

STEERING

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SPECIFICATIONS

N19CA--

GENERAL SPECIFICATIONS

Items	Specifications
Steering wheel	
Steering wheel O.D. mm (in.)	
Two-spork type	370 (14.6)
Three-spork type	376 (14.8)
Gear box	
Steering gear type	Rack and pinion
Power steering oil pump	
Oil pump type	Vane type
Displacement cm ³ /rev. (cu.in./rev.)	9.6 (.59)
Relief set pressure MPa (psi)	8 (1,138)

SERVICE SPECIFICATIONS

N19CB--

MANUAL STEERING

Items	Specifications
Standard value	
Steering angle	
Inner wheel	41°00' ± 1°30'
Outer wheel	35°00'
Tie rod end ball joint starting torque Nm (in.lbs.)	0.5 – 2.5 (4 – 22)
Total pinion torque Nm (in.lbs.)	0.3 – 1.4 (3 – 12)
Tie-rod joint swing resistance N (lbs.)	8 – 20 (1.8 – 4.4)
Tie-rod joint swing torque Nm (in.lbs.)	2 – 5 (17 – 43)
Limit	
Steering wheel free play (when hydraulic operation) mm (in.)	30 (1.2)
Variation of tie rod end ball joint shaft direction mm (in.)	1.5 (.059)

POWER STEERING

Items	Specifications
Standard value	
Steering wheel free play (with engine stopped) mm (in.)	11 (.43)
Steering angle	
Inner wheel	37°00' ± 1°30'
Outer wheel	32°30'
Tie rod end ball joint starting torque Nm (in.lbs.)	0.5 – 2.5 (4 – 22)
Stationary steering effort N (lbs.)	37 (8)
V-belt deflection mm (in.)	6 – 9 (.24 – .35)
Oil pump pressure MPa (psi)	
Pressure gauge valve closed	5.5 – 6.2 (782 – 881)
Pressure gauge valve opened	0.8 – 1.0 (114 – 142)

Items	Specifications
Oil pressure switch operating pressure MPa (psi)	
Oil pressure switch contacts closed (continuity)	1.5 – 2.0 (213 – 284)
Oil pressure switch contacts opened (no continuity)	0.7 – 1.2 (100 – 171)
Total pinion torque Nm (in.lbs.)	0.6 – 1.3 (5 – 11)
Tie-rod joint swing resistance N (lbs.)	8 – 20 (1.9 – 4.6)
Tie-rod joint swing torque Nm (in.lbs.)	2 – 5 (17 – 43)
Limit	
Steering wheel free play (when hydraulic operation) mm (in.)	30 (1.2)
Oil pump pressure	
Pressure gauge valve opened MPa (psi)	1.5 (213)
Space between vane and rotor mm (in.)	0.06 (.0024)
Shaft backlash of pump body bushing and pulley assembly mm (in.)	0.1 (.004)

TORQUE SPECIFICATIONS

N19CC -

Items	Nm	ft.lbs.
Steering wheel and shaft		
Steering wheel lock nut	35 – 45	25 – 33
Lower bracket	8 – 12	6 – 9
Upper bracket	8 – 12	6 – 9
Joint to gear box	15 – 20	11 – 14
Manual steering gear box		
Joint to gear box	15 – 20	11 – 14
Tie rod end to knuckle	15 – 34	11 – 25
Gear box to body	60 – 80	43 – 58
Tie rod end lock nut	34 – 50	25 – 36
Tie rod to rack	80 – 100	58 – 72
Rack support cover locking nut	50 – 70	36 – 51
Top cover locking nut	50 – 70	36 – 51
Power steering gear box		
Joint to gear box	15 – 20	11 – 14
Pressure tube to gear box	12 – 18	9 – 13
Return tube to gear box	12 – 18	9 – 13
Tie rod end to knuckle	15 – 34	11 – 25
Gear box to body	60 – 80	43 – 58
Tie rod end lock nut	34 – 50	25 – 36
Tie rod to rack	80 – 100	58 – 72
Feed tubes	12 – 18	9 – 13
End plug	50 – 70	36 – 51
Pinion and valve assembly to self-locking nut	20 – 30	14 – 22
Rack support cover locking nut	50 – 70	36 – 51
Valve housing installation bolts	17 – 26	12 – 19

Items	Nm	ft.lbs.
Power steering oil pump		
Pressure hose to oil pump	14 – 21	10 – 15
Oil pump to oil pump bracket	45 – 55	33 – 40
Heat protector installation nut	9 – 14	7 – 10
Oil pump bracket to engine	25 – 33	18 – 24
Oil reservoir installation bolt	9 – 14	7 – 10
Oil reservoir bracket installation bolt	9 – 14	7 – 10
Pump cover to pump body	18 – 22	13 – 16
Suction connector to pump body	6 – 10	4 – 7
Connector to pump body	50 – 70	36 – 51
Terminal assembly to pump body	25 – 30	18 – 22
Power steering hoses		
Cooler tube to hood lack stay	4 – 6	3 – 4
Cooler tube to body	9 – 14	7 – 10
Cooler tube clamp	3.0 – 4.5	2 – 3
Return tube to body	9 – 14	7 – 10
Pressure tube to gear box	12 – 18	9 – 13
Return tube to gear box	12 – 18	9 – 13
Pressure hose to body	9 – 14	7 – 10
Pressure hose to oil pump	14 – 21	10 – 15
Pressure hose to pressure tube	30 – 40	22 – 29
Pressure hose bracket	9 – 14	7 – 10

LUBRICANTS

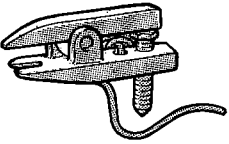
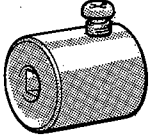
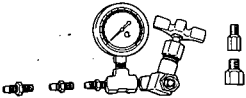
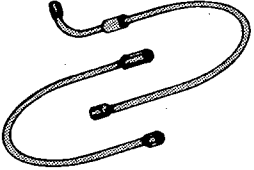
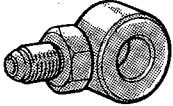
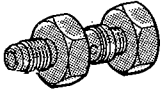
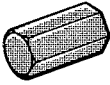
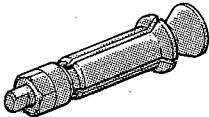

N19CD -

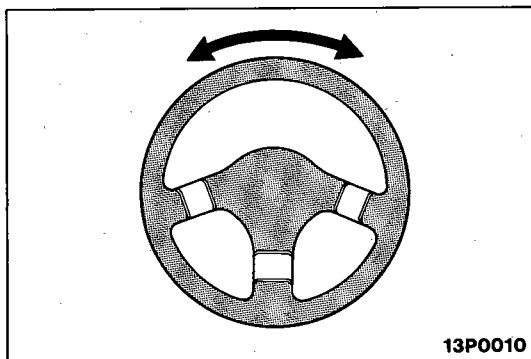
Items	Specified lubricant	Quantity
Steering column and shaft		
Sliding part of the bearing	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required
Manual steering gear box		
Rack teeth surface and rack bushing inner surface	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required
Pinion teeth surface	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required
Rack support surface in contact with the rack bar	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required
Inside of the rack support spring	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required
Bellows	Silicone grease	As required
Tie rod end dust cover	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required

Items	Specified lubricant	Quantity
Power steering gear box		
Bearing	MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II	As required
O-ring	MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II	As required
Oil seal	MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II	As required
Coating of the rack teeth face	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required
Special tool (MB991212)	MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II	As required
Pinion and valve assembly seal ring part	MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II	As required
Pinion and valve assembly pinion gear part	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required
Rack support surface in contact with the rack bar	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required
Bellows	Silicone grease	As required
Tie rod end dust cover	MOPAR Multi-mileage Lubricant Part Number 2525035 or equivalent	As required
Power steering oil pump		
Power steering fluid	MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II	0.9 liter (.95 qt.)
Flow control valve	MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II	As required
Friction surface of rotor, vane, cam ring and pump cover	MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II	As required
O-ring	MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II	As required

SPECIAL TOOLS

N19DA--

Tool	Number	Name	Use
	MB990635	Steering linkage puller	Disconnection of tie-rod end
	CT-1108	Preload socket	Measurement of the total pinion torque
	C-3309-E	Oil pressure gauge assembly	Measurement of oil pressure
	C-4535	Power steering oil pressure hose set	Measurement of oil pressure
	MB991217	Power steering oil pressure gauge adapter (pump side)	Measurement of oil pressure
	MB990994	Power steering oil pressure gauge adapter (hose side)	Measurement of oil pressure
	MB990607-A	Torque wrench socket	Remove and installation of the rack support cover
	MB991120	Needle bearing puller	Removal of rack housing needle bearing
	MB991212	Rack installer	Rack installation



13P0010

SERVICE ADJUSTMENT PROCEDURES <MANUAL STEERING>

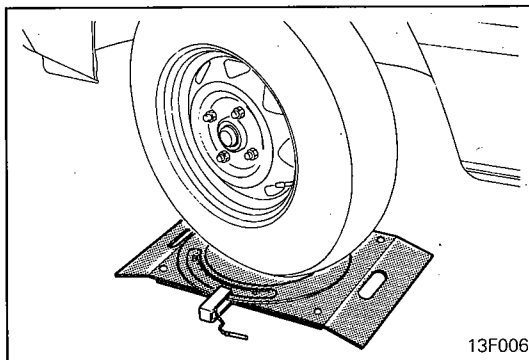
N19FAAE

STEERING WHEEL FREE PLAY CHECK

1. Set front wheels straight ahead.
2. Measure the play on steering wheel circumference before wheels move when slightly moving steering wheel in both directions.

Limit: 30 mm (1.2 in.)

3. When the play exceeds the limit, check play in steering shaft connection and steering linkage. Correct or replace.
4. When (3) check provides good results, check the following to adjust:
 - Remove the steering gear box, check and adjust total pinion starting torque.



13F006

STEERING ANGLE CHECK

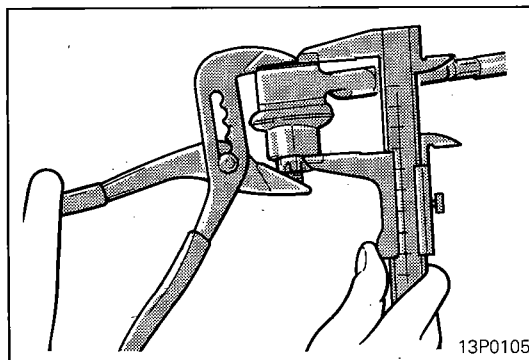
N19FDBF1

1. Set front wheels on turning radius gauge and measure steering angle.

Standard values:

Inner wheel $41^{\circ}00' \pm 1^{\circ}30'$
Outer wheel $35^{\circ}00'$

2. When not within the standard value, it is probably a toe problem. Adjust toe (refer to GROUP 2 – Service Adjustment Procedures) and recheck.



13P0105

TIE ROD END BALL JOINT VARIATION CHECK (SHAFT DIRECTION)

N19FPAB

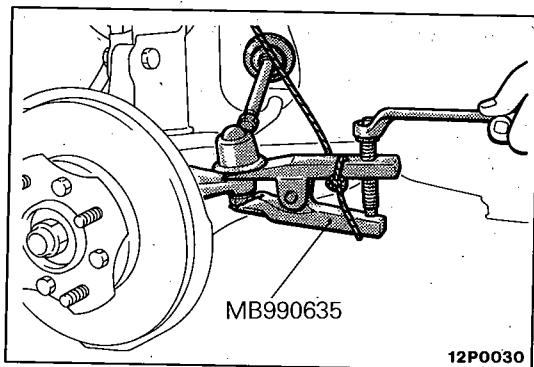
1. Hold the ball joint with pliers.
2. Set a caliper gauge as illustrated and measure the displacement with the ball stud compressed.

Limit: 1.5 mm (.059 in.)

3. If the measured displacement exceeds the limit, replace the tie-rod end.

Caution

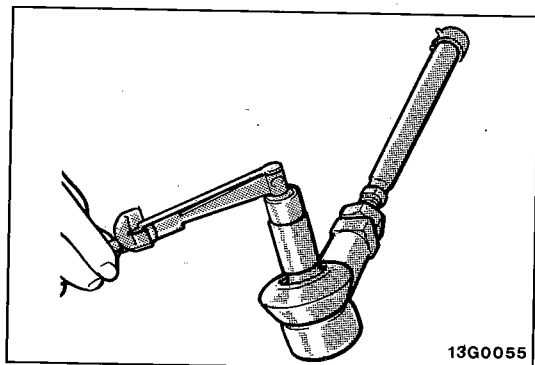
Even if the variation is within the limit, check ball joint starting torque.



TIE ROD END BALL JOINT STARTING TORQUE CHECK

N19FEB01

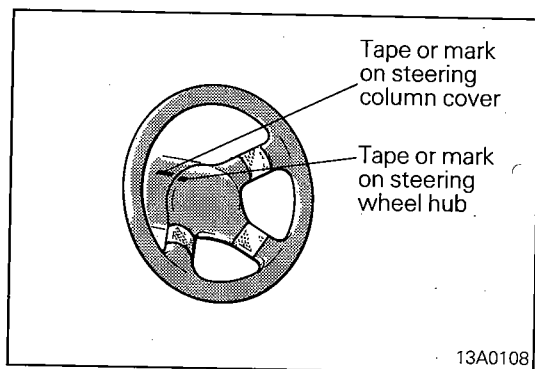
1. Disconnect tie rod and knuckle with special tool.



2. Move ball joint stud several times and install nut on stud. Measure ball joint starting torque.

Standard value: 0.5 – 2.5 Nm (4 – 22 in.lbs.)

3. When starting torque exceeds the standard value, replace tie rod end.
4. When the starting torque is under the standard value, check for play or ratcheting in ball joint. If none of these, it is still serviceable.



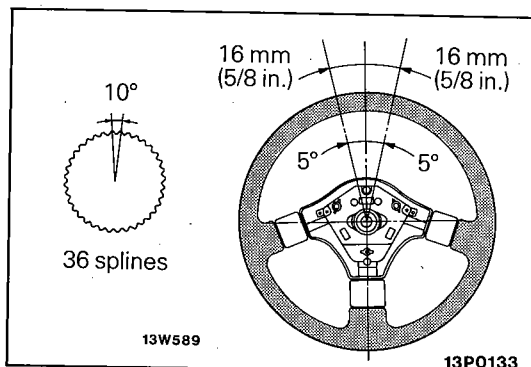
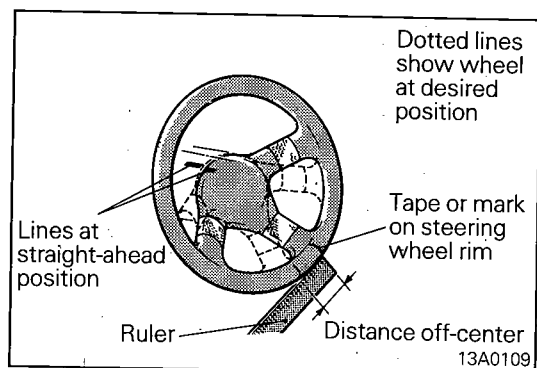
STEERING WHEEL CENTERING

N19FNAC

SIMPLIFIED STEERING WHEEL CENTERING

Determining Steering Wheel's Off Center

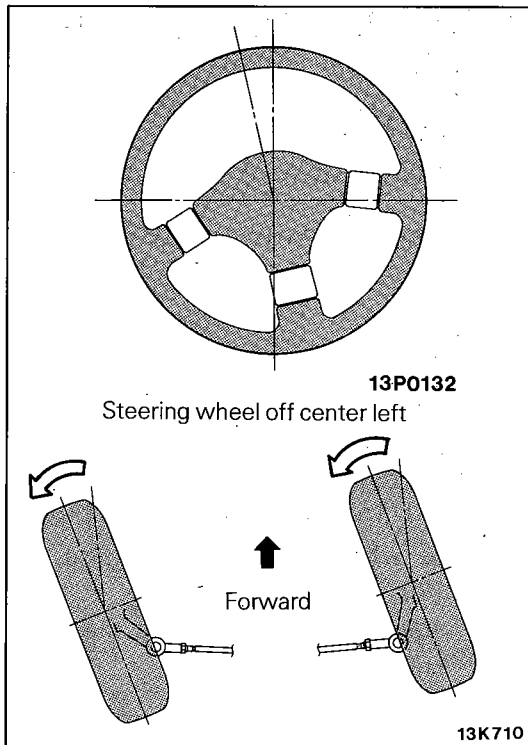
1. For the road test, take along chalk or tape and a ruler.
2. Drive straight ahead on an uncambered level surface.
3. When the vehicle's wheels are pointing straight ahead, mark the steering wheel hub and column cover with a chalk or tape line.
4. Stop the vehicle and line up the marks on the hub and column cover.
5. Place a tape strip or mark on the steering wheel rim.
6. Hold a ruler next to the rim as shown in the illustration, and then steer the steering wheel until it is in the desired centered position.
7. Record the distance the strip or mark on the rim has moved. This is how far the steering wheel is off center. If it is more than 16 mm (5/8 in.) off center, it can be centered by indexing it ten degrees towards the center.



Indexing Steering Wheel to Center It

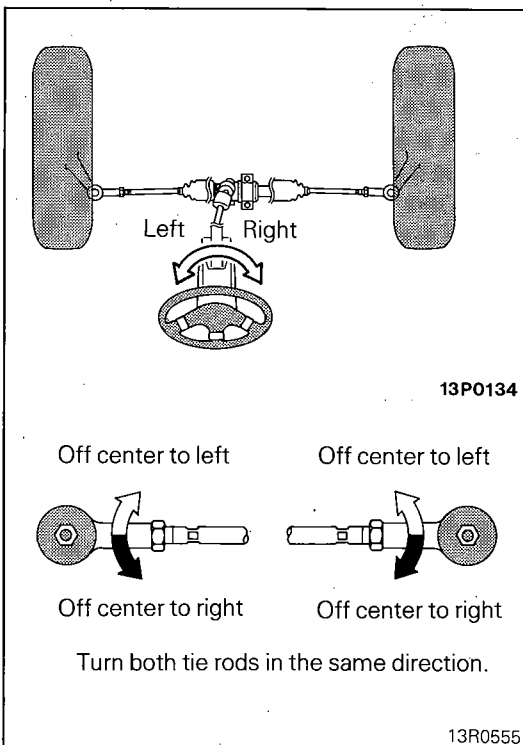
The steering wheel shaft has 36 splines, allowing the steering wheel to be indexed in ten-degree increments.

1. Remove the steering wheel.
2. Without disturbing the position of the steering wheel shaft, re-install the wheel as near on-center as possible.



