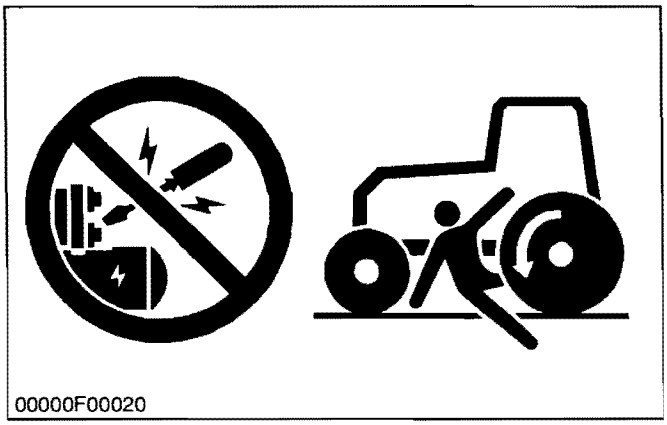
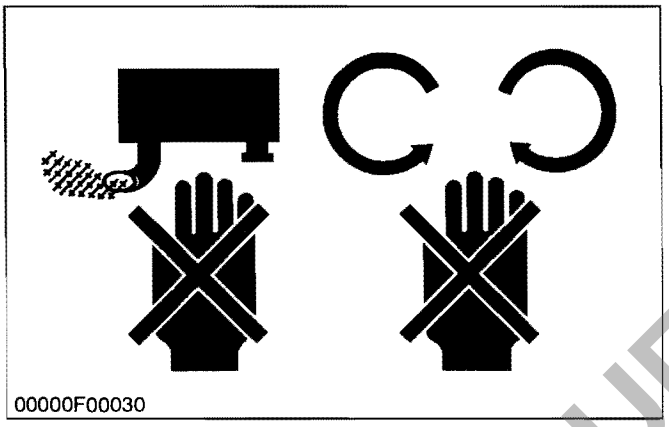

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SAFETY STARTING

(1) Do not start the engine by shorting across starter terminals or bypassing the safety start switch.
(2) Do not alter or remove any part of machine safety system.
(3) Before starting the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
(4) Never start the engine while standing on ground. Start the engine only from operator's seat.

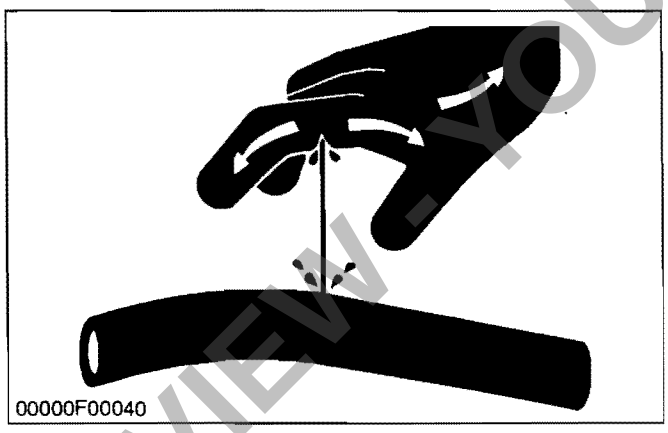
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SAFETY WORKING

(1) Do not work on the machine while under the influence of alcohol, medication, or other substances or while fatigued.
(2) Wear close fitting clothing and safety equipment appropriate to the job.
(3) Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
(4) When servicing is performed together by two or more persons, take care to perform all work safely.
(5) Do not work under the machine that is supported solely by a jack. Always support the machine by safety stands.
(6) Do not touch the rotating or hot parts while the engine is running.
(7) Never remove the radiator cap while the engine is running, or immediately after stopping. Otherwise, hot water will spout out from radiator. Only remove radiator cap when cool enough to touch with bare hands. Slowly loosen the cap to first stop to relieve pressure before removing completely.
(8) Escaping fluid (fuel or hydraulic oil) under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or fuel lines. Tighten all connections before applying pressure.

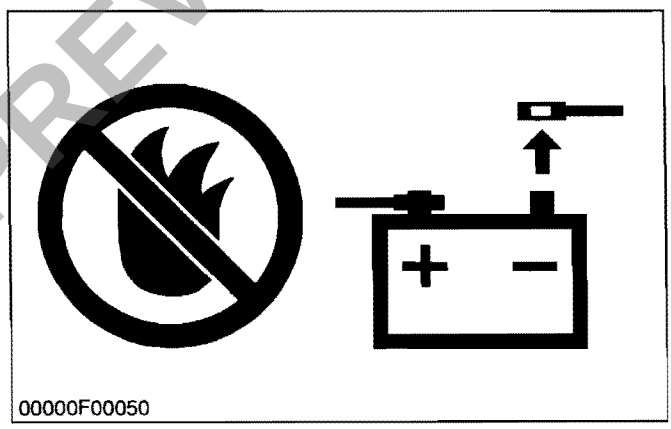
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AVOID FIRES

(1) Fuel is extremely flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.
(2) To avoid sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
(3) Battery gas can explode. Keep sparks and open flame away from the top of battery, especially when charging the battery.
(4) Make sure that no fuel has been spilled on the engine.

