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SERVICE MANUAL

TRX300
TRX300FW
FOURTRAX™

IMPORTANT SAFETY NOTICE

WARNING

Indicates a strong possibility of severe personal injury or death if instructions are not followed.

CAUTION:

Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE:

Gives helpful information

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains some warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda might be done or of the possible hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service method or tools selected.

HOW TO USE THIS MANUAL

Follow the Maintenance Schedule (Section 3) recommendations to ensure that the vehicle is in peak operating condition and the emission levels are within the standards set by the California Air Resources Board.

Sections 1 through 3 apply to the complete FOURTRAX, while sections 4 through 21 describe parts of the FOURTRAX, grouped according to location.

Find the section you want on this page, then turn to the table of contents on page 1 of that section.

Most sections start with an assembly or system illustration, service information and troubleshooting for the section. The subsequent pages give detailed procedures.

If you don't know the source of the trouble, go to section 22, Troubleshooting.

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HONDA MOTOR CO., LTD.
Service Publications Office

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1. GENERAL INFORMATION

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GENERAL SAFETY

▲ WARNING

If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

▲ WARNING

The battery generates hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near the battery, especially while charging it.

▲ WARNING

- Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake or clutch assemblies.*
- Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA designed to minimize the hazard caused by airborne asbestos fibers.*

▲ WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in your work area or where gasoline is stored.

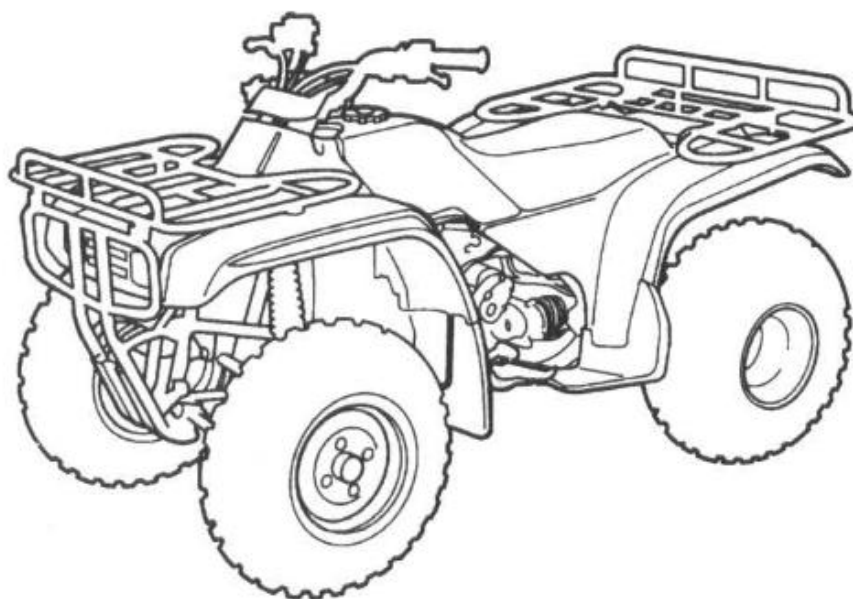
▲ WARNING

The battery electrolyte contains sulfuric acid. Protect your eyes, skin and clothing. In the case of contact, flush thoroughly with water and call a doctor if electrolyte gets in your eyes.

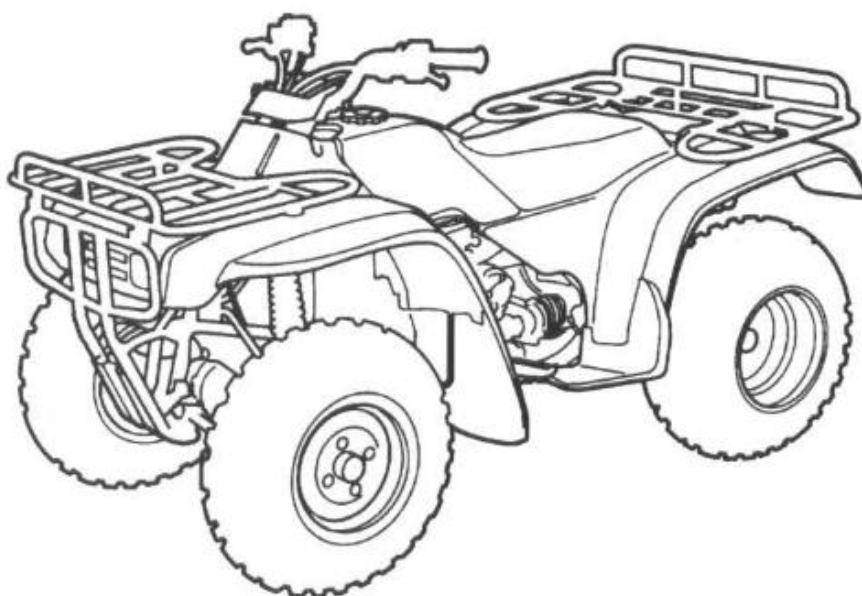
SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that don't meet HONDA's design specifications may cause damage to the vehicle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the vehicle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps, unless a particular sequence is specified.
6. Clean parts in non-flammable or high flash point solvent upon disassembly.
7. Lubricate any sliding surfaces before reassembly.
8. After reassembly, check all parts for proper installation and operation.

TRX300:



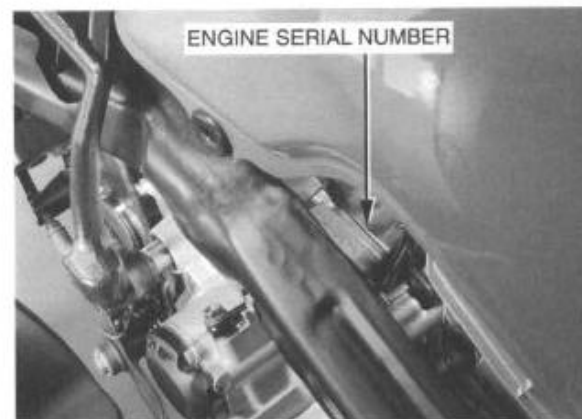
TRX300FW:



(1) The frame serial number is stamped on the front of the frame.



(2) The engine serial number is stamped on the upper side of the right crankcase.



(3) The carburetor identification number is on the left side of the carburetor body.



GENERAL INFORMATION

SPECIFICATIONS

[]: TRX300FW

DIMENSIONS	Overall length		1,910 mm (75.2 in)	
	Overall width	'95-'97 After '97	1,115 mm (43.9 in) 1,157 mm (45.6 in)	[1,110 mm (43.7 in)]
	Overall height	'95-'97 After '97	1,088 mm (42.8 in) 1,077 mm (42.4 in)	[1,085 mm (42.7 in)] [1,089 mm (42.9 in)]
	Wheelbase	'95-'97 After '97	1,239 mm (48.8 in) 1,239 mm (48.8 in)	[1,238 mm (48.7 in)] [1,235 mm (48.6 in)]
	Seat height	'95-'97 After '97	783 mm (30.8 in) 783 mm (30.8 in)	[780 mm (30.7 in)] [788 mm (31.0 in)]
	Foot peg height	'95-'97 After '97	305 mm (12.0 in) 297 mm (11.7 in)	[309 mm (12.2 in)]
	Ground clearance	'95-'97 After '97	160 mm (6.3 in) 160 mm (6.3 in)	[172 mm (6.8 in)]
	Dry weight		221 kg (487 lb)	[239 kg (527 lb)]
FRAME	Type		Double cradle	
	Rim size	Front Rear	11 x 6.5 AT 9 x 9.0 AT	[11 x 7.5 AT]
	Suspension travel	Front Rear	Axle travel 130 mm (5.1 in) Axle travel 130 mm (5.1 in)	
	Front tire size, pressure		AT 23 x 8-11 ★★, 2.9 psi (0.20 kg/cm ² , 20 kPa) [AT 23 x 8-11 ★★, 4.4 psi (0.30 kg/cm ² , 30 kPa)]	
	Rear tire size, pressure		AT 25 x 11-9 ★, 2.9 psi (0.20 kg/cm ² , 20 kPa) [AT 24 x 9-11 ★, 2.9 psi (0.20 kg/cm ² , 20 kPa) with cargo: 3.6 psi (0.25 kg/cm ² , 25 kPa)]	
	Front brake		Hydraulic operated leading/trailing shoe [Hydraulic operated dual leading shoe]	
	Rear brake		Cable operated leading/trailing shoe	
	Fuel tank capacity		12.5 liters (3.3 US gal, 2.8 imp gal)	
	Fuel reserve capacity		2.5 liters (0.7 US gal, 0.6 imp gal)	
	Toe-in		5 mm (0.25 in)	[4 mm (0.16 in)]
	Caster angle		7°	[2.2°]
	Camber angle		0.2°	[0°]
	Trail length		33.0 mm (1.26 in)	[10.0 mm (0.39 in)]
	Tread	Front Rear	790 mm (31.1 in) 840 mm (33.1 in)	[840 mm (33.1 in)] [840 mm (33.1 in)]

ENGINE	Type		Gasoline, air-cooled 4-stroke
	Cylinder arrangement		Single cylinder inclined 20° from vertical
	Bore x stroke		74.0 x 65.5 mm (2.91 x 2.58 in)
	Displacement		281.7 cc (17.2 cu-in)
	Compression ratio		9.0 : 1
	Valve train		Overhead camshaft, chain driven
	Oil capacity		2.5 lit (2.6 US qt, 2.2 Imp qt) at disassembly 2.2 lit (2.3 US qt, 1.9 Imp qt) after draining
	Lubrication system		Forced pressure and wet sump
	Cylinder compression		1,250–1,450 kPa (12.5–14.5 kg/cm ² , 178–206 psi)
	Intake valve	Opens Closes	11° BTDC 32° ABDC
CARBURETOR	Exhaust valve	Opens Closes	43° BBDC 2° ATDC
	Valve clearance (Cold)	Intake Exhaust	0.15 mm (0.006 in) 0.15 mm (0.006 in)
	Type		Vacuum piston (VE)
	Identification number	'95-'97 After '97	VE91C Except California type: VE91C California type: VE91D
	Throttle bore		32 mm (1.3 in)
	Main jet		# 125
	Slow jet		# 40
	Starter jet		# 85
	Pilot screw initial opening		see page 4-14
	Jet needle setting		3rd groove from the top
	Float level		18.5 mm (0.73 in)
	Idle speed		1,400 ± 100 rpm

GENERAL INFORMATION

DRIVE TRAIN	Clutch	Wet multi-plate, automatic centrifugal	
	Transmission	5-speed constant mesh with reverse	
	Primary reduction	2.407 (65/27)	
	Gear Ratio	S/L	4.083 (49/12)
		I	2.389 (43/18)
		II	1.609 (37/23)
		III	1.179 (33/28)
		IV	0.848 (28/33)
		Reverse	5.397 (34/12 x 40/21)
	Final reduction	Front (TRX300FW)	5.554 (19/13 x 38/10)
ELECTRICAL		Rear	1.462 (19/13) x 3.889 (35/9)
	Gearshift pattern	Left foot operated return system, Forward: N-S/L-1-2-3-4 Reverse: N-R	
	[Front differential oil capacity	200 cc (6.8 oz) at disassembly [190 cc (6.4 oz) after draining]	
	[Front gear case oil capacity	200 cc (6.8 oz) at disassembly [190 cc (6.4 oz) after draining]	
	Rear final drive oil capacity	100 cc (3.4 oz) at disassembly 90 cc (3.0 oz) after draining	
	Ignition	DC-CDI	
	Ignition timing	Initial	13° BTDC at idle
		Full advance	31° BTDC at 4,500 ± 100 rpm
	Alternator	Capacity	0.22 kW/5,000 rpm
	Battery	12 V-12 AH	
	Spark plugs	NGK	
		DENSO	
		Standard	DPR8EA-9
		For cold climate (Below 5° C/41° F)	DPR7EA-9
		For extended high speed riding	DPR9EA-9
			X24EPR-U9
			X22EPR-U9
			X27EPR-U9
	Spark plug gap	0.8-0.9 mm (0.031-0.035 in)	
	Headlight	12 V 25/25 W x 2	
	Taillight	12 V 5 W	
	Neutral indicator	12 V 1.7 W	
	Reverse indicator	12 V 1.7 W	
	Oil high temperature indicator	12 V 1.7 W	

TORQUE VALUES

ENGINE

Item	Q'ty	Thread Dia. (mm)	Torque			Remarks
			N•m	kg-m	ft-lb	
Engine oil drain bolt	1	12	25	2.5	18	NOTE 2
Oil filter cover bolt	3	6	10	1.0	7	
Clutch adjusting screw lock nut	1	8	22	2.2	16	
Valve adjusting lock nut	2	6	17	1.7	12	
Spark plug	1	12	18	1.8	13	
Insulator band screw	1	5	4	0.4	2.9	
Carburetor cover screw	1	5	3.5	0.35	2.5	
Starting enrichment (SE) valve nut	1	14	2.5	0.25	1.8	
Cylinder head cover (6 mm SH bolt)	3	6	10	1.0	7	
(6 mm flange bolt)	10	6	12	1.2	9	
Cylinder head (cap nut)	4	10	40	4.0	29	NOTE 1
(socket bolt)	3	8	25	2.5	18	
Cam sprocket bolt	2	7	20	2.0	14	
Cam chain tensioner lifter (mounting bolt)	2	6	10	1.0	7	
(sealing bolt)	1	6	10	1.0	7	
Oil pipe bolt (BLACK)	1	7	12	1.2	9	
Oil pump assembly bolt	2	5	7	0.7	5.1	
Oil path pipe bolt	2	7	12	1.2	9	
Cylinder mounting bolt	2	6	10	1.0	7	
Centrifugal clutch lock nut	1	20	120	12.0	87	
Change clutch lock nut	1	18	110	11.0	80	NOTE 1/3
Clutch spring bolt	4	6	12	1.2	9	NOTE 1
Reverse/neutral rotor bolt	1	6	12	1.2	9	
Right crankcase cover bolt	12	6	10	1.0	7	
Kick starter ratchet guide	2	6	12	1.2	9	
Starter reduction gear cover bolt	5	6	10	1.0	7	NOTE 1
Ignition pulse generator socket bolt	2	5	6	0.6	4	
Alternator stator bolt	3	6	10	1.0	7	NOTE 1
Starter clutch Torx bolt	6	6	16	1.6	12	
Flywheel bolt	1	12	110	11.0	80	
Gearshift return spring pin	1	8	22	2.2	16	
Left crankcase cover bolt	9	6	10	1.0	7	
Side shaft cover bolt (TRX300FW)	4	6	10	1.0	7	
OUTPUT GEAR						
Output shaft bearing holder bolt	3	8	23	2.3	17	NOTE 2/3
Countershaft bearing lock nut	1	64	100	10.0	72	
Output shaft bearing outer race lock nut	1	60	100	10.0	72	NOTE 2/3
Output shaft bearing inner race lock nut	1	28	75	7.5	54	NOTE 2/3
Output gear case mounting bolt	3	8	32	3.2	23	NOTE 1
Crankcase bolt	13	6	10	1.0	7	
Bearing set plate bolt	2	6	12	1.2	9	
Cam chain guide holder bolt	1	6	12	1.2	9	
Neutral switch	1	10	13	1.3	9	
Reverse switch	1	10	13	1.3	9	
Oil temperature sensor	1	12	18	1.8	13	

GENERAL INFORMATION

FRAME

Item	Q'ty	Thread Dia. (mm)	Torque			Remarks
			N•m	kg-m	ft-lb	
Engine bracket bolt (front)	4	10	75	7.5	54	
Engine bracket nut (upper)	2	10	75	7.5	54	
Engine mounting nut (front and upper)	2	10	75	7.5	54	
Engine mounting nut (rear/upper and rear/lower)	2	10	75	7.5	54	
Gearshift pedal bolt	1	6	16	1.6	12	
Footpeg bolt	8	8	33	3.3	24	
Fuel valve	1	18	28	2.8	20	
Exhaust muffler mounting bolt	3	10	55	5.5	40	
Exhaust pipe protector bolt	3	6	18	1.8	13	NOTE 1
DC consent	—	8	16	1.6	12	
FRONT						
Handlebar upper holder bolt	4	8	27	2.7	20	
Handlebar switch housing screw	2	5	2	0.2	1.4	
Master cylinder holder	2	6	12	1.2	9	
Handlebar grip end bolt	2	6	10	1.0	7	
Throttle case cover	2	4	3	0.3	2.5	
Handlebar lever pivot bolt	1	6	1.0	0.10	0.7	
Handlebar lever pivot bolt lock nut	1	6	6	0.6	4.3	
Wheel nut	8	10	65	6.5	47	
Wheel hub mounting bolt (TRX300FW)	4	6	10	1.0	7	
Front arm mounting nut	8	8	31	3.1	22	NOTE 5
Front arm ball joint nut	4	12	30–36	3.0–3.6	22–26	
Tie-rod ball joint nut	4	12	55	5.5	40	NOTE 5
Tie-rod lock nut	4	12	55	5.5	40	
Steering shaft upper holder bolt	2	8	33	3.3	24	
Steering shaft nut	1	14	100–120	10.0–12.0	72–87	NOTE 6
Handlebar lower holder nut	2	10	40	4.0	29	NOTE 5
Shock absorber mounting bolt	upper lower	10	31	3.1	22	NOTE 5
		10	45	4.5	33	NOTE 5
Master cylinder cover screw	2	4	2	0.2	1.4	
Brake hose bolt	3 [4]	10	35	3.5	25	
Wheel cylinder bolt (TRX300)	4	6	8	0.8	6	
Adjuster bolt (TRX300)	4	6	8	0.8	6	
Front brake panel bolt	8	8	29	2.9	21	NOTE 5
Axle nut	2	18	80–100	8.0–10.0	58–72	NOTE 6
Wheel cylinder assy.	6 mm bolt (TRX300FW)	4	8	0.8	6	
	8 mm bolt (TRX300FW)	4	17	1.7	12	
Brake pipe joint nut	2	10	14	1.4	10	NOTE 2
Brake hose/breather tube clamp bolt	4	6	12	1.2	9	
Brake bleeder valve	2	8	6	0.6	4.3	
REAR						
Wheel nut	8	10	65	6.5	47	
Axle housing bolt	4	10	45	4.5	33	
Axle lock nut (inner)	2	32	40	4.0	29	
(outer)	2	32	130	13.0	94	NOTE 1
Axle nut	2	18	140–160	14.0–16.0	101–116	
Brake panel drain bolt	1	12	25	2.5	18	
Brake panel nut	4	10	35	3.5	25	NOTE 5
Shock absorber mount nut	2	10	45	4.5	33	NOTE 5
Swingarm left pivot bolt	1	30	115	11.5	83	
Swingarm right pivot bolt	1	30	4	0.4	3	
Swingarm right pivot lock nut	1	30	115	11.5	83	
Trailer hitch bolt	5	10	75	7.5	54	NOTE 1

FRAME (cont'd)

[]: TRX300FW

Item	Q'ty	Thread Dia. (mm)	Torque			Remarks	
			N•m	kg-m	ft-lb		
FRONT DIFFERENTIAL (TRX300FW)							
Oil filler cap	1	30	12	1.2	9	NOTE 3 NOTE 1 NOTE 1	
Mounting bolt (10 mm)	4	10	45	4.5	33		
(8 mm)	2	8	22	2.2	16		
Cap bolt (Torx)	6	8	33	3.3	24		
Ring gear bolt	6	8	50	5.0	36		
Pinion bearing lock nut	1	60	100	10.0	72		
Pinion joint nut	1	16	110	11.0	80		
Drain bolt	1	8	12	1.2	9		
Cover bolt (10 mm)	2	10	48	4.8	35		
(8 mm)	6	8	26	2.6	19		
FRONT GEAR CASE (TRX300FW)							
Oil filler cap	1	30	12	1.2	9	NOTE 5 NOTE 1 NOTE 3 NOTE 1	
Mounting bolt (8 mm)	3	8	25	2.5	18		
(6 mm)	4	6	12	1.2	9		
Drain bolt	1	8	22	2.2	16		
Cover bolt	9	6	12	1.2	9		
FINAL DRIVE							
Oil filler cap	1	30	12	1.2	9		
Joint nut	4	10	45	4.5	33		
Cover bolt (10 mm)	2	10	48	4.8	35		
(8 mm)	6	8	26	2.6	19		
Pinion bearing lock nut	1	60	100	10.0	72		
Pinion joint nut	1	16	110	11.0	80		
Drain bolt	1	8	12	1.2	9		

NOTE 1: Apply locking agent to the threads.

2: Apply oil to the flange and threads.

3: Stake.

4: Left-hand threads.

5: Do not re-use.

6: Apply grease to the flange threads.

Torque specifications listed above are for the most important tightening points. If a torque specification is not listed, follow the standards given below.

STANDARD TORQUE VALUES

Item	Torque N•m (kg-m, ft-lb)	Item	Torque N•m (kg-m, ft-lb)
5 mm bolt, nut	5 (0.5, 3.6)	5 mm screw	4 (0.4, 2.9)
6 mm bolt, nut	10 (1.0, 7)	6 mm screw, 6 mm flange bolt with 8 mm head	9 (0.9, 6.5)
8 mm bolt, nut	22 (2.2, 16)	6 mm flange bolt, nut	12 (1.2, 9)
10 mm bolt, nut	35 (3.5, 25)	8 mm flange bolt, nut	27 (2.7, 20)
12 mm bolt, nut	55 (5.5, 40)	10 mm flange bolt, nut	40 (4.0, 29)

GENERAL INFORMATION

TOOLS

SPECIAL

DESCRIPTION	TOOL NUMBER	REF. SEC.
Pin puller	07936-MA70100	6
Remover weight	07936-3710200	6
Valve guide reamer, 5.5 mm	07984-2000001 or 07984-200000D	6
Bearing remover, 17 mm	07936-3710300	8, 13, 14
Remover handle	07936-3710100	8, 13, 14
Remover weight	07936-3710200	8, 13, 14
Bearing remover, 15 mm	07937-KC10500	10
Remover weight	07936-3710200	10
Clutch holder	07GMB-HA70100	8
Clutch center holder	07HGB-001000A	8
Attachment, 28 x 20 mm	07946-1870100	8
Clutch puller	07933-HB3000A	8
Assembly collar	07965-VM00100	10
Shaft puller	07931-ME4000A	10
Threaded adapter	07931-KF00200	10
Shaft holder	07924-ME50000	10
Lock nut wrench, 36 x 48 mm	07916-MB00001 or 07916-MB00000 and 07916-HA2020A	10 10, 14, 15
Lock nut wrench, 34 x 44 mm	07916-ME50001 or 07916-ME50000 and 07916-HA0010A	
Ball joint remover, 28 mm	07MAC-SL00200 or 07941-6920003	11, 14
Ball joint remover/installer	07JMF-HC50110	11
Attachment	07945-3330300	11
Snap ring pliers	07914-3230001	12
Oil seal driver	07965-MC70100	12
Base	07959-MB10000	13
Swingarm lock nut wrench	07908-469000A	13
Differential inspection tool (NOTE 2)	07KMK-HC5010A	14
Shaft puller	07931-ME40000 or 07931-ME4000A	14, 15
Pinion gear driver	07945-HA00000	14, 15
Lock nut wrench, 34 x 44 mm	07916-ME50001 or 07916-ME50000 and 07916-HA0010A	
Lock nut wrench, 41 mm	07916-958020B	15
Lock nut wrench attachment, 41 mm	07916-958010B	15
Pinion holder	07924-HA00001 or 07924-HA00000*	14, 15
Oil seal driver (After '97 only)	07JAD-PH80101	15

* Must be modified for section 15. Increase 4 holes to 10.5 mm (0.41 in).

COMMON

DESCRIPTION	TOOL NUMBER	REF. SEC.
Float level gauge	07401-0010000	4
Valve guide driver, 5.5 mm	07742-0010000	6
Valve spring compressor	07757-0010000	6
Valve seat cutters	Commercially available	6
Driver	07749-0010000	8, 9, 10, 12, 13, 14, 15
Attachment, 42 x 47 mm	07746-0010300	8, 10, 11, 12
Pilot, 17 mm	07746-0040400	8, 11, 14
Attachment, 24 x 26 mm	07746-0010700	9
Rotor puller	07933-3950000	9
Attachment, 24 x 26 mm	07746-0010700	10
Attachment, 72 x 75 mm	07746-0010600	10
Driver, 40 mm I.D.	07746-0030100	10
Attachment, 30 mm I.D.	07746-0030300	10
Pilot, 22 mm	07746-0041000	10
Pilot, 40 mm	07746-0040900	10
Attachment, 37 x 40 mm	07746-0010200	10, 11, 13, 14
Pilot, 20 mm	07746-0040500	10, 11, 12
Pilot, 30 mm (NOTE 2)	07746-0040700	11
Shock absorber compressor	07959-3290001	11, 13
Attachment, 32 x 35 mm	07746-0010100	10, 12
Pilot, 15 mm	07746-0040300	10, 12
Attachment, 62 x 68 mm	07746-0010500	12, 15
Pilot, 35 mm	07746-0040800	12
Universal bead breaker	GN-AH-958-BBI	13
Attachment, 52 x 55 mm	07746-0010400	10, 14, 15
Pilot, 28 mm	07746-0041100	10, 14
Inner driver, 22 mm I.D.	07746-0020100	14, 15
Attachment, 20 mm I.D. (NOTE 2)	07746-0020400	14
Christie battery charger	MC1012/2	18
Battery tester	07GMJ-0010000	18

NOTE 1: TRX300 only

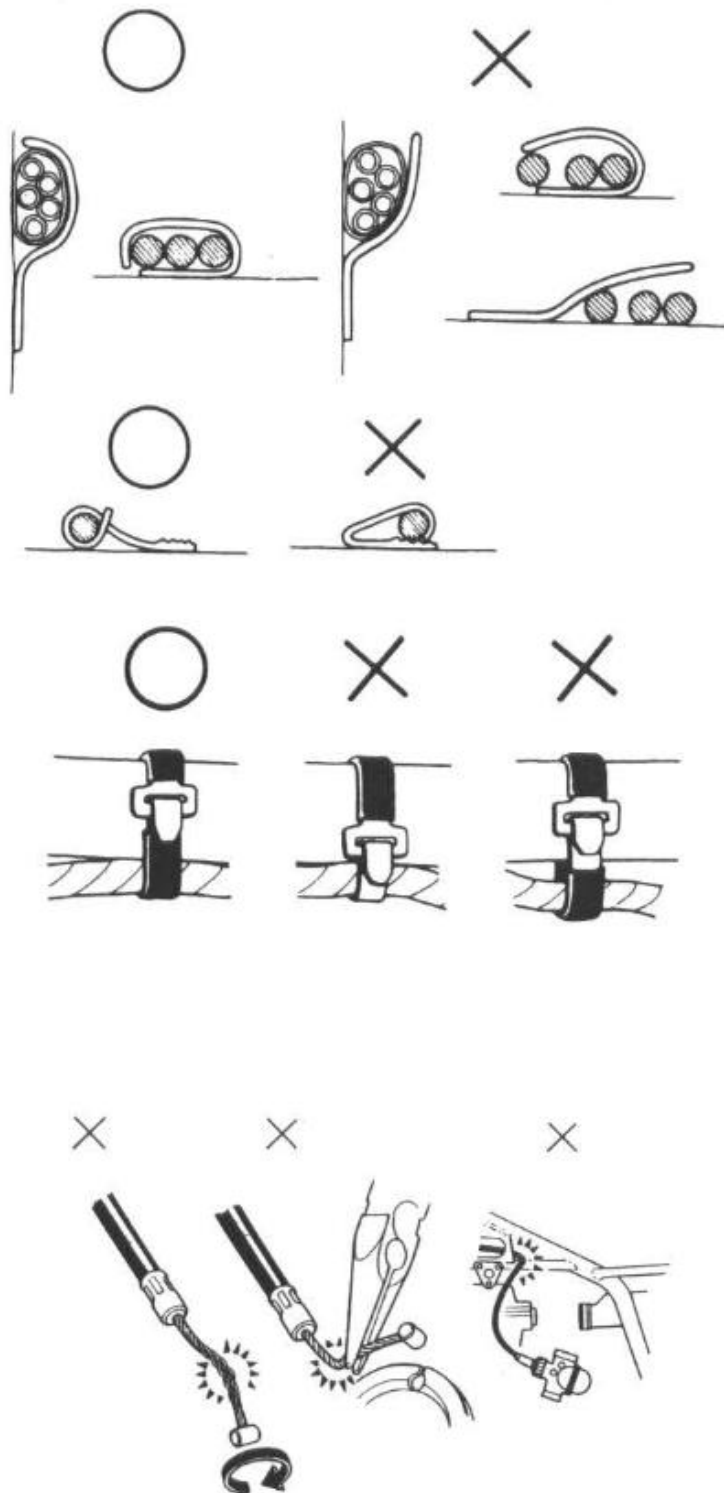
2: TRX300FW only

CABLE & HARNESS ROUTING

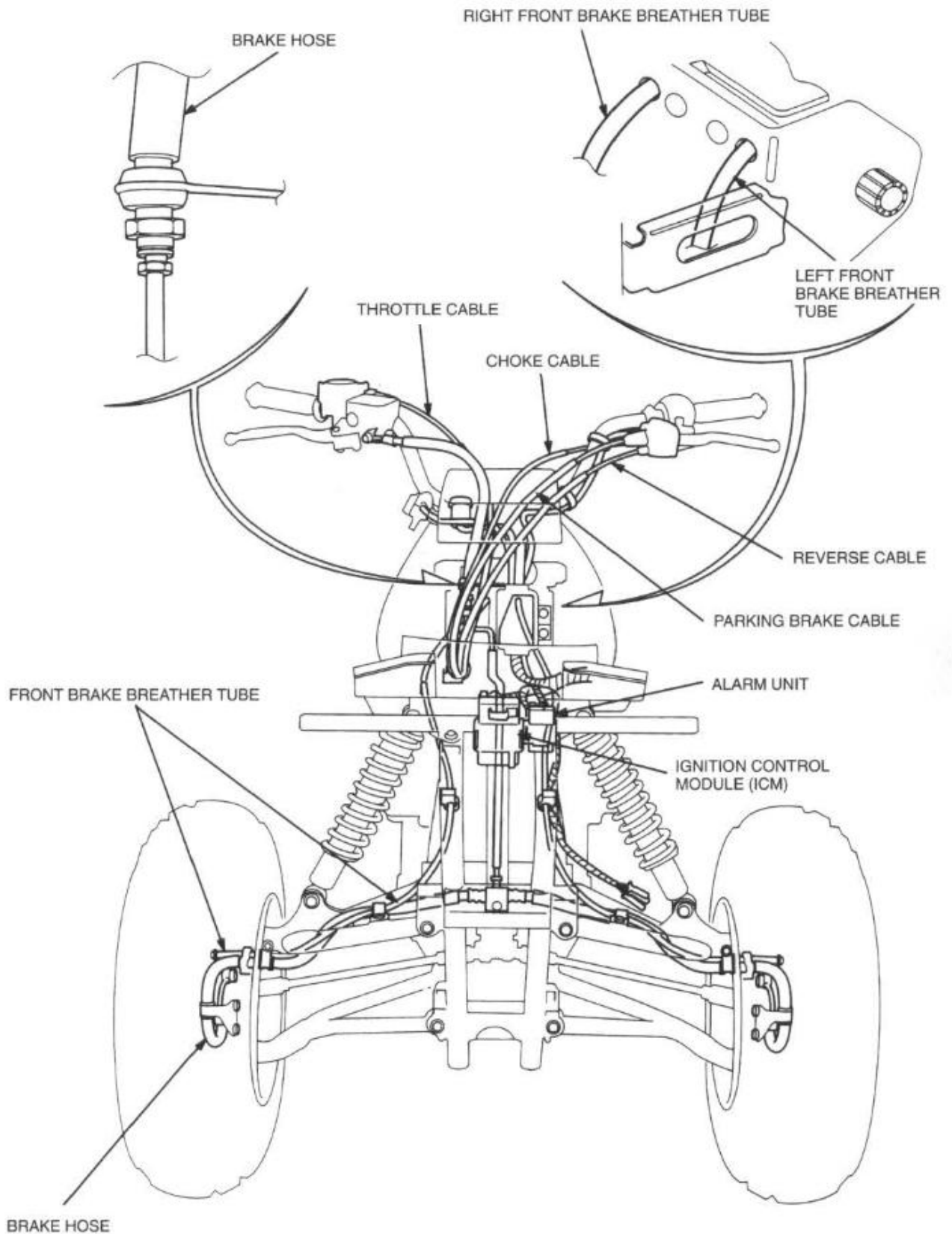
Note the following when routing cables and wire harnesses:

- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze a wire against a weld or end of its clamp.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harnesses.
- Leave a little slack when routing harnesses. Avoid pulling the harness too tight or leaving excess slack.
- Protect wires and harnesses with electrical tape or tubes if they contact a sharp edge or corner. Clean the attaching surface thoroughly before applying tape.
- Do not use a wire harness with a broken insulator. Repair by wrapping them with protective tape or replace them.
- Route wire harnesses to avoid sharp edges or corners. Also avoid the projected ends of bolts and screws.
- Keep the wire harnesses away from the exhaust pipe and other hot parts.
- Be sure the grommets are seated in their grooves properly.
- After clamping, check each harness to be certain that it is not interfering with any moving or sliding parts.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, be pinched by or interfere with adjacent parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.
- Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

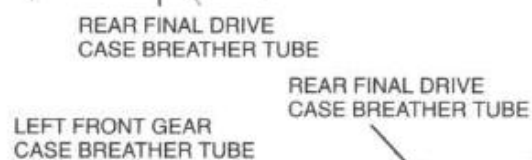
O: CORRECT
X: INCORRECT



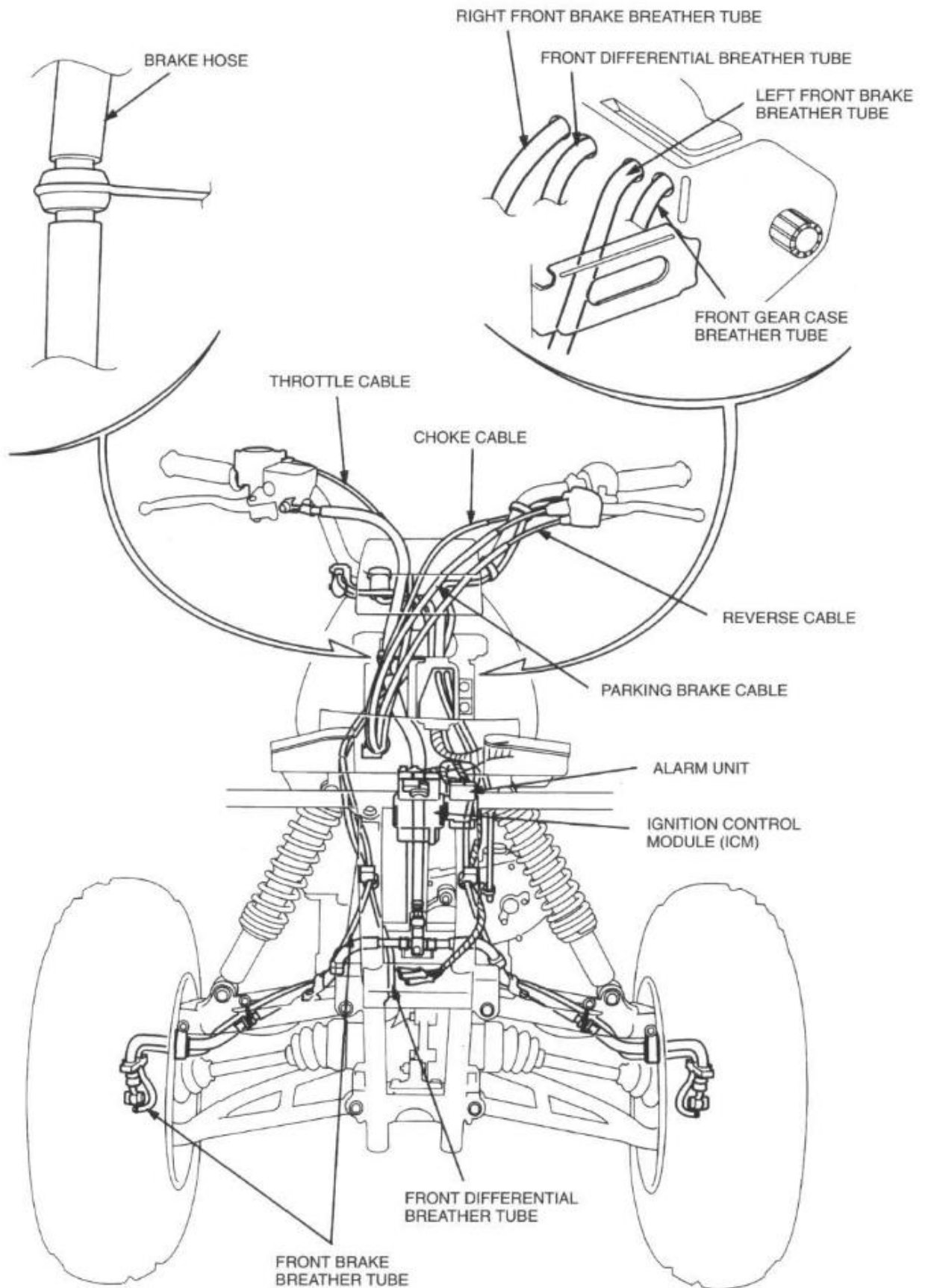
TRX300



TRX300

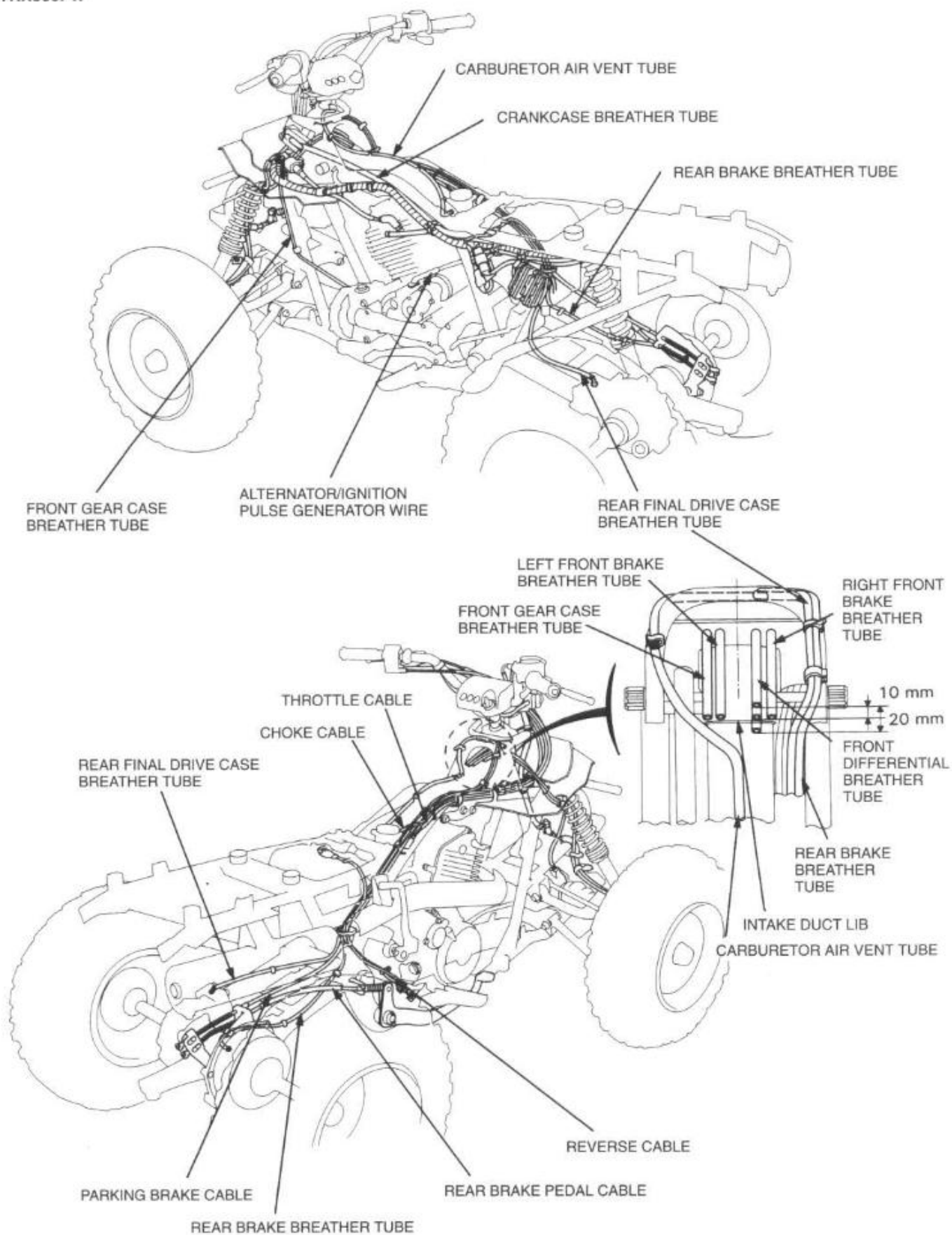


TRX300FW

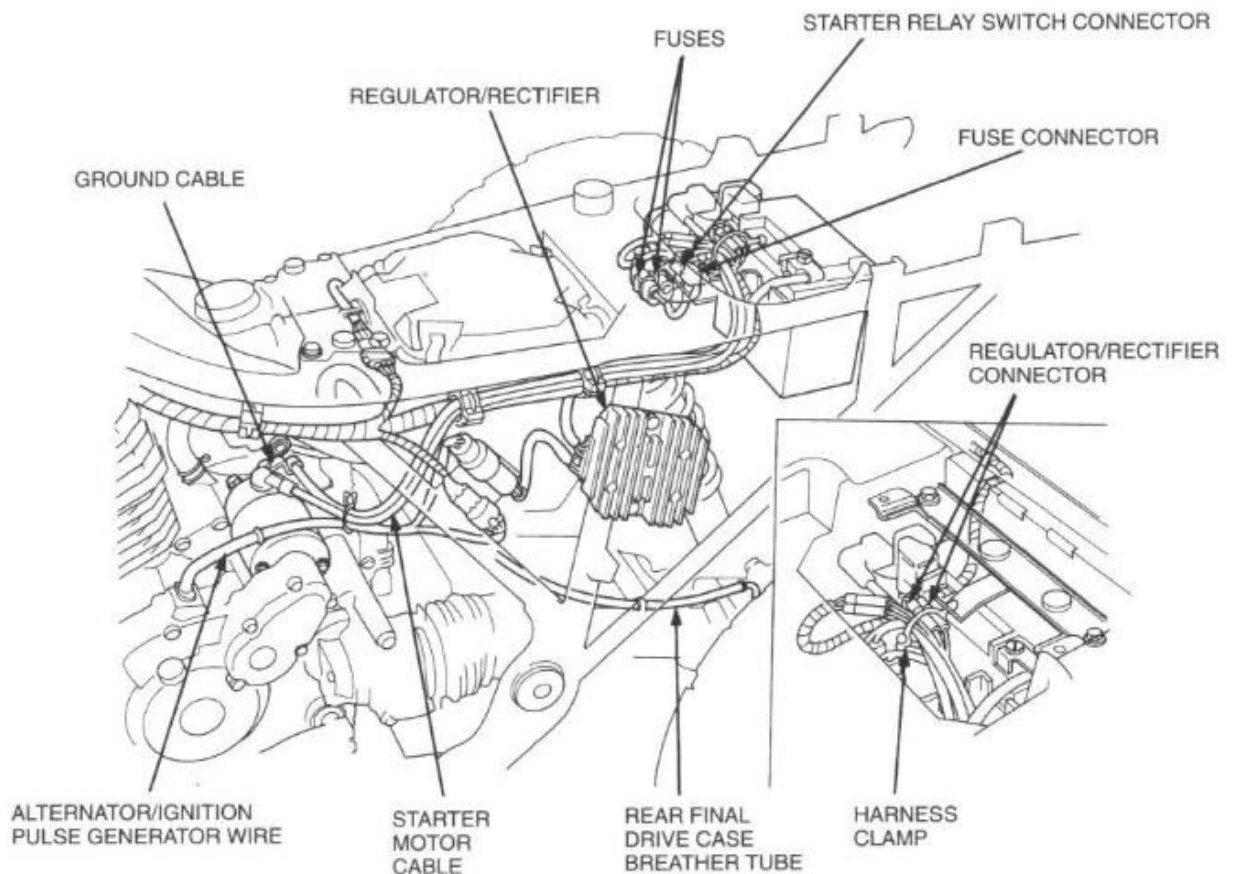
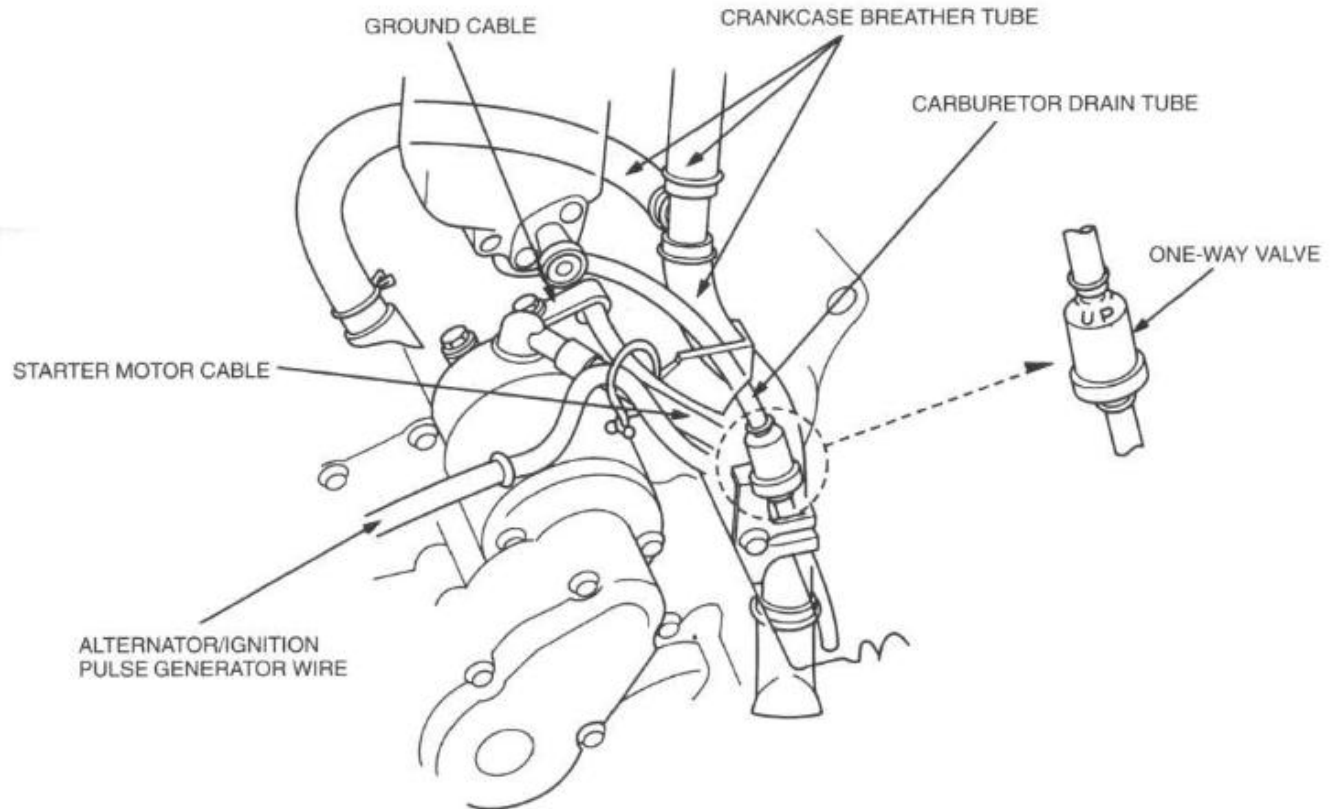


GENERAL INFORMATION

TRX300FW



TRX300FW



EMISSION CONTROL SYSTEMS (After '97)

The California Air Resources Board (CARB) requires manufacturers to certify that their ATVs comply with applicable exhaust emissions standards during their useful life, when operated and maintained according to the instructions provided (California type only).

SOURCE OF EMISSIONS

The combustion process produces carbon monoxide and hydrocarbons. Control of hydrocarbons is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but is toxic.

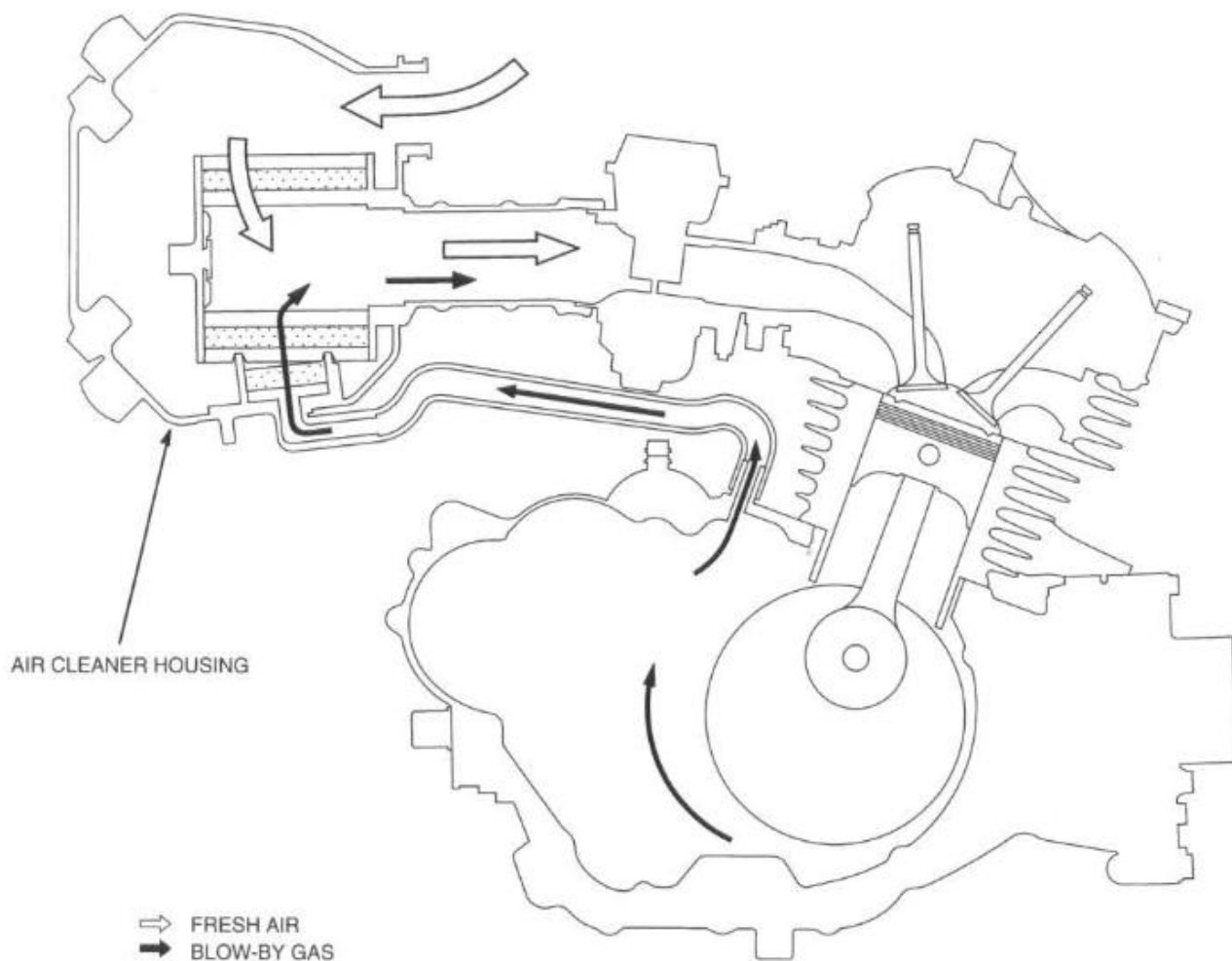
Honda Motor Co., Ltd. uses lean carburetor settings as well as other systems to reduce carbon monoxide and hydrocarbons.

EXHAUST EMISSION CONTROL SYSTEM (California type only)

The exhaust emission control system comprises a lean carburetor setting, and no adjustments should be made except idle speed adjustment with the throttle stop screw. The exhaust emission control system is separate from the crankcase emission control system.

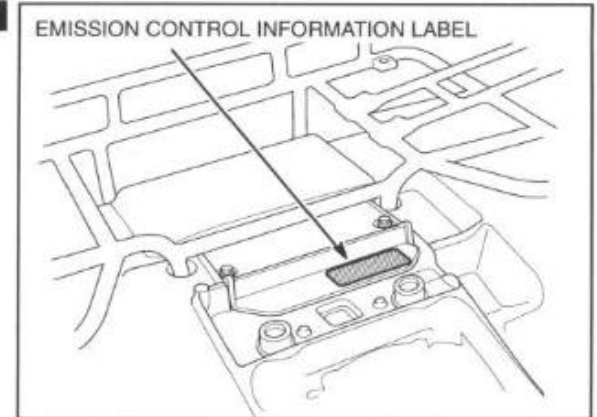
CRANKCASE EMISSION CONTROL SYSTEM (California type only)

The engine is equipped with a closed crankcase system to prevent discharging crankcase emissions into the atmosphere. Blow-by gas returned to the combustion chamber through the air cleaner and carburetor.



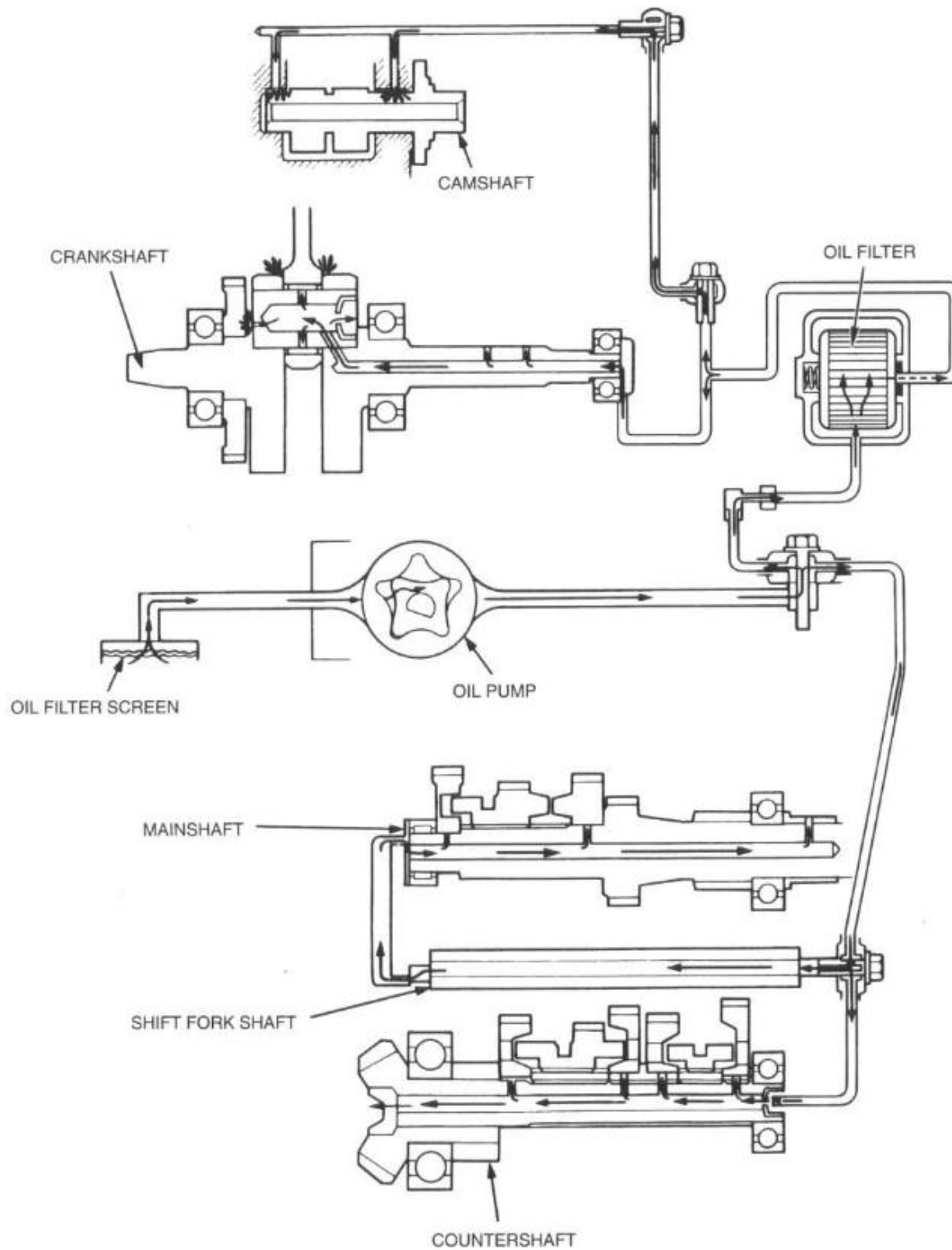
EMISSION CONTROL INFORMATION LABEL (After '97 California type only)

The Emission Control Information Label is located on the battery box cover under the seat.



LUBRICATION

LUBRICATION DIAGRAM



2. LUBRICATION

SERVICE INFORMATION	2-1	OIL FILTER SCREEN	2-4
TROUBLESHOOTING	2-2	FRONT DIFFERENTIAL (TRX300/FW)/ REAR FINAL DRIVE OIL	2-4
ENGINE OIL LEVEL	2-3	FRONT GEAR CASE OIL (TRX300FW)	2-5
ENGINE OIL & FILTER CHANGE	2-3	LUBRICATION POINTS	2-6

2

SERVICE INFORMATION

GENERAL

▲ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

CAUTION

Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

- Section 8 shows how to service the oil pump.

SPECIFICATIONS

Engine Oil Capacity 2.5 lit (2.6 US qt, 2.2 Imp qt) at disassembly
2.25 lit (2.38 US qt, 1.98 Imp qt) at oil and filter change
2.2 lit (2.3 US qt, 1.9 Imp qt) after draining

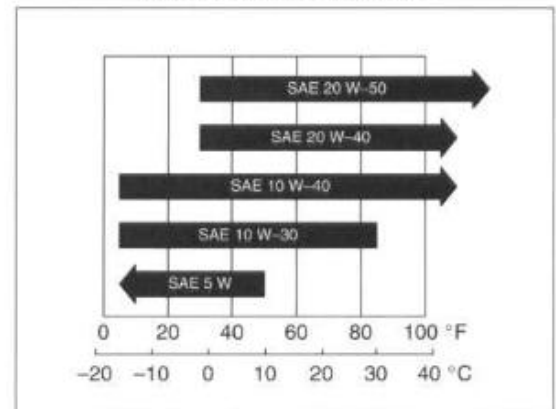
Engine Oil Recommendation Use Honda GN4 4-stroke oil or equivalent.
API Service Classification: SF or SG
Viscosity: SAE 10 W-40
Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.

Rear Final Drive
Oil capacity 100 cc (3.4 oz) at disassembly
90 cc (3.0 oz) after draining
Oil recommendation Hypoid gear oil, SAE #80

Front Differential (TRX300FW)
Oil capacity 200 cc (6.8 oz) at disassembly
190 cc (6.4 oz) after draining
Oil recommendation Hypoid gear oil, SAE #80

Front Gear Case (TRX300FW)
Oil capacity 200 cc (6.8 oz) at disassembly
190 cc (6.4 oz) after draining
Oil recommendation Use Honda GN4 4-stroke oil or equivalent.
API Service Classification: SF or SG
Viscosity: SAE 10 W-40

ENGINE OIL VISCOSITIES



LUBRICATION

TORQUE VALUES

Engine oil drain bolt	25 N·m (2.5 kg-m, 18 ft-lb)
Oil filter cover	10 N·m (1.0 kg-m, 7 ft-lb) – Apply oil
Differential/final drive/gear case oil filler cap	12 N·m (1.2 kg-m, 9 ft-lb)
Differential/final drive oil drain bolt	12 N·m (1.2 kg-m, 9 ft-lb)
Front gear case drain bolt	22 N·m (2.2 kg-m, 16 ft-lb)

TROUBLESHOOTING

Engine oil level too low – high oil consumption

- External oil leaks
- Worn piston rings
- Oil not changed often enough
- Faulty head gasket

Engine oil contamination

- Oil or filter not changed often enough
- Head gasket faulty
- Worn piston rings

ENGINE OIL LEVEL

Place the vehicle on level ground.

Check the oil level using the oil filler cap/dipstick by placing it into the filler hole without screwing it in.

If the oil level is below or near the lower level line on the dipstick, add the recommended oil (page 2-1) up to the upper level line.

ENGINE OIL & FILTER CHANGE

▲ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

With the vehicle on level ground, start the engine and let it idle for a few minutes.

Stop the engine.

Remove the oil filler cap and drain bolt.

Remove the three bolts attaching the oil filter cover, oil filter and spring. Discard the oil filter.

CAUTION

Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

Drain the oil completely. Gently rock the unit side to side to help draining.

Check that the sealing washer on the drain bolt is in good condition and replace if necessary.

Install the drain bolt.

TORQUE: 25 N·m (2.5 kg·m, 18 ft·lb)

Install the oil filter spring to the right crankcase cover.

Make sure that the O-rings are in good condition and replace if necessary.

Install a new oil filter with its "OUT-SIDE (TOWARDS FILTER COVER)" mark facing out.

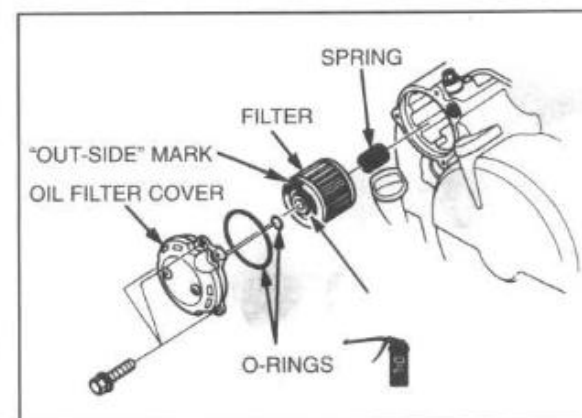
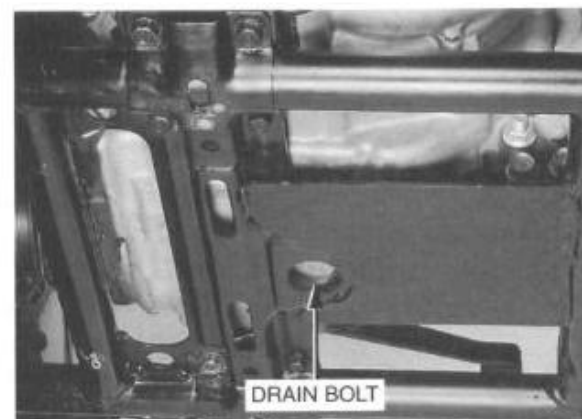
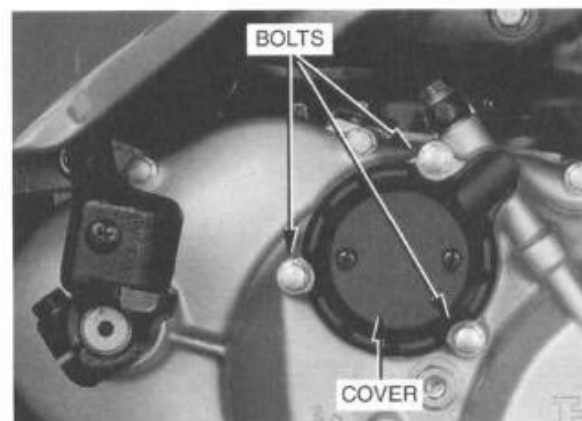
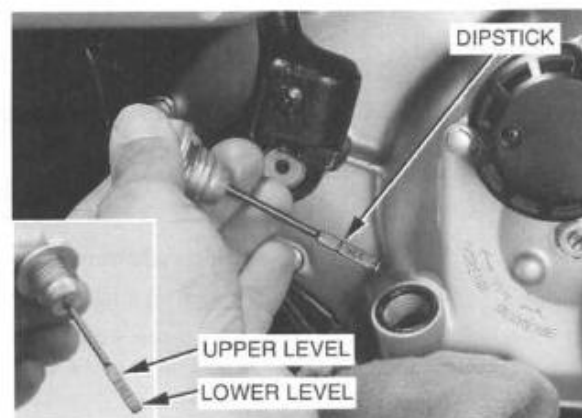
CAUTION

Installing the oil filter backwards will result in severe engine damage.

Apply oil to the cover bolt threads and O-rings.

Install the oil filter cover and tighten the cover bolts to the specified torque.

TORQUE: 10 N·m (1.0 kg·m, 7 ft·lb)



LUBRICATION

Fill the crankcase with the recommended oil.

OIL CAPACITY:

2.5 lit (2.6 US qt, 2.2 Imp qt) at disassembly

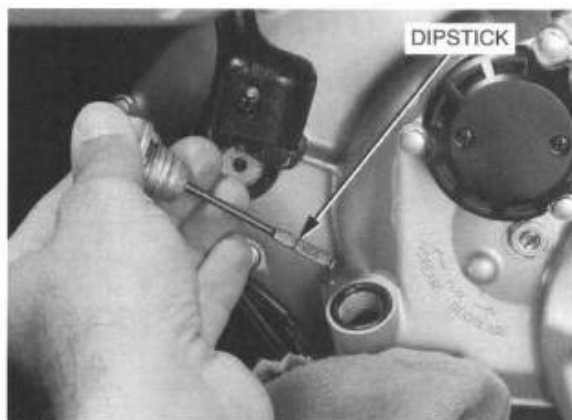
2.25 lit (2.38 US qt, 1.98 Imp qt) at oil and filter change

2.2 lit (2.3 US qt, 1.9 Imp qt) after draining

Install the oil filler cap/dipstick.

Start the engine and let it idle for 2 to 3 minutes.

Stop the engine and check that the oil level is at the upper level line on the dipstick. Make sure there are no oil leaks.



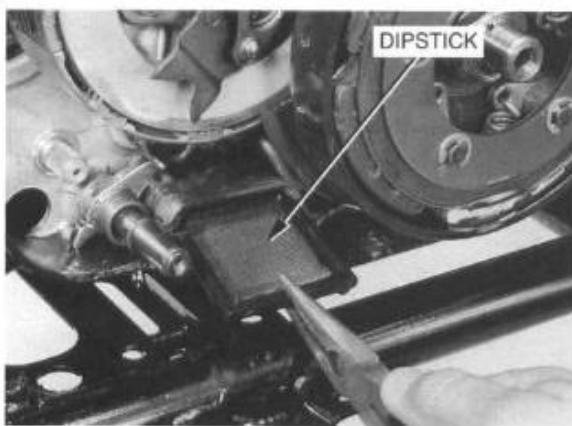
OIL FILTER SCREEN

Remove the right crankcase cover (page 8-3).

Remove the oil filter screen and clean it.

Install the oil filter screen.

Install the right crankcase cover (page 8-23).



FRONT DIFFERENTIAL (TRX300FW)/ REAR FINAL DRIVE OIL

OIL CHANGE

*Front
differential
only:*

Use a suitable oil guide under the drain bolt to prevent oil
spilling on the frame.

Remove the oil filler cap and the drain bolt to drain all oil from
the gear case.

Check that the drain bolt sealing washer is in good condition.

Tighten the drain bolt to the specified torque.

TORQUE: 12 N·m (1.2 kg·m, 9 ft-lb)

Fill with the recommended oil to the standard level.

OIL CAPACITY:

FRONT DIFFERENTIAL:

200 cc (6.8 oz) at disassembly

190 cc (6.4 oz) after draining

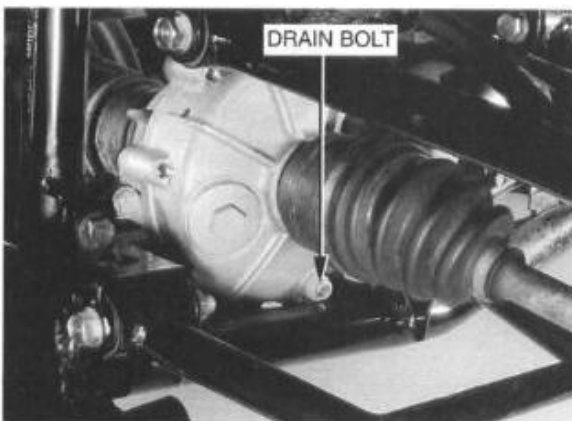
REAR FINAL DRIVE:

100 cc (3.4 oz) at disassembly

90 cc (3.0 oz) after draining

RECOMMENDED OIL:

Hypoid gear oil SAE #80



Install the filler cap.

TORQUE: 12 N·m (1.2 kg·m, 9 ft·lb)

Front differential only: Remove the oil guide.



FRONT GEAR CASE OIL (TRX300FW)

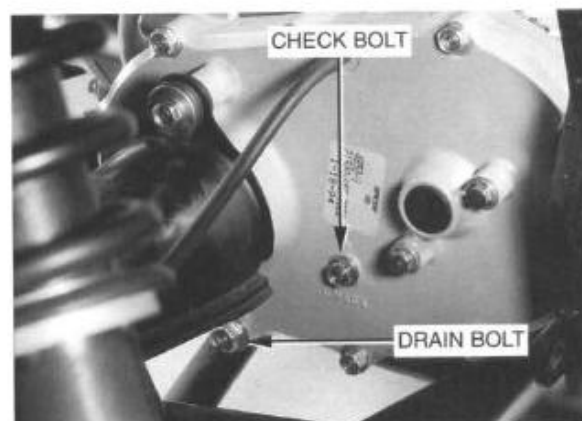
LEVEL CHECK

Place the vehicle on level ground.

Remove the oil check bolt and check that the oil flows out of the check bolt hole.

If there is no oil flow, remove the filler cap and add oil slowly through the oil filler hole until the oil starts to flow out of the check hole.

Stop adding oil and install the oil check bolt and the filler cap.



OIL CHANGE

Remove the oil filler cap and the drain bolt.

Drain the oil completely.

Check that the drain bolt sealing washer is in good condition and install the drain bolt.

TORQUE: 22 N·m (2.2 kg·m, 16 ft·lb)

Remove the check bolt and fill the gear case with the recommended oil.

**OIL CAPACITY: 200 cc (6.8 oz) at disassembly
190 cc (6.4 oz) after draining**

RECOMMENDED OIL:

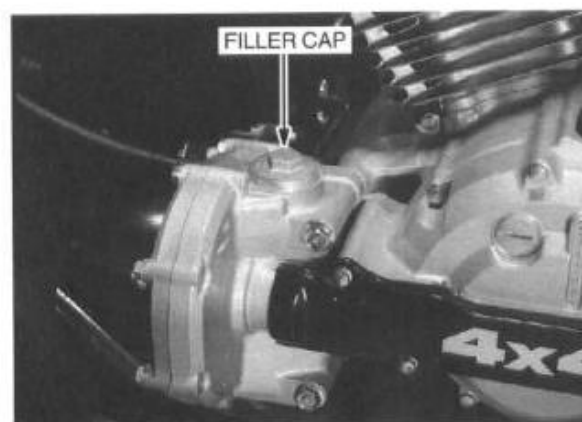
Honda GN4 4-stroke oil or equivalent
API Service Classification: SF or SG
Viscosity: SAE 10 W-40

NOTE

Use this specified capacity only as a guide. Always add oil until it flows out of the oil check bolt hole, allow it to stop flowing out, then reinstall the oil check bolt.

Reinstall the oil filler cap.

TORQUE: 12 N·m (1.2 kg·m, 9 ft·lb)



LUBRICATION POINTS

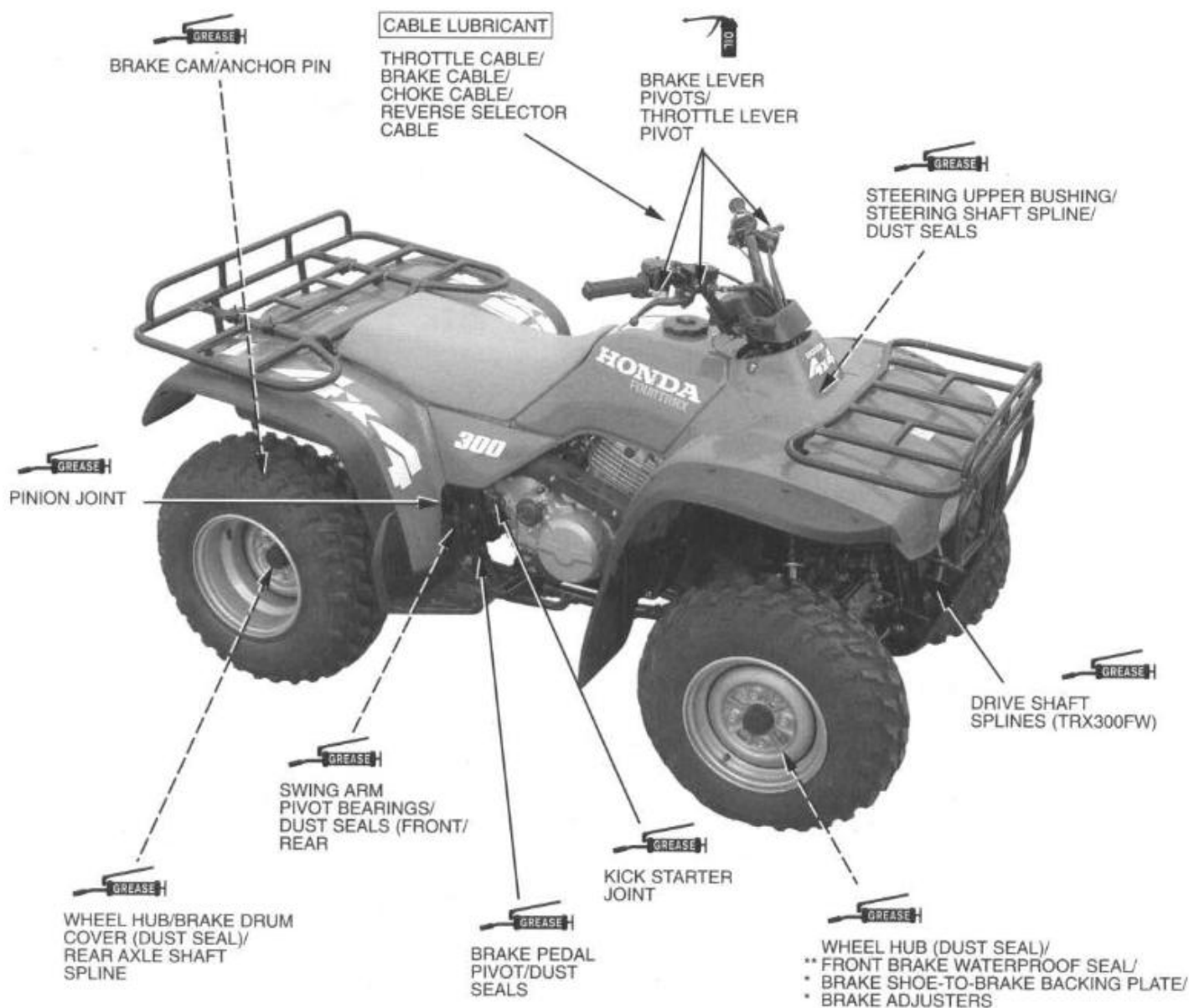
Use general purpose grease when no other specification is given. Apply oil or grease to any 2 sliding surfaces and cables not shown here.

CONTROL CABLES

Periodically, disconnect the throttle, choke, rear brake and reverse selector cables at their upper ends. Thoroughly lubricate the cables and their pivot points with a commercially available cable lubricant or light weight oil.

* Apply silicone grease.

** Apply multipurpose grease NLGI No. 3 (page 12-20, 12-23).



3. MAINTENANCE

SERVICE INFORMATION	3-1	BRAKE SHOE WEAR	3-12
MAINTENANCE SCHEDULES	3-3	BRAKE SYSTEM	3-13
FUEL LINE	3-7	REVERSE LOCK SYSTEM	3-14
FUEL STRAINER SCREEN	3-7	SKID PLATES	3-15
THROTTLE OPERATION	3-7	CLUTCH SYSTEM	3-15
CARBURETOR CHOKE	3-8	SUSPENSION	3-15
AIR CLEANER ELEMENT	3-8	SPARK ARRESTER CLEANING	3-16
AIR CLEANER HOUSING DRAIN TUBE	3-9	WHEELS/TIRES	3-17
SPARK PLUG	3-9	STEERING SHAFT HOLDER BEARING	3-17
VALVE CLEARANCE	3-10	STEERING SYSTEM	3-17
ENGINE IDLE SPEED	3-11	HEADLIGHT AIM	3-18
CYLINDER COMPRESSION	3-12	NUTS, BOLTS, FASTENERS	3-18
BRAKE FLUID	3-12		

3

SERVICE INFORMATION

GENERAL

▲ WARNING

- Support the vehicle in an upright position on level ground before starting any work.
- If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

Engine oil and filter	See page 2-3
Front differential (TRX300FW)	
Rear final drive oil	See page 2-4
Front gear case oil (TRX300FW)	See page 2-5

SPECIFICATIONS

Air cleaner element oil recommendation	Use Honda Foam Filter Oil or an equivalent
Spark plug gap:	0.8–0.9 mm (0.031–0.035 in)

Spark plug:	Standard	For Extended high speed steering	For Cold climate (below 5° C/41° F)
NGK	DPR8EA-9	DPR9EA-9	DPR7EA-9
DENSO	X24EPR-U9	X27EPR-U9	X22EPR-U9

Valve clearance:	0.15 mm (0.006 in)
Idle speed:	1,400 ± 100 rpm
Cylinder compression:	1,250–1,450 kPa (12.5–14.5 kg/cm ² , 178–206 psi)
Throttle lever free play:	3–8 mm (1/8–5/16 in)
Front brake lever free play:	25–30 mm (1–1 1/4 in)
Rear (parking) brake lever free play:	15–20 mm (5/8–3/4 in)
Rear brake pedal free play:	15–20 mm (5/8–3/4 in)
Reverse selector lever free play:	2–4 mm (1/16–1/8 in)

MAINTENANCE

Tire size:

	Front	Rear
TRX300	AT23 x 8-11 ★★	AT25 x 11-9 ★
TRX300FW	AT23 x 8-11 ★★	AT24 x 9-11 ★

Tire pressure:

		Standard	Minimum	Maximum
TRX300 (Front/Rear)		2.9 psi (0.20 kg/cm ² , 20 kPa)	2.5 psi (0.17 kg/cm ² , 17 kPa)	3.3 psi (0.23 kg/cm ² , 23 kPa)
TRX300FW	Front	4.4 psi (0.30 kg/cm ² , 30 kPa)	3.8 psi (0.26 kg/cm ² , 26 kPa)	5.0 psi (0.34 kg/cm ² , 34 kPa)
	Rear	2.9 psi (0.20 kg/cm ² , 20 kPa)	2.5 psi (0.17 kg/cm ² , 17 kPa)	3.3 psi (0.23 kg/cm ² , 23 kPa)

Toe-in:

TRX300: 5 mm (0.2 in)
TRX300FW: 4 mm (0.2 in)

TORQUE VALUES

Clutch adjusting screw lock nut	22 N·m (2.2 kg-m, 16 ft-lb)
Valve adjusting lock nut	17 N·m (1.7 kg-m, 12 ft-lb)
Spark plug	18 N·m (1.8 kg-m, 13 ft-lb)
Tie rod lock nut	55 N·m (5.5 kg-m, 40 ft-lb)

MAINTENANCE SCHEDULES

- The maintenance intervals shown in the following schedules are based upon average riding conditions. Vehicles subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.

TRX300 ('95 – '97)

Perform the Pre-ride Inspection in the Owner's Manual at each scheduled maintenance period.

I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace A: Adjust L: Lubricate			INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page
	EVERY				
* FUEL LINE	YEAR I				3-7
* FUEL STRAINER SCREEN	YEAR C				3-7
* THROTTLE OPERATION			I	I	3-7
* CARBURETOR CHOKE				I	3-8
AIR CLEANER	NOTE 1			C	3-8
AIR CLEANER HOUSING DRAIN TUBE	NOTE 2			I	3-9
SPARK PLUG				I	3-9
* VALVE CLEARANCE			I	I	3-10
ENGINE OIL			R	R	2-3
ENGINE OIL FILTER			R	R	2-3
* ENGINE IDLE SPEED			I	I	3-11
FINAL DRIVE OIL	YEAR I 2 YEARS R				2-4
* BRAKE FLUID	NOTE 3			I	3-12
* BRAKE SHOE WEAR	YEAR I NOTE 2				3-12
BRAKE SYSTEM			I	I	3-13
* REVERSE LOCK SYSTEM			I	I	3-14
SKID PLATES				I	3-15
* CLUTCH SYSTEM			I	I	3-15
* SUSPENSION				I	3-15
* SPARK ARRESTER				C	3-16
* NUTS, BOLTS, FASTENERS			I	I	3-18
** WHEELS/TIRES			I	I	3-17
** STEERING SHAFT HOLDER BEARING	YEAR I				3-17
** STEERING SYSTEM	YEAR I				3-17

* Should be serviced by an authorized Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.

**In the interest of safety, we recommend these items be serviced only by an authorized Honda dealer.

- NOTES: 1. Service more frequently when riding in dusty areas, sand or snow.
2. Service more frequently after riding in very wet or muddy conditions.
3. Replace every 2 years. Replacement requires mechanical skill.

MAINTENANCE

TRX300FW ('95 – '97)

Perform the Pre-ride Inspection in the Owner's Manual at each scheduled maintenance period.

I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace A: Adjust L: Lubricate			INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page
	EVERY				
* FUEL LINE	YEAR I				3-7
* FUEL STRAINER SCREEN	YEAR C				3-7
* THROTTLE OPERATION			I	I	3-7
* CARBURETOR CHOKE				I	3-8
AIR CLEANER	NOTE 1			C	3-8
AIR CLEANER HOUSING DRAIN TUBE	NOTE 2			I	3-9
SPARK PLUG				I	3-9
* VALVE CLEARANCE			I	I	3-10
ENGINE OIL			R	R	2-3
ENGINE OIL FILTER			R	R	2-3
* ENGINE IDLE SPEED			I	I	3-11
FINAL DRIVE OIL AND FRONT DIFFERENTIAL OIL	YEAR I 2 YEARS R				2-4, 5
* BRAKE FLUID	NOTE 3			I	3-12
* BRAKE SHOE WEAR	YEAR I NOTE 2				3-12
BRAKE SYSTEM			I	I	3-13
* REVERSE LOCK SYSTEM			I	I	3-14
SKID PLATES				I	3-15
* CLUTCH SYSTEM			I	I	3-15
* SUSPENSION				I	3-15
* SPARK ARRESTER				C	3-16
* NUTS, BOLTS, FASTENERS			I	I	3-18
** WHEELS/TIRES			I	I	3-17
** STEERING SHAFT HOLDER BEARING	YEAR I				3-17
** STEERING SYSTEM	YEAR I				3-17

* Should be serviced by an authorized Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.

**In the interest of safety, we recommend these items be serviced only by an authorized Honda dealer.

NOTES: 1. Service more frequently when riding in dusty areas, sand or snow.
2. Service more frequently after riding in very wet or muddy conditions.
3. Replace every 2 years. Replacement requires mechanical skill.

TRX300 (After '97)

Perform the Pre-ride Inspection in the Owner's Manual at each scheduled maintenance period.

I: Inspect (clean, adjust, lubricate or replace if necessary).

C: Clean

R: Replace

A: Adjust

L: Lubricate

ITEMS		FREQUENCY	WHICHEVER COMES FIRST	INITIAL MAINTENANCE	REGULAR MAINTENANCE INTERVAL		Refer to page
					mi	1,200	
					km	2,000	
					HOURS	200	
EMISSION RELATED ITEMS	*	FUEL LINE				I	3-7
	*	FUEL STRAINER SCREEN				C	3-7
	*	THROTTLE OPERATION				I	3-7
	*	CARBURETOR CHOKE				I	3-8
		AIR CLEANER	NOTE 1		C	C	3-8
		AIR CLEANER HOUSING DRAIN TUBE	NOTE 2		I	I	3-9
		SPARK PLUG			I	I	3-9
	*	VALVE CLEARANCE		I	I	I	3-10
		ENGINE OIL		R	R	R	2-3
		ENGINE OIL FILTER		R	R	R	2-3
	*	ENGINE IDLE SPEED		I	I	I	3-11
NON-EMISSION RELATED ITEMS		REAR FINAL GEAR CASE OIL			R: EVERY 2 YEARS	I	2-4
	*	BRAKE FLUID	NOTE 3		I	I	3-12
	*	BRAKE SHOE WEAR	NOTE 1			I	3-12
		BRAKE SYSTEM		I	I	I	3-13
	*	REVERSE LOCK SYSTEM		I	I	I	3-14
		SKID PLATE, ENGINE GUARD			I	I	3-15
	*	CLUTCH SYSTEM		I	I	I	3-15
	*	SUSPENSION			I	I	3-15
	*	SPARK ARRESTER			C	C	3-16
	*	NUTS, BOLTS, FASTENERS		I		I	3-18
	**	WHEELS/TIRES		I	I	I	3-17
	**	STEERING SHAFT HOLDER BEARING				I	3-17
	**	STEERING SYSTEM				I	3-17

* Should be serviced by an authorized Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.

**In the interest of safety, we recommend these items be serviced only by your Honda dealer.

NOTES: 1. Service more frequently when riding in dusty areas, sand or snow.
2. Service more frequently after riding in very wet or muddy conditions.
3. Replace every 2 years. Replacement requires mechanical skill.

MAINTENANCE

TRX300FW (After '97)

Perform the Pre-ride Inspection in the Owner's Manual at each scheduled maintenance period.

I: Inspect (clean, adjust, lubricate or replace if necessary).

C: Clean

R: Replace

A: Adjust

L: Lubricate

ITEMS		FREQUENCY	WHICHEVER COMES FIRST	INITIAL MAINTENANCE	REGULAR MAINTENANCE INTERVAL		Refer to page
			mi	100	600	1,200	
			km	250	1,000	2,000	
		NOTE	HOURS	20	100	200	
EMISSION RELATED ITEMS	*	FUEL LINE				I	3-7
	*	FUEL STRAINER SCREEN				C	3-7
	*	THROTTLE OPERATION				I	3-7
	*	CARBURETOR CHOKE				I	3-8
		AIR CLEANER	NOTE 1		C	C	3-8
		AIR CLEANER HOUSING DRAIN TUBE	NOTE 2		I	I	3-9
		SPARK PLUG			I	I	3-9
	*	VALVE CLEARANCE		I	I	I	3-10
		ENGINE OIL		R	R	R	2-3
		ENGINE OIL FILTER		R	R	R	2-3
	*	ENGINE IDLE SPEED		I	I	I	3-11
NON-EMISSION RELATED ITEMS		DRIVE SHAFT BOOTS			I	I	-
		FRONT GEAR CASE OIL, REAR FINAL GEAR CASE OIL, AND DIFFERENTIAL OIL			R: EVERY 2 YEARS	I	2-4, 5
	*	BRAKE FLUID	NOTE 3		I	I	3-12
	*	BRAKE SHOE WEAR	NOTE 1			I	3-12
		BRAKE SYSTEM		I	I	I	3-13
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		SKID PLATES, ENGINE GUARD			I	I	3-15
	*	CLUTCH SYSTEM		I	I	I	3-15
	*	SUSPENSION			I	I	3-15
	*	SPARK ARRESTER			C	C	3-16
	*	NUTS, BOLTS, FASTENERS		I		I	3-18
	**	WHEELS/TIRES		I	I	I	3-17
	**	STEERING SHAFT HOLDER BEARING				I	3-17
	**	STEERING SYSTEM				I	3-17

* Should be serviced by your Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.

**In the interest of safety, we recommend these items be serviced only by your Honda dealer.

NOTES: 1. Service more frequently when riding in dusty areas, sand or snow.

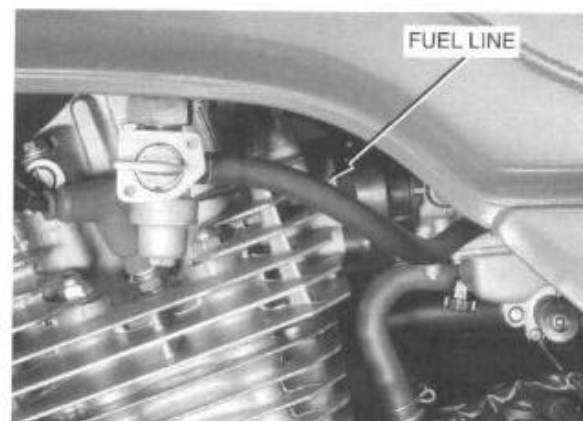
2. Service more frequently after riding in very wet or muddy conditions.

3. Replace every 2 years. Replacement requires mechanical skill.

FUEL LINE

Check the fuel line.

Replace it if it shows signs of deterioration, damage or leaks.



FUEL STRAINER SCREEN

Turn the fuel valve OFF.

Remove the fuel cup, O-ring and filter screen, and drain the gasoline into a suitable container.

⚠ WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. Work in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in your working area or where gasoline is stored.
- Wipe up spilled gasoline at once.

Wash the cup and filter screen in clean non-flammable or high flash point solvent.

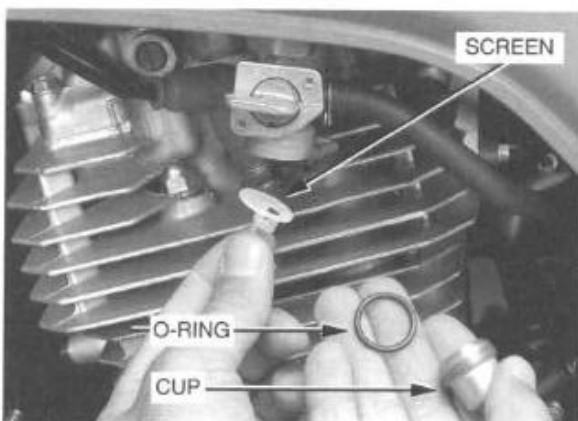
Reinstall the screen.

Install a new O-ring into the fuel valve body.

Reinstall the fuel cup, making sure the new O-ring is in place.

Hand-tighten the fuel cup securely, but do not overtighten. Overtightening could damage the O-ring and fuel leakage may result.

After installing, turn the fuel valve ON and check that there are no fuel leaks.



THROTTLE OPERATION

Check for smooth throttle lever operation with complete opening and automatic closing in all steering positions. Make sure there is no deterioration, damage or kinking in the throttle cable. Replace any damaged parts.

Disconnect the throttle cable at the upper end.

Thoroughly lubricate the cable and pivot point with a commercially available cable lubricant.

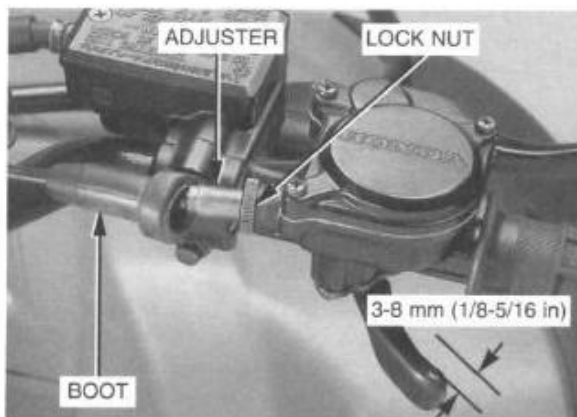
Install the throttle cable in the reverse order of removal. Make sure the throttle lever free play is 3–8 mm (1/8–5/16 in) at the tip of the throttle lever.

Minor adjustments can be made at the upper adjuster:

Slide the rubber boot off the cable adjuster.

Loosen the lock nut and adjust the throttle cable free play by turning the cable adjuster.

Tighten the lock nut and install the rubber boot securely.



MAINTENANCE

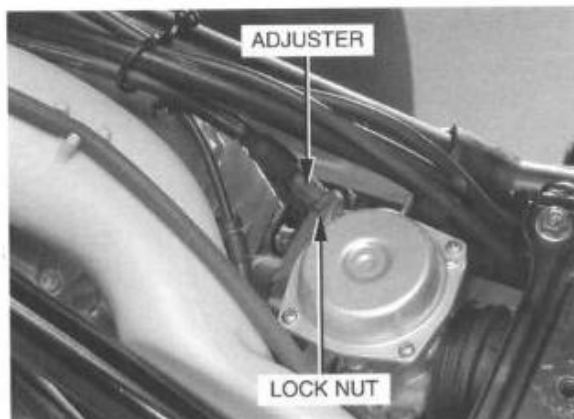
Major adjustments are made with the lower adjuster:

Remove the fuel tank (page 4-3).

Adjust by loosening the lock nut and turning the adjuster.

Tighten the lock nut and recheck throttle operation.

Install the fuel tank and check throttle free play again.



CARBURETOR CHOKE

The choke system uses a fuel enrichment circuit controlled by a starting enrichment (SE) valve. The SE valve opens the enrichment circuit via a cable when the choke lever on the handlebar is moved to the left.

Check for smooth choke lever operation and lubricate the choke cable if required.

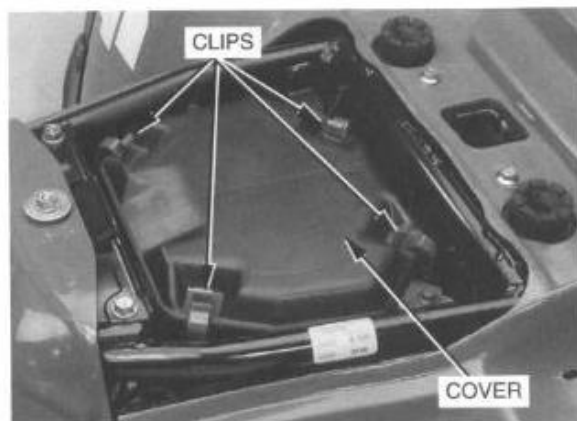
Inspect the cable for cracks which could allow moisture to enter. Replace the cable if necessary.



AIR CLEANER ELEMENT

Remove the seat by pulling the seat latch lever.

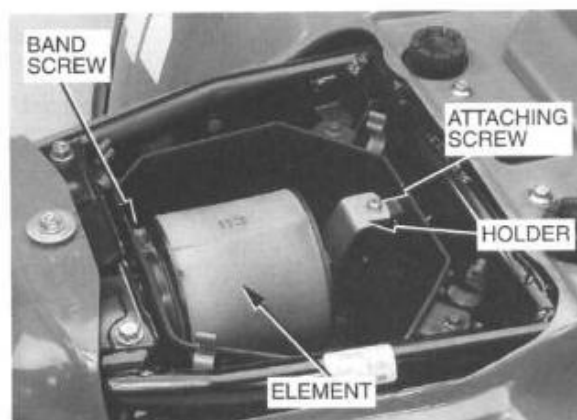
Release the retaining clips from the air cleaner housing cover and remove the cover.



Loosen the air cleaner element band screw.

Remove the element holder attaching screw and remove the air cleaner element assembly from the housing.

Remove the element holder by turning it counterclockwise. Remove the element band and separate the element from the element core.



Wash the element in non-flammable or high flash point solvent, squeeze out the solvent thoroughly, and allow the element to dry.

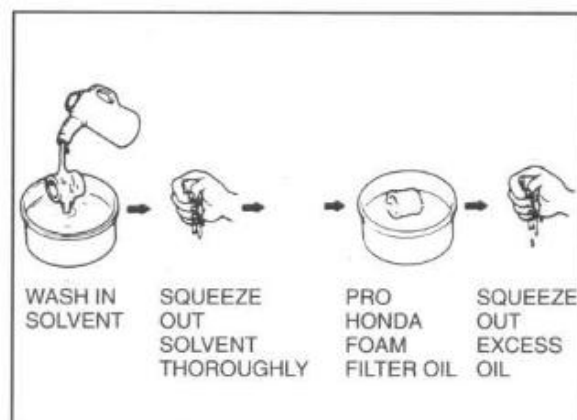
Soak the element in 21–26 cc (0.7–0.9 oz) of Pro Honda Foam Filter Oil or an equivalent oil (page 2-1) and squeeze out the excess oil thoroughly.

Place the element onto the core and replace the element band and holder.

Install the element in the air cleaner housing.

Install the air cleaner housing cover and clips.

Install the seat.

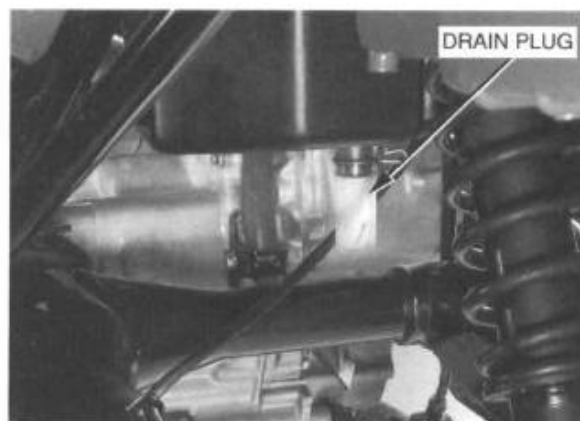


AIR CLEANER HOUSING DRAIN TUBE

Remove the drain plug from the air cleaner housing to empty any deposits.

Install the drain plug.

Service frequently when riding in wet or muddy areas.



SPARK PLUG

Disconnect the spark plug cap and remove the spark plug. Visually inspect the spark plug electrodes for wear.

The center electrode should have square edges and the side electrode should have a constant thickness.

Discard the spark plug if there is apparent wear or if the insulator is cracked or chipped.

Measure the gap with a wire-type feeler gauge and adjust if necessary by carefully bending the side electrode.

SPARK PLUG GAP:

0.8–0.9 mm (0.031–0.035 in)

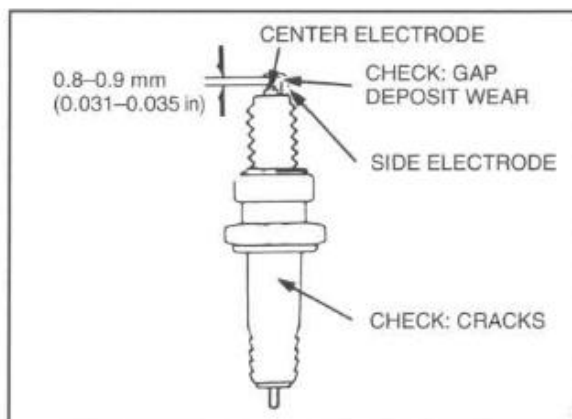
RECOMMENDED REPLACEMENT PLUG:

NGK: DPR8EA-9 (DPR7EA-9, DPR9EA-9)

DENSO: X24EPR-U9 (X22EPR-U9, X27EPR-U9)

With the sealing washer attached, thread the spark plug in by hand to prevent cross-threading. Tighten the spark plug to the specified torque.

TORQUE: 18 N·m (1.8 kg·m, 13 ft·lb)



VALVE CLEARANCE

NOTE

Inspect and adjust the valve clearance while the engine is cold (below 35°C/95°F).

Remove the fuel tank (page 4-3).

Remove the intake and exhaust valve adjusting hole covers.

Remove the timing hole cap.

TRX300: Remove the crankshaft hole cap.

TRX300FW: Remove the reduction shaft cap.

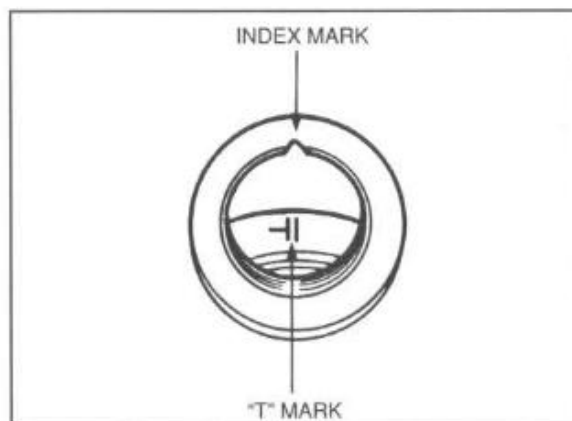
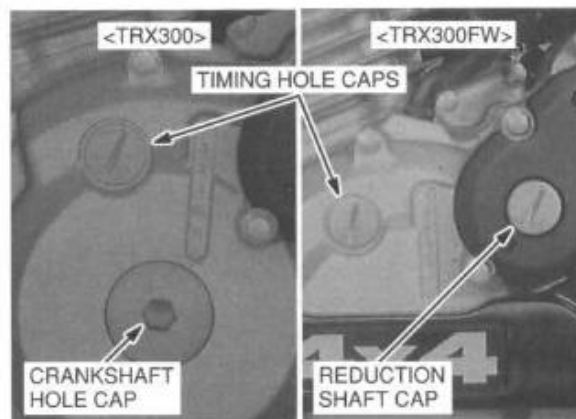
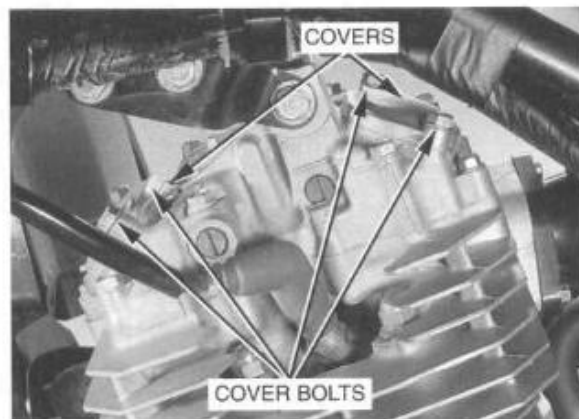
TRX300: Rotate the crankshaft clockwise.

TRX300FW: Rotate the starter reduction shaft counterclockwise, using a 6mm hex wrench.

Align the "T" mark on the rotor with the index mark. Make sure the piston is at TDC on the compression stroke. If not, rotate the crankshaft 360° (1 full turn) and align the "T" mark again.

Inspect the intake and exhaust valve clearances by inserting a feeler gauge between the adjusting screw and valve stem.

VALVE CLEARANCE: 0.15 mm (0.006 in)



Adjust by loosening the lock nut and turning the adjusting screw until there is a slight drag on the feeler gauge.

Hold the adjusting screw and tighten the lock nut.

TORQUE: 17 N·m (1.7 kg-m, 12 ft-lb)

Recheck the valve clearance.

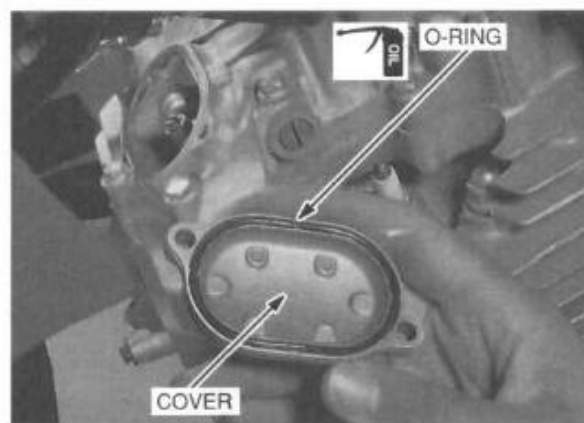


Inspect the condition of the O-rings and replace any that are worn or damaged.

Install the valve adjusting hole covers.

Install the following:

- TRX300: – crankshaft hole cap
- TRX300FW: – reduction shaft cap
- timing hole cap
- fuel tank (page 4-3)



ENGINE IDLE SPEED

⚠ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

NOTE

- Inspect and adjust the idle speed after all other engine maintenance items have been performed and are within specifications.
- The engine must be warm for accurate idle speed inspection and adjustment.



Warm up the engine for about ten minutes.

Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED: 1,400 ± 100 rpm

CYLINDER COMPRESSION

⚠ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

Warm up the engine.

Stop the engine and remove the spark plug.

Install a compression gauge.

Usually 4-7 seconds Open the throttle all the way and crank the engine with the starter motor until the gauge reading stops rising.

COMPRESSION PRESSURE:

1,250–1,450 kPa (12.5–14.5 kg/cm², 178–206 psi)

Low compression can be caused by:

- blown cylinder head gasket
- improper valve adjustment
- valve leakage
- worn piston ring or cylinder

High compression can be caused by:

- carbon deposits in combustion chamber or on piston head



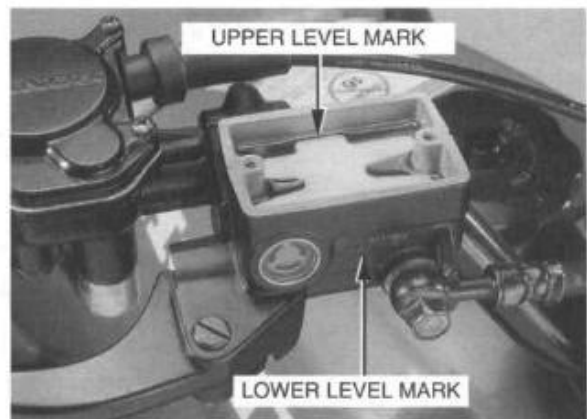
BRAKE FLUID

Check that the brake fluid reservoir is full. If the level is near the lower level mark, fill the reservoir up to the upper level mark.

Check the entire system for leaks if the level is low.

CAUTION

- When adding brake fluid, be sure the reservoir is level before the cap is removed, or brake fluid may spill out.
- Use only DOT 3 or 4 brake fluid from a sealed container.
- Avoid spilling fluid on painted, plastic, or rubber parts. Place a shop towel over these parts whenever the system is serviced.
- Never allow contamination (dirt, water, etc.) to enter the brake fluid reservoir.



BRAKE SHOE WEAR

FRONT BRAKE

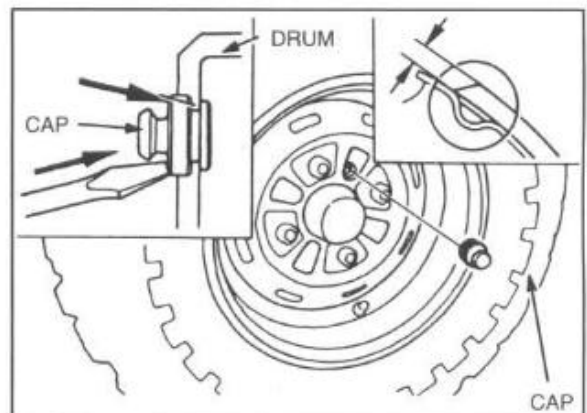
Remove the brake shoe lining inspection hole cap and inspect the lining thickness.

Lining thickness:

STANDARD: 4.0 mm (0.16 in)

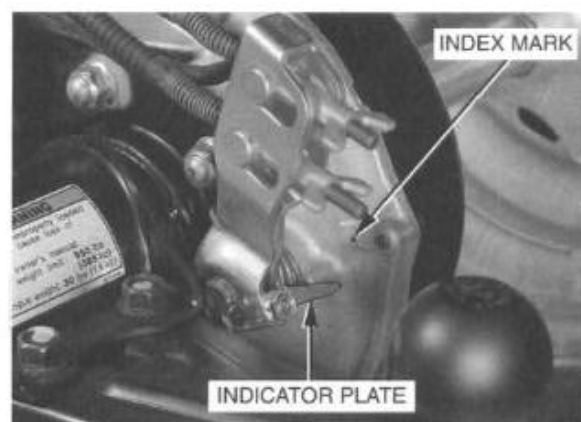
SERVICE LIMIT: 1.0 mm (0.04 in)

If either lining is worn beyond the limit, both brake shoes must be replaced.



REAR BRAKE

Replace the brake shoes if the indicator plate aligns with the brake panel index mark when the rear brake lever or pedal is applied.



BRAKE SYSTEM

FRONT BRAKE

Measure the distance the brake lever moves before the brake starts to take hold.

Free play, measured at the tip of the front brake lever, should be within standard.

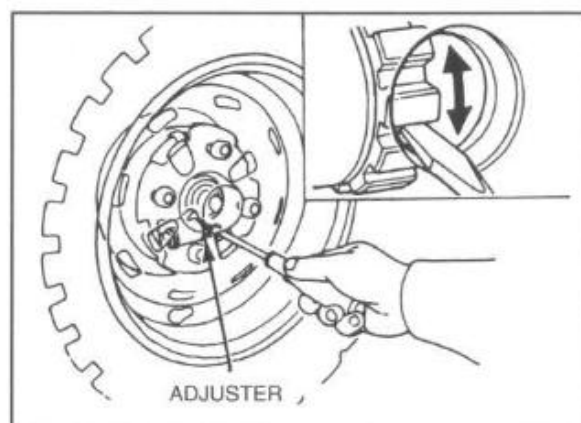
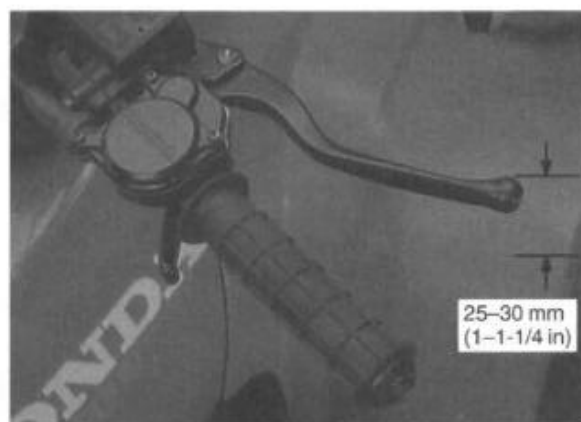
FREE PLAY: 25–30 mm (1–1¼ in)

If the brake lever free play is excessive and the brake linings are not worn beyond the recommended limit, adjust the brake shoe lining-to-drum clearance.

Remove the inspection hole plug and line up the hole with one of the brake adjusters and turn the brake shoe adjuster up with a screwdriver until the shoes lock, then back off three stops. Spin the wheel manually to make sure the brake does not drag. Line up the inspection hole with the second adjuster and repeat the procedure.

Recheck the brake lever free play. If free play is still excessive after adjusting the brake lining clearance, there is probably air in the brake system and it must be bled out (section 12).

After checking, install the inspection hole cap securely in the drum while pushing the cap with a screwdriver.



REAR BRAKE

Check the cable, brake lever and brake pedal for loose connections, excessive play or other damage. Replace or repair if necessary.

Disconnect the brake cables at the brake lever or pedal ends.

Thoroughly lubricate the cables and their pivot points with a commercially available cable lubricant.

Install the cables.

Measure the rear (parking) brake lever free play at the end of the brake lever.

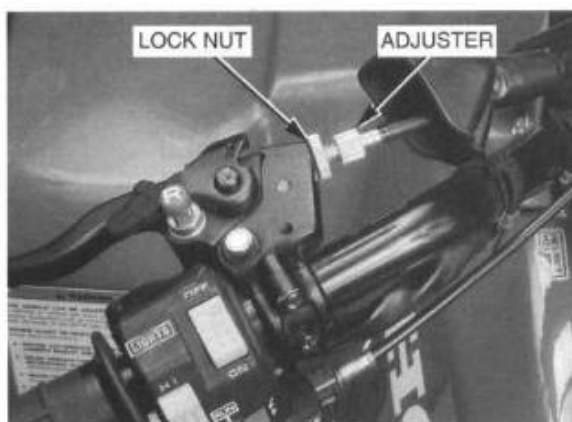
REAR BRAKE LEVER FREE PLAY: 15–20 mm (5/8–¾ in)



MAINTENANCE

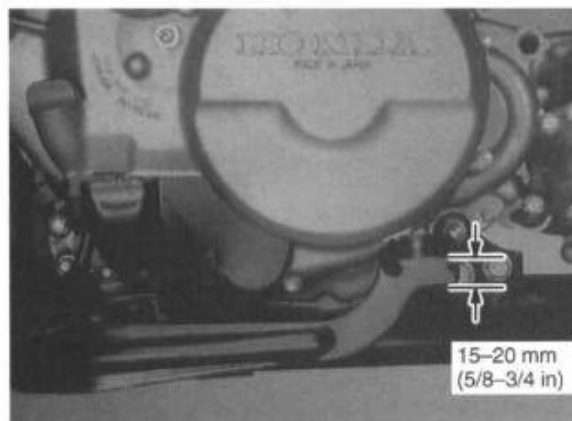
Minor adjustments can be made with the upper adjuster. Slide the rubber cover off the adjuster, loosen the lock nut and adjust.

Major adjustments should be made with the lower adjusting nut at the rear brake arm.



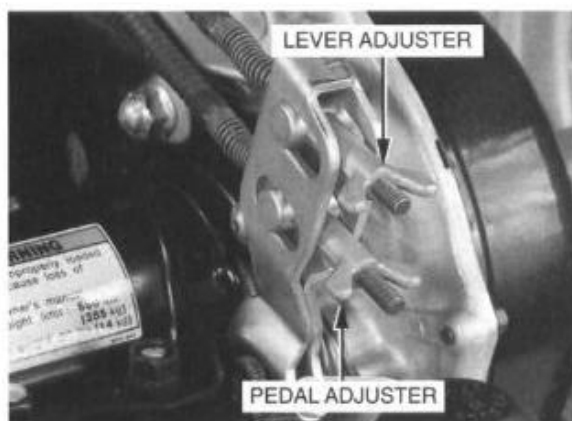
Measure the brake pedal free play at the end of the brake pedal and adjust as required.

BRAKE PEDAL FREE PLAY: 15–20 mm (5/8–3/4 in)



Adjust the rear brake lever and pedal free play by turning the adjusting nuts at the lower end of the cables.

Make sure the cut-out of each adjusting nut is seated on the brake arm pin.



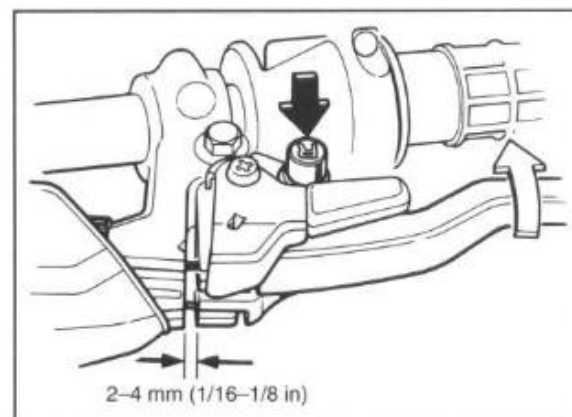
REVERSE LOCK SYSTEM

Check the reverse selector cable and lever for a loose connection, excessive play or other damage.

Replace or repair if necessary.

Measure the reverse selector lever free play at the lever end near the cable.

FREE PLAY: 2–4 mm (1/16–1/8 in)



Adjust by loosening the lock nut and turning the adjusting nut.

Tighten the lock nut securely.

SKID PLATES

The skid plates protect the engine, rear final gear case and rear brake panel from rocks.

Check the plates for cracks, damage or looseness at intervals shown in the Maintenance Schedule.

Replace the plates if they are cracked or damaged.

If the plate bolts are loose, tighten them.

CLUTCH SYSTEM

⚠ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

Loosen the clutch adjusting screw lock nut.

Slowly turn the adjusting screw counterclockwise until resistance is felt. Then turn the adjusting screw clockwise 1/4 turn, and tighten the lock nut.

TORQUE: 22 N·m (2.2 kg·m, 16 ft·lb)

After adjustment, start the engine and check for proper clutch operation.

SUSPENSION

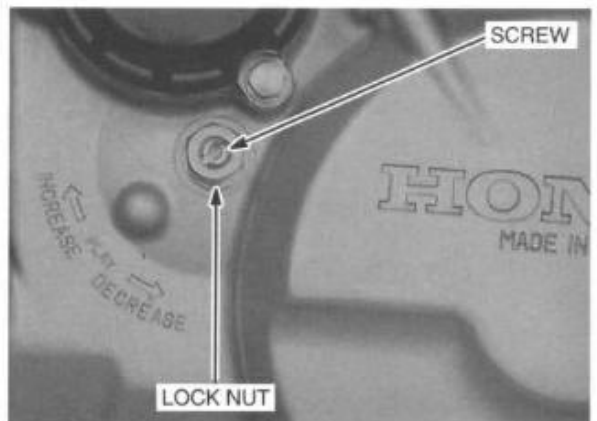
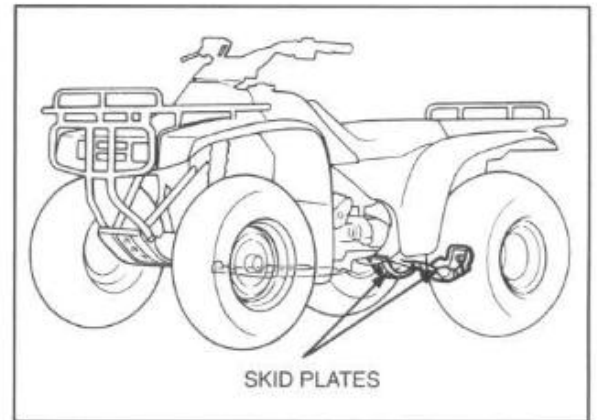
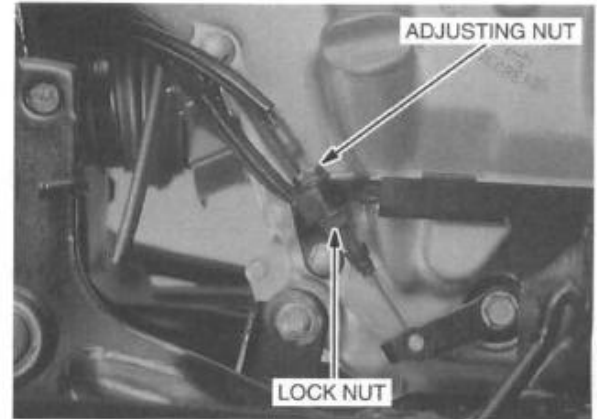
⚠ WARNING

- Do not ride a vehicle with faulty suspension.
- Loose, worn or damaged suspension parts impair vehicle stability and control.

Check the action of the front/rear shock absorber by compressing them several times.

Check the entire shock absorber assembly for leaks or damage. Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.

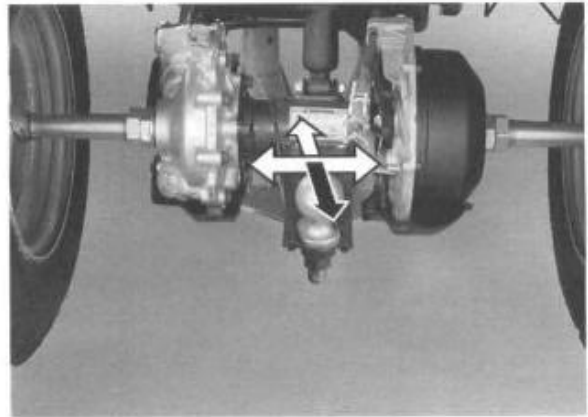


SWINGARM BEARINGS

Raise the rear wheels off the ground by placing a jack or block under the engine.

Move the rear axle sideways, forward, and backward using moderate force to see if the wheel and swingarm bearings are worn.

Replace the bearings if there is any play.

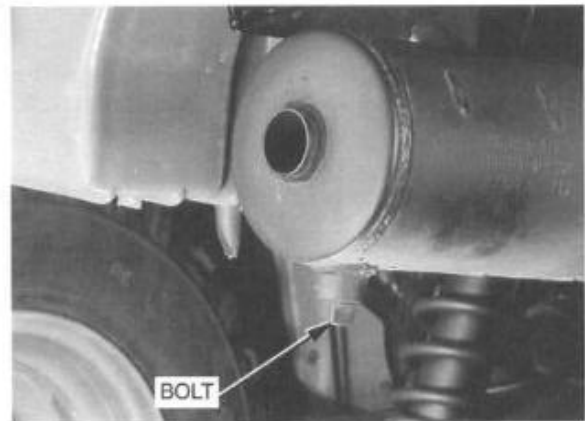


SPARK ARRESTER CLEANING

⚠ WARNING

- If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.
- Do not touch exhaust components while the exhaust system is hot.
- Perform this operation in a well-ventilated area, free from fire hazards.
- Use adequate eye protection.

Remove the bolt.



Block the end of the muffler with a shop towel.

Start the engine with the transmission in neutral, and purge accumulated carbon from the muffler by momentarily revving the engine several times.

Stop the engine and allow the exhaust system to cool.

Install the bolt securely.



WHEELS/TIRES

Check the tires for cuts, embedded nails, or other damage.

Check the tire pressure. Tire pressure should be checked when the tires are COLD.

Adjust accordingly.

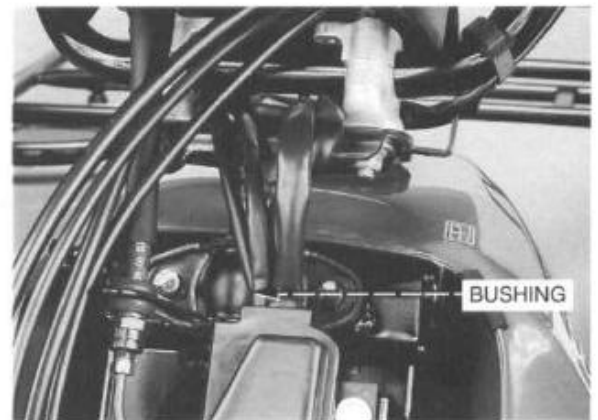
Tire pressure:

unit: psi (kg/cm², kPa)

	TRX300 (Front/Rear)	TRX300FW	
		Front	Rear
Standard	2.9 (0.20, 20)	4.4 (0.30, 30)	2.9 (0.20, 20)
Minimum	2.5 (0.17, 17)	3.8 (0.26, 26)	2.5 (0.17, 17)
Maximum	3.3 (0.23, 23)	5.0 (0.34, 34)	3.3 (0.23, 23)
With Cargo		4.4 (0.30, 30)	3.6 (0.25, 25)

Raise the wheels off the ground and check the hub or knuckle and axle bearings for excessive play or abnormal noise.

Replace any faulty parts (sections 11 and 13).

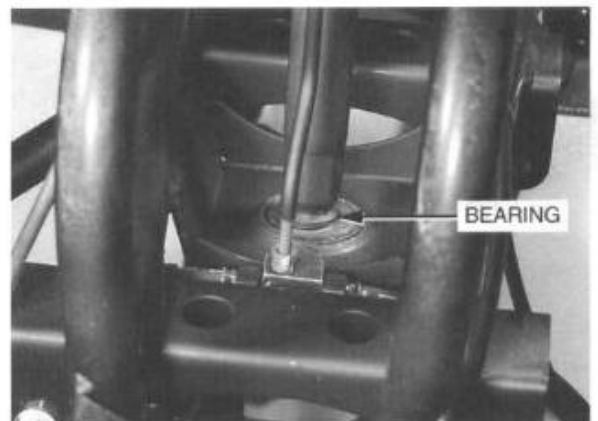


STEERING SHAFT HOLDER BEARING

Raise the front wheels off the ground and make sure that the handlebar rotates freely.

Make sure the cables do not interfere with the rotation of the handlebar.

If the handlebar moves unevenly, binds or has horizontal movement, check the steering shaft holder bushing and steering bearing, and replace them if necessary (page 11-27).



STEERING SYSTEM

TOE-IN

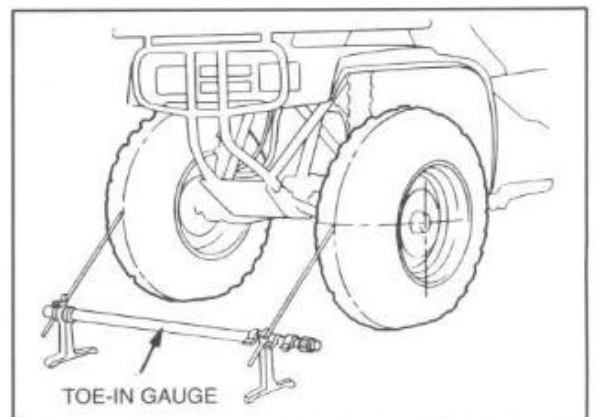
Remove the front fender (page 16-1).

Place the vehicle on level ground with the front wheels facing straight ahead.

Mark the centers of the tires with chalk to indicate the axle center height.

Align the toe-in gauge with the marks on the tires as shown. Check the readings on the gauge scales.

Slowly move the vehicle back until the wheels have turned 180° so the marks on the tires are aligned with the gauge height on the rear side.



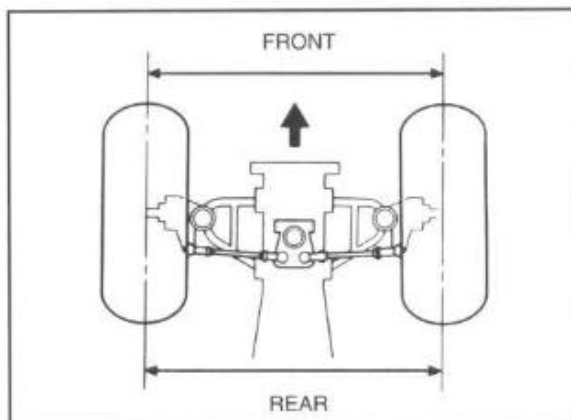
MAINTENANCE

Measure the toe-in on the rear part of the tires at the same points.

TOE-IN:

TRX300: 5 mm (0.2 in)

TRX300FW: 4 mm (0.2 in)

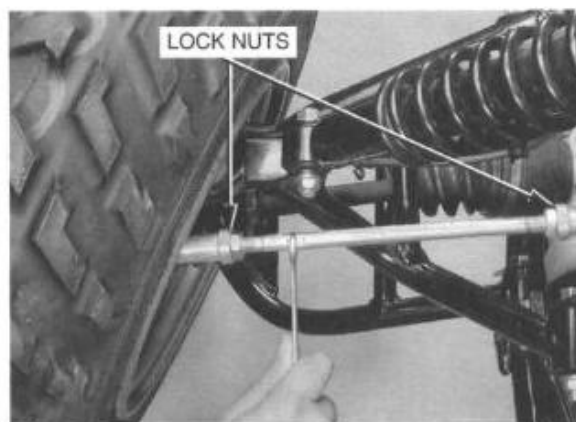


When the toe-in is out of specification, adjust it by changing the length of the tie-rods equally by turning the tie-rod while holding the ball joint.

Tighten the lock nuts.

TORQUE: 55 N-m (5.5 kg-m, 40 ft-lb)

After finally tightening the lock nuts, make sure the ball joints operate properly by rotating the tie-rods.



HEADLIGHT AIM

Adjust the vertical beam by turning each adjusting screw on the headlight cover.



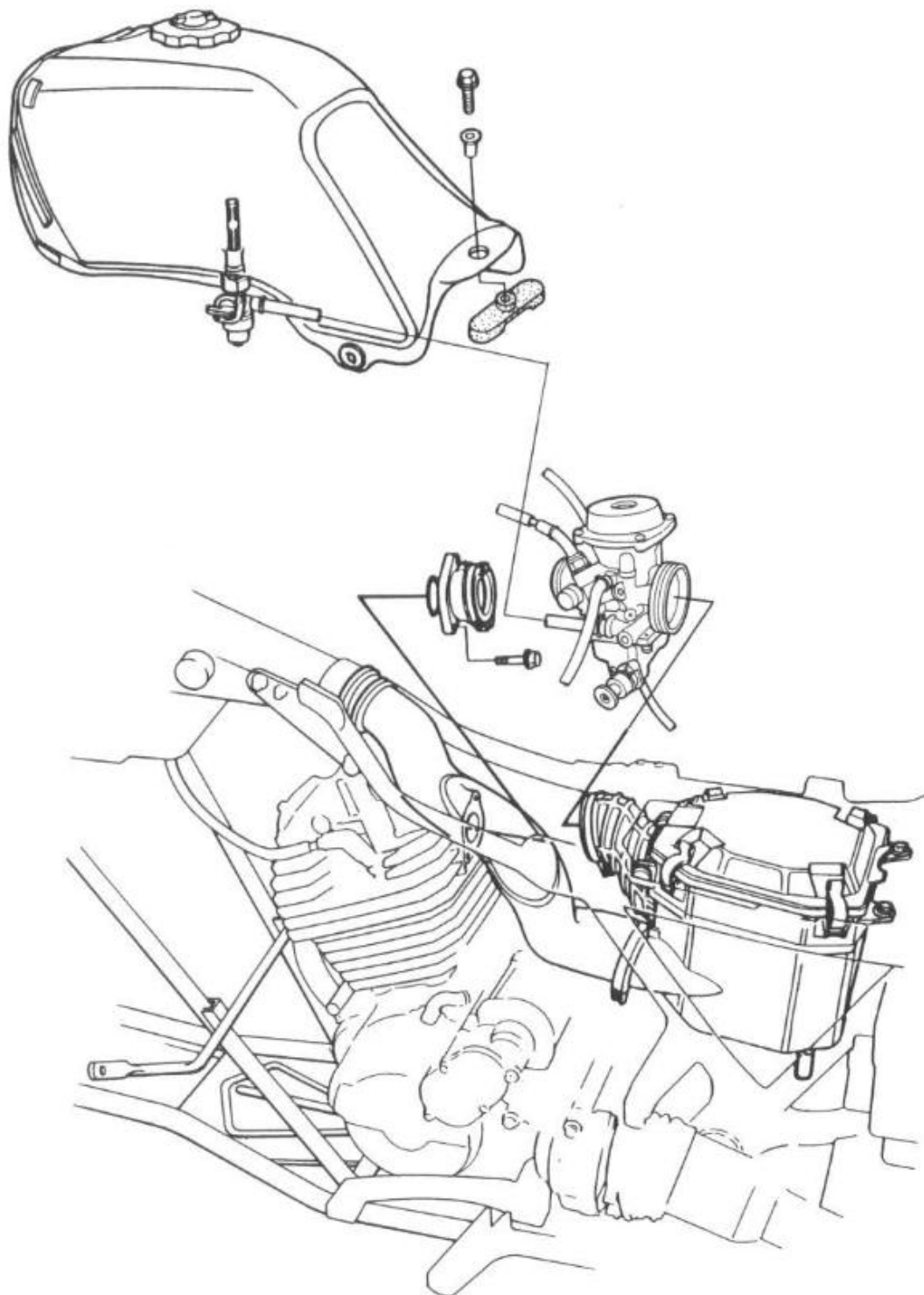
NUTS, BOLTS, FASTENERS

Tighten bolts, nuts and fasteners at the regular intervals shown in the Maintenance Schedule (pages 3-3 and 3-4).

Check that all chassis nuts and bolts are tightened to their correct torque values (pages 1-7 thru 1-9). Check that all cotter pins and safety clips are in place.

Check the rear axle nut torque (page 15-16) at Initial Service and after each 30 days of operation.

MEMO



4. FUEL SYSTEM

SERVICE INFORMATION	4-1	CARBURETOR DISASSEMBLY	4-6
TROUBLESHOOTING	4-2	CARBURETOR ASSEMBLY	4-10
FUEL TANK	4-3	CARBURETOR INSTALLATION	4-13
AIR CLEANER HOUSING	4-4	PILOT SCREW ADJUSTMENT	4-15
CARBURETOR REMOVAL	4-5	HIGH ALTITUDE ADJUSTMENT	4-17

SERVICE INFORMATION

GENERAL

WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. Work in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the work area or where gasoline is stored.
- If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

CAUTION

Do not bend or twist control cables. Damaged control cables will not operate smoothly and may stick or bind.

- If the vehicle is to be stored for more than one month, drain the float chamber. The carburetor float chamber has a drain screw that can be loosened to drain gasoline. Be sure to drain all gasoline into a suitable container. Fuel left in the float chamber may cause clogged jets resulting in hard starting or poor driveability complaints.
- When disassembling fuel system parts, note the locations of the O-rings. Replace them with new O-rings during reassembly.

SPECIFICATIONS

Fuel tank capacity	12.5 lit (3.3 US gal, 2.7 Imp. gal)
Fuel reserve capacity	2.5 lit (0.7 US gal, 0.5 Imp. gal)

Carburetor

Identification mark	VE91C (After '97 California type: VE91D)
Type	Vacuum piston (VE)
Throttle bore	32 mm (1.3 in)
Float level	18.5 mm (0.73 in)
Pilot screw initial opening	See page 4-15
Idle speed	1,400 ± 100 rpm
Main jet	#125
Slow jet	#40
Starter jet	#85
Throttle lever free play	3–8 mm (1/8–5/16 in)
Jet needle setting	3rd groove from the top

FUEL SYSTEM

TORQUE VALUES

Fuel valve lock nut	28 N·m (2.8 kg-m, 20 ft-lb)
Insulator band screw	4 N·m (0.4 kg-m, 2.9 ft-lb)
Carburetor cover screw	3.5 N·m (0.35 kg-m, 2.5 ft-lb)
Starting enrichment (SE) valve nut	2.5 N·m (0.25 kg-m, 1.8 ft-lb)

TOOL

Common

Float level gauge	07401-0010000
-------------------	---------------

TROUBLESHOOTING

Engine cranks but won't start

- No fuel to carburetor
- Engine flooded with fuel
- No spark at plug (ignition system faulty)
- Clogged air cleaner
- Intake air leak
- Improper choke operation
- Improper throttle operation

Engine idles roughly, runs poorly or stalls

- Improper choke operation
- Ignition malfunction
- Fuel contaminated
- Intake air leak
- Incorrect idle speed
- Incorrect pilot screw adjustment
- Low cylinder compression
- Starting enrichment (SE) valve stuck open
- Damaged starting enrichment (SE) valve seat
- Rich mixture
- Lean mixture
- Clogged carburetor

Misfiring during acceleration

- Ignition system faulty
- Lean mixture

Afterburn during deceleration

- Ignition system faulty
- Lean mixture

Poor performance (driveability) and poor fuel economy

- Fuel system clogged
- Ignition system faulty
- Air cleaner clogged

Afterfiring

- Ignition malfunction
- Carburetor malfunction
- Lean mixture
- Rich mixture

Lean mixture

- Clogged fuel jets
- Faulty float valve
- Float level too low
- Blocked fuel fill cap vent hole
- Clogged fuel strainer screen
- Restricted fuel line
- Clogged air vent tube
- Intake air leak
- Vacuum piston stuck closed

Rich mixture

- Clogged air cleaner
- Worn jet needle or needle jet
- Faulty float valve
- Float level too high
- Starting enrichment (SE) valve stuck open
- Damaged starting enrichment (SE) valve seat
- Clogged air jet

Incorrect fast idle speed

- Incorrect choke cable free play
- Starting enrichment (SE) valve stuck or damaged

FUEL TANK

REMOVAL

Remove the seat and right side cover. Pull the left side cover tabs free from the fuel tank.

Turn the fuel valve OFF and disconnect the fuel line. Remove the fuel tank mounting bolt and fuel tank.

▲ WARNING

- Gasoline is extremely flammable and is explosive under certain conditions. Work in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in your working area or where gasoline is stored.
- Wipe up spilled gasoline at once.

Use a drain pan and check that fuel flows freely out of the fuel valve by turning the fuel valve ON.

If flow is restricted, clean the fuel strainer screen (page 3-7).

Drain fuel from the fuel tank into a suitable container.

Remove the fuel valve by loosening the valve nut.

Remove and clean the strainer.

INSTALLATION

Install the strainer and valve and tighten the fuel valve lock nut to the specified torque.

TORQUE: 28 N·m (2.8 kg-m, 20 ft-lb)

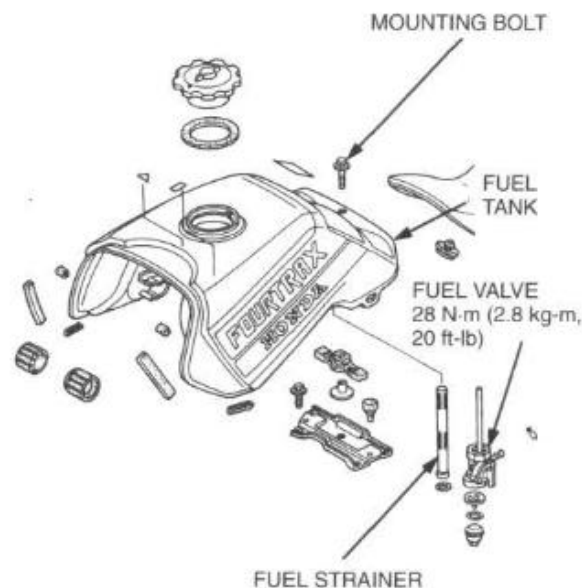
Fill the fuel tank, turn the fuel valve ON and check for leaks.

Check the vent hole in the fuel cap for blockage.

Install the fuel tank by sliding its front hooks into the rubber cushions on the frame and tighten the fuel tank mounting bolt.

Connect the fuel line to the fuel valve.

Turn the fuel valve ON and make sure that there are no fuel leaks.



AIR CLEANER HOUSING

REMOVAL

Remove the fuel tank (page 4-3).

Remove the fuel tank bracket.

Loosen the air cleaner intake duct and connecting tube band.

Free the intake duct and connecting tube from the frame and carburetor.

Remove the air cleaner housing mounting bolts.

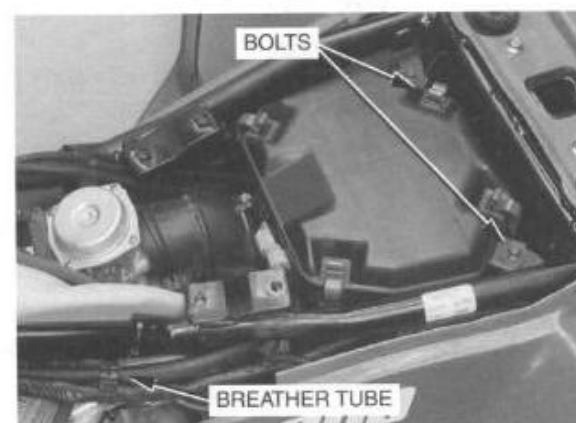
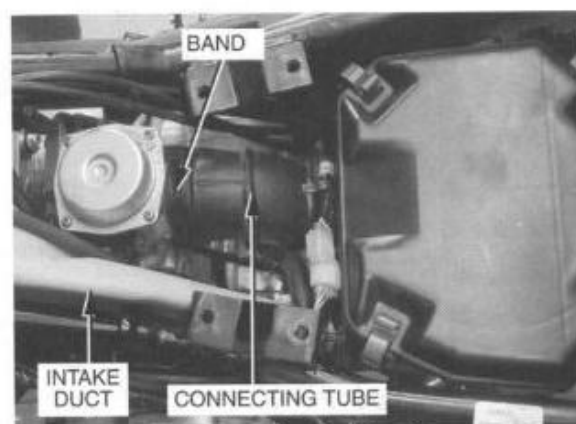
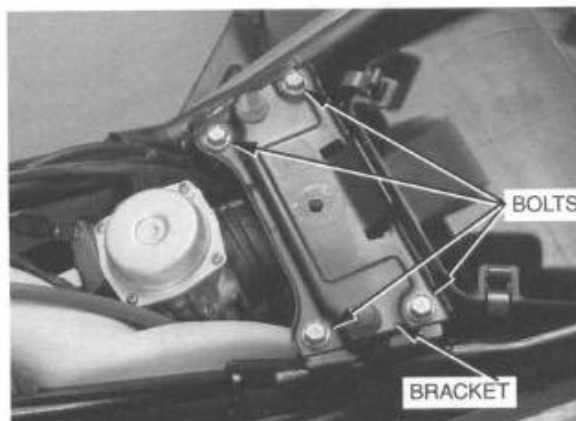
*Except After '97
California type:*

Free the crankcase breather tube from the clamp.

*After '97
California type:*

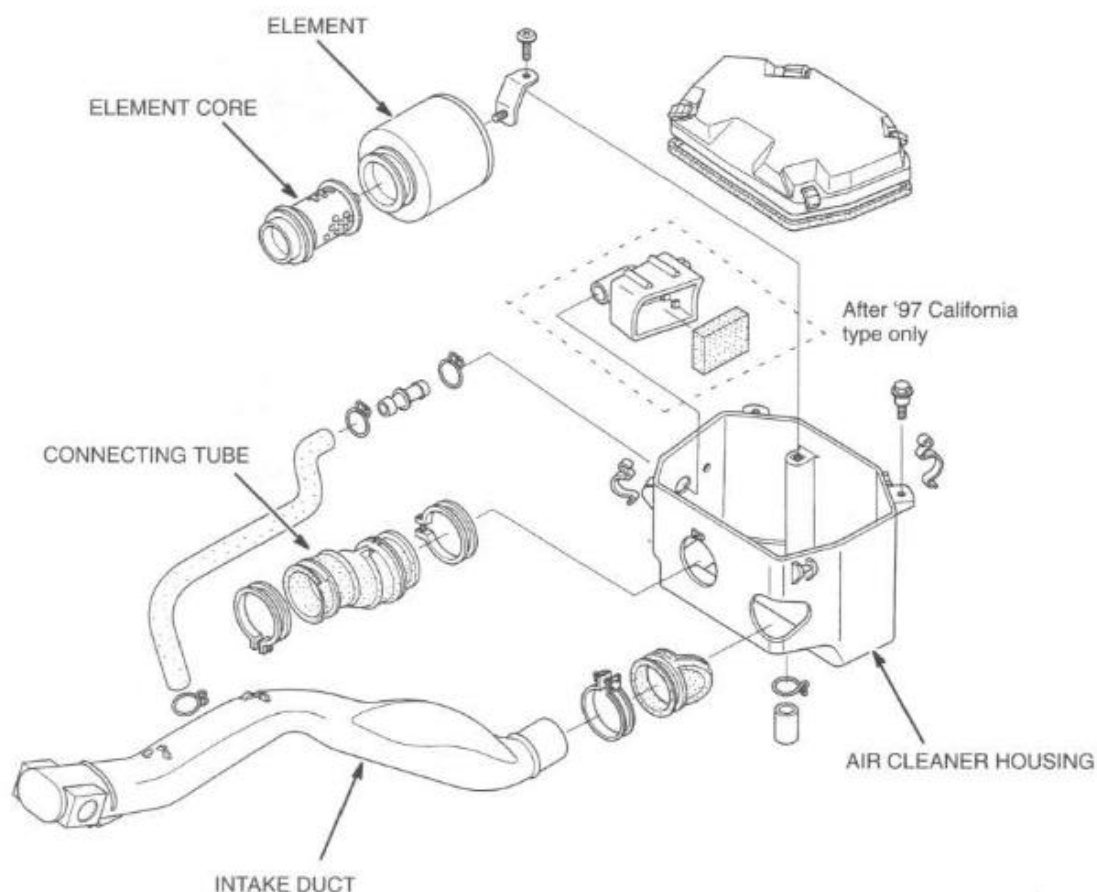
Disconnect the crankcase breather tube from the crankcase.

Remove the air cleaner housing by pulling upward to clear the frame pipes.



INSTALLATION

Install the air cleaner housing in the reverse order of removal.



CARBURETOR REMOVAL

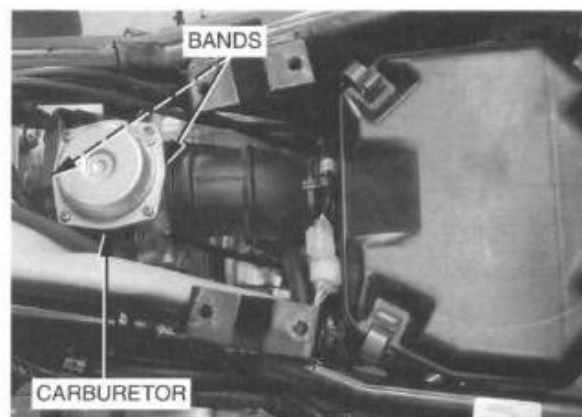
Remove the fuel tank (page 4-3).
Remove the fuel tank bracket (page 4-4).

Loosen the connecting tube and insulator bands.

Pull the carburetor upward.

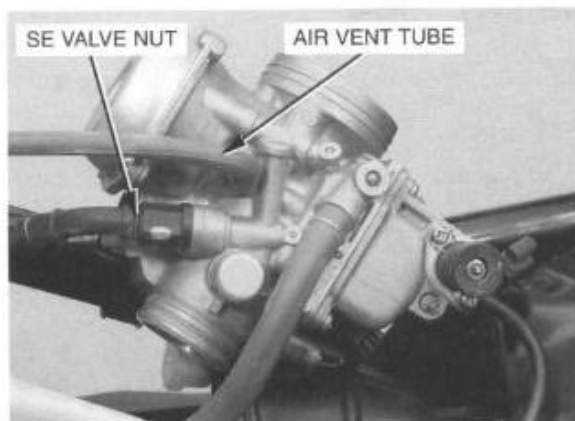
CAUTION

Do not let dirt and dust enter the engine through the intake port, or the engine may be damaged.

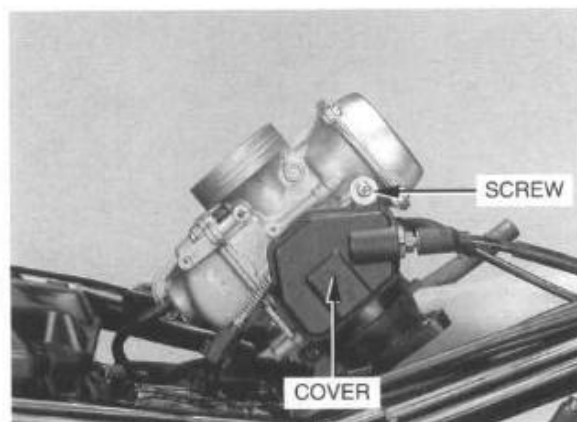


FUEL SYSTEM

Loosen the starting enrichment (SE) valve nut and remove the SE valve from the carburetor, then discount the air vent tube.



Remove the carburetor cover screw and the cover.

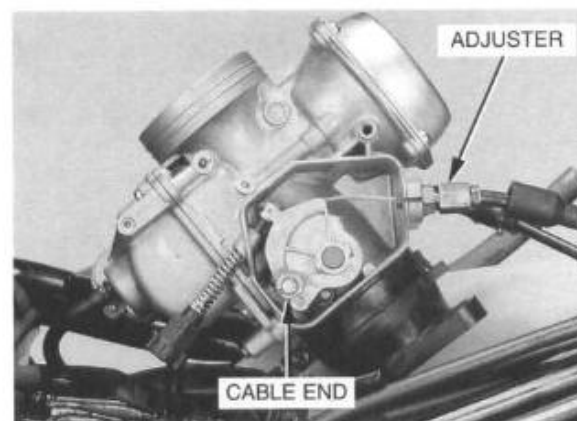


Do not kink or twist the throttle cable.

Disconnect the throttle cable end from the throttle drum.

Remove the throttle cable from the carburetor body by removing the adjuster.

