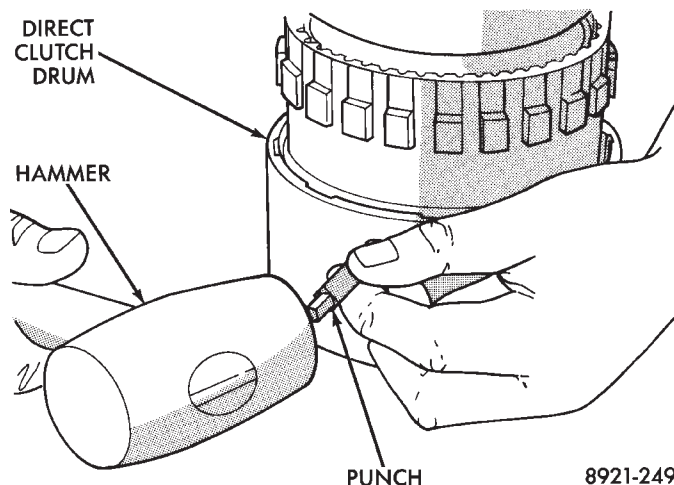


Fig. 270 Marking Direct Clutch Drum And Annulus Gear For Assembly Alignment

(7) Remove direct clutch drum rear retaining ring (Fig. 271).

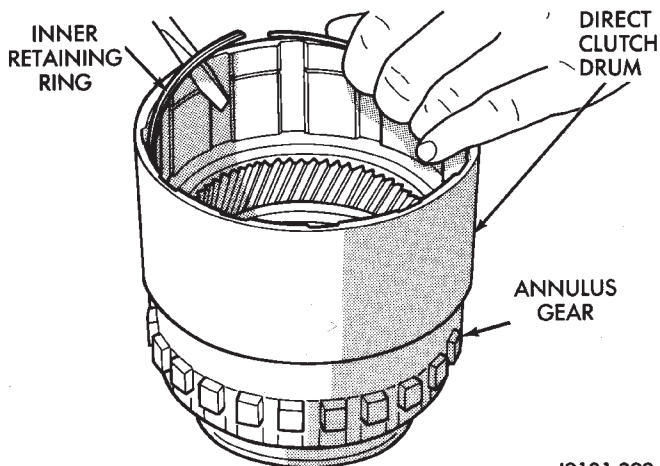


Fig. 271 Clutch Drum Inner Retaining Ring Removal

(8) Remove direct clutch drum outer retaining ring (Fig. 272).

(9) Mark annulus gear and output shaft for assembly alignment reference (Fig. 273). Use punch or scribe to mark gear and shaft.

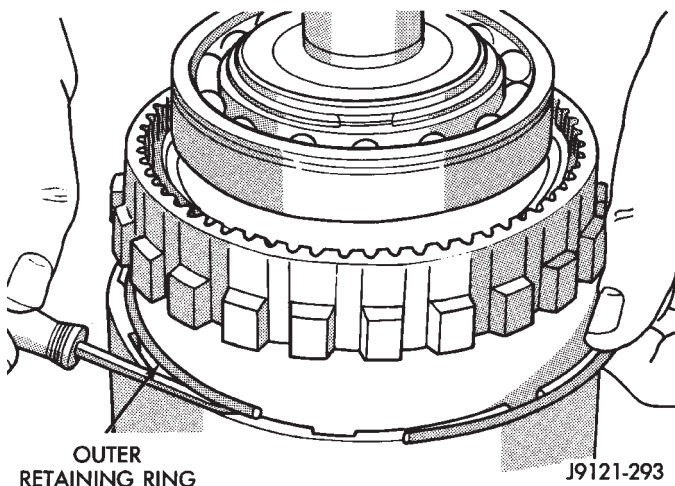
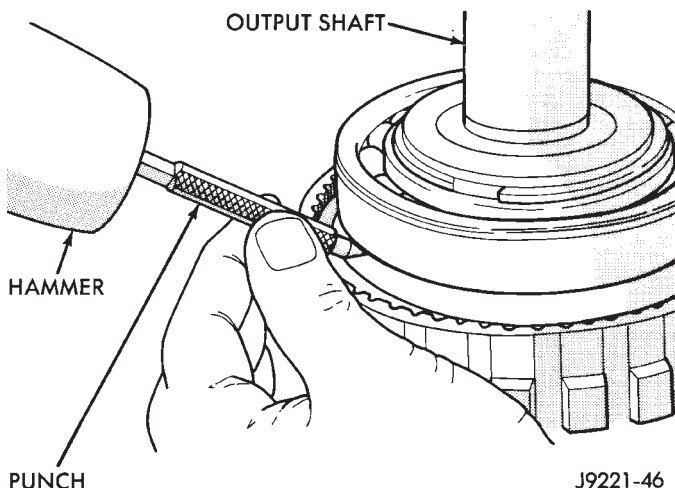
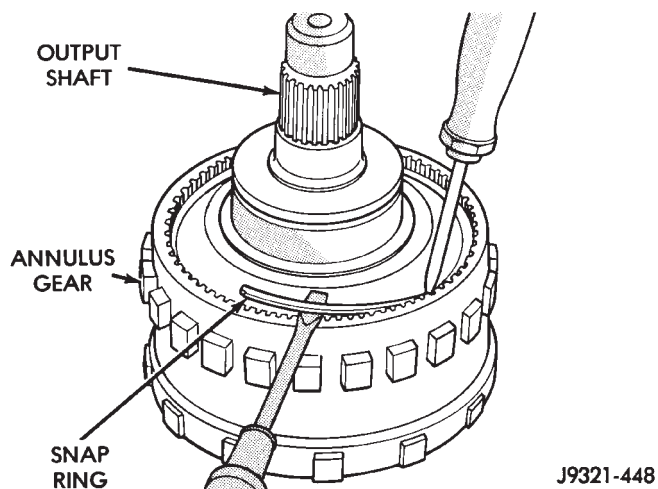
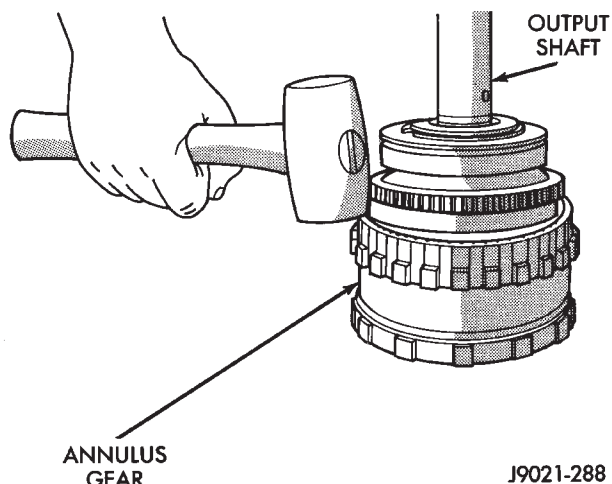
(10) Remove snap ring that secures annulus gear on output shaft (Fig. 274). Use two screwdrivers to unseat and work snap ring out of groove as shown.

(11) Remove annulus gear from output shaft (Fig. 275). Use rawhide or plastic mallet to tap gear off shaft.

GEAR CASE AND PARK LOCK DISASSEMBLY

(1) Remove locating ring from gear case.

DISASSEMBLY AND ASSEMBLY (Continued)

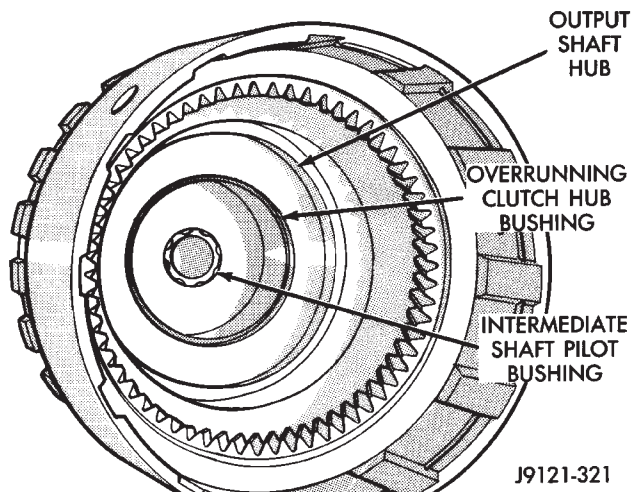

Fig. 272 Clutch Drum Outer Retaining Ring Removal

Fig. 273 Marking Annulus Gear And Output Shaft For Assembly Alignment

Fig. 274 Annulus Gear Snap Ring Removal

Fig. 275 Annulus Gear Removal

- (2) Remove park pawl shaft retaining bolt and remove shaft, pawl and spring.
- (3) Remove reaction plug snap ring and remove reaction plug.
- (4) Remove output shaft seal. Use punch or tool similar to Seal Remover C-3981.

OVERDRIVE UNIT ASSEMBLY

GEARTRAIN AND DIRECT CLUTCH ASSEMBLY

- (1) Soak direct clutch and overdrive clutch discs in Mopar ATF Plus transmission fluid. Allow discs to soak for 10-20 minutes.
- (2) Install new pilot bushing and clutch hub bushing in output shaft if necessary (Fig. 276). Lubricate bushings with petroleum jelly, or transmission fluid.


Fig. 276 Output Shaft Pilot Bushing

DISASSEMBLY AND ASSEMBLY (Continued)

(3) Install annulus gear on output shaft, if removed. Then install annulus gear retaining snap ring (Fig. 277).

(4) Align and install clutch drum on annulus gear (Fig. 278). Be sure drum is engaged in annulus gear lugs.

(5) Install clutch drum outer retaining ring (Fig. 278).

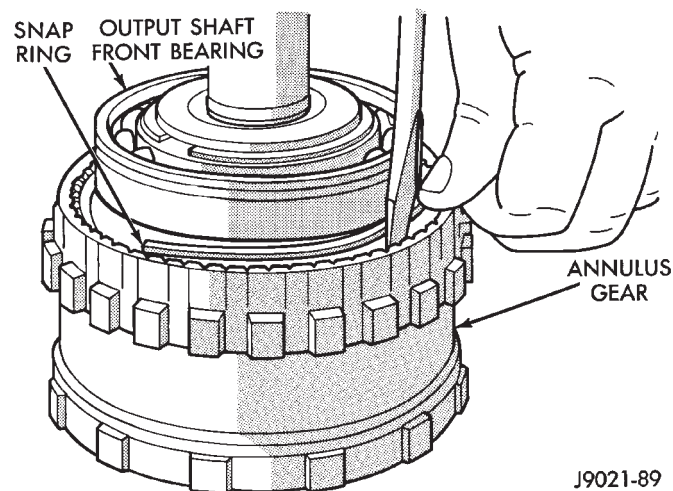


Fig. 277 Annulus Gear Installation

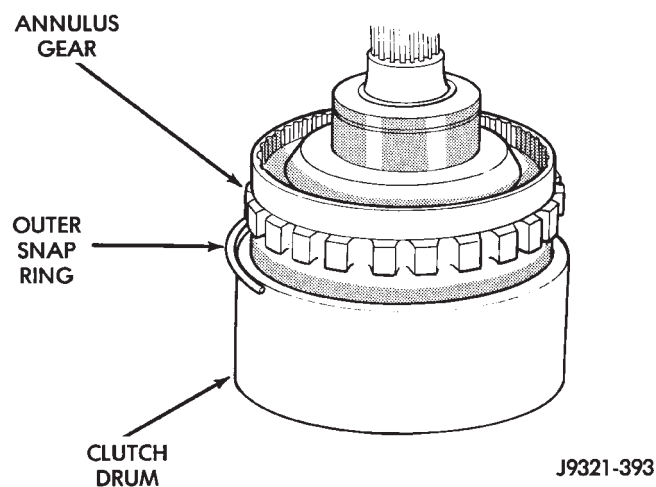


Fig. 278 Clutch Drum And Outer Retaining Ring Installation

(6) Slide clutch drum forward and install inner retaining ring (Fig. 279).

(7) Install rear bearing and snap ring on output shaft (Fig. 280). Be sure locating ring groove in bearing is toward rear.

(8) Install overrunning clutch on hub (Fig. 281). **Note that clutch only fits one way. Shoulder on clutch should seat in small recess at edge of hub.**

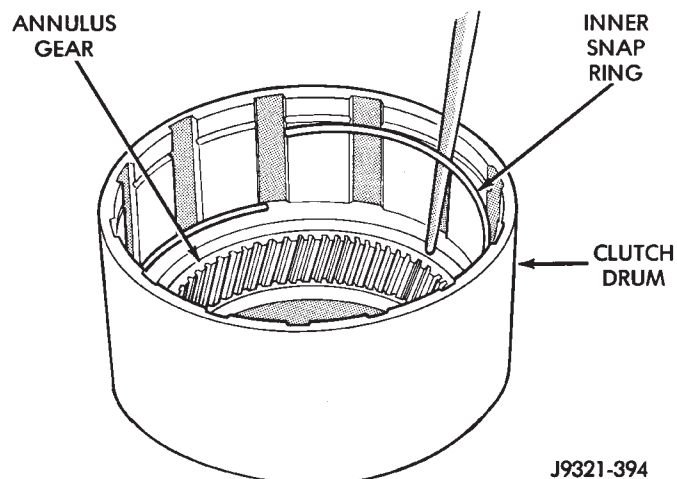


Fig. 279 Clutch Drum Inner Retaining Ring Installation

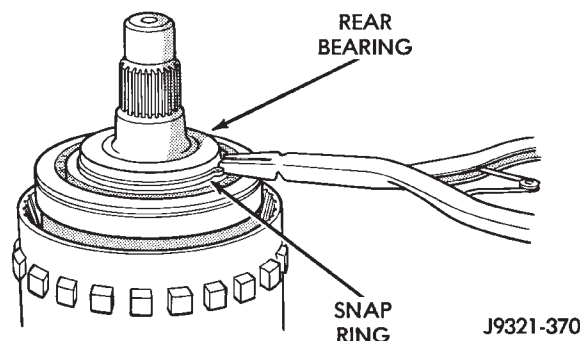


Fig. 280 Rear Bearing And Snap Ring Installation

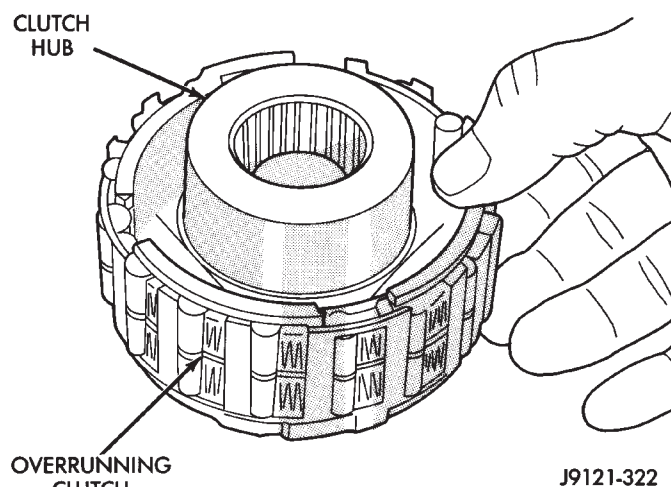


Fig. 281 Assembling Overrunning Clutch And Hub

DISASSEMBLY AND ASSEMBLY (Continued)

(9) Install thrust bearing on overrunning clutch hub (Fig. 282). Use generous amount of petroleum jelly to hold bearing in place for installation. **Bearing fits one way only. Be sure bearing is seated squarely against hub. Reinstall bearing if it does not seat squarely.**

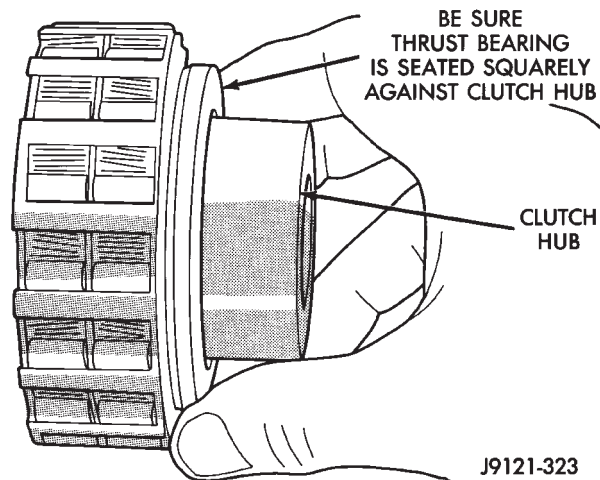


Fig. 282 Overrunning Clutch Thrust Bearing Installation

(10) Install overrunning clutch in output shaft (Fig. 283). Insert snap ring pliers in hub splines. Expand pliers to grip hub. Then install assembly with counterclockwise, twisting motion.

