

STEERING SYSTEM - POWER RACK & PINION

1998 Toyota Supra

1997-98 STEERING
Toyota - PowerRack & Pinion

1997: Paseo & Previa
1997-98: Camry, Celica, Corolla, Supra, Tercel, T100 2WD

DESCRIPTION & OPERATION

System consists of a rack and pinion assembly, hydraulic pump, and hoses. On some vehicles, an air control valve increases idle speed when power steering pump is under load.

LUBRICATION

FLUID TYPE

Use Dexron-II fluid.

FLUID LEVEL CHECK

When fluid is at normal operating temperature, fluid level should be between HOT marks on fluid reservoir or dipstick. When fluid is cold, fluid level should be between COLD marks on fluid reservoir or dipstick. Add Dexron-II fluid if necessary.

HYDRAULIC SYSTEM BLEEDING

NOTE: On Camry with 3.0L engine, cooling fan system must be bled whenever any hose is disconnected, or any cooling fan system component is replaced. See COOLING FAN SYSTEM BLEEDING.

1) With engine off, check fluid level in power steering pump reservoir. See FLUID LEVEL CHECK. Raise and support vehicle. Turn wheels fully in both directions. Recheck fluid level. Start and run engine at 1000 RPM or less. Rotate steering from lock to lock 2 or 3 times. Lower vehicle.

2) Rotate wheel from lock to lock 2 or 3 times. Center steering wheel. If fluid level does not rise and no foaming of fluid is evident, bleeding is complete. If fluid level rises more than 0.20" (5.0 mm) or foaming is evident, repeat procedure until air is released.

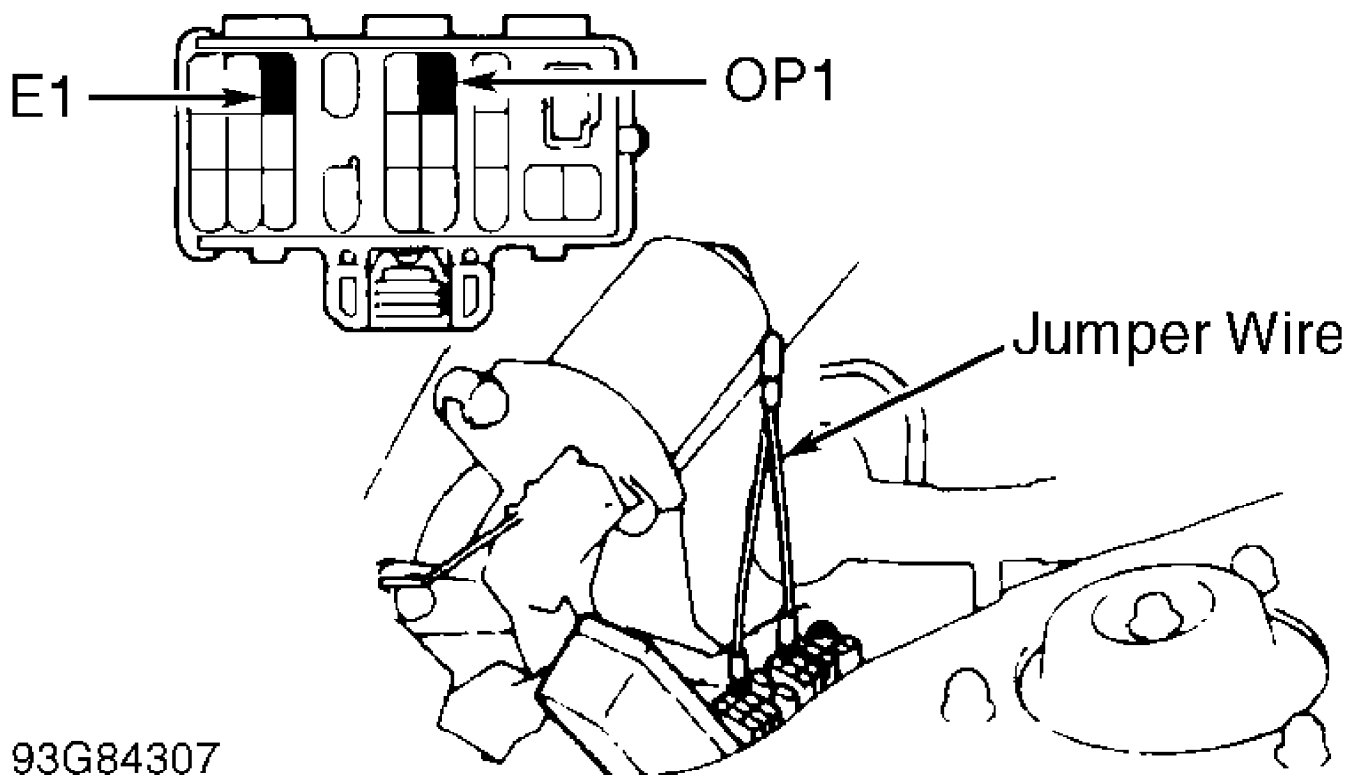
COOLING FAN SYSTEM BLEEDING

Camry (3.0L)

1) Park vehicle on level surface. With engine off, check fluid level in power steering pump reservoir. See FLUID LEVEL CHECK.

2) With ignition off, connect jumper wire between E1 and OP1 terminals of Data Link Connector No. 1 (DLC1). See Fig. 1. DLC1 is located in passenger's side rear corner of engine compartment, near strut tower and wiper motor.

3) Start engine without pressing accelerator pedal. Allow engine to idle for several seconds until no foaming exists in fluid in power steering pump reservoir. Shut engine off. Remove jumper wire from DLC1.



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Fig. 1: Identifying DLC Terminals
Courtesy of Toyota Motor Sales, U.S.A., Inc.

ADJUSTMENTS

POWER STEERING PUMP BELT

Using belt tension gauge, measure belt tension. See BELT TENSION SPECIFICATIONS table.

BELT TENSION SPECIFICATIONS

Application	Lbs. (kg)
Camry	
2.2L	
New	95-145 (43-66)
Used (1)	60-100 (27-45)
3.0L	
New	150-185 (68-84)
Used (1)	95-135 (43-61)
Celica	
New	99-121 (44-54)
Used (1)	44-77 (20-35)
Corolla (2)	
Paseo	
New	135-185 (61-83)
Used (1)	80-120 (36-54)
Previa	
New	160-180 (72-81)
Used (1)	115-135 (52-61)
Supra (2)	
Tercel	

New	140-180 (64-82)
Used (1)	80-120 (36-54)
T100 2WD	
New	135-185 (61-84)
Used (1)	80-120 (36-54)

- (1) - Belt is used if it has been in operation longer than 5 minutes.
(2) - Belt tension is controlled by an automatic tensioner. No adjustment is required.

TESTING

AIR CONTROL VALVE

Start engine. Turn A/C off. Rotate steering wheel right and left. Engine RPM should not decrease greater than 50 RPM. Pinch air hose shut. Rotate steering wheel right and left. Engine RPM should decrease about 200 RPM. If system fails any of these tests, check vacuum hoses and air control valve.

HYDRAULIC SYSTEM PRESSURE TEST

Pressure Test

1) Disconnect pressure line at line joint. Connect pressure gauge according to manufacturer's instructions. Bleed air from hydraulic system. Check power steering fluid level. With engine at idle, close pressure gauge valve for 2-3 seconds. Note fluid pressure. See HYDRAULIC PRESSURE table.

HYDRAULIC PRESSURE

Application	psi (kg/cm ²)
Camry & T100 2WD	1138 (80)
Celica	1280 (90)
Corolla	925 (65)
Paseo	850 (60)
Previa & Supra	1070 (75)
Tercel	996 (70)

NOTE: DO NOT keep pressure gauge valve closed longer than 10 seconds. Fluid testing temperature should be 176°F (80°C) or warmer.

2) Open pressure gauge valve fully. Note pressure with engine at idle and at 3000 RPM. Pressure difference should be less than 71 psi (5 kg/cm²). If difference is greater than specified, check flow control valve. If flow control valve is okay, repair or replace power steering pump.

3) With steering wheel at full lock position and pressure valve open, again measure pressure. See HYDRAULIC PRESSURE table. If pressure is less than specified, steering gear has an internal leak. Repair or replace steering gear.

STEERING WHEEL TURNING FORCE

1) On Previa, attach spring scale to steering wheel, as close to rim as possible. Steering effort should not exceed 8.8 lbs. (4.0 kg).

2) On all other models, center steering wheel. With engine

idling, measure steering turning force at steering wheel nut with an INCH-lb. torque wrench.

3) See STEERING EFFORT SPECIFICATIONS table. Repair or replace power steering unit if turning force exceeds specification.

STEERING EFFORT SPECIFICATIONS

Application	INCH-Lbs. (N.m)
Camry & Paseo	52 (5.9)
Celica & Supra	61 (6.9)
Corolla	43 (4.9)
Tercel	69 (7.2)
T100 2WD	73 (8.3)

REMOVAL & INSTALLATION

POWER STEERING PUMP

Removal (Camry 2.2L)

1) Raise and support front of vehicle. Remove right front wheel. Remove right fender apron. Remove air control valve vacuum hose. Remove drive belt.

2) Remove pressure and return lines. Plug and elevate lines to prevent fluid loss. Remove pulley nut. Remove pump bolts and pump.

Removal (Camry 3.0L)

Raise and support front of vehicle. Remove right front wheel. Remove right fender apron. Unplug solenoid valve connector. Remove and plug pressure and return lines. Remove drive belt. Remove pump mounting bolts. Remove pump.

Removal (Celica)

Raise and support front of vehicle. Remove engine undercover and lower crossmember. Remove and plug pressure and return lines. Remove drive belt. Remove pump mounting bolts. Remove pump.

Removal (Corolla)

Raise and support front of vehicle. Remove oil from reservoir. Disconnect pressure and return lines at pump. Remove air control valve hoses. Remove drive belt and pump.

Removal (Paseo & Tercel)

Raise and support front of vehicle. Disconnect pressure and return lines from pump. Remove drive belt. Remove pump bolts. Remove pump.

Removal (Previa)

Raise and support front of vehicle. Remove air duct and fan shroud. Remove fan, fan coupling, and drive belt. Disconnect pressure and return lines from pump. Remove pump mounting hardware and pump.

Removal (Supra)

1) Remove battery and battery tray. Raise and support front of vehicle. On turbo models, loosen air hose clips as necessary to remove intake air hose.

2) On all models, disconnect and plug hoses at pump. Disconnect hoses from air control valve on pump. Remove engine undercover. Remove pressure line. On turbo models, remove pulley nut, belt, and pulley. On all models, remove pump.

Removal (T100 2WD)

Drain power steering fluid reservoir. Disconnect and plug pressure and return lines. Remove drive belt. Remove pump bolts. Remove pump.

Installation (All Models)

To install, reverse removal procedure. Fill and bleed system. See HYDRAULIC SYSTEM BLEEDING under LUBRICATION. On FWD models, check front end alignment (if necessary). See WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT section.

POWER RACK & PINION

CAUTION: On models with air bag, position front wheels straight ahead, then secure steering wheel to prevent it from rotating, before disconnecting steering column "U" joint.

Removal (Corolla)

1) Remove steering column hole cover. Mark steering column "U" joint and shafts for installation reference. Position front wheels straight ahead. Secure steering wheel to prevent it from rotating. Remove steering column "U" joint bolts. Raise and support vehicle.

2) Remove engine splash shields. Remove engine center support. Separate tie rod ends from steering knuckles. Disconnect pressure and return lines. Remove steering gear bolts, clamps, and grommets. Remove steering gear.

Removal (FWD Except Corolla)

1) On Celica, remove air cleaner and duct. On all models, raise and support front of vehicle. Remove front wheels. On Camry, remove both fender aprons. On all models, separate tie rod ends from steering arms. Remove steering column hole cover for access to steering coupler bolts.

2) Mark and disconnect steering coupler "U" joint. Remove and plug pressure and return lines. Remove air control vacuum valve hose (if equipped). On Paseo and Tercel, remove exhaust pipe. On Celica, Paseo and Tercel, remove rear engine mount bracket. On Celica, remove crossmember.

3) On Camry, mark and remove drive shaft. Remove stabilizer bar (if necessary). On all models, remove steering gear mounting brackets. Remove steering gear. Use care not to tear rack boots when removing from chassis.

Removal (RWD Except Previa)

1) Raise and support front of vehicle. Remove front wheels. Separate tie rod ends from steering arms. Remove engine undercover (if equipped). Using driver-side seat belt, secure steering wheel in straight-ahead position. Mark and disconnect steering coupler "U" joint.

2) On all models, remove steering damper. Remove any line clamp bolts which may interfere with gear removal. Remove steering gear mounting brackets and steering gear. Use care not to tear rack boots when removing from chassis.

Removal (Previas)

1) Remove battery. Raise and support front of vehicle. Remove front wheels. Separate tie rod ends from steering knuckles. Mark universal joint and steering shaft. Disconnect "U" joint. Disconnect lines at steering gear.

2) On 4WD models, remove left engine undercover and front differential assembly. See appropriate article in DRIVE AXLES.