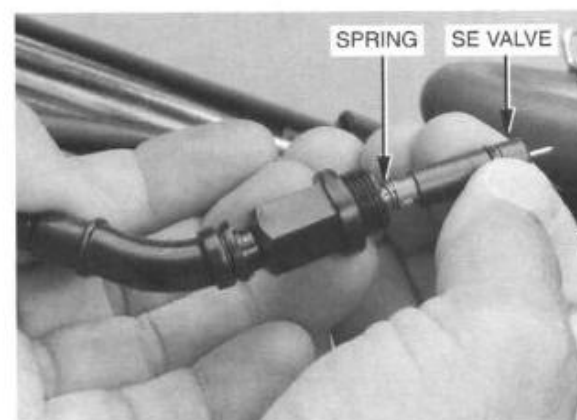
Remove the carburetor from the frame.



CARBURETOR DISASSEMBLY

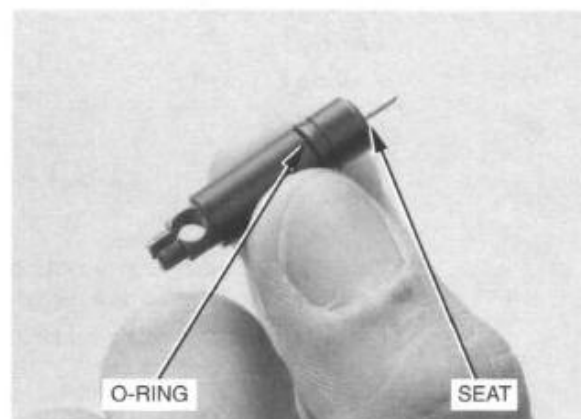
STARTING ENRICHMENT (SE) VALVE

Disconnect the choke cable end from the SE valve and remove the valve spring.



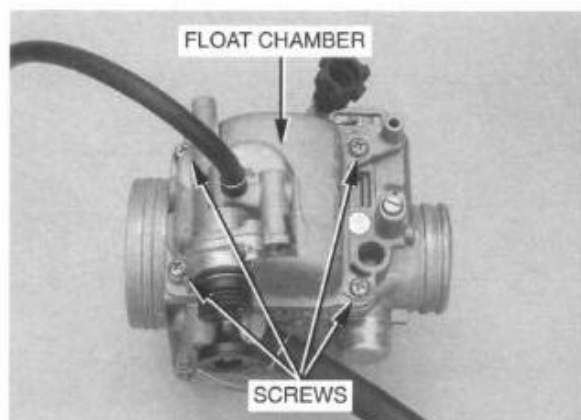
Check the SE valve for nicks, grooves or other damage.
 Check the valve seat for wear.
 Check the O-ring for wear or damage.

The SE valve and O-ring must be replaced as a set.



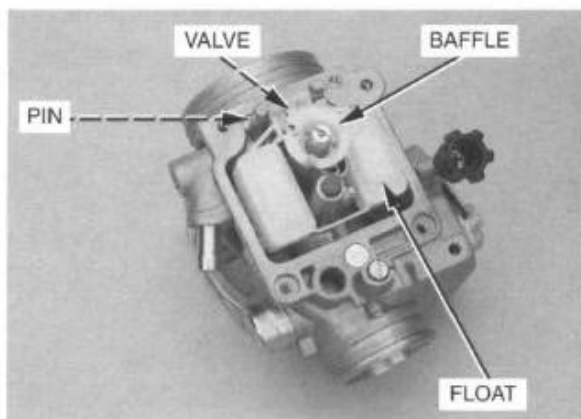
FLOAT AND JETS

Remove the four screws and the float chamber.



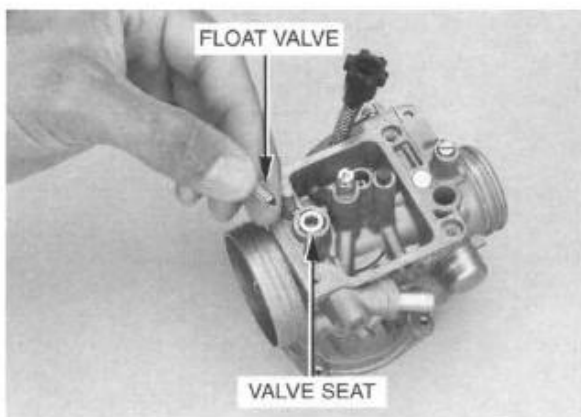
Remove the following:

- baffle
- float pin
- float
- float valve



Inspect the float valve for grooves and nicks, and replace if necessary.

Inspect the operation of the float valve.



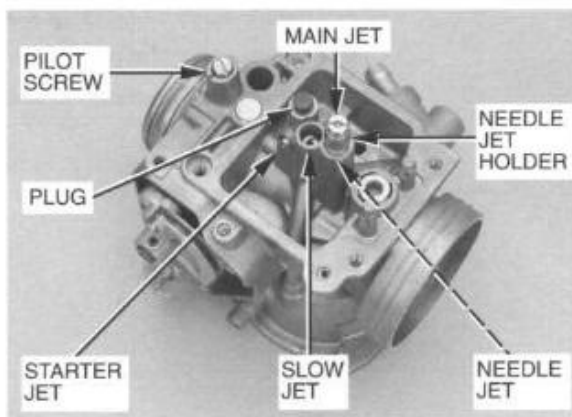
FUEL SYSTEM

Remove the following:

- main jet
- needle jet holder
- needle jet
- slow jet
- plug
- starter jet

Do not overtighten. Turn the pilot screw in and record the number of turns before it seats lightly. Use this as a reference for reinstallation.

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.



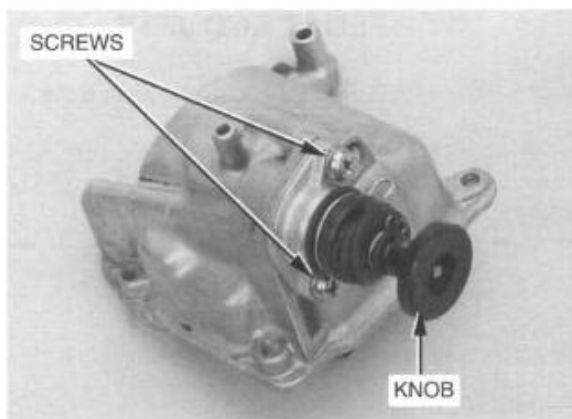
Remove the pilot screw.

Inspect the pilot screw and each jet. Replace them if they are worn or damaged.

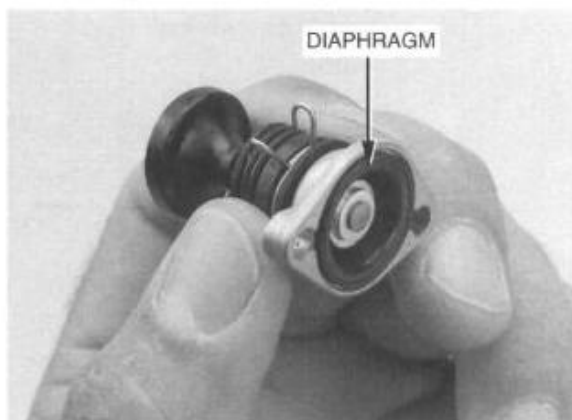
Blow open all jets with compressed air.

PRIMER KNOB

Remove the screws and the primer knob.



Check the diaphragm for tears or other damage.

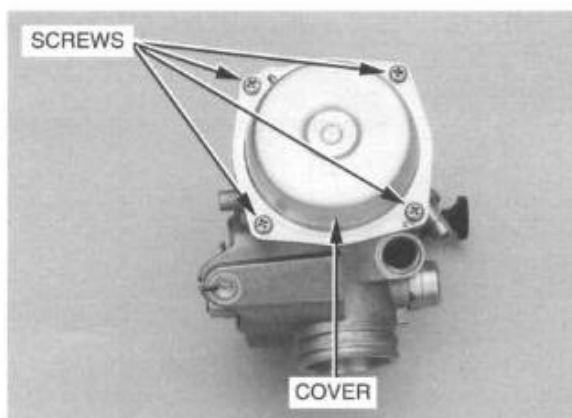


DIAPHRAGM/VACUUM PISTON

NOTE

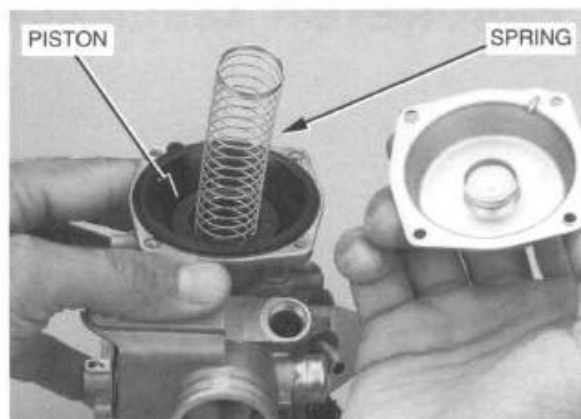
The diaphragm/vacuum piston can be removed without removing the float chamber.

Remove the vacuum chamber cover by removing the four screws.

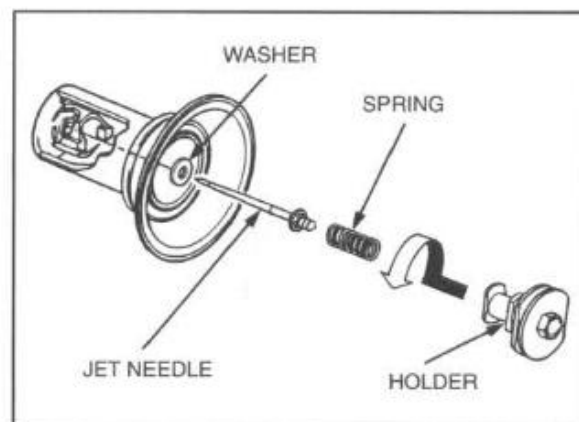


Remove the compression spring and diaphragm/vacuum piston.

Inspect the vacuum piston for wear, nicks, or other damage. Make sure the piston moves up and down freely in the chamber.

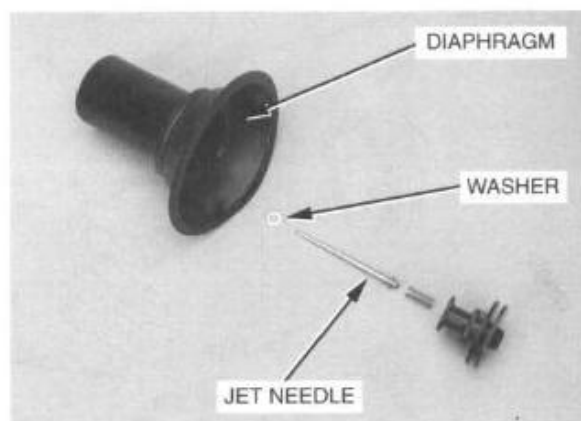


Push the jet needle holder down and turn it counterclockwise 90 degrees with an 8 mm socket. Then remove the needle holder, jet needle and washer from the diaphragm/vacuum piston.

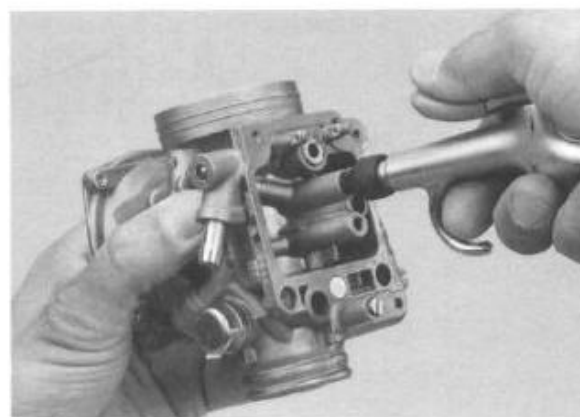


Inspect the jet needle for excessive wear at the tip or other damage.

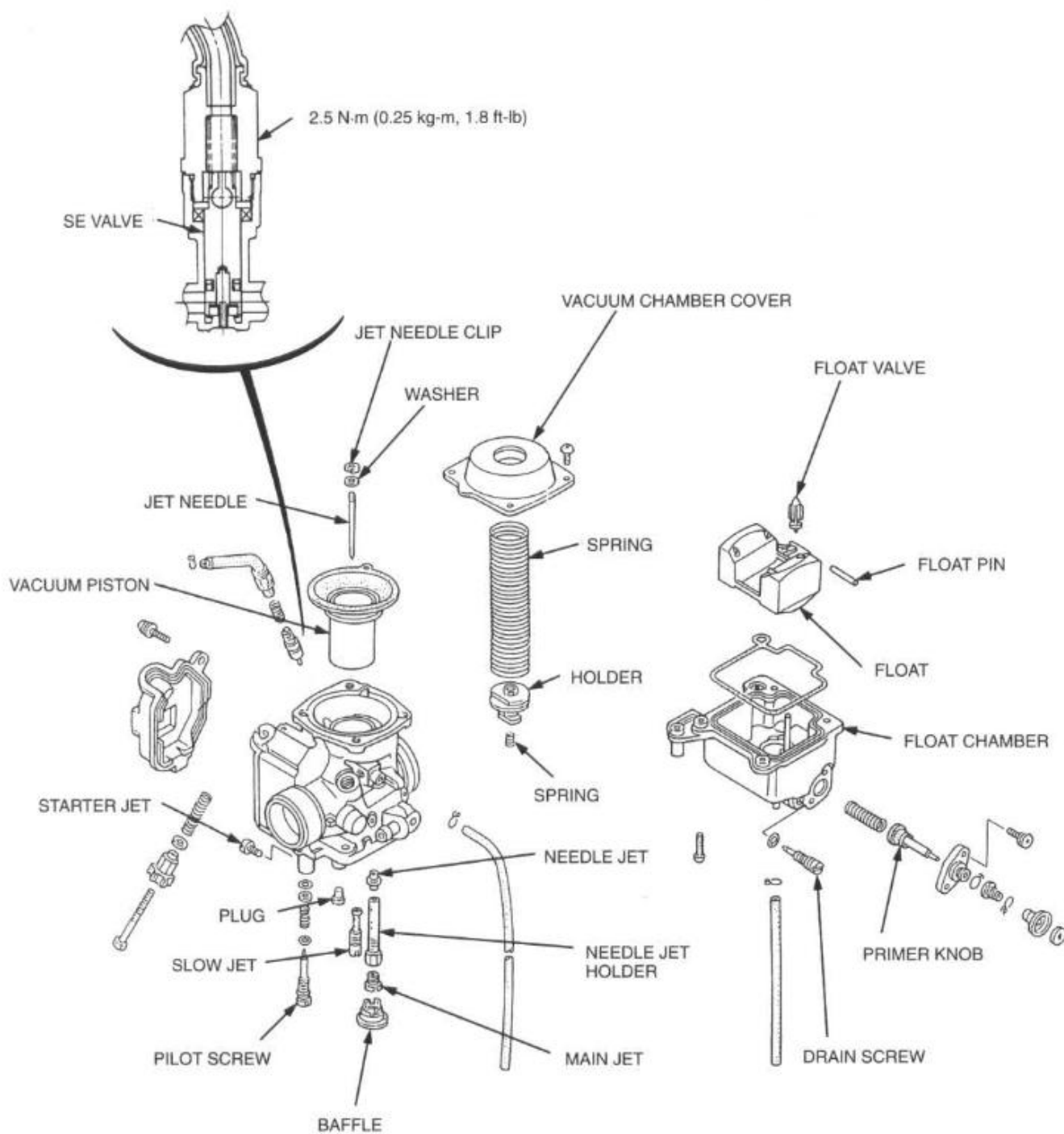
Check for a torn diaphragm or other deterioration.



Blow open all carburetor body openings with compressed air.



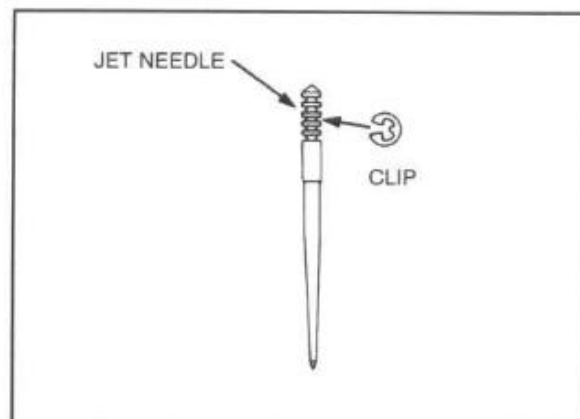
CARBURETOR ASSEMBLY



DIAPHRAGM/VACUUM PISTON

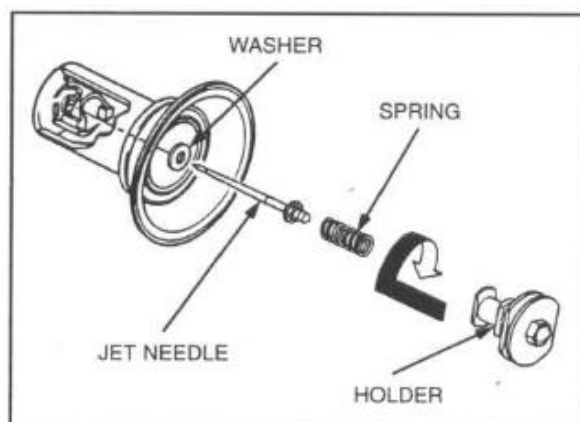
Install the needle clip on the jet needle.

STANDARD SETTING: 3rd groove from the top



Install the washer, jet needle, spring and jet needle holder to the vacuum piston.

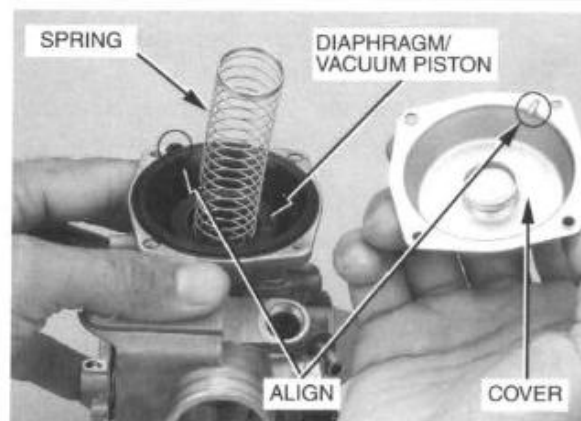
Push the jet needle holder in and turn it 90 degrees clockwise.



Install the diaphragm/piston in the vacuum chamber, aligning the diaphragm tab with the groove of the carburetor. Hold the vacuum piston up to almost full open so the diaphragm is not pinched by the chamber cover.

Do not pinch the diaphragm under the chamber cover.

Install the chamber cover with the spring, aligning its tab with the hole in the carburetor, and secure with at least two screws before releasing the vacuum piston.

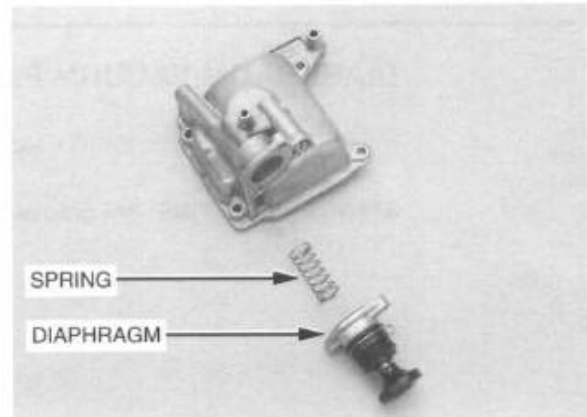


Install the remaining vacuum chamber cover screws.



PRIMER KNOB

Install the primer knob with the spring into the float chamber.
Do not pinch the diaphragm when installing the screws.
Tighten the screws securely.



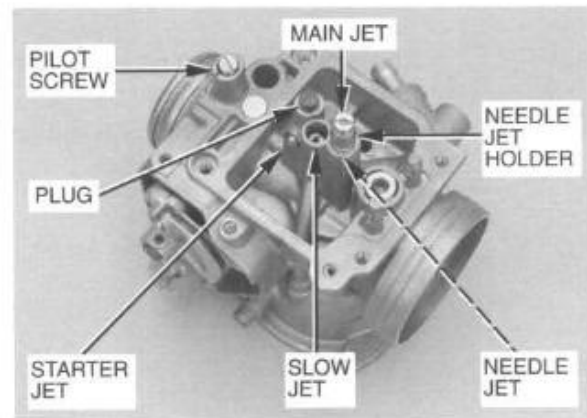
FLOAT AND JETS

Install the following:

- starter jet
- plug
- slow jet
- needle jet, needle jet holder
- main jet

NOTE

Handle all jets with care. They can easily be scored or scratched.

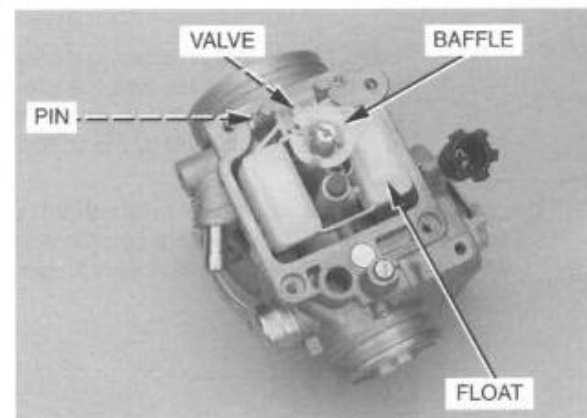


Install the pilot screw and return it to its original position as noted during removal.

Perform pilot screw adjustment if a new pilot screw is installed (page 4-15).

Install the float and float valve in the carburetor body, then install the float arm pin through the body and float.

Install the baffle.



FLOAT LEVEL INSPECTION

With the float valve seated and the float arm just touching the valve, measure the float level with the float level gauge as shown.

SPECIFICATION: 18.5 mm (0.73 in)

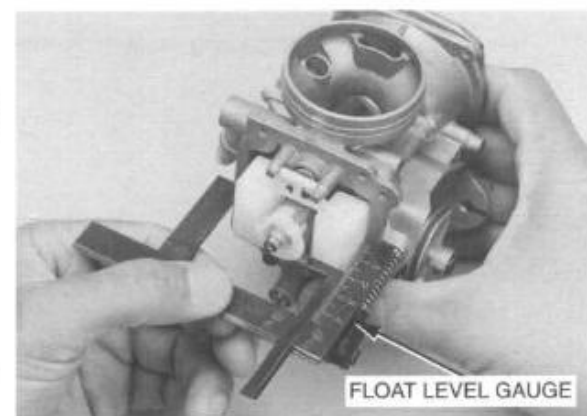
TOOL:

Float level gauge

07401-0010000

The float cannot be adjusted.

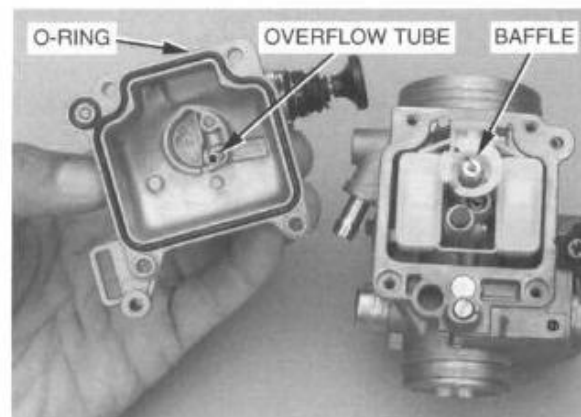
Replace the float assembly if the float level is out of specification.



Install a new O-ring in the float chamber.

Install the float chamber, aligning the overflow tube with the hole in the baffle as shown.

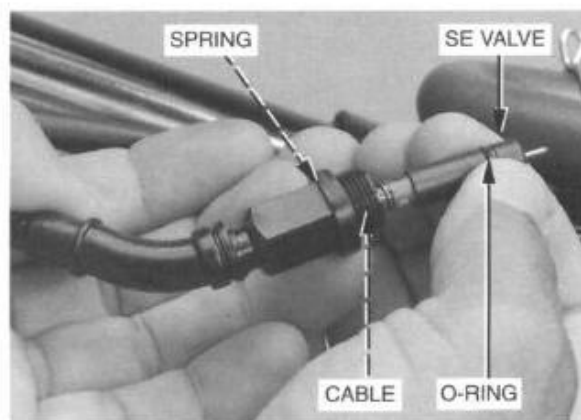
Install the four float chamber screws.



STARTING ENRICHMENT (SE) VALVE

Install the spring over the choke cable and connect the cable end to the SE valve.

Move the choke lever all the way to the right and left and make sure that the SE valve operates properly.

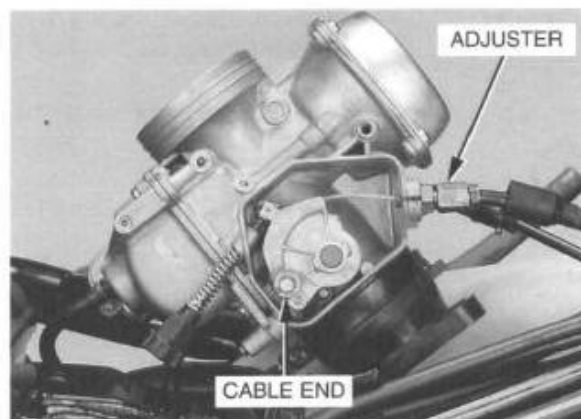


CARBURETOR INSTALLATION

Do not kink or twist the throttle cable.

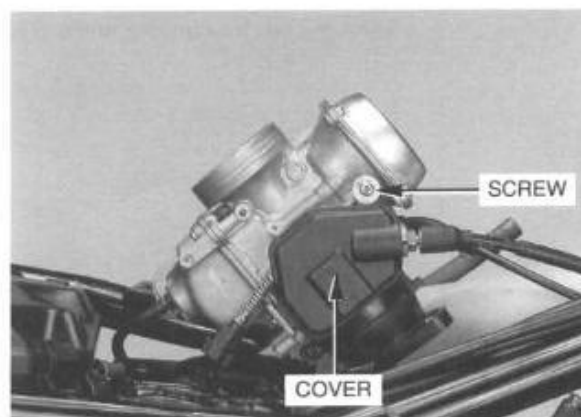
Install the throttle cable adjuster to the carburetor body. Connect the throttle cable end to the throttle drum.

Apply grease to the throttle cable end.



Install the carburetor cover. Tighten the screw.

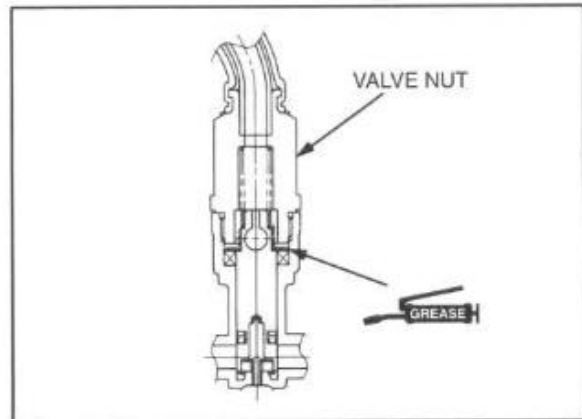
TORQUE: 3.5 N·m (0.35 kg-m, 2.5 ft-lb)



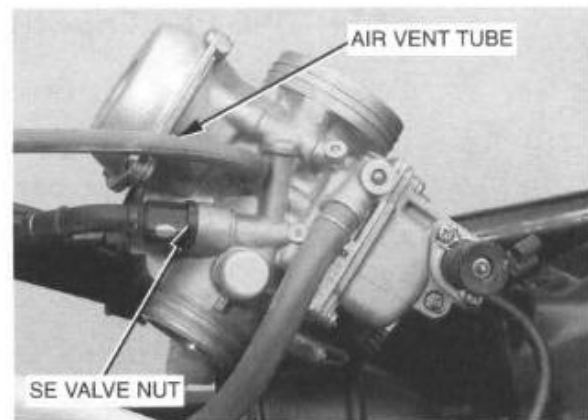
FUEL SYSTEM

Apply multipurpose grease to the SE valve end as shown. Install the SE valve and tighten the valve nut.

TORQUE: 2.5 N·m (0.25 kg-m, 1.8 ft-lb)



Connect the air vent tube to the carburetor.



Install the carburetor by aligning its intake pipe boss with the insulator groove.

Set the pin of the insulator band in the groove of the insulator and install the band.

Tighten the insulator band screw to the specified torque.

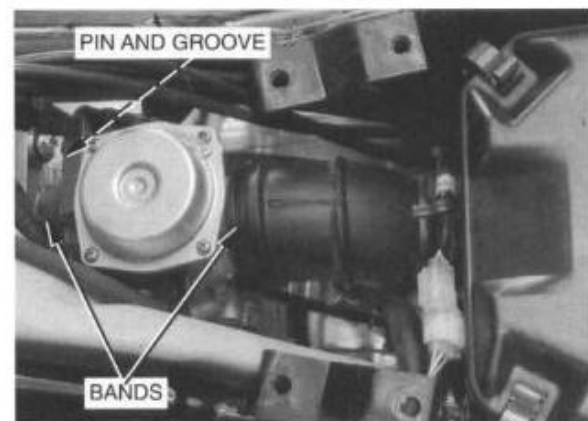
TORQUE: 4 N·m (0.4 kg-m, 2.9 ft-lb)

Install the carburetor connecting tube and tighten the tube band.

Route the drain tube correctly (page 1-15).

Adjust the throttle lever free play (page 3-7).

Install the fuel tank bracket and fuel tank (page 4-3).



PILOT SCREW ADJUSTMENT

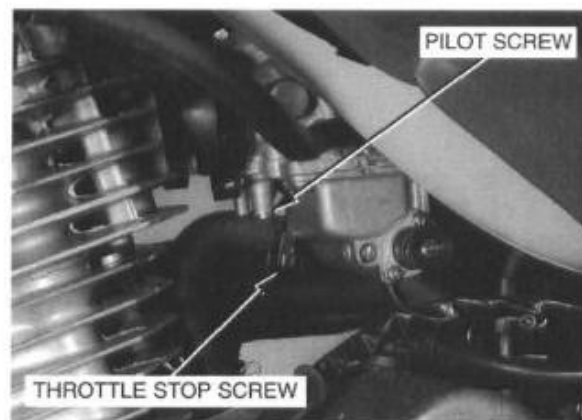
▲ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

'95 – '97:

NOTE

The pilot screw is factory pre-set. Adjustment is not necessary unless the carburetor is overhauled or a new pilot screw is installed.



Do not overtighten. Turn the pilot screw clockwise until it seats lightly and back it out 2–1/4 turns.

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

This is an initial setting prior to the final pilot screw adjustment.

Warm the engine up to operating temperature.

Stop the engine and connect a tachometer according to the tachometer manufacturer's instructions.

Start the engine and adjust the idle speed with the throttle stop screw.

IDLE SPEED: 1,400 ± 100 rpm

Turn the pilot screw clockwise until you hear the engine miss or decrease in speed, then turn counterclockwise until the engine again misses or decreases in speed.

Center the pilot screw exactly between these two extreme positions.

If idle speed changes after adjusting the pilot screw, readjust the throttle stop screw.

After '97:

NOTE

- The pilot screw is factory pre-set. Adjustment is not necessary unless the carburetor is overhauled or a new pilot screw is installed.
- Use a tachometer with graduations of 50 rpm or smaller that will accurately indicate a 50 rpm change.

1. Turn the pilot screw clockwise until it seats lightly. Then back it out to the specification given. This is an initial setting prior to the final pilot screw adjustment.

CAUTION

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

INITIAL OPENING:

Except California type: 2-1/4 turns out
California type: 2-1/2 turns out

2. Warm up the engine to sufficient operating temperature. Stop and go riding for 10 minutes is sufficient.
3. Stop the engine and connect a tachometer according to the tachometer manufacturer's instructions.
4. Start the engine and adjust the idle speed with the throttle stop screw.

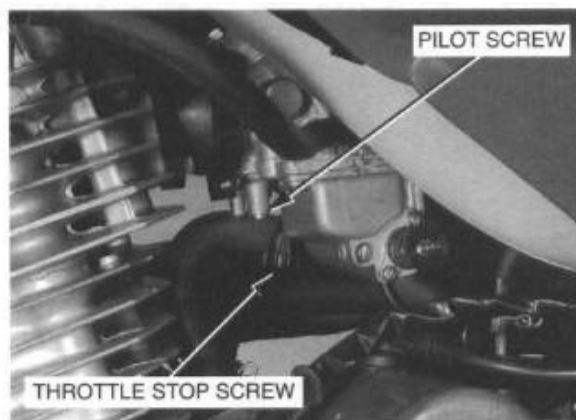
IDLE SPEED: 1,400 \pm 100 RPM

5. Turn the pilot screw in or out slowly to obtain the highest engine speed.
6. Readjust the idle speed with the throttle stop screw.
7. Turn the pilot screw in gradually until the engine speed drops 100 rpm.
8. Turn the pilot screw counterclockwise to the final opening.

FINAL OPENING:

Except California type: 3/4 turn out
California type: 3/4 turn out

9. Readjust the idle speed with the throttle stop screw.



HIGH ALTITUDE ADJUSTMENT

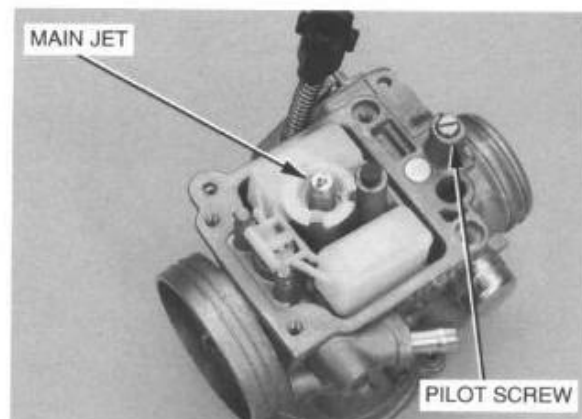
SPECIFICATIONS

	Below 5,000 ft (1,500 m)	Between 3,000–8,000 ft (1,000–2,500 m)
Main jet	#125	#120
Pilot screw opening	Factory preset	3/4 turn in

The carburetor must be adjusted for high altitude riding (between 3,000–8,000 ft/1,000–2,500 m).

STANDARD SETTING: Below 5,000 ft (1,500 m)

HIGH ALTITUDE SETTING: Between 3,000–8,000 ft
(1,000–2,500 m)



The high altitude carburetor adjustment is performed as follows:

Remove the carburetor (page 4-5) and float chamber.

Replace the standard main jet with the high altitude type.

High Altitude Main Jet: #120

Assemble and install the carburetor.

Turn-in the pilot screw the specified number of turns from the initial setting.

High Altitude Pilot Screw Setting: 3/4 turn in

Start the engine and adjust the idle speed at high altitude to ensure proper high altitude operation.

▲ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

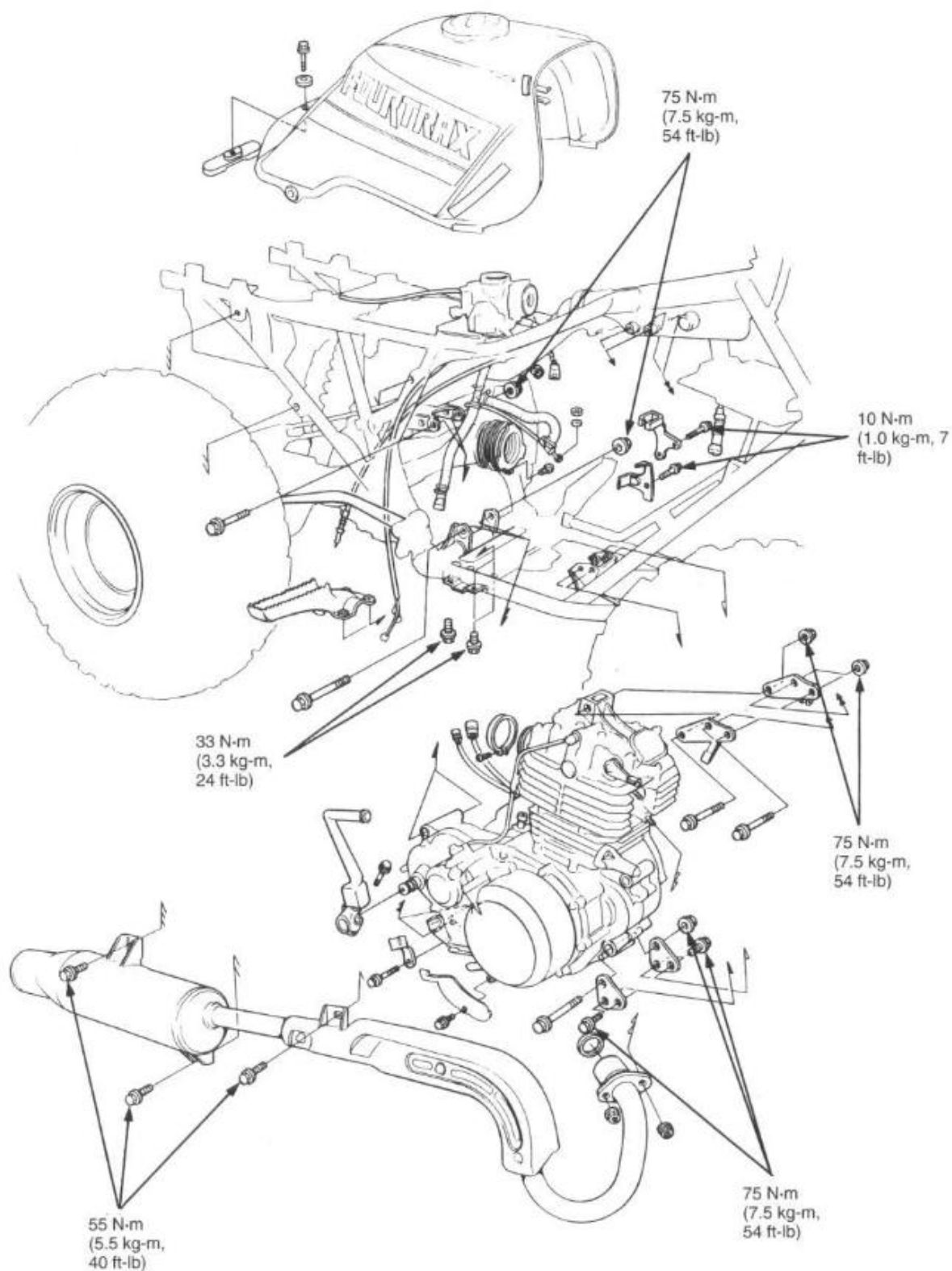
CAUTION

Sustained operation below 5,000 feet (1,500 m) with the high altitude settings may cause engine overheating and engine damage. Install the standard main jet and screw out the pilot screw the specified number of turns, when riding below 5,000 feet (1,500 m).

Standard Main Jet: #125

Pilot Screw Change

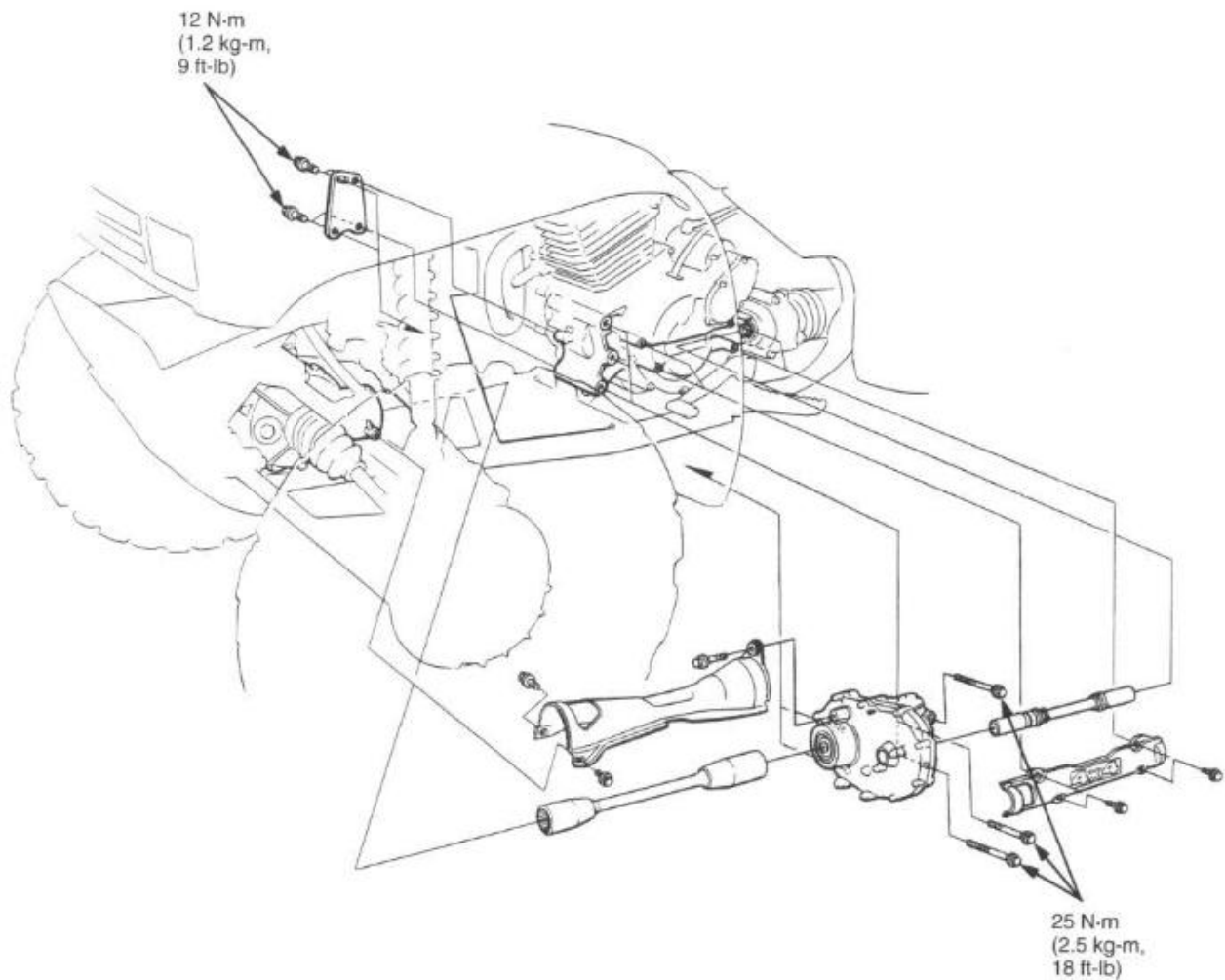
From High To Low Altitude: 3/4 turn out



5. ENGINE REMOVAL/INSTALLATION

TRX300FW

5



SERVICE INFORMATION

5-2

ENGINE INSTALLATION

5-4

ENGINE REMOVAL

5-3

SERVICE INFORMATION

GENERAL

The following parts or components require engine removal for servicing:

Crankshaft/balancer

Section 10

Transmission

Section 10

Output gear

Section 10

SPECIFICATIONS

Engine oil capacity

2.5 lit (2.6 US qt, 2.2 Imp qt) at disassembly

2.2 lit (2.3 US qt, 1.9 Imp qt) after draining

Front gear case oil capacity (TRX300FW)

190 cc (6.4 oz) after draining

TORQUE VALUES

Engine bracket bolt (front)

55 N·m (5.5 kg-m, 40 ft-lb)

Engine bracket nut (upper)

55 N·m (5.5 kg-m, 40 ft-lb)

Engine mounting nut (front and upper)

55 N·m (5.5 kg-m, 40 ft-lb)

Engine mounting nut (rear/upper and rear/lower)

75 N·m (7.5 kg-m, 54 ft-lb)

Crankcase bolt

10 N·m (1.0 kg-m, 7 ft-lb)

Gearshift pedal bolt

16 N·m (1.6 kg-m, 12 ft-lb)

Foot peg bolt

33 N·m (3.3 kg-m, 24 ft-lb)

Exhaust muffler mounting bolt

55 N·m (5.5 kg-m, 40 ft-lb)

TRX300FW:

Front gear case mounting bolt (8 mm)

25 N·m (2.5 kg-m, 18 ft-lb)

(6 mm)

12 N·m (1.2 kg-m, 9 ft-lb)

ENGINE REMOVAL

Drain the engine oil (page 2-3).

TRX300FW: Drain the front gear case oil (page 2-5).

Disconnect the battery negative cable from the engine (under the starter mounting bolt).

Remove the following:

- fuel tank (page 4-3)
- exhaust muffler (page 16-7)
- right foot peg
- neutral/reverse switch cover and connectors
- reverse cable
- brake pedal (page 12-29)

TRX300FW: Remove the following:

- front drive side shaft cover and shaft (page 14-25)
- front gear case (page 14-25)

Remove the following:

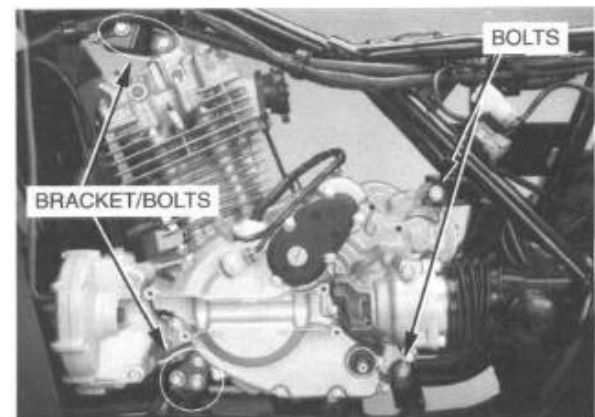
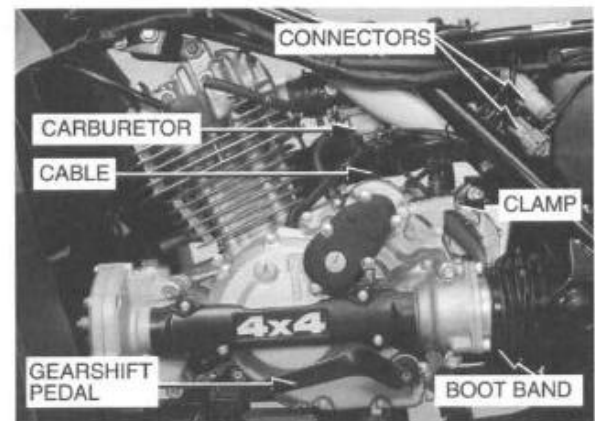
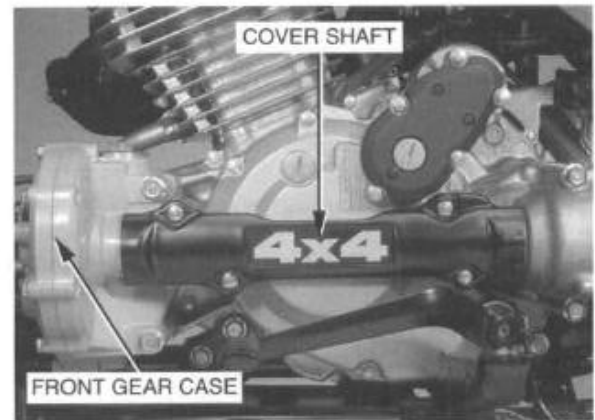
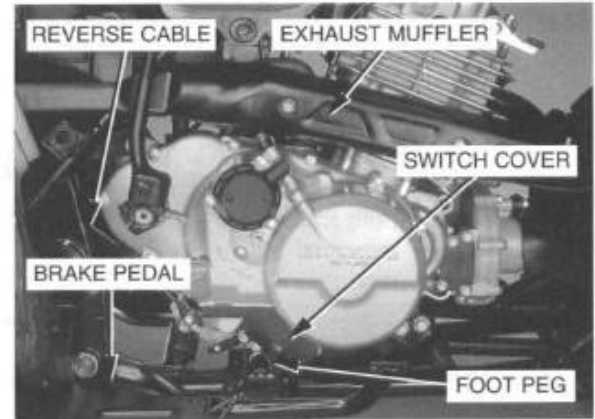
- carburetor (The throttle and choke cables do not have to be removed.)
- gearshift pedal
- spark plug wire
- swing arm boot band (loosen)
- breather tube clamps
- crankcase breather tube
- starter motor cable
- alternator and ignition pulse generator connectors

Support the engine.

Remove the following:

- engine mounting bolts (front and upper)
- engine bracket bolts and brackets (front and upper)
- engine mounting bolts (rear/upper and rear/lower)

Remove the engine from the right side while disconnecting the drive shaft universal joint from the engine.



ENGINE INSTALLATION

Apply molybdenum disulfide grease to the drive shaft splines.

Install the engine from the right side while connecting the drive shaft universal joint into the output shaft.

Support the engine at the position shown.

Install the following:

- engine brackets and engine bracket bolts (upper: from the left side)
- engine mounting bolts from the left side

Tighten all bolts to the specified torques.

TORQUE:

Engine bracket bolt (front):

75 N·m (7.5 kg-m, 54 ft-lb)

Engine bracket nut (upper):

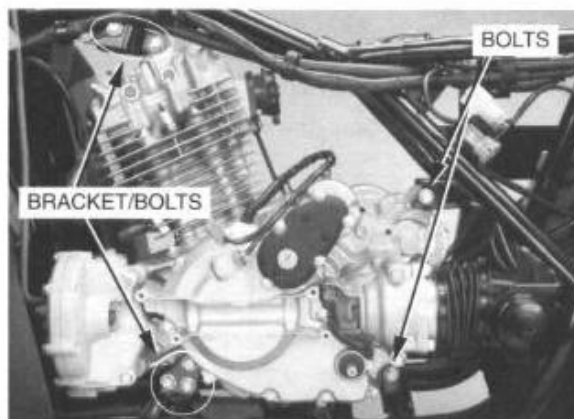
75 N·m (7.5 kg-m, 54 ft-lb)

Engine mounting nut (front and upper):

75 N·m (7.5 kg-m, 54 ft-lb)

Engine mounting nut (rear/upper and rear/lower):

75 N·m (7.5 kg-m, 54 ft-lb)

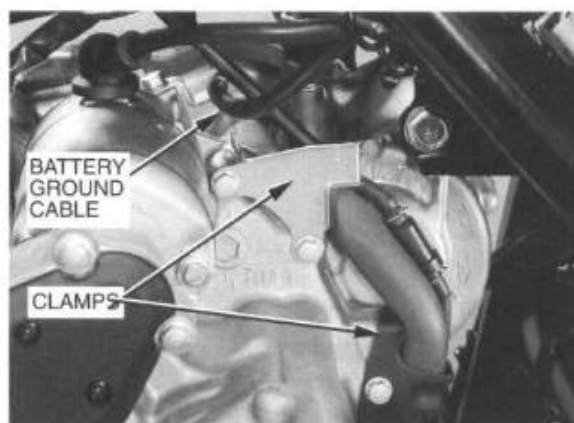


Install the following:

- breather tube clamps, and tighten

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)

- battery ground cable

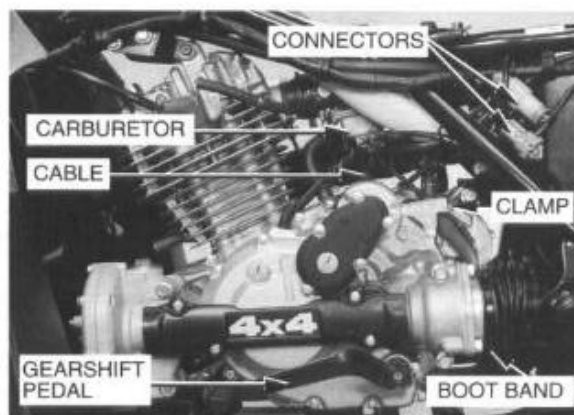


Install the following:

- carburetor (page 4-13)
- swing arm boot band
- gearshift pedal, and tighten

TORQUE: 16 N·m (1.6 kg-m, 12 ft-lb)

- spark plug wire
- crankcase breather tube
- starter motor cable
- alternator and ignition pulse generator connectors



- brake pedal (page 12-30)
- right foot peg, and tighten

TORQUE: 33 N·m (3.3 kg-m, 24 ft-lb)

- neutral/reverse switch cover and connectors
- reverse cable
- exhaust muffler (page 16-7), and tighten

TORQUE: Exhaust muffler mounting bolt
55 N·m (5.5 kg-m, 40 ft-lb)

- fuel tank (page 4-3)

- TRX300FW:**
- front gear case (page 14-25)
 - front drive side shaft and cover (page 14-25)

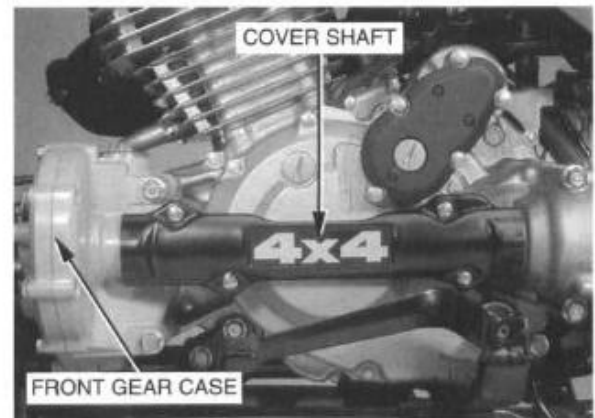
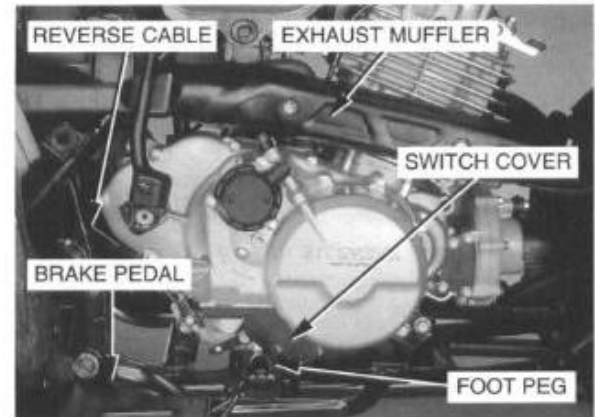
After installation:

- Route the wires and cables properly (page 1-12).
- Fill the crankcase to the proper level with the recommended oil (page 2-2).

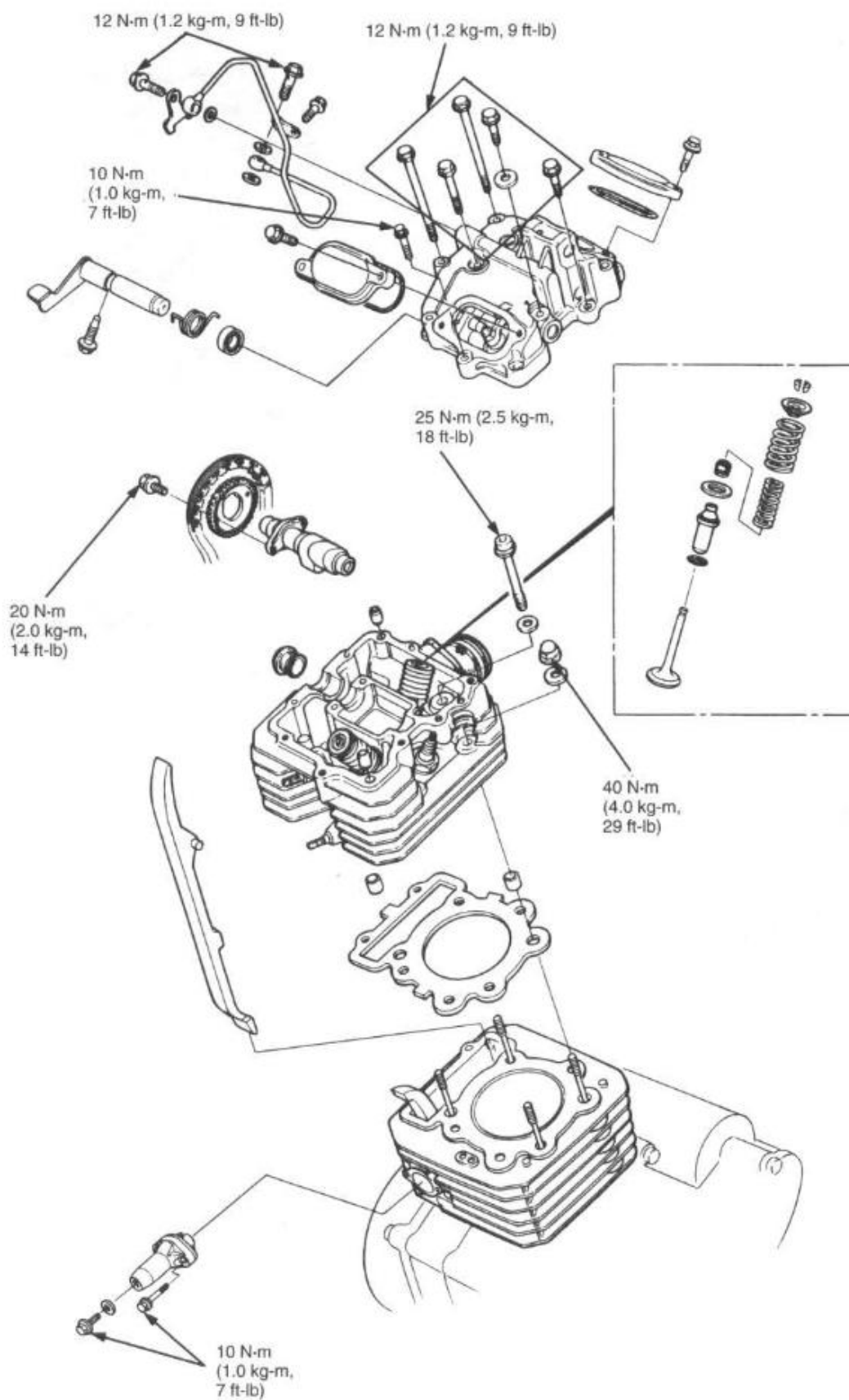
- TRX300FW:**
- Fill the front gear case to the proper level with the recommended oil (page 2-5).
 - Perform the following inspections and adjustments:
 - throttle operation (page 3-7)
 - reverse selector cable (page 3-12)

▲ WARNING

Connect the neutral and reverse switch wires properly. If these wire connections are interchanged, the neutral indicator will come on with the transmission in reverse and the vehicle will reverse unexpectedly.



CYLINDER HEAD/VALVES



6. CYLINDER HEAD/VALVES

SERVICE INFORMATION	6-1	VALVE SEAT INSPECTION/REFACING	6-10
TROUBLESHOOTING	6-2	CYLINDER HEAD ASSEMBLY	6-13
CYLINDER HEAD COVER REMOVAL	6-3	CYLINDER HEAD INSTALLATION	6-14
CAMSHAFT/CAM CHAIN TENSIONER LIFTER REMOVAL	6-5	CAMSHAFT/CAM CHAIN TENSIONER LIFTER INSTALLATION	6-14
CYLINDER HEAD REMOVAL	6-6	CYLINDER HEAD COVER ASSEMBLY/INSTALLATION	6-17
VALVE GUIDE REPLACEMENT	6-9		

SERVICE INFORMATION

GENERAL

- This section covers cylinder head, valves, camshaft, rocker arm and cam chain tensioner lifter service. These services can be performed with the engine installed in the frame.
- Camshaft lubrication oil is fed to the cylinder head through an oil path pipe. Be sure this pipe is not clogged before installation.
- Before assembly, apply molybdenum disulfide grease to the camshaft journal bearings and rocker arm shafts to provide initial lubrication.
- Pour clean engine oil into the oil pockets in the cylinder head during assembly to lubricate the camshaft lobes.

SPECIFICATIONS

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			1,250–1,450 kPa (12.5–14.5 kg/cm ² , 178–206 psi)	—
Camshaft	Cam lobe height	IN	35.309–35.469 (1.3901–1.3964)	35.193 (1.3834)
		EX	35.176–35.336 (1.3849–1.3912)	35.006 (1.3782)
	Journal O.D.	R	23.954–23.975 (0.9431–0.9439)	23.90 (0.941)
		C	23.934–23.955 (0.9423–0.9431)	23.88 (0.940)
		L	19.954–19.975 (0.7856–0.7864)	19.90 (0.783)
	Bearing I.D.	R	24.000–24.021 (0.9449–0.9457)	24.05 (0.947)
		C	24.000–24.021 (0.9449–0.9457)	24.05 (0.947)
		L	20.000–20.021 (0.7874–0.7882)	20.05 (0.789)
	Oil clearance	R	0.025–0.067 (0.0010–0.0026)	0.10 (0.004)
		C	0.045–0.087 (0.0018–0.0034)	0.12 (0.005)
		L	0.025–0.067 (0.0010–0.0026)	0.10 (0.004)
Cylinder head warpage			—	0.10 (0.004)
Rocker arm	I.D.		12.000–12.018 (0.4724–0.4731)	12.05 (0.474)
	Shaft O.D.		11.966–11.984 (0.4711–0.4718)	11.92 (0.469)
	Arm-to-shaft clearance		0.016–0.052 (0.0006–0.0020)	0.08 (0.003)
Valve spring	Free length	Inner	38.31 (1.508)	35.3 (1.39)
		Outer	46.83 (1.844)	43.8 (1.72)
	Preload	Inner	8.72 ± 0.8 kg/31.6 mm (19.224 ± 1.76 lb/1.24 in)	—
		Outer	19.59 ± 1.5 kg/35.1 mm (43.188 ± 3.31 lb/1.38 in)	—

CYLINDER HEAD/VALVES

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Valve, valve guide	Stem O.D.	IN	5.475–5.490 (0.2156–0.2161)	5.45 (0.215)
		EX	5.455–5.470 (0.2148–0.2154)	5.43 (0.214)
	Guide I.D.	IN	5.500–5.512 (0.2165–0.2170)	5.525 (0.2177)
		EX	5.500–5.512 (0.2165–0.2170)	5.525 (0.2177)
	Stem-to-guide clearance	IN	0.010–0.037 (0.0004–0.0015)	0.12 (0.005)
		EX	0.030–0.057 (0.0012–0.0022)	0.14 (0.006)
Valve seat width			1.2 (0.05)	1.5 (0.06)

TORQUE VALUES

Cylinder head cover (6 mm SH bolt)	10 N·m (1.0 kg-m, 7 ft-lb)
(6 mm flange bolt)	12 N·m (1.2 kg-m, 9 ft-lb)
Cylinder head (cap nut)	40 N·m (4.0 kg-m, 29 ft-lb)
(socket bolt)	25 N·m (2.5 kg-m, 18 ft-lb)
Cam sprocket bolt	20 N·m (2.0 kg-m, 14 ft-lb)
Cam chain tensioner lifter (mounting bolt)	10 N·m (1.0 kg-m, 7 ft-lb)
(sealing bolt)	10 N·m (1.0 kg-m, 7 ft-lb)
Oil path pipe bolt	12 N·m (1.2 kg-m, 9 ft-lb)
Carburetor insulator band screw	4 N·m (0.4 kg-m, 2.9 ft-lb)

TOOLS

Special

Pin puller	07936-MA70100
Remover weight	07936-3710200
Valve guide reamer, 5.5 mm	07984-2000001 or 07984-200000D

Common

Valve guide driver, 5.5 mm	07742-0010100
Valve spring compressor	07757-0010000
Valve seat cutters—these are commercially available in U.S.A.	

TROUBLESHOOTING

Engine top-end problems usually affect engine performance. These problems can be diagnosed by a compression test or by tracing engine noises to the top-end with a sounding rod stethoscope.

Low compression

- Valves:
 - Incorrect valve adjustment
 - Burned or bent valve
 - Incorrect valve timing
 - Weak valve spring
- Cylinder head:
 - Leaking or damaged head gasket
 - Warped or cracked cylinder head
- Cylinder and piston (Section 7)

High compression

- Excessive carbon build-up on piston crown or on combustion chamber

Excessive noise

- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Damaged or worn rocker arm or camshaft
- Worn or damaged cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth

Poor idling

- Compression too low

CYLINDER HEAD COVER REMOVAL

Remove the following:

- fuel tank (page 4-3)
- oil path pipe (page 8-3)
- upper engine brackets (page 5-3)

Remove the intake and exhaust valve adjusting hole covers.

Remove the timing hole cap.

TRX300: Remove the crankshaft hole cap.

TRX300FW: Remove the reduction shaft cap.

TRX300: Rotate the crankshaft clockwise.

TRX300FW: Rotate the starter reduction shaft counterclockwise, using a 6mm hex wrench.

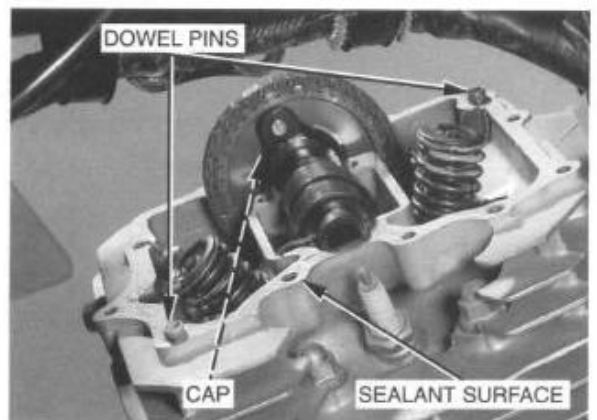
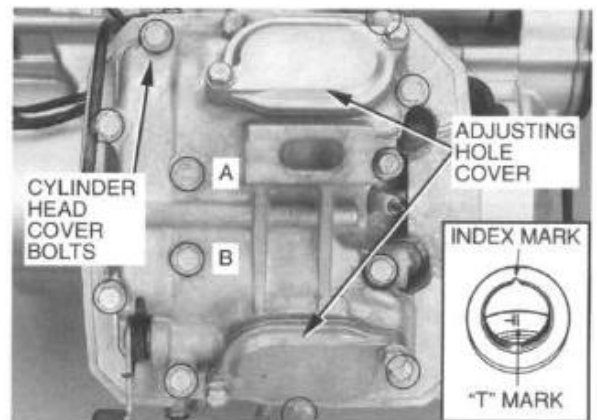
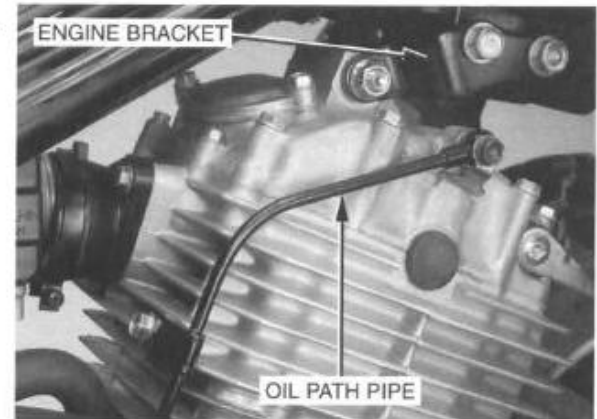
Align the "T" mark on the rotor with the index mark. Make sure the piston is at TDC on the compression stroke. If not, rotate the crankshaft 360° (1 full turn) and align the "T" mark again.

Leave bolts A and B with the cylinder head cover as you remove it.

Loosen the cylinder head cover bolts in 2 or 3 steps in a crisscross pattern and remove the cylinder head cover.

Remove the dowel pins and the camshaft side cap.

Clean off any sealant material from the head cover and cylinder head.



DISASSEMBLY

Groove each rocker arm shaft dowel pin with a grinder and remove the dowel pins with the special tools.

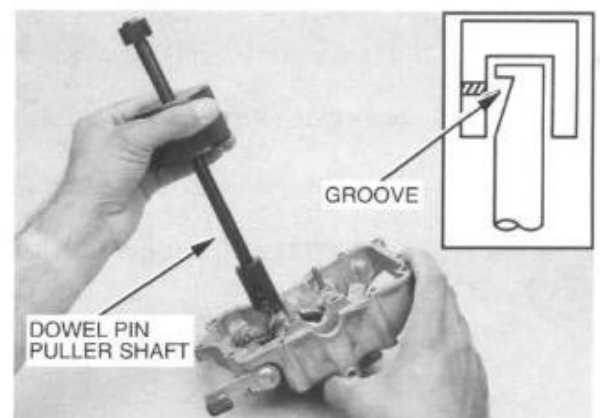
TOOLS:

Pin puller

Remover weight

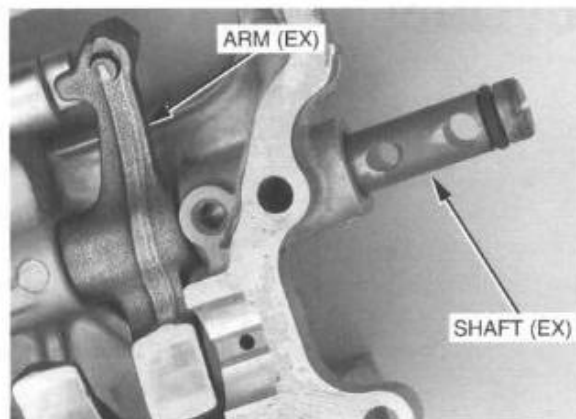
07936-MA70100

07936-3710200

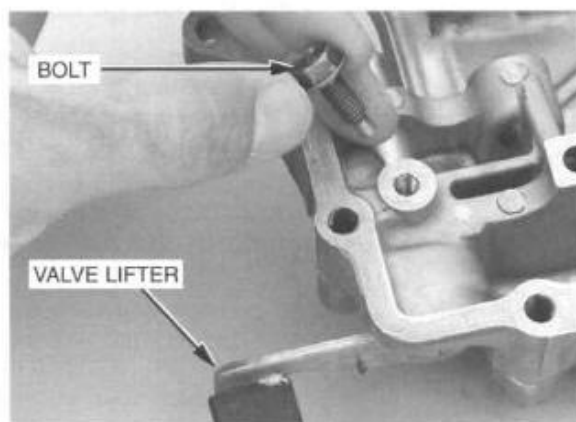


CYLINDER HEAD/VALVES

Remove the rocker arm shafts and rocker arms (IN/EX) from the cylinder head cover.



Remove the bolt and valve lifter.



INSPECTION

Inspect the rocker arm slipper surfaces for excessive wear. Check the O-rings of the rocker arm shafts for damage or fatigue.

Inspect the rocker arms and shafts for wear or damage.

If the rocker arms require servicing or replacement, inspect the cam lobes for scoring, chipping or flat spots.

Measure the I.D. of each rocker arm.

SERVICE LIMIT: 12.05 mm (0.474 in)

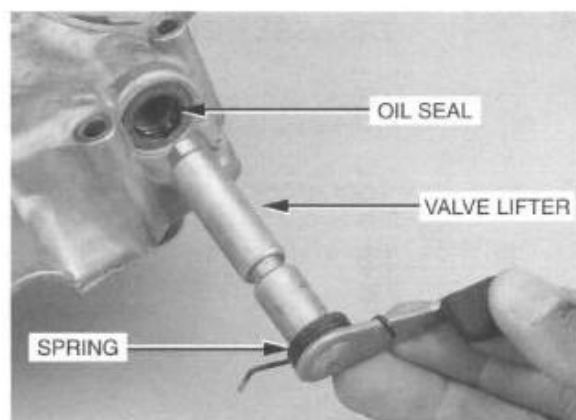
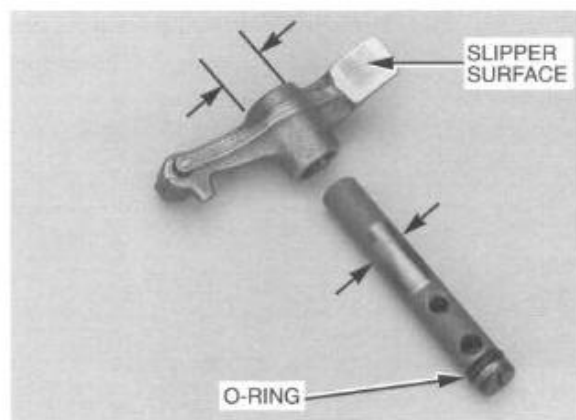
Measure the O.D. of each rocker arm shaft.

SERVICE LIMIT: 11.92 mm (0.469 in)

Calculate the rocker arm-to-shaft clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)

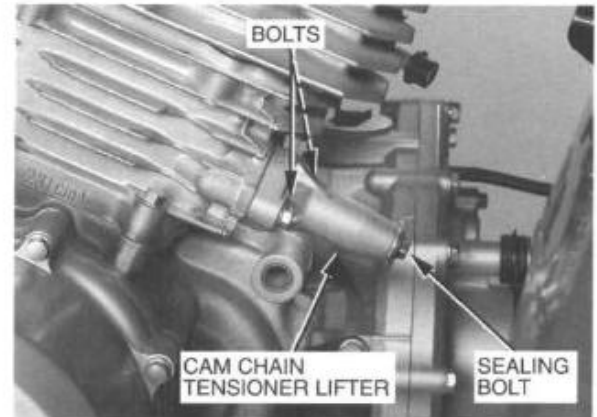
Inspect the valve lifter, spring and oil seal for wear or damage.



CAMSHAFT/CAM CHAIN TENSIONER LIFTER REMOVAL

REMOVAL

Temporarily loosen the sealing bolt to ease removal. Remove the cam chain tensioner lifter by removing the two mounting bolts.



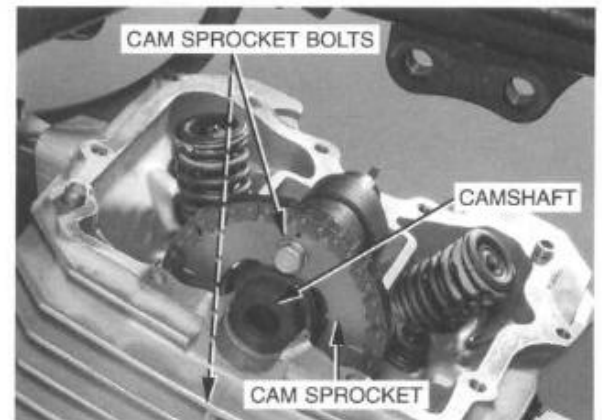
Do not let the bolts fall into the crankcase. Remove one cam sprocket bolt.

TRX300: Turn the crankshaft clockwise.

TRX300FW: Turn the starter reduction shaft counterclockwise.

Remove the other cam sprocket bolt.

Remove the camshaft and cam sprocket, and suspend the cam chain with a piece of wire to prevent it from falling into the crankcase.



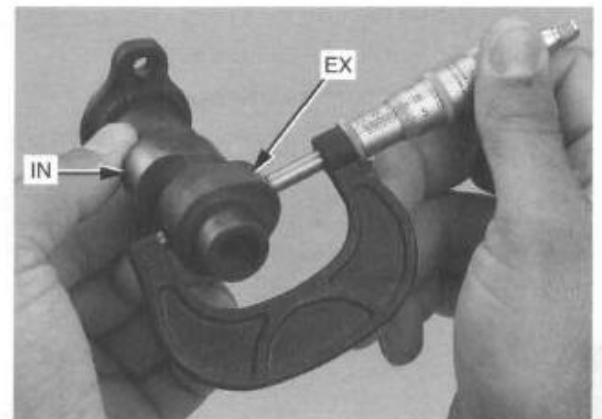
INSPECTION

Using a micrometer, measure the height of each cam lobe and inspect it for wear or damage.

SERVICE LIMITS:

IN: 35.139 mm (1.3834 in)

EX: 35.006 mm (1.3782 in)



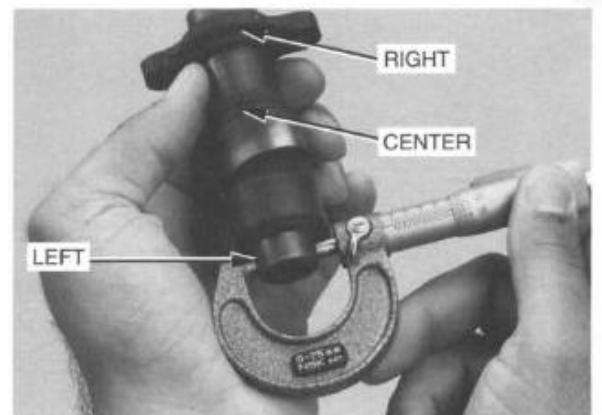
Measure the camshaft journal O.D.

SERVICE LIMITS:

Left: 19.90 mm (0.783 in)

Right: 23.90 mm (0.941 in)

Center: 23.88 mm (0.940 in)



CYLINDER HEAD/VALVES

Install the cylinder head cover and tighten the head cover bolts in 2 or 3 steps in a crisscross pattern.

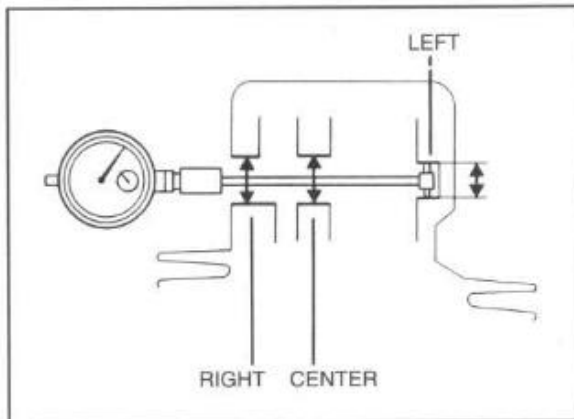
TORQUES:

6 mm SH bolt: 10 N·m (1.0 kg-m, 7 ft-lb)
6 mm flange bolt: 12 N·m (1.2 kg-m, 9 ft-lb)

Measure the camshaft journal bearing I.D. as shown.

SERVICE LIMITS:

Left: 20.05 mm (0.789 in)
Right: 24.05 mm (0.947 in)
Center: 24.05 mm (0.947 in)



Calculate the camshaft-to-bearing clearance.

SERVICE LIMITS:

Left: 0.10 mm (0.004 in)
Right: 0.10 mm (0.004 in)
Center: 0.12 mm (0.005 in)

Remove the cam chain tensioner lifter sealing bolt.

Discard the gasket.

Check the lifter operation:

- The tensioner shaft should not go into the body when it is pushed.
- When it is turned clockwise with a screwdriver, the tensioner shaft should be pulled into the body. The shaft should spring out of the body as soon as the screwdriver is released.



CYLINDER HEAD REMOVAL

REMOVAL

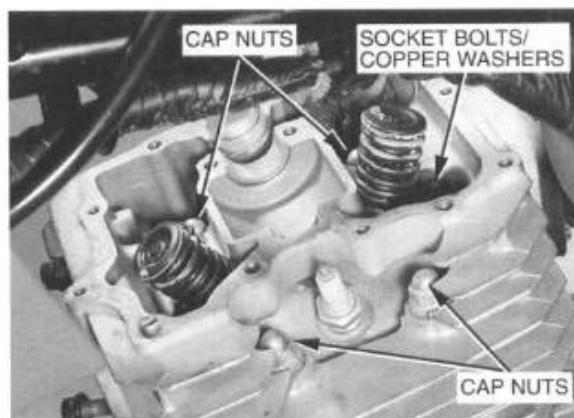
Remove the following:

- exhaust muffler (page 16-7)
- cylinder head cover (page 6-3)
- camshaft/cam chain tensioner lifter (page 6-5)

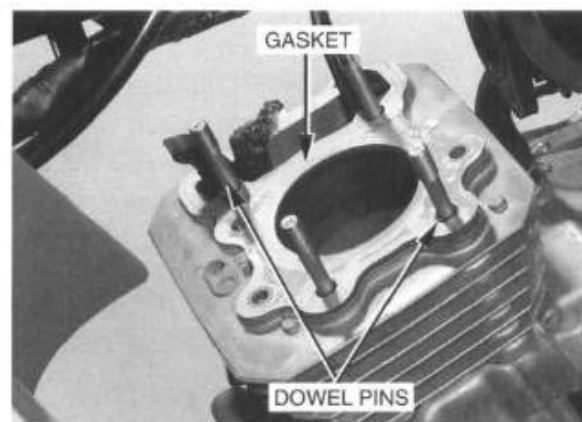
Loosen the carburetor insulator band.

Remove the cylinder head socket bolts/copper washers and cap nuts in 2 or 3 steps in a crisscross pattern.

Remove the cylinder head.



Remove the cylinder head gasket and dowel pins.

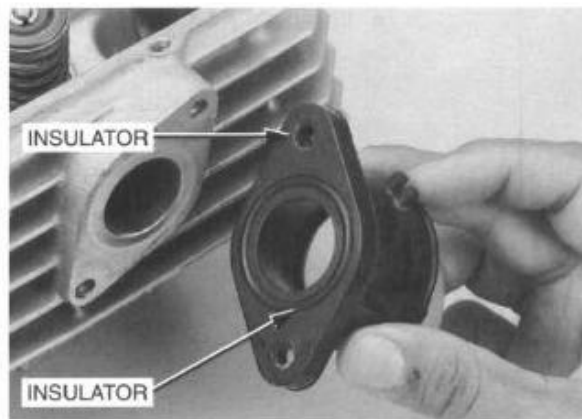


Remove the cam chain guide.



DISASSEMBLY

Remove the carburetor insulator and O-ring from the cylinder head.



Mark all parts during removal so they can be placed back in their original locations.

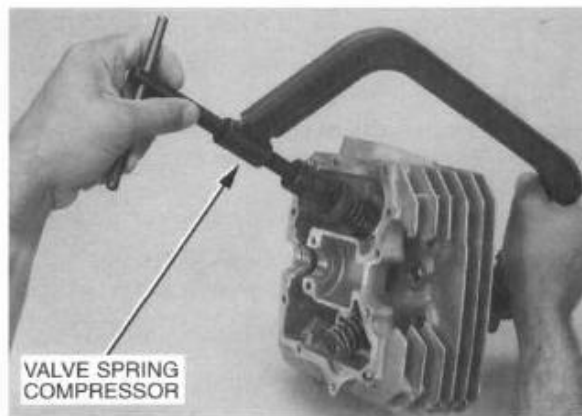
Remove the valve spring cotters, retainers, springs and valves with the valve spring compressor.

To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.

TOOL:

Valve spring compressor 07757-0010000

Remove the valve stem seals and valve spring seats.

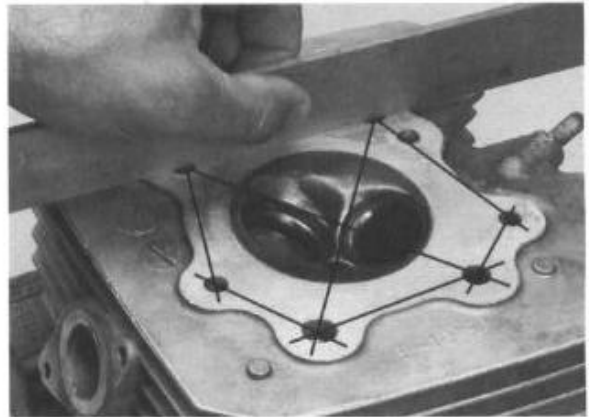


INSPECTION

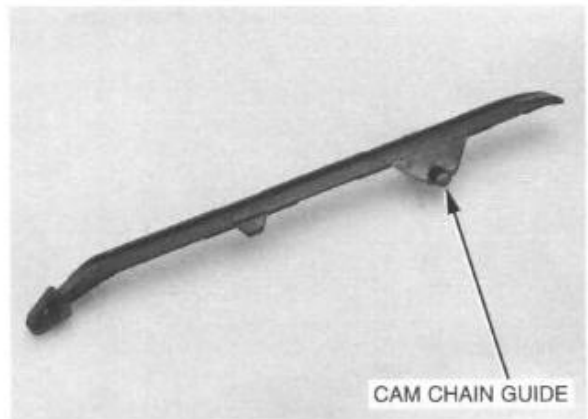
• CYLINDER HEAD

Remove carbon deposits from the combustion chamber.
Check the spark plug hole and valve areas for cracks.
Check the cylinder head for warpage with a straight edge and feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)



Check the cam chain guide for excessive wear or damage.



• VALVE SPRING FREE LENGTH

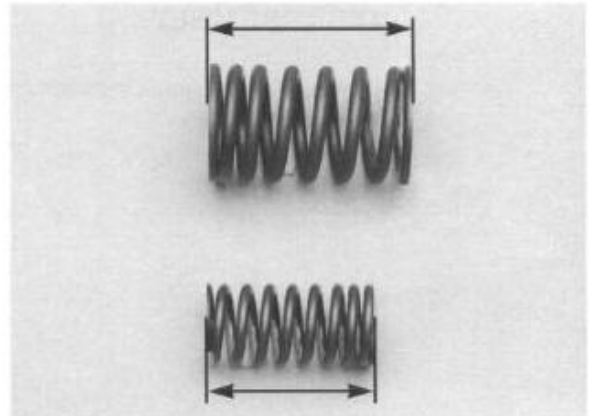
Measure the free length of the inner and outer valve springs.

SERVICE LIMITS:

Inner: 35.3 mm (1.39 in)

Outer: 43.8 mm (1.72 in)

Replace the springs if they are shorter than the service limits.



• VALVE STEM-TO-GUIDE CLEARANCE

Inspect each valve for bending, burning or abnormal stem wear.

Check valve movement in the guide, measure and record each valve stem O.D.

SERVICE LIMITS:

IN: 5.45 mm (0.215 in)

EX: 5.43 mm (0.214 in)



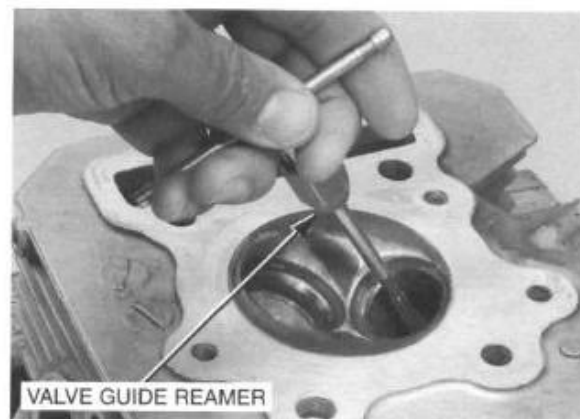
Ream the guides to remove any carbon deposits before checking clearances.

Insert the reamer from the combustion chamber side of the head and always rotate the reamer clockwise.

TOOL:

Valve guide reamer, 5.5 mm

07984-2000001 or
07984-200000D



Measure and record each valve guide I.D.

SERVICE LIMIT (IN/EX): 5.525 mm (0.2177 in)

Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the stem-to-guide clearance.

SERVICE LIMITS:

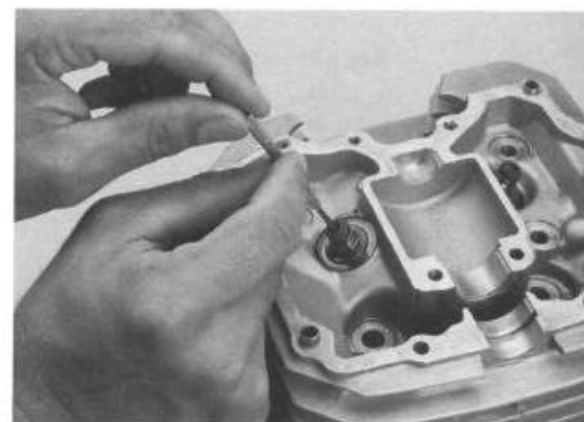
IN: 0.12 mm (0.005 in)

EX: 0.14 mm (0.006 in)

If the stem-to-guide clearance exceeds the service limits, determine if a new guide with standard dimensions would bring the clearance within tolerance. If so, replace any guides as necessary and ream to fit.

If the stem-to-guide clearance exceeds the service limits with new guides also, replace the valves and guides.

Reface the valve seats whenever the valve guides are replaced (page 6-10).



VALVE GUIDE REPLACEMENT

Chill the replacement valve guides in the freezer section of a refrigerator for about an hour.

Heat the cylinder head to 100–150°C (212–300°F) with a hot plate or oven. Do not use a torch to heat the cylinder head; it may cause warping.

▲ WARNING

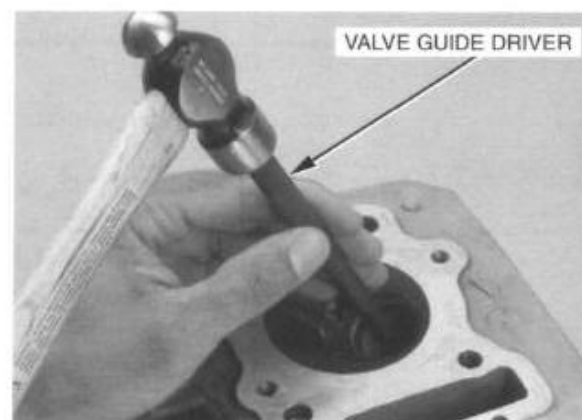
To avoid burns, wear heavy gloves when handling the heated cylinder head.

Support the cylinder head and drive out the old guides from the combustion chamber side of the cylinder head.

TOOL:

Valve guide driver, 5.5 mm

07742-0010100

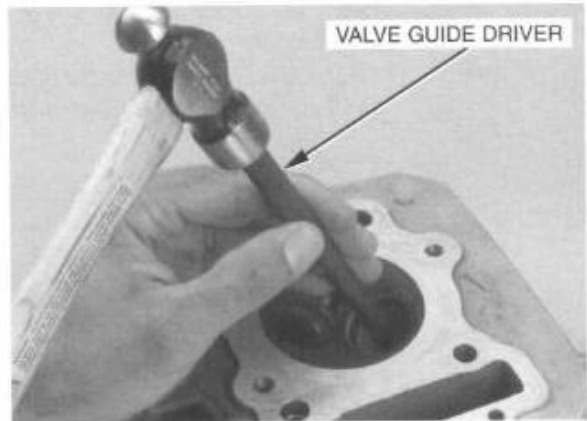


CYLINDER HEAD/VALVES

Place a new O-ring on the new valve guide. Drive in the guide from the camshaft side of the head.

TOOL:

Valve guide driver, 5.5 mm 07742-0010100



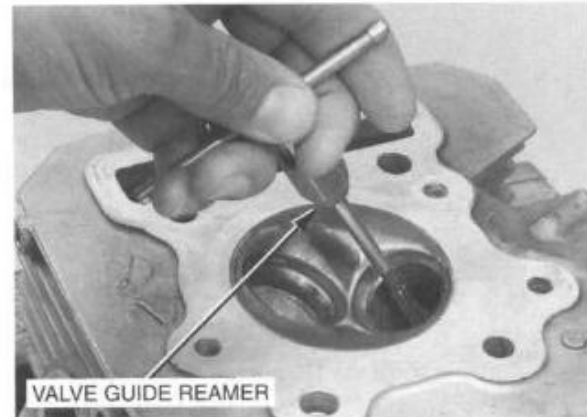
Inspect the valve guide for damage.

Ream the new valve guide after installation.

Insert the reamer from the combustion chamber side of the head; always rotate the reamer clockwise.

TOOL:

Valve guide reamer, 5.5 mm 07984-2000001 or
07984-200000D



Clean the cylinder head thoroughly to remove any metal particles.

Reface the valve seat (see below).

VALVE SEAT INSPECTION/ REFACING

Clean the intake and exhaust valves thoroughly to remove carbon deposits.

Apply a light coating of Prussian Blue to the valve seats. Lap the valves and seats using a rubber hose or other hand-lapping tool.

Remove and inspect the valves.



NOTE

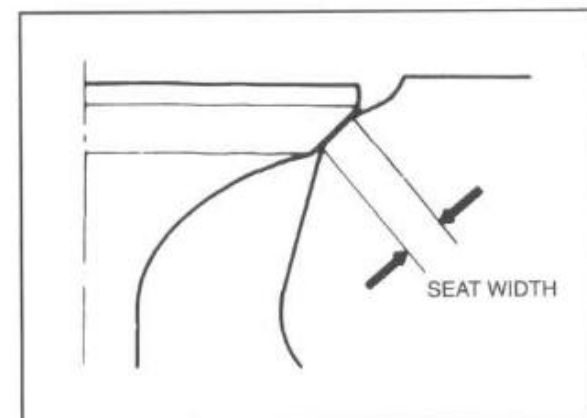
The valves cannot be ground. If a valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.

Inspect the width of each valve seat.

STANDARD: 1.2 mm (0.05 in)

SERVICE LIMIT: 1.5 mm (0.06 in)

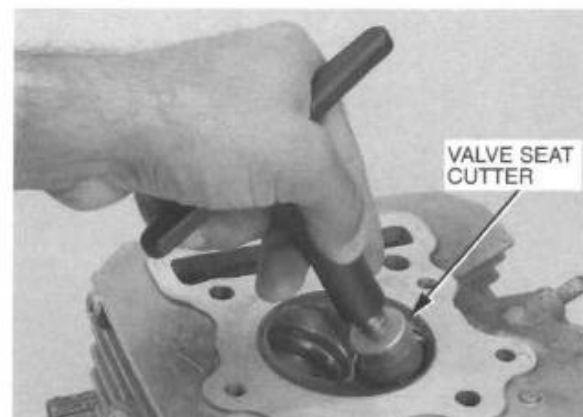
If the seat is too wide, too narrow or has low spots, the seat must be ground.



VALVE SEAT CUTTERS

Valve seat cutters, a grinder, or equivalent valve seat refacing equipment are recommended to correct a worn valve seat.

Follow the refacer manufacturer's operating instructions.

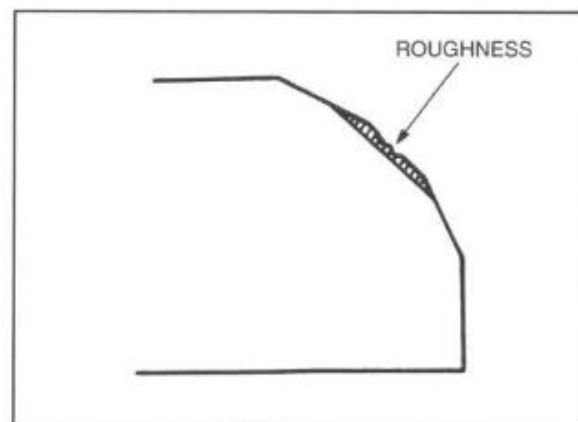


VALVE SEAT REFACING

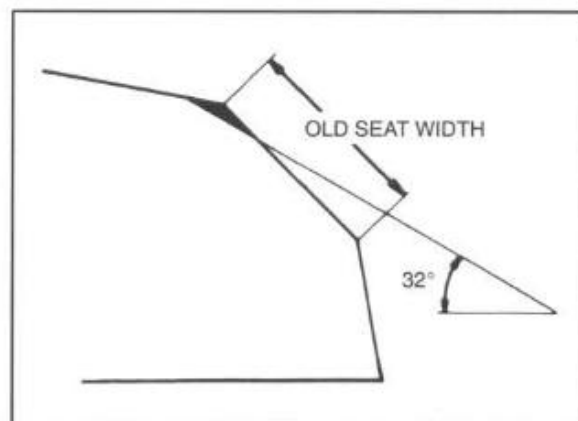
Use a 45 degrees cutter to remove any roughness or irregularities from the seat.

NOTE

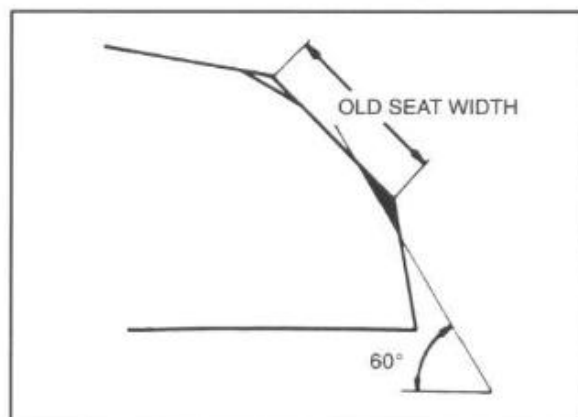
Reface the seat with a 45 degrees cutter whenever a valve guide is replaced.



Use a 32 degrees cutter to remove the top 1/4 of the existing valve seat material.



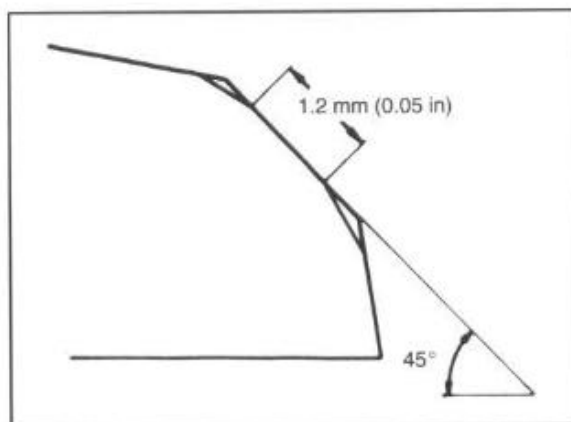
Use a 60 degrees cutter to remove the bottom 1/4 of the old seat. Remove the cutter and inspect the area you have refaced.



CYLINDER HEAD/VALVES

Install a 45 degrees finish cutter and cut the seat to the proper width. Make sure that all pitting and irregularities are removed.

Refinish if necessary.

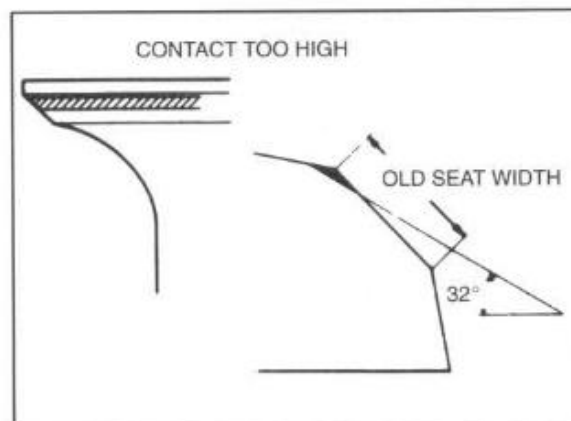


Apply a thin coating of Prussian Blue to the valve seat. Press the valve through the valve guide and onto the seat to make a clear pattern.

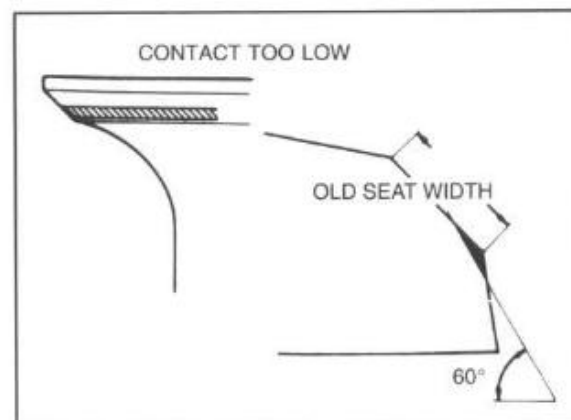
NOTE

The location of the valve seat in relation to the valve face is very important for good sealing.

If the contact area is too high on the valve, the seat must be lowered using a 32 degrees flat cutter.



If the contact area is too low on the valve, the seat must be raised using a 60 degrees inner cutter.



Refinish the seat to specifications, using a 45 degrees finish cutter.

After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.

After lapping, wash all residual compound off the cylinder head and valve.

NOTE

Do not allow lapping compound to enter the guides.



CYLINDER HEAD ASSEMBLY

Install the valve spring seat and a new stem seal.

Turn the valve slowly when inserting.

Lubricate the valve stems with molybdenum disulfide grease and insert the valve into the valve guide.

Be careful not to damage the stem seal.

Install the valve springs with the tightly wound coils facing the cylinder head.

Install the valve spring retainers and cotters.

To prevent loss of tension, do not compress the valve spring more than necessary.

TOOL:

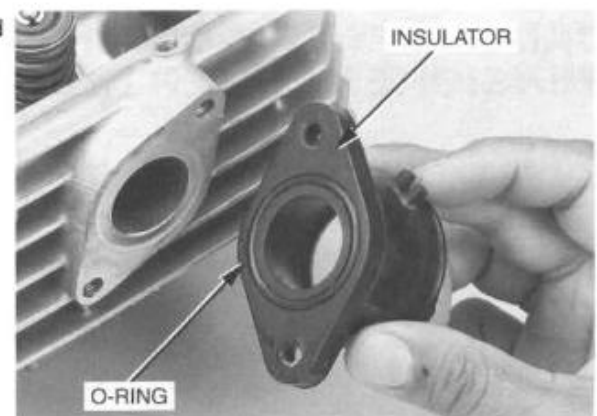
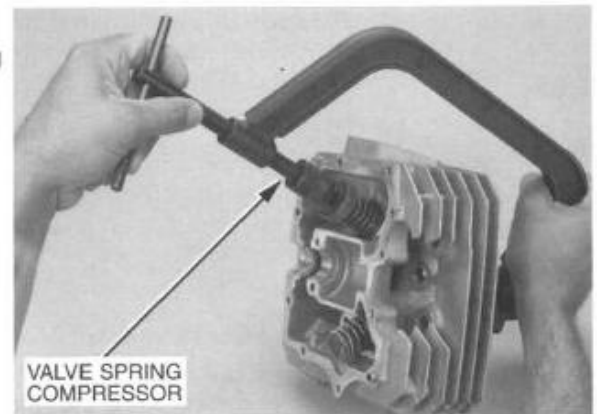
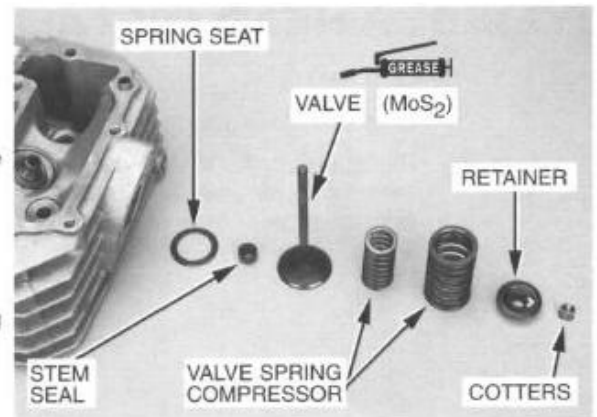
Valve spring compressor

07757-0010000

To prevent possible valve damage, support the cylinder head above the work surface. Be sure the supports do not interfere with valve travel.

Seat the cotters firmly using two plastic hammers as shown. Hold one hammer on the valve stem and gently tap it with the other hammer.

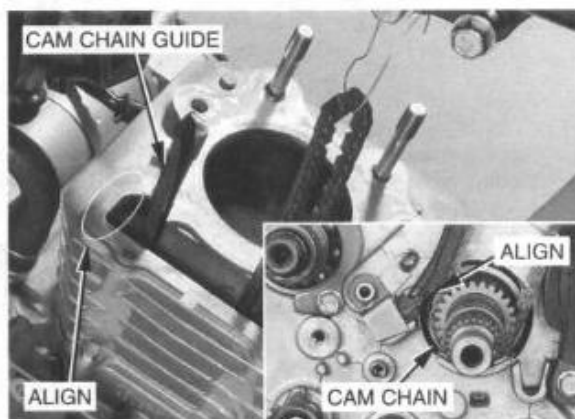
Install a new O-ring in the carburetor insulator groove and install the insulator with two bolts.



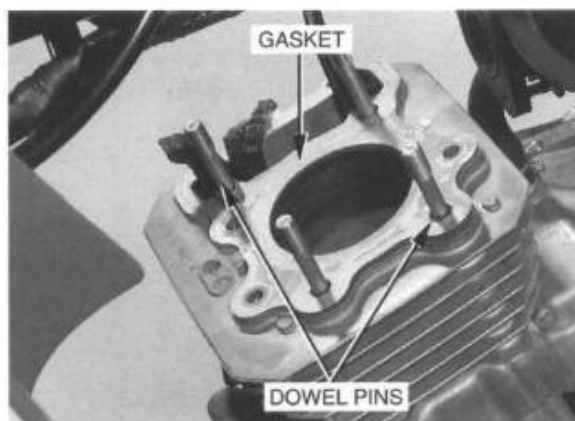
CYLINDER HEAD INSTALLATION

Make sure that the cam chain is properly installed on the crankshaft drive gear as shown.

Place the bottom end of the cam chain guide into the groove in the right crankcase and its bosses in the grooves in the cylinder upper surface.



Install the dowel pins and a new cylinder head gasket.



Install the cylinder head, and tighten the cylinder head cap nuts/washers (④, ⑤, ⑥ and ⑦) and socket bolts/copper washers (①, ② and ③) in the sequence shown.

TORQUES:

Cap nut: 40 N·m (4.0 kg-m, 29 ft-lb)

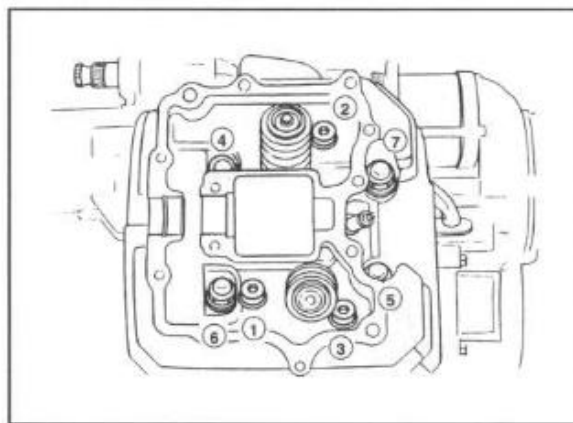
Socket bolt: 25 N·m (2.5 kg-m, 18 ft-lb)

Tighten the carburetor insulator band screw to specified torque.

TORQUE: 4 N·m (0.4 kg-m, 2.9 ft-lb)

Install the following:

- camshaft/cam chain tensioner lifter
- cylinder head cover (page 6-19)
- exhaust muffler (page 16-7)



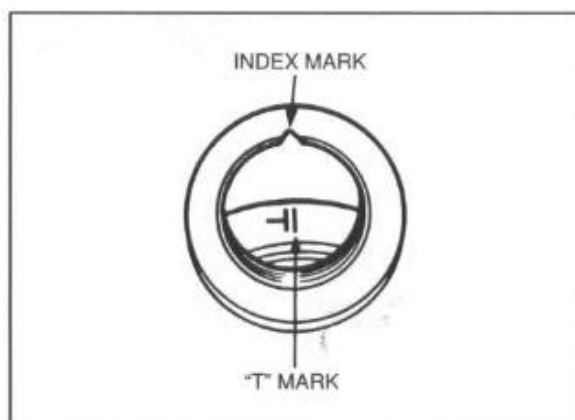
CAMSHAFT/CAM CHAIN TENSIONER LIFTER INSTALLATION

CAMSHAFT INSTALLATION

TRX300: Rotate the crankshaft clockwise.

TRX300FW: Rotate the starter reduction shaft counterclockwise, using a 6mm hex wrench.

Align the "T" mark on the rotor with the index mark. Make sure the piston is at TDC on the compression stroke. If not, rotate the crankshaft 360° (1 full turn) and align the "T" mark again.

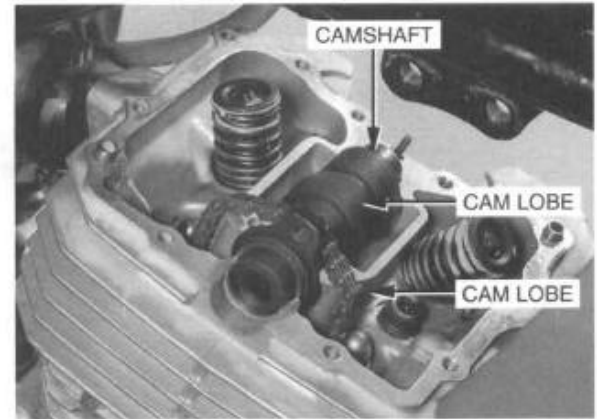


Apply molybdenum disulfide grease to the camshaft journals of the cylinder head, and to the cam lobes.

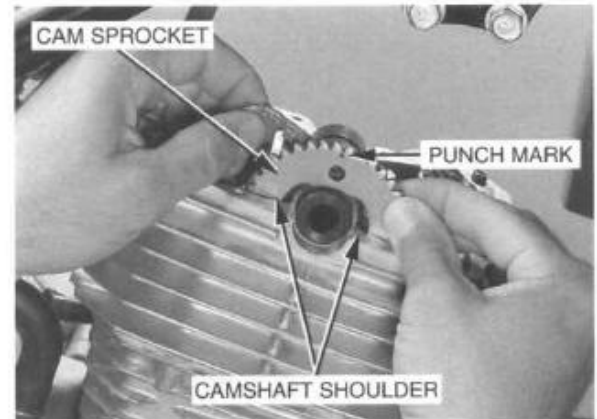
Install the camshaft in the cylinder head.

Position the cam lobes down.

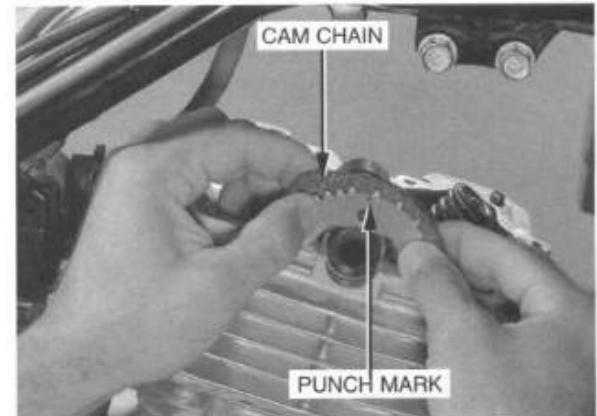
Install the cam chain over the camshaft as shown.



Raise the camshaft and install the cam sprocket onto the shoulder of the camshaft with its punch mark facing to the right. Reset the camshaft in the cylinder head.



Pull the sprocket slightly forward off the shoulder, rotate the sprocket until the punch mark is at the top, and install the cam chain.



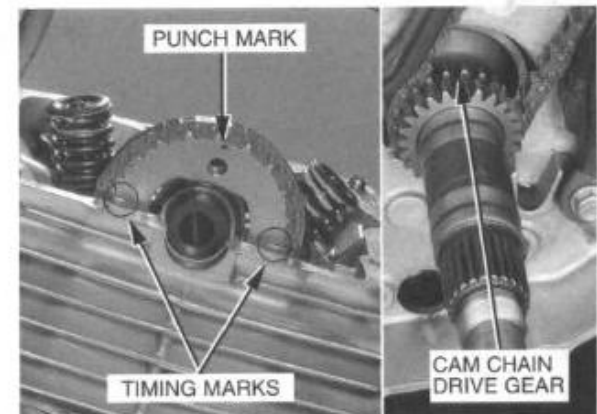
Before positioning the sprocket on the camshaft holder, align the timing marks on the cam sprocket with the upper surface of the cylinder head.

Do not rotate the crankshaft. Make sure the "T" mark on the flywheel is still aligned with the index marker.

Reinstall the cam sprocket onto the shoulder of the camshaft.

NOTE

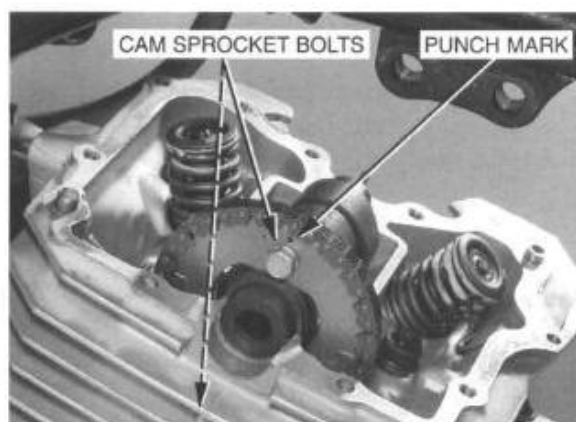
If it is difficult to reinstall the cam sprocket, make sure the cam chain is set properly on the crankshaft cam chain drive gear.



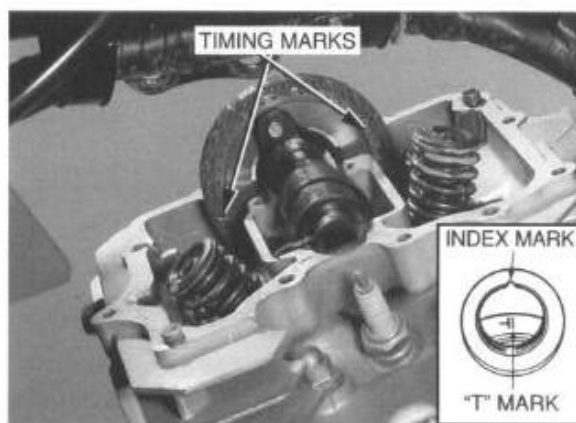
CYLINDER HEAD/VALVES

Apply locking agent to the threads of the cam sprocket bolts. Tighten the cam sprocket bolt on the punch mark side first, then turn the crankshaft and tighten the remaining sprocket bolt to the same torque.

TORQUE: 20 N·m (2.0 kg·m, 14 ft·lb)



Realign the "T" mark with index mark and recheck the cam sprocket timing marks.

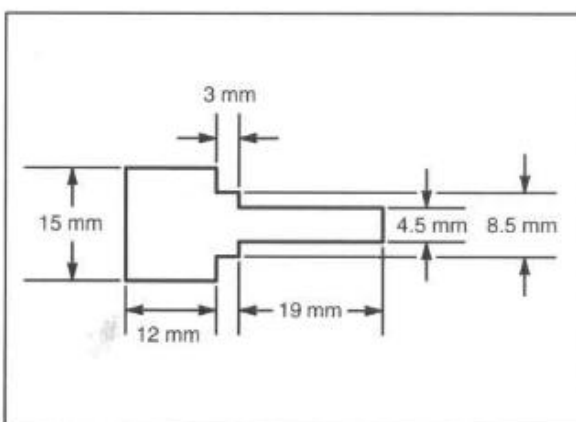


Fill the oil pocket in the cylinder head fresh oil. Apply oil to the cam chain.



CAM CHAIN TENSIONER LIFTER INSTALLATION

Make a tensioner shaft stopper tool out of a thin piece of steel (1 mm thick) using the diagram.



Turn the tensioner shaft clockwise with the stopper tool to retract the tensioner, then insert the stopper fully to hold the tensioner in the fully retracted position.

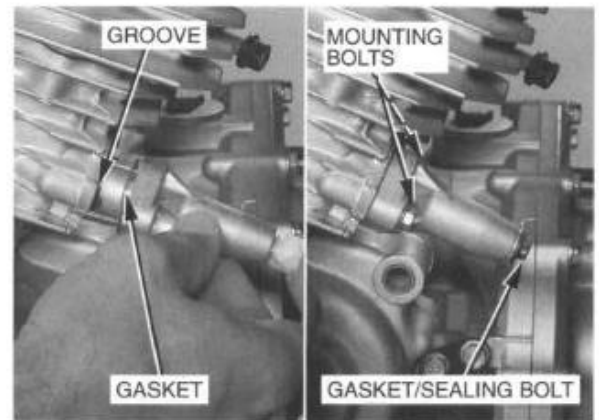


Install a new gasket on the cam chain tensioner lifter.
Install the cam chain tensioner lifter with its groove facing up.
Tighten the cam chain tensioner lifter mounting bolts.

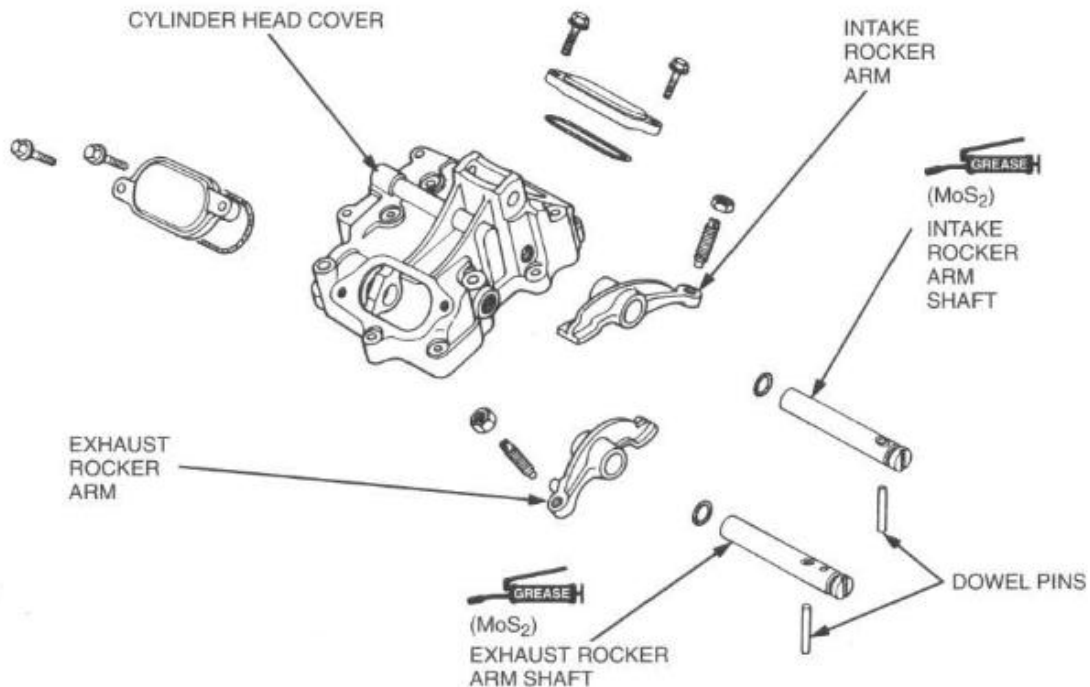
TORQUE: 10 N·m (1.0 kg·m, 7 ft·lb)

Remove the holder tool from the tensioner lifter.
Install and tighten the bolt with a new gasket to the tensioner.
Tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kg·m, 7 ft·lb)

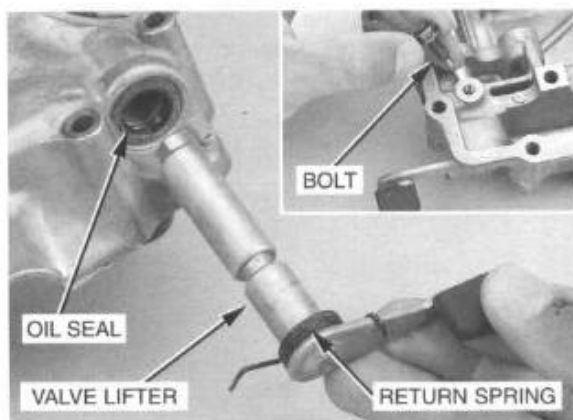


CYLINDER HEAD COVER ASSEMBLY/INSTALLATION ASSEMBLY

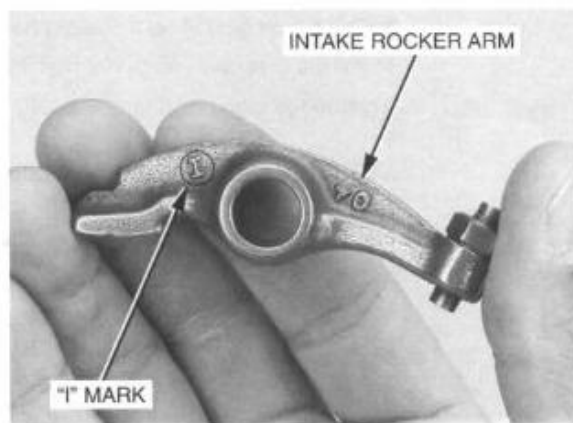


CYLINDER HEAD/VALVES

Install the oil seal, return spring, valve lifter and valve lifter bolt.



Note that intake rocker arm has an "I" mark on its side as shown.

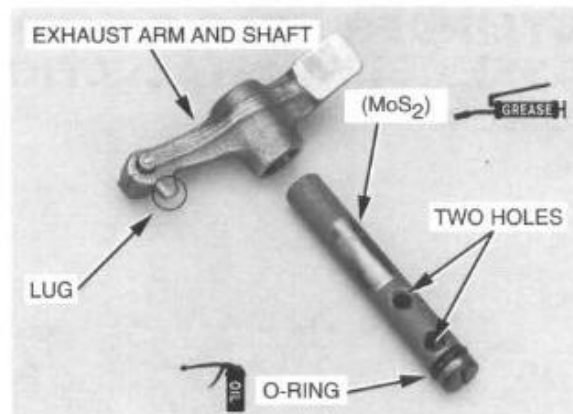


Carefully identify the exhaust side parts:

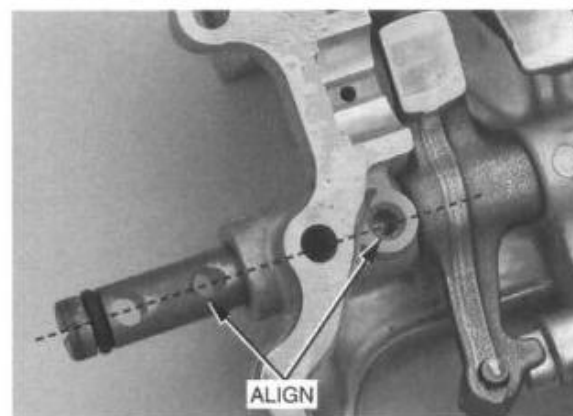
- The rocker arm has the decompression lug as shown.
- The rocker arm shaft has two holes as shown.

Apply oil to the O-rings of the rocker arm shafts.

Apply molybdenum disulfide grease to the rocker arm shafts.



Install the rocker arms and shafts, aligning the grooves on the shafts with the head cover mounting holes.

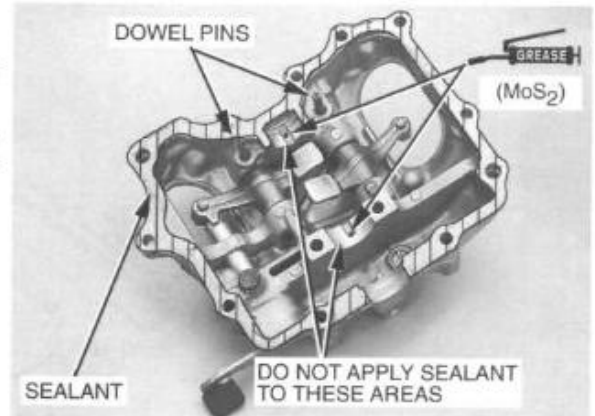


Insert new dowel pins in the head cover.

Do not apply sealant to the camshaft journals.

Apply liquid sealant to the mating surfaces of the cylinder head cover.

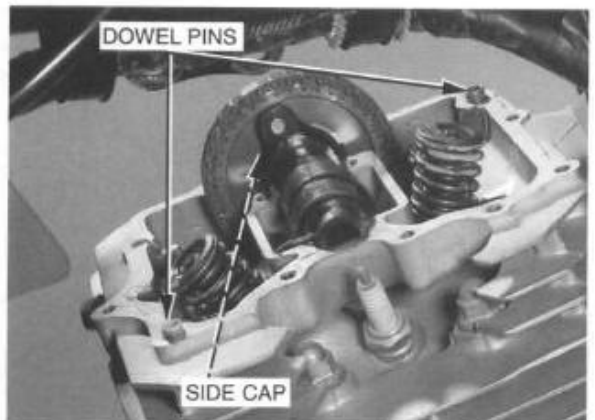
Apply molybdenum disulfide grease to the camshaft journals of the cylinder head cover, and to the rocker arm slipper surfaces.



INSTALLATION

Install the dowel pins and the camshaft side cap on the cylinder head.

Position the camshaft so that both cam lobes face down as shown by rotating the crankshaft.

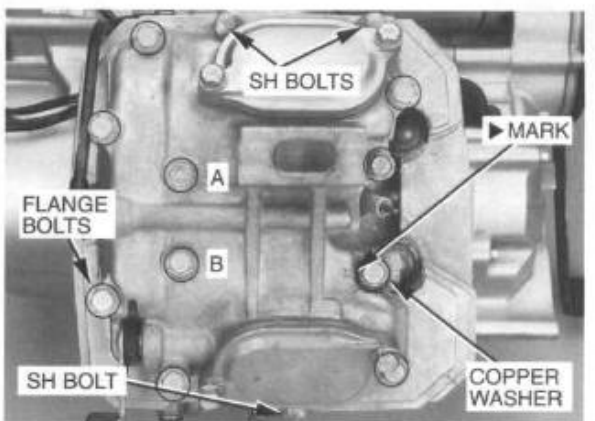


Install the cylinder head cover bolts A and B onto the cylinder head cover.

Install the cylinder head cover.

Install a new copper washer on the flange bolt that is designated by the "▼" mark.

Tighten the cover bolts in 2 or 3 steps in a crisscross pattern, starting with the center bolt.



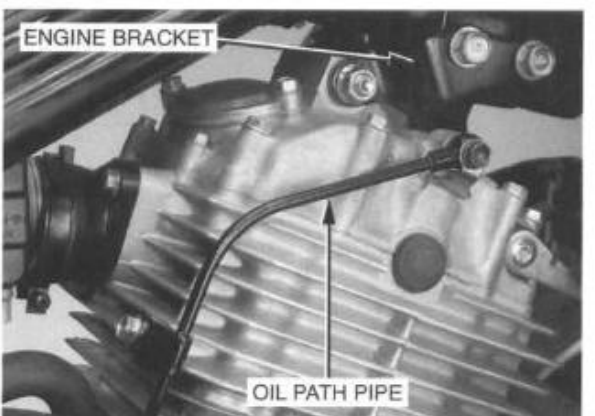
TORQUES:

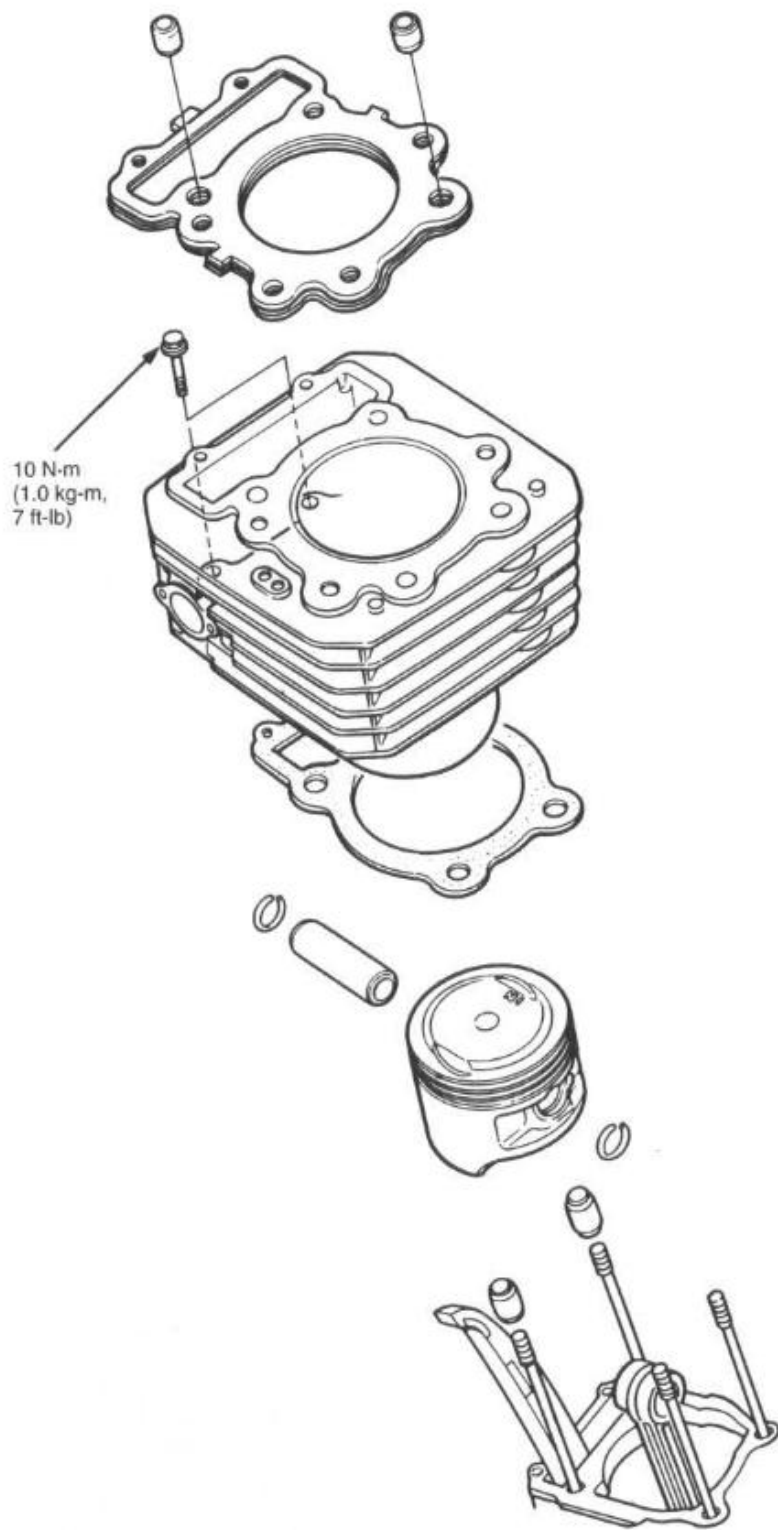
6 mm flange bolt: 12 N·m (1.2 kg·m, 9 ft·lb)
6 mm SH bolt: 10 N·m (1.0 kg·m, 7 ft·lb)

Adjust the valve clearance (page 3-8).

Install the following:

- valve adjusting hole covers
- engine brackets (upper) (page 5-4)
- oil path pipe (page 8-25)
- fuel tank (page 4-3)





7. CYLINDER/PISTON

SERVICE INFORMATION	7-1	PISTON	7-3
TROUBLESHOOTING	7-1	PISTON/CYLINDER INSTALLATION	7-5
CYLINDER	7-2		

SERVICE INFORMATION

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Cylinder	I.D.	74.000–74.010 (2.9134–2.9138)	74.10 (2.917)
	Taper	—	0.01 (0.004)
	Out of round	—	0.01 (0.004)
	Warpage across top	—	0.01 (0.004)
Piston, piston pin, piston rings	Piston O.D.	73.960–73.985 (2.9118–2.9128)	73.90 (2.909)
	Piston pin bore	17.002–17.008 (0.6694–0.6696)	17.04 (0.671)
	Piston pin O.D.	16.994–17.000 (0.6691–0.6693)	16.96 (0.668)
	Piston-to-pin clearance	0.002–0.014 (0.0001–0.0006)	0.02 (0.001)
	Piston ring-to-ring groove clearance	TOP	0.02–0.05 (0.001–0.002)
		SECOND	0.015–0.045 (0.0006–0.0018)
	Piston ring end gap	TOP	0.15–0.30 (0.006–0.012)
		SECOND	0.25–0.40 (0.010–0.016)
		OIL	0.2–0.7 (0.01–0.03)
			—
Cylinder-to-piston clearance		0.015–0.050 (0.0006–0.0020)	0.10 (0.004)
Connecting rod small end I.D.		17.016–17.034 (0.6699–0.6706)	17.10 (0.673)

TORQUE VALUE

Cylinder mounting bolt 10 N·m (1.0 kg-m, 7 ft-lb)

TROUBLESHOOTING

Low or unstable compression

- Worn cylinder or piston rings
- Cylinder head and valves (Section 6)

Excessive smoke

- Worn cylinder, piston or piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

Overheating

- Excessive carbon build-up on the piston head or combustion chamber wall

Knocking or abnormal noise

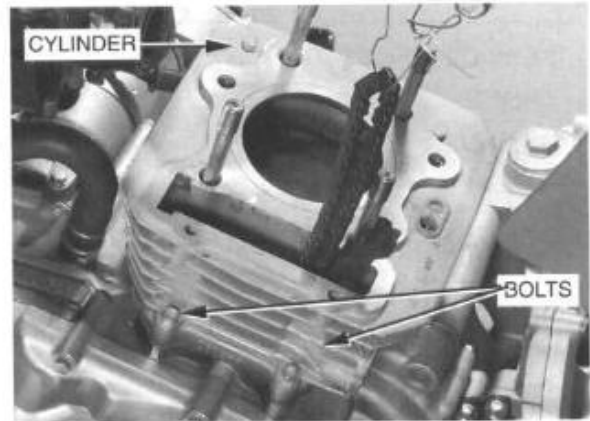
- Worn piston and cylinder
- Excessive carbon build-up

CYLINDER

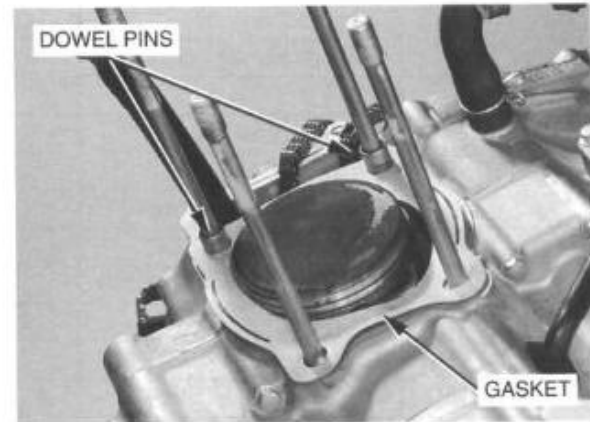
REMOVAL

Remove the cylinder head (page 6-6).

Remove the cylinder mounting bolts and cylinder.



Remove the cylinder gasket and dowel pins.



INSPECTION

Inspect the cylinder bore for wear or damage.

Measure the cylinder I.D. in X and Y axis at three levels.

Take the maximum reading to determine the cylinder wear.

SERVICE LIMIT: 74.10 mm (2.917 in)

Calculate the piston-to-cylinder clearance. Take the maximum reading to determine the clearance.

Refer to page 7-4 for measurement of the piston O.D.

SERVICE LIMIT: 0.10 mm (0.004 in)

Calculate the taper and out of round at three levels in X and Y axis. Use the maximum reading to determine the service limit.



SERVICE LIMITS:

Taper: 0.10 mm (0.004 in)

Out of round: 0.10 mm (0.004 in)

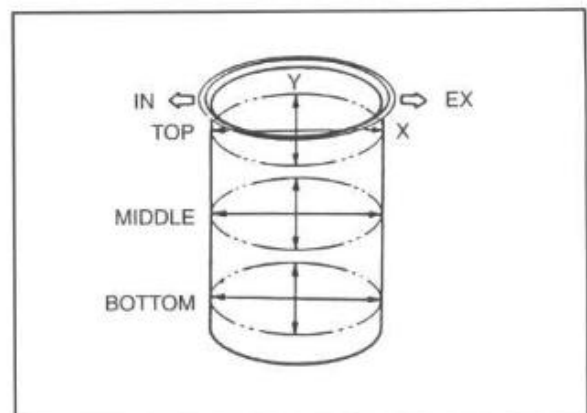
The cylinder must be rebored and an oversize piston fitted if the service limits are exceeded.

The following oversize pistons are available:

0.25 mm (0.010 in), 0.50 mm (0.020 in),

0.75 mm (0.030 in) and 1.00 mm (0.040 in)

The piston-to-cylinder clearance for the oversize piston must be: 0.015–0.050 mm (0.0006–0.0020 in).



Inspect the top of the cylinder for warpage.

SERVICE LIMIT: 0.10 mm (0.004 in)

PISTON

REMOVAL

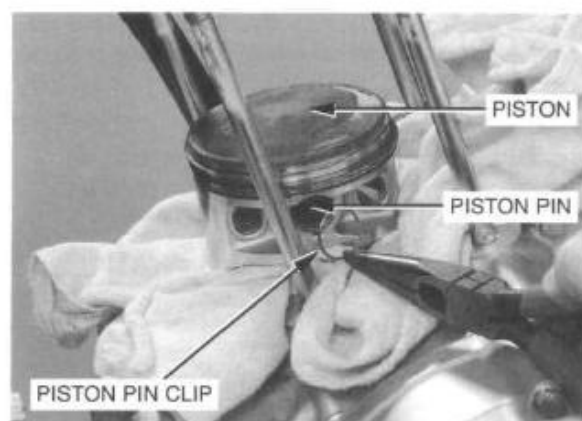
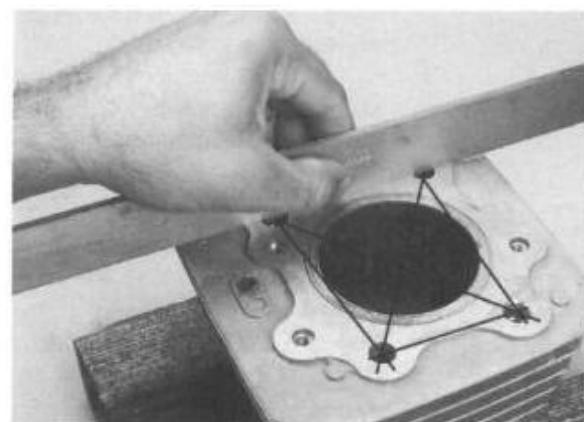
Do not let the clips fall into the crankcase.

Remove the piston pin clip with pliers.

Support the piston, press the piston pin out of the piston and remove the piston.

NOTE

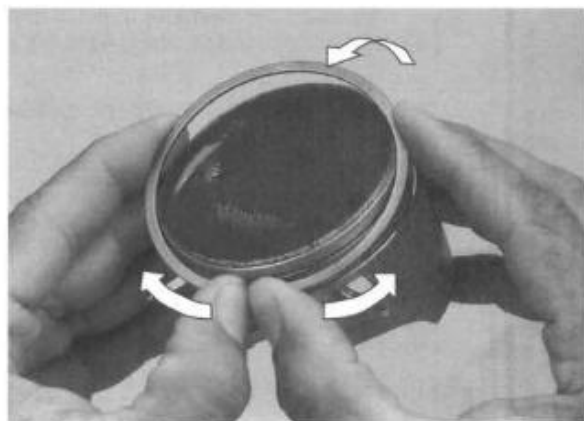
Always support the piston when pressing out the piston pin to prevent damage to the big-end bearing.



INSPECTION

Do not damage the piston rings during removal.

Remove the piston rings, as shown.



Remove any carbon deposits from the piston ring grooves, using an old piston ring as shown.



CYLINDER/PISTON

Temporarily install the piston rings to their proper position with the mark facing up.

Measure the piston ring-to-groove clearance with the rings pushed into the grooves.

SERVICE LIMITS:

Top: 0.09 mm (0.004 in)

Second: 0.09 mm (0.004 in)

Inspect the piston for wear or damage.



Push the rings into the cylinder with the top of the piston to be sure they are squarely in the cylinder.

Insert each piston ring squarely into the bottom of the cylinder and measure the ring end gap.

SERVICE LIMITS:

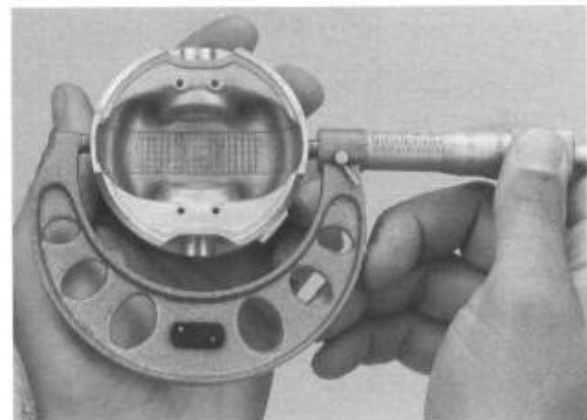
Top: 0.5 mm (0.02 in)

Second: 0.6 mm (0.02 in)



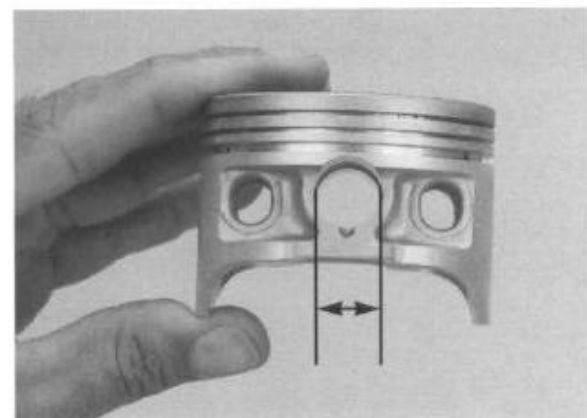
Measure the diameter of the piston at 10 mm (0.4 in) from the bottom and 90 degrees to the piston pin hole.

SERVICE LIMIT: 73.90 mm (2.909 in)



Measure the piston pin bore on both sides.

SERVICE LIMIT: 17.04 mm (0.671 in)

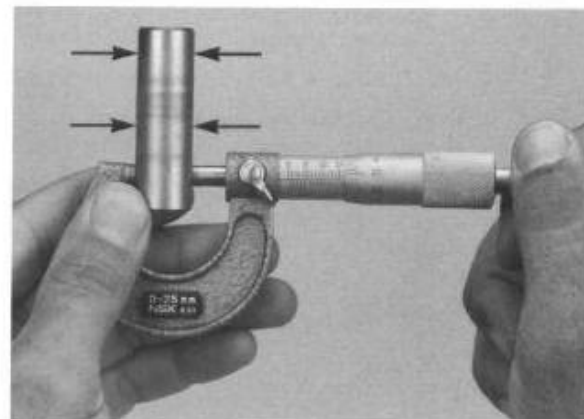


Measure the piston pin O.D. at three places.

SERVICE LIMIT: 16.96 mm (0.668 in)

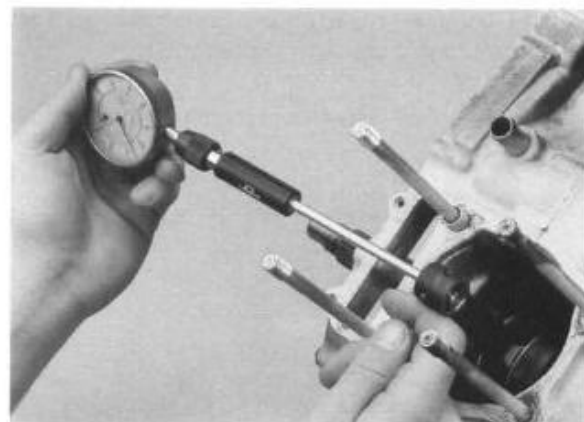
Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.02 mm (0.001 in)



Measure the connecting rod small end I.D.

SERVICE LIMIT: 17.10 mm (0.673 in)



PISTON/CYLINDER INSTALLATION

Clean the piston ring grooves thoroughly.

Apply oil to the piston rings.

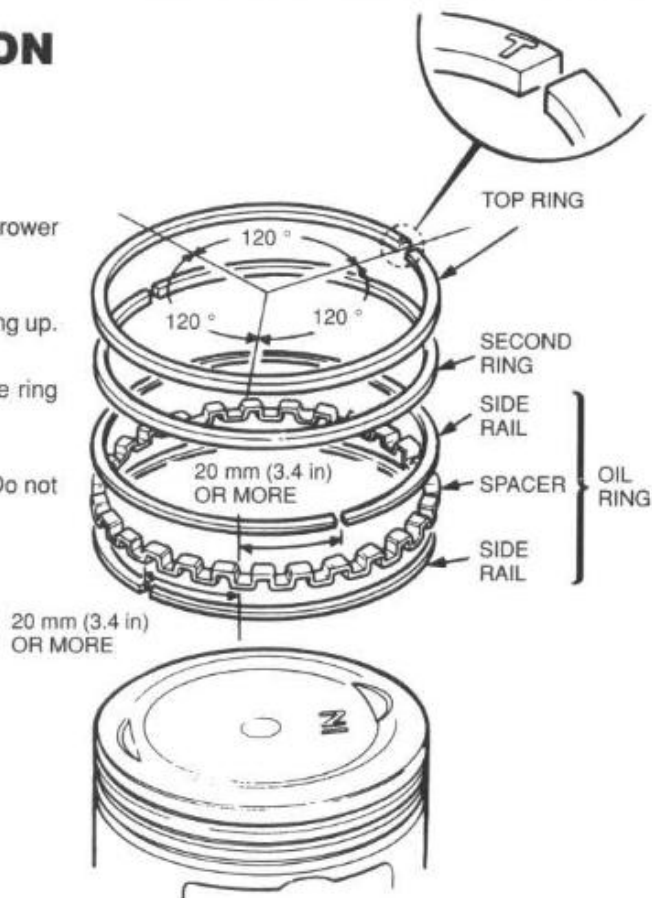
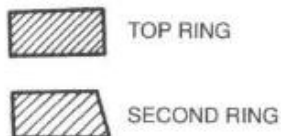
Do not mix the top and second rings; the top ring is narrower in width than the second ring.

Do not damage the rings while installing.

Install the piston rings with the markings (T or R) facing up.

After installation, the rings should rotate freely in the ring grooves.

Space the piston ring end gaps 120 degrees apart. Do not align the gaps in the oil rings (side rails).



CYLINDER/PISTON

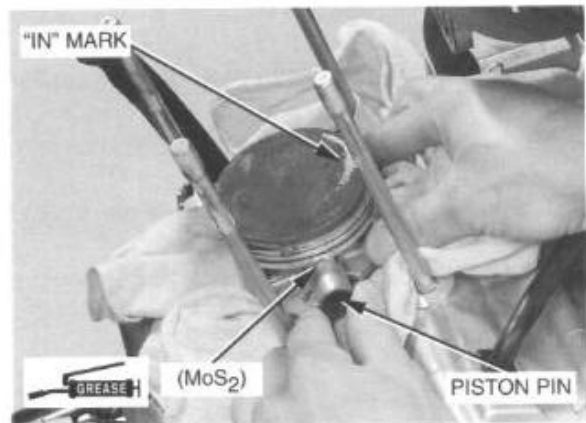
Apply molybdenum disulfide grease to the outer surface of the piston pin.

Position the piston "IN" mark on the intake valve side.

Do not let the clips fall into the crankcase.

Install the piston and piston pin, using new piston pin clips.

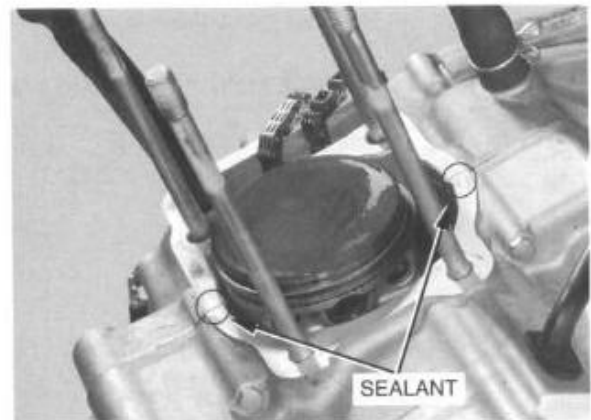
Do not align the piston pin clip end gap with the piston cut-out.



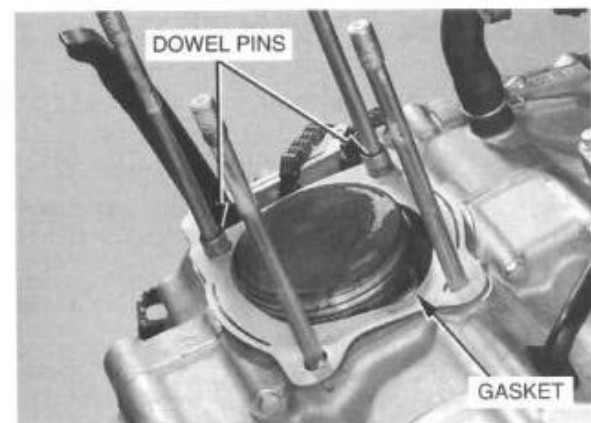
Be careful not to damage the gasket surface.