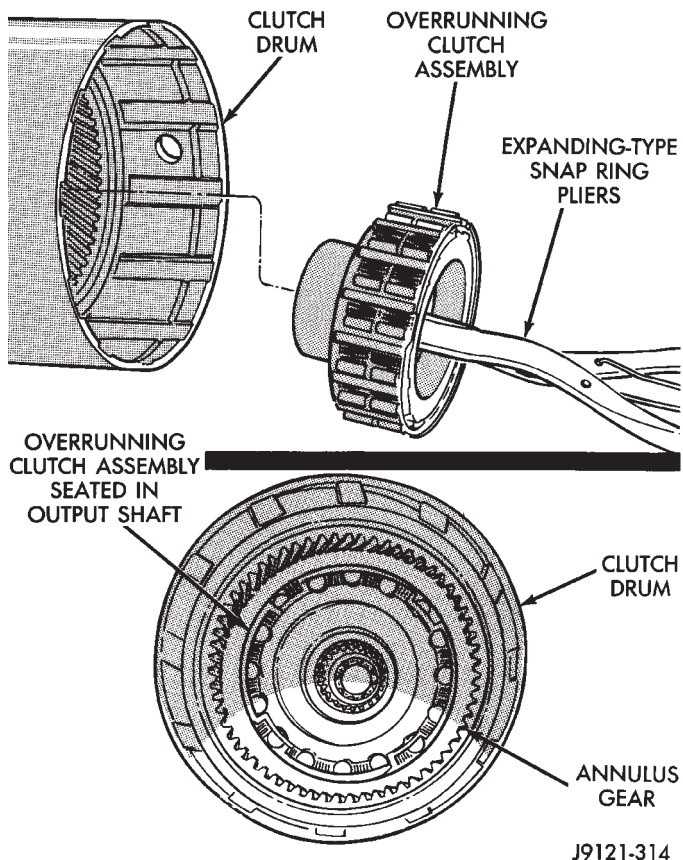


Fig. 283 Overrunning Clutch Installation

(11) Install planetary gear in annulus gear (Fig. 284). **Be sure planetary pinions are fully seated in annulus gear before proceeding.**

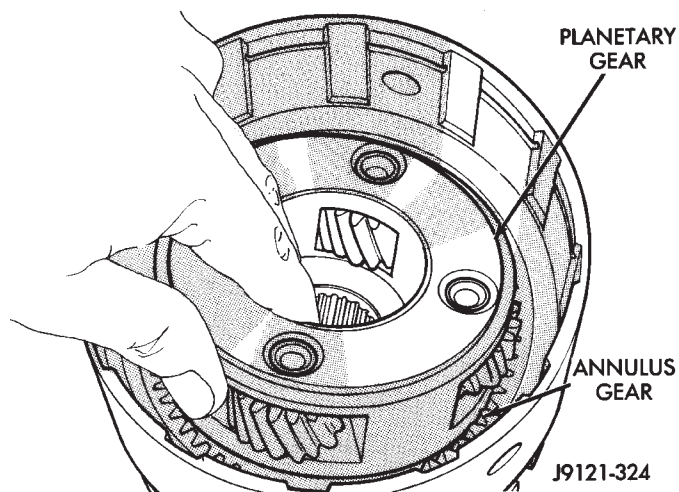


Fig. 284 Planetary Gear Installation

(12) Install direct clutch spring plate on sun gear. Shoulder side of plate should face outward and toward front. Then secure plate to sun gear with snap ring (Fig. 285).

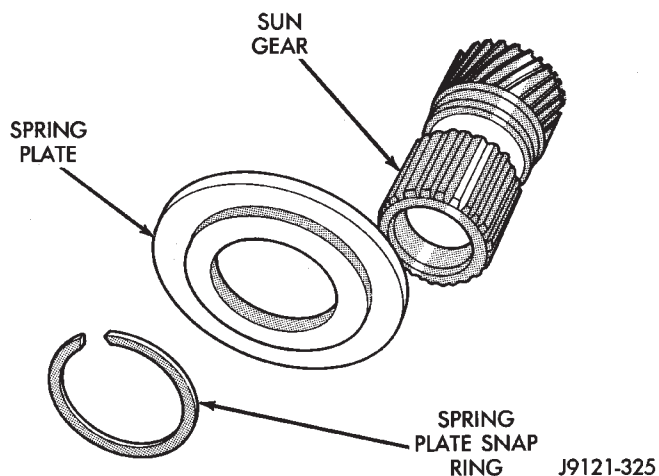


Fig. 285 Sun Gear And Spring Plate Assembly

DISASSEMBLY AND ASSEMBLY (Continued)

(13) Coat planetary thrust bearing and bearing contact surface of spring plate with generous amount of petroleum jelly. This will help hold bearing in place during installation.

(14) Install planetary thrust bearing on sun gear (Fig. 286). Slide bearing onto gear and seat it against spring plate as shown. **Bearing fits one way only. If it does not seat squarely against spring plate, remove and reposition bearing.**

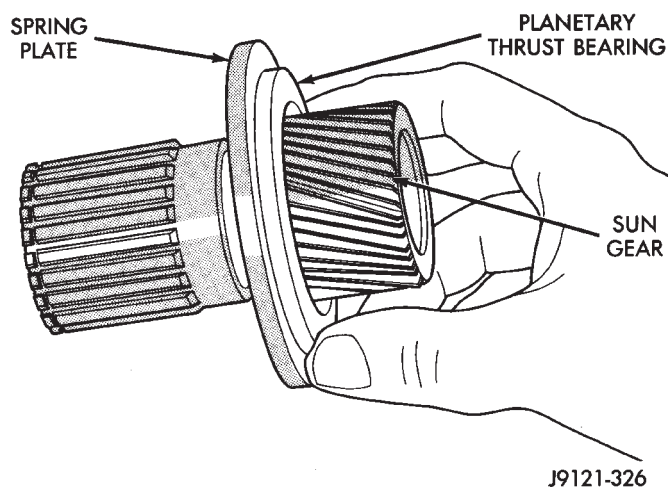


Fig. 286 Planetary Thrust Bearing Installation

(15) Install assembled sun gear, spring plate and thrust bearing (Fig. 287). Be sure sun gear and thrust bearing are fully seated before proceeding.

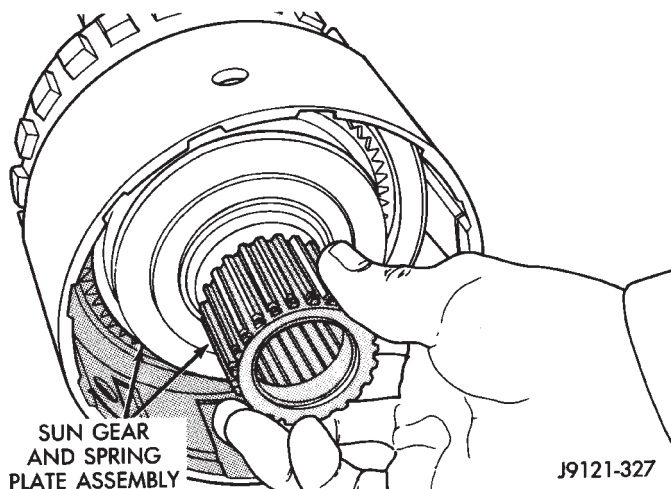


Fig. 287 Sun Gear Installation

(16) Mount assembled output shaft, annulus gear, and clutch drum in shop press. Direct clutch spring, hub and clutch pack are easier to install with assembly mounted in press.

(17) Align splines in hubs of planetary gear and overrunning clutch with Alignment tool 6227-2 (Fig. 288). Insert tool through sun gear and into splines of both hubs. Be sure alignment tool is fully seated before proceeding.

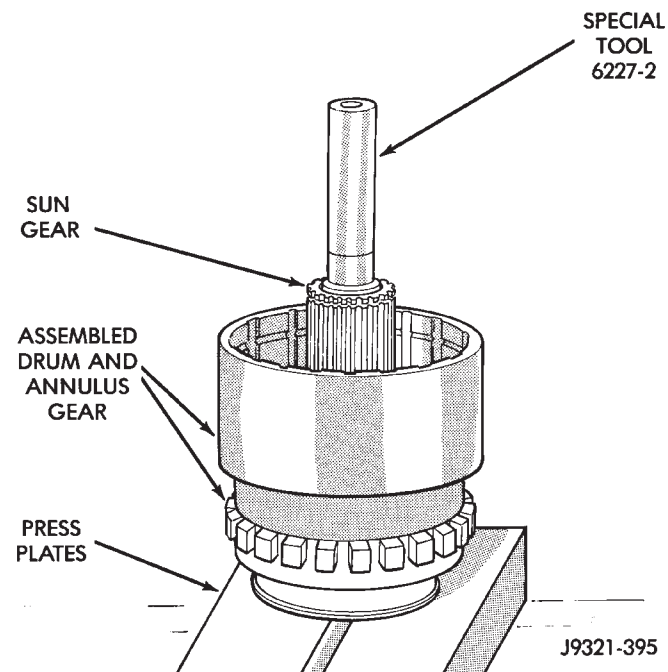


Fig. 288 Alignment Tool Installation

(18) Install direct clutch spring (Fig. 289). Be sure spring is properly seated on spring plate.

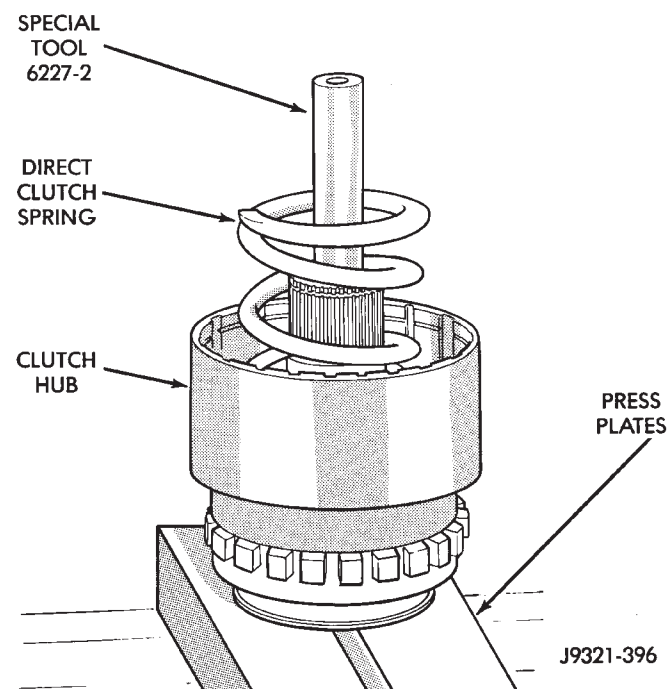
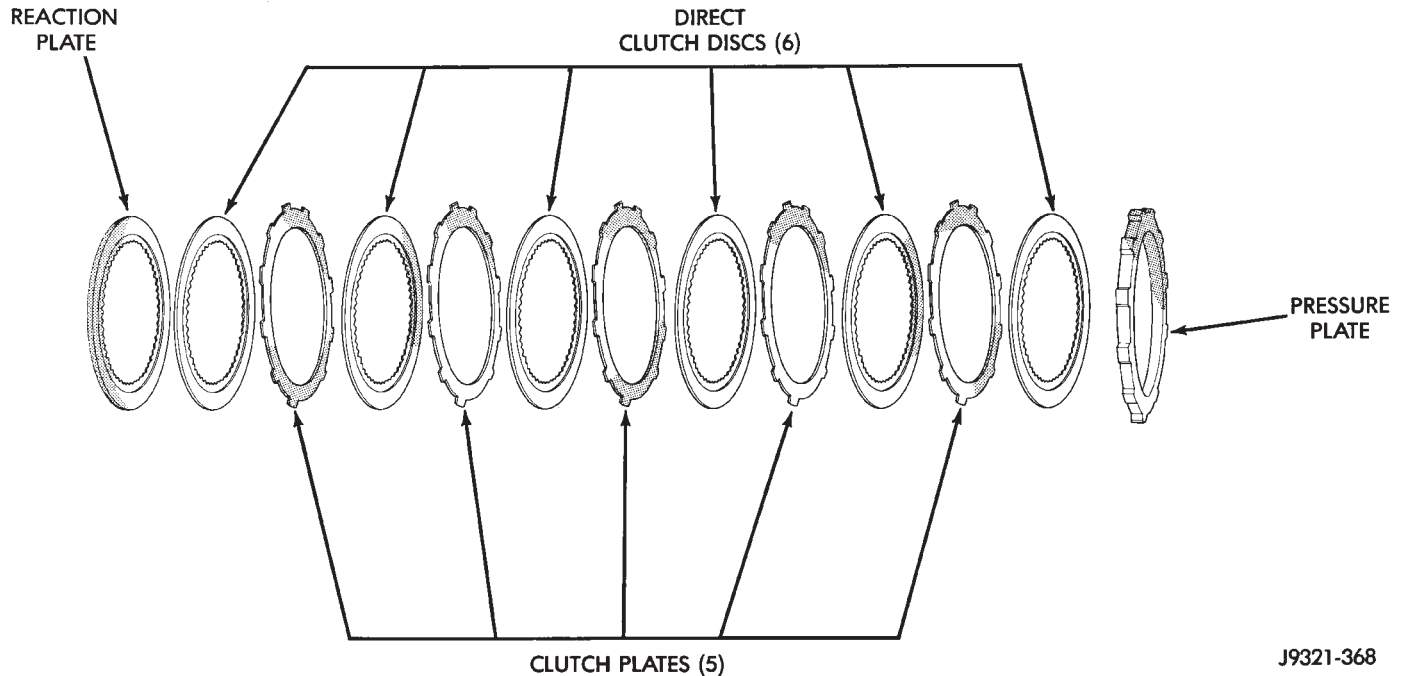


Fig. 289 Direct Clutch Spring Installation

DISASSEMBLY AND ASSEMBLY (Continued)

*Fig. 290 Direct Clutch Pack Components*

(19) Assemble and install direct clutch pack on hub as follows:

(a) Assemble clutch pack components (Fig. 290).

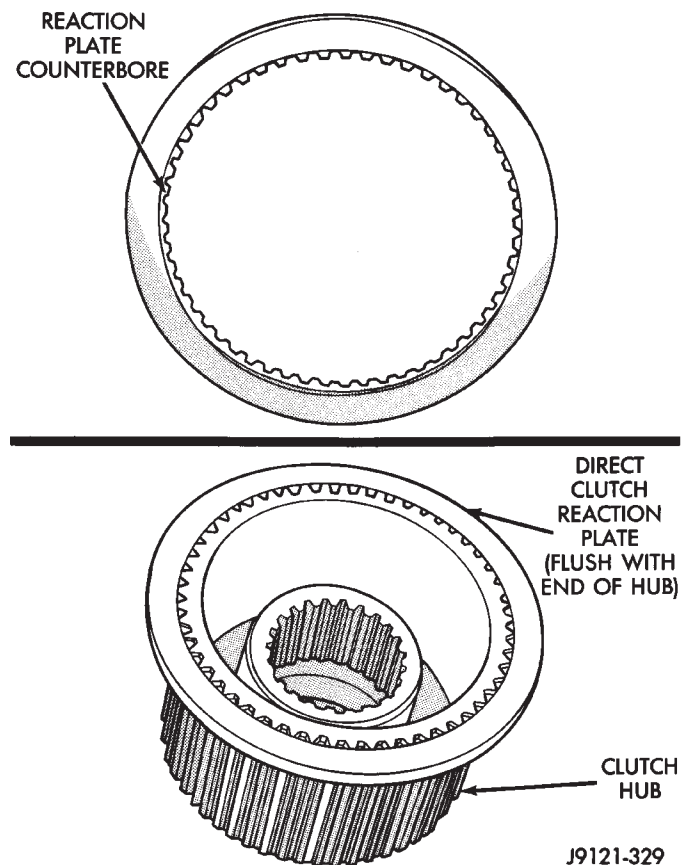
(b) Install direct clutch reaction plate on clutch hub first. **Note that one side of reaction plate is counterbored. Be sure this side faces rearward. Splines at rear of hub are raised slightly. Counterbore in plate fits over raised splines. Plate should be flush with this end of hub (Fig. 291).**

(c) Install first clutch disc followed by a steel plate until 6 discs and 5 plates have been installed.