3) On all models, remove No. 3 drive housing bracket. Remove No. 2 drive housing insulator. Remove brackets and grommets from

steering gear. Move steering gear to right side. Rotate steering gear pinion shaft as necessary to work steering gear through opening on left side of vehicle.

Installation (All Models)

To install, reverse removal procedure. Check front end alignment. See WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT section.

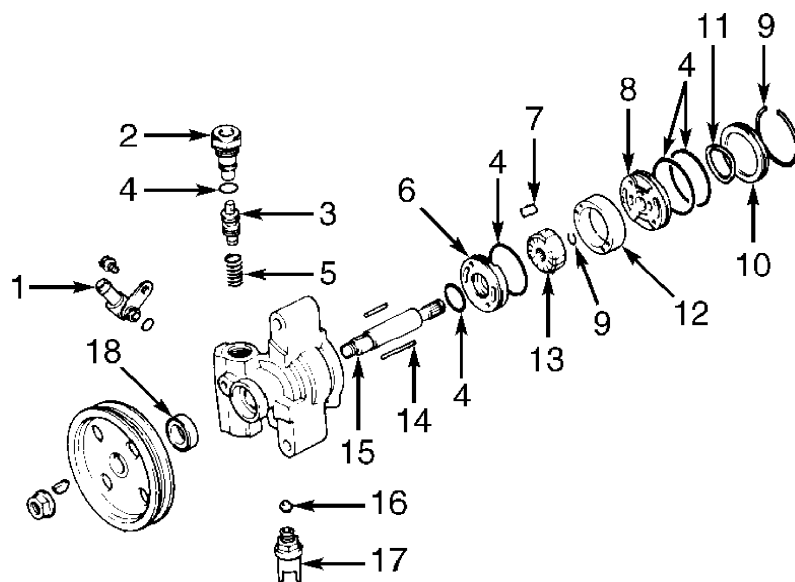
OVERHAUL

POWER STEERING PUMP

Disassembly (Camry, Celica & Corolla)

1) Remove drive pulley. Place power steering pump in vise. Remove reservoir and bracket. Remove air control valve (if equipped). See Fig. 2 or 3. Remove pressure feed tube, pressure port, flow control valve, and spring. Remove rear housing bolts or snap ring.

2) Using plastic mallet, tap end of shaft to remove rear housing and wave washer. Remove pump shaft, cam ring, and vane plates. Remove rotor and side plate. Drive out straight pins.

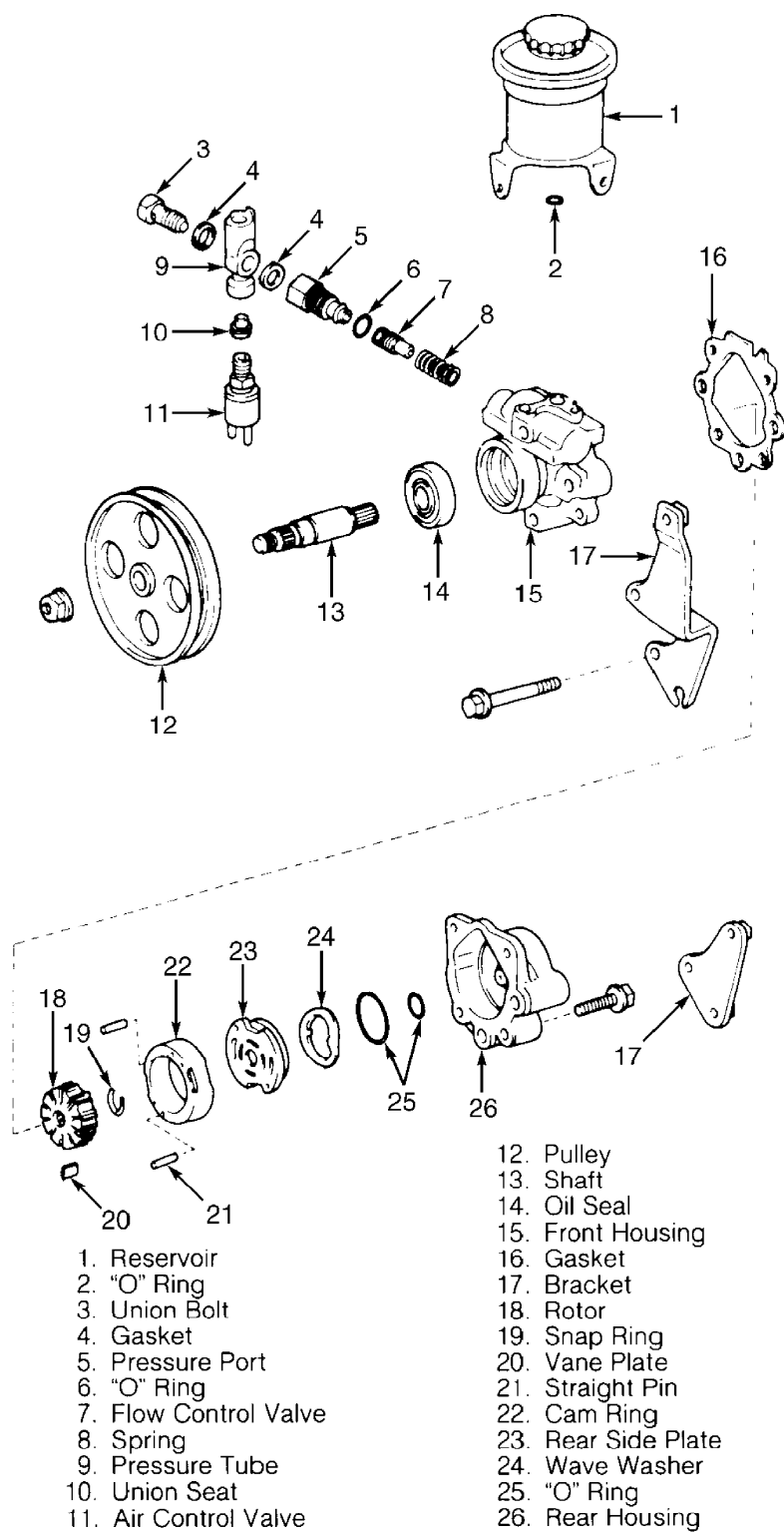


1. Suction Port Union
2. Pressure Port Union
3. Flow Control Valve
4. "O" Ring
5. Spring
6. Front Side Plate
7. Vane
8. Rear Side Plate
9. Snap Ring

10. Rear Housing
11. Wave Washer
12. Cam Ring
13. Rotor
14. Straight Pin
15. Pump Shaft
16. Union Seat
17. Air Control Valve
18. Oil Seal

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Fig. 2: Exploded View Of Power Steering Pump (Camry & Celica)
Courtesy of Toyota Motor Sales, U.S.A., Inc.



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 Fig. 3: Exploded View Of Power Steering Pump (Corolla)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

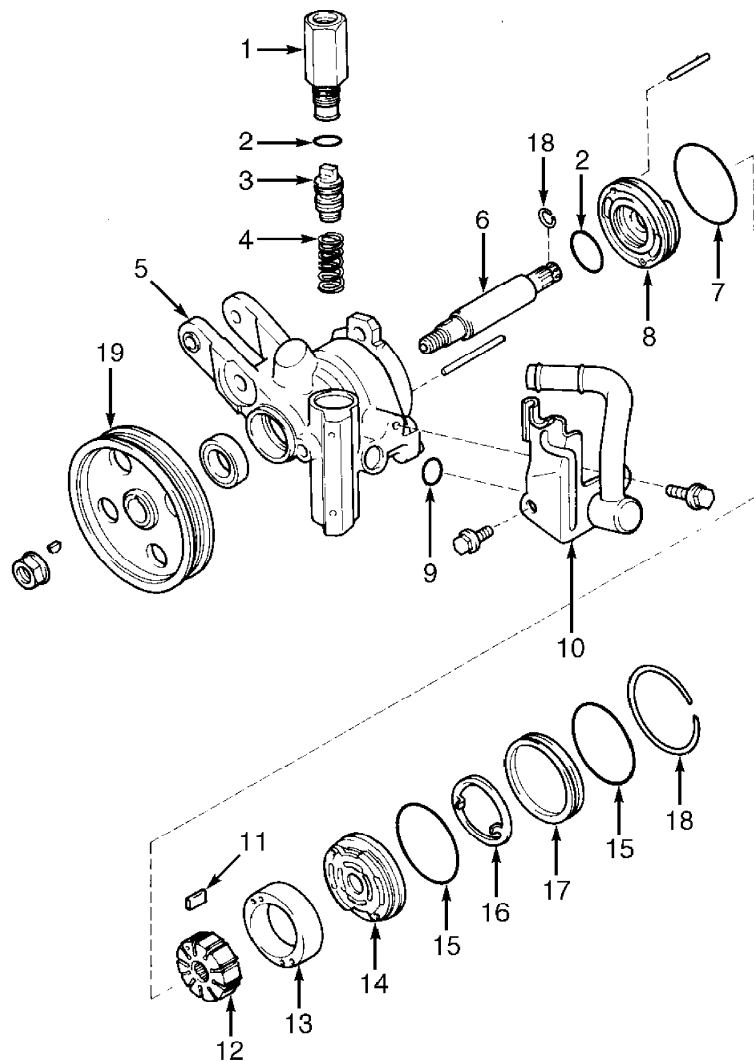
Disassembly (Paseo & Tercel)

1) Mount pump in vise. Remove pulley and key. See Fig. 4.

Remove suction and pressure ports. Remove flow control valve. Remove rear housing snap ring.

2) Wrap vinyl tape around pump shaft. Using plastic mallet, tap out rear housing and wave washer. Remove "O" ring. Using plastic mallet, tap end of shaft to remove rear plate. Remove "O" ring.

3) Remove shaft, cam ring, and vane plates. Pull out longer straight pin. Remove snap ring, rotor, and front plate.



- | | |
|------------------------|------------------------|
| 1. Pressure Port Union | 10. Suction Port Union |
| 2. "O" Ring | 11. Vane Plate |
| 3. Flow Control Valve | 12. Rotor |
| 4. Spring | 13. Cam Ring |
| 5. Front Housing | 14. Rear Side Plate |
| 6. Pump Shaft | 15. "O" Ring |
| 7. "O" Ring | 16. Wave Washer |
| 8. Front Side Plate | 17. Rear Housing |
| 9. "O" Ring | 18. Snap Ring |
| | 19. Pulley |

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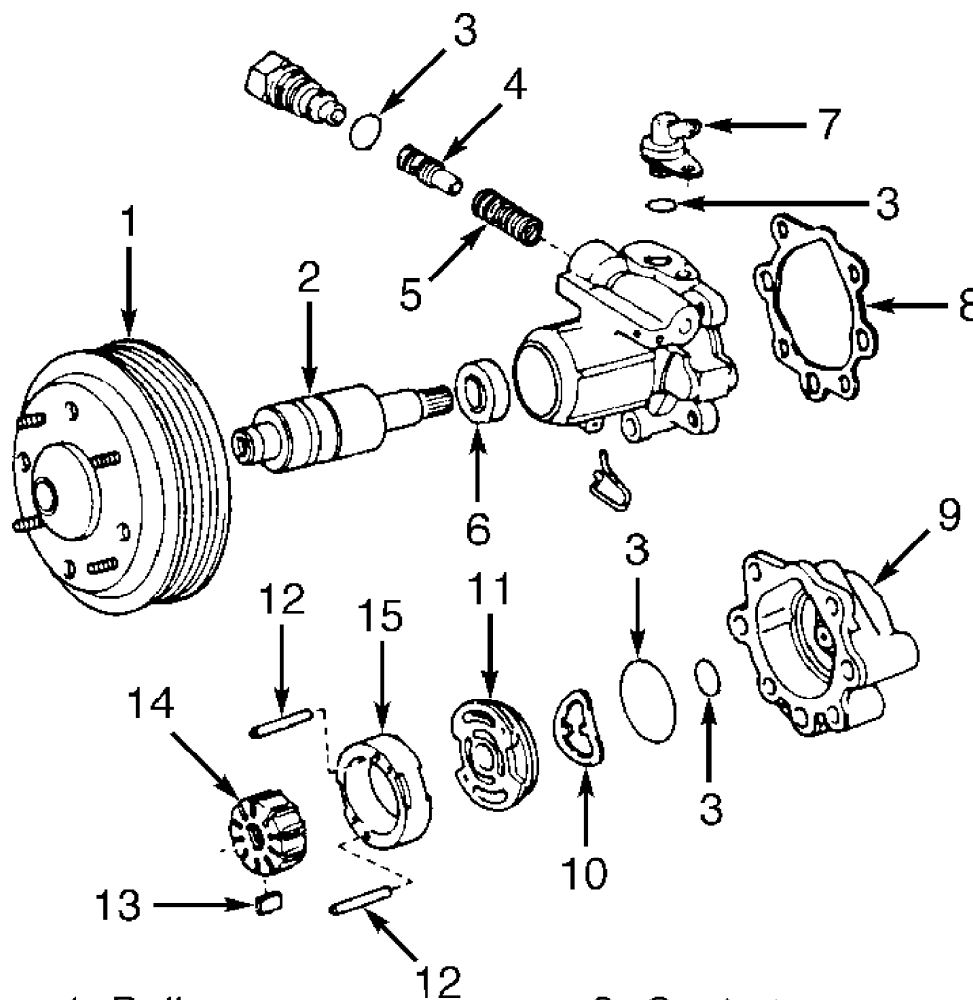
Fig. 4: Exploded View Of Power Steering Pump (Paseo & 1997 Tercel)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Disassembly (Previa)

1) Mount pump in vise. Remove pulley. See Fig. 5. Remove

suction and pressure ports. Remove flow control valve. Mark front and rear housings for reassembly reference. Remove rear housing.