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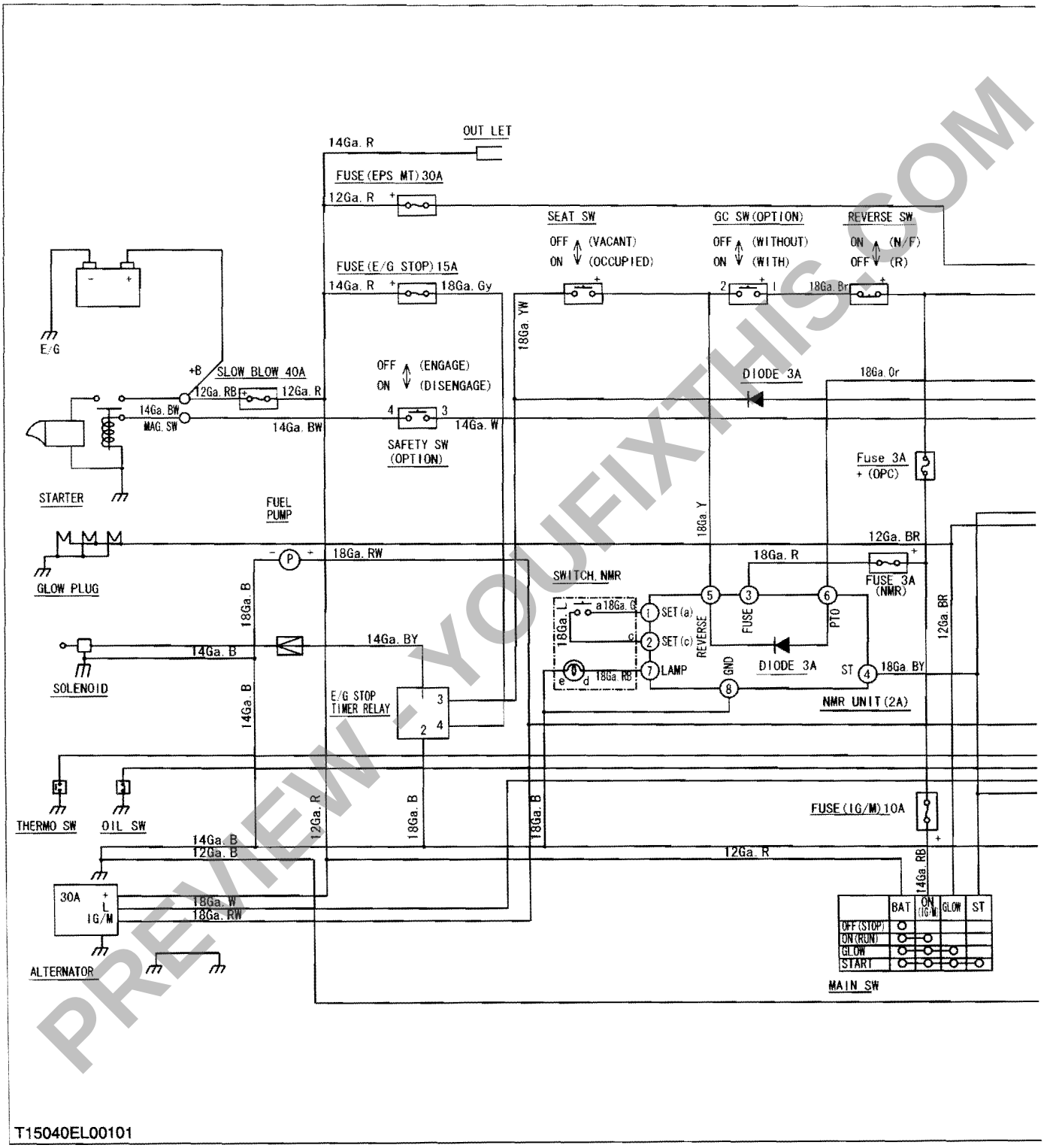

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1. WIRING DIAGRAM

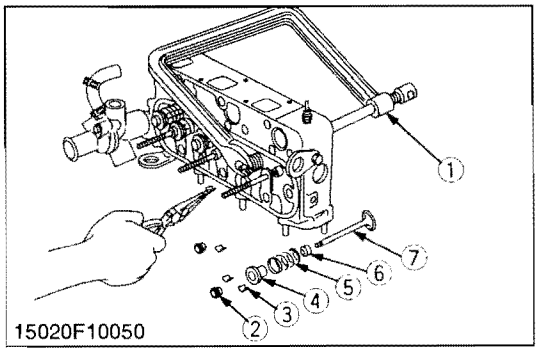
[1] WIRING DIAGRAM (with KRA system) :TG1860



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Valves

1. Remove the valve caps (2).
2. Remove the valve spring collet (3), pushing the valve spring retainer (4) by valve spring replacer (1).
3. Remove the valve spring retainer (4), valve spring (5) and valve stem seal (6).
4. Remove the valve (7).

(When reassembling)

- Wash the valve stem and valve guide hole, and apply engine oil sufficiently
- After installing the valve spring collets, lightly tap the stem to assure proper fit with a plastic hammer.

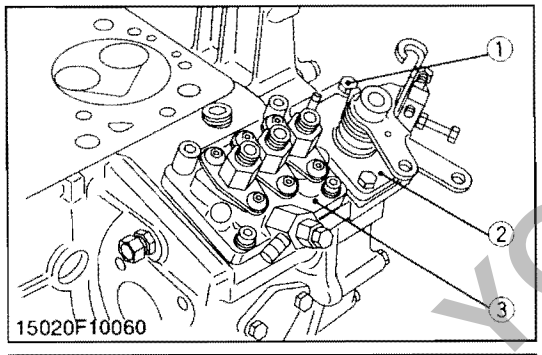
■ IMPORTANT

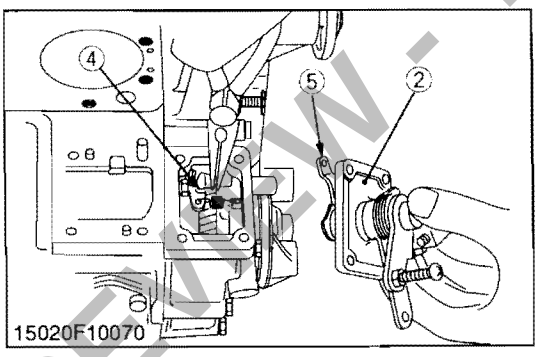
- **Don't change the combination of valve and valve guide.**