Clean off any gasket material from the cylinder base and crankcase upper surfaces.

Apply liquid sealant to the crankcase joints.



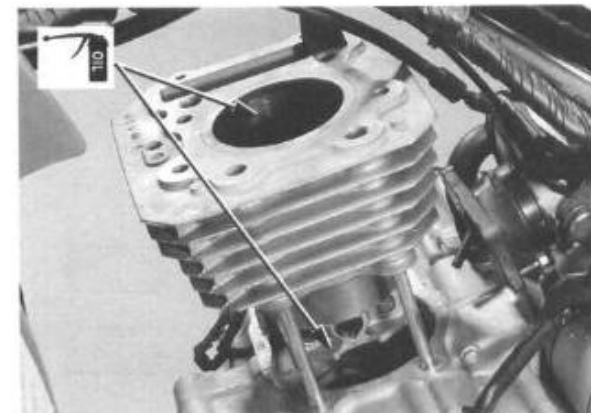
Install a new gasket and dowel pins.



Avoid piston ring damage during installation.

Coat the cylinder bore and piston with engine oil and install the cylinder.

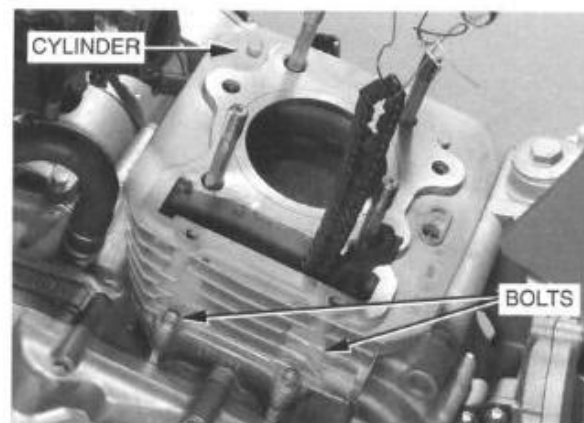
Do not let the cam chain fall into the crankcase.



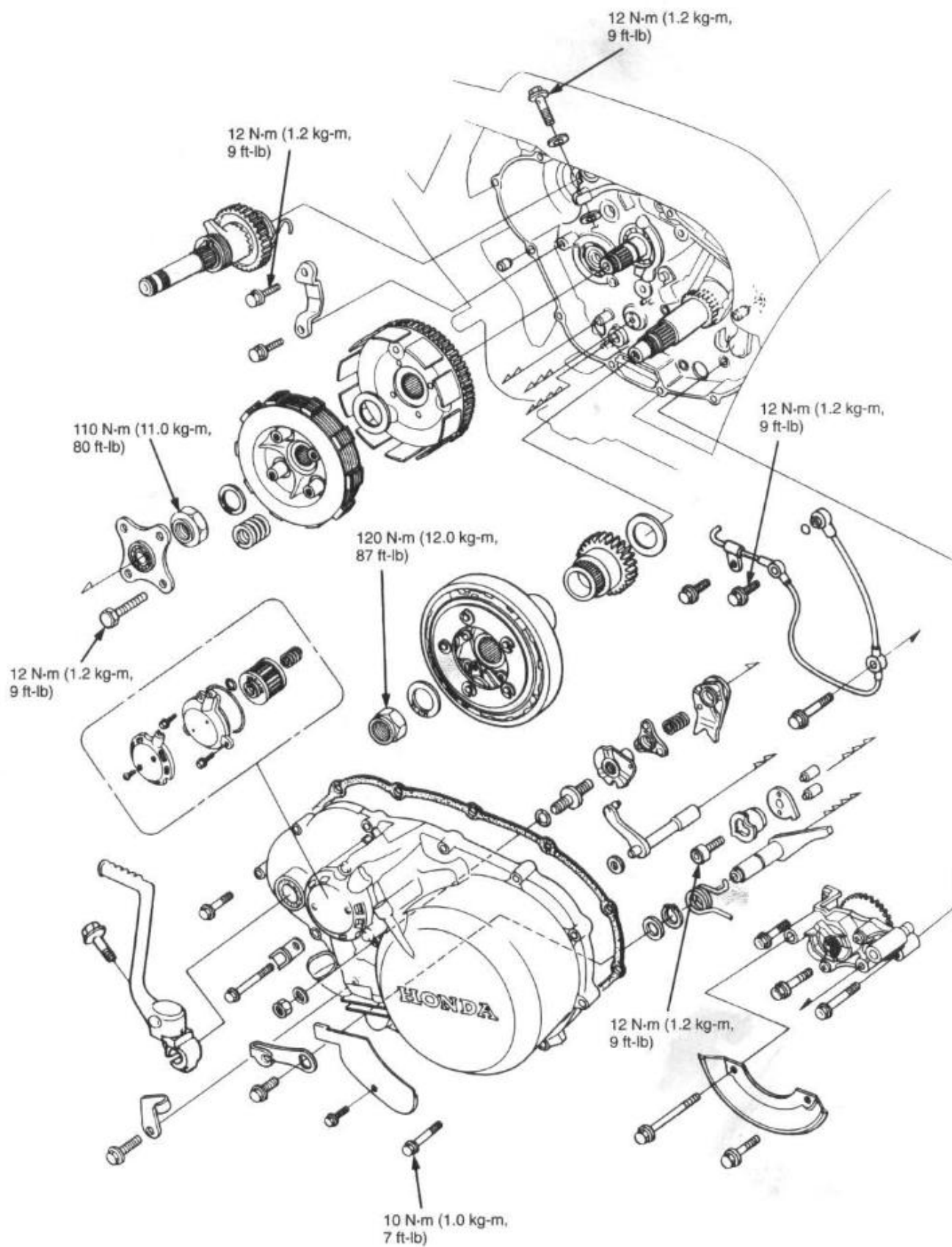
Tighten the cylinder mounting bolts.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)

Install the cylinder head (page 6-14).



CLUTCH/OIL PUMP/KICK STARTER



8. CLUTCH/OIL PUMP/KICK STARTER

SERVICE INFORMATION	8-1	REVERSE LOCK MECHANISM	8-17
TROUBLESHOOTING	8-2	OIL PUMP	8-18
RIGHT CRANKCASE COVER REMOVAL	8-3	KICK STARTER	8-21
CENTRIFUGAL CLUTCH/ PRIMARY DRIVE GEAR	8-4	RIGHT CRANKCASE COVER INSTALLATION	8-23
CHANGE CLUTCH	8-12		

SERVICE INFORMATION

GENERAL

- This section covers removal and installation of the centrifugal clutch, change clutch, oil pump and kick starter. These parts can be serviced with the engine installed in the frame.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Change clutch	Spring free length	32.1 (1.26)	31.0 (1.22)
	Disc thickness	2.62–2.78 (0.103–0.109)	2.3 (0.09)
	Disc warpage	—	0.20 (0.008)
	Plate warpage	—	0.20 (0.008)
	Clutch outer guide O.D.	27.959–27.980 (1.1007–1.1016)	27.92 (1.099)
	Clutch outer guide I.D.	22.000–22.021 (0.8661–0.8670)	22.05 (0.868)
	Mainshaft O.D. (outer guide)	21.972–21.993 (0.8650–0.8659)	21.93 (0.863)
Centrifugal clutch	Drum I.D.	140.0 (5.51)	140.2 (5.52)
	Weight lining thickness	3.0 (0.12)	2.0 (0.08)
	Clutch spring height	3.1 (0.12)	2.95 (0.116)
	Clutch weight spring free length	21.6 (0.85)	22.5 (0.89)
Kick starter	Shaft O.D.	23.959–23.980 (0.9433–0.9441)	23.90 (0.941)
	Pinion gear I.D.	24.000–24.021 (0.9449–0.9457)	24.10 (0.949)
Primary drive gear	Crankshaft O.D.	26.959–26.980 (1.0614–1.0622)	26.93 (1.060)
	Gear I.D.	27.000–27.021 (1.0630–1.0638)	27.05 (1.065)
Oil pump	Body clearance	0.15–0.21 (0.006–0.008)	0.25 (0.010)
	Tip clearance	0.15 (0.006) MAX	0.20 (0.008)
	Side clearance	0.02–0.08 (0.001–0.003)	0.10 (0.004)

CLUTCH/OIL PUMP/KICK STARTER

TORQUE VALUES

Centrifugal clutch lock nut	120 N·m (12.0 kg-m, 87 ft-lb) – Apply locking agent/Stake/Left-hand threads
Change clutch lock nut	110 N·m (11.0 kg-m, 80 ft-lb) – Apply locking agent/Stake
Clutch spring bolt	12 N·m (1.2 kg-m, 9 ft-lb)
Reverse/neutral rotor bolt	12 N·m (1.2 kg-m, 9 ft-lb) – Apply locking agent
Oil pipe bolt (BLACK)	12 N·m (1.2 kg-m, 9 ft-lb)
Right crankcase cover bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Right foot peg bolt	33 N·m (3.3 kg-m, 24 ft-lb)
Oil path pipe bolt	12 N·m (1.2 kg-m, 9 ft-lb)
Kick starter ratchet guide bolt	12 N·m (1.2 kg-m, 9 ft-lb)
Oil pump assembly bolt	7 N·m (0.7 kg-m, 5.1 ft-lb)

TOOLS

Special

Bearing remover, 17 mm	07936-3710300
Remover handle	07936-3710100
Remover weight	07936-3710200
Clutch holder	07GMB-HA70100
Clutch center holder	07HGB-001000A
Attachment, 28 x 30 mm	07946-1870100
Clutch puller	07933-HB3000A

Common

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 17 mm	07746-0040400

TROUBLESHOOTING

Faulty clutch operation can usually be corrected by adjusting the clutch.

Clutch slips when accelerating

- Faulty clutch lifter
- Discs/plates worn
- Weak springs

Clutch will not disengage

- Faulty clutch lifter mechanism
- Plates wrapped

The vehicle creeps with clutch disengaged

- Faulty centrifugal clutch
- Plates warped

Clutch operation feels rough

- Outer drum slots rough

Hard to shift

- Incorrect clutch adjustment
- Faulty clutch lifter mechanism

Low oil pressure

- Faulty oil pump
- Oil pump drive gear broken

RIGHT CRANKCASE COVER REMOVAL

REMOVAL

Shift the transmission into neutral and drain the oil from the engine (page 2-3).

Remove the following:

- oil path pipe bolts and oil path pipe
- switch cover
- neutral, reverse and oil temperature switch wires
- bolt from the reverse stopper shaft, and reverse stopper lever
- right crankcase cover bolt and reverse cable holder
- TRX300FW: – skid plate
- right foot peg
- kick starter pedal

'95-'97: Remove the twelve right crankcase cover bolts.

After '97: Remove the thirteen right crankcase cover bolts.

Remove the right crankcase cover.

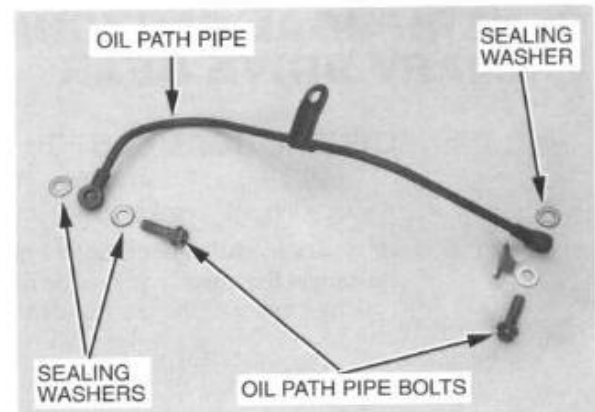
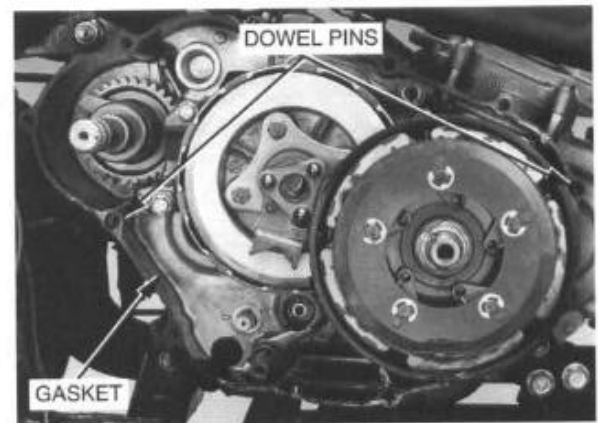
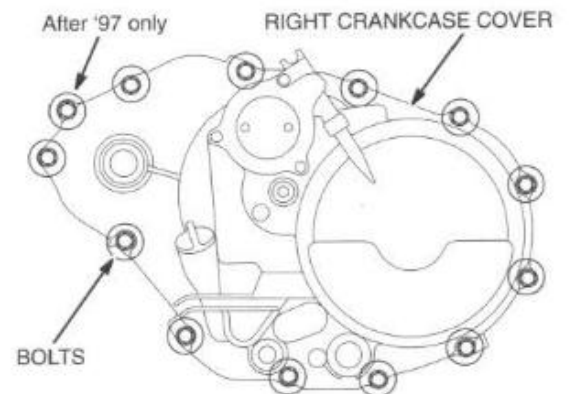
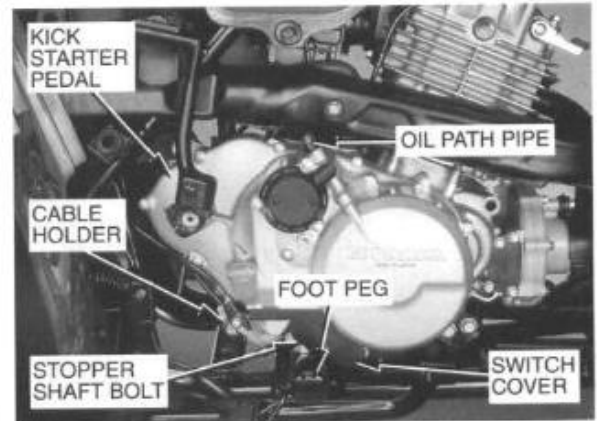
NOTE

Be careful not to remove the kick starter mechanism and reverse stopper shaft from the crankcase as you remove the cover.

Remove the gasket and dowel pins.

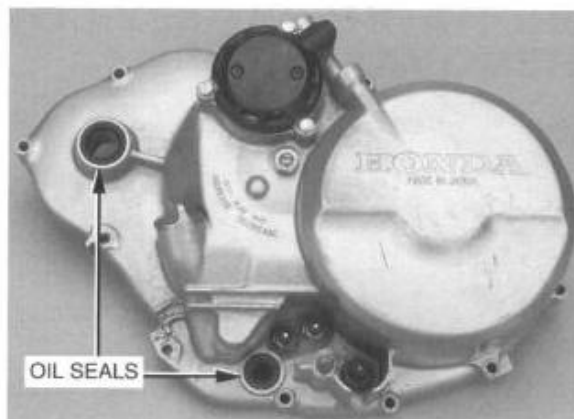
INSPECTION

Make sure that the oil path pipe and its bolts are not clogged, and that the sealing washers are in good condition.



CLUTCH/OIL PUMP/KICK STARTER

Check the kick starter pedal and reverse stopper shaft oil seals for wear or damage.



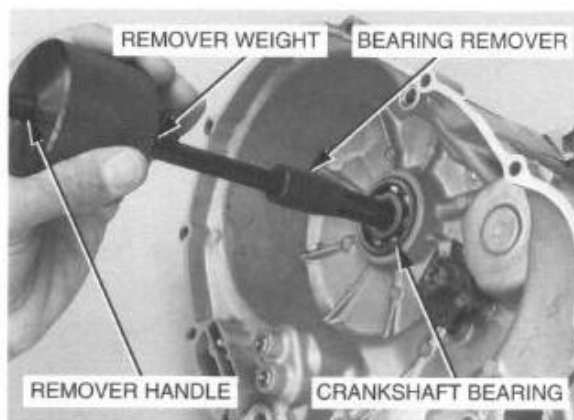
Turn the crankshaft bearing inner race with your finger. The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the crankcase cover. Replace it if necessary.

BEARING REPLACEMENT

Remove the crankshaft bearing from the right crankcase cover with the following tools.

TOOLS:

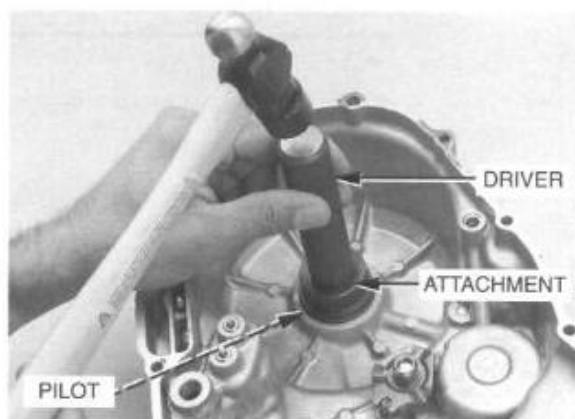
Bearing remover, 17 mm	07936-3710300
Remover handle	07936-3710100
Remover weight	07936-3710200



Drive a new crankshaft bearing into the cover, with its sealed side facing out, using the following tools.

TOOLS:

Driver	07749-0010000
Attachment, 42 x 47 mm	07746-0010300
Pilot, 17 mm	07746-0040400

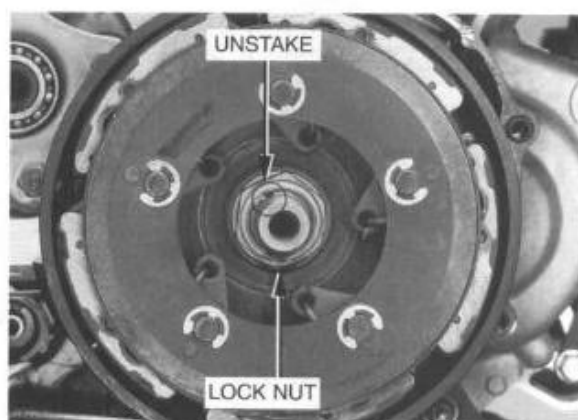


CENTRIFUGAL CLUTCH/ PRIMARY DRIVE GEAR

CENTRIFUGAL CLUTCH REMOVAL

Remove the right crankcase cover (page 8-3).

Unstake the centrifugal clutch lock nut with a drill or grinder. Be careful that metal particles do not enter the clutch and that the threads of the crankshaft are not damaged.



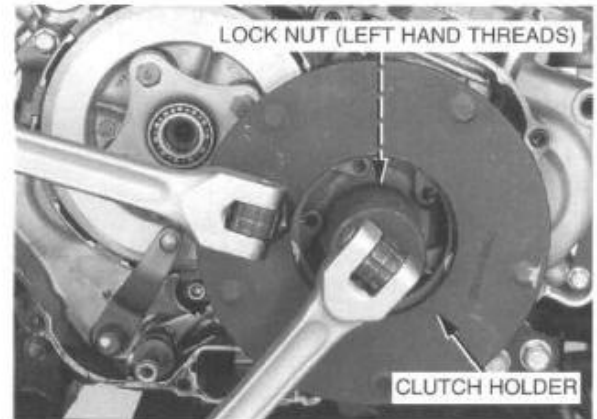
The lock nut has left-hand threads. Hold the centrifugal clutch weight assembly with a clutch holder and remove the lock nut by turning it clockwise.

TOOL:

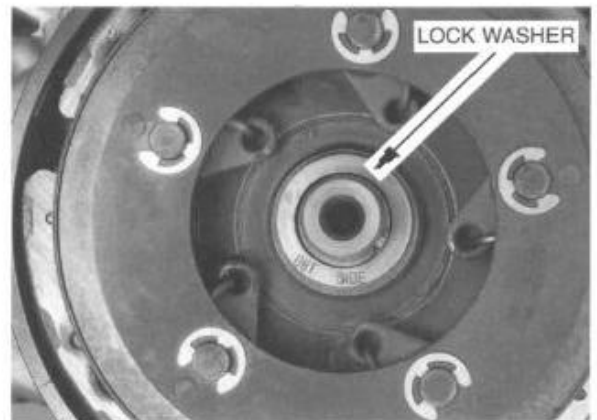
Clutch holder

07GMB-HA70100

Discard the lock nut.



Remove the lock washer.



Remove the centrifugal clutch weight assembly using the special tool and remove the clutch drum.

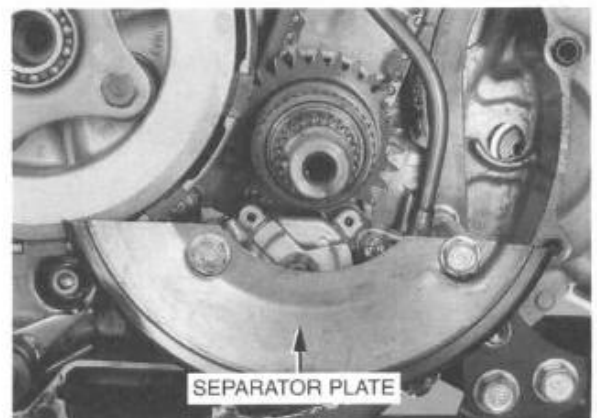
TOOL:

Clutch puller

07933-HB3000A



Remove the separator plate.

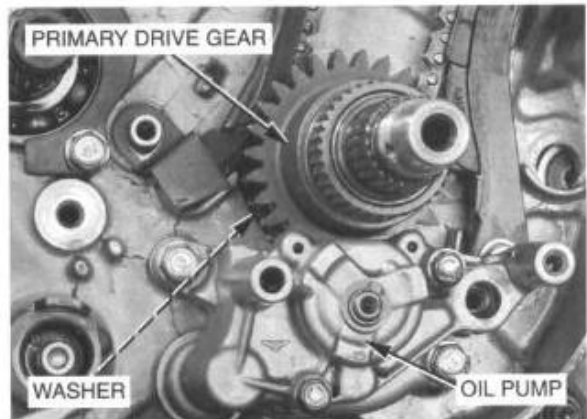


PRIMARY DRIVE GEAR REMOVAL

Remove the following:

- centrifugal clutch (page 8-4)
- change clutch (page 8-12)
- oil pump (page 8-18)

Remove the primary drive gear and washer from the crankshaft.



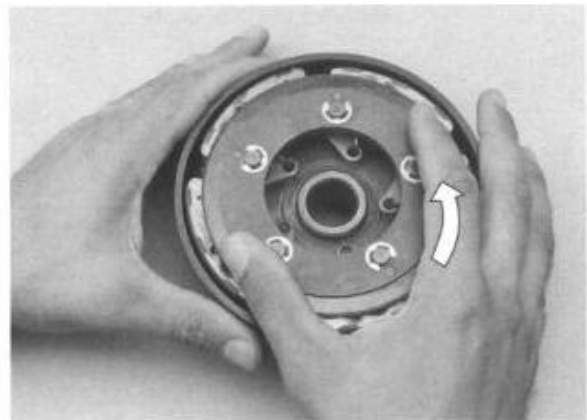
INSPECTION

• One-way clutch

Hold the clutch drum and rotate the clutch weight assembly. You should only be able to turn it counterclockwise.

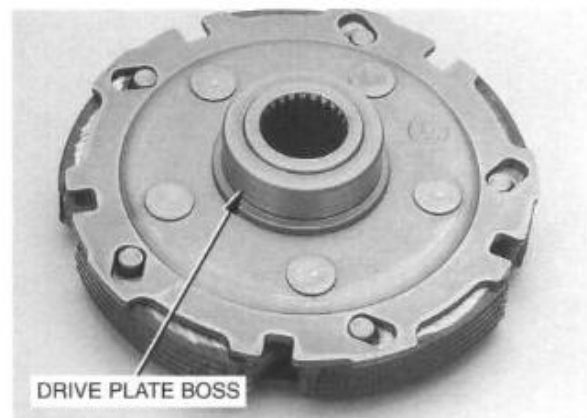
Remove the clutch weight assembly and one-way clutch from the clutch drum.

Check the rollers for excessive wear.



• Drive plate boss

Check the drive plate boss for excessive wear or damage.

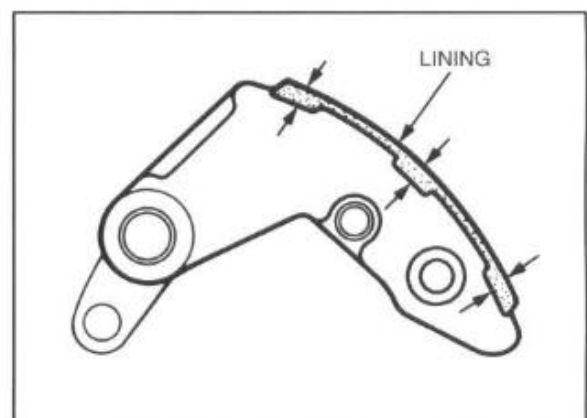


• Weight lining

Measure the weight lining thickness as shown.

SERVICE LIMIT: 2.0 mm (0.08 in)

For replacement, see page 8-7.

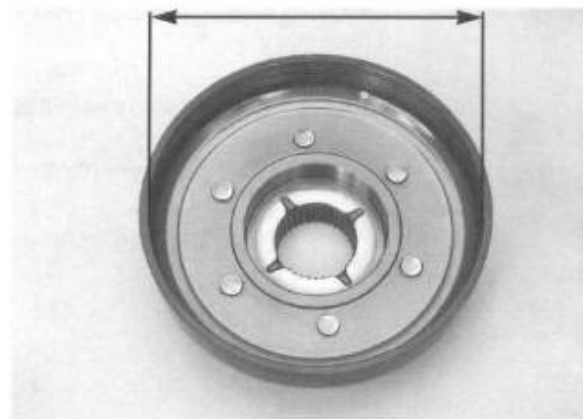


• Clutch Drum

Check the inside of the centrifugal clutch drum for scratches or excessive wear. Replace if necessary.

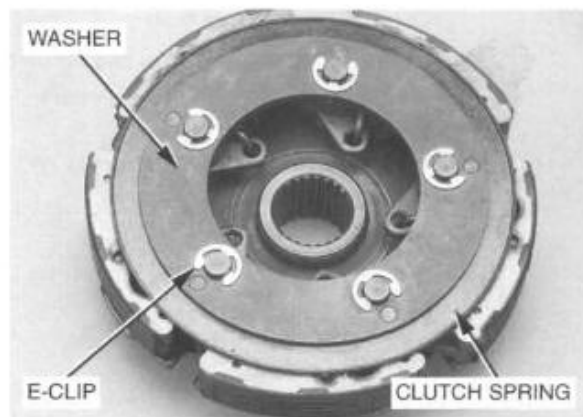
Measure the I.D. of the clutch drum.

SERVICE LIMIT: 140.2 mm (5.52 in)

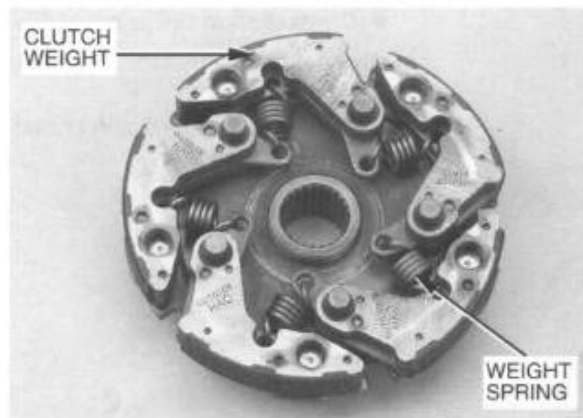


• Weight Spring/Clutch Spring

Remove the E-clips, outside washer, clutch spring, and inside washer.



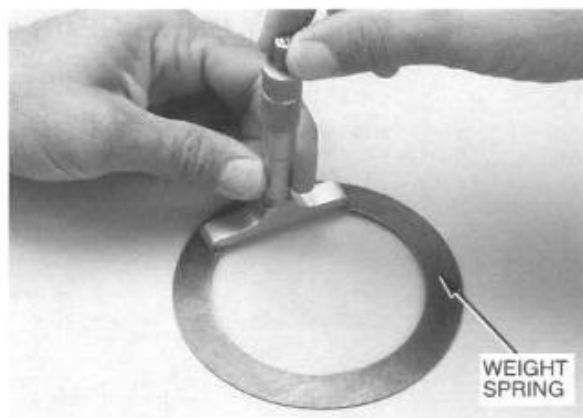
Remove the weight springs and clutch weights from the drive plate.



Measure the height of the clutch spring.

SERVICE LIMIT: 2.95 mm (0.116 in)

Replace the spring if it is shorter than the service limit.



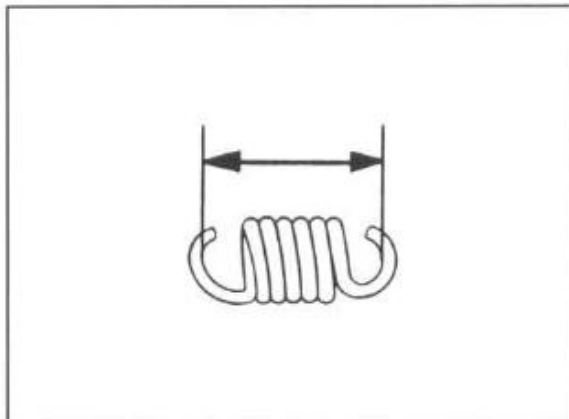
CLUTCH/OIL PUMP/KICK STARTER

Check the weight springs for wear or damage, and replace if necessary.

Measure the length of the weight spring.

SERVICE LIMIT: 22.5 mm (0.89 in)

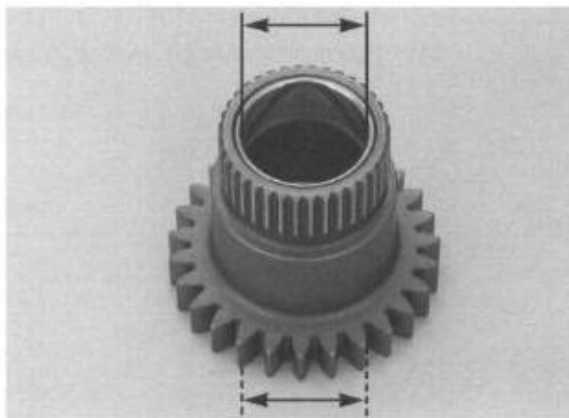
Replace the springs if they are longer than the service limit.



- **Primary drive gear**

Inspect the primary drive gear for damage or excessive wear.
Measure the primary drive gear I.D.

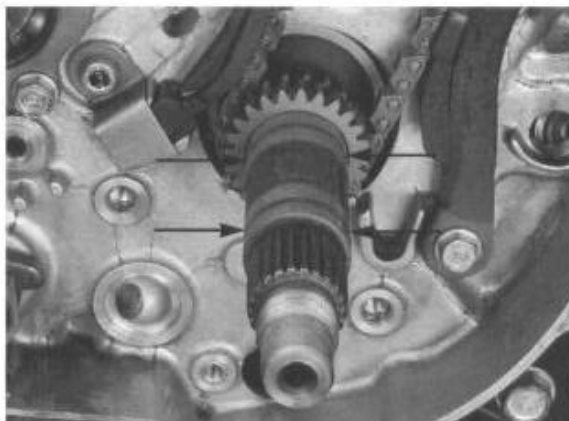
SERVICE LIMIT: 27.05 mm (1.065 in)



- **Crankshaft at the primary drive gear**

Measure the crankshaft O.D. at two locations as shown.

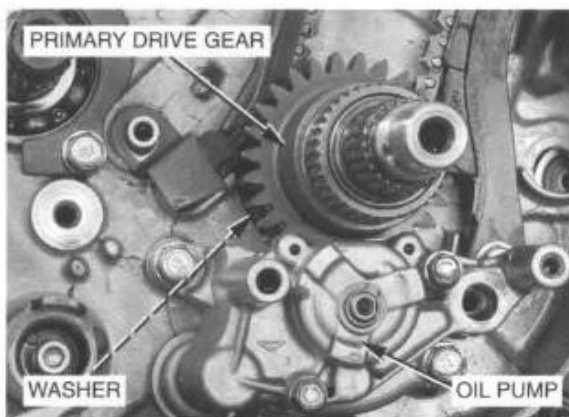
SERVICE LIMIT: 26.93 mm (1.060 in)



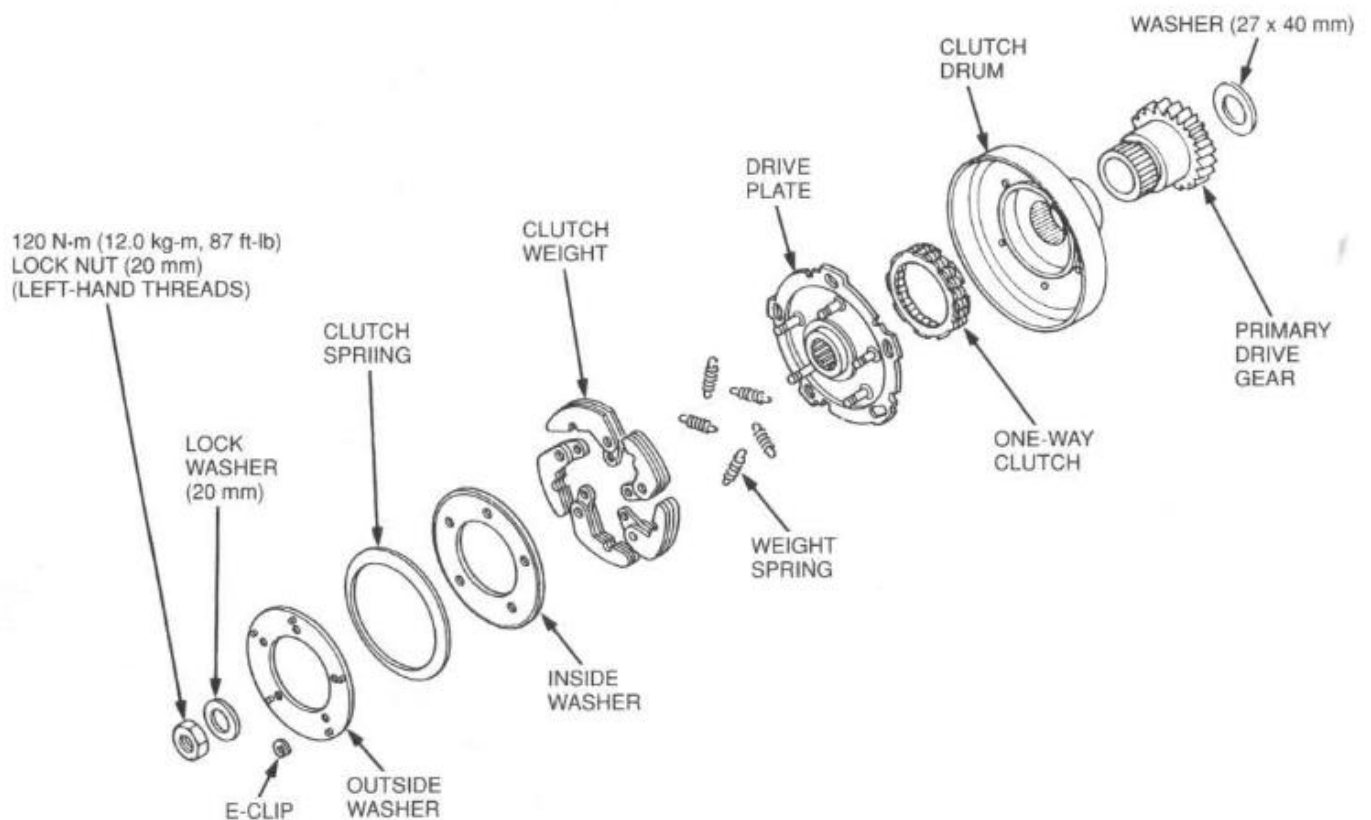
PRIMARY DRIVE GEAR INSTALLATION

Install the following:

- washer and primary drive gear to the crankshaft
- oil pump (page 8-20)
- change clutch (page 8-15)

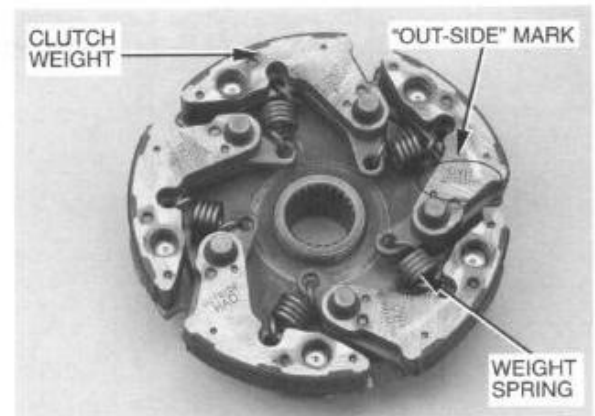


CENTRIFUGAL CLUTCH WEIGHT ASSEMBLY



Install the weights with the "OUT-SIDE" marks facing up.

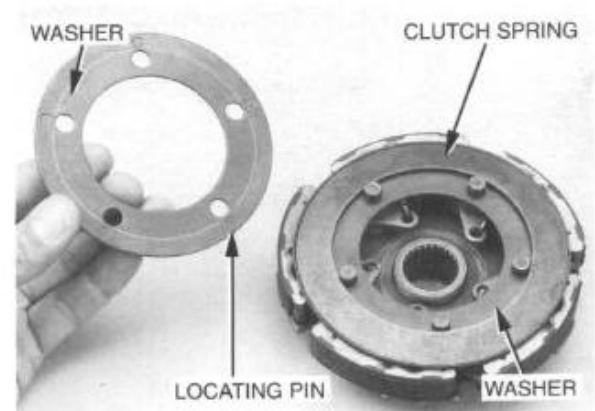
Install the clutch weights and springs onto the drive plate.



Install the spring with the dished face towards the inside.

Install the inside washer and clutch spring.

Install the outside washer with the locating pins facing out.

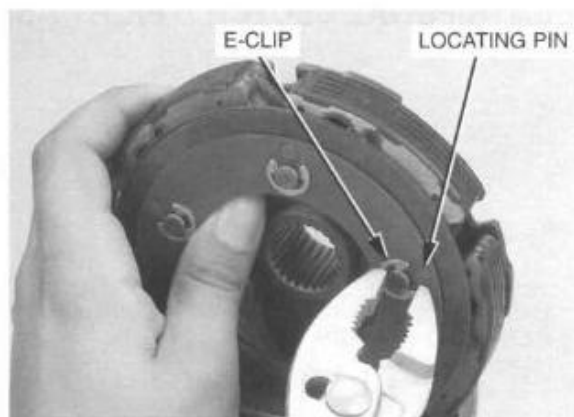


CLUTCH/OIL PUMP/KICK STARTER

Be careful not to damage the clutch weight assembly.

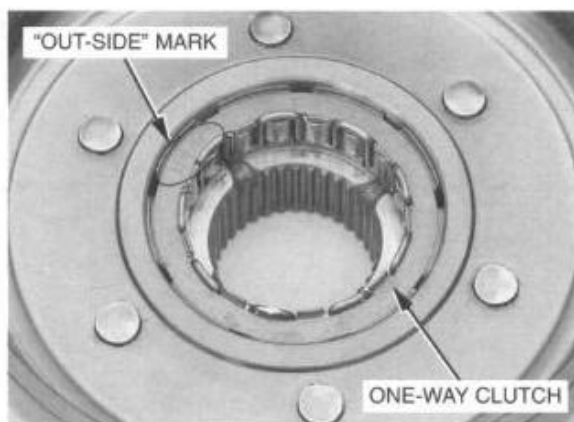
Place the clutch weight assembly in a vise and tighten the jaws just enough to compress the clutch spring.

Install the E-clips with their dished sides against the washer and their gaps aligned with the locating pins.

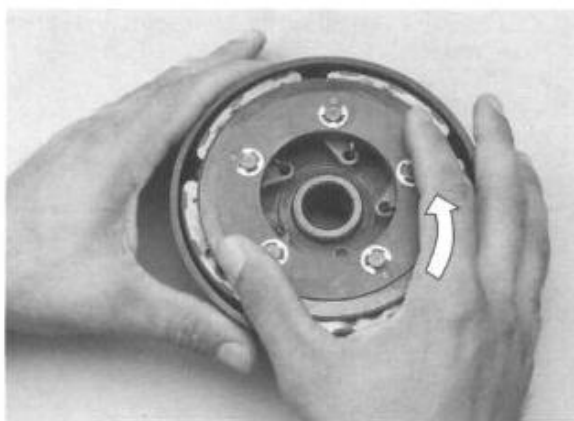


Inspect the one-way clutch for smooth operation and check the rollers for excessive wear.

Install the one-way clutch in the clutch drum with its "OUT-SIDE" mark facing out.

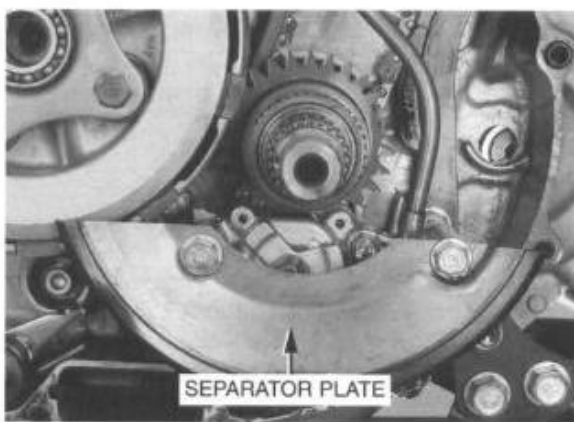


Install the centrifugal clutch weight assembly in the clutch drum, rotating the weight assembly counterclockwise.



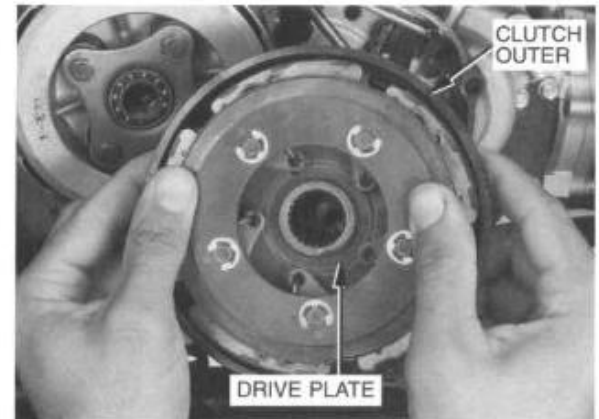
CENTRIFUGAL CLUTCH INSTALLATION

Install the separator plate.

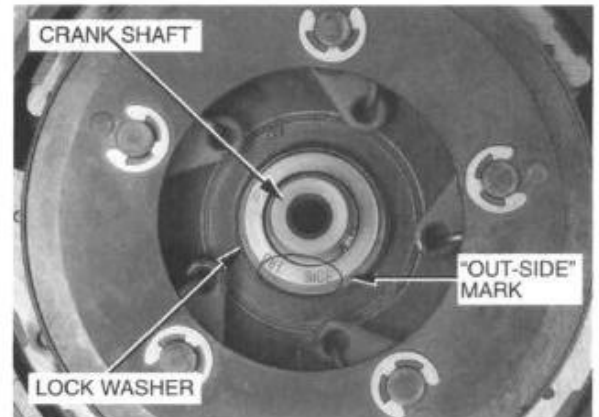


Install the centrifugal clutch weight assembly and clutch drum to the crankshaft using the following method:

- Align the splines of the drive plate and crankshaft.
- Rotating the clutch outer, align the splines of the primary drive gear and clutch outer.



Install the lock washer with its "OUT-SIDE" mark facing out.



Apply locking agent to the new lock nut.

The lock nut has left-hand threads.

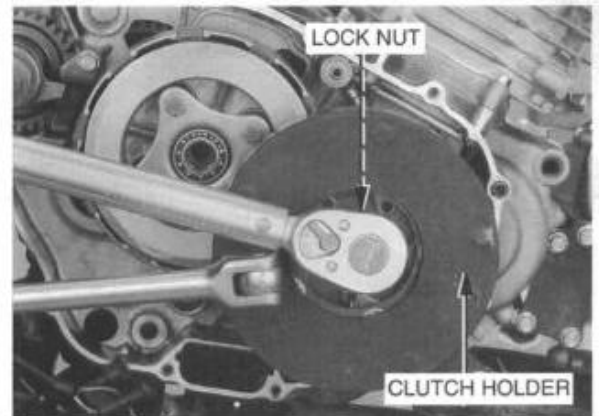
Hold the centrifugal clutch weight assembly with the clutch holder and tighten the lock nut by turning it counterclockwise.

TORQUE: 120 N·m (12.0 kg-m, 87 ft-lb)

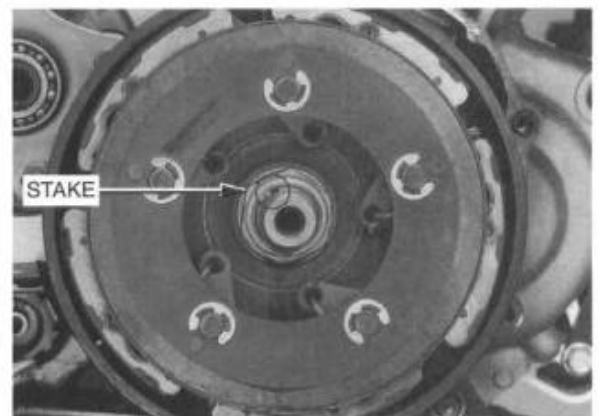
TOOL:

Clutch holder

07GMB-HA70100



Stake the lock nut and install the right crankcase cover (page 8-23).



CHANGE CLUTCH

REMOVAL

Remove the following:

- right crankcase cover (page 8-3)
- centrifugal clutch (page 8-4)
- clutch lever (page 8-17)

Remove the clutch bolts, loosening them in a crisscross pattern in 2 or 3 steps.

Remove the lifter plate and clutch springs.

Unstake the clutch center lock nut with a drill or grinder. Be careful that metal particles do not enter the clutch and that the threads of the mainshaft are not damaged.

Install the clutch center holder and lock nut wrench as shown, and remove the clutch lock nut.

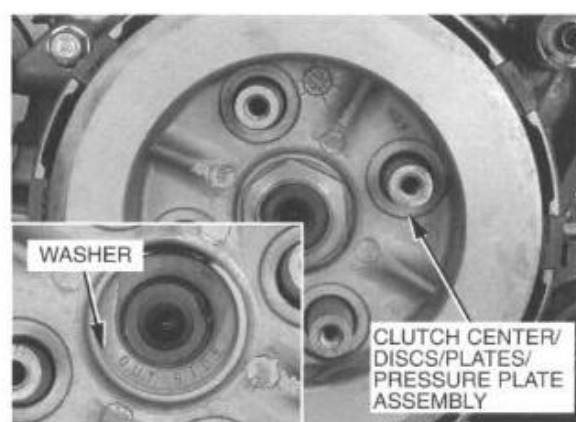
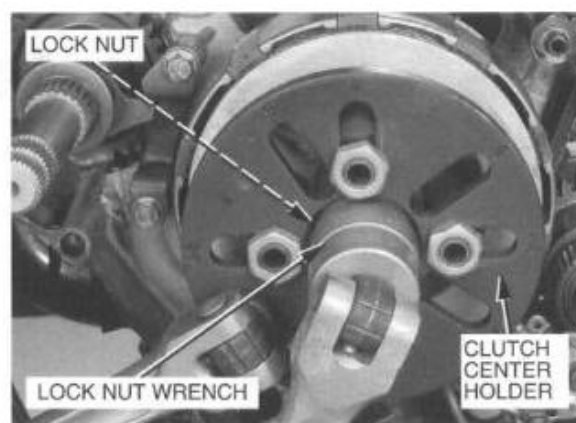
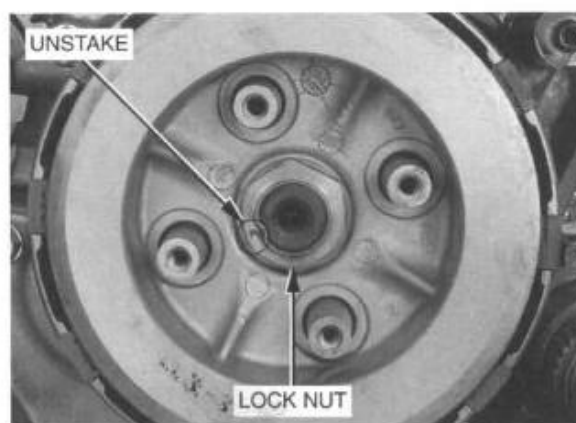
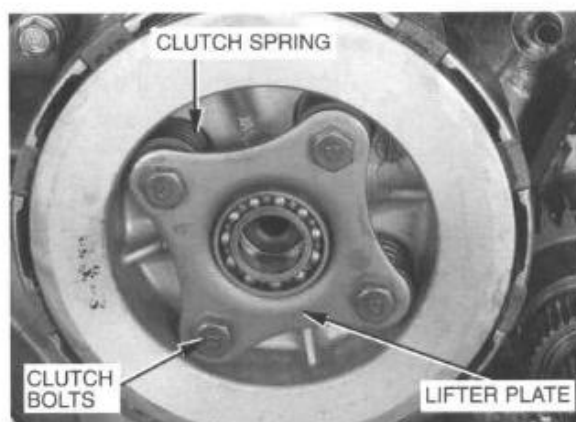
TOOLS:

Clutch center holder

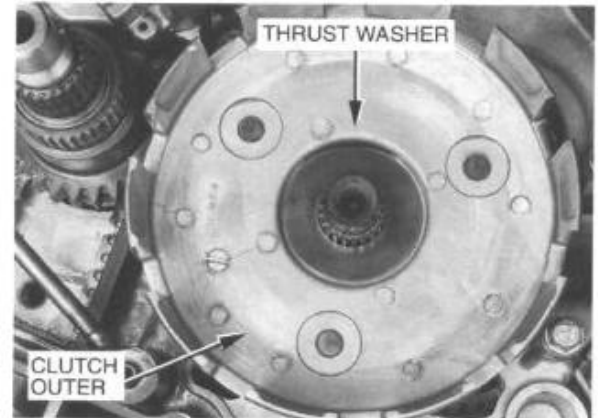
07HGB-001000A

Discard the lock nut.

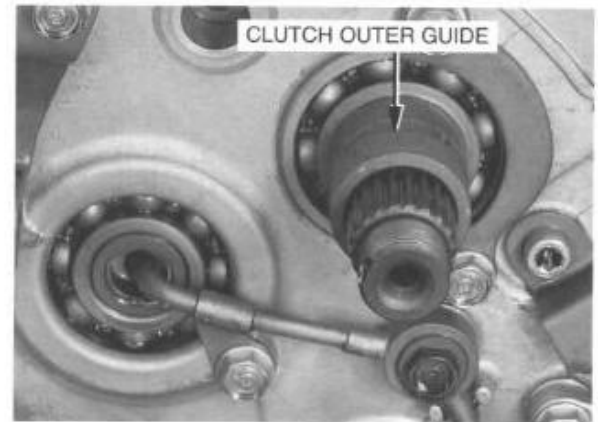
Remove the washer, clutch center, discs, plates and pressure plate as an assembly.



Remove the thrust washer and clutch outer.



Remove the clutch outer guide from the mainshaft.



INSPECTION

• Clutch lifter bearing

Turn the lifter bearing inner race with your finger. The bearing should turn smoothly and freely without excessive play. Also check that the bearing outer race fits tightly in the clutch lifter plate.

Replace if necessary. Drive the bearing out of the clutch lifter plate.

Drive a new bearing into the plate.

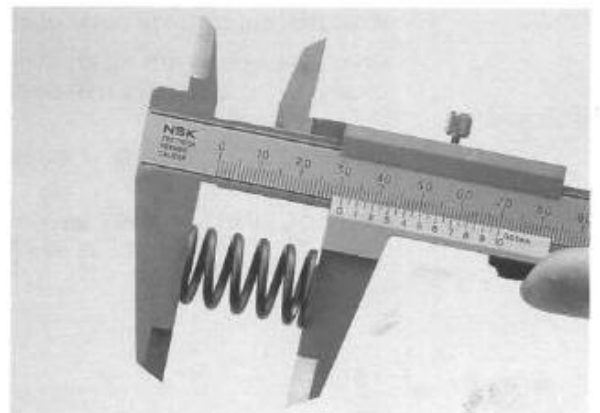
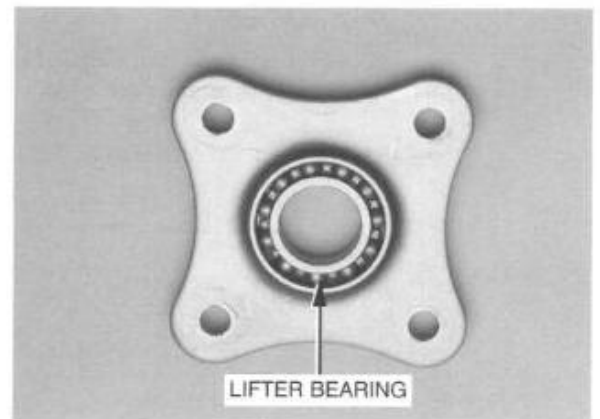
TOOLS:

Driver	07749-0010000
Attachment, 28 x 30 mm	07946-1870100

• Clutch spring

Measure the spring free length of all 4 springs.

SERVICE LIMIT: 31.0 mm (1.22 in)

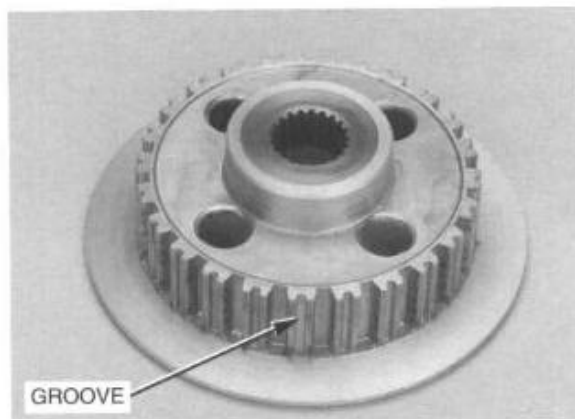


CLUTCH/OIL PUMP/KICK STARTER

- **Clutch center**

Check the grooves of the clutch center for damage or wear caused by the clutch plate.

Replace if necessary.

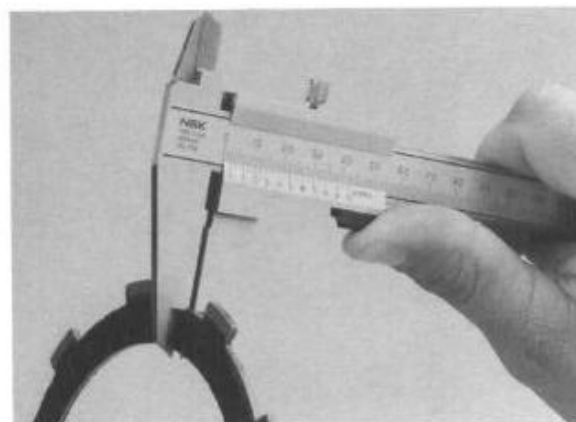


- **Clutch disc**

Replace the clutch discs if they show signs of scoring or discoloration.

Measure the disc thickness.

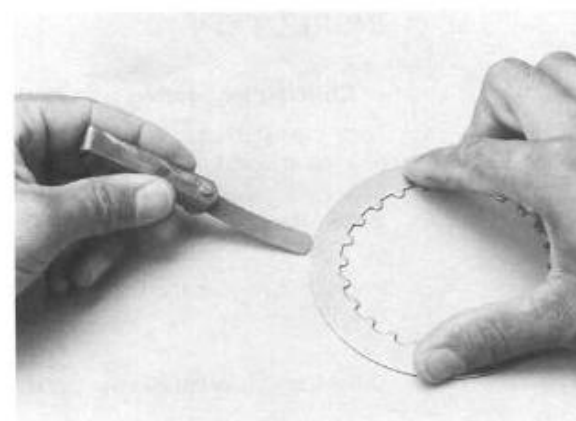
SERVICE LIMIT: 2.3 mm (0.09 in)



- **Clutch plate**

Check for plate and disc warpage on a surface plate using a feeler gauge and surface plate.

SERVICE LIMIT: 0.20 mm (0.008 in)

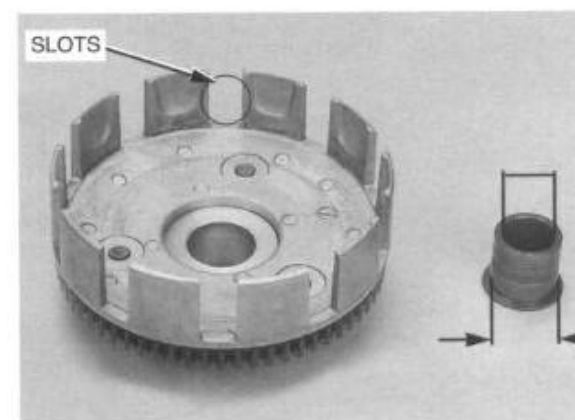


- **Clutch outer/clutch outer guide**

Check the slots of the clutch outer for damage or wear caused by the clutch discs. Replace if necessary.

Measure the O.D. and I.D. of the clutch outer guide.

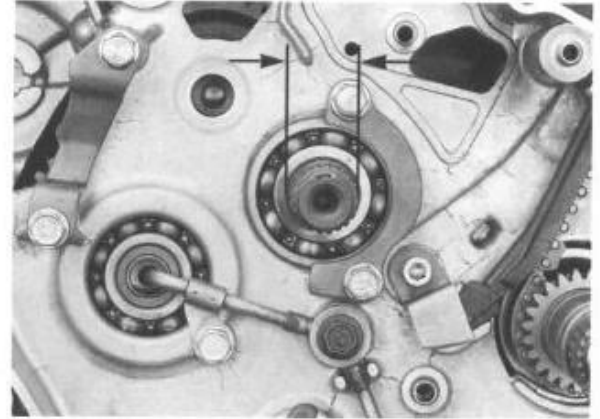
**SERVICE LIMITS: O.D. 27.92 mm (1.099 in)
I.D. 22.05 mm (0.868 in)**



- Mainshaft at the clutch outer guide

Measure the O.D. of the mainshaft.

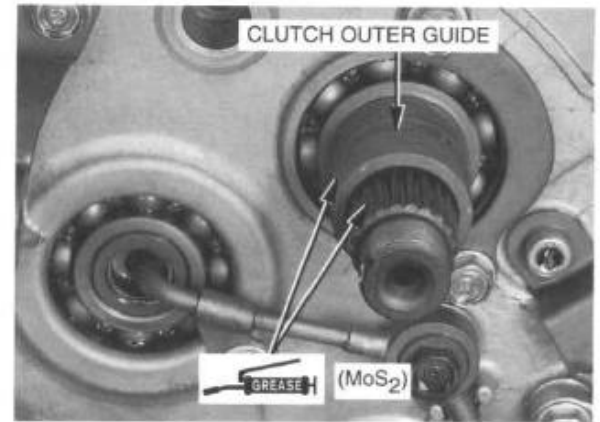
SERVICE LIMIT: 21.93 mm (0.863 in)



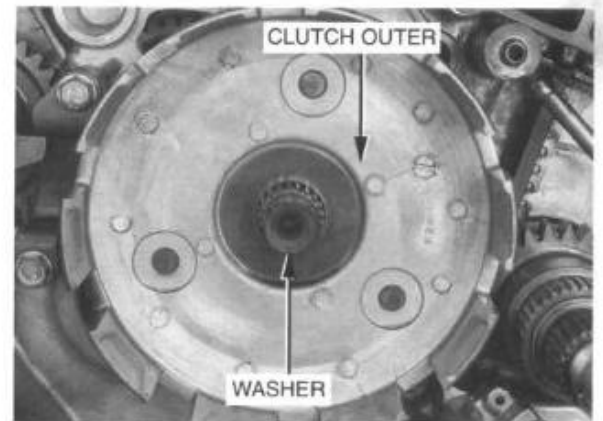
INSTALLATION

Apply molybdenum disulfide grease to the inner and outer surfaces of the clutch outer guide.

Install the clutch outer guide on the mainshaft.



Install the clutch outer and thrust washer.

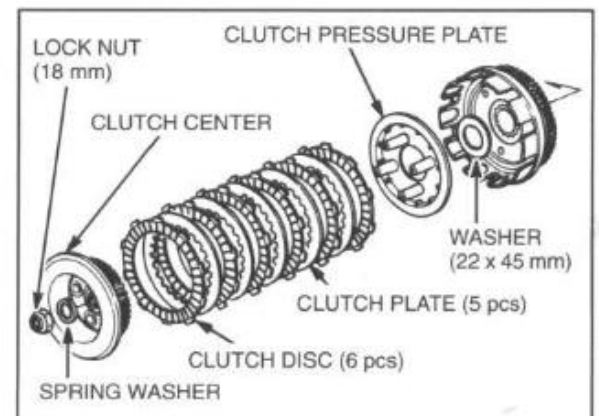


Coat new clutch discs with engine oil.

Assemble the clutch pressure plate, discs, plates and clutch center, and install them in the clutch outer.

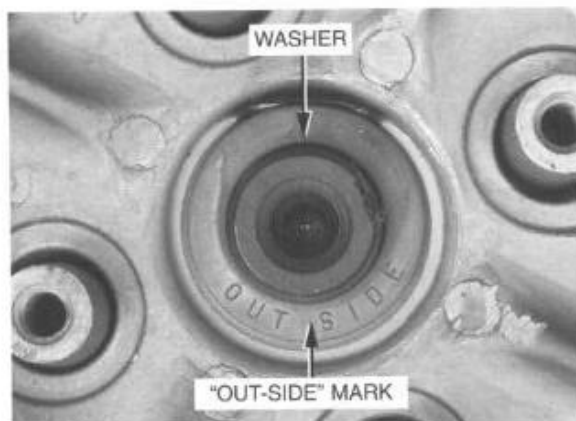
Stack the discs and plates alternately.

Be sure the clutch center and pressure plate grooves are properly aligned.



CLUTCH/OIL PUMP/KICK STARTER

Install the washer on the mainshaft with its "OUT-SIDE" mark facing out.



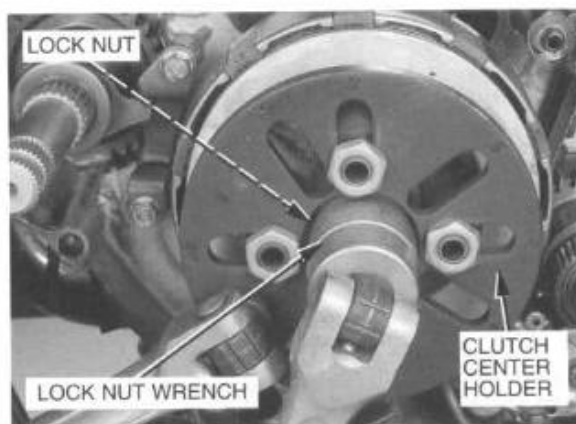
Apply locking agent to the new lock nut.
Hold the clutch center and tighten the lock nut.

TORQUE: 110 N·m (11.0 kg·m, 80 ft·lb)

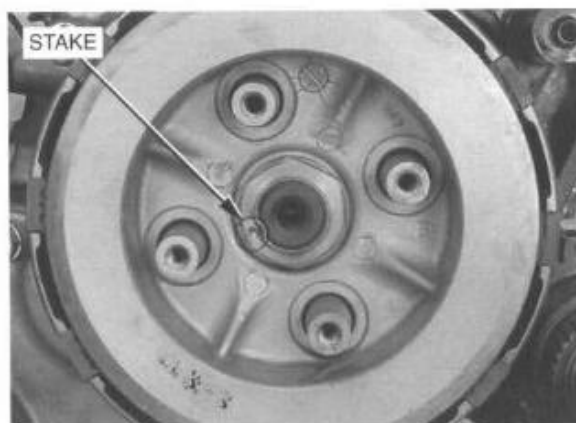
TOOLS:

Clutch center holder

07HGB-001000A



Stake the clutch center lock nut.

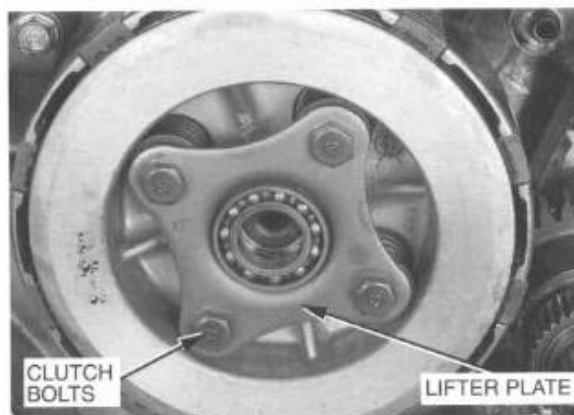


Install the clutch springs, lifter plate and bolts.
Tighten the bolts in a crisscross pattern in 2 or 3 steps.

TORQUE: 12 N·m (1.2 kg·m, 9 ft·lb)

Install the following:

- clutch lever (page 8-17)
- centrifugal clutch (page 8-10)
- right crankcase cover (page 8-23)



REVERSE LOCK MECHANISM

REMOVAL

Remove the following:

- right crankcase cover (page 8-3)
- washer and clutch lever
- washer and reverse stopper shaft
- rotor bolt, reverse/neutral rotor and reverse lock plate

Remove the washer and spring from the reverse stopper shaft.

Check all parts for excessive wear or damage, and replace if necessary.

INSTALLATION

Assemble the reverse stopper shaft and apply oil to the shaft pivot.

Install the reverse stopper shaft.

Install the reverse lock plate pins with their thicker sides towards the drum, then install the reverse lock plate.

Install the reverse/neutral rotor with its projection facing down.

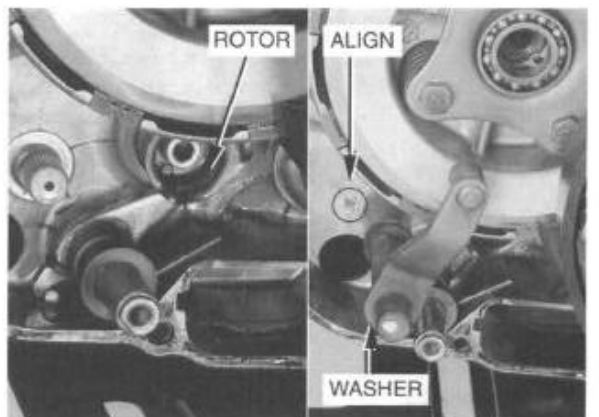
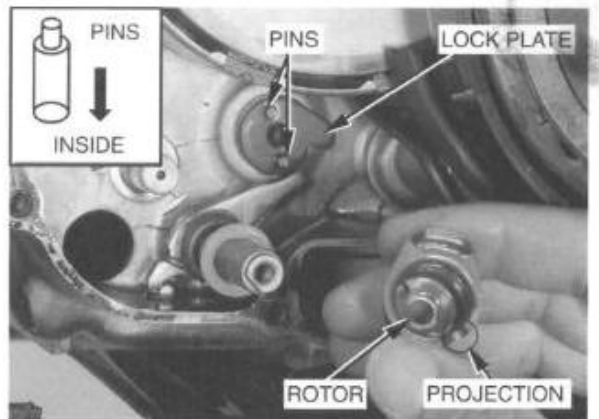
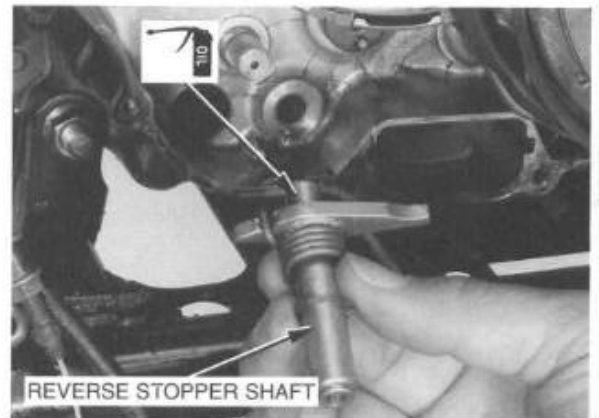
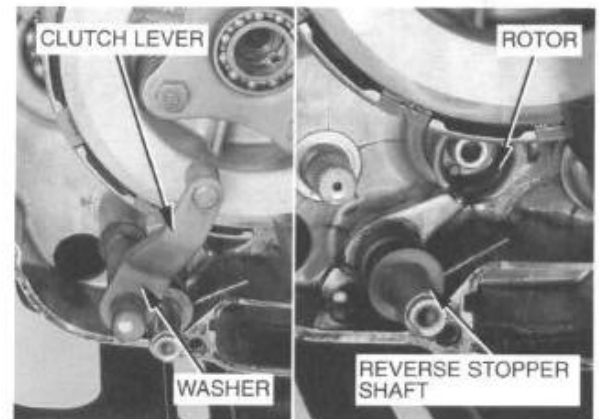
Apply locking agent to the rotor bolt and tighten it to the specified torque.

TORQUE: 12 N·m (1.2 kg·m, 9 ft·lb)

Align the index mark on the crankcase with the punch mark on the clutch lever and install the clutch lever.

Install the thrust washer.

Install the right crankcase cover (page 8-23).



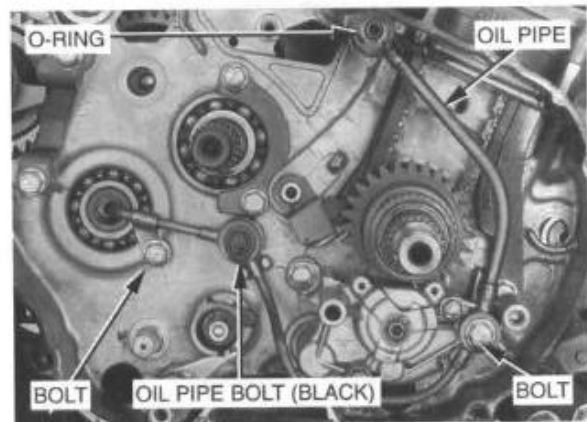
OIL PUMP

REMOVAL/DISASSEMBLY

Remove the following:

- centrifugal clutch (page 8-4)
- change clutch (page 8-12)

Remove the O-ring, oil pipe mounting bolts, oil pipe bolt (BLACK) and pipe.

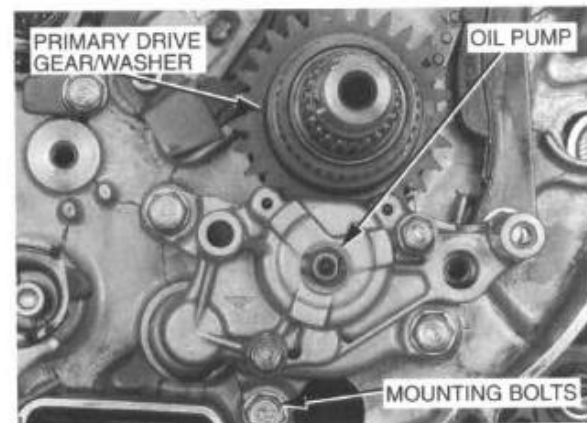


Remove the oil pump mounting bolts.

Remove the oil pump, primary drive gear and thrust washer.

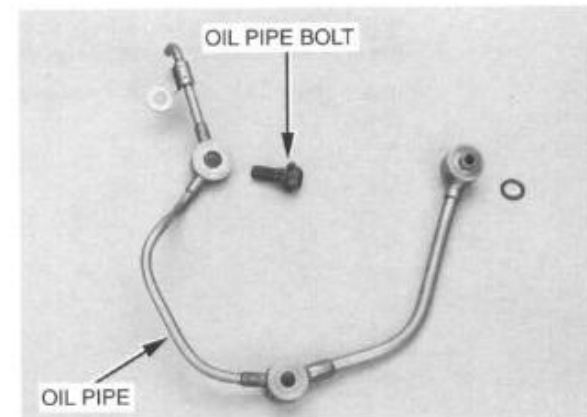
Remove the O-ring and two dowel pins from the crankcase.

Disassemble the oil pump.



INSPECTION

Make sure that the oil pipe and oil pipe bolt are not clogged.

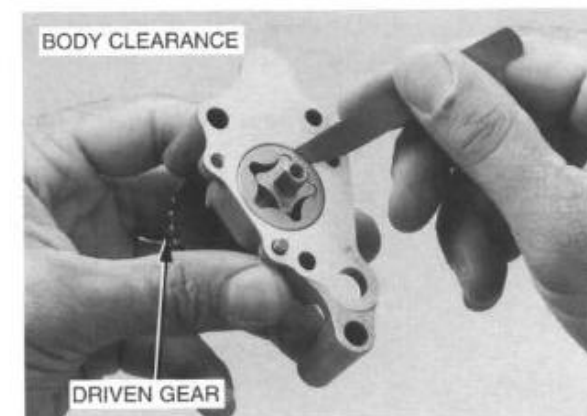


Thoroughly clean all the components.

Install the outer and inner rotors into the body and temporarily insert the oil pump driven gear shaft.

Measure the pump rotor clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)



Measure the pump rotor tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)

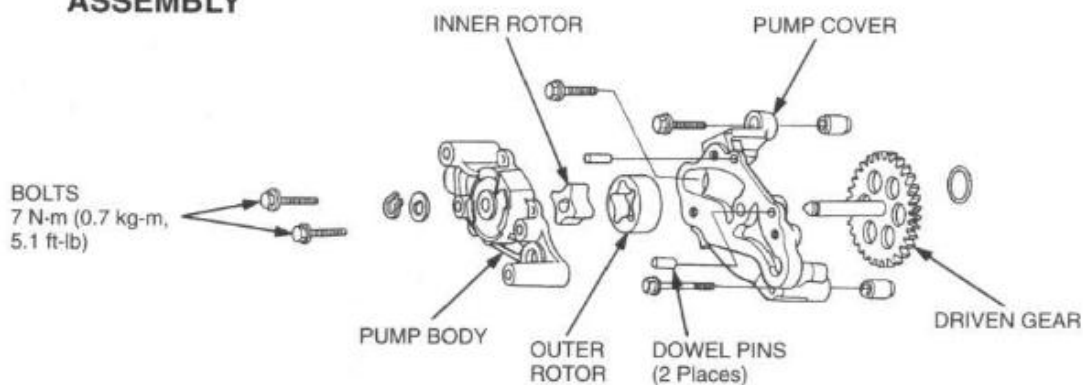


Remove the oil pump driven gear shaft from the oil pump body and measure the pump side clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

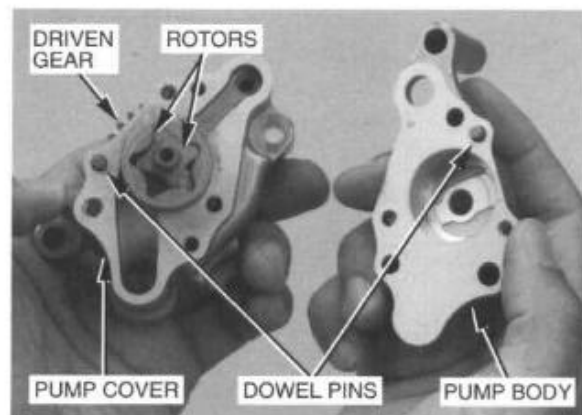


ASSEMBLY



Install the driven gear, inner rotor, outer rotor and dowel pin on the pump cover.

Install the pump body on the cover.

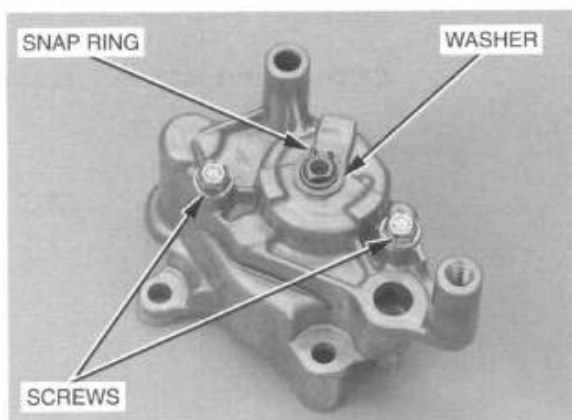


CLUTCH/OIL PUMP/KICK STARTER

Install the snap ring with its chamfered surface facing the washer.

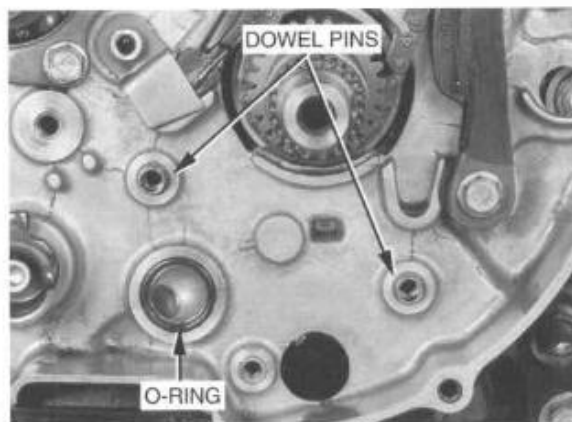
Install the washer, snap ring and tighten the bolts to the specified torque.

TORQUE: 7 N-m (0.7 kg-m, 5.1 ft-lb)



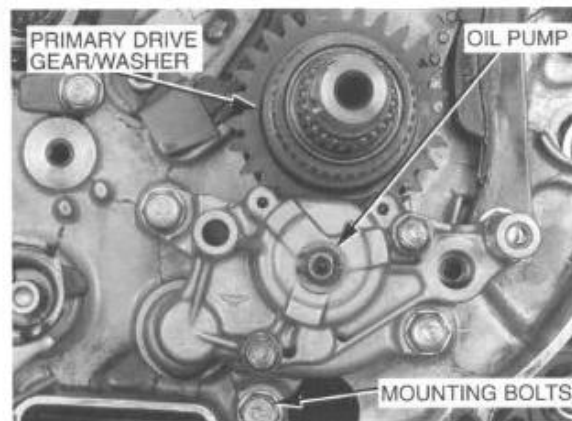
INSTALLATION

Install the O-ring and dowel pins into the right crankcase.



Install the thrust washer and primary drive gear on the crankshaft.

Install the oil pump and tighten the mounting bolts.



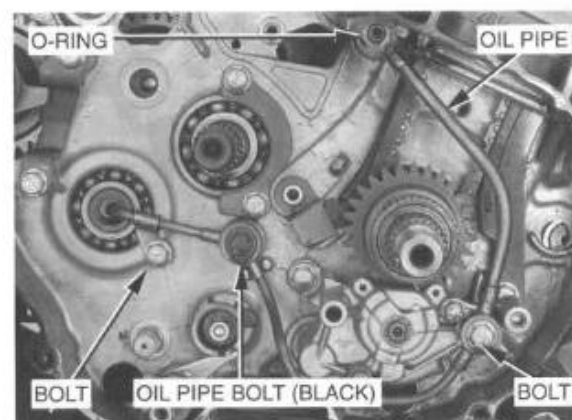
Install the oil pipe with the oil pipe bolt (BLACK), mounting bolts and O-ring.

Tighten the oil pipe bolt (BLACK) to the specified torque.

TORQUE: 12 N-m (1.2 kg-m, 9 ft-lb)

Install the following:

- change clutch (page 8-15)
- centrifugal clutch (page 8-10)



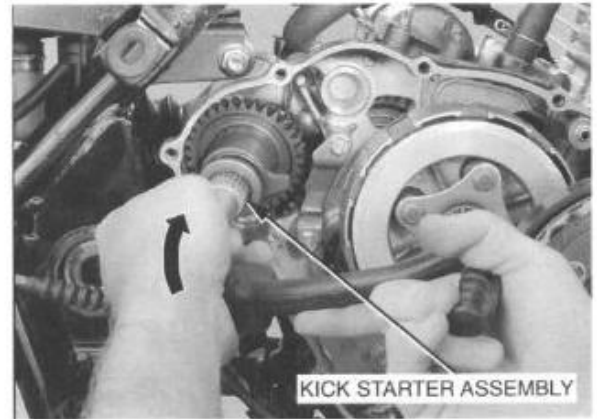
KICK STARTER

REMOVAL/DISASSEMBLY

Remove the right crankcase cover (page 8-3).

Temporarily install the kick starter pedal on the starter shaft and remove the shaft assembly by turning the kick starter arm clockwise to free the ratchet from the ratchet guide.

Disassemble the kick starter.



INSPECTION

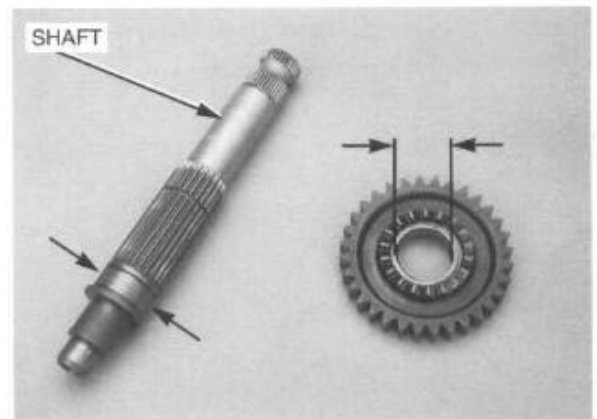
Measure the kick starter shaft O.D.

SERVICE LIMIT: 23.90 mm (0.941 in)

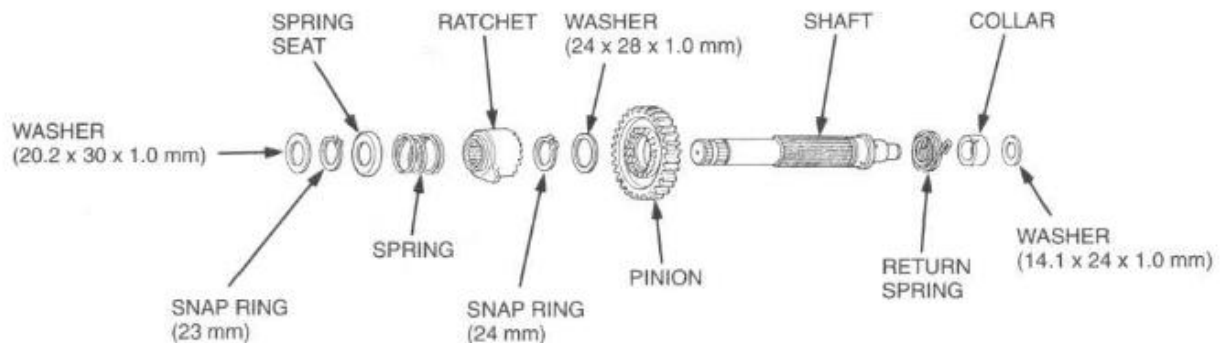
Inspect the pinion for damaged ratchet teeth.

Measure the kick starter pinion I.D.

SERVICE LIMIT: 24.10 mm (0.949 in)



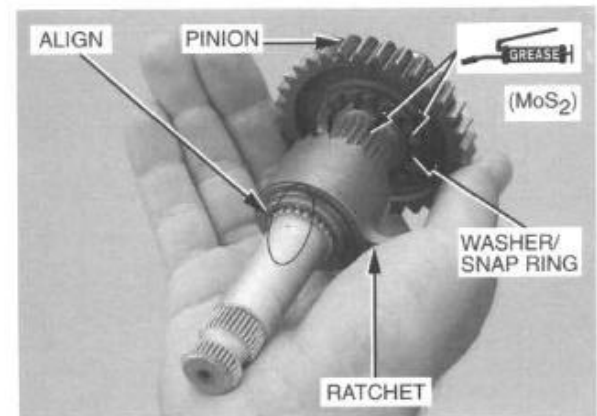
ASSEMBLY



Apply molybdenum disulfide grease to the spline side of the kick starter shaft and the sliding surface of the kick starter pinion.

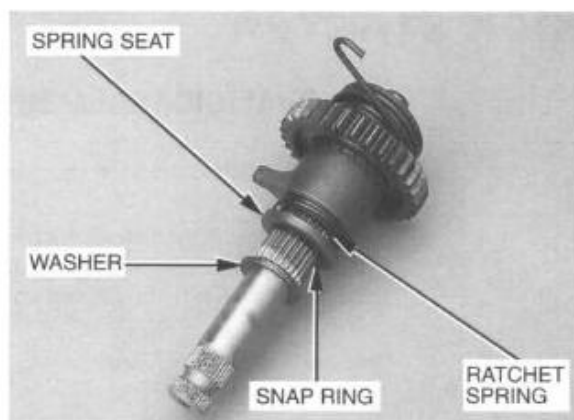
Install the kick starter pinion on the shaft, then install the washer and snap ring.

Install the ratchet on the shaft while aligning their punch marks.



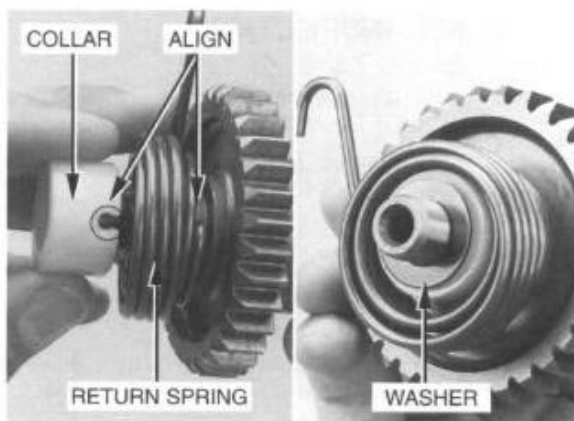
CLUTCH/OIL PUMP/KICK STARTER

Install the ratchet spring and spring seat, snap ring and washer.



Install the return spring and collar, aligning the groove in the collar with the end of the return spring.

Install the washer.

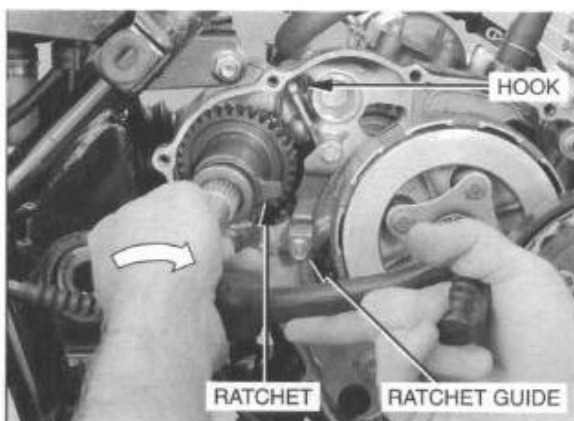


INSTALLATION

Temporarily install the kick starter pedal onto the shaft.

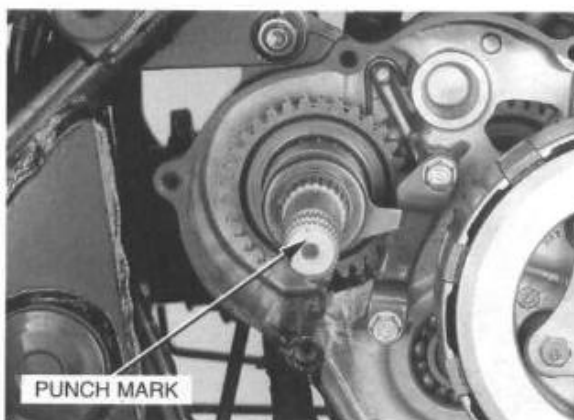
Hook the return spring onto the crankcase.

Install the kick starter assembly by turning it clockwise about a half-turn and aligning the ratchet with the ratchet guide.



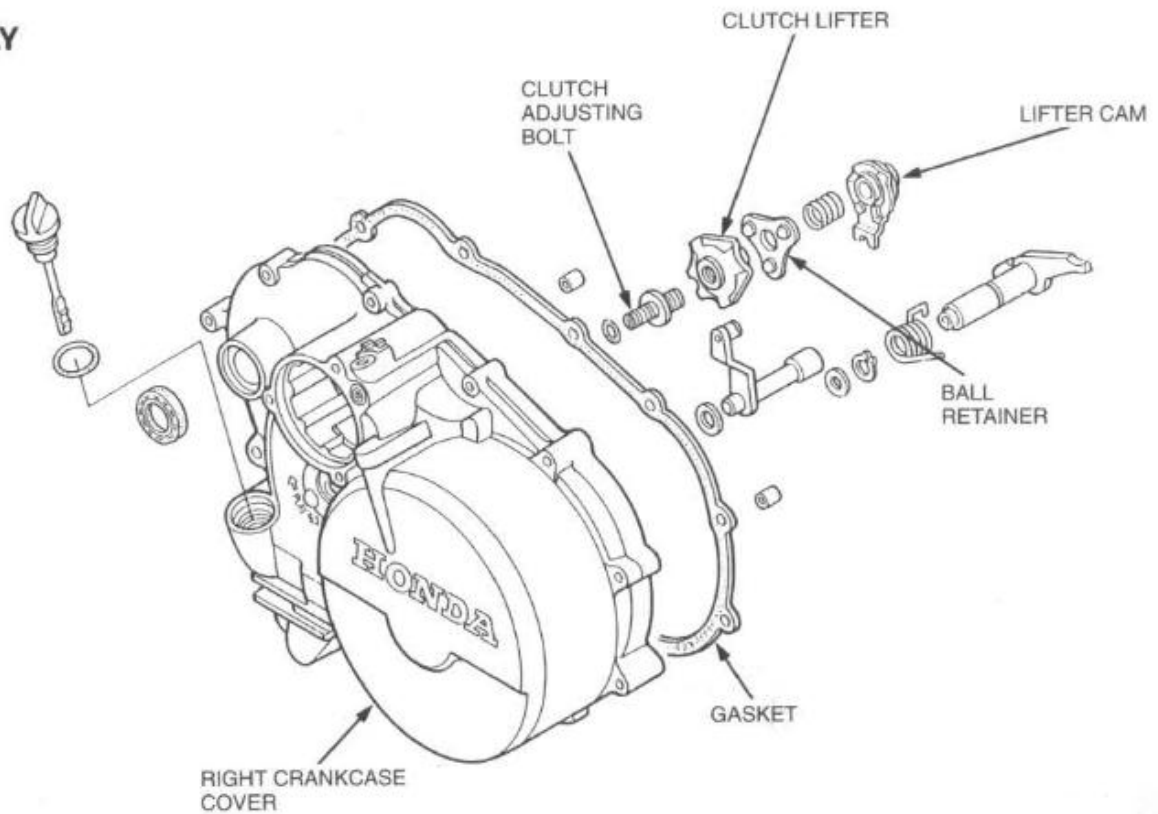
Make sure that the punch mark on the end of the spindle is facing up.

Install the right crankcase cover (page 8-23).



RIGHT CRANKCASE COVER INSTALLATION

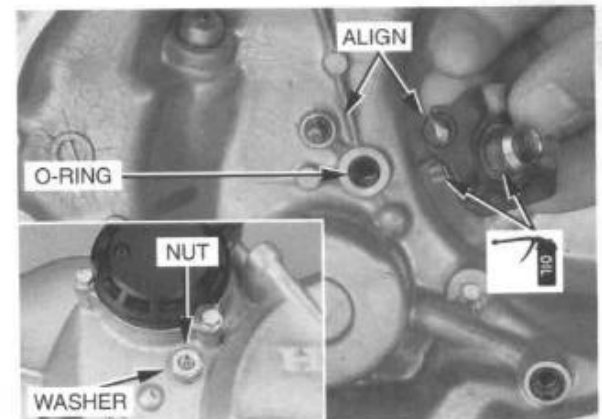
ASSEMBLY



Apply oil to the clutch adjusting bolt.

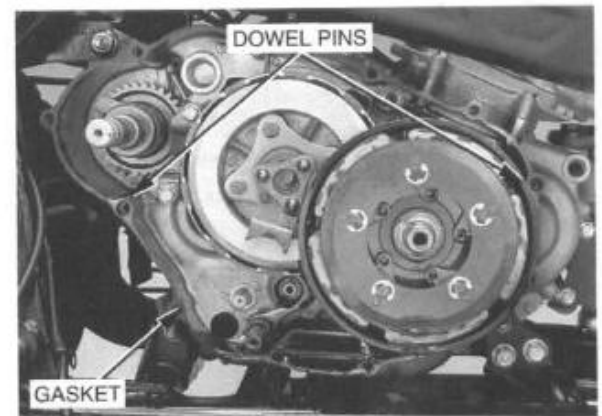
Install the O-ring and the clutch adjusting bolt while aligning the groove of the clutch lifter with the crankcase cover pin.

Install the washer and nut.



INSTALLATION

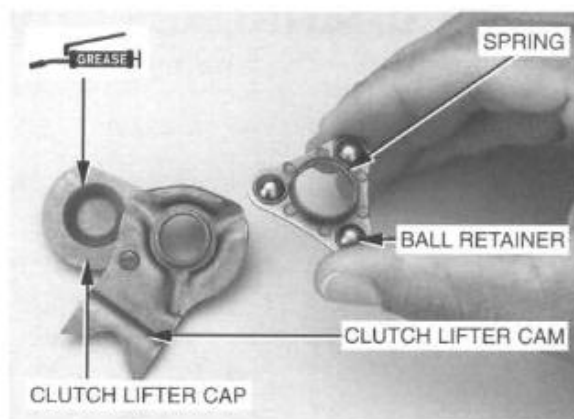
Install the dowel pins and new gasket.



CLUTCH/OIL PUMP/KICK STARTER

Apply grease to the clutch lifter cap.

Install the ball retainer and spring to the clutch lifter cam.

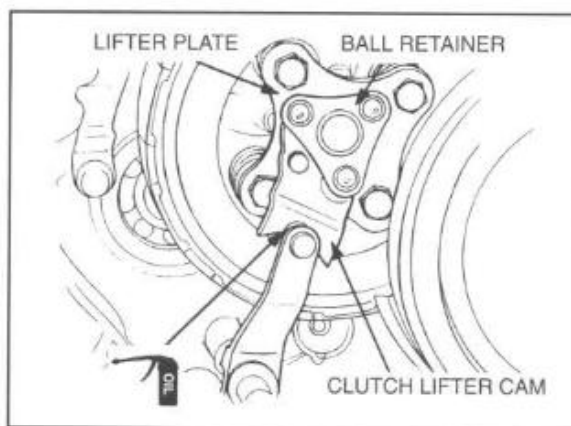


Apply oil to the clutch lever.

Install the clutch lifter cam and ball retainer to the clutch lifter plate as shown.

NOTE

Make sure the clutch lever points toward the center of clutch as shown.



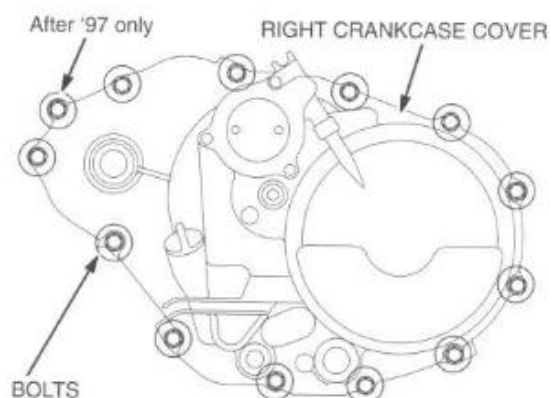
Install the right crankcase cover.

'95-'97: Install the twelve right crankcase cover bolts.

After '97: Install the thirteen right crankcase cover bolts.

Tighten the bolts in a crisscross pattern in 2 or 3 steps.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)

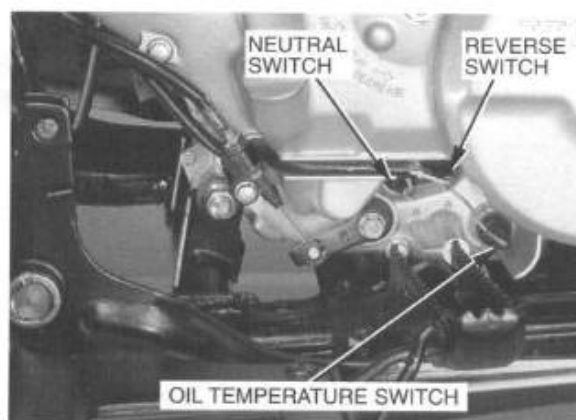


Connect the switch connectors referring their marked codes: "N" to the neutral switch and "R" to the reverse switch.

⚠ WARNING

If the neutral and reverse switch wire connections are interchanged, the neutral indicator will come on when the transmission is in reverse.

Connect the oil temperature switch wire. Route the wires along the crankcase cover properly.

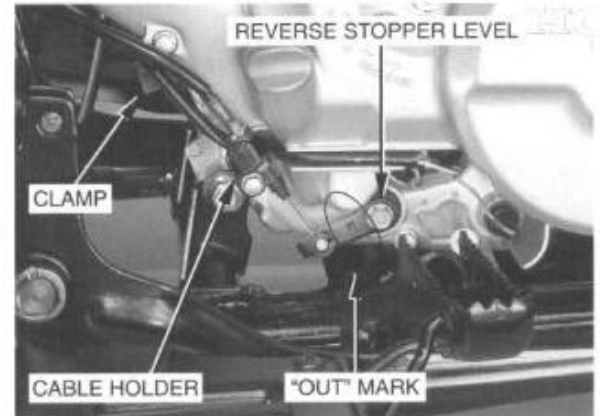


Install the clamp and cable holder with the right crankcase cover bolts. Tighten the bolts.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)

Clamp the wire with the clamp and cable holder as shown.

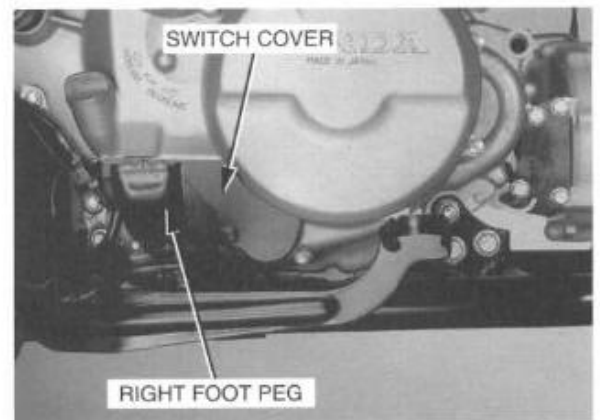
Install the reverse stopper lever with its "OUT" mark facing out. Install and tighten the reverse stopper shaft bolt.



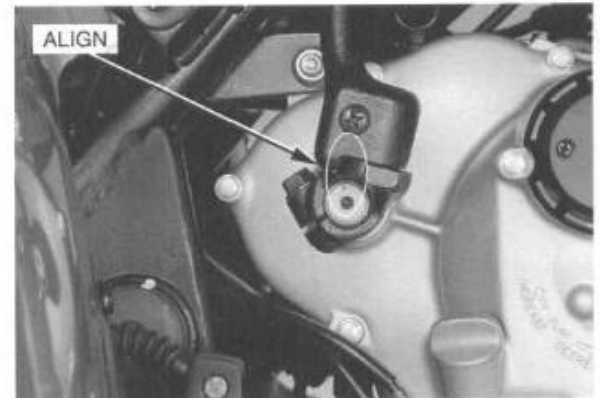
Install the switch cover and the right foot peg. Tighten the foot peg bolt.

TORQUE: 33 N·m (3.3 kg-m, 24 ft-lb)

TRX300FW: Install the skid plate.



Install the kick starter pedal to the shaft, aligning the punch marks of the pedal and shaft.



Install the oil path pipe at the top using a special bolt, lock washer and a new sealing washer.

Attach the lower end of the oil path pipe using a special bolt and new sealing washers.

Torque the special bolts.

TORQUE:

**Oil path pipe bolt (oil control bolt):
12 N·m (1.2 kg-m, 9 ft-lb)**

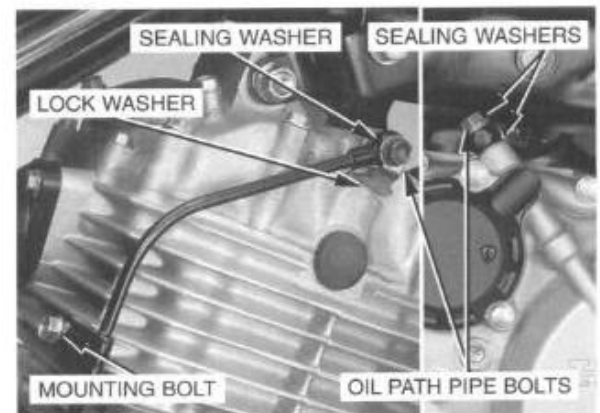
Secure the oil path pipe using the mounting bolt as shown. Tighten the bolt securely.

Adjust the clutch and reverse cable (pages 3-14 and 3-15).

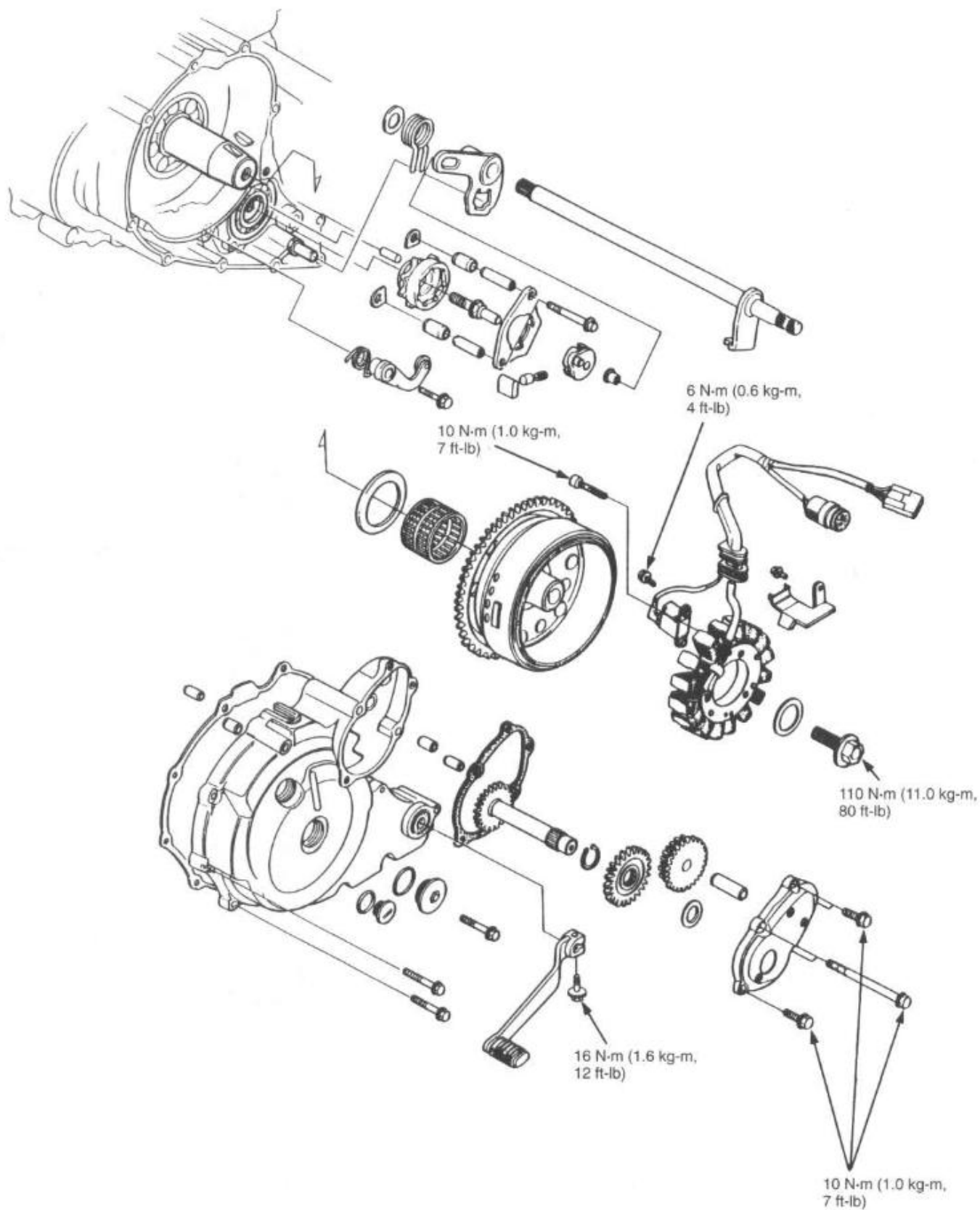
Fill the engine with oil (page 2-3).

Check the clutch and gearshift pedal for smooth operation.

Make sure there are no oil leaks.



ALTERNATOR/STARTER CLUTCH/GEARSHIFT LINKAGE



9. ALTERNATOR/STARTER CLUTCH/GEARSHIFT LINKAGE

SERVICE INFORMATION	9-1	FLYWHEEL/STARTER CLUTCH	9-7
TROUBLESHOOTING	9-1	GEARSHIFT LINKAGE	9-10
STARTER REDUCTION GEAR	9-2	LEFT CRANKCASE COVER	
LEFT CRANKCASE COVER REMOVAL	9-4	INSTALLATION	9-14

SERVICE INFORMATION

GENERAL

- This section covers the removal and installation of the starter reduction gear, alternator, ignition pulse generator, starter clutch and gearshift linkage.
- Refer to section 17 for pulse generator inspection, and to section 18 for alternator inspection.

TORQUE VALUES

Starter reduction gear cover bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Ignition pulse generator screw	6 N·m (0.6 kg-m, 4 ft-lb) – Apply locking agent
Alternator stator bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Starter clutch torx bolt	16 N·m (1.6 kg-m, 12 ft-lb) – Apply locking agent
Flywheel bolt	110 N·m (11.0 kg-m, 80 ft-lb)
Left foot peg bolt	33 N·m (3.3 kg-m, 24 ft-lb)
Gearshift return spring pin	22 N·m (2.2 kg-m, 16 ft-lb)
Gearshift pedal bolt	16 N·m (1.6 kg-m, 12 ft-lb)
Left crankcase cover bolt	10 N·m (1.0 kg-m, 7 ft-lb)

TOOLS

Common

Driver	07749-0010000
Attachment, 24 x 26 mm	07746-0010700
Rotor puller	07933-3950000

TROUBLESHOOTING

Engine does not turn

- Faulty one-way starter clutch
- Starter reduction gear broken

Transmission jumps out of gear

- Shift drum stopper arm broken

Hard to shift

- Shift drum cam plate damaged

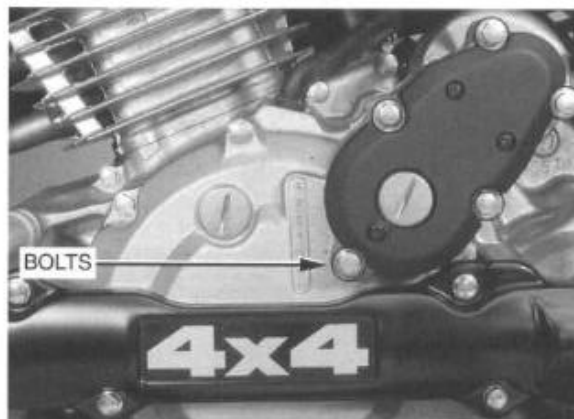
Gearshift pedal will not return

- Weak or broken shift return spring
- Shift spindle binding with case

STARTER REDUCTION GEAR

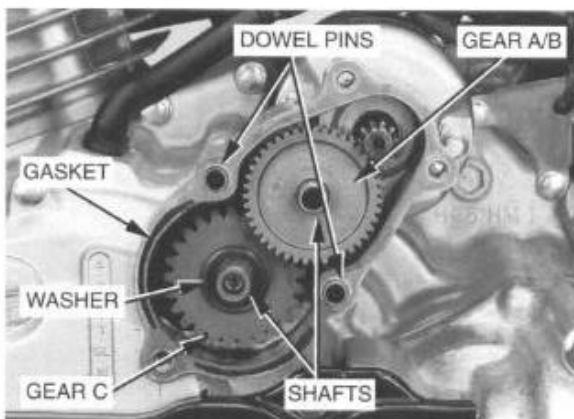
REMOVAL

Remove the starter reduction gear cover bolts and cover.



Remove the gasket and dowel pins.

Remove reduction gears A/B and C, the washer and the shafts.



INSPECTION

Inspect the starter reduction gear teeth for wear or damage.

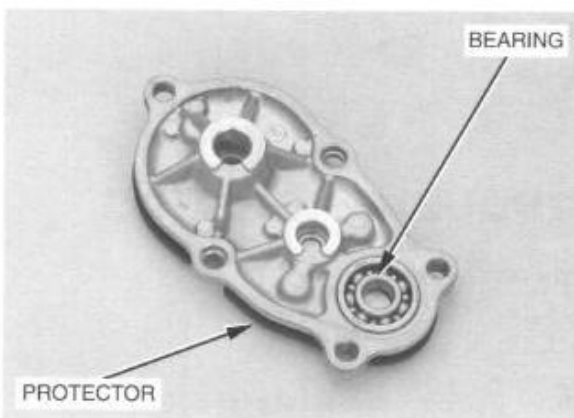
Check the reduction gear bearing for excessive play or damage. Replace if necessary.

BEARING REPLACEMENT

Remove the gear cover protector by removing the screws. Remove the reduction gear bearing by heating the cover slightly and then tapping the area around the bearing with a soft hammer.

⚠ WARNING

To avoid burns, wear heavy gloves when handling the heated reduction cover.



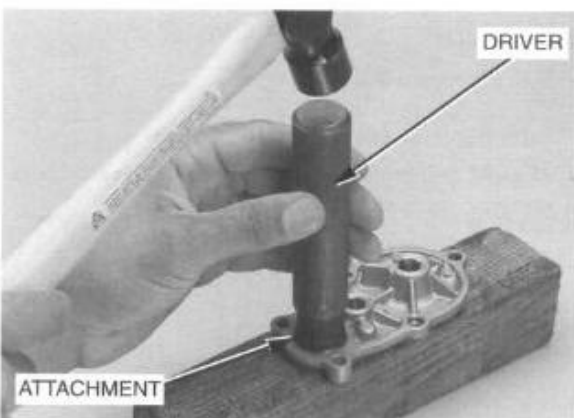
Drive the new bearing into the starter reduction gear cover.

TOOLS:

Driver 07749-0010000
Attachment, 24 x 26 mm 07746-0010700

NOTE

Do not use a pilot when driving the bearing because the pilot contacts the cover before the bearing seats.

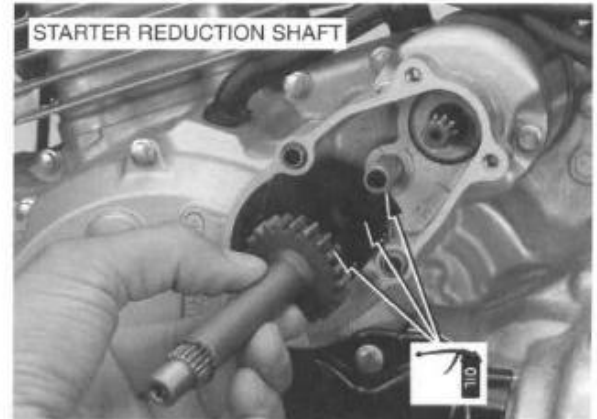


Install the gear cover protector with screws.

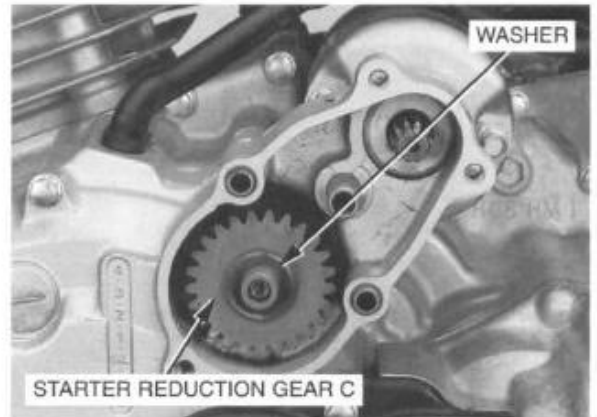
INSTALLATION

Apply oil to all gear teeth and shaft journals of the crankcase.

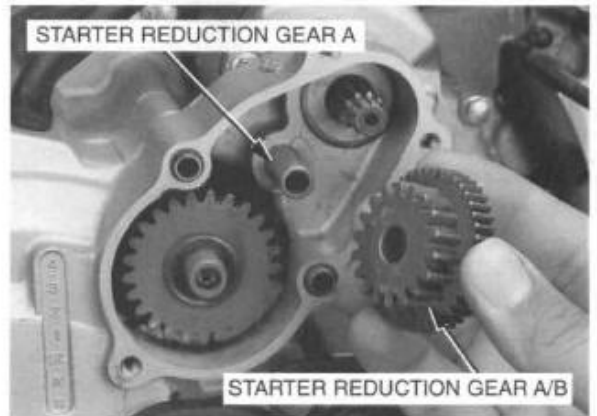
Install the starter reduction shaft.



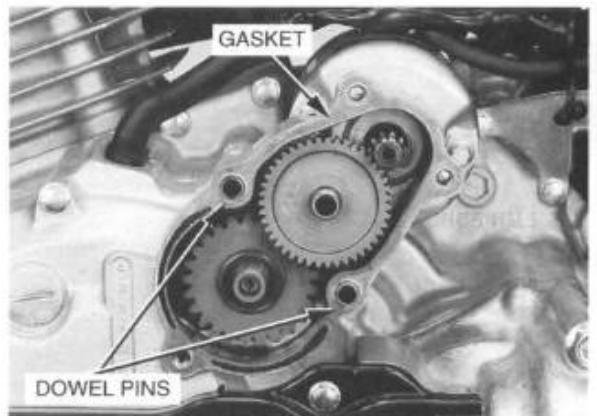
Install the starter reduction gear C and thrust washer on the shaft.



Install the starter reduction shaft A and starter reduction gear A/B.



Install the dowel pins and new gasket.



ALTERNATOR/STARTER CLUTCH/GEARSHIFT LINKAGE

Install the starter reduction gear cover and tighten the bolts to the specified torque.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)

LEFT CRANKCASE COVER REMOVAL

COVER REMOVAL

Drain the oil from the engine (page 2-3).

Remove the following:

- TRX300FW: – skid plate
- TRX300FW: – front drive side shaft cover and shaft (page 14-25)
- left foot peg
- gearshift pedal
- starter reduction gear (page 9-2)

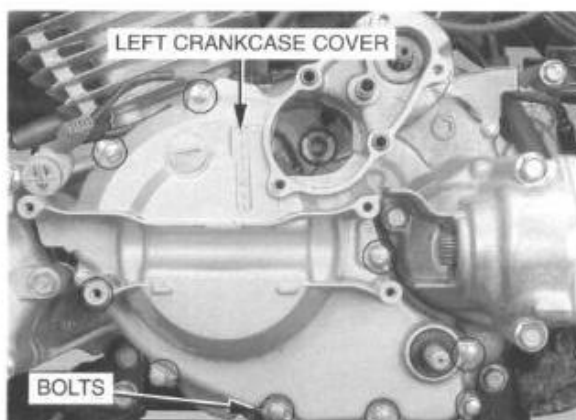
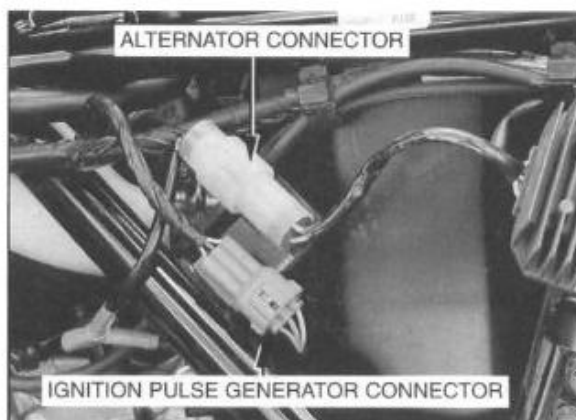
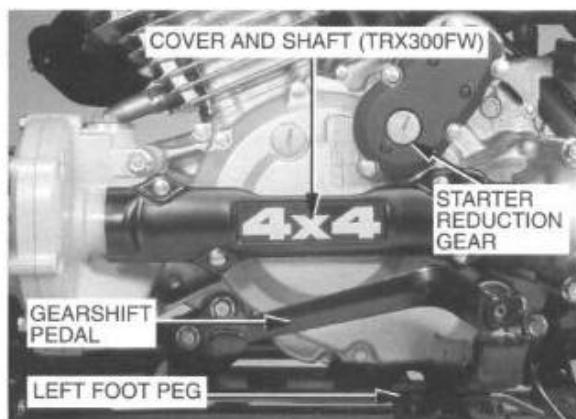
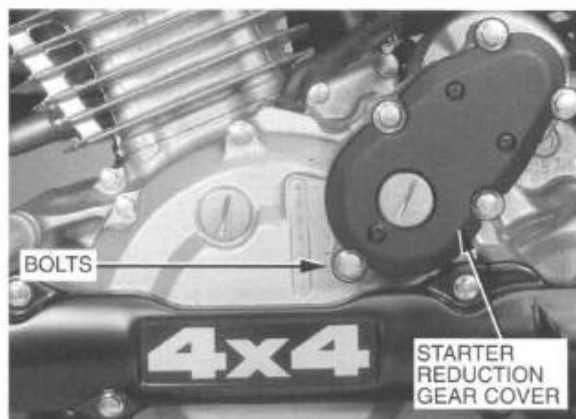
Disconnect the ignition pulse generator and alternator connectors.

Remove and save the plastic clip securing the wires

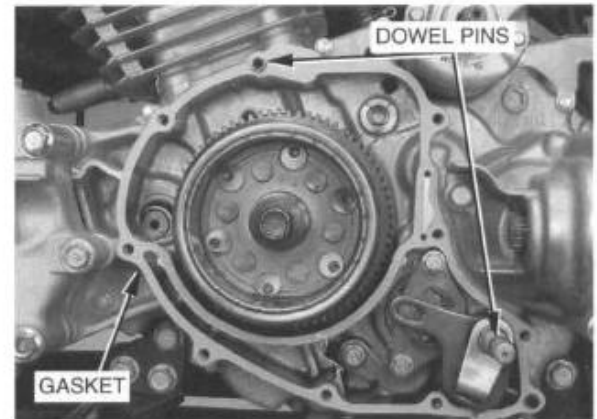
Remove the left crankcase cover mounting bolts and cover.

NOTE

Be careful not to pull the gearshift spindle out of the crankcase when removing the crankcase cover.

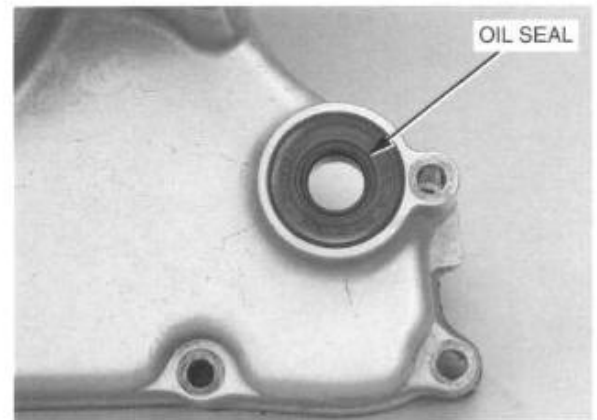


Remove the gasket and dowel pins.



INSPECTION

Inspect the gearshift spindle oil seal for wear or damage.

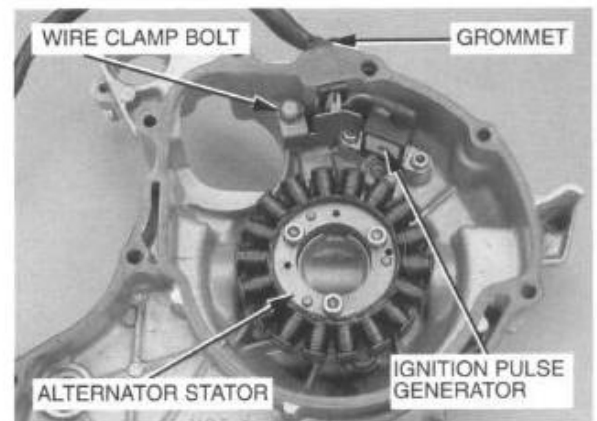


ALTERNATOR-IGNITION PULSE GENERATOR REPLACEMENT

Remove the wire clamp by removing the bolt.

Remove the three stator bolts and stator.

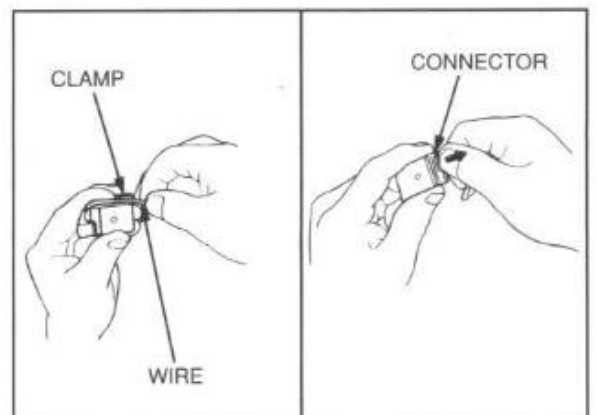
Remove the ignition pulse generator mounting screws.



Release the ignition pulse generator wire from the clamp on the ignition pulse generator.

Pull the connector, do not pull the wire.

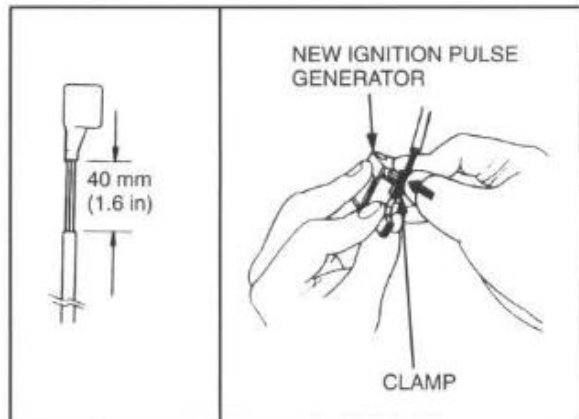
Disconnect the ignition pulse generator wire connector from the ignition pulse generator.



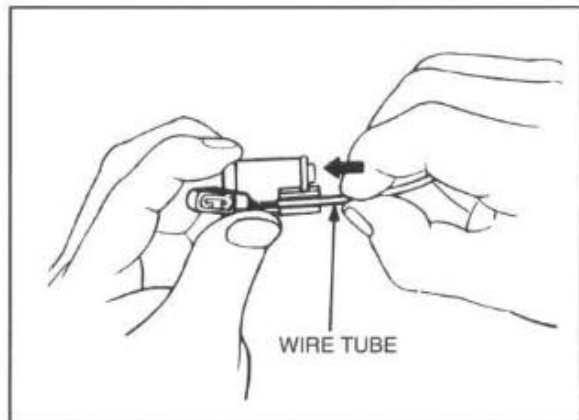
ALTERNATOR/STARTER CLUTCH/GEARSHIFT LINKAGE

Move the wire tube and keep the distance between the terminal insulator and wire tube at 40 mm (1.6 in).

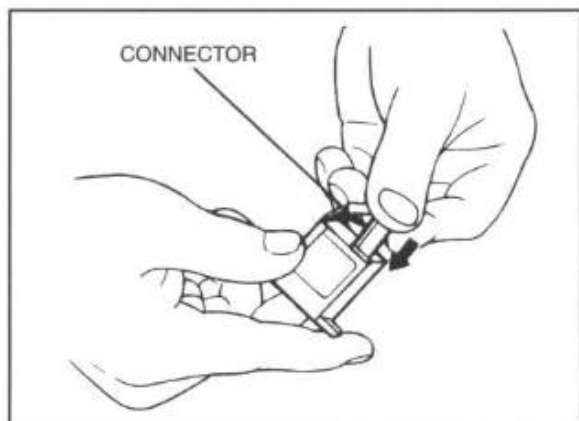
Clamp the ignition pulse generator wire securely as shown.



Push the wire tube into the ignition pulse generator clamp.



Connect the ignition pulse generator wire connector on the ignition pulse generator terminal.



Apply sealant to the groove in the left crankcase cover and insert the wire grommet.

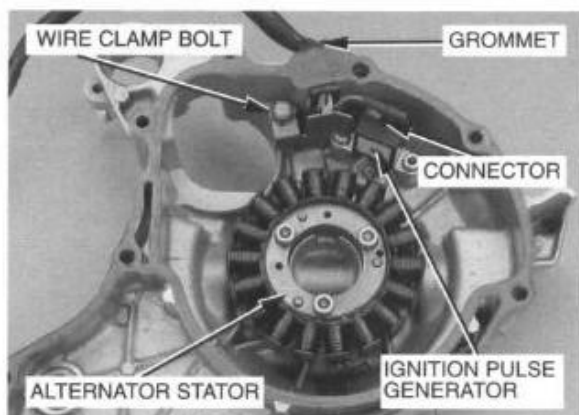
Apply locking agent to the attaching screws and install the stator, ignition pulse generator and wire clamp securely.

Tighten the screws and bolts to the specified torque.

TORQUE:

Ignition pulse generator: 6 N·m (0.6 kg-m, 4 ft-lb)

Alternator stator: 10 N·m (1.0 kg-m, 7 ft-lb)



FLYWHEEL/STARTER CLUTCH

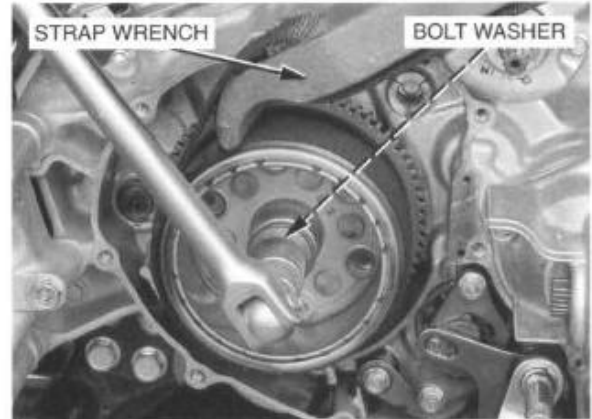
FLYWHEEL REMOVAL

Hold the flywheel with the flywheel holder, and remove the bolt and washer.

TOOL:

Flywheel holder or
strap wrench

commercially
available

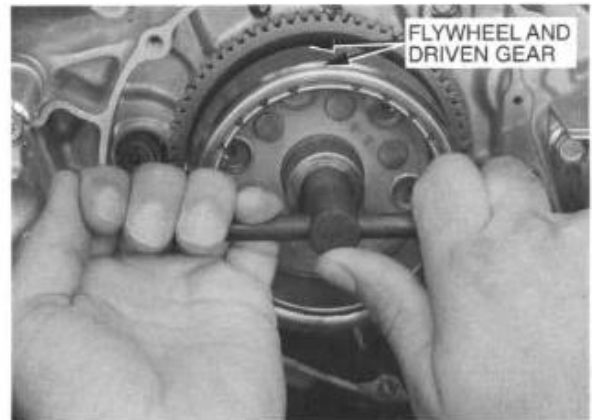


Remove the flywheel with the starter driven gear.

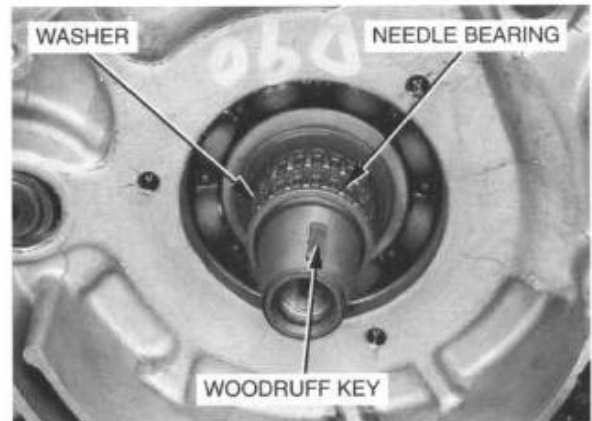
TOOL:

Rotor puller

07933-3950000

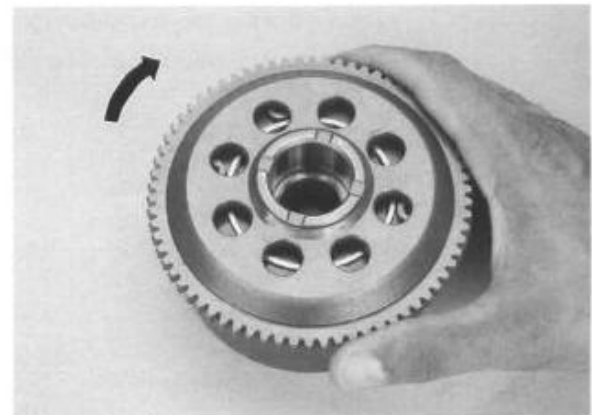


Remove the needle bearing, washer and woodruff key.



STARTER CLUTCH INSPECTION/ DISASSEMBLY

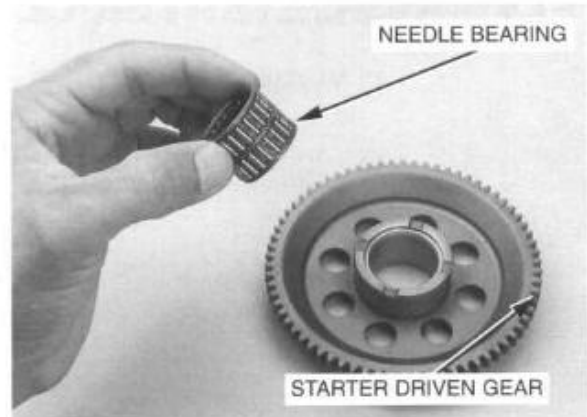
Check the operation of the one-way clutch by turning the driven gear. You should be able to turn the driven gear clockwise smoothly, but the gear should not turn counter-clockwise.



ALTERNATOR/STARTER CLUTCH/GEARSHIFT LINKAGE

Inspect the starter driven gear teeth for damage or abnormal wear.

Check the needle bearing for damage.



Remove the one-way clutch from the flywheel using an impact driver and torx driver bit.

TOOL:

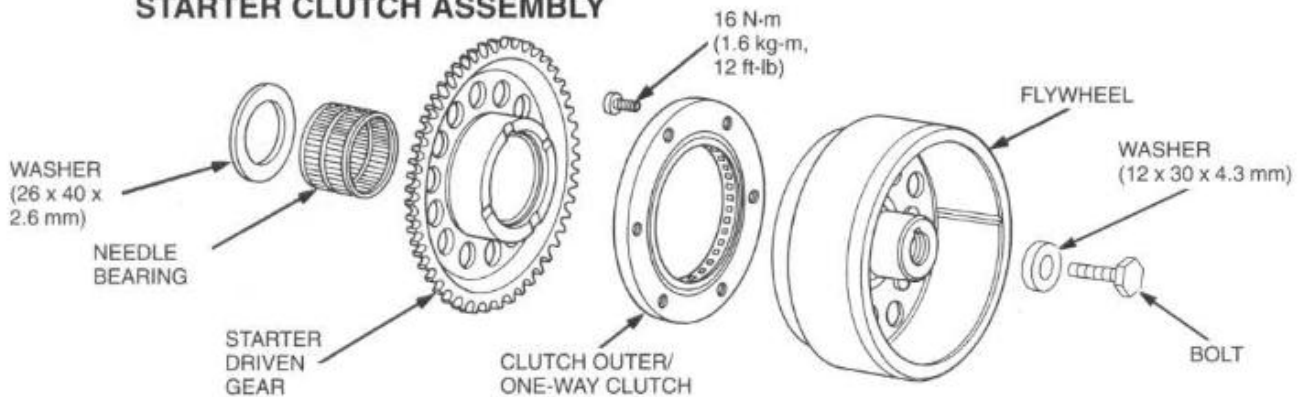
Torx driver bit, T30

commercially available

Check the one-way clutch rollers for wear or damage.

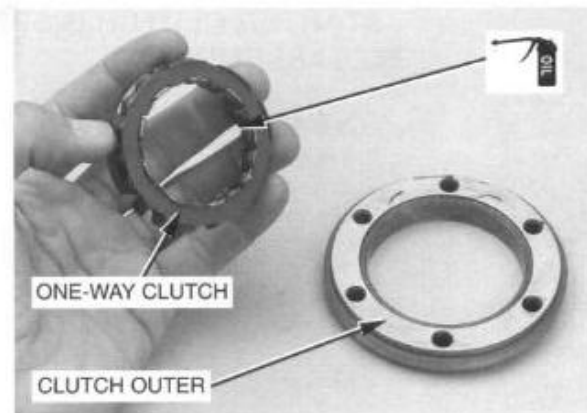


STARTER CLUTCH ASSEMBLY



Apply oil to the one-way clutch rollers.

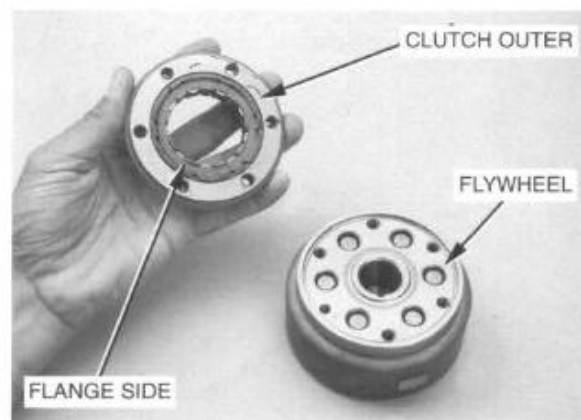
Install the one-way clutch in the clutch outer.



Assemble the one-way clutch outer and the flywheel.

NOTE

Make sure the flange side of the one-way clutch is facing toward the flywheel.



Apply locking agent to the threads of the torx bolts.
Install and tighten the torx bolts.

TORQUE: 16 N-m (1.6 kg-m, 12 ft-lb)

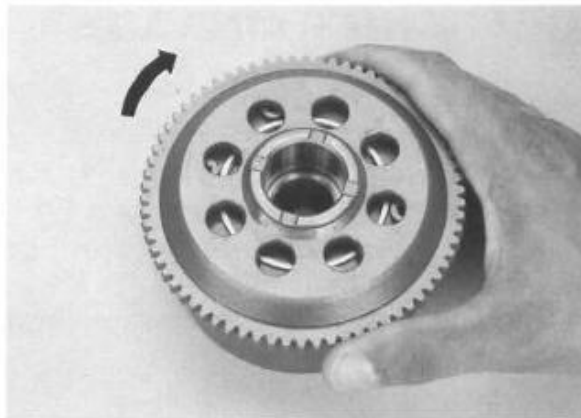
TOOL:

Torx driver bit, T30

commercially
available

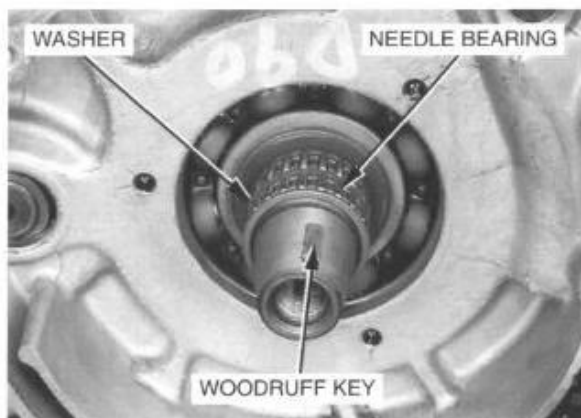


Install the starter driven gear into the one-way clutch by turning it clockwise.



FLYWHEEL INSTALLATION

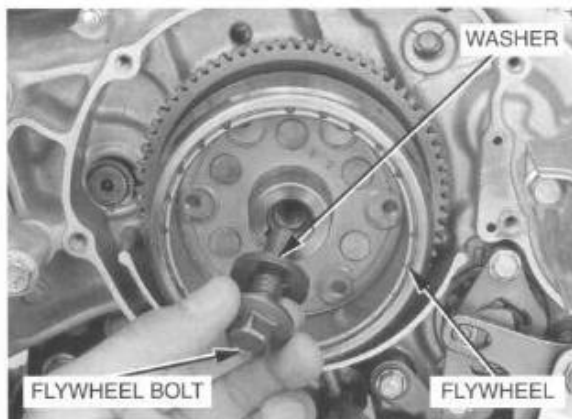
Clean any oil from the crankshaft.
Install the washer with its chamfered surface facing out.
Install the needle bearing.
Install the woodruff key.



ALTERNATOR/STARTER CLUTCH/GEARSHIFT LINKAGE

Install the flywheel with the starter driven gear, aligning the key-way in the flywheel with the key on the crankshaft.

Install the washer and flywheel bolt.



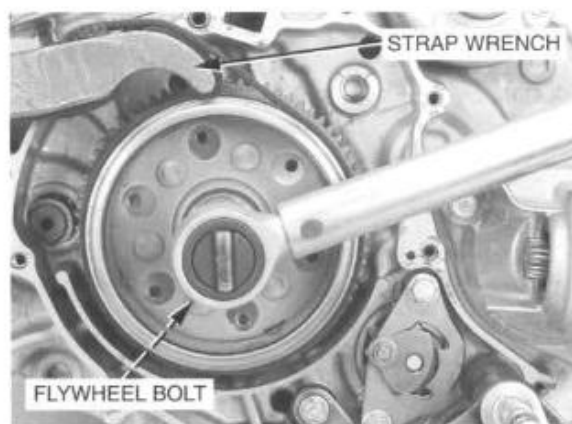
Hold the flywheel with the flywheel holder and tighten the bolt.

TORQUE: 110 N·m (11.0 kg·m, 80 ft·lb)

TOOL:

Flywheel holder or
strap wrench

commercially
available



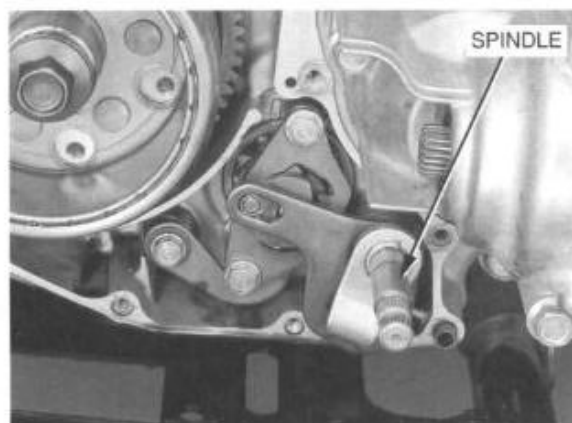
GEARSHIFT LINKAGE

REMOVAL

Remove the following:

- left crankcase cover (page 9-4)
- right crankcase cover (page 8-3)
- clutch lever (page 8-17)

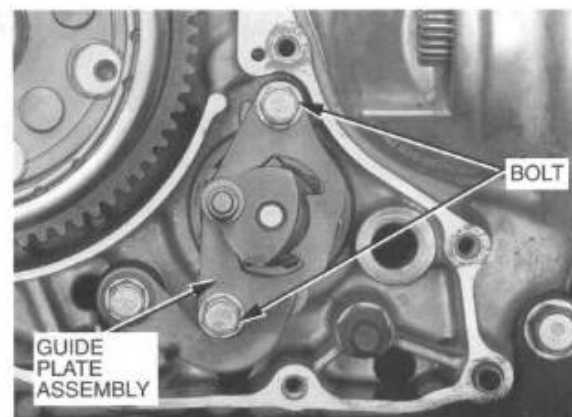
Pull the gearshift spindle out of the crankcase.



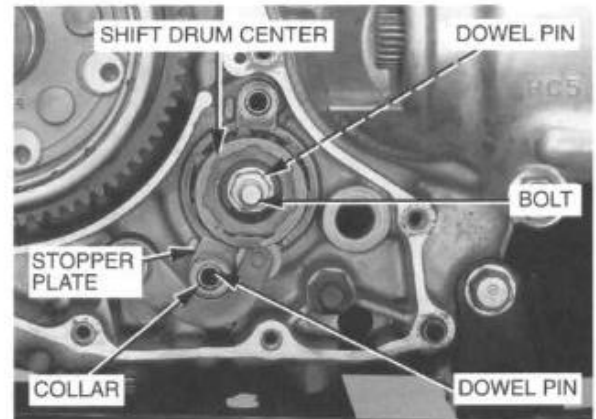
*Be careful not
to drop any
components into
the crankcase.*

Remove the guide plate bolts and guide plate assembly.

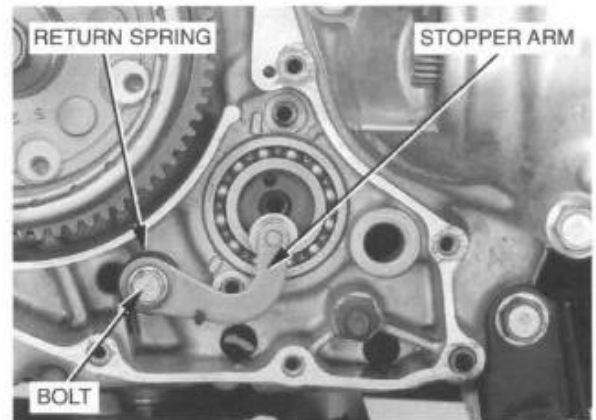
Disassemble them.



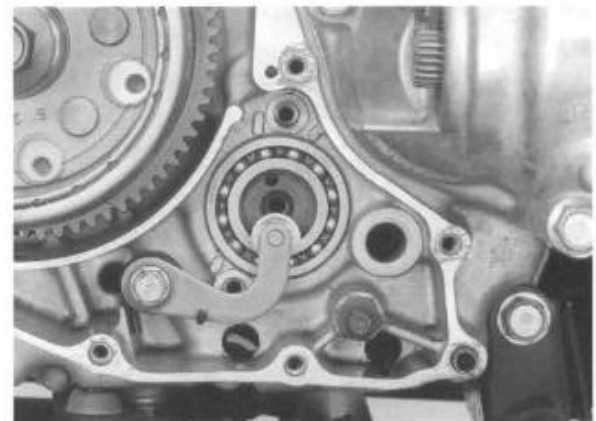
Remove the collars, dowel pins and bearing stopper plate.



Remove the stopper arm bolt, stopper arm and return spring.

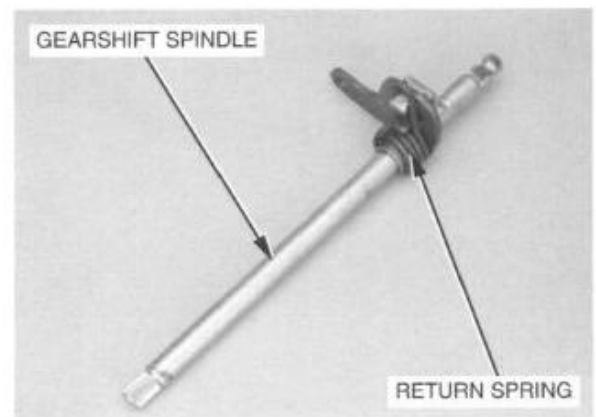


Remove the shift drum center bolt, shift drum center and dowel pin.



INSPECTION

Inspect the gearshift spindle for distortion.
Check the return spring for wear or damage.

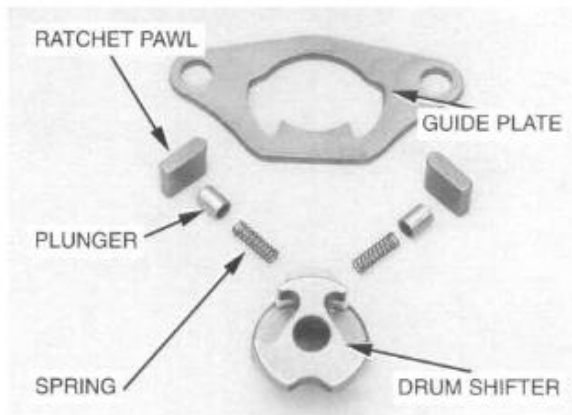


ALTERNATOR/STARTER CLUTCH/GEARSHIFT LINKAGE

Check the ratchet pawls, plungers and springs for wear or damage.

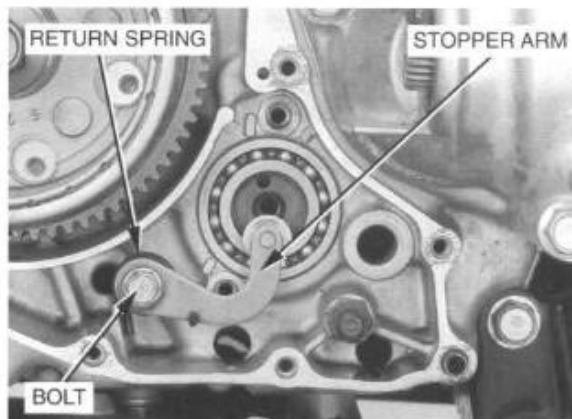
Install the springs, plungers and ratchet pawls to the drum shifter.

Install the drum shifter assembly to the guide plate.



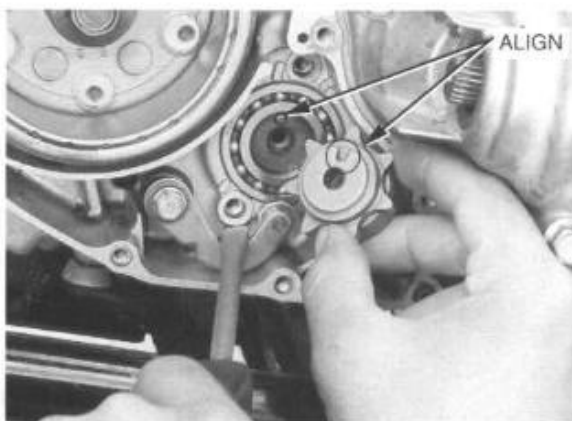
INSTALLATION

Install the return spring, stopper arm and stopper arm bolt.



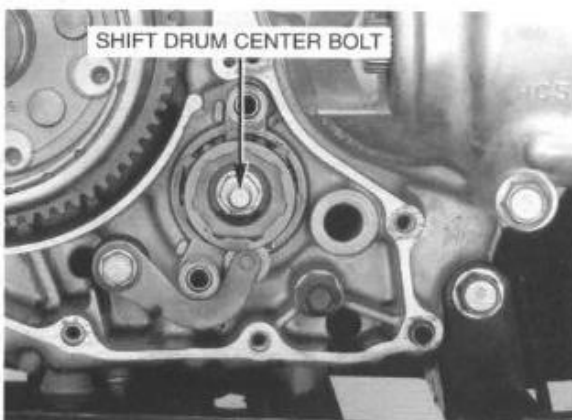
Install the dowel pin on the shift drum.

Hold the stopper arm down and install the shift drum center, aligning the hole of the drum center with the dowel pin.

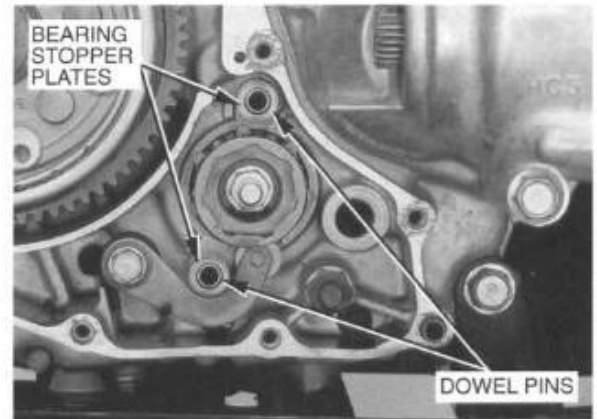


Apply locking agent to the shift drum center bolt.