2) Remove wave washer and rear plate. Remove cam ring, rotor and vane plates. Pull out bearing retaining clip. Remove pump shaft and bearing. Press bearing from shaft.



- | | |
|-------------------------------|------------------|
| 1. Pulley | 8. Gasket |
| 2. Pump Shaft
With Bearing | 9. Rear Housing |
| 3. "O" Ring | 10. Wave Washer |
| 4. Flow Control Valve | 11. Rear Plate |
| 5. Spring | 12. Straight Pin |
| 6. Oil Seal | 13. Vane Plate |
| 7. Suction Port Union | 14. Rotor |
| | 15. Cam Ring |

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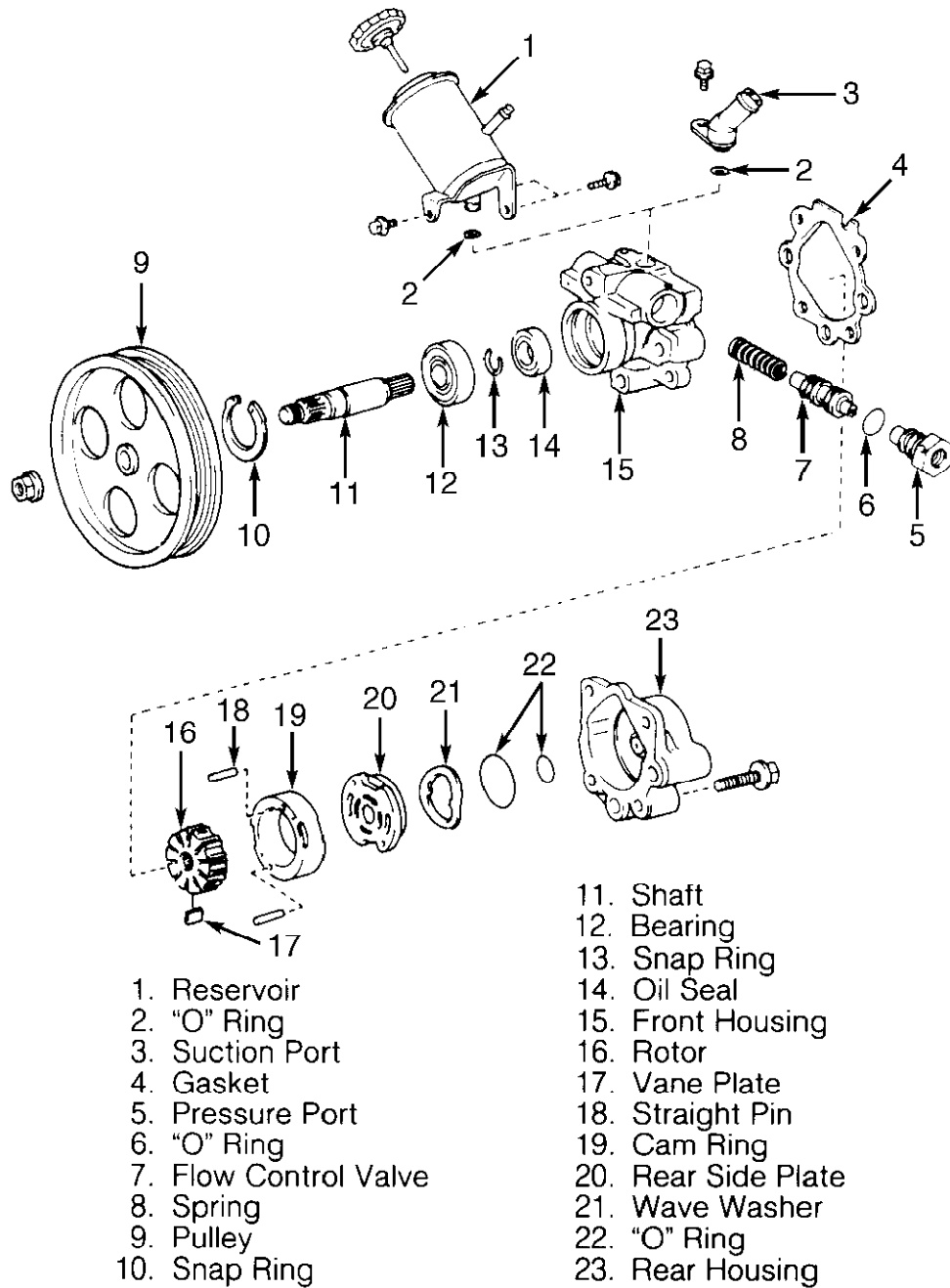
Fig. 5: Exploded View Of Power Steering Pump (Previa)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Disassembly (Supra)

1) Remove pulley, if not already removed. Remove reservoir if

necessary. Remove suction and pressure ports. Remove flow control valve and spring. See Fig. 6.

2) Mark front and rear housings for reassembly reference. Remove rear housing. Remove cam ring, rotor, and vane plates. Remove snap ring, shaft, and bearing. Tap out oil seal. Wrap vinyl tape around shaft serrations. Press bearing from shaft. Using plastic mallet, tap out rear side plate and wave washer.



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Fig. 6: Exploded View Of Power Steering Pump (Supra & 1998 Tercel)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Disassembly (T100 2WD)

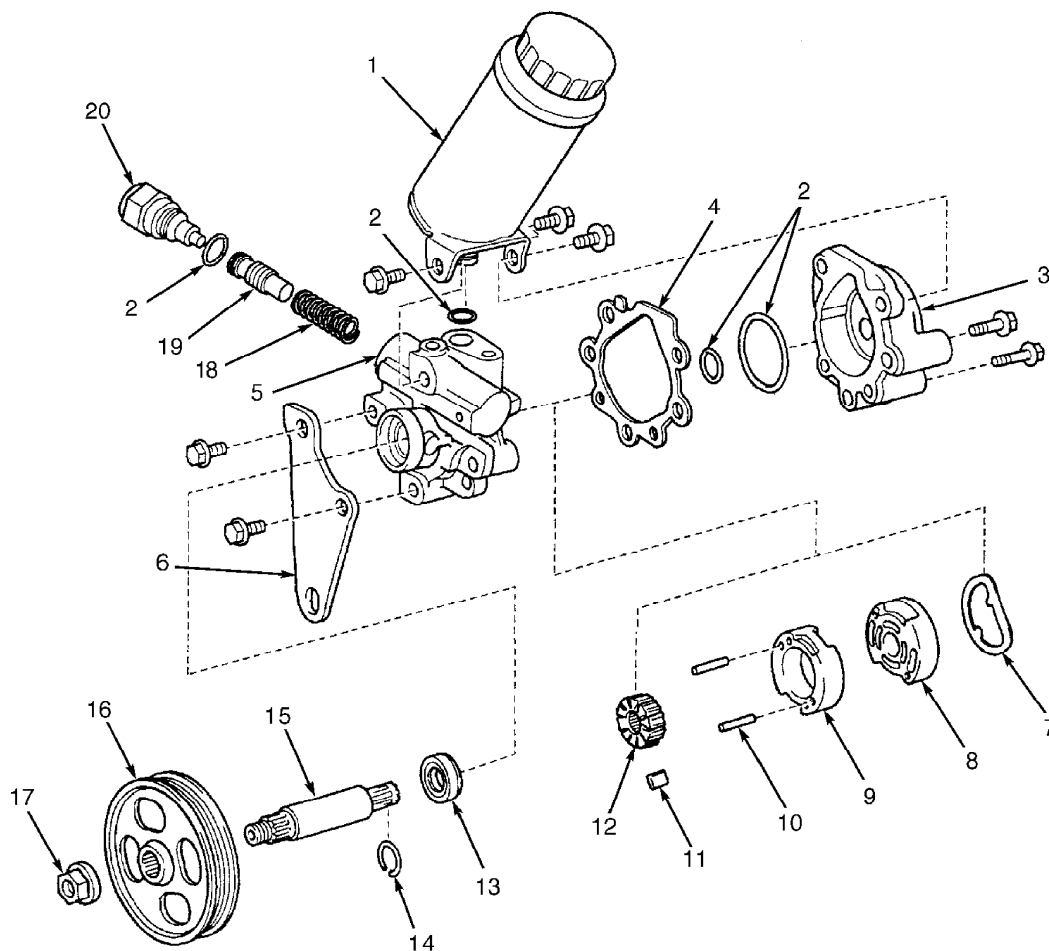
1) Remove pulley, if not already removed. Clamp pump in vise.

See Fig. 7. Remove pressure port union and flow control valve. Mark front and rear housings for reassembly reference.

2) Using 2 screwdrivers, remove rear housing snap ring. Remove rear housing. Using plastic hammer, tap out rear housing and wave washer. Remove "O" ring from rear housing.

3) Using plastic hammer, tap shaft end and remove rear plate. Remove "O" ring from rear plate. Remove pump shaft, cam ring and vane plates. Remove long straight pins from front housing.

4) Using screwdriver, remove snap ring from pump shaft. Remove rotor and front plate from pump shaft. Remove mounting bracket from pump housing assembly.



- | | |
|------------------|-------------------------|
| 1. Oil Reservoir | 11. Vane |
| 2. "O" Ring | 12. Vane Pump Rotor |
| 3. Rear Housing | 13. Oil Seal |
| 4. Gasket | 14. Snap Ring |
| 5. Front Housing | 15. Vane Pump Shaft |
| 6. Bracket | 16. Vane Pump Pulley |
| 7. Wave Washer | 17. Pulley Nut |
| 8. Side Plate | 18. Spring |
| 9. Cam Ring | 19. Flow Control Valve |
| 10. Straight Pin | 20. Pressure Port Union |

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Fig. 7: Exploded View Of Power Steering Pump (T100)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Inspection (All Models)

1) Except on models with shaft bearing, measure oil clearance

between pump housing bushing and rotor shaft. See Fig. 8. If clearance exceeds 0.0028" (0.07 mm), replace pump. On all models, discard all "O" rings and oil seals, and replace with new ones.

2) Inspect vane plates for wear or damage. See VANE PLATE SPECIFICATIONS table. Maximum clearance between vane plate and rotor groove on all models except Corolla is 0.0012" (0.03 mm). On Corolla, maximum clearance is 0.0013" (0.035 mm). If clearance exceeds specification, replace rotor and vane plate as an assembly.

3) Using 57-71 psi (4.0-5.0 kg/cm²) compressed air, check flow control valve for leakage. See Fig. 9. On all models except Supra, spring length should be 1.42-1.49" (36-38 mm). On Supra, spring length should be a minimum of 1.30" (33 mm). Replace spring if length is not as specified.

VANE PLATE SPECIFICATIONS

Application	In. (mm)
Camry, Celica, Corolla, Previa & Tercel	
Minimum Height	0.315 (8.00)
Minimum Thickness	0.0697 (1.770)
Minimum Length	0.5894 (14.970)
Paseo & T100	
Minimum Height	0.319 (8.10)
Minimum Thickness	0.0707 (1.797)
Minimum Length	0.5901 (14.988)
Supra	
Minimum Height	0.339 (8.60)
Minimum Thickness	0.055 (1.40)
Minimum Length	0.590 (14.99)