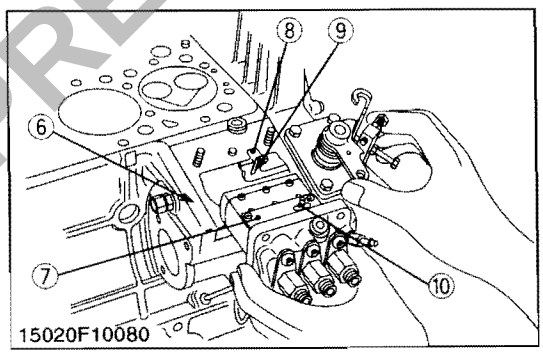
(1) Valve Spring Replacer
(2) Valve Cap
(3) Valve Spring Collet
(4) Valve Spring Retainer
(5) Valve Spring
(6) Valve Stem Seal
(7) Valve

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(2) Timing Gears and Camshaft







Injection Pump and Speed Control Plate

1. Remove the socket head screws and nuts, and remove the injection pump (3).
2. Remove the screws and separate the speed control plate (2), taking care not to damage the spring (4).
3. Disconnect the spring (4) and remove the speed control plate (2).

(When reassembling)

- Hook the governor spring (4) to the lever (5) first and install the speed control plate (2).
- Be sure to place the copper washers underneath two screws (1) (as shown in the figure).
- Position the slot (9) on the fork lever just under the slot (8) on the crankcase.
- Insert the injection pump (3) so that the control rod (7) should be pushed by the spring (6) at its end and the pin (10) on the rod engages with the slot (9) on the fork lever (as shown in the figure).

■ NOTE

- **The sealant is applied to both sides of the soft metal gasket shim. The liquid gasket is not required for assembling.**
- **Addition or reduction of shim (0.05 mm, 0.0020 in.) delays or advances the injection timing by approx. 0.0087 rad (0.5°).**
- **In disassembling and replacing, be sure to use the same number of new gasket shims with the same thickness.**

(1) Screws and Copper Washers
(2) Speed Control Plate
(3) Injection Pump
(4) Governor Spring
(5) Lever
(6) Spring
(7) Control Rod
(8) Slot (Crankcase Side)
(9) Slot (Fork Lever Side)
(10) Pin

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[6] TIGHTENING TORQUES

(1) General Use Screws, Bolt and Nuts

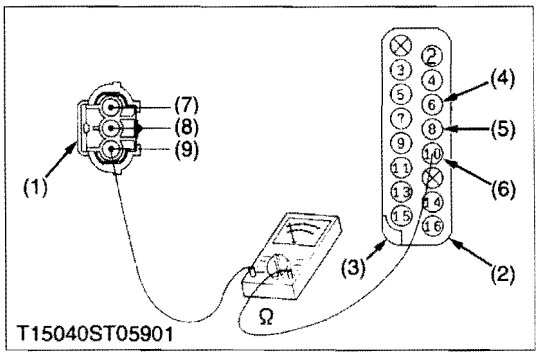
Screws, bolts and nuts whose tightening torques are not specified in this Workshop Manual should be tightened according to the table below.

Indication on top of bolt	⟨4⟩ No-grade or 4T						⟨7⟩ 7T						⟨9⟩ 9T		
Material of bolt	SS400, S20C						S43C, S48C						SCr435, SCM435		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit / Diameter	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs	N·m	kgf·m	ft-lbs
M6 (6 mm, 0.24 in.)	7.85 to 9.31	0.80 to 0.95	5.79 to 6.87	7.85 to 8.82	0.80 to 0.90	5.79 to 6.50	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31	7.85 to 8.82	0.80 to 0.90	5.79 to 6.50	12.3 to 14.2	1.25 to 1.45	9.05 to 10.4
M8 (8 mm, 0.31 in.)	17.7 to 20.5	1.8 to 2.1	13.1 to 15.1	16.7 to 19.6	1.7 to 2.0	12.3 to 14.4	23.6 to 27.4	2.4 to 2.8	17.4 to 20.2	17.7 to 20.5	1.8 to 2.1	13.1 to 15.1	29.5 to 34.3	3.0 to 3.5	21.7 to 25.3
M10 (10 mm, 0.39 in.)	39.3 to 45.1	4.0 to 4.6	29.0 to 33.2	31.4 to 34.3	3.2 to 3.5	23.2 to 25.3	48.1 to 55.8	4.9 to 5.7	35.5 to 41.2	39.3 to 44.1	4.0 to 4.5	29.0 to 32.5	60.9 to 70.6	6.2 to 7.2	44.9 to 52.0
M12 (12 mm, 0.47 in.)	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5				77.5 to 90.2	7.9 to 9.2	57.2 to 66.5	62.8 to 72.5	6.4 to 7.4	46.3 to 53.5	103 to 117	10.5 to 12.0	76.0 to 86.7
M14 (14 mm, 0.55 in.)	108 to 125	11.0 to 12.8	79.6 to 92.5				124 to 147	12.6 to 15.0	91.2 to 108				167 to 196	17.0 to 20.0	123 to 144
M16 (16 mm, 0.63 in.)	167 to 191	17.0 to 19.5	123 to 141				197 to 225	20.0 to 23.0	145 to 166				260 to 304	26.5 to 31.0	192 to 224
M18 (18 mm, 0.71 in.)	246 to 284	25.0 to 29.0	181 to 209				275 to 318	28.0 to 32.5	203 to 235				344 to 402	35.0 to 41.0	254 to 296
M20 (20 mm, 0.79 in.)	334 to 392	34.0 to 40.0	246 to 289				368 to 431	37.5 to 44.0	272 to 318				491 to 568	50.0 to 58.0	362 to 419