PRECISION STEERING WHEEL CENTERING

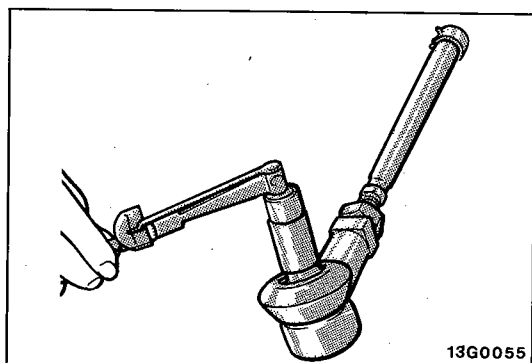
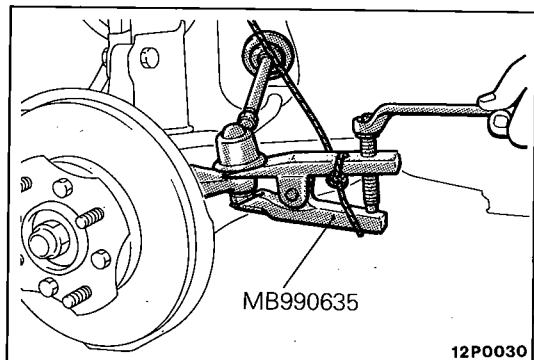
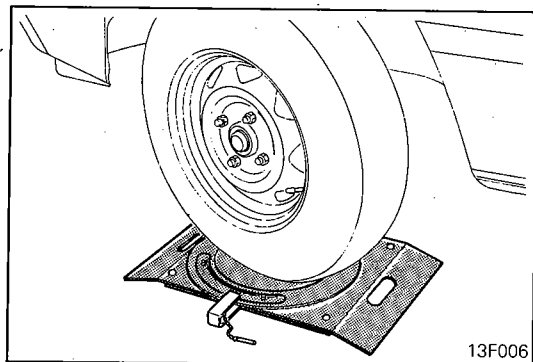
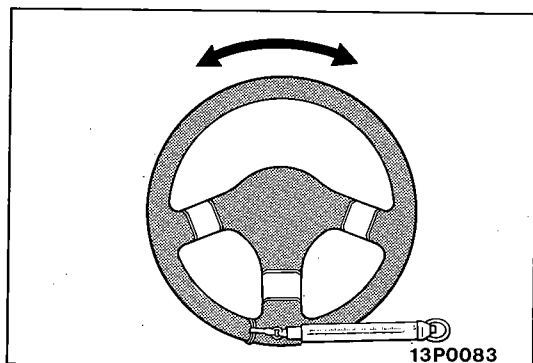
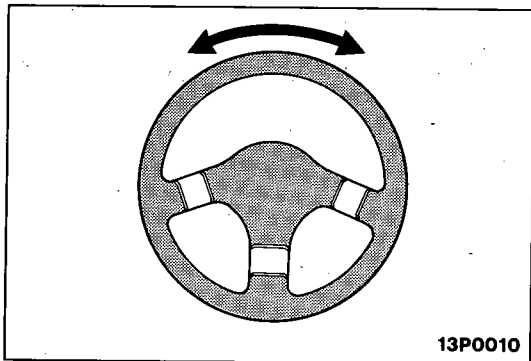
In general, the tie rods are adjusted to steer the front wheels in the same direction that the steering wheel is off center. If the steering wheel is off center to the left, center it by adjusting the tie rods to make the front wheels steer toward the left, and vice versa.



1. Mark the tie rods and tie rod ends with chalk before loosening the lock nuts.
2. Hold the tie rod with a wrench and loosen the lock nut.
3. Hold the tie rod end with a wrench and turn the tie rod the desired number of turns.

For 2° or 6 mm (.25 in.) at the steering wheel rim 1/5 turn of tie rods

4. Tighten the lock nut to specified torque, taking care not to turn the tie rod.



SERVICE ADJUSTMENT PROCEDURES <POWER STEERING>

N19FABH

STEERING WHEEL FREE PLAY CHECK

1. With engine running (hydraulic operation), set front wheels straight ahead.
2. Measure the play on steering wheel circumference before wheels start to move when slightly moving steering wheel in both directions.

Limit: 30 mm (1.2 in.)

3. When the play exceeds the limit, check for play on steering shaft connection and steering linkage. Correct or replace.
4. If the free play still exceeds the limit value set steering wheel straight ahead with engine stopped. Load 5 N (1 lb.) towards steering wheel circumference and check play.

Standard value (steering wheel play with engine stopped): 11 mm (.43 in.)

If the play exceeds the standard value, remove steering gear box and check total pinion torque.

STEERING ANGLE CHECK

N19FDBF2

1. Set front wheels on turning radius gauge and measure steering angle.

Standard values:

Inner wheel $37^{\circ}00' \pm 1^{\circ}30'$
Outer wheel $32^{\circ}30'$

2. When not within the standard value, it is probably a toe problem. Adjust toe (refer to GROUP 2 – Service Adjustment Procedures) and recheck.

TIE ROD END BALL JOINT STARTING TORQUE CHECK

N19FEB2

1. Disconnect tie rod and knuckle with special tool.

2. Move ball joint stud several times and install nut on stud. Measure ball joint starting torque.

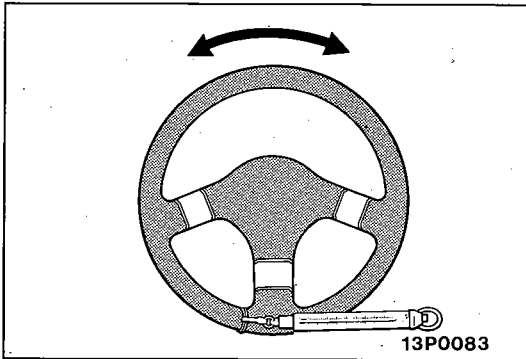
Standard value: 0.5 – 2.5 Nm (4 – 22 in.lbs.)

3. When starting torque exceeds the standard value, replace tie rod end.
4. When the starting torque is under the standard value, check for play or ratcheting in ball joint. If none of these, it is still serviceable.

STEERING WHEEL CENTERING

N19FNAF

Center the steering wheel in the same way as the manual steering. (Refer to P.19-8.)

**STATIONARY STEERING EFFORT CHECK**

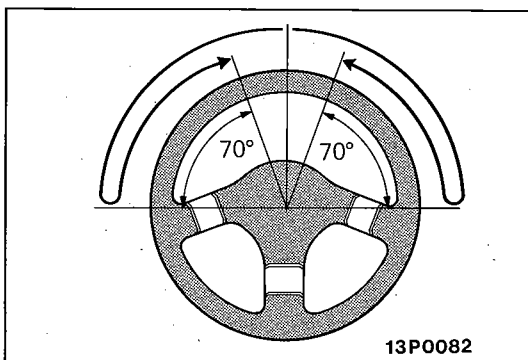
N19FFAI

1. With the vehicle stopped on a flat, paved surface, turn the steering wheel to the straight ahead position.
2. Start the engine and set it to $1,000 \pm 100$ rpm.

Caution

After checking the engine rpm., there must be a return to the standard idling rpm.

3. Attach a spring balance to the outer circumference of the steering wheel and measure the steering force required to turn the steering wheel from the straight ahead position to the left and right (within a range of 1.5 turns). Also check to be sure that there is no significant fluctuation of the required steering force.

Standard value:**Steering effort****37 N (8 lbs.) or less****Fluctuation allowance****6 N (1.3 lbs.) or less****STEERING WHEEL RETURN TO CENTER CHECK**

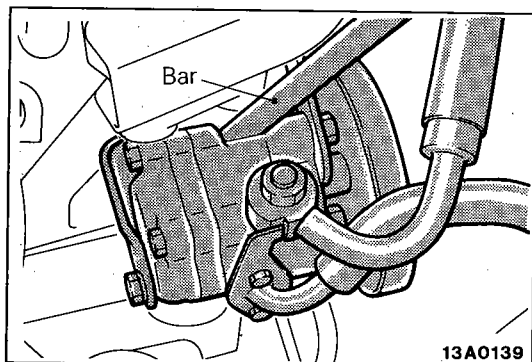
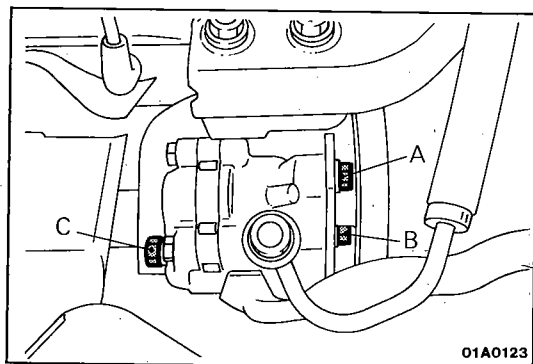
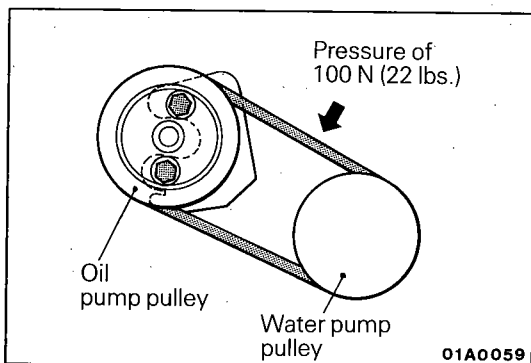
N19FGAE

To make this test, conduct a road test and check as follows.

1. Make both gradual and sudden turns and check the steering "feeling" to be sure that there is no difference in the steering force required and the wheel return between left and right turns.
2. At a speed of 35 km/h (22 mph), turn the steering wheel 90°, and release the steering wheel after 1 or 2 seconds. If the steering wheel then returns 70° or more, the return can be judged to be satisfactory.

NOTE

There will be a momentary feeling of "heaviness" when the wheel is turned quickly, but this is not abnormal. (This is because the oil pump discharge amount is especially apt to be insufficient during idling.)



V-BELT TENSION CHECK

N19FHA1

1. Check to be sure that the belt is not damaged and that the V-belt is correctly attached to the groove of the pulley.

NOTE

If there is abnormal noise or belt slippage, check the belt tension and check for unusual wear or abrasion, or damage, of the pulley contact surface, and for scars or scratches on the pulley.

2. Press in V-belt at the illustrated position with about 100 N (22 lbs.) and measure deflection.

Standard value: 6 – 9 mm (.24 – .35 in.)

3. If there is a deviation from the standard value range, make an adjustment of the belt tension by following the procedures described below.

(1) Loosen bolts A, B and C (for holding the oil pump).

(2) Place a bar or similar object against the body of the oil pump, and, while manually providing the suitable amount of tension, adjust the amount of flexion of the belt.

(3) Tighten bolts A, B and C (for holding the oil pump).

(4) Check the amount of flexion of the belt; readjust if necessary.

Caution

The check should be made after turning the engine one time or more in the regular direction of rotation (to the right).

FLUID LEVEL CHECK

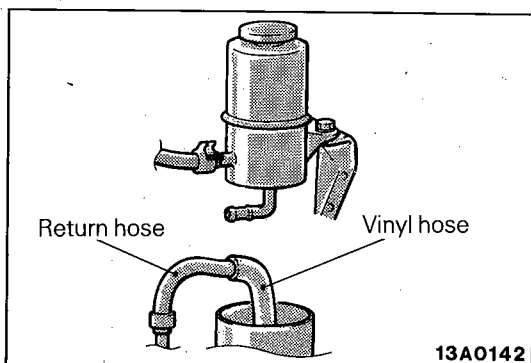
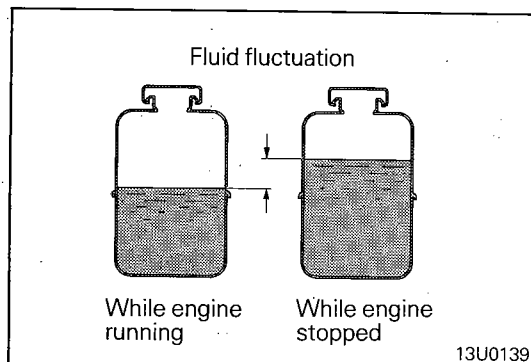
N19FIA1

1. Park the vehicle on a flat, level surface, start the engine, and then turn the steering wheel several times to raise the temperature of the fluid to approximately 50 – 60°C (122 – 140°F).
2. With the engine running, turn the wheel all the way to the left and right several times.
3. Check the fluid in the oil reservoir for foaming or milkiness. Check the difference of the fluid level when the engine is stopped, and while it is running. If the fluid level changes considerably, air bleeding should be done.

FLUID REPLACEMENT

N19FJAK

1. Raise the front wheels on a jack, and then support them with rigid racks.
2. Disconnect the return hose connection.
3. Connect a vinyl hose to the return hose, and drain the oil into a container.



4. Disconnect the high-tension cable, and then while operating the starting motor intermittently, turn the steering wheel all the way to the left and right several times to drain all of the fluid.

Caution

Be careful not to position the high-tension cable near the carburetor or the delivery pipe.

5. Connect the return hoses securely, and then secure it with the clip.
6. Fill the oil reservoir with the specified fluid up to the lower position of the filter, and then bleed the air.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

BLEEDING

N19FKAG

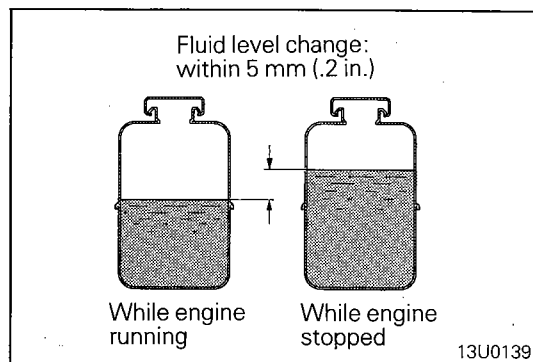
1. Jack up the front wheels and support them by using a floor stand.
2. Manually turn the oil pump pulley a few times.
3. Turn the steering wheel all the way to the left and to the right five or six times.
4. Disconnect the high-tension cable, and then, while operating the starting motor intermittently, turn the steering wheel all the way to the left and right five or six times (for 15 to 20 seconds).

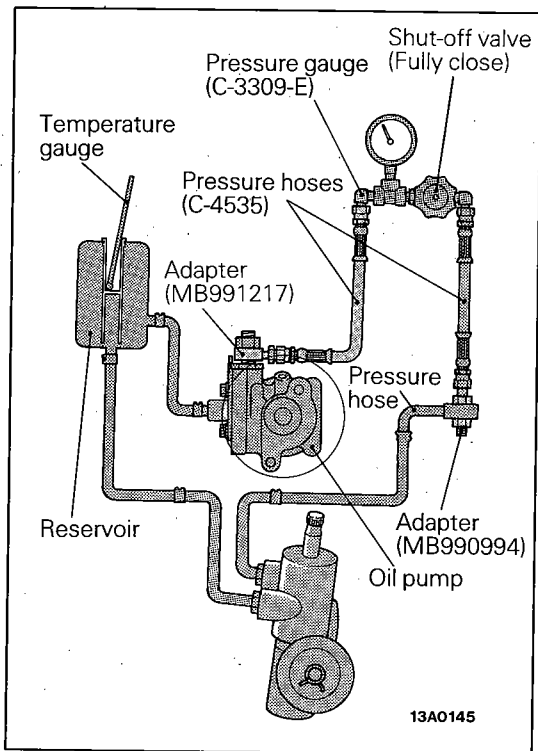
Caution

1. **During air bleeding, replenish the fluid supply so that the level never falls below the lower position of the filter.**
 2. **If air bleeding is done while engine is running, the air will be broken up and absorbed into the fluid; be sure to do the bleeding only while cranking.**
5. Connect the ignition cable, and then start the engine (idling).
 6. Turn the steering wheel to the left and right until there are no air bubbles in the oil reservoir.
 7. Confirm that the fluid is not milky, and that the level is up to the specified position on the level gauge.
 8. Confirm that there is very little change in the fluid level when the steering wheel is turned left and right.
 9. Check whether or not the change in the fluid level is within 5 mm (.2 in.) when the engine is stopped and when it is running.

Caution

1. **If the change of the fluid level is 5 mm (.2 in.) or more, the air has not been completely bled from the system, and thus must be bled completely.**
2. **If the fluid level rises suddenly after the engine is stopped, the air has not been completely bled.**
3. **If air bleeding is not complete, there will be abnormal noises from the pump and the flow-control valve, and this condition could cause a lessening of the life of the pump, etc.**





OIL PUMP PRESSURE TEST

N19FLAF

CHECKING THE OIL PUMP RELIEF PRESSURE

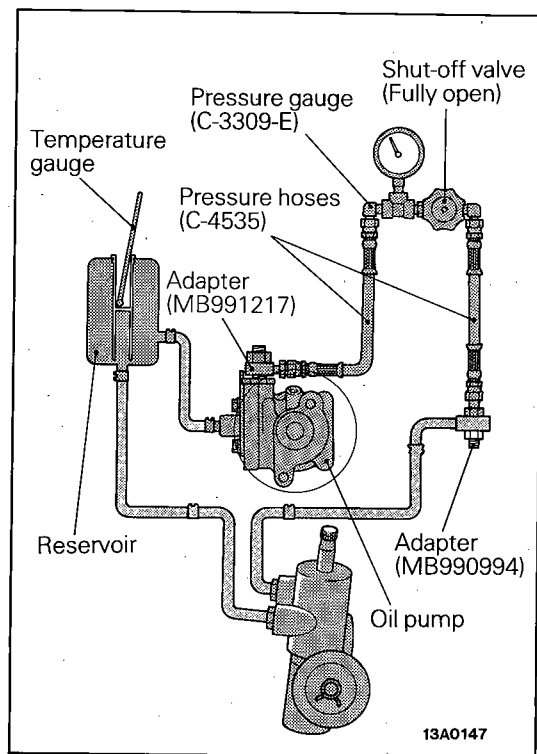
1. Disconnect the pressure hose from the oil pump, and then connect the special tools.
2. Bleed the air, and then turn the steering wheel several times while the vehicle is not moving so that the temperature of the fluid rises to approximately 50 – 60°C (122 – 140°F).
3. Start the engine and idle it at $1,000 \pm 100$ rpm.
4. Fully close the shut-off valve of the pressure gauge and measure the oil pump relief pressure to confirm that it is within the standard value range.

Standard value: 5.5 – 6.2 MPa (782 – 881 psi)

Caution

Pressure gauge shut off valve must not remain closed for more than 10 seconds.

5. If it is not within the standard value, overhaul the oil pump.
6. Remove the special tools, and then tighten the pressure hose to the specified torque.
7. Bleed the system.



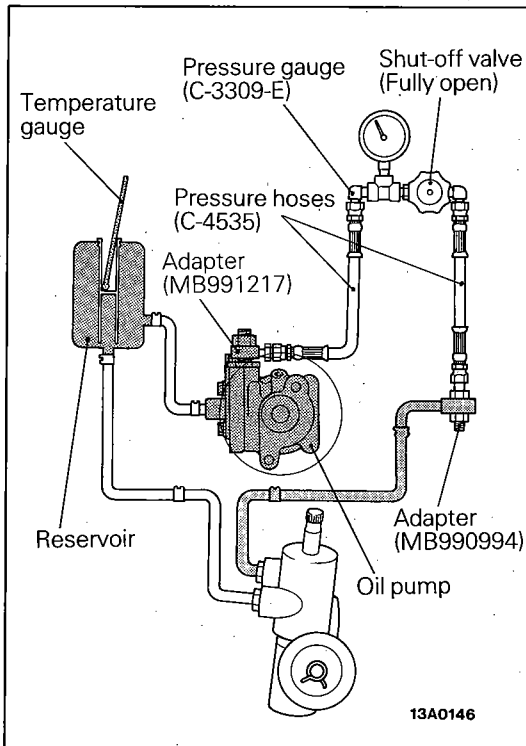
CHECKING THE PRESSURE UNDER NO-LOAD CONDITIONS

1. Disconnect the pressure hose from the oil pump, and then connect the special tool.
2. Bleed the air, and then turn the steering wheel several times while the vehicle is not moving so that the temperature of the fluid rises to approximately 50 – 60°C (122 – 140°F).
3. Start the engine and idle it at $1,000 \pm 100$ rpm.
4. Check whether or not the hydraulic pressure is the standard value when no-load conditions are created by fully opening the shut-off valve of the pressure gauge.