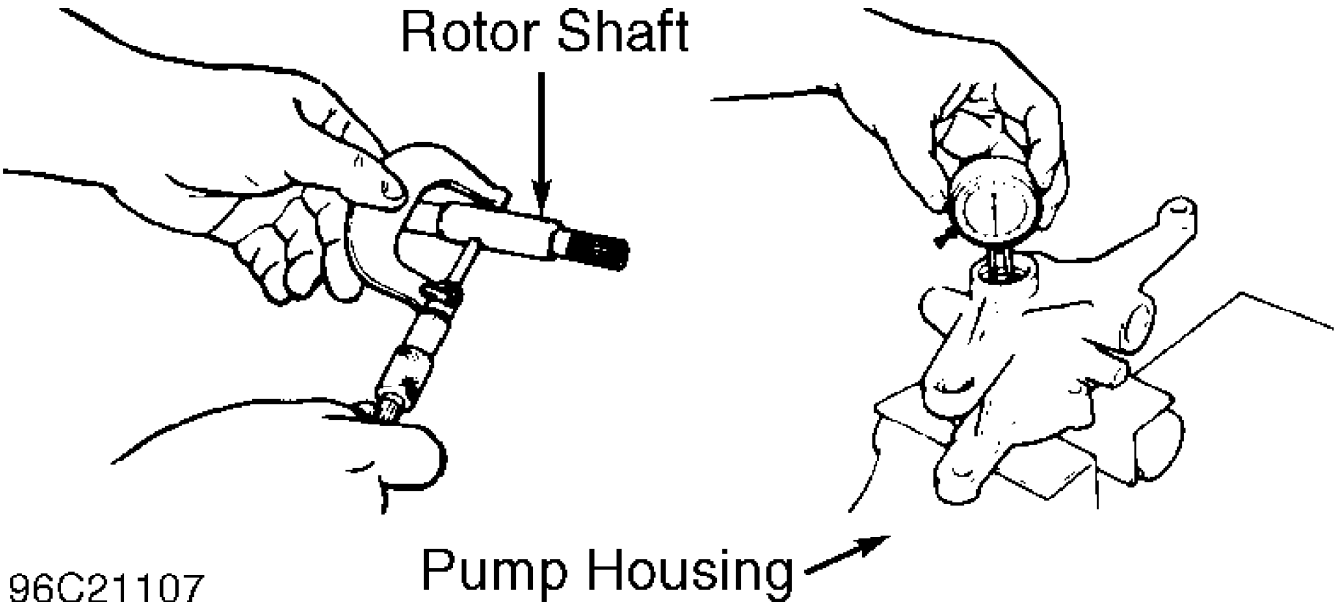
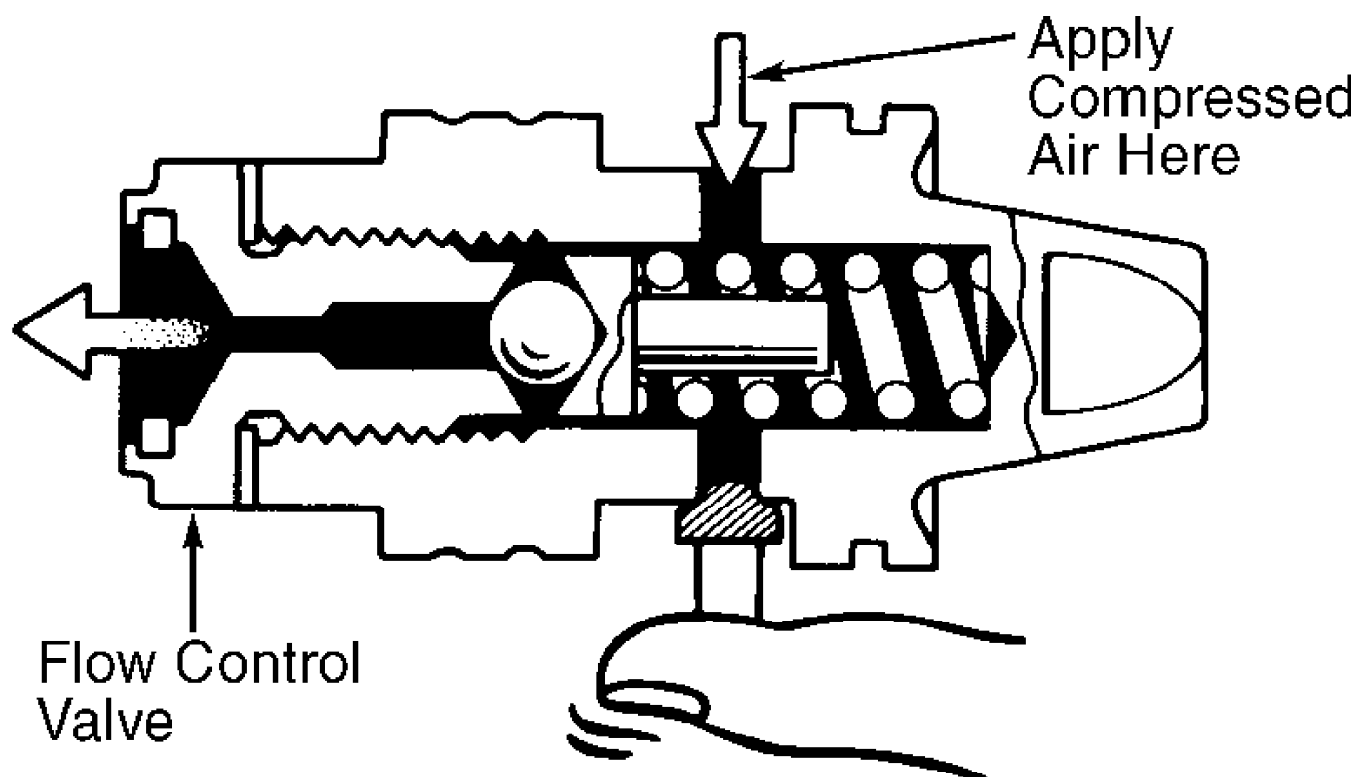


Fig. 8: Measuring Pump Shaft Clearance
Courtesy of Toyota Motor Sales, U.S.A., Inc.



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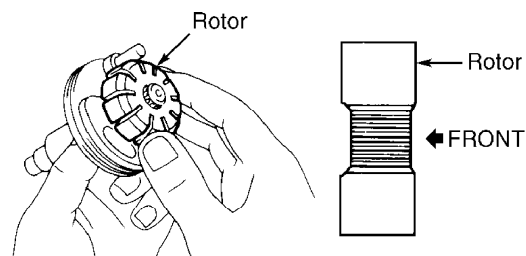
Fig. 9: Checking Flow Control Valve
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Reassembly (All Models)

1) Coat all sliding surfaces with ATF. Assemble front plate and rotor assembly onto pump shaft. See Fig. 10. Coat shaft seal with grease. Install longer pin into housing. Align pin and hole in front plate.

2) Using a plastic mallet, tap pump shaft into housing. Install cam ring with scribe mark toward rear of pump. Install vane plates with rounded end facing rear of pump. Install rear side plate and "O" ring. Install wave washer, "O" ring, and rear housing.

3) Measure pump shaft rotating preload. Preload should not exceed 2.7 INCH lbs. (0.3 N.m), except on Supra. On Supra, preload should not exceed 1.8 INCH lbs. (0.2 N.m). If preload exceeds specification, disassemble pump and inspect components. To complete reassembly, reverse disassembly procedure.



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Fig. 10: Installing Power Steering Pump Rotor
Courtesy of Toyota Motor Sales, U.S.A., Inc.

STEERING GEAR

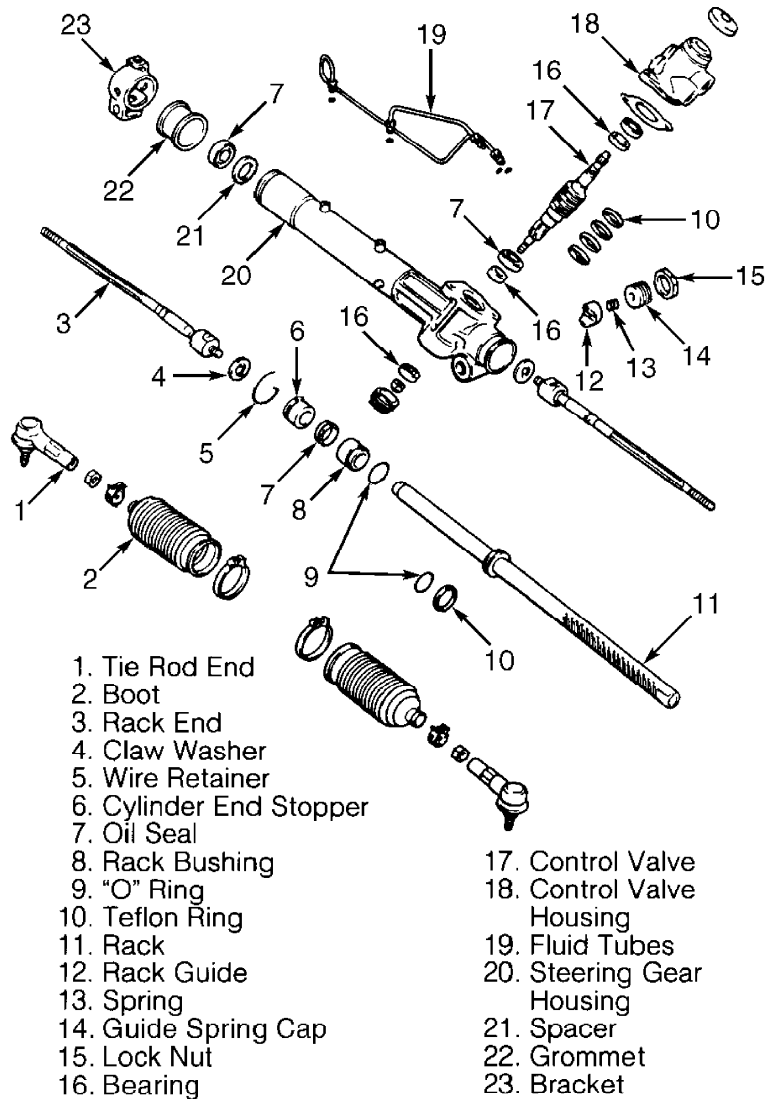
NOTE: Lubricate all internal parts of steering gear with power steering fluid before reassembly.

Disassembly (Camry)

1) Using Rack Housing Stand (09612-00012), mount steering gear in vise. Remove left and right turn tubes. See Fig. 11. Loosen tie rod end lock nuts. Mark tie rod ends for reassembly reference. Remove tie rod ends. Remove outer clips, clamps, and rack boots.

2) Unstake claw washers. Remove rack ends and claw washers. Remove rack guide spring cap lock nut. Remove spring cap. Remove rack guide spring, rack guide, and seat.

3) Remove rack housing cap. Remove nut, spacer, and lower bearing. Remove snap ring. Using Puller (09613-12010), remove control valve. Remove upper bearing. Remove rack end stopper. Press out rack and oil seal. Drive out spacer and remaining oil seal.



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Fig. 11: Exploded View Of Power Rack & Pinion Steering Gear (Camry)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

Inspection & Repair

1) Check all parts for damage and deterioration. Place rack

on "V" blocks. Measure runout at center of rack. Maximum runout is 0.012" (0.30 mm). Inspect back surface of rack for wear or damage. Measure oil clearance between shaft and bushing. Replace bushing if clearance exceeds 0.005" (0.125 mm). Inspect all bearings and seals for damage. Replace as necessary. Replace all "O" rings. Replace rack housing if defective.

2) Using a small screwdriver, remove Teflon ring from rack. Lubricate NEW ring with power steering fluid. Carefully expand ring with Expander (09631-24020). Install ring onto rack, and firmly snug down with finger pressure. Slide chamfered end of Installer (09631-24030) over ring to seat it.

3) Remove Teflon rings from control valve in similar manner. Lubricate Teflon rings with power steering fluid. Slide rings over Installer (09631-20070). Install rings onto control valve. Snug down rings with fingers. Slide chamfered end of Seal Ring Setter (09631-20081) over assembly to seat seal rings.

Reassembly & Adjustments

1) Install oil seal and spacer into cylinder. Install Steering Rack Cover (09631-10041) onto rack. Coat with power steering fluid. Insert rack into cylinder. Remove rack cover. Install oil seal and spacer. Coat rack housing and inside of end stopper with grease. Install and stake end stopper.

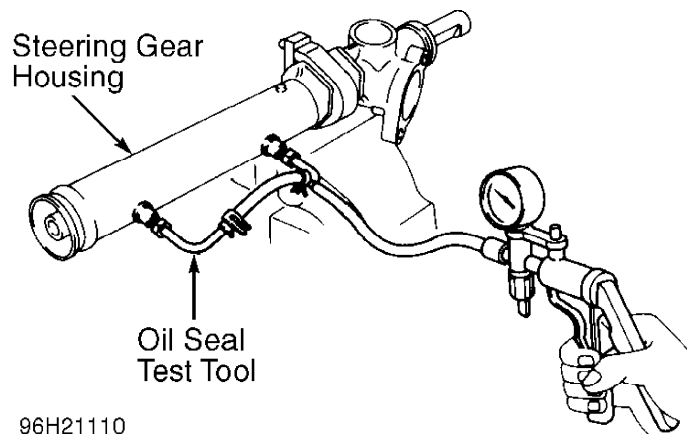
2) Install Oil Seal Test Tool (09631-12071). Apply 15.8 in. Hg for 30 seconds. If vacuum drops, recheck seals in rack housing. See Fig. 12.

3) Press in control valve. Press in upper bearing. Install oil seal and snap ring. Using Wrench (09613-00010), install and tighten NEW self-locking nut. Tighten to 18 ft. lbs. (25 N.m).

4) Apply Loctite 242 sealant to threads of rack housing cap. Install cap, tighten to 43 ft. lbs. (59 N.m), and stake in position. Install rack guide seat, rack guide, and rack guide spring.

5) Apply Loctite 242 sealant to threads of spring cap. Tighten cap to 18 ft. lbs. (25 N.m). Loosen spring cap 12 degrees. Rotate control valve shaft left and right twice. Loosen spring cap until preload is eliminated. Tighten spring cap until preload is 6.9-12.2 INCH lbs. (0.8-1.4 N.m). See Fig. 13.

6) Apply Loctite 242 sealant to 2 or 3 threads of rack guide spring cap nut. Install and tighten nut to 37 ft. lbs. (50 N.m). Measure preload, and readjust if necessary. To complete assembly, reverse disassembly procedure.



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Fig. 12: Testing Rack Seal

Courtesy of Toyota Motor Sales, U.S.A., Inc.