(d) Install pressure plate. This is last clutch pack item to be installed. **Be sure plate is installed with shoulder side facing upward (Fig. 292).**

(20) Install clutch hub and clutch pack on direct clutch spring (Fig. 293). **Be sure hub is started on sun gear splines before proceeding.**

WARNING: THE NEXT STEP IN GEARTRAIN ASSEMBLY INVOLVES COMPRESSING THE DIRECT CLUTCH HUB AND SPRING. IT IS EXTREMELY IMPORTANT THAT PROPER EQUIPMENT BE USED TO COMPRESS THE SPRING AS SPRING FORCE IS APPROXIMATELY 830 POUNDS. USE COMPRESSOR TOOL C-6227-1 AND A HYDRAULIC-TYPE SHOP PRESS WITH A MINIMUM RAM TRAVEL OF 6 INCHES. THE PRESS MUST ALSO HAVE A BED THAT CAN BE ADJUSTED UP OR DOWN AS REQUIRED. RELEASE CLUTCH SPRING TENSION SLOWLY AND COMPLETELY TO AVOID PERSONAL INJURY.

*Fig. 291 Correct Position Of Direct Clutch Reaction Plate*

(21) Carefully **remove** Alignment Tool 6227-2 from clutch and hub splines. Withdraw tool slowly to avoid

DISASSEMBLY AND ASSEMBLY (Continued)

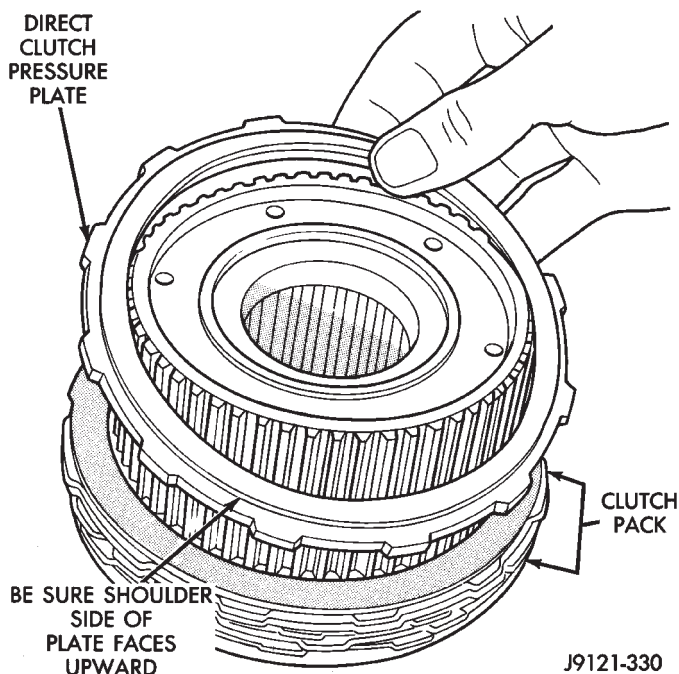


Fig. 292 Correct Position Of Direct Clutch Pressure Plate

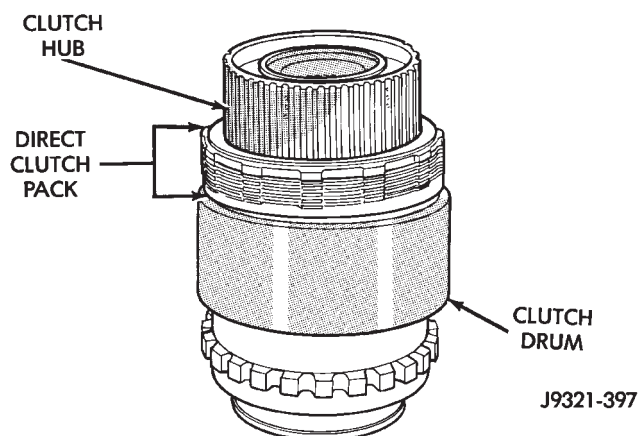


Fig. 293 Direct Clutch Pack And Clutch Hub Installation

spline misalignment. Tool must be removed at this point to provide room for compressor tool movement.

(22) Position Compressor Tool 6227-1 on clutch hub (Fig. 294).

(23) Position Tool C-3995-A or similar type tool on top of Tool 6227-1 (Fig. 295).

(24) Compress clutch hub and spring just enough to place tension on hub and hold it in place.

(25) Slide direct clutch pack upwards on hub (Fig. 294). Then set clutch pack on edge of clutch hub and compressor tool as shown.

(26) Slowly compress clutch hub and spring (Fig. 294). Compress spring and hub only enough to

expose ring grooves for clutch pack snap ring and clutch hub retaining ring.

(27) Realign clutch pack on hub and seat clutch discs and plates in clutch drum (Fig. 294).

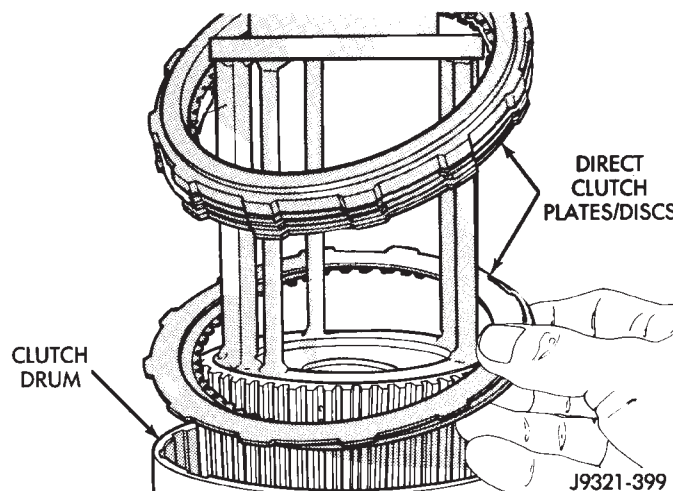


Fig. 294 Seating Clutch Pack In Drum

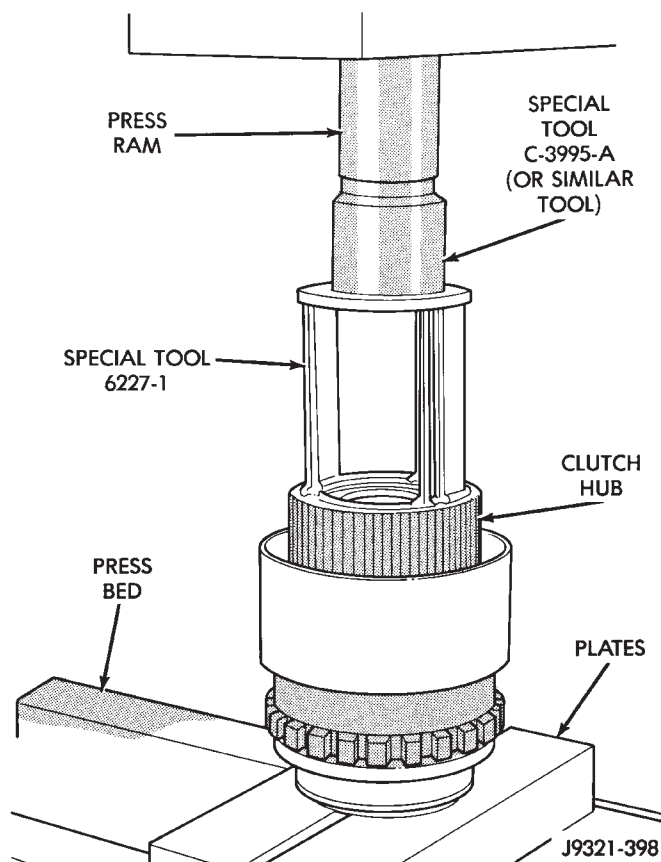


Fig. 295 Geartrain Mounted In Press

DISASSEMBLY AND ASSEMBLY (Continued)

(28) Install direct clutch pack snap ring (Fig. 296). **Be very sure snap ring is fully seated in clutch drum ring groove.**

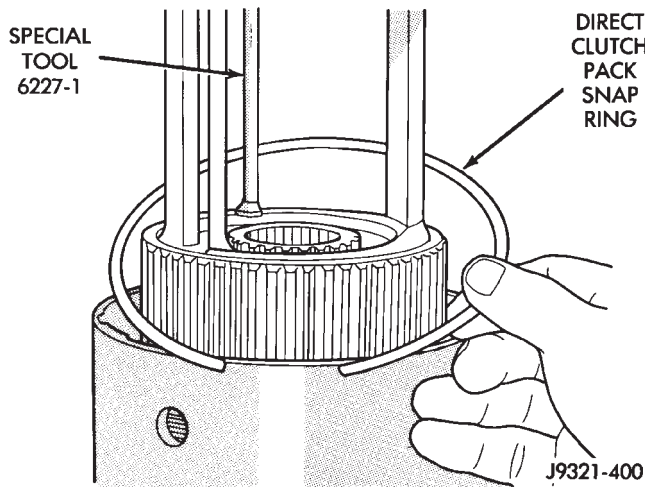


Fig. 296 Direct Clutch Pack Snap Ring Installation

(29) Install clutch hub retaining ring (Fig. 297). **Be very sure retaining ring is fully seated in sun gear ring groove.**

(30) Slowly release press ram, remove compressor tools and remove geartrain assembly.

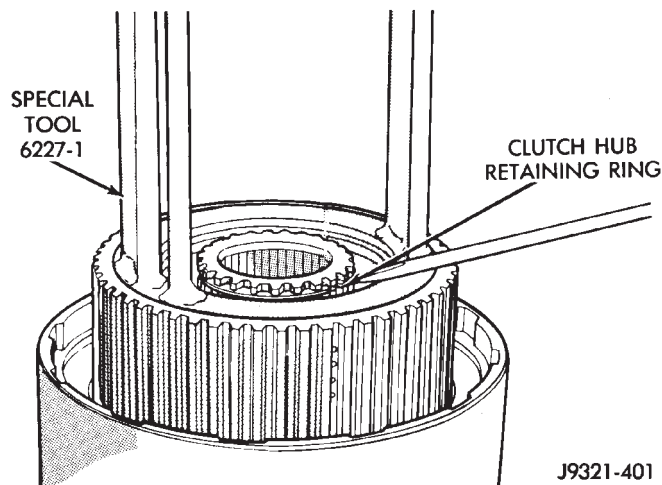


Fig. 297 Clutch Hub Retaining Ring Installation

GEAR CASE ASSEMBLY AND INSTALLATION

(1) Position park pawl and spring in case and install park pawl shaft (Fig. 298). Verify that end of spring with 90° bend is hooked to pawl and straight end of spring is seated against case.

(2) Install pawl shaft retaining bolt. Tighten bolt to 27 N·m (20 ft. lbs.) torque.

(3) Install park lock reaction plug. **Note that plug has locating pin at rear (Fig. 299). Be sure pin is seated in hole in case before installing snap ring.**

(4) Install reaction plug snap ring (Fig. 300). **Compress snap ring only enough for installation; do not distort it.**

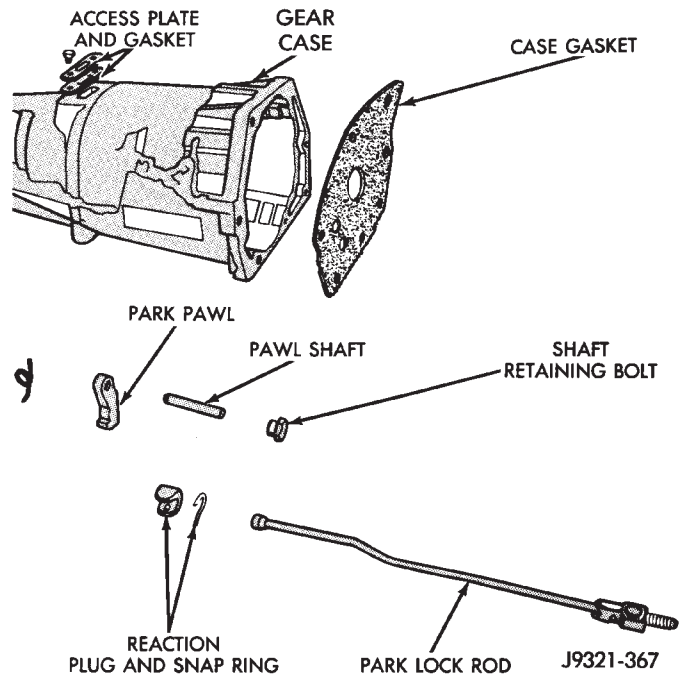


Fig. 298 Park Lock Components

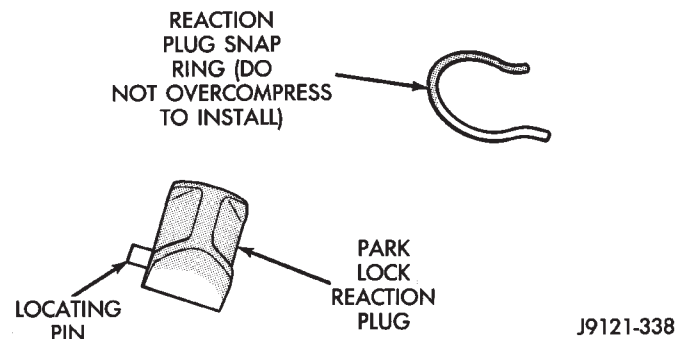


Fig. 299 Reaction Plug Locating Pin And Snap Ring

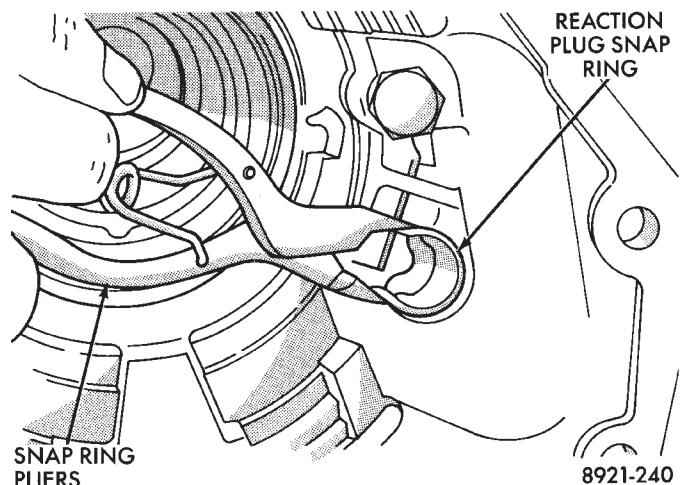


Fig. 300 Reaction Plug And Snap Ring Installation

DISASSEMBLY AND ASSEMBLY (Continued)

(5) Install new seal in gear case (Fig. 301). On 4x4 gear case, use Tool Handle C-4171 and Installer 5062 (or similar size tool) to seat seal in case. On 4 x 2 gear case, use same tool handle and suitable size installer to seat seal in case.

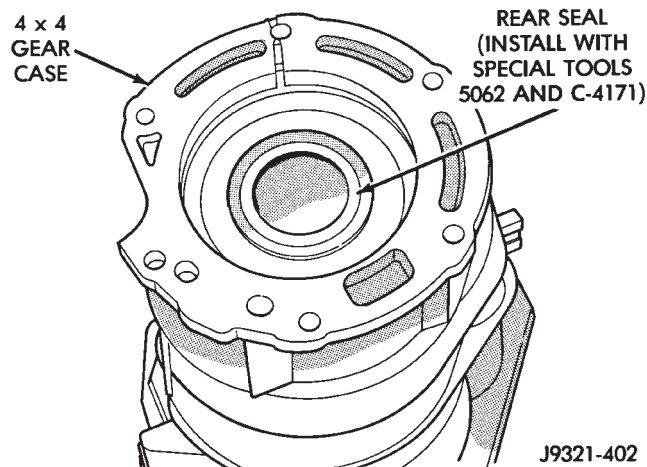


Fig. 301 Rear Seal Installation—4x4 Gear Case

(6) Verify that tab ends of rear bearing locating ring extend into access hole in gear case (Fig. 302).

(7) Support geartrain on Tool 6227-1 (Fig. 303). Be sure tool is securely seated in clutch hub.