Standard value: 0.8 – 1.0 MPa (114 – 142 psi)

Limit: 1.5 MPa (213 psi)

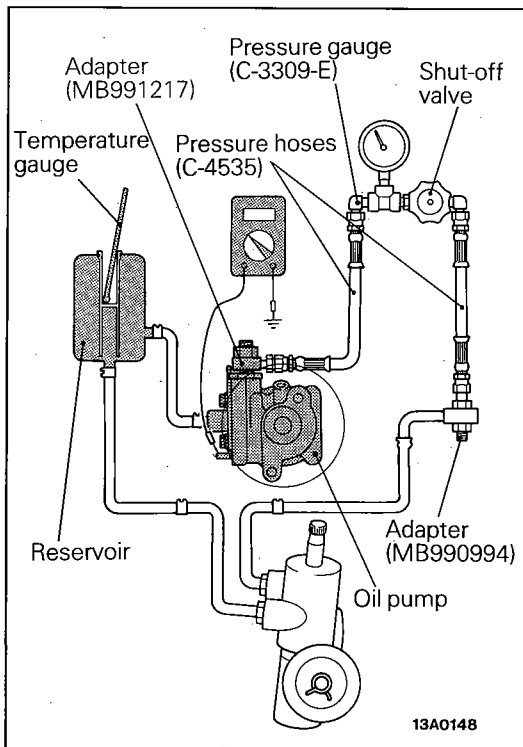
5. If it is not within the standard value, the probable cause is a malfunction of the oil line or steering gear box, so check these parts and repair as necessary.
6. Remove the special tools, and then tighten the pressure hose to the specified torque.
7. Bleed the system.

**CHECKING THE STEERING GEAR RETENTION HYDRAULIC PRESSURE**

1. Disconnect the pressure hose from the oil pump, and then connect the special tools.
2. Bleed the air, and then turn the steering wheel several times while the vehicle is not moving so that the temperature of the fluid rises to approximately 50 – 60°C (122 – 140°F).
3. Start the engine and idle it at 1,000 ± 100 rpm.
4. Fully close and fully open the shut-off valve of the pressure gauge.
5. Turn the steering wheel all the way to the left or right; then check whether or not the retention hydraulic pressure is the standard value.

Standard value: 5.5 – 6.2 MPa (782 – 881 psi)

6. When not within the standard value, overhaul the steering gear box.
Remeasure fluid pressure.
7. Remove the special tools, and then tighten the pressure hose to the specified torque.
8. Bleed the system.

**OIL PRESSURE SWITCH CHECK**

N19FUAA

1. Disconnect the pressure hose from the oil pump, and then connect the special tools.
2. Bleed the air, and then turn the steering wheel several times while the vehicle is not moving so that the temperature of the fluid rises to approximately 50 – 60°C (122 – 140°F).
3. The engine should be idling.
4. Disconnect the connection of the connector for the oil pressure switch, and place an ohmmeter in position.
5. Gradually close the shut-off valve of the pressure gauge and increase the hydraulic pressure then check whether or not the hydraulic pressure that activates the switch is the standard value.

Standard value: 1.5 – 2.0 MPa (213 – 284 psi)

6. Gradually open the shut-off valve and reduce the hydraulic pressure; then check whether or not the hydraulic pressure that deactivates the switch is the standard value.

Standard value: 0.7 – 1.2 MPa (100 – 171 psi)

7. Remove the special tools, and then tighten the pressure hose to the specified torque.
8. Bleed the system.

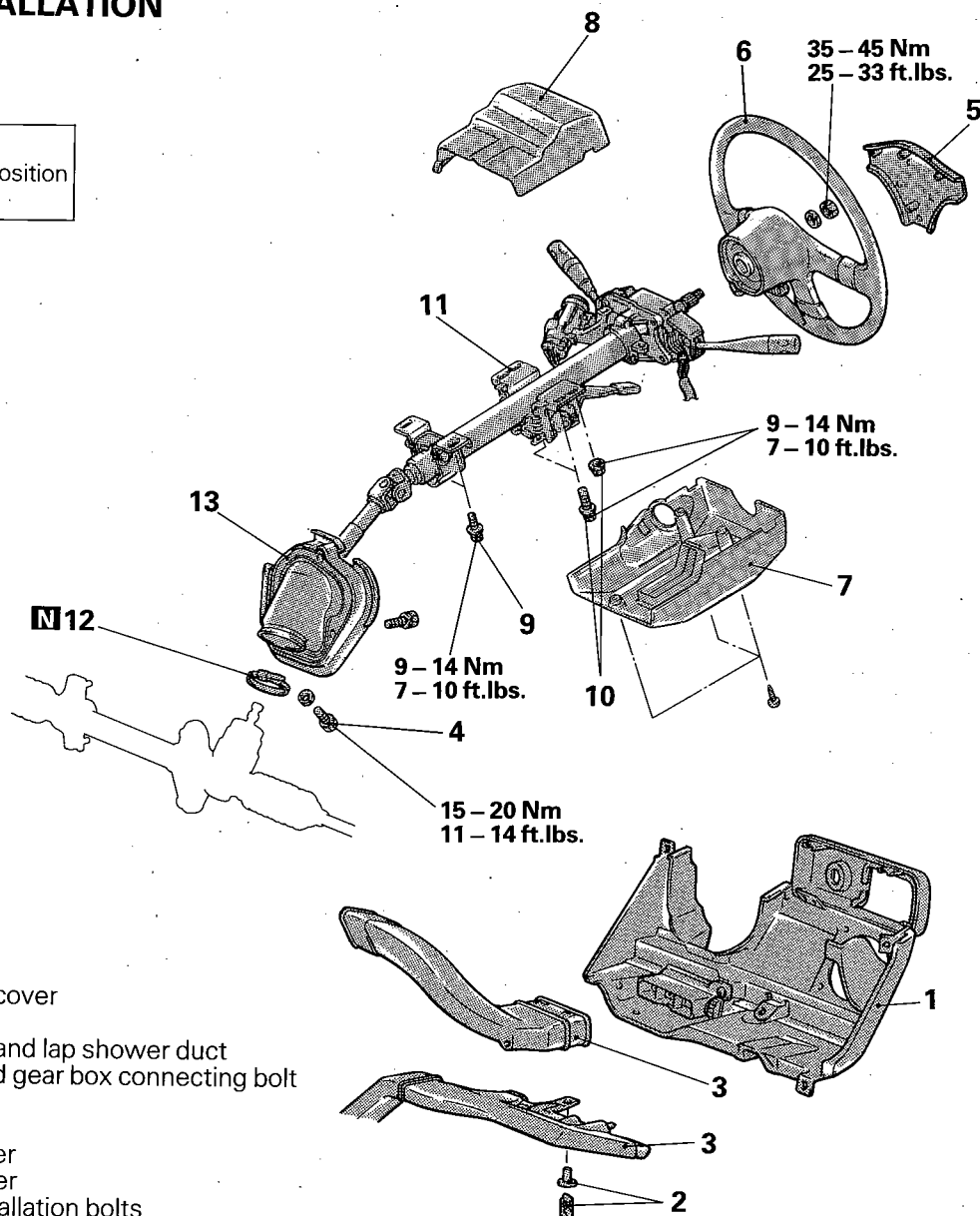
STEERING WHEEL AND SHAFT

REMOVAL AND INSTALLATION

N19GA--

Post-installation Operation

- Checking of Steering Wheel Position with Wheels Straight Ahead

**Removal steps**

- ↔ ↔ 1. Instrument under cover
- ↔ ↔ 2. Trim clip
- ↔ 3. Foot shower duct and lap shower duct
- ↔ 4. Joint assembly and gear box connecting bolt
- ↔ 5. Horn pad
- ↔ 6. Steering wheel
- 7. Column cover lower
- 8. Column cover upper
- 9. Lower bracket installation bolts
- 10. Upper bracket installation bolts and nut
- 11. Steering column assembly
- 12. Band
- 13. Steering joint cover

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ↔: Refer to "Service Points of Removal".
- (3) ↔: Refer to "Service Points of Installation".
- (4) [N]: Non-reusable parts

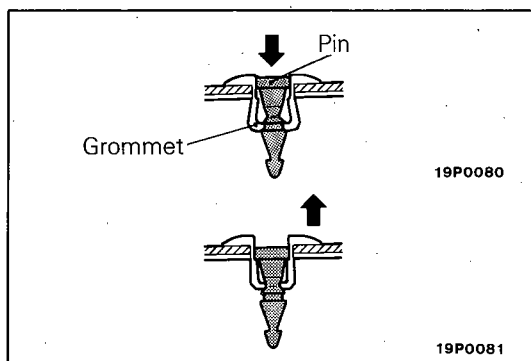
13P0120

SERVICE POINTS OF REMOVAL

N19GBAQ

1. REMOVAL OF INSTRUMENT UNDER COVER

Refer to GROUP 23 – Instrument Panel.



2. REMOVAL OF TRIM CLIP

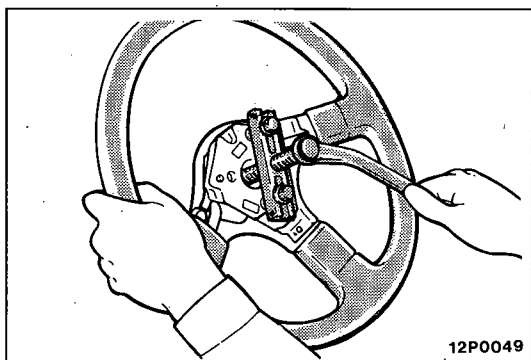
- (1) Lightly push in the pin at the center of the clip with a Philips screwdriver.
- (2) Remove the clip by pulling it out.

Caution

If the pin is pushed in too far, the grommet might get damaged or the pin might fall out. Do not push the pin in more than necessary.

5. REMOVAL OF HORN PAD

Pull the lower end of the horn pad to remove it.

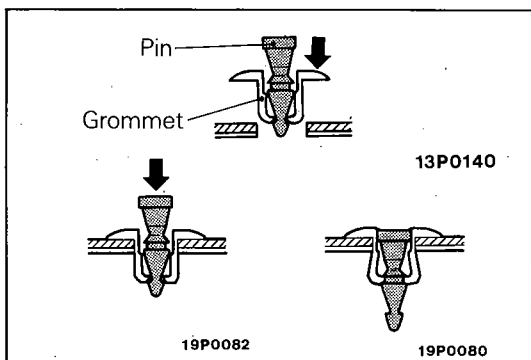


6. REMOVAL OF STEERING WHEEL

Remove the steering wheel by using a steering wheel puller.

Caution

Do not hammer on the steering wheel to remove it; doing so may damage the collapsible mechanism.



SERVICE POINTS OF INSTALLATION

N19GDAK

2. INSTALLATION OF TRIM CLIP

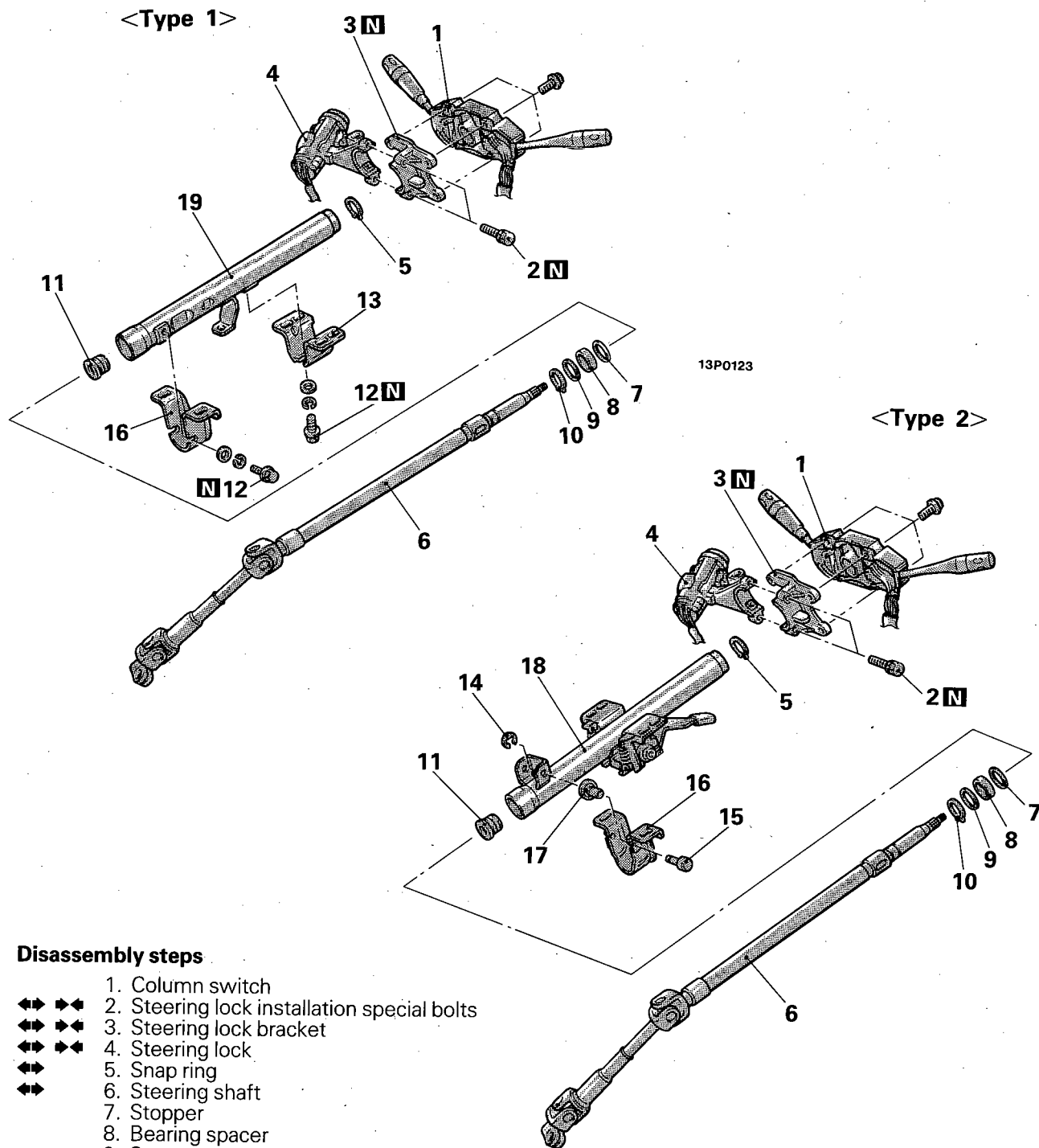
- (1) With the pin pulled out, insert the clip into the hole.
- (2) Push the pin in until the head of the pin is flush with the grommet.
- (3) Check that the foot shower nozzle has been secured in position.

1. INSTALLATION OF INSTRUMENT UNDER COVER

Refer to GROUP 23 – Instrument Panel.

DISASSEMBLY AND REASSEMBLY

N19GE-

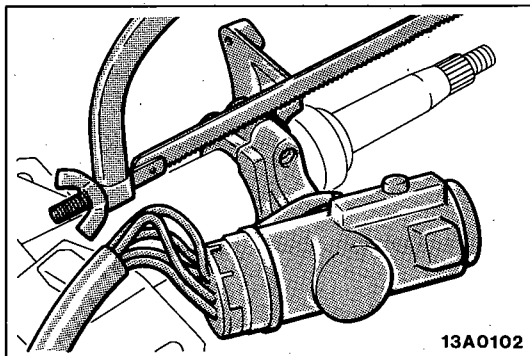


Disassembly steps

- 1. Column switch
- ↔ ↔ 2. Steering lock installation special bolts
- ↔ ↔ 3. Steering lock bracket
- ↔ ↔ 4. Steering lock
- ↔ 5. Snap ring
- ↔ 6. Steering shaft
- 7. Stopper
- 8. Bearing spacer
- 9. Stopper
- 10. Snap ring
- ↔ 11. Bearing
- ↔ ↔ 12. Column bracket installation special bolts <Type 1>
- 13. Upper bracket <Type 1>
- 14. Snap rings <Type 2>
- ↔ 15. Clevis pins <Type 2>
- 16. Lower bracket
- 17. Bushing <Type 2>
- 18. Column tube

NOTE

- (1) Reverse the disassembly procedures to reassemble.
- (2) ↔: Refer to "Service Points of Disassembly".
- (3) ↔: Refer to "Service Points of Reassembly".
- (4) [N]: Non-reusable parts



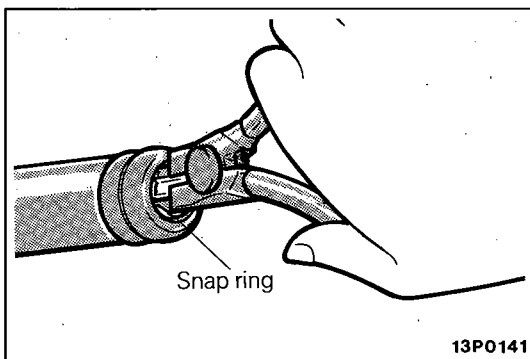
13A0102

SERVICE POINTS OF DISASSEMBLY

N19GFAL

2. REMOVAL OF STEERING LOCK INSTALLATION SPECIAL BOLTS / 3. STEERING LOCK BRACKET / 4. STEERING LOCK

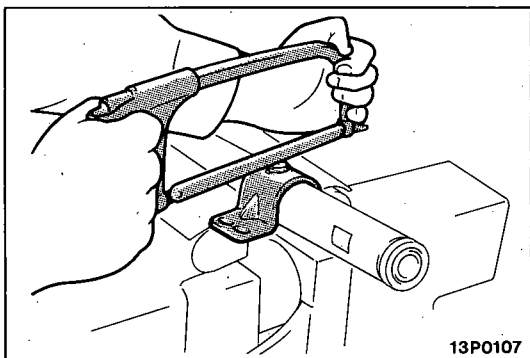
If it is necessary to remove the steering lock, use a hacksaw to cut the special bolts at the steering lock bracket side.



13P0141

5. REMOVAL OF SNAP RING / 6. STEERING SHAFT

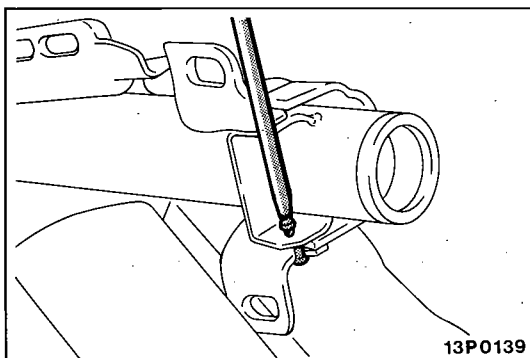
Remove the snap ring and remove the steering shaft downward.



13P0107

12. REMOVAL OF COLUMN BRACKET INSTALLATION SPECIAL BOLTS

If it is necessary to remove the steering column brackets, use a hack-saw to cut a groove on the head of the special bolt, and then use a screwdriver to remove the column brackets.



13P0139

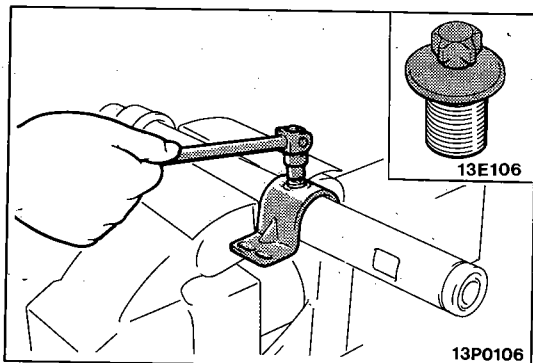
15. REMOVAL OF CLEVIS PIN

Remove the snap ring and then tap out the clevis pin from the inner side.