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Checking Continuity between the Torque Sensor 3P Connector and EPS Controller 16P Connector

1. Using a circuit tester, check continuity between the terminals. Refer to the figure below.

Resistance (between same color terminal)	Factory spec.	0 Ω
Resistance (between different color terminal)	Factory spec.	∞ Ω

2. If the resistance is out of factory specification, repair or replace the wire harness with new one. If the resistance is okay, replace the power steering assembly with new one.

■ **IMPORTANT**

- **In checking continuity, also swing the cable behind the connector.**
  Be very careful to keep the circuit tester probes tight at the terminals.

(1) Torque Sensor **3P** Connector
(2) EPS Controller **16P** Connector (view from the wire connected side)
(3) Notch
(4) Black/White Terminal
(5) Red Terminal
(6) White Terminal
(7) Red Terminal
(8) Black Terminal
(9) White Terminal

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(7) Error Codes and Defective Sections

Read the error code on the warning lamp display and take measures as shown in the table below.
For the procedures for taking measures, refer to page 5-S6.

System name	Error code	Estimated defective section						Reset	Reference section
		Power source	Fuse 30A	Sensor	Motor	EPS Controller 4P	EPS Controller 16P		
Power system	02							#1	5-S6
	03								5-S7
	05								5-S7
	06								5-S8
	15								5-S9
	17								5-S10
	19								5-S10
	22								5-S10
Torque sensor system	11							#2	5-S8
	12								5-S9
	13								5-S9
EPS controller inside	23							#1	5-S11
	32								5-S12
	34								5-S12
	35								5-S13

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■ **NOTE**

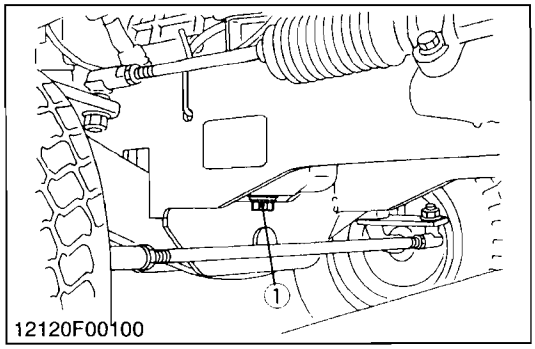
- **Resetting method (Reset after performing checking based on the error code.)**
  #1: Turn off the main switch and then turn it on.
  #2: Perform fail-safe history erasing.

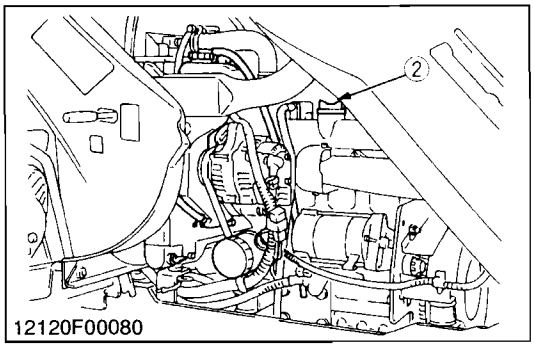
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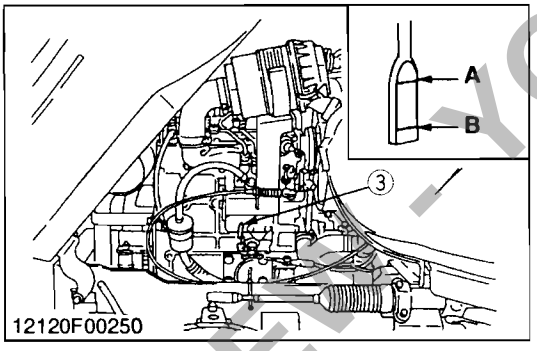
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CHECKING, DISASSEMBLING AND SERVICING

[1] SEPARATING ENGINE
DISASSEMBLING AND ASSEMBLING







Draining Engine Oil

1. Park the machine on level ground.
2. Start and warm up the engine for approx. 5 minutes.
3. Place an oil pan underneath the engine.
4. Remove the drain plug (1) to drain oil.
5. After draining, screw in the drain plug.

(When refilling)

- Fill the engine oil up to the upper line on the dipstick (3).

Engine oil	Capacity	3.0 L 3.2 U.S.qts. 2.6 Imp.qts.

■ IMPORTANT

- **Never mix two different type of oil.**
- **Use the proper SAE Engine Oil according to ambient temperatures.**
  Refer to "LUBRICANTS, FUEL AND COOLANT". (See page G-9.)