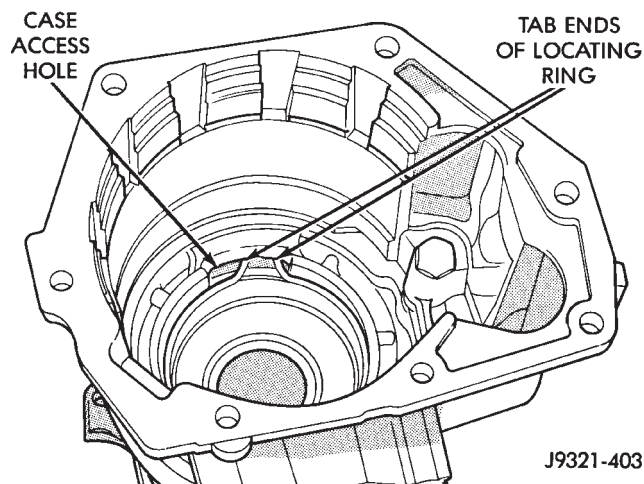


Fig. 302 Correct Rear Bearing Locating Ring Position

(8) Install overdrive gear case on geartrain (Fig. 303).

(9) Expand front bearing locating ring with snap ring pliers (Fig. 304). Then slide case downward until locating ring locks in bearing groove and release snap ring.

(10) Install locating ring access cover and gasket in overdrive unit case (Fig. 305).

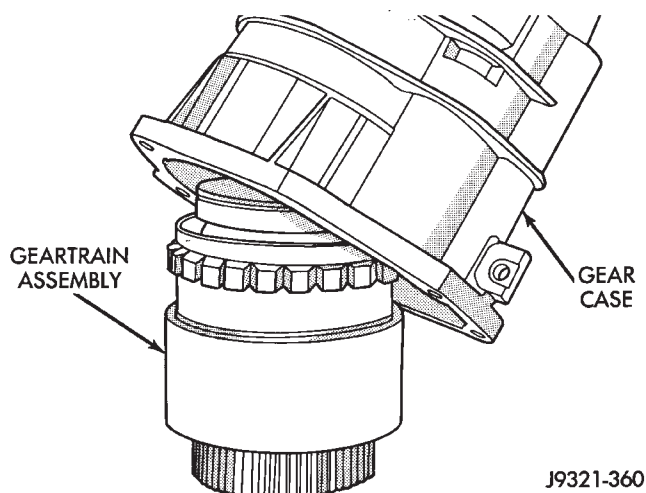


Fig. 303 Overdrive Gear Case Installation

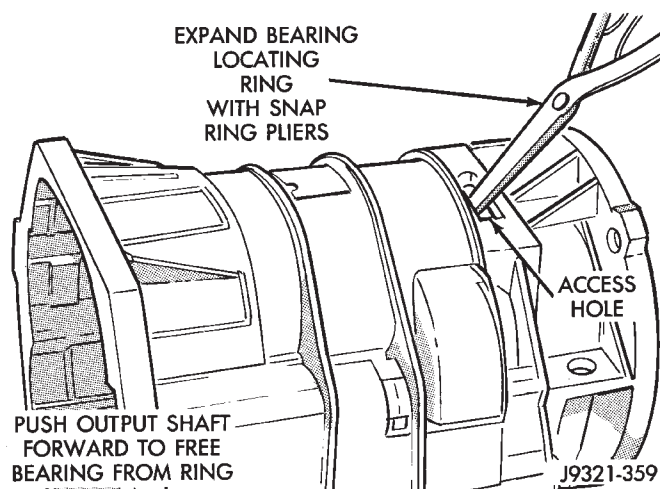


Fig. 304 Seating Locating Ring In Rear Bearing

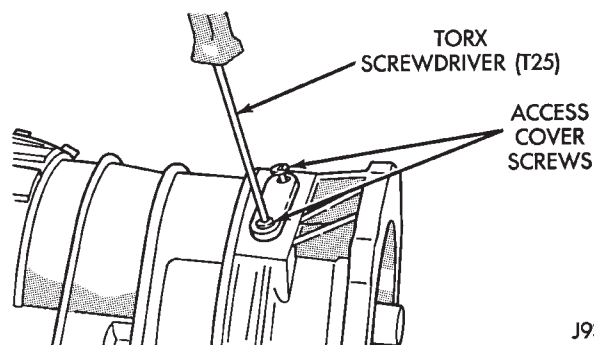


Fig. 305 Locating Ring Access Cover And Gasket Installation

DISASSEMBLY AND ASSEMBLY (Continued)

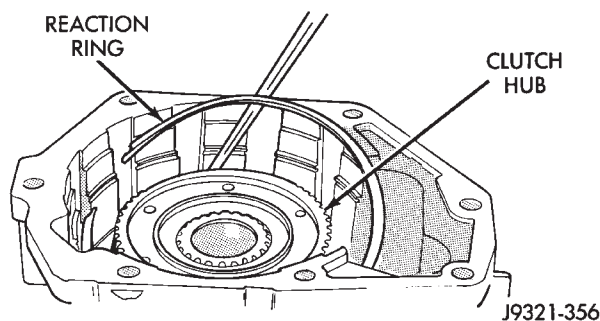


Fig. 306 Overdrive Clutch Reaction Ring Installation

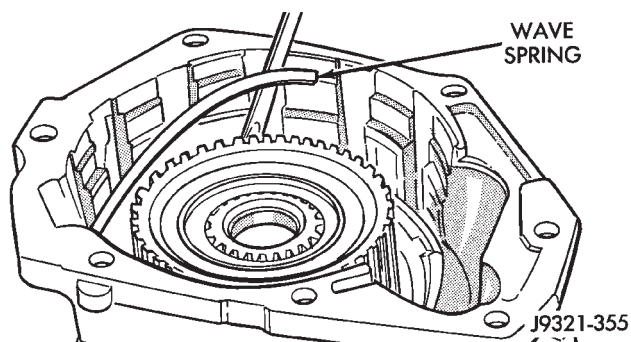


Fig. 307 Overdrive Clutch Wave Spring Installation

OVERDRIVE CLUTCH INSTALLATION

- (1) Install overdrive clutch reaction ring first. Reaction ring is flat with notched ends (Fig. 306).
- (2) Install wave spring on top of reaction ring (Fig. 307). **Reaction ring and wave ring both fit in**

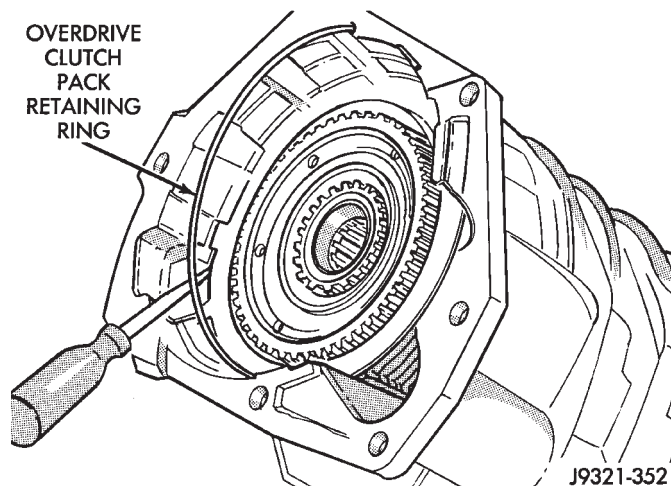


Fig. 309 Overdrive Clutch Pack Retaining Ring Installation

same ring groove. Use screwdriver to seat each ring securely in groove.

- (3) Assemble overdrive clutch pack (Fig. 308).
- (4) Install overdrive clutch reaction plate first. **Note that reaction plate is thinner than pressure plate.**
- (5) Install first clutch disc followed by first clutch plate. Then install remaining clutch discs and plates in same order.
- (6) Verify clutch pack. 3 clutch discs, 2 steel plates, 1 reaction plate and 1 pressure plate are required.
- (7) Install clutch pack pressure plate. Note that pressure plate is thickest plate in clutch pack.
- (8) Install clutch pack wire-type retaining ring (Fig. 309).

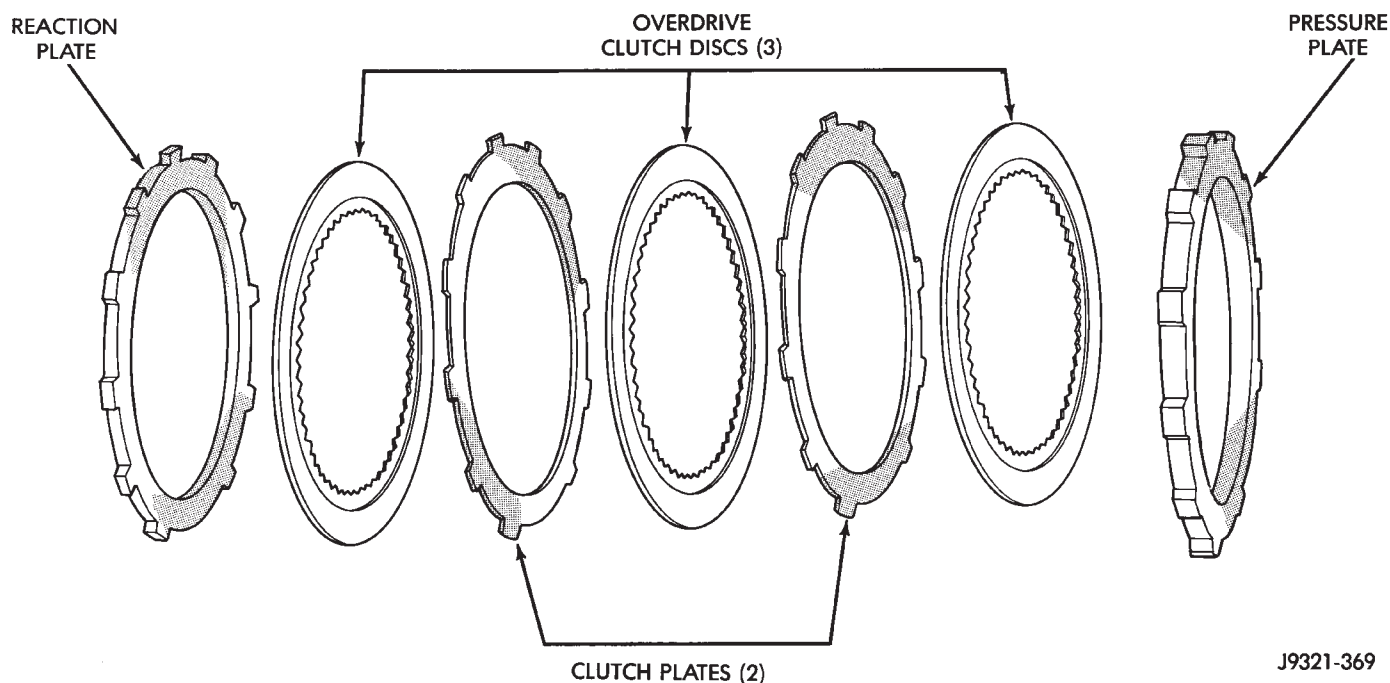


Fig. 308 Overdrive Clutch Components

J9321-369

DISASSEMBLY AND ASSEMBLY (Continued)

SHAFT END PLAY ADJUSTMENT

(1) Place overdrive unit in vertical position. Mount it on blocks, or in workbench with appropriate size mounting hole cut into it. Be sure unit is facing upward for access to direct clutch hub. Also be sure output shaft is not loaded and internal components are moved rearward for accurate measurement.

(2) Determine correct thickness **intermediate shaft spacer** as follows:

(a) Insert Special Tool 6312 through sun gear, planetary gear and into pilot bushing in output shaft. Be sure tool bottoms against planetary shoulder.

(b) Position Gauge Tool 6311 across face of overdrive case (Fig. 310). Then position Dial Caliper C-4962 over gauge tool (Fig. 310).

(c) Extend sliding scale of dial caliper downward through gauge tool slot until scale contacts end of Gauge Alignment Tool 6312. Lock scale in place. Remove dial caliper tool and note distance measured (Fig. 310).

(d) Select proper thickness end play spacer from spacer chart based on distance measured (Fig. 311).

(e) Remove Gauge Alignment Tool 6312.

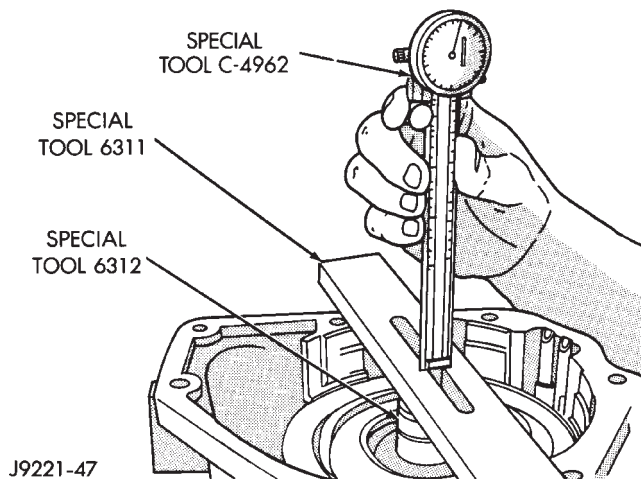


Fig. 310 Shaft End Play Measurement

End Play Measurement (Inches)	Spacer Thickness (Inches)
.7336 - .7505	.158 - .159
.7506 - .7675	.175 - .176
.7676 - .7855	.193 - .194
.7856 - .8011	.211 - .212

J9121-341

Fig. 311 Intermediate Shaft End Play Spacer Selection

(3) Determine correct thickness **overdrive piston thrust plate** as follows:

(a) Position Gauge Tool 6311 across face of overdrive case. Then position Dial Caliper C-4962 over gauge tool (Fig. 312).

(b) Measure distance to clutch hub thrust bearing seat at four points 90° apart. Then average measurements by adding them and dividing by 4.

(c) Select and install required thrust plate from information in thrust plate chart (Fig. 313).

(4) Leave Alignment Tool 6227-2 in place. Tool will keep planetary and clutch hub splines in alignment until overdrive unit is ready for installation on transmission.

(5) Transmission speed sensor can be installed at this time if desired. However, it is recommended that sensor not be installed until after overdrive unit is secured to transmission.

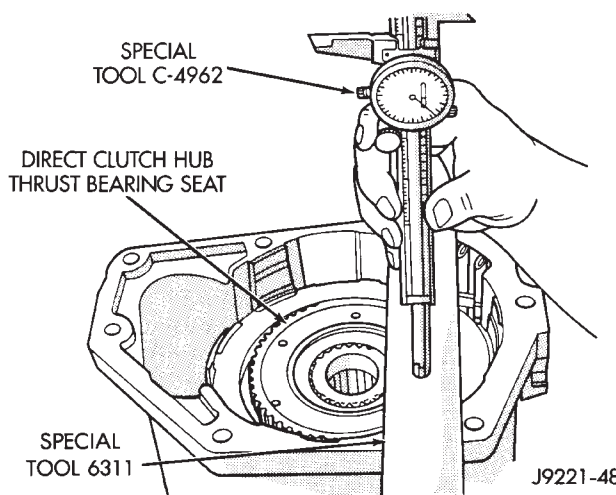


Fig. 312 Overdrive Piston Thrust Plate Measurement

End Play Measurement (Inches)	Spacer Thickness (Inches)
1.7500 - 1.7649	.108 - .110
1.7650 - 1.7799	.123 - .125
1.7800 - 1.7949	.138 - .140
1.7950 - 1.8099	.153 - .155
1.8100 - 1.8249	.168 - .170
1.8250 - 1.8399	.183 - .185
1.8400 - 1.8549	.198 - .200
1.8550 - 1.8699	.213 - .215
1.8700 - 1.8849	.228 - .230
1.8850 - 1.8999	.243 - .245

J9121-342

Fig. 313 Overdrive Piston Thrust Plate Selection

DISASSEMBLY AND ASSEMBLY (Continued)

OVERDRIVE GEARTRAIN

DISASSEMBLE

- (1) Remove output shaft front bearing snap ring (Fig. 314).
- (2) Remove front bearing from output shaft (Fig. 314).