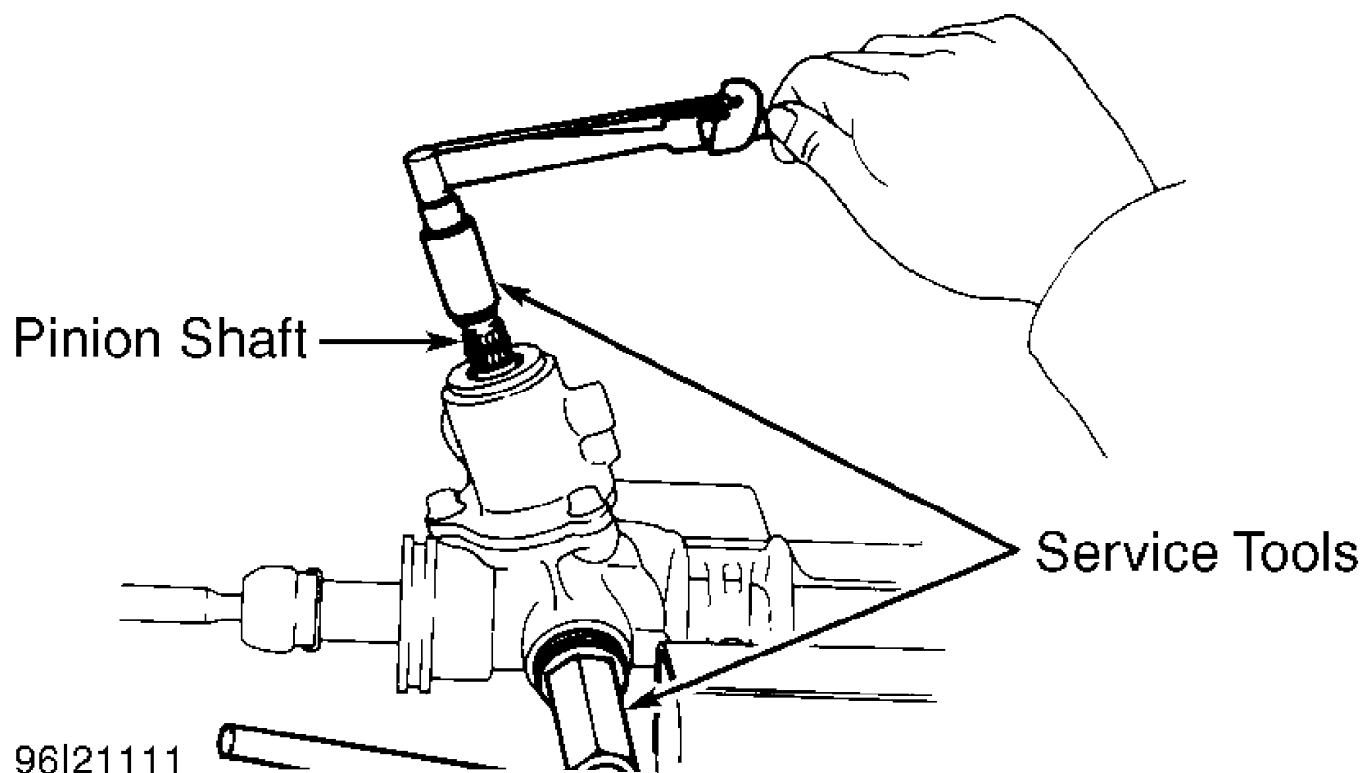


Fig. 13: Setting Rack & Pinion Total Preload
Courtesy of Toyota Motor Sales, U.S.A., Inc.

Disassembly (Celica)

1) Using Rack Housing Stand (09612-00012), mount steering gear in vise. Remove left and right turn tubes. Mark and remove tie rod ends. Remove boots. See Fig. 14.

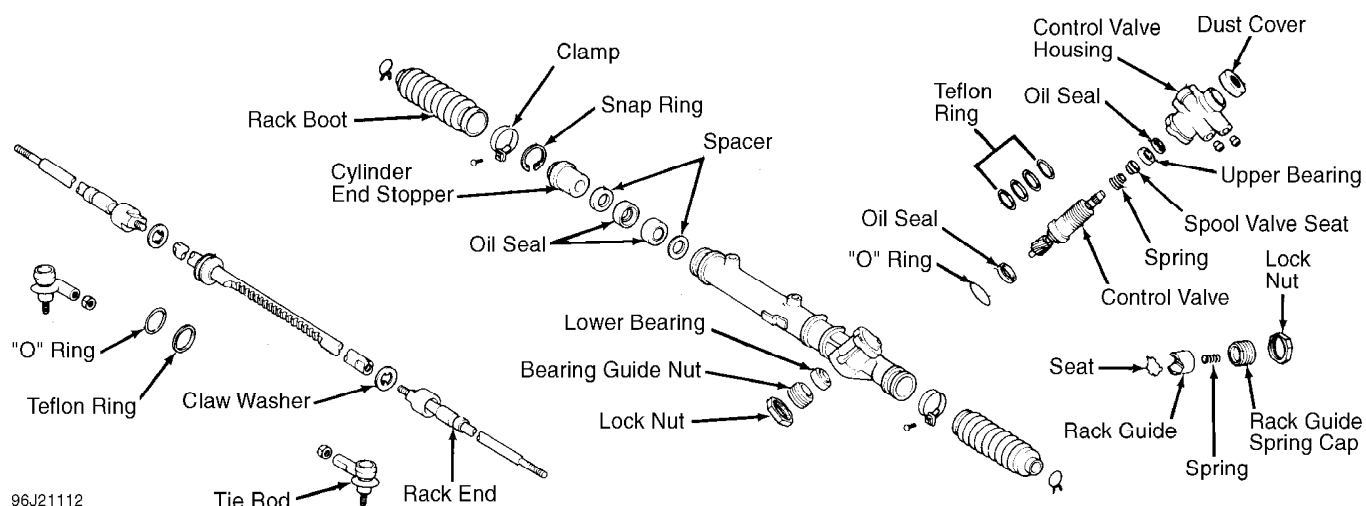


Fig. 14: Exploded View Of Power Rack & Pinion Steering Gear Components (Celica)
Courtesy of Toyota Motor Sales, U.S.A., Inc.

2) Unstake claw washers. Mark left and right rack ends for reassembly reference. Using Wrench (09628-10020), remove rack ends and claw washers. Remove rack guide spring cap lock nut. Remove spring cap. Remove rack guide spring, guide, and seat.

3) Remove bearing guide lock nut and guide nut. Remove dust cover. Mark control valve housing and rack for reassembly reference. Remove control valve housing. Remove control valve and bearing.

4) Remove snap ring from end of housing. Using Bearing Replacer (09612-10061), press cylinder end stopper out until end stopper touches press plate. Pull out rack with cylinder end stopper, spacer, and oil seal. Drive out rack housing oil seal and spacer.

Inspection & Repair

1) Check all parts for damage and deterioration. Place rack on "V" blocks. Measure runout at center of rack. Maximum runout is 0.012" (0.30 mm). Inspect back surface of rack for wear or damage. Inspect all bearings and seals for damage. Replace as necessary. Replace all "O" rings. Replace rack housing if defective.

2) Using a small screwdriver, remove Teflon ring from rack. Lubricate NEW ring with power steering fluid. Carefully expand ring with Expander (09631-24020). Install ring onto rack, and firmly snug down with finger pressure.

3) Remove Teflon rings from control valve in similar manner. Lubricate Teflon rings with power steering fluid. Slide rings over Installer (09620-24040). Install rings onto control valve. Snug down rings with fingers. Slide chamfered end of Seal Ring Setter (09620-224050) over assembly to seat seal rings.

Reassembly & Adjustments

1) Install rack housing oil seal and spacer. Install Rack Cover (09631-32010) onto rack. Install rack into cylinder. Remove rack cover. Wind vinyl tape around steering rack end. Install oil seal into cylinder. Install spacer. Drive in cylinder end stopper with Bearing Replacer (09612-22011). Install snap ring.

2) Install Oil Seal Tester (09631-12070). Apply 15.8 in. Hg for 30 seconds. If vacuum drops, recheck seals, "O" rings, and Teflon rings in rack housing. See Fig. 12.

3) Coat control valve Teflon rings with power steering fluid. Insert valve into steering housing. Install "O" ring, spring, and spring seat. Align reference marks on control valve housing. Install control valve lower bearing.

4) Apply Loctite 242 sealant to 2 or 3 threads of bearing guide nut. Install and tighten bearing guide nut to 11 ft. lbs. (15 N.m). Loosen guide nut until rotating torque is 3.5-5.3 INCH lbs. (0.4-0.6 N.m). See Fig. 13.

5) Apply Loctite 242 sealant to 2 or 3 threads of bearing guide lock nut. Install and tighten lock nut to 41 ft. lbs. (56 N.m). Measure preload, and readjust if necessary.

6) Install rack guide, guide spring, and seat. Apply Loctite 242 sealant to threads of rack guide spring cap. Install and tighten cap to 18 ft. lbs. (25 N.m). Back off spring cap 12 degrees. Rotate control valve shaft left and right twice.

7) Loosen spring cap until preload is eliminated. Tighten spring cap until preload is 8.0-10.6 INCH lbs. (.9-1.2 N.m). Apply liquid sealer to threads of lock nut, and install lock nut. Tighten lock nut to 41 ft. lbs. (56 N.m). Measure preload, and readjust if necessary. To complete reassembly, reverse disassembly procedure.

Disassembly (Corolla)

1) Using Rack Housing Stand (09612-00012), mount steering gear in vise. Remove left and right turn tubes. Loosen lock nuts on tie rod ends, and mark tie rod ends for reassembly reference. Remove tie rod ends. See Fig. 15. Remove outer clips, clamps, and rack boots.

2) Unstake claw washers. Remove rack ends and claw washers. Remove rack guide spring cap lock nut. Remove spring cap. Remove rack guide spring, rack guide, and seat.

3) Remove rack housing cap. Remove nut, spacer, and lower

bearing. Remove snap ring. Using Puller (09613-12010), remove control valve. DO NOT tap valve to remove it. Using brass mallet, tap out rack and oil seal. Remove oil seal and spacer from lower end of control valve housing.

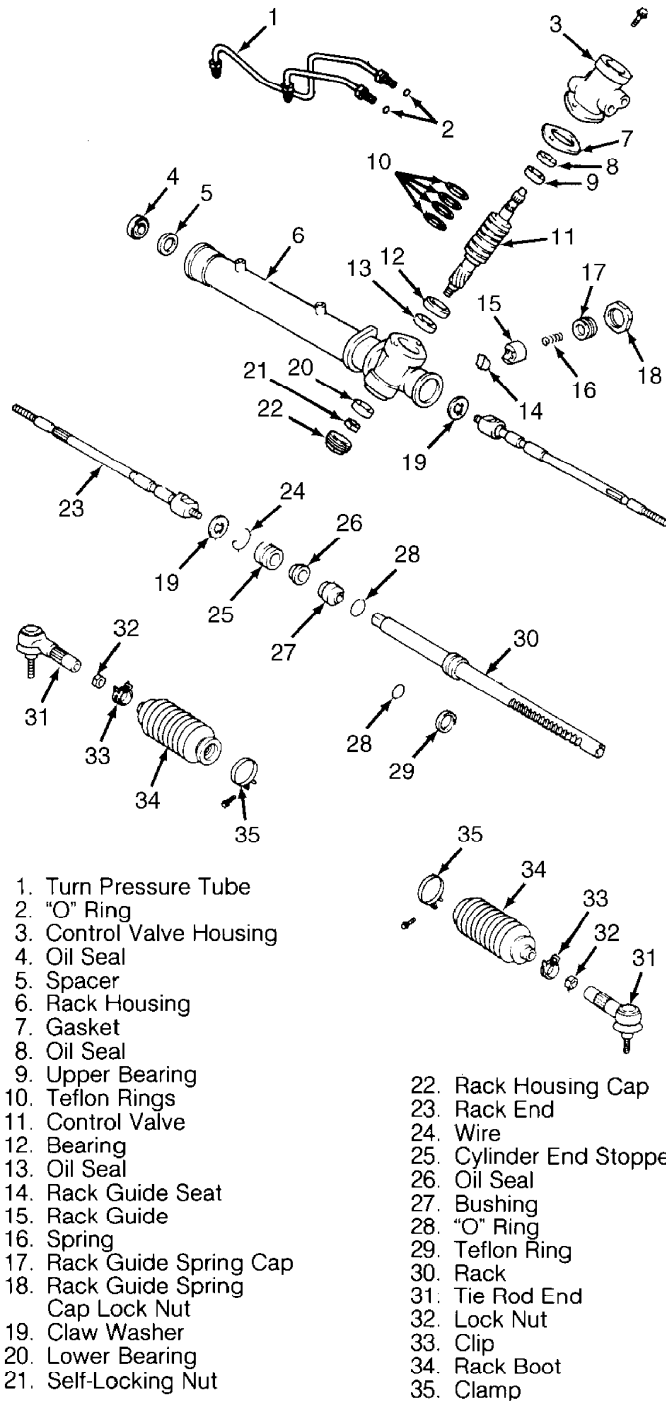


Fig. 15: Exploded View Of Power Rack & Pinion Steering Gear (Corolla)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

Inspection & Repair

- 1) Place rack on "V" blocks. Measure runout at center of

rack. Maximum runout is 0.006" (0.15 mm).