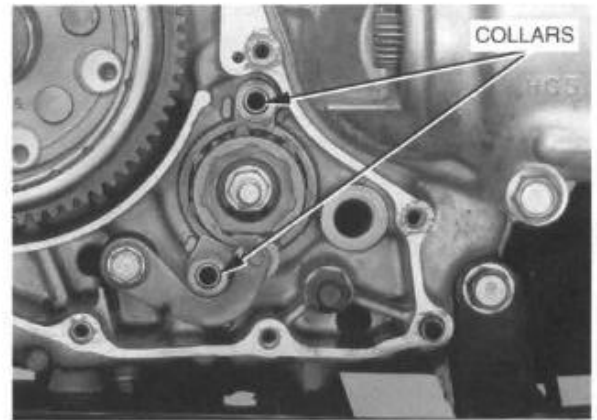
Install and tighten the bolt securely.



Install the bearing stopper plates and dowel pins.

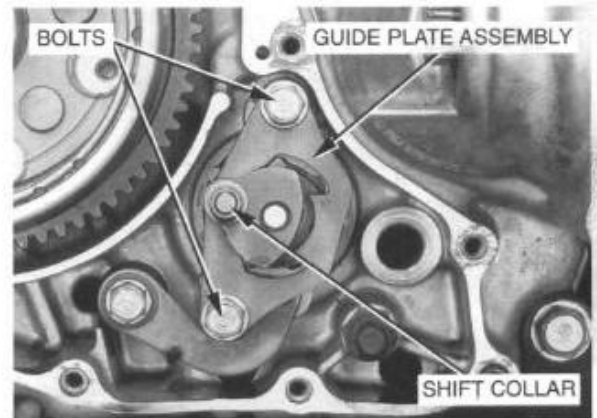


Install the collars.



Be careful not to drop any components into the crankcase. Install the guide plate assembly and tighten the bolts securely.

Install the shift collar onto the drum shifter pin.



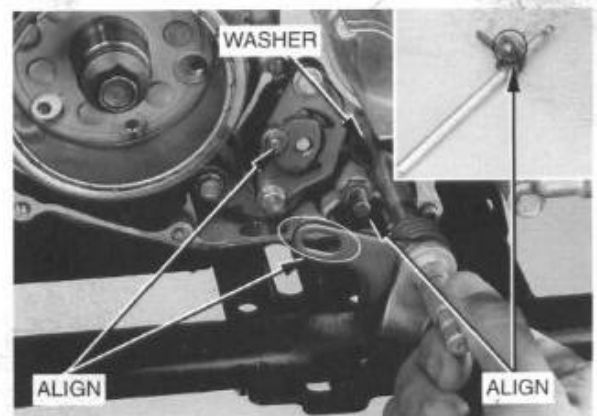
Install the washer and gearshift spindle.

Position the return spring ends over the return spring pin, and the gearshift spindle slot over the shift collar.

Install the following:

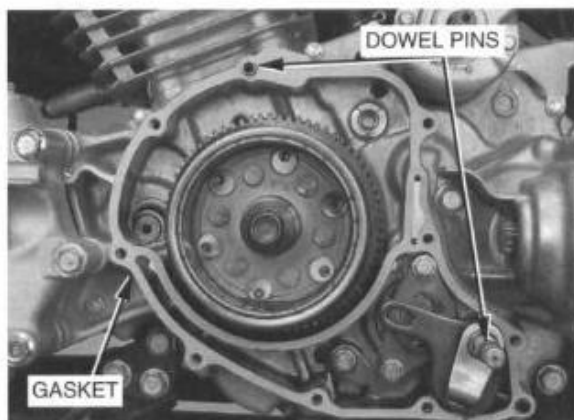
- clutch lever (page 8-17)
- right crankcase cover (page 8-24)
- left crankcase cover

Check the gearshift pedal for smooth operation.



LEFT CRANKCASE COVER INSTALLATION

Install the dowel pins and a new gasket.

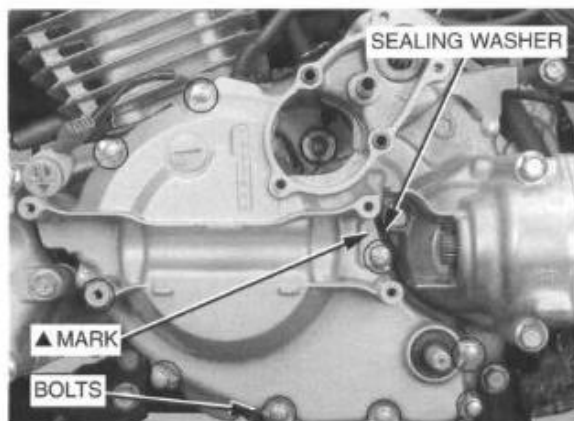


Install the left crankcase cover.

Install a new sealing washer with the bolt near the s mark.

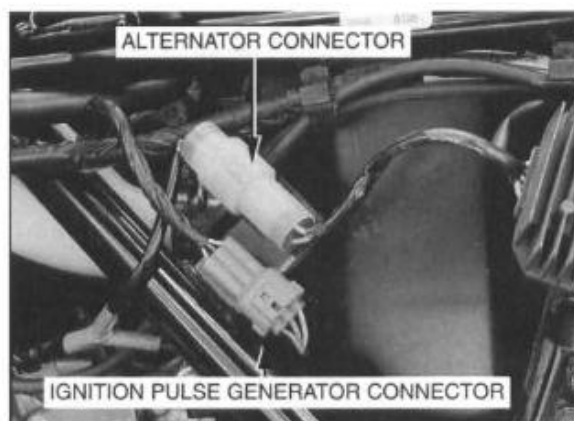
Install and tighten the left crankcase cover bolts in a criss-cross pattern.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)



Connect the ignition pulse generator and alternator wire connectors.

Install the plastic clip around the wires.



Install the gearshift pedal, aligning the punch marks on the pedal and shaft.

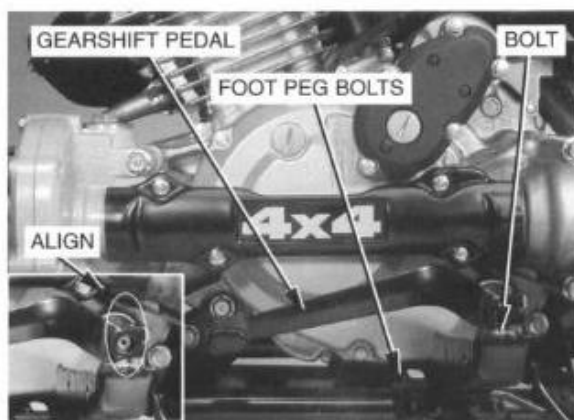
Tighten the pedal bolt to the specified torque.

TORQUE: 16 N·m (1.6 kg-m, 12 ft-lb)

Install the left foot peg.

Tighten the four mounting bolts to the specified torque.

TORQUE: 33 N·m (3.3 kg-m, 24 ft-lb)

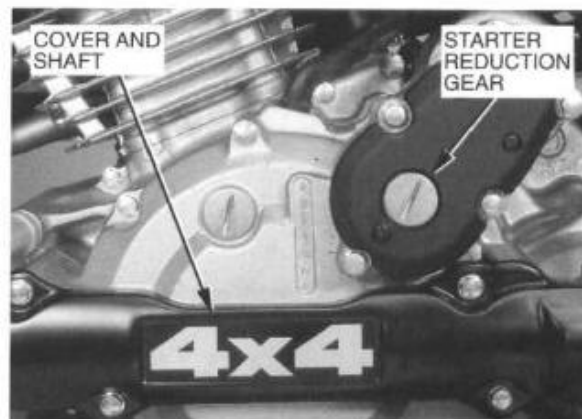


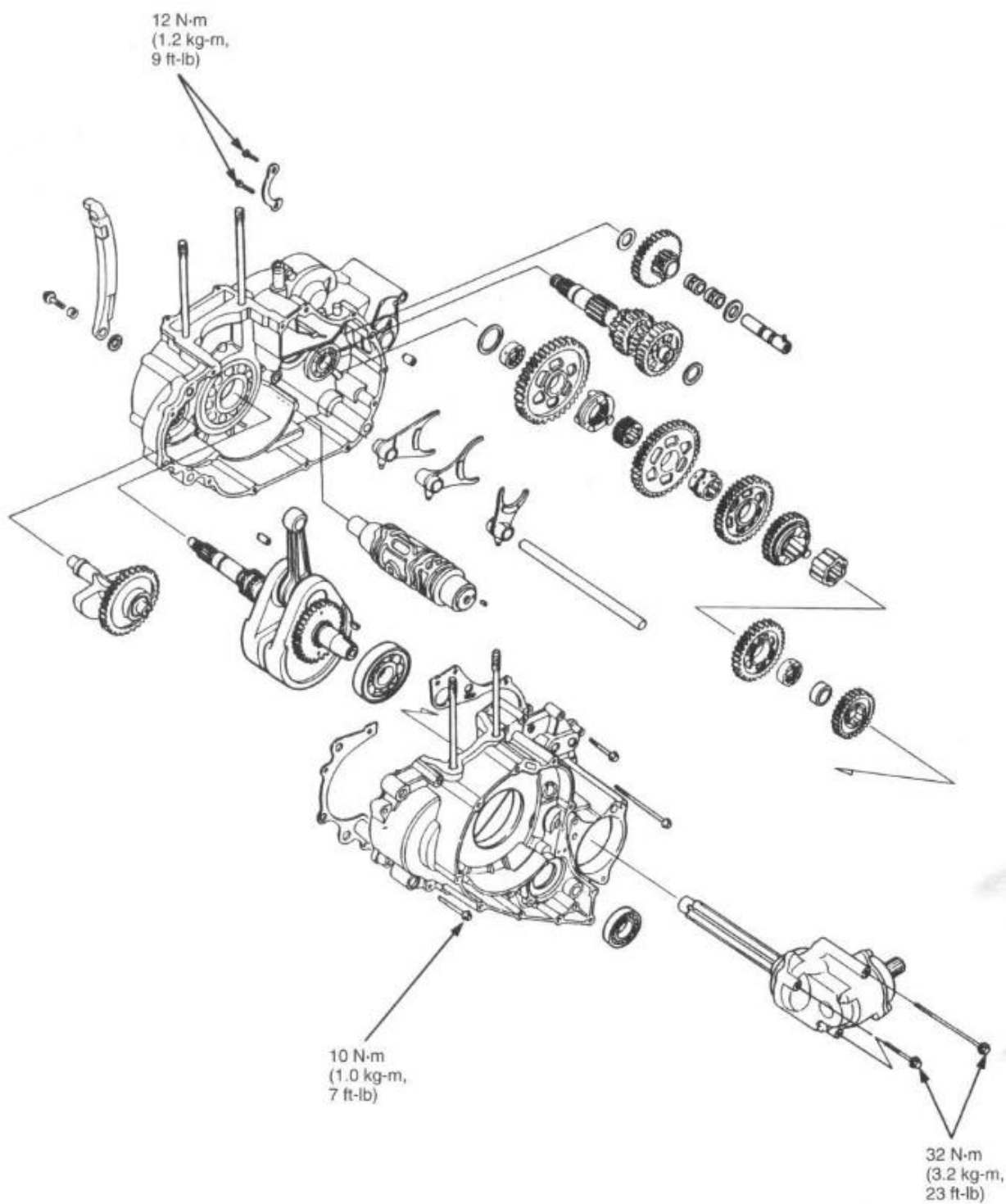
Install the following:

- TRX300FW: – skid plate
- TRX300FW: – front drive side shaft and shaft cover (page 14-31)
- starter reduction gear (page 9-2)

Fill the engine with the recommended oil (page 2-3).

Make sure there are no oil leaks.





10. CRANKCASE/CRANKSHAFT/TRANSMISSION

SERVICE INFORMATION	10-1	CRANKSHAFT/BALANCER	10-13
TROUBLESHOOTING	10-3	OUTPUT GEAR	10-16
CRANKCASE SEPARATION	10-4	CRANKCASE ASSEMBLY	10-26
TRANSMISSION	10-5		

SERVICE INFORMATION

GENERAL

- For crankshaft and transmission repair, the crankcase must be separated.
- Use soft jaws to prevent damage to the output gear case when placing the case in a vise.
- When replacing the following output gear components, a new adjustment shim must be selected:
 - output gear case
 - output shaft assembly
 - output shaft bearing
 - output shaft bearing holder
 - countershaft
- Replace the countershaft and output shaft as a set.

SPECIFICATIONS

Unit: mm (in)

10

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod big end side clearance		0.05–0.65 (0.002–0.026)	0.80 (0.031)
	Connecting rod big end radial clearance		0.006–0.018 (0.0002–0.0007)	0.05 (0.002)
	Runout		—	0.05 (0.002)
Shift fork, shaft	Fork	I.D.	13.000–13.021 (0.5118–0.5126)	13.04 (0.513)
		Claw thickness	4.93–5.00 (0.194–0.197)	4.50 (0.177)
	Shaft O.D.		12.966–12.984 (0.5105–0.5112)	12.96 (0.510)
Transmission	Gear I.D.	M4	25.000–25.021 (0.9843–0.9851)	25.05 (0.986)
		M5	20.020–20.041 (0.7882–0.7890)	20.07 (0.790)
		C1, C2, C3	28.020–28.041 (1.1031–1.1040)	28.07 (1.105)
		CR	28.021–28.041 (1.1032–1.1040)	28.07 (1.105)
		R idler	18.000–18.021 (0.7087–0.7095)	18.05 (0.711)
	Shaft O.D.	M4	21.959–21.980 (0.8645–0.8654)	21.93 (0.863)
		M5	16.983–16.994 (0.6686–0.6691)	16.95 (0.667)
		R idler	13.966–13.984 (0.5498–0.5506)	13.93 (0.548)
	Gear bushing	C1 O.D.	27.984–28.005 (1.1017–1.1026)	27.93 (1.100)
		C2/CR O.D.	27.979–28.000 (1.1015–1.1024)	27.93 (1.100)
		C3 O.D.	27.984–28.005 (1.1017–1.1026)	27.93 (1.100)
		M4 O.D.	24.959–24.980 (0.9826–0.9835)	24.93 (0.981)
		M4 I.D.	22.000–22.021 (0.8661–0.8670)	22.05 (0.868)
		M5 O.D.	19.996–19.984 (0.7861–0.7868)	19.93 (0.785)
		M5 I.D.	17.016–17.034 (0.6699–0.6706)	17.06 (0.672)
		R O.D.	17.966–17.984 (0.7073–0.7080)	17.93 (0.706)
		R I.D.	14.000–14.025 (0.5512–0.5522)	14.05 (0.553)

CRANKCASE/CRANKSHAFT/TRANSMISSION

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Transmission	Gear-to-bushing clearance	M4	0.020–0.062 (0.0008–0.0024)	0.10 (0.004)
		M5	0.036–0.075 (0.0014–0.0030)	0.10 (0.004)
		C1	0.015–0.057 (0.0006–0.0022)	0.10 (0.004)
		C2/CR	0.020–0.062 (0.0008–0.0024)	0.10 (0.004)
		C3	0.015–0.057 (0.0006–0.0022)	0.10 (0.004)
		R idler	0.016–0.055 (0.0006–0.0022)	0.10 (0.004)
	Bushing-to-shaft clearance	M4	0.020–0.062 (0.0008–0.0024)	0.10 (0.004)
		M5	0.022–0.051 (0.0009–0.0020)	0.10 (0.004)
		R idler	0.016–0.059 (0.0006–0.0023)	0.10 (0.004)
Output gear backlash			0.080–0.180 (0.0031–0.0071)	0.25 (0.010)

TORQUE VALUES

Output shaft bearing holder bolt	23 N·m (2.3 kg-m, 17 ft-lb)
Countershaft bearing lock nut	100 N·m (10.0 kg-m, 72 ft-lb)—Apply oil/stake
Output shaft bearing outer race lock nut	100 N·m (10.0 kg-m, 72 ft-lb)—Apply oil/stake
Output shaft bearing inner race lock nut	75 N·m (7.5 kg-m, 54 ft-lb)—Apply oil/stake
Output gear case mounting bolt	32 N·m (3.2 kg-m, 23 ft-lb)
Crankcase bolt	10 N·m (1.0 kg-m, 7 ft-lb)
Bearing set plate bolt	12 N·m (1.2 kg-m, 9 ft-lb)—Apply locking agent
Cam chain guide holder bolt	12 N·m (1.2 kg-m, 9 ft-lb)—Apply locking agent

TOOLS

Special

Bearing remover, 17 mm	07936–3710300
Remover handle	07936–3710100
Remover weight	07936–3710200
Assembly collar	07965–VM00100
Shaft puller	07931–ME4000A
Threaded adaptor	07931–KF00200
Shaft holder	07924–ME50000
Lock nut wrench, 36 x 48 mm	07916–MB00001 or 07916–MB00000 and 07916–HA2020A
Lock nut wrench, 34 x 44 mm	07916–ME50001 or 07916–ME50000 and 07916–HA0010A
Bearing remover, 15 mm	07936–KC10500
Remover weight	07936–3710200

Common

Driver	07749–0010000
Attachment, 24 x 26 mm	07746–0010700
Attachment, 52 x 55 mm	07746–0010400
Pilot, 22 mm	07746–0041000
Attachment, 42 x 47 mm	07746–0010300
Pilot, 20 mm	07746–0040500
Attachment, 72 x 75 mm	07746–0010600
Pilot, 40 mm	07746–0040900
Attachment, 37 x 40 mm	07746–0010200
Pilot, 28 mm	07746–0041100
Driver, 40 mm I.D.	07746–0030100
Attachment, 30 mm I.D.	07746–0030300
Pilot, 15 mm	07746–0040300
Pilot, 17 mm	07746–0040400

TROUBLESHOOTING

Crankshaft noisy

- Worn connecting rod big end bearing
- Bent connecting rod
- Worn crankshaft main journal bearing

Jumps out of gear

- Shift fork bent or damaged
- Shift fork shaft bent
- Shift claw bent
- Gear engagement dogs or slots worn
- Shift drum shifter grooves damaged

Hard to shift

- Incorrect clutch adjustment
- Shift fork bent or damaged
- Shift fork shaft bent

Excessive output gear noise

- Output shaft and countershaft gears worn or damaged
- Bearing worn or damaged
- Excessive backlash between output shaft and countershaft gears
- Improper shim thickness

CRANKCASE SEPARATION

Remove the engine from the frame and remove the following components:

- starter motor
- cylinder head/valve (section 6)
- cylinder/piston (section 7)
- gearshift linkage (section 9)
- reverse lock mechanism (section 8)
- flywheel (section 9)
- change clutch (section 8)
- centrifugal clutch (section 8)

Remove the following:

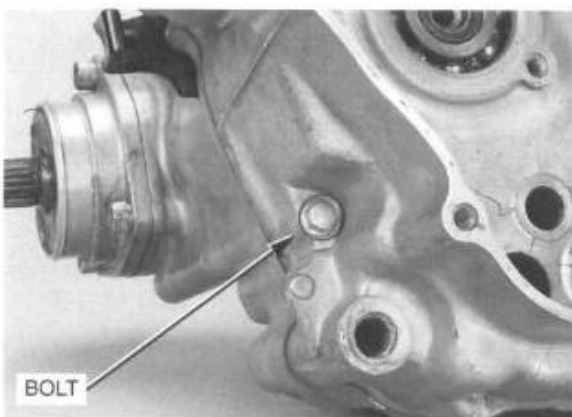
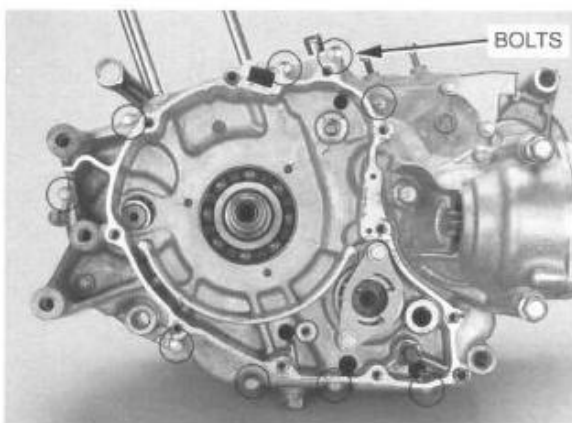
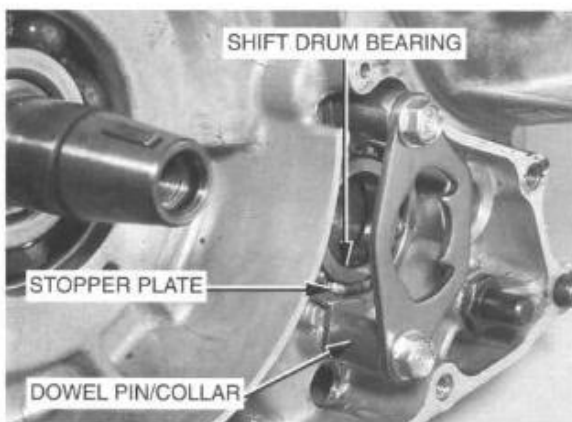
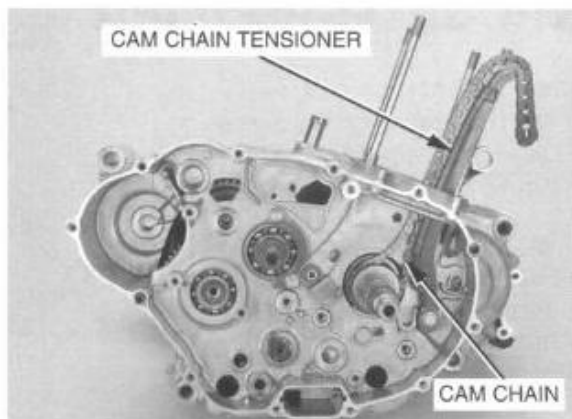
- cam chain
- cam chain tensioner

Temporarily install the gearshift drum bearing stopper plates, dowel pins, collars and guide plate to prevent the bearing from falling out while disassembling and assembling the transmission.

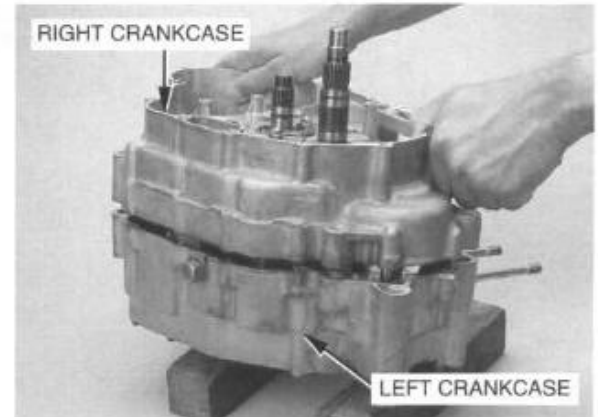
Loosen the left crankcase bolts in a crisscross pattern in 2 or 3 steps to prevent crankcase distortion.

Remove the bolts.

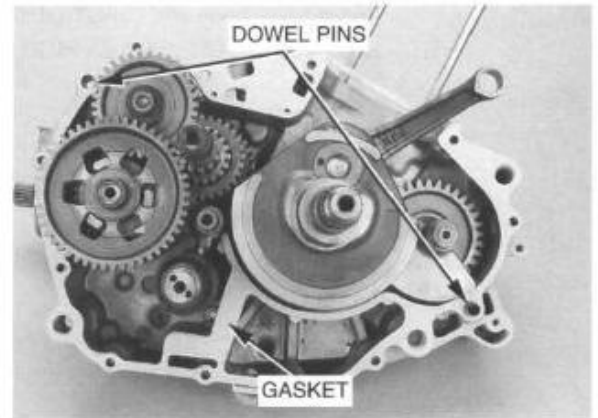
Remove the right crankcase bolt.



Place the engine with the left crankcase down and remove the right crankcase.

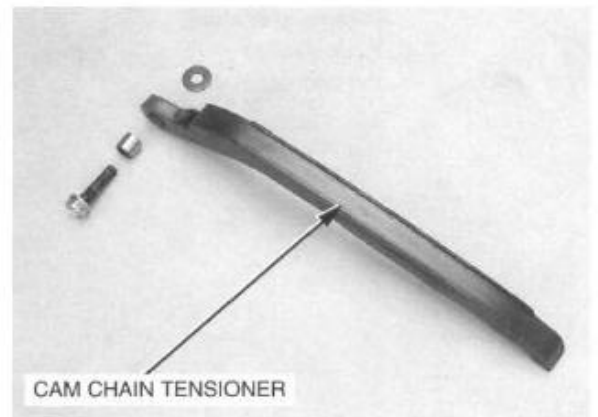


Remove the dowel pins and gasket.



INSPECTION

Check the cam chain tensioner for excessive wear or damage.

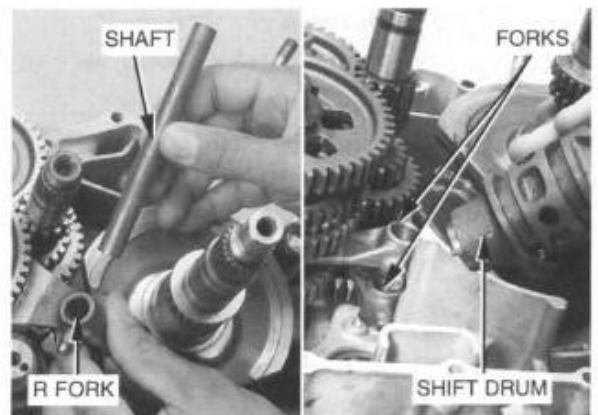


TRANSMISSION

REMOVAL/DISASSEMBLY

Remove the following:

- shift fork shaft and right shift fork
- shift drum, center shift fork and left shift fork

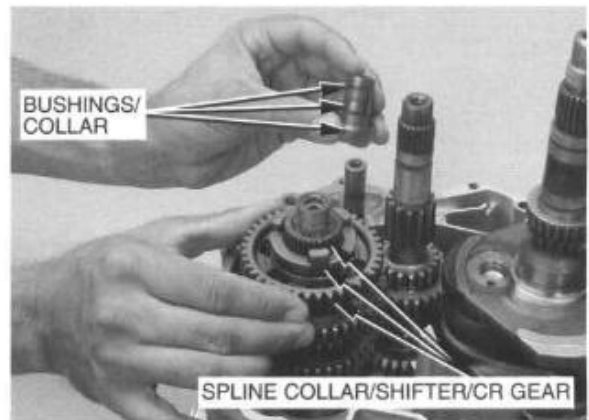


CRANKCASE/CRANKSHAFT/TRANSMISSION

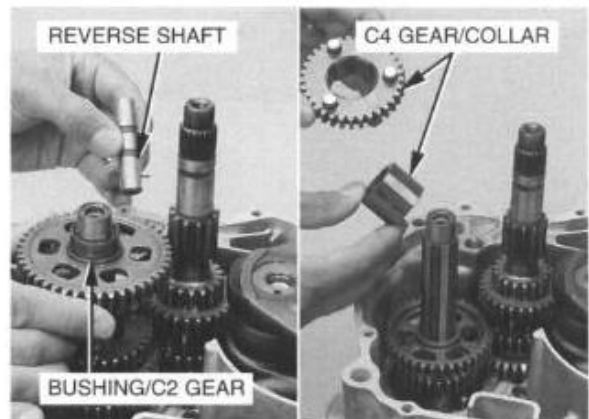
- washer, C1 gear and C1 bushing from the countershaft
- washer and reverse idler gear from the reverse idler shaft



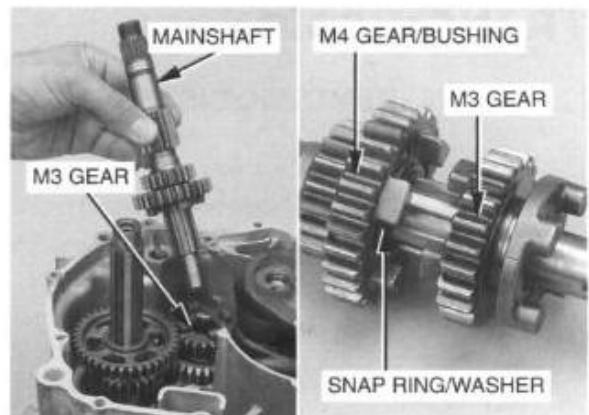
- reverse bushings and collar from the shaft
- spline collar, C1/CR shifter and CR gear from the countershaft



- reverse idler shaft
- CR/C2 bushing, C2 gear, C4 gear and spline collar from the countershaft



- mainshaft and M3 gear
- snap ring, spline washer, M4 gear and M4 bushing from the mainshaft



- washer, M5 bushing, M5 gear and washer
- C3 gear, C3 bushing, collar and C5 gear from the counter-shaft



INSPECTION

Check the gear dogs, dog holes and teeth for abnormal wear or lack of lubrication.

Measure the I.D. of each gear.

SERVICE LIMITS:

C1, C2, C3, CR	28.07 mm (1.105 in)
M4	25.05 mm (0.986 in)
M5	20.07 mm (0.790 in)
R idler	18.05 mm (0.711 in)

Measure the I.D. and O.D. of each gear bushing.

SERVICE LIMITS:

C1, CR/C2, C3, O.D.	27.93 mm (1.100 in)
M4 O.D.	24.93 mm (0.981 in)
M4 I.D.	22.05 mm (0.868 in)
M5 O.D.	19.93 mm (0.785 in)
M5 I.D.	17.06 mm (0.672 in)
R O.D.	17.93 mm (0.706 in)
R I.D.	14.05 mm (0.553 in)

Calculate the gear-to-bushing clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

Check the gearshift groove of the C1/CR shifter, C4 gear and M3 gear for excessive wear or damage.

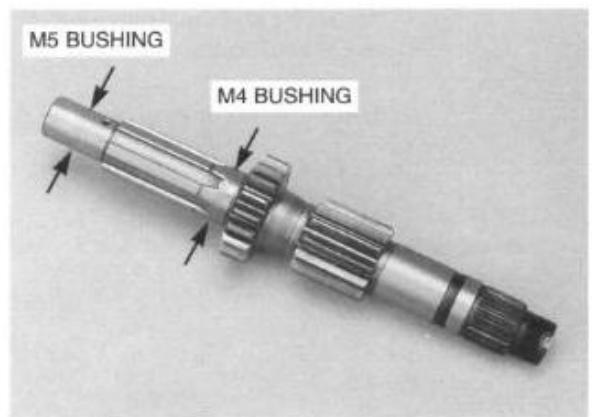
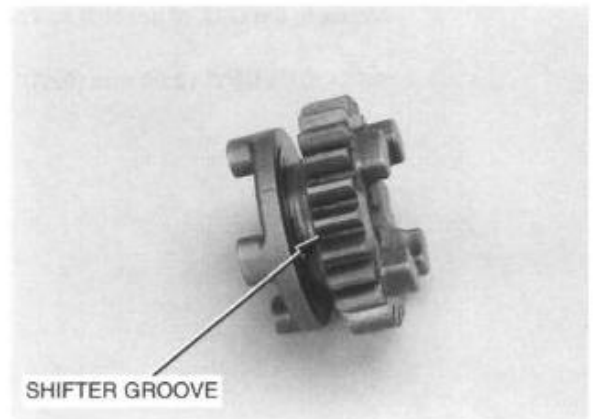
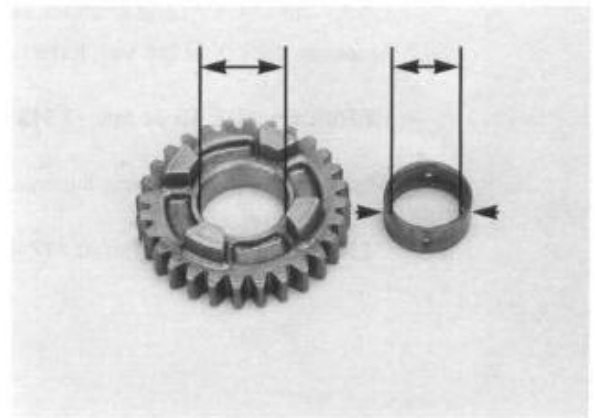
Measure the O.D. of the mainshaft.

SERVICE LIMITS:

M4	21.93 mm (0.863 in)
M5	16.95 mm (0.667 in)

Calculate the bushing-to-mainshaft clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



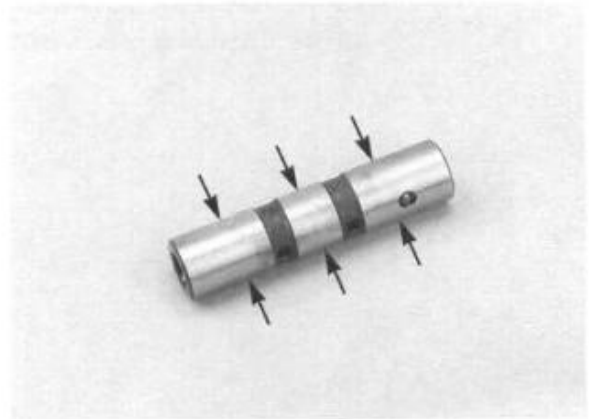
CRANKCASE/CRANKSHAFT/TRANSMISSION

Measure the O.D. of the reverse idler shaft.

SERVICE LIMIT: 13.93 mm (0.548 in)

Calculate the bushing-to-reverse idler shaft clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)



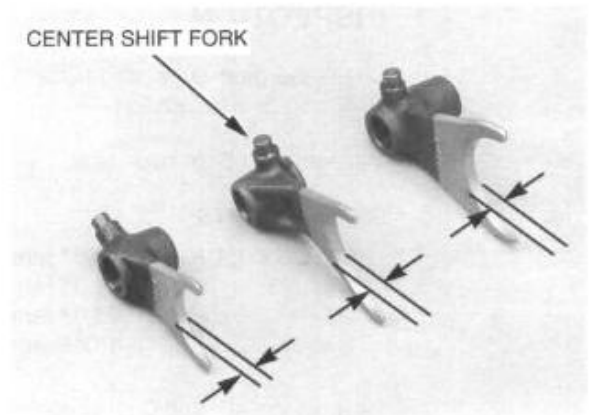
Check the shift fork and shaft for wear or damage.
Measure the I.D. of the shift forks.

SERVICE LIMIT: 13.04 mm (0.513 in)

Measure the shift fork claw thickness as shown.

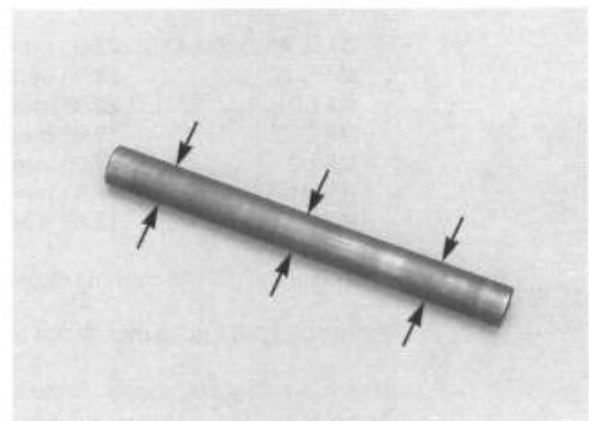
SERVICE LIMIT: 4.50 mm (0.177 in)

CENTER SHIFT FORK



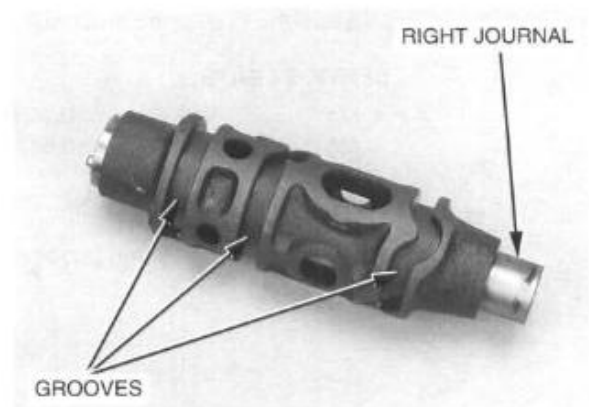
Measure the O.D. of the shift fork shaft.

SERVICE LIMIT: 12.96 mm (0.510 in)



Inspect the shift drum right journal for scoring, scratches or lack of lubrication.

Check the shift drum grooves for damage.



Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the outer race of each bearing fits tightly in the crankcase.

BEARING REPLACEMENT

NOTE

For crankshaft and balancer bearing replacement, see page 10-15.

Pull the mainshaft needle bearing and washer out of the left crankcase.

TOOLS:

Remover, 15 mm

07936-KC10500

Remover weight

07934-3710200

Install a new washer and mainshaft needle bearing. Press the bearing into the left crankcase.

TOOLS:

Driver

07749-0010000

Attachment, 24 x 26 mm

07746-0010700

Pilot, 17 mm

07746-0040400

Drive the mainshaft and countershaft bearings out of the right crankcase.

Drive new bearings into the right crankcase.

TOOLS:

Mainshaft bearing:

Driver

07749-0010000

Attachment, 52 x 55 mm

07746-0010400

Pilot, 22 mm

07746-0041000

Countershaft bearing:

Driver

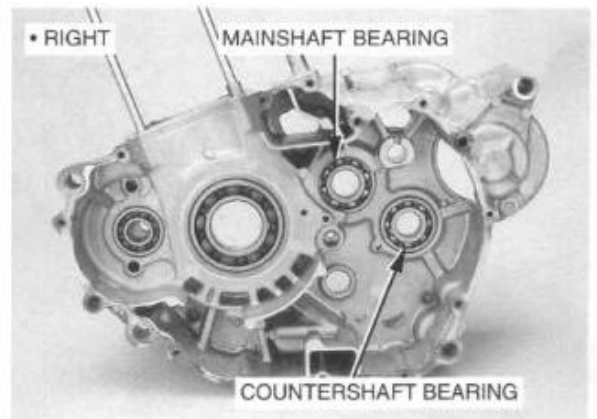
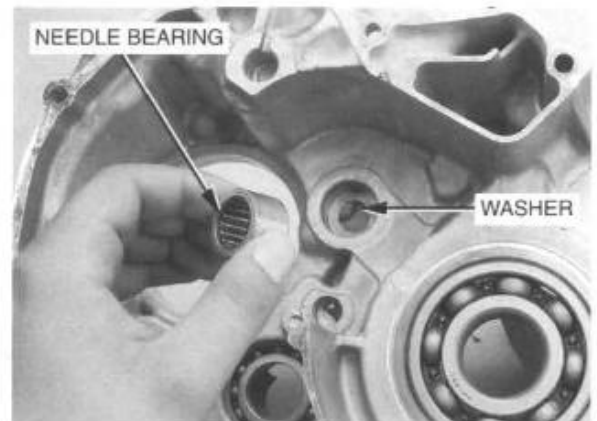
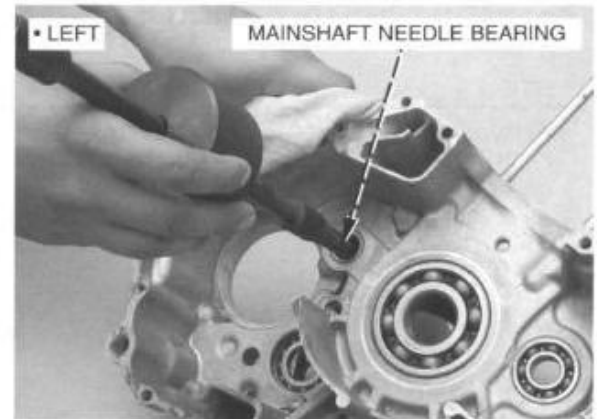
07749-0010000

Attachment, 42 x 47 mm

07746-0010300

Pilot, 20 mm

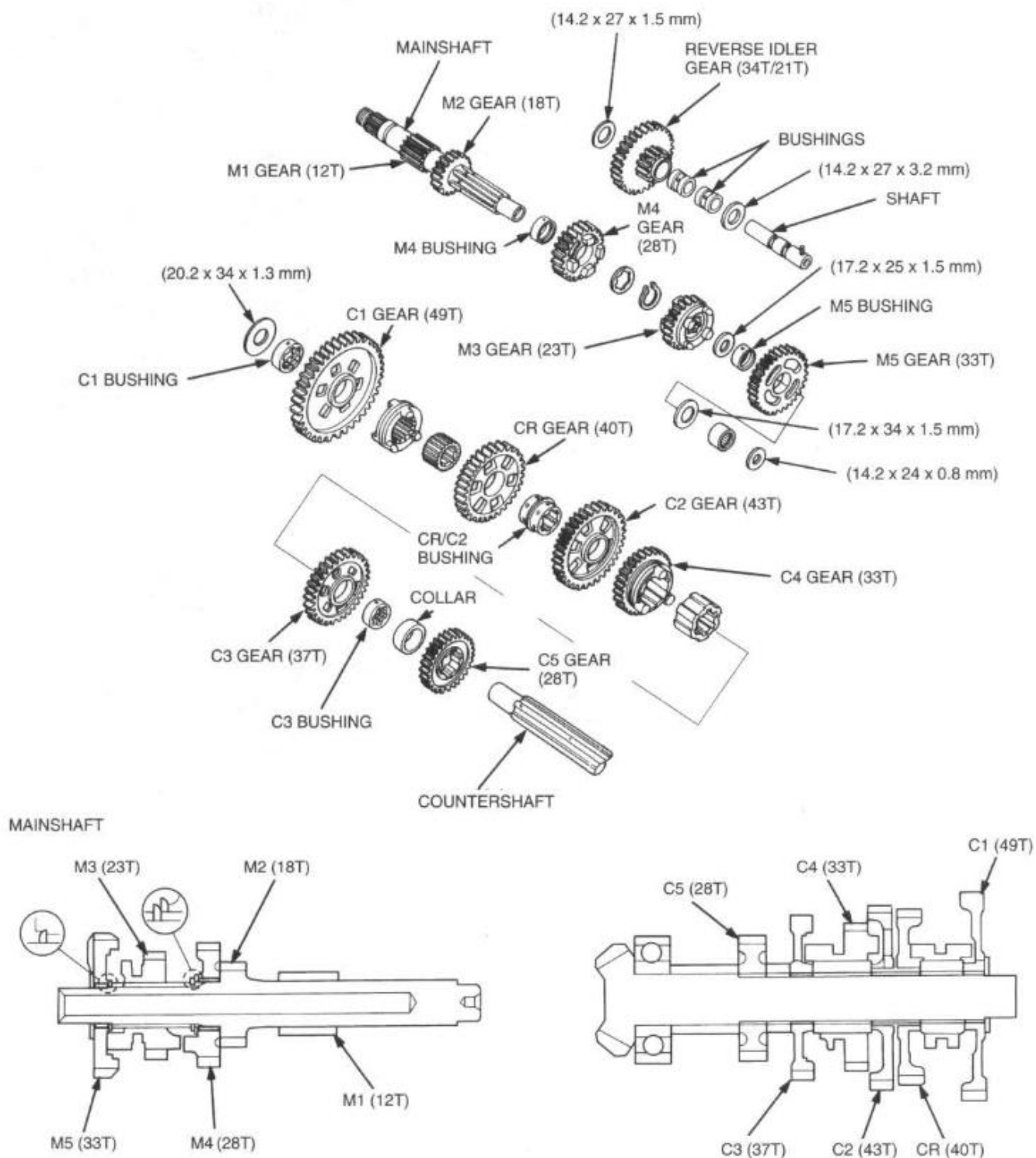
07746-0040500



ASSEMBLY/INSTALLATION

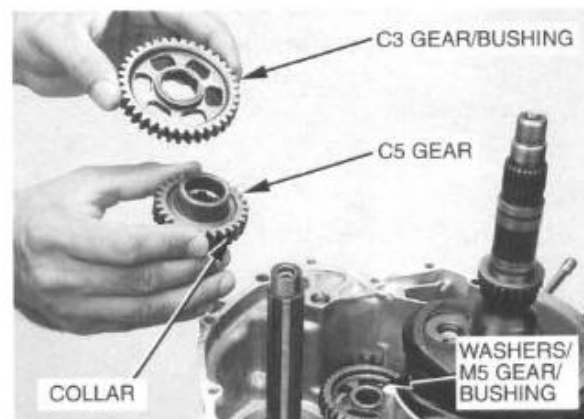
NOTE

- Apply oil to the gears, collar, bushing, shift fork shaft, shift drum, shift drum journal, mainshaft and reverse idler shaft.
- Install the snap ring with its chamfered side facing the gear.
- Align the holes on the shafts and all bushings.

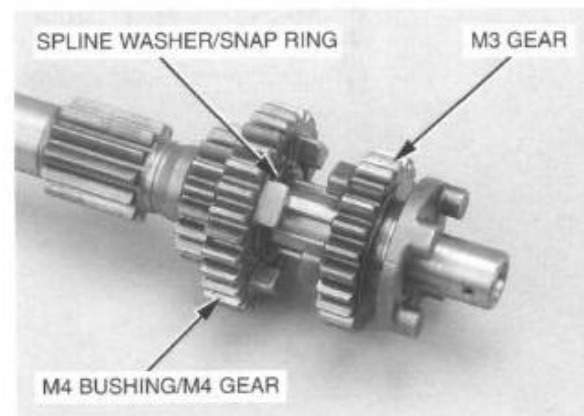


Install the following:

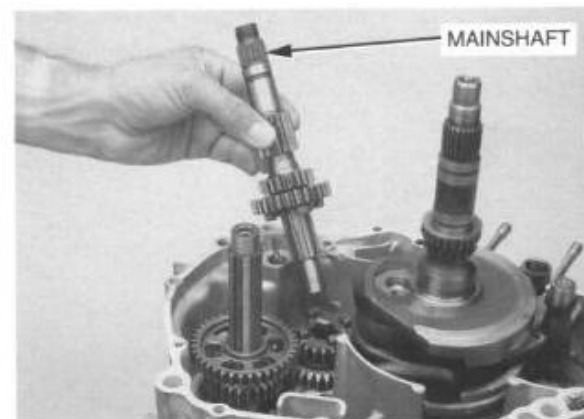
- C5 gear and collar onto the countershaft
- washer, M5 gear, M5 bushing and washer
- C3 gear and C3 bushing onto the countershaft



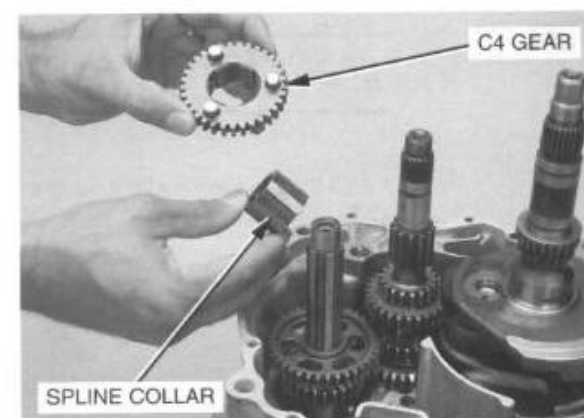
- M4 bushing, M4 gear, spline washer and snap ring onto the mainshaft
- M3 gear onto the mainshaft



- mainshaft into the left crankcase

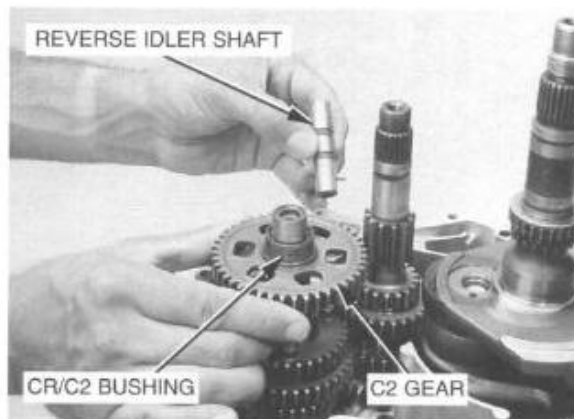


- spline collar and C4 gear onto the countershaft

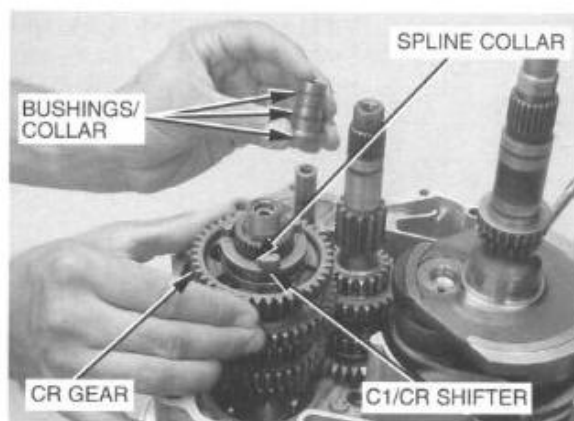


CRANKCASE/CRANKSHAFT/TRANSMISSION

- C2 gear and CR/C2 bushing onto the countershaft
- reverse idler shaft



- CR gear, spline collar and C1/CR shifter onto the countershaft
- collar and reverse bushings onto the reverse idler shaft



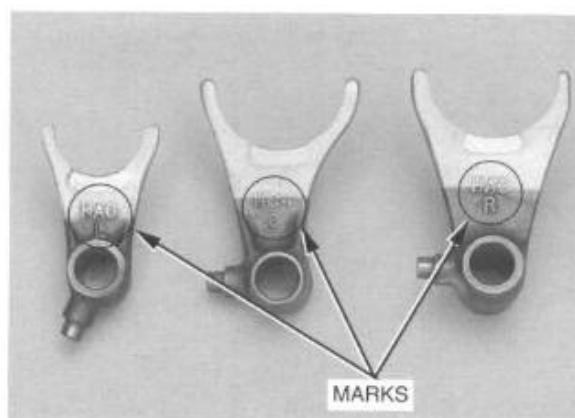
- reverse idler gear and washer onto the reverse idler shaft
- C1 gear, C1 bushing and washer onto the countershaft



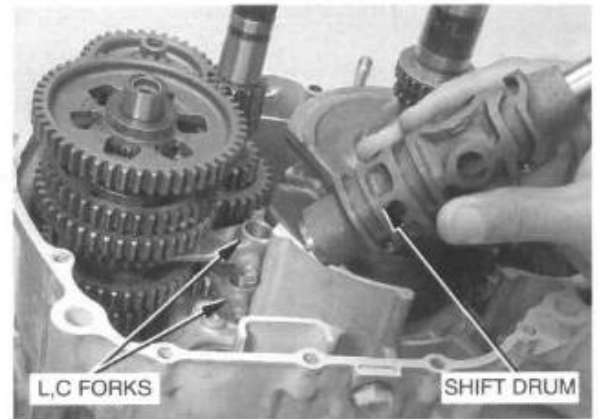
NOTE

The shift forks are marked: L for left, C for center and R for right.

Install the shift forks with their marks facing up.

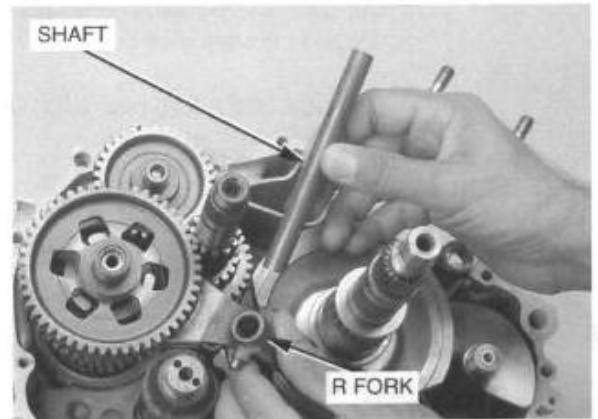


- left and center shift forks
- shift drum, aligning each shift fork guide pin with the guide groove in the shift drum



- right shift fork
- shift fork shaft

After installation, apply oil to the mainshaft and countershaft, and check each gear for smooth rotation.

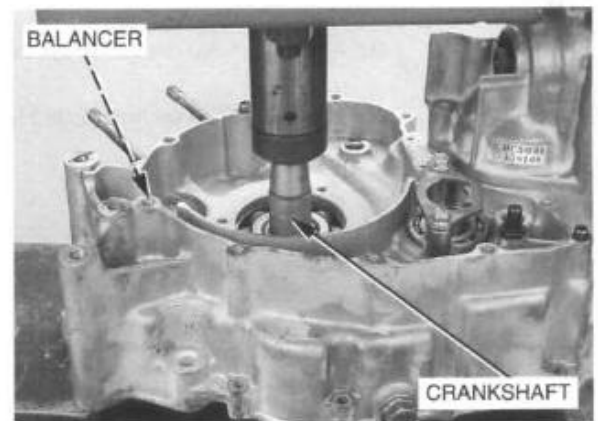


CRANKSHAFT/BALANCER

REMOVAL

Remove the transmission (page 10-5).

Remove the crankshaft and balancer from the left crankcase using a hydraulic press.



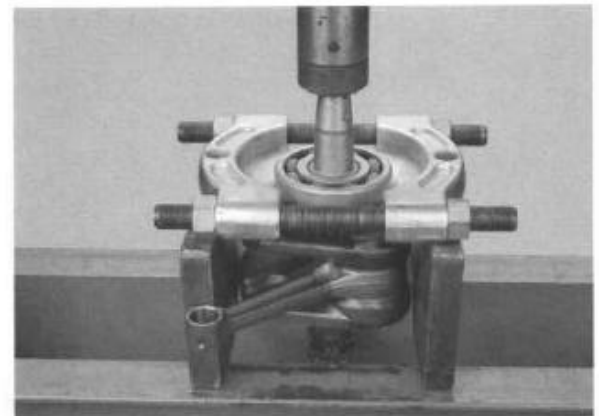
If the left crankshaft bearing remains on the crankshaft, remove it with a bearing puller.

If the bearing remains in the left crankcase, drive it out from the outside.

Discard the left crankshaft bearing.

NOTE

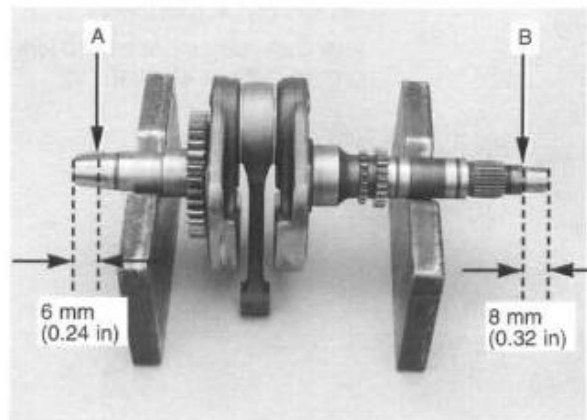
Always replace the left bearing with a new one whenever the crankshaft is removed from the left crankcase.



INSPECTION

Set the crankshaft in a stand or V-blocks and read the runout using dial indicators at the A and B points as shown.

SERVICE LIMIT: 0.05 mm (0.002 in)



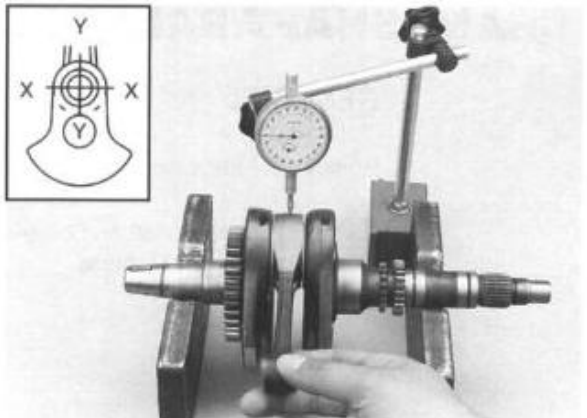
Measure the side clearance between the connecting rod big end and the crankshaft flyweight with a feeler gauge.

SERVICE LIMIT: 0.80 mm (0.031 in)

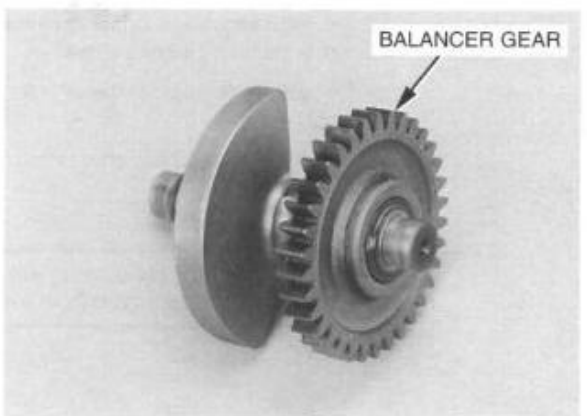


Measure the radial clearance at the connecting rod big end, at two points in the directions indicated by the arrows.

SERVICE LIMIT: 0.05 mm (0.002 in)



Check the balancer gear teeth for abnormal wear or damage.



Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the outer race of each bearing fits tightly in the crankcase.

BEARING REPLACEMENT

Pull the crankshaft and balancer bearings out of the crankcase.

TOOLS:

Balancer bearings:

Bearing remover, 17 mm	07936-3710300
Remover handle	07936-3710100
Remover weight	07936-3710200

Drive new bearings in with the following tools:

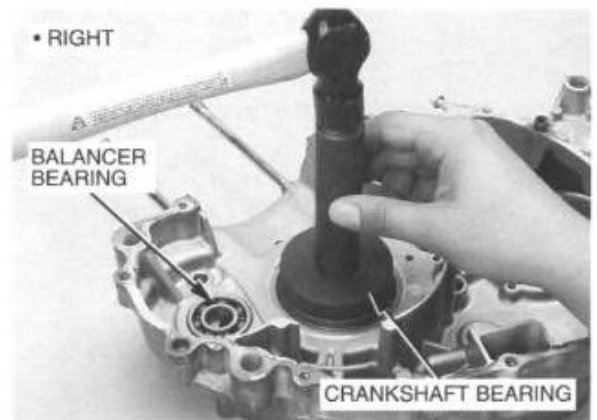
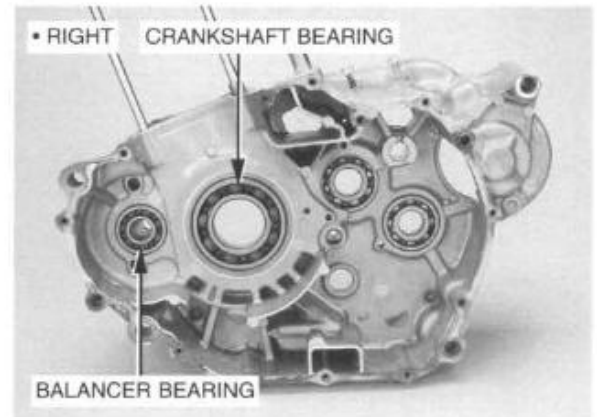
TOOLS:

Crankshaft bearing:

Driver	07749-0010000
Attachment, 72 x 75 mm	07746-0010600
Pilot, 40 mm	07746-0040900

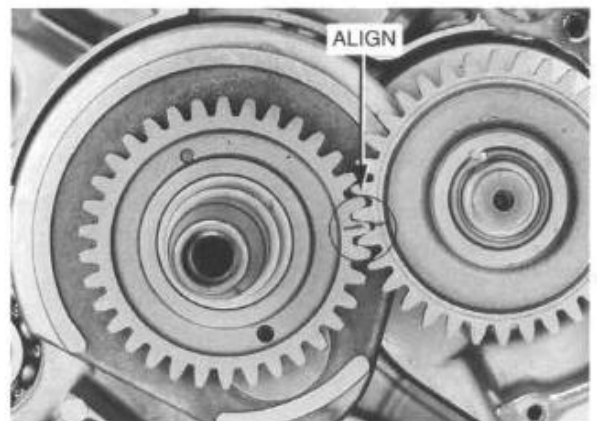
Balancer bearings:

Driver	07749-0010000
Attachment, 37 x 40 mm	07746-0010200



INSTALLATION

Temporarily install the balancer and crankshaft in the right crankcase and align their timing marks.



Install the left crankcase onto the right crankcase.
Install the threaded adaptor on the crankshaft.

TOOL:

Threaded adaptor	07931-KF00200
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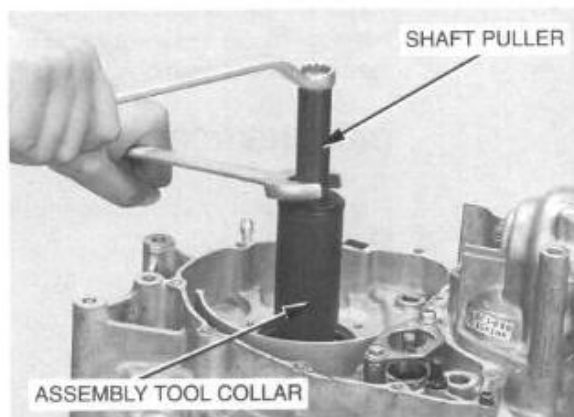
CRANKCASE/CRANKSHAFT/TRANSMISSION

Draw the crankshaft into the left crankcase using the special tools.

TOOLS:

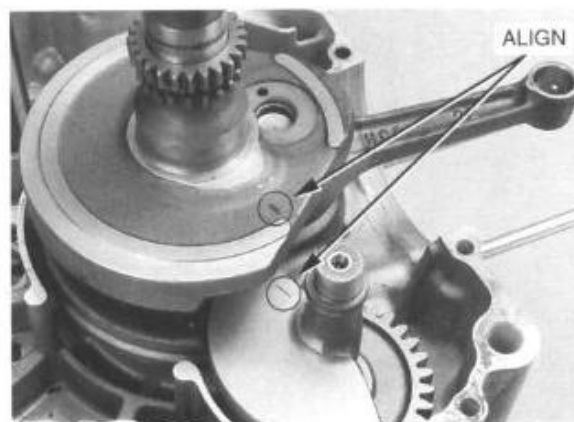
Assembly collar
Shaft puller
Threaded adaptor

07965-VM00100
07931-ME4000A
07931-KF00200



Remove the right crankcase and make sure the index marks on the balancer and crankshaft are aligned.

Install the transmission (page 10-10).



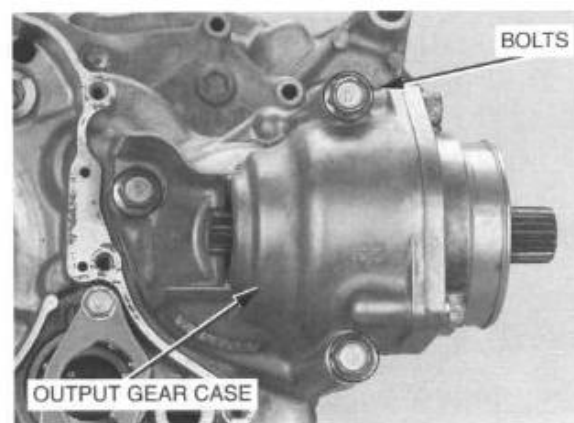
OUTPUT GEAR

REMOVAL

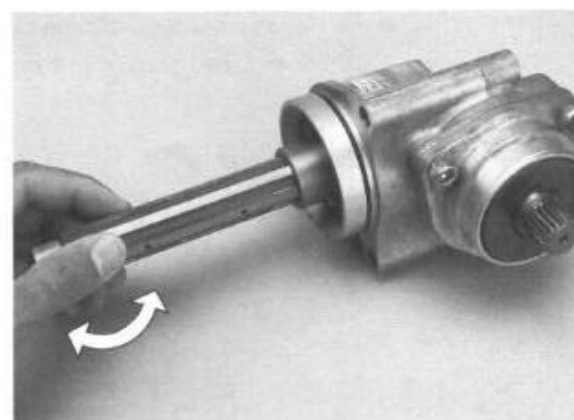
Remove the transmission (page 10-5).

Remove the three output gear case mounting bolts and remove the output gear case.

Remove the dowel pin and O-ring.



Rotate the countershaft and output shaft, and check that each shaft turns smoothly and quietly.



BACKLASH INSPECTION

Use soft jaws to prevent damage to the gear case.

Place the output gear case in a vise.

Set a horizontal type dial indicator on the countershaft as shown.

Hold the output shaft with the special tool and rotate the countershaft until the gear slack is taken up. Turn the countershaft back and forth to read the backlash.

TOOL:

Shaft holder 07924-ME50000

STANDARD: 0.080–0.180 mm (0.0031–0.0071 in)

SERVICE LIMIT: 0.25 mm (0.010 in)

Remove the dial indicator. Turn the output drive shaft 120° and measure the backlash. Repeat this procedure once more.

Compare the difference of the three measurements.

DIFFERENCE OF MEASUREMENT

SERVICE LIMIT: 0.10 mm (0.004 in)

If the difference in the measurements exceeds the limit, it indicates that the bearing is not installed squarely. Inspect the bearings and replace if necessary.

If the backlash is excessive, remove the output shaft assembly and replace the output shaft adjustment shim with a thinner one.

If the backlash is too small, replace the output shaft adjustment shim with a thicker one.

The backlash is changed by about 0.06 mm (0.002 in) when the thickness of the shim is changed by 0.10 mm (0.004 in).

OUTPUT SHAFT ADJUSTMENT SHIMS:

- A: 0.20 mm (0.008 in)
- B: 0.25 mm (0.010 in)
- C: 0.30 mm (0.012 in)
- D: 0.35 mm (0.014 in)
- E: 0.40 mm (0.016 in)
- F: 0.45 mm (0.018 in) Standard
- G: 0.50 mm (0.020 in)

Install the output shaft assembly with the new shim.

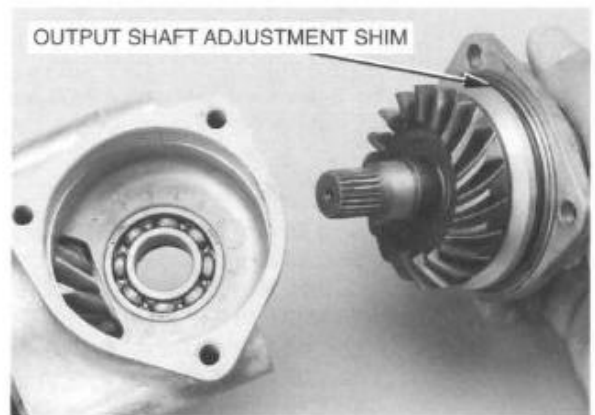
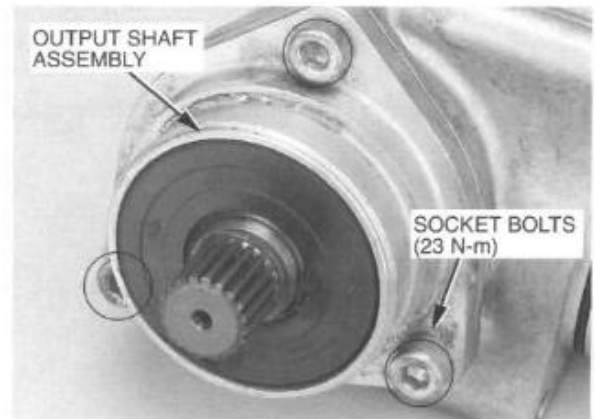
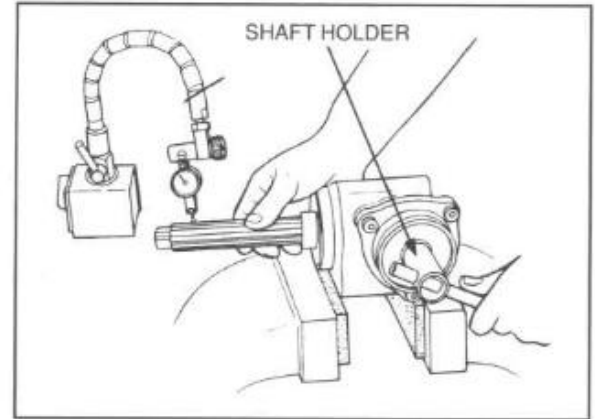
While turning the countershaft, tighten the socket bolts.

TORQUE: 23 N·m (2.3 kg·m, 17 ft·lb)

CAUTION

It is important to turn the countershaft while tightening the bolts. If the shim is too thin, the gears will lock only after light tightening.

Next, perform the gear tooth contact pattern check (page 10-18).

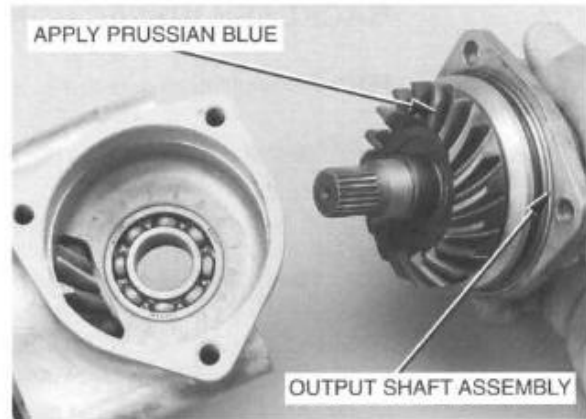


GEAR TOOTH CONTACT PATTERN CHECK

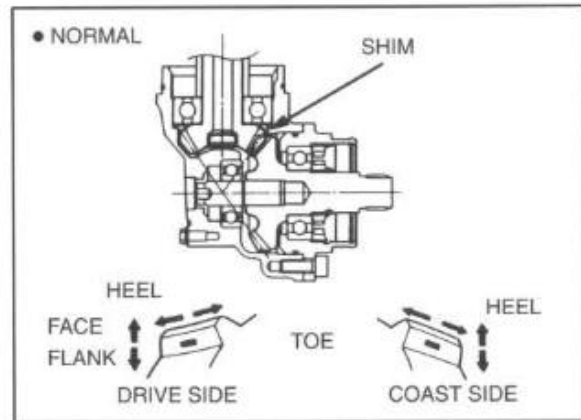
Remove the output shaft assembly and apply Prussian Blue to the output shaft gear teeth.

Install the output shaft assembly and rotate the countershaft several times in both directions of rotation.

Remove the output shaft assembly again, and check the gear tooth contact pattern.

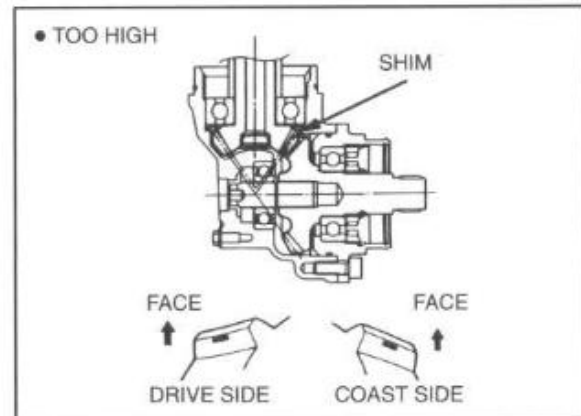


Contact is normal if Prussian Blue is transferred to the approximate center of each tooth and slightly to the side.



If the pattern is not correct, remove and replace the countershaft adjustment shim (page 10-21).

Replace the shim with a thinner one if the contact pattern is too high.

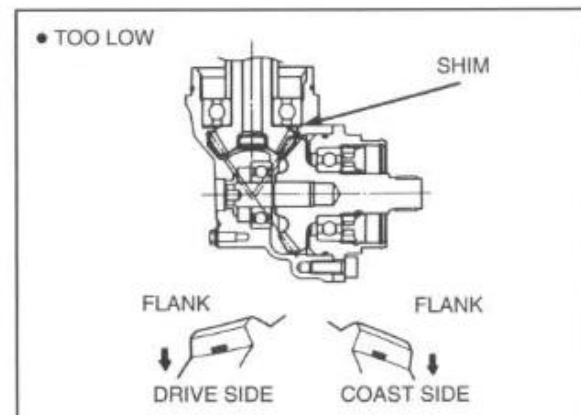


Replace the countershaft adjustment shim with a thicker one if the contact is too low.

The pattern will shift about 1.00 mm (0.039 in) when the thickness of the shim is changed by 0.10 mm (0.004 in).

OUTPUT DRIVE GEAR ADJUSTMENT SHIMS:

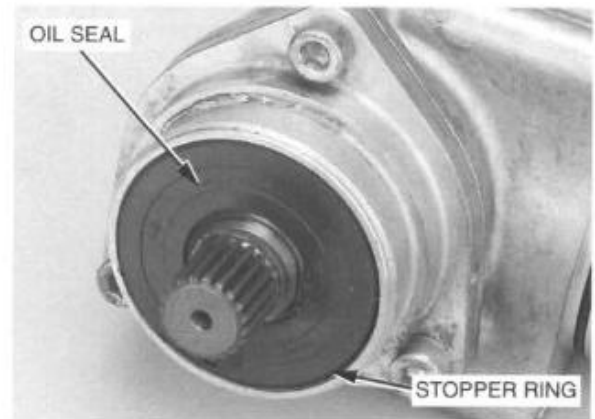
- A: 0.80 mm (0.031 in)
- B: 0.85 mm (0.033 in)
- C: 0.90 mm (0.035 in)
- D: 0.95 mm (0.037 in)
- E: 1.00 mm (0.039 in) Standard
- F: 1.05 mm (0.041 in)
- G: 1.10 mm (0.043 in)



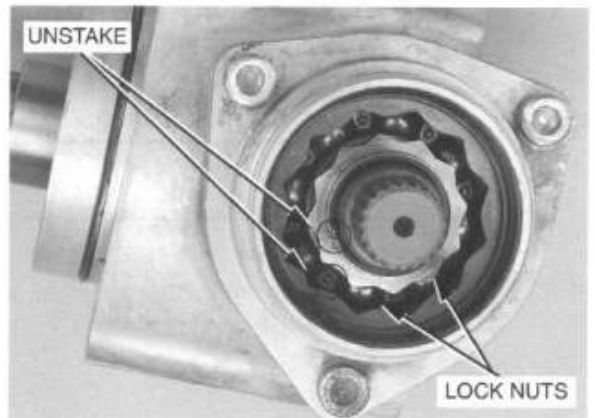
OUTPUT SHAFT DISASSEMBLY

Remove the oil seal stopper ring and oil seal.

Discard the oil seal.



Unstake the output shaft bearing race lock nuts with a drill or grinder. Be careful that metal particles do not enter the bearing, and that the threads on the shaft are not damaged.



Use soft jaws to prevent damage to the gear case.

Place the output gear case in a vise, being careful not to distort it.

Hold the output shaft and remove the bearing inner race lock nut.

TOOLS:

Shaft holder

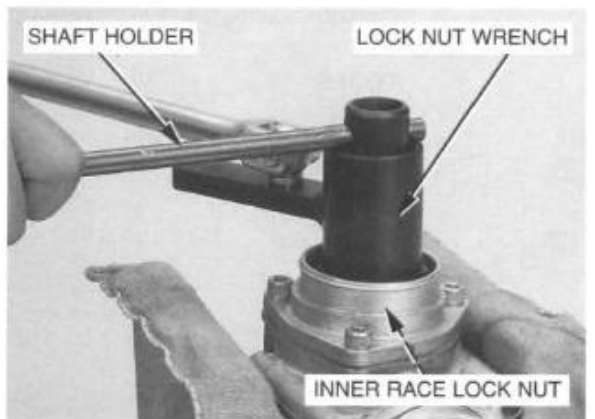
Lock nut wrench, 34 x 44 mm

07924-ME50000

07916-ME50001 or

07916-ME50000 and

07916-HA0010A



Discard the lock nut.

Remove the outer race lock nut and discard the lock nut.

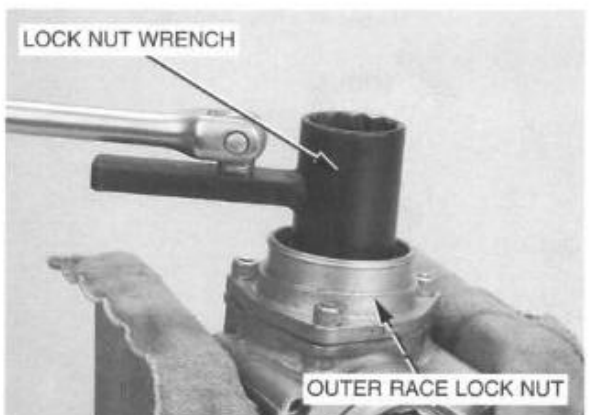
TOOL:

Lock nut wrench, 34 x 44 mm

07916-ME50001 or

07916-ME50000 and

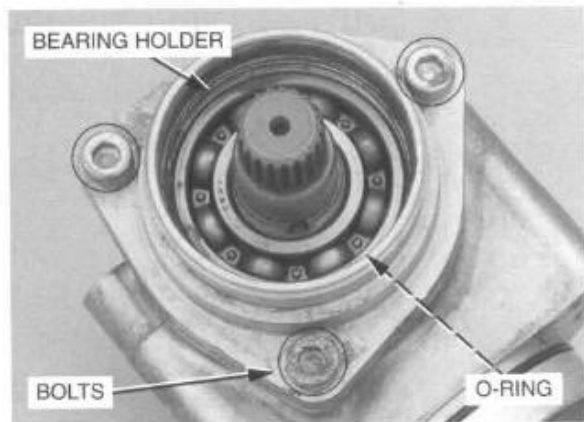
07916-HA0010A



CRANKCASE/CRANKSHAFT/TRANSMISSION

Remove the 8 mm socket bolts attaching the output shaft bearing holder, and remove the bearing holder assembly from the gear case.

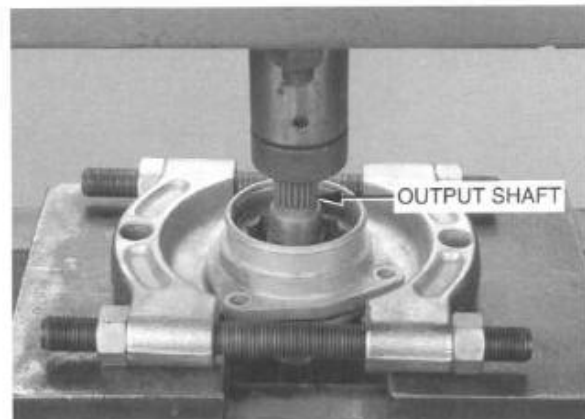
Remove the O-ring.



OUTPUT SHAFT BEARING REPLACEMENT

NOTE

The output shaft must be removed before replacing the bearing.



Place the bearing holder in a press and remove the output shaft from the bearing holder.

Place the bearing holder in the press and remove the bearing.

TOOLS:

Driver

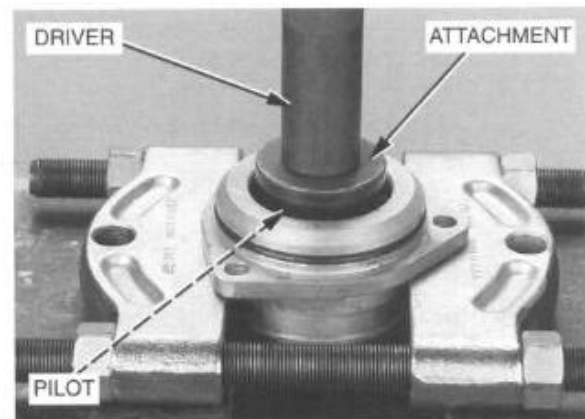
Attachment, 42 x 47 mm

Pilot, 28 mm

07749-0010000

07746-0010300

07746-0041100



Press in a new bearing.

TOOLS:

Driver

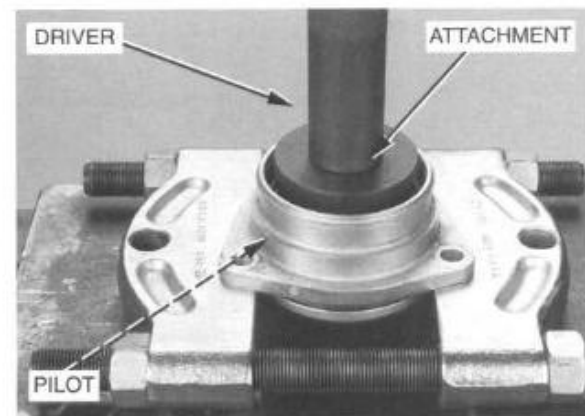
Attachment, 52 x 55 mm

Pilot, 28 mm

07749-0010000

07746-0010400

07746-0041100



Press the output shaft into the bearing.

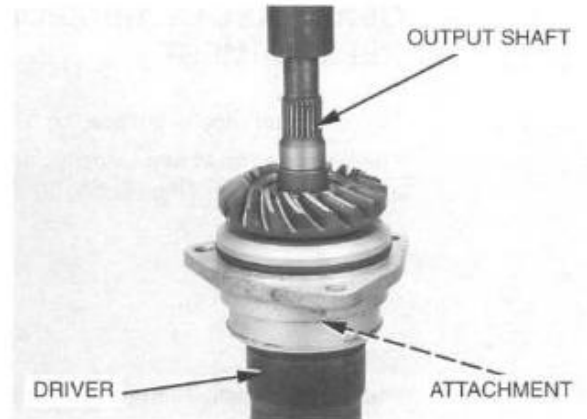
TOOLS:

Driver, 40 mm I.D.

07746-0030100

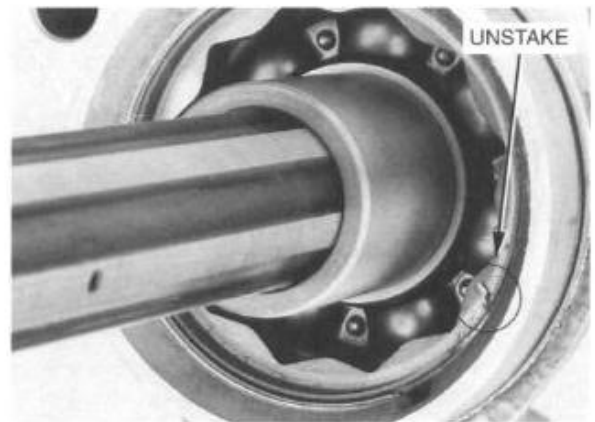
Attachment, 30 mm I.D.

07746-0030300



COUNTERSHAFT DISASSEMBLY

Unstake the countershaft bearing race lock nut with a drill or grinder. Be careful that metal particles do not enter the bearing, and that the threads of the shaft are not damaged.



Use soft jaws to prevent damage to the gear case.

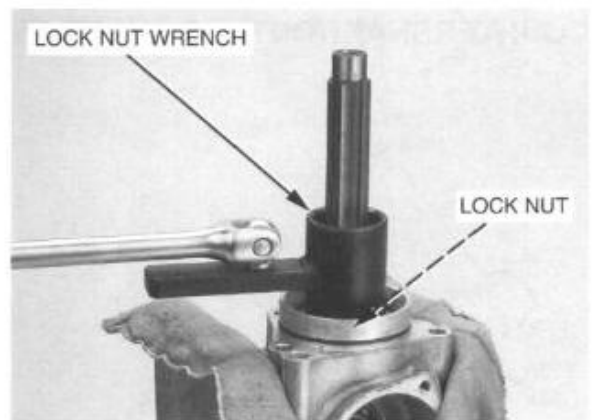
Place the output gear case in a vise, being careful not to distort it.

Remove the countershaft bearing lock nut. Discard the lock nut.

TOOL:

Lock nut wrench, 36 x 48 mm

07916-MB00001 or
07916-MB00000 and
07916-HA2020A



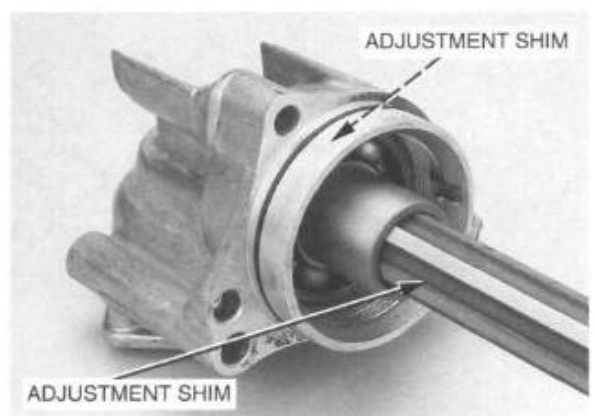
Do not use a torch to heat the output gear case; it may cause warping.

Heat the output gear case around the countershaft bearing to 80°C (176°F).

▲ WARNING

Always wear gloves when handling a heated gear case to prevent burning your hands.

Remove the countershaft and adjustment shim.



GEAR CASE BEARING/OIL SEAL REPLACEMENT

Turn the inner race of the bearing with your finger.

The bearing should turn smoothly and quietly. Also check that the outer race of the bearing fits tightly in the gear case. Replace if necessary.

Remove the bearing.

TOOLS:

Bearing remover, 20 mm

07936-3710600

Remover weight

07936-3710200

Remover handle

07936-3710100

Check the oil seal for damage or fatigue and replace it if necessary.

Drive a new bearing into the gear case.

TOOLS:

Driver

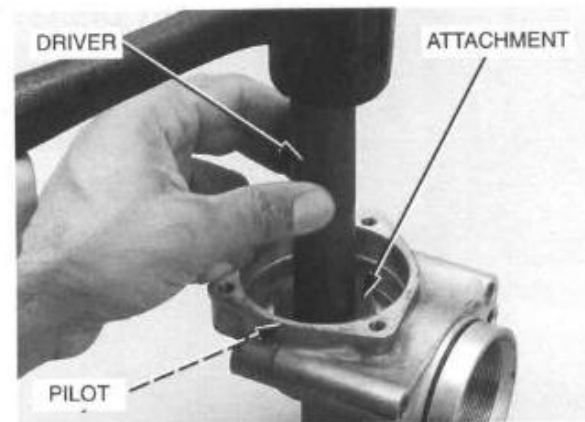
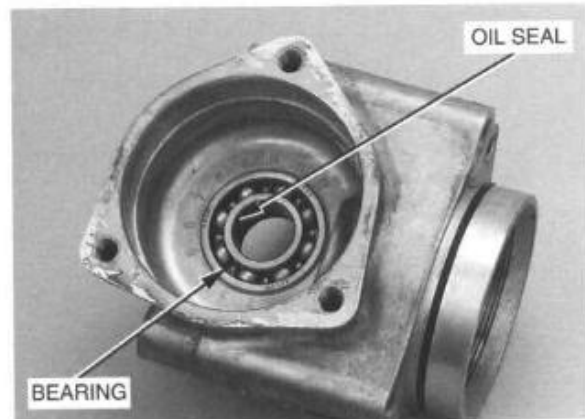
07749-0010000

Attachment, 42 x 47 mm

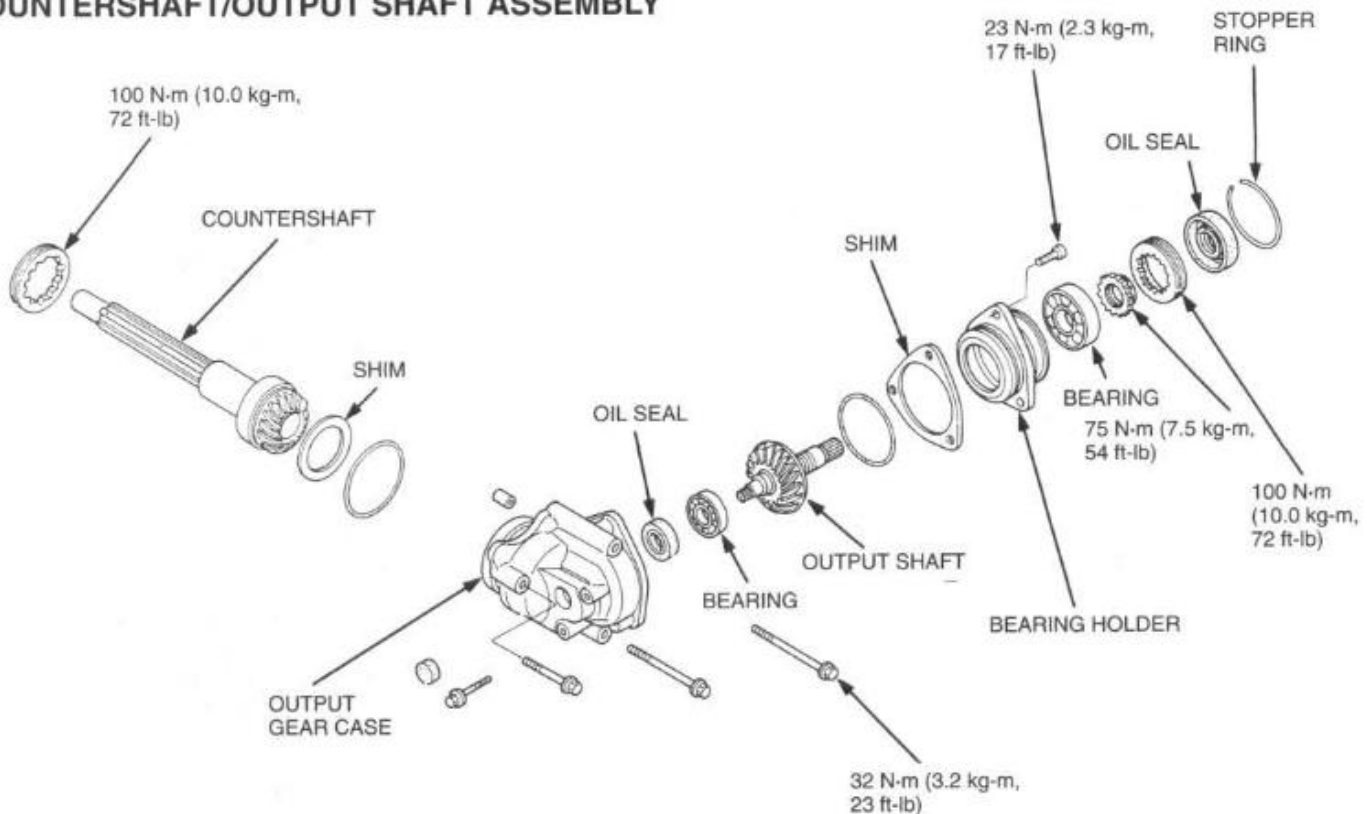
07746-0010300

Pilot, 20 mm

07746-0040500



COUNTERSHAFT/OUTPUT SHAFT ASSEMBLY

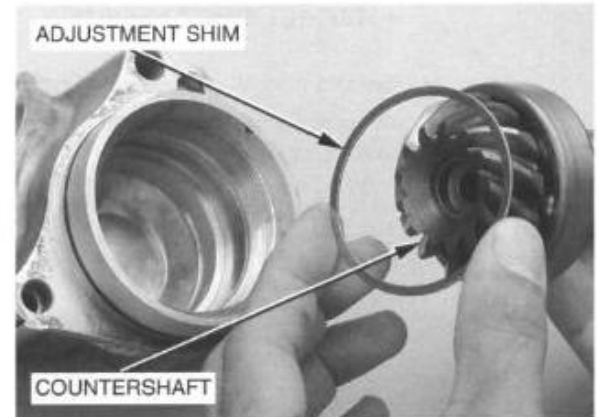


• COUNTERSHAFT ASSEMBLY

Place the shim and countershaft into the case.

NOTE

When the shaft set, output shaft bearing holder, output shaft bearing and/or gear case have been replaced, use a shim of 1.00 mm (0.039 in) thickness for initial reference.



Do not use a torch to heat the output gear case; it may cause warping.

Heat the output gear case around the countershaft bearing to 80°C (176°F).

▲ WARNING

Always wear gloves when handling a heated gear case to prevent burning your hands.

Tap the countershaft into the case with a plastic hammer.

NOTE

Check the backlash (page 10-17) and the gear tooth contact pattern (page 10-18) before tightening the lock nut.



Apply oil to the lock nut flange.

Install and tighten the countershaft bearing lock nut to the specified torque.

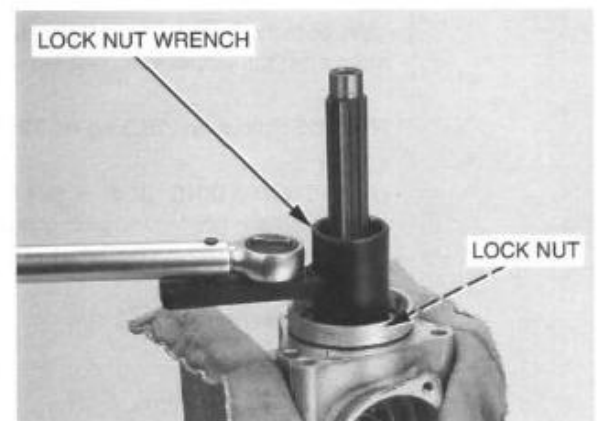
TORQUE: 100 N·m (10.0 kg·m, 72 ft·lb)

WRENCH READING: 91 N·m (9.1 kg·m, 66 ft·lb)
using a 50 cm (20 in) long torque wrench

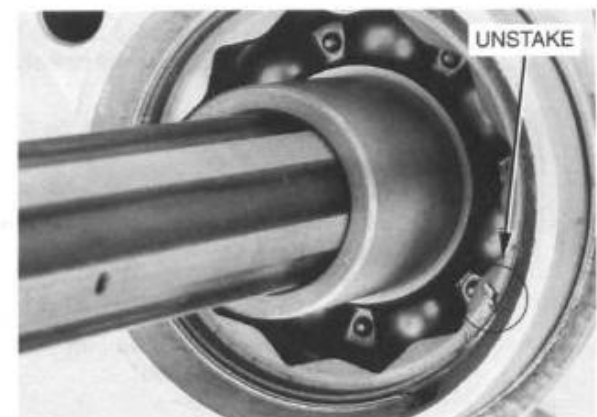
TOOL:

Lock nut wrench, 36 x 48 mm

07916-MB00001 or
07916-MB00000 and
07916-HA2020A



Stake the lock nut.

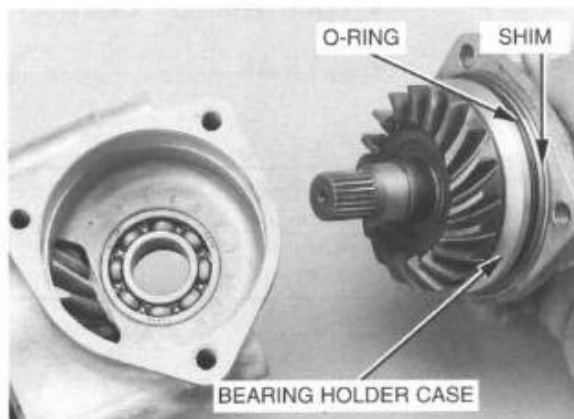


CRANKCASE/CRANKSHAFT/TRANSMISSION

• OUTPUT SHAFT ASSEMBLY

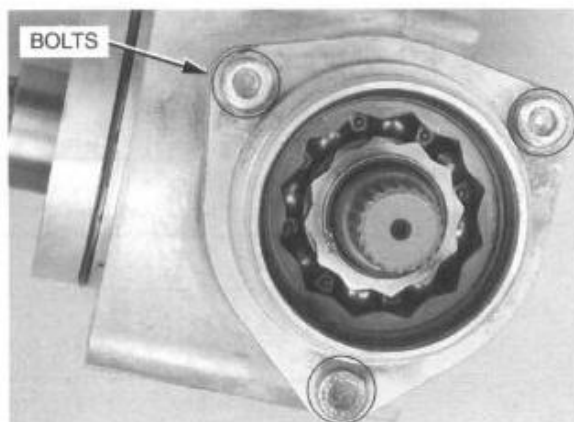
Install a new O-ring to bearing holder.

Place the shim and output shaft/bearing holder assembly into the case.



Install and tighten the 8 mm socket bolts to the specified torque.

TORQUE: 23 N·m (2.3 kg-m, 17 ft-lb)



Apply oil to the flange of the bearing outer race lock nut. Install and tighten the output shaft bearing outer race lock nut.

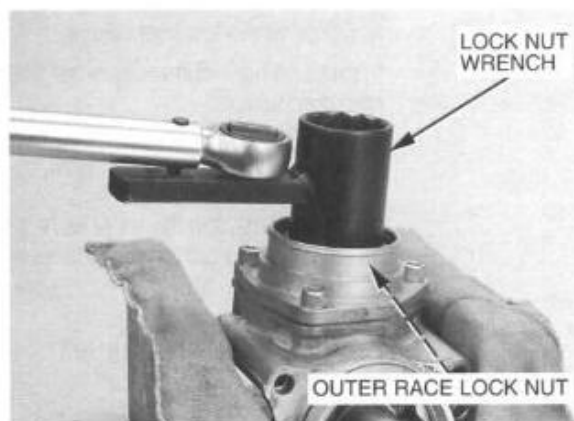
TORQUE: 100 N·m (10.0 kg-m, 72 ft-lb)

WRENCH READING: 91 N·m (9.1 kg-m, 66 ft-lb)
using a 50 cm (20 in) long torque wrench

TOOL:

Lock nut wrench, 34 x 44 mm

07916-ME50001 or
07916-ME50000 and
07916-HA0010A



Apply oil to the flange of the bearing inner race lock nut. Hold the output shaft with the shaft holder and tighten the lock nut.

TORQUE: 75 N·m (7.5 kg-m, 54 ft-lb)

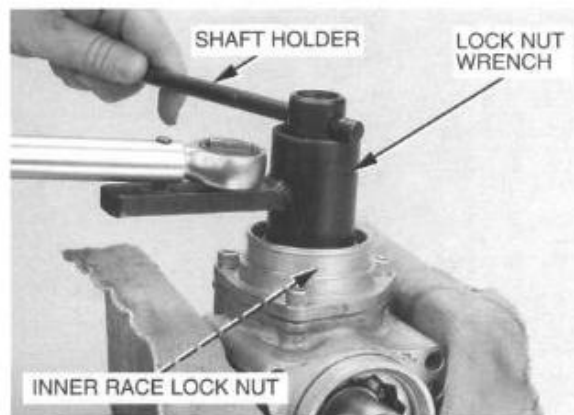
WRENCH READING: 69 N·m (6.9 kg-m, 50 ft-lb)
using a 50 cm (20 in) long torque wrench

TOOLS:

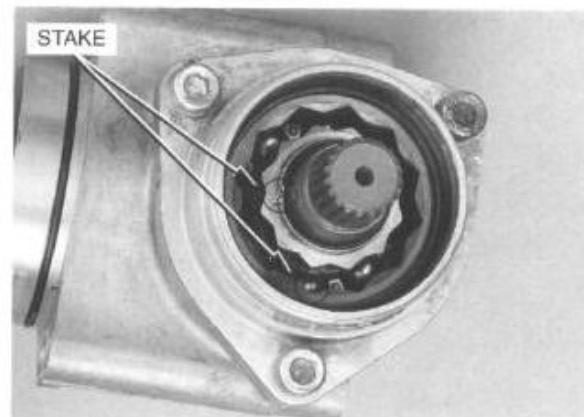
Shaft holder

Lock nut wrench, 34 x 44 mm

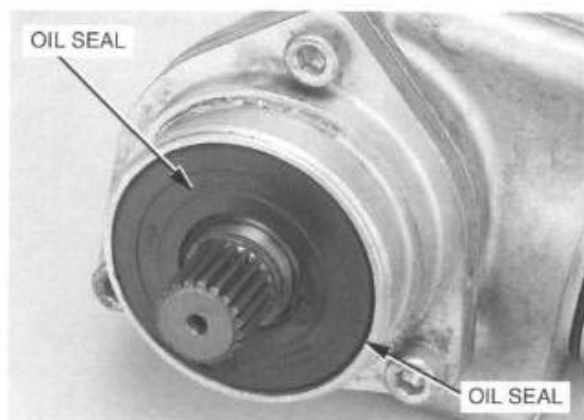
07924-ME50000
07916-ME50001 or
07916-ME50000 and
07916-HA0010A



Stake the outer and inner race lock nuts.



Install a new oil seal and stopper ring.

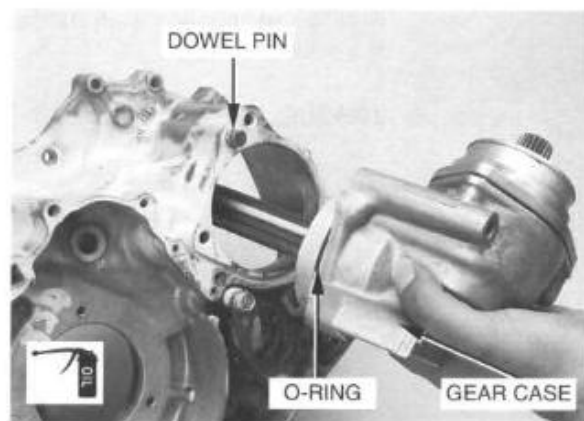


INSTALLATION

Apply oil to the output gear case hole in the left crankcase.

Install a new O-ring to the gear case.

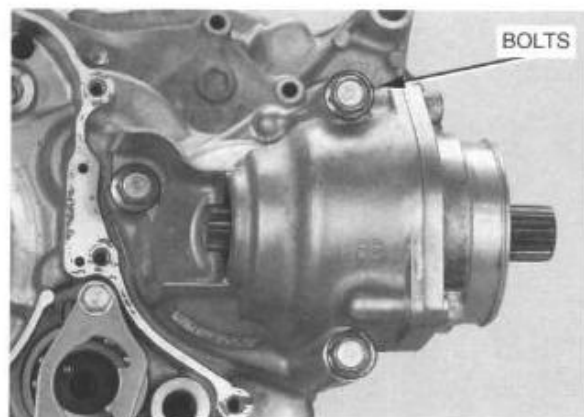
Install the dowel pin and output gear case to the crankcase.



Install and tighten the output gear case mounting bolts to the specified torque.

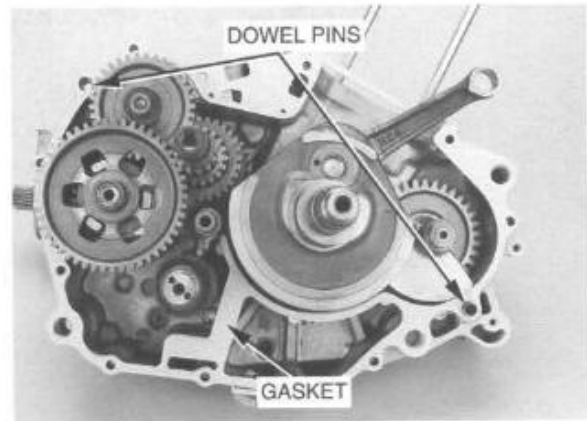
TORQUE: 32 N·m (3.2 kg·m, 23 ft·lb)

Install the transmission (page 10-10).

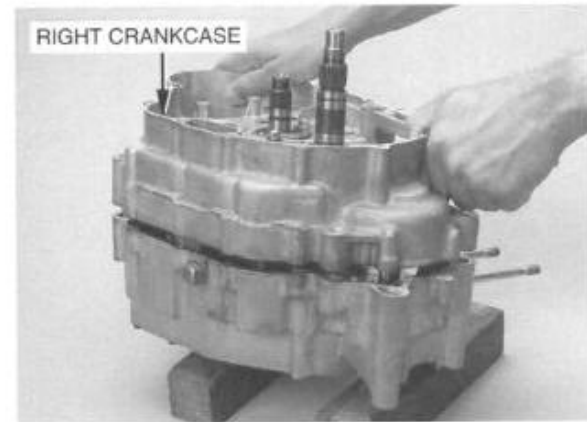


CRANKCASE ASSEMBLY

Install the dowel pins and new gasket.

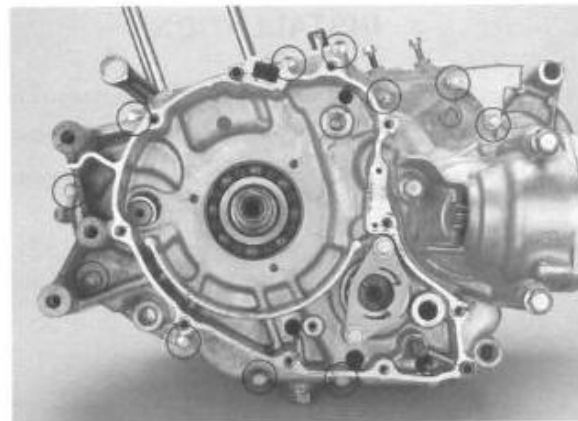


Make sure that the gasket stays in place. Install the right crankcase onto the left crankcase.



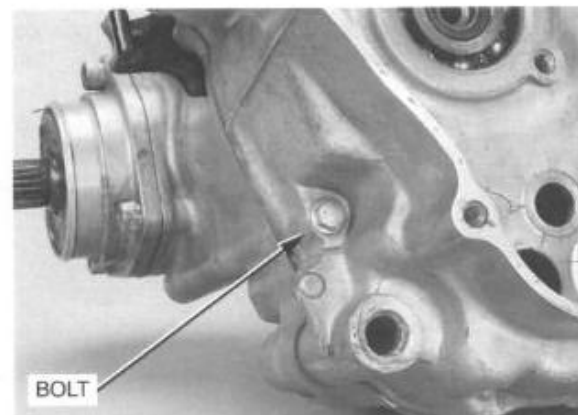
Install and tighten all the left crankcase bolts in 2 or 3 steps in a crisscross pattern.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)



Tighten the right crankcase bolt to the specified torque.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)



Clean off oil from the crankshaft.

Apply locking agent to the threads of the cam chain tensioner bolt, bearing set plate bolt and cam chain guide holder bolt.

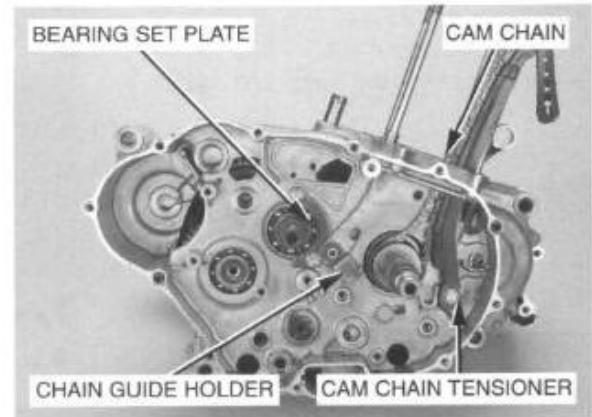
Install the following:

- bearing set plate and cam chain guide holder

TORQUE: 12 N·m (1.2 kg-m, 9 ft-lb)

- Install washer between crankcase and tensioner*
- cam chain tensioner, washer, collar, bolt (page 10-5)
 - cam chain

Reinstall the removed parts in reverse order of removal (page 10-4).

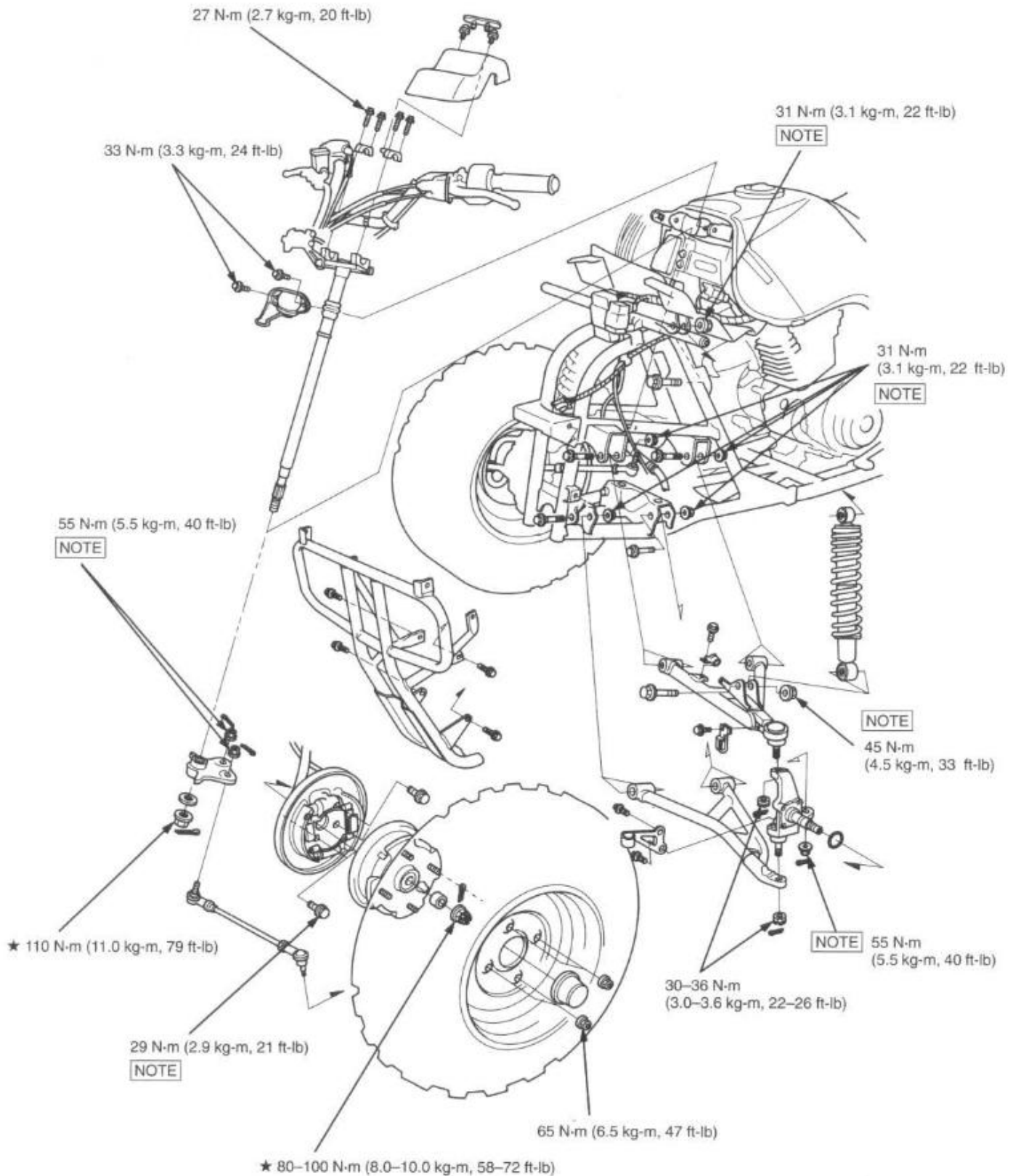


FRONT WHEEL/SUSPENSION/STEERING

TRX300

NOTE: Do not reuse nut.

★ Apply grease to the flange and threads

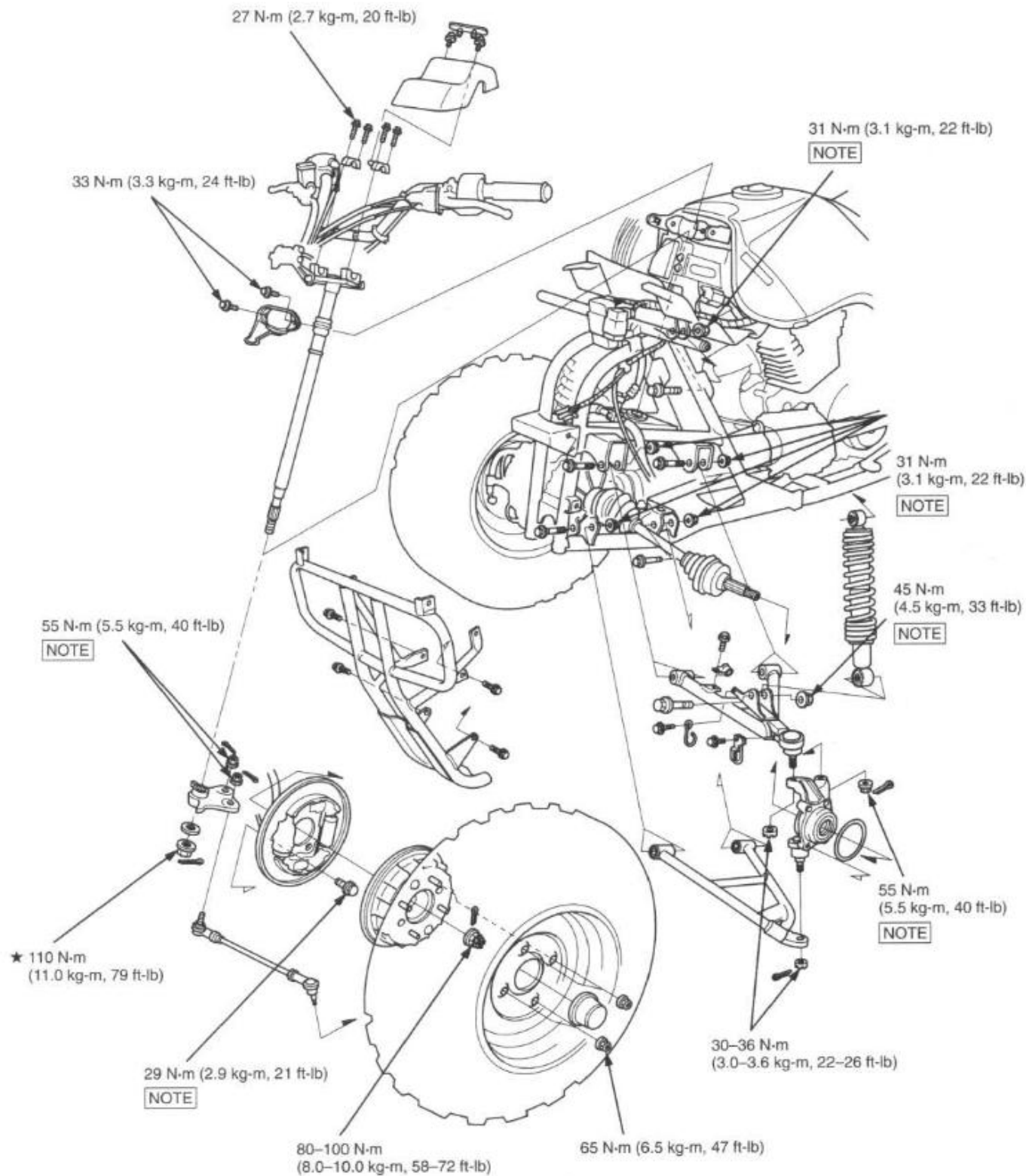


11. FRONT WHEEL/SUSPENSION/STEERING

TRX300FW

NOTE: Do not reuse nut.

★ Apply grease to the flange and threads



FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION	11-2	TIE-ROD/KNUCKLE INSTALLATION (TRX300)	11-14
TROUBLESHOOTING	11-3	TIE-ROD/KNUCKLE REMOVAL (TRX300FW)	11-17
HANDLEBAR	11-4	FRONT ARM (TRX300FW)	11-22
THROTTLE HOUSING	11-6	TIE-ROD/KNUCKLE INSTALLATION (TRX300FW)	11-25
FRONT WHEEL	11-7	STEERING SHAFT	11-27
TIE-ROD/KNUCKLE REMOVAL (TRX300)	11-8	FRONT SHOCK ABSORBER	11-30
FRONT ARM (TRX300)	11-12		

SERVICE INFORMATION

GENERAL

▲ WARNING

Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake or clutch assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA designed to minimize the hazard caused by airborne asbestos fibers.

- This section covers servicing of the front wheel, steering stem and suspension.
- A jack or other support is required to support the vehicle.
- Adjust toe-in whenever the tie rod, knuckle or steering shaft are replaced or removed (page 3-17).
- Do not twist or bend the brake hoses and pipes when removing them from the knuckle or front arm.
- See section 13 for tire removal/repair procedures.

SPECIFICATIONS

[]: TRX300FW

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Tie-rod distance between the ball joints	345.5 (13.6) [343 (13.5)]	—
Front shock absorber spring free length	216.9 (8.54) [223.8 (8.81)]	212.5 (8.37) [219.3 (8.63)]

TORQUE VALUES

NOTE 1: Do not reuse the nut.

NOTE 2: Apply grease to the flange and threads

Handlebar upper holder bolt		27 N·m (2.7 kg-m, 20 ft-lb)
Switch housing screw		2 N·m (0.2 kg-m, 1.4 ft-lb)
Grip end bolt		10 N·m (1.0 kg-m, 7 ft-lb)
Master cylinder holder		12 N·m (1.2 kg-m, 9 ft-lb)
Wheel nut		65 N·m (6.5 kg-m, 47 ft-lb)
Front arm mounting nut		31 N·m (3.1 kg-m, 22 ft-lb): NOTE 1
Front arm ball joint nut		30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb): NOTE 1
Tie-rod ball joint nut		55 N·m (5.5 kg-m, 40 ft-lb): NOTE 1
Tie-rod lock nut		55 N·m (5.5 kg-m, 40 ft-lb)
Steering shaft upper holder bolt		33 N·m (3.3 kg-m, 24 ft-lb)
Steering shaft nut		110 N·m (11.0 kg-m, 79 ft-lb): NOTE 2
Handlebar lower holder nut		40 N·m (4.0 kg-m, 29 ft-lb): NOTE 1
Shock absorber mounting bolt		
	upper	31 N·m (3.1 kg-m, 22 ft-lb): NOTE 1
	lower	45 N·m (4.5 kg-m, 33 ft-lb): NOTE 1
Brake hose/breather tube		
clamp bolt	(TRX300)	22 N·m (2.2 kg-m, 16 ft-lb)
	(TRX300FW)	12 N·m (1.2 kg-m, 9 ft-lb)

TOOLS

Special

Ball joint remover/installer	07JMD-HC50110
Ball joint remover, 28 mm	07MAC-SL00200 or 07941-6920003
Attachment	07945-3330300
Driver	07949-3710001

Common

Attachment, 37 x 40 mm	07746-0010200
Attachment, 42 x 47 mm	07746-0010300
Pilot, 20 mm	07746-0040500
Pilot, 30 mm	07746-0040700
Driver	07749-0010000
Shock absorber compressor	07959-3290001

TROUBLESHOOTING

Hard steering

- Damaged steering shaft bearing and holder bushing
- Steering shaft holder too tight
- Insufficient tire pressure

Steers to one side or does not track straight

- Bent tie-rod
- Insufficient tire pressure
- Bent front arm; frame or wheel installed incorrectly
- Incorrect wheel alignment
- Weak front shock absorber

Front wheel wobbling

- Bent rim
- Worn front drum bearing
- Faulty tire
- Axle nut not tightened properly

Soft suspension

- Weak spring

Hard suspension

- Bent shock absorber

Suspension noise

- Loose fasteners

HANDLEBAR

REMOVAL

Remove the following:

- wire bands
- throttle lever housing
- switch housing (and disconnect the choke cable)
- master cylinder
- rear brake lever bracket

- cover cap
- screws
- handlebar cover

- upper holder bolts
- upper holder
- handlebar

INSTALLATION

Place the handlebar on the lower holders.

Align the punch mark on the handlebar with the top of the lower holders.

Install the upper holders on the handlebar with their punch marks forward.

Tighten the front bolts first, then tighten the rear bolts.

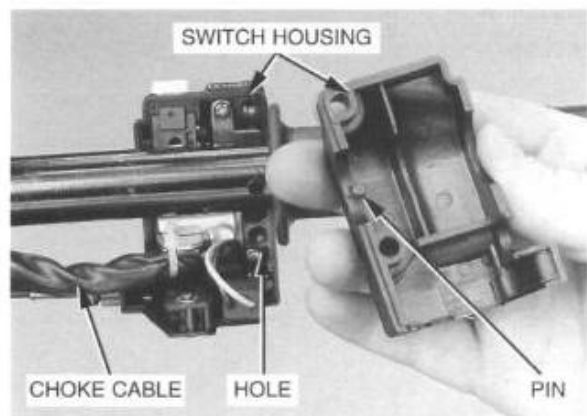
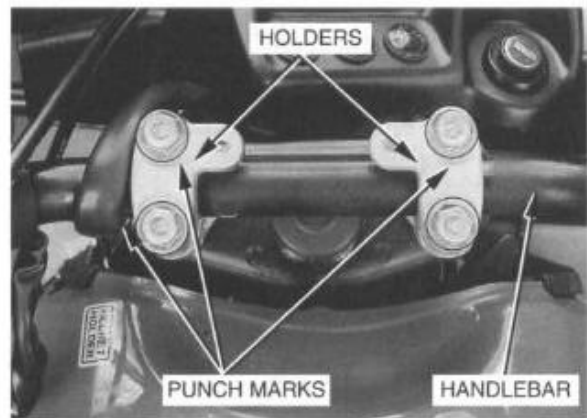
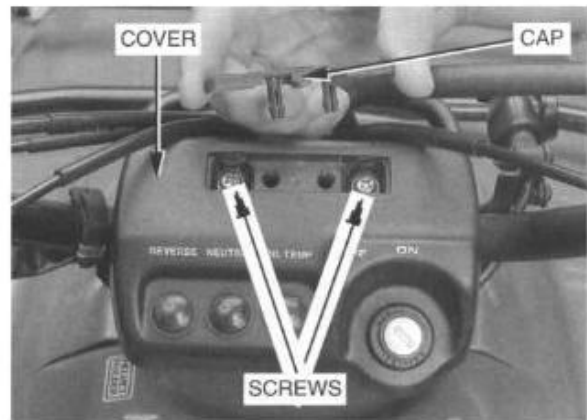
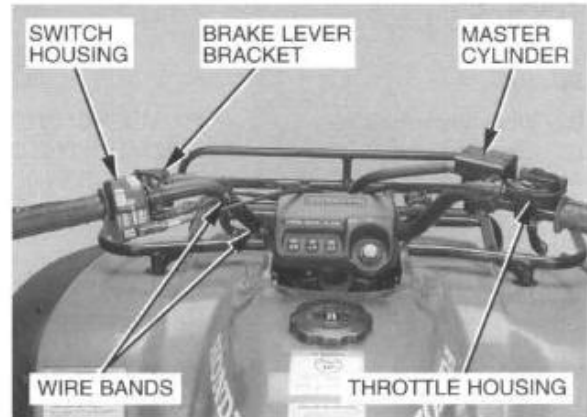
TORQUE: 27 N·m (2.7 kg-m, 20 ft-lb)

Install the following:

- choke cable to the choke lever
- switch housing

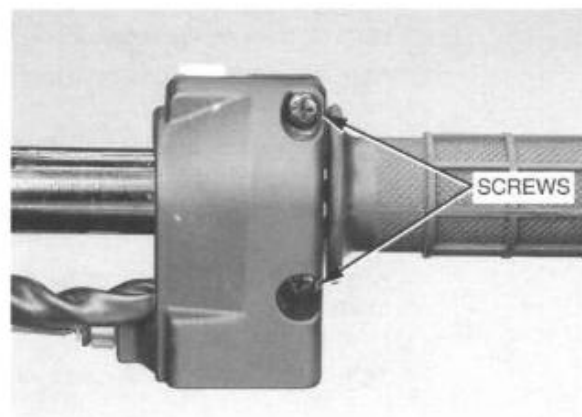
NOTE

When installing the switch housing, place the locating pin in the hole on the handlebar.



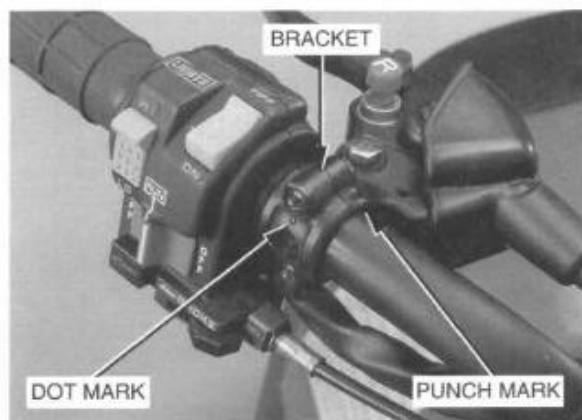
Tighten the upper screw first, then tighten the lower screw.

TORQUE: 2 N·m (0.2 kg-m, 1.4 ft-lb)



Install the rear brake lever bracket with the dot on the holder facing up. Align the end of the holder with the punch mark on the handlebar.

Tighten the upper screw first, then the lower screw.



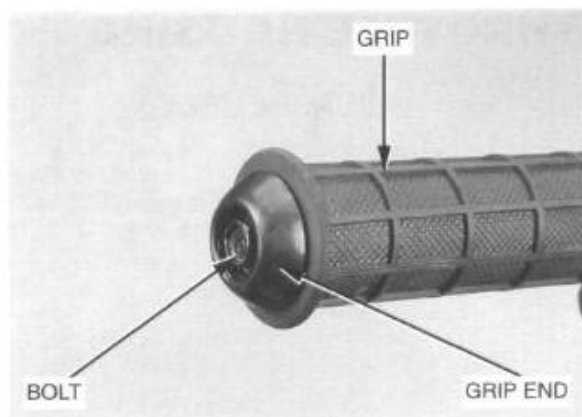
If the handlebar grips were removed, apply Honda Bond A or Honda Hand Grip Cement (U.S.A. only) to the inside of the grip and to the clean surfaces of the right and left handlebar.

Wait 3–5 minutes and install the grip.

Rotate the grip for even application of the adhesive.

NOTE

Allow the adhesive to dry for an hour before using.

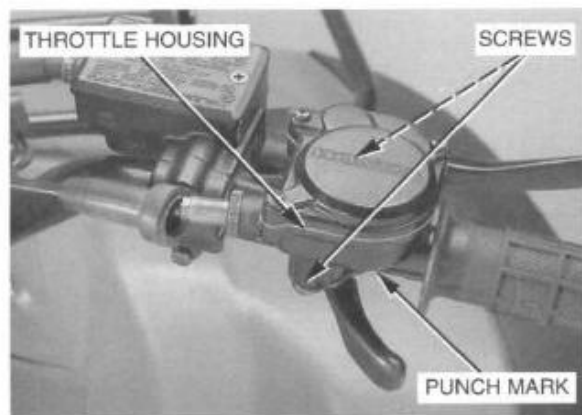


Install the grip end and tighten the bolt to the specified torque.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)

Install the throttle housing on the handlebar, aligning the end of the housing with the punch mark on the handlebar.

Loosely tighten the screws.



FRONT WHEEL/SUSPENSION/STEERING

Install the master cylinder and front brake lever bracket with the "UP" mark on the holder facing up.

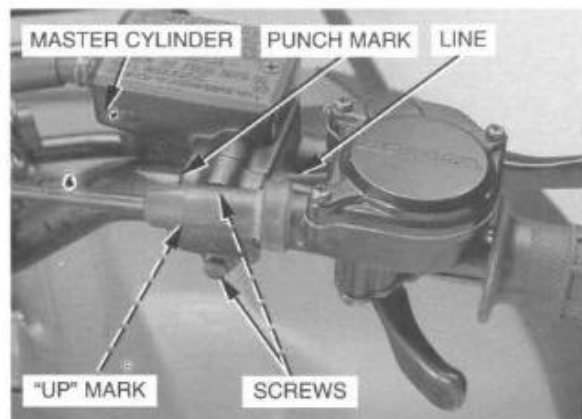
Align the end of the master cylinder with the punch mark on the handlebar.

Tighten the upper bracket screw first, then the lower screw.

TORQUE: 12 N·m (1.2 kg-m, 9 ft-lb)

Align the line on the throttle housing with the end of the master cylinder.

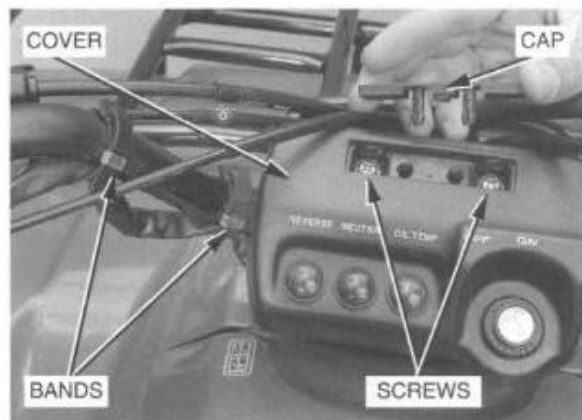
Tighten the throttle housing screws securely.



Install the handlebar cover and tighten the screws securely.

Install the cover cap.

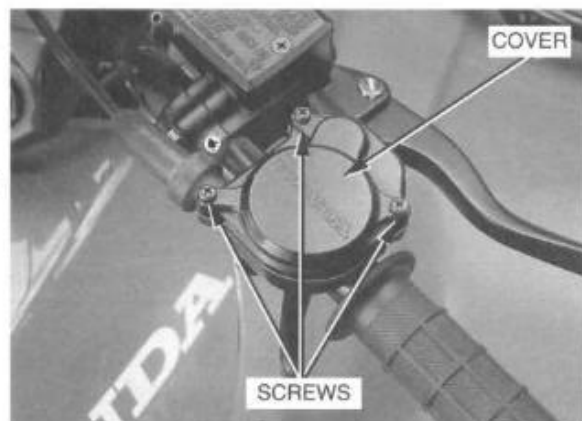
Secure the wires with wire bands.



THROTTLE HOUSING

DISASSEMBLY

Remove the three throttle housing cover screws and the cover. Remove the gasket.



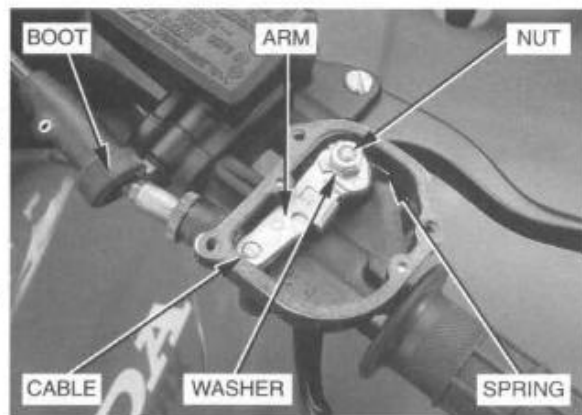
Slide the rubber boot off the cable adjuster.

Loosen the throttle cable adjuster.

Bend down the lock washer tab and remove the nut and lock washer.

Disconnect the throttle cable from the throttle arm.

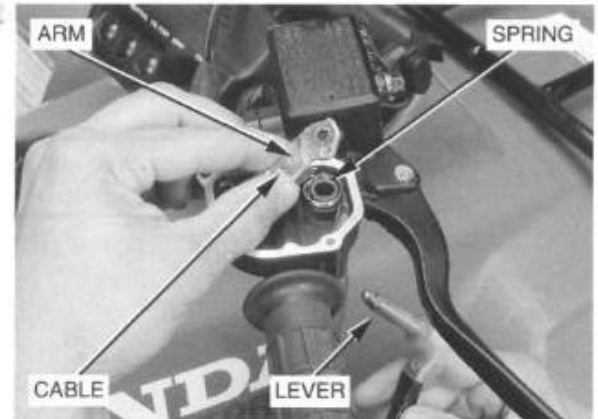
Remove the throttle arm, spring and throttle lever from the throttle housing.



ASSEMBLY

Connect the throttle cable to the throttle arm.

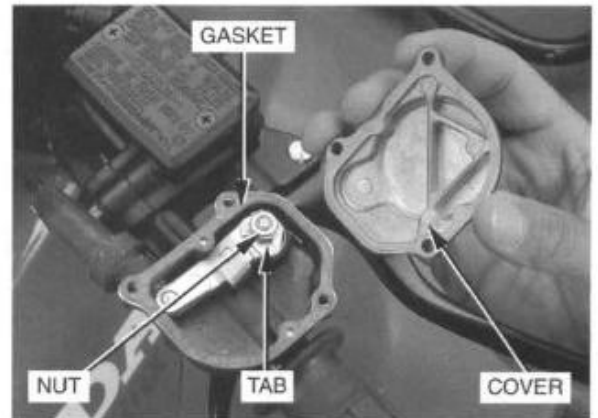
Install the throttle arm spring and arm onto the throttle lever, aligning their flats.



Install a new lock washer and tighten the nut. Bend up the lock washer tab against the nut.

Install a new gasket, then install the throttle housing cover using the three screws.

Adjust the throttle lever free play (page 3-7).



FRONT WHEEL

REMOVAL

Loosen the wheel nuts.

Place a support block under the engine to raise the front wheels off the ground.

Remove the wheel nuts and wheel.



INSTALLATION

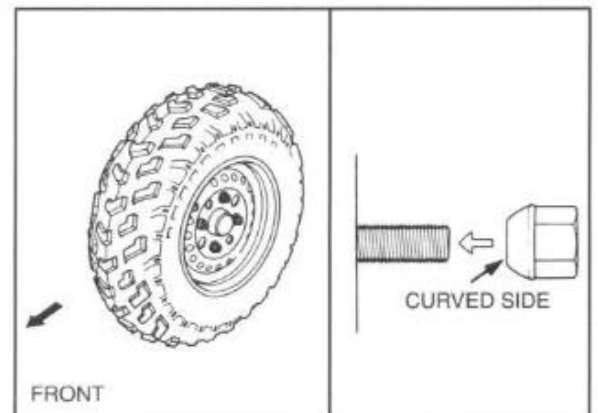
Install the front wheel.

NOTE

Do not interchange the right and left tires.

Install the wheel nuts with their curved sides facing inward and tighten to the specified torque.

TORQUE: 65 N·m (6.5 kg-m, 47 ft-lb)



TIE-ROD/KNUCKLE REMOVAL (TRX300)

NOTE

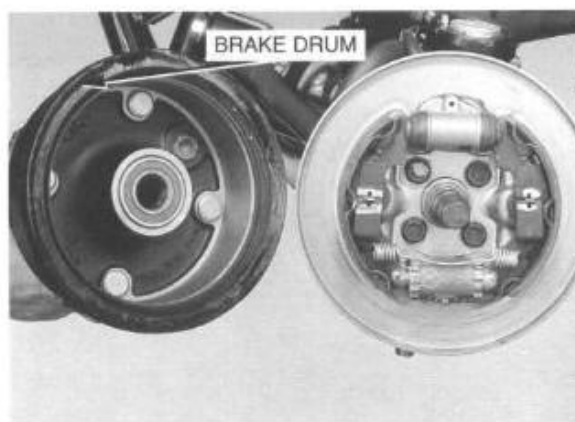
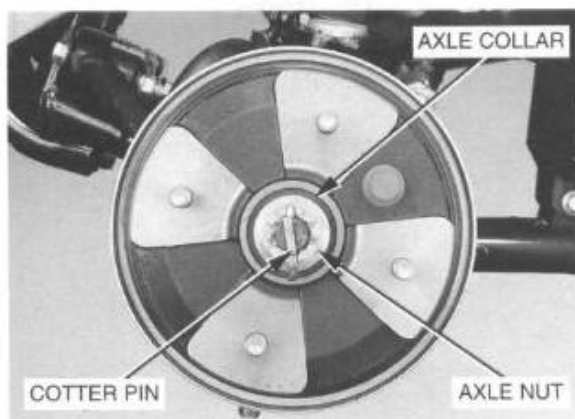
The tie-rod can be removed without removing the brake drum.

Remove the front wheel (page 11-7).

Remove the following:

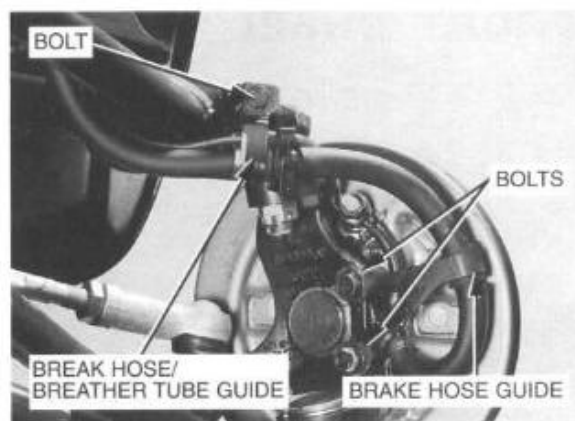
- cotter pin
- axle nut
- axle collar

Remove the brake drum.



Remove the brake hose guide mounting bolts.

Remove the brake hose and breather tube guide mounting bolt.



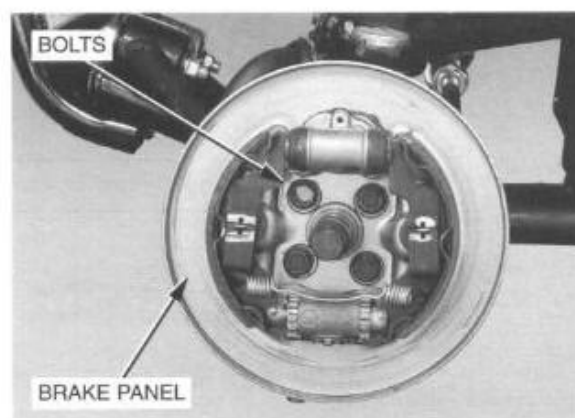
Remove the four bolts and brake panel from the knuckle.

NOTE

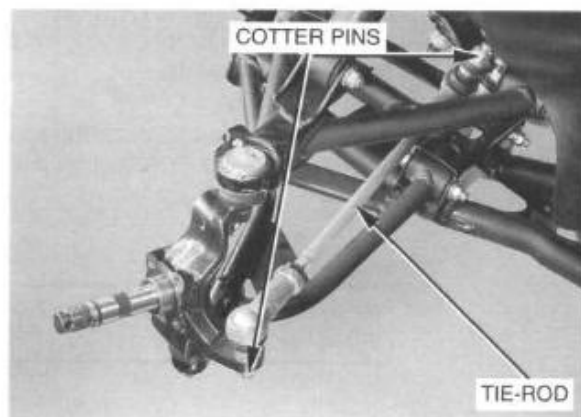
- Do not disconnect the brake hose from the brake panel. The brake system will have to be bled if the brake hose is disconnected.
- Do not operate the front brake lever after removing the brake panel. If you do, it will be difficult to refit the brake drum and shoes.

CAUTION

Support the brake panel so that it does not hang from the brake hose. Do not twist the brake hose.

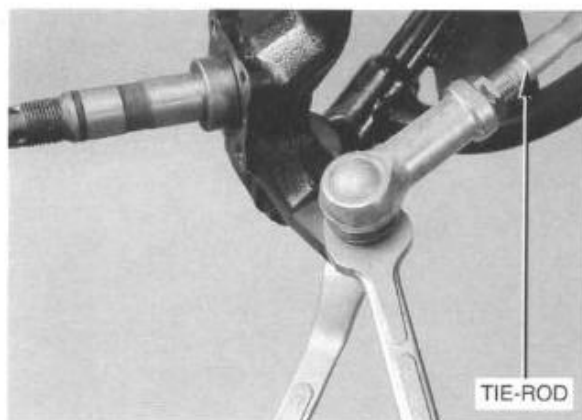


Remove the cotter pins.

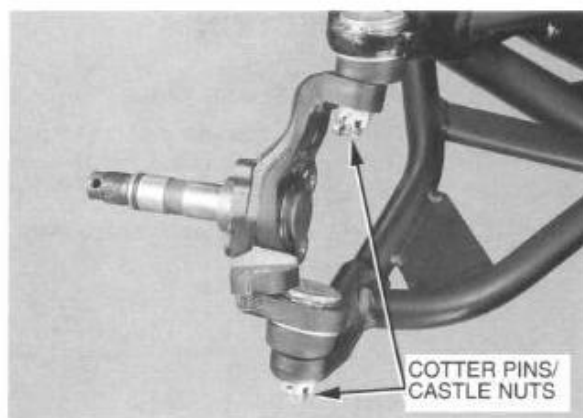


Hold the tie-rod ball joints and remove the nuts.

Remove the tie-rod.



Remove the cotter pins and castle nuts.

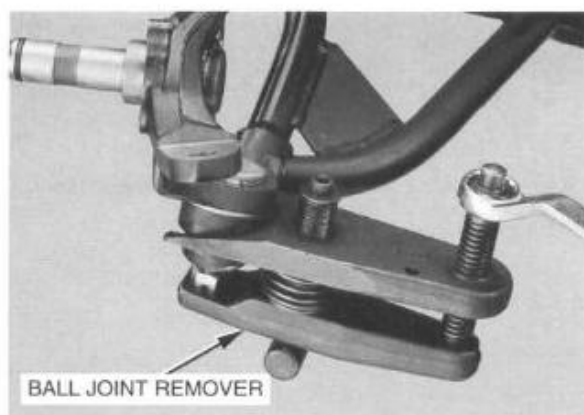


Remove the knuckle from the upper and lower arm, using the special tool according to the following instructions.

TOOL:

Ball joint remover, 28 mm

07MAC-SL00200 or
07941-6920003



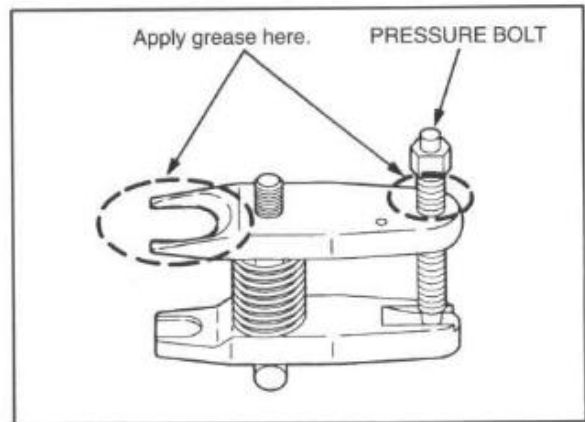
FRONT WHEEL/SUSPENSION/STEERING

Apply grease to the ball joint puller on the areas shown. This will ease installation of the tool and prevent damage to the pressure bolt threads.

Insert the jaws carefully, making sure that you do not damage the ball joint boot. Adjust the jaw spacing by turning the pressure bolt.

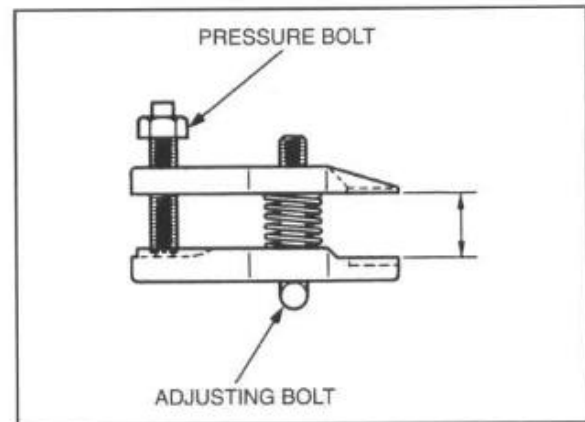
NOTE

If necessary, apply penetrating type lubricant to loosen the ball joint.



Once the tool is in place, turn the adjusting bolt as necessary to make the jaws parallel. Then hand-tighten the pressure bolt and recheck the jaws to make sure they are still parallel.

Tighten the pressure bolt with a wrench until the ball joint shaft pops loose.

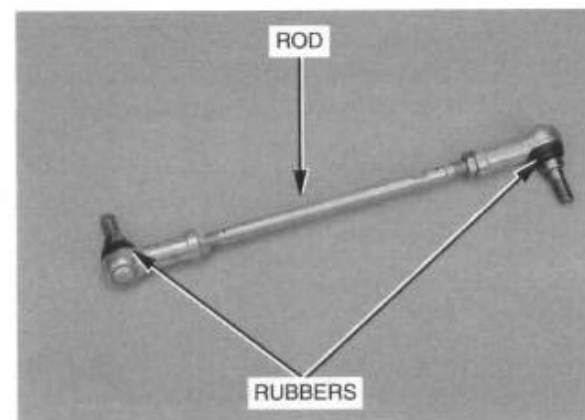


INSPECTION

Inspect the tie-rod for distortion or damage.

Inspect the ball joint rubbers for tears or other damage by moving the ball joint ends. They should move freely and smoothly.

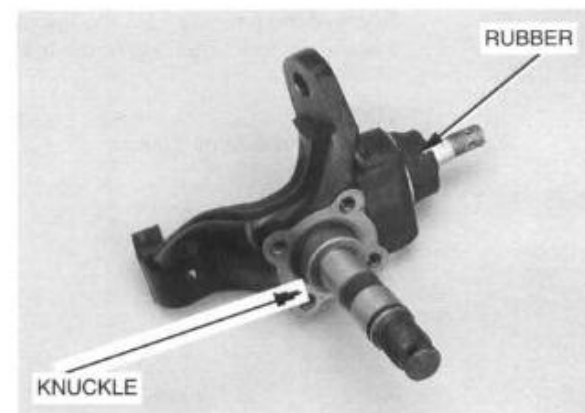
Replace the ball joints if necessary.



Inspect the knuckle for damage or cracking.

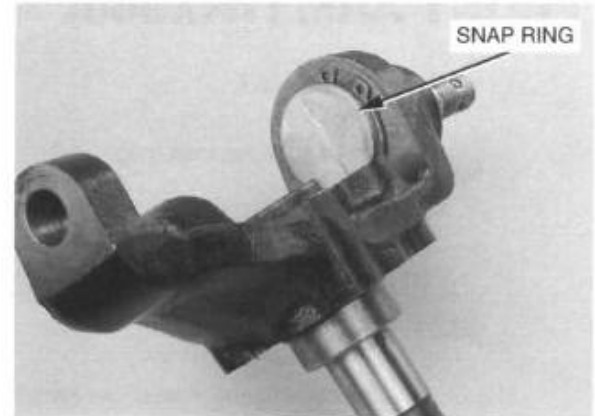
Inspect the knuckle ball joint rubbers for tears or other damage by moving the ball joint end. It should move freely and smoothly.

Replace the ball joint if necessary.



BALL JOINT REPLACEMENT

Remove the snap ring.



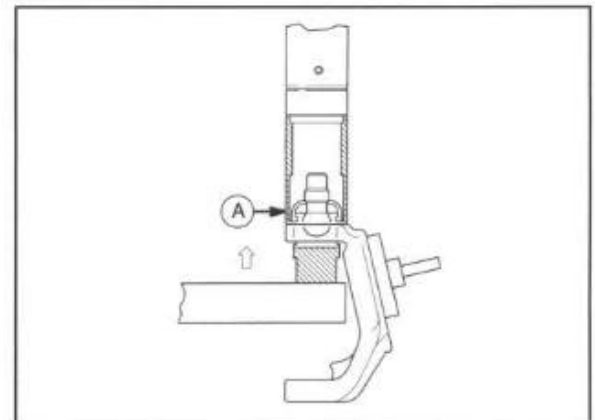
Set the knuckle and ball joint remover/installer, with the "A" marked side on the tool faced to the ball joint, in a press as shown.

TOOL:

**Ball joint remover/installer
Attachment, 28 x 30 mm**

**07JMF-HC50110
07946-1870100**

Press the ball joint out of the knuckle.



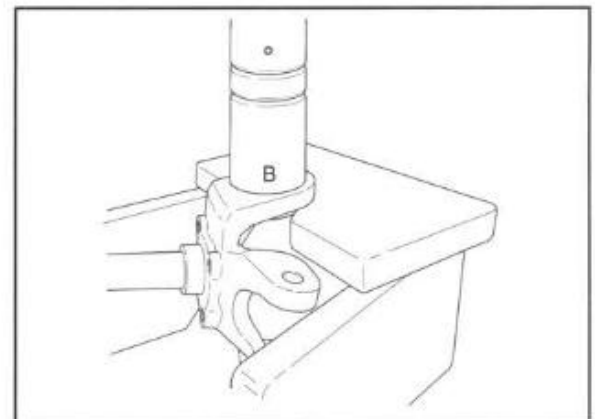
Set the knuckle, a new ball joint and ball joint remover/installer, with the "B" marked side on the tool faced to the ball joint, in a press as shown.