INSPECTION

N19GGAI

- Check the steering shaft for damage and deformation.
- Check the joints for play, damage, or rough movement.
- Check the joint bearing for wear and damage.
- Check the tilt bracket for cracks and damage.
- Check the bushing for damage.



SERVICE POINTS OF REASSEMBLY

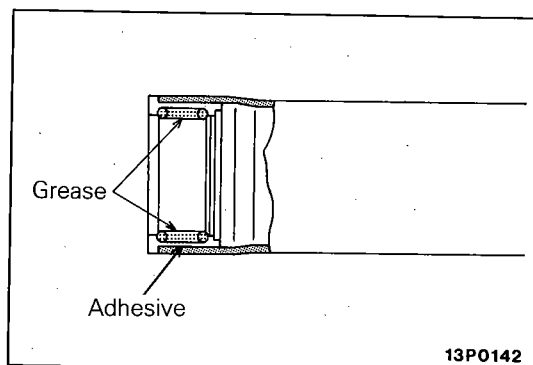
N19GHAY

12. INSTALLATION OF COLUMN BRACKET INSTALLATION SPECIAL BOLTS

When installing the steering column brackets, tighten the special bolt until the head twists off.

Caution

A new special screw must be used each time.

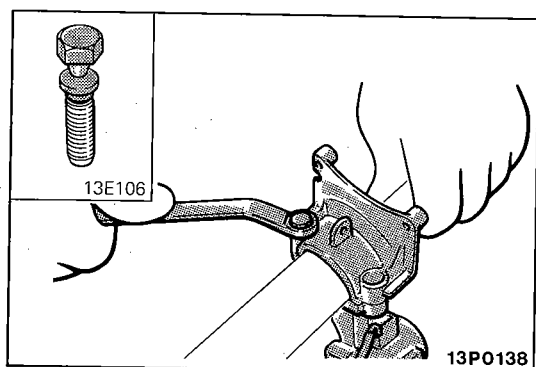


11. INSTALLATION OF BEARING

- (1) Apply a drying adhesive to the outside circumference of the bearing before installing it in the column tube.
- (2) Apply a coating of multipurpose grease to the sliding part of the bearing.

Grease: MOPAR Multi-mileage Lubricant

Part Number 2525035 or equivalent



4. INSTALLATION OF STEERING LOCK / 3. STEERING LOCK BRACKET / 2. STEERING LOCK INSTALLATION SPECIAL BOLTS

- (1) When installing the steering lock and steering lock bracket to the column tube, temporarily install the steering lock in alignment with the column boss.
- (2) After checking the lock works properly, tighten the special bolts until the head twists off.

Caution

The steering lock bracket and bolts must be replaced with new ones when the steering lock is installed.

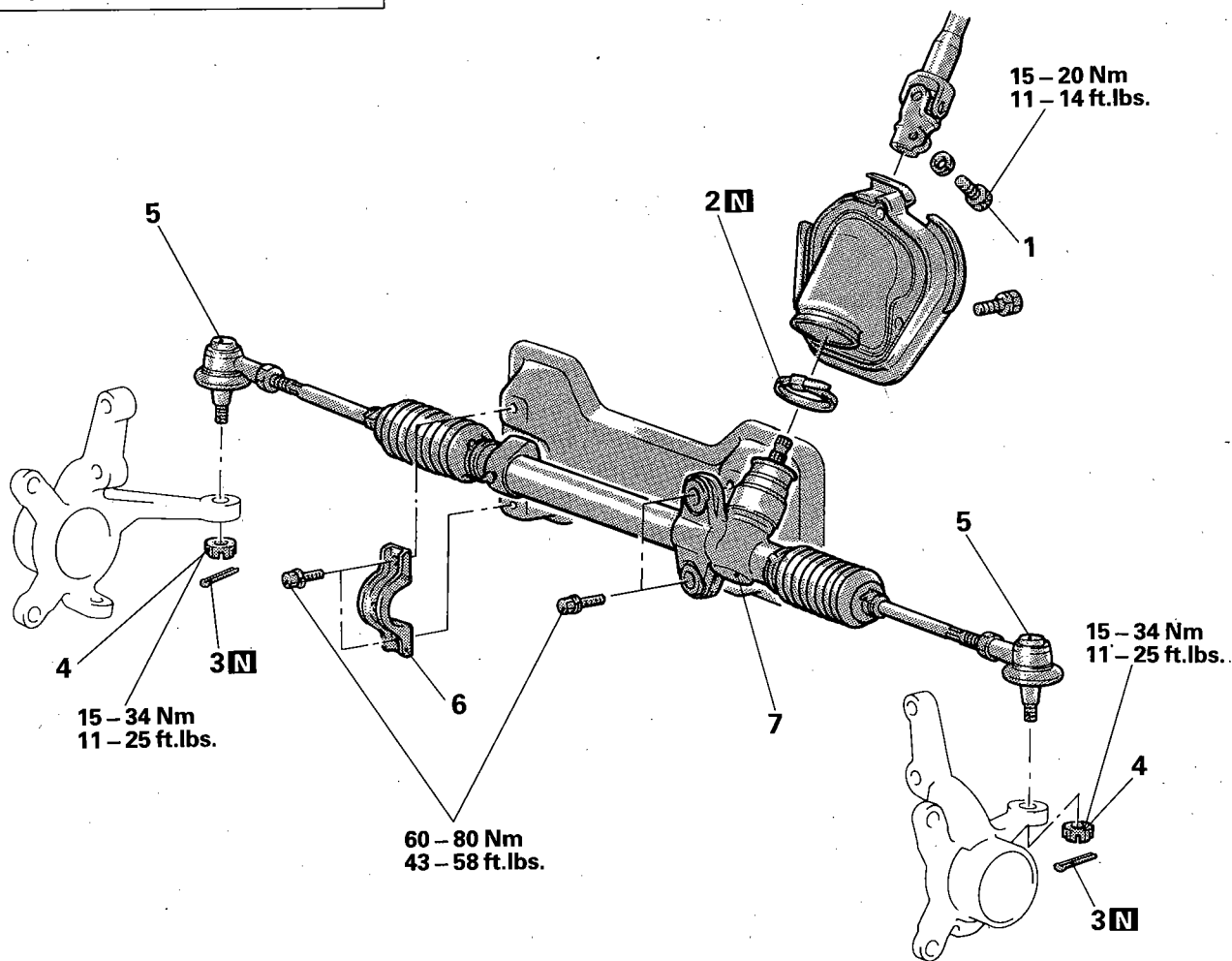
MANUAL STEERING GEAR BOX

N19LA--

REMOVAL AND INSTALLATION

Post-installation Operation

- Checking of Steering Wheel Position with Wheels Straight Ahead
- Adjustment of the Front Wheel Alignment (Refer to GROUP 2 – Service Adjustment Procedures.)



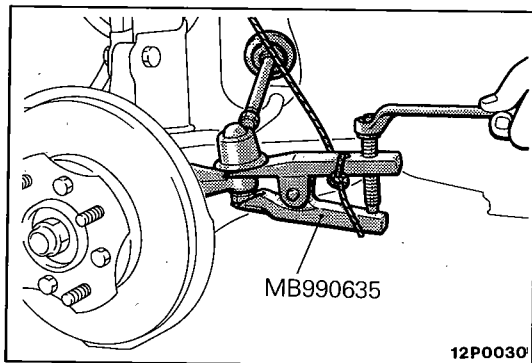
13P0117

Removal steps

1. Joint assembly and gear box connecting bolt
2. Band
3. Split pin
4. Tie rod end and knuckle connecting nuts
5. Tie rod end
6. End housing clamp
7. Gear box assembly

NOTE

- (1) Reverse the removal procedures to reinstall.
 (2) **↔**: Refer to "Service Points of Removal".
 (3) **N**: Non-reusable parts

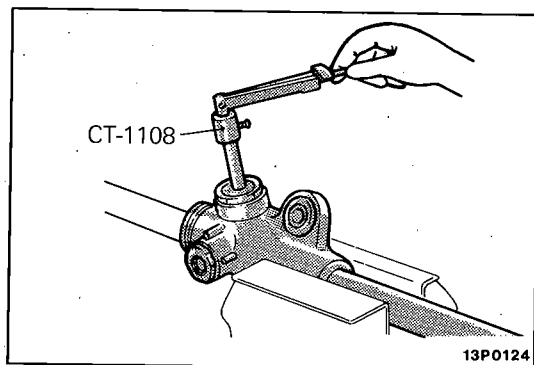


SERVICE POINTS OF REMOVAL

N19LBAE

5. DISCONNECTION OF TIE ROD END

Using the special tool, disconnect the tie rod from the knuckle.



INSPECTION

N19LCAF

GEAR BOX FOR TOTAL PINION TORQUE

Using the special tools, rotate the pinion gear at the rate of one rotation in approximately 4 to 6 seconds to check the total pinion torque.

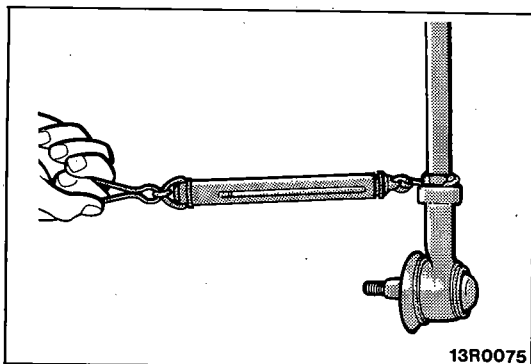
Standard value: 0.3 – 1.4 Nm (3 – 12 in.lbs.)

NOTE

Measure the pinion torque through the whole stroke of the rack.

If the measured value is not within the standard range, first adjust the rack support cover, and then check the total pinion starting torque again.

If the total pinion starting torque cannot be adjusted to within the standard range by adjusting the rack support cover, check the rack support cover, rack support spring, rack support and replace any parts necessary.



CHECK THE TIE ROD FOR SWING RESISTANCE

- (1) Give 10 hard swings to the tie rod.
- (2) Measure the tie rod swing resistance with a spring balance.

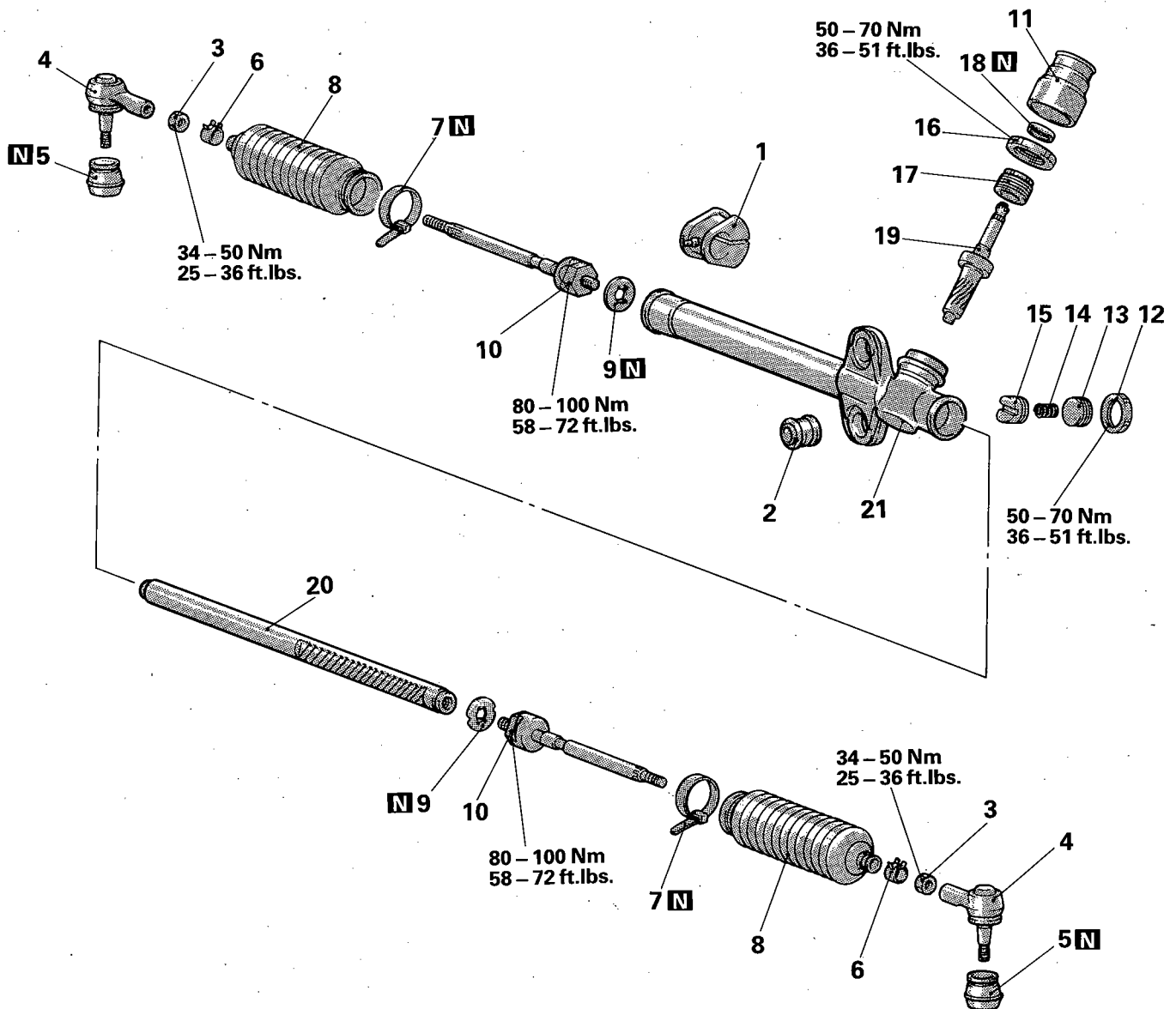
Standard value: 8 – 20 N (1.8 – 4.4 lbs.)
[2 – 5 Nm (17 – 43 in.lbs.)]

- (3) If the measured value exceeds the standard value, replace tie rod assembly.

NOTE

Even if the measured value is below the standard value, the tie rod which swings smoothly without excessive play may be used.

DISASSEMBLY AND REASSEMBLY



13P0119

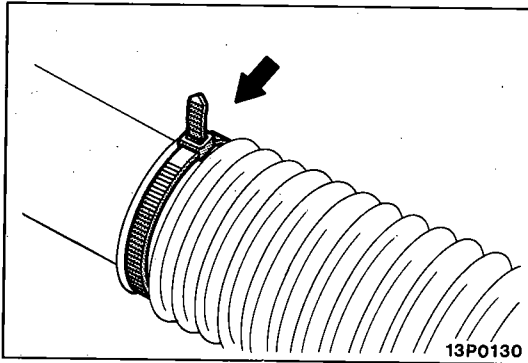
Disassembly steps

1. Mounting rubber
2. Mounting bush
3. Tie rod end locking nuts
4. Tie rod end
5. Dust covers
6. Bellows clips
7. Bellows bands
8. Bellows
9. Tab washers
10. Tie rod
11. Joint cover
12. Locking nut
13. Rack support cover

14. Rack support spring
15. Rack support
16. Locking nut
17. Top cover
18. Oil seal
19. Pinion
20. Rack
21. Rack housing

NOTE

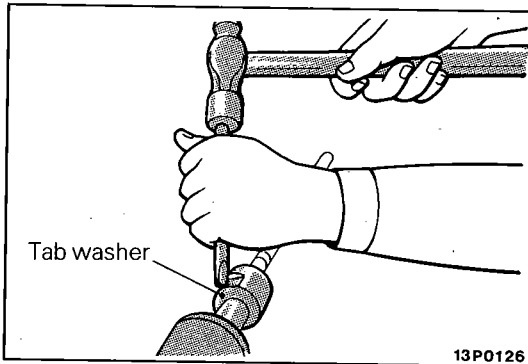
- (1) Reverse the disassembly procedures to reassemble.
- (2) Refer to "Service Points of Disassembly".
- (3) Refer to "Service Points of Reassembly".
- (4) N: Non-reusable parts

**SERVICE POINTS OF DISASSEMBLY**

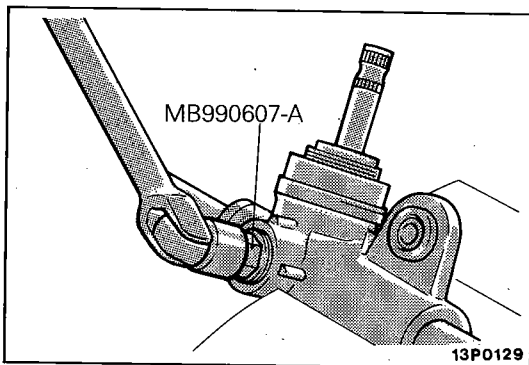
N19LFAF

7. REMOVAL OF BELLOWS BANDS

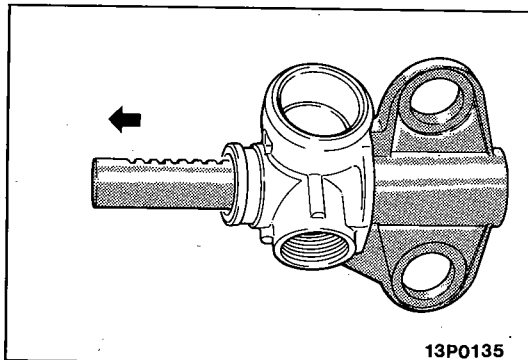
Cut the bellows band, and then remove the band.

**9. REMOVAL OF TAB WASHER**

Unstake the tab washer which fixes the tie rod and rack with a chisel.

**13. REMOVAL OF RACK SUPPORT COVER**

Remove the rack support cover by using the special tool.

**20. REMOVAL OF RACK**

Pull out the rack from the gear housing in the direction shown in the illustration.

Caution

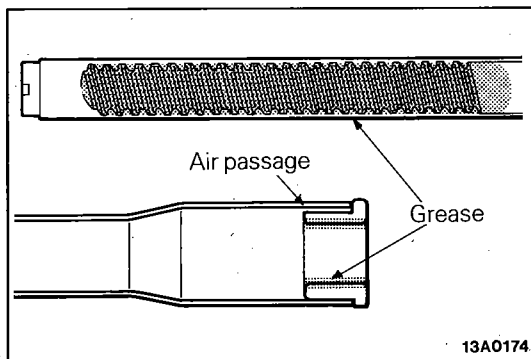
If the rack is pulled out in the wrong direction, the bushing in the gear box may be damaged by the rack threads.

INSPECTION

N19LGAE

- Check the rack support for uneven wear or damage.
- Check the rack support spring for deterioration.
- Check the oil seal for cracks or damage.
- Check the rack pinion tooth surfaces for wear or damage.
- Check the ball bearings or pinion bushing for noise, uneven rotation, or damage.
- Check the rack bushing for damage.
- Check the dust cover for cracks or damage.

N19LHAI

**SERVICE POINTS OF REASSEMBLY****20. INSTALLATION OF RACK**

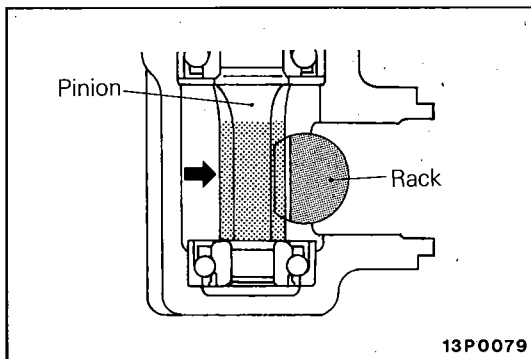
Apply a coating of multipurpose grease to the toothed surface of the rack and to the inner side of the rack bushing, and then install the rack to the rack housing.