(1) Drain Plug
(2) Oil Inlet Plug
(3) Dipstick
(A) Upper Level
(B) Lower Level

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1. D722

[1] TROUBLESHOOTING

Symptom	Probable Cause	Solution	Reference Page
Engine Does Not Start	• No fuel	Replenish fuel	–
	• Air in the fuel system	Bleed	–
	• Water in the fuel system	Change fuel and repair or replace fuel system	–
	• Fuel pipe clogged	Clean	–
	• Fuel filter clogged	Replace	G-25, G-28
	• Excessively high viscosity of fuel or engine oil at low temperature	Use specified fuel or engine oil	G-9
	• Fuel with low cetane number	Use specified fuel	G-9
	• Fuel leak due to loose injection pipe retaining nut	Tighten retaining nut	1-S18
	• Incorrect injection timing	Adjust	1-S47
	• Fuel camshaft worn	Replace	1-S23
	• Injection nozzle clogged	Clean	1-S49
	• Injection pump malfunctioning	Repair or replace	1-S21, S47
	• Seizure of crankshaft, camshaft, piston, cylinder or bearing	Repair or replace	1-S23, S25 S27, S42
	• Compression leak from cylinder	Replace head gasket, tighten cylinder head screw, glow plug and nozzle holder	1-S15
	• Improper valve timing	Correct or replace timing gear	1-S33
	• Piston ring and cylinder worn	Replace	1-S37, S42
	• Excessive valve clearance	Adjust	1-S17
(Starter Does Not Run)	• Battery discharged	Charge	G-24
	• Starter malfunctioning	Repair or replace	8-S14, S15
	• Main switch malfunctioning	Repair or replace	8-S9, S10
	• Brake switch defective	Replace	8-S26
	• Seat switch defective	Replace	8-S27
	• Wiring disconnected	Connect	–
Engine Revolution Is Not Smooth	• Fuel filter clogged or dirty	Replace	G-25, G-28
	• Air cleaner clogged	Clean or replace	G-19, G-28
	• Fuel leak due to loose injection pipe retaining nut	Tighten retaining nut	1-S18
	• Injection pump malfunctioning	Repair or replace	1-S21, S47
	• Incorrect nozzle injection pressure	Adjust	1-S49
	• Injection nozzle stuck or clogged	Repair or replace	1-S19, S50
	• Governor malfunctioning	Repair	1-S21
Either White or Blue Exhaust Gas Is Observed	• Excessive engine oil	Reduce to specified level	1-S11
	• Piston ring and cylinder worn or stuck	Repair or replace	1-S26, S37 S42
	• Incorrect injection timing	Adjust	1-S47
	• Deficient compression	Adjust top clearance	1-S15

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SERVICING SPECIFICATIONS

[1] ENGINE BODY

Cylinder Head

Item	Factory Specification	Allowable Limit
Cylinder Head Surface Flatness	–	0.05 mm 0.0020 in.
Top Clearance	0.50 to 0.70 mm 0.0197 to 0.0276 in.	–
Compression Pressure	2.84 to 3.24 MPa 29.0 to 33.0 kgf/cm^2 412 to 469 psi	2.26 MPa 23.0 kgf/cm^2 327 psi
Variance Among Cylinders	–	10 % or less

Valves

Valve Clearance (Cold)	0.145 to 0.185 mm 0.00571 to 0.00728 in.	–
Valve Seat Width	2.12 mm 0.0835 in.	–
Valve Seat Angle	0.79 rad. 45°	–
Valve Face Angle	0.79 rad. 45°	–
Valve Recessing	– 0.10 to 0.10 mm – 0.0039 to 0.0039 in.	0.30 mm 0.0118 in.
Clearance between Valve Stem and Valve Guide	0.030 to 0.057 mm 0.00118 to 0.00224 in.	0.10 mm 0.0039 in.
Valve Stem O.D.	5.968 to 5.980 mm 0.23496 to 0.23543 in.	–
Valve Guide I.D.	6.010 to 6.025 mm 0.23661 to 0.23720 in.	–

Valve Timing

Intake Valve	Open	0.35 rad. (20°) before T.D.C.	–
	Close	0.79 rad. (45°) after B.D.C.	–
Exhaust Valve	Open	0.89 rad. (50°) before B.D.C.	–
	Close	0.26 rad. (15°) after T.D.C.	–

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[7] MAINTENANCE CHECK LIST

(1) TG1860

No.	Items / Period		Every 50 hrs	Indication on hour meter (Hr)							Reference page
				50	100	200	300	400	500	After since	
1	Tires (Pressure, wear and damage)	Check	☆								G-15
2	Brake play ✦	Check	☆								3-S2
3	Engine oil	Change		★	☆	☆	☆	☆	☆	Every 100 hrs	G-17
4	Engine oil filter cartridge	Replace		★		☆		☆		Every 200 hrs	G-18
5	Bevel gear case oil	Change				☆			☆	Every 300 hrs	G-26
6	Fan drive belt tension	Adjust	☆								G-18
7	Air cleaner element	Clean	☆**								G-19
		Replace								Every year **	G-28
8	All grease nipples	Lubricate	☆								G-20
9	Fuel lines	Check			☆	☆	☆	☆	☆	Every 100 hrs	G-25
		Replace								Every 2 years *	G-31
10	Fuel filter	Check			☆	☆	☆	☆	☆	Every 100 hrs	G-25
11	Fuel filter ✦	Replace							☆	Every 500 hrs	G-28
12	Anti-freeze and coolant	Change								Every year	G-29
13	Radiator	Clean								Every year	G-29
14	Radiator hose and clamp	Check				☆		☆		Every 200 hrs	G-27
15	Radiator core	Clean			☆	☆	☆	☆	☆	Every 100 hrs**	G-26
16	Radiator hose	Replace								Every 2 years	G-31
17	Safety devices	Check	☆							Every 50 hrs	G-22
18	Battery condition	Check	☆							Every 50 hrs	8-S8