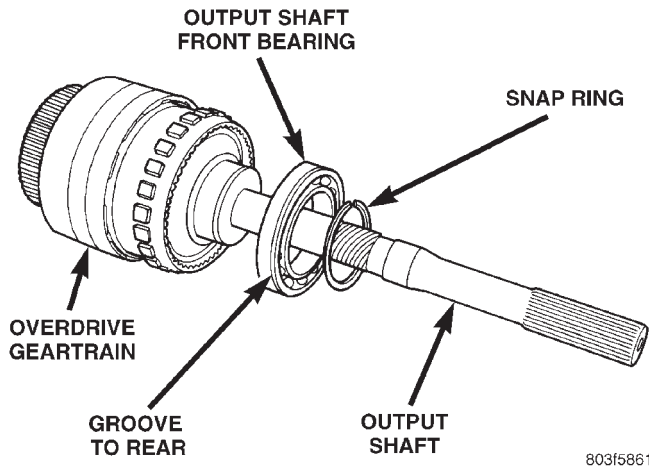


Fig. 314 Removing Snap Ring And Front Bearing

WARNING: THE NEXT STEP IN GEARTRAIN DISASSEMBLY INVOLVES COMPRESSING THE DIRECT CLUTCH SPRING. IT IS EXTREMELY IMPORTANT THAT PROPER EQUIPMENT BE USED TO COMPRESS THE SPRING AS SPRING FORCE IS APPROXIMATELY 830 POUNDS. USE SPRING COMPRESSOR TOOL 6227-1 AND A HYDRAULIC SHOP PRESS WITH A MINIMUM RAM TRAVEL OF 5-6 INCHES. THE PRESS MUST ALSO HAVE A BED THAT CAN BE ADJUSTED UP OR DOWN AS REQUIRED. RELEASE CLUTCH SPRING TENSION SLOWLY AND COMPLETELY TO AVOID PERSONAL INJURY.

- (3) Mount geartrain in shop press.
- (4) Position Compressor Tool 6227-1 on clutch hub (Fig. 315). Support output shaft flange with steel press plates as shown and center assembly under press ram.
- (5) Apply press pressure slowly. Compress hub and spring far enough to expose clutch hub retaining ring and relieve spring pressure on clutch pack snap ring (Fig. 315).
- (6) Remove direct clutch pack snap ring first (Fig. 315).
- (7) Remove direct clutch hub retaining ring (Fig. 316).
- (8) Release press load on clutch spring **slowly and completely**. Remove press tools and geartrain.

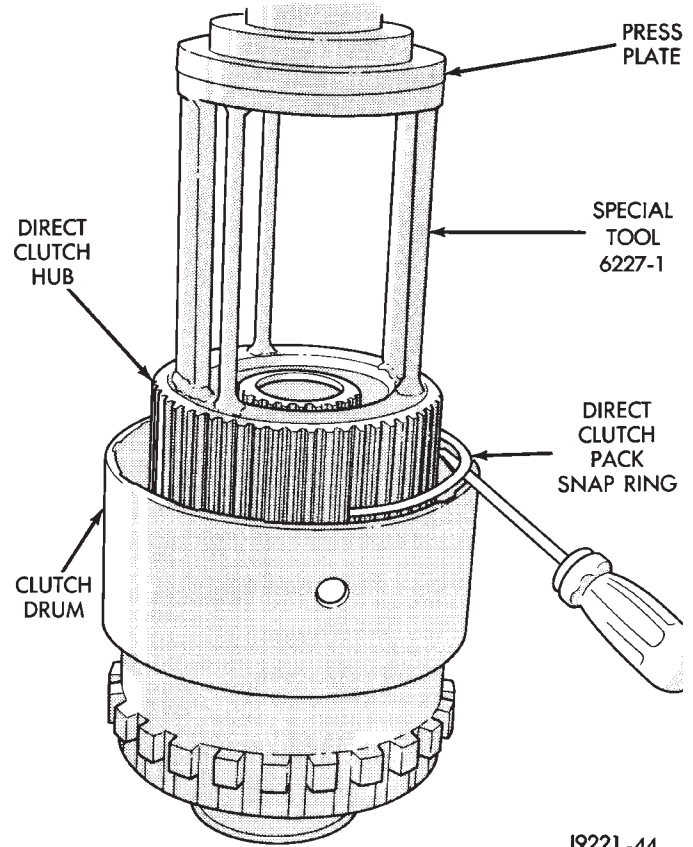


Fig. 315 Removing Direct Clutch Pack Snap Ring

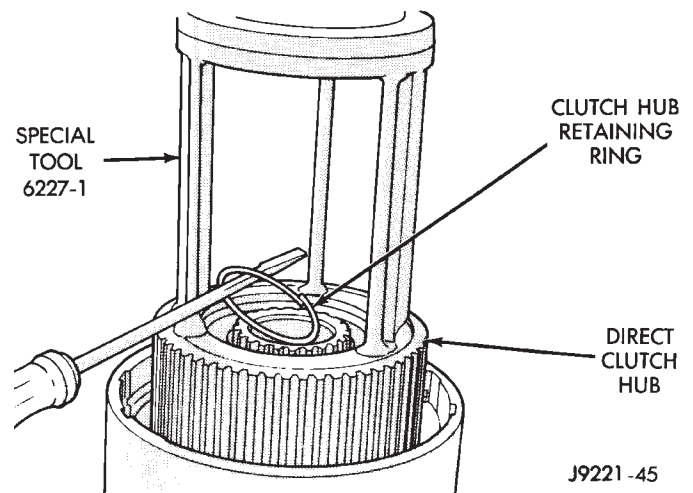


Fig. 316 Removing Direct Clutch Hub Retaining Ring

DISASSEMBLY AND ASSEMBLY (Continued)

- (9) Remove direct clutch pack from hub (Fig. 317).

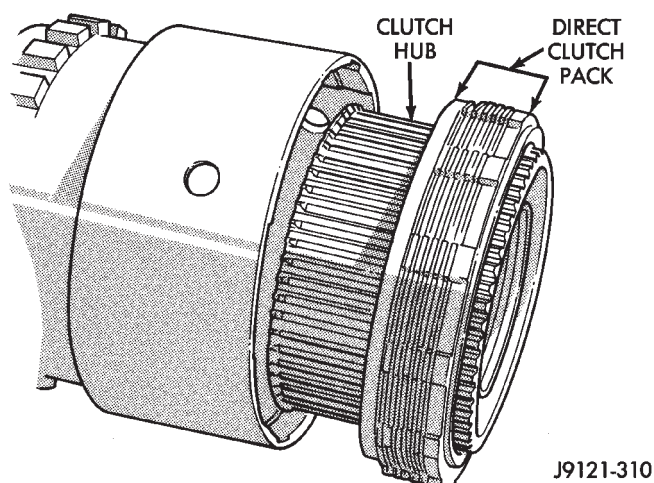


Fig. 317 Direct Clutch Pack Removal

- (10) Remove direct clutch hub and spring (Fig. 318).

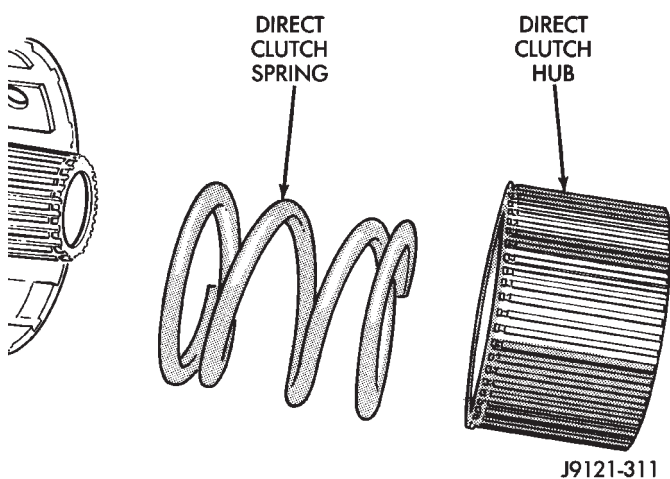
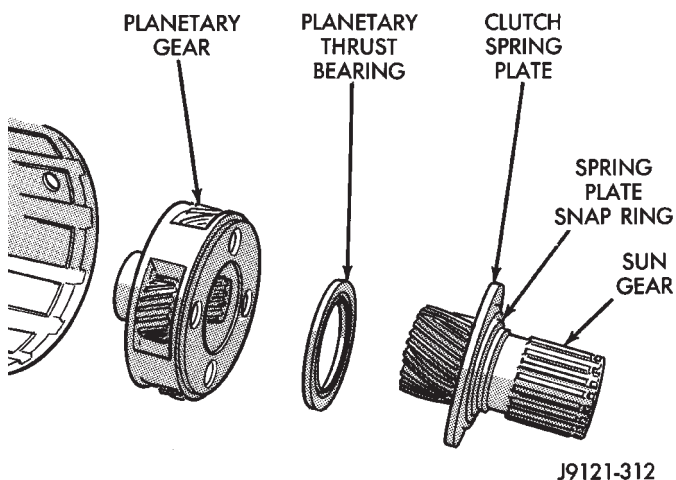


Fig. 318 Direct Clutch Hub And Spring Removal

- (11) Remove sun gear and spring plate, planetary thrust bearing and planetary gear (Fig. 319).



**Fig. 319 Removing Sun Gear/Thrust Bearing/
Planetary Gear**

- (12) Remove overrunning clutch assembly with expanding type snap ring plier (Fig. 320). Insert pliers into clutch hub. Expand pliers to grip hub splines and remove clutch with counterclockwise, twisting motion.

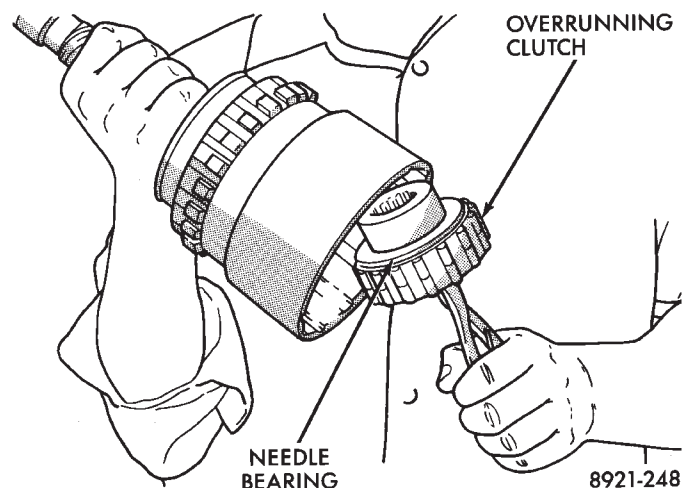


Fig. 320 Removing Overrunning Clutch Assembly

- (13) Remove thrust bearing from overrunning clutch hub (Fig. 321).

- (14) Remove overrunning clutch from hub (Fig. 321).

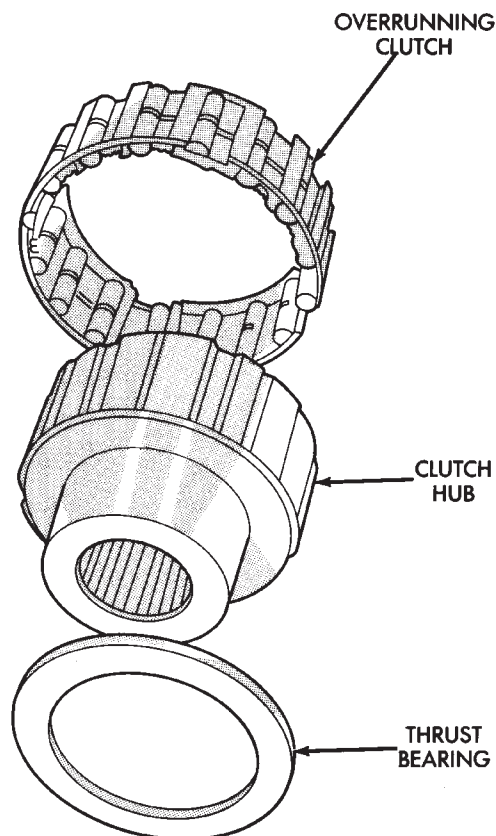


Fig. 321 Overrunning Clutch Components

DISASSEMBLY AND ASSEMBLY (Continued)

(15) Mark position of annulus gear and direct clutch drum for assembly alignment reference (Fig. 322). Use small center punch or scribe to make alignment marks.

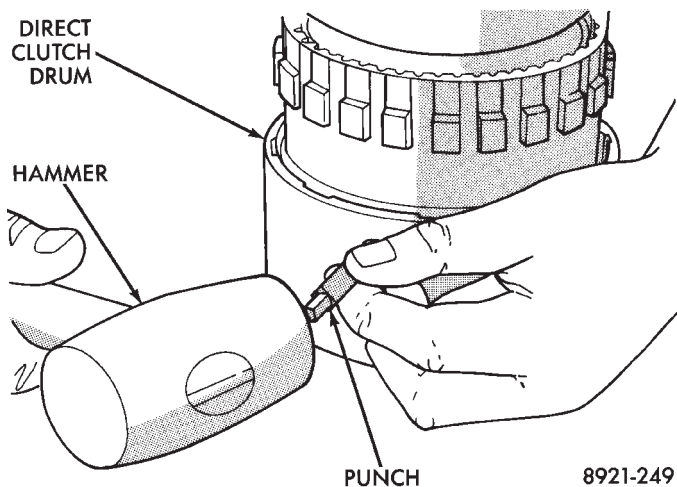


Fig. 322 Marking Direct Clutch Drum And Annulus Gear For Assembly Alignment

(16) Remove direct clutch drum rear retaining ring (Fig. 323).

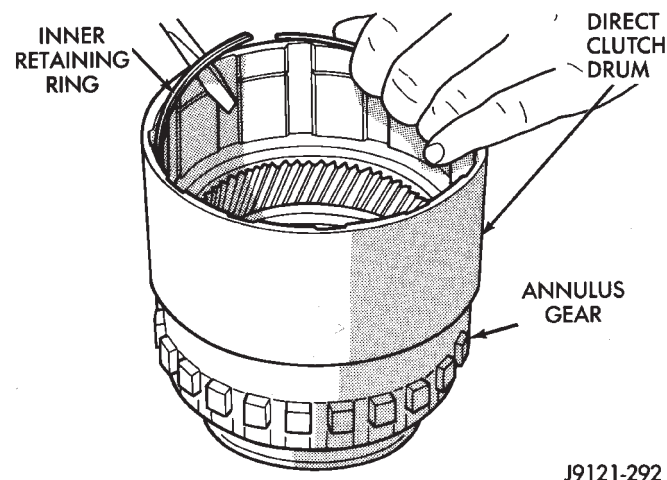


Fig. 323 Removing Clutch Drum Inner Retaining Ring

(17) Remove direct clutch drum outer retaining ring (Fig. 324).

(18) Mark annulus gear and output shaft for assembly alignment reference (Fig. 325).

(19) Remove annulus gear from output shaft (Fig. 326). Use rawhide or plastic mallet to tap gear off shaft.

(20) Remove output shaft front bearing if not previously removed.

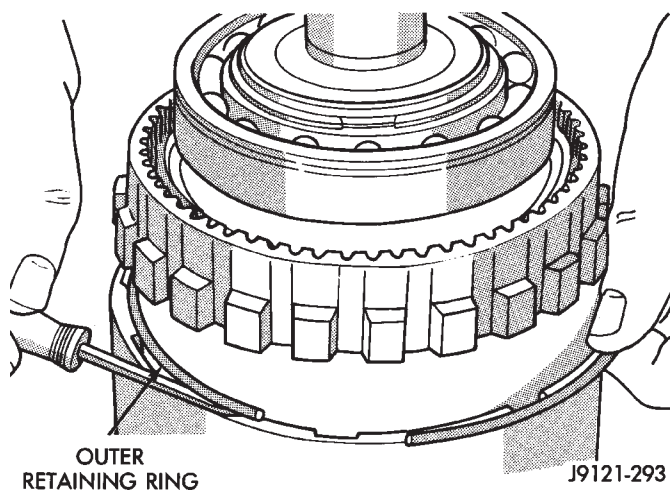


Fig. 324 Removing Clutch Drum Outer Retaining Ring

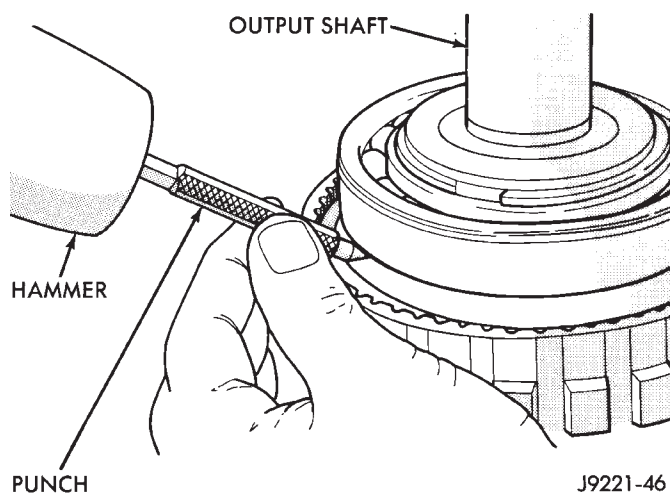


Fig. 325 Marking Annulus Gear And Output Shaft For Assembly Alignment

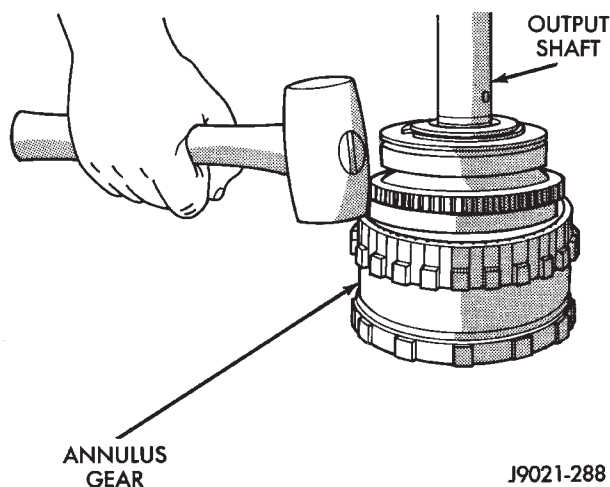


Fig. 326 Removing Annulus Gear

DISASSEMBLY AND ASSEMBLY (Continued)

ASSEMBLE

(1) Soak direct clutch and overdrive clutch discs in Mopar ATF Plus before installation. Also lubricate geartrain components with ATF Plus during reassembly.