Caution

Take care that the applied grease does not obstruct the air passage of the rack bushing.

Grease: MOPAR Multi-mileage Lubricant

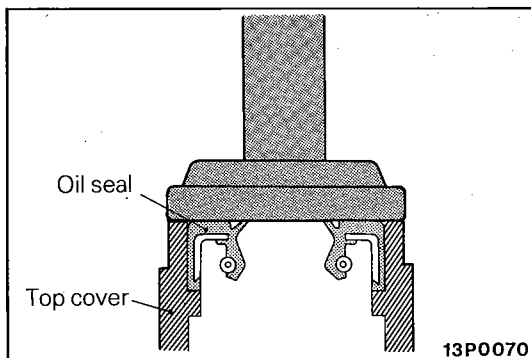
Part Number 2525035 or equivalent

**19. INSTALLATION OF PINION**

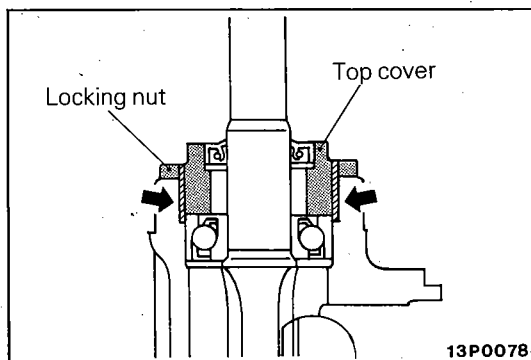
Apply a coating of multipurpose grease to the toothed surface of the pinion, and then install the pinion to the rack housing.

Grease: MOPAR Multi-mileage Lubricant

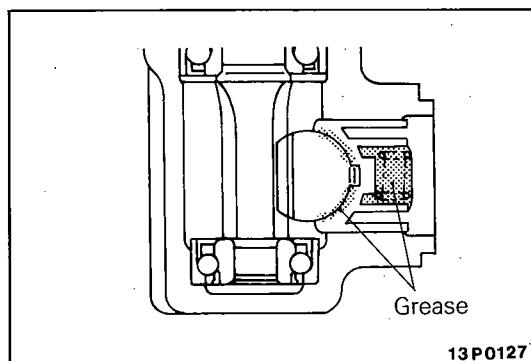
Part Number 2525035 or equivalent

**18. INSTALLATION OF OIL SEAL / 17. TOP COVER**

(1) Press the oil seal into the top cover.



(2) Apply semi-drying sealant to the threaded portion of the top cover.

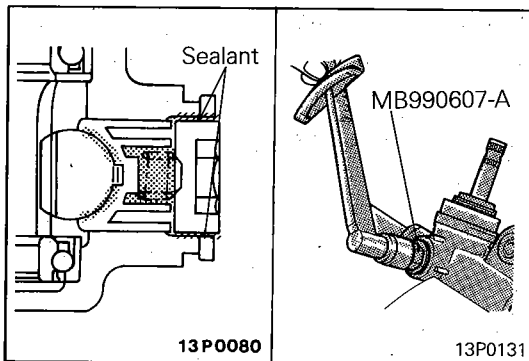
**15. INSTALLATION OF RACK SUPPORT / 14. RACK SUPPORT SPRING / 13. RACK SUPPORT COVER**

(1) Apply a coating of multipurpose grease to the surface of the rack support that contacts the rack, and then install the rack support to the rack housing.

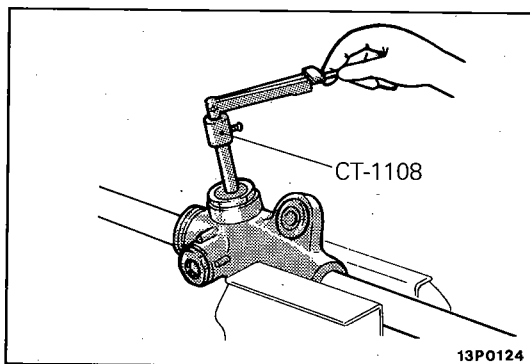
(2) Fill the inner side of the rack support spring with multipurpose grease, and then install the rack support spring to the rack housing.

Grease: MOPAR Multi-mileage Lubricant

Part Number 2525035 or equivalent



- (3) Apply a coating of the semi-drying sealant to the threaded part of the rack support cover, and then install the rack support cover to the rack housing.



• ADJUSTMENT OF TOTAL PINION TORQUE

- (1) Position rack at its center and tighten rack support cover to 15 Nm (11 ft.lbs.).
- (2) In neutral position, rotate pinion shaft clockwise one turn/4 – 6 seconds with special tool. Return rack support cover 30° – 60° and adjust torque to the standard value.

Standard value: 0.3 – 1.4 Nm (3 – 12 in.lbs.)

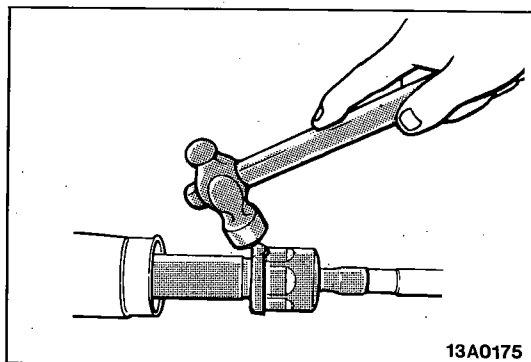
Caution

1. When adjusting, set the standard value at its highest value.
2. Assure no ratcheting or catching when operating rack towards the shaft direction.

NOTE

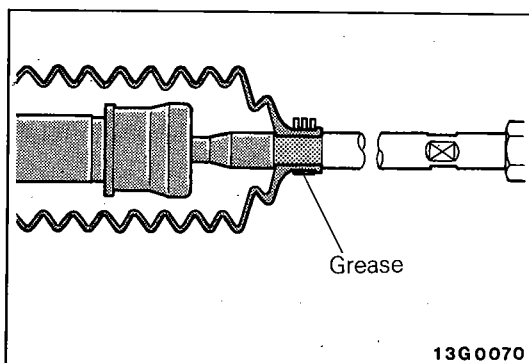
When it cannot be adjusted within the specified return angle, check rack support cover components or replace.

- (3) After adjusting, lock rack support cover with lock nut.



10. INSTALLATION OF TIE ROD

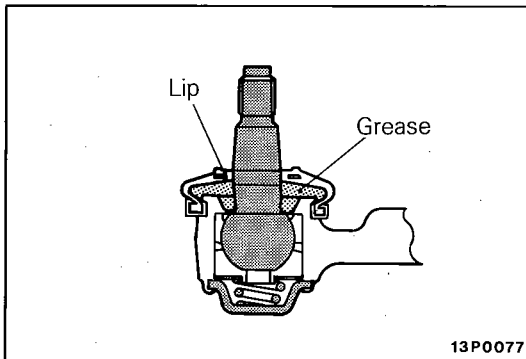
After installing tie rod to rack, fold tab washer end (2 locations) to tie rod notch.



8. APPLICATION OF GREASE TO BELLOWS

Pack tie rod bellows lock groove with specified grease.

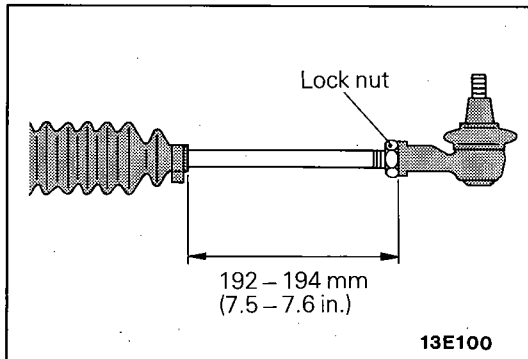
Specified grease: Silicone grease



5. INSTALLATION OF DUST COVER

Pack dust cover interior and lip with multipurpose grease.

**Grease: MOPAR Multi-mileage Lubricant
Part Number 2525035 or equivalent**



4. INSTALLATION OF TIE ROD END

Screw in tie rod end to have its right and left length as illustrated. Lock with lock nut.

POWER STEERING GEAR BOX

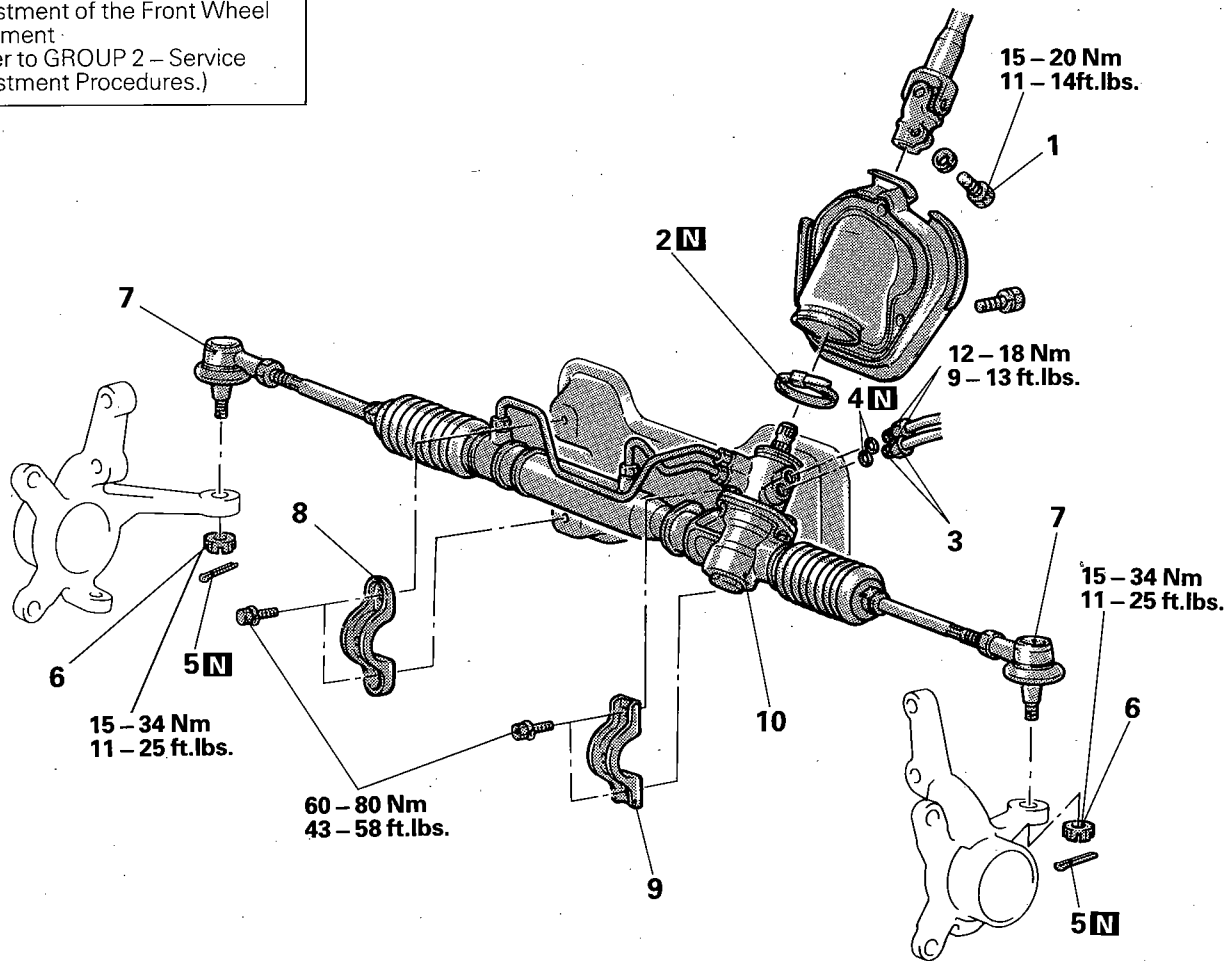
REMOVAL AND INSTALLATION

Pre-removal Operation

- Draining the Power Steering Fluid

Post-installation Operation

- Supplying of the Power Steering fluid
- Bleeding the Power Steering Fluid Line (Refer to P.19-13.)
- Checking of Steering Wheel Position with Wheels Straight Ahead
- Adjustment of the Front Wheel Alignment (Refer to GROUP 2 – Service Adjustment Procedures.)



13P0116

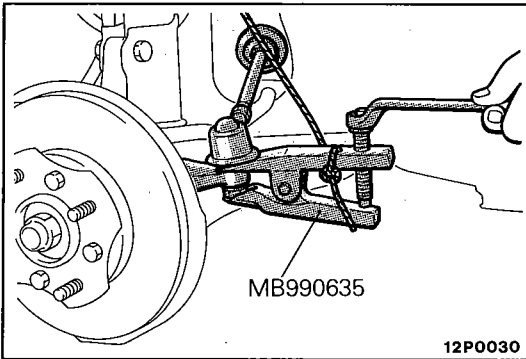
Removal steps

1. Joint assembly and gear box connecting bolt
2. Band
3. Pressure tube and return tube
4. O-ring
5. Cotter pin
6. Tie rod end and knuckle connecting nut
7. Tie rod end
8. Gear housing clamp
9. Cylinder clamp
10. Gear box assembly



NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) : Refer to "Service Points of Removal".
- (3) **N**: Non-reusable parts



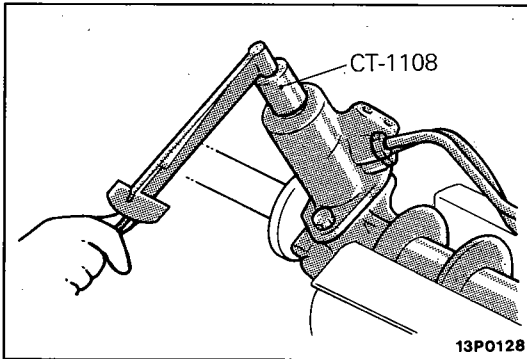
12P0030

SERVICE POINTS OF REMOVAL

N19PBAF

7. DISCONNECTION OF TIE-ROD END

Using the special tool, disconnect the tie rod from the knuckle.



13P0128

INSPECTION

N19PCAD

GEAR BOX FOR TOTAL PINION TORQUE

Using the special tools, rotate the pinion gear at the rate of one rotation in approximately 4 to 6 seconds to check the total pinion torque.

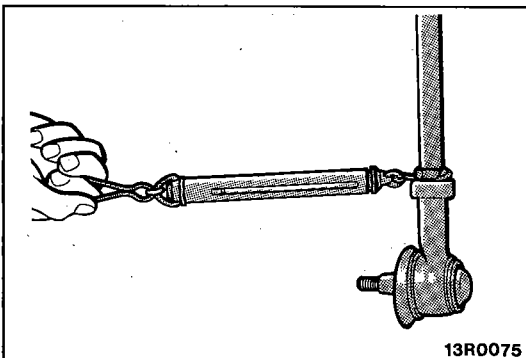
Standard value: 0.6 – 1.3 Nm (5 – 11 in.lbs.)

NOTE

Measure the pinion torque through the whole stroke of the rack.

If the measured value is not within the standard range, first adjust the rack support cover, and then check the total pinion starting torque again.

If the total pinion starting torque cannot be adjusted to within the standard range by adjusting the rack support cover, check the rack support cover, rack support spring, rack support and replace any parts necessary.



13R0075

CHECK THE TIE ROD FOR SWING RESISTANCE

- (1) Give 10 hard swings to the tie rod.
- (2) Measure the tie rod swing resistance with a spring balance.

Standard value: 8 – 20 N (1.8 – 4.4 lbs.)
[2 – 5 Nm (17 – 43 in.lbs.)]

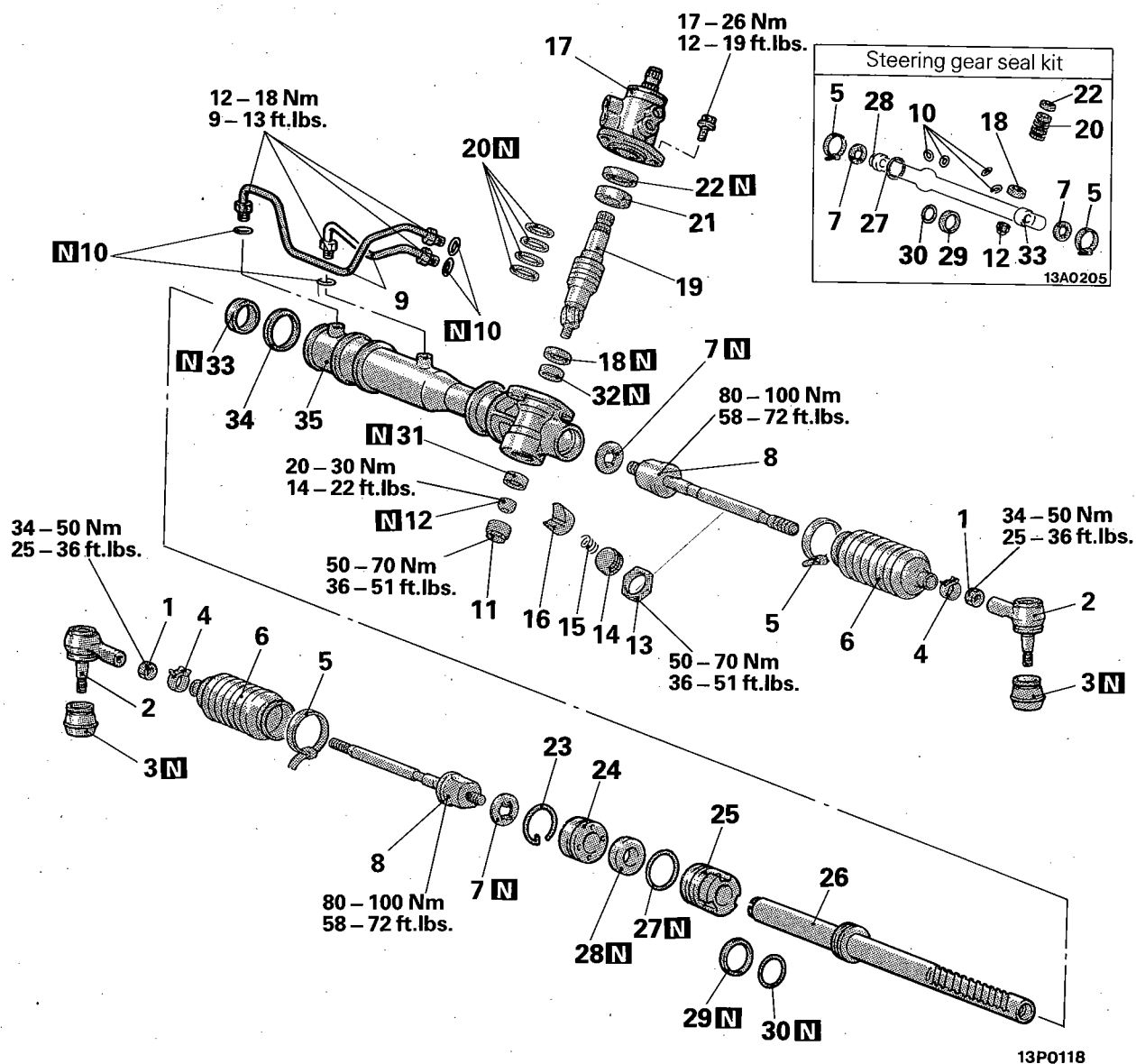
- (3) If the measured value exceeds the standard value, replace tie rod assembly.