2) Measure clearance between control valve shaft and bushing. If clearance exceeds .018" (.45 mm), replace bushing. Press bushing in to a depth of 2.74" (69.5 mm).

3) Using a small screwdriver, remove Teflon rings from rack piston and control valve. Carefully expand new rack piston ring with fingers, and install into groove. Seat ring firmly with fingers so it fits tightly in groove.

4) On control valve, use Installer (09631-20070) to expand Teflon rings and install onto control valve. Slide tapered end of Installer (09631-20081) over rings to seat.

Reassembly & Adjustments

1) Install oil seal and spacer into cylinder. Install Steering Rack Cover (09631-16020) onto rack. Coat with power steering fluid. Insert rack into cylinder. Remove rack cover. Install oil seal, spacer, and end stopper. Install snap ring.

2) Install Oil Seal Tester (09631-22030). Apply 15.8 in. Hg for 30 seconds. If vacuum drops, recheck seals, "O" rings, and Teflon rings in rack housing. See Fig. 12.

3) Press in upper bearing. Install oil seal and snap ring. Install spacer and lower bearing onto control valve shaft. Install control valve. Using Wrench (09613-12020), install and tighten NEW self-locking nut until it touches spacer. Distance between pivot arm on tool and surface of nut should be .65-.67" (16.5-17.0 mm).

4) Apply Loctite 242 sealant to threads of rack housing cap. Install cap, and stake in position. Install rack guide seat, rack guide, and rack guide spring.

5) Apply Loctite 242 sealant to threads of spring cap. Tighten cap to 18 ft. lbs. (25 N.m). Loosen spring cap 15 degrees. Rotate control valve shaft left and right twice. Loosen spring cap until preload is eliminated. Tighten spring cap until preload is 7.1-11.5 INCH lbs. (.8-1.3 N.m). See Fig. 13.

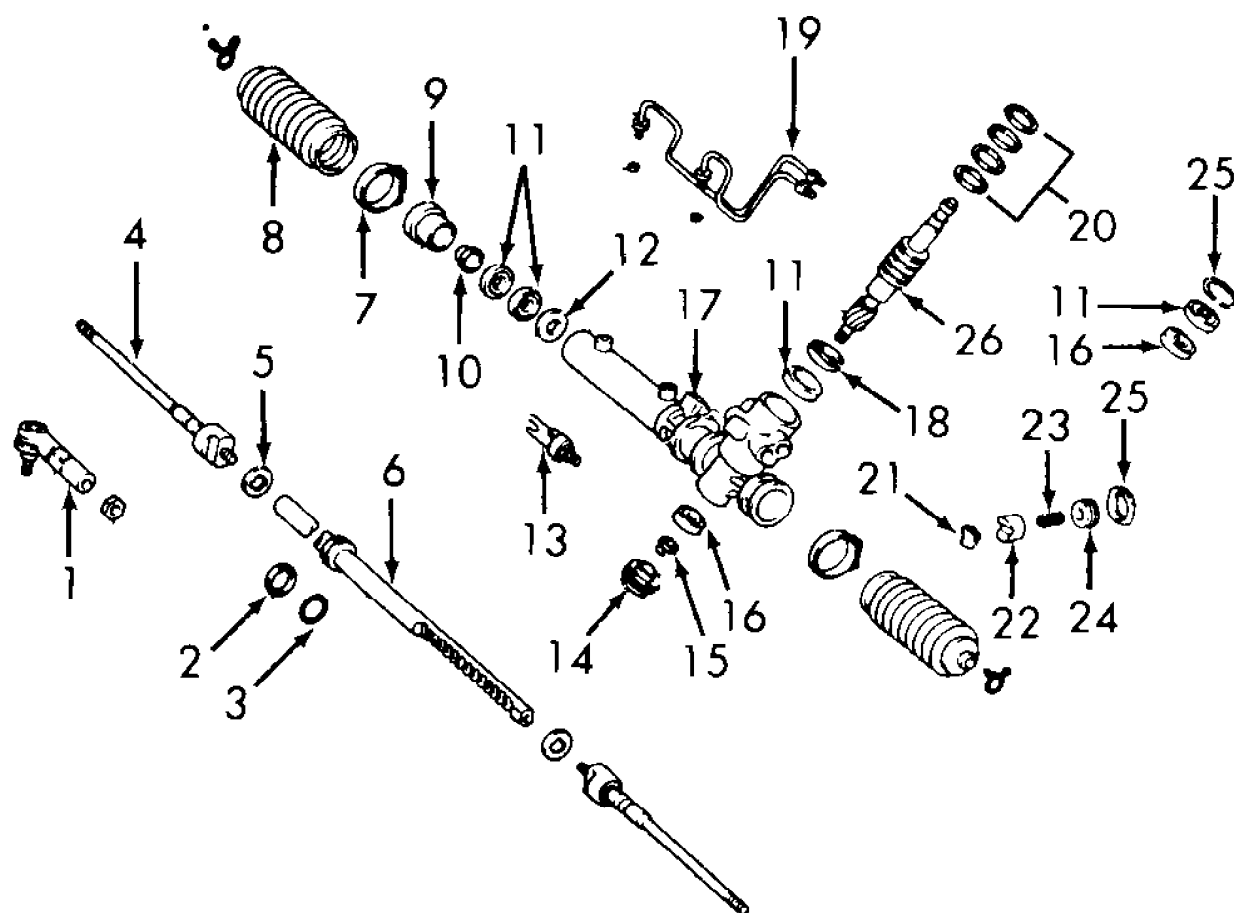
6) Apply Loctite 242 sealant to 2 or 3 threads of rack guide spring cap nut. Install and tighten nut to 41 ft. lbs. (56 N.m). Measure preload, and readjust if necessary. To complete assembly, reverse disassembly procedure.

Disassembly (Paseo & Tercel)

1) Using Rack Housing Stand (09612-00012), mount steering gear in vise. Remove left and right turn tubes. Loosen lock nuts on tie rod ends, and mark tie rod ends for reassembly reference. Remove tie rod ends. See Fig. 16. Remove outer clips, clamps, and rack boots.

2) Unstake claw washers. Remove rack ends and claw washers. Remove rack guide spring cap lock nut. Remove spring cap. Remove rack guide spring, rack guide, and seat.

3) Remove rack housing cap. Remove nut, spacer, and lower bearing. Remove snap ring. Using Puller (09613-12010), remove control valve. Remove upper bearing. Remove rack end stopper. Press out rack and oil seal. Drive out spacer and remaining oil seal.



- | | |
|-----------------------|---------------------|
| 1. Tie Rod End | 14. Rack Housing |
| 2. Teflon Ring | Cap |
| 3. "O" Ring | 15. Lock Nut |
| 4. Rack End | 16. Bearing |
| 5. Claw Washer | 17. Steering Gear |
| 6. Rack | Housing |
| 7. Boot Clamp | 18. Bushing |
| 8. Boot | 19. Fluid Pipes |
| 9. Cylinder End | 20. Teflon Rings |
| Stopper | 21. Rack Guide Seat |
| 10. Bushing | 22. Rack Guide |
| 11. Oil Seal | 23. Spring |
| 12. Spacer | 24. Spring Cap |
| 13. Air Control Valve | 25. Lock Nut |
| | 26. Control Valve |

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Fig. 16: Exploded View Of Power Rack & Pinion Steering Gear (Paseo & Tercel)

Courtesy of Toyota Motor Sales, U.S.A., Inc.

1) Check all parts for damage and deterioration. Place rack on "V" blocks. Measure runout at center of rack. Maximum runout is .012" (.30 mm). Inspect back surface of rack for wear or damage. Measure oil clearance between shaft and bushing. Replace bushing if clearance exceeds .005" (0.125 mm). Inspect all bearings and seals for damage. Replace as necessary. Replace all "O" rings. Replace rack housing if defective.

2) Using a small screwdriver, remove Teflon ring from rack. Lubricate NEW ring with power steering fluid. Carefully expand ring with Expander (09631-24020). Install ring onto rack, and firmly snug down with finger pressure. Slide chamfered end of Installer (09631-24030) to seat ring.

3) Remove Teflon rings from control valve in similar manner. Lubricate Teflon rings with power steering fluid. Slide rings over Installer (09631-20070). Install rings onto control valve. Snug down rings with fingers. Slide chamfered end of Seal Ring Setter (09631-20081) over assembly to seat seal rings.

Reassembly & Adjustments

1) Install oil seal and spacer into cylinder. Install Steering Rack Cover (09631-10041) onto rack. Coat with power steering fluid. Insert rack into cylinder. Remove rack cover. Install oil seal and spacer. Coat rack housing and inside of end stopper with grease. Install and stake end stopper.

2) Install Oil Seal Tester (09631-12071). Apply 15.8 in. Hg for 30 seconds. If vacuum drops, recheck seals in rack housing. See Fig. 12.

3) Press in control valve. Press in upper bearing. Install oil seal and snap ring. Using Wrench (09613-00010), install and tighten NEW self-locking nut.

4) Apply Loctite 242 sealant to threads of rack housing cap. Install cap, and stake in position. Install rack guide seat, rack guide, and rack guide spring.

5) Apply Loctite 242 sealant to threads of spring cap. Tighten cap to 18 ft. lbs. (25 N.m). Loosen spring cap 12 degrees. Rotate control valve shaft left and right twice. Loosen spring cap until preload is eliminated. Tighten spring cap until preload is 5.2-10.4 INCH lbs. (.6-1.2 N.m). See Fig. 13.

6) Apply Loctite 242 sealant to 2 or 3 threads of rack guide spring cap nut. Install and tighten nut to 32 ft. lbs. (43 N.m). Measure preload, and readjust if necessary. To complete assembly, reverse disassembly procedure.

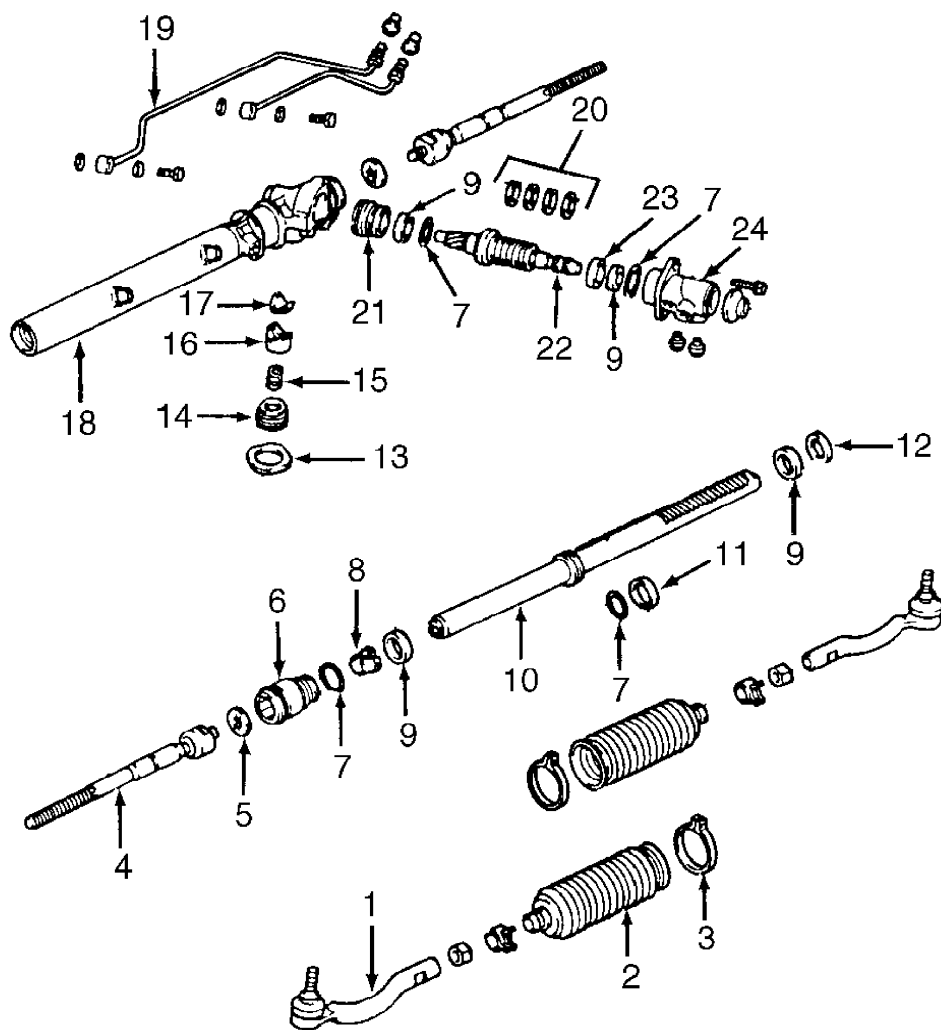
Disassembly (Previa)

1) Mount steering gear in vise with Rack Housing Stand (09612-00012). Remove left and right turn tubes. Mark and remove tie rod ends. See Fig. 17. Remove outer clips and inner clamps. Remove boots and dust cover.

2) Unstake claw washers. Remove tie rods. Remove claw washers. Remove rack guide spring cap lock nut, spring cap, rack guide and seat.