TOOL:

**Ball joint remover/installer
Attachment, 20 mm I.D.**

**07JMF-HC50110
07746-0020400**

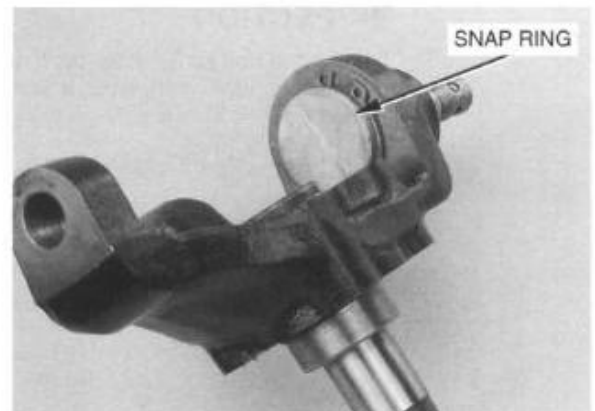
Press the ball joint into the knuckle.



CAUTION

If you feel strong resistance when lowering the press, stop. Reset the attachment of the tool so that the ball joint head can go into the hollow of the attachment and try again.

Install the snap ring securely in the ball joint groove.



FRONT ARM (TRX300)

REMOVAL

Remove the knuckle (page 11-8).

NOTE

The front arm can be removed without removing the tie-rod.

• Upper arm

Remove the shock absorber lower mounting bolt, and the brake hose and breather tube clamp.

Remove the upper arm mounting bolts and arm.

Discard the upper arm mounting nuts and shock absorber mounting nut.

Disconnect the brake hose and breather tube from the brake drum.

Remove the brake hose and breather tube clamp bolt.

Remove the shock absorber lower mounting bolt.

Remove the upper arm mounting bolts and upper arm.

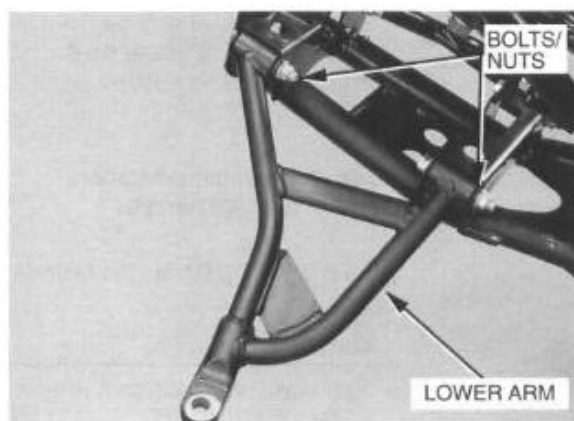
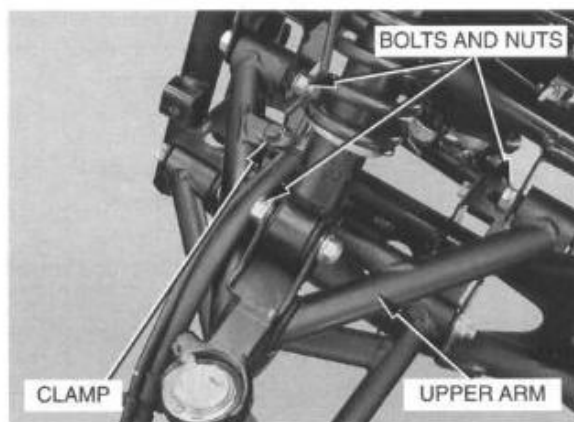
Discard the upper arm mounting nuts and shock absorber mounting nut.

• Lower arm

Remove the front bumper (page 16-1).

Remove the lower arm mounting bolts and lower arm.

Discard the lower arm mounting nuts.

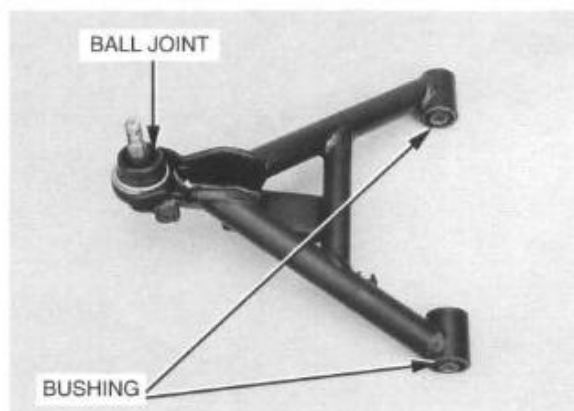


INSPECTION

Inspect the ball joint rubber for tears or other damage by moving the ball joint end. It should move freely and smoothly.

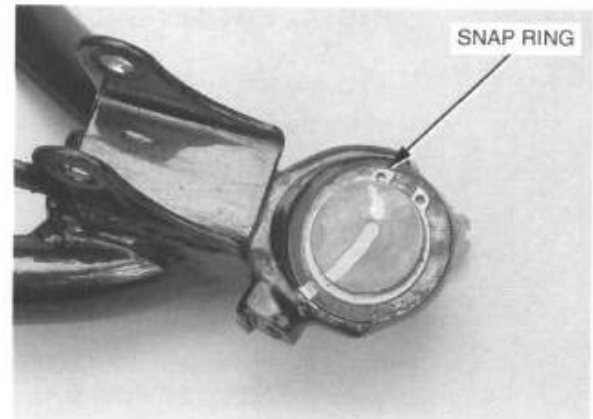
Replace the ball joint if necessary.

Check the pivot rubber bushing for damage.



BALL JOINT REPLACEMENT

Remove the snap ring.



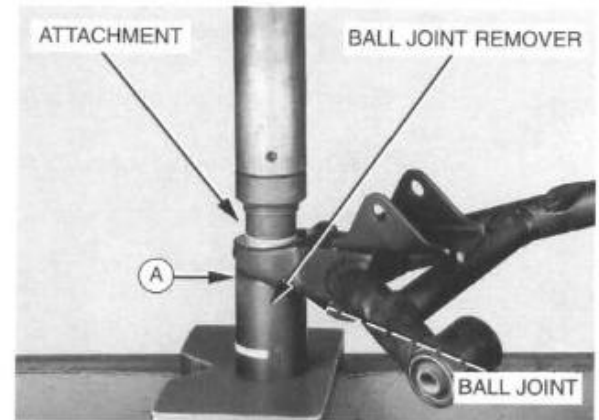
Set the upper arm and ball joint remover/installer, with the "A" marked side on the tool faced to the ball joint, in a press as shown.

TOOL:

Ball joint remover/installer
Attachment, 28 x 30 mm

07JMF-HC50110
07946-1870100

Press the ball joint out of the upper arm.



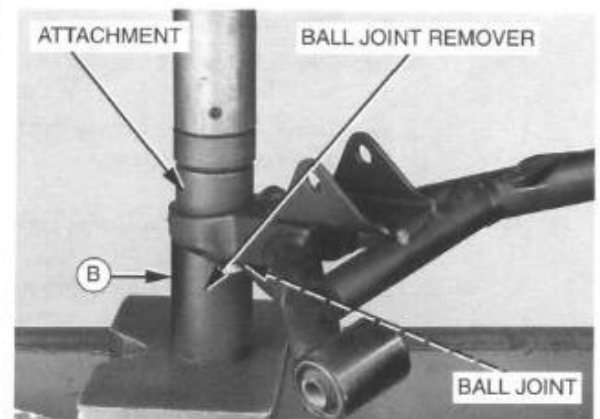
Set the upper arm, a new ball joint and ball joint remover/installer, with the "B" marked side on the tool faced to the ball joint, in a press as shown.

TOOL:

Ball joint remover/installer
Attachment, 20 mm I.D.

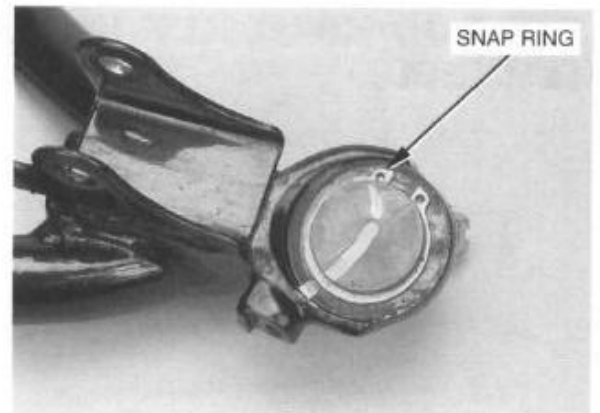
07JMF-HC50110
07746-0020400

Press the ball joint into the upper arm.

**CAUTION**

If you feel strong resistance when lowering the press, stop. Reset the attachment of the tool so that the ball joint head can go into the hollow of the attachment and try again.

Install the snap ring to the groove of the ball joint securely.



INSTALLATION

• Upper arm

Install the upper arm, bolts and new nuts.

Install the front shock absorber lower mounting bolt and new nut and tighten it to the specified torque.

Do not reuse the nut.

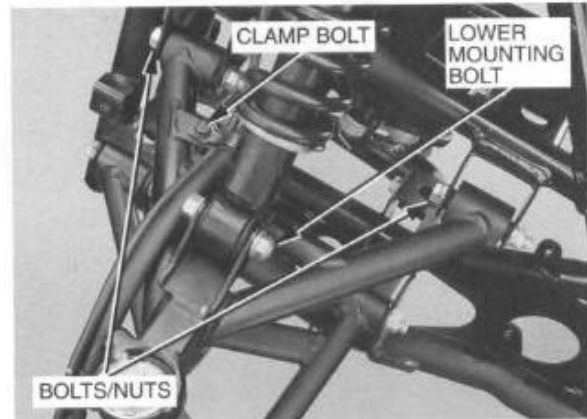
TORQUE: 45 N·m (4.5 kg-m, 33 ft-lb)

Route the brake hose and breather hose (page 1-13) and install and tighten the clamp bolt.

Install the knuckle and front wheel (page 11-7), then place the vehicle on level ground.

Tighten the upper arm mounting nuts to the specified torque.

TORQUE: 31 N·m (3.1 kg-m, 22 ft-lb)



• Lower arm

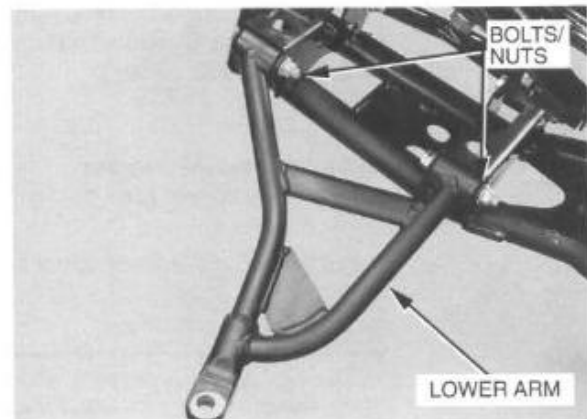
Install the lower arm, bolts and new nuts.

Install the knuckle and front wheel (page 11-7), then place the vehicle on level ground.

Tighten the lower arm mounting nuts to the specified torque.

TORQUE: 31 N·m (3.1 kg-m, 22 ft-lb)

Install the front bumper (page 16-2).



TIE-ROD/KNUCKLE INSTALLATION (TRX300)

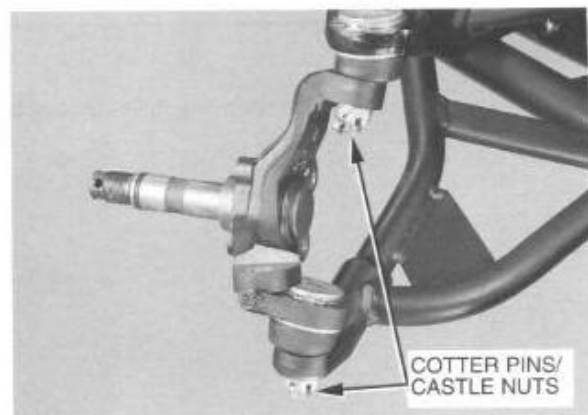
KNUCKLE INSTALLATION

Connect the knuckle to the upper and lower arms.

Install and tighten the nuts to the specified torque.

TORQUE: 30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)

Install the new cotter pins.



TIE-ROD ASSEMBLY

Install the unmarked ball joint and gold colored nut on the flat side of the tie-rod, and the "L" marked ball joint and silver nut on the opposite side.

Set the distance between the ball joints as specified below.

STANDARD SETTING:

TRX300: 345.5 mm (13.6 in)

LOCK NUT-TO-THREAD END DISTANCE A AND B:

- A = 12 mm (0.5 in) MAX.
- B = 12 mm (0.5 in) MAX.
- A-B less than or equal to 3 mm (0.1 in)

NOTE

Position the ball joints 180 degrees from each other.

Tighten the lock nuts securely.

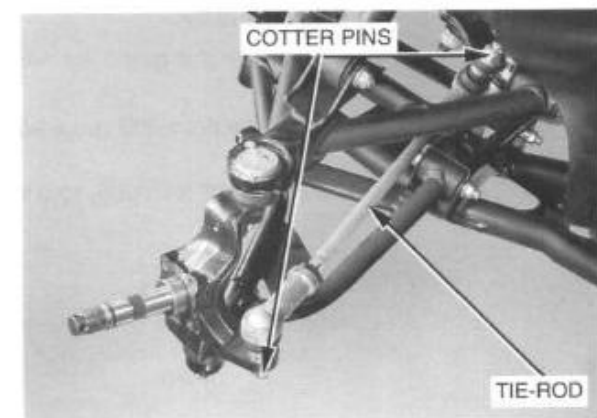
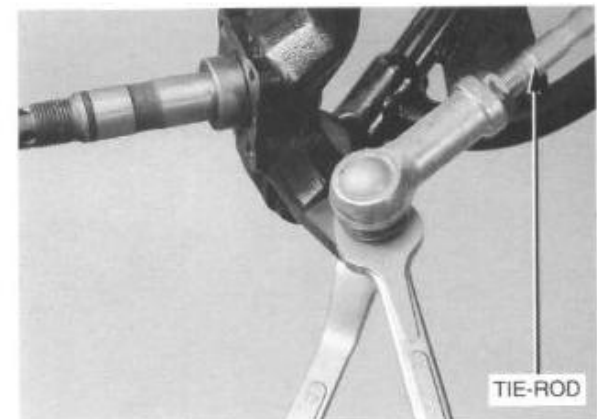
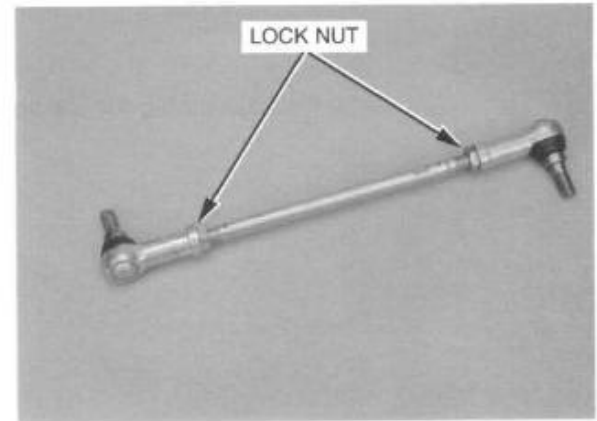
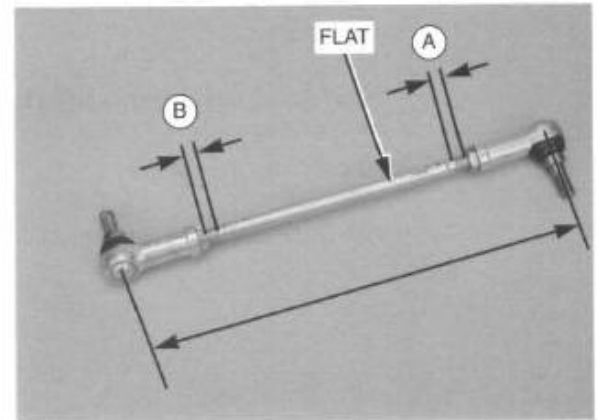
Install the tie-rod with its flat end at the knuckle.

Hold the ball joint and tighten the ball joint nuts to the specified torque.

TORQUE: 55 N·m (5.5 kg-m, 40 ft-lb)

Install new cotter pins.

Adjust the toe-in (page 3-15; specification page 1-4).



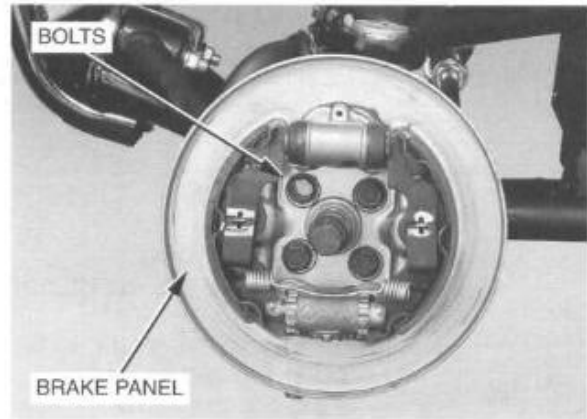
FRONT WHEEL/SUSPENSION/STEERING

If you removed the brake panel, install the brake panel onto the knuckle.

Install new brake panel mounting bolts and tighten them to the specified torque.

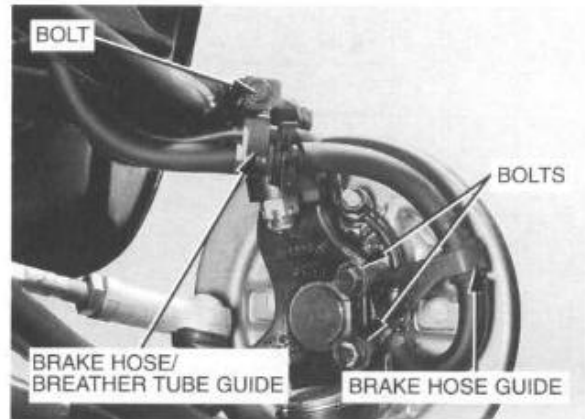
Do not reuse the bolts.

TORQUE: 29 N·m (2.9 kg-m, 21 ft-lb)

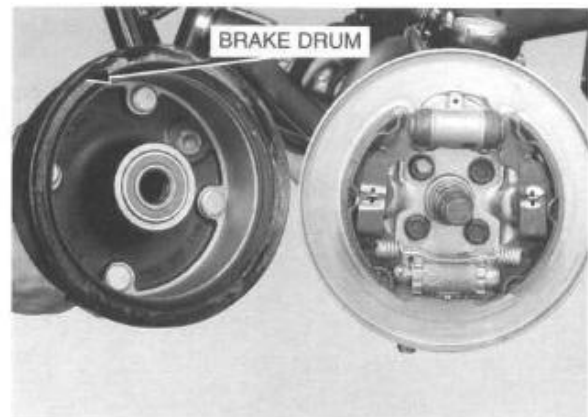


Install the brake hose and breather tube guide and tighten the bolt.

Install the brake hose guide and tighten the bolts.



Install the brake drum (page 12-17).



Install the axle collar.

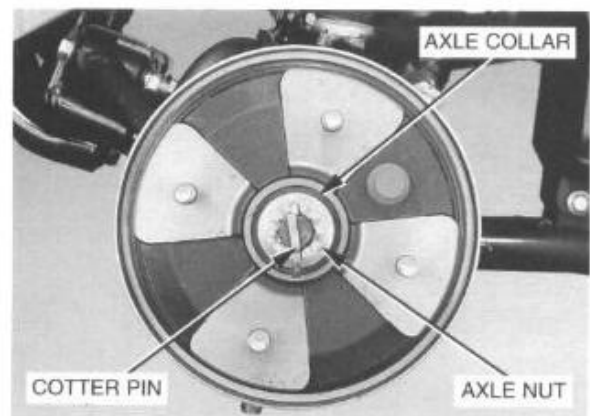
Apply grease to the castle nut flange and threads, then install the nut.

Tighten the axle nut to the specified torque.

TORQUE: 80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)

Install a new cotter pin.

If you disconnected the brake line, bleed the system (page 12-5). Install the front wheel (page 11-7).



TIE-ROD/KNUCKLE REMOVAL (TRX300FW)

NOTE

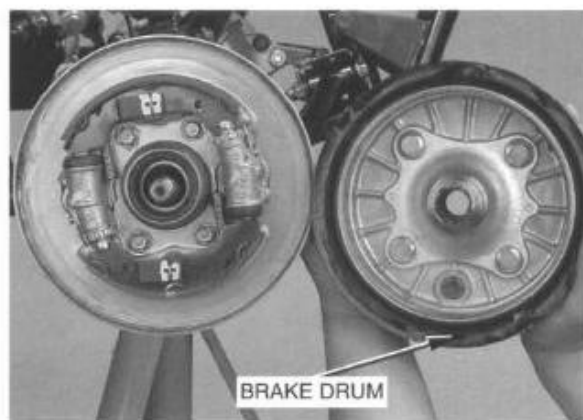
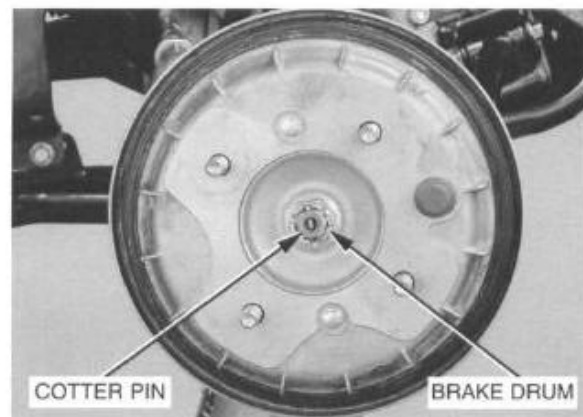
The tie-rod can be removed without removing the brake drum.

Remove the front wheel (page 11-7).

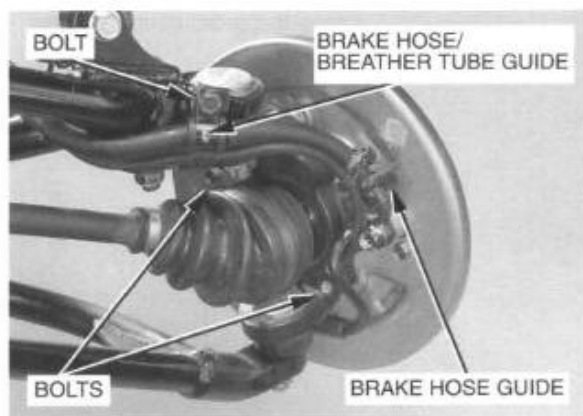
Remove the following:

- cotter pin
- axle nut

Remove the brake drum.



Remove the brake hose and breather tube clamps.



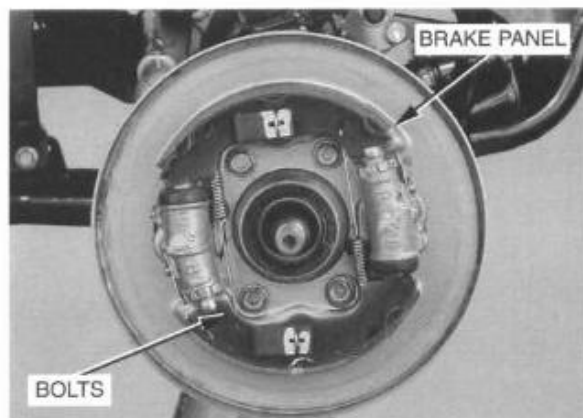
Remove the four bolts and brake panel from the knuckle.

NOTE

- Do not disconnect the brake hose from the brake panel. The brake system will have to be bled if the brake hose is disconnected.
- Do not operate the front brake lever after removing the brake panel. If you do, it will be difficult to refit the brake drum and shoes.

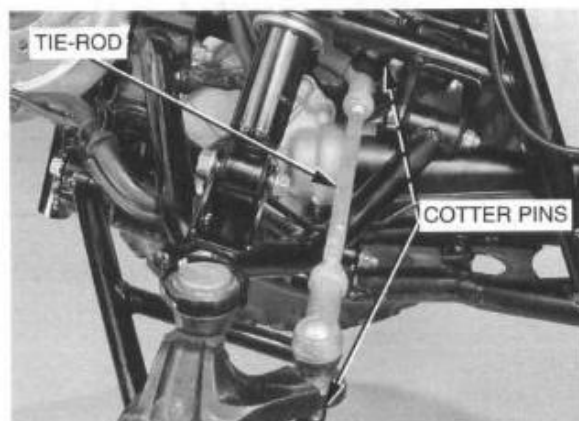
CAUTION

Support the brake panel so that it does not hang from the brake hose. Do not twist the brake hose.



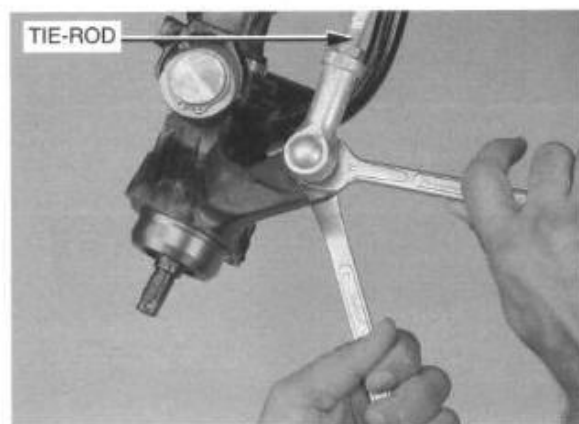
FRONT WHEEL/SUSPENSION/STEERING

Remove the cotter pins.

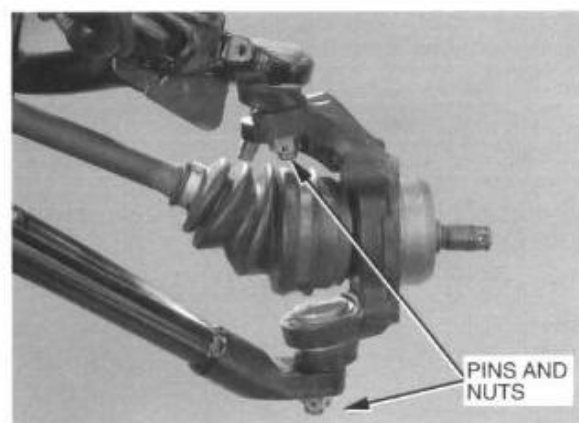


Hold the tie-rod ball joints and remove the nuts.

Remove the tie-rod.



Remove the cotter pins and castle nuts.

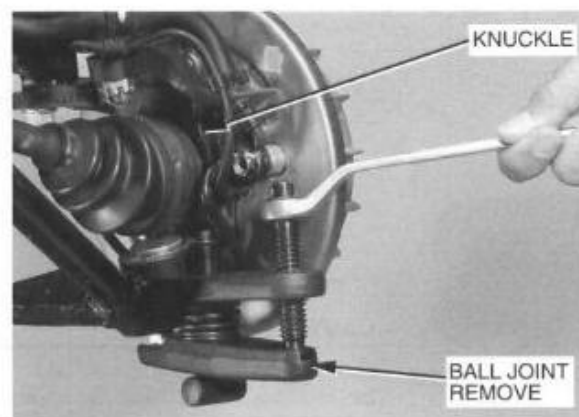


Separate the knuckle ball joint from the lower arm using the special tool as shown below.

TOOL:

Ball joint remover, 28 mm

07MAC-SL00200 or
07941-6920003

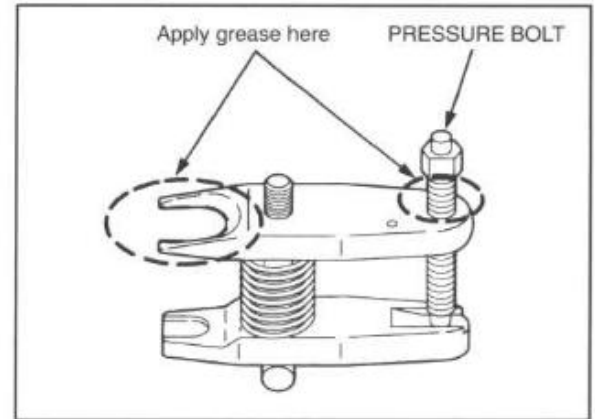


Apply grease to the ball joint puller on the areas shown. This will ease installation of the tool and prevent damage to the pressure bolt threads.

Insert the jaws carefully, making sure you do not damage the ball joint boot. Adjust the jaw spacing by turning the pressure bolt.

NOTE

If necessary, apply penetrating type lubricant to loosen the ball joint.



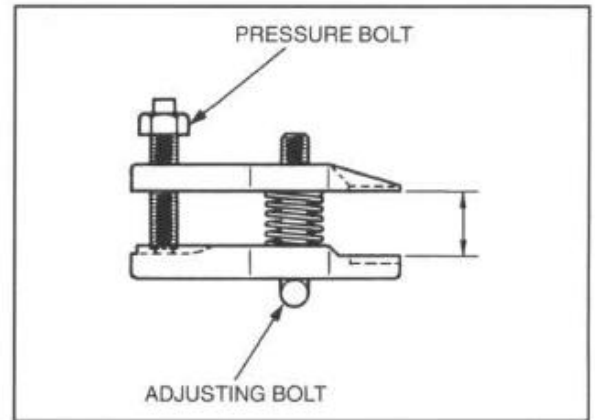
Once the tool is in place, turn the adjusting bolt as necessary to make the jaws parallel. Then hand-tighten the pressure bolt and recheck the jaws to make sure they are still parallel.

Loosen the upper arm pivot bolts.

Remove the lower shock absorber mounting bolt.

Lift the upper arm and remove the drive shaft from the knuckle.

Separate the upper ball joint to remove the knuckle.



TOOL:

Ball joint remover, 28 mm

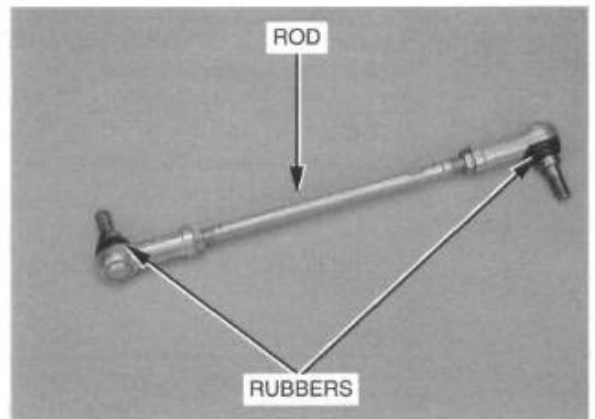
07MAC-SL00200 or
07941-6920003

INSPECTION

Inspect the tie-rod for distortion or damage.

Inspect the ball joint rubbers for tears or other damage by moving the ball joint ends. They should move freely and smoothly.

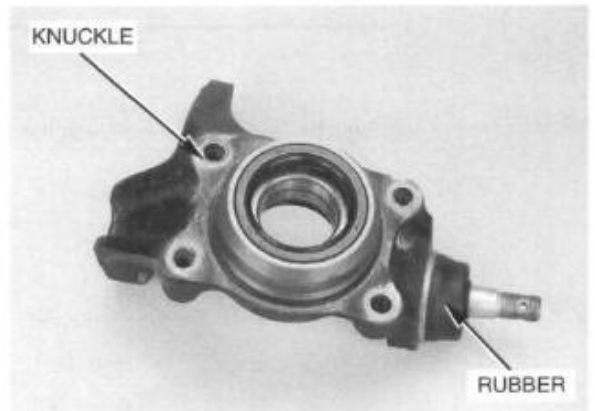
Replace the ball joints if necessary.



Inspect the knuckle for damage or cracking.

Inspect the knuckle ball joint rubbers for tears or other damage by joggling the ball joint end. It should move freely and smoothly.

Replace the ball joint if necessary.



BALL JOINT REPLACEMENT

Remove the snap ring.

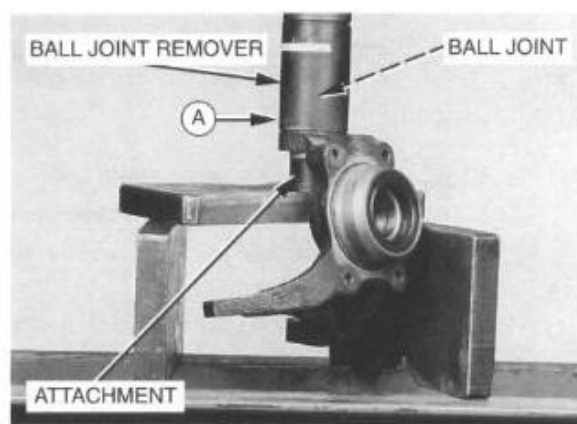


Set the knuckle and ball joint remover/installer, with the "A" marked side on the tool faced to the ball joint, in a press as shown.

TOOL:

Ball joint remover/installer 07JMF-HC50110
Attachment, 28 x 30 mm 07946-1870100

Press the ball joint out of the knuckle.

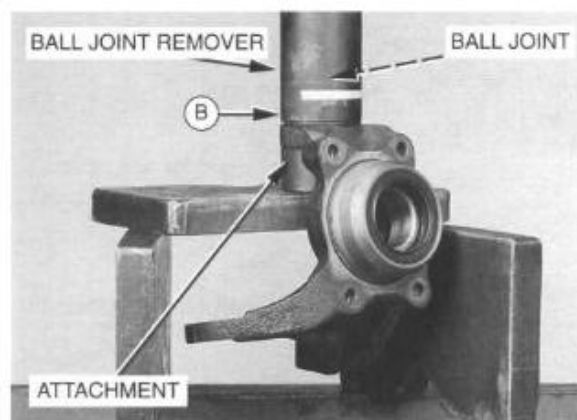


Set the knuckle, a new ball joint and ball joint remover/installer, with the "B" marked side on the tool faced to the ball joint, in a press as shown.

TOOL:

Ball joint remover/installer 07JMF-HC50110
Attachment, 20 mm I.D. 07746-0020400

Press the ball joint into the knuckle.



CAUTION

If you feel strong resistance when lowering the press, stop. Reset the attachment of the tool so that the ball joint head can go into the hollow of the attachment and try again.

Install the snap ring securely in the ball joint groove.



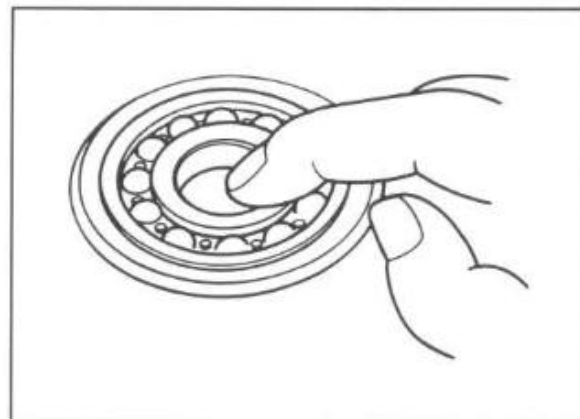
KNUCKLE BEARING INSPECTION/ REPLACEMENT (TRX300FW)

Turn the inner race of the knuckle bearing with your finger.

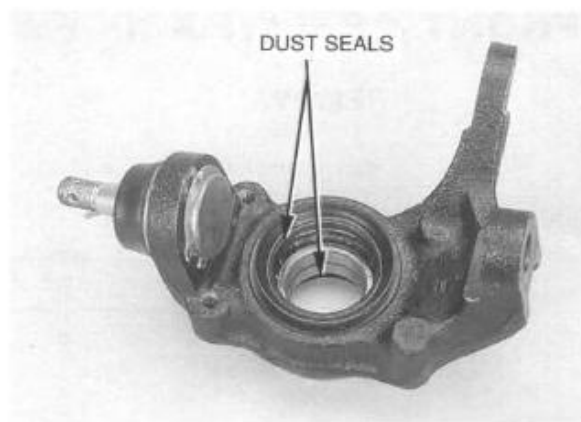
The bearing should turn quietly.

Also check that the bearing outer race fits tightly in the knuckle.

Remove and discard the bearing if the race does not turn smoothly and quietly or if it fits loosely in the knuckle.

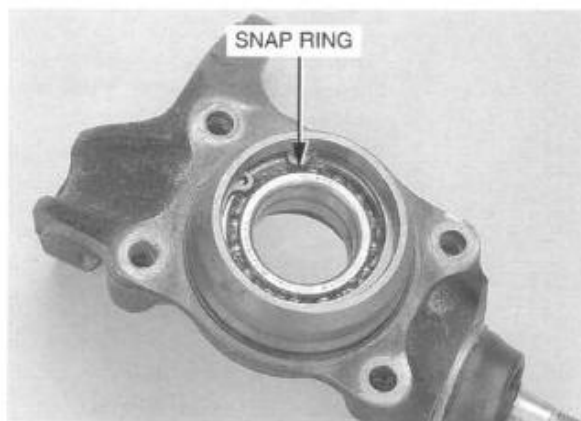


Remove both dust seals from the knuckle.



Remove the snap ring.

Drive the bearing out of the knuckle.



Pack the new bearing cavity with grease.

Install the bearing squarely.

TOOLS:

Driver

07749-0010000

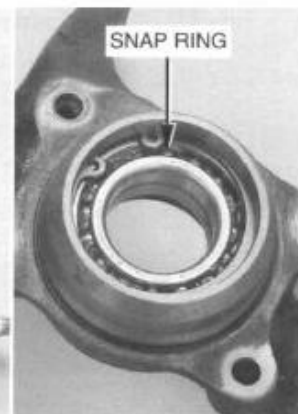
Attachment

07945-3330300

Pilot, 30 mm

07746-0040700

Install a snap ring securely in the knuckle groove.



FRONT WHEEL/SUSPENSION/STEERING

Install new dust seals on both sides of the knuckle, using the special tools.

Apply grease to the dust seal lips.

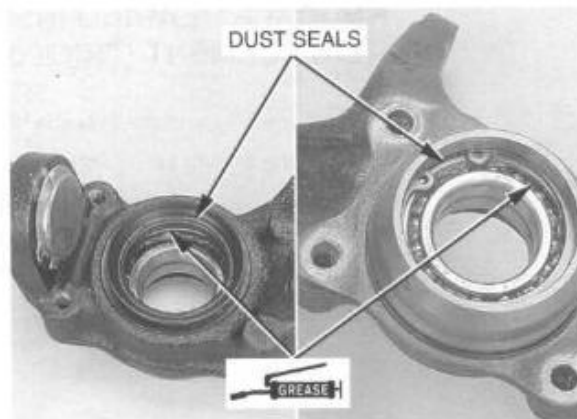
TOOLS:

Driver

07749-0010000

Attachment, 62 x 68 mm

07746-0010500



FRONT ARM (TRX300FW)

REMOVAL

Remove the knuckle (page 11-17).

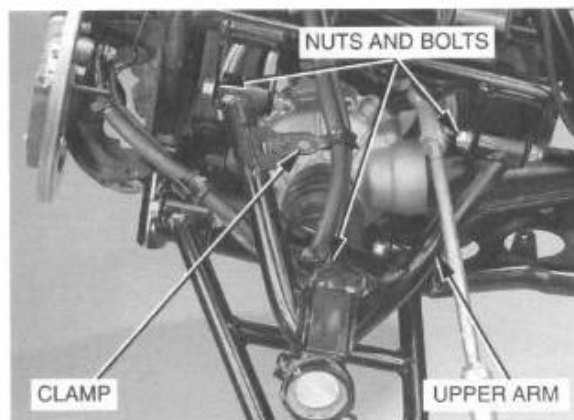
NOTE

The front arm can be removed without removing the tie-rod.

• Upper arm

Remove the shock absorber lower mounting bolt, and the brake hose and breather tube clamp.

Remove the upper arm mounting bolts and arm. Discard the upper arm mounting nuts and shock absorber mounting nut.

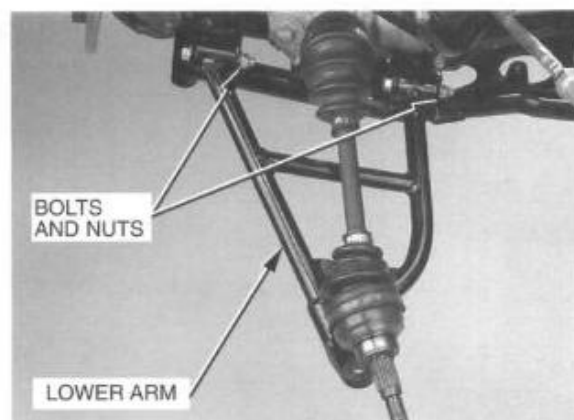


• Lower arm

Remove the front bumper (page 16-1).

Remove the lower arm mounting bolts and arm.

Discard the lower arm mounting nuts.

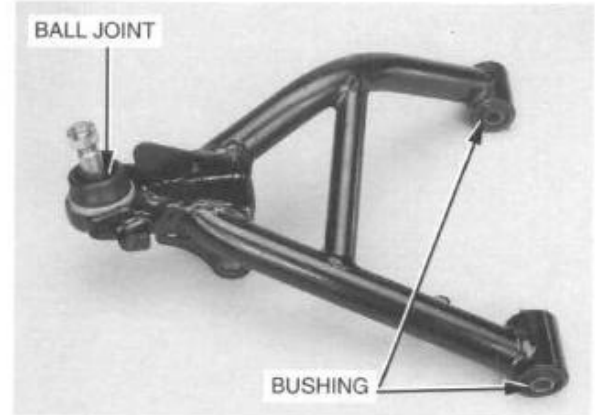


INSPECTION

Inspect the ball joint rubber for tears or other damage by moving the ball joint end. It should move freely and smoothly.

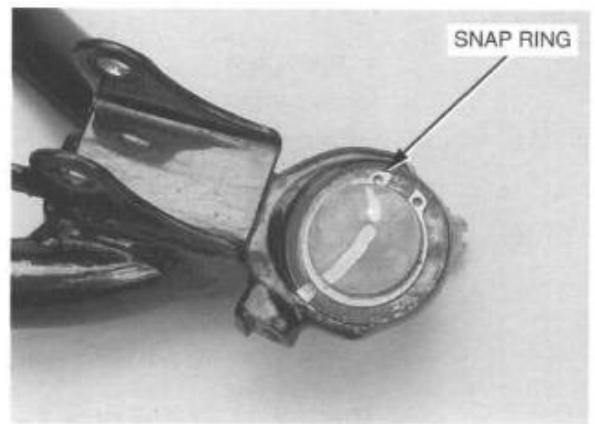
Replace the ball joint if necessary.

Check the pivot rubber bushing for damage.



BALL JOINT REPLACEMENT

Remove the snap ring.



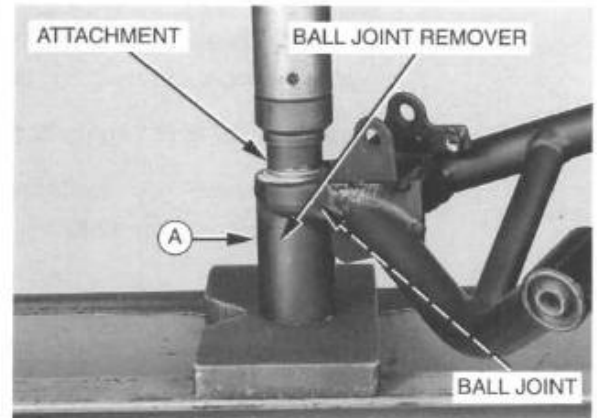
Set the upper arm and ball joint remover/installer, with the "A" marked side on the tool faced to the ball joint, in a press as shown.

TOOL:

Ball joint remover/installer
Attachment, 28 x 30 mm

07JMF-HC50110
07946-1870100

Press the ball joint out of the upper arm.



Set the upper arm, a new ball joint and ball joint remover/installer, with the "B" marked side on the tool faced to the ball joint, in a press as shown.

TOOL:

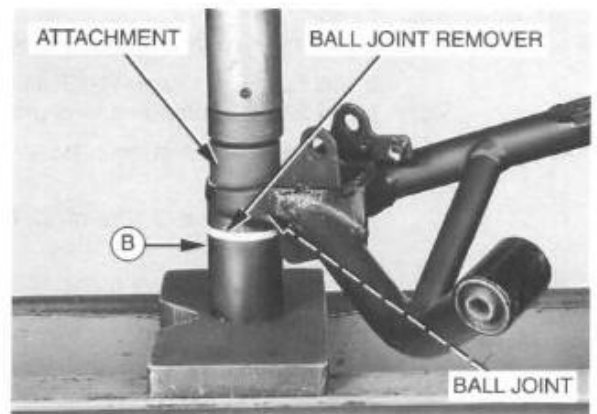
Ball joint remover/installer
Attachment, 20 mm I.D.

07JMF-HC50110
07746-0020400

Press the ball joint into the upper arm.

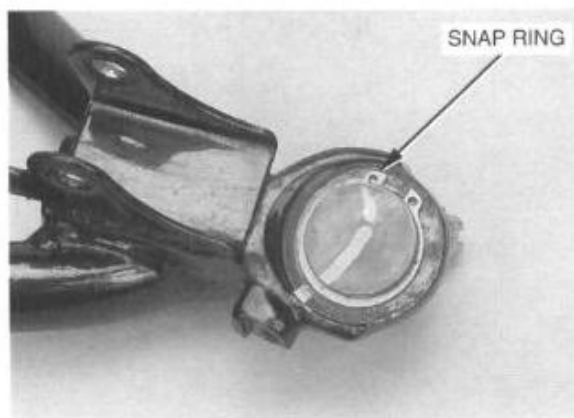
CAUTION

If you feel strong resistance when lowering the press, stop. Reset the attachment of the tool so that the ball joint head can go into the hollow of the attachment and try again.



FRONT WHEEL/SUSPENSION/STEERING

Install the snap ring to the groove of the ball joint securely.



INSTALLATION

• Upper arm

Install the upper arm, bolts and new nuts.

Install the front shock absorber lower mounting bolt and new nut and tighten it to the specified torque.

Do not reuse the nut.

TORQUE: 45 N·m (4.5 kg·m, 33 ft·lb)

Install the brake hose and breather tube clamp.

Tighten the clamp bolt to the specified torque.

TORQUE: 12 N·m (1.2 kg·m, 9 ft·lb)

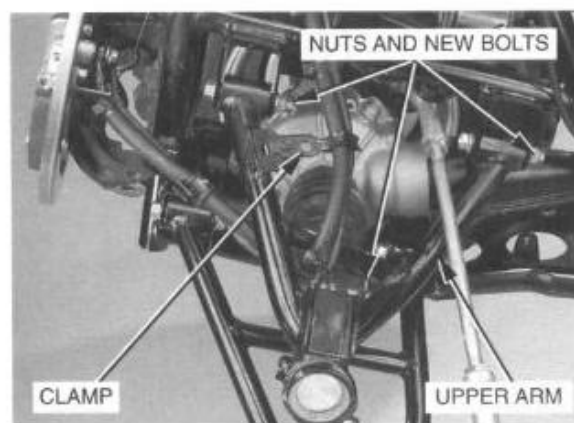
Install the knuckle (page 11-25) and front wheel (page 11-7), then place the vehicle on level ground.

Tighten the upper arm mounting nuts to the specified torque.

TORQUE: 31 N·m (3.1 kg·m, 22 ft·lb)

Reinstall the brake hose and breather tube.

Bleed the brakes (page 12-5).



• Lower arm

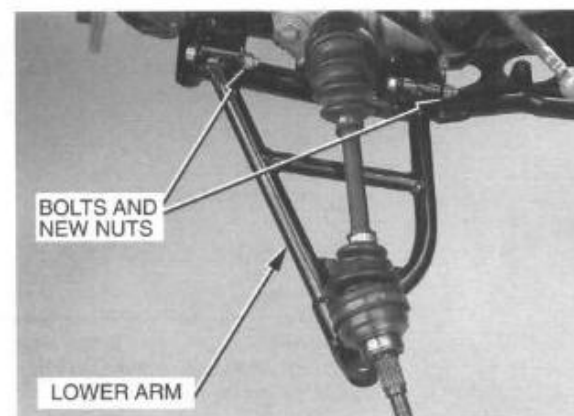
Install the lower arm, bolts and new nuts.

Install the knuckle (page 11-25) and front wheel (page 11-7), then place the vehicle on level ground.

Tighten the lower arm mounting nuts to the specified torque.

TORQUE: 31 N·m (3.1 kg·m, 22 ft·lb)

Install the front bumper (page 16-3).



TIE-ROD/KNUCKLE INSTALLATION (TRX300FW)

KNUCKLE INSTALLATION

Connect the knuckle to the upper arms.

Install and tighten the nuts to the specified torque.

TORQUE: 30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)

Install the new cotter pins.

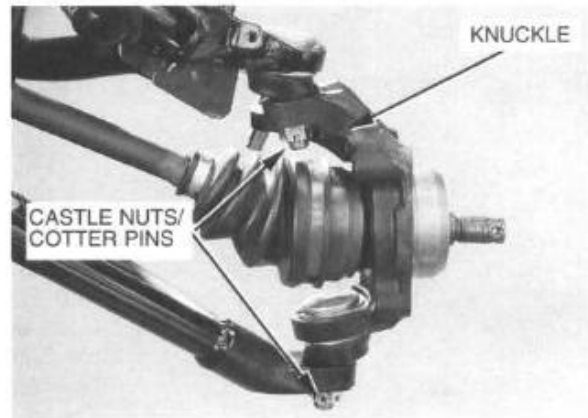
Raise the upper arm and insert the drive shaft into the knuckle.

Connect the knuckle to the lower arm.

Tighten the castle nuts to the specified torque.

TORQUE: 30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)

Install new cotter pins.



TIE-ROD ASSEMBLY

Install the unmarked ball joint and gold colored nut on the flat side of the tie-rod, and the "L" marked ball joint and silver nut on the opposite side.

Set the distance between the ball joints as specified below.

STANDARD SETTING:

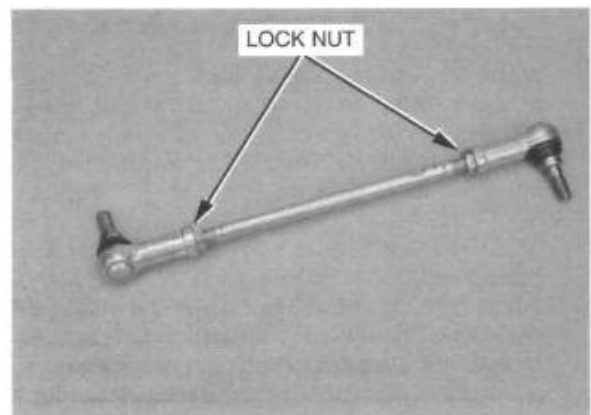
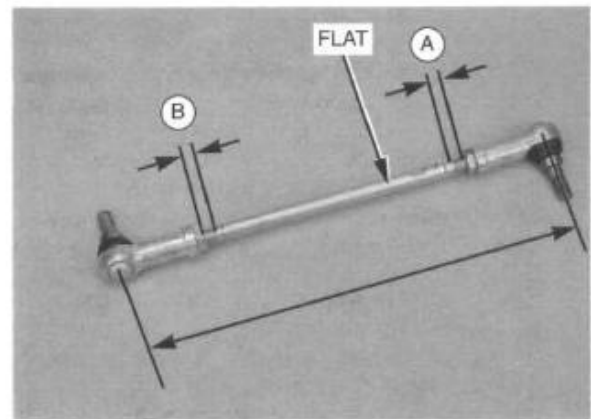
TRX300FW: 343 mm (13.5 in)

LOCK NUT-TO-THREAD END DISTANCE A AND B:

- A = 12 mm (0.5 in) MAX.
- B = 12 mm (0.5 in) MAX.
- A-B less than or equal to 3 mm (0.1 in)

NOTE

Position the ball joints 180 degrees from each other.



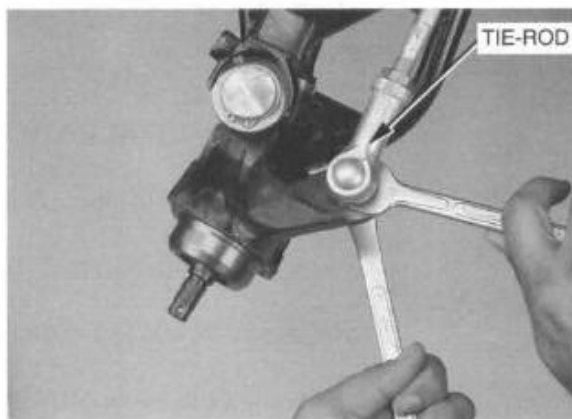
Tighten the lock nuts securely.

TIE-ROD INSTALLATION

Install the tie-rod with its flat end at the knuckle.

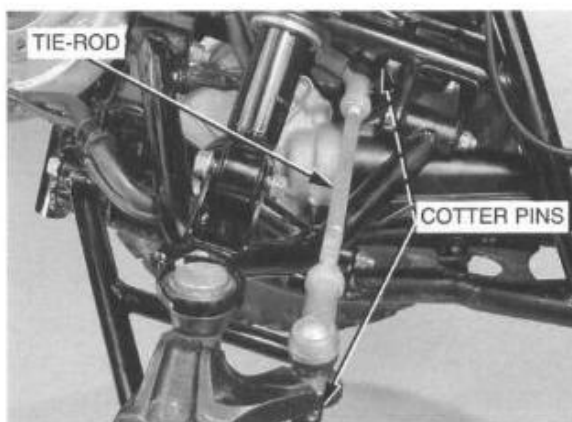
Hold the ball joint and tighten the ball joint nuts to the specified torque.

TORQUE: 55 N·m (5.5 kg-m, 40 ft-lb)



Install new cotter pins.

Adjust the toe-in (page 3-17; specification page 1-4).

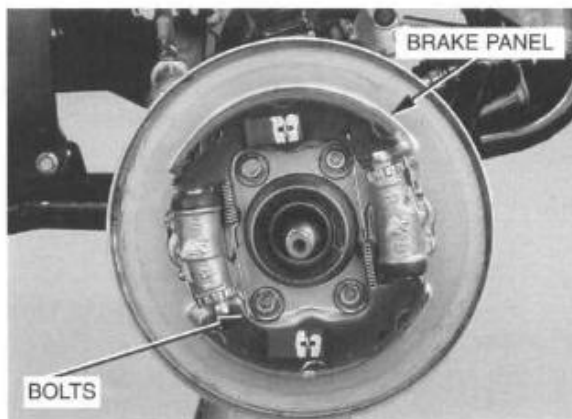


If you removed the brake panel, install the brake panel onto the knuckle.

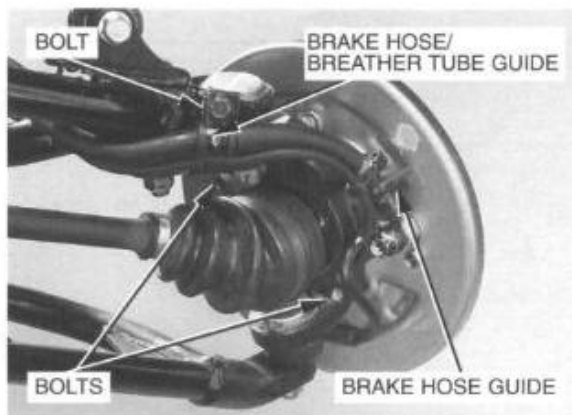
Install new brake panel mounting bolts and tighten them to the specified torque.

Do not reuse the bolts.

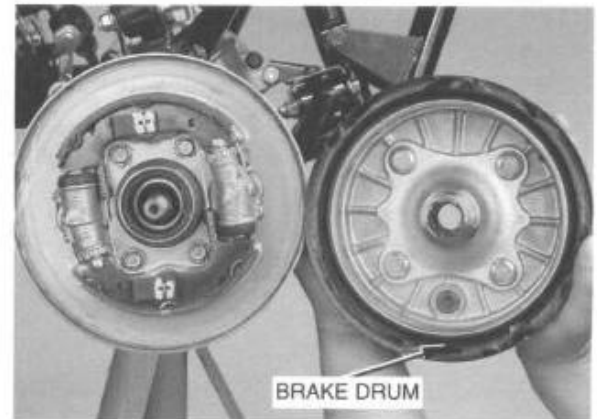
TORQUE: 29 N·m (2.9 kg-m, 21 ft-lb)



Install the brake hose clamps and tighten the bolts.



Install the brake drum (page 12-20).



Install the axle collar.

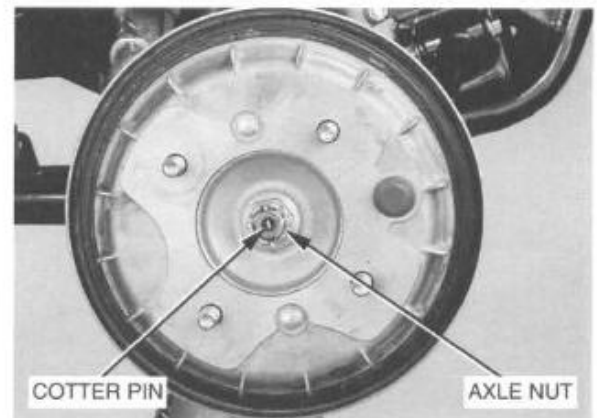
Apply grease to the castle nut flange and threads, then install the nut.

Tighten the axle nut to the specified torque.

TORQUE: 80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)

Install a new cotter pin.

If you disconnected the brake line, bleed the system (page 12-5). Install the front wheel (page 11-7).



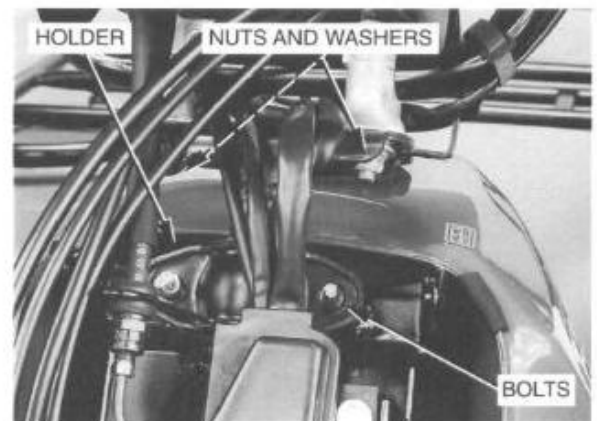
STEERING SHAFT

REMOVAL

Remove the following:

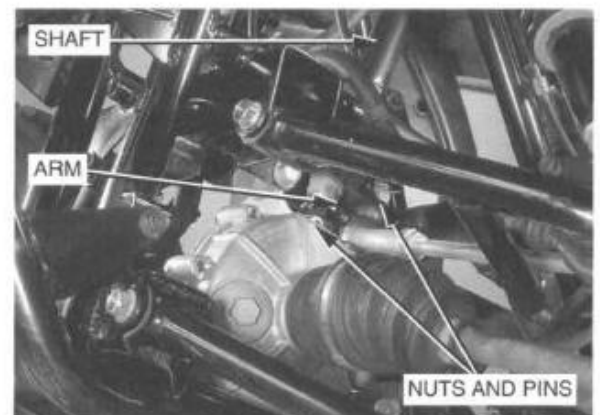
- front fender (page 16-1)
- handlebar lower holder nuts and washers
- handlebar assembly
- steering shaft holder bolts and holder

Discard the handlebar lower holder nuts.



Remove the following:

- cotter pins
- tie-rod ball joint nuts and steering shaft nut
- steering arm
- steering shaft



INSPECTION

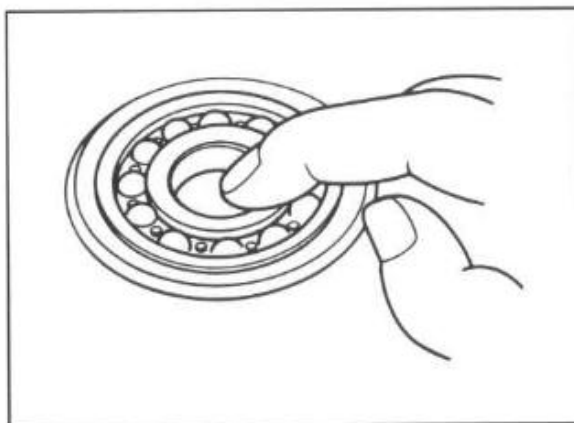
Check the steering shaft bushing for wear or damage.



Check the steering shaft distortion or damage.



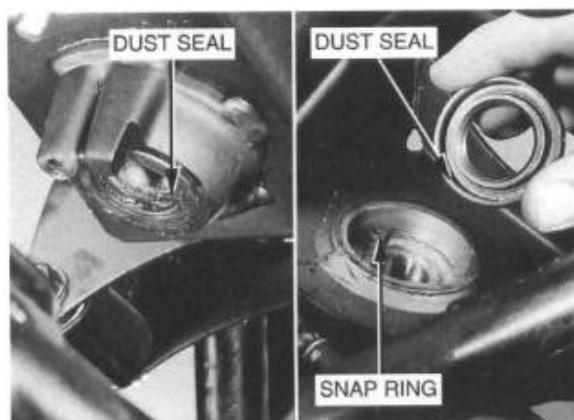
Turn the inner race of steering shaft bearing with your finger. The bearing should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the frame. Remove and discard the bearing if the race does not turn smoothly, quietly or if it fits loosely in the frame.



BEARING REPLACEMENT

Remove the following:

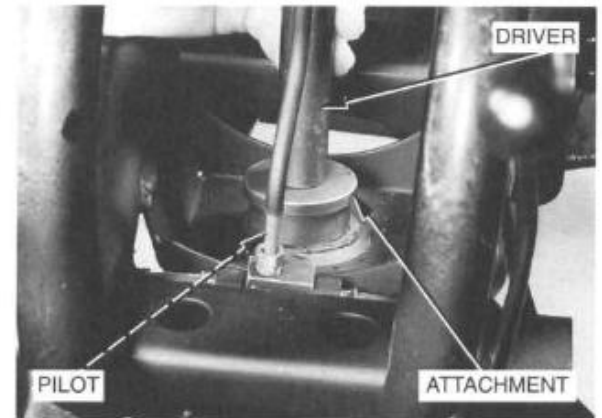
- lower dust seal
- upper dust seal and snap ring
- steering shaft bearing (from the top)



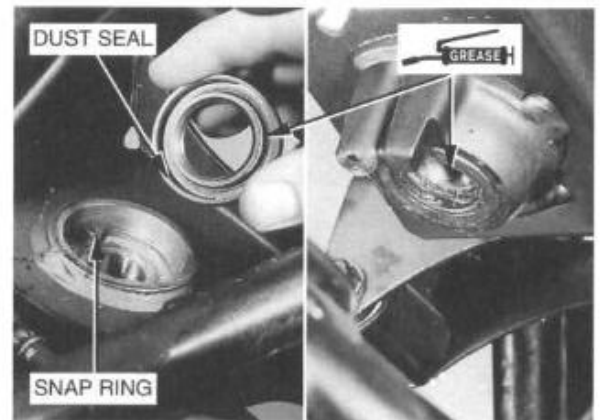
Pack the bearing cavity with grease.
Install the bearing with its sealed side up.

TOOLS

Driver	07949-3710001
Attachment, 42 x 47 mm	07746-0010300
Pilot, 20 mm	07746-0040500



Install a snap ring in the groove securely.
Apply grease to new dust seal lips.
Install the dust seals.



INSTALLATION

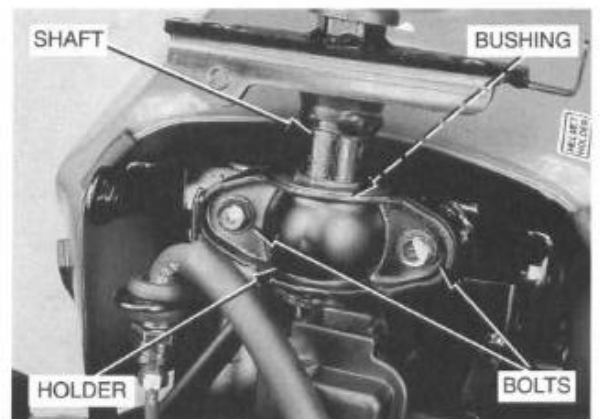
Apply grease to the steering shaft bushing cavities.

Install the bushing with its "UP" mark facing up.

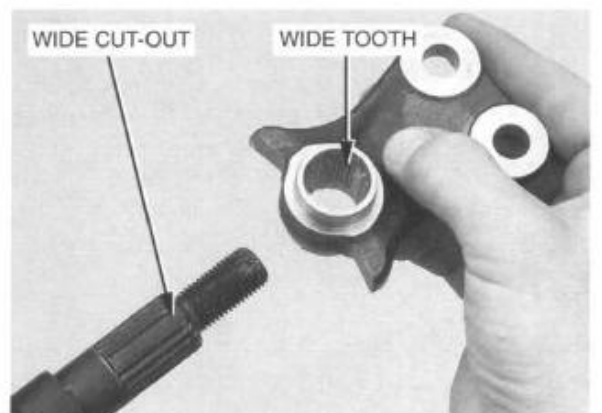
Install the steering shaft in the frame.

Install the steering shaft holder and tighten the holder bolts to the specified torque.

TORQUE: 33 N·m (3.3 kg-m, 24 ft-lb)



Assemble the steering shaft and steering arm by aligning the wide cut-out of the steering shaft with the wide tooth of the steering arm.



FRONT WHEEL/SUSPENSION/STEERING

Apply grease to the flange and threads of the steering shaft nut.

Install the steering arm and tighten the steering shaft nut with the washer to the specified torque.

TORQUE: 70 N·m (7.0 kg-m, 51 ft-lb)

Install the tie-rod on the steering arm (page 11-26).

Install a new cotter pin.



Install the handlebar assembly on the steering shaft and tighten the new lower holder nuts with washers to the specified torque.

Do not reuse the nuts.

TORQUE: 40 N·m (4.0 kg-m, 29 ft-lb)

Adjust the toe-in (page 3-17).



FRONT SHOCK ABSORBER

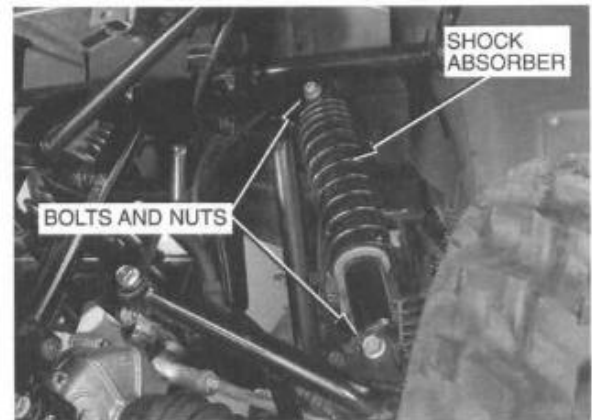
REMOVAL

Support the vehicle with a support block under the engine to raise the front wheels off the ground.

Remove the following:

- shock absorber mounting bolts
- shock absorber

Discard the mounting nuts.



DISASSEMBLY

Compress the front shock absorber with the shock absorber compressor.

CAUTION

Be careful that the upper end of the damper does not slip out of the compressor.

TOOL:

Shock absorber compressor 07959-3290001

Remove the spring seat stopper.

Remove the spring compressor and spring.

INSPECTION

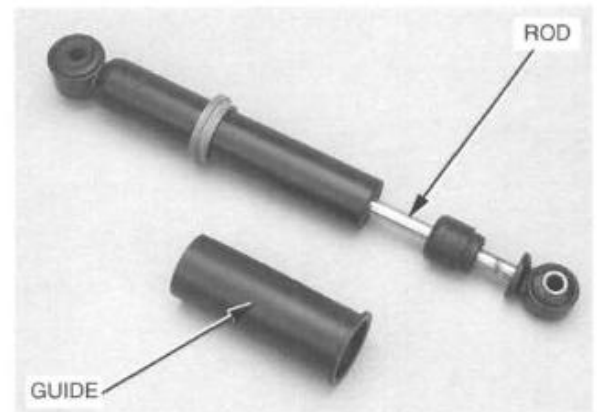
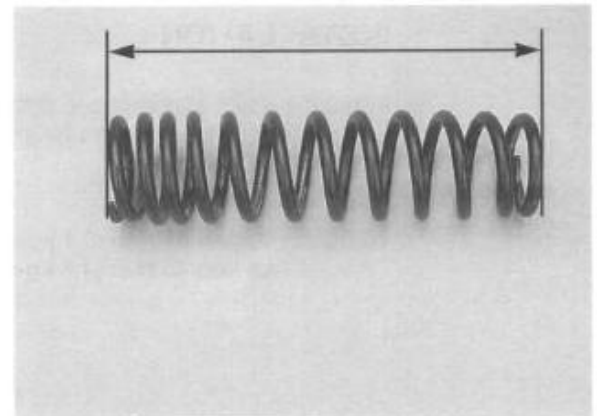
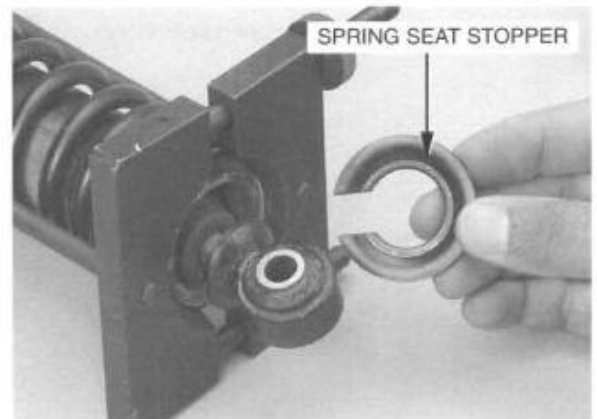
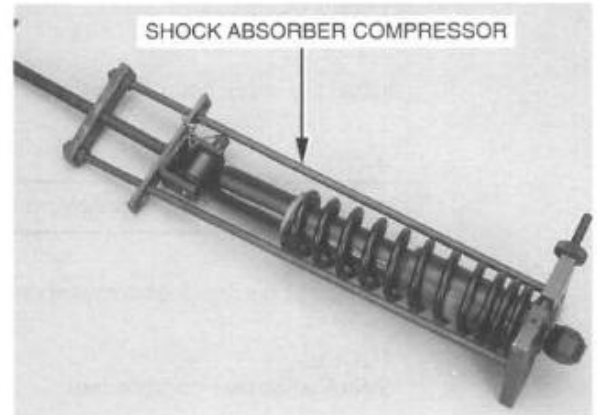
Inspect the spring for damage and measure its free length.

SERVICE LIMITS:

TRX300: 212.5 mm (8.37 in)

TRX300FW: 219.3 mm (8.63 in)

Inspect the damper rod for distortion and signs of oil leakage. Inspect the spring guide for damage.



ASSEMBLY

Install the shock spring onto the damper.

NOTE

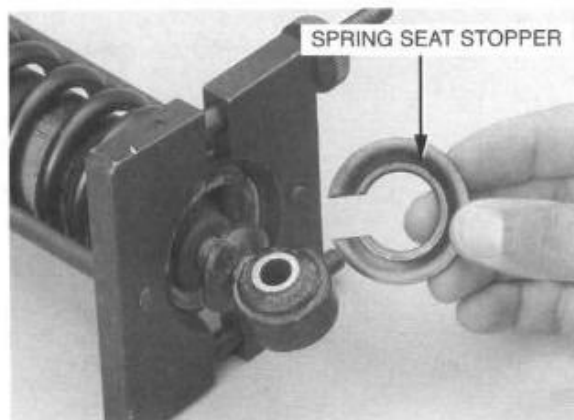
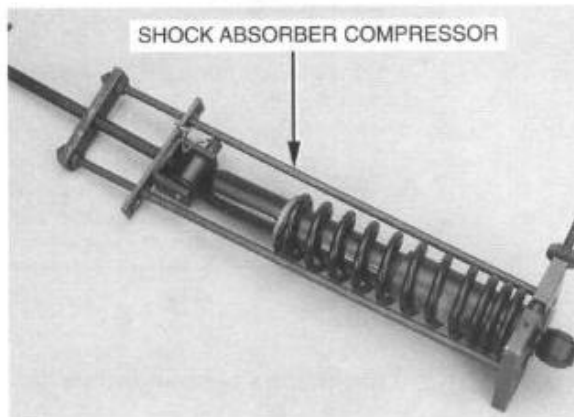
Install the spring with the closely wound coil toward the top.

Compress the shock absorber spring with the compressor.

TOOL:

Shock absorber compressor 07959-3290001

Install the spring seat stopper.

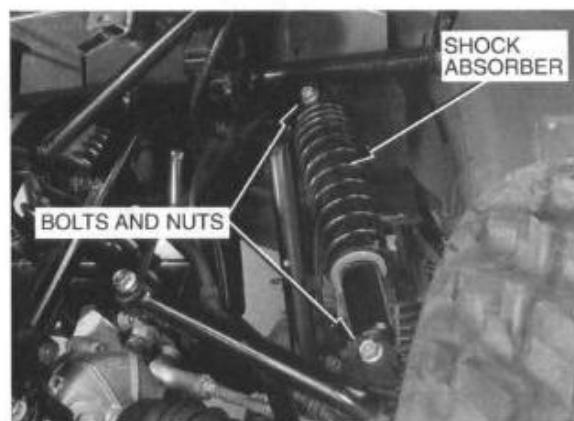


INSTALLATION

Install the shock absorber and tighten the mounting bolts and new nuts to the specified torque.

Do not reuse the nuts.

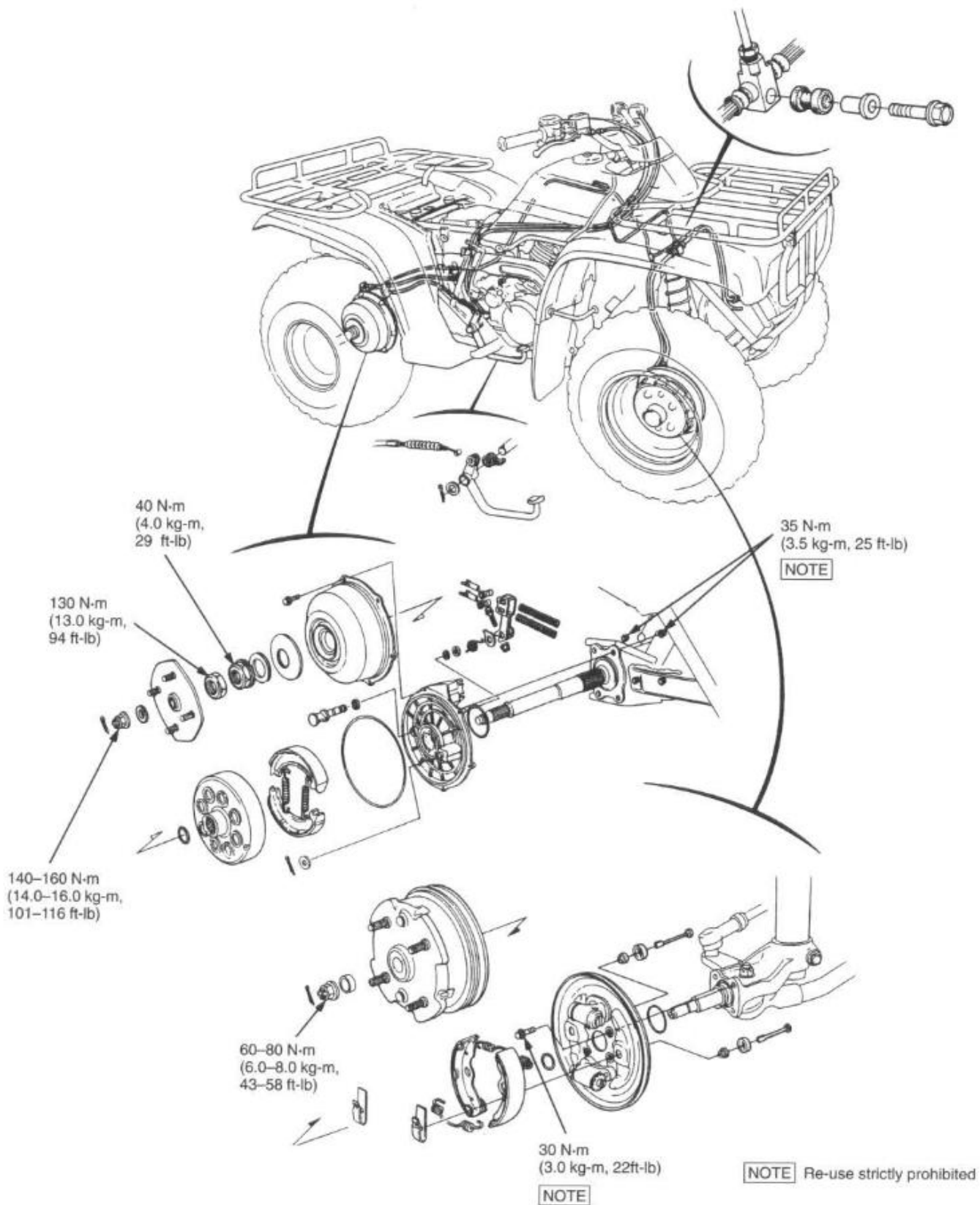
TORQUE: Upper: 31 N·m (3.1 kg-m, 22 ft-lb)
Lower: 45 N·m (4.5 kg-m, 33 ft-lb)



MEMO

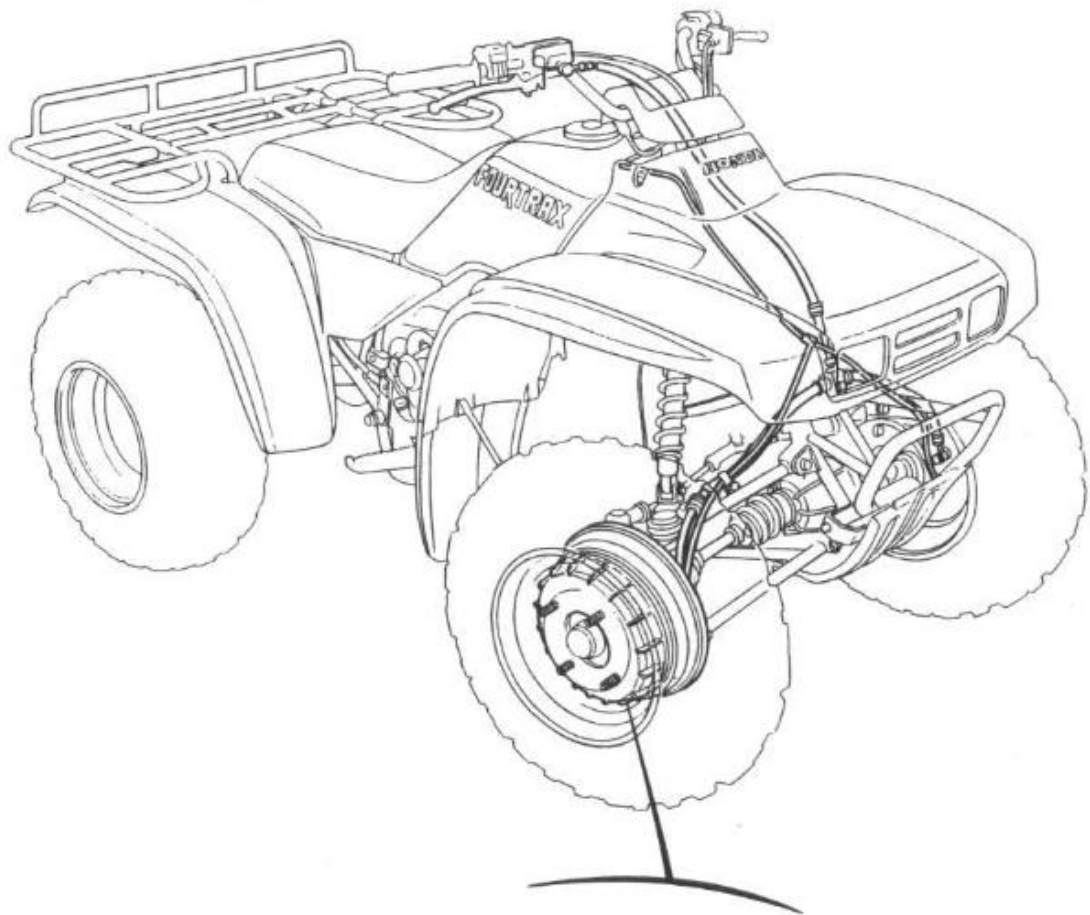
BRAKES

TRX300



12. BRAKES

TRX300FW



12

10 N·m
(1.0 kg-m,
7 ft-lb)

80–100 N·m
(8.0–10.0 kg-m, 58–72 ft-lb)

30 N·m
(3.0 kg-m, 22 ft-lb)

NOTE

NOTE Re-use strictly prohibited

BRAKES

SERVICE INFORMATION	12-2	BRAKE SHOES/WHEEL CYLINDER/ ADJUSTER	12-8
TROUBLESHOOTING	12-3	REAR BRAKE	12-23
BRAKE FLUID REPLACEMENT/ AIR BLEEDING	12-4	REAR BRAKE PEDAL	12-29
MASTER CYLINDER	12-6		

SERVICE INFORMATION

GENERAL

▲ WARNING

Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake or clutch assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA designed to minimize the hazard caused by airborne asbestos fibers.

- This section covers maintenance of the front hydraulic brake and rear drum brake systems.
- A jack or other support is required to support the vehicle.
- Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- Do not allow foreign material to enter the system when filling the reservoir.
- Use DOT 3 or 4 brake fluid.
- Brake fluid will damage painted, plastic and rubber parts. Whenever handling brake fluid, protect the painted, plastic and rubber parts by covering them with a rag. If fluid does get on these parts, wipe it off with a clean cloth.
- Always check the brake operation before riding the vehicle.
- Apply multipurpose grease (NLGI No 3) to the front brake waterproof seal lip.

SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Front brake drum I.D.	TRX300	130 (5.1)	131 (5.2)
	TRX300FW	160 (6.3)	161 (6.3)
Front brake lining thickness		4.0 (0.16)	1.0 (0.04)
Master cylinder I.D.	TRX300	12.700–12.743 (0.5000–0.5017)	12.755 (0.5022)
	TRX300FW	14.000–14.043 (0.5512–0.5529)	14.055 (0.5533)
Master cylinder piston O.D.	TRX300	12.657–12.684 (0.4983–0.4994)	12.645 (0.4978)
	TRX300FW	13.957–13.984 (0.5495–0.5506)	13.945 (0.5490)
Wheel cylinder piston O.D.	TRX300	15.827–15.854 (0.6231–0.6242)	15.817 (0.6227)
	TRX300FW	17.417–17.444 (0.6857–0.6868)	17.405 (0.6852)
Wheel cylinder I.D.	TRX300	15.870–15.913 (0.6248–0.6265)	15.923 (0.6269)
	TRX300FW	17.460–17.503 (0.6874–0.6891)	17.515 (0.6896)
Front brake panel warpage		—	0.4 (0.02)
Front brake panel seal lip wear		—	0.5 (0.02)
Front brake waterproof seal lip length	TRX300	21.0 (0.83)	19.0 (0.75)
	TRX300FW	22.0 (0.87)	20.0 (0.79)
Rear brake lining thickness		5.0 (0.20)	2.0 (0.08)
Rear brake drum I.D.		160 (6.3)	161 (6.3)

TORQUE VALUES

Master cylinder cover screw	2 N·m (0.2 kg-m, 1.4 ft-lb)
Master cylinder holder	12 N·m (1.2 kg-m, 9 ft-lb)
Brake hose bolt	35 N·m (3.5 kg-m, 25 ft-lb)
Wheel cylinder bolt (TRX300)	8 N·m (0.8 kg-m, 6 ft-lb)
Adjuster bolt (TRX300)	8 N·m (0.8 kg-m, 6 ft-lb)
Front brake panel bolt	30 N·m (3.0 kg-m, 22 ft-lb)—do not re-use bolts
Brake hose joint nut (TRX300)	14 N·m (1.4 kg-m, 10 ft-lb)
Front axle nut (TRX300)	60–80 N·m (6.0–8.0 kg-m, 43–58 ft-lb)
Front axle nut (TRX300FW)	80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Front wheel hub mounting bolt (TRX300FW)	10 N·m (1.0 kg-m, 7 ft-lb)
Brake hose joint (TRX300)	35 N·m (3.5 kg-m, 25 ft-lb)
Cylinder assy. 6 mm bolt (TRX300FW)	8 N·m (0.8 kg-m, 6 ft-lb)
8 mm bolt (TRX300FW)	17 N·m (1.7 kg-m, 12 ft-lb)
Front brake pipe joint nut	14 N·m (1.4 kg-m, 10 ft-lb)
Rear brake panel drain bolt	25 N·m (2.5 kg-m, 18 ft-lb)
Rear brake panel nut	35 N·m (3.5 kg-m, 25 ft-lb)—do not re-use nuts

TOOLS

Special

Snap ring pliers	07914–3230001
Oil seal driver	07965–MC70100

Common

Driver	07749–0010000
Attachment, 62 x 68 mm	07746–0010500
Pilot, 35 mm	07746–0040800
Attachment, 32 x 35 mm	07746–0010100
Pilot, 15 mm	07746–0040300
Attachment, 42 x 47 mm	07746–0010300
Pilot, 20 mm	07746–0040500

TROUBLESHOOTING

Front wheel wobbling and noise

- Worn front wheel bearings (TRX300)
- Worn brake shoes

Poor brake performance

- Brake not adjusted properly
- Worn brake shoes
- Brake fluid leak
- Water in the front brake drum
- Incorrectly installed rear brake arm
- Contaminated brake shoes
- Worn rear brake cam
- Worn rear brake drum

Possible causes for water entering a front brake drum

- Faulty waterproof seal installation
- Warped or worn brake panel
- Damaged tension pin, tension pin seal or seal cap

- Unsealed wheel cylinder assembly
- Unsealed adjuster assembly
- Damaged or loose wheel cylinder or adjuster mounting bolt
- Damaged or loose brake panel bolt
- Disconnected or damaged breather tube
- Faulty breather tube routing
- Faulty inspection hole cap installation
- Loosened axle nut by uninstalled cotter pin
- Loose bolt attaching the drum to the hub (TRX300FW)
- Faulty hub O-ring (TRX300FW)
- Faulty brake panel O-ring
- Unsealed or damaged wheel bolt
- Faulty wheel bearing
- Faulty wheel hub dust seal (TRX300FW)
- Faulty brake drum dust seal (TRX300)
- Faulty wheel hub (TRX300FW)
- Faulty brake drum
- Faulty knuckle axle seal

BRAKE FLUID REPLACEMENT/AIR BLEEDING

BRAKE FLUID DRAINING

CAUTION

- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

With the fluid reservoir parallel to the ground, remove the reservoir cover and diaphragm.

Connect a bleed hose to the bleed valve.

Loosen the bleed valve and pump the brake lever.

Stop pumping the lever when no more fluid flows out of the bleed valve.

BRAKE FLUID FILLING

Fill the reservoir with DOT 3 or 4 brake fluid from a sealed container.

CAUTION

Do not mix different types of fluid. They are not compatible.

Connect a commercially available brake bleeder to the bleed valve.

Pump the brake bleeder and loosen the bleed valve, adding fluid when the fluid level in the master cylinder reservoir is low.

NOTE

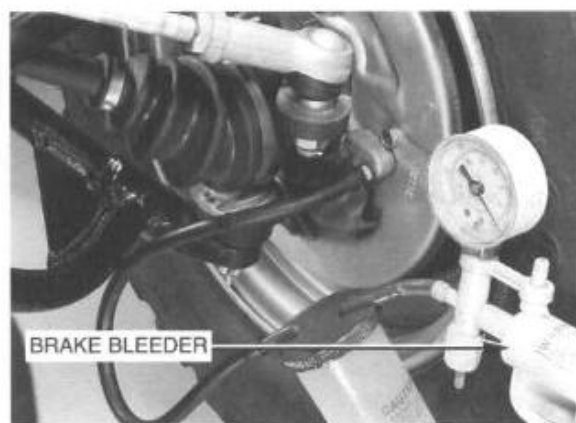
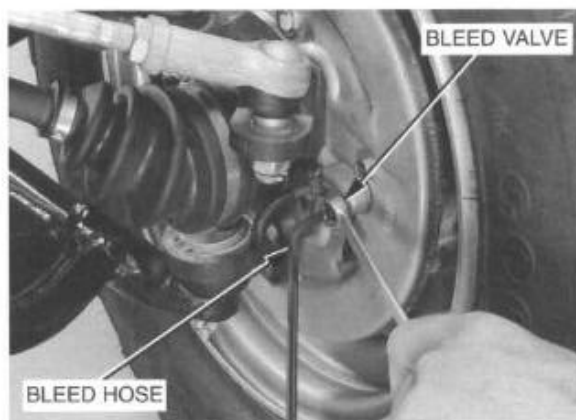
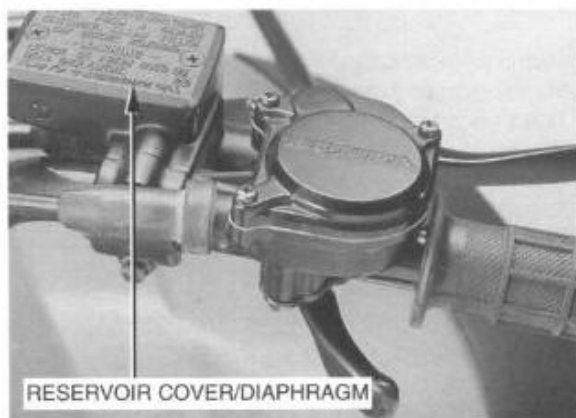
- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.

Repeat the above procedures until air bubbles do not appear in the plastic hose.

NOTE

- If air is entering the bleeder from around the bleed valve threads, seal the threads with Teflon tape.
- If a brake bleeder is not available, fill the master cylinder and operate the brake lever to fill the system (page 12-5).

Close the bleed valve. Next, perform the available BLEEDING procedure (page 12-5).



BRAKE BLEEDING

Connect a clear bleed hose to the bleed valve.

Pump up the system pressure with the lever until there are no air bubbles in the fluid flowing out of the master cylinder and lever resistance is felt.

1. Squeeze the brake lever, open the bleed valve 1/2 turn and then close the valve.

NOTE

Do not release the brake lever until the bleed valve has been closed.

2. Release the brake lever slowly and wait several seconds after it reaches the end of its travel.

Repeat steps 1 and 2 until bubbles cease to appear in the fluid coming out of the bleed valve.

Fill the fluid reservoir to the upper level.

Reinstall the diaphragm and reservoir cover, and tighten the screws.

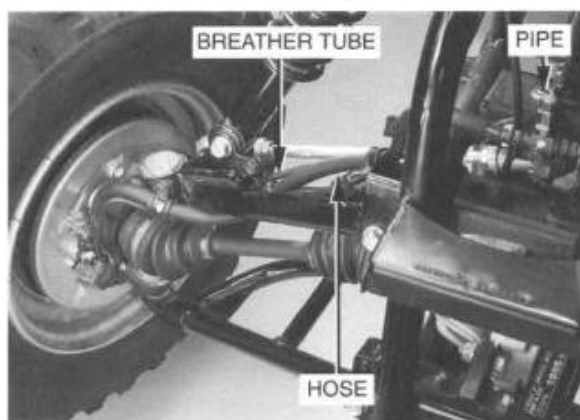
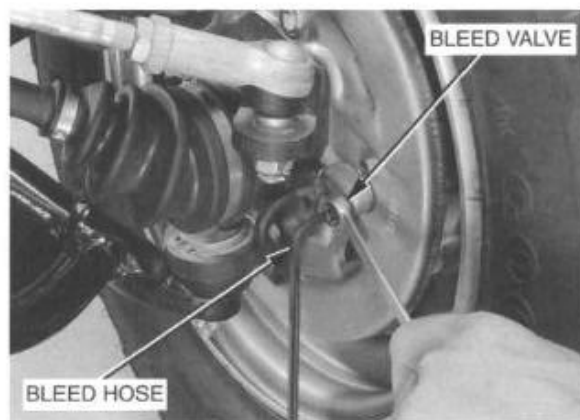
TORQUE: 2 N·m (0.2 kg·m, 1.4 ft·lb)

BRAKE HOSE/BRAKE PIPE/BREATHER TUBE INSPECTION

Remove the front fender (page 16-1).

Check the brake hose and brake pipe for damage and brake fluid leaks.

Check the front brake breather tubes for secure connections and damage. A disconnected breather means that the front brake drum can flood with water.



MASTER CYLINDER

DISASSEMBLY

Remove the reservoir cover, diaphragm and float, and soak up the brake fluid from the reservoir.

Disconnect the brake hose from the master cylinder by removing the bolt/two sealing washers.

Fix the brake hose to prevent the fluid from flowing out.

CAUTION

Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

Remove the screws from the master cylinder holder and remove the master cylinder.

Remove the front brake lever nut and pivot bolt.

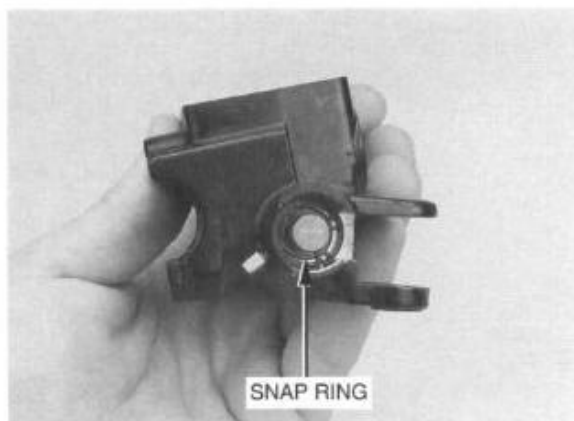
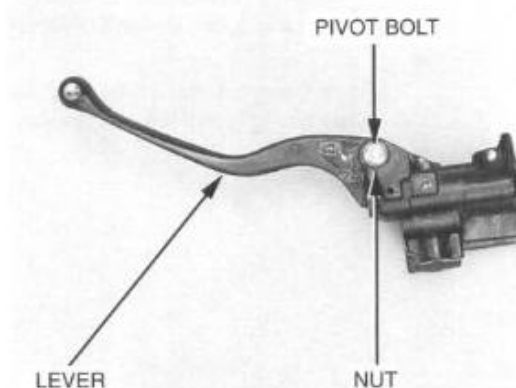
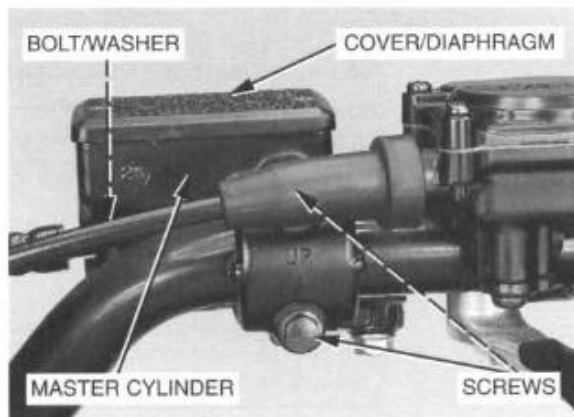
Remove the boot.

Remove the snap ring from the master cylinder body.

TOOL:

Snap ring pliers

07914-3230001

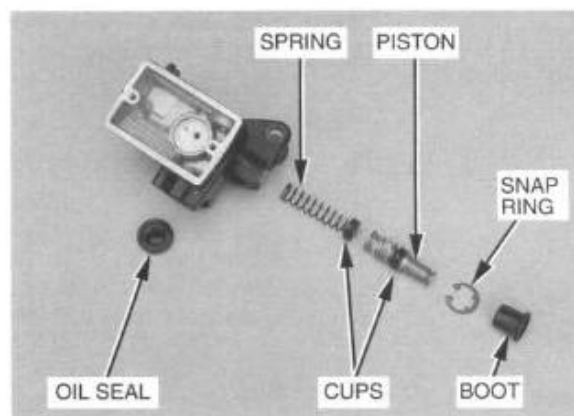


Remove the oil seal, piston and spring.

Clean the inside of the cylinder and reservoir with brake fluid.

Check the oil seal, piston boot, primary cup and secondary cup for fatigue or damage.

Check the master cylinder and piston for abnormal scratches.



INSPECTION

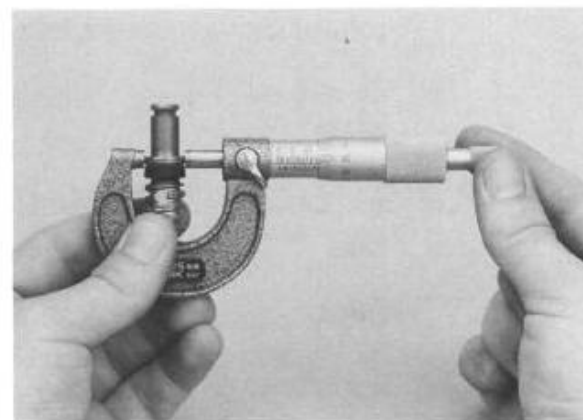
Measure the master cylinder I.D.

SERVICE LIMIT: (TRX300) 12.755 mm (0.5022 in)
(TRX300FW) 14.055 mm (0.5533 in)



Measure the master cylinder piston O.D.

SERVICE LIMIT: (TRX300) 12.645 mm (0.4978 in)
(TRX300FW) 13.945 mm (0.5490 in)



ASSEMBLY

CAUTION

Keep the piston, cups, spring, snap ring and boot as a set; do not substitute individual parts.

Coat all parts with clean brake fluid before assembly. Dip the secondary cup in brake fluid.

Do not allow the lips to turn inside out.

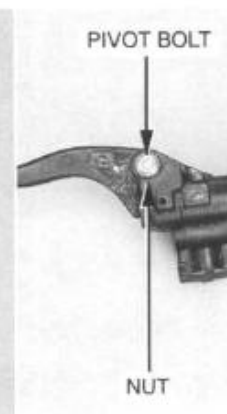
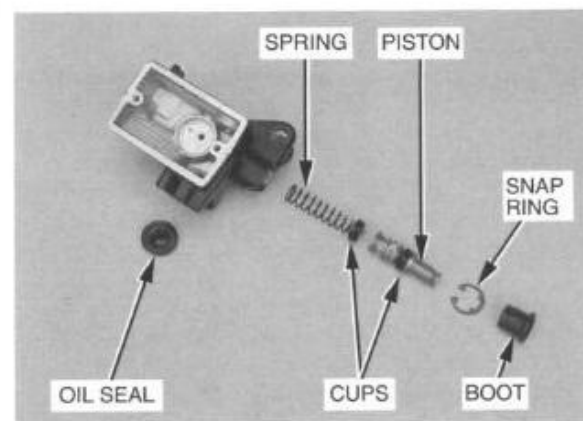
Install the primary cup and spring to the piston.

Be certain the snap ring is firmly seated in the groove.

Install the oil seal, piston assembly, snap ring and boot.

Install the brake lever.

Place the master cylinder on the handlebar.



Install the master cylinder holder with the "UP" mark facing up. Tighten the upper screw first, then tighten the lower screw loosely.

TORQUE: 12 N·m (1.2 kg-m, 9 ft-lb)

Align the end of the master cylinder with the punch mark on the handlebar.

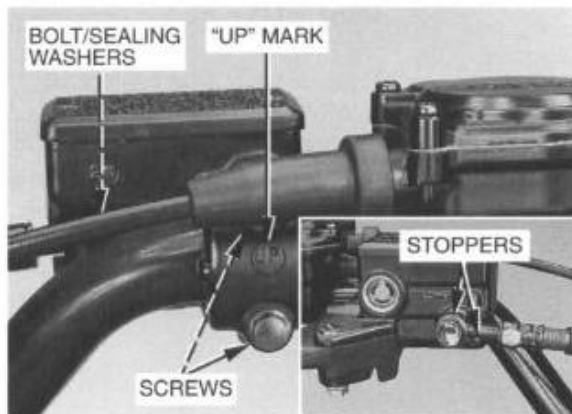
Tighten the lower screw.

TORQUE: 12 N·m (1.2 kg-m, 9 ft-lb)

Install the brake hose between the stoppers with the bolt and new sealing washers.

TORQUE: 35 N·m (3.5 kg-m, 25 ft-lb)

Fill the reservoir to the upper level and bleed the brake system (page 12-5).



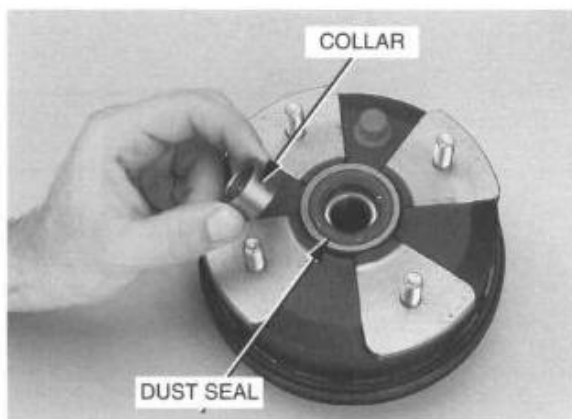
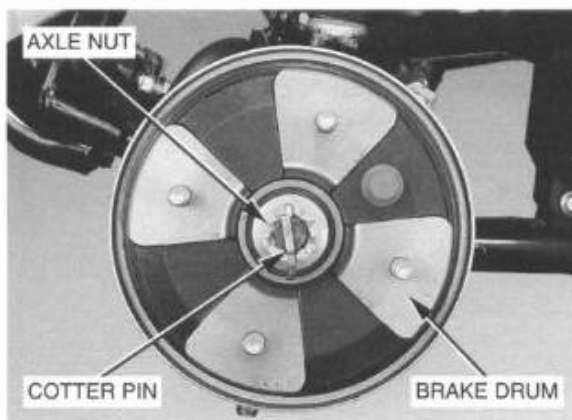
BRAKE SHOES/WHEEL CYLINDER/ADJUSTER

DISASSEMBLY (TRX300)

Remove the following:

- front wheel (page 11-7)
- cotter pin
- axle nut
- brake drum (wheel hub)

- collar
- dust seal



Turn the inner race of each bearing with your finger.

The bearings should turn smoothly and quietly.

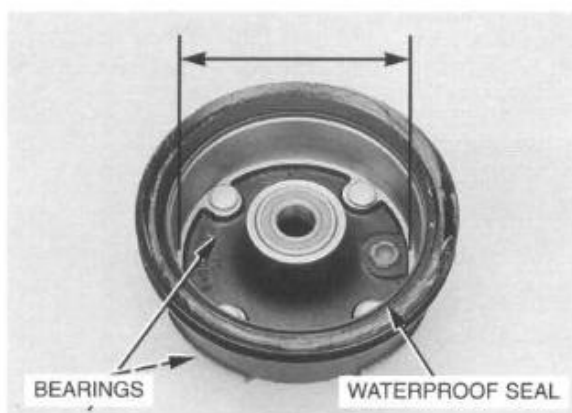
Also check that the outer race of each bearing fits tightly in the brake drum.

For bearing replacement, see page 12-10.

For front brake waterproof seal inspection/replacement, see page 12-15.

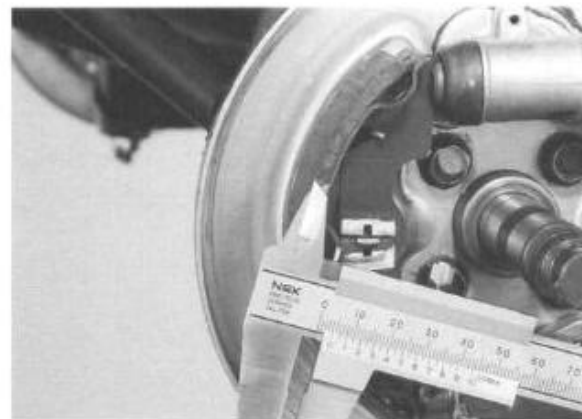
Measure the brake drum I.D.

SERVICE LIMIT: 131 mm (5.2 in)



Measure the brake lining thickness.

SERVICE LIMIT: 1.0 mm (0.04 in)

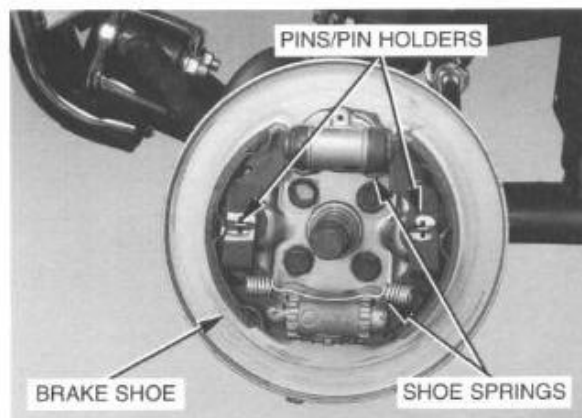


For brake panel inspection, see page 12-14.

Remove the following:

- pins
- pin holders
- brake shoes and shoe springs
- brake hose/breather tube guide

Mark the brake shoes to indicate their original positions.



Drain the brake fluid (page 12-4).

Remove the following:

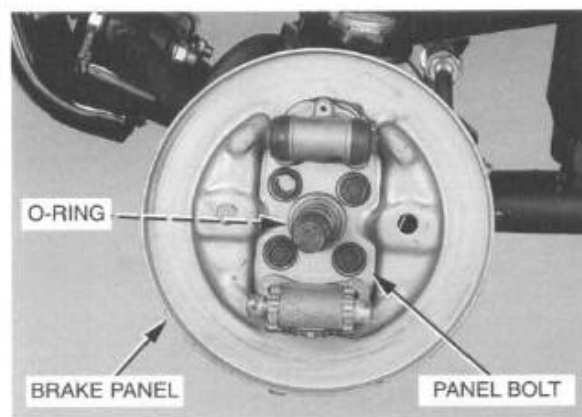
- brake hose by removing the brake hose bolt.
- breather tube from brake panel



- brake panel
- O-ring

CAUTION

Discard the panel bolts. Do not reuse the panel bolts because their threads are specially dry-coated for waterproofing.

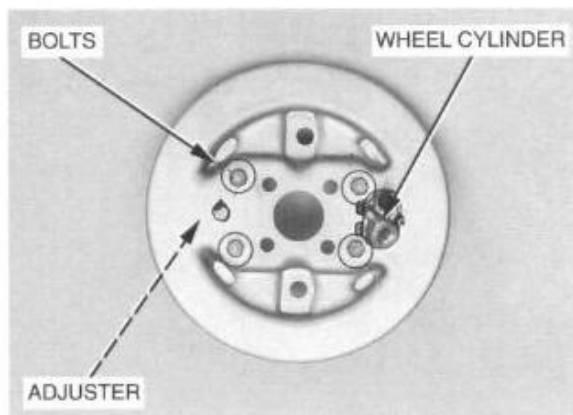


BRAKES

Remove the wheel cylinder and adjuster by removing the attaching bolts.

Disassemble them.

Clean off any sealant material from the cylinder, adjuster, brake panel and panel bolts.



BRAKE DRUM BEARING REPLACEMENT (TRX300)

Remove the brake drum bearings.

TOOLS:

Outer bearing:

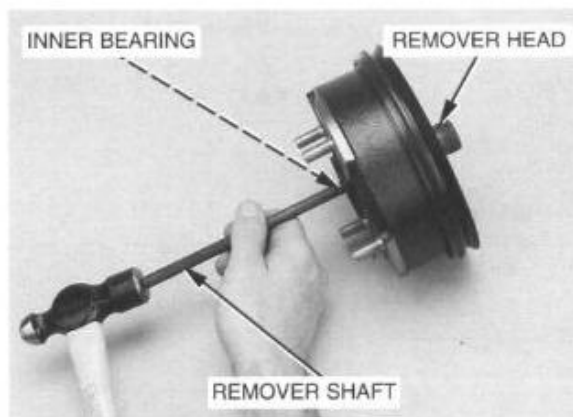
Bearing remover, 15 mm

commercially available

Inner bearing:

Bearing remover, 20 mm

commercially available



Pack the bearing cavities with grease.

Drive the new bearings into the brake drum.

Do not damage the waterproof seal. Support the brake drum boss when driving the bearings.

TOOLS:

Outer bearing:

Driver

07749-0010000

Attachment, 32 x 35 mm

07746-0010100

Pilot, 15 mm

07746-0040300

Inner bearing:

Driver

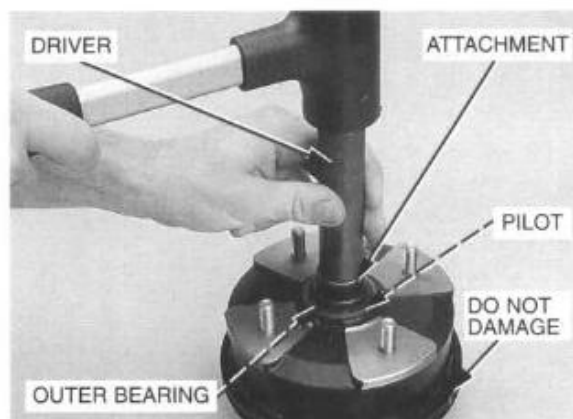
07749-0010000

Attachment, 42 x 47 mm

07746-0010300

Pilot, 20 mm

07746-0040500



For seal inspection, see page 12-15.

DISASSEMBLY (TRX300FW)

Remove the following:

- front wheel (page 11-7)
- cotter pin
- axle nut
- brake drum

Measure the brake drum I.D.

SERVICE LIMIT: 161 mm (6.3 in)

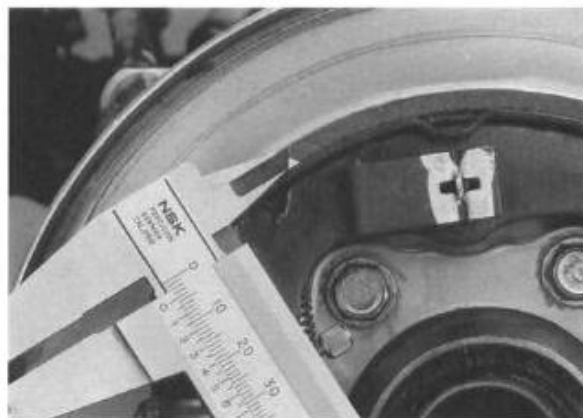
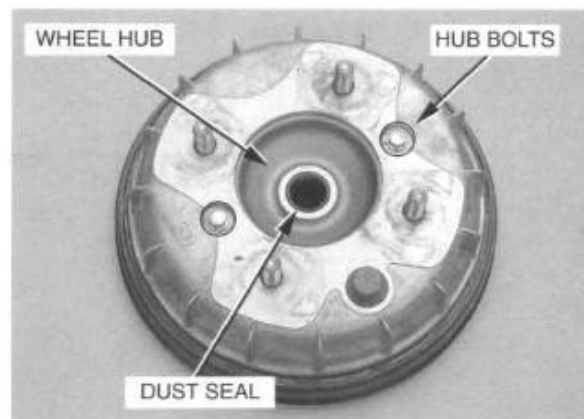
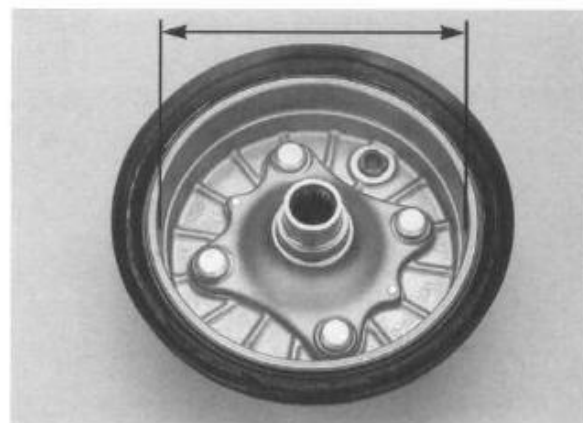
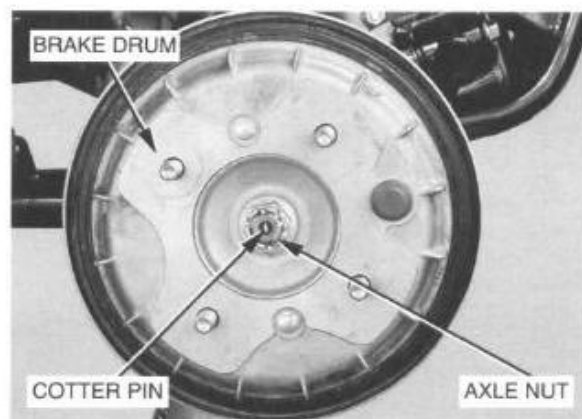
Remove the following:

- wheel hub and O-ring by removing the hub bolts
- dust seal

For front brake waterproof seal inspection/replacement, see page 12-15.

Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.08 in)



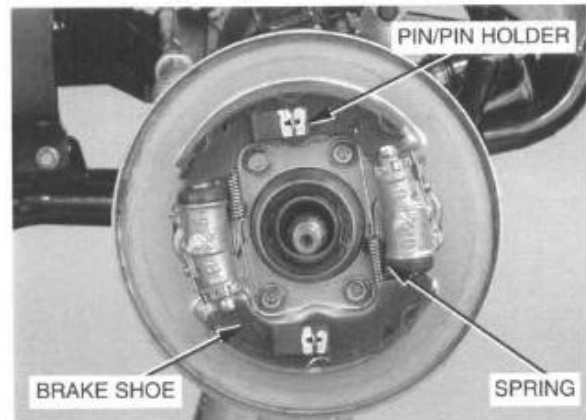
BRAKES

For brake panel inspection, see page 12-14.

Remove the following:

- pins
- pin holders
- brake shoes and shoe springs

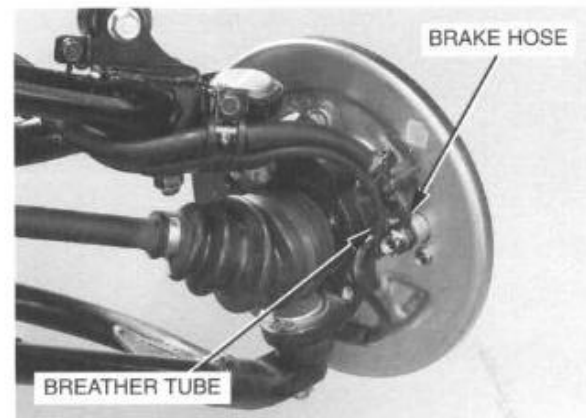
Mark the brake shoes to indicate their original positions.



Drain the brake fluid (page 12-4).

Remove the following:

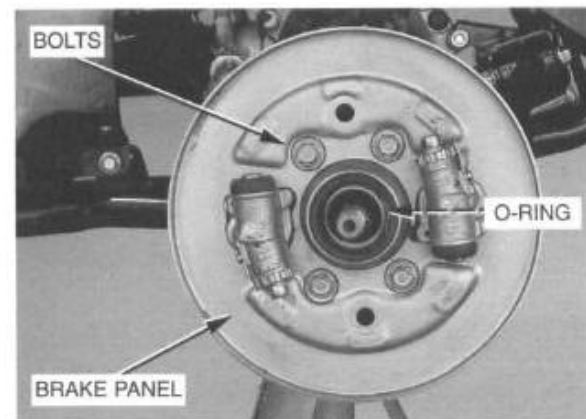
- brake hose by removing the brake hose bolt
- breather tube from brake panel



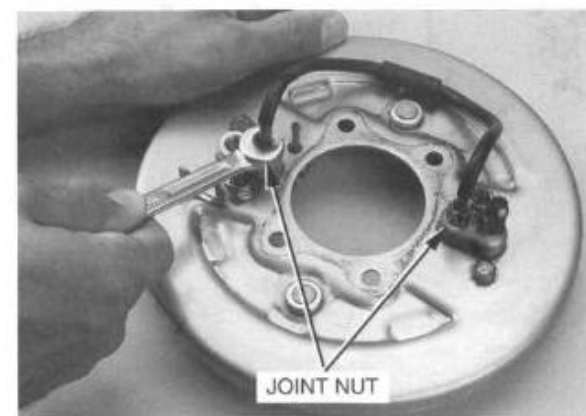
- brake panel
- O-ring

CAUTION

Discard the panel bolts. Do not reuse the panel bolts because their threads are specially dry-coated for waterproofing.



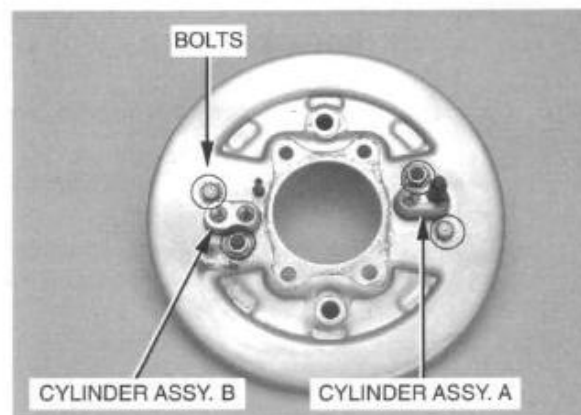
- brake pipe by loosening the joint nuts



Remove cylinder assembly A and B by removing the bolts.

Disassemble them.

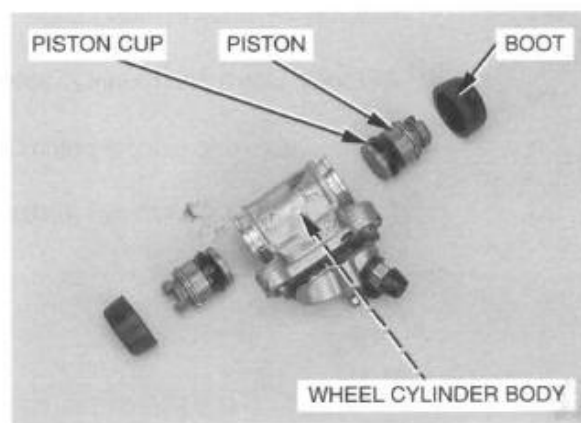
Clean any sealant material from the cylinders, bolts and brake panel.



WHEEL CYLINDER/ADJUSTER INSPECTION (TRX300)

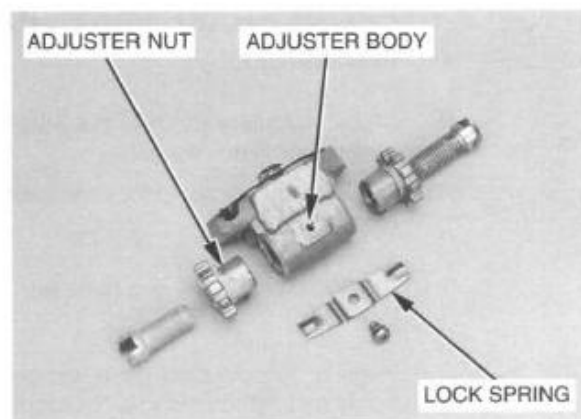
Inspect the wheel cylinder bore and pistons for scoring or grooving.

Inspect the piston cups and piston boots for wear or fatigue.



Inspect the adjuster body and adjuster nuts for wear or damage.

Check the lock spring for fatigue or damage.

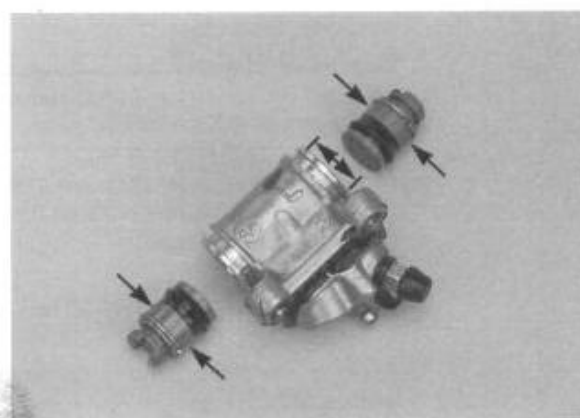


Measure the wheel cylinder I.D.

SERVICE LIMIT: 15.923 mm (0.6269 in)

Measure the wheel cylinder piston O.D.

SERVICE LIMIT: 15.817 mm (0.6227 in)

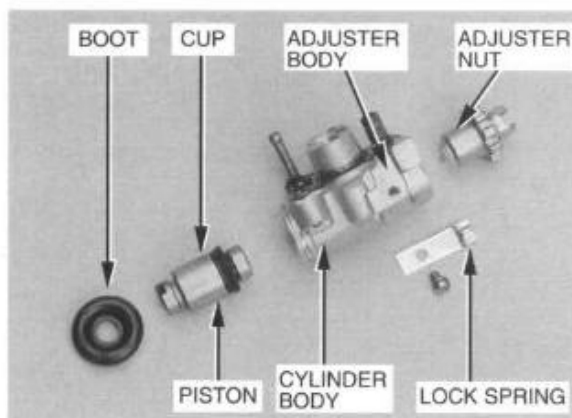


WHEEL CYLINDER/ADJUSTER INSPECTION (TRX300FW)

Inspect the wheel cylinder bore and piston for scoring or grooving.

Inspect the piston cup and piston boot for wear or fatigue.

Inspect the adjuster body and adjuster nut for wear or damage. Check the lock spring for fatigue or damage.

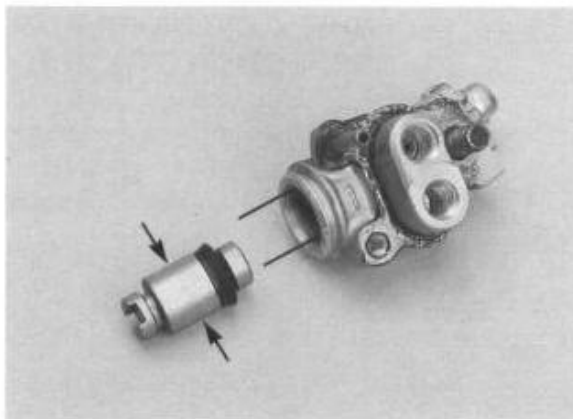


Measure the wheel cylinder I.D.

SERVICE LIMIT: 17.515 mm (0.6896 in)

Measure the wheel cylinder piston O.D.

SERVICE LIMIT: 17.405 mm (0.6852 in)



FRONT BRAKE PANEL INSPECTION (TRX300)

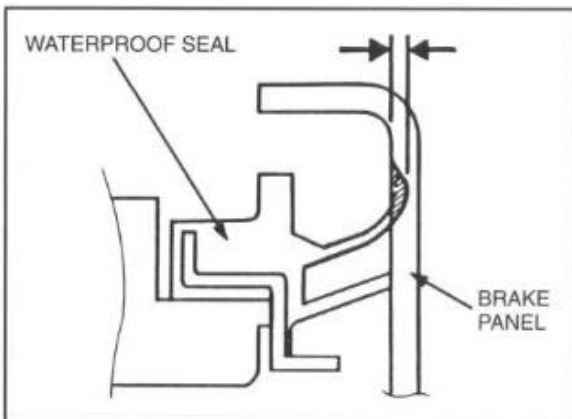
Check the brake panel at the waterproof seal lip contact area for abnormal scratches.

Check the brake panel for wear caused by the waterproof seal lip.

SERVICE LIMIT: 0.5 mm (0.02 in)

Install a suitable steel plate and collar onto the knuckle. Install and tighten the axle nut securely.

Clean any grease from the brake panel.



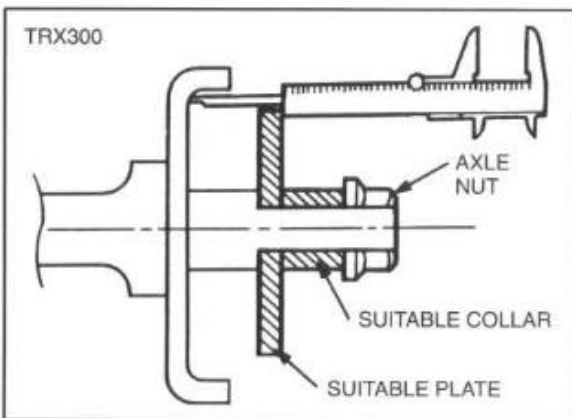
▲ WARNING

Grease on the brake linings reduces stopping power. Keep grease off the linings.

Using a vernier caliper as shown, measure the depth of the brake panel at several points on the seal lip contact area. Calculate the warpage.

SERVICE LIMIT: 0.4 mm (0.02 in)

Replace the brake panel if warpage is greater than the service limit.



TRX300FW

Remove the wheel hub from the brake drum and temporarily install the hub on the axle shaft. Tighten the axle nut securely. Install a suitable steel plate to the wheel hub and tighten the plate with the wheel nut securely.

Clean any grease from the brake panel.

⚠ WARNING

Grease on the brake linings reduces stopping power. Keep grease off the linings.

Measure the brake panel on the points attached to the waterproof seal lip for warpage as shown, using a dial indicator.

SERVICE LIMIT: 0.4 mm (0.02 in)

Replace the brake panel if warpage is greater than the service limit.

FRONT BRAKE WATERPROOF SEAL INSPECTION

Check the waterproof seal for damage, fatigue or faulty installation.

Measure the front brake waterproof seal lip length.

SERVICE LIMIT:

TRX300: 19.0 mm (0.75 in)

TRX300FW: 20.0 mm (0.79 in)

FRONT BRAKE WATERPROOF SEAL REPLACEMENT

Remove the waterproof seal from the brake drum by prying open the seal edge.

Remove the wheel hub. (TRX300FW)

- **CALCULATE THE CLEARANCES BETWEEN THE DRUM AND SEAL**

TRX300

Measure the drum and seal at a, b and c as shown. Calculate the clearances A and B between the drum and seal.

$$A = a - c$$

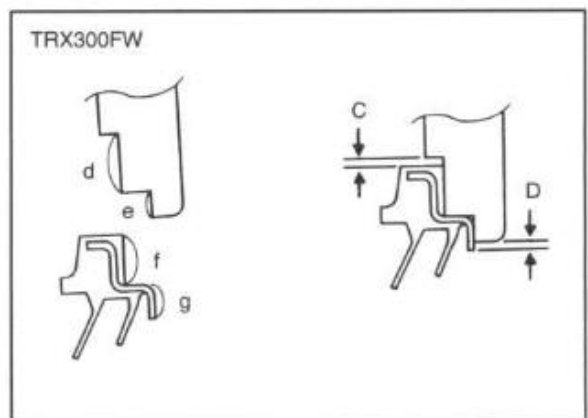
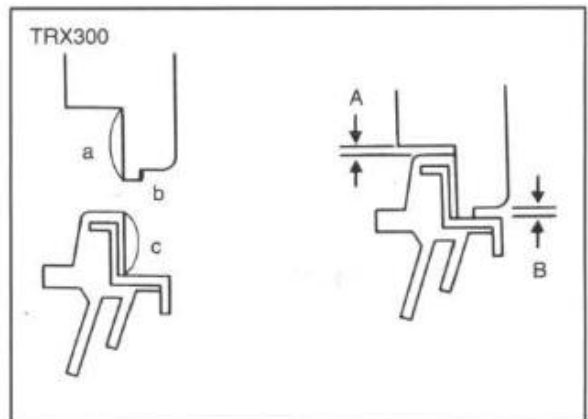
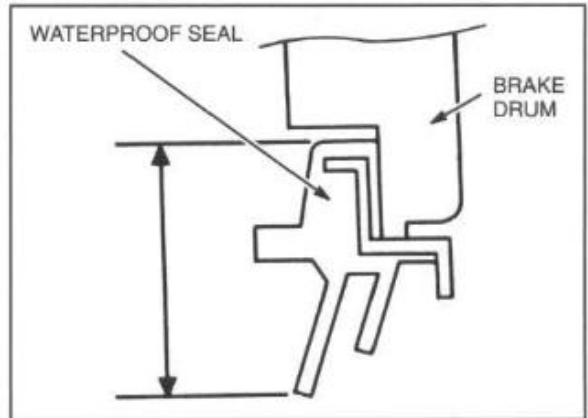
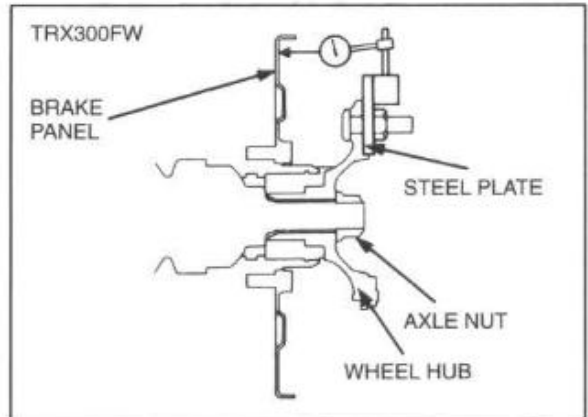
$$B = b$$

TRX300FW

Measure the drum and seal at d, e, f and g as shown. Calculate the clearances C and D between the drum and seal.

$$C = d - f$$

$$D = g - e$$

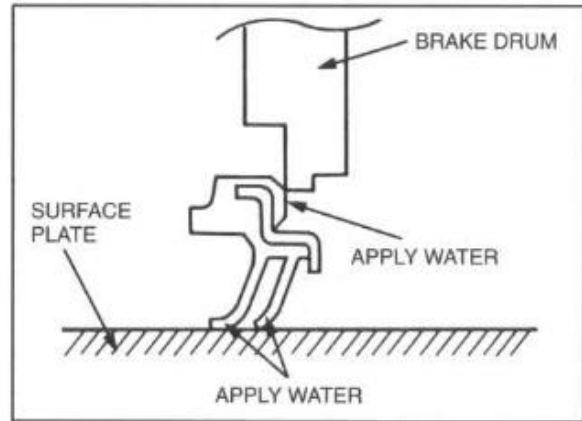


Apply water to the entire new waterproof seal.

Place a waterproof seal on a clean surface plate, and press the brake drum into the waterproof seal, making sure that the clearances between the seal and drum will reach the calculated clearance (see previous page).

CAUTION

- Press the drum onto the seal evenly, so the lips will not be damaged. If the seal is damaged or mis-installed, remove it and try again with a new seal.
- (TRX300FW)
Place a steel plate [about 140 mm (5.5 in) in diameter and more than 10 mm (0.4 in) in thickness] on the brake drum, or the brake drum will be warped or damaged.



Dry the seal thoroughly and pack the lips cavity with multi-purpose grease (NLGI No.3) as shown.

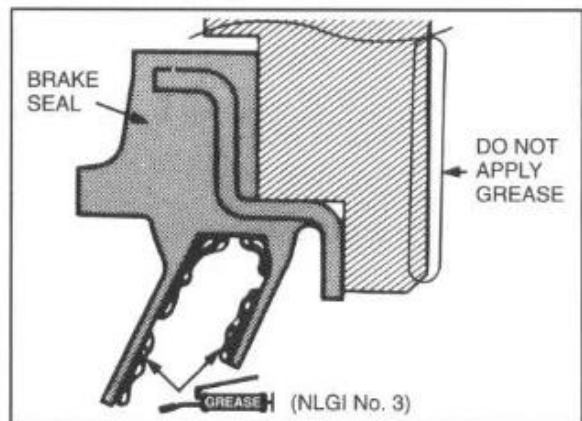
AMOUNT OF GREASE:

TRX300: 12–14 g (0.4–0.5 oz)

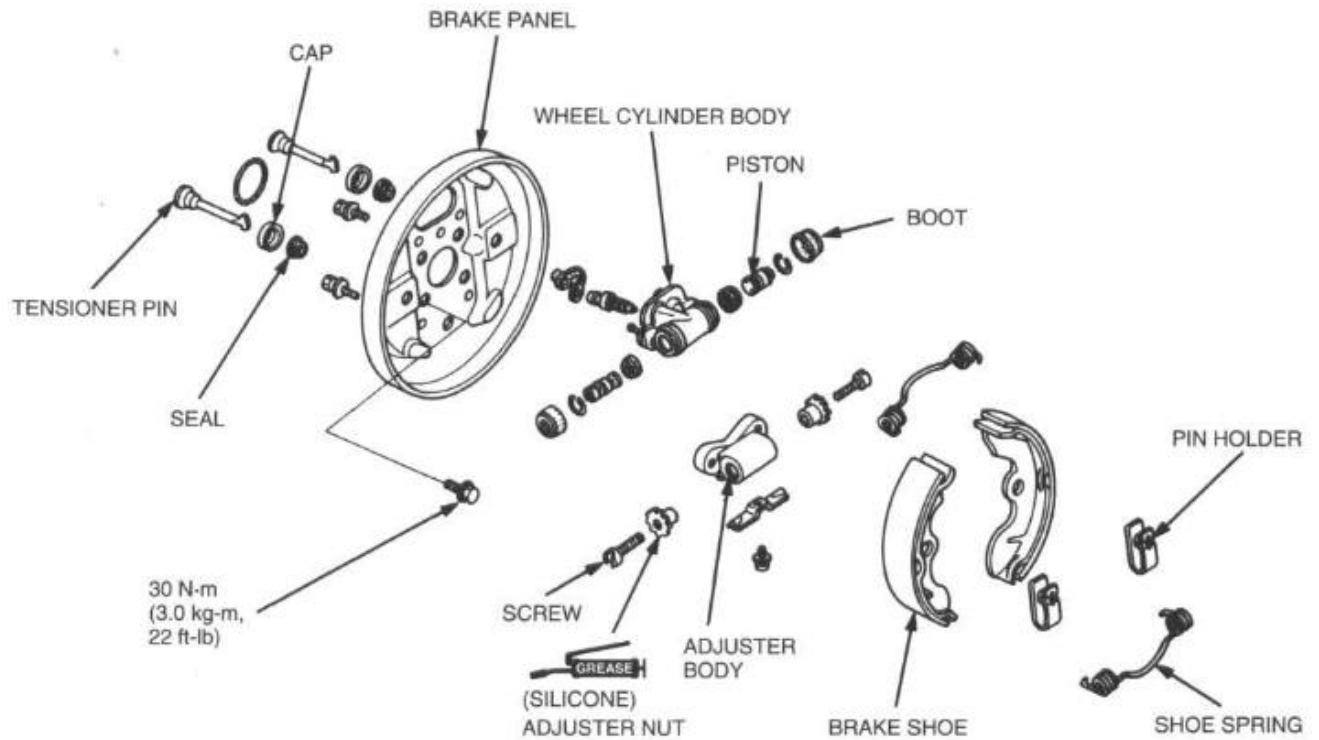
TRX300FW: 14–16 g (0.5–0.6 oz)

▲ WARNING

Do not apply grease to the inner surface of the brake drum. Grease on the inner surface of drum reduces stopping power. Keep grease off the drum.



ASSEMBLY (TRX300)

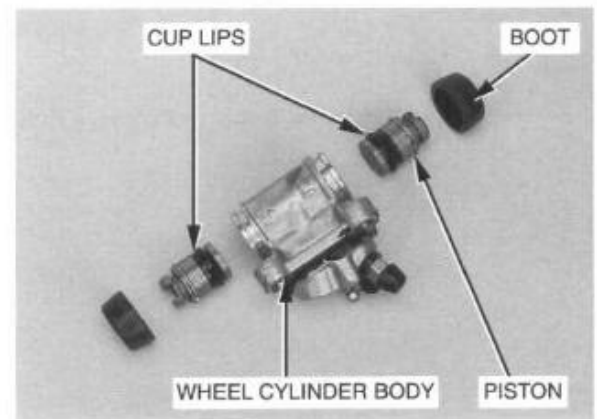


Clean all parts, excluding the boots, thoroughly with BRAKE FLUID only.

Blow out passages with compressed air.

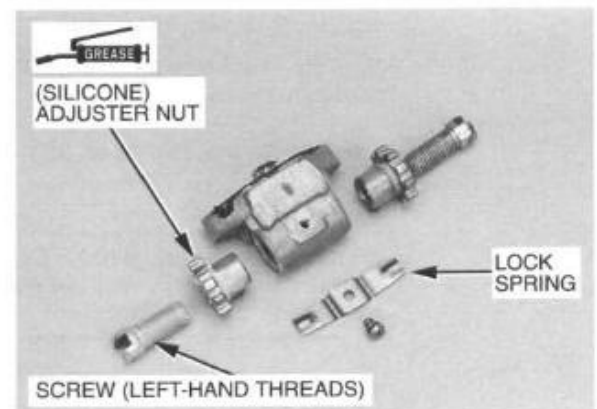
Install the pistons into the wheel cylinder body without allowing the lips to turn inside out.

Install the boots on the cylinder body.



Apply silicone grease to the adjuster nuts.

Install the adjuster nuts, screws and lock spring on the adjuster body.

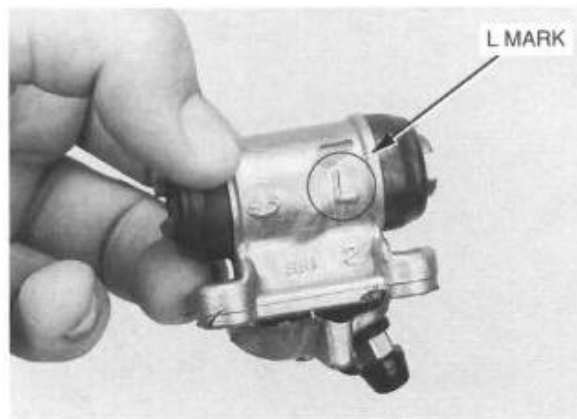


BRAKES

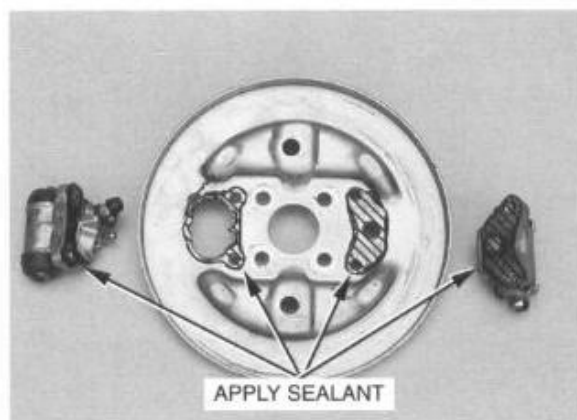
Note that the wheel cylinders are marked.

L: for the left brake panel

R: for the right brake panel

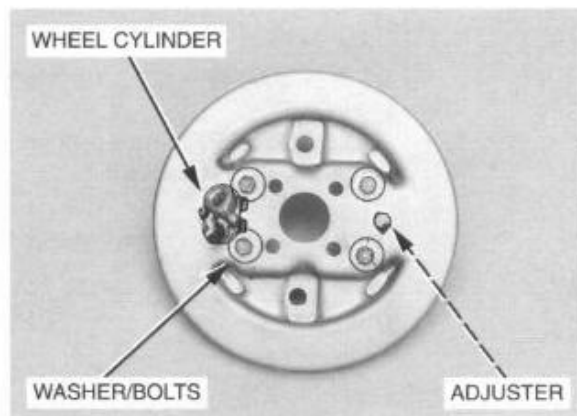


Apply sealant between the wheel cylinder and adjuster bodies and the brake panel.



Install the wheel cylinder and adjuster and tighten the washers and bolts.

TORQUE: 8 N-m (0.8 kg-m, 6 ft-lb)



Install an O-ring on the knuckle.

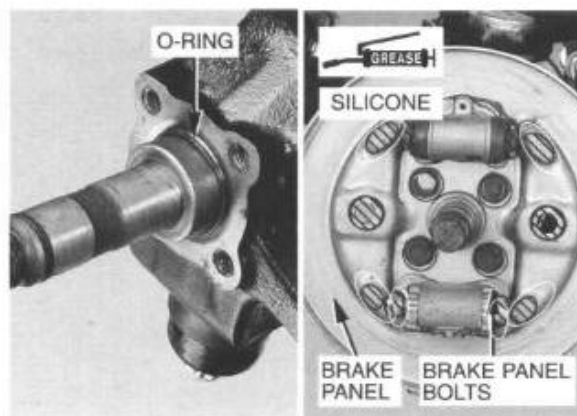
Install the front brake panel assembly and tighten the new brake panel bolts.

TORQUE: 30 N-m (3.0 kg-m, 22 ft-lb)

CAUTION

Discard the used panel bolts. Do not reuse the panel bolts because their threads are specially dry-coated for waterproofing.

Apply silicone grease on the metal contact areas indicated and pistons/adjuster screws.



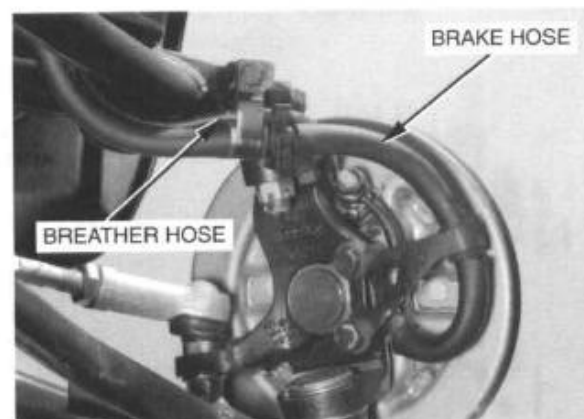
Tighten the brake hose joint, if removed.

TORQUE: 35 N·m (3.5 kg-m, 25 ft-lb)

Hold the hose while tightening. Connect the brake hose to the wheel cylinder, and tighten the brake hose bolt with new sealing washers.

TORQUE: 14 N·m (1.4 kg-m, 10 ft-lb)

Install the brake panel breather tube to the wheel cylinder securely.



Face the flatter edges of the shoes to the wheel cylinder. Install the brake shoes in their original positions, then install the shoe springs with their curved sides facing out.

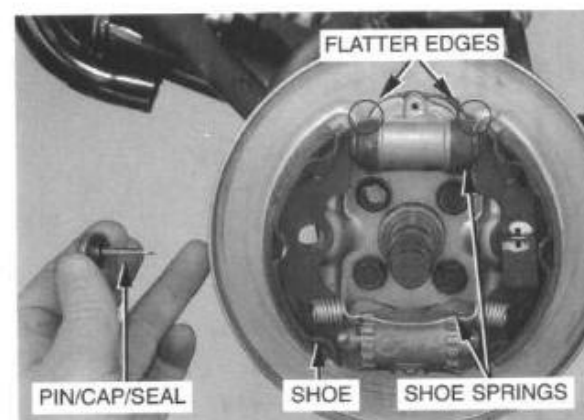
Install the upper spring from the inside; lower spring, from the outside.

Apply oil to the tension pin seals.

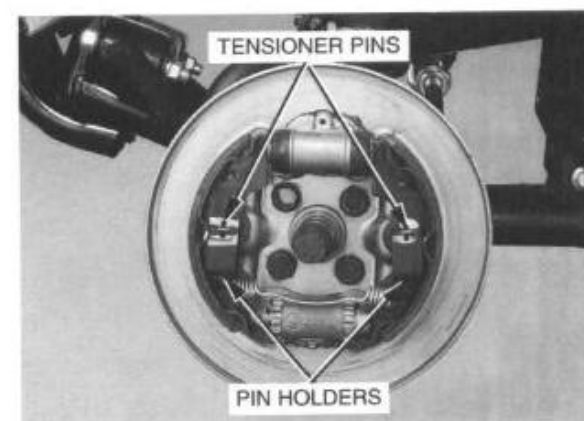
Install the tension pins, tension pin seals and seal caps as shown.

⚠ WARNING

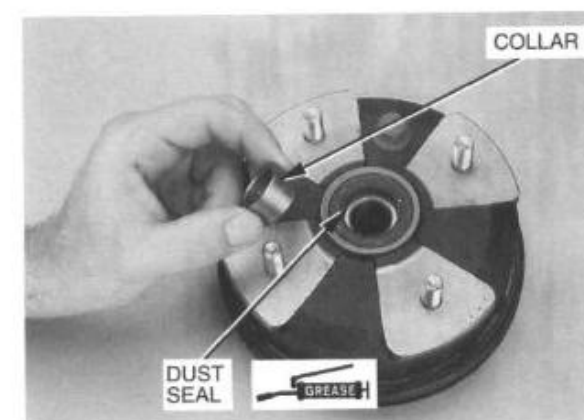
Do not get grease or oil on the brake lining surface.



Install the pin holders as shown and lock them by tensioner pins.



Install the dust seal and apply grease to its lip.
Install the collar.



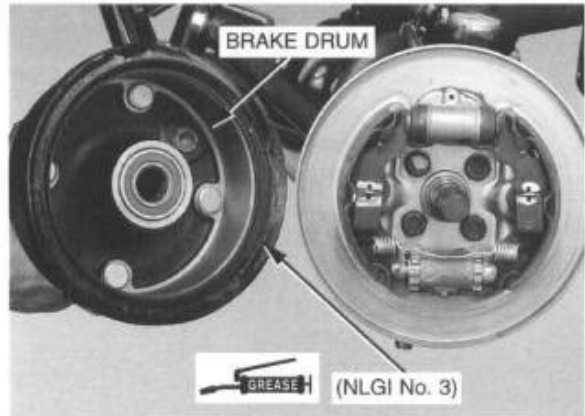
BRAKES

Make sure the inside of the brake drum and the brake shoes are completely free of grease, then install the drum.

NOTE

Make sure the waterproof seal lip is packed with multipurpose grease (NLGI No.3) (see page 12-16).

AMOUNT OF GREASE: 12-14 g (0.4-0.5 oz)



Install and tighten the axle nut.

TORQUE: 60-80 N·m (6.0-8.0 kg-m, 43-58 ft-lb)

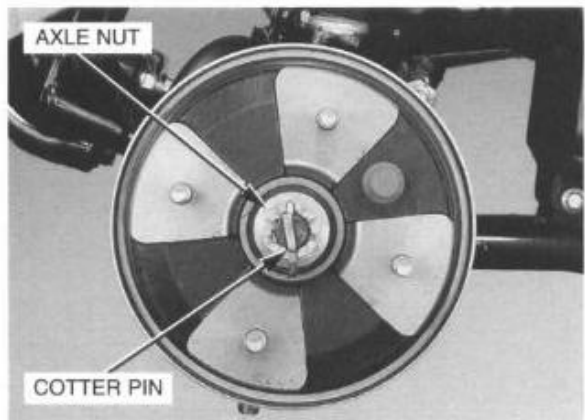
Install a new cotter pin.

Fill the reservoir to the upper level with new brake fluid (page 12-4).