Note : ★ **The maintenance indicated by ★ must be done initially.**

* **Replace only if necessary.**

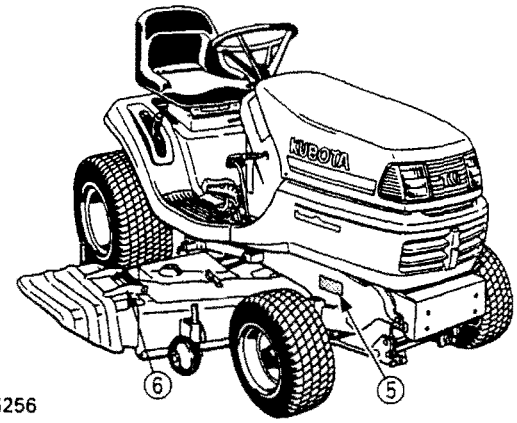
** **This maintenance should be done daily in dusty conditions than in normal conditions.**

✦ **These items should be serviced by an authorized KUBOTA dealer, unless the owner has the proper tools and is mechanically proficient.**

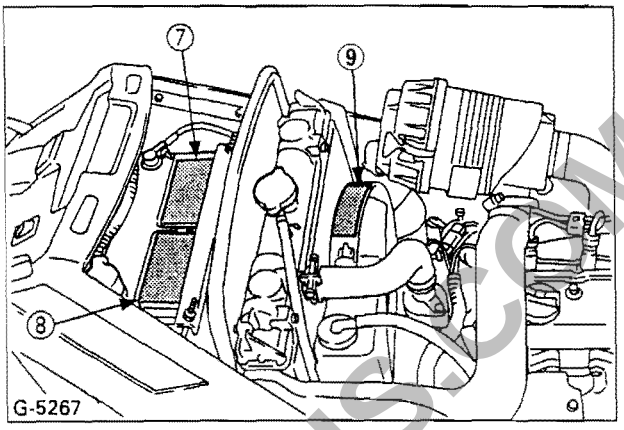
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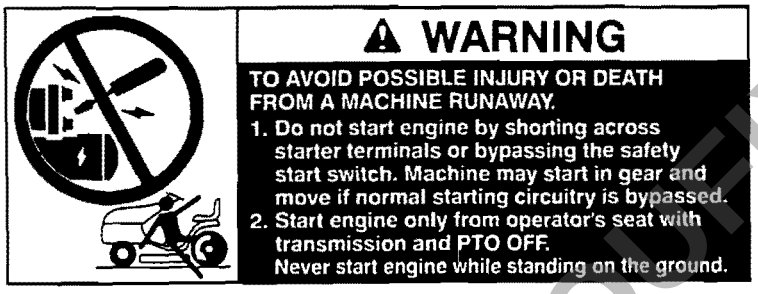


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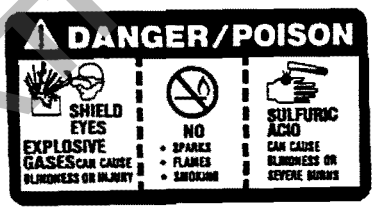


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⑤ Part No. K1122-6583-1



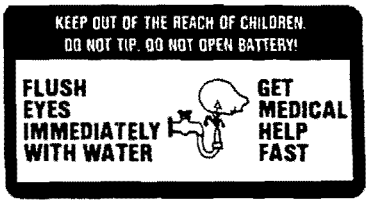
⑦ Part No. K1211-6115-1



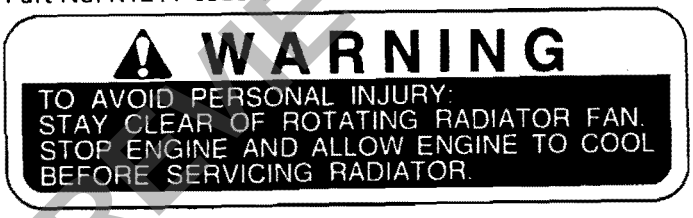
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⑧ Part No. K1211-6116-1



⑨ Part No. K1211-6586-1



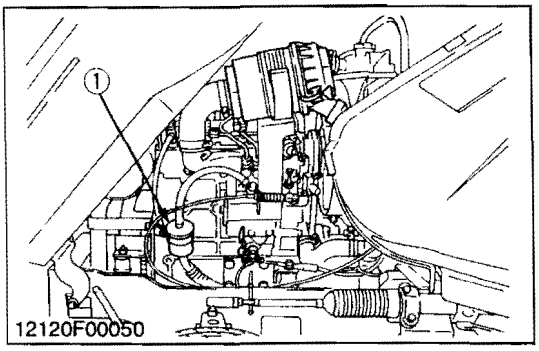
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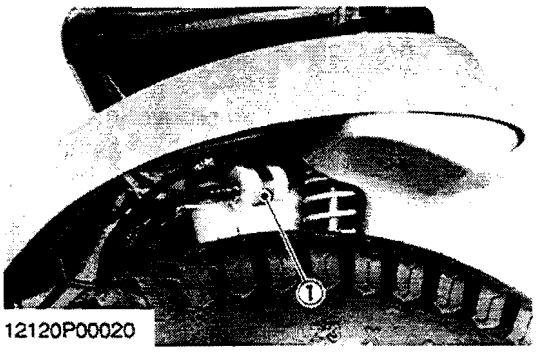
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(8) Check Points of Every 500 Hours