3) Mark control valve housing and rack housing. Remove control valve and control valve housing as an assembly. Wrap vinyl tape around shaft. Using a plastic mallet, tap out control valve together with bearing guide nut. Remove guide nut.

4) Remove cylinder end stopper nut with Stopper Nut Wrench (09631-20090). Remove "O" ring. Press out rack with Bearing Replacer (09612-10061). Remove oil seal.



- | | |
|-------------------------|---------------------------|
| 1. Tie Rod End | 14. Spring Cap |
| 2. Boot | 15. Spring |
| 3. Boot Clamp | 16. Rack Guide |
| 4. Rack End | 17. Rack Guide Seat |
| 5. Claw Washer | 18. Steering Gear Housing |
| 6. Cylinder End Stopper | 19. Fluid Pipes |
| 7. "O" Ring | 20. Teflon Rings |
| 8. Bushing | 21. Bearing Guide |
| 9. Oil Seal | 22. Control Valve |
| 10. Rack | 23. Bearing |
| 11. Teflon Ring | 24. Control Valve Housing |
| 12. Spacer | |
| 13. Lock Nut | |

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Fig. 17: Exploded View Of Power Rack & Pinion Steering Gear (Previa)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

Inspection & Repair

- 1) Inspect all parts for damage and deterioration. Place rack

on "V" blocks. Measure runout at center of rack. Maximum runout is .012" (.30 mm). Inspect back surface of rack for wear or damage. Inspect all bearings and seals for damage. Replace all "O" rings. Inspect cylinder end stopper bushing for cracks. Inspect housing for defects. Replace parts as necessary.

2) Using a small screwdriver, remove Teflon ring from rack. Carefully expand new ring with fingers. DO NOT expand ring more than necessary to install. Install ring onto rack, and firmly seat.

3) Remove Teflon rings from control valve in similar manner. Slide new rings over Installer (09631-20070). Install rings onto control valve. Firmly seat rings with fingers. Slide chamfered end of Seal Ring Setter (09631-20081) over assembly to seat seal rings.

Reassembly & Adjustments

1) Tap in housing oil seal and spacer. Install Steering Rack Cover (09631-20111) onto rack. Insert rack into housing. Remove steering rack cover. DO NOT move rack until control valve is installed.

2) Install steering rack cover onto opposite end of rack. Grease lip of oil seal, then install oil seal into steering rack cover. Remove steering rack cover.

3) Install "O" ring onto end stopper. Tap end stopper into housing with block of wood and hammer. Tighten end stopper with Stopper Nut Wrench (09631-20090). Stake rack housing.

4) Install Oil Seal Tester (09631-22030). Apply 15.8 in. Hg for 30 seconds. If vacuum drops, recheck seals, "O" rings, and Teflon rings in rack housing. See Fig. 12.

5) Wrap vinyl tape around serrations of control valve shaft. Insert control valve into housing. Install "O" ring. Install and tighten guide nut to 18 ft. lbs. (25 N.m). Stake guide nut.

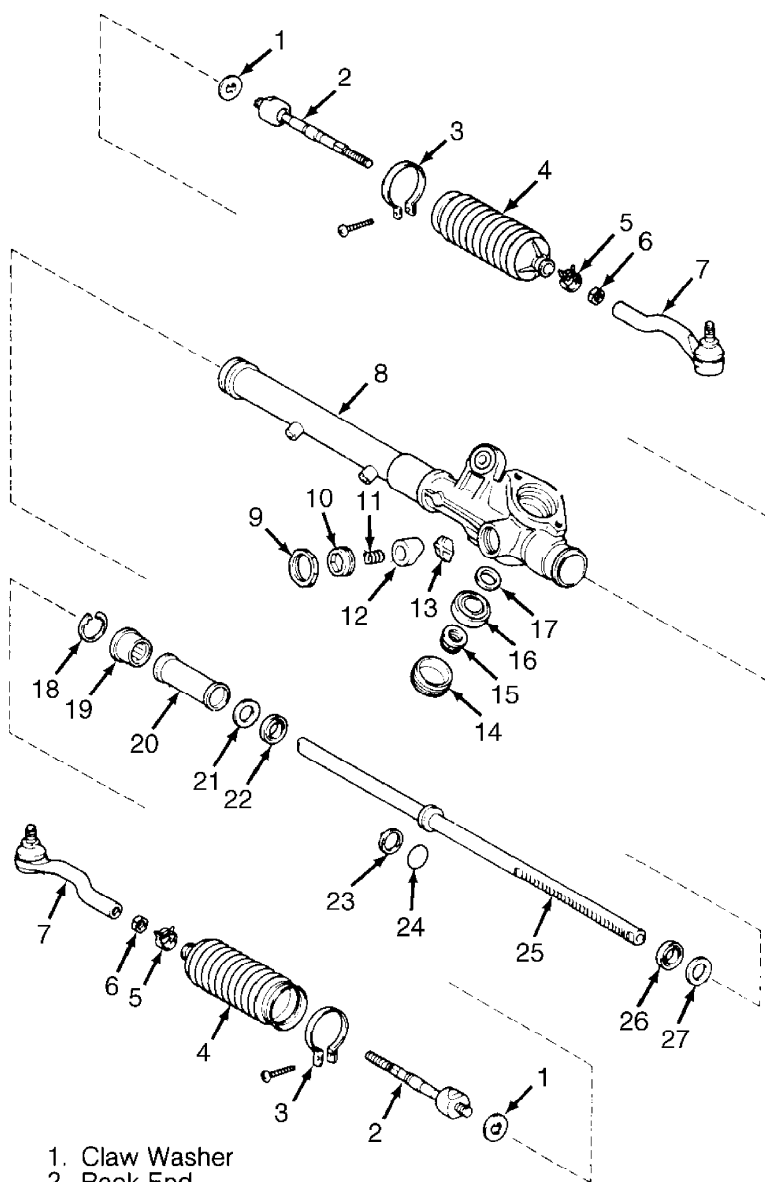
6) Install control valve housing "O" ring. Install control valve housing. Align reference marks. Install rack guide and rack guide spring. Apply sealant to threads of rack guide spring cap. Install rack guide spring cap.

7) Tighten rack guide spring cap to 18 ft. lbs. (25 N.m). Rotate control valve shaft left and right twice. Loosen spring cap until preload is eliminated. Tighten spring cap until preload is 6.2-11.5 INCH lbs. (0.7-1.3 N.m). See Fig. 13. Apply liquid sealer to lock nut threads. Install and tighten lock nut to 41 ft. lbs. (56 N.m). Stake lock nut.

8) Measure preload, and readjust if necessary. Clean any grease from hole in tube. To complete assembly, reverse disassembly procedure.

Disassembly (Supra)

1) Using Rack Housing Stand (09612-00012), mount steering gear in vise. Remove left and right turn tubes. Mark and remove tie rod ends. Remove boots. See Figs. 18 and 19.

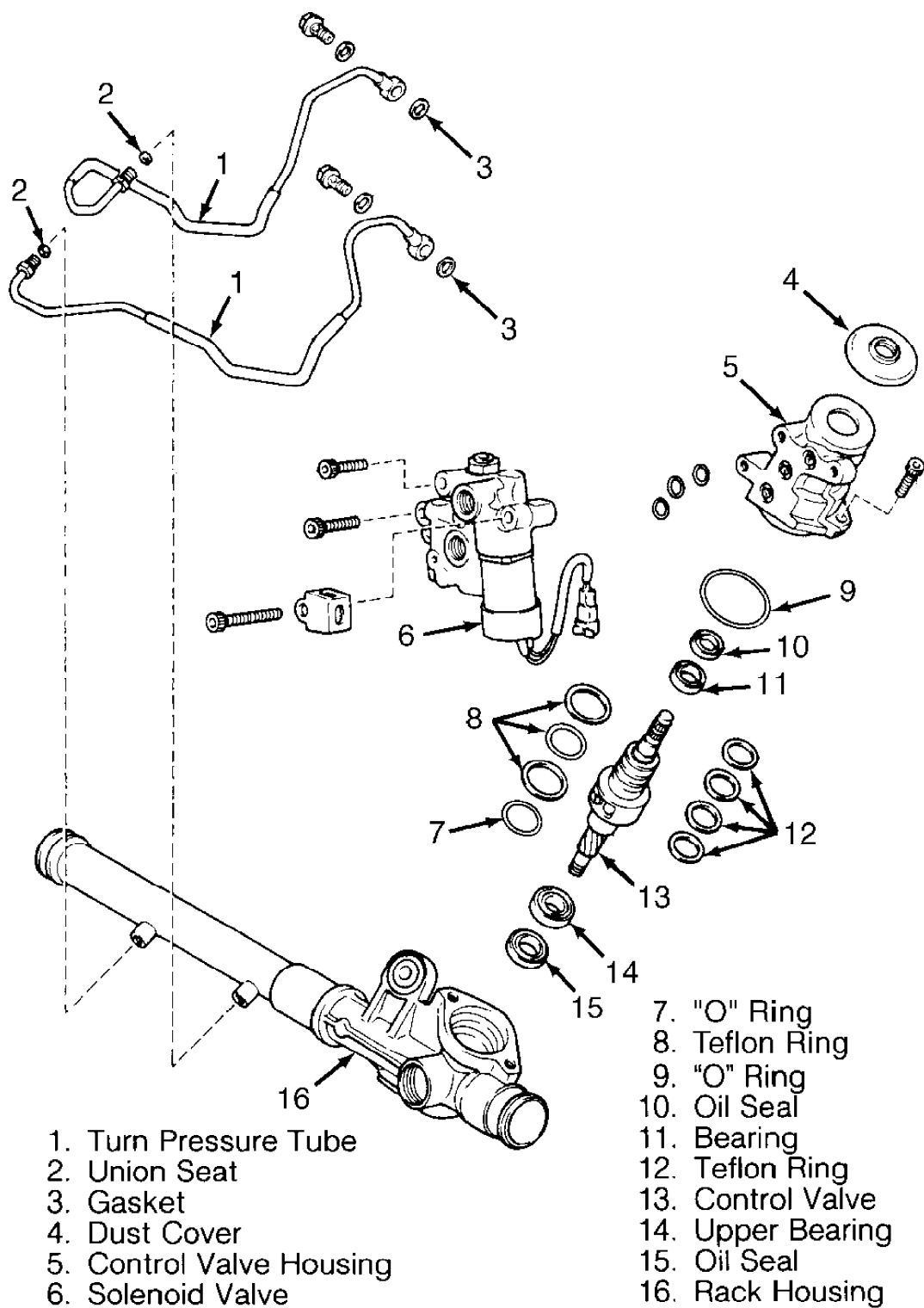


- | | |
|------------------------|--------------------------|
| 1. Claw Washer | 16. Lower Bearing |
| 2. Rack End | 17. Spacer |
| 3. Clamp | 18. Snap Ring |
| 4. Rack Boot | 19. Cylinder End Stopper |
| 5. Clip | 20. Spacer |
| 6. Lock Nut | 21. Spacer |
| 7. Tie Rod End | 22. Oil Seal |
| 8. Rack Housing | 23. Teflon Ring |
| 9. Spring Cap Lock Nut | 24. "O" Ring |
| 10. Spring Cap | 25. Steering Rack |
| 11. Guide Spring | 26. Oil Seal |
| 12. Rack Guide | 27. Spacer |
| 13. Guide Seat | |
| 14. Rack Housing Cap | |
| 15. Self-Locking Nut | |

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Fig. 18: Exploded View Of Power Rack & Pinion Steering Gear (Supra - 1 Of 2)

Courtesy of Toyota Motor Sales, U.S.A., Inc.



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Fig. 19: Exploded View Of Power Rack & Pinion Steering Gear (Supra - 2 Of 2)

Courtesy of Toyota Motor Sales, U.S.A., Inc.

2) Unstake claw washers. Mark left and right rack ends for

reassembly reference. Using Wrench (09628-10020), remove rack ends and claw washers. Remove rack guide spring cap lock nut. Remove spring cap. Remove rack guide spring, guide, and seat. Remove rack housing cap.

3) Remove nut, lower bearing, and spacer. Cover shaft splines with vinyl tape. Remove control valve housing bolts. Using brass drift, tap out control valve housing. Using plastic mallet, tap out control valve.

4) Remove snap ring. Using plastic mallet, tap end of housing to remove end stopper and spacers. Press rack from housing. Remove oil seal and spacer. If necessary, remove upper bearing and oil seal.

Inspection & Repair

1) Place rack on "V" blocks. Measure runout at center of rack. Maximum runout is .006" (.15 mm). Inspect back surface of rack for wear or damage.

2) Using a small screwdriver, remove Teflon rings. Coat new Teflon rings with power steering fluid. Stretch new rings by hand, just enough to install. Snug rings down by hand. Slide Ring Compressor (09631-20081) or (09631-32020) over rings to compress them before assembling steering gear. Install new oil seals and "O" rings.

Reassembly & Adjustments

1) Install spacer and oil seal. Slide Rack Cover (09631-32010) onto rack, and coat with power steering fluid. Insert rack into cylinder. Remove rack cover. Wind vinyl tape around steering rack end. Lubricate with power steering fluid.