NOTE

Even if the measured value is below the standard value, the tie rod which swings smoothly without excessive play may be used.

DISASSEMBLY AND REASSEMBLY

N19PE -



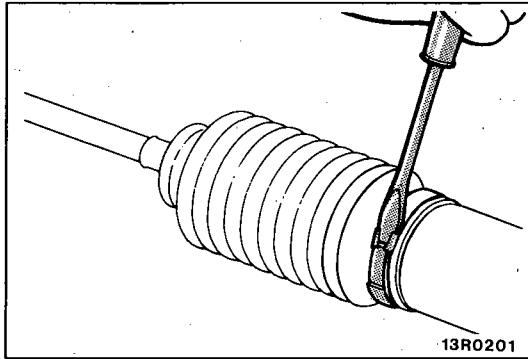
Disassembly steps

- 1. Tie rod end locking nuts
- ♦♦ 2. Tie rod ends
- ♦♦ 3. Dust covers
- ♦♦ 4. Bellows clips
- ♦♦ 5. Bellows bands
- ♦♦ 6. Bellows
- ♦♦ 7. Tab washers
- ♦♦ 8. Tie rods
- 9. Feed tubes
- 10. O-rings
- ♦♦ Adjustment of total pinion torque
- ♦♦ 11. End plug
- 12. Self-locking nut
- 13. Locking nut
- ♦♦ 14. Rack support cover
- 15. Rack support spring
- ♦♦ 16. Rack support
- 17. Valve housing
- ♦♦ 18. Oil seal
- ♦♦ 19. Pinion and valve assembly
- ♦♦ 20. Seal rings

- ♦♦ ♦♦ 21. Ball bearing
- ♦♦ ♦♦ 22. Oil seal
- ♦♦ ♦♦ 23. Circlip
- ♦♦ 24. Rack stopper
- ♦♦ 25. Rack bushing
- ♦♦ ♦♦ 26. Rack
- ♦♦ ♦♦ 27. O-ring
- ♦♦ ♦♦ 28. Oil seal
- ♦♦ ♦♦ 29. Seal rings
- ♦♦ ♦♦ 30. O-ring
- ♦♦ ♦♦ 31. Ball bearing
- ♦♦ ♦♦ 32. Needle roller bearing
- ♦♦ ♦♦ 33. Oil seal
- ♦♦ ♦♦ 34. Back-up washer
- 35. Rack housing

NOTE

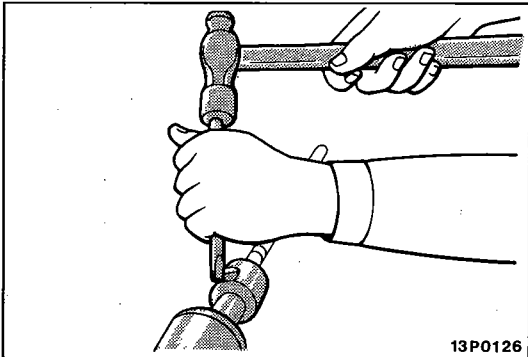
- (1) Reverse the disassembly procedures to reassemble.
- (2) ♦♦♦♦: Refer to "Service Points of Disassembly".
- (3) ♦♦♦♦: Refer to "Service Points of Reassembly".
- (4) [N]: Non-reusable parts

**SERVICE POINTS OF DISASSEMBLY**

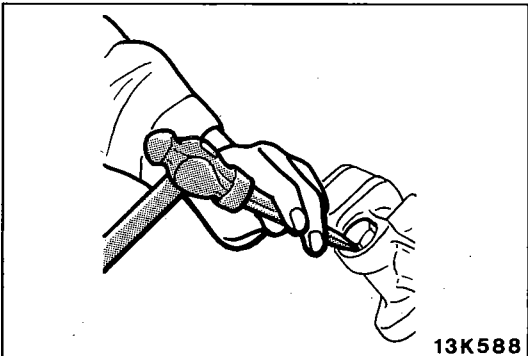
N19PFAI

5. REMOVAL OF BELLOWS BANDS

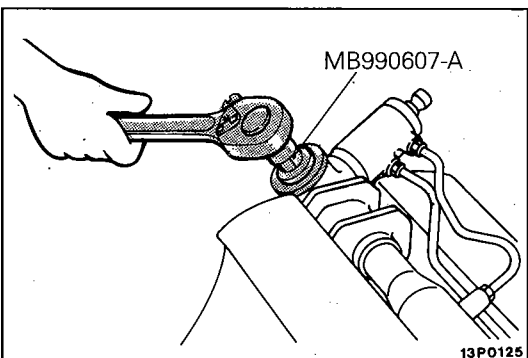
Using a screwdriver or similar tool, loosen and then remove the boot retaining band.

**7. REMOVAL OF TAB WASHER**

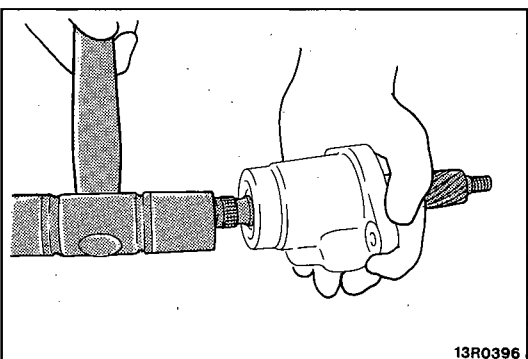
Unstake the tab washer which fixes the tie rod and rack with a chisel.

**11. REMOVAL OF END PLUG**

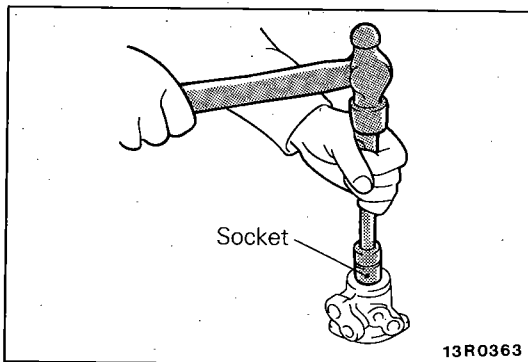
Disconnect end plug caulking and remove end plug.

**14. REMOVAL OF RACK SUPPORT COVER**

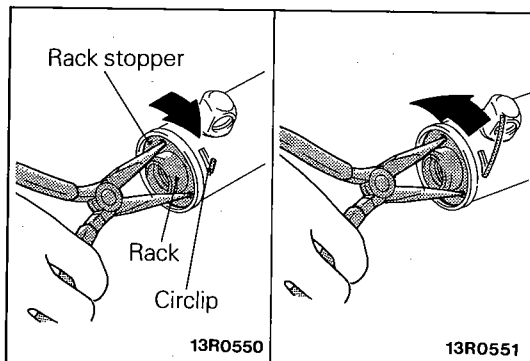
Using the special tool, remove the rack support cover from the gear box.

**18. REMOVAL OF OIL SEAL**

Using a plastic hammer, gently tap the pinion to remove it.

**21. REMOVAL OF BALL BEARING / 22. OIL SEAL**

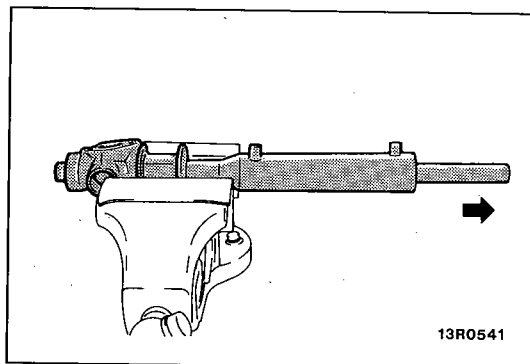
Using a socket, remove the oil seal and the ball bearing from the valve housing simultaneously.

**23. REMOVAL OF CIRCLIP**

- (1) Turn the rack stopper clockwise until the end of the circlip comes out of the slot in the rack housing.
- (2) Turn the rack stopper anticlockwise to remove the circlip.

26. REMOVAL OF RACK

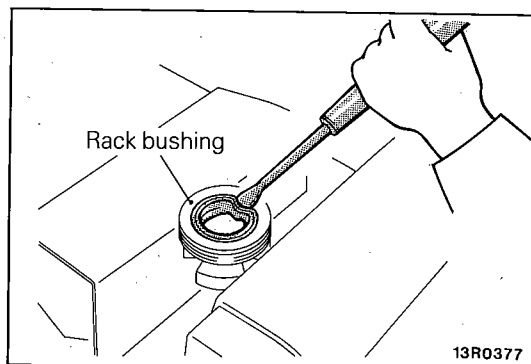
Pull out the rack slowly.
At this time also take out the rack stopper and the rack bushing simultaneously.

**28. REMOVAL OF OIL SEAL**

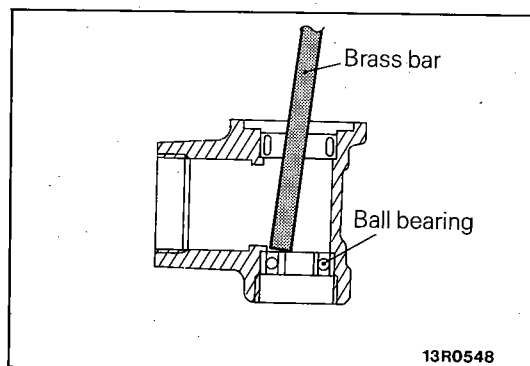
Partially bend oil seal and remove from rack bushing.

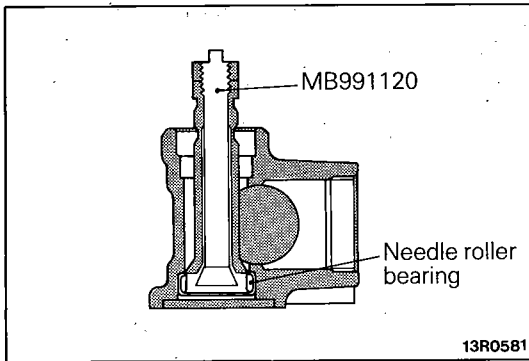
Caution

Do not damage oil seal press fitting surface.

**31. REMOVAL OF BALL BEARING**

Use a brass bar to remove the ball bearing from the gear housing.

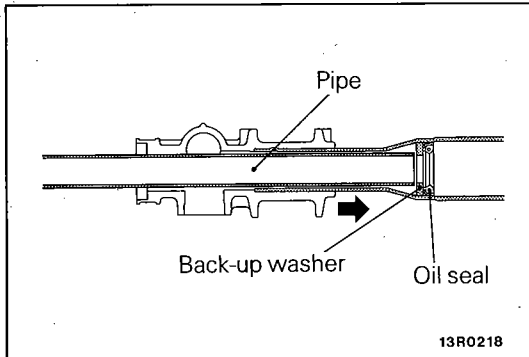


**32. REMOVAL OF NEEDLE ROLLER BEARING**

Use the special tool to remove the needle roller bearing from the rack housing.

Caution

Do not open special tool excessively to prevent damaging housing interior.

**33. REMOVAL OF OIL SEAL / 34. BACK-UP WASHER**

Use a piece of pipe or similar tool to remove the back-up washer and oil seal from the gear housing.

Caution

Be careful not to damage the inner surface of the rack cylinder of the gear housing.

INSPECTION

N19PGAG

RACK

- Check the rack tooth surfaces for damage or wear.
- Check the oil seal contact surfaces for uneven wear.
- Check the rack for bends.

PINION AND VALVE ASSEMBLY

- Check the pinion gear tooth surfaces for damage or wear.
- Check for worn or defective seal ring.

BEARING

- Check for roughness or abnormal noise during bearing operation.
- Check the bearing for play.
- Check the needle roller bearings for roller slip-off.

OTHERS

- Check the cylinder inner surface of the rack housing for damage.
- Check the boots for damage, cracking or deterioration.
- Check the rack support for uneven wear or dents.
- Check the rack bushing for uneven wear or damage.

SERVICE POINTS OF REASSEMBLY

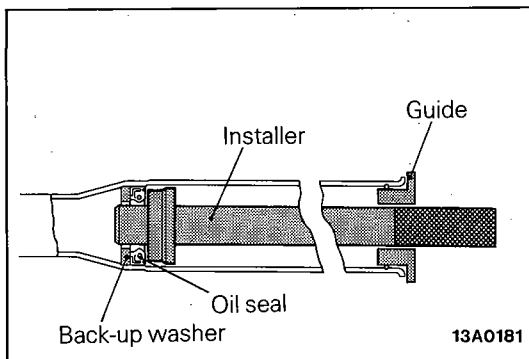
N19PHAK

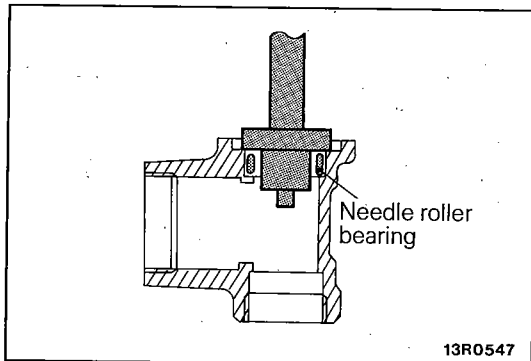
34. INSTALLATION OF BACK-UP WASHER / 33. OIL SEAL

- (1) Apply a coating of the specified fluid to the outside of the oil seal.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

- (2) Using a tool, press the back-up washer and the oil seal into the rack housing to the specified position (where the upper surface of the press-in guide coincides with the stepped part of the press-in tool).





32. INSTALLATION OF NEEDLE ROLLER BEARING

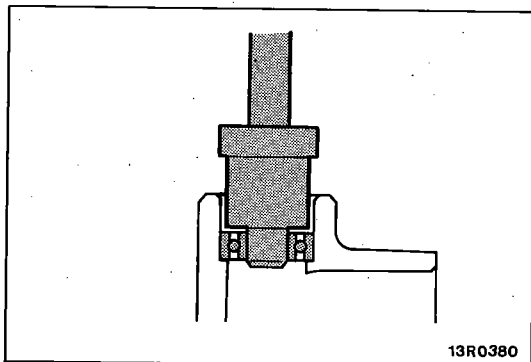
- (1) Apply specified fluid to housing, bearing and oil seal press fitting surface.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

- (2) Press fit needle roller bearing.

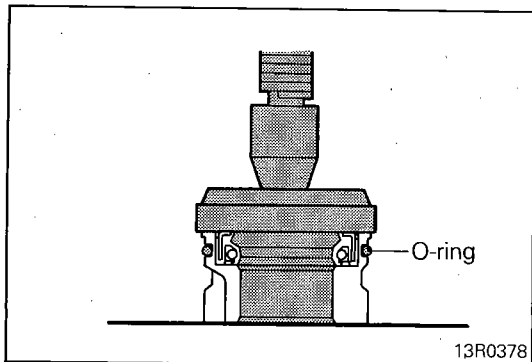
Caution

Press fit straight as valve housing is aluminium.



31. INSTALLATION OF BALL BEARING

Press fit ball bearing.

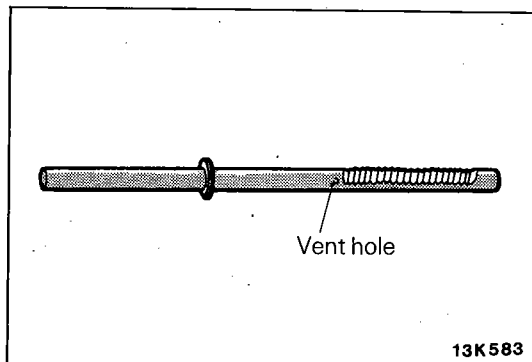


28. INSTALLATION OF OIL SEAL / 27. O-RING

- (1) Apply a coating of the specified fluid to the outside of the oil seal and O-ring.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

- (2) Press fit oil seal until it touches rack bush end.



26. INSTALLATION OF RACK ASSEMBLY

- (1) Apply a coating of multipurpose grease to the rack teeth face.

**Grease: MOPAR Multi-mileage Lubricant
Part Number 2525035 or equivalent**

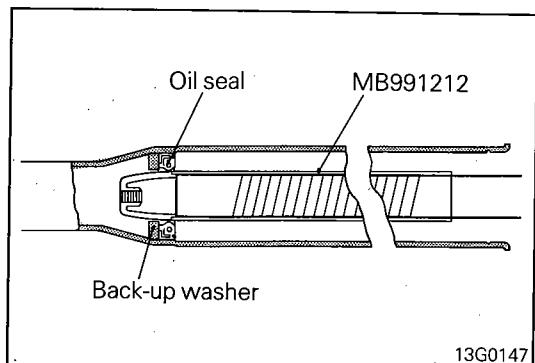
Caution

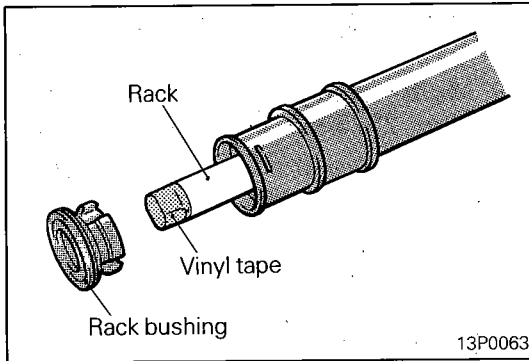
Do not close the vent hole in the rack with grease.

- (2) Cover rack serrations with special tool.
- (3) Apply specified fluid on special tool.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

- (4) Match oil seal center with rack to prevent retainer spring from slipping and slowly insert rack from power cylinder side.



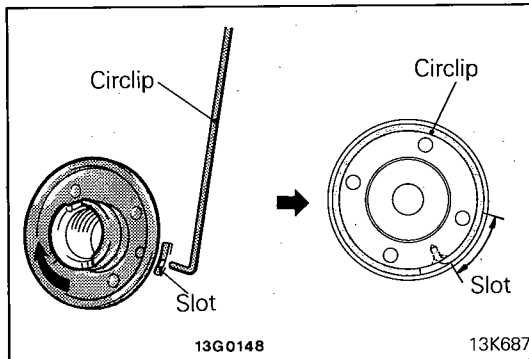
**25. INSTALLATION OF RACK BUSHING ASSEMBLY**

Wrap the rack end with vinyl tape, apply a coating of the specified fluid, and then install the rack bushing and rack stopper.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

Caution

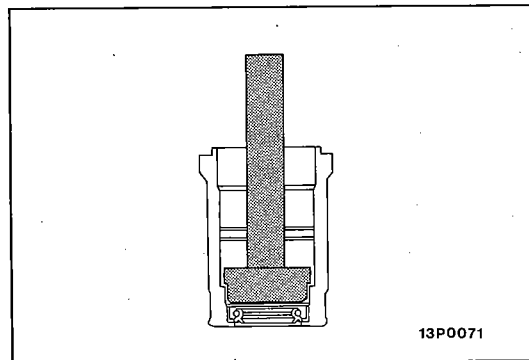
Do not allow oil seal retainer spring to slip out.

**23. INSTALLATION OF CIRCLIP**

Insert circlip to rack stopper hole through cylinder hole. Turn rack stopper clockwise and insert circlip firmly.