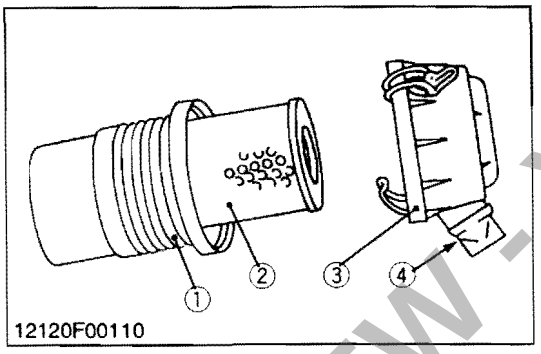
Replacing Fuel Filter

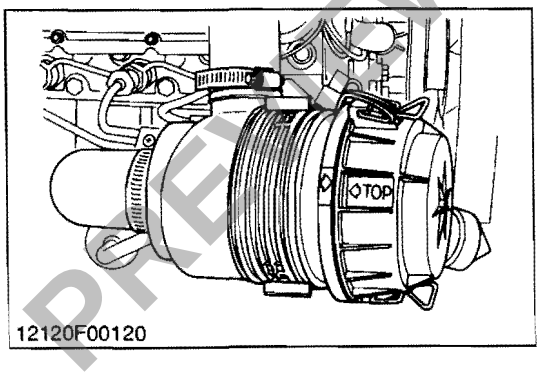
1. Replace the fuel filter (1).

(1) Fuel Filter

12120G00300

(9) Check Points of Every 1 Year





Replacing Air Cleaner Element

1. Replace the air cleaner element (2).

■ IMPORTANT

- **The air cleaner uses a dry element, never apply oil.**
- **Do not run the engine with filter element removed.**
- **Be sure to refit the air cleaner cover (3) as shown in the figure. If the air cleaner cover is improperly fitted, evacuator valve (4) will not function and dust will adhere to the element.**
- **If it is loose, dust and dirt may be sucked in, wearing down the cylinder and piston rings earlier and thereby resulting in poor power output.**

(1) Air Cleaner Body
(2) Air Cleaner Element
(3) Air Cleaner Cover
(4) Evacuator Valve

12120G00310

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Cylinder Liner

Item	Factory Specification	Allowable Limit
Cylinder Liner I.D.	67.000 to 67.019 mm 2.63779 to 2.63854 in.	+ 0.15 mm 0.0059 in.
Oversized Cylinder Liner I.D.	67.250 to 67.269 mm 2.64764 to 2.64839 in.	+ 0.15 mm 0.0059 in.

12120S10080

[2] LUBRICATING SYSTEM

Oil Pump

Engine Oil Pressure At Idle Speed	98 kPa 1.0 kgf/cm^2 14 psi	–
At Rated Speed	196.0 to 441.0 kPa 2.0 to 4.5 kgf/cm^2 28.0 to 64.0 psi	98 kPa 1.0 kgf/cm^2 14 psi
Clearance between Inner Rotor and Outer Rotor	0.03 to 0.14 mm 0.0012 to 0.0055 in.	–
Clearance between Outer Rotor and Pump Body	0.07 to 0.15 mm 0.0028 to 0.0059 in.	–
End Clearance between Inner Rotor and Cover	0.075 to 0.135 mm 0.00295 to 0.00531 in.	–

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[3] COOLING SYSTEM

Thermostat

Thermostat's Valve Opening Temperature	80.5 to 83.5 °C 176.9 to 182.3 °F	–
Temperature at Which Thermostat Completely Opens	95 °C 203 °F	–

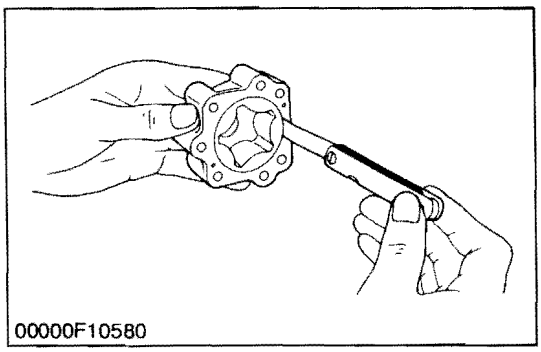
Radiator

Radiator Water Tightness	Water tightness at specified pressure 147 kPa 1.5 kgf/cm^2, 21 psi	–
Radiator Cap Air Leakage	10 seconds or more 88 → 59 kPa 0.9 → 0.6 kgf/cm^2 13 → 9 psi	–
Fan Belt Tension	Approx. 10 mm / 10 kgf 0.4 in. / 10 kgf (22 lbs.)	–

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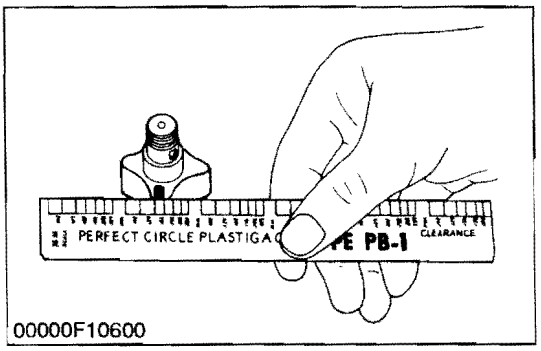

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Clearance between Outer Rotor and Pump Body

1. Measure the clearance between the outer rotor and the pump body with a feeler gauge.
2. If the clearance exceeds the factory specifications, replace the oil pump rotor assembly.

Clearance between outer rotor and pump body	Factory spec.	0.07 to 0.15 mm 0.0028 to 0.0059 in.

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Clearance between Rotor and Cover

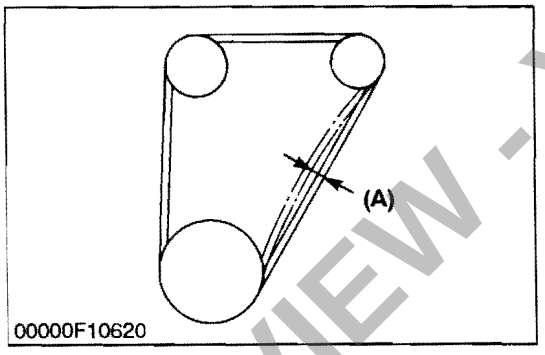
1. Put a strip of plastigage (Code No. 07909-30241) onto the rotor face with grease.
2. Install the cover and tighten the screws.
3. Remove the cover carefully, and measure the amount of the flattening with the scale and get the clearance.
4. If the clearance exceeds the factory specifications, replace oil pump rotor assembly.