(2) Install new pilot bushing and clutch hub bushing in output shaft if necessary (Fig. 327). Lubricate new (or old) bushings with petroleum jelly.

(3) Install front bearing and bearing snap ring on output shaft (Fig. 327).

(4) Align and install annulus gear on output shaft (Fig. 327).

(5) Install annulus snap ring (Fig. 327).

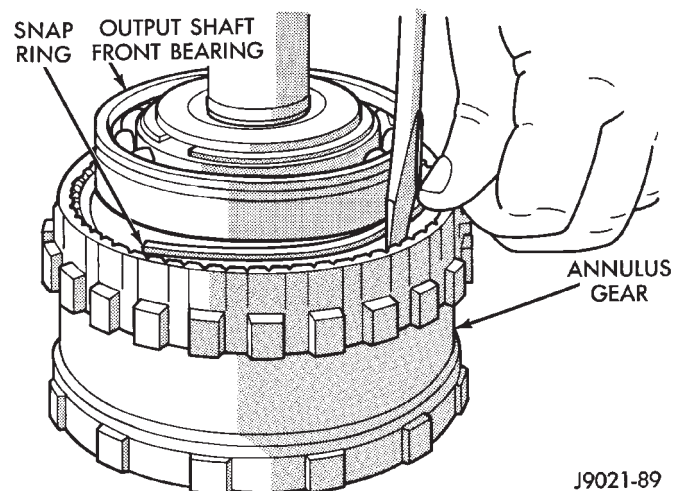


Fig. 327 Installing Annulus Gear And Snap Ring

(6) Align and install clutch drum on annulus gear (Fig. 328). Be sure drum is engaged in annulus gear lugs.

(7) Install clutch drum outer retaining ring (Fig. 328).

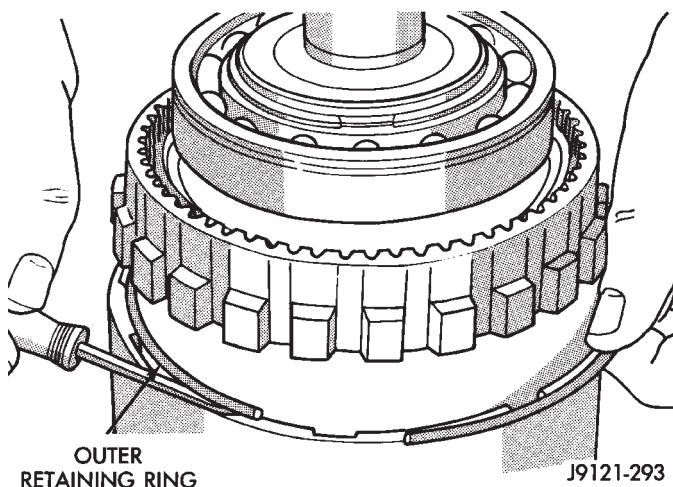


Fig. 328 Clutch Drum And Outer Retaining Ring Installation

(8) Slide clutch drum forward and install inner retaining ring (Fig. 329).

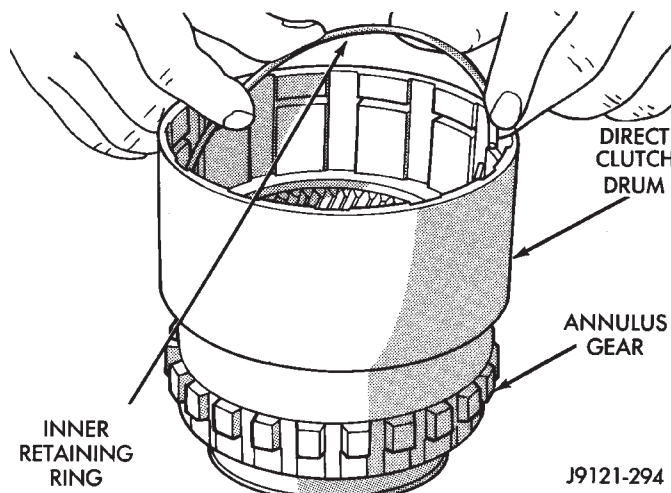


Fig. 329 Installing Clutch Drum Inner Retaining Ring

(9) Install overrunning clutch on hub (Fig. 330). **Clutch only fits one way. Shoulder on clutch should seat in small recess at edge of hub.**

(10) Install thrust bearing on overrunning clutch hub (Fig. 331). Use petroleum jelly to hold bearing in place during installation. **Bearing fits one way only. Be sure bearing is seated squarely against hub. Reposition bearing if it does not seat squarely.**

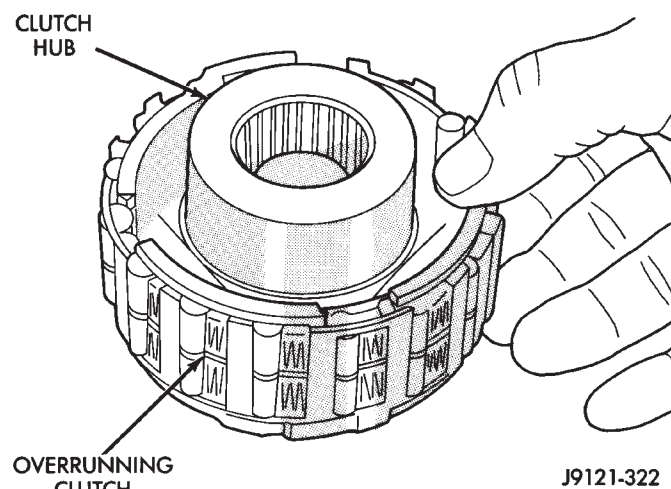


Fig. 330 Assembling Overrunning Clutch And Hub

(11) Install overrunning clutch (Fig. 332). Insert snap ring pliers in hub splines. Expand pliers to grip hub. Then install assembly with counterclockwise, twisting motion.

(12) Install planetary gear in annulus gear (Fig. 333). **Be sure planetary pinions are fully seated in annulus gear before proceeding.**

(13) Install direct clutch spring plate on sun gear. Then secure plate to sun gear with snap ring (Fig. 334). Shoulder side of plate should face outward and toward front.

DISASSEMBLY AND ASSEMBLY (Continued)

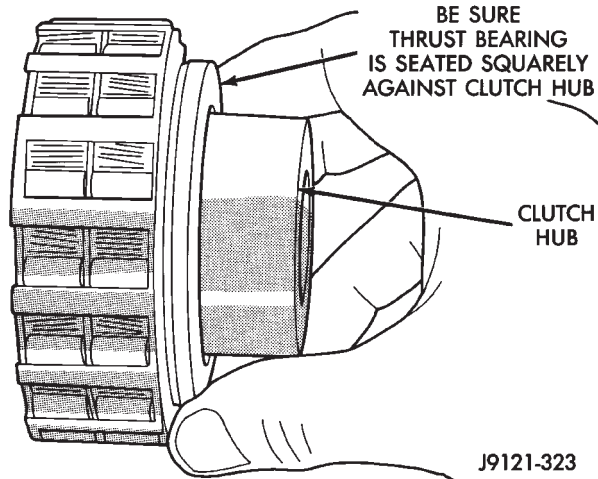


Fig. 331 Installing Overrunning Clutch Thrust Bearing

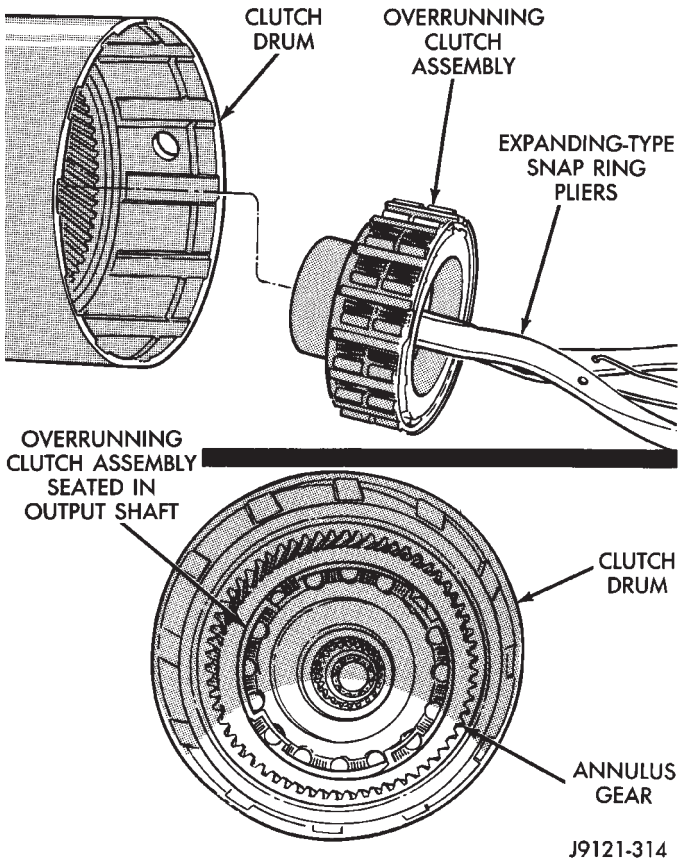


Fig. 332 Overrunning Clutch Installation

(14) Coat planetary thrust bearing and bearing contact surface of spring plate with petroleum jelly. This will help hold bearing in place during installation.

(15) Install planetary thrust bearing on sun gear (Fig. 335). Slide bearing onto gear and seat it against spring plate as shown. **Bearing fits one way only.**

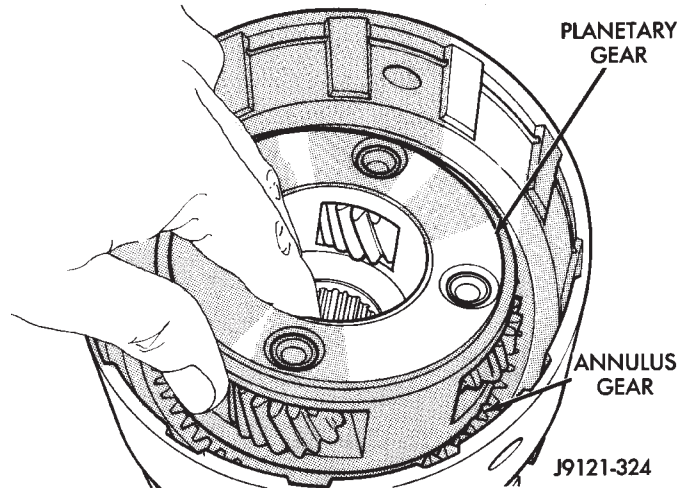


Fig. 333 Planetary Gear Installation

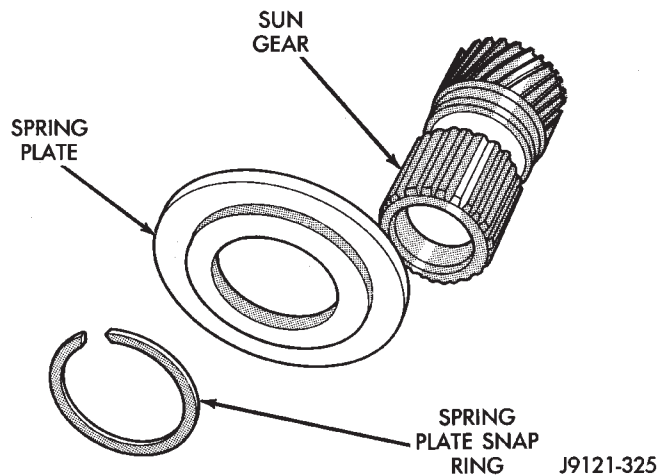


Fig. 334 Sun Gear And Spring Plate Assembly

If it does not seat squarely against spring plate, remove and reposition bearing.

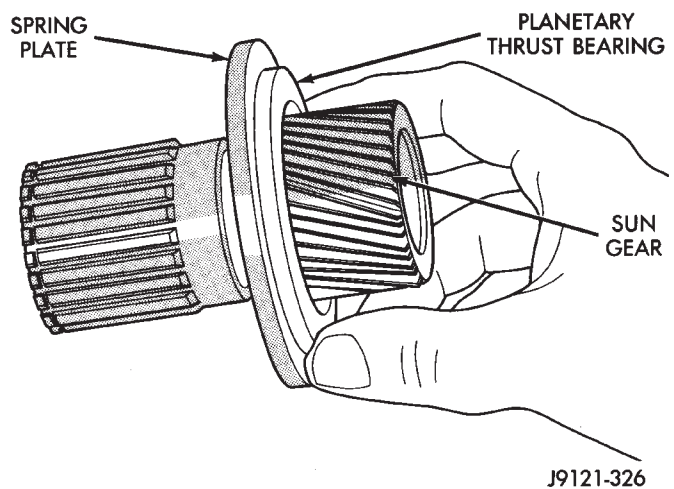


Fig. 335 Installing Planetary Thrust Bearing

DISASSEMBLY AND ASSEMBLY (Continued)

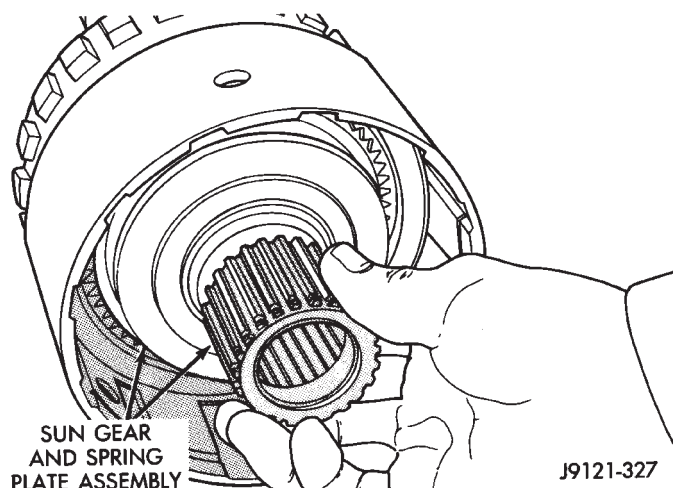


Fig. 336 Sun Gear Installation

(16) Install assembled sun gear, spring plate and thrust bearing (Fig. 336). Be sure sun gear and thrust bearing are fully seated before proceeding.

(17) Align splines in hubs of planetary gear and overrunning clutch with Alignment Tool 6227-2 (Fig. 337). Insert tool through sun gear and into splines of both hubs. Be sure alignment tool is fully seated before proceeding.

(18) Install direct clutch spring. Be sure spring is properly seated on spring plate (Fig. 337).

(19) Assemble direct clutch pack for installation on hub (Fig. 338).

(20) Install direct clutch reaction plate on clutch hub. **One side of reaction plate is counterbored. Be sure this side faces rearward. Splines at rear of hub are raised slightly and counterbore in plate fits over these splines. Plate should be flush with this end of hub (Fig. 339).**

(21) Install remainder of direct clutch components as follows:

(a) Install first clutch disc on reaction plate followed by a steel plate.