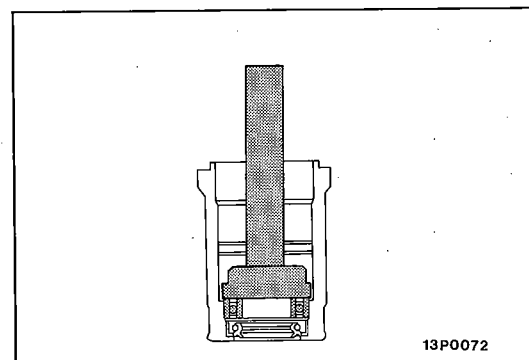
Caution

Insert circlip to rack stopper hole while turning rack stopper clockwise.

**22. INSTALLATION OF OIL SEAL**

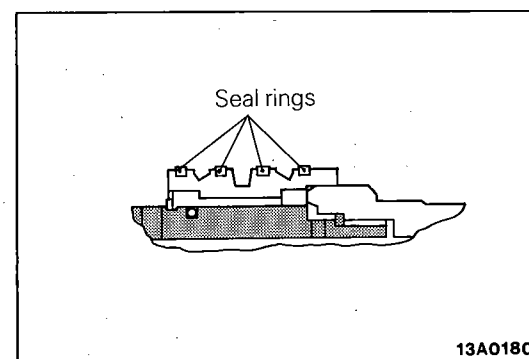
Apply a coating of the specified fluid to the outside of the oil seal. Press the oil seal into the valve housing.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

**21. INSTALLATION OF BALL BEARING**

Apply a coating of the specified fluid to the outside of the ball bearing. Press the ball bearing into the valve housing.

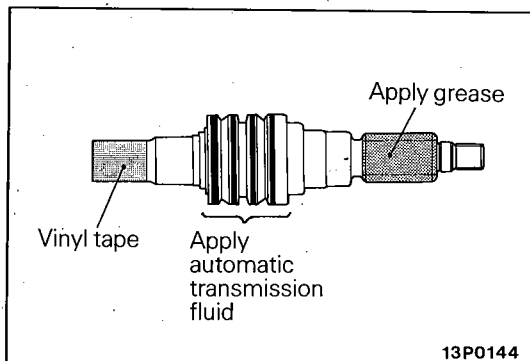
Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

**20. INSTALLATION OF SEAL RINGS / 19. PINION AND VALVE ASSEMBLY**

(1) When installing seal rings, press firmly into valve groove.

Apply specified fluid.

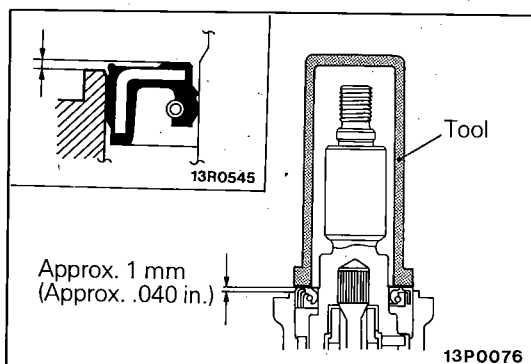
Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II



- (2) Apply multipurpose grease to pinion gear and housing bearing.

**Grease: MOPAR Multi-mileage Lubricant
Part Number 2525035 or equivalent**

- (3) Wrap vinyl tape around the serrated part so that the oil seal won't be damaged when the pinion and valve assembly is installed to the valve housing.
- (4) Mount the pinion and valve assembly to the valve housing.



18. INSTALLATION OF OIL SEAL

Using a tool, press the oil seal into the valve housing.

Caution

In order to eliminate a seal malfunction at the valve housing alignment surface, the upper surface of the oil seal should project outward approximately 1 mm (.040 in.) from the housing edge surface.

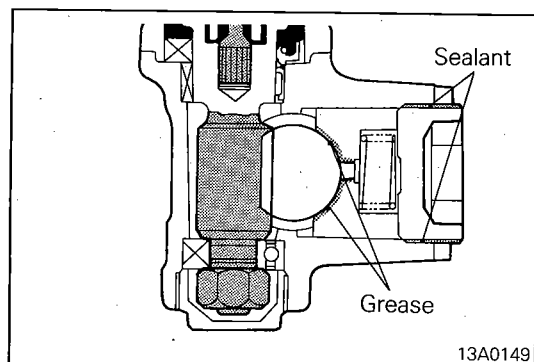
16. INSTALLATION OF RACK SUPPORT

Apply multipurpose grease to the rack support surface in contact with the rack bar.

**Grease: MOPAR Multi-mileage Lubricant
Part Number 2525035 or equivalent**

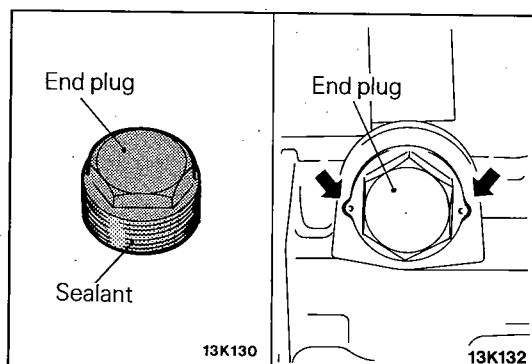
14. INSTALLATION OF RACK SUPPORT COVER

Apply semi-drying sealant to rack support cover screw. Lock temporarily with lock nut.



11. INSTALLATION OF END PLUG

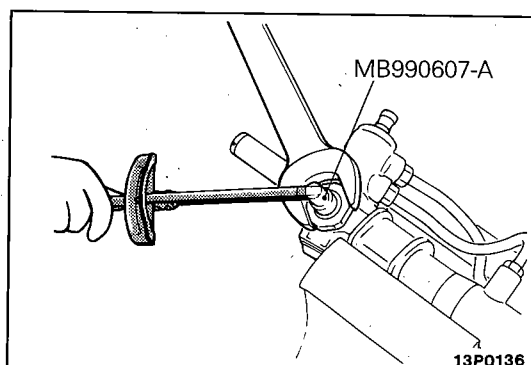
- (1) Apply the semi-drying sealant to the threaded part of the end plug.
- (2) Secure the threaded portion of the end plug at two places by using a punch.

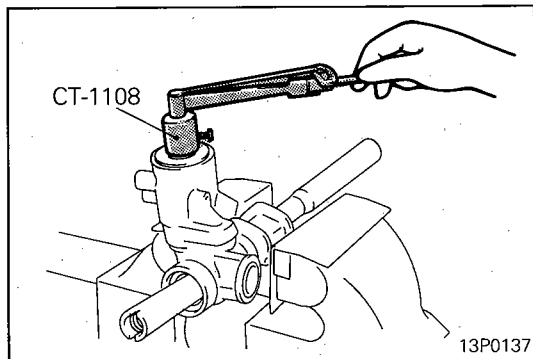


• ADJUSTMENT OF TOTAL PINION TORQUE

- (1) Position rack at its center. With special tool, tighten rack support cover to 15 Nm (11 ft.lbs.).
- (2) In neutral position, rotate pinion shaft clockwise one turn/4 – 6 seconds with special tool. Return rack support cover 30° – 60° and adjust torque to the standard value.

Standard value: 0.6 – 1.3 Nm (5 – 11 in.lbs.)



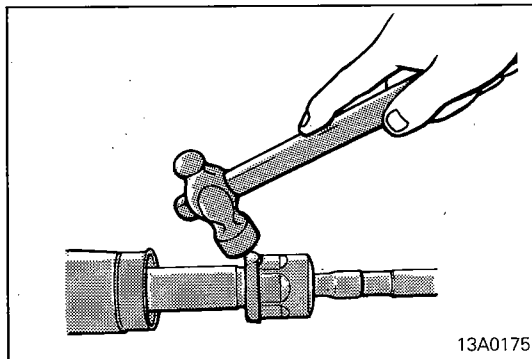
**Caution**

1. When adjusting, set the standard value at its highest value.
2. Assure no ratcheting or catching when operating rack towards the shaft direction.

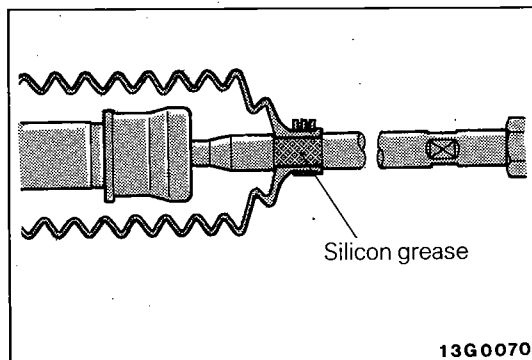
NOTE

When it cannot be adjusted within the specified return angle, check rack support cover components or replace.

- (3) After adjusting, lock rack support cover with lock nut.

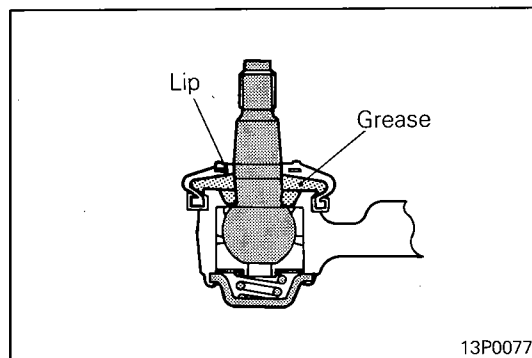
**8. INSTALLATION OF TIE ROD**

After installing tie rod to rack, fold tab washer end (2 locations) to tie rod notch.

**6. APPLICATION OF GREASE TO BELLOWS**

Pack tie rod bellows lock groove with specified grease.

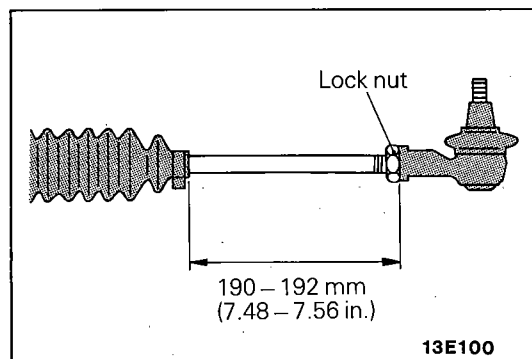
Specified grease: Silicone grease

**3. INSTALLATION OF DUST COVER**

Pack dust cover interior and lip with multipurpose grease.

Grease: MOPAR Multi-mileage Lubricant

Part Number 2525035 or equivalent

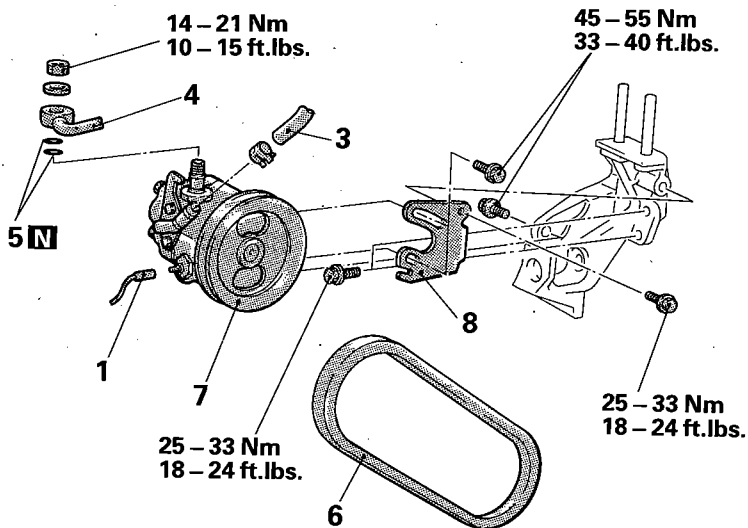
**2. INSTALLATION OF TIE ROD END**

Screw in tie rod end to have its right and left length as illustrated. Lock with lock nut.

POWER STEERING OIL PUMP

REMOVAL AND INSTALLATION

<1500>

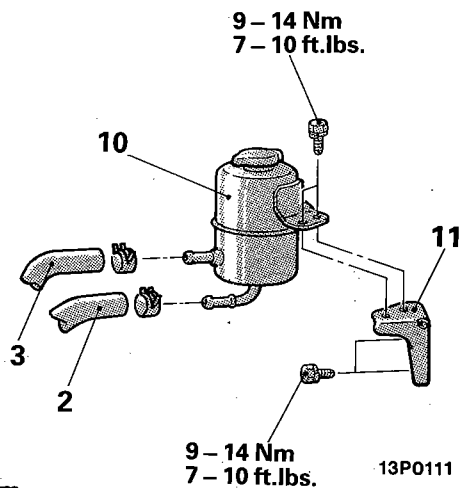
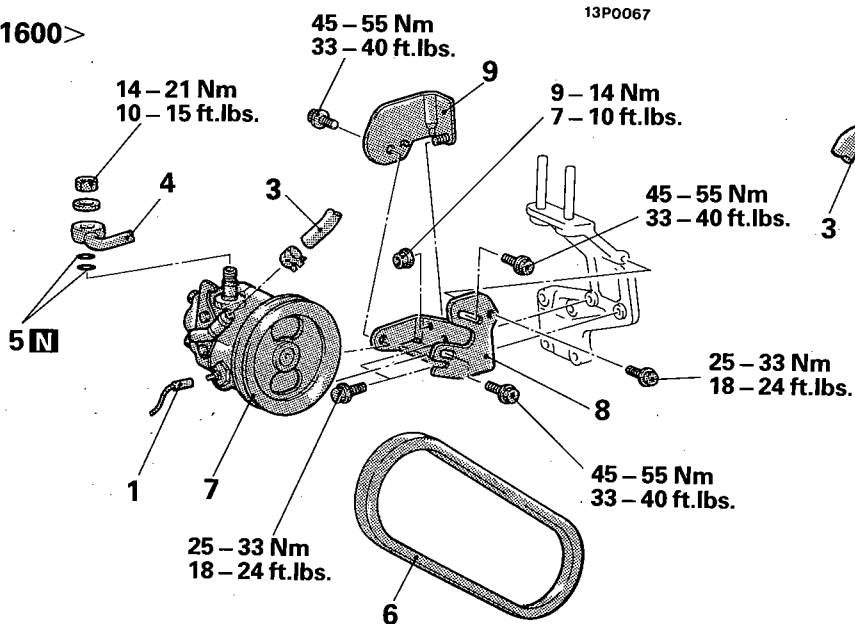
**Pre-removal Operation**

- Draining the Power Steering Fluid

Post-installation Operation

- Supplying of the Power Steering Fluid
- Bleeding the Power Steering Fluid Line (Refer to P.19-13.)
- Checking of the Oil Pump Pressure (Refer to P.19-14.)

<1600>

**Removal steps**

1. Pressure switch connector connection
2. Return hose connection
3. Suction hose
4. Pressure hose connection
5. O-ring
6. V-belt
7. Oil pump
8. Oil pump bracket
9. Heat protector <1600>

10. Oil reservoir
11. Reservoir bracket

NOTE

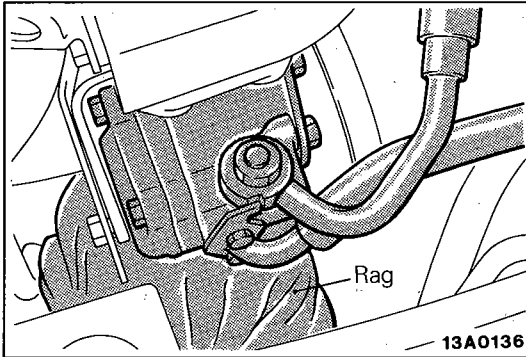
- (1) Reverse the removal procedures to reinstall.
- (2) ⇄: Refer to "Service Points of Removal".
- (3) ⇄: Refer to "Service Points of Installation".
- (4) N: Non-reusable parts

SERVICE POINTS OF REMOVAL

N19RBAJ

2. DISCONNECTION OF RETURN HOSE

- (1) Remove the reservoir cap and disconnect the return hose from the reservoir to drain the fluid.
- (2) Jack up the front wheels.
- (3) Disconnect the high tension cable and turn the engine over several times to drain the fluid from the gear box.

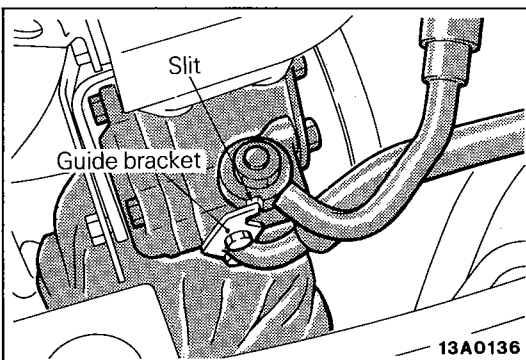
**3. DISCONNECTION OF SUCTION HOSE / 4. PRESSURE HOSE****Caution**

The alternator is located under the oil pump. If any of the hoses are to be removed, cover the alternator with a rag to protect it from oil.

INSPECTION

N19RCAA

- Check the V-belt for cracks.
- Check the pulley assembly for uneven rotation.

**SERVICE POINTS OF INSTALLATION**

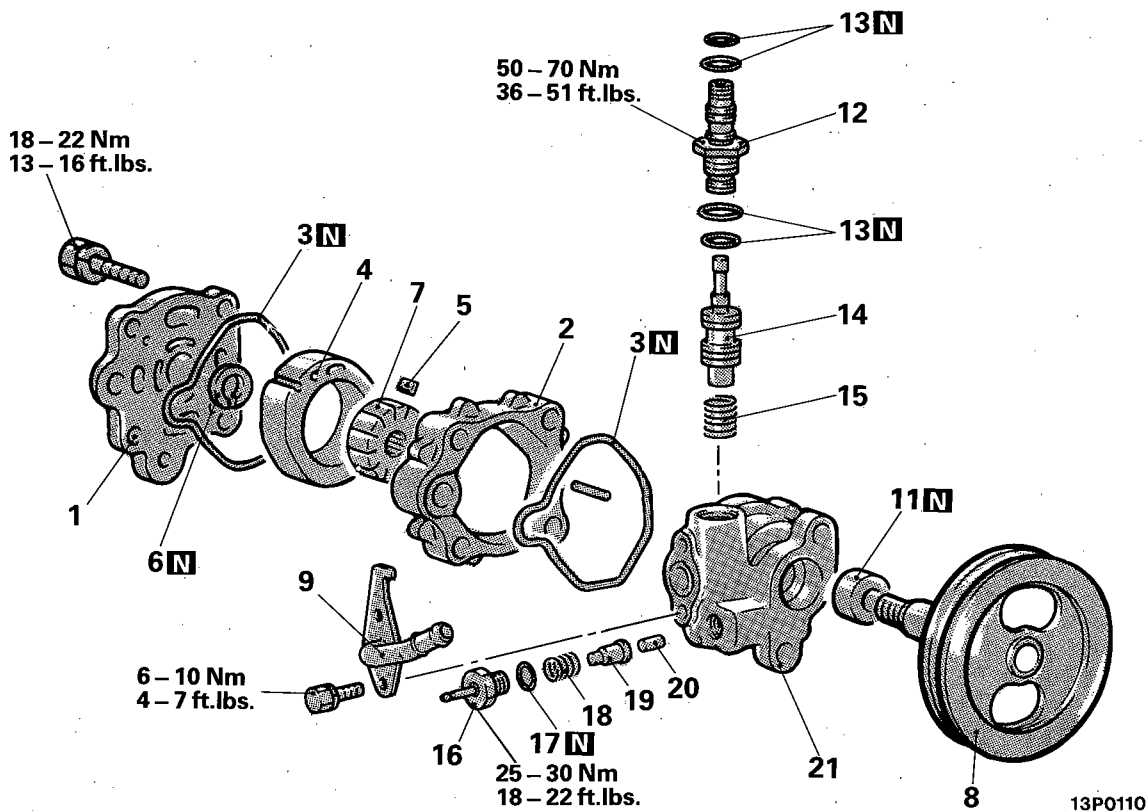
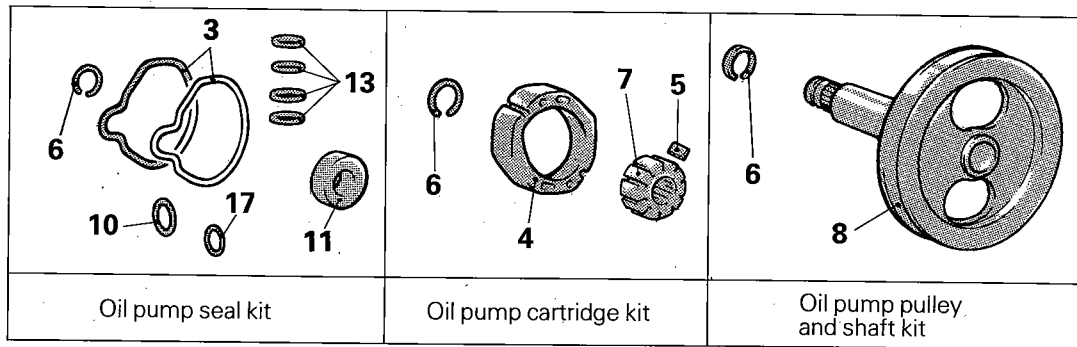
N19RDAH

4. INSTALLATION OF PRESSURE HOSE

Connect the pressure hose so that its slit part contacts the oil pump's guide bracket.