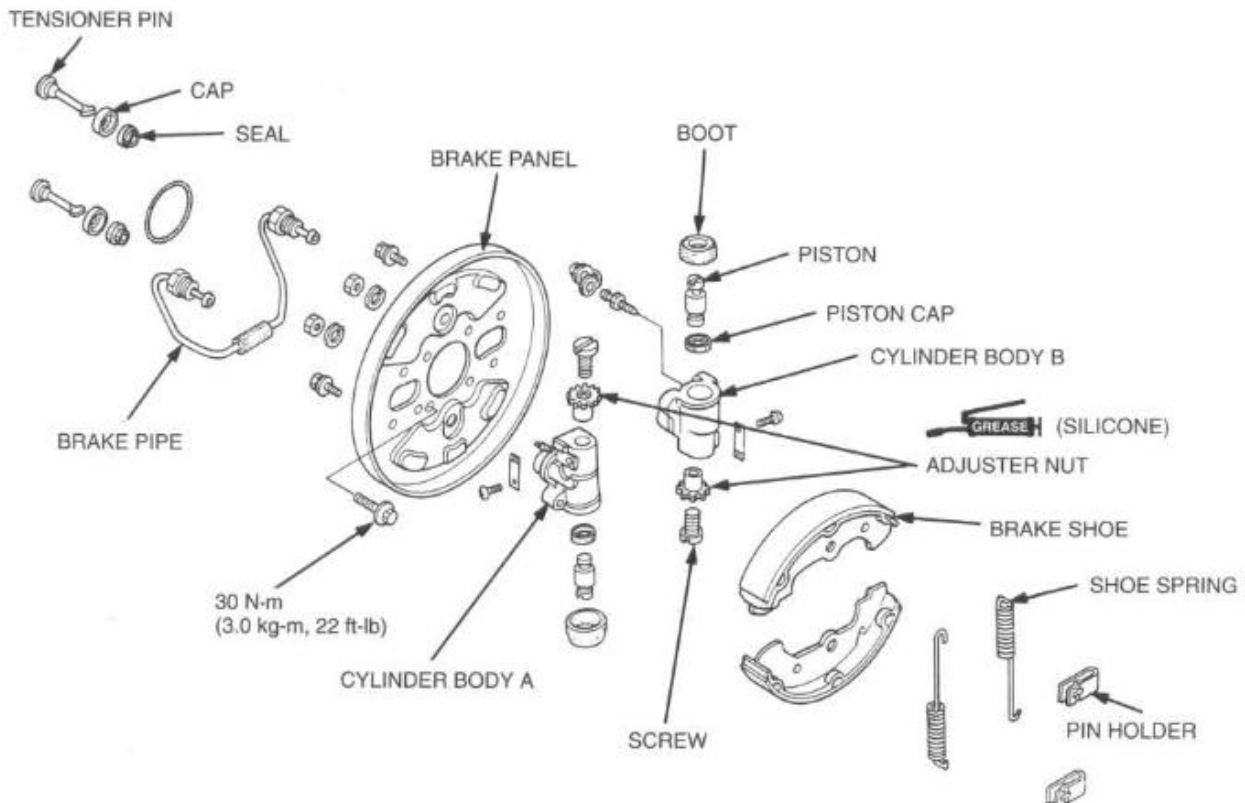
Bleed the brake system (page 12-5).

Install the front wheel (page 11-7).

Adjust the brake (page 3-13).



ASSEMBLY (TRX300FW)



Clean all parts, excluding the boot, thoroughly with BRAKE FLUID only.

Blow out passages with compressed air.

Install the piston into the cylinder body without allowing the lips to turn inside out.

Install the boot on the cylinder body.

Apply silicone grease to the adjuster nut.

Install the adjuster nut, screw and lock spring on the adjuster body.

Apply sealant to the cylinders' mounting locations on the brake panel.

Install the cylinder assembly A and B, and tighten the washers and bolts.

TORQUE:

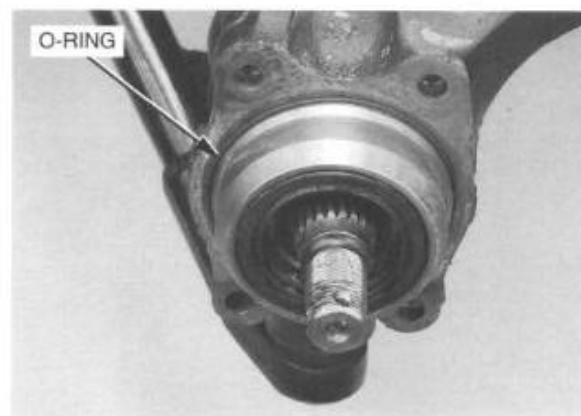
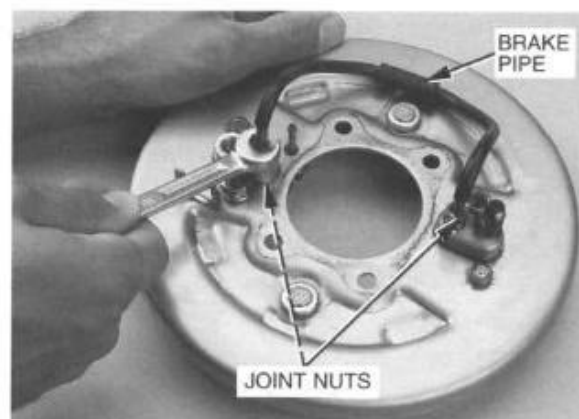
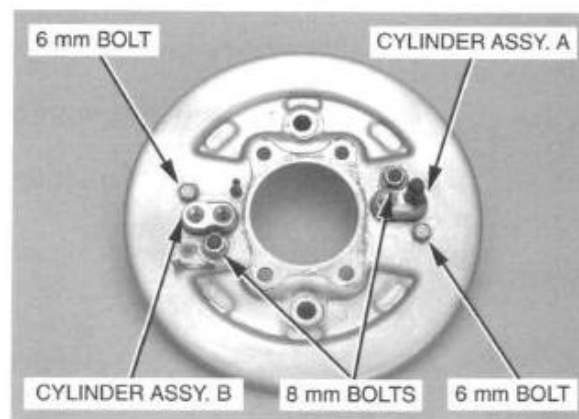
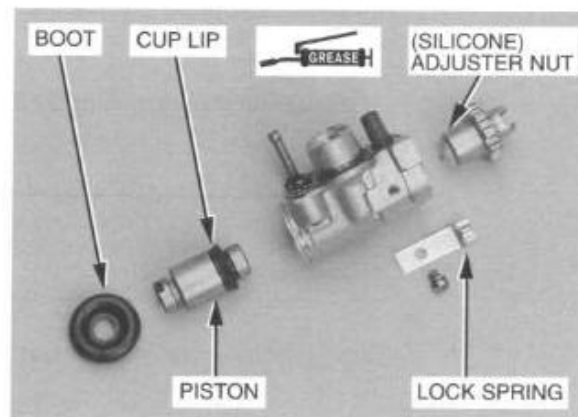
6 mm bolt: 8 N·m (0.8 kg-m, 6 ft-lb)

8 mm bolt: 17 N·m (1.7 kg-m, 12 ft-lb)

Install the brake pipe as shown by tightening the joint nuts.

TORQUE: 14 N·m (1.4 kg-m, 10 ft-lb)

Install an O-ring on the knuckle.



BRAKES

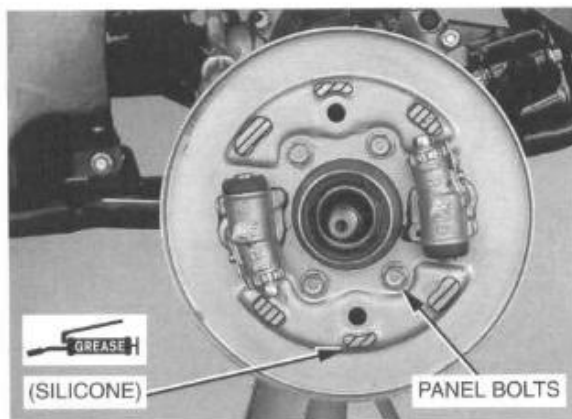
Install the front brake panel assembly and tighten the new brake panel bolts.

TORQUE: 30 N·m (3.0 kg-m, 22 ft-lb)

CAUTION

Discard the used panel bolts. Do not reuse the panel bolts because their threads are specially dry-coated for waterproofing.

Apply silicone grease on the metal contact areas indicated.

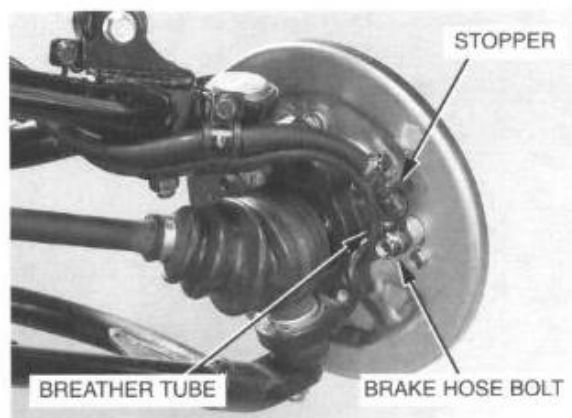


Route the brake hose between the stoppers.

Install the brake hose to the cylinder assembly A and tighten the brake hose bolt with new sealing washers.

TORQUE: 35 N·m (3.5 kg-m, 25 ft-lb)

Securely install the breather tube to the cylinder assembly A.



Face the flatter edges of the shoes to the cylinder.

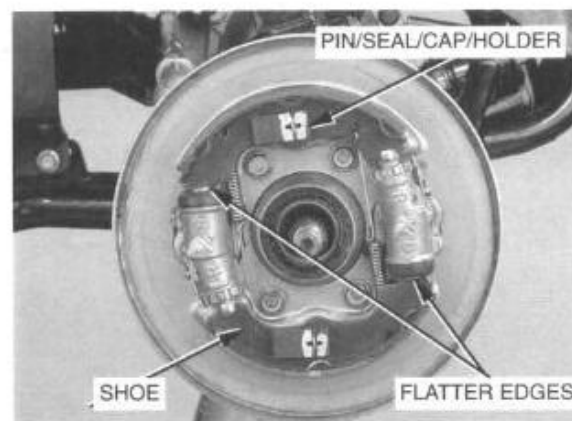
Install the brake shoes in their original positions with the shoe springs as shown.

Apply oil to the tension pin seals.

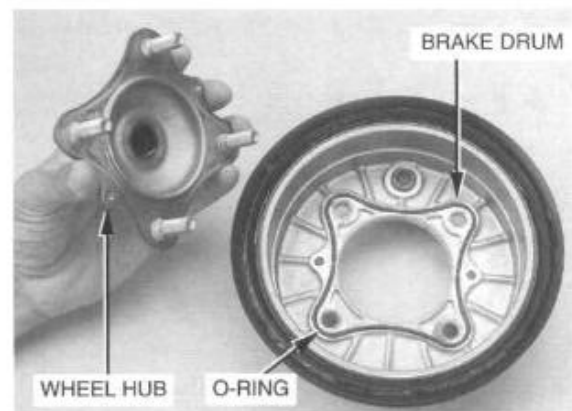
Install the tension pins, tension pin seals, seal caps and pin holders.

▲ WARNING

- Do not get grease on the brake drum or shoes or stopping power will be reduced.
- Discard contaminated shoes and clean a contaminated drum with a high quality brake degreasing agent.



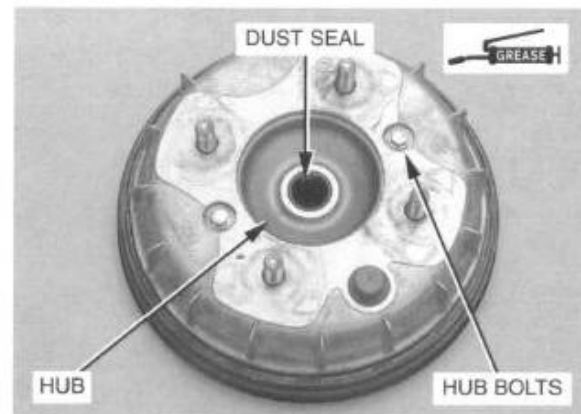
Seat an O-ring carefully in the brake drum, and install the wheel hub to the drum.



Install and tighten the wheel hub mounting bolts.

TORQUE: 10 N·m (1.0 kg-m, 7 ft-lb)

Apply grease to the dust seal and install it in the wheel hub.

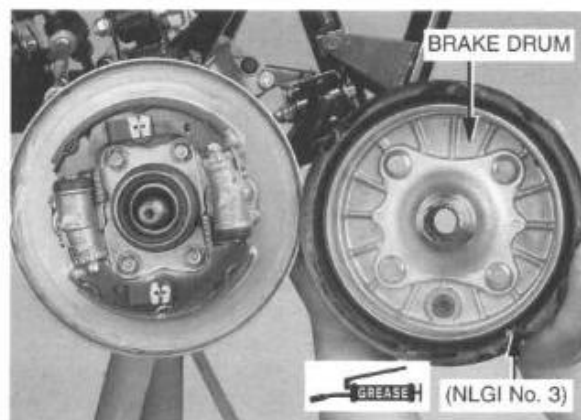


Install the brake drum.

NOTE

- Make sure the waterproof seal lip is packed with multi-purpose grease (NLGI No.3) (see page 12-16).
- **AMOUNT OF GREASE: 14–16 g (0.5–0.6 oz)**

Make sure any grease is cleaned off the inside of the brake drum and brake shoes.



Install and tighten the axle nut.

TORQUE: 80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)

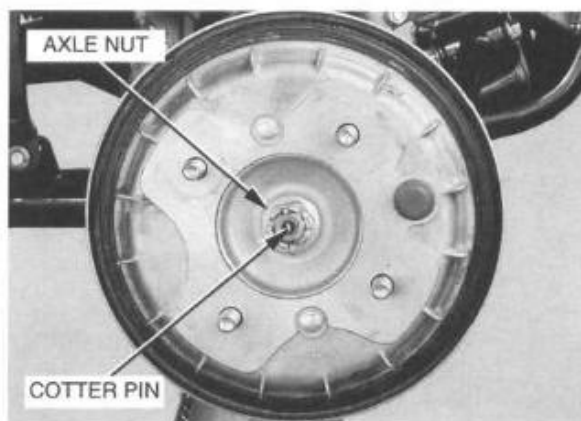
Install a new cotter pin.

Fill the reservoir to the upper level with new brake fluid (page 12-4).

Bleed the brake system (page 12-5).

Install the front wheel (page 11-7).

Adjust the brake (page 3-13).

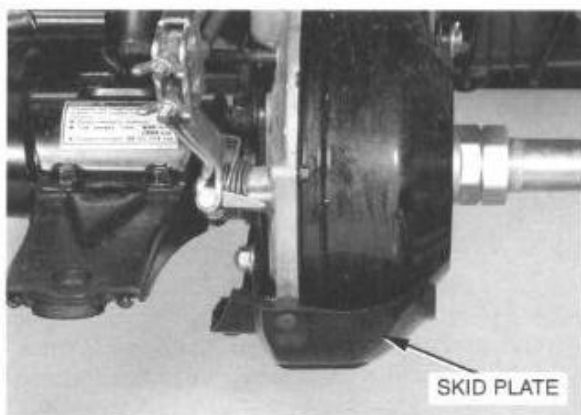


REAR BRAKE

REMOVAL/DISASSEMBLY

Remove the following:

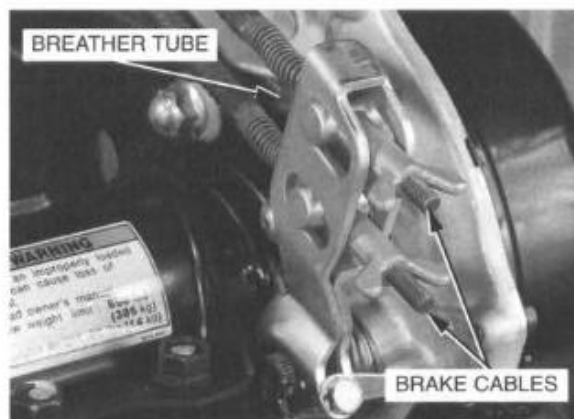
- right rear wheel (page 13-3)
- right wheel hub, lock nuts and lock washer (page 15-3)
- rear brake skid plate



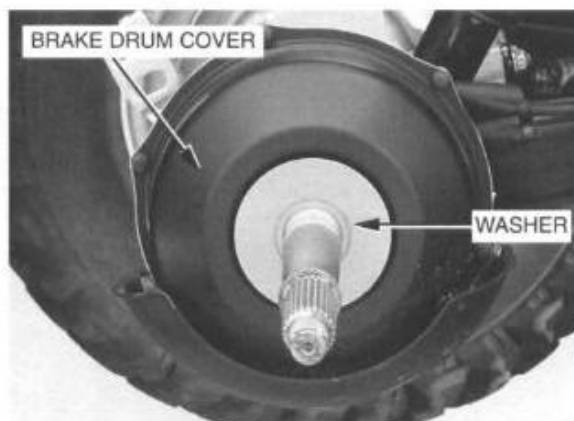
BRAKES

Remove the following:

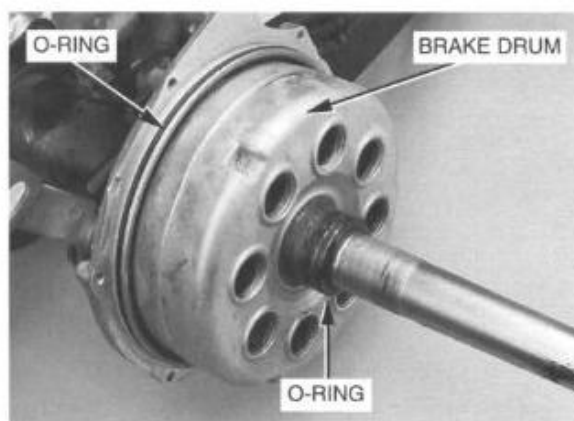
- brake cables from the brake arm
- rear brake breather tube



- washer and brake drum cover

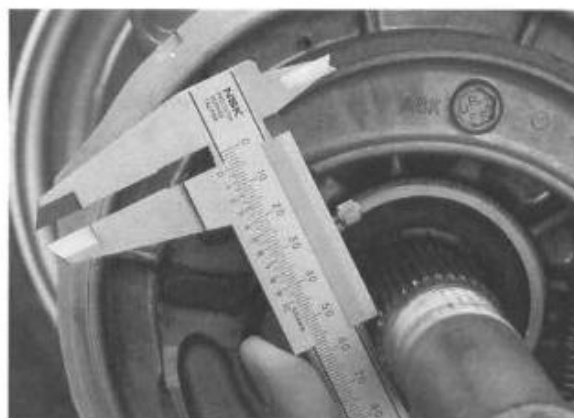


- O-rings and brake drum from the rear axle



Measure the brake lining thickness.

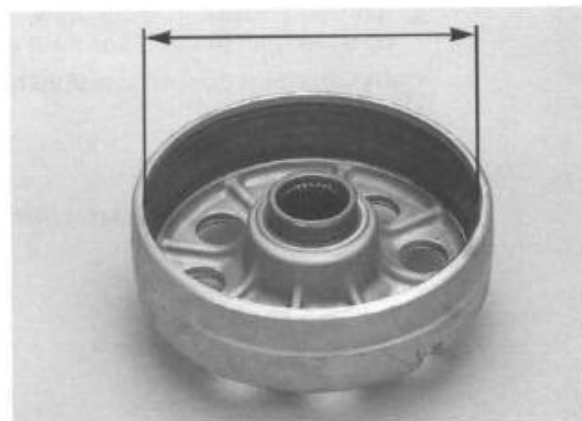
SERVICE LIMIT: 2.0 mm (0.08 in)



Measure the brake drum I.D.

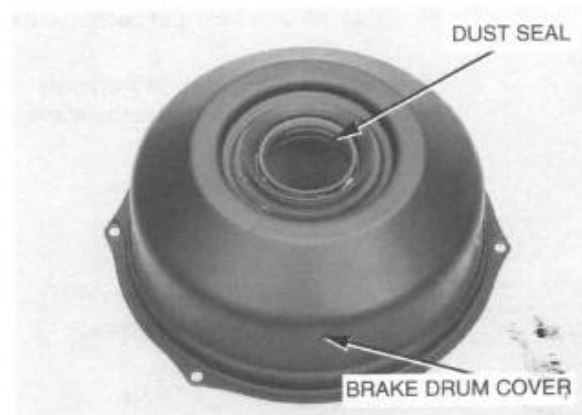
SERVICE LIMIT: 161 mm (6.3 in)

Inspect the brake drum for scoring, cracks and out of roundness.



Check the brake drum cover dust seal for wear or damage. Drive it out of the drum cover if necessary.

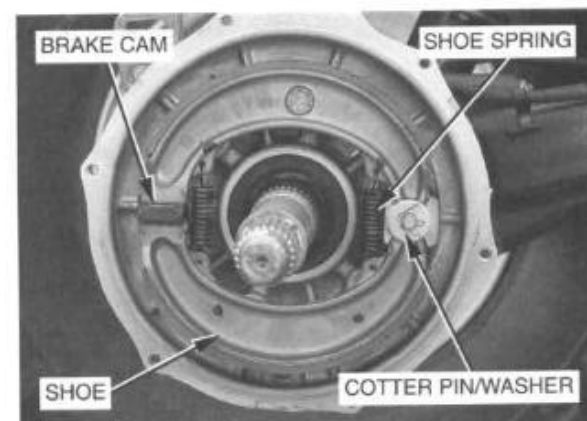
For the installation of the dust seal, see page 12-28.



Remove the following:

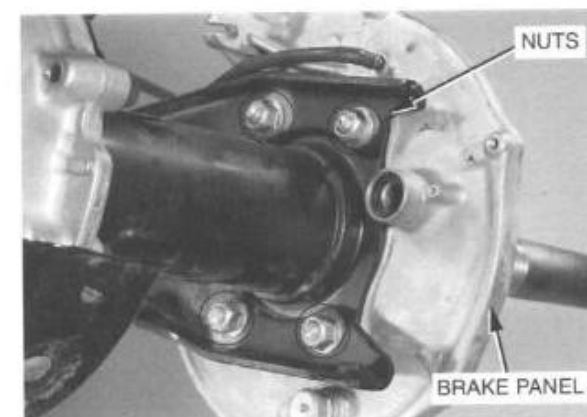
- cotter pin
- washer
- brake shoes and shoe springs
- brake arm, brake cam, felt seal and dust seal

Mark the brake shoes to indicate their original positions.



Remove the brake panel and O-ring.

Discard the brake panel nuts.



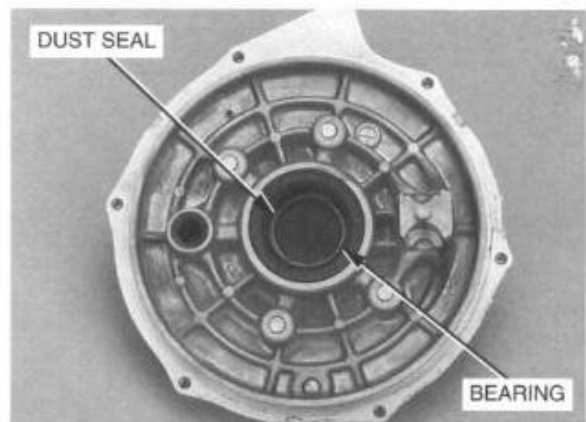
BRAKES

Turn the inner race of the bearing with your finger. The bearing should turn smoothly and quietly.

Also check that the outer race of the bearing fits tightly in the brake panel.

Replace if necessary.

Check the dust seal for wear or damage.



Drive the dust seal and bearing out of the brake panel.

Mark the attachment at the specified point as shown and drive in a new bearing to the marked point with its BLACK sealed side facing up.

TOOLS:

Driver

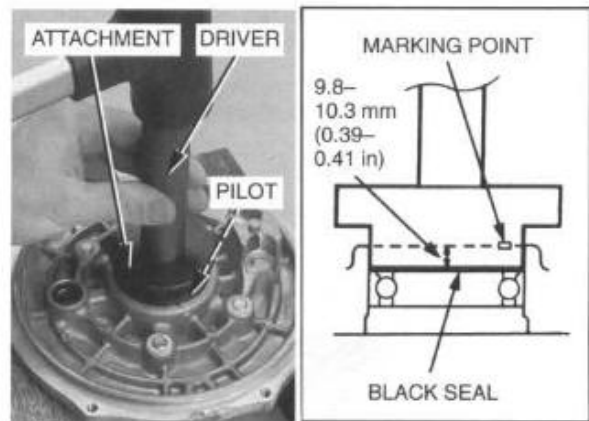
07749-0010000

Attachment, 62 x 68 mm

07746-0010500

Pilot, 35 mm

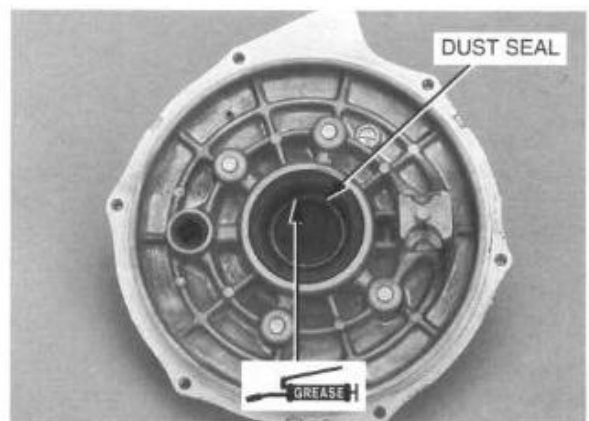
07746-0040800



ASSEMBLY/INSTALLATION

Pack the dust seal lip with grease and install it in the panel with the lip facing down.

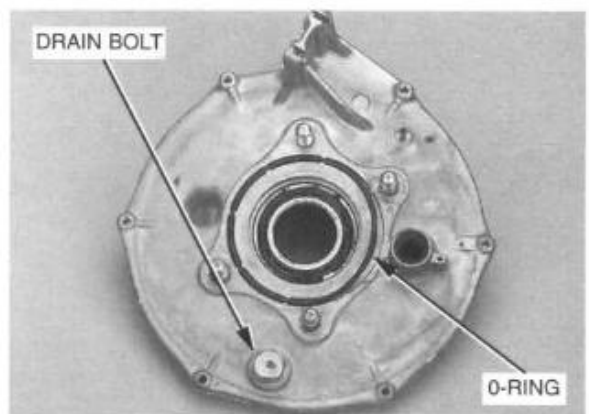
Align the upper surfaces of the dust seal and brake panel.



Install an O-ring in the brake panel securely.

Tighten the brake panel drain bolt if removed.

TORQUE: 25 N·m (2.5 kg·m, 18 ft·lb)



Install the brake panel and tighten the new nuts.
Do not reuse the nuts.

TORQUE: 35 N·m (3.5 kg·m, 25 ft·lb)

If necessary, loosen the rear final drive case nuts, install the brake panel nuts, and re-tighten the final drive case nuts (page 15-15).

Apply grease to the dust seals.

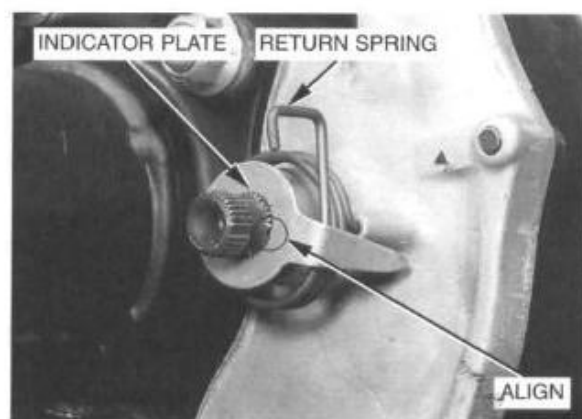
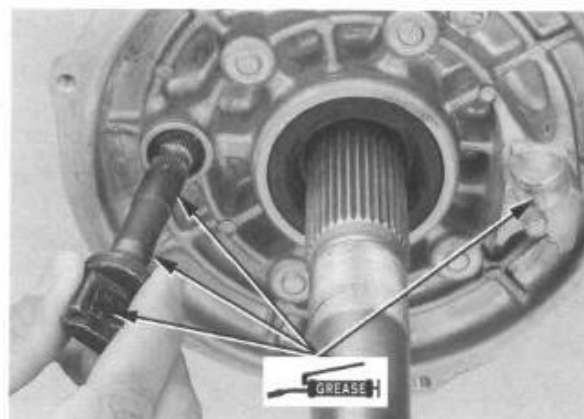
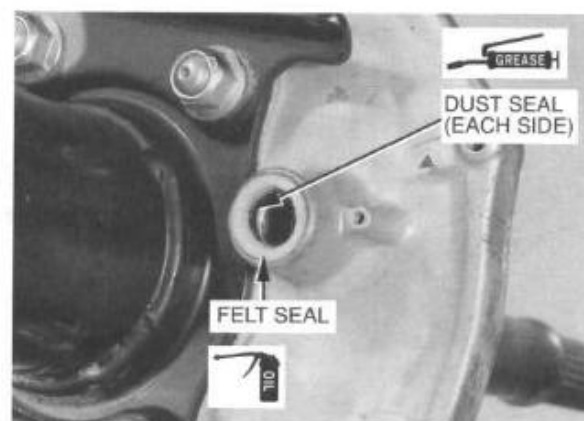
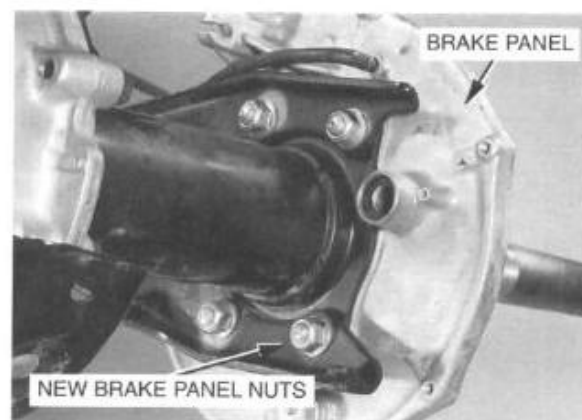
Apply oil to the felt seal.

Install the dust seals and felt seal.

Apply grease to the anchor pin and brake cam.

Install the brake cam from the right side.

Install the return spring and then install the indicator plate, aligning the wide tooth on the plate with the wide groove on the brake cam.

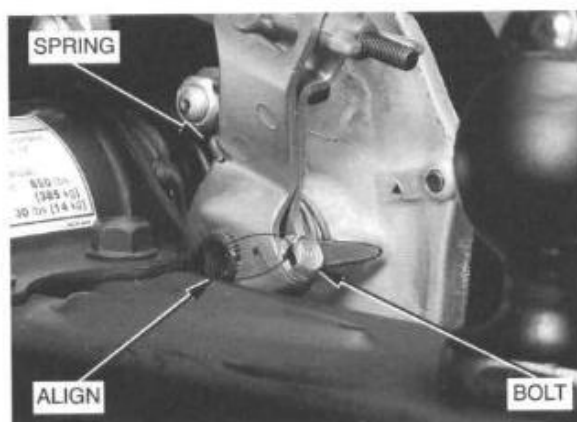


BRAKES

Install the brake arm, aligning the punch marks on the brake arm and cam.

Hook the return spring end onto the brake arm.

Tighten the brake arm bolt securely.

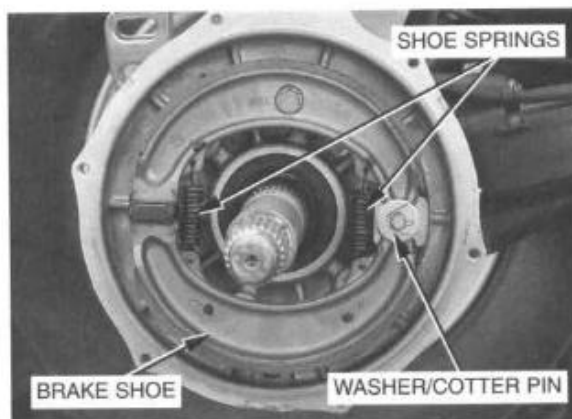


Install the brake shoes in their original positions with the springs as shown.

▲ WARNING

Contaminated brake linings reduce stopping power. Keep grease off the linings. Wipe excess grease off the cam.

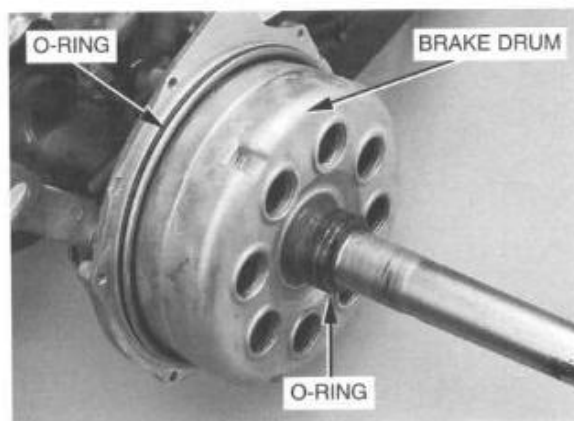
Install the anchor pin washer and new cotter pin as shown.



Apply grease to the brake drum splines.

Install the brake drum and a new O-ring onto the brake panel.

Install a new O-ring onto the brake drum.



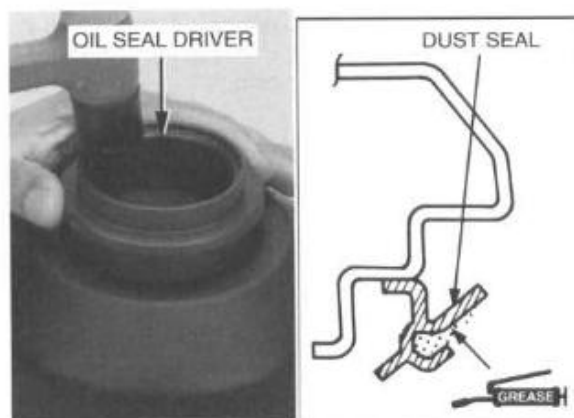
Install a new dust seal into the drum cover.

TOOL:

Oil seal driver

07965-MC70100

Apply grease to the brake drum cover dust seal lip as shown.



Install the drum cover and bolts.

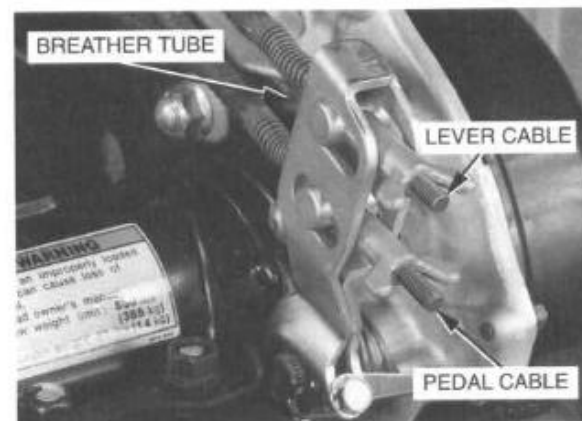
Install the washer.



Connect the brake cables to the brake arm and install the adjusting nuts.

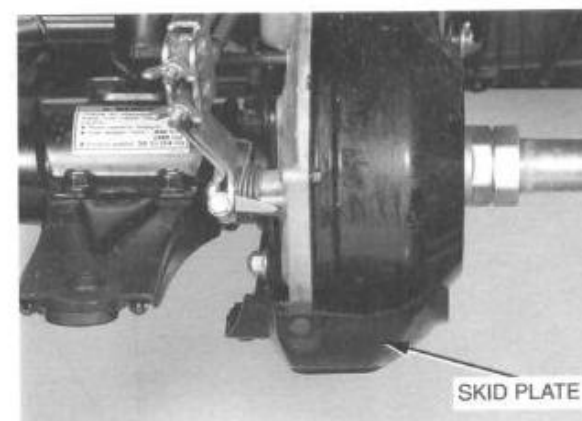
Connect the breather tube to the brake panel.

Adjust the rear brake lever and pedal free play (page 3-11).



Install the following:

- skid plate
- washer, lock nuts and right wheel hub (page 15-16)
- right rear wheel (page 13-3)



REAR BRAKE PEDAL REMOVAL

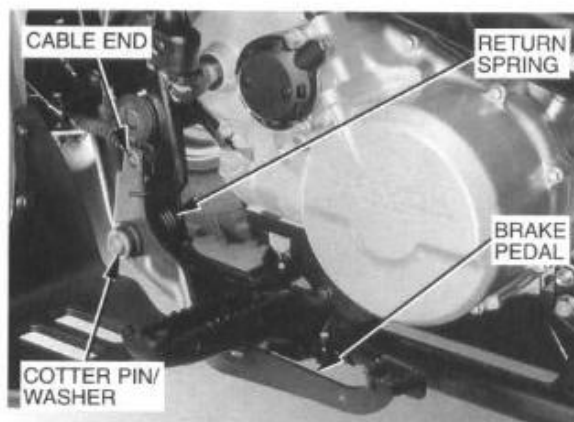
Loosen and remove the rear brake pedal adjusting nut.



BRAKES

Remove the cotter pin and washer from the pedal pivot shaft.

Disconnect the brake cable and return spring from the pedal and remove the pedal from the shaft.

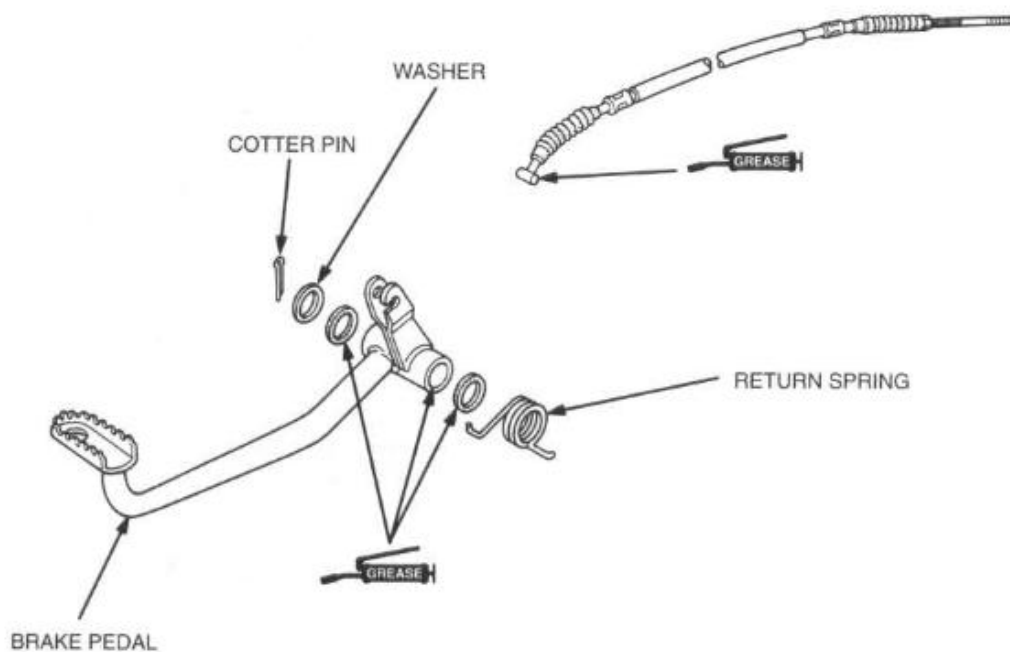
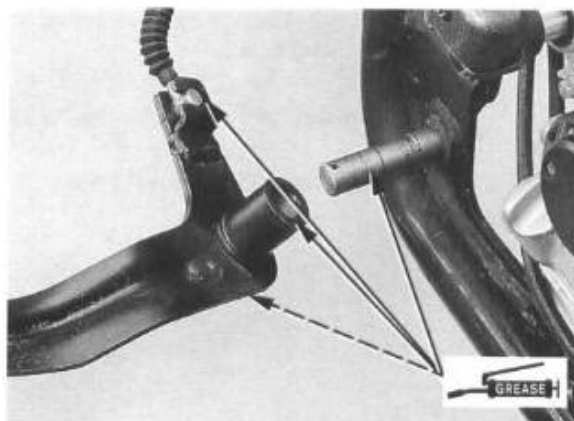


INSTALLATION

Apply grease to the brake pedal pivot shaft, dust seals and brake cable end.

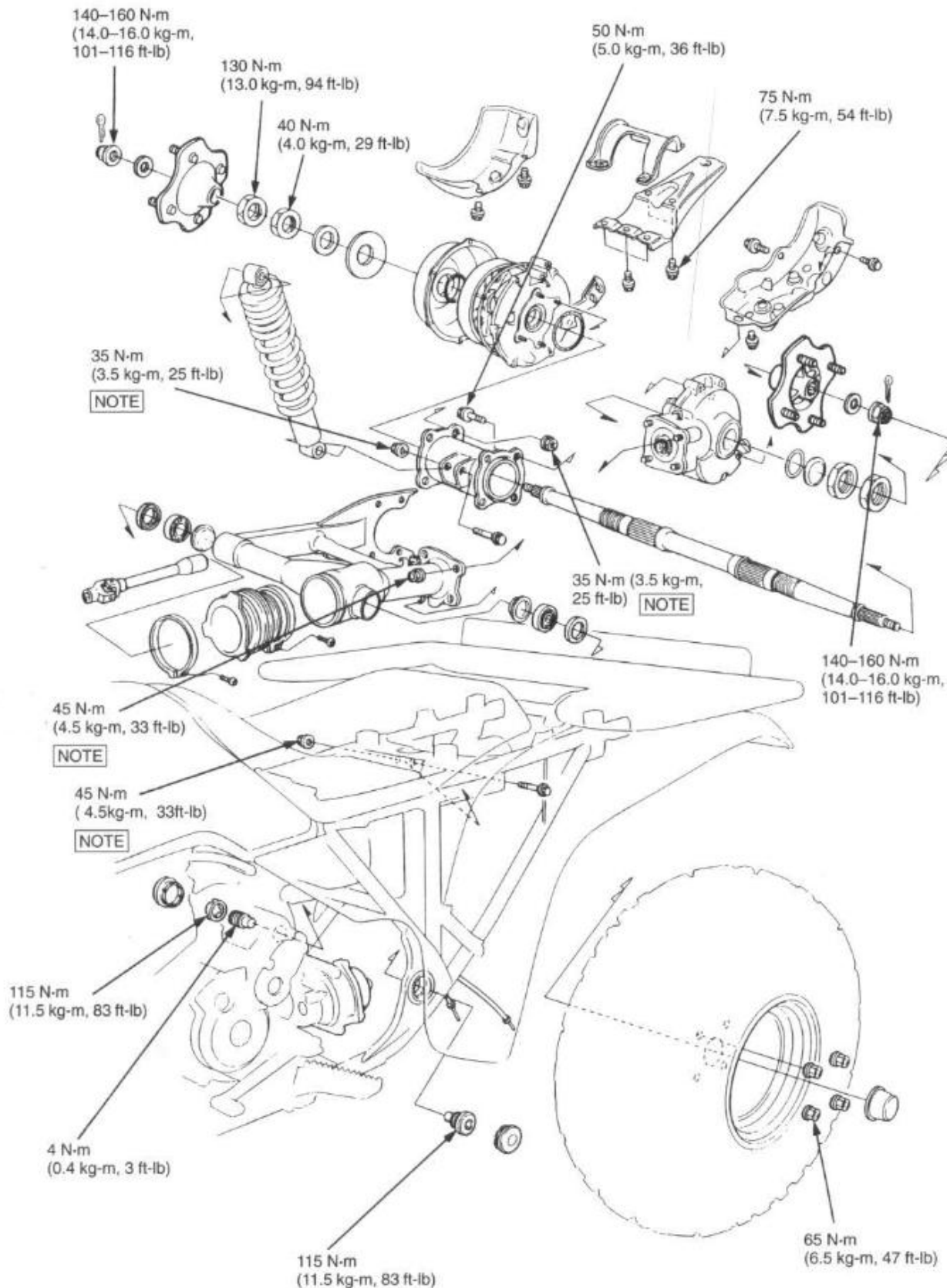
Install the brake pedal in the reverse order of removal.

Adjust the rear brake (page 3-13).



MEMO

REAR WHEEL/SUSPENSION



NOTE Re-use is strictly prohibited.

13. REAR WHEEL/SUSPENSION

SERVICE INFORMATION	13-1	TIRES	13-3
TROUBLESHOOTING	13-2	REAR SHOCK ABSORBER	13-7
REAR WHEEL	13-3	SWINGARM	13-9

SERVICE INFORMATION

GENERAL

▲ WARNING

Inhaled asbestos fibers have been found to cause respiratory disease and cancer. Never use an air hose or dry brush to clean brake or clutch assemblies. Use an OSHA-approved vacuum cleaner or alternate method approved by OSHA designed to minimize the hazard caused by airborne asbestos fibers.

- This section covers maintenance of the rear wheels, suspension and drive shaft.
- A jack or block is required to support the vehicle.

SPECIFICATIONS

Unit: mm (in)

	ITEM	STANDARD	SERVICE LIMIT
Rear shock absorber spring free length	TRX300	241.6 (9.51)	236.7 (9.32)
	TRX300FW	243.3 (9.58)	238.4 (9.39)

Tire pressure:

		Standard	Minimum	Maximum
TRX300 (Front/Rear)		2.9 psi (0.20 kg/cm ² , 20 kPa)	2.5 psi (0.17 kg/cm ² , 17 kPa)	3.3 psi (0.23 kg/cm ² , 23 kPa)
TRX300FW	Front	4.4 psi (0.30 kg/cm ² , 30 kPa)	3.8 psi (0.26 kg/cm ² , 26 kPa)	5.0 psi (0.34 kg/cm ² , 34 kPa)
	Rear	2.9 psi (0.20 kg/cm ² , 20 kPa)	2.5 psi (0.17 kg/cm ² , 17 kPa)	3.3 psi (0.23 kg/cm ² , 23 kPa)

TORQUE VALUES

Rear wheel nut	65 N·m (6.5 kg-m, 47 ft-lb)
Rear shock absorber mount nut (upper/lower)	45 N·m (4.5 kg-m, 33 ft-lb) – Do not re-use the nuts.
Swing arm left pivot bolt	115 N·m (11.5 kg-m, 83 ft-lb)
Swing arm right pivot bolt	4 N·m (0.4 kg-m, 3 ft-lb)
Swing arm right pivot lock nut	115 N·m (11.5 kg-m, 83 ft-lb)
Trailer hitch bolt	75 N·m (7.5 kg-m, 54 ft-lb) – Apply locking agent to the threads.

REAR WHEEL/SUSPENSION

TOOLS

Special

Replacement kit	07959-MB10000
Swingarm lock nut wrench	07908-469000A
Bearing remover, 17 mm	07936-3710300
Remover handle	07936-3710100
Remover weight	07936-3710200

Common

Driver	07749-0010000
Attachment, 37 x 40 mm	07746-0010200
Shock absorber compressor	07959-3290001
Universal bead breaker	GN-AH-958-BB1

TROUBLESHOOTING

Wobble or vibration in vehicle

- Bent rim
- Loose brake panel bearing
- Faulty tire
- Axle not tightened properly
- Swingarm bearings worn

Soft suspension

- Weak spring

Hard suspension

- Bent shock absorber
- Improperly tightened swingarm pivot
- Faulty pivot bearing

Suspension noise

- Rear shock absorber damper binding
- Loose fasteners

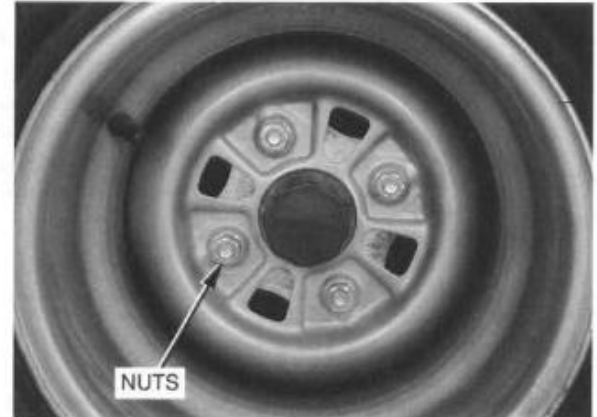
REAR WHEEL

REMOVAL

Loosen the wheel nuts.

Raise the rear wheels off the ground with a jack or block under the engine.

Remove the wheel nuts and wheel.



INSTALLATION

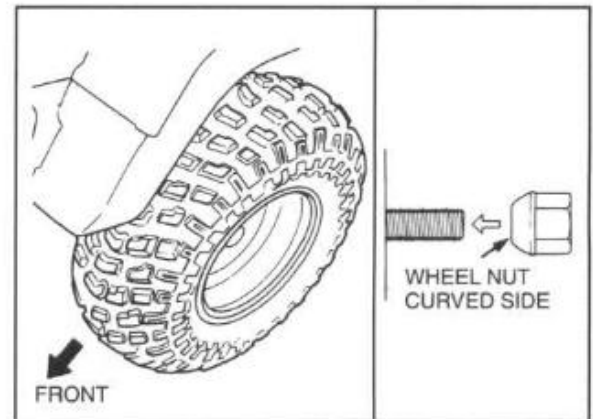
Install the rear wheel with the tire valve facing out so that the tires show a "V" pattern when viewed from front.

NOTE

Do not interchange the right and left tires.

Install the wheel nuts with the curved sides facing inward and tighten to the specified torque.

TORQUE: 65 N-m (6.5 kg-m, 47 ft-lb)



TIRES

REMOVAL

NOTE

- This service requires the Universal Bead Breaker (GN-AH-958-BB1).
- Remove and install tires from the rim side opposite the valve stem.

Remove the core from the valve stem.

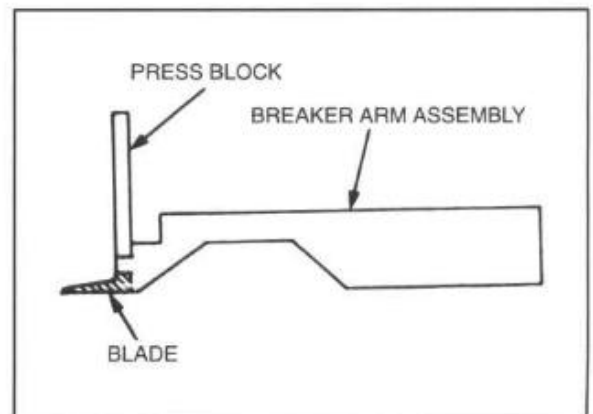
CAUTION

- Use of the Bead Breaker tool is required for tire removal.
- Do not damage the bead seating area of the rim.
- Use a Coats 220 Tire Changer or equivalent to remove the tire from the rim. If a tire changer is not available, rim protectors and tire irons may be used.

Install the blade for 9"/11" rims onto the breaker arm assembly.

CAUTION

Use of an improper size blade may result in damage to the rim, tire or blade.



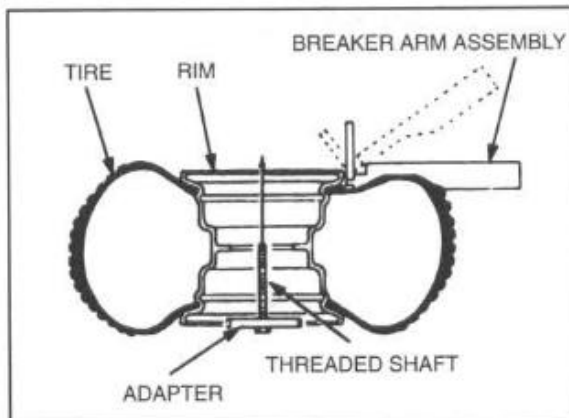
REAR WHEEL/SUSPENSION

Place the proper size adapter onto the threaded shaft and then put the wheel over the threaded shaft and adapter.

Lube the bead area with water, pressing down on the tire sidewall/bead area in several places to allow the water to run into and around the bead. Also lube the area where the breaker arm will contact the sidewall of the tire.

▲ WARNING

Use only water as a lubricant when removing or mounting tires. Soap or some mounting lubricants may leave a slippery residue which can cause the tire to shift on the rim and lose air pressure during riding.

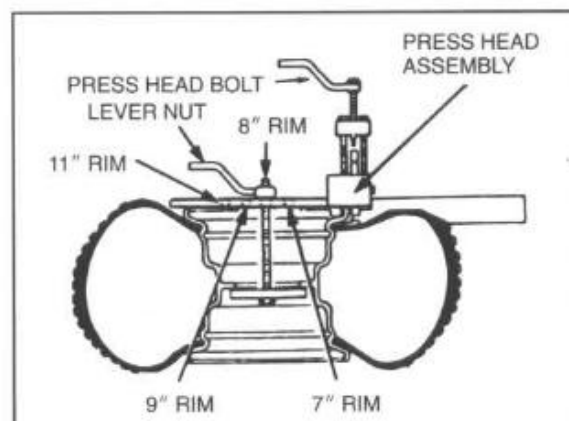


While holding the breaker arm assembly at an approximate 45° position, insert the blade of the breaker arm between the tire and rim. Push the breaker arm inward and downward until it is in the horizontal position with its press block in contact with the rim.

With the breaker arm in the horizontal position, place the breaker press head assembly over the breaker arm press block. Make sure the press head bolt is backed out all the way and then position the nylon buttons on the press head against the inside edge of the rim.

Insert the threaded shaft through the appropriate hole in the breaker press head assembly and then tighten the lever nut until both ends of the breaker press head assembly are in firm contact with the rim.

Tighten the press head bolt until the reference mark on the press block is aligned with the top edge of the press head.



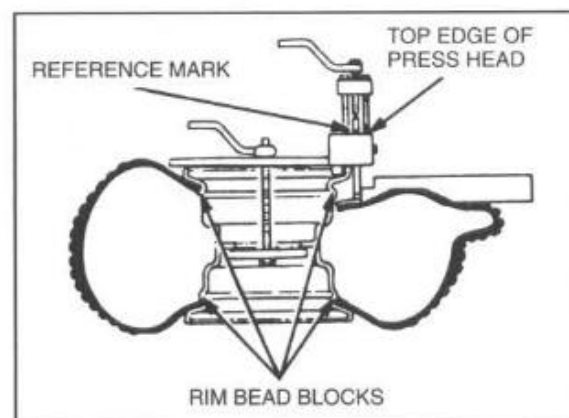
If the rest of the bead cannot be pushed down into the center of the rim by hand, loosen the press head bolt and the lever nut. Rotate the breaker arm assembly and breaker press head assembly 1/8 to 1/4 the circumference of the rim. Tighten the lever nut and then tighten the press head bolt as described.

Repeat this procedure as necessary until the remainder of the bead can be pushed down into the center of the rim.

Assemble the Universal Bead Breaker on the other side of the wheel and break the bead following the same procedures.

Remove the tire from the rim using a tire changer machine or tire irons and rim protectors.

Remove tire from rim that has the smallest shoulder area to simplify removal.



TIRE REPAIR

NOTE

Use the manufacturer's instructions for the tire repair kit you are using. If your kit does not have instructions, use the procedures provided here.

Check the tire for puncturing objects. Chalk mark the punctured area and remove the puncturing object.

Inspect and measure the injury. Tire repairs for injuries larger than 15 mm (5/8 in) should be a section repair. Section repairs should be done by a professional tire repair shop.

If the injury is smaller than 15 mm (5/8 in), proceed with the repair as described here.

Install a rubber plug into the injury as follows:

Apply cement to a plug inserting needle and work the needle into the injury to clean and lubricate it. Do this three times. Do not let the cement dry.

Insert and center a rubber plug through the eye of the inserting needle.

Apply cement to the rubber plug.

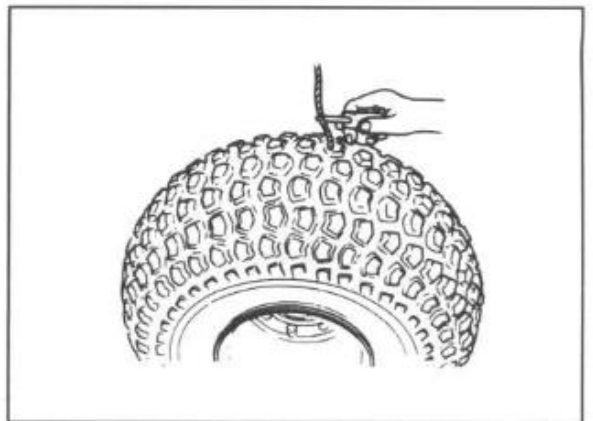
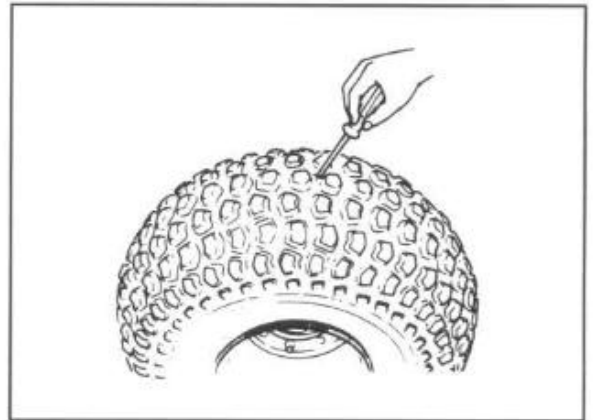
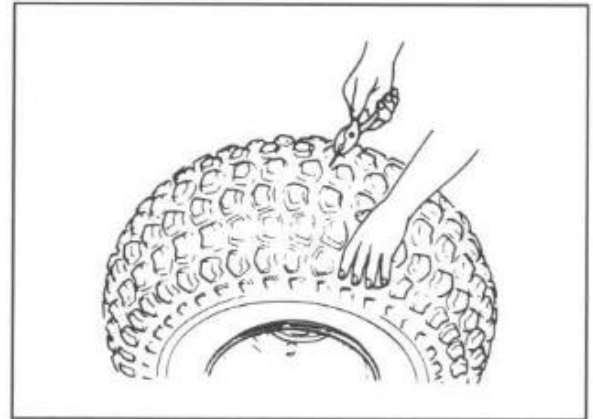
Be careful not to push the plug all the way into the tire to prevent it from falling inside.

Push the inserting needle with plug into the injury until the plug is slightly above the tire. Twist the needle and remove it from the tire; the plug will stay in the tire.

Trim the plug 6 mm (1/4 in) above the tire surface.

Repeat the above procedure if the puncture is large.

Do not use more than two plugs per injury.



REAR WHEEL/SUSPENSION

Allow the repair to dry. Drying time will vary with air temperature. Refer to the tire repair kit manufacturer's recommendations.

Inflate the tire and test the seal by dabbing a small amount of cement around the plug. Escaping air will cause a bubble in the cement. If there is leakage, remove the tire (page 13-3) and apply a cold patch to the inside of the tire as described.

If a plug has been inserted, trim it even with the inner tire surface.

Temporarily place a rubber patch that is at least twice the size of the puncture over the injury. Make a mark around the patch, slightly larger than the patch itself.

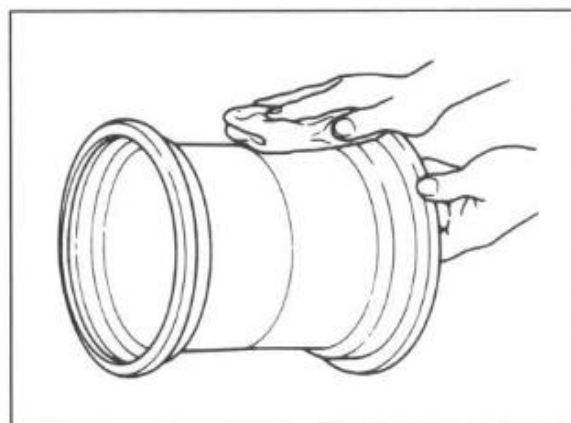
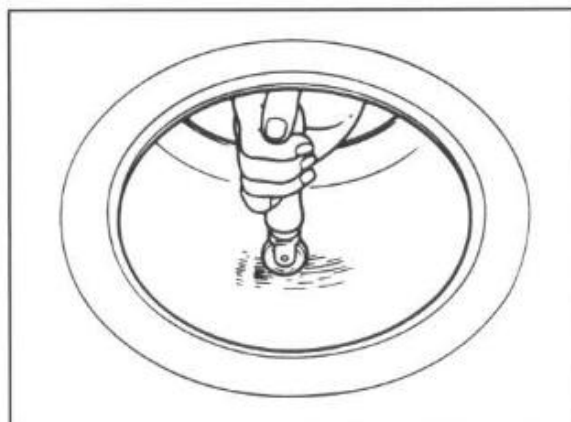
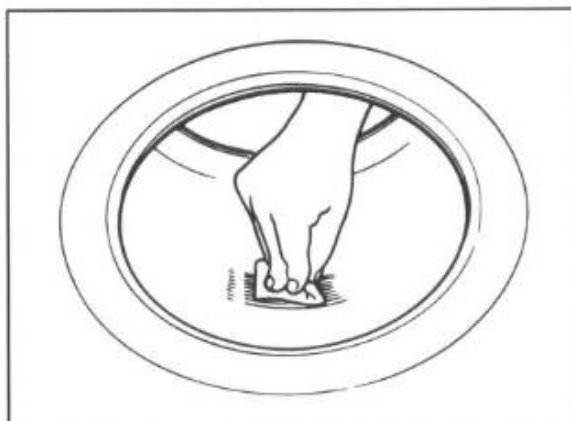
Remove the patch.

Roughen the area marked inside the tire with a tire buffer or a wire brush. Clean the rubber dust from the buffed area.

Apply cement over the area marked and allow it to dry. Remove the lining from the patch and center it over the injury. Press the patch against the injury using a special roller.

NOTE

- Allow cement to dry until tacky before applying patch.
- Do not touch the cement with dirty or greasy hands.



ASSEMBLY

Install the tire onto the rim, where the rim shoulder width is the narrowest, to simplify installation.

Clean the rim bead seat and flanges.

Apply clean water to the rim flanges, bead seat and base.

▲ WARNING

Use only water as a lubricant when mounting tires. Soap or some mounting lubricants may leave a slippery residue which can cause the tire to shift on the rim and lose air pressure during riding.

Install the valve core in the valve stem.

Install the tire and inflate it to seat the tire bead.

Deflate the tire. Wait 1 hour and inflate the tire to the specified pressure.

TIRE PRESSURE:

Unit: psi (kg/cm², kPa)

	TRX300 (Front/Rear)	TRX300FW	
		Front	Rear
Standard	2.9 (0.20, 20)	4.4 (0.30, 30)	2.9 (0.20, 20)
Minimum	2.5 (0.17, 17)	3.8 (0.26, 26)	2.5 (0.17, 17)
Maximum	3.3 (0.23, 23)	5.0 (0.34, 34)	3.3 (0.23, 23)

Check for air leaks and install the valve cap.

REAR SHOCK ABSORBER

REMOVAL

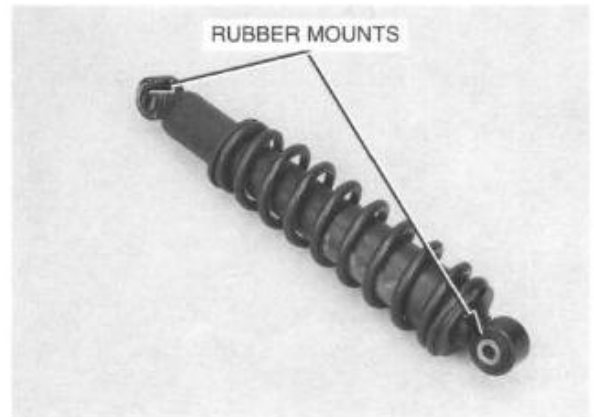
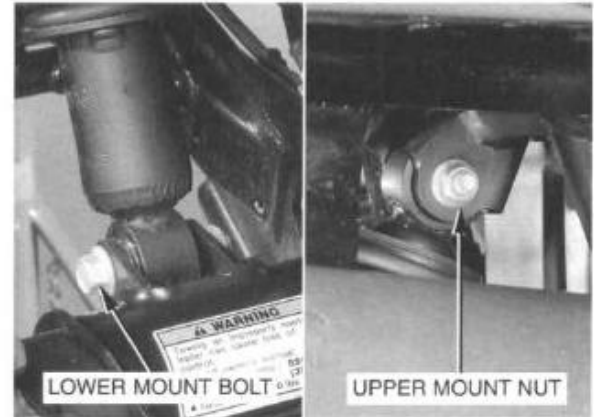
Raise the rear wheels off the ground by placing a jack or block under the engine.

Remove the rear shock absorber lower mount nut and bolt.

Remove the rear shock absorber upper mount nut and remove the shock absorber.

Discard the nuts.

Check the upper and lower rubber mounts for damage or fatigue.



DISASSEMBLY

Compress the rear shock absorber with the shock compressor and base.

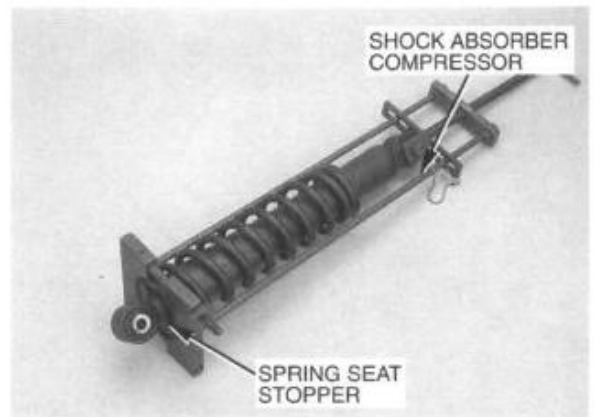
CAUTION

Be sure the base is adjusted correctly for the shock spring seat and the clevis pin is all the way in.

TOOLS:

Shock absorber compressor	07GME-0010000 or 07959 - 3290001 and 07GME-0010100
Replacement kit	07959-MB10000

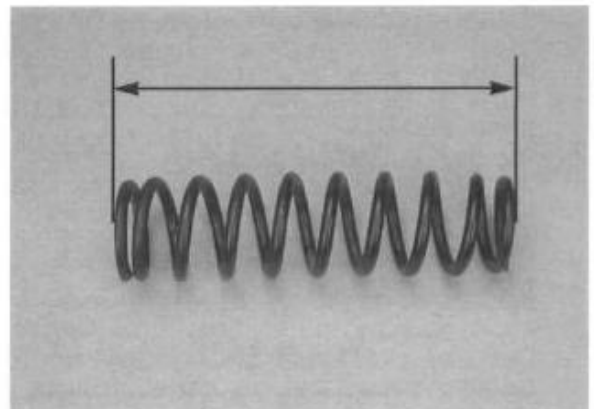
Remove the spring seat stopper and disassemble the shock absorber.



INSPECTION

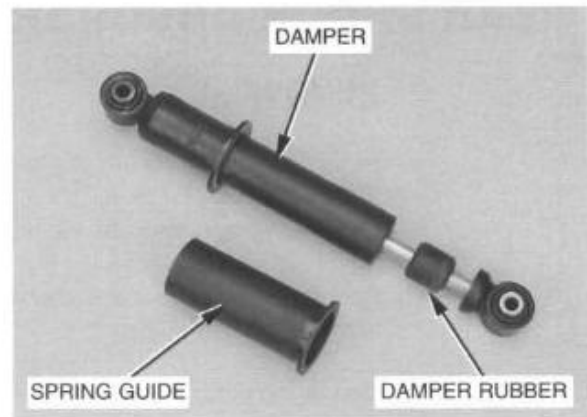
Measure the rear shock absorber spring free length.

SERVICE LIMIT: (TRX300) 248.8 mm (9.80 in)
(TRX300FW) 250.4 mm (9.86 in)

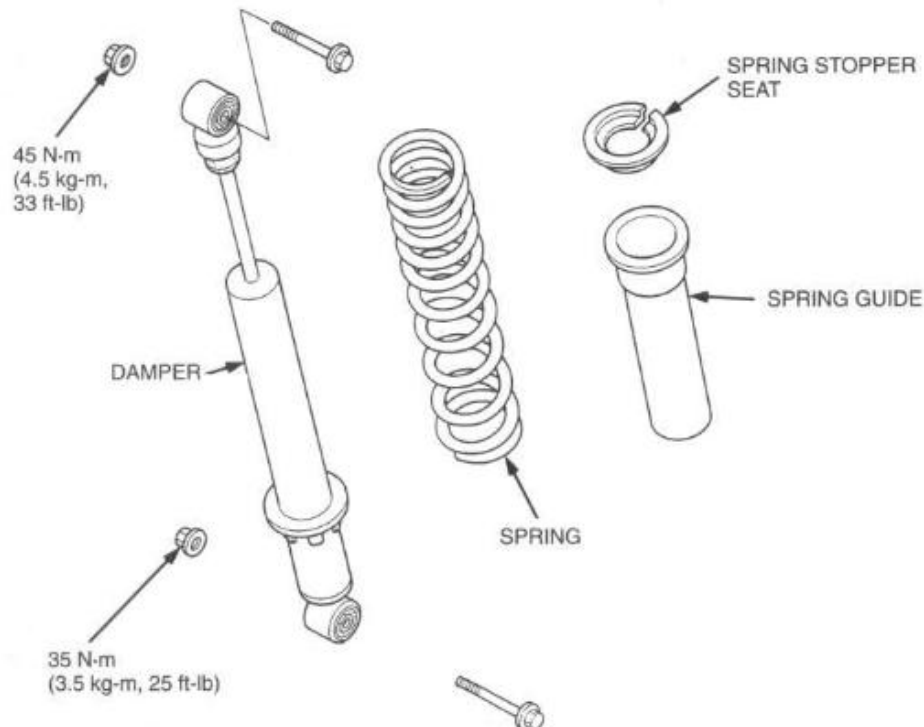


REAR WHEEL/SUSPENSION

Check the rear damper for signs of damage or oil leakage.
Check the rod for straightness and smooth operation.
Check the damper rubber and spring guide for wear or damage.



ASSEMBLY



Install the spring with its tightly wound coils facing the upper mount.

Install the spring guide, then compress the rear shock absorber with the shock compressor and base.

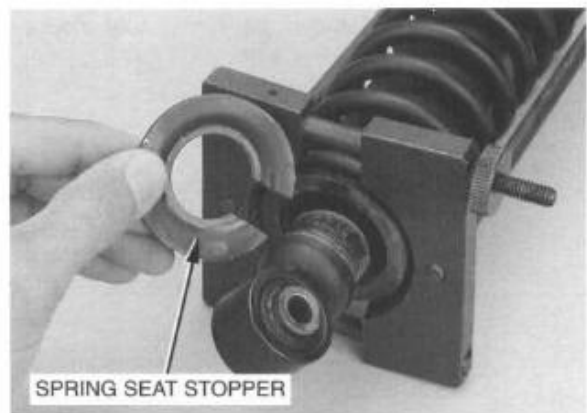
CAUTION

Be sure the base is adjusted correctly for the shock spring seat and the clevis pin is all the way in.

TOOLS:

Shock absorber compressor	07GME-0010000 or 07959-3290001 and 07GME-0010100
Replacement kit	07959-MB10000

Install the spring seat stopper and remove the tools.



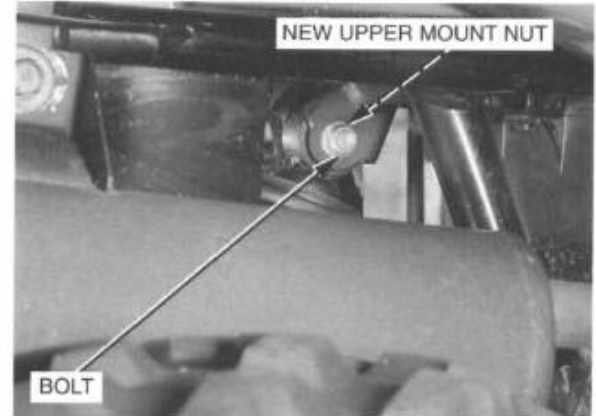
INSTALLATION

Position the rear shock absorber into the frame, and insert the upper mount bolt from the left.

Install and tighten the new upper mount nut.

Do not reuse the nut.

TORQUE: 45 N·m (4.5 kg-m, 33 ft-lb)



Insert the lower mount bolt from the left.

Install and tighten the new lower mount nut.

Do not reuse the nut.

TORQUE: 45 N·m (4.5 kg-m, 33 ft-lb)



SWINGARM

REMOVAL

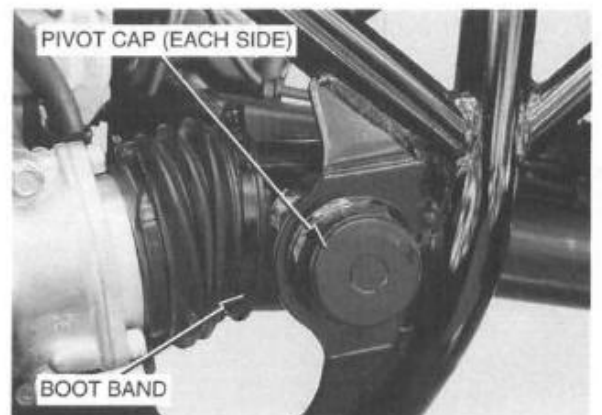
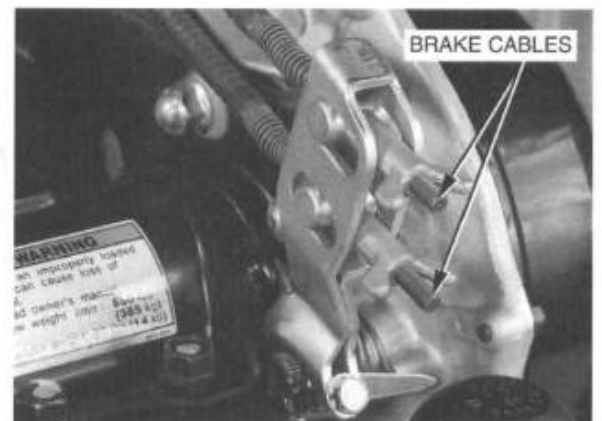
Remove the following:

- rear brake cables
- rear shock absorber lower mount bolt (page 13-8)

NOTE

To service the pivot bearings, dust seals, drive shaft or boot, you do not have to remove the brake, axle and final drive; go to next step.

- rear wheels (page 13-3)
- rear brake panel nuts (page 12-25)
- rear axle with rear brake assembly (page 15-3)
- axle housing and final drive (page 15-4)
- swingarm pivot cap (each side)
- swingarm boot and band (loosen)

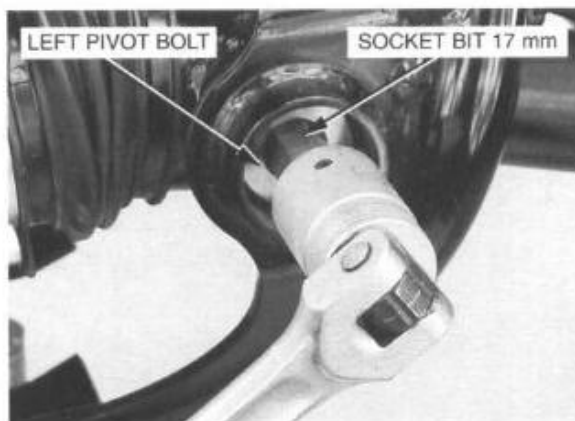


REAR WHEEL/SUSPENSION

Remove the left pivot bolt.

TOOL:
Socket bit, 17 mm

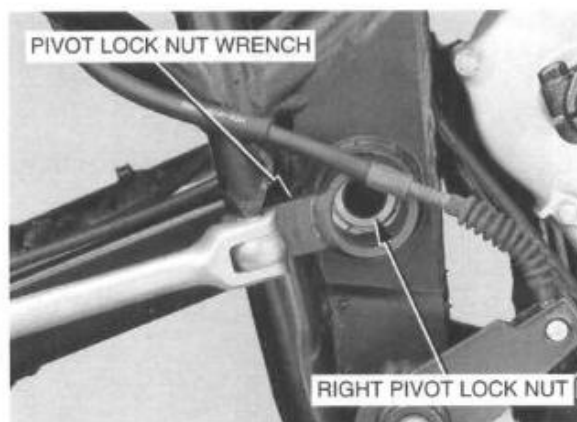
commercially
available



Remove the right pivot lock nut.

TOOL:
Pivot lock nut wrench

07908-469000A



Remove the following:

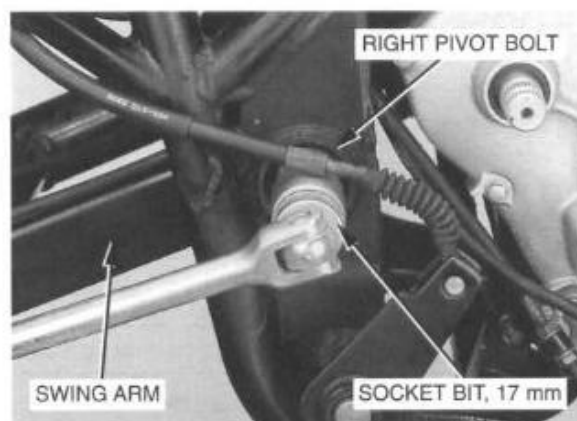
– right pivot bolt

TOOL:
Socket bit, 17

commercially
available

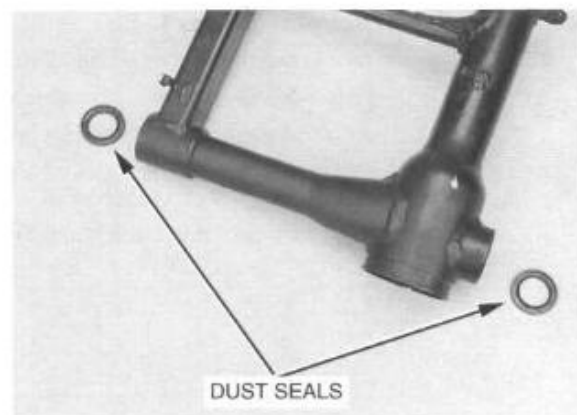
– swing arm

– drive shaft from the swing arm



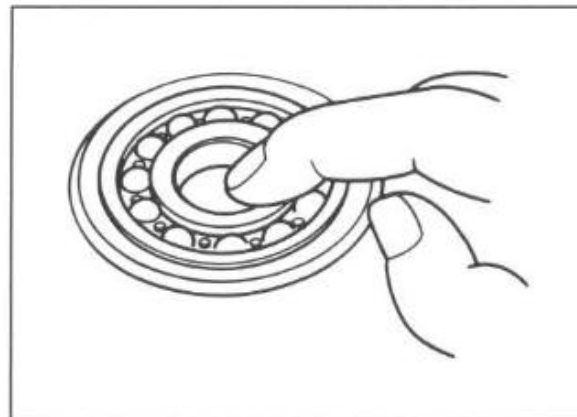
INSPECTION

Remove the dust seals and bearings from the swing arm.
Check the dust seals for wear or damage.



Turn the inner race of pivot bearings with your finger. The bearings should turn smoothly and quietly. Also check that the outer race fits tightly in the swing arm pivot.

Replace them if necessary (see REPLACEMENT below).



PIVOT BEARING REPLACEMENT

Remove the swing arm pivot bearing with the special tool.

Use the tools vertically against the bearing.

If the bearing can be removed with your finger, do not use the tools.

TOOLS:

Bearing remover, 17 mm

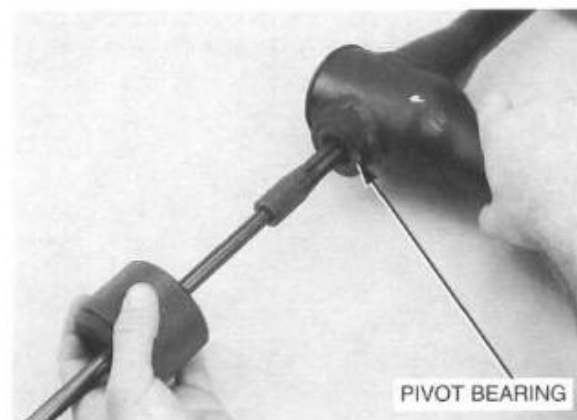
07936-3710300

Remover handle

07936-3710100

Remover weight

07936-3710200



Remove the grease holder.

Install the grease holder in the swing arm pivot.

Install a new pivot bearing with the special tools, being careful of the bearing orientation as shown.

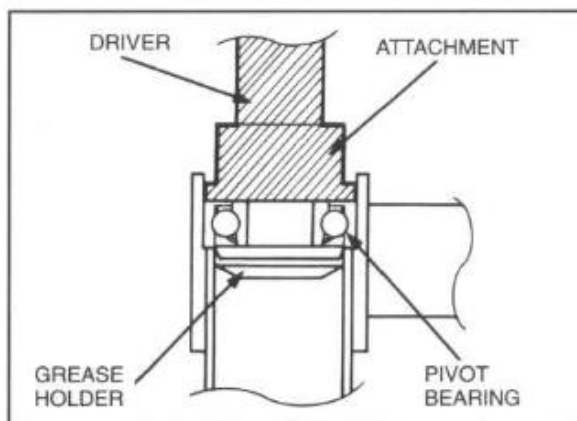
TOOLS:

Driver

07749-0010000

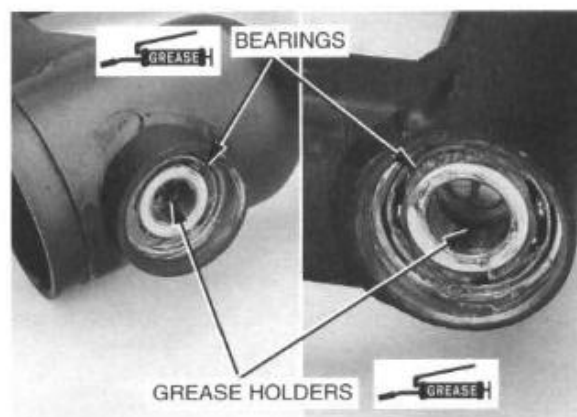
Attachment, 37 x 40 mm

07746-0010200



INSTALLATION

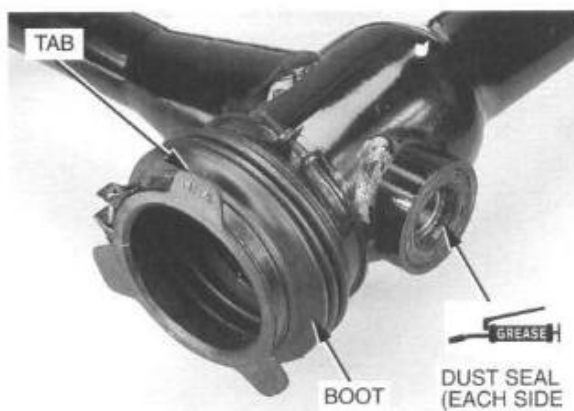
Pack the grease holders and bearing cavities with grease.



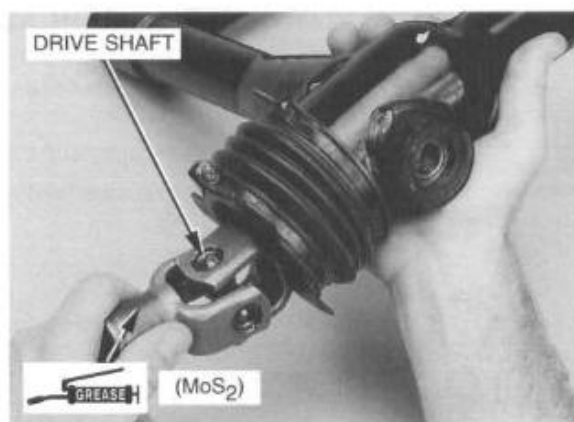
REAR WHEEL/SUSPENSION

Apply grease to the dust seal lips, and install the dust seals in the swing arm.

Install the swing arm boot securely with its tab facing up.



Apply molybdenum disulfide grease to the drive shaft splines and install the drive shaft into the swing arm.

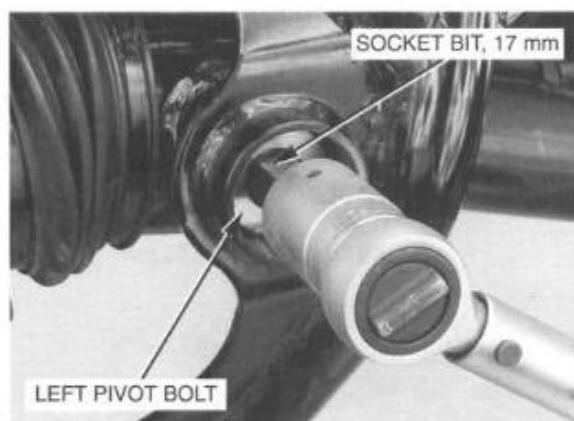


Position the swing arm in the frame.
Install and tighten the left pivot bolt.

TORQUE: 115 N·m (11.5 kg-m, 83 ft-lb)

TOOL:
Socket bit, 17 mm

commercially
available

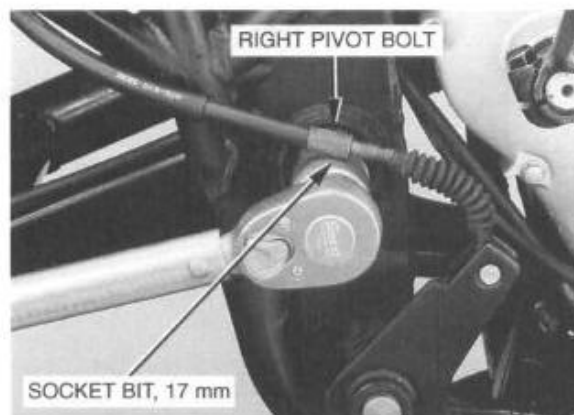


Install and tighten the right pivot bolt.

TORQUE: 4 N·m (0.4 kg-m, 3 ft-lb)

TOOL:
Socket bit, 17 mm

commercially
available



Move the swing arm up and down several times.
Retighten the right pivot bolt to the specified torque (see above).

Tighten the right pivot lock nut while holding the pivot bolt.

TORQUE: 115 N·m (11.5 kg-m, 83 ft-lb)

Torque wrench scale reading:
105 N·m (10.5 kg-m, 76 ft-lb)

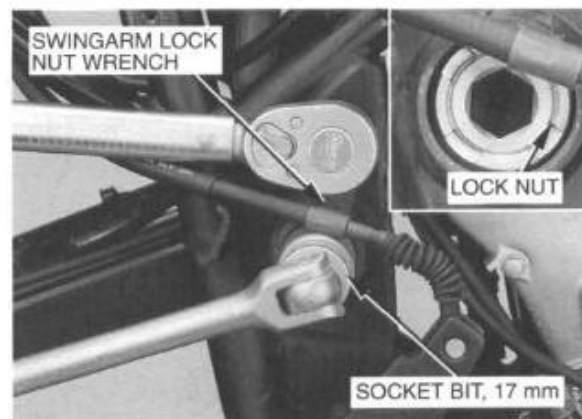
TOOLS:

Socket bit, 17 mm

commercially
available

Swingarm lock nut wrench

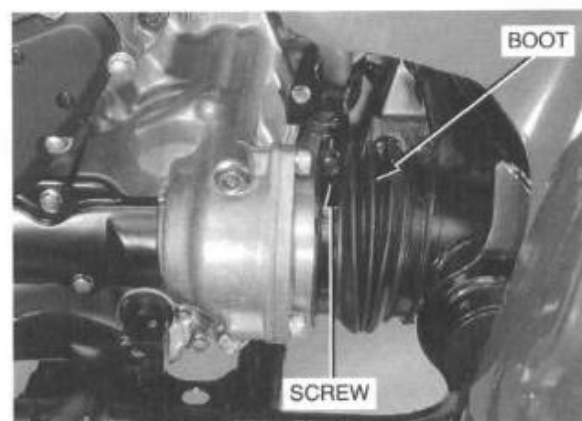
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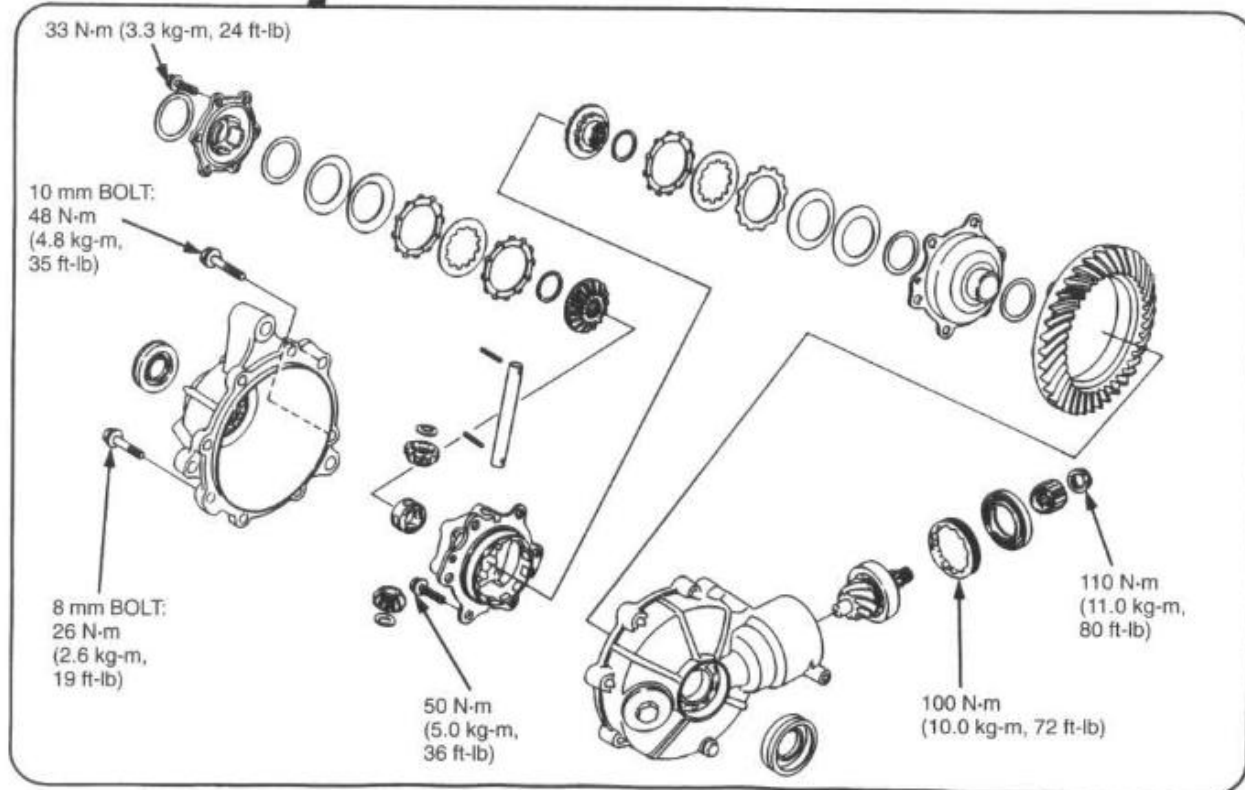
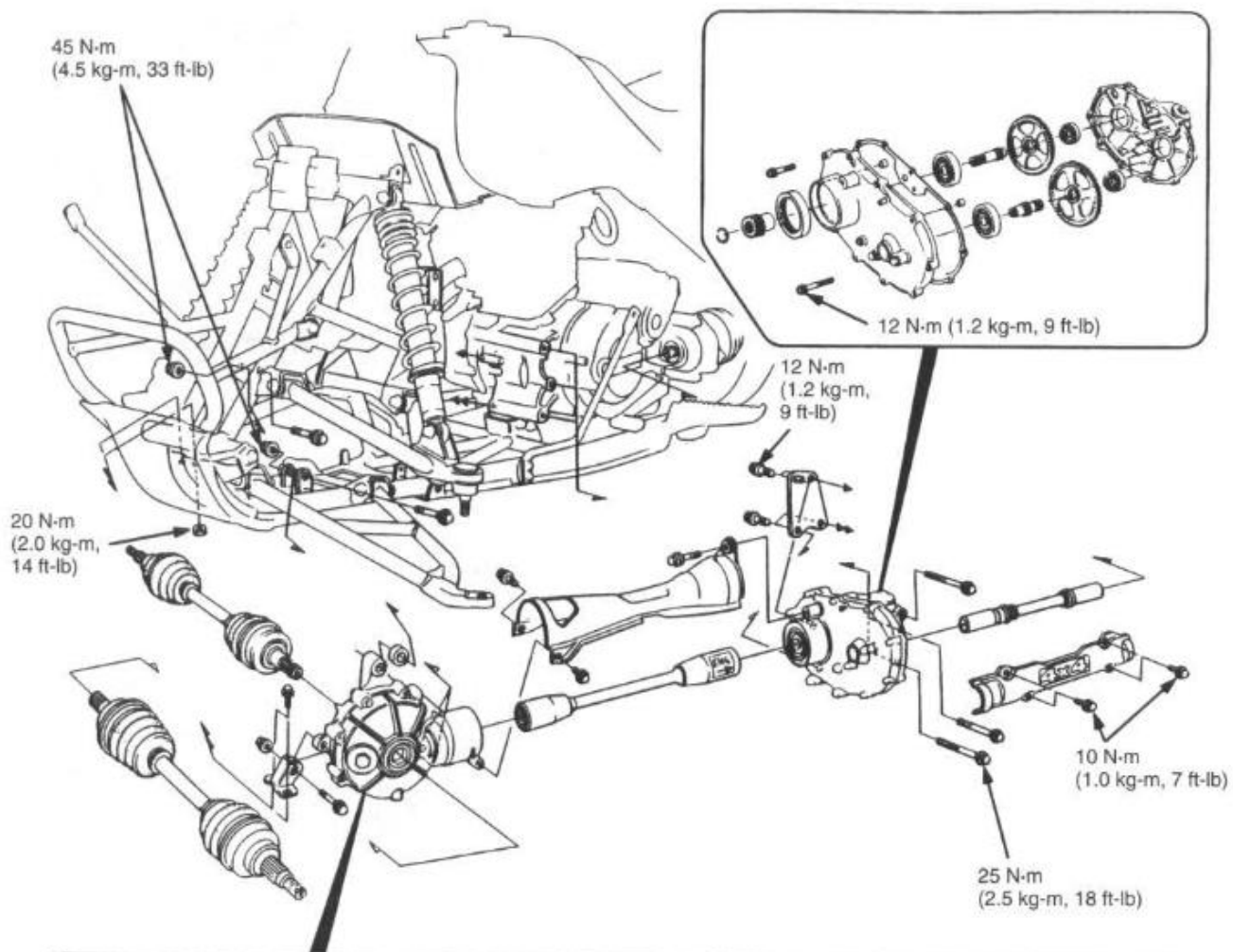
Attach the swingarm boot to the gear case and tighten the boot clamp screw securely.

Install the following:

- swingarm pivot cap (each side)
- axle housing and final drive (page 15-14)
- rear shock absorber lower mount bolt (page 13-7)
- rear axle with rear brake assembly (page 15-15)
- new rear brake panel nuts (page 12-27)
- rear wheels (page 13-3)



FRONT DRIVING MECHANISM (TRX300FW)



14. FRONT DRIVING MECHANISM (TRX300FW)

SERVICE INFORMATION	14-1	FRONT DRIVE SHAFT INSTALLATION	14-21
TROUBLESHOOTING	14-2	FRONT DRIVE SIDE SHAFT REMOVAL	14-25
FRONT DRIVE SHAFT REMOVAL	14-3	FRONT GEAR CASE	14-25
FRONT DIFFERENTIAL	14-5	FRONT DRIVE SIDE SHAFT INSTALLATION	14-31

SERVICE INFORMATION

GENERAL

- This section covers servicing of the front drive shaft, front differential, propeller shaft, front drive side shaft and front gear case.
- Replace all oil seals and O-rings whenever the front differential and front gear case assemblies are disassembled.
- Check the tooth contact pattern and gear backlash when the front differential bearing, gear set and/or gear case are replaced.

SPECIFICATIONS

ITEM				STANDARD	SERVICE LIMIT
Front differential	Oil capacity			200 cc (6.8 oz) at disassembly	—
	Recommended oil			Hypoid gear oil SAE#80	—
	Differential assembly	Clutch spring free height		2.65 mm (0.104 in)	2.5 mm (0.10 in)
		Clutch disc thickness	A	2.3–2.4 mm (0.090–0.094 in)	2.1 mm (0.08 in)
			B	1.9–2.0 mm (0.075–0.079 in)	1.7 mm (0.07 in)
		Pinion gear I.D.		12.000–12.018 mm (0.4724–0.4731 in)	12.05 mm (0.474 in)
		Pinion gear shaft O.D.		11.973–11.984 mm (0.4714–0.4718 in)	11.75 mm (0.463 in)
		Slip torque		17–25 N·m (1.7–2.5 kg·m, 12–18 ft·lb)	—
Gear backlash			0.08–0.18 mm (0.003–0.007 in)	0.25 mm (0.010 in)	
Front gear case	Oil capacity			200 cc (6.8 oz) at disassembly	—
	Recommended oil			Honda GN4 4-stroke oil or equivalent. API Service Classification: SF or SG Viscosity: SAE 10W-40	—

TORQUE VALUES

Front differential

Mounting bolt	10 mm	45 N·m (4.5 kg·m, 33 ft·lb)
	8 mm	22 N·m (2.2 kg·m, 16 ft·lb)
Differential cap bolt (torx)		33 N·m (3.3 kg·m, 24 ft·lb)
Ring gear bolt		50 N·m (5.0 kg·m, 36 ft·lb)
Pinion bearing lock nut		100 N·m (10.0 kg·m, 72 ft·lb)
Pinion joint nut		110 N·m (11.0 kg·m, 80 ft·lb) – Apply locking agent
Differential cover bolt	10 mm	48 N·m (4.8 kg·m, 35 ft·lb) – Apply locking agent
	8 mm	26 N·m (2.6 kg·m, 19 ft·lb)

Front gear case

Mounting bolt	8 mm	25 N·m (2.5 kg·m, 18 ft·lb)
	6 mm	12 N·m (1.2 kg·m, 9 ft·lb)
Drain bolt		22 N·m (2.2 kg·m, 16 ft·lb)
Cover bolt		12 N·m (1.2 kg·m, 9 ft·lb)
Side shaft cover bolt		10 N·m (1.0 kg·m, 7 ft·lb)

FRONT DRIVING MECHANISM (TRX300FW)

TOOLS

Special

Differential inspection tool	07KMK-HC5010A
Pinion holder	07924-HA00001 or 07924-HA00000
Lock nut wrench, 34 x 44 mm	07916-ME50001 or 07916-ME50000 and 07916-HA0010A
Shaft puller	07931-ME40000 or 07931-ME4000A
Bearing remover, 17 mm	07936-3710300
Remover weight	07936-3710200
Remover handle	07936-3710100
Ball joint puller	07MAC-SL00200 or 07941-6920003

Common

Driver	07749-0010000
Attachment, 37 x 40 mm	07746-0010200
Attachment, 52 x 55 mm	07746-0010400
Pilot, 17 mm	07746-0040400
Pilot, 28 mm	07746-0041100
Driver, 22 mm I.D.	07746-0020100
Attachment, 20 mm I.D.	07746-0020400
Driver, 40 mm I.D.	07746-0030100

TROUBLESHOOTING

FRONT DIFFERENTIAL

Consistent noise during cruising

- Oil level too low
- Foreign matter contaminating gear oil
- Improper tooth contact between ring gear and drive pinion
- Worn or damaged ring gear bearing
- Worn or damaged ring gear and drive pinion
- Worn pinion shaft or pinion gear side washer
- Deformed ring gear or differential case
- Chipped or damaged gears

Gear noises while running

- Oil level too low
- Foreign matter contaminating gear oil
- Chipped or damaged gears
- Improper tooth contact between ring gear and drive pinion

Gear noises while coasting

- Damaged or chipped gears

Bearing noises while running and coasting

- Cracked or damaged drive pinion bearing or ring gear

Abnormal noises when turning

- Worn (excessive play) or damaged ring gear bearing
- Damaged side gear, pinion or pinion shaft
- Worn clutch disc/plate
- Worn clutch spring
- Worn or damaged slots of the differential housing

Abnormal noises at start or during acceleration

- Excessive backlash between ring gear and drive pinion
- Excessive pinion gear backlash
- Worn differential splines
- Loose pinion joint nut and other fasteners
- Worn clutch disc/plate
- Worn clutch spring

Oil leak

- Oil level too high
- Clogged breather hole or tube
- Worn or damaged oil seal
- Loose differential cover bolt

Overheating

- Oil level too low
- Insufficient backlash between ring gear and drive pinion

FRONT GEAR CASE

Oil leak

- Clogged breather hole or tube
- Oil level too high
- Worn or damaged oil seal
- Loose gear case bolt

Excessive noise

- Oil level too low
- Worn or scored splines
- Worn or damaged gear(s)

FRONT DRIVE SHAFT

Remove the following:

- front wheel (page 11-9)
- front brake drum (page 12-11)
- cotter pins and castle nuts

Separate the knuckle from the lower suspension arm.

TOOL:

Ball joint puller

07MAC-SL00200 or
07941-6920003

Disconnect the breather tube from the brake panel.

Separate the knuckle/brake panel assembly from the drive shaft.

Support the knuckle/brake panel assembly so that it does not hang from the brake hose. Do not twist the brake hose.

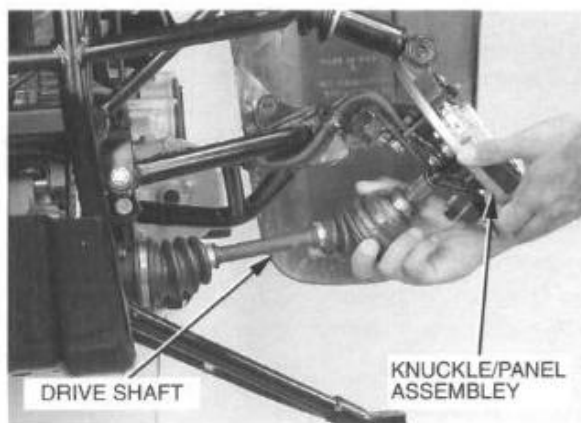
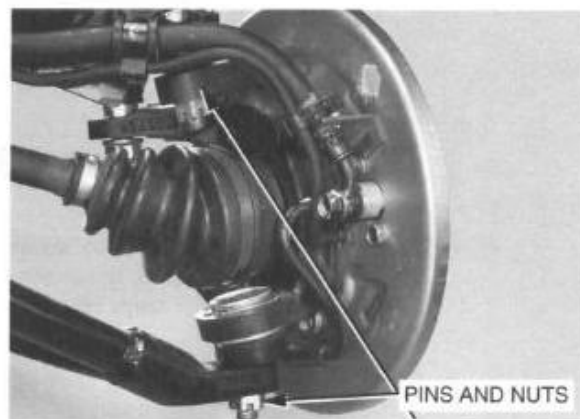
NOTE

Do not operate the front brake lever after removing the knuckle/brake panel assembly. If you do, it will be difficult to refit the brake and brake shoes.

Hold the inboard joint as shown and pull the drive shaft out of the differential.

CAUTION

To prevent damage to the differential oil seal, hold the inboard joint horizontal until the drive shaft is clear of the differential.

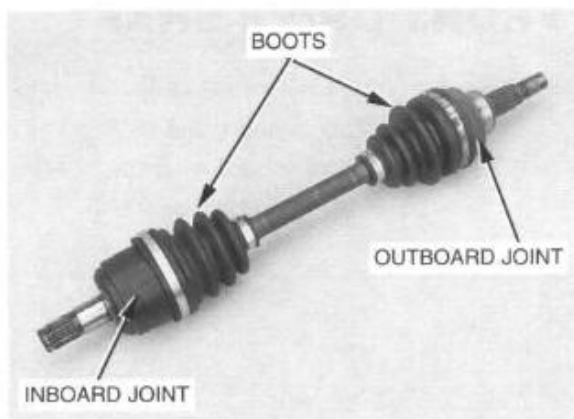


INSPECTION

Check the boot for cuts or other damage; replace, if necessary.

Check the drive shaft joints for excessive play or noise by moving the joints in a circular direction.

If the outboard joint seems to be worn or damaged, the drive shaft must be replaced. To service the inboard joint, follow the DISASSEMBLY steps below.



DISASSEMBLY

NOTE

To replace the outboard boot, first remove the inboard boot as described in these steps. Then remove the bands and pull the outboard boot off the inboard end of the shaft.

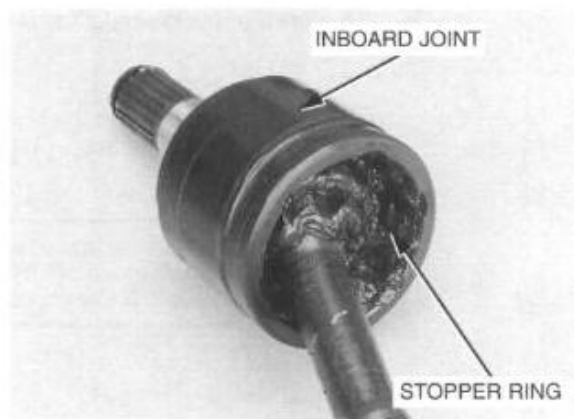
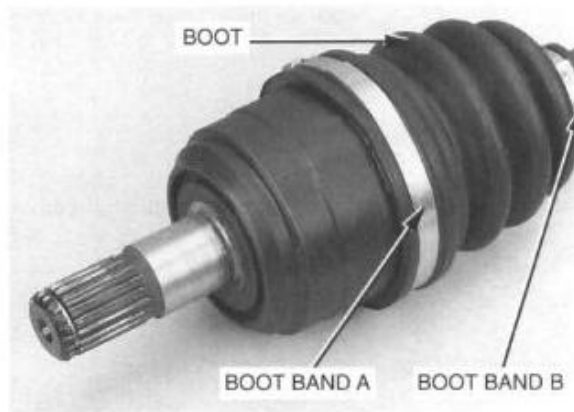
Loosen both boot bands on the inboard side, and remove boot band A.

Pull the boot off the inboard joint.

Remove the stopper ring and inboard joint.

NOTE

The outboard joint cannot be disassembled.

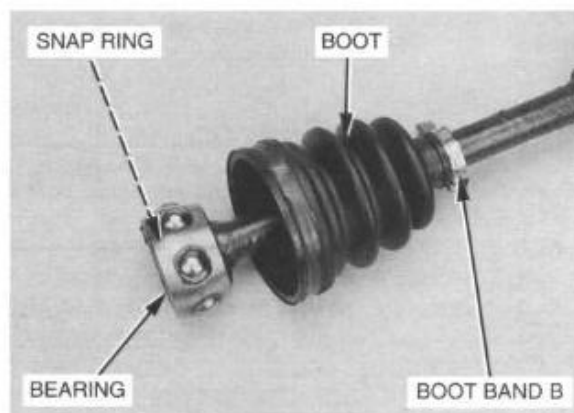


Remove the snap ring and bearing.

Remove the boot band B and pull the boot off the drive shaft.

NOTE

Replace the bands with new ones whenever removing them.



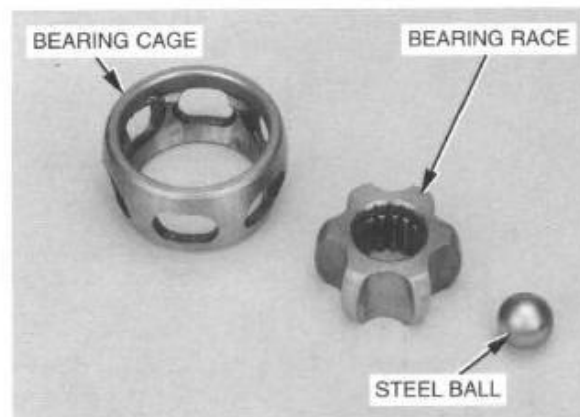
Check the following for wear or damage:

- bearing cage
- bearing race
- steel balls

- inboard joint

NOTE

Replace the bearing cage, bearing race, steel balls and inboard joint as an assembly.



FRONT DIFFERENTIAL

REMOVAL

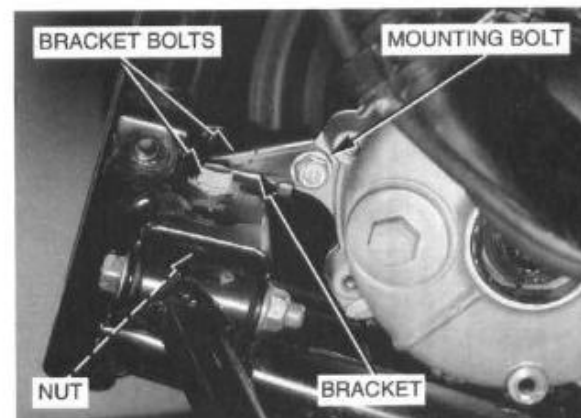
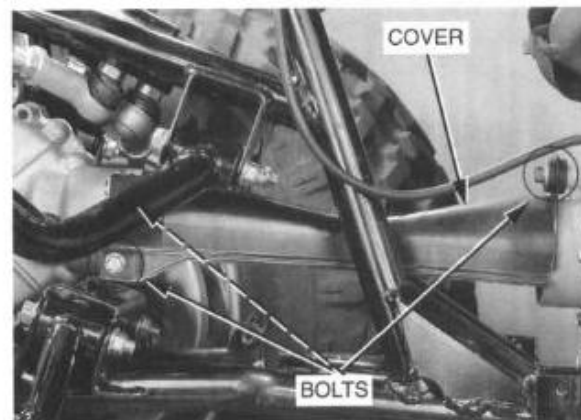
Drain the front differential oil (page 2-4).

Remove the following:

- front drive shaft (page 14-3)
- front fender (page 16-1)

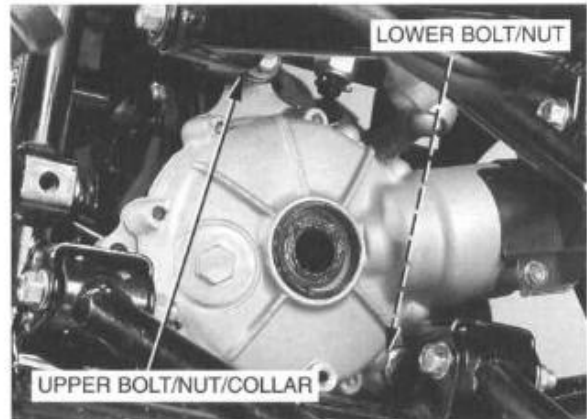
Remove the bolts and propeller shaft cover.

- front differential mounting bolt and nut
- front differential mounting bracket bolts, nut and bracket



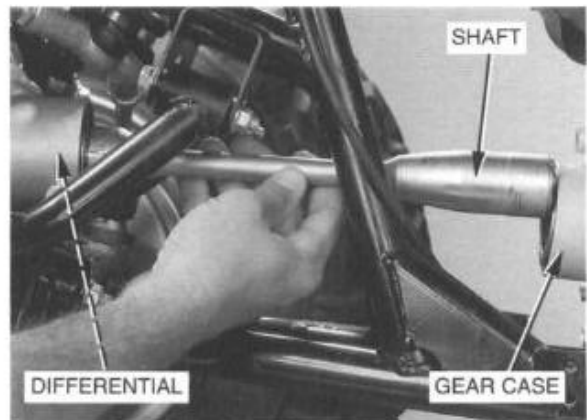
FRONT DRIVING MECHANISM (TRX300FW)

- upper mounting bolt, nut and collar
- rear mounting bolt and nut



Push the front differential forward, then separate the propeller shaft from the front gear case.

Remove the propeller shaft and front differential.



INSPECTION

Check the propeller shaft for wear or damage.

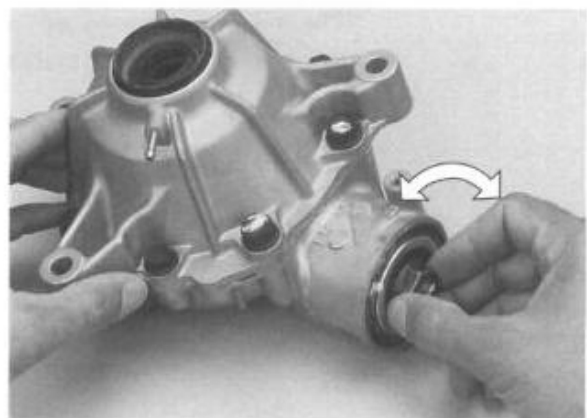


Turn the differential drive pinion with your finger; it should turn smoothly and quietly.

Inspect the following if the drive pinion does not turn smoothly and quietly:

- differential case
- ring gear bearings
- drive pinion
- ring gear

Proceed with the detailed inspection procedures that follow and replace faulty parts/assemblies as required.



BACKLASH INSPECTION

Remove the oil filler cap, and drive pinion oil seal.
Install the pinion holder onto the pinion joint.

TOOL:

Pinion holder

07924-HA00001 or
07924-HA00000

Set the holder in the vise.

Set a horizontal type dial indicator on the ring gear, through the oil filler hole.

Install the differential inspection attachment into the right side of differential gear and rotate the differential assembly/ring gear by turning the differential inspection attachment by hand until gear slack is taken up. Turn the ring gear back and forth to read backlash.

STANDARD: 0.08–0.18 mm (0.003–0.007 in)
SERVICE LIMIT: 0.25 mm (0.010 in)

TOOL:

Differential inspection tool

07KMK-HC5010A

Remove the dial indicator. Turn the ring gear and measure the backlash. Repeat this procedure once more.

Compare the difference of the three measurements.

DIFFERENCE OF MEASUREMENT

SERVICE LIMIT: 0.10 mm (0.004 in)

If the difference in measurements exceeds the limit, it indicates that either the bearing is not installed squarely, or the case is deformed.

Inspect each bearing and case.

If backlash is too small, replace the ring gear left side spacer with a thicker one.

Backlash is changed by about 0.06 mm (0.002 in) when thickness of the spacer is changed by 0.10 mm (0.004 in).

RING GEAR SPACERS:

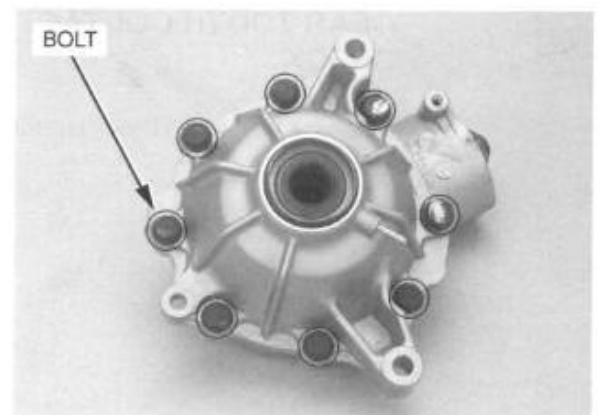
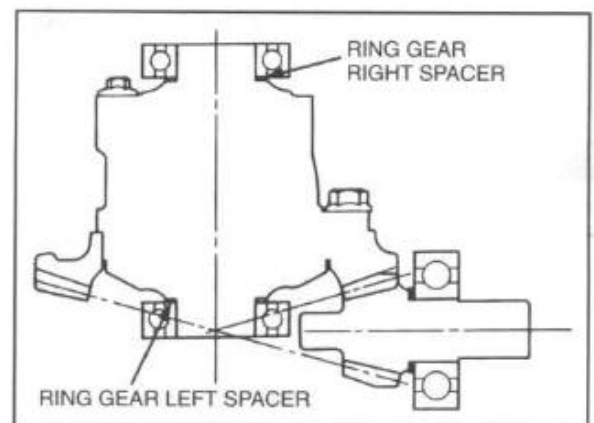
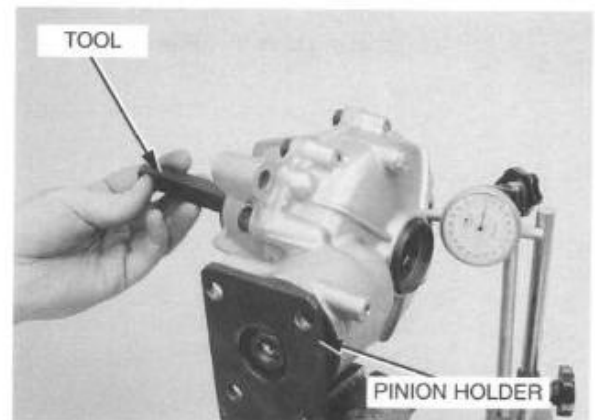
Twenty-three spacers (from A to W) are available in thickness intervals of 0.05 mm.

- Standard: 1.00 mm (0.039 in)
- Thinnest: 0.50 mm (0.020 in)
- Thickest: 1.60 mm (0.063 in)

Change the right side spacer an equal thickness and opposite amount of what the left side spacer was changed; if the left spacer was replaced with a 0.10 mm (0.004 in) thicker spacer, replace the right spacer with one that is 0.10 mm (0.004 in) thinner.

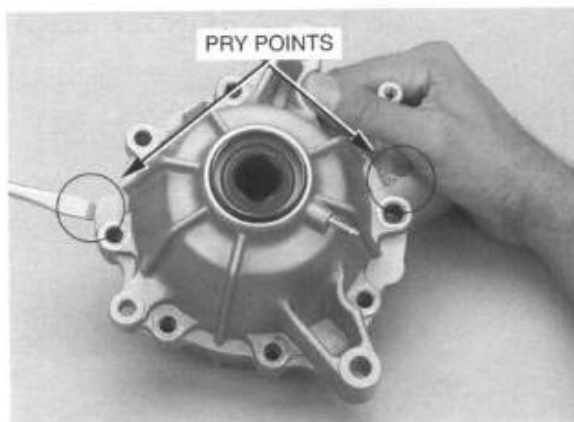
DIFFERENTIAL CASE DISASSEMBLY

Remove the cover bolts in 2–3 steps in a crisscross pattern to prevent differential case warpage.

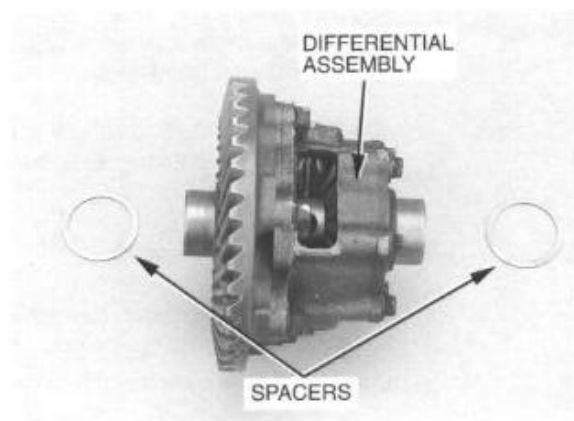


FRONT DRIVING MECHANISM (TRX300FW)

Carefully pry the cover off the case using a screwdriver at the pry points as shown.



Remove the differential assembly and the adjustment spacers from the differential case.



BEARING INSPECTION

Turn the inner race of each ring gear bearing with your finger.

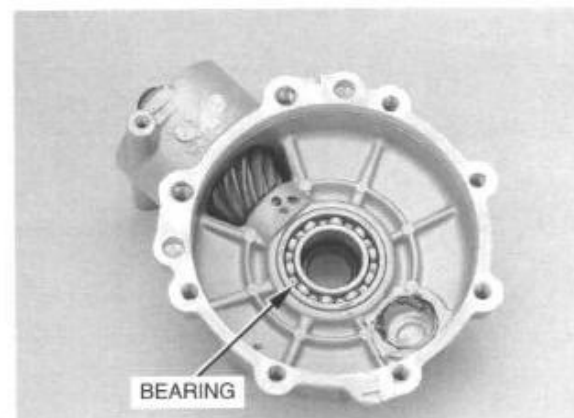
The bearings should turn smoothly and quietly.

Also check that the outer race fit tightly in the case and cover.

Remove and discard the bearings if the races do not turn smoothly and quietly, or if they fit loosely in the case or cover.

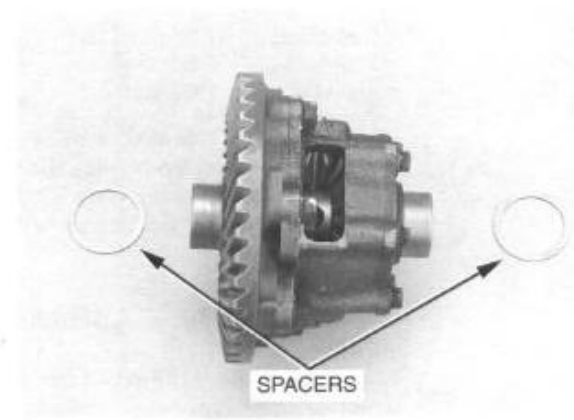
For ring gear bearing replacement, go to page 14-15.

For drive pinion removal and disassembly, go to page 14-13.

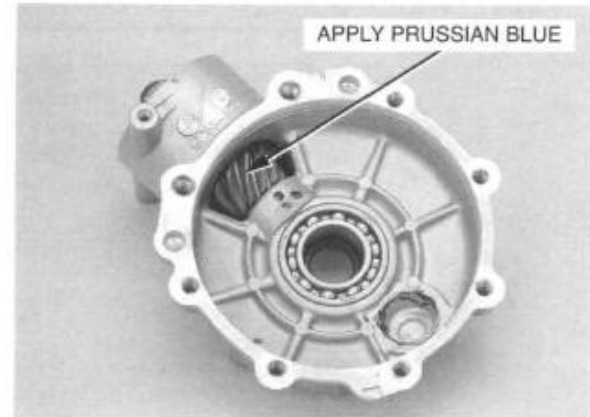


GEAR TOOTH CONTACT PATTERN CHECK

Install the original ring gear spacers onto the differential assembly.



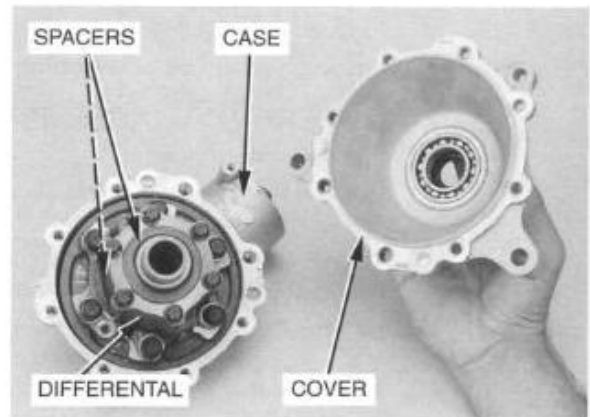
Apply a thin coat of Prussian Blue to the pinion gear teeth for a gear tooth contact pattern check.



Be careful not to damage the mating surfaces. Clean all sealing material off the mating surfaces of the differential case and cover.

Keep dust and dirt out of the differential case.

Install the differential assembly with the spacers into the differential case.



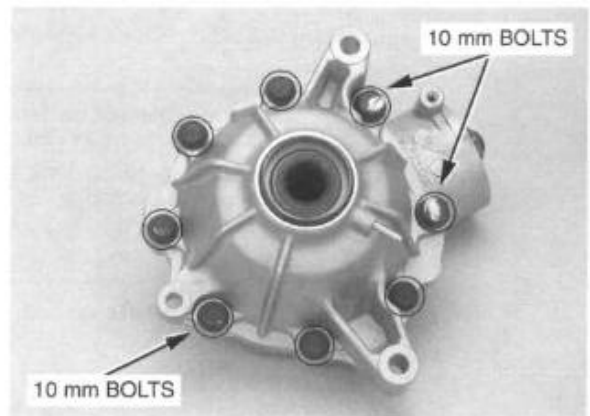
Tighten the cover bolts in 2 or 3 steps until the cover evenly touches the gear case. Then, while rotating the drive pinion, tighten the bolts to the specified torque in 2-3 steps in a crisscross pattern.

TORQUES:

10 mm bolt: 48 N·m (4.8 kg-m, 35 ft-lb)
8 mm bolt: 26 N·m (2.6 kg-m, 19 ft-lb)

CAUTION

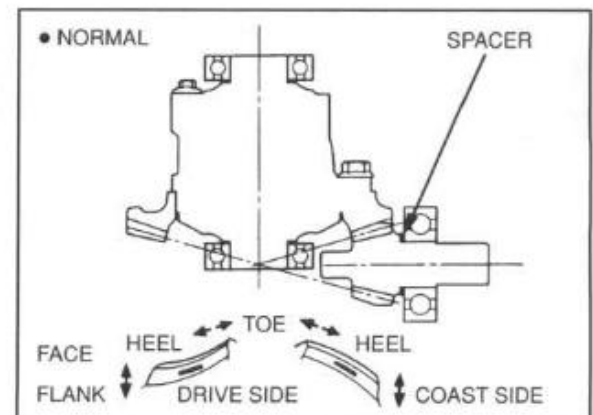
It is important to turn the pinion while tightening the bolts. If the ring gear spacer is too thick, the gears will lock after only light tightening.



Remove the oil filler cap from the differential case.

Rotate the ring gear several times in both directions of rotation. Check the gear tooth contact pattern through the oil filler hole. The pattern is indicated by the Prussian Blue applied to the pinion before assembly.

Contact is normal if the Prussian Blue is transferred to the approximate center of each tooth and slightly to the flank side.



FRONT DRIVING MECHANISM (TRX300FW)

If the patterns are not correct, remove and replace the pinion spacer with one of an alternate thickness. Replace the pinion spacer with a thicker one if the contacts are too high, toward the face. Replace the pinion spacer with a thinner one if the contacts are too low, to the flank side. The patterns will shift about 1.5–2.0 mm (0.06–0.08 in) when the thickness of the spacer is changed by 0.10 mm (0.004 in).

PINION SPACERS:

- A: 1.82 mm (0.072 in)
- B: 1.88 mm (0.074 in)
- C: 1.94 mm (0.076 in)
- D: 2.00 mm (0.079 in)
- E: 2.06 mm (0.081 in)
- F: 2.12 mm (0.083 in)
- G: 2.18 mm (0.086 in)

For pinion spacer replacement, go to page 14-13.

DIFFERENTIAL ASSEMBLY INSPECTION

Slip torque inspection:

Install the differential inspection tools to both sides of the differential.

TOOL:

Differential inspection tool 07KMK-HC5010A

Hold the chamfered side with a bench vise as shown. Place a torque wrench on the other tool and measure the limited slip torque.

SLIP TORQUE: 17–25 N·m (1.7–2.5 kg-m, 12–18 ft-lb)

If the limited slip differential was disassembled or if the slip torque is out of specification, perform the following:

NOTE

- A visual inspection must be done for each clutch pack (plate, discs, springs and seat).
- Always install each clutch pack assembly in its original location in the differential.
- Do not interchange components between the two clutch pack assemblies.

Remove both differential caps and clutch pack assemblies (page 14-11).

Inspect the clutch pack assemblies. (page 14-12).

Then, install one of the differential caps onto its clutch pack assembly.

Check the slip torque on the reassembled clutch pack assembly using the procedure specified above.

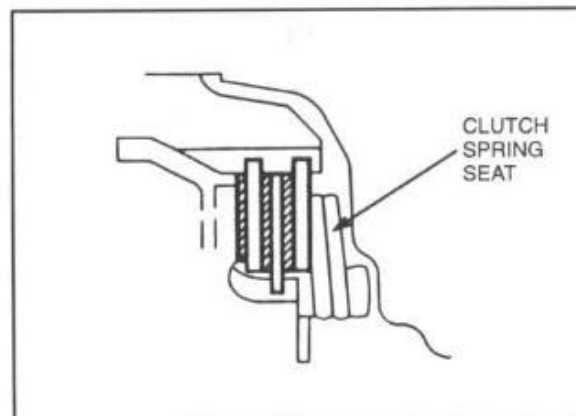
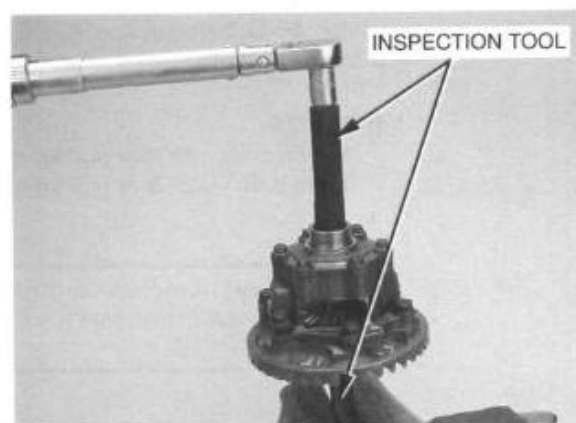
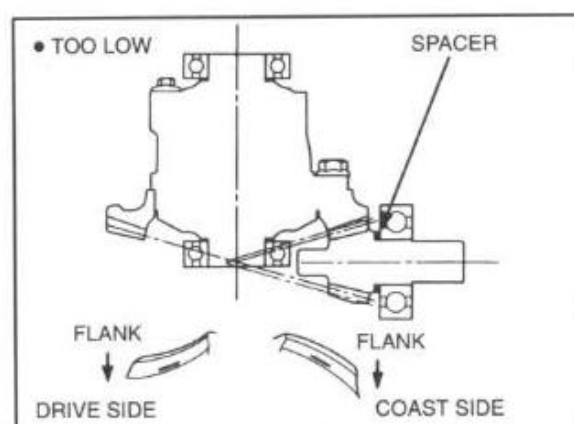
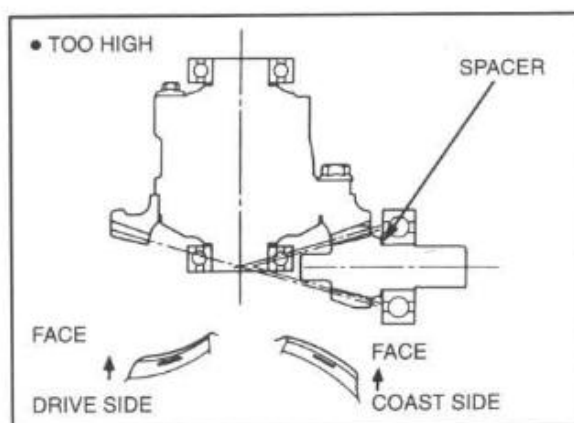
If the slip torque is out of specification, the clutch spring seat is worn.

Remove the inspection tools.

Remove the differential cap and the clutch pack from the differential. Select a clutch spring seat of the required thickness.

If the slip torque is below specification, replace the spring seat with a thicker one.

If the slip torque is above specification, replace the spring seat with a thinner one.



Select the clutch spring seat from the list below:

A: 1.0 mm (0.039 in)

B: 1.2 mm (0.047 in)

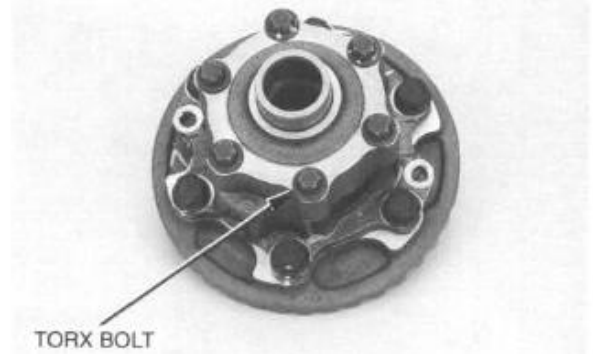
C: 1.4 mm (0.055 in)

D: 1.6 mm (0.063 in)

E: 1.8 mm (0.071 in)

Recheck the slip torque.

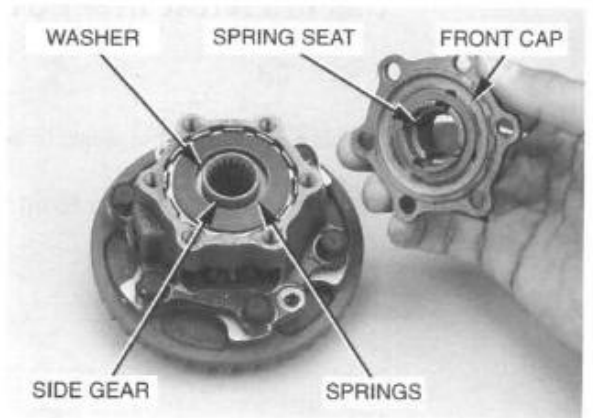
Next, inspect the remaining clutch pack assembly in the same way.



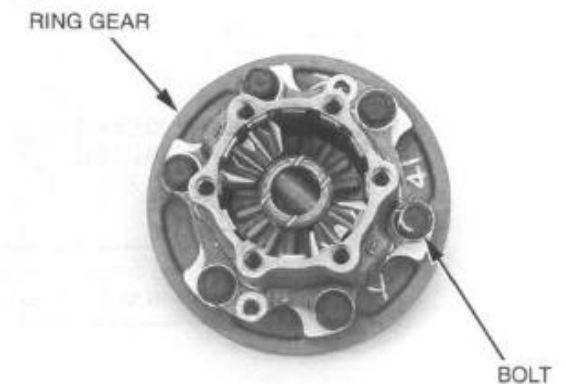
DIFFERENTIAL DISASSEMBLY

Remove the following from the differential cover:

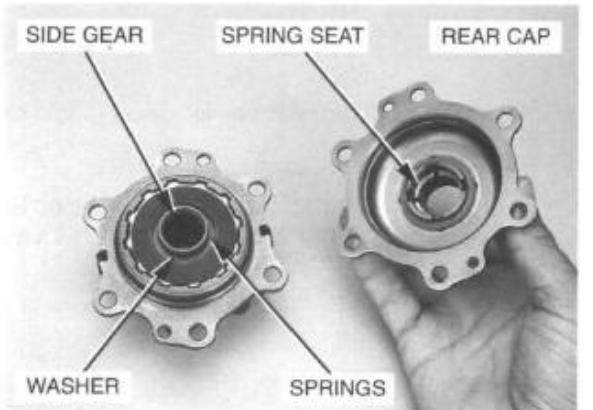
- torx bolts
- front differential cap
- clutch pack (spring seat, springs, discs and plate)
- side gear
- washer



- bolts
- ring gear

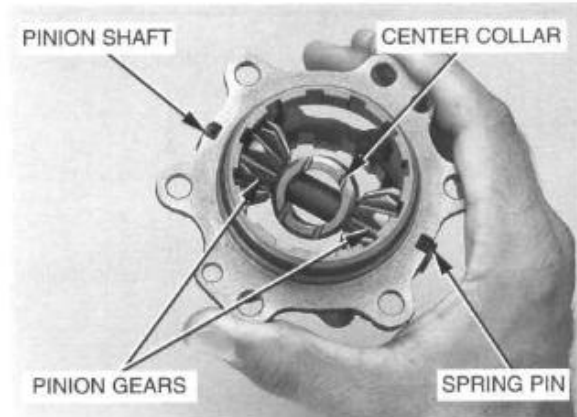


- rear differential cap
- clutch pack (spring seat, springs, discs and plate)
- side gear
- washer



FRONT DRIVING MECHANISM (TRX300FW)

- spring pin
- pinion shaft
- pinion gears
- center collar
- side washers

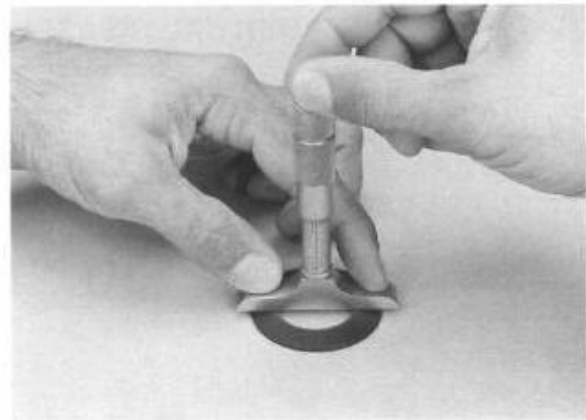


DIFFERENTIAL INSPECTION

• CLUTCH

Measure and record the height of the clutch spring.

SERVICE LIMIT: 2.5 mm (0.10 in)



Check the clutch discs for scoring or discoloration.
Measure the thickness of each disc.

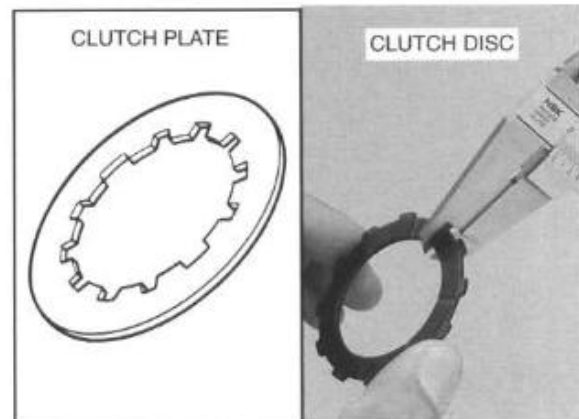
SERVICE LIMITS:

DISC A: 2.1 mm (0.08 in)

DISC B: 1.7 mm (0.07 in)

NOTE

Clutch disc B has two faces: one side is a steel plate, the other side is a friction surface disc.



Inspect the clutch plate surface for excessive scores or discoloration (purple) and replace if necessary.

• PINION

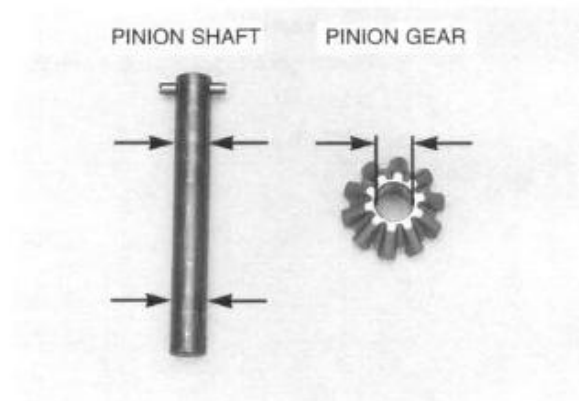
Measure the pinion gear I.D. and pinion shaft O.D.

SERVICE LIMITS:

PINION GEAR I.D.: 12.05 mm (0.474 in)

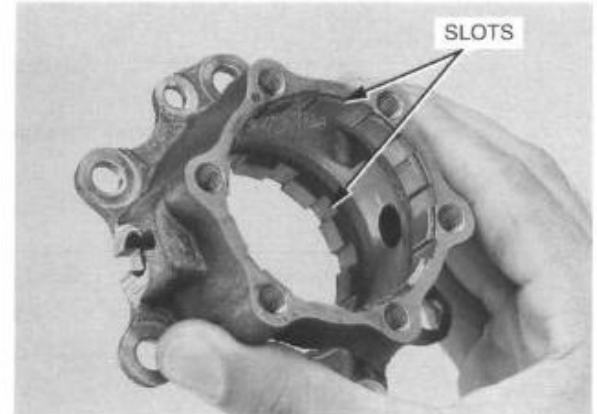
PINION SHAFT O.D.: 11.75 mm (0.463 in)

Check the side washer for wear or damage.



• DIFFERENTIAL HOUSING

Check the slots for wear or damage.



DRIVE PINION REMOVAL

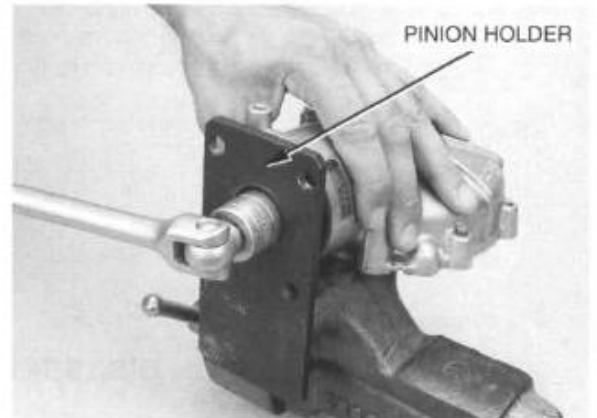
Install the pinion holder on the pinion joint and secure in a vise as shown.

TOOL:

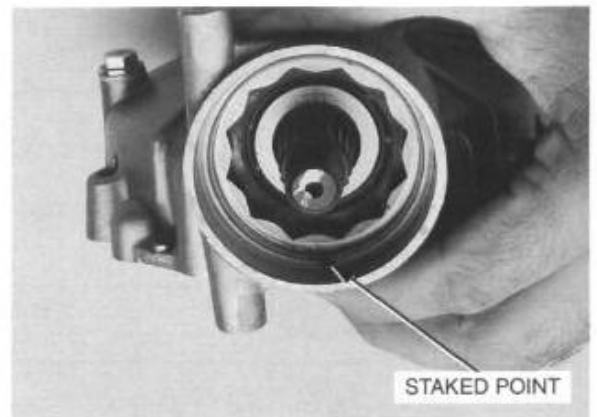
Pinion holder

07924-HA00001 or
07924-HA00000

Remove the pinion joint nut, then remove the pinion holder and pinion joint.



Unstake the pinion bearing lock nut with a drill or grinder. Be careful that metal particles do not enter the bearing and that the threads are not damaged.



Remove the pinion bearing lock nut with the lock nut wrench.

TOOLS:

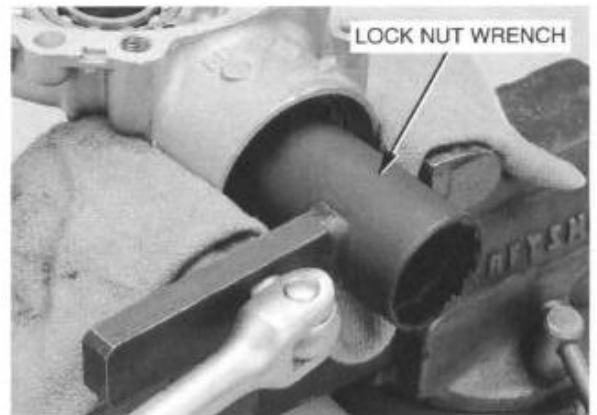
Lock nut wrench, 34 x 44 mm

07916-ME50001

or

Lock nut wrench, 34 x 44 mm
Attachment

07916-ME50000 and
07916-HA0010A



FRONT DRIVING MECHANISM (TRX300FW)

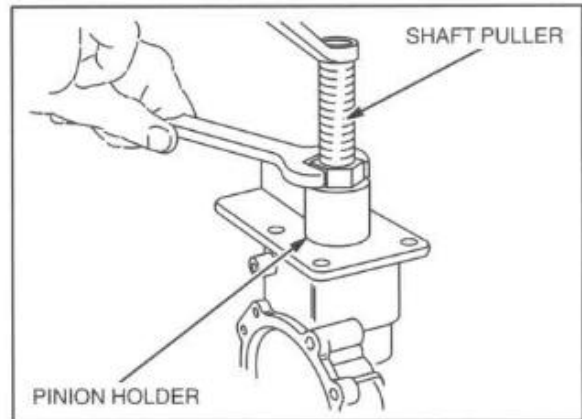
Put the pinion holder on the differential case.

Screw the shaft puller onto the threads of the drive pinion.

Screw the 23 mm special nut down until it contacts the pinion holder.

NOTE

Be sure that the 23 mm special nut is backed off far enough to allow full thread engagement between the puller and the drive pinion.



Turn the 23 mm special nut counterclockwise with a 23 mm wrench while holding the shaft with a 17 mm wrench to remove the drive pinion from its housing.

Pull the drive pinion assembly off with the shaft puller.

TOOLS:

Shaft puller

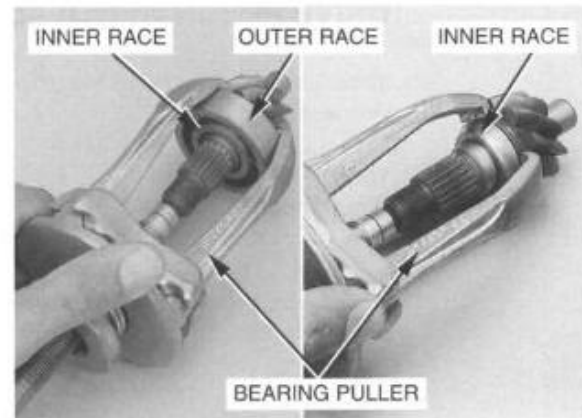
07931-ME40000 or

07931-ME4000A

Pinion holder

07924-HA00001 or

07924-HA00000



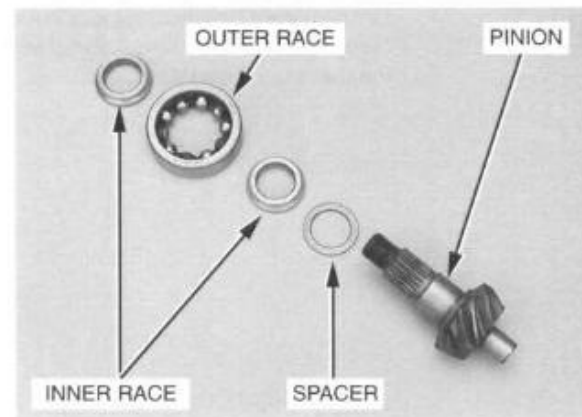
DRIVE PINION DISASSEMBLY/ ASSEMBLY

Pull the bearing outer and inner races off the shaft with a bearing puller.

Pull the other inner race off with the same tool.

Remove the pinion adjustment spacer.

To reassemble, first install the pinion spacer.



NOTE

When the gear set, pinion bearing and/or differential case has been replaced, use a 2.0 mm (0.08 in) thick spacer.

Apply #80 gear oil to the inner races and the bearing.

Press one inner race onto the pinion gear shaft.

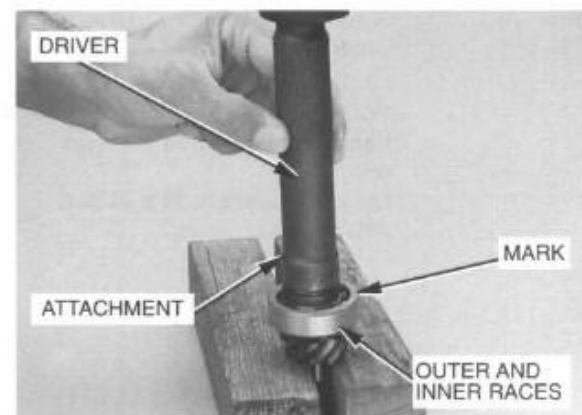
TOOL:

Driver, 22 mm I.D.

07746-0020100

Position the marked side of the outer race to the outside.

Press the outer race with the other inner race onto the drive pinion.



TOOLS:

Driver, 22 mm I.D.

07746-0020100

Attachment, 20 mm I.D.

07746-0020400

CASE BEARING REPLACEMENT

NOTE

The drive pinion bearing cannot be removed. Replace the differential case if the bearing is damaged.

Remove the oil seal.

Drive the ring gear bearing out of the case and cover.

Blow compressed air through the breather hole in the differential cover.

Drive the ring gear bearing into the case and cover.

TOOLS:

Driver

07749-0010000

Attachment, 52 x 55 mm

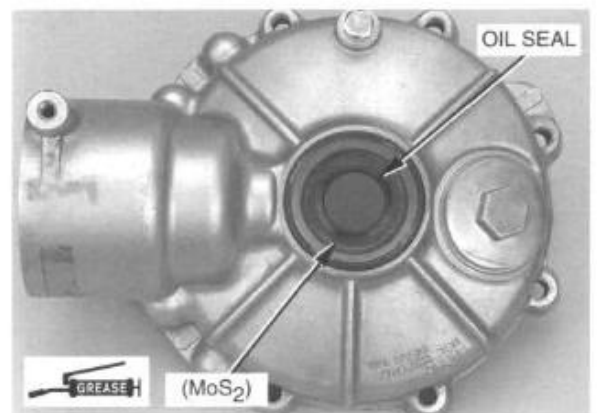
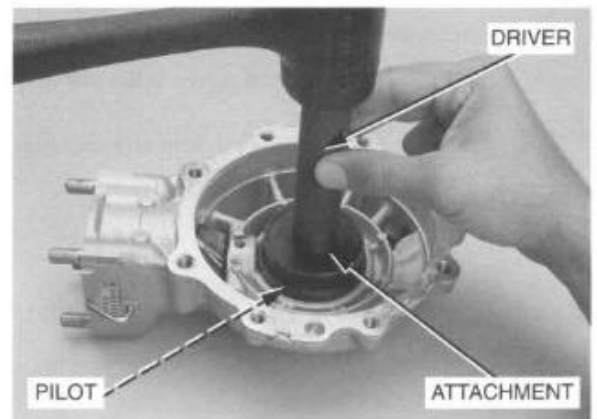
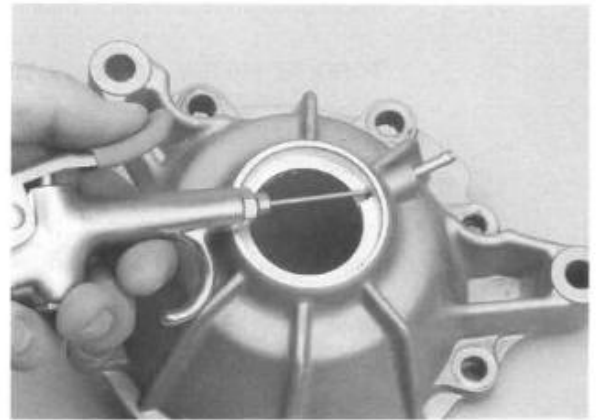
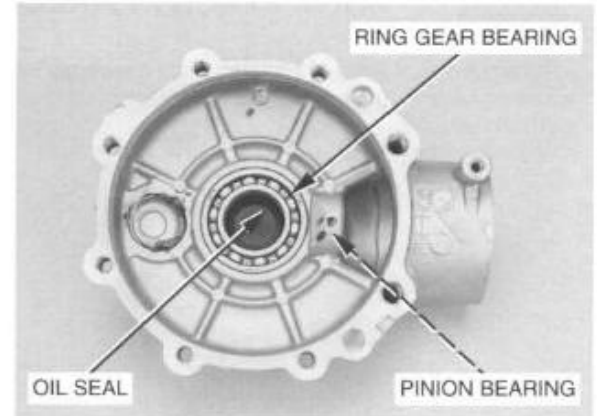
07746-0010400

Pilot, 28 mm

07746-0041100

Install a new oil seal in the case and cover.

Apply molybdenum disulfide grease to the oil seal lips.



DRIVE PINION INSTALLATION

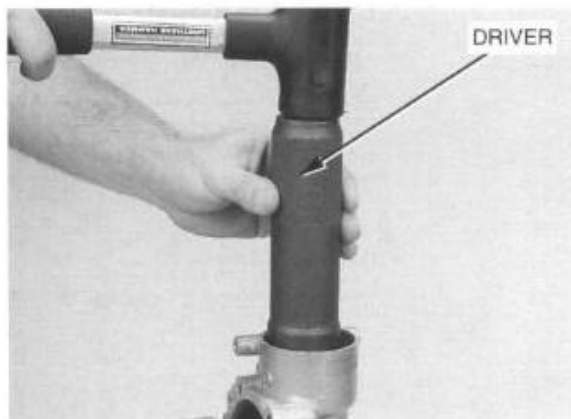
Keep the driver centered with the bearing outer race during installation.

Place the drive pinion assembly into its housing and drive it into the differential case.

TOOL:

Driver, 40 mm I.D.

07746-0030100



Install and tighten the pinion bearing lock nut.

TORQUE: 100 N·m (10.0 kg-m, 72 ft-lb)

WRENCH READING: 91 N·m (9.1 kg-m, 66 ft-lb)
using a 50 cm (20 in) long torque wrench

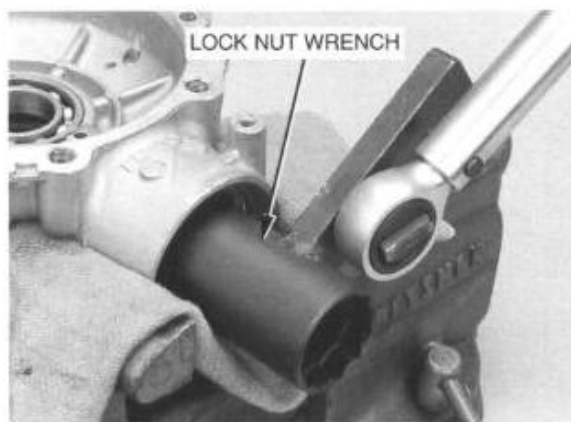
TOOLS:

Lock nut wrench, 34 x 44 mm
or

Lock nut wrench, 34 x 44 mm
Attachment

07916-ME50001

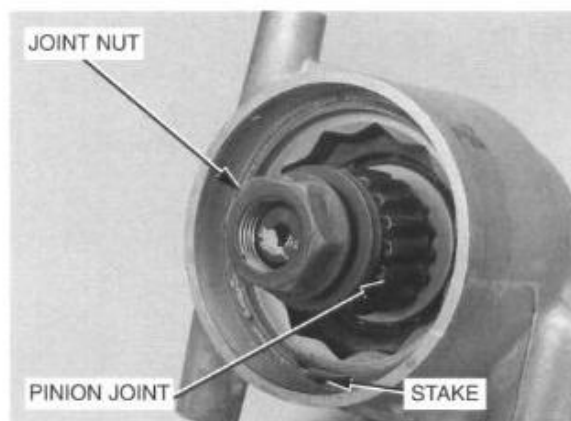
07916-ME50000 and
07916-HA0010A



Stake the pinion bearing lock nut.

Apply locking agent to the pinion threads.

Install the pinion joint and joint nut.



Attach the pinion holder on the pinion joint and secure in a vise.

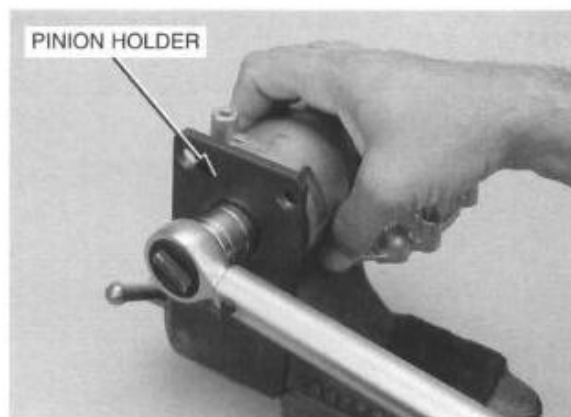
Tighten the pinion joint nut.

TORQUE: 110 N·m (11.0 kg-m, 80 ft-lb)

TOOL:

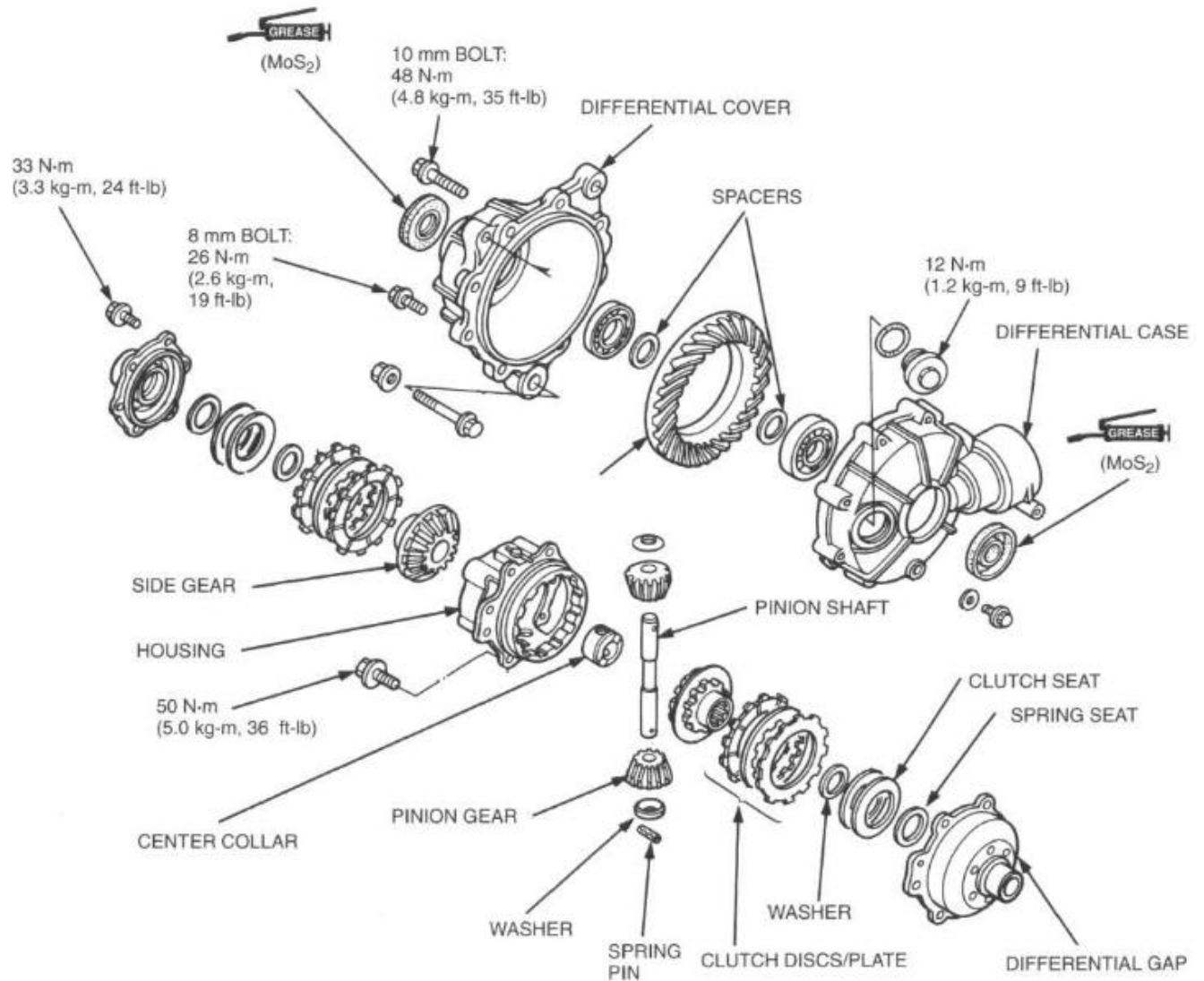
Pinion holder

07924-HA00001 or
07924-HA00000
(Modified)



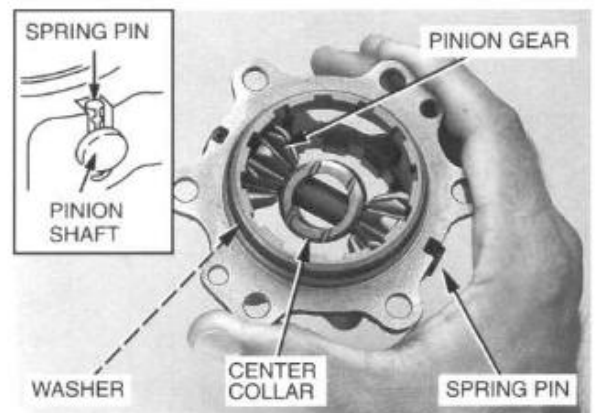
Remove the pinion holder.

DIFFERENTIAL ASSEMBLY



Install a new spring pin into the pinion shaft.

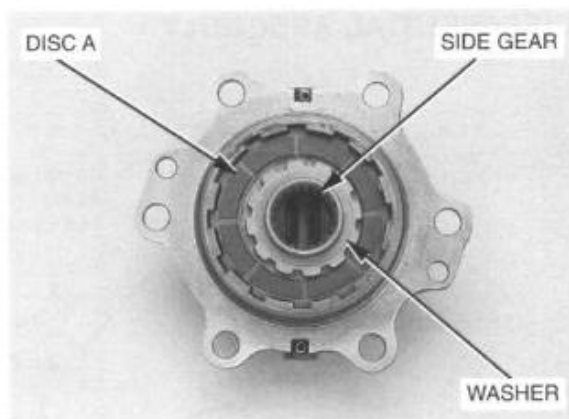
Install the washers, pinion gears and collar into the housing.
Insert the pinion shaft and install a new spring pin securely.



FRONT DRIVING MECHANISM (TRX300FW)

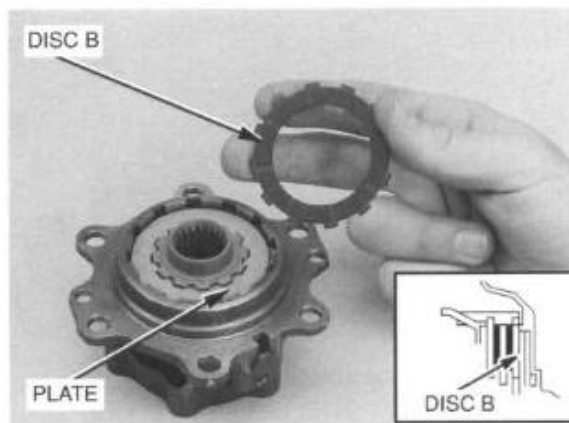
Install the following:

- side gear
- washer
- clutch disc A

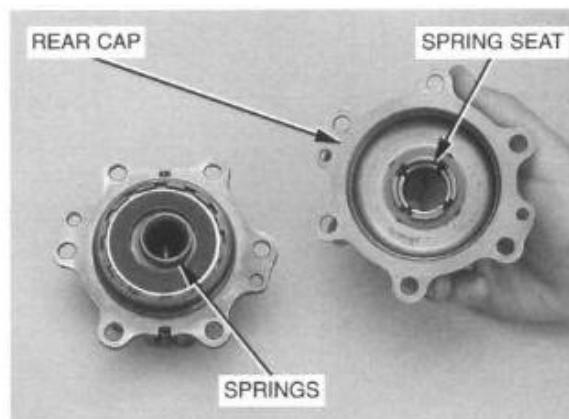


Install with the friction surface lining facing inside.

- clutch plate
- clutch disc B

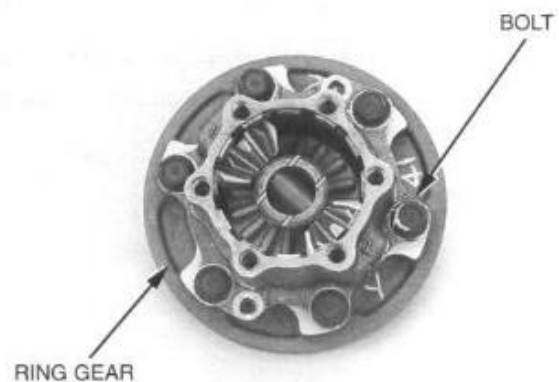


- clutch springs
- spring seat
- rear differential cap



- ring gear

Loosely install the bolts.



Install the other clutch pack in the same manner.

Tighten the bolts in 2-3 steps in a crisscross pattern.

Install the front differential cap.

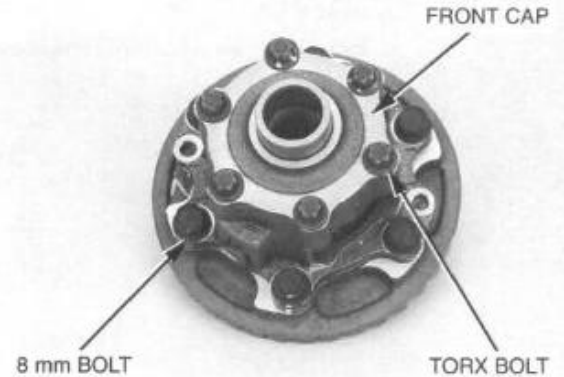
Temporarily install the drive shaft to center the side gear, and differential cap.

Tighten the bolts to the specified torque.

TORQUES:

Torx bolt: 33 N·m (3.3 kg·m, 24 ft·lb)

8 mm bolt: 50 N·m (5.0 kg·m, 36 ft·lb)

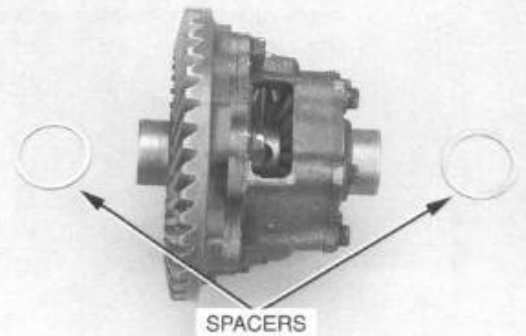


DIFFERENTIAL CASE ASSEMBLY

NOTE

When the bearing, gear set and/or gear case has been replaced, check the tooth contact pattern (page 14-8) and gear backlash (page 14-7).

Install the ring gear spacers onto the differential assembly.

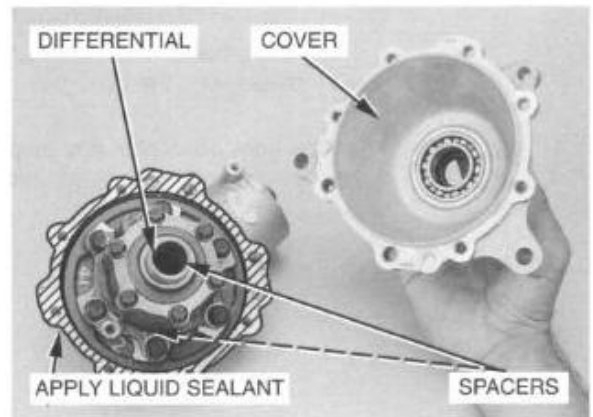


Apply liquid sealant to the mating surface of the gear case cover.

NOTE

Keep dust and dirt out of the differential case.

Install the differential assembly with the spacers into the differential case.



Apply locking agent to the threads of the 10 mm bolts.

Tighten the cover bolts in 2-3 steps until the cover evenly touches the differential case. Then, while rotating the drive pinion, tighten the bolts to the specified torque in 2-3 steps in a crisscross pattern.

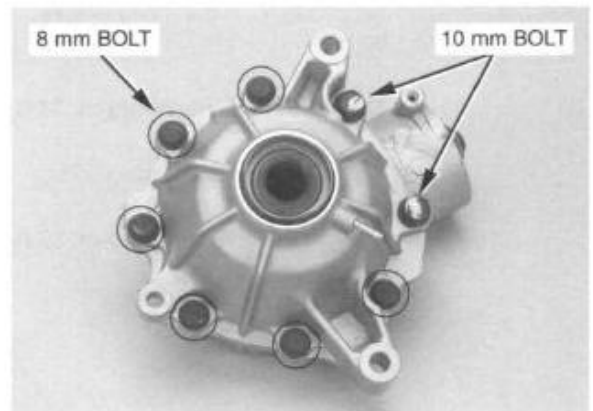
TORQUES:

10 mm bolt: 48 N·m (4.8 kg·m, 35 ft·lb)

8 mm bolt: 26 N·m (2.6 kg·m, 19 ft·lb)

CAUTION

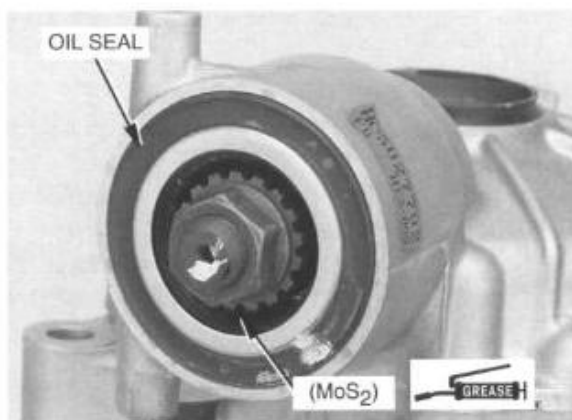
It is important to turn the pinion while tightening the bolts. If the ring gear spacer is too thick, the gears will lock after only light tightening.



FRONT DRIVING MECHANISM (TRX300FW)

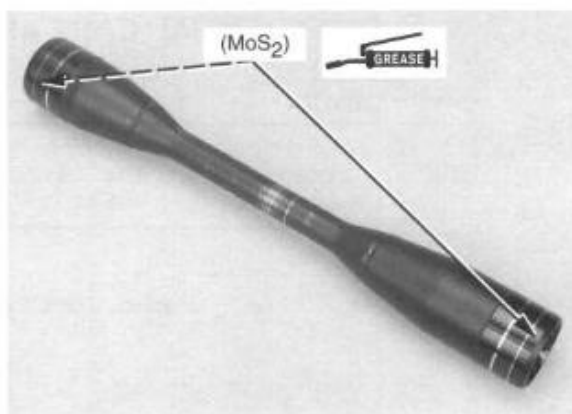
Apply molybdenum disulfide grease to the new drive pinion oil seal lips.

Install the new drive pinion oil seal on the case.



INSTALLATION

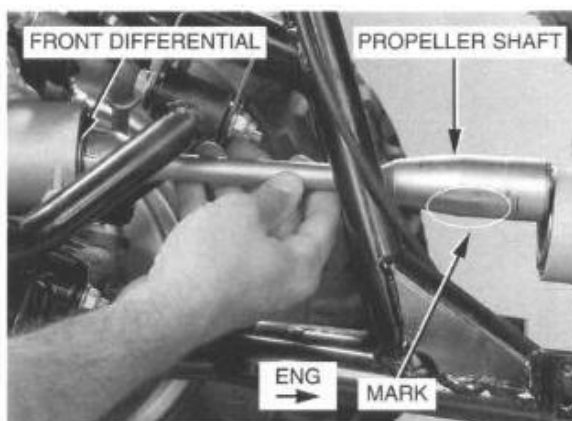
Apply molybdenum disulfide grease to the splines of the propeller shaft.



Position the front differential in the chassis.

Connect the propeller shaft on the front differential with its **ENG** mark facing the front gear case.

Push the front differential and propeller shaft slightly forward, then connect the propeller shaft to the front gear case.

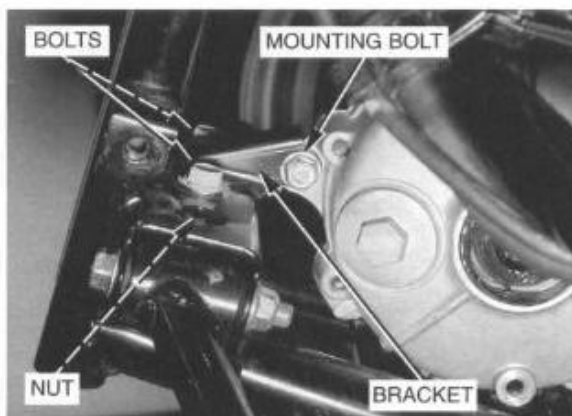


Install the front mounting bracket and tighten the bracket bolts.

TORQUE: 20 N·m (2.0 kg·m, 14 ft·lb)

Tighten the front mounting bolt.

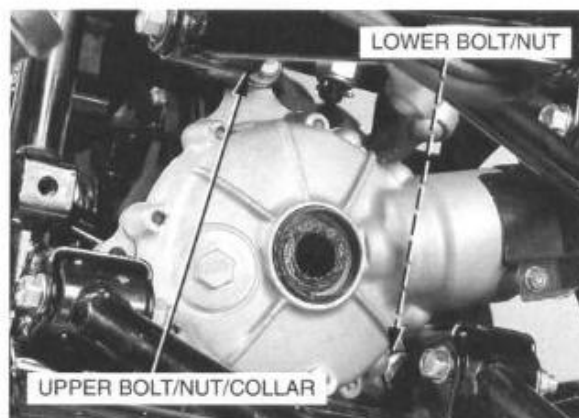
TORQUE: 45 N·m (4.5 kg·m, 33 ft·lb)



Install the upper and rear mounting bolts with the upper mounting collar in the location shown.

Tighten the upper and rear mounting bolts.

TORQUE: 45 N·m (4.5 kg·m, 33 ft·lb)

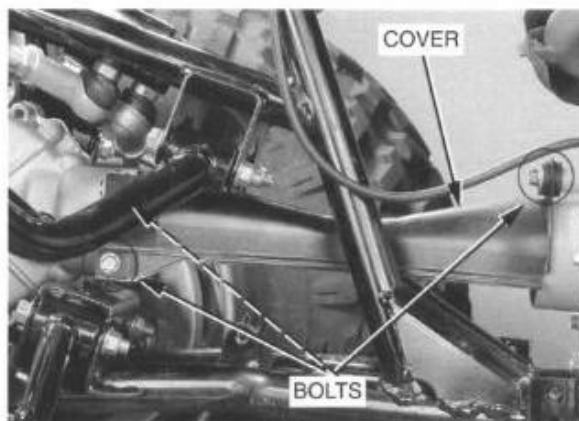


Install the propeller shaft cover and tighten the bolts securely.

Install the following:

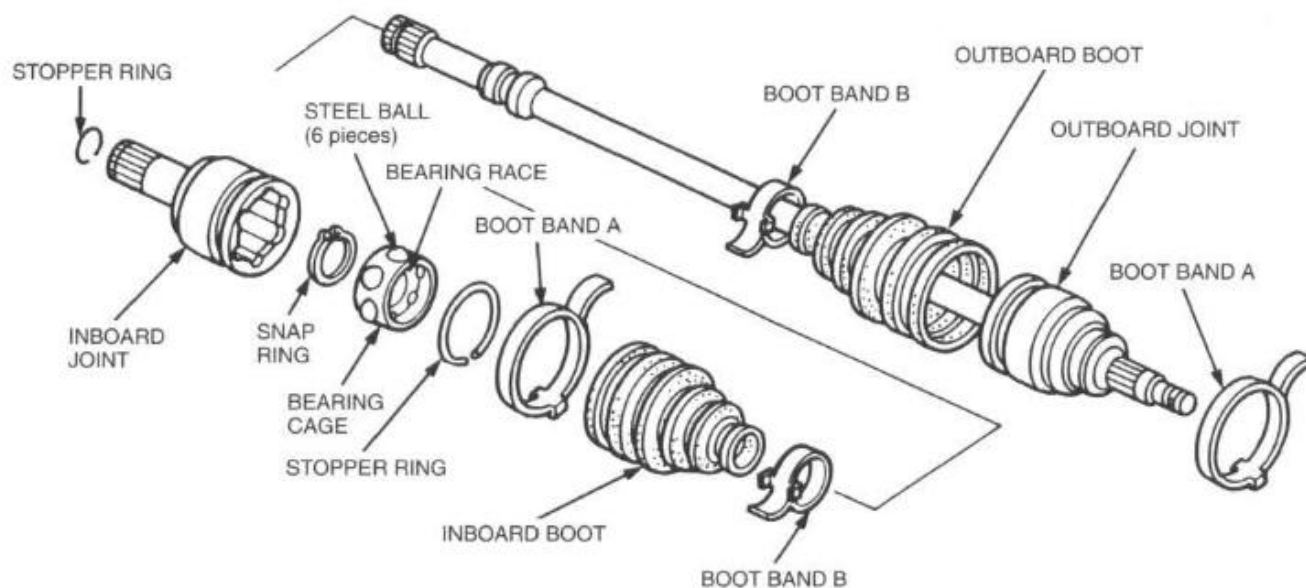
- front drive shaft
- front fender (page 16-3)

Fill the front differential with the recommended oil (page 2-4).



FRONT DRIVE SHAFT INSTALLATION

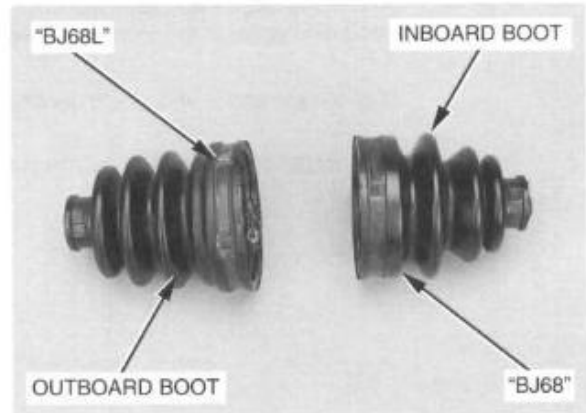
ASSEMBLY



FRONT DRIVING MECHANISM (TRX300FW)

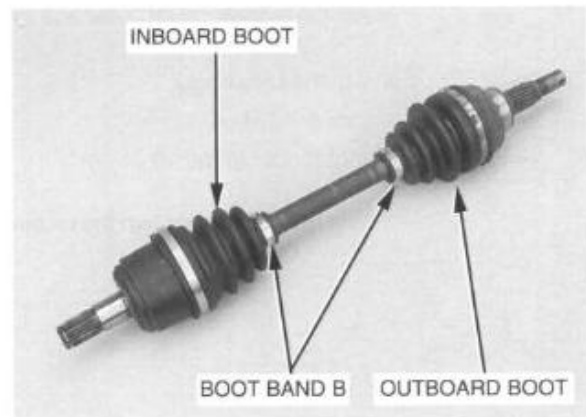
NOTE

The boots are marked "BJ68L" for the outboard joint and "BJ68" for the inboard joint.

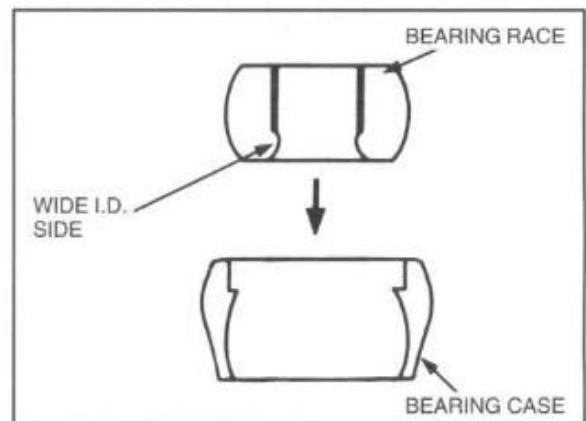


If the outboard boot was removed, install it on the drive shaft with a new boot band B (2 pieces).

Install the inboard boot with a boot band B.
Do not tighten the bands at this time.



Install the bearing race in the bearing cage as shown.

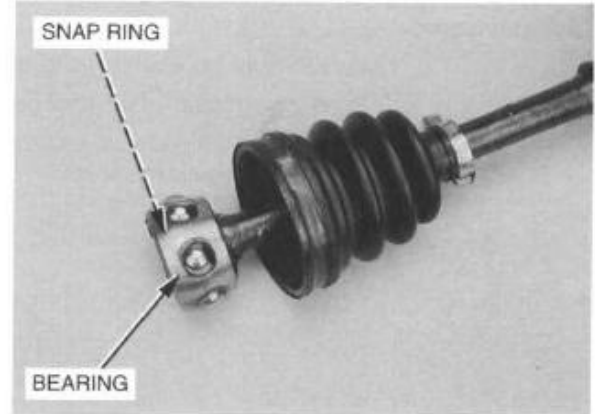


Push the steel balls into the bearing cage.



Install the bearing on the drive shaft with the small end of the bearing facing the inside of the drive shaft.

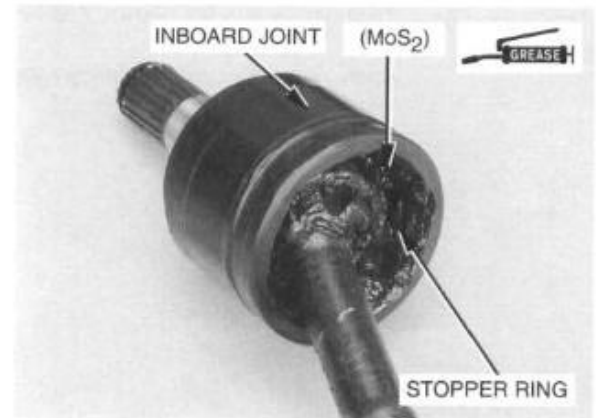
Install the snap ring securely in the groove of the drive shaft.



Apply molybdenum disulfide grease to the bearing and inside of the inboard joint.

Install the inboard joint to the drive shaft.

Install the stopper ring in the joint groove.

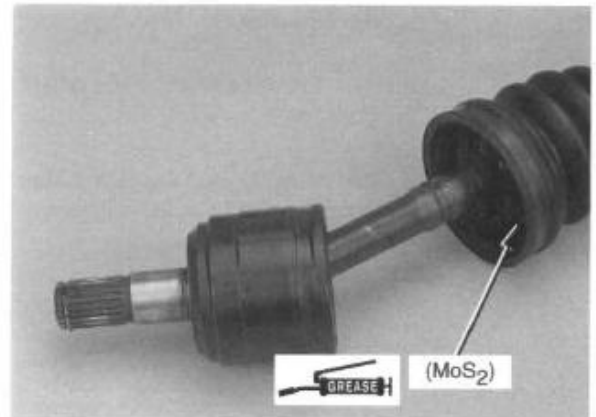


Pack the boots with molybdenum disulfide grease and pull them on the joints.

GREASE CAPACITY:

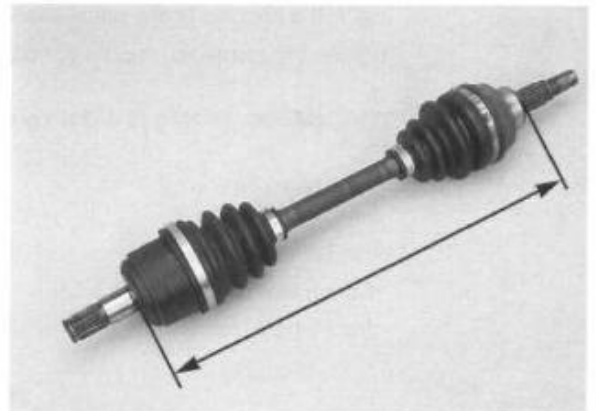
Inboard boot: 35–55 grams (1.2–1.9 oz)

Outboard boot: 30–50 grams (1.1–1.8 oz)



Adjust the length of the drive shaft to the figure given below.

DRIVE SHAFT LENGTH: 351–361 mm (13.8–14.2 in)

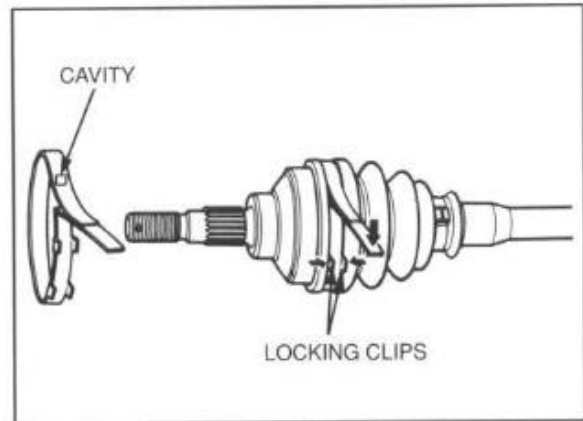


FRONT DRIVING MECHANISM (TRX300FW)

Be careful not to damage the boot. Install the bands with their tabs facing rearward.

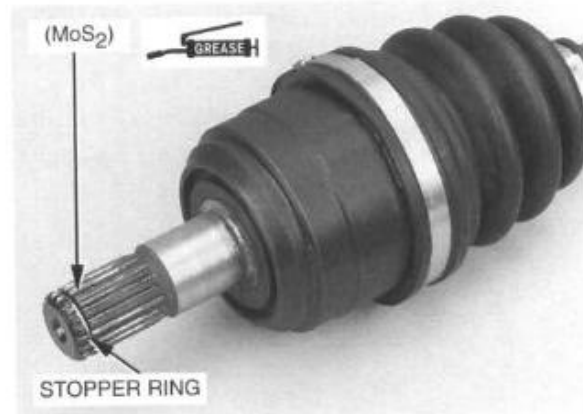
Secure the new boot bands as follows:

1. Bend down the tab of the boot band.
2. Secure the bent down tab with the locking clips and tap them with a plastic hammer.



Install a new stopper ring in the groove on the inboard joint.

Apply molybdenum disulfide grease to the splines of the inboard joint.



INSTALLATION

Install the drive shaft in the differential while holding the inboard joint.

After installing, pull the joint a little to make sure that the stopper ring locks in the differential side gear groove.



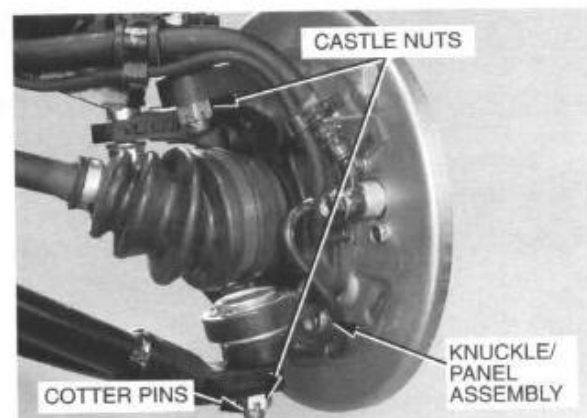
Install the knuckle/brake panel assembly.
Tighten the castle nuts to the specified torque.

TORQUE: 30–36 N·m (3.0–3.6 kg·m, 22–26 ft·lb)

Install new cotter pins.

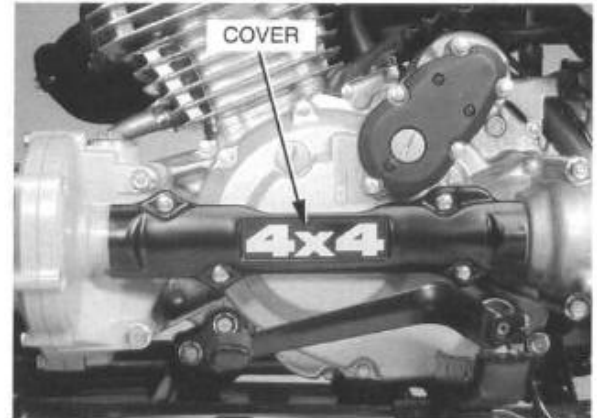
Install the following:

- front brake drum (page 12-23)
- front wheel (page 11-7)



FRONT DRIVE SIDE SHAFT REMOVAL

Remove the side shaft cover.

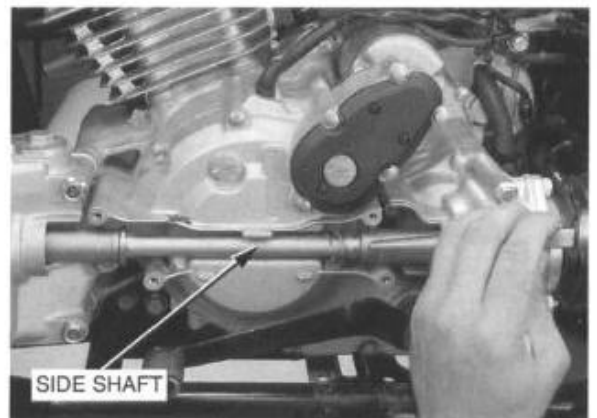


Remove the snap rings from the grooves of the shaft.

Using a drift or punch, carefully tap the side shaft joints until they separate from the output shaft and front drive gear shaft.

Remove the front drive side shaft.

Check the front drive side shaft for damage.



FRONT GEAR CASE

REMOVAL

Remove the front fender (page 16-1).

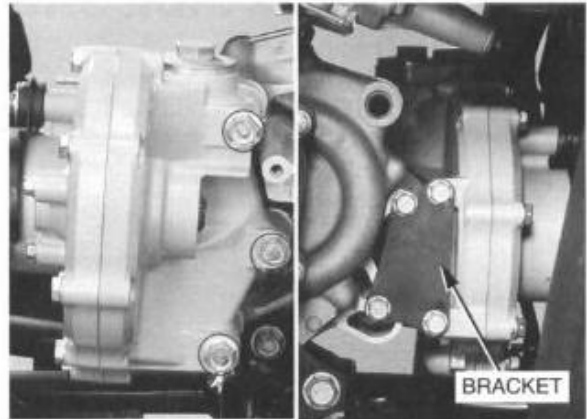
Drain the oil from the front gear case (page 2-5).

Remove the propeller shaft cover.



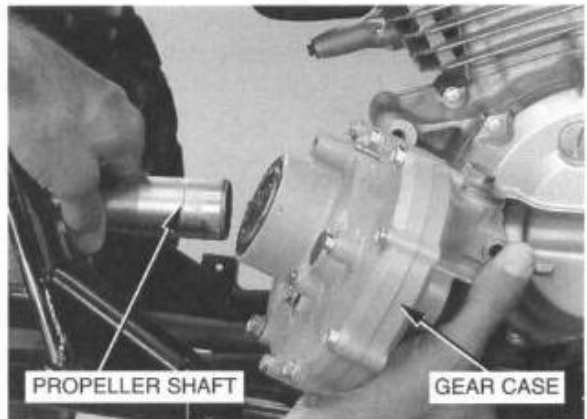
FRONT DRIVING MECHANISM (TRX300FW)

Remove the front gear case mounting bolts and bracket.
Disconnect the vent tube.



Clear the front gear case and propeller shaft from the engine and front differential by pushing the propeller shaft into the gear case.

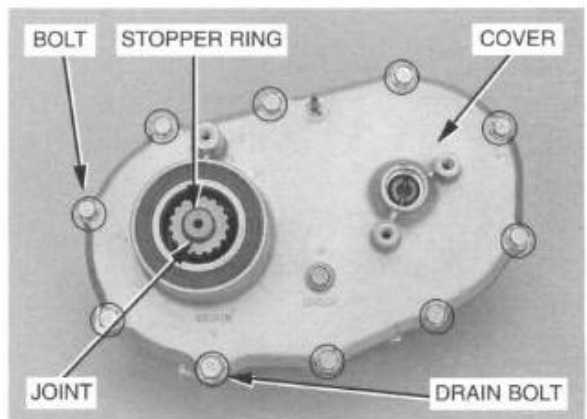
Remove the gear case and propeller shaft.



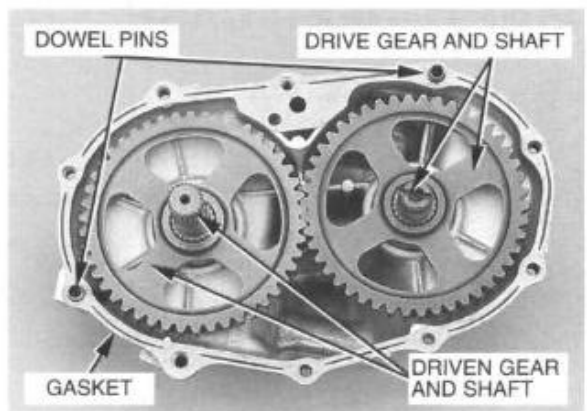
DISASSEMBLY

Remove the following from the gear case:

- stopper ring
- front driven gear shaft joint
- oil drain bolt
- cover bolts
- cover



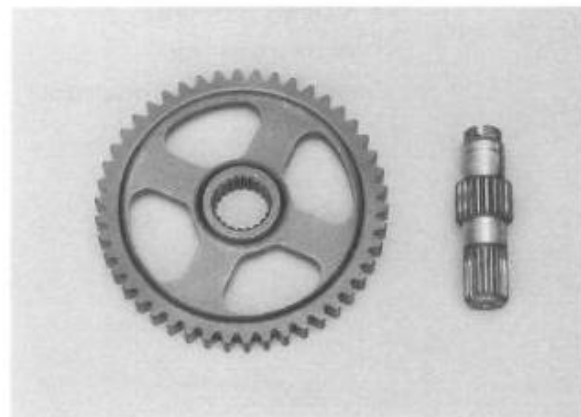
- dowel pins
- gasket
- front driven gear and shaft
- front drive gear and shaft



INSPECTION

• GEAR AND SHAFT

Check the gear and shaft for wear or damage.



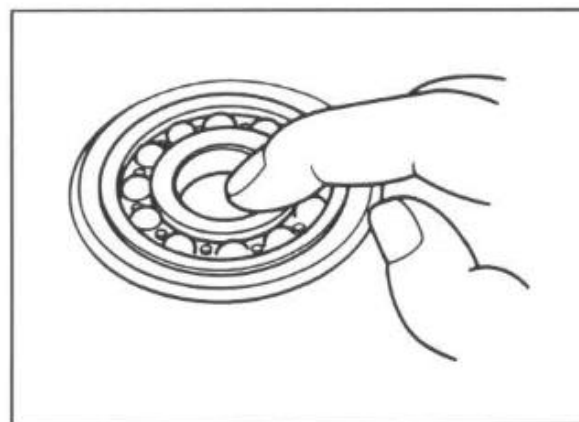
• BEARING

Turn the inner race of each bearing with your finger.

The bearing should turn smoothly and quietly.

Also check that the bearing outer race fits tightly in the case or cover.

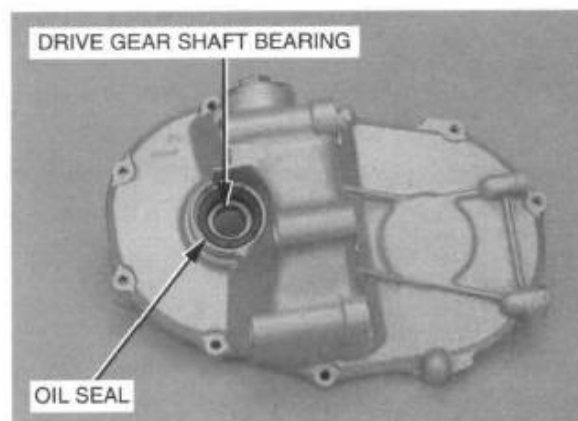
Remove and discard the bearings if the races do not turn smoothly and quietly, or if they fit loosely in the case or cover.



BEARING REMOVAL

• CASE BEARING

Remove the oil seal and drive the drive gear shaft bearing out.



Remove the driven gear shaft bearing.

TOOLS:

Bearing remover, 17 mm

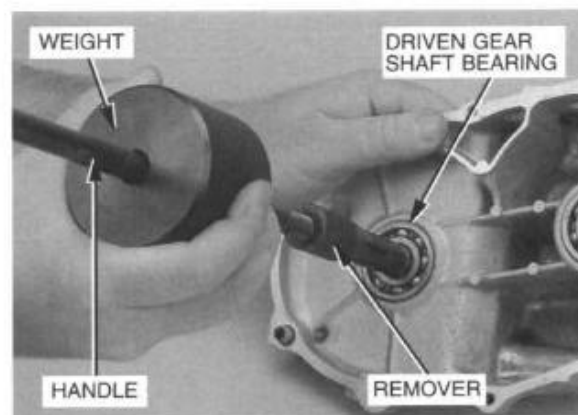
Remover handle

Remover weight

07936-3710300

07936-3710100

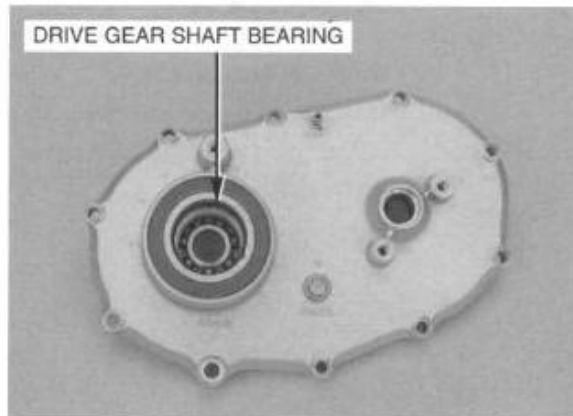
07936-3710200



• COVER BEARING

Remove the oil seal.

Drive the driven shaft bearing out.



Remove the drive gear shaft bearing.

TOOLS:

Bearing remover, 17 mm

07936-3710300

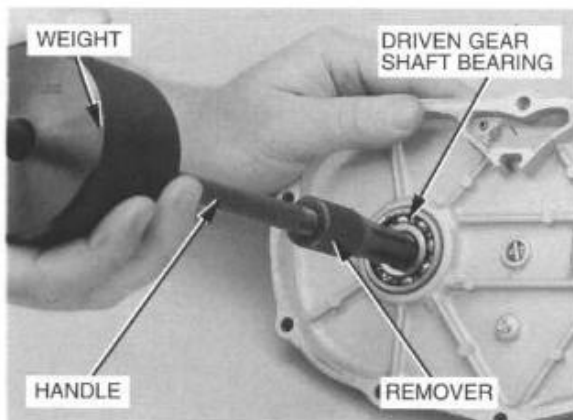
Remover handle

07936-3710100

Remover weight

07936-3710200

Remove the oil seal.



BEARING INSTALLATION

Install a new drive shaft oil seal in the cover.

Apply grease to the oil seal lips.

Drive shaft bearing: Install the bearing with the driver, attachment, and pilot.

Driven shaft bearing: Install the bearing with the driver, and attachment. Do not use the pilot.

TOOLS:

Driver

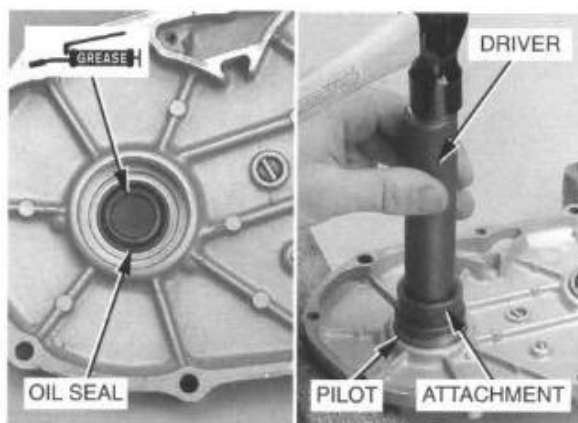
07749-0010000

Attachment, 37 x 40 mm

07746-0010200

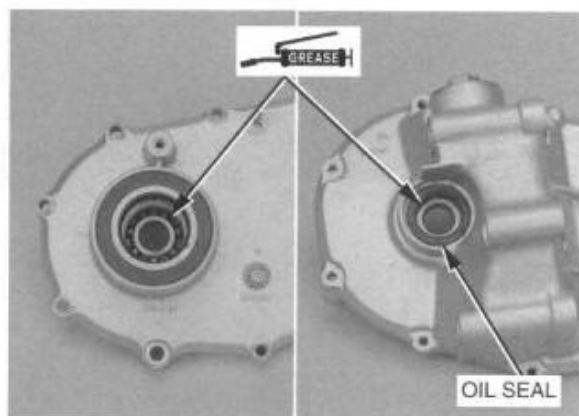
Pilot, 17 mm

07746-0040400

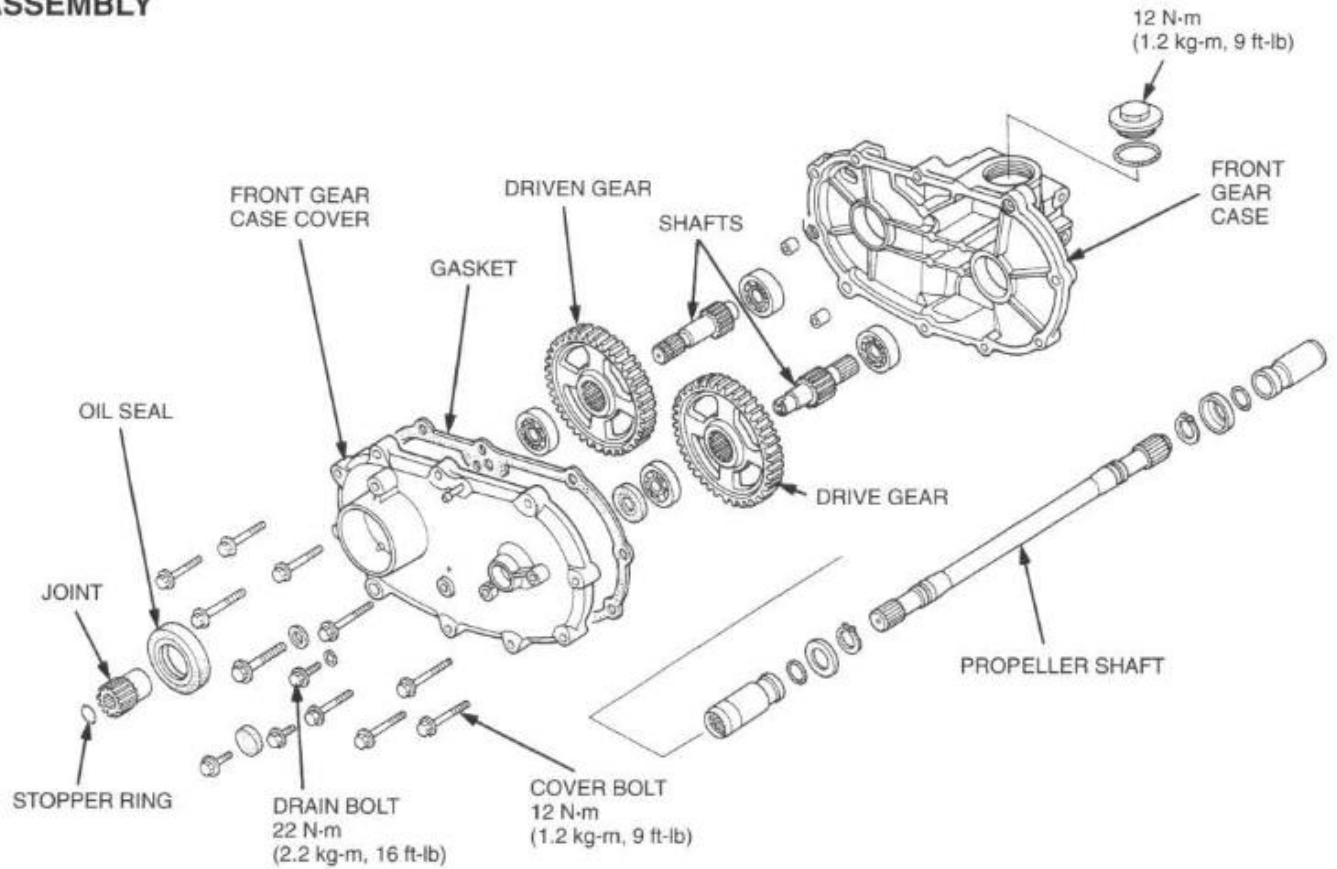


Install new oil seals in the cover and case.

Apply grease to the oil seal lips.

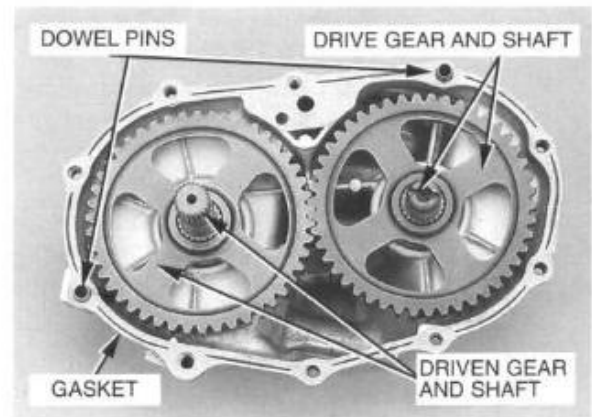


ASSEMBLY



Install the following in the case:

- front drive gear and shaft
- front driven gear and shaft
- new gasket
- dowel pins

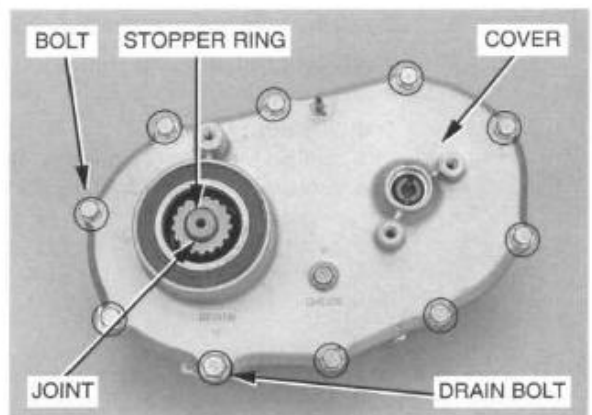


Tighten the cover bolts and drain bolt with a new sealing washer.

TORQUES:

Drain bolt: 22 N·m (2.2 kg-m, 16 ft-lb)

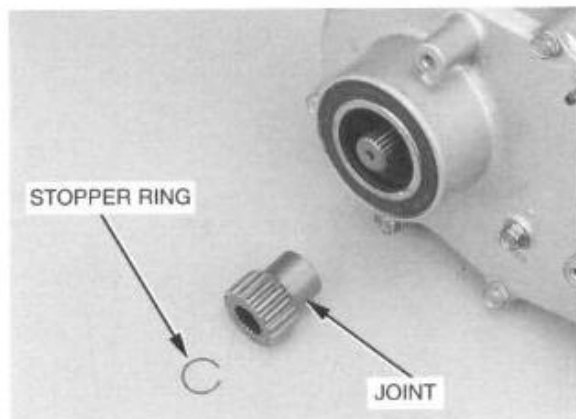
Cover bolt: 12 N·m (1.2 kg-m, 9 ft-lb)



FRONT DRIVING MECHANISM (TRX300FW)

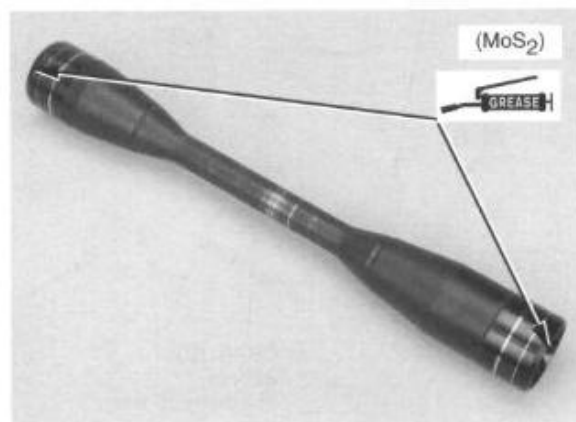
Install the driven gear shaft joint and secure it with the stopper ring.


Install the stopper ring securely in the groove of the driven gear shaft.



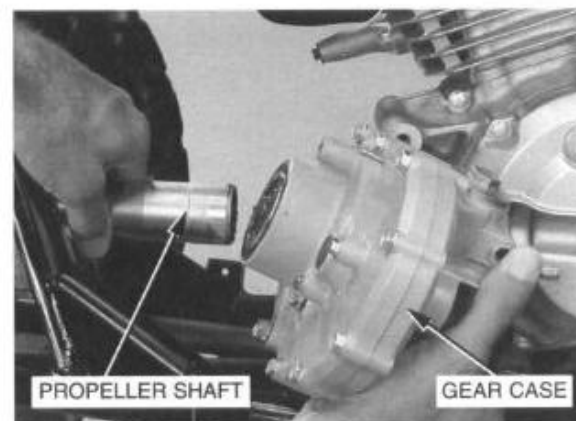
INSTALLATION

Apply molybdenum disulfide grease to the splines of the propeller shaft.



Install the propeller shaft in the front gear case with  mark facing the gear case.

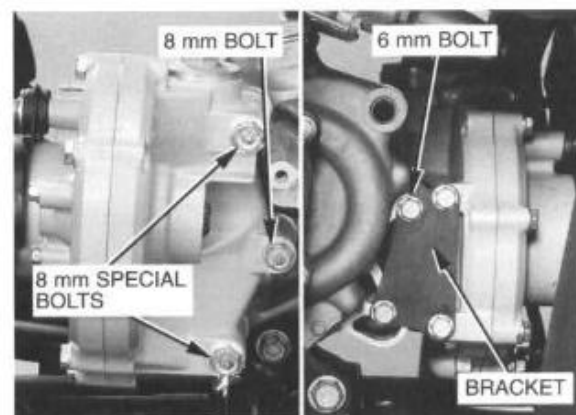
Position the gear case/propeller shaft in the frame and push slightly rearward to install the shaft in the differential case.



Install the front gear case to the engine.
Install the bracket on the right side.

TORQUES:

8 mm bolt: 25 N·m (2.5 kg·m, 18 ft·lb)
6 mm bolt: 12 N·m (1.2 kg·m, 9 ft·lb)

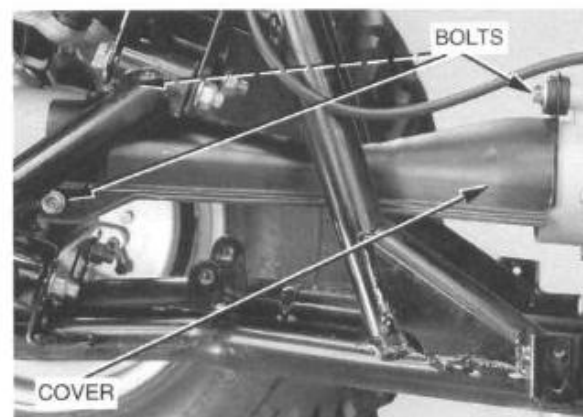


Install the propeller shaft cover and tighten the cover bolts securely.

Connect the vent tube.

Fill the front gear case with the recommended oil (page 2-5).

Install the front fender (page 16-3).

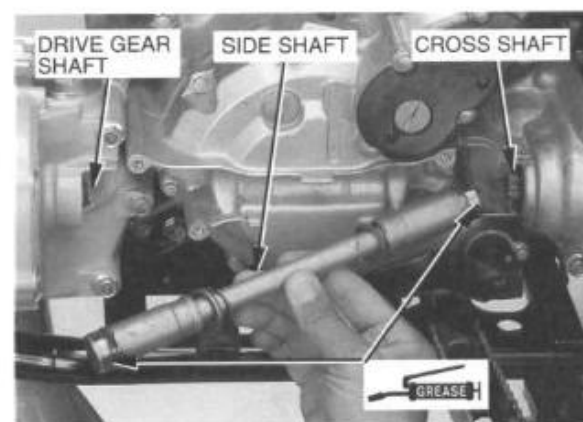


FRONT DRIVE SIDE SHAFT INSTALLATION

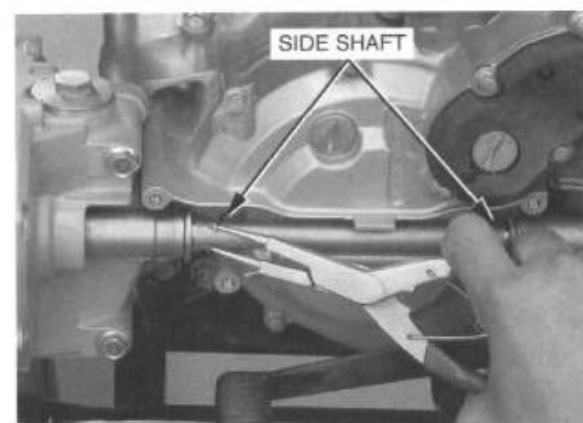
Apply grease to the splines of the side shaft.

Install the side shaft to the output shaft and install the rear snap ring.

Align the splines by turning the front wheel and install the side shaft to the front drive gear shaft.



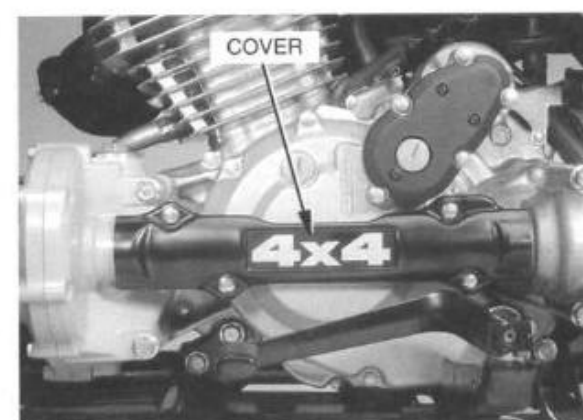
Install the front snap ring in the side shaft groove.



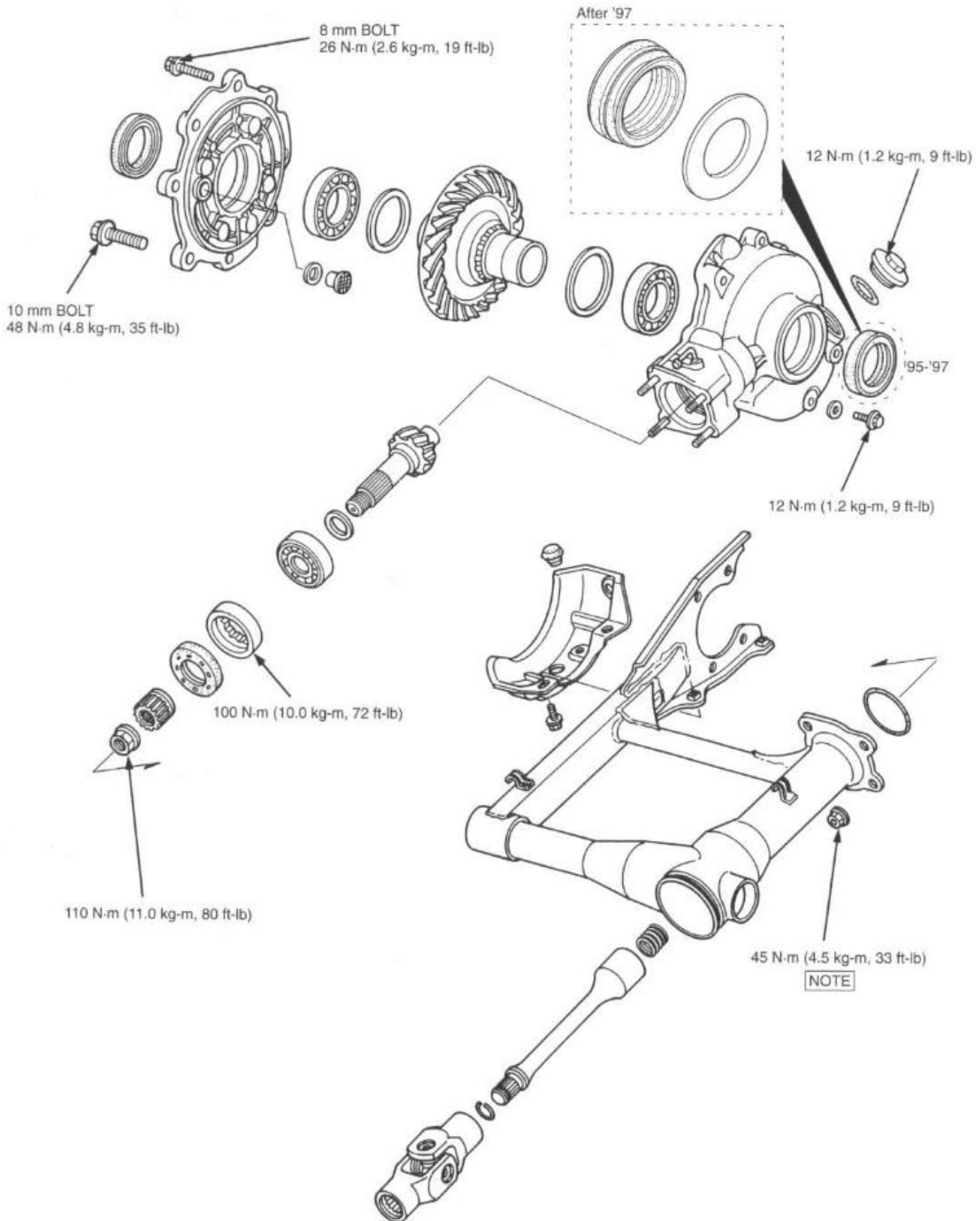
Install the side shaft cover.

Tighten the bolts to the specified torque.

TORQUE: 10 N·m (1.0 kg·m, 7 ft-lb)



REAR DRIVING MECHANISM



15. REAR DRIVING MECHANISM

SERVICE INFORMATION	15-1	REAR DRIVE SHAFT	15-12
TROUBLESHOOTING	15-2	REAR FINAL DRIVE INSTALLATION	15-13
REAR AXLE REMOVAL	15-3	REAR AXLE INSTALLATION	15-15
REAR FINAL DRIVE REMOVAL	15-4		

SERVICE INFORMATION

GENERAL

- This section covers servicing of the rear axle, rear drive shaft and rear final drive.
- Replace all oil seals whenever the rear final drive is disassembled.
- Check the tooth contact pattern and gear backlash when the final drive bearing, gear set and/or case are replaced.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Axle runout		—	3.0 mm (0.12 in)
Rear final drive	Oil capacity	100 cc (3.4 oz) at disassembly	—
	Recommended oil	Hypoid gear oil SAE #80	—
	Gear backlash	0.08–0.18 mm (0.003–0.007 in)	0.25 mm (0.010 in)

TORQUE VALUES

Final drive

Joint nut	45 N·m (4.5 kg-m, 33 ft-lb) – Reuse strictly prohibited
Cover bolt	10 mm 8 mm 48 N·m (4.8 kg-m, 35 ft-lb) – Apply locking agent
Pinion bearing lock nut	26 N·m (2.6 kg-m, 19 ft-lb) 100 N·m (10.0 kg-m, 72 ft-lb)
Pinion joint nut	110 N·m (11.0 kg-m, 80 ft-lb) – Apply locking agent

Axle

Axle housing bolt	50 N·m (5.0 kg-m, 36 ft-lb)
Axle lock nut	inner outer 40 N·m (4.0 kg-m, 29 ft-lb) 130 N·m (13.0 kg-m, 94 ft-lb) – Apply locking agent
Axle nut	140–160 N·m (14.0–16.0 kg-m, 101–116 ft-lb)

TOOLS

Special

Lock nut wrench, 41 mm	07916–958020B
Lock nut wrench attachment, 41 mm	07916–958010B
Pinion holder	07924–HA00001 or 07924–HA00000 Must be modified Increase 4 holes to 10.5 mm (0.41 in)
Lock nut wrench, 34 x 44 mm	07916–ME50001 or 07916–ME50000 and 07916–HA0010A
Shaft puller	07931–ME40000 or 07931–ME4000A
Driver, 40 mm I.D.	07746–0030100
Oil seal driver	07JAD–PH80101 (After '97 only)

REAR DRIVING MECHANISM

Common

Driver, 22 mm I.D.	07746-0020100
Driver	07749-0010000
Attachment, 62 x 68 mm	07746-0010500
Attachment, 52 x 55 mm	07746-0010400

TROUBLESHOOTING

REAR FINAL DRIVE

Excessive noise

- Worn or scored ring gear shaft and driven flange
- Scored driven flange and wheel hub
- Worn or scored drive pinion and splines
- Worn pinion and ring gears
- Excessive backlash between pinion and ring gear
- Oil level too low

REAR AXLE

Wobble or vibration in vehicle

- Axle not tightened properly
- Bent axle

Oil leak

- Clogged breather hole or tube
- Oil level too high
- Worn or damaged oil seal
- Loose cover bolt

REAR AXLE REMOVAL

REMOVAL

Remove the following:

- right and left wheels (page 13-3)
- cotter pins, axle nuts, washers and wheel hubs

Loosen the axle outer lock nut while holding the inner lock nut.

TOOLS:

Lock nut wrench, 41 mm 07916-958020B

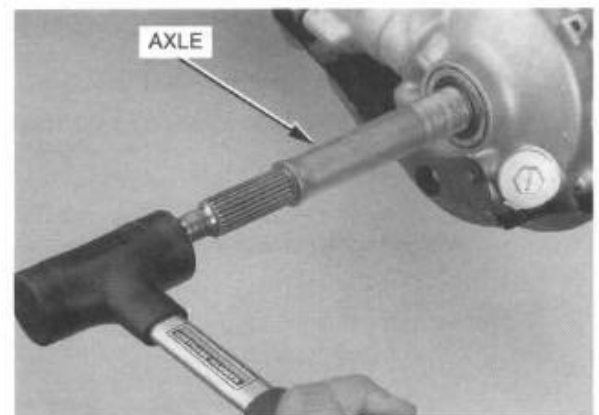
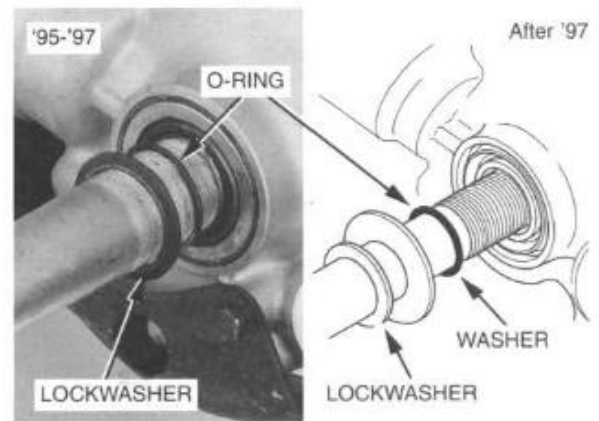
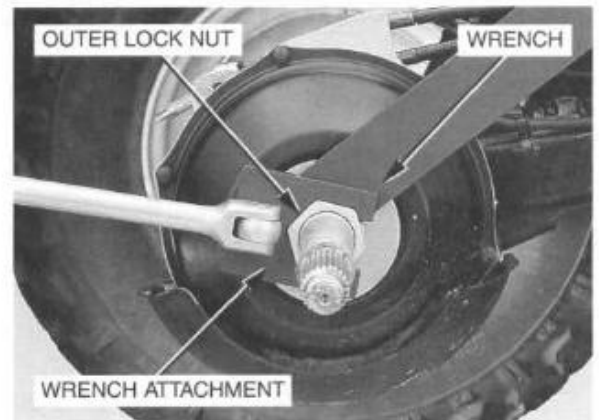
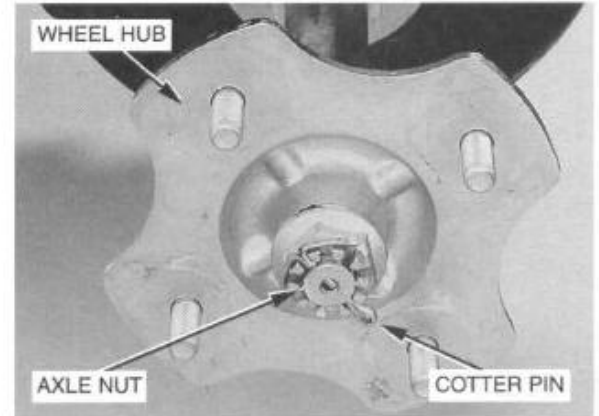
Lock nut wrench attachment, 41 mm 07916-958010B

Loosen the inner lock nut then remove the lock nuts.

Remove the rear brake panel (page 12-23).

Remove the washer (After '97: washers) and O-ring from the axle.

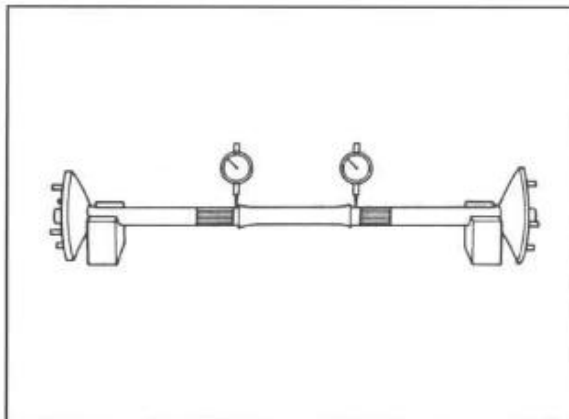
Drive the axle out from the left side with a rubber hammer.



INSPECTION

Install the wheel hubs onto both ends of the axle.
Place the rear axle in V-blocks and measure the runout.

SERVICE LIMIT: 3.0 mm (0.12 in)



REAR FINAL DRIVE REMOVAL

REMOVAL

NOTE

It is not necessary to disassemble the brake panel.

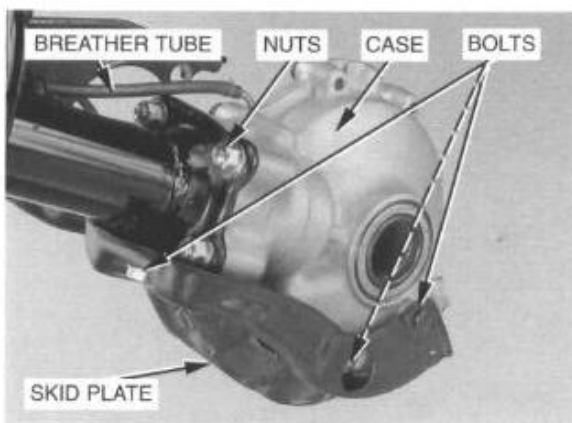
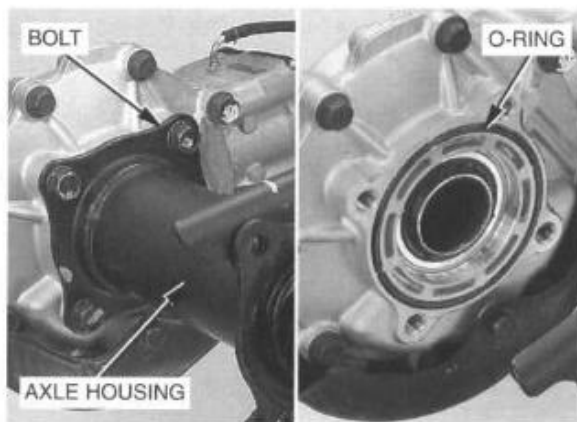
Drain the oil from the rear final drive (page 2-4).

Remove the following:

- rear brake cables
- rear brake panel nuts (page 12-25)
- rear axle with rear brake assembly (page 15-3)
- axle housing mounting bolts
- axle housing
- O-ring

- skid plate mounting bolts and skid plate
- breather tube
- final drive case mounting nuts and case
- O-ring

Discard the mounting nuts.



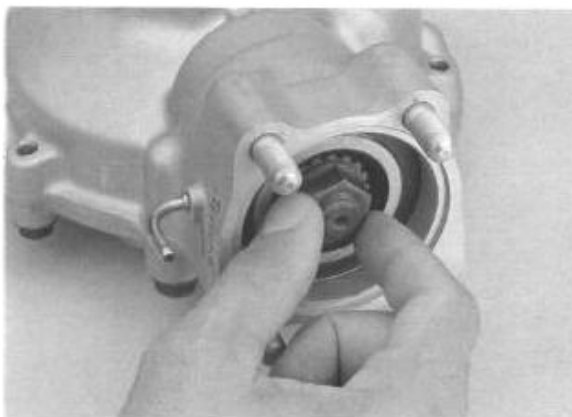
INSPECTION

Turn the drive pinion with your finger.

The drive pinion and ring gear should turn smoothly and quietly.

Check or replace the following if the drive pinion and ring gear do not turn smoothly and quietly:

- case
- each bearing
- drive pinion
- ring gear



BACKLASH INSPECTION

Remove the oil filler cap.

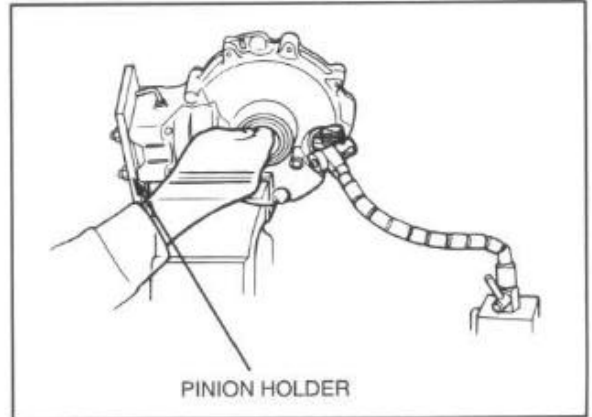
Install the pinion holder onto the pinion joint with four 10 mm nuts.

Set the holder in a vise.

TOOL:

Pinion holder

07924-HA00001 or
07924-HA00000
(Modified-Increase
(4) holes to 10.5 mm)



Set a horizontal type dial indicator on the ring gear, through the oil filler hole.

Rotate the ring gear by hand until gear slack is taken up. Turn the ring gear back and forth to read backlash.

STANDARD: 0.08–0.18 mm (0.003–0.007 in)

SERVICE LIMIT: 0.25 mm (0.010 in)

Remove the dial indicator. Turn the ring gear and measure backlash. Repeat this procedure once more.

Compare the difference of the three measurements.

DIFFERENCE OF MEASUREMENT

SERVICE LIMIT: 0.10 mm (0.004 in)

If the difference in measurements exceeds the limit, it indicates that either the bearing is not installed squarely, or the case is deformed.

Inspect each bearing and case.

If backlash is too small, replace the ring gear left side spacer with a thicker one.

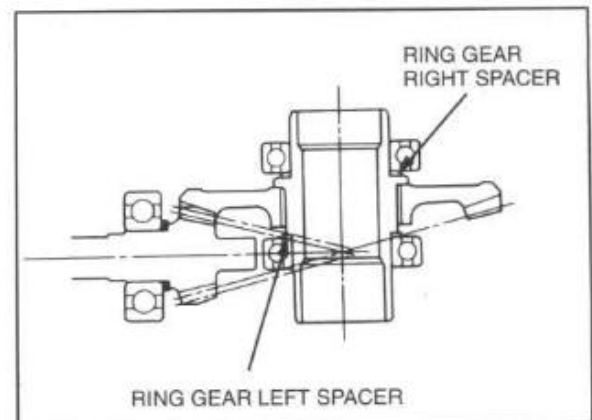
Backlash is changed by about 0.06 mm (0.002 in) when thickness of the spacer is changed by 0.12 mm (0.005 in).

RING GEAR SPACERS:

Twenty-five spacers (from U to X and A to T) are available in thickness intervals of 0.06 mm.

- Standard: 1.50 mm (0.059 in)
- Thinnest: 0.96 mm (0.038 in)
- Thickest: 2.40 mm (0.094 in)

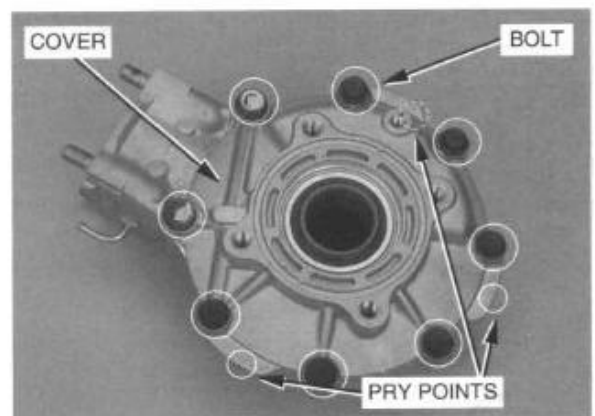
Change the right side spacer thickness an opposite amount to what the left side spacer was changed if the left spacer was replaced with a 0.10 mm (0.004 in) thicker spacer, replace the right spacer with one that is 0.10 mm (0.004 in) thinner.



DISASSEMBLY

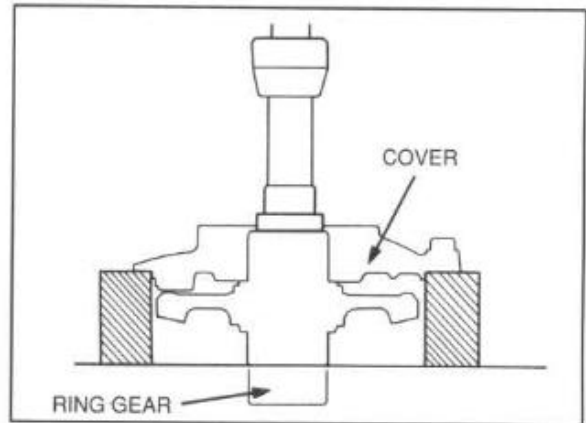
Remove the eight case cover bolts.

Carefully pry the cover off the case using a screwdriver on the pry points as shown.

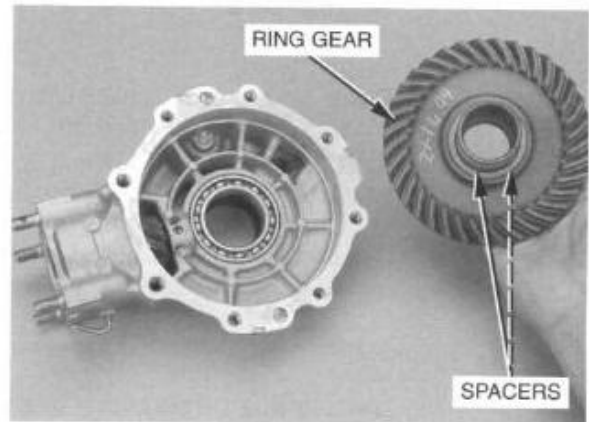


REAR DRIVING MECHANISM

If the ring gear stays in the cover, do the following:
Place the cover in a press with the ring gear down.
Make sure the cover is securely supported.
Press the ring gear out of the cover.



Remove the ring gear and spacers.



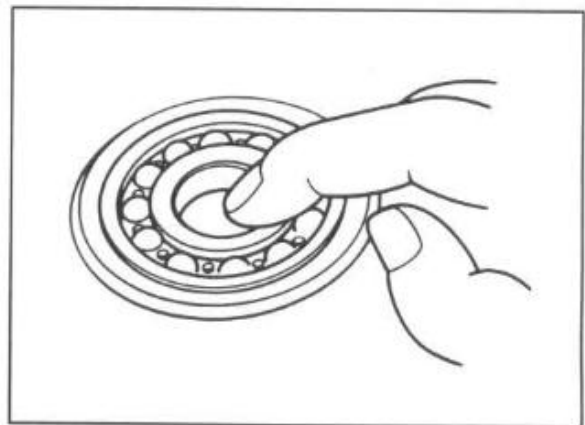
BEARING INSPECTION

Turn the inner race of the ring gear bearings with your finger.
The bearings should turn smoothly and quietly. Also check that the outer races fit tightly in the case or cover.

Remove and discard the bearings if the races do not turn smoothly and quietly, or if they loosely fit in the case or cover.

For ring gear bearing replacement, go to page 15-10.

For drive pinion removal and disassembly, go to page 15-7.



GEAR TOOTH CONTACT PATTERN CHECK

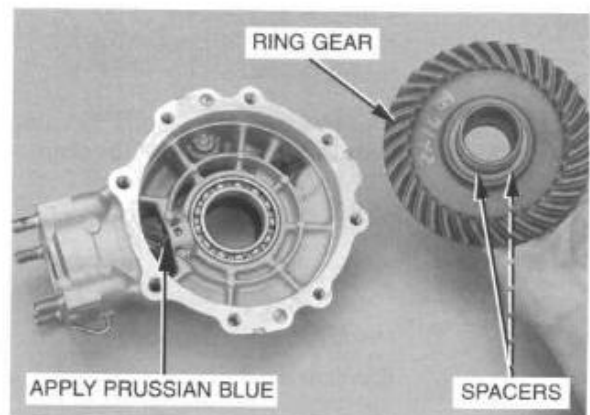
Be careful not to damage the mating surfaces.

Clean all sealing material off the mating surfaces of the gear case and cover.

Keep dust and dirt out of the gear case.

Apply a thin coat of Prussian Blue to the pinion gear teeth for a gear tooth contact pattern check.

Install the ring gear with the ring gear spacers into the case.



Tighten the cover bolts in 2 or 3 steps until the cover evenly touches the gear case. Then, while rotating the drive pinion, tighten the bolts to the specified torque in 2–3 steps in a crisscross pattern.

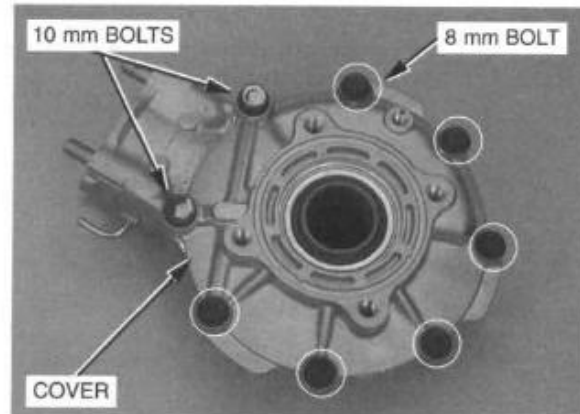
TORQUES:

10 mm bolt: 48 N·m (4.8 kg-m, 35 ft-lb)

8 mm bolt: 26 N·m (2.6 kg-m, 19 ft-lb)

CAUTION

It is important to turn the pinion while tightening the bolts. If the ring gear spacer is too thick, the gears will lock after only light tightening.



Remove the oil filler cap from the final drive case.

Rotate the ring gear several times in both directions of rotation. Check the gear tooth contact pattern through the oil filler hole. The pattern is indicated by the Prussian Blue applied to the pinion before assembly.

Contact is normal if the Prussian Blue is transferred to the approximate center of each tooth and slightly to the flank side.

If the patterns are not correct, remove and replace the pinion spacer. Replace the pinion spacer with a thicker one if the contacts are too high, toward the face.

Replace the pinion spacer with a thinner one if the contacts are too low, to the flank side.

The patterns will shift about 1.5–2.0 mm (0.06–0.08 in) when the thickness of the spacer is changed by 0.10 mm (0.004 in).

PINION SPACERS:

A: 1.82 mm (0.072 in)

B: 1.88 mm (0.074 in)

C: 1.94 mm (0.076 in)

D: 2.00 mm (0.079 in) Standard

E: 2.06 mm (0.081 in)

F: 2.12 mm (0.083 in)

G: 2.18 mm (0.086 in)

Remove the ring gear.

DRIVE PINION REMOVAL

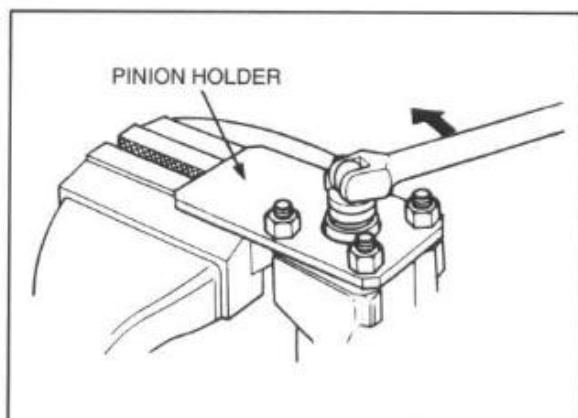
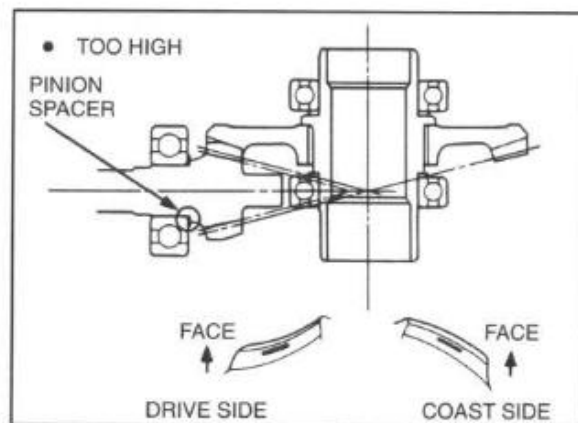
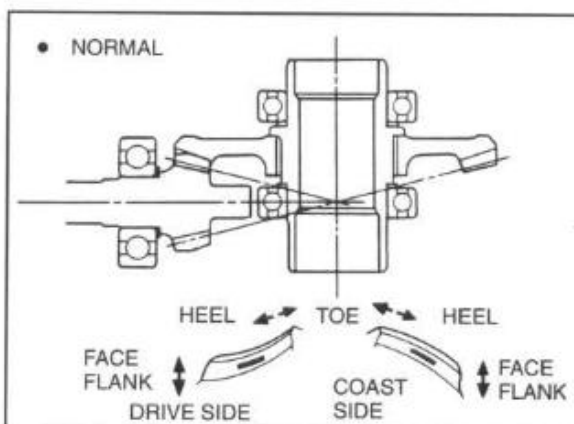
Engage the splines of the special tool with the pinion joint and secure it to the final gear case with four 10 mm nuts. Secure the special tool in a vise.

Remove the pinion joint nut, then remove the special tool.

TOOL:

Pinion holder

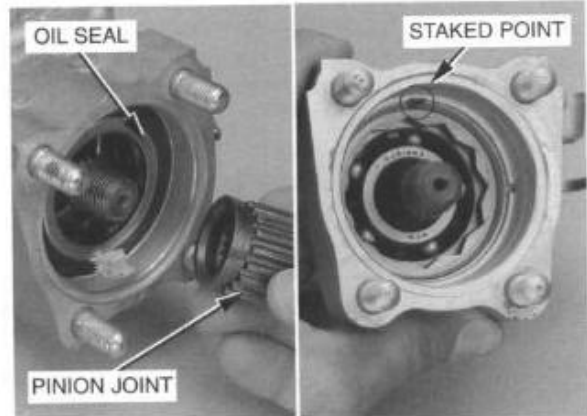
07924-HA00001 or
07924-HA00000
(Modified)—Increase
(4) holes to
10.5 mm (0.14 in)



REAR DRIVING MECHANISM

Remove the pinion joint and oil seal.

Unstake the pinion bearing lock nut with a drill or grinder. Be careful that metal particles do not enter the bearing and that the threads are not damaged.

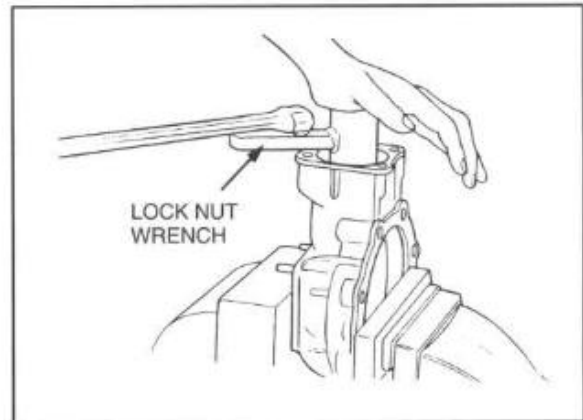


Remove the pinion bearing lock nut with the lock nut wrench.

TOOLS:

Lock nut wrench, 34 x 44 mm	07916-ME50001
or	
Lock nut wrench, 34 x 44 mm	07916-ME50000 and
Attachment	07916-HA0010A

Remove the washer.



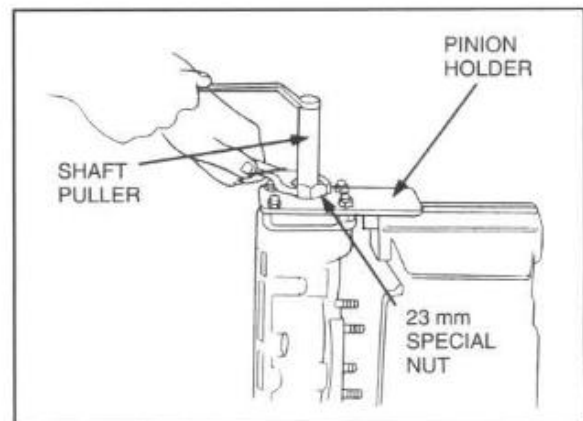
Position the pinion holder on the final drive case.

Screw the shaft puller onto the threads of the drive pinion.

Screw the 23 mm special nut down until it contacts the pinion holder.

NOTE

Be sure that the 23 mm special nut is backed off far enough to allow full thread engagement between the puller and the pinion gear shaft.



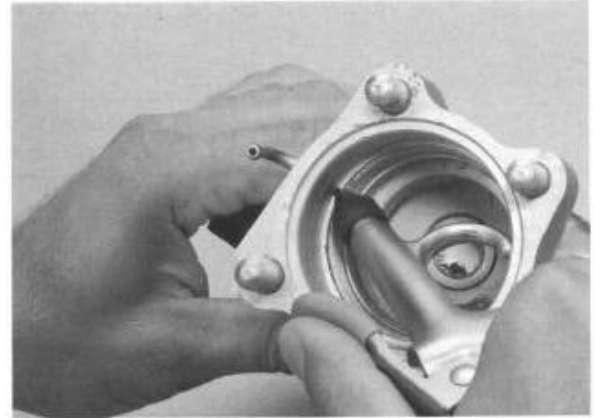
Turn the 23 mm special nut counterclockwise with a 23 mm wrench while holding the shaft with a 17 mm wrench to remove the drive pinion from its housing.

Pull the pinion assembly off with the pinion holder.

TOOLS:

Shaft puller	07931-ME40000 or
	07931-ME4000A
Pinion holder	07924-HA00001 or
	07924-HA00000
	(Modified)—Increase
	(4) holes to
	10.5 mm (0.14 in)

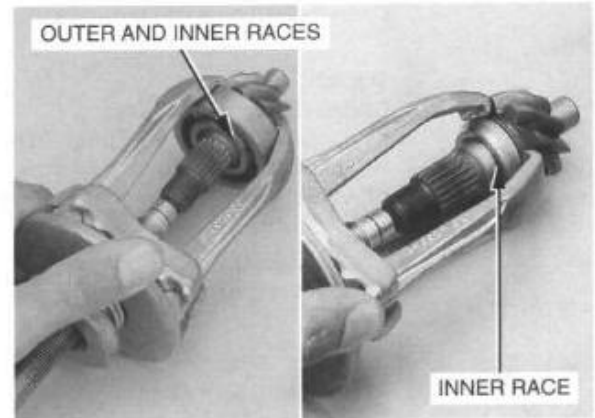
Blow compressed air through the breather hole in the final drive case.



Pull the bearing outer and inner races off the shaft with the bearing puller.

Pull the other inner race off with the same tool.

Remove the pinion adjustment spacer.

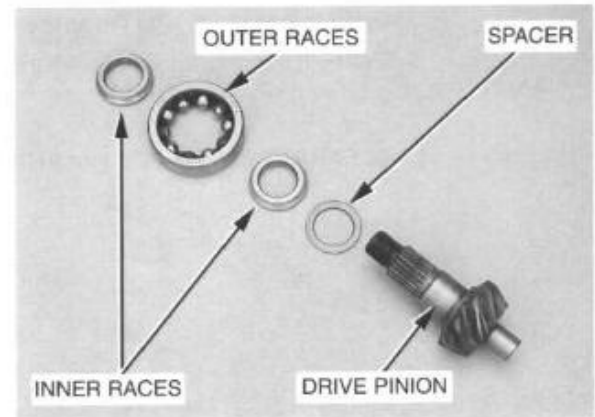


To reassemble, first install the pinion spacer.

NOTE

When the gear set, pinion bearing and/or gear case have been replaced, use a 2.00 mm (0.079 in) thick spacer.

Apply #80 gear oil to the inner races and the bearing.



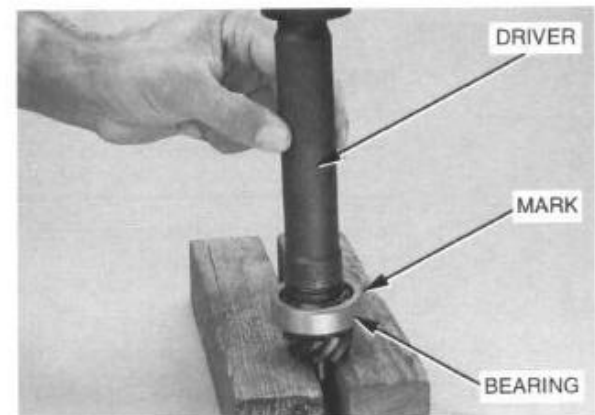
Position the marked side of the outer race to the outside.

Press the bearing and both inner races onto the pinion gear shaft with the special tool shown.

TOOL:

Driver, 22 mm I.D.

07746-0020100



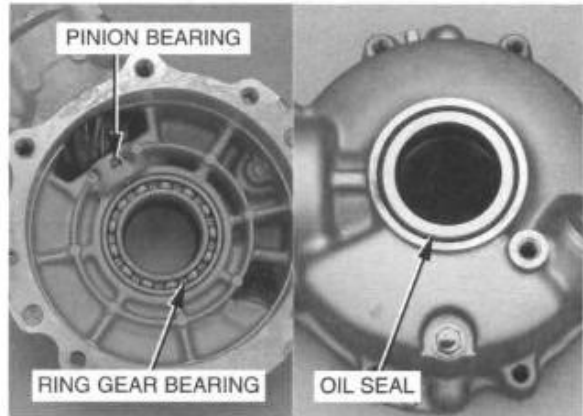
BEARING/OIL SEAL REPLACEMENT

NOTE

The drive pinion bearing cannot be removed. Replace the final drive case if the bearing is damaged.

Remove the oil seals.

Drive the ring gear bearing out of the case and cover.



Drive the oil seals into the case and cover.

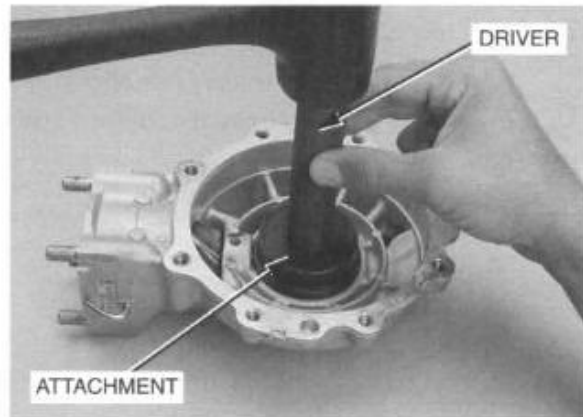
TOOLS:

CASE: Driver ('95-'97) 07749-0010000
Oil Seal Driver (After '97) 07JAD-PH80101
Attachment, 62 x 68 mm 07746-0010500
COVER: Driver 07749-0010000
Attachment, 52 x 55 mm 07746-0010400

Drive the ring gear bearing into the case and cover.

TOOLS:

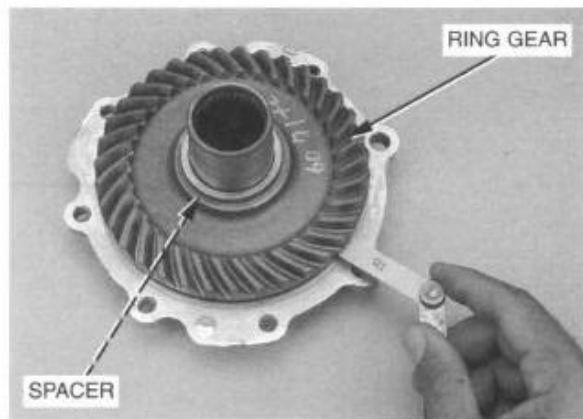
Driver 07749-0010000
Attachment, 62 x 68 mm 07746-0010500



Install the ring gear with the spacer into the cover.

Measure the clearance between the ring gear and the ring gear stop pin with a feeler gauge.

CLEARANCE: 0.30-0.60 mm (0.012-0.024 in)



Do not use a torch to heat the cover; it may cause warping.

Remove the ring gear. If the clearance exceeds the standard, heat the cover to approximately 80°C (176°F) and remove the stop pin by tapping the cover.

▲ WARNING

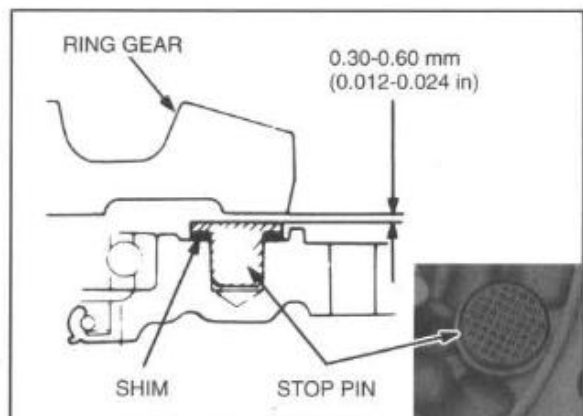
Always wear gloves when handling the cover after it has been heated to prevent burning your hands.

Install a stop pin shim to obtain the correct clearance.

SHIM THICKNESS:

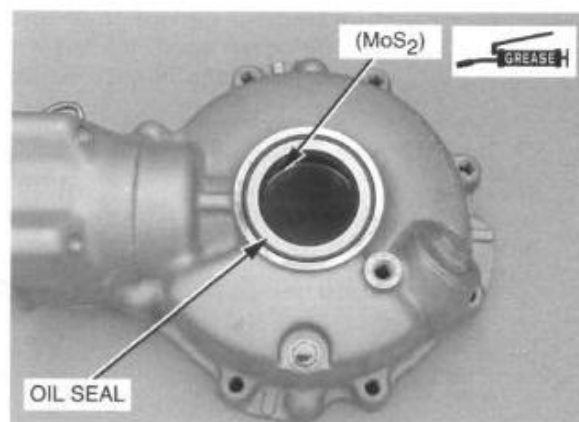
A: 0.10 mm (0.004 in)
B: 0.15 mm (0.006 in)

Install the shim and drive the stop pin into the cover.



Install a new oil seal in the case and cover.

Apply molybdenum disulfide grease to the oil seal lips.



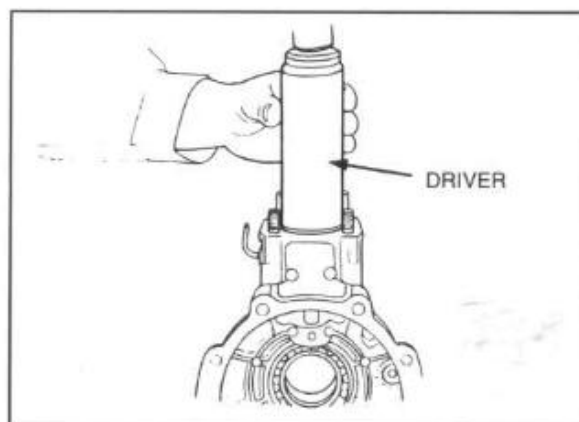
DRIVE PINION INSTALLATION

Place the drive pinion assembly into its housing and drive it into the final drive case.

TOOL:

Driver, 40 mm I.D.

07746-0030100



Install the washer.

Install and tighten the pinion bearing lock nut.

TORQUE: 100 N-m (10.0 kg-m, 72 ft-lb)

WRENCH READING: 91 N-m (9.1 kg-m, 66 ft-lb)
using a 50 cm (20 in) long torque wrench

TOOLS:

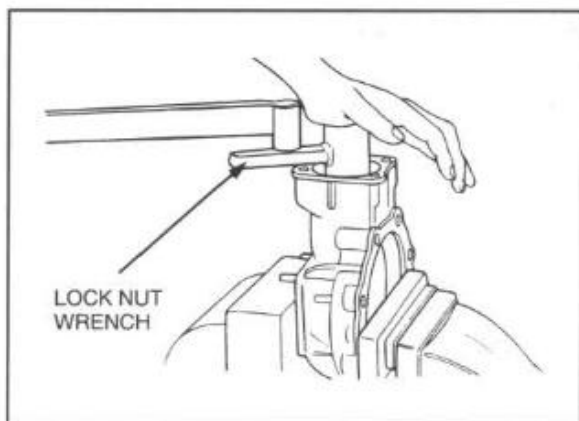
Lock nut wrench, 34 x 44 mm

07916-ME50001

or

Lock nut wrench, 34 x 44 mm
Attachment

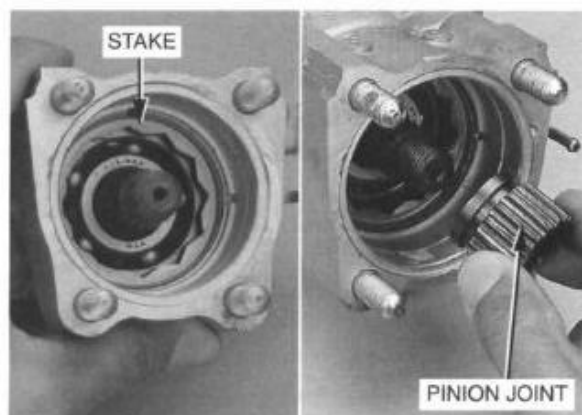
07916-ME50000 and
07916-HA0010A
(U.S.A. only)



Stake the pinion bearing lock nut.

Install the pinion joint into the pinion.

Apply locking agent to the pinion threads.



REAR DRIVING MECHANISM

Place the pinion holder onto the pinion joint. Align the holes in the pinion holder with the four (4) studs on the final drive case and secure to the case with four 10 mm nuts.

Place the holder in a vise.

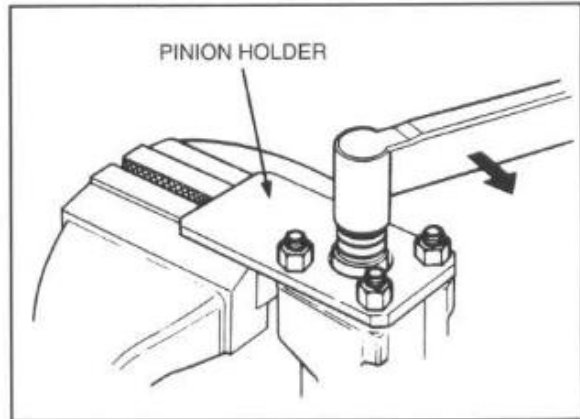
Tighten the pinion joint nut.

TORQUE: 110 N·m (11.0 kg-m, 80 ft-lb)

TOOLS:

Pinion holder

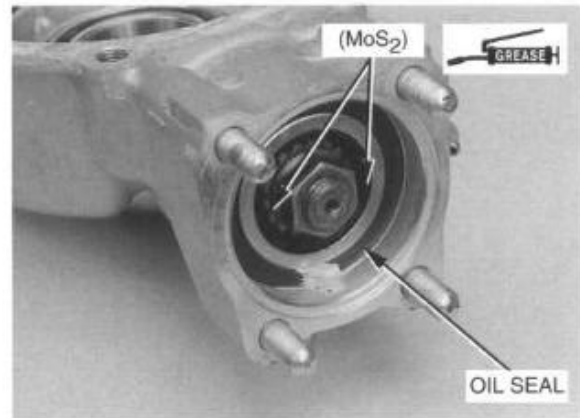
07924-HA00001 or
07924-HA00000
(Modified-Increase
(4) holes to 10.5 mm)



Remove the pinion holder.

Apply molybdenum disulfide grease to the lips of a new drive pinion oil seal and the pinion joint.

Install the new drive pinion oil seal in the case.



REAR DRIVE SHAFT

REMOVAL

Remove the swingarm (page 13-9).

Pull the drive shaft out of the swing arm and disassemble it.



INSPECTION

Inspect the yoke joint bearings for excessive play or damage.

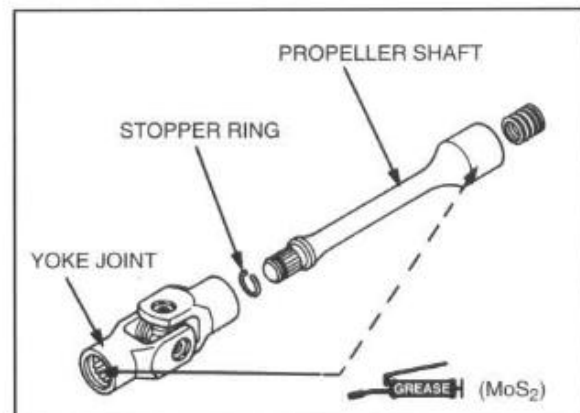
Apply molybdenum disulfide grease to the splines.

INSTALLATION

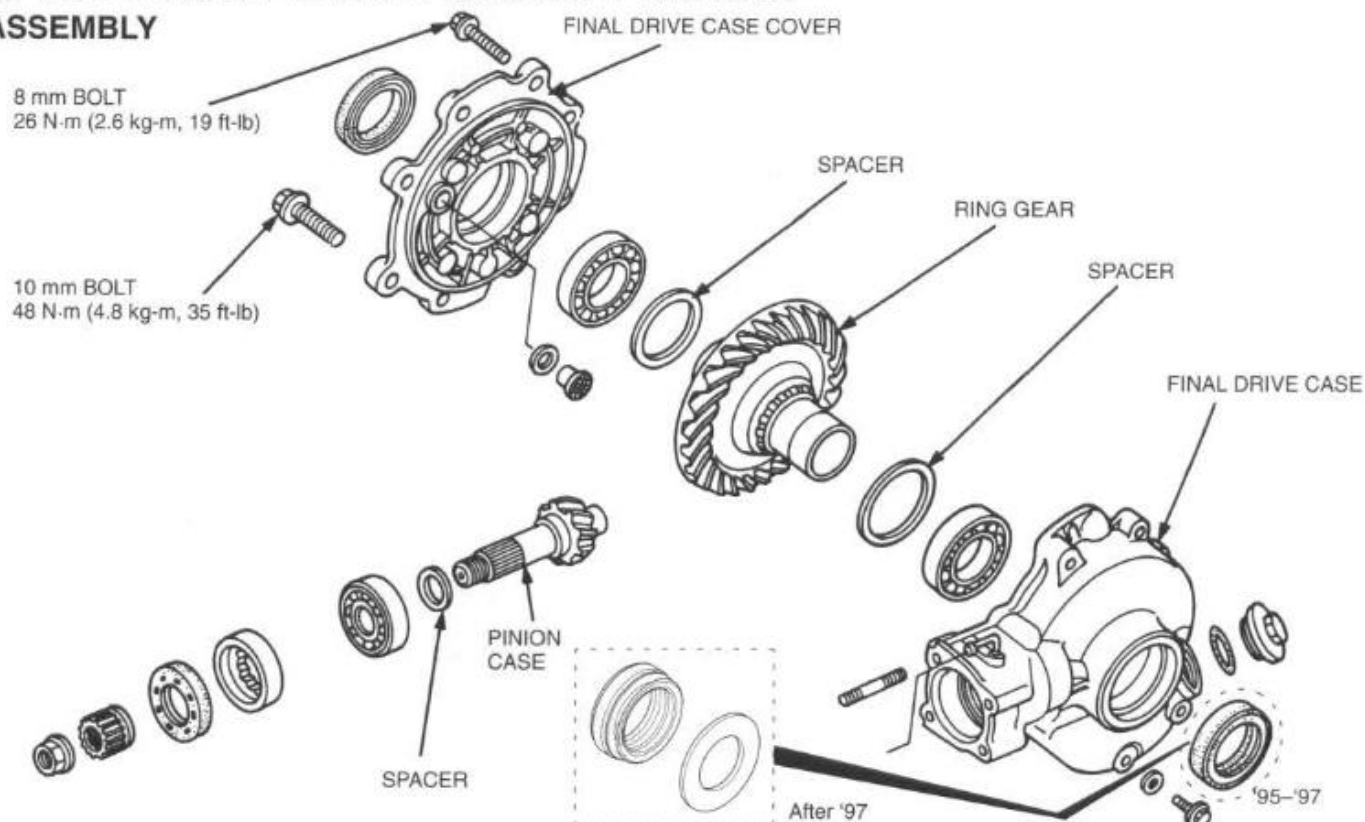
Install the stopper ring to the propeller shaft and install the yoke joint to the shaft by lightly tapping.

Install the drive shaft into the swingarm.

Install the swingarm (page 13-11).



REAR FINAL DRIVE INSTALLATION ASSEMBLY



NOTE

When the bearing, gear set and/or case has been replaced, check the tooth contact pattern (page 15-6) and gear backlash (page 15-5).

Install the ring gear spacers onto the ring gear.

Install the ring gear, with the spacers, into the final drive case.

Apply liquid sealant to the mating surface of the cover and install the cover on the final drive case.

Apply locking agent to the threads of the 10 mm bolts.

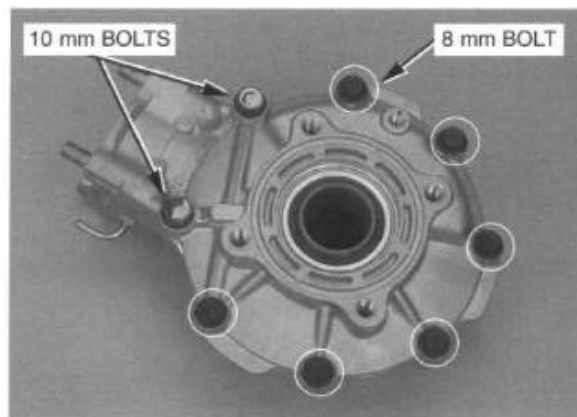
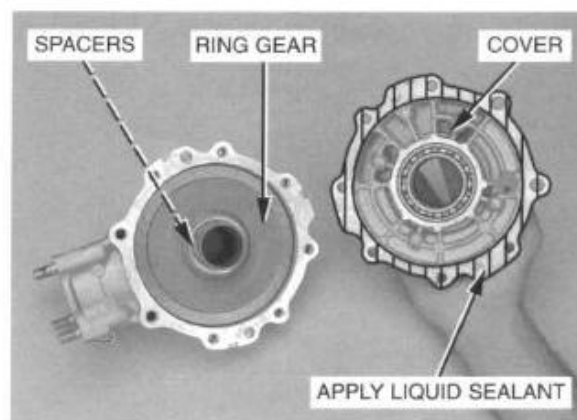
Tighten the cover bolts in 2-3 steps until the cover evenly touches the final drive case. Then, while rotating the pinion, tighten the bolts to the specified torque in 2-3 steps in a crisscross pattern.

TORQUES:

10 mm bolt: 48 N·m (4.8 kg-m, 35 ft-lb)
8 mm bolt: 26 N·m (2.6 kg-m, 19 ft-lb)

CAUTION

It is important to turn the pinion while tightening the bolts. If the ring gear spacer is too thick, the gears will lock after only light tightening.

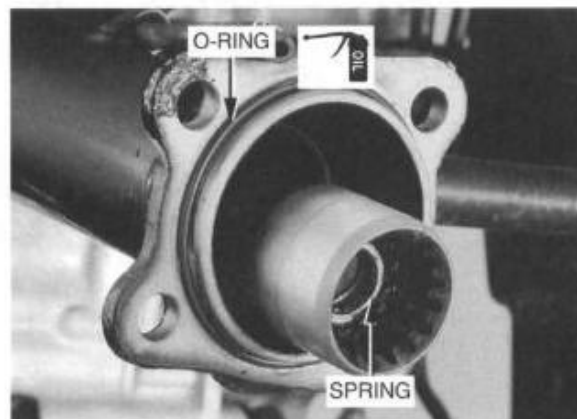


INSTALLATION

Install a new O-ring on the swing arm.

Apply oil to the O-ring.

Install the spring in the drive shaft joint.

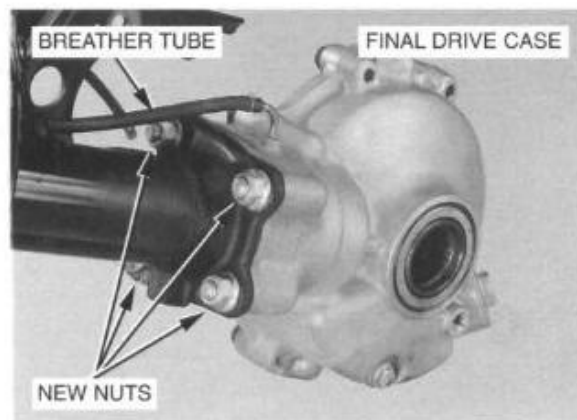


Assemble the final drive case to the swing arm.

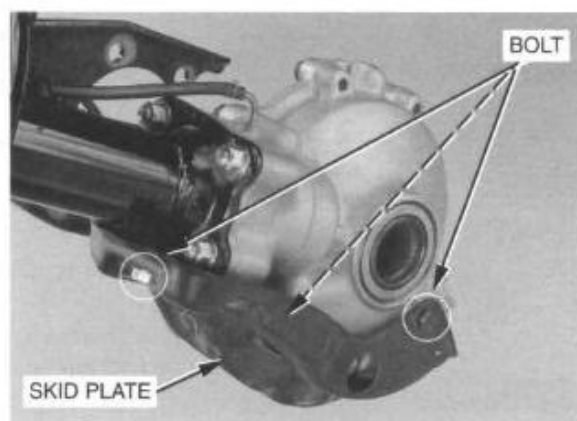
Install the new joint nuts loosely.

Do not reuse the nuts.

Connect the breather tube to the case.

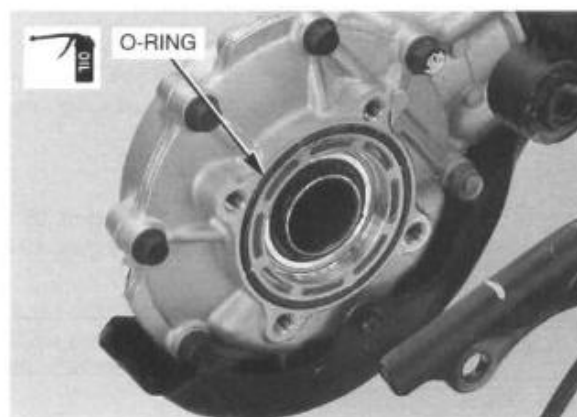


Install the skid plate on the final drive case.



Install a new O-ring on the final drive case.

Apply oil to the O-ring.



Install the axle housing to the final drive case and tighten the bolts to the specified torque.

TORQUE: 50 N·m (5.0 kg-m, 36 ft-lb)

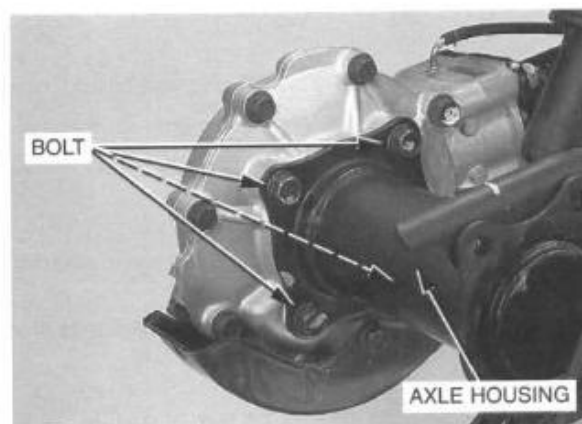
Tighten the final drive case joint nuts to the specified torque.

TORQUE: 45 N·m (4.5 kg-m, 33 ft-lb)

Fill the final drive with the recommended oil (page 2-4).

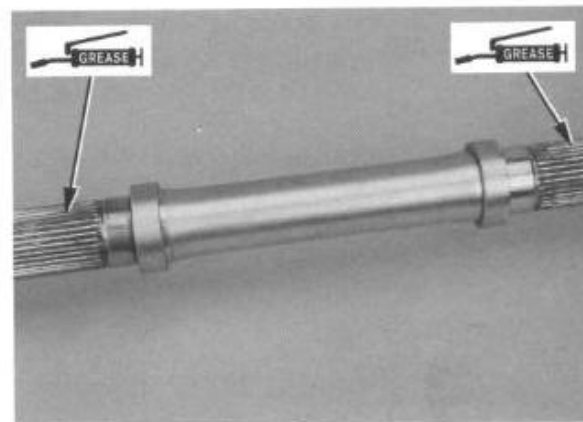
Install the rear axle housing with rear brake assembly.

Install new rear brake panel nuts (page 12-27).

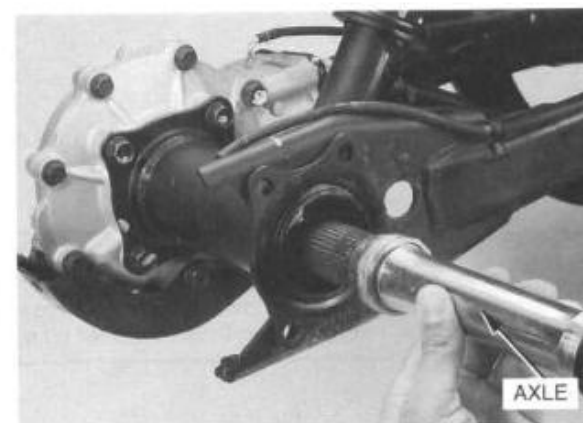


REAR AXLE INSTALLATION

Apply grease to the axle splines.

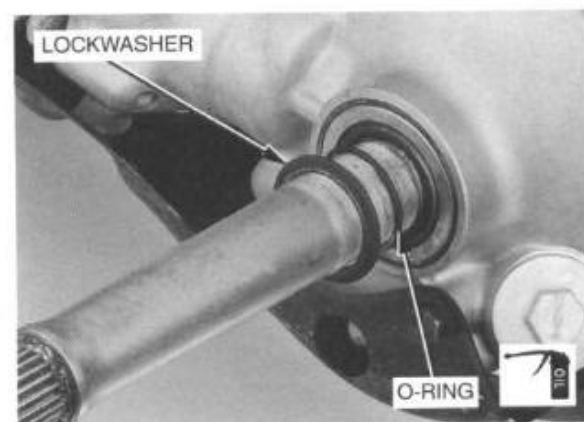


Install the rear axle from the right side while aligning the splines of the final drive and axle.



'95-'97: Coat a new O-ring with oil and install it onto the axle.

Install the lockwasher onto the axle with its "OUTSIDE" mark facing out.



REAR DRIVING MECHANISM

After '97: Apply grease to the oil seal lip of the final drive case.

Coat a new O-ring with oil and install it onto the axle.

Install the washer onto the axle.

Install the lock washer onto the axle with its "OUTSIDE" mark facing out.

Install the rear brake panel and drum (page 12-26).

Install the inner lock nut (flange side on inside) and tighten it to the specified torque.

TORQUE: 40 N·m (4.0 kg-m, 29 ft-lb)

Apply locking agent to the threads of the outer lock nut.

Install the outer lock nut and tighten it to the specified torque while holding the inner lock nut.

TORQUE: 130 N·m (13.0 kg-m, 94 ft-lb)

TOOLS:

Lock nut wrench, 41 mm 07916-958020B

Lock nut wrench attachment, 41 mm 07916-958010B

Apply grease to the axle splines.

Install the following:

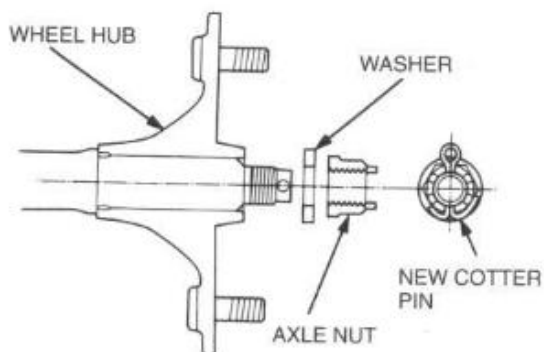
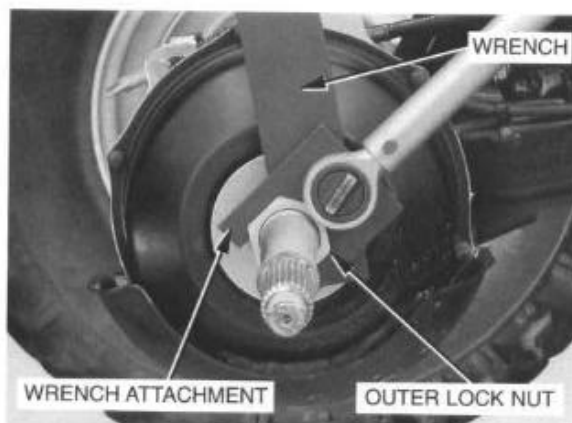
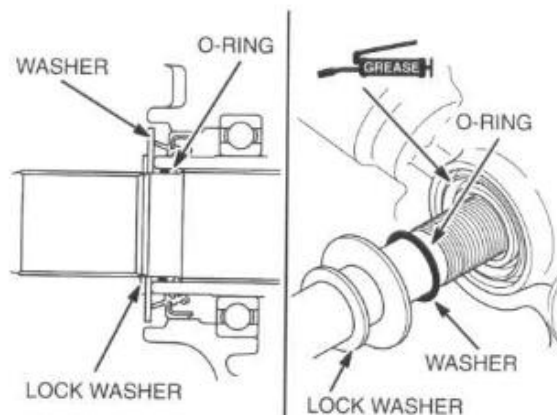
- wheel hubs
- washer
- axle nuts

TORQUE: 140-160 N·m (14.0-16.0 kg-m, 101 - 116 ft-lb)

NOTE

If cotter pins cannot be installed after torquing nuts due to alignment of axle hole, tighten nut further until cotter pin can be installed. Do not loosen the axle nuts after torquing them to install cotter pins as shown.

- new cotter pins
- right and left rear wheels (page 13-3)



16. BUMPER/CARRIERS/FENDERS/MUFFLER

FRONT BUMPER/CARRIER/FENDER
REAR CARRIER/REAR FENDER

16-1
16-4

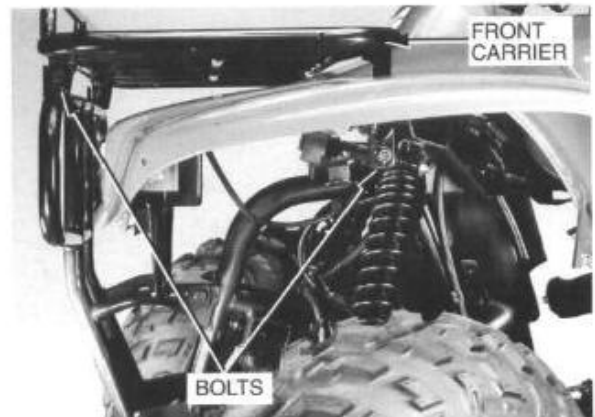
EXHAUST MUFFLER

16-7

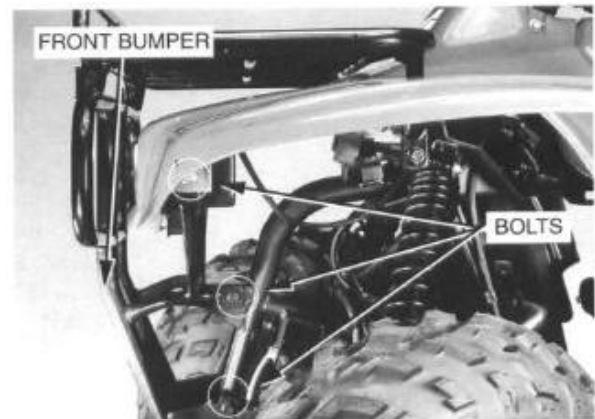
FRONT BUMPER/CARRIER/FENDER

REMOVAL

Remove the four bolts and the front carrier.



Remove the six bolts and the front bumper.

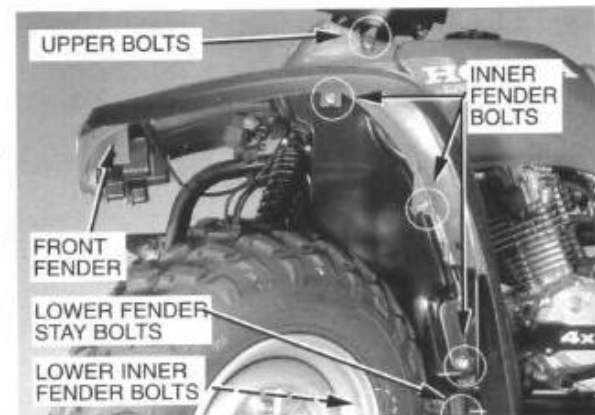


16

Disconnect the headlight wire connectors.
Remove the two fender upper bolts.
Remove the two lower front fender stay bolts.
Remove the two lower inner fender bolts and front fender.

NOTE

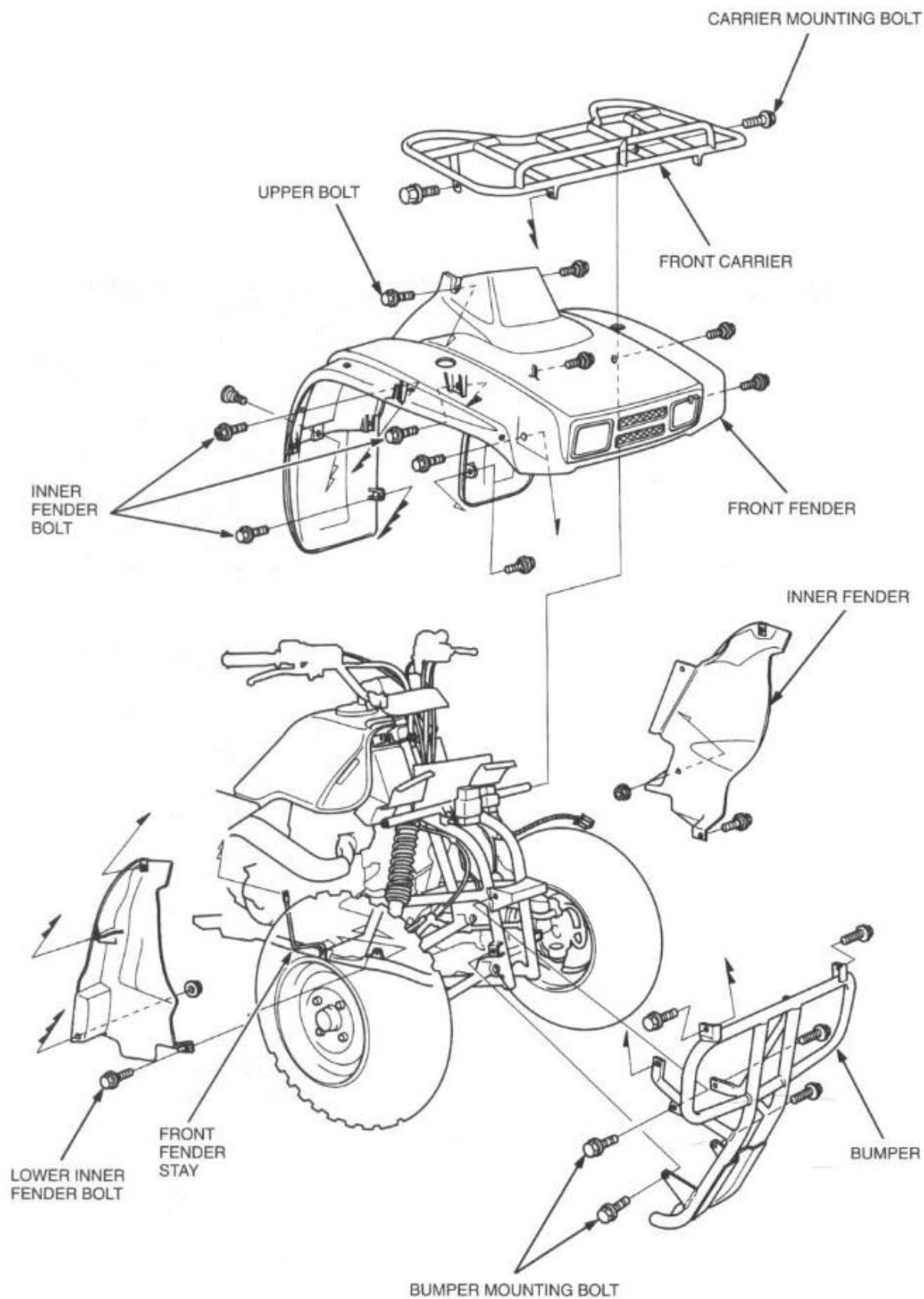
To separate the two inner fenders from the front fender, remove the six inner fender bolts.



BUMPER/CARRIERS/FENDERS/MUFFLER

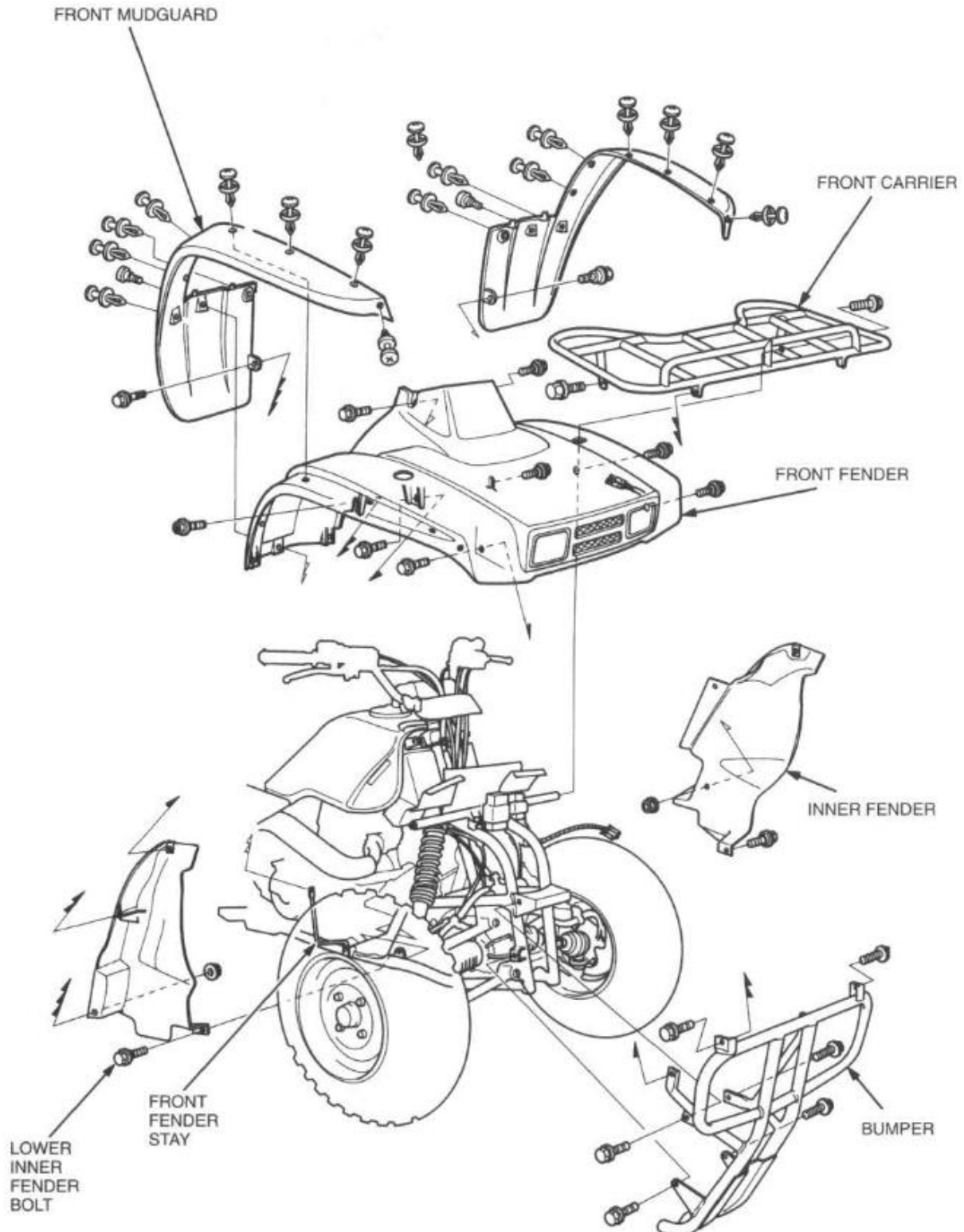
INSTALLATION (TRX300)

Install the front fender, bumper, and carrier in the reverse order of removal.



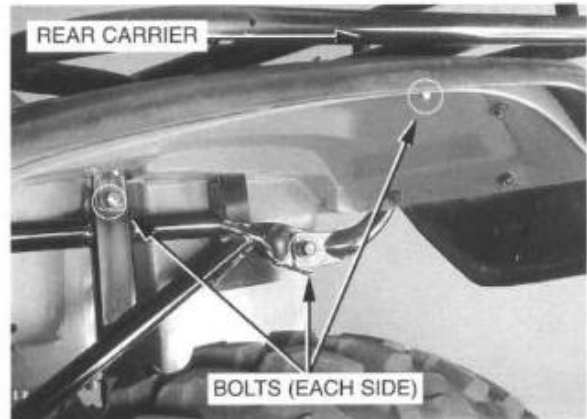
INSTALLATION (TRX300FW)

Install the front fender, bumper, and carrier in the reverse order of removal.



REAR CARRIER/REAR FENDER

Remove the six bolts and rear carrier.

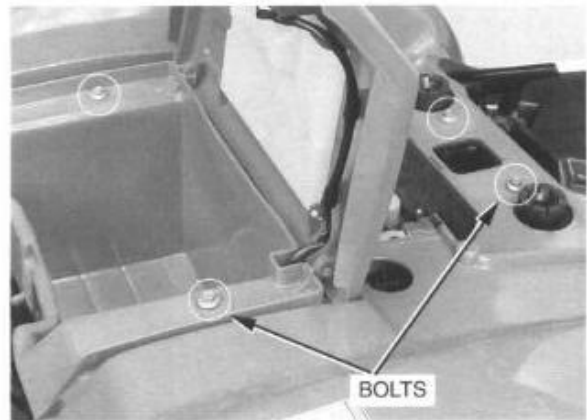


Remove the battery (page 18-4) and disconnect all connectors in the battery box.

Open the tool box cover and remove two bolts.

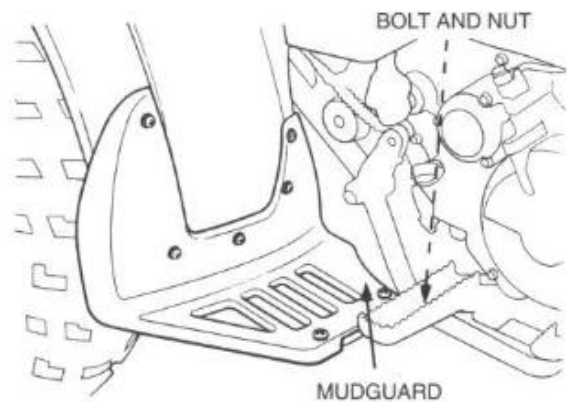
Remove the seat.

Remove the two bolts under the seat.



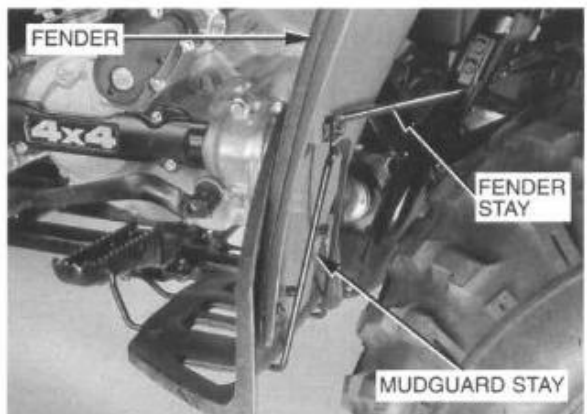
Remove the mudguard (each side).

Remove the mudguard stay bolt and nut (each side).



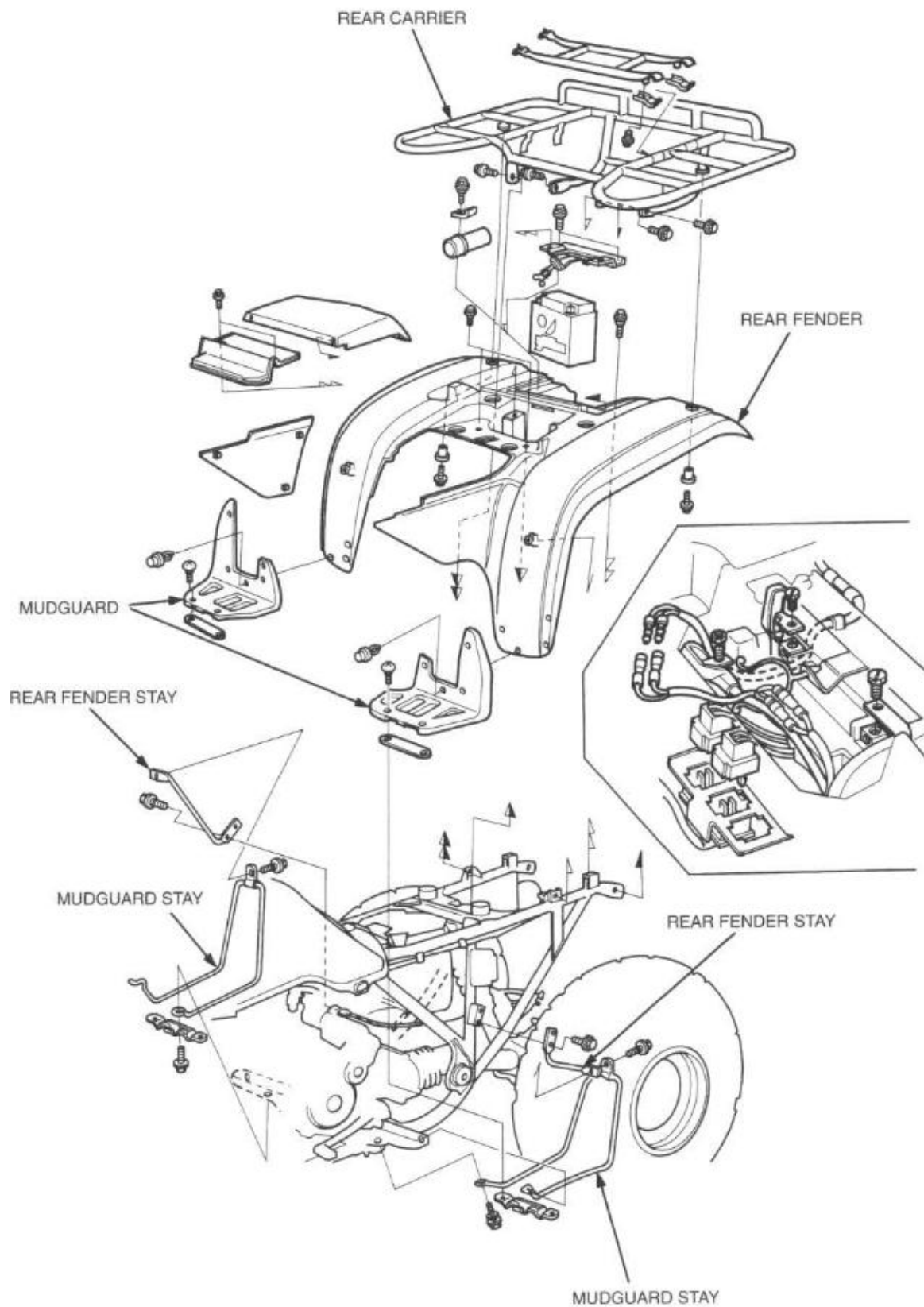
Remove the rear fender stay/mudguard stay.

Remove the rear fender.

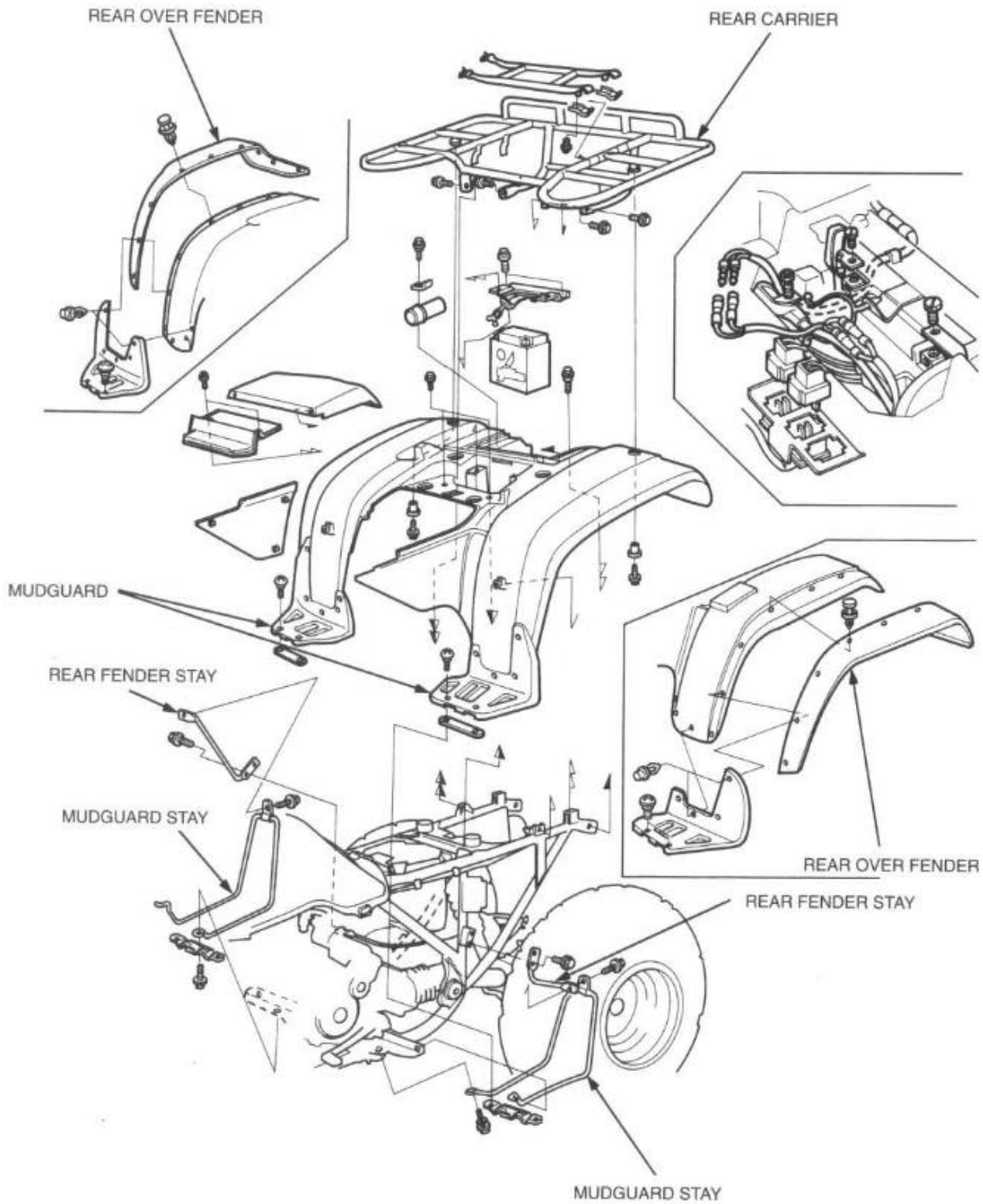


INSTALLATION (TRX300)

Install the rear fender and rear carrier in the reverse order of removal.