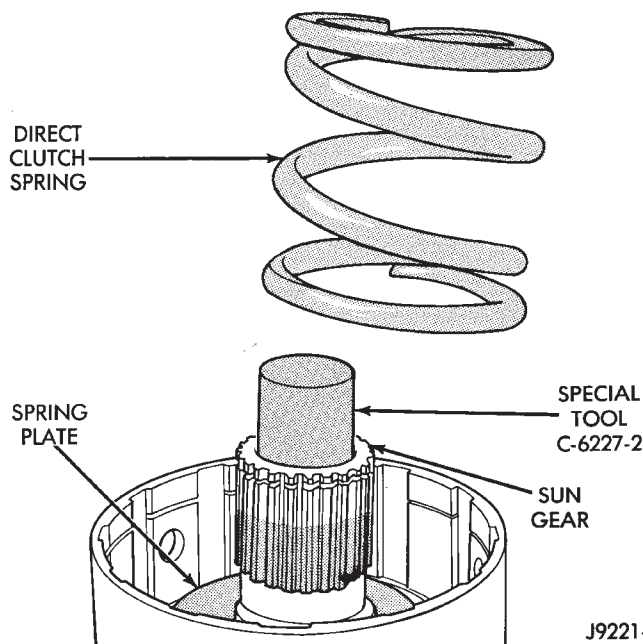


Fig. 337 Direct Clutch Spring Installation

(b) Alternately install remaining clutch discs and steel plates until required number are installed (Fig. 338). The clutch requires 8 discs and 7 steel plates.

(c) Last clutch pack item installed is clutch pressure plate. Be sure plate is installed with shoulder side of plate facing upward (Fig. 340).

(22) Install clutch hub and clutch pack on direct clutch spring (Fig. 341).

(23) Mount geartrain assembly in shop press (Fig. 342).

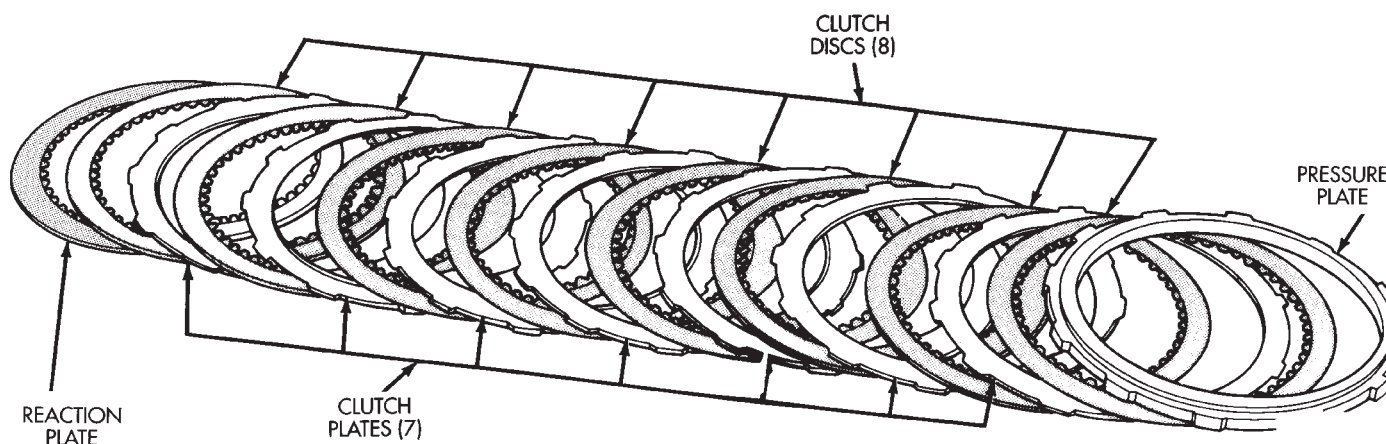


Fig. 338 Direct Clutch Pack Components

DISASSEMBLY AND ASSEMBLY (Continued)

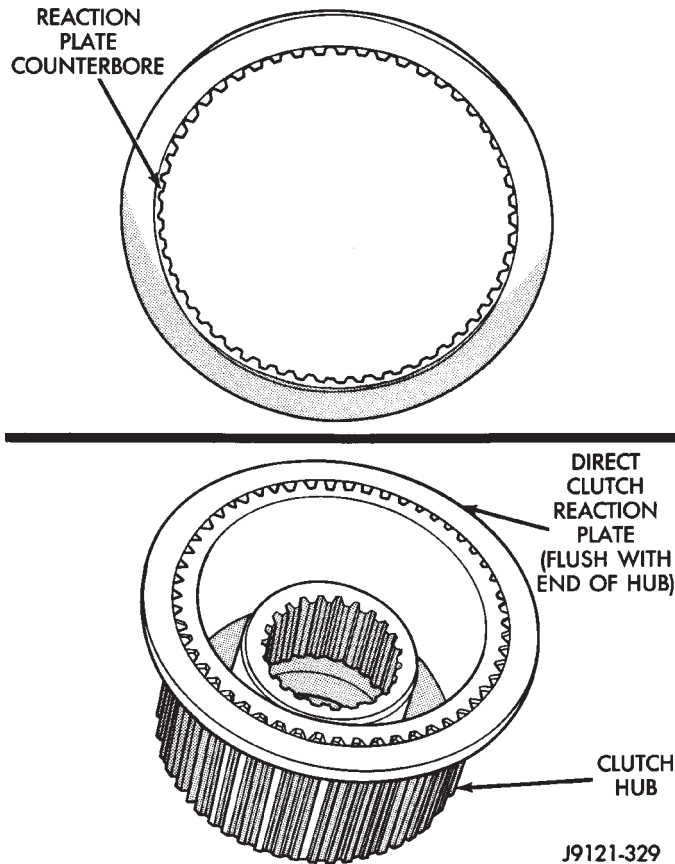


Fig. 339 Correct Position Of Direct Clutch Reaction Plate

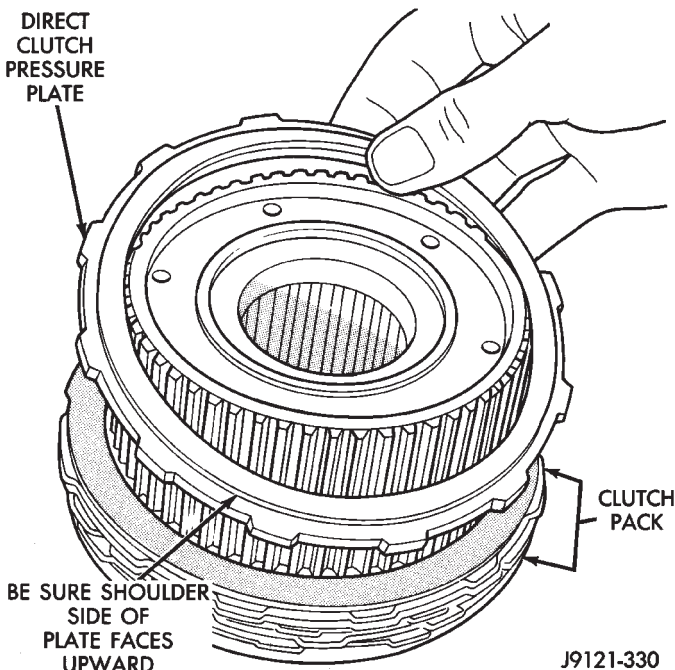


Fig. 340 Correct Position Of Direct Clutch Pressure Plate

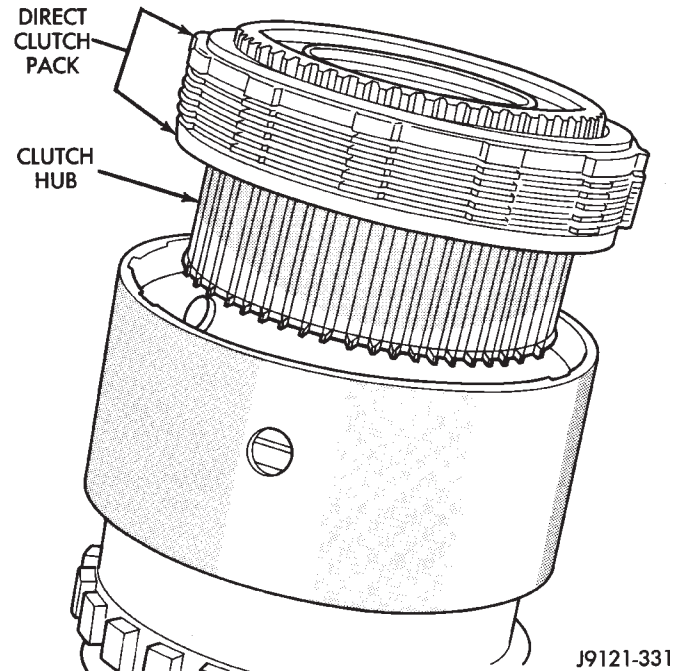


Fig. 341 Installing Assembled Direct Clutch Pack And Hub

WARNING: THE NEXT STEP IN GEARTRAIN ASSEMBLY INVOLVES COMPRESSING THE DIRECT CLUTCH HUB AND SPRING. IT IS EXTREMELY IMPORTANT THAT PROPER EQUIPMENT BE USED TO COMPRESS THE SPRING AS SPRING FORCE IS APPROXIMATELY 800 POUNDS. USE SPRING COMPRESSOR TOOL C-6227-1 AND A HYDRAULIC-TYPE SHOP PRESS WITH A MINIMUM RAM TRAVEL OF 5-6 INCHES. THE PRESS MUST ALSO HAVE A BED THAT CAN BE ADJUSTED UP OR DOWN AS REQUIRED. RELEASE CLUTCH SPRING TENSION SLOWLY AND COMPLETELY TO AVOID PERSONAL INJURY.

(24) Position Compressor Tool 6227-2 on clutch hub (Fig. 342).

(25) Slide direct clutch pack upwards on hub (Fig. 342). Slide pack upward and set it partially on edge of hub and compressor tool as shown in (Fig. 342).

(26) Slowly compress clutch hub and spring (Fig. 343). Compress spring and hub only enough to expose ring grooves for clutch pack snap ring and clutch hub retaining ring.

(27) Realign clutch pack on hub and seat clutch discs and plates in clutch drum (Fig. 343).

(28) Install direct clutch pack snap ring (Fig. 344). **Be very sure snap ring is fully seated in clutch drum ring groove.**

(29) Install clutch hub retaining ring (Fig. 345). **Be very sure retaining ring is fully seated in sun gear ring groove.**

DISASSEMBLY AND ASSEMBLY (Continued)

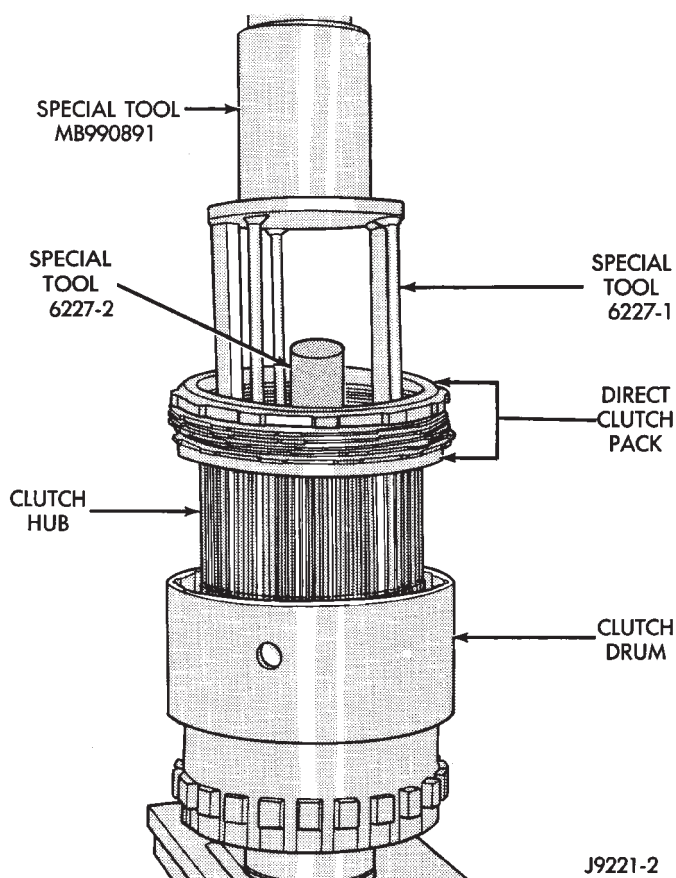


Fig. 342 Mounting Geartrain Assembly In Shop Press

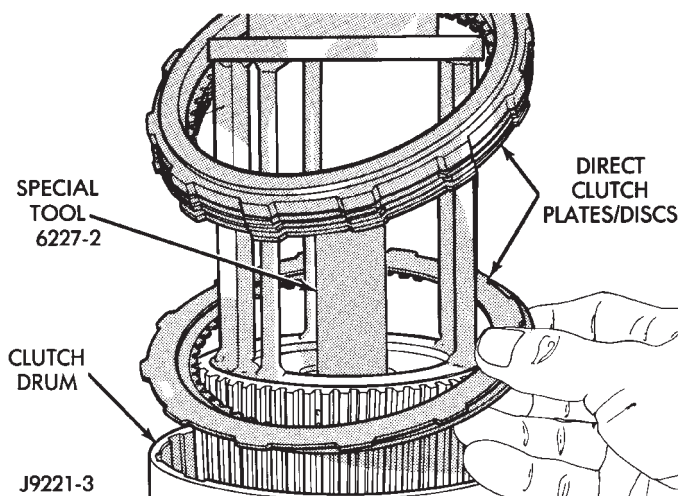


Fig. 343 Seating Clutch Pack In Drum

(30) Slowly release press ram, remove compressor tools and remove geartrain assembly.

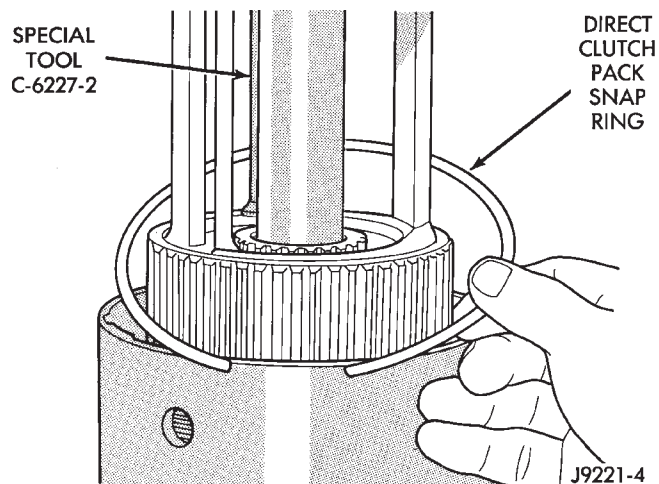


Fig. 344 Installing Direct Clutch Pack Snap Ring

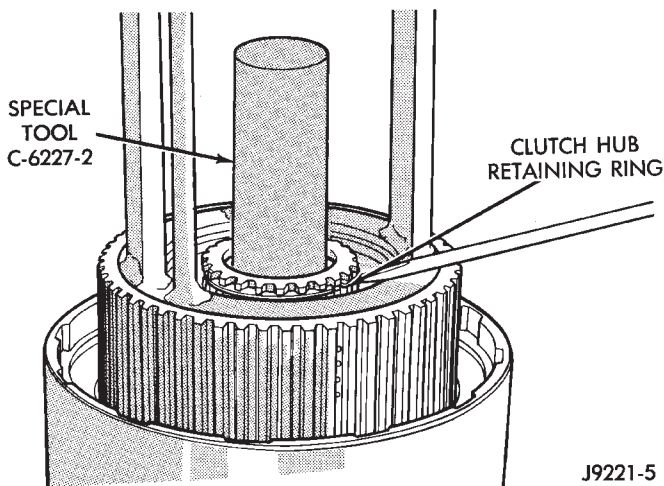


Fig. 345 Installing Clutch Hub Retaining Ring

CLEANING AND INSPECTION

VALVE BODY

Clean the valve housings, valves, plugs, springs, and separator plates with a standard parts cleaning solution only. Do not use gasoline, kerosene, or any type of caustic solution.

Do not immerse any of the electrical components in cleaning solution. Clean the governor solenoid and sensor and the dual solenoid and harness assembly by wiping them off with dry shop towels only.

Dry all except the electrical parts with compressed air. Make sure all passages are clean and free from obstructions. **Do not use rags or shop towels to dry or wipe off valve body components. Lint from these materials can stick to valve body parts, interfere with valve operation, and clog filters and fluid passages.**

Wipe the governor pressure sensor and solenoid valve with dry, lint free shop towels only. The O-rings on the sensor and solenoid valve are the only service-

CLEANING AND INSPECTION (Continued)

able components. Be sure the vent ports in the solenoid valve are open and not blocked by dirt or debris. Replace the valve and/or sensor only when DRB scan tool diagnosis indicates this is necessary. Or, if either part has sustained physical damage (dented, deformed, broken, etc.).