DISASSEMBLY AND REASSEMBLY

N19RE--



Disassembly steps

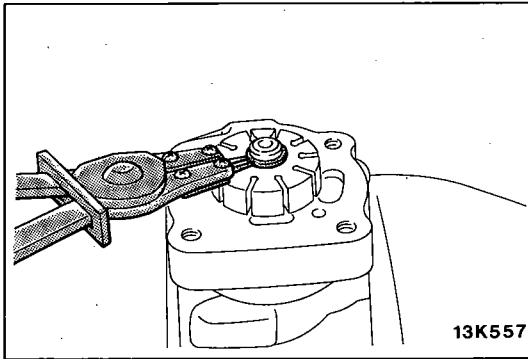
- ◆◆ 1. Pump cover
- ◆◆ 2. Cam case
- ◆◆ 3. O-ring
- ◆◆ 4. Cam ring
- ◆◆ 5. Vanes
- ◆◆ 6. Snap ring
- ◆◆ 7. Rotor
- ◆◆ 8. Pulley assembly
- ◆◆ 9. Suction connector
- ◆◆ 10. O-ring
- ◆◆ 11. Oil seal
- ◆◆ 12. Connector
- ◆◆ 13. O-ring
- ◆◆ 14. Flow control valve
- ◆◆ 15. Flow control spring

- ◆◆ 16. Terminal assembly
- ◆◆ 17. O-ring
- ◆◆ 18. Spring
- ◆◆ 19. Plunger
- ◆◆ 20. Piston rod
- ◆◆ 21. Oil pump body

NOTE

- (1) Reverse the disassembly procedures to reassemble.
- (2) ◆◆: Refer to "Service Points of Disassembly".
- (3) ◆◆: Refer to "Service Points of Reassembly".
- (4) **N**: Non-reusable parts

13P0110

**SERVICE POINTS OF DISASSEMBLY**

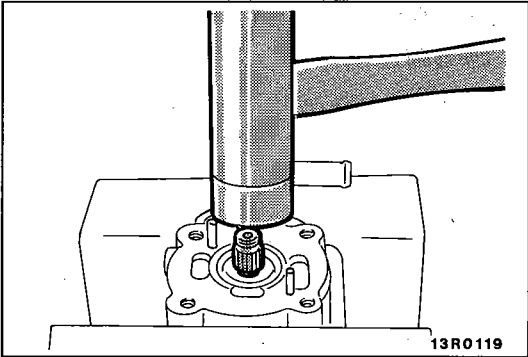
N19RFAJ

6. REMOVAL OF SNAP RING

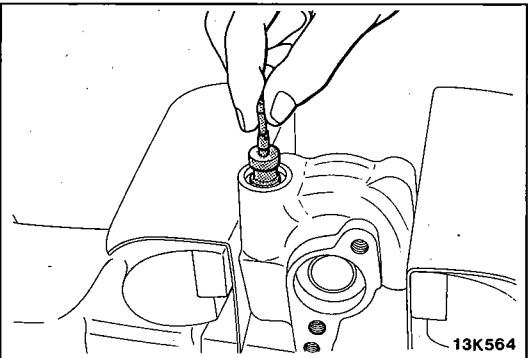
Remove the snap ring from the shaft (pulley assembly) with snap ring pliers and separate the rotor from the shaft.

Caution

Do not try to disassemble the pulley; it is press-fit onto the shaft.

**8. REMOVAL OF PULLEY ASSEMBLY**

Tap the rotor side of the shaft lightly with a plastic hammer, and take out the pulley assembly.

**14. REMOVAL OF FLOW CONTROL VALVE / 15. FLOW CONTROL SPRING**

Remove the connector from the oil pump body, and take out the flow control valve and flow control spring.

Caution

Do not disassemble the flow control valve.

INSPECTION

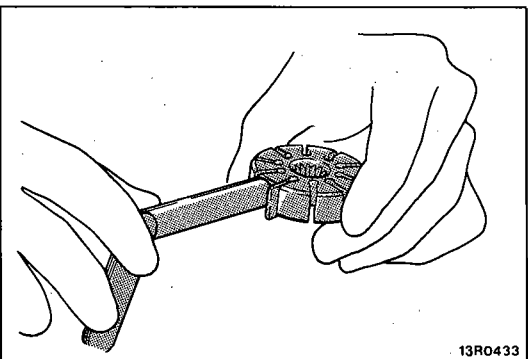
N19RGAK

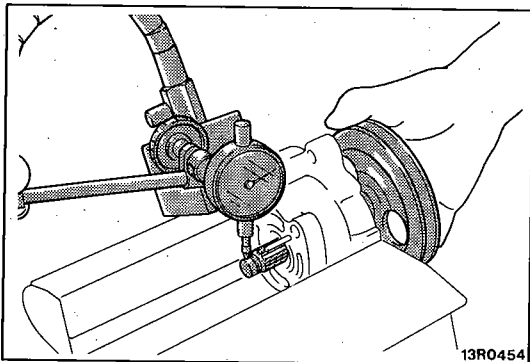
- Check the flow control spring for wear.
- Check the shaft of the pulley for wear and bend.
- Check the groove of rotor vane for "stepped" wear.
- Check the contact surface of cam ring and vanes for "stepped" wear.
- Check the vanes for breakage.

CHECK OF GAP BETWEEN VANE AND ROTOR GROOVE

Install vane to rotor groove as illustrated. Measure the gap between vane and rotor groove with thickness gauge.

Limit: 0.06 mm (.0024 in.)



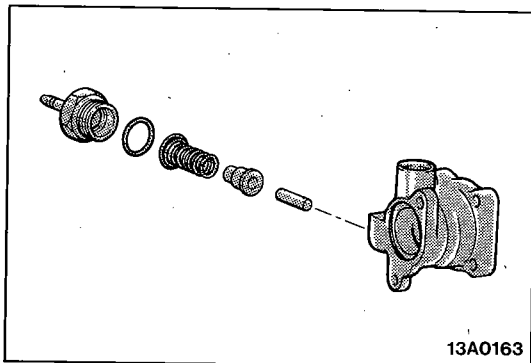


13R0454

CHECK OF SHAFT BACKLASH OF PUMP BODY BUSHING AND PULLEY ASSEMBLY

- (1) Place a dial gauge at the end of the shaft of the pulley assembly.
- (2) Move the pulley assembly up and down, and measure the play.

Limit: 0.1 mm (.004 in.)



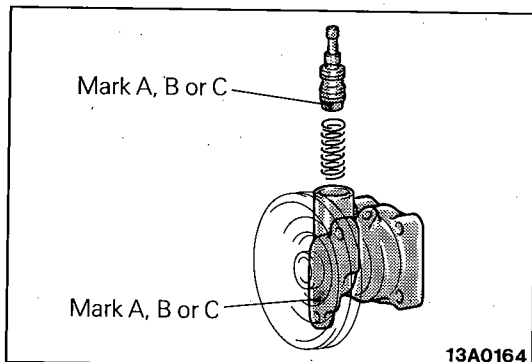
13A0163

SERVICE POINTS OF REASSEMBLY

N19RHAV

18. INSTALLATION OF SPRING

Fit the spring to the oil pump body with the larger-diameter end at the terminal assembly side.



13A0164

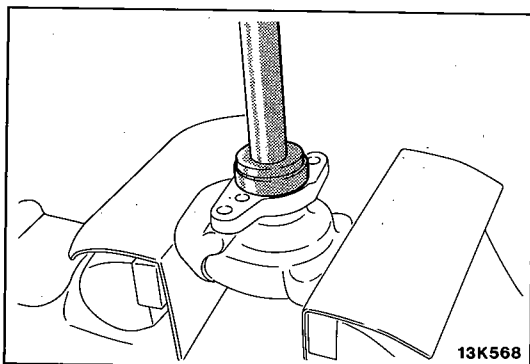
14. INSTALLATION OF FLOW CONTROL VALVE

- (1) If the flow control valve is to be replaced, install the flow control valve to the oil pump body corresponding with the body identification mark (A, B, C).
- (2) Apply the specified fluid to the outside of the flow control valve.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

11. INSTALLATION OF OIL SEAL

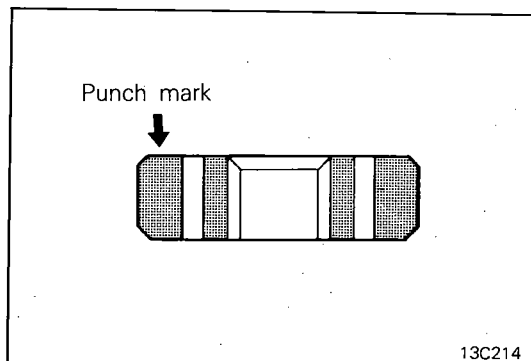
Drive the oil seal into the pump body.



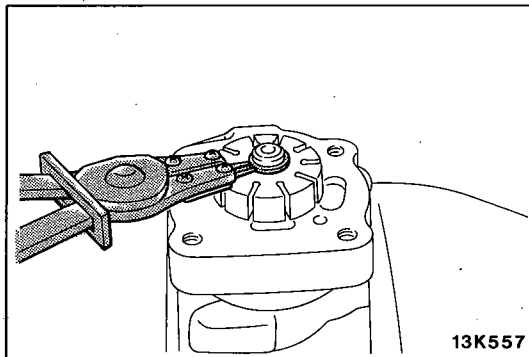
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7. INSTALLATION OF ROTOR

Install the rotor to the pulley assembly so that the rotor's punch mark is at the pump cover side.

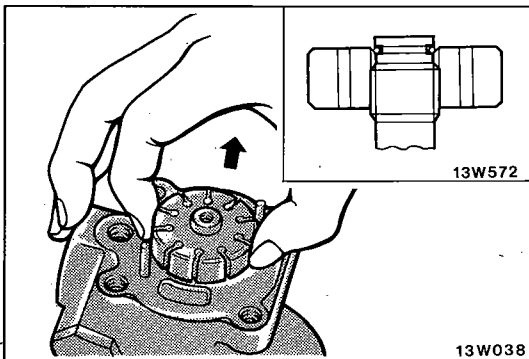


13C214

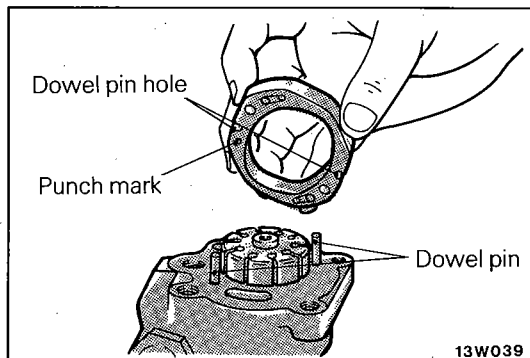


6. INSTALLATION OF SNAP RING

- (1) Install the snap ring with the snap ring pliers.



- (2) Lift the rotor and check to be sure that the snap ring is in the countersunk part.



5. INSTALLATION OF VANE / 4. CAM RING

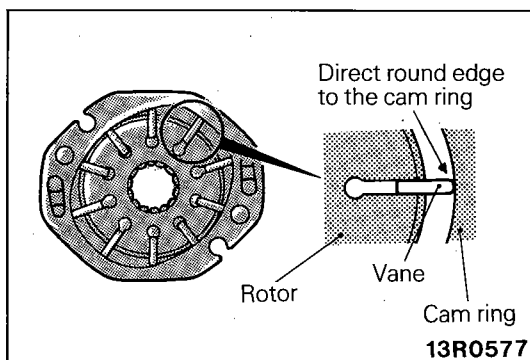
- (1) Apply specified fluid to vane and cam ring friction surface.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

- (2) Align the dowel pins of the pump body with the dowel holes of the cam ring, and then install so that the cam ring's punch mark is at the pump body side.

- (3) Apply specified fluid to the vanes and install the vanes on the rotor, paying close attention to the installation direction.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II



3. INSTALLATION OF O-RING

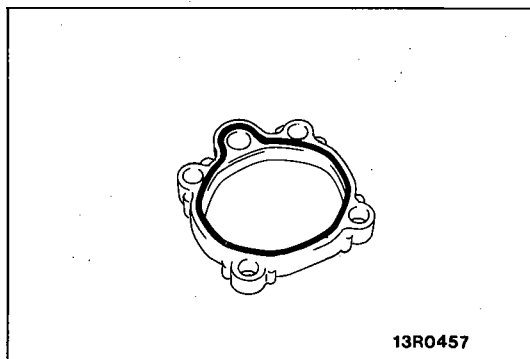
Apply specified fluid to O-ring and install firmly on cam case.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II

1. INSTALLATION OF PUMP COVER

Apply specified fluid to rotor friction surface of pump cover.

Specified fluid: MOPAR ATF PLUS (AUTOMATIC TRANSMISSION FLUID TYPE 7176) or DEXRON II



POWER STEERING HOSES

REMOVAL AND INSTALLATION

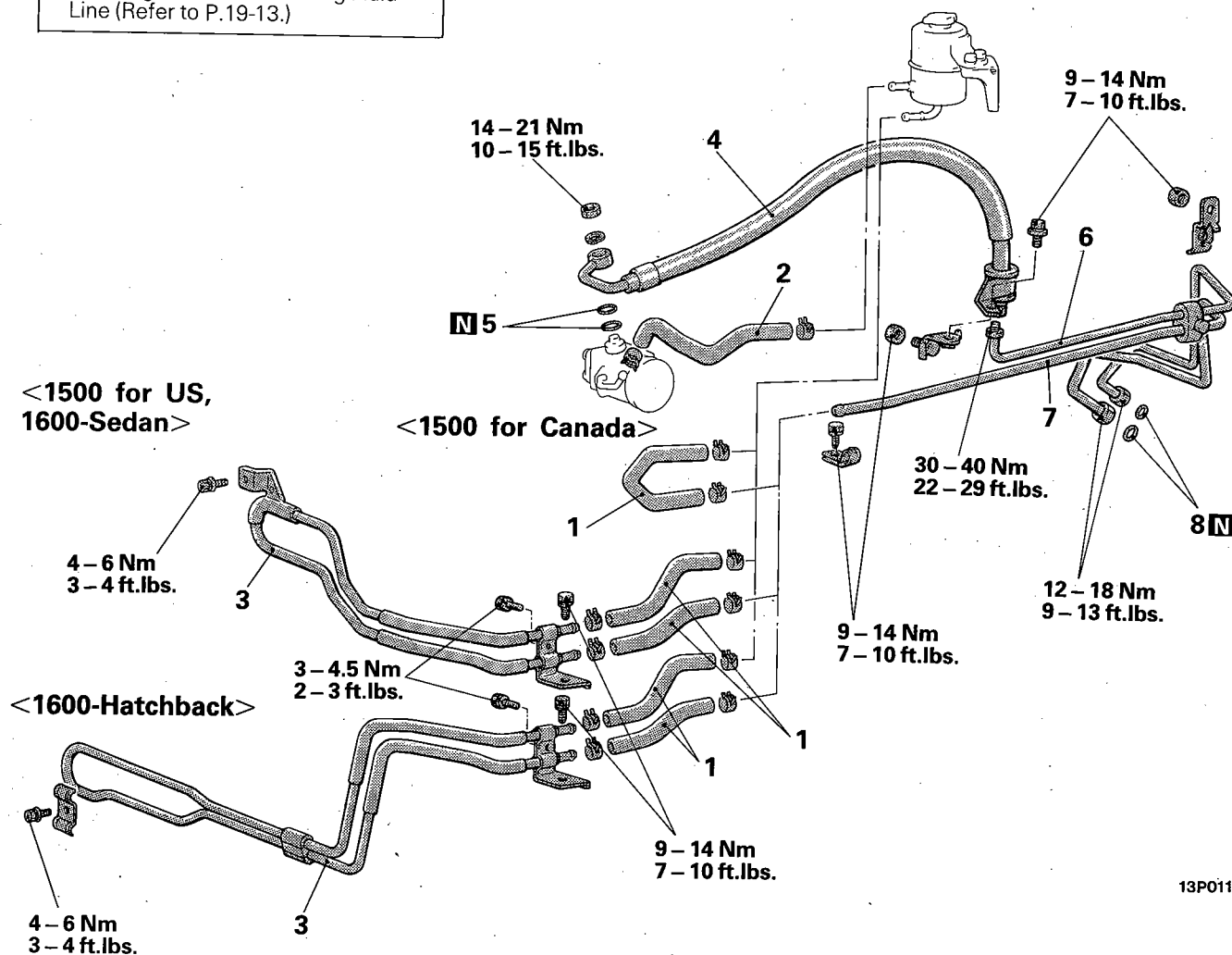
N19TA--

Pre-removal Operation

- Draining the Power Steering Fluid

Post-installation Operation

- Supplying of the Power Steering Fluid
- Bleeding the Power Steering Fluid Line (Refer to P.19-13.)



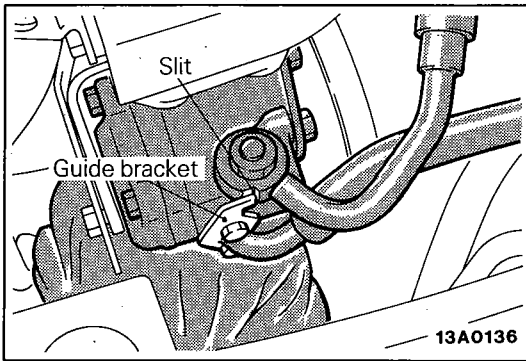
13P0113

Removal steps

1. Return hose
2. Suction hose
3. Cooler tube
- ◆◆ 4. Pressure hose
5. O-ring
6. Pressure tube
7. Return tube
8. O-ring

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆: Refer to "Service Points of Installation".
- (3) **N**: Non-reusable parts

**SERVICE POINTS OF INSTALLATION**

N19TDAD

4. INSTALLATION OF PRESSURE HOSE

- (1) Connect the pressure hose so that its slit part contacts the oil pump's guide bracket.
- (2) When the pressure hose is installed, align the white line on the pressure hose with the white line on the pressure tube so that together they form a straight line.