INSTALLATION (TRX300FW)



EXHAUST MUFFLER

REMOVAL

⚠ WARNING

Do not service the exhaust system while it is hot.

NOTE

The exhaust muffler can be serviced without removing the rear fender.

Remove the exhaust muffler joint nuts.

Remove the exhaust muffler mounting bolts and exhaust muffler.

INSTALLATION

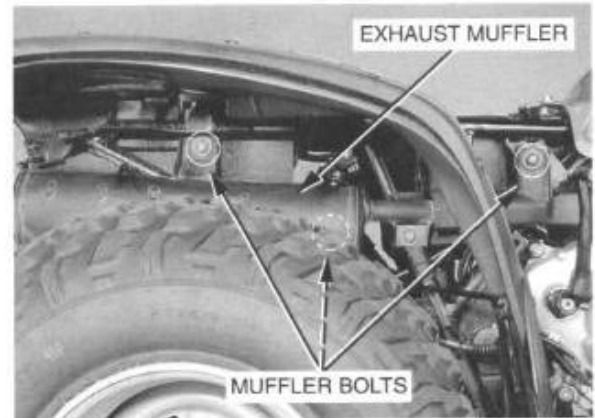
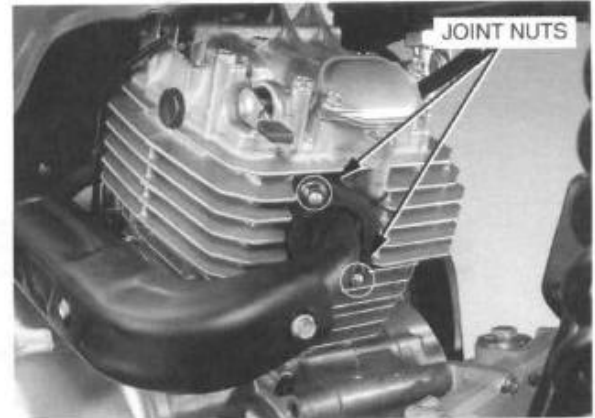
Apply a locking agent to the bolt threads.

Install the exhaust muffler in the reverse order of removal.

TORQUES:

Muffler mounting bolt: 55 N·m (5.5 kg-m, 40 ft-lb)

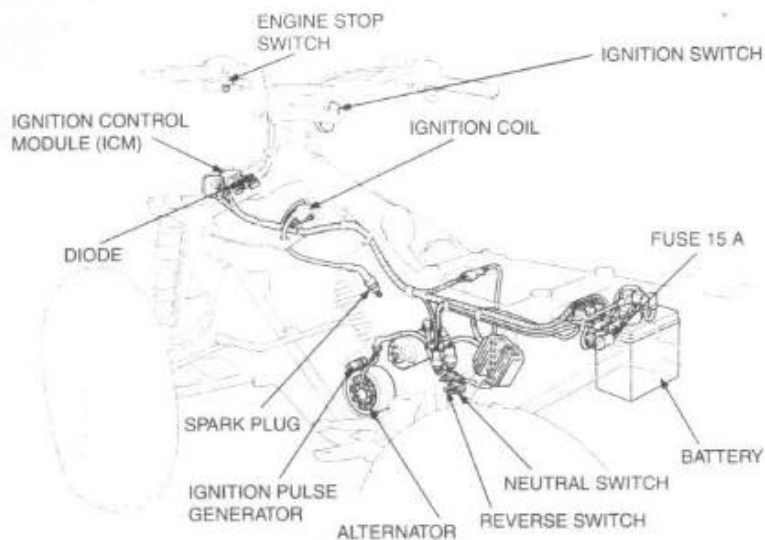
Protector bolt: 18 N·m (1.8 kg-m, 13 ft-lb)



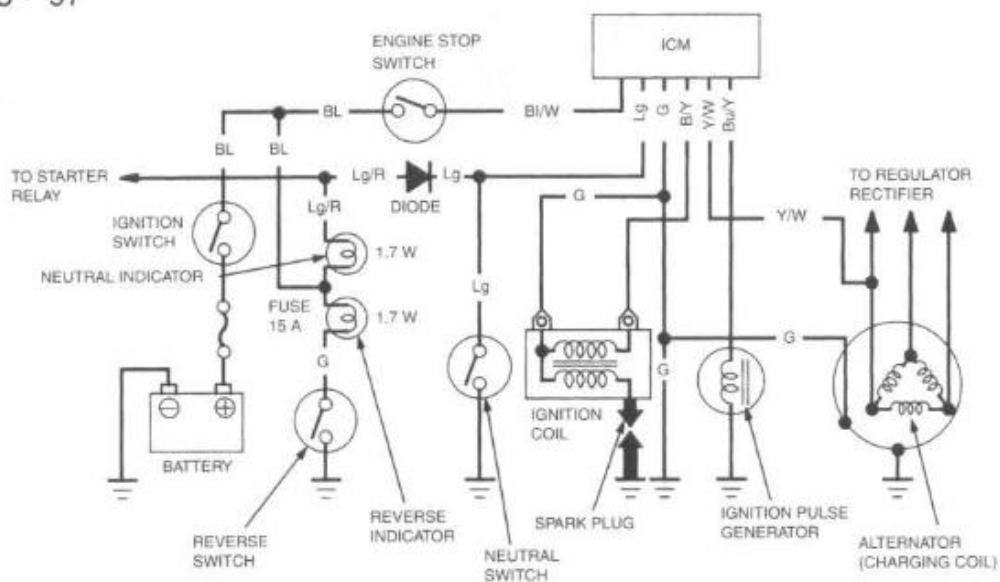
IGNITION SYSTEM

SYSTEM DIAGRAM

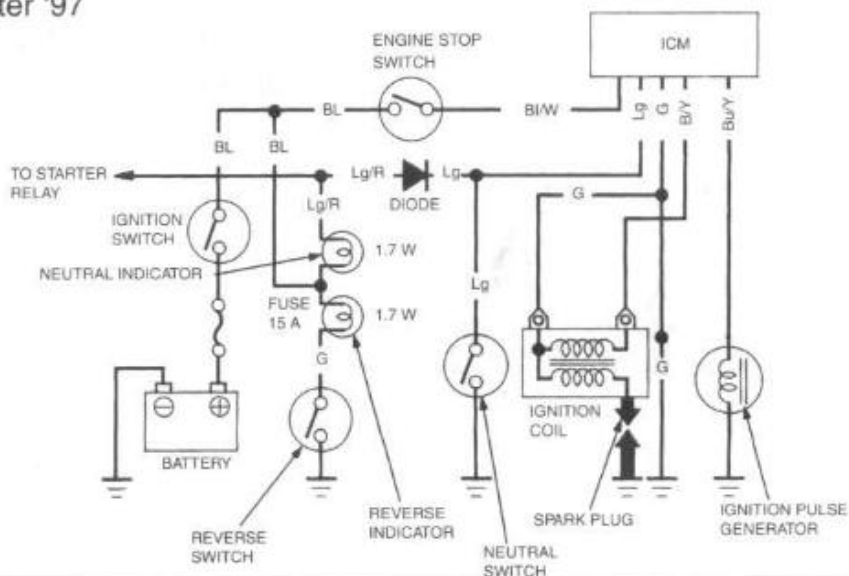
'95 - '97 Shown



'95 - '97



After '97



NEW

17. IGNITION SYSTEM

SYSTEM DIAGRAM	17-0	IGNITION COIL	17-3
SERVICE INFORMATION	17-1	IGNITION PULSE GENERATOR	17-4
TROUBLESHOOTING	17-2	ALTERNATOR	17-5
IGNITION CONTROL MODULE (ICM)		IGNITION TIMING	17-5
SYSTEM INSPECTION	17-3	PEAK VOLTAGE TESTING	17-6

SERVICE INFORMATION

GENERAL

⚠ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

- The following color codes are used throughout the electrical system:

Bu = Blue
Bl = Black
Br = Brown

G = Green
Gr = Gray
Lb = Light Blue

Lg = Light Green
O = Orange
P = Pink

R = Red
W = White
Y = Yellow

- Ignition timing does not normally need to be adjusted since the Ignition Control Module (ICM) is factory preset.
- For spark plug inspection, refer to page 3-7.
- For alternator or ignition pulse generator removal/installation, see section 9.
- When inspecting the ignition system, check the system components and lines step-by-step according to the troubleshooting sequence on the next page.
- This ignition system should spark when transmission is in the neutral position.
When the transmission is in gear (except reverse position), there should be spark with the kick starter pedal operated.

SPECIFICATIONS

ITEM		STANDARD
Spark plug	Standard	DPR8EA-9 (NGK), X24EPR-U9 (DENSO)
	For extended high speed riding	DPR9EA-9 (NGK), X27EPR-U9 (DENSO)
	For cold climate (below 5° C/41° F)	DPR7EA-9 (NGK), X22EPR-U9 (DENSO)
Spark plug gap		0.8–0.9 mm (0.031–0.035 in)
Ignition timing	At idle (F mark)	13° BTDC at 1,400 ± 100 rpm
	Full advance	31° BTDC at 4,500 ± 100 rpm
Ignition coil (20° C/68° F)	Primary coil resistance	0.1–0.2 Ω
	Secondary coil resistance	
	Without spark plug cap	2.7–3.5 Ω
	With spark plug cap	6.5–9.8 Ω
Ignition pulse generator resistance (20° C/68° F)		290–360 Ω

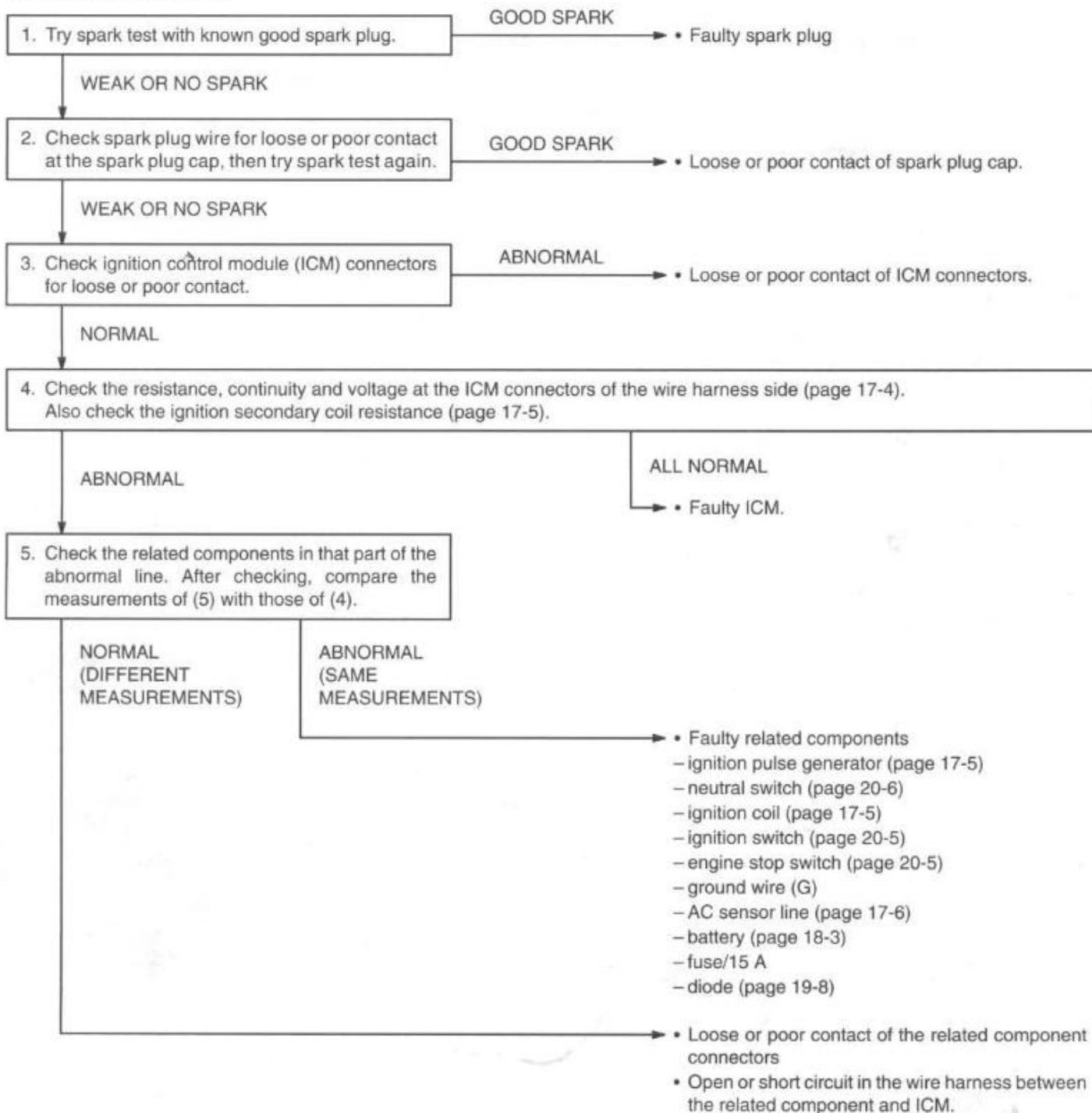
TOOLS

Digital multimeter

commercially available

TROUBLESHOOTING

Weak or no spark at plug

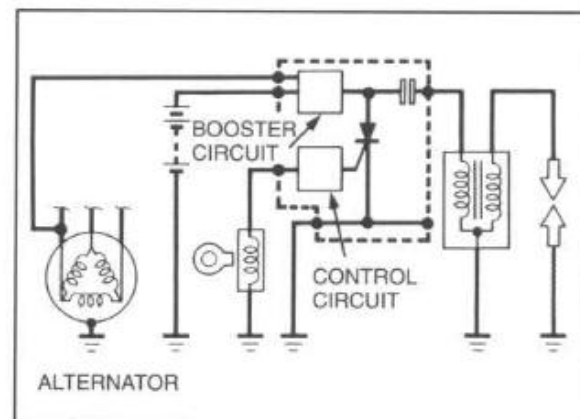


IGNITION CONTROL MODULE (ICM) SYSTEM INSPECTION

INSPECTION

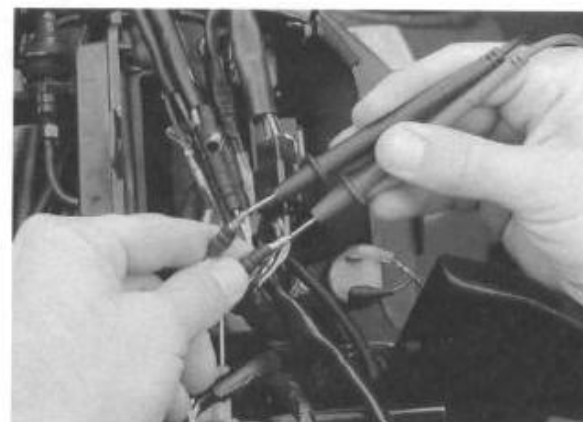
NOTE

- Check the system components and lines step-by-step using a peak voltage tester according to the troubleshooting on page 17-6.
- This method does not include an inspection of the ignition timing advance system at the ICM.



Disconnect the ICM connectors and check them for loose contact or corroded terminals.

Measure the resistance, continuity and voltage between connector terminals of the wire harness side as follows:



ITEM	TERMNAL	STANDARD
Ignition coil primary coil	BI/Y and G	0.1–0.2 Ω (at 20° C/68° F)
Ignition pulse generator coil	Bu/Y and G	290–360 Ω (at 20° C/68° F)
Ignition switch and engine stop switch (Turn the ignition switch ON and the engine stop switch RUN)	BI/W (+) and G (–)	The battery voltage should register.
Gearshift pedal (in neutral position)	Lg and G	Continuity
AC sensor line	Y/W and G	No continuity
	Y/W and Y (See NOTE below)	Continuity

NOTE

Disconnect the alternator 3P connector (White), and check continuity between Y/W (ICM 4P connector of wire harness side) and Y (alternator 3P connector of alternator wire side).

IGNITION COIL

REMOVAL/INSTALLATION

Remove the fuel tank (page 4-3).

Remove the spark plug cap from the spark plug.

Disconnect the BI/Y wire connector from the black terminal of the ignition coil and G wire connector from the green terminal. Remove the screw, ground wire and ignition coil.

Install the ignition coil in the reverse order of removal.

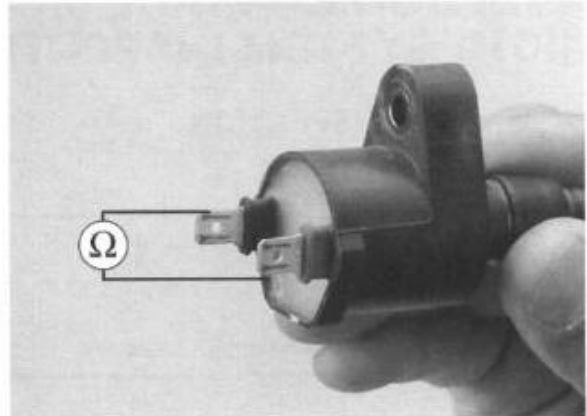


IGNITION SYSTEM

INSPECTION

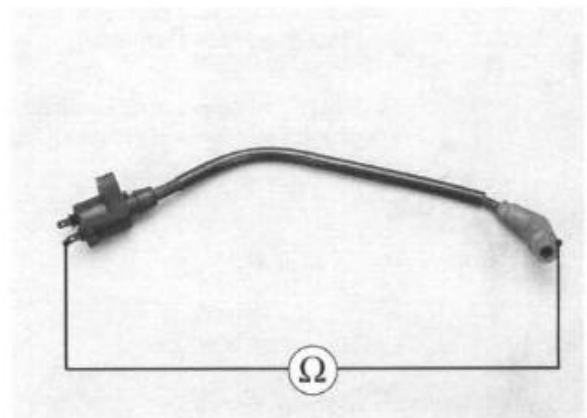
Remove the ignition coil (page 17-3).
Measure the primary coil resistance between terminals.

STANDARD: 0.1–0.2 Ω (at 20°C/68°F)



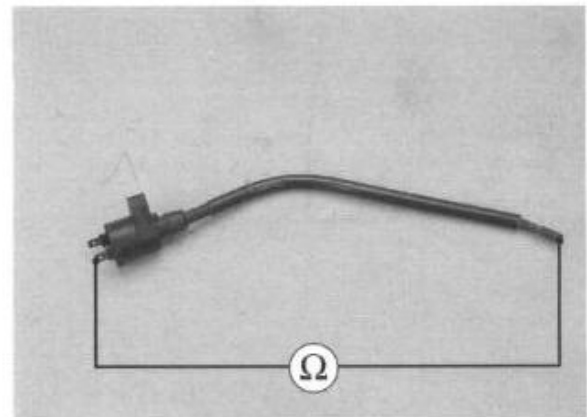
Measure the secondary coil resistance with the spark plug cap in place by checking for continuity between the plug cap and green terminal.

STANDARD: 6.5–9.8 k Ω (at 20°C/68°F)



Remove the spark plug cap from the wires and measure the secondary coil resistance.

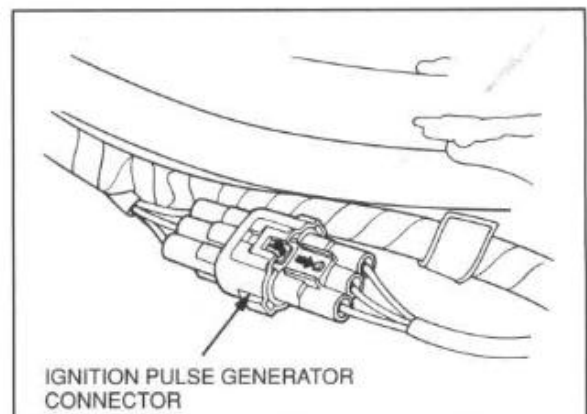
STANDARD: 2.7–3.5 k Ω (at 20°C/68°F)



IGNITION PULSE GENERATOR

INSPECTION

Release the clip as show Disconnect the ignition pulse generator wire connector (Green).



Measure the resistance between the Bu/Y wire and body ground.

STANDARD: 290–360 Ω (at 20°C/68°F)

If the reading is far beyond the standard, remove the left crankcase cover, disconnect the ignition pulse generator wire connector from the ignition pulse generator terminal and measure the resistance between the terminal and body ground (see section 9). Replace the ignition pulse generator if necessary.

ALTERNATOR

NOTE

It is not necessary to remove the stator coil to make this test.

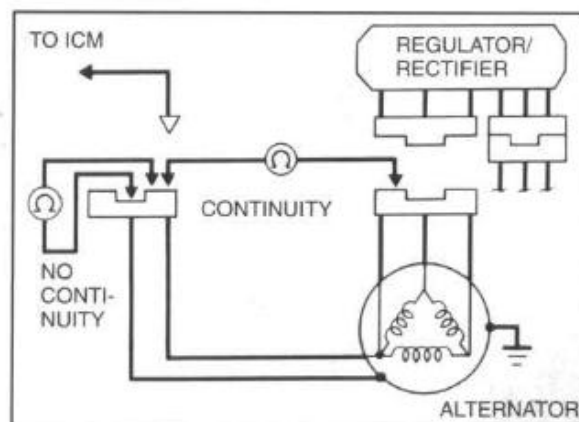
AC SENSOR LINE INSPECTION

Disconnect the AC sensor line connector (Black).

And also disconnect the alternator 3P connector (White).

Check the continuity between connector terminals as follows:

	AC sensor line connector terminal (Y/W)
Alternator 3P connector terminal (Y)	CONTINUITY
Alternator 3P connector terminal (G)	NO CONTINUITY



IGNITION TIMING

⚠ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

NOTE

The Ignition Control Module (ICM) system is factory preset and does not require adjustment. To inspect the function of the ICM components, ignition timing inspection procedures are given here.

Warm up the engine to the operating temperature.

Remove the timing hole cap.

Connect a tachometer and timing light.

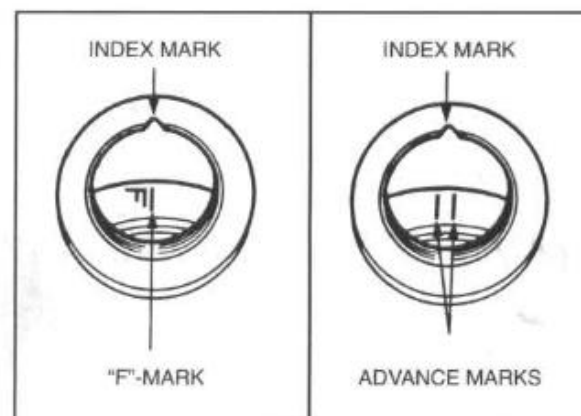
Start the engine and allow it to idle.

IDLE SPEED: 1,400 \pm 100 rpm

Inspect the ignition timing.

Timing is correct if the "F" mark on the alternator rotor is aligned with the index mark on the left crankcase cover at idle. To check the advance, raise the engine speed to 4,500 \pm 100 rpm. The index mark should be between the advance marks.

If the ignition timing is incorrect, perform the system inspection (page 17-3) or the peak voltage test (page 17-6).

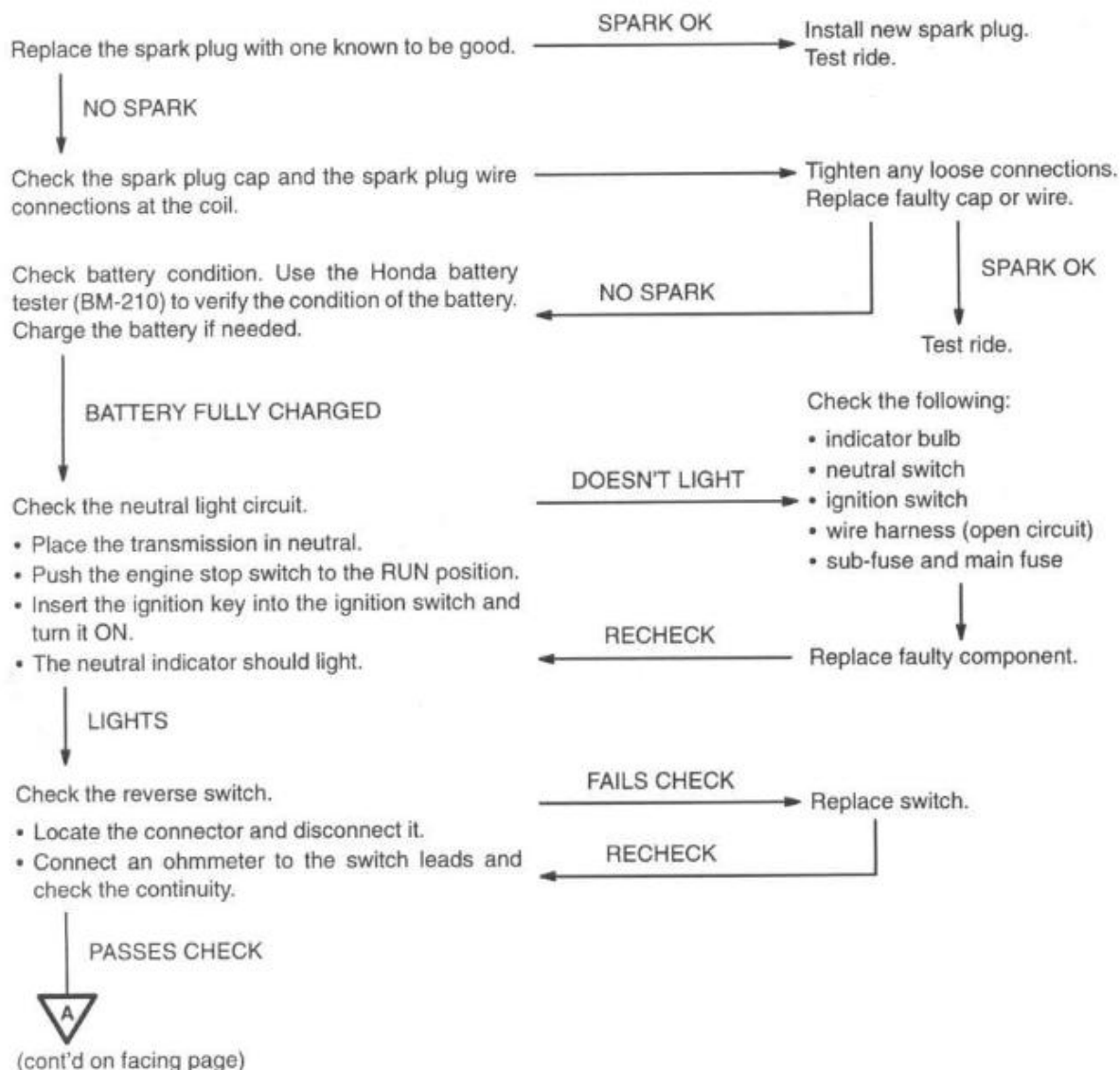


IGNITION SYSTEM

PEAK VOLTAGE TESTING

To crank the engine without starting it:

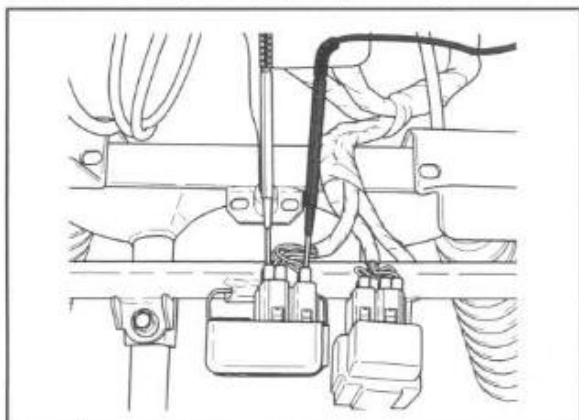
- Turn the fuel valve OFF.
- Remove the spark plug(s) and ground away from the plug hole.
- Turn the engine stop switch to RUN.
- Turn the ignition switch ON.
- Press the starter or vigorously crank the kickstarter.



(cont'd from facing page)

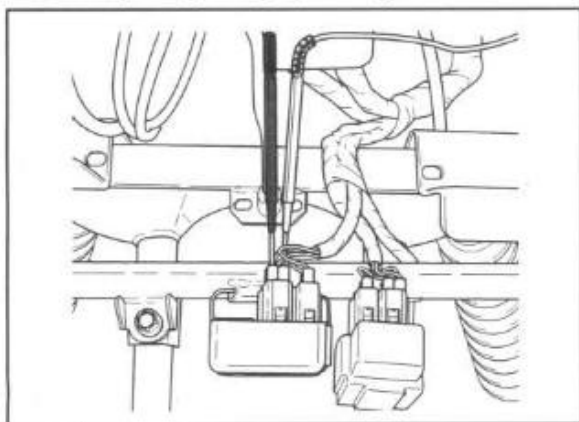


Check the battery voltage (>12v) at the ignition control module.



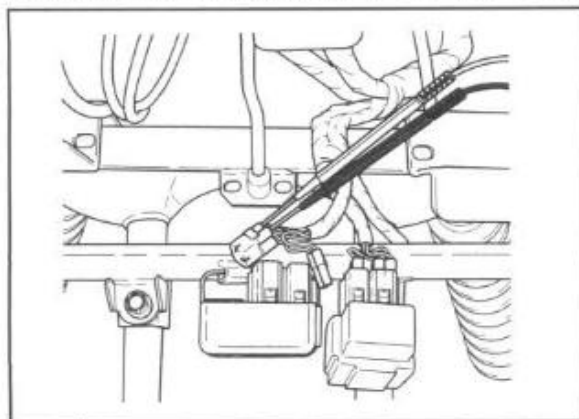
VOLTAGE OK

Check the primary voltage (cranking) at the ICM. Primary coil voltage: 100v minimum.



VOLTAGE OK

Disconnect the ignition pulse generator leads from the ignition control module and check the pulser voltage while cranking. Visually inspect the connector for corrosion. Ignition pulse generator voltage: 0.7v minimum.



VOLTAGE OK



(cont'd on following page)

LOW VOLTAGE

- Verify the battery voltage is >12v at the battery.
- Check the wiring continuity. Replace if necessary.
- Check the connectors for corrosion or loose connections.
- Verify there is 12v to the stop switch and to the coil(s).

SPARK OK

Test ride.

NO SPARK, CONTINUE TESTING

LOW VOLTAGE

Check the coil for an open or shorted circuits in both the primary and secondary sides.

OPEN OR SHORTED CIRCUITS

Replace the ignition coil.

COIL CONTINUITY OK,
CONTINUE TESTING

Check for spark.

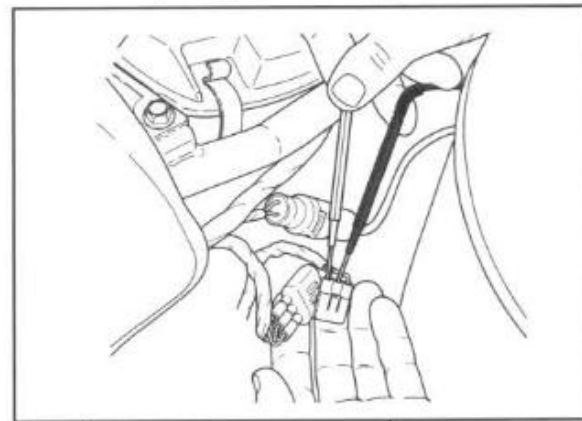
NO SPARK,
CONTINUE TESTING

SPARK

Test ride.

LOW VOLTAGE

Disconnect the ignition pulse generator connector from the wire harness and check the voltage while cranking. Ignition pulse generator voltage: 0.7v minimum.



VOLTAGE OK

LOW VOLTAGE



(cont'd on following page)



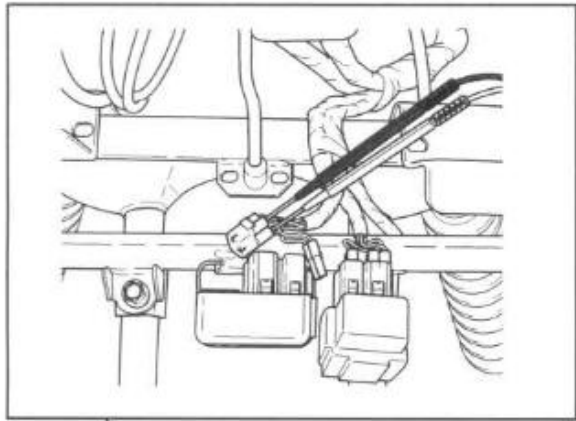
(cont'd on following page)

IGNITION SYSTEM

(cont'd from previous page)



Check the A/C sensor voltage at the ignition control module while cranking. A/C sensor voltage: 3v minimum.



VOLTAGE OK

(cont'd from previous page)



- Check the wiring continuity; replace if necessary.
- Check the connectors for corrosion or loose connections.

Check for spark.

NO SPARK,
CONTINUE TESTING

SPARK OK



(cont'd from previous page)

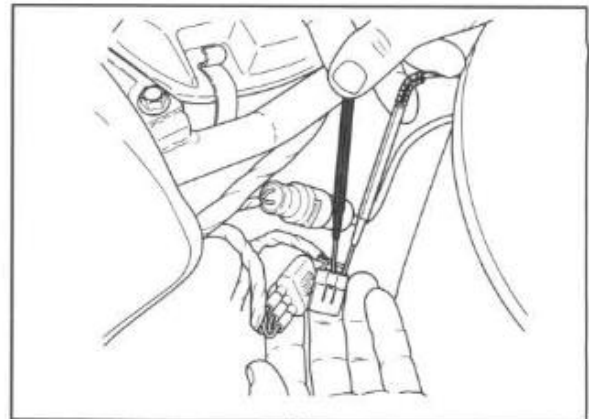
Replace the pulser coil.

Test ride.

LOW
VOLTAGE

VOLTAGE OK

Disconnect the engine operation sensor at the connector and check the voltage at the connector while cranking. Engine operation sensor voltage: 3v minimum.



LOW VOLTAGE

Troubleshoot the alternator.

- Check the wiring continuity; replace if necessary.
- Check the connectors for corrosion or loose connections.

Check for spark.

NO SPARK

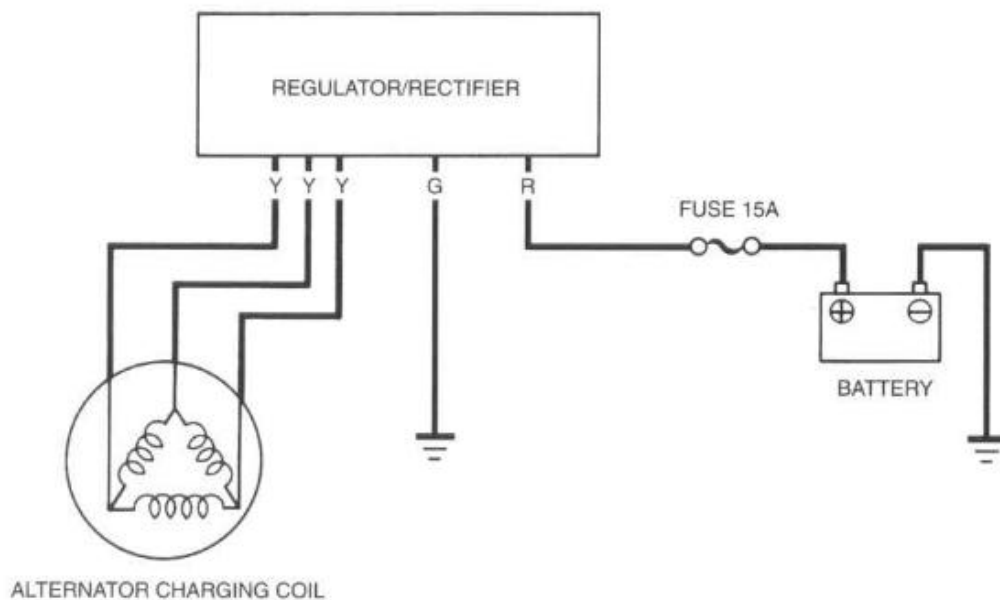
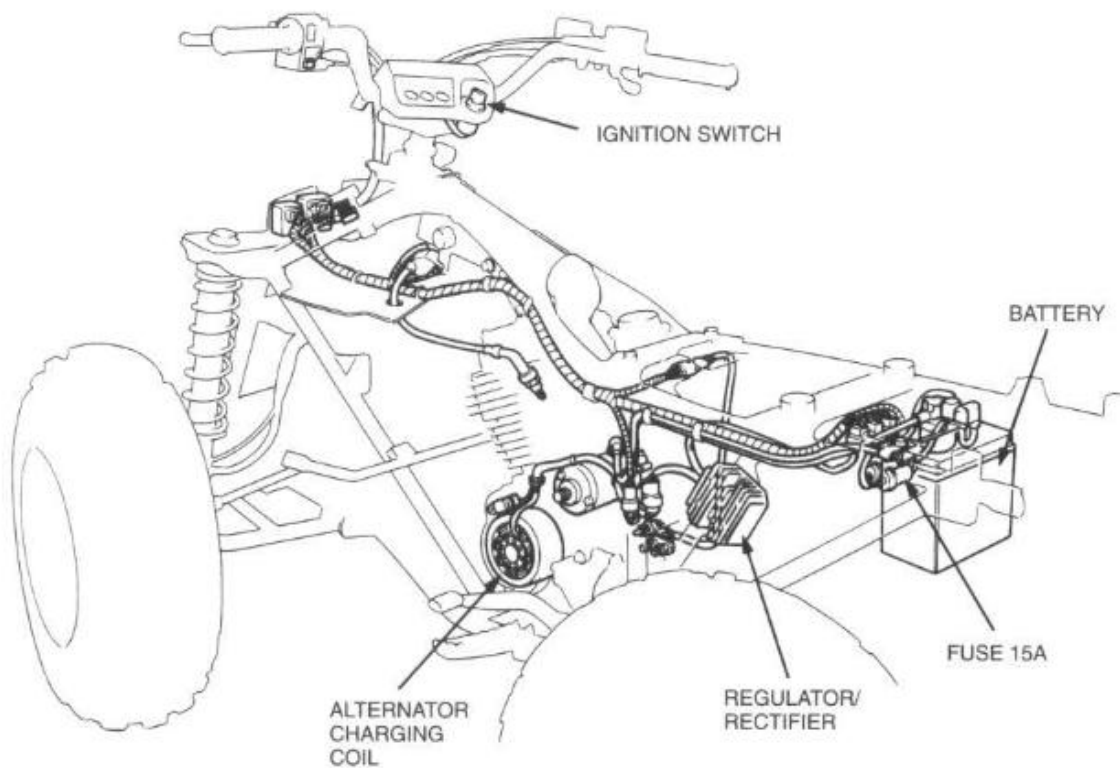
SPARK OK

Replace the ignition control module.

Test ride.

MEMO

SYSTEM DIAGRAM



18. BATTERY/CHARGING SYSTEM

SYSTEM DIAGRAM	18-0	CHARGING SYSTEM	18-6
SERVICE INFORMATION	18-1	ALTERNATOR CHARGING COIL	18-8
TROUBLESHOOTING	18-3	REGULATOR/RECTIFIER	18-8
BATTERY	18-4		

SERVICE INFORMATION

GENERAL

▲ WARNING

- The battery gives off explosive gases; keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.
- The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.
 - If electrolyte gets on your skin, flush with water.
 - If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician.
- Electrolyte is poisonous.
 - If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.
- If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

Battery charging

This model comes with a maintenance-free (MF) battery. Remember the following about MF batteries:

- Use only the electrolyte that comes with the battery
- Use all of the electrolyte
- Seal the battery properly
- Never open the seals again

CAUTION

For battery charging, do not exceed the charging current and time specified on the battery. Use of excessive current or charging time may damage the battery.

After activation, both conventional and maintenance-free batteries must be charged at the appropriate ampere-hour rating for the proper length of time.

Set the Battery Amp. Hr. Selector Switch on the Christie battery charger (#MC1012/2) for the size of the battery being charged. Set the Timer to the NEW BATT position and connect the battery clamps. When the time reaches the "trickle" position, the charging cycle is complete.

After charging, test the condition of the new battery using the Honda Battery Tester (07GMJ-0010000) — refer to the Operation Manual for complete details.

BATTERY/CHARGING SYSTEM

Battery charging/Testing equipment

Refer to the instruction in the Operation Manual for the Honda Battery Tester and Christie Battery Charger for detailed battery charging steps.

The Christie battery charger (#MC1012/2) is a constant current (amperage) type designed to produce current at a constant rate for the duration of the charge, even if the voltage varies.

The Honda Battery Tester (07GMJ-0010000) puts a "load" on the battery so that the actual battery condition at the time of the load can be measured.

This provides an accurate determination of the battery condition — good (green), fair (yellow), or poor (red).

- Slow charge the battery whenever possible, quick charging should be an emergency procedure only.
- Remove the battery from the vehicle for charging.
- The battery on this vehicle is a sealed type. Do not try to remove the filler hole caps even during charging. Do not use a non-sealed battery as a replacement.
- All charging system components can be checked on the vehicle.
- When inspecting the charging system, check the system components and lines step-by-step according to the troubleshooting on the next page.
- Alternator removal is given in section 9.

SPECIFICATIONS

Battery	Capacity		12 V – 12 AH
	Voltage at 20° C (68° F)	Fully charged	13.0–13.2 V at 20° C (68° F)
		Needs charging	Below 12.3 V at 20° C (68° F)
Alternator	Capacity		0.22 kW/5,000 rpm
	Charging coil resistance		0.09–0.11 Ω (at 20° C/68° F)
Regulator/rectifier	Type		Three-phase/full-wave rectification
	Regulated voltage/ampere		13.5–15.5 V/0–5 A at 5,000 rpm

TOOLS

Digital multimeter
Christie battery charger
Battery tester

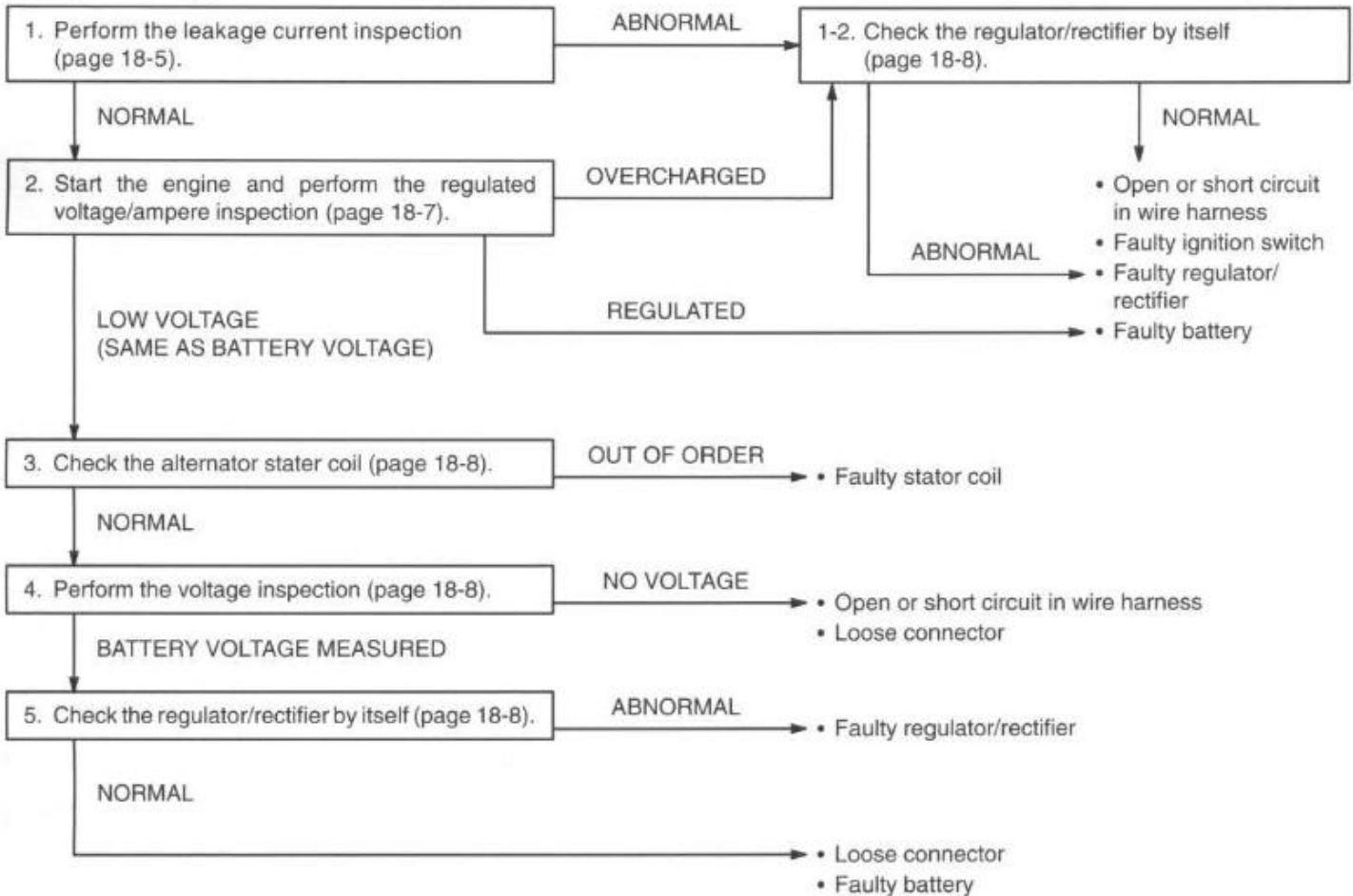
Commercially available
MC1012/2
07GMJ-0010000

TROUBLESHOOTING

Battery overcharged

- Loose or poorly connected BI terminal of the regulator/rectifier 3P connector
- Open circuit in BI wire
- Faulty regulator/rectifier

Battery undercharged



BATTERY

REMOVAL

Remove the battery holder bolts and holder.

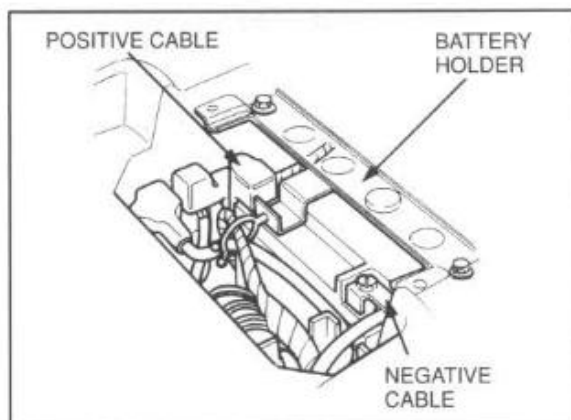
Disconnect the negative cable and then the positive cable, and remove the battery.

INSTALLATION

Connect the positive cable first, and then the negative cable.

Install the battery in the reverse order of removal with the proper wiring as shown.

After installing the battery, coat the terminals with clean grease.



VOLTAGE INSPECTION

Measure the battery voltage using a digital multimeter.

VOLTAGE: Fully charged: 13.0–13.2 V
Under charged: Below 12.3 V

TOOL:

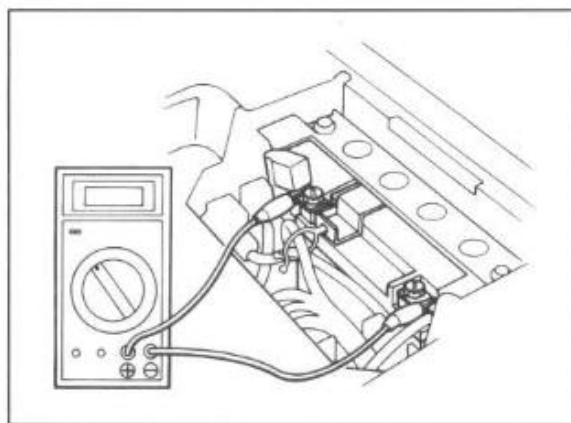
Digital multimeter

Commercially available

BATTERY TESTING

NOTE

Always clear the work area of flammable materials such as gasoline, brake fluid, electrolyte, or cloth towels when operating the tester, the heat generated by the tester may cause a fire.



Remove the battery.

TOOL:

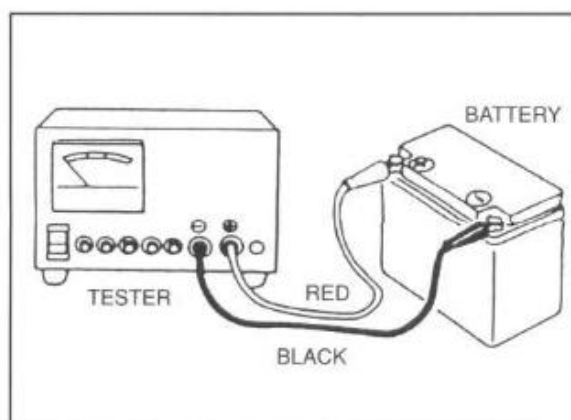
Battery tester

07GMJ-0010000

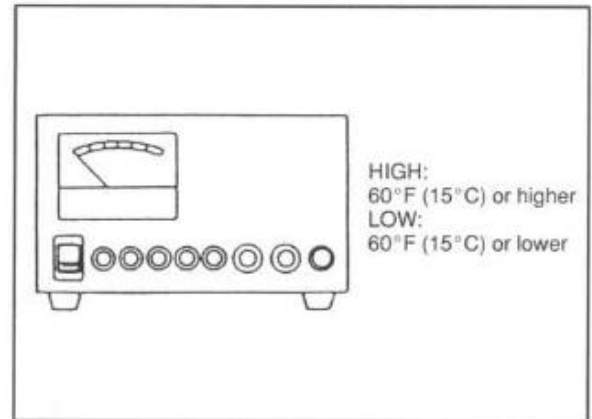
Securely connect the tester's positive (+) cable first, then connect the negative (–) cable.

NOTE

For accurate test result, be sure the tester's cables and clamps are in good working condition and that a secure connection can be made at the battery.



Set the temperature switch to "HIGH" or "LOW" depending on the ambient temperature.



5.5 Ah–9Ah test button Push in the appropriate test button for three seconds and read the condition of the battery on the meter.

NOTE

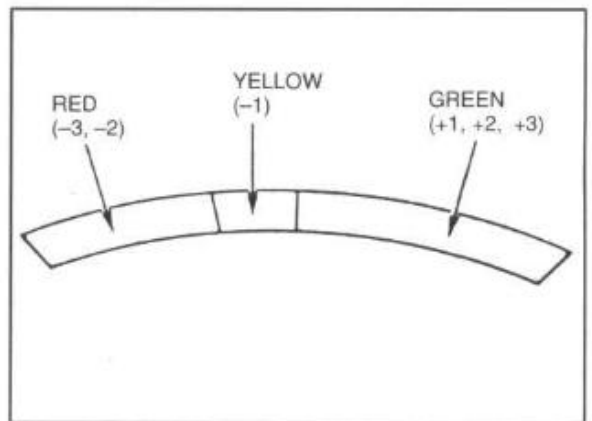
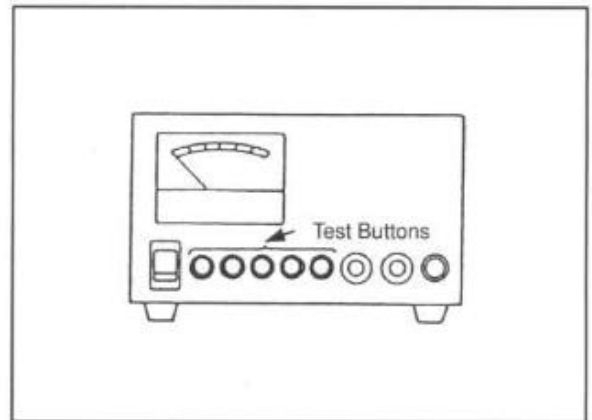
For the first check, DO NOT charge the battery before testing; test it in an "as is" condition.

CAUTION

- To avoid damaging the tester, only test batteries with an amperage rating of less than 30A.
- Tester damage can result from overheating when:
 - The test button is pushed in for more than three seconds.
 - The tester is used without being allowed to cool for at least one minute when testing more than one battery.
 - More than ten consecutive tests are performed without allowing at least a 30-minute cool-down period.

NOTE

The result of a test on the meter scale is relative to the amp. hour rating of the battery. Any BATTERY READING IN THE GREEN ZONE IS OK. Batteries should only be charged if they register in the YELLOW or RED zone.



BATTERY CHARGING

⚠ WARNING

- The battery gives off explosive gases: keep sparks, flames and cigarettes away. Provide adequate ventilation when charging.
- The battery contains sulfuric acid (electrolyte). Contact with skin or eyes may cause severe burns. Wear protective clothing and a face shield.
 - If electrolyte gets on your skin, flush with water.
 - If electrolyte gets in your eyes, flush with water for at least 15 minutes and call a physician.
- Electrolyte is poisonous.
 - If swallowed, drink large quantities of water or milk and follow with milk of magnesia or vegetable oil and call a physician.
- Turn power ON/OFF at the charger, not at the battery terminals.

BATTERY/CHARGING SYSTEM

NOTE

- Be sure that the area around the charger is well-ventilated, clear of flammable materials, and free from heat, humidity, water and dust.
- Clean the battery terminals and position the battery as far away from the charger as the leads will permit.
- Do not place batteries below the charger; gases from the battery may corrode and damage the charger.
- Do not place batteries on top of the charger. Be sure the air vents are not blocked.

TOOL: Christie battery charger MC1012/2

1. Turn the Power Switch to the OFF position.
2. Set the battery Amp. Hr. Selector Switch for the size of the battery being charged.
3. Set the Timer to the position indicated by the Honda Battery Tester: RED-3, RED-2 or YELLOW-1. If you are charging a new battery, set the switch to the NEW BATT position.
4. Attach the clamps to the battery terminals: RED to Positive, BLACK to Negative.

Connect the battery cables only when the Power Switch is OFF.

▲ WARNING

Connecting the cables with the Power Switch ON can produce a spark which could ignite or explode the battery.

5. Turn the Power Switch to the ON position.
6. When the timer reaches the "Trickle" position, the charging cycle is complete. Turn the Power Switch OFF and disconnect the clamps.

NOTE

The charger will automatically switch to the "Trickle" mode after the set charging time has elapsed.

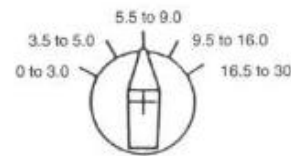
7. Let the battery cool for at least ten minutes or until gassing subsides after charging.
8. Retest the battery using the Honda Battery Tester and recharge if necessary using the above steps.

CHARGING SYSTEM

NOTE

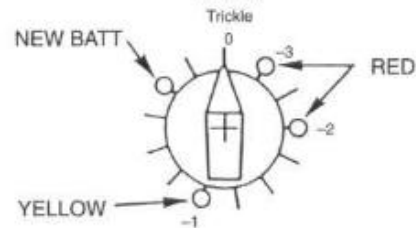
- When inspecting the charging system, check the system components and lines step-by-step according to the troubleshooting on page 18-3.
- Measuring circuits with a large capacity that exceeds the capacity of the tester may cause damage to the tester. Before starting each test, set the tester at the high capacity range first, then gradually down to low capacity ranges in order that you have the correct range and do not damage the tester.
- When measuring small capacity circuits, keep the ignition switch off. If the switch is suddenly turned on during a test, the tester fuse may blow.

BATTERY AMP HR. SELECTION SWITCH



set the appropriate amp. hour rating.

TIMER



LEAKAGE INSPECTION

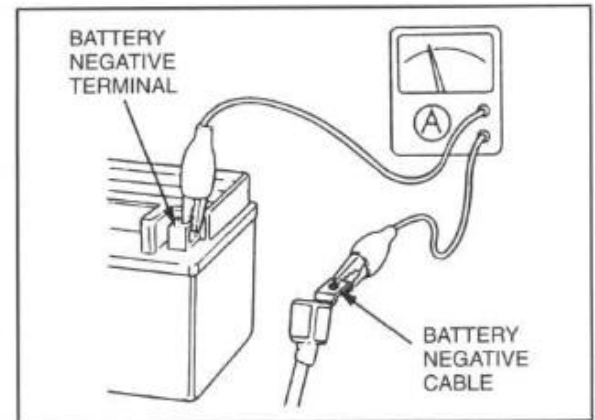
Check the battery ampere leakage before making the regulated ampere inspection.

Turn the ignition switch off and disconnect the battery negative cable from the battery.

Connect the tester between the negative cable and the negative battery terminal.

The voltage should indicate less than 0.1 mA with the ignition switch off.

LEAKAGE AMPERES: 0.1 mA max.



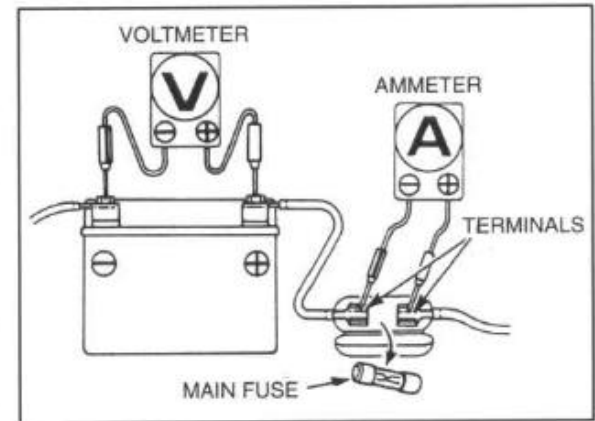
REGULATED VOLTAGE/AMPERAGE INSPECTION

⚠ WARNING

If the engine must be running to do some work, make sure that the area is well-ventilated. Never run the engine in an enclosed area. The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and lead to death.

NOTE

Be sure the battery is in good condition before performing this test.



Warm up the engine to normal operating temperature.

Stop the engine, and connect the voltmeter as shown.

Remove the main fuse and connect an ammeter to the main fuse terminals as shown.

Connect the tachometer and restart the engine.

Allow the engine to idle, and increase the engine speed gradually.

The voltage and amperage should be controlled as specified.

STANDARD: 13.5–15.5 V/0-5 A at 5,000 rpm

CAUTION

Be careful not to allow the battery positive cable to touch the frame while testing.

ALTERNATOR CHARGING COIL

NOTE

It is not necessary to remove the stator coil to make this test.

INSPECTION

Disconnect the regulator/rectifier (alternator) 3P (White) connector.

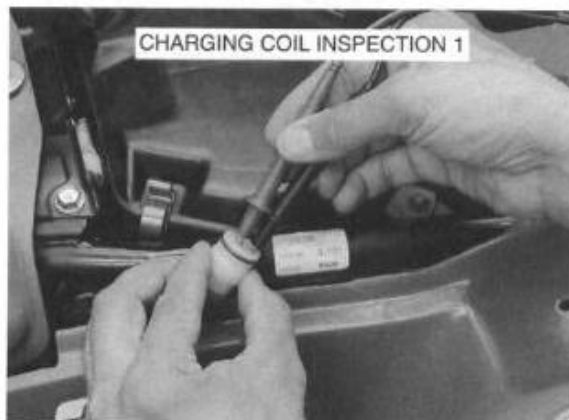
Check the resistance between the connector terminals.

STANDARD: 0.09–0.11 Ω (at 20°C/68°F)

Check for continuity between the connector terminals and ground.

There should be no continuity.

Replace the alternator stator if readings are far beyond the standard, or if any wire has continuity to ground. Refer to section 9 for stator removal.



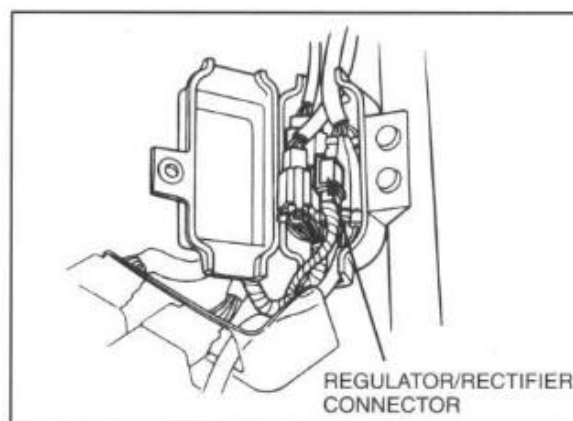
REGULATOR/RECTIFIER

VOLTAGE INSPECTION

Remove the battery box cover and disconnect the regulator/rectifier 3P connector, and check it for loose contact or corroded terminals.

If the regulated voltage reading (above) is out of the specification, measure the voltage between connector terminals (wire harness side) as follows:

ITEM	TERMINALS	SPECIFICATION
Battery charging line	R (+) and G (–)	Battery voltage should register.
Battery voltage feedback line	Bl (+) and G (–)	Battery voltage should register with the ignition switch ON.



REGULATOR/RECTIFIER INSPECTION

Provided that all components of the charging system are normal and there are no loose connections at the regulator/rectifier connector, inspect the regulator/rectifier unit by measuring the resistance between the terminals.

NOTE

- The resistance values will be incorrect if the probes touch your fingers.
- An old battery in the multimeter could cause inaccurate readings. Check the battery if the multimeter registers incorrectly.

Unit: k Ω

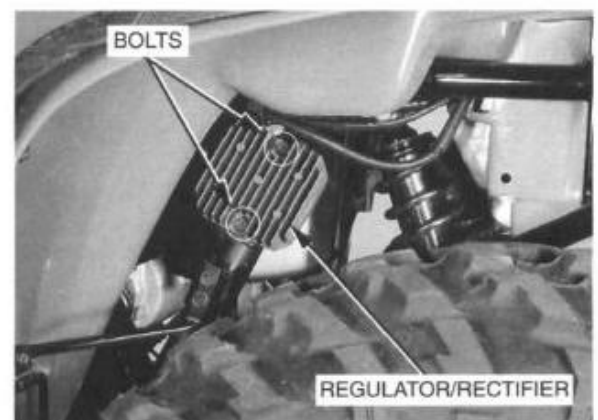
+Probe \ -Probe	Red	Green	Black	Yellow
Red		∞	∞	∞
Green	1-20		1-20	0.5-10
Black	20-100	10-50		15-80
Yellow	0.5-10	∞	∞	

Replace the regulator/rectifier unit if any one of the resistance values is abnormal.

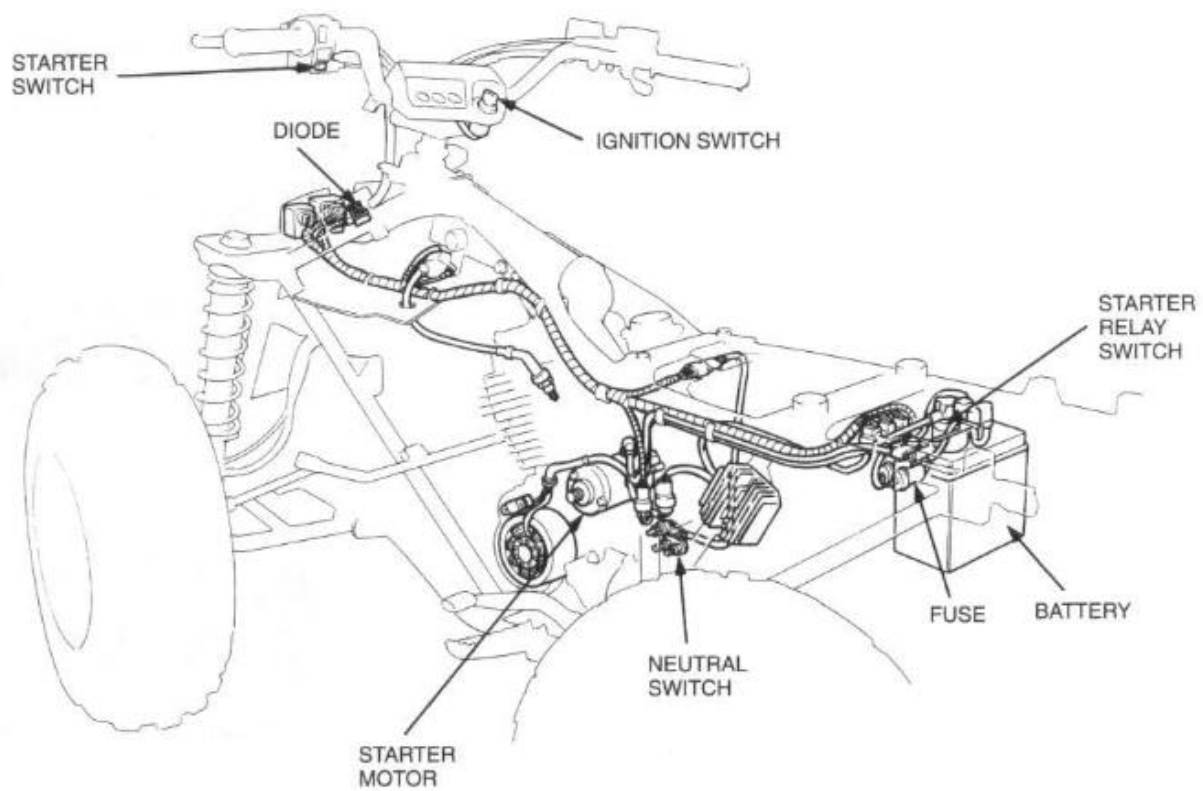
REPLACEMENT

Disconnect the regulator/rectifier connector.

Remove the regulator/rectifier mounting bolts and regulator/rectifier.



SYSTEM DIAGRAM



SPECIFICATIONS

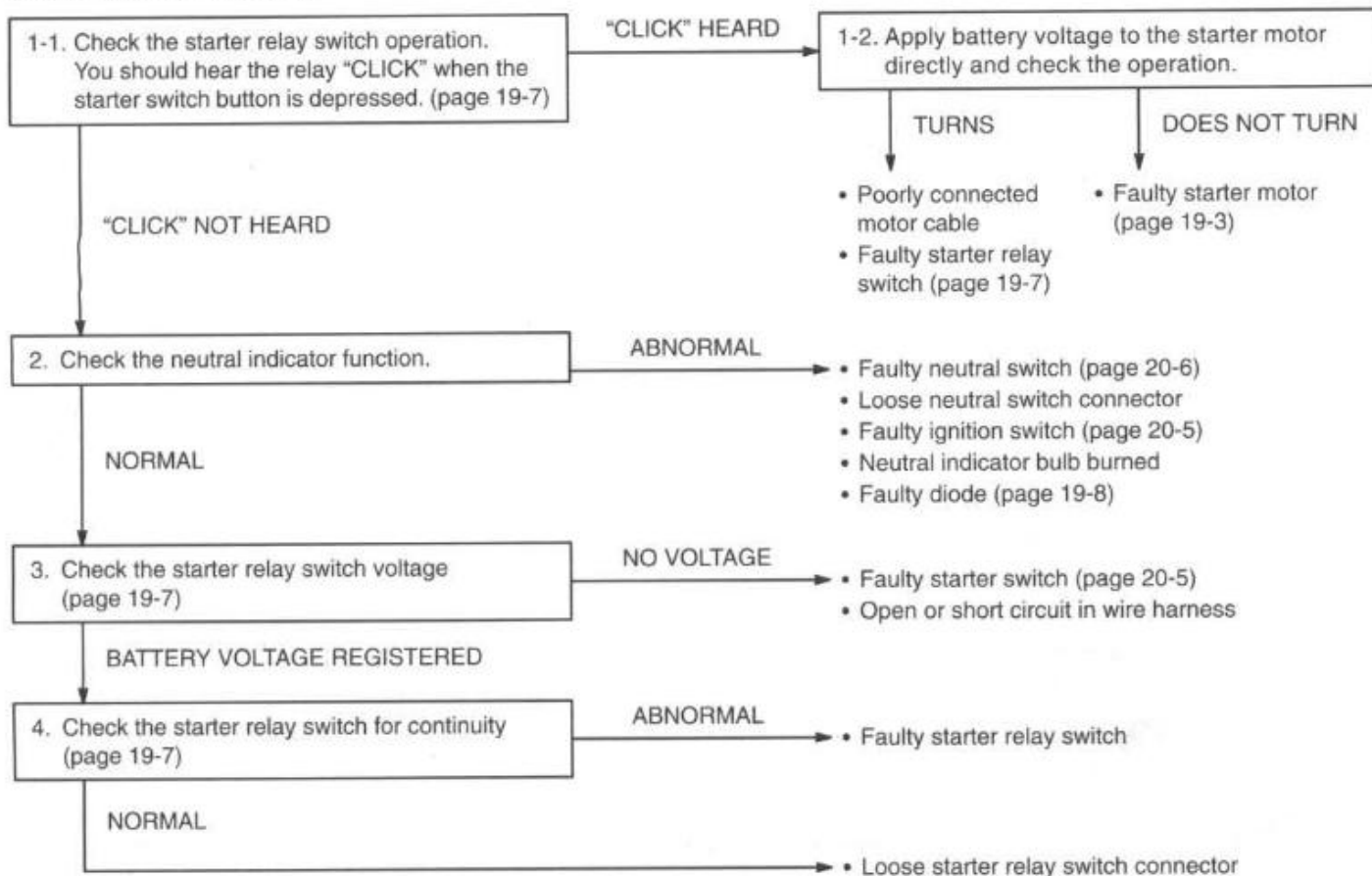
[illegible]

TROUBLESHOOTING

NOTE

- The starter motor should operate only when the transmission is in neutral.
- Check the following items before troubleshooting the system:
 - Blown fuse (15A)
 - Battery and starter motor cables for loose connection
 - Battery discharged

Starter motor does not turn



Starter motor turns engine slowly

- Low specific gravity
- Excessive resistance in circuit
- Binding in starter motor

Starter motor turns, but engine does not turn

- Faulty starter clutch (see section 9)
- Faulty starter reduction gears (see section 9)

Starter motor and engine turns, but engine does not start

- Faulty ignition system (see section 17)
- Engine problems (see section 3)
 - Low compression
 - Fouled spark plugs

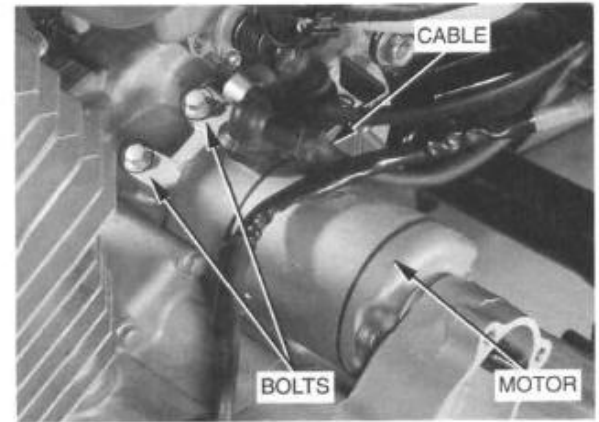
STARTER MOTOR

REMOVAL

⚠ WARNING

With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.

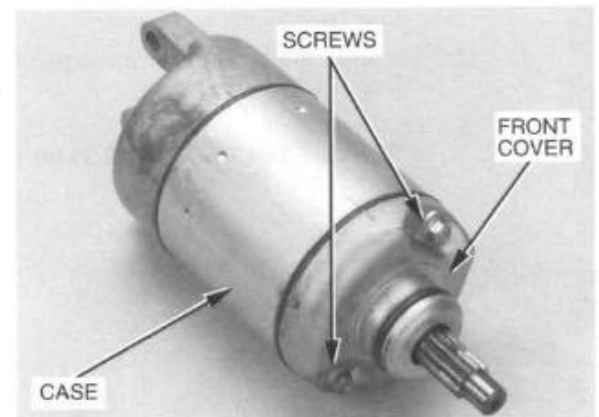
Remove the starter reduction gear A/B (page 9-2).
Disconnect the starter cable from the starter motor.
Remove the two mounting bolts and the starter motor.



DISASSEMBLY

Remove the two starter motor case screws and remove the front cover, motor case and armature coil.

Record the number and location of shims for correct assembly.



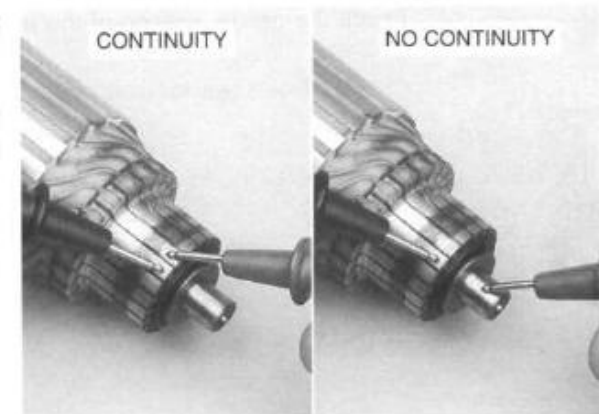
INSPECTION

Inspect the commutator bars for discoloration. Bars discolored in pairs indicate grounded armature coils, in which case the starter motor must be replaced.



Check for continuity between individual commutator bars; there should be continuity.

Also, check for continuity between individual commutator bars and the armature shaft; there should be no continuity.



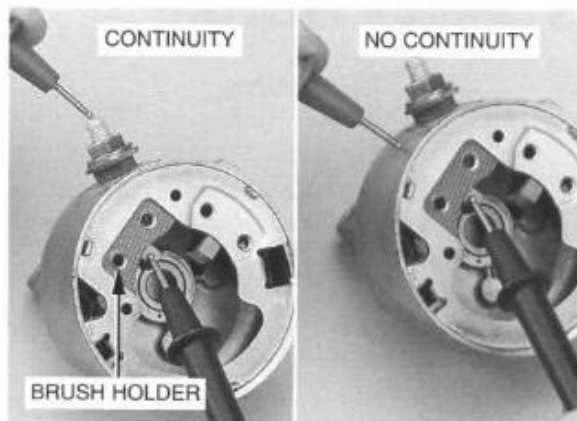
STARTER SYSTEM

Check for continuity between the cable terminal and the brush wire (the indigo colored wire or the insulated brush holder).

There should be continuity.

Check for continuity between the rear cover and the brush wire (the indigo cover wire or the insulated brush holder).

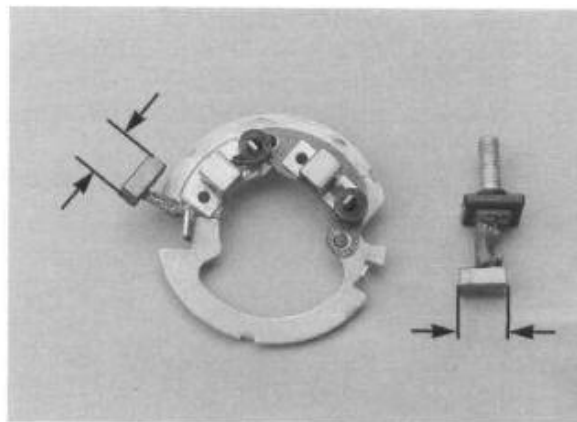
There should be no continuity.



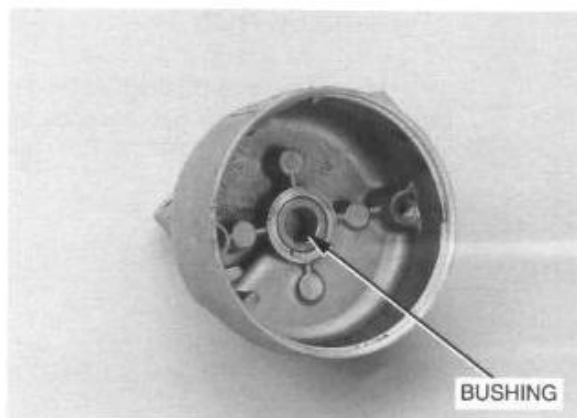
Disassemble the rear cover.

Inspect the brushes for damage and measure the brush length.

SERVICE LIMIT: 9.0 mm (0.35 in)

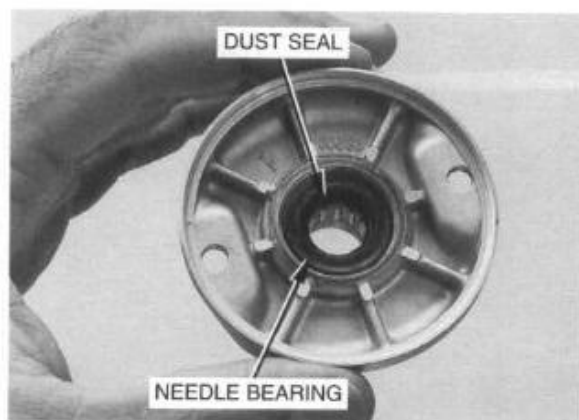


Check the bushing of the rear cover for wear or damage.

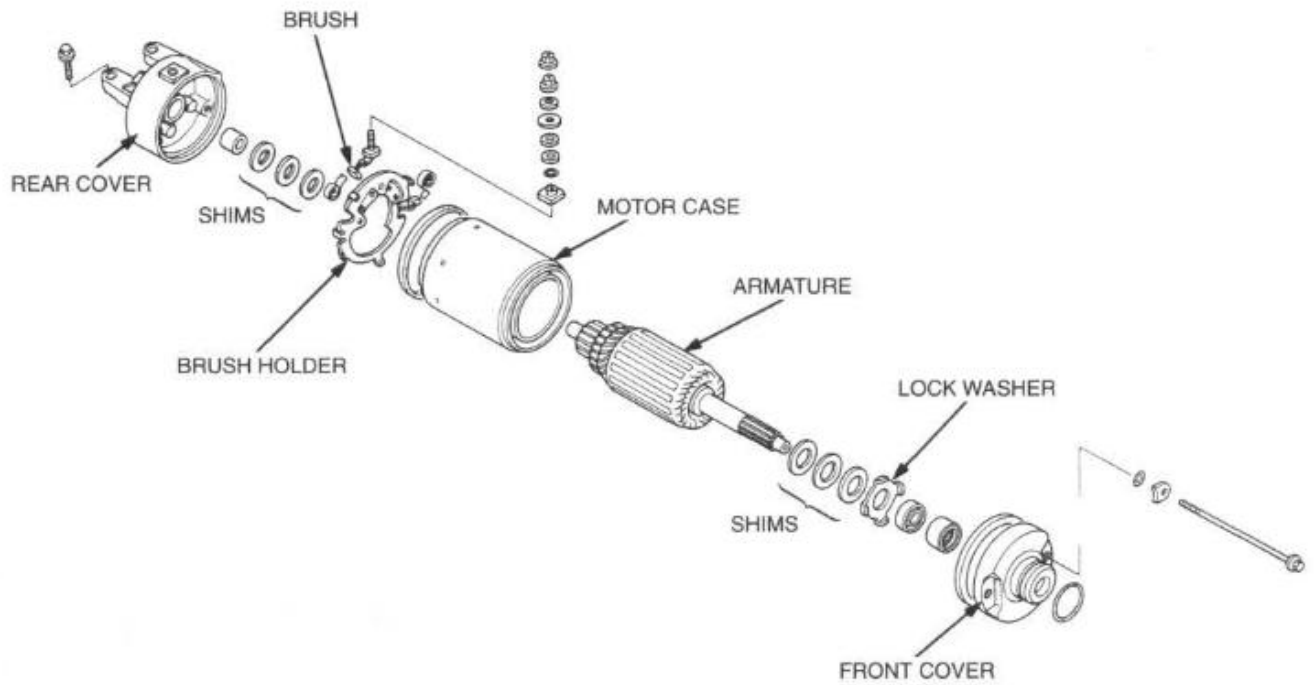


Check the needle bearing of the front cover for smooth rotation.

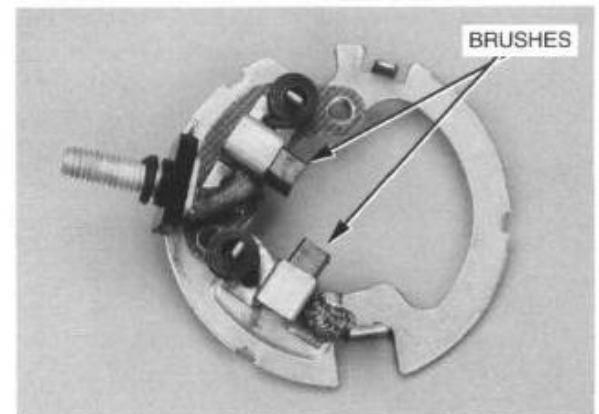
Check the dust seal for wear or damage.



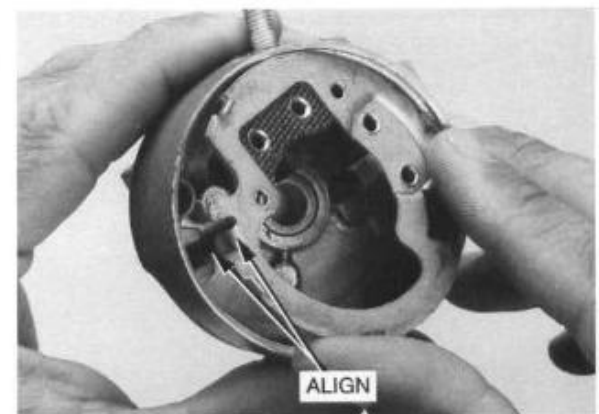
ASSEMBLY



Install the brushes in the brush holders as shown.



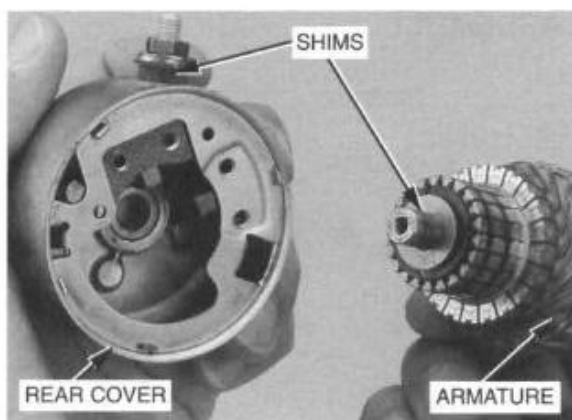
Install the brush holder assembly to the rear cover, aligning the tab of the holder with the groove of the rear cover.



STARTER SYSTEM

Install the shims to the terminal and armature coil in the correct positions as recorded.

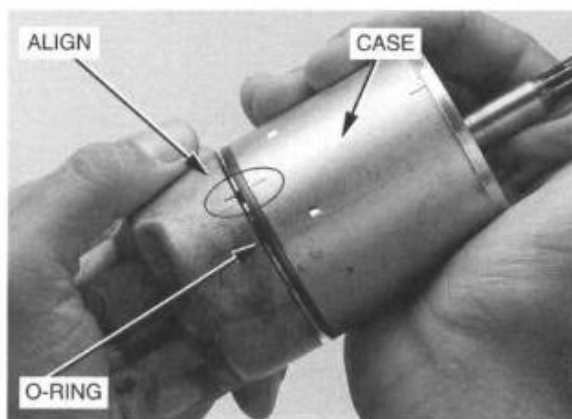
Install the armature in the rear cover.



Install the O-ring on the motor case.

Hold the armature coil shaft, or armature might be drawn out by the magnetic field.

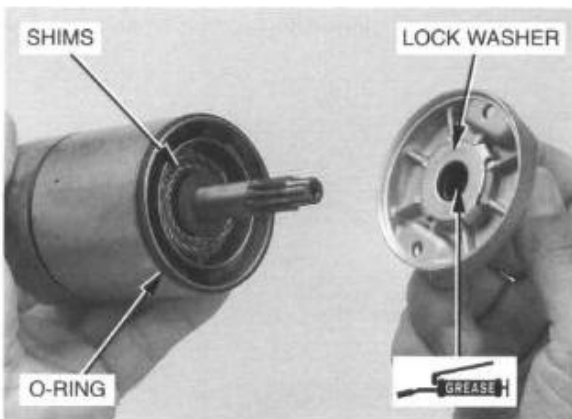
Assemble the motor case and rear cover, aligning the index marks.



Apply grease to the dust seal of the front cover.

Do not damage the front cover dust seal.

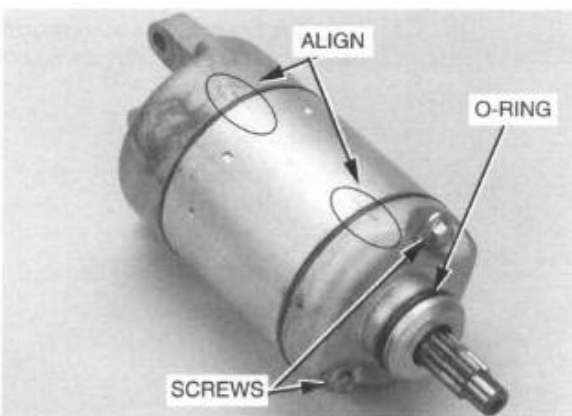
Install the lock washer to the cover, shims to the shaft in the correct positions as recorded, and O-ring to the case.



Align the index marks of the front cover, motor case and rear cover.

Install the screws securely.

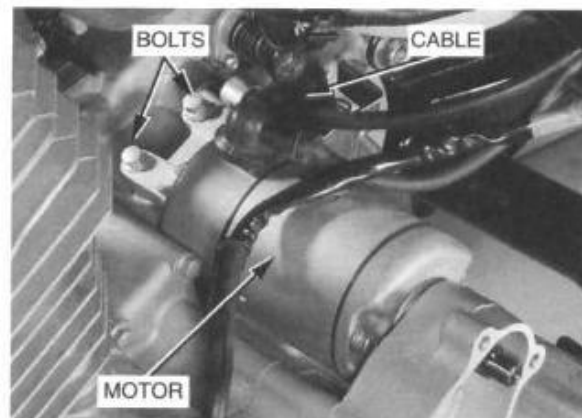
Apply oil to the O-ring and install it on the front cover.



INSTALLATION

Install the starter motor with the two mounting bolts.
Connect the starter cable to the motor.

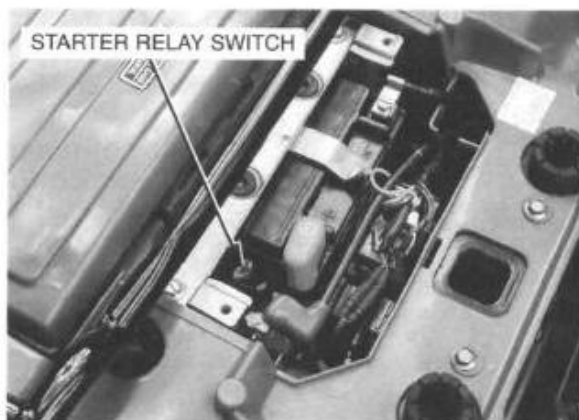
Install the starter reduction gear A/B and cover (page 9-3).
Connect the negative cable to the battery.



STARTER RELAY SWITCH

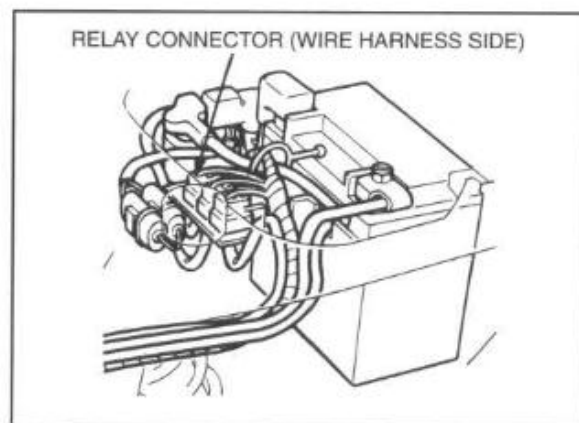
OPERATION INSPECTION

Remove the battery box cover.
Depress the starter switch button with the ignition ON.
The coil is normal if the starter relay switch clicks.



VOLTAGE INSPECTION

If the switch "CLICK" is not heard, disconnect the relay mini-connector. Measure the voltage between the Y/R (+) and G/R (-) wire terminals of the wire harness side. The battery voltage should be indicated when the starter switch button is depressed with the ignition switch ON and the transmission in neutral. If the battery voltage does not register, remove the relay switch and perform the following inspection.



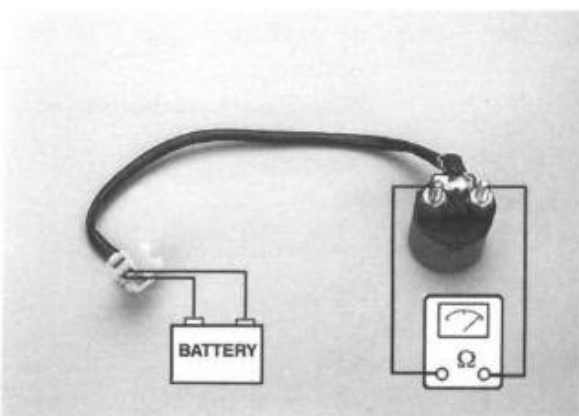
CONTINUITY INSPECTION

Connect an ohmmeter to the starter relay switch large terminals.

Connect a fully charged 12 V battery to the starter relay switch connector terminals (Y/R and G/R).

Check for continuity between the starter relay switch terminals.

There should be continuity while 12 V battery is connected to the starter relay switch connector terminals and should be no continuity when the battery is disconnected.



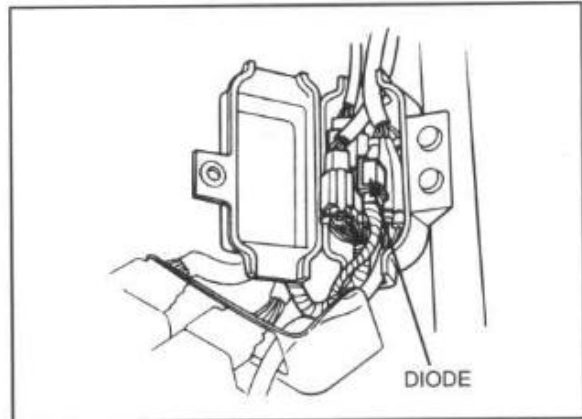
DIODE

REMOVAL

Remove the front fender to gain access to the diode (page 16-1).

Open the connector box.

Remove the diode from the wire harness.



INSPECTION

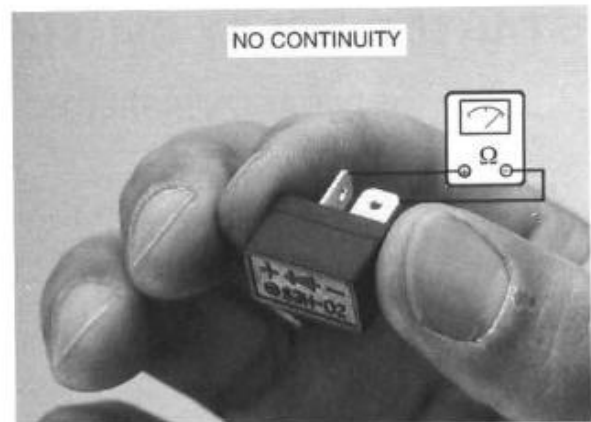
Check for continuity with an ohmmeter.

NORMAL DIRECTION: CONTINUITY
REVERSE DIRECTION: NO CONTINUITY

INSTALLATION

Install the diode in the reverse order of removal.

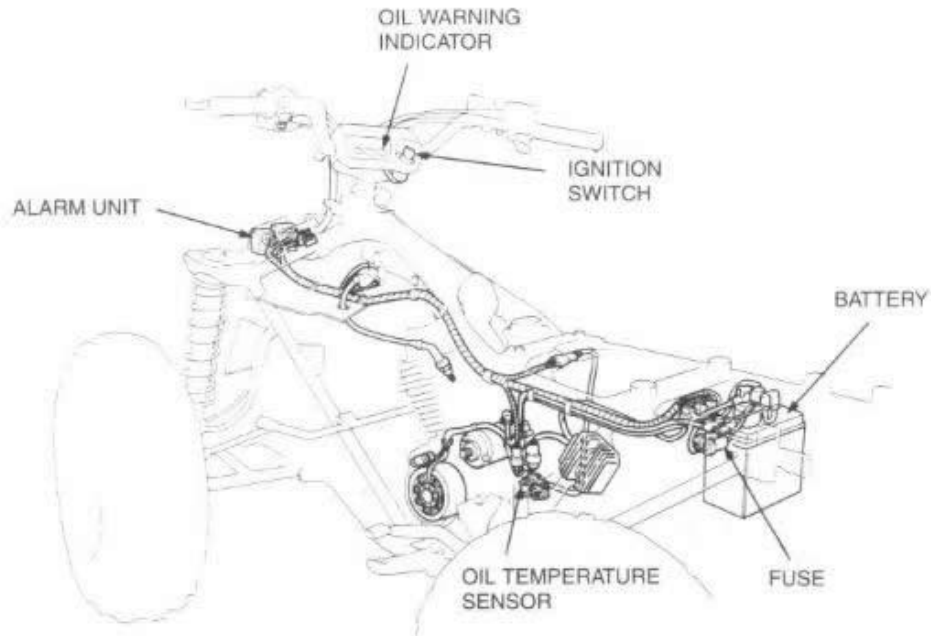
Install the front fender (page 16-2, 3).



MEMO

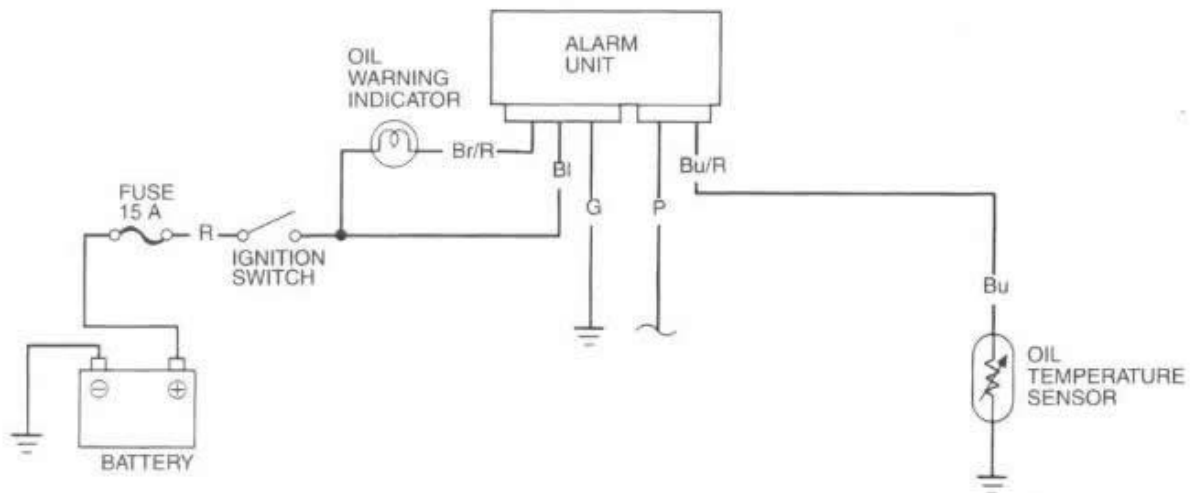
LIGHTS/SWITCHES

'95 - '97 Shown

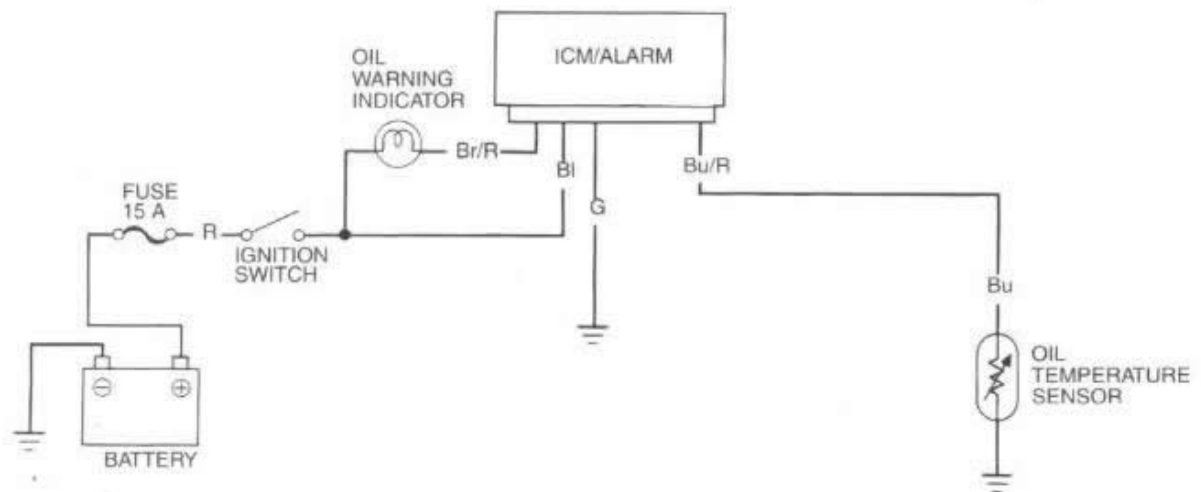


OIL WARNING SYSTEM DIAGRAM

'95 - '97



After '97



20. LIGHTS/SWITCHES

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SERVICE INFORMATION

GENERAL

- A continuity check can usually be made without removing the part from the vehicle by simply disconnecting the wires and connecting a continuity tester or voltmeter to the terminals.
- When inspecting the oil warning system, check the system components and lines step-by-step, according to the troubleshooting on the next page.

SPECIFICATIONS

Headlight	12 V 25/25W x 2
Taillight	12V 5W
Indicator lamp	12V 1.7W x 3

TORQUE VALUES

Neutral switch	13 N·m (1.3 kg-m, 9 ft-lb)
Reverse switch	13 N·m (1.3 kg-m, 9 ft-lb)
Oil temperature sensor	18 N·m (1.8 kg-m, 13 ft-lb)

TROUBLESHOOTING

Light does not come on when light switch is turned on

- Bulb burned out
- Faulty switch
- Wiring to that component has open circuit

Headlight beams do not shift when dimmer switch is operated

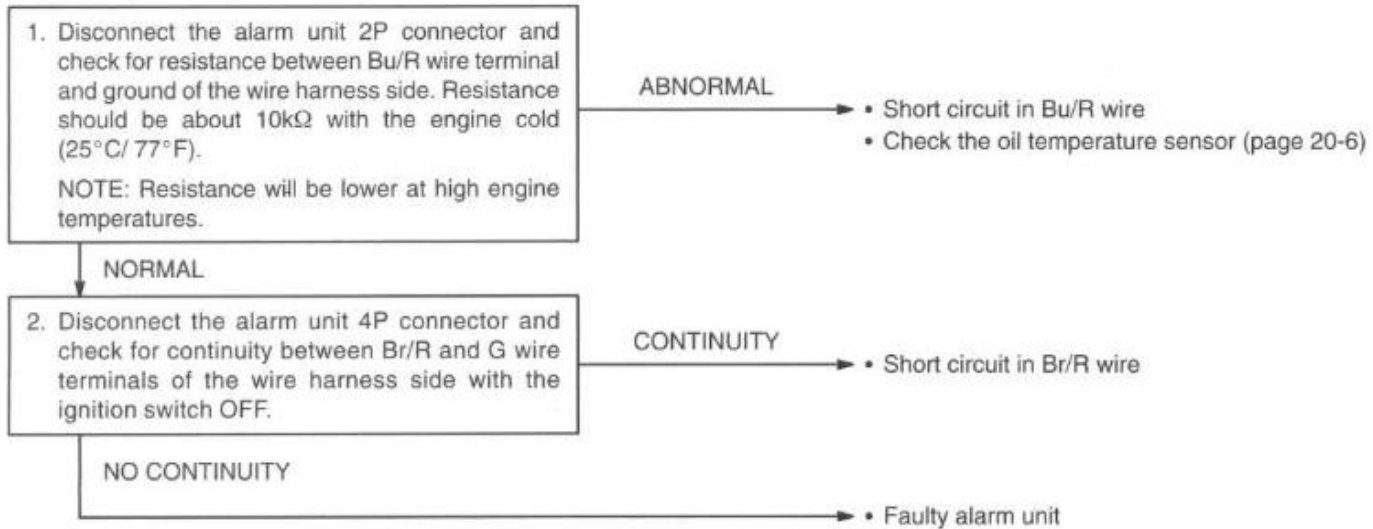
- Faulty dimmer switch
- Bulb burned out
- Wiring to that component has open circuit

OIL WARNING SYSTEM

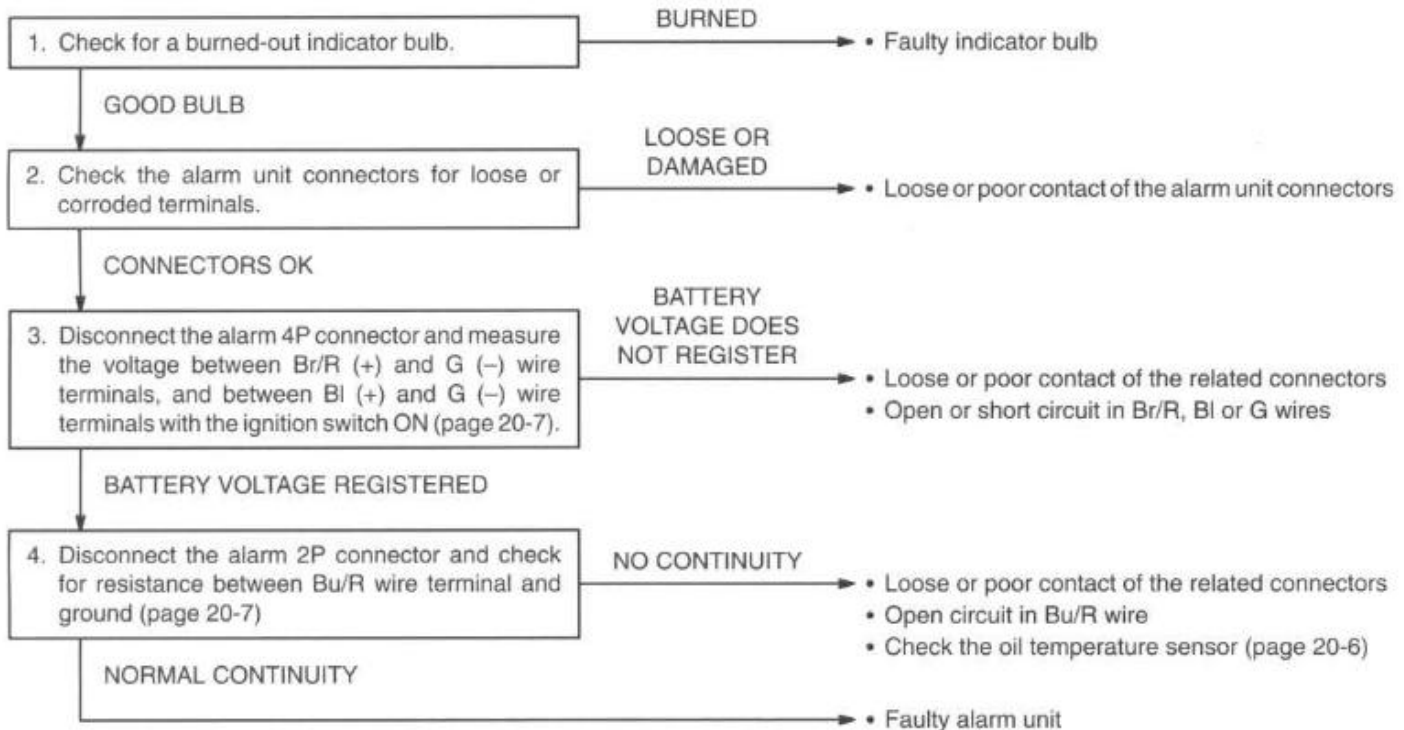
NOTE

When the ignition switch is turned on, the oil warning indicator should come on for a few seconds then go off.

Oil warning indicator does not go off



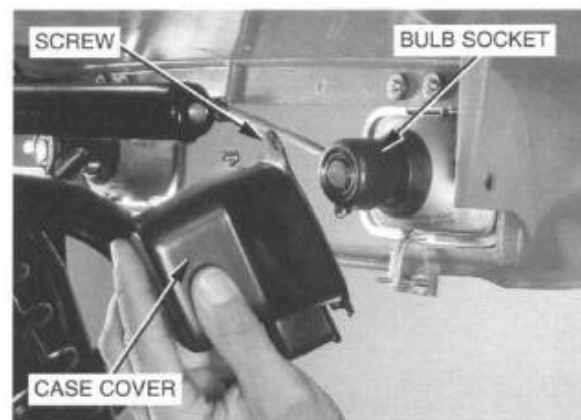
Oil warning indicator does not come on for a few seconds, when the ignition switch is turned on.



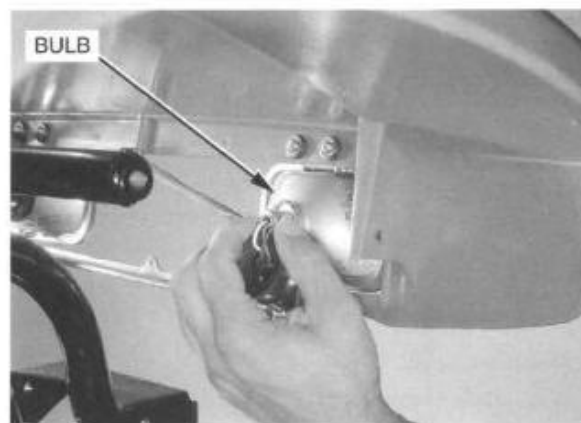
HEADLIGHT

BULB REPLACEMENT

Remove the headlight case cover by removing two screws.
Remove the dust cover and bulb socket.



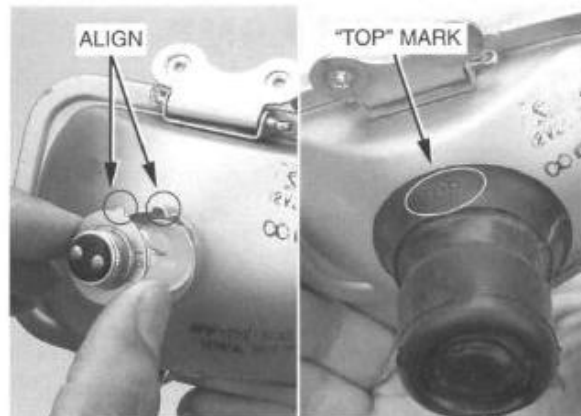
Remove the headlight bulb from the headlight case.



Install a new bulb in the case, aligning the bulb tab with the case groove.

Install the bulb socket and dust cover with the "TOP" mark of the cover facing up.

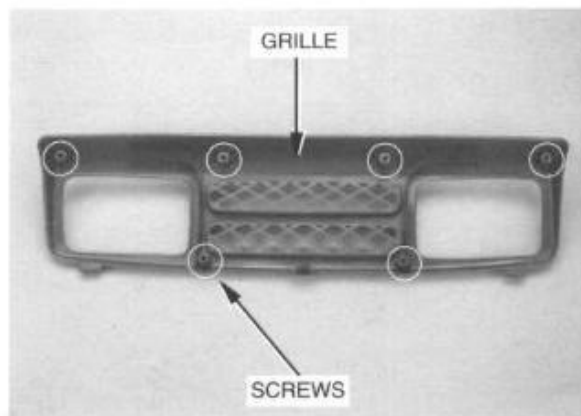
Install the headlight case cover securely.



CASE REMOVAL/INSTALLATION

Remove the headlight bulb (see above).

Remove the headlight case grille by removing the attaching screws as shown.

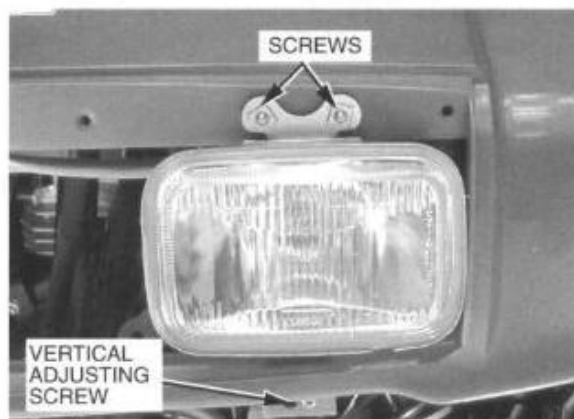


LIGHTS/SWITCHES

Remove the two headlight case mounting screws, release the headlight vertical adjusting screw from the front fender and remove the headlight case.

Install the headlight case in the reverse order of removal.

Adjust the headlight aim (page 3-18).

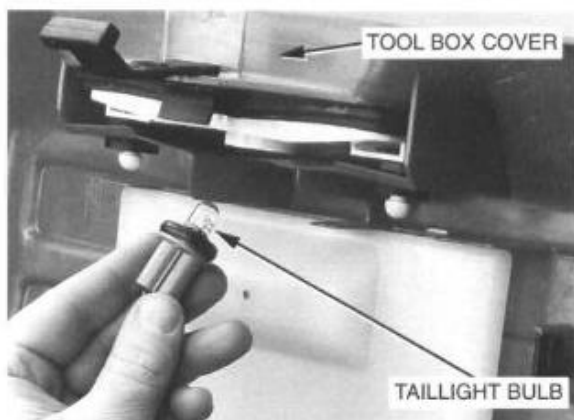


TAILLIGHT

BULB REPLACEMENT

Open the tool box cover.

Remove the bulb socket from the taillight case and replace the bulb with a new one.



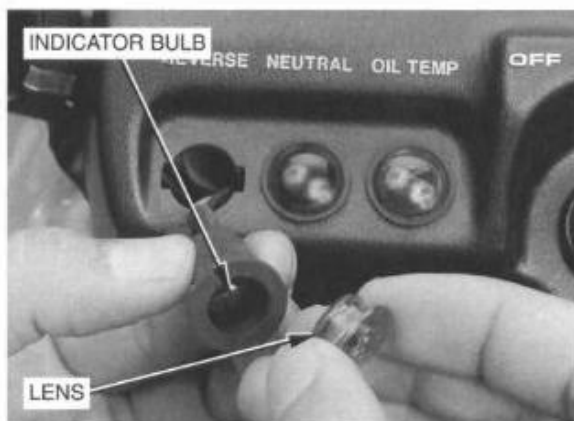
INDICATOR LAMP

BULB REPLACEMENT

Pull the indicator lamp socket out of the handlebar cover. Remove the indicator lens.

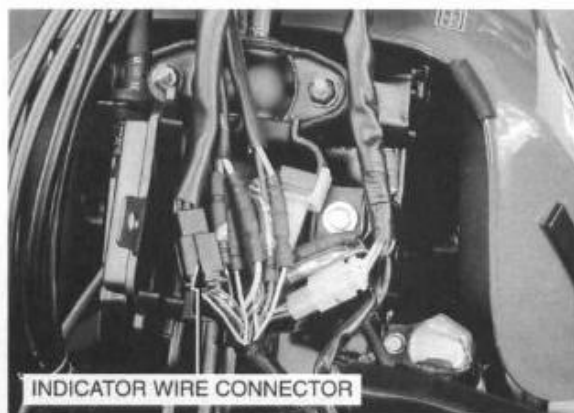
Remove the bulb from the socket and replace it with a new one.

During socket installation, align the projections with the cutouts in the handle cover securely.



If you replace the bulb socket, remove the front fender (page 16-1) and open the connector box.

Disconnect the indicator wire connector, and replace indicator wires as an assembly.



IGNITION SWITCH

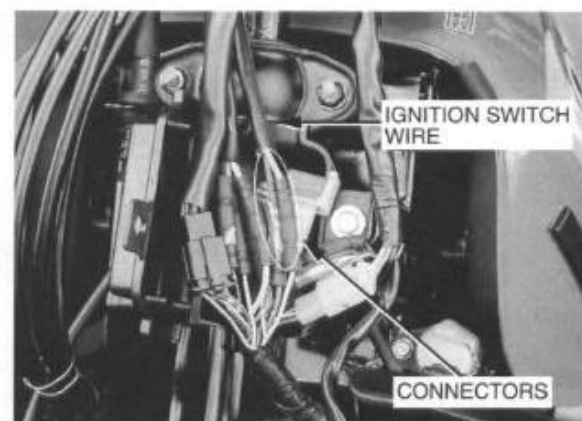
Remove the front fender (page 16-1).

Open the connector box and disconnect the ignition switch wire connectors.

Check for continuity between the wire terminals of the ignition switch connector in each switch position.

Continuity should exist between the color coded wires as follows:

Color	R	Bl	P/W	P
OFF				
ON	○	○	○	○



HANDLEBAR SWITCHES

The handlebar switches (lighting, dimmer, engine stop, starter switches) must be replaced as an assembly.

Remove the front fender (page 16-1).

Open the connector box and disconnect the handlebar switch connectors.

Check for continuity between the wire terminals of the handlebar switch connectors. Continuity should exist between the color coded wire terminals as follows:

LIGHTING SWITCH

Color		Br	Bl
OFF			
ON	○	○	○

DIMMER SWITCH

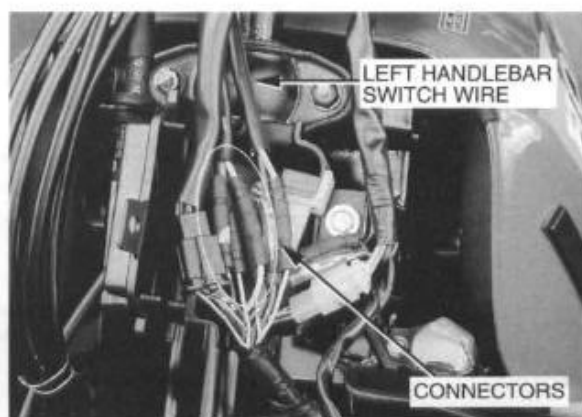
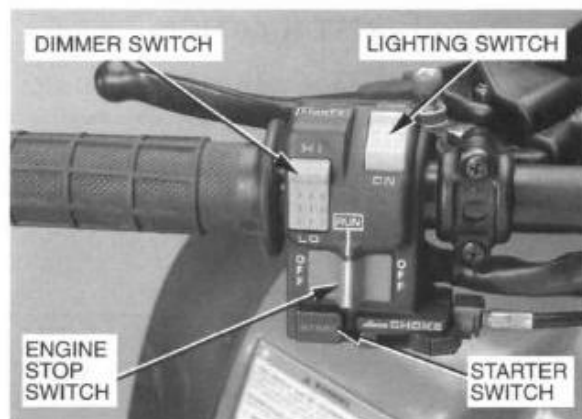
Color	Bu	●	W
HI	○	○	
↕	○	○	○
LO		○	○

ENGINE STOP SWITCH

Color		Bl/W
OFF		
RUN	○	○
OFF		

STARTER SWITCH

Color	Bl	●	Y/R
FREE			
PUSH	○	○	



NEUTRAL SWITCH/REVERSE SWITCH

INSPECTION/REMOVAL

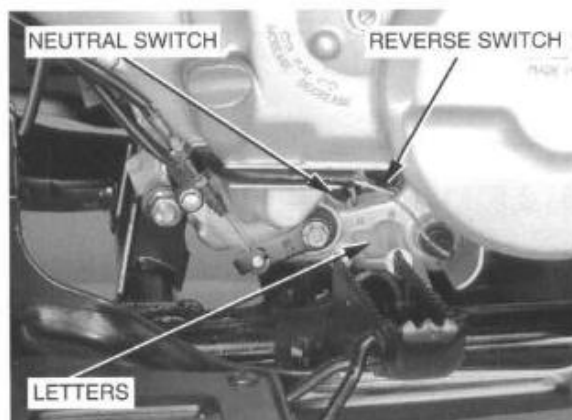
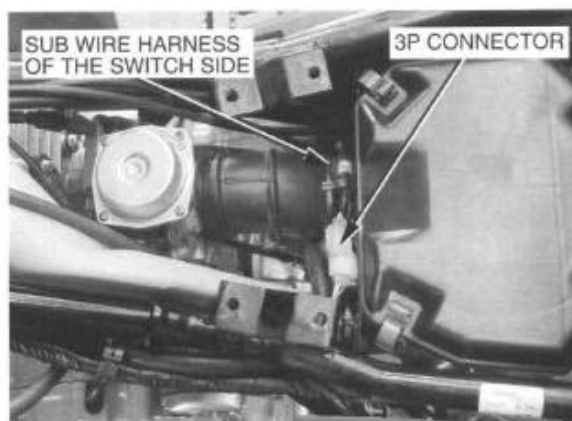
Remove the seat and disconnect the 3P connector.

The neutral switch is functional if continuity exists between the Lg wire terminal of the switch side and body ground only when the transmission is in neutral.

The reverse switch is functional if continuity exists between the Gr wire terminal of the switch side and body ground only when the transmission is in the reverse position.

If there is no continuity as described, remove the switch cover and check the neutral/reverse switch wire connector for loose connection or corroded terminals.

Disconnect the connector and also check the neutral or reverse switches for continuity between each switch terminal and body ground (how to check: see above).



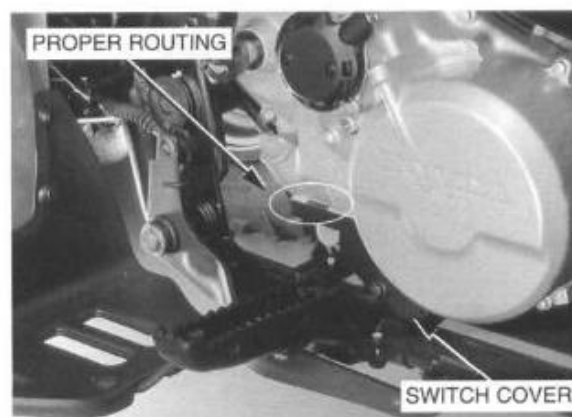
INSTALLATION

Connect the switch connector according to the letter (on the connector), "N" to neutral switch and "R" to reverse switch.

⚠ WARNING

If the neutral and reverse switch wire connections are interchanged, the neutral indicator will come on when the transmission is in reverse.

Install the switch cover properly with the switch wire routed in the crankcase cover groove.



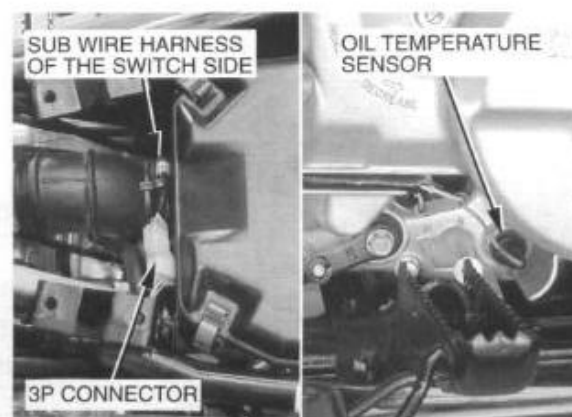
OIL TEMPERATURE SENSOR

INSPECTION/REMOVAL

Remove the seat and disconnect the 3P connector. Check for resistance between Bu wire terminal of the switch side and body ground. Resistance should be about 10 kΩ with the engine cold (25°C/77°F).

If not, remove the switch cover (see above) and disconnect the wire from the oil temperature sensor.

Drain the engine oil (page 2-3).



Remove the sensor from the right crankcase cover.

Suspend the oil temperature sensor in heated engine oil to check its operation. Do not let the thermometer or sensor touch the pan, or false readings will result.

Connect ohmmeter probes across the terminals of the sensor and measure the resistance.

TECHNICAL DATA

Temperature	25°C (77°F)	100°C (212°F)	170°C (338°F)
Resistance	9.5– 10.5 kΩ	0.95– 1.05 kΩ	209– 231 Ω

Replace the sensor if the readings are out of the ranges as shown.

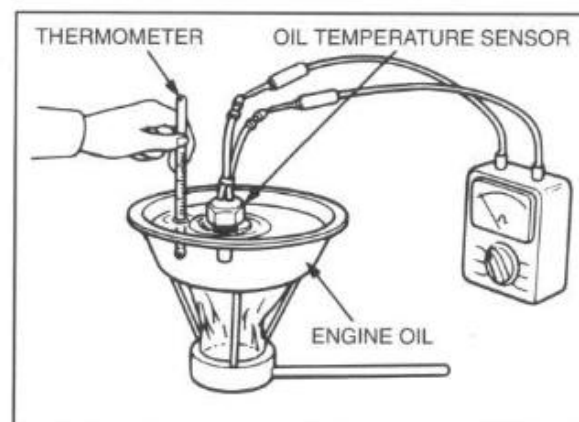
INSTALLATION

Install the temperature sensor in the right crankcase and connect the wires.

TORQUE: 18 N·m (1.8 kg·m, 13 ft·lb)

Install the switch cover (page 20-6).

Fill the crankcase with the recommended oil (page 2-3).



ALARM UNIT

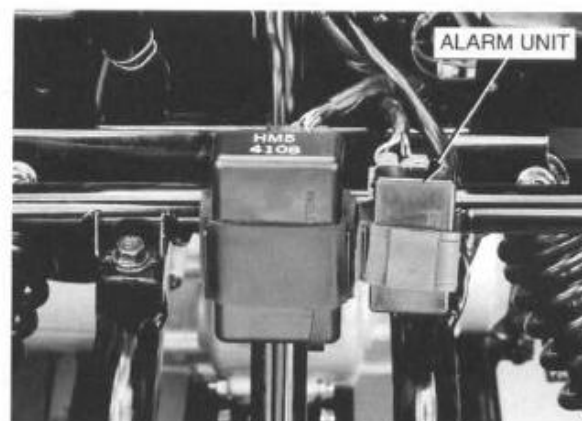
NOTE

Check the system components and lines step-by-step according to the troubleshooting on page 20-2.

INSPECTION

Disconnect the alarm unit connectors and check them for loose contact or corroded terminals.

Check for voltage and continuity between the connector terminals of the wire harness side as follows:

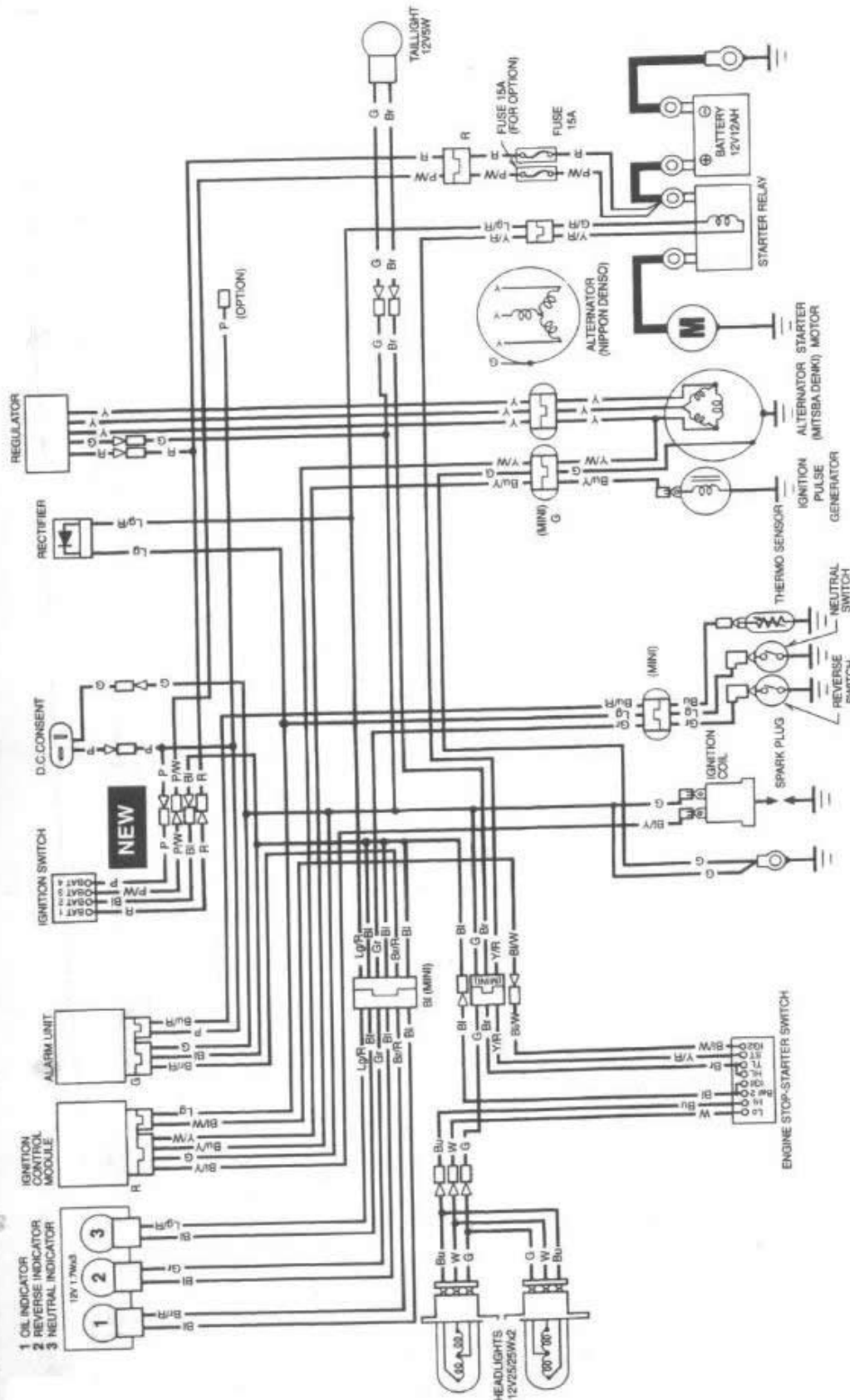


ITEM	TERMINAL	SPECIFICATION
Oil warning indicator line	Br/R (+) and G (-)	Battery voltage should register with the ignition switch ON.
Battery voltage line	Bl (+) and G (-)	
Oil temperature sensor line	Bu/R and ground	9.5–10.5 kΩ (Engine cold, 25° C/77° F)

MEMO

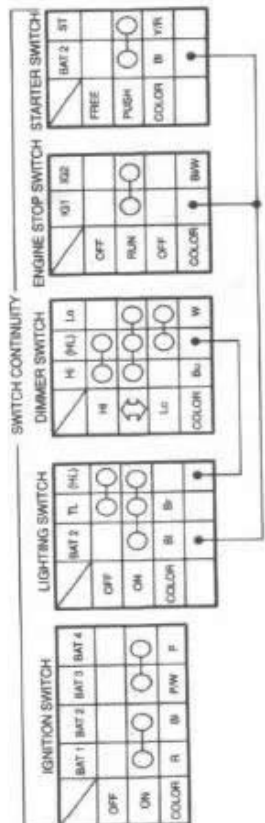
21. WIRING DIAGRAM

'95 - '97



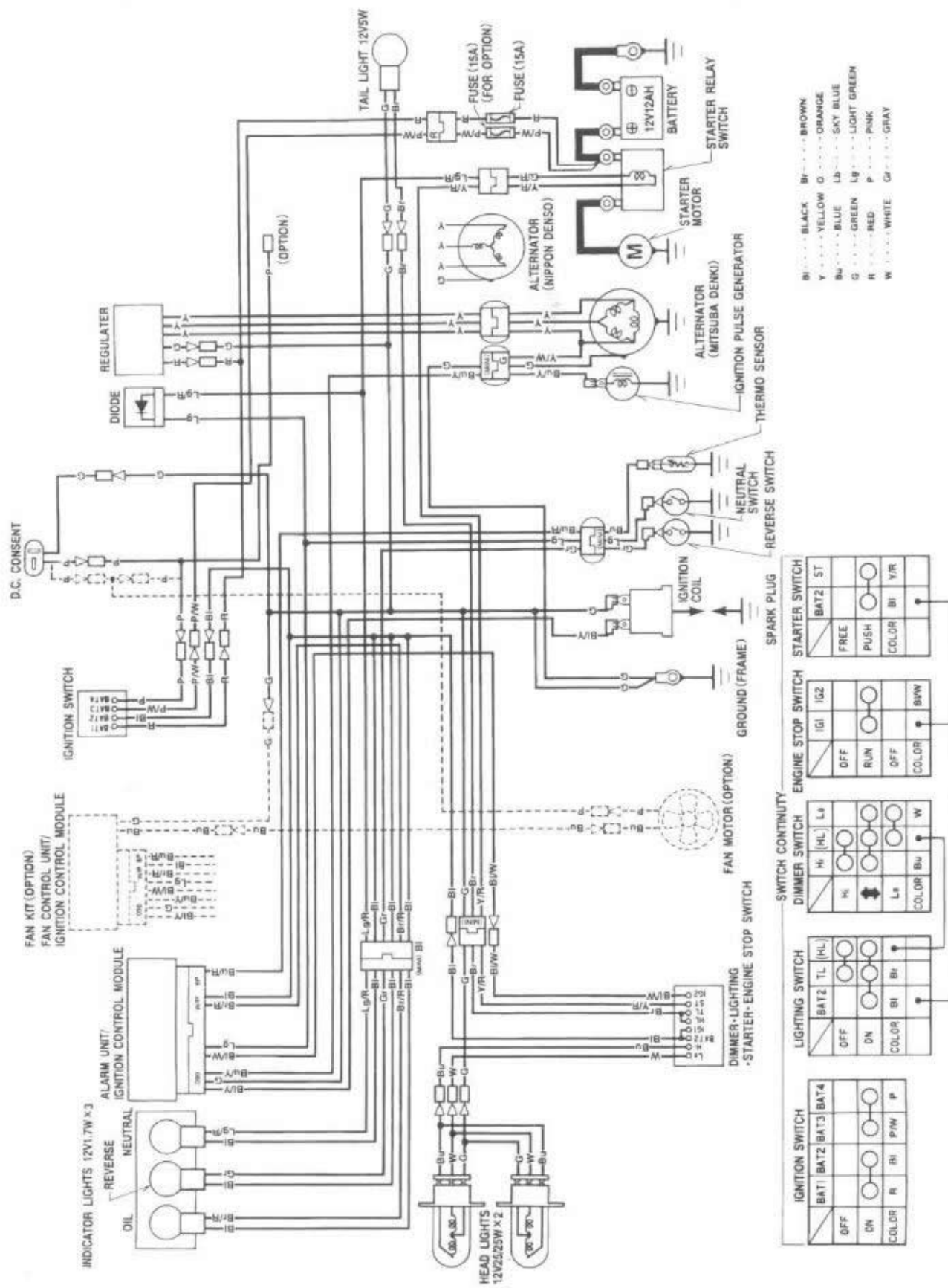
Color Legend:

Black	Yellow	Brown	Orange
Blue	Light Blue	Light Green	Green
Red	Pink	Gray	
White			



WIRING DIAGRAM

After '97



22. TROUBLESHOOTING

ENGINE DOES NOT START OR IS
HARD TO START

22-1

ENGINE LACKS POWER

22-2

POOR PERFORMANCE AT LOW
AND IDLE SPEEDS

22-3

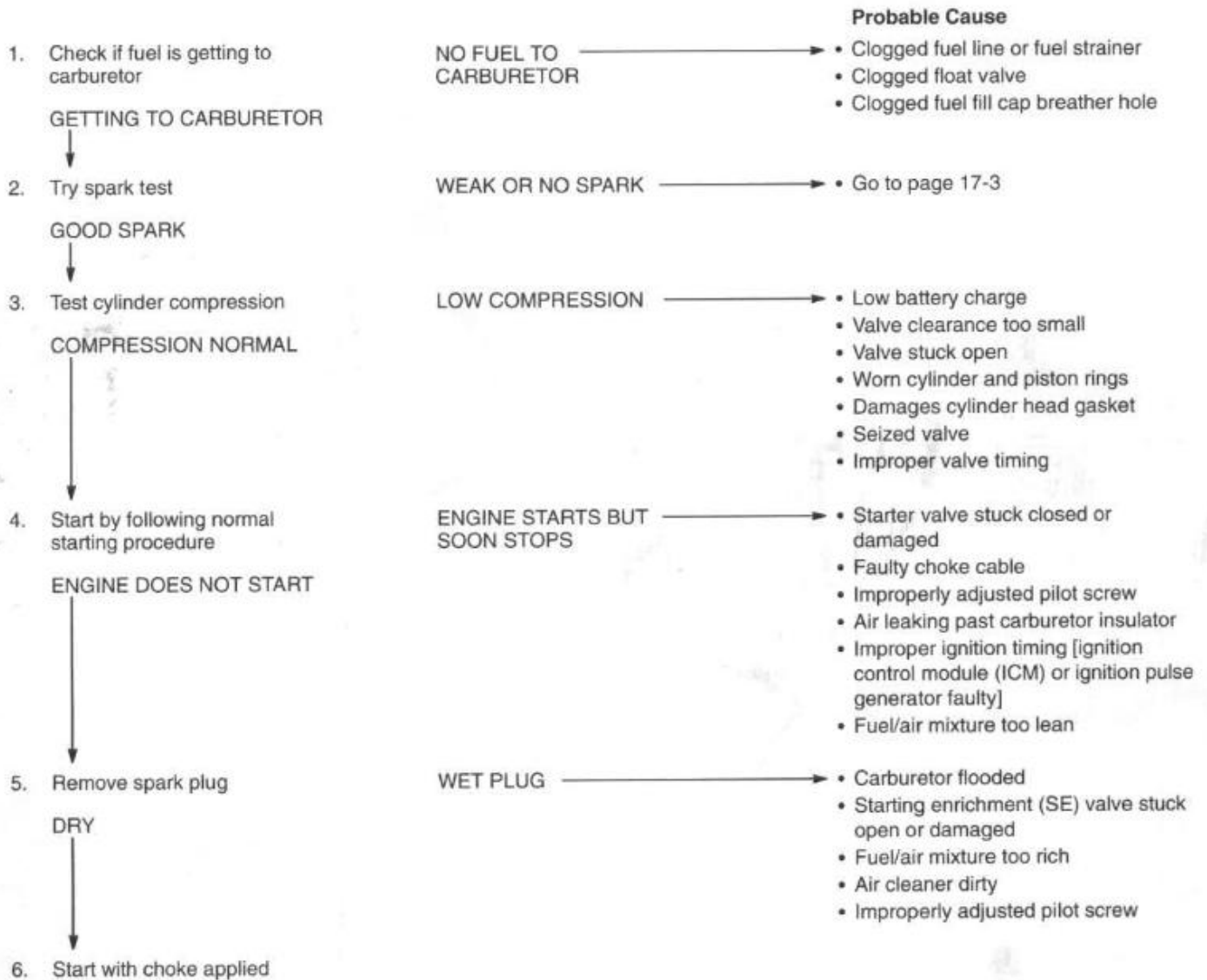
POOR PERFORMANCE AT HIGH SPEEDS

22-4

POOR HANDLING

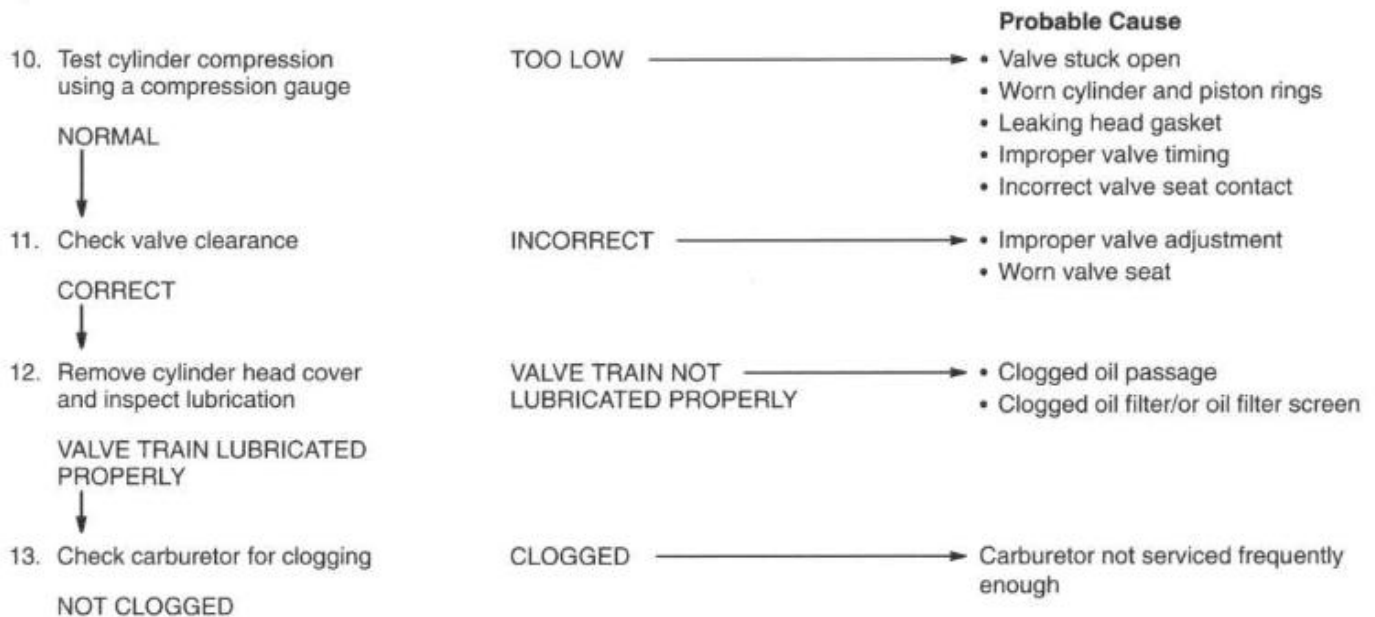
22-4

ENGINE DOES NOT START OR IS HARD TO START

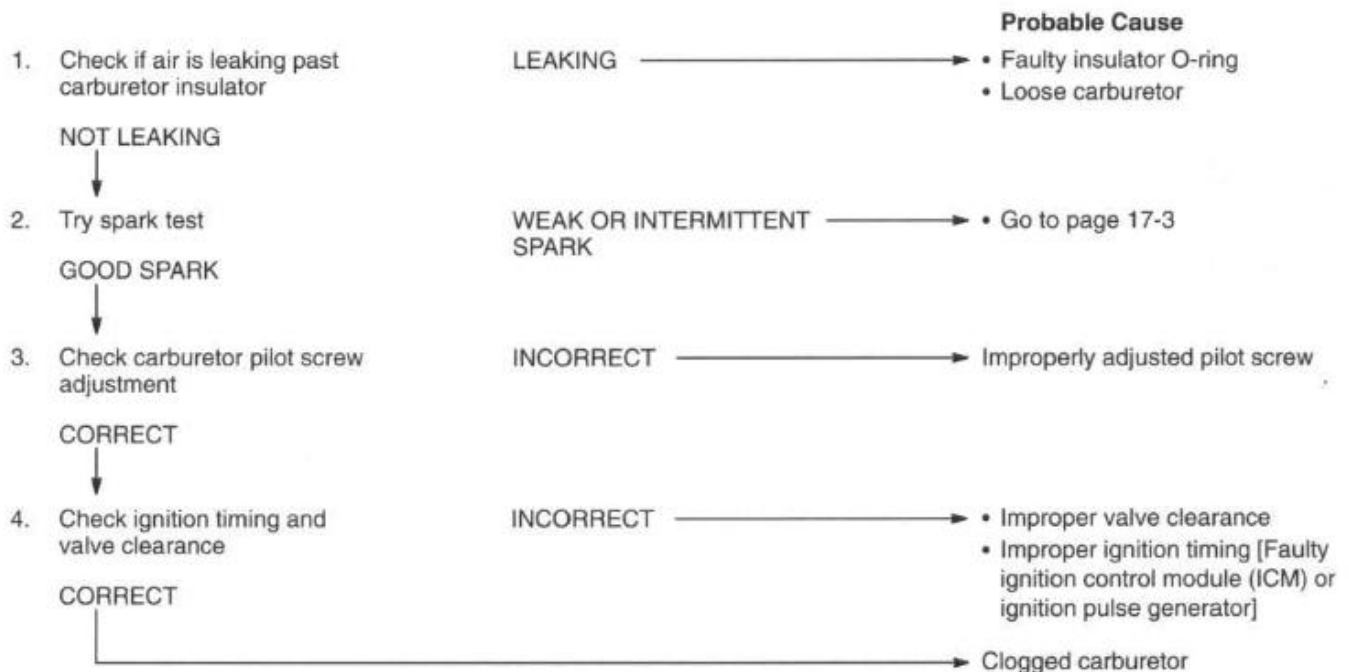


ENGINE LACKS POWER



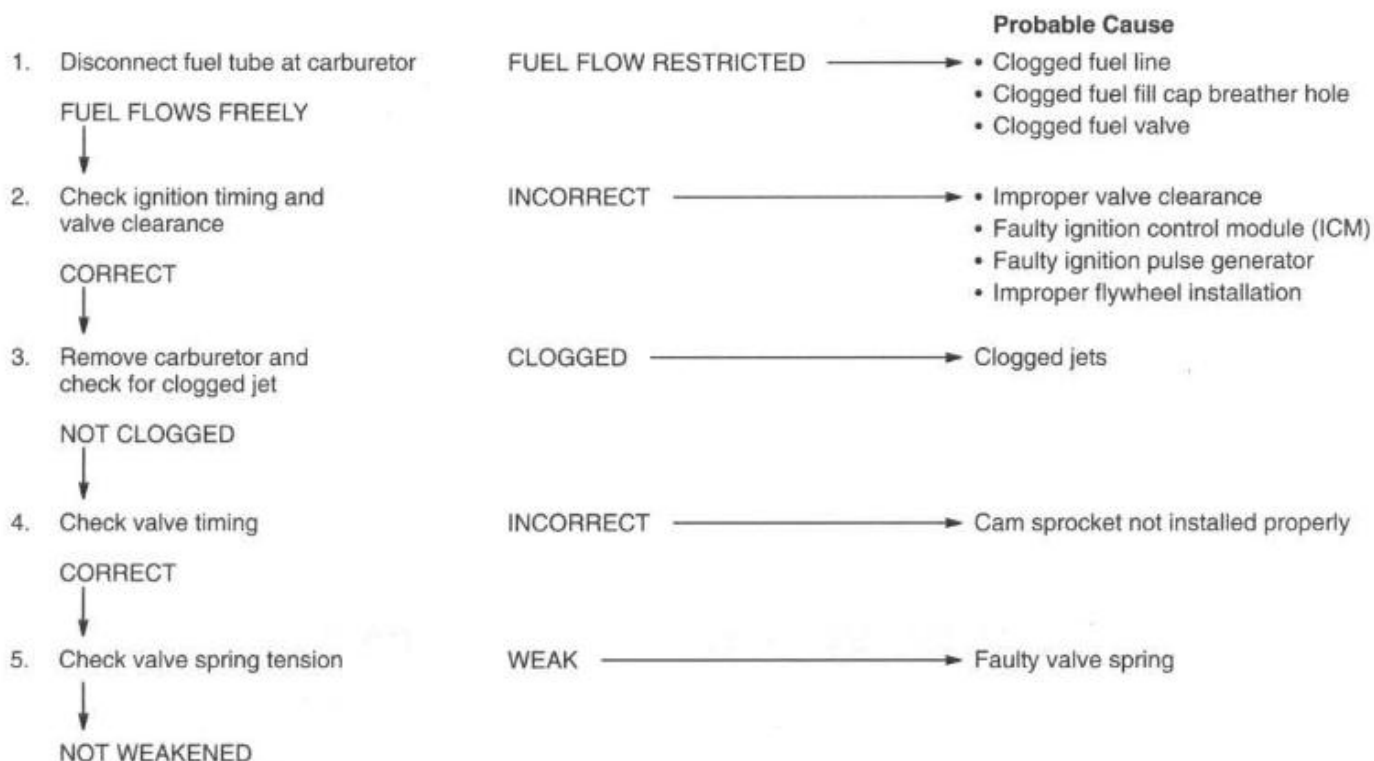


POOR PERFORMANCE AT LOW AND IDLE SPEEDS

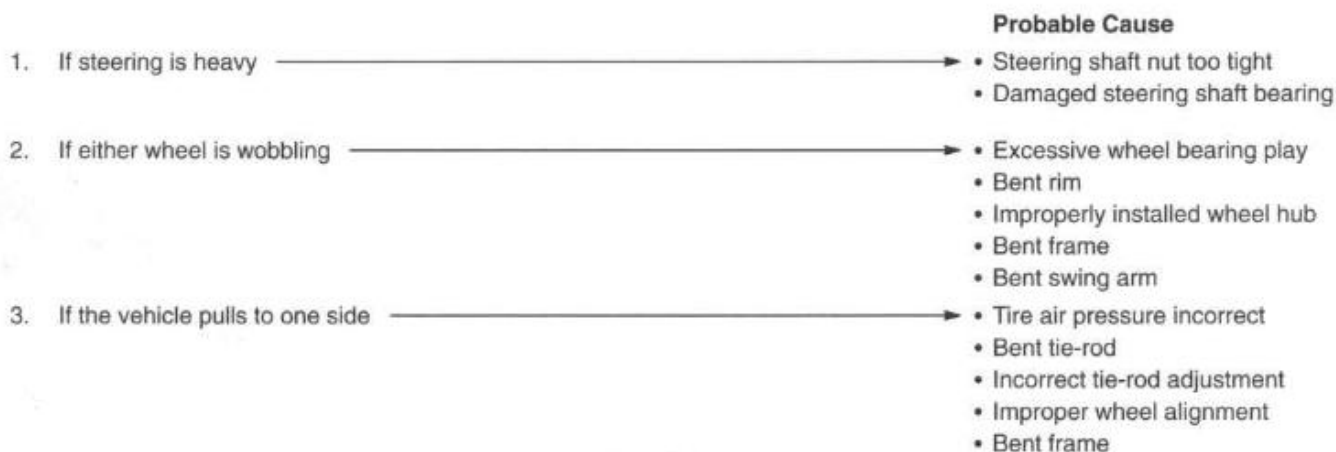


TROUBLESHOOTING

POOR PERFORMANCE AT HIGH SPEEDS



POOR HANDLING → Check tire pressure



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