2) Insert oil seal into cylinder. Install spacers. Drive in end stopper with Replacer (09620-30010). Install snap ring.

3) Install Oil Seal Tester (09631-22030). Apply 15.8 in. Hg for 30 seconds. If vacuum drops, recheck seals, "O" rings, and Teflon rings in rack housing. See Fig. 12.

4) Coat control valve Teflon rings with power steering fluid. Wrap vinyl tape around serrations on control valve shaft. Install control valve into steering housing. Install spacer and lower bearing. Hold shaft in position, and install NEW self-locking nut.

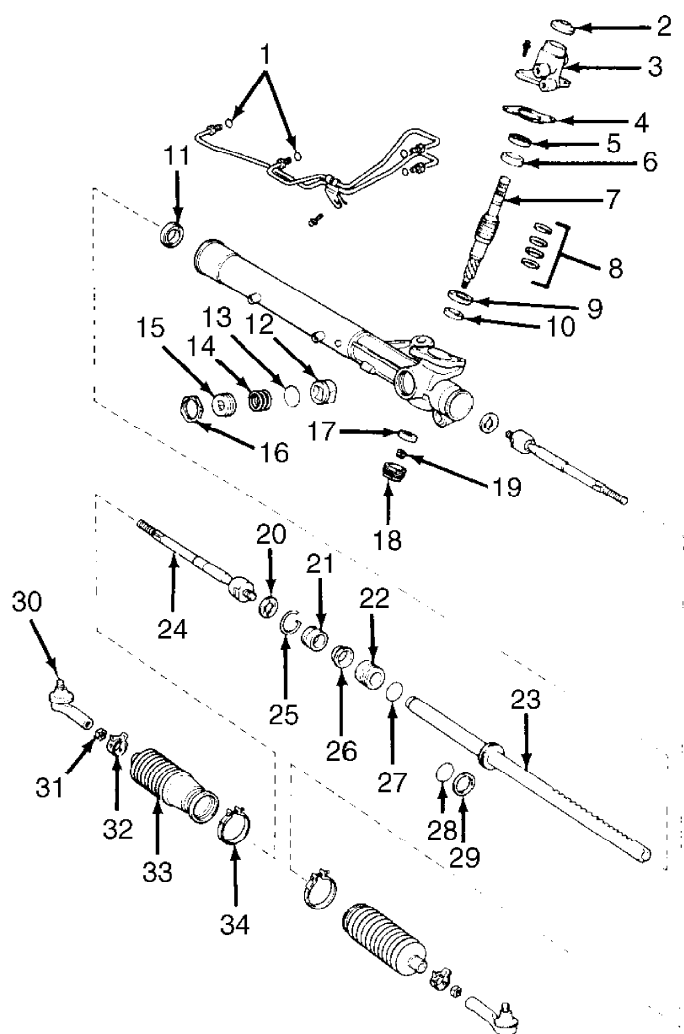
5) Apply Loctite 242 sealant to 2 or 3 threads of rack housing cap. Install rack housing cap. Apply Loctite 242 sealant to 2 or 3 threads of rack guide spring cap. Install rack guide seat, rack guide, rack guide spring, and rack guide spring cap. Tighten rack guide cap to 18 ft. lbs. (25 N.m).

6) Loosen spring cap 12 degrees. Rotate control valve shaft left and right 2 times. Loosen spring cap until preload is eliminated. Tighten spring cap until turning preload is 8.8-16.8 INCH lbs. (1.0-1.9 N.m). See Fig. 13. Apply liquid sealer to threads of lock nut, and install lock nut. Tighten lock nut to specification. Measure preload, and readjust if necessary.

7) Apply Loctite 242 sealant to 2 or 3 threads of rack guide spring cap nut. Install and tighten nut to 41 ft. lbs. (56 N.m). Measure preload, and readjust if necessary. Install dust cover. To complete assembly, reverse disassembly procedure.

Disassembly (T100 2WD)

1) Using Rack Housing Stand (09612-00012), mount steering gear in vise. Remove turn pressure tubes and "O" rings. Mark and remove tie rod ends and rack boots. See Fig. 20.



- | | |
|---------------------------|--------------------------|
| 1. "O" Ring | 18. Self-Locking Nut |
| 2. Dust Cover | 19. Rack Housing Cap |
| 3. Control Valve Housing | 20. Claw Washer |
| 4. Gasket | 21. Cylinder End Stopper |
| 5. Oil Seal | 22. Rack Bushing |
| 6. Upper Bearing | 23. Rack |
| 7. Control Valve | 24. Rack End |
| 8. Teflon Rings | 25. Wire |
| 9. Oil Seal | 26. Oil Seal |
| 10. Center Bearing | 27. "O" Ring |
| 11. Oil Seal | 28. "O" Ring |
| 12. Rack Guide | 29. Teflon Ring |
| 13. "O" Ring | 30. Tie Rod End |
| 14. Spring | 31. Lock Nut |
| 15. Rack Guide Spring Cap | 32. Clip |
| 16. Lock Nut | 33. Rack Boot |
| 17. Lower Bearing | 34. Clamp |

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 Fig. 20: Exploded View Of Power Rack & Pinion Steering Gear (T100 2WD)
 Courtesy of Toyota Motor Sales, U.S.A., Inc.

2) Unstake claw washers. Mark left and right rack ends for

reassembly reference. Using Wrench (09922-10010), remove rack ends and claw washers. Remove rack guide spring cap lock nut and spring cap. Remove rack guide spring, guide, and "O" ring. Remove rack housing cap.

3) Using Wrench (09616-00010), hold control valve and remove self-locking nut. Mark and remove control valve housing. Using brass drift, tap out control valve housing. Using plastic mallet, tap out control valve.

4) Using Wrench (09631-16010), turn cylinder end stopper clockwise until wire end comes out. Turn cylinder end stopper counter-clockwise, remove wire. Remove cylinder end stopper.

5) Using a brass bar, tap out rack with rack bushing. Remove "O" ring from bushing. Drive out oil seal from cylinder housing.

Inspection & Repair

1) Place rack on "V" blocks. Measure runout at center of rack. Maximum runout is .012" (.30 mm). Inspect back surface of rack for wear or damage.

2) Using a small screwdriver, remove Teflon rings. Coat new Teflon rings with power steering fluid. Stretch new rings by hand, just enough to install. Snug rings down by hand. Slide Ring Compressor (09631-20081) or (09631-32020) over rings to compress them before assembling steering gear. Install new oil seals and "O" rings.

Reassembly & Adjustments

1) Install oil seal. Slide Rack Cover (09631-32010) onto rack, and coat with power steering fluid. Insert rack into cylinder. Wind vinyl tape around steering rack end. Lubricate with power steering fluid.

2) Push in rack bushing and cylinder end stopper until wire installation hole appears. Insert new wire end into hole. Using Wrench (09631-16010), turn cylinder end stopper clockwise until wire end disappears.

3) Install Oil Seal Tester (09631-12071). Apply 15.8 in. Hg for 30 seconds. If vacuum drops, check installation of rack housing oil seal. See Fig. 20.

4) Coat control valve Teflon rings with power steering fluid. Wrap vinyl tape around serrations on control valve shaft. Install control valve into steering housing. Press in oil seal. Install NEW gasket on rack housing. Tighten retaining bolts to 13 ft. lbs. (18 N.m). Install dust cover. Hold shaft in position, and install NEW self-locking nut. Tighten lock nut to 18 ft. lbs. (25 N.m).

5) Apply Loctite 242 sealant to 2 or 3 threads of rack housing cap. Install rack housing cap and stake housing at 2 places. Install "O" ring on rack guide. Install rack guide and spring.

6) Apply Loctite 242 sealant to 2 or 3 threads of rack guide spring cap. Install spring cap. Set rack at rack stroke center. Tighten rack guide cap to 18 ft. lbs. (25 N.m).

7) Loosen spring cap 10-12 degrees. Rotate control valve shaft left and right 2 times. Loosen spring cap until preload is eliminated. Tighten spring cap until turning preload is 4.3-12.2 INCH lbs. (.5-1.4 N.m). Apply liquid sealer to lock nut threads, and install lock nut. Tighten lock nut to specification. Measure preload, and readjust if necessary.

8) Apply Loctite 242 sealant to 2 or 3 threads of rack guide spring cap nut. Install and tighten nut to 51 ft. lbs. (60 N.m). Measure preload, and readjust if necessary. Install and stake NEW claw washer. Install rack boots. To complete assembly, reverse disassembly procedure.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS (CAMRY & CELICA)

Application	Ft. Lbs. (N.m)
Air Control Valve	27 (36)
Control Valve Housing Bolts	
Camry	13 (18)
Celica	23 (31)
Control Valve Lower Bearing Self-Locking Nut	
Camry & Celica	18 (25)
Pressure Port	
Camry	62 (83)
Celica	51 (69)
Pulley Bolt Or Nut	32 (43)
Pump Bracket Bolt	29-33 (39-45)
Rack Guide Spring Cap Lock Nut	51 (69)
Rack Housing Cap (Camry)	43 (58)
Rear Housing Bolt	17 (24)
Stabilizer Bar Bracket Bolt	14 (19)
Steering Gear-To-Chassis	
Camry	134 (181)
Celica	94 (127)
Steering Rack Tie Rod	61 (83)
Tie Rod Lock Nut	
Camry	54 (74)
Celica	41 (56)
Tie Rod-To-Steering Arm Nut	36 (49)
Turn Tubes	
Camry	9 (13)
Celica	14 (19)
"U" Joint Pinch Bolt	26 (35)
Wheel Lug Nuts	76 (103)

INCH Lbs. (N.m)

Return Port Bolt	106 (12)
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TORQUE SPECIFICATIONS (COROLLA)

Application	Ft. Lbs. (N.m)
Control Valve Self-Locking Nut	18 (25)
Fluid Tubes	18 (25)
Pulley Nut	32 (43)
Pump Pressure Port	61 (83)
Rack End Nut	61 (83)
Rack Guide Spring Cap Lock Nut	44 (59)
Rack Housing Cap	43 (58)
Rear Housing	17 (24)
Steering Gear-To-Chassis Bolt	52 (71)
Tie Rod End Lock Nut	41 (56)
Tie Rod-To-Steering Arm	36 (49)
"U" Joint Pinch Bolt	26 (35)
Union Bolt	51 (69)

INCH Lbs. (N.m)

Turn Pressure Tube Nuts	115 (13)
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TORQUE SPECIFICATIONS (PASEO & TERCEL)

Application	Ft. Lbs. (N.m)
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Air Control Valve (1997 Only)	21	(29)
Fluid Tubes (1997 Only)	18	(25)
Pulley Nut	32	(43)
Pump Bracket Bolt & Nut	29	(39)
Rack End Nuts	44	(59)
Rack Guide Spring Cap Lock Nut	32	(43)
Rack Housing Cap	43	(58)
Rear Engine Mount Bracket	57	(78)
Steering Gear-To-Chassis Bolt	43	(58)
Tie Rod Clamp Bolt (1997 Only)	14	(19)
Tie Rod End Lock Nut	35	(47)
Tie Rod-To-Steering Arm	36	(49)
"U" Joint Pinch Bolt	21	(28)

INCH Lbs. (N.m)

Reservoir Bolt		
1997	106	(12)
1998	115	(13)

TORQUE SPECIFICATIONS (PREVIA)

Application	Ft. Lbs. (N.m)	
Bearing Guide Lock Nut	51	(69)
Control Valve Retaining Bolt	13	(18)
Inner Tie Rod End Joint	76	(103)
No. 2 Drive Housing Insulator Bolt	18	(25)
No. 3 Drive Housing Bracket Bolt	13	(18)
Rack Cylinder End Stopper	58	(78)
Rear Pump Housing-To-Front Housing Bolt	13	(18)
Tie Rod End Castle Nuts	36	(49)
Tie Rod End Lock Nut	67	(91)
"U" Joint Clamp Bolt	26	(35)

TORQUE SPECIFICATIONS (SUPRA)

Application	Ft. Lbs. (N.m)	
Control Valve Bolts	13	(18)
Control Valve Self-Locking Nut	29	(39)
Pulley Nut	32	(43)
Pressure & Return Lines		
Steering Gear	36	(49)
Steering Pump	61	(83)
Pump Housing Bolts	17	(24)
Rack End	74	(100)
Rack Guide Spring Cap Nut	50	(69)
Rack Housing Cap	18	(25)
Tie Rod End Castle Nuts	36	(49)
Tie Rod End Lock Nut	41	(56)
Turn Pressure Tube		
Bolt	25	(34)
Nut	18	(24)
"U" Joint Clamp Bolt	26	(35)

TORQUE SPECIFICATIONS (T100 2WD)

Application	Ft. Lbs. (N.m)	
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Control Valve Bolts	13	(18)
Control Valve Self-Locking Nut	18	(25)
Gear Housing-To-Crossmember Bolts	65	(88)
Pressure & Return Lines	18	(25)
Rack End	62	(83)
Rack Guide Spring Cap Nut	51	(69)
Rack Housing Cap	51	(69)
Tie Rod End Lock Nut	41	(56)
Tie Rod End-To-Knuckle Nut	67	(90)
"U" Joint Clamp Bolt	26	(35)

INCH Lbs. (N.m)

Turn Pressure Union Nut	115	(13)
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