Clearance between rotor and cover	Factory spec.	0.075 to 0.135 mm 0.00295 to 0.00531 in.

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[4] COOLING SYSTEM CHECKING AND ADJUSTING

(1) Fan Belt



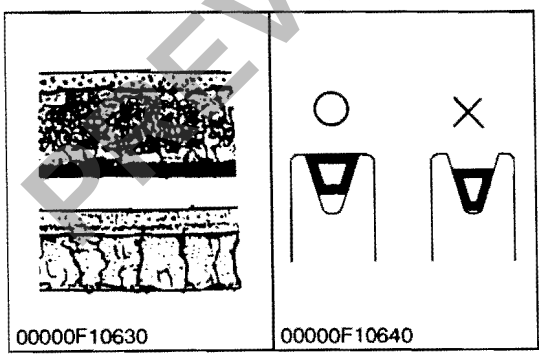
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Fan Belt Tension

1. Measure the deflection **(A)**, depressing the belt halfway between the fan drive pulley and alternator pulley at specified force (98 N, 10 kgf, 22 lbs).
2. If the measurement is not within the factory specifications, loosen the alternator mounting screws and relocate the alternator to adjust.

Deflection **(A)**	Factory spec.	7 to 9 mm 0.28 to 0.35 in.

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Fan Belt Damage and Wear

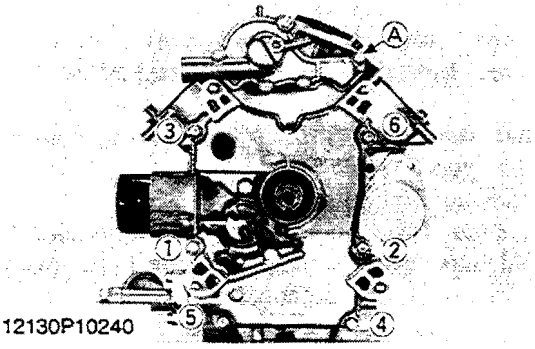
1. Check the fan belt for damage.
2. If the fan belt is damaged, replace it.
3. Check if the fan belt is worn and sunk in the pulley groove.
4. If the fan belt is nearly worn out and deeply sunk in the pulley groove, replace it.

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(4) Crankcase Cover and Camshaft



12130P10240

Water Pump and Crankcase Cover

1. Remove the water pump mounting screws and water pump assembly.
2. Remove the crankcase cover mounting screws in sequence shown in the photo.
3. Pull out the crankcase cover.

(When reassembling)

- Tape the key way of crankshaft to avoid damaging oil seal.
- Apply oil on the bearings and seal lip.
- Replace the crankcase cover gasket and water pump gasket with new ones.
- Check the governor weights are closed.

■ IMPORTANT

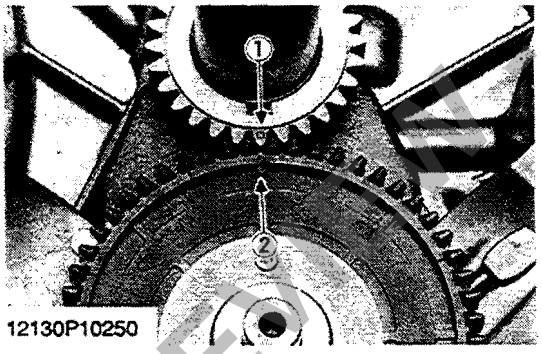
- **Do not tighten one screw completely while others are loose. It may warp the crankcase cover.**
- **Tighten the crankcase cover mounting screws to the specified torque in the sequence as shown.**

Tightening torque	Crankcase cover mounting screw		20.6 N·m 2.10 kgf·m 15.2 ft-lbs
	Water pump mounting screw	M6	8.8 N·m 0.90 kgf·m 6.5 ft-lbs
		M8	21.6 N·m 2.20 kgf·m 15.9 ft-lbs

(1) ~ (6) Mounting Screw Loosening (Tightening) Sequence

(A) Water Pump Mounting Screw

12130S10360



12130P10250

Camshaft

1. Turn the crankcase upside down.
2. Pull out the camshaft.
3. Remove the tappets.

■ NOTE

- **Mark the tappets so they can be installed in their original positions during assembly.**

(When reassembling)

- Apply engine oil to moving parts.
- Align the punch mark (1) on the crank gear with the projection (2) on the cam gear.

(1) Punch Mark

(2) Projection

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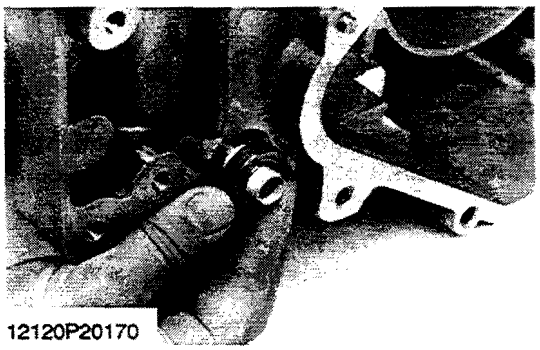
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(3) Assembling Hydrostatic Transaxle

■ IMPORTANT

- **Most parts have critical high tolerance