CAUTION: Do not turn the small screw at the end of the solenoid valve for any reason. Turning the screw in either direction will ruin solenoid calibration and result in solenoid failure. In addition, the filter on the solenoid valve is NOT serviceable. Do not try to remove the filter as this will damage the valve housing.

Inspect the throttle and manual valve levers and shafts (Fig. 346). Do not attempt to straighten a bent shaft or correct a loose lever. Replace these components if worn, bent, loose or damaged in any way.

Inspect all of the valve body mating surfaces for scratches, nicks, burrs, or distortion. Use a straight-edge to check surface flatness. Minor scratches may be removed with crocus cloth using only very light pressure.

Minor distortion of a valve body mating surface may be corrected by smoothing the surface with a sheet of crocus cloth. Position the crocus cloth on a surface plate, sheet of plate glass or equally flat surface. If distortion is severe or any surfaces are heavily scored, the valve body will have to be replaced.

CAUTION: Many of the valves and plugs, such as the throttle valve, shuttle valve plug, 1-2 shift valve and 1-2 governor plug, are made of coated aluminum. Aluminum components are identified by the dark color of the special coating applied to the surface (or by testing with a magnet). Do not sand aluminum valves or plugs under any circumstances. This practice could damage the special coating causing the valves/plugs to stick and bind.

Inspect the valves and plugs for scratches, burrs, nicks, or scores. Minor surface scratches on steel valves and plugs can be removed with crocus cloth but **do not round off the edges of the valve or**

plug lands. Maintaining sharpness of these edges is vitally important. The edges prevent foreign matter from lodging between the valves and plugs and the bore.

Inspect all the valve and plug bores in the valve body. Use a penlight to view the bore interiors. Replace the valve body if any bores are distorted or scored. Inspect all of the valve body springs. The springs must be free of distortion, warpage or broken coils.

Check the two separator plates for distortion or damage of any kind. Inspect the upper housing, lower housing, 3-4 accumulator housing, and transfer plate carefully. Be sure all fluid passages are clean and clear. Check condition of the upper housing and transfer plate check balls as well. The check balls and ball seats must not be worn or damaged.

Trial fit each valve and plug in its bore to check freedom of operation. When clean and dry, the valves and plugs should drop freely into the bores.

Valve body bores do not change dimensionally with use. If the valve body functioned correctly when new, it will continue to operate properly after cleaning and inspection. It should not be necessary to replace a valve body assembly unless it is damaged in handling.

The only serviceable valve body components are listed below. The remaining valve body components are serviced only as part of a complete valve body assembly. Serviceable parts are:

- dual solenoid and harness assembly
- solenoid gasket
- solenoid case connector O-rings and shoulder bolt
- switch valve and spring
- pressure adjusting screw and bracket assembly
- throttle lever
- manual lever and shaft seal
- throttle lever shaft seal, washer, and E-clip
- fluid filter and screws
- detent ball and spring
- valve body screws
- governor pressure solenoid
- governor pressure sensor and retaining clip
- park lock rod and E-clip

CLEANING AND INSPECTION (Continued)

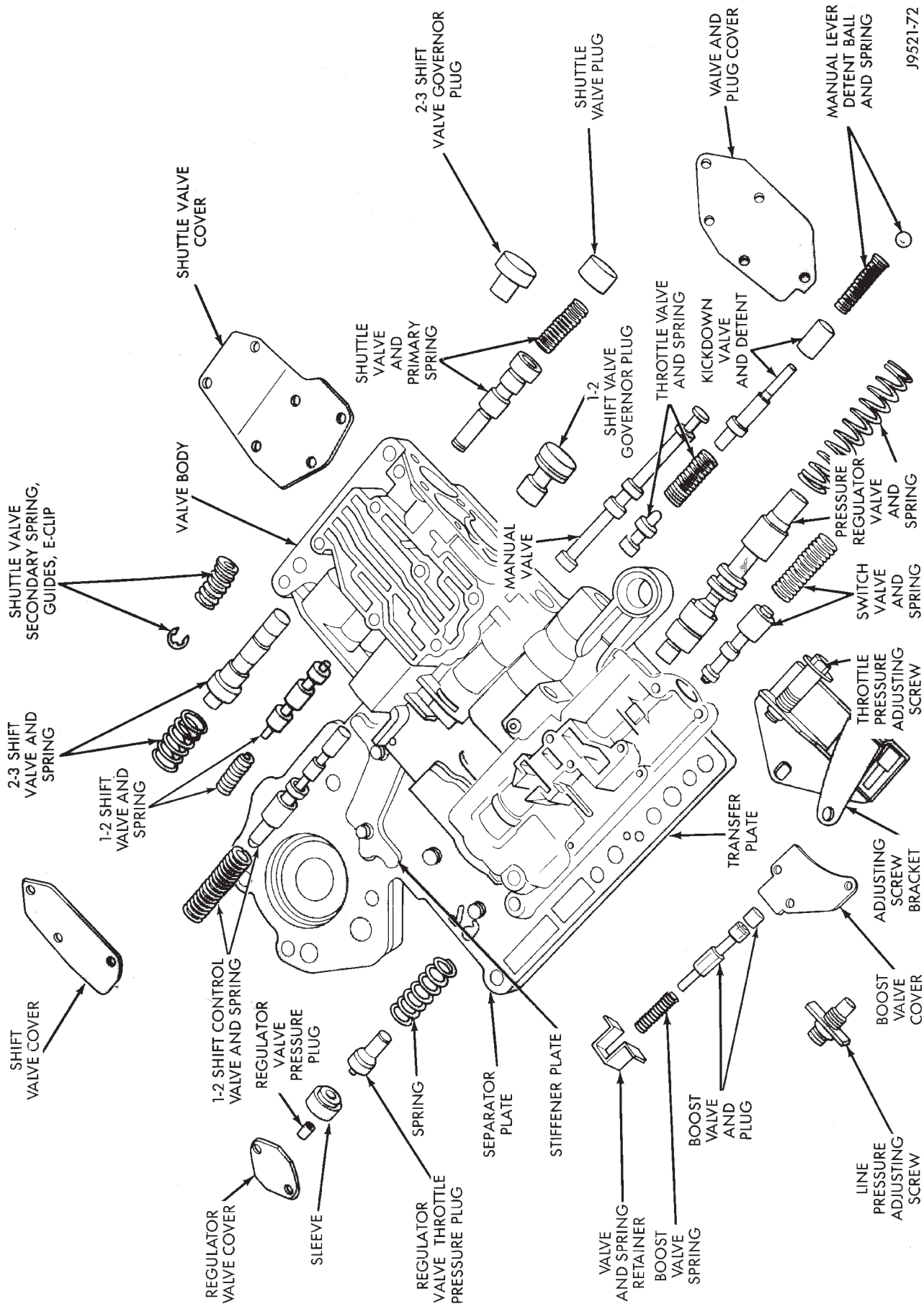


Fig. 346 Upper Housing Valves, Plug, Springs And Brackets

CLEANING AND INSPECTION (Continued)

TRANSMISSION

GENERAL INFORMATION

Inspect the transmission bushings during overhaul. Bushing condition is important as worn, scored bushings contribute to low pressures, clutch slip and accelerated wear of other components. However, do not replace bushings as a matter of course. Replace bushings only when they are actually worn, or scored.

Use recommended tools to replace bushings. The tools are sized and designed to remove, install, and seat bushings correctly. The bushing replacement tools are included in Bushing Tool Set C-3887-B.

Pre-sized service bushings are available for replacement purposes. Only the sun gear bushings are not serviced. Low cost of the sun gear assembly makes it easier to simply replace the gear and bushings as an assembly.

Heli-Coil inserts can be used to repair damaged, stripped or worn threads in aluminum parts. These inserts are available from most automotive parts suppliers. Stainless steel inserts are recommended.

The use of crocus cloth is permissible where necessary, providing it is used carefully. When used on shafts, or valves, use extreme care to avoid rounding off sharp edges. Sharp edges are vital as they prevent foreign matter from getting between the valve and valve bore.

Do not reuse oil seals, gaskets, seal rings, or O-rings during overhaul. Replace these parts as a matter of course. Also do not reuse snap rings or E-clips that are bent or distorted. Replace these parts as well.

Lubricate transmission parts with Mopar ATF Plus, Type 7176, transmission fluid during overhaul and assembly. Use petroleum jelly, Mopar Door Ease, or Ru-Glyde to prelubricate seals, O-rings, and thrust washers. Petroleum jelly can also be used to hold parts in place during reassembly.

TRANSMISSION CASE CLEANING AND INSPECTION

Clean the case in a solvent tank. Flush the case bores and fluid passages thoroughly with solvent. Dry the case and all fluid passages with compressed air. Be sure all solvent is removed from the case and that all fluid passages are clear.

NOTE: Do not use shop towels or rags to dry the case (or any other transmission component) unless they are made from lint-free materials. Lint will stick to case surfaces and transmission components and circulate throughout the transmission after assembly. A sufficient quantity of lint can block fluid passages and interfere with valve body operation.

Inspect the case for cracks, porous spots, worn bores, or damaged threads. Damaged threads can be repaired with Helicoil thread inserts. However, the case will have to be replaced if it exhibits any type of damage or wear.

Lubricate the front band adjusting screw threads with petroleum jelly and thread the screw part-way into the case. Be sure the screw turns freely.

OVERRUNNING CLUTCH/LOW-REVERSE DRUM/REAR SUPPORT

Clean the overrunning clutch assembly, clutch cam, low-reverse drum and rear support in solvent. Dry them with compressed air after cleaning.

Inspect condition of each clutch part after cleaning. Replace the overrunning clutch roller and spring assembly if any rollers or springs are worn or damaged, or if the roller cage is distorted, or damaged. Replace the cam if worn, cracked or damaged.

Replace the low-reverse drum if the clutch race, roller surface or inside diameter is scored, worn or damaged. **Do not remove the clutch race from the low-reverse drum under any circumstances. Replace the drum and race as an assembly if either component is damaged.**

Examine the rear support carefully for wear, cracks, scoring or other damage. Be sure the support hub is a snug fit in the case and drum. Replace the support if worn or damaged.

ACCUMULATOR

Inspect the accumulator piston and seal rings (Fig. 347). Replace the seal rings if worn or cut. Replace the piston if chipped or cracked.

Check condition of the accumulator inner and outer springs (Fig. 347). Replace the springs if the coils are cracked, distorted or collapsed.

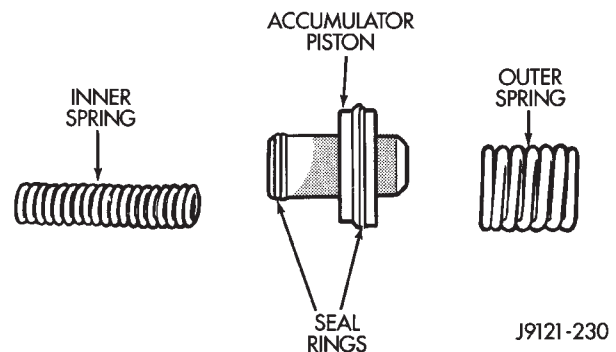


Fig. 347 Accumulator Components

FRONT SERVO

Clean the servo piston components with solvent and dry them with compressed air. Wipe the band clean with lint free shop towels.

CLEANING AND INSPECTION (Continued)

Replace the front band if distorted, lining is burned, flaking off, or worn to the point where the grooves in the lining material are no longer visible.

Inspect the servo components. Replace the springs if collapsed, distorted or broken. Replace the guide, rod and piston if cracked, bent, or worn. Discard the servo snap ring if distorted or warped.

Check the servo piston bore for wear. If the bore is severely scored, or damaged, it will be necessary to replace the case.

Replace any servo component if doubt exists about condition. Do not reuse suspect parts.

REAR SERVO

Remove and discard the servo piston seal ring (Fig. 348). Then clean the servo components with solvent and dry with compressed air. Replace either spring if collapsed, distorted or broken. Replace the plug and piston if cracked, bent, or worn. Discard the servo snap rings and use a new ones at assembly.

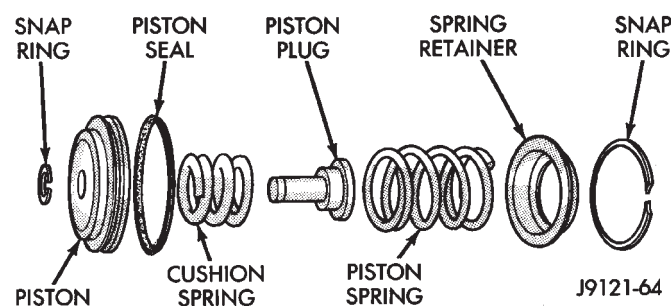


Fig. 348 Rear Servo Components

OIL PUMP AND REACTION SHAFT SUPPORT

Clean pump and support components with solvent and dry them with compressed air.

Check condition of the seal rings and thrust washer on the reaction shaft support. The seal rings do not need to be replaced unless cracked, broken, or severely worn.

Inspect the pump and support components. Replace the pump or support if the seal ring grooves or machined surfaces are worn, scored, pitted, or damaged. Replace the pump gears if pitted, worn chipped, or damaged.

Check the pump vent. The vent must be secure. Replace the pump body if the vent is cracked, broken, or loose.

Inspect the pump bushing. Then check the reaction shaft support bushing. Replace either bushing only if heavily worn, scored or damaged. It is not necessary to replace the bushings unless they are actually damaged.

Install the gears in the pump body and measure end clearance with a feeler gauge and straightedge (Fig. 349). Straightedge should be resting on pump body as shown:

- End clearance between outer gear and straight-edge should be 0.010 to 0.063 mm (0.0004 to 0.0025 in.).

- End clearance between inner gear and straight-edge should be 0.025 to 0.177 mm (0.001 to 0.007 in.).

Measure tip clearances with feeler gauge (Fig. 350):

- Clearance between inner gear tooth and outer gear should be 0.08 to 0.19 mm (0.0035 to 0.0075 in.).

- Clearance between outer gear and pump housing should also be 0.010 to 0.19 mm (0.0035 to 0.0075 in.).

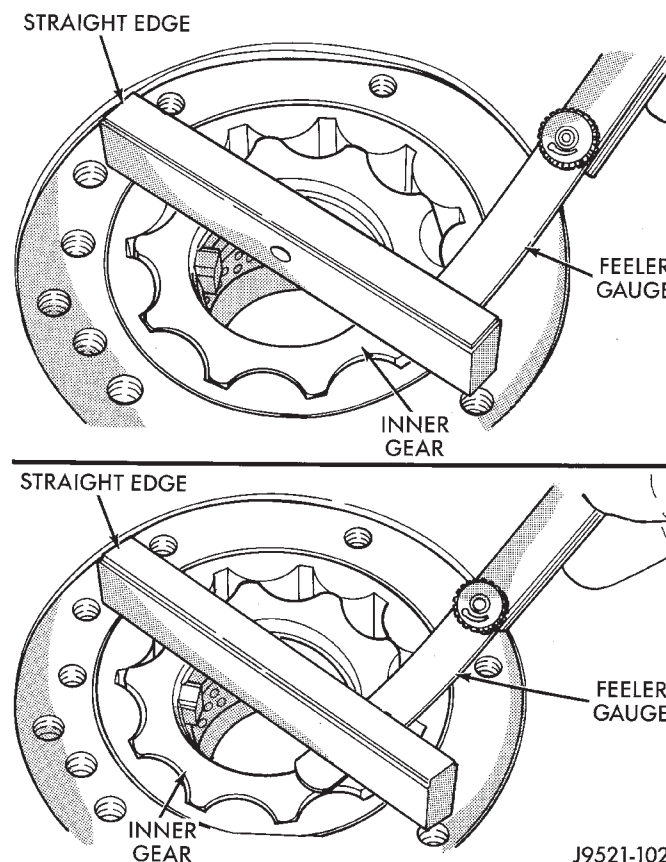


Fig. 349 Checking Pump Gear End Clearance

FRONT CLUTCH

Clean the front clutch components in solvent and dry them with compressed air only. Do not use rags or shop towels to dry any of the clutch parts. Lint from such materials will adhere to the component surfaces and could restrict or block fluid passages after assembly.

Replace the clutch discs if warped, worn, scored, burned or charred, or if the facing is flaking off. Replace the steel plates if heavily scored, warped, or broken. Be sure the driving lugs on the plates are in good condition. The lugs must not be bent, cracked or damaged in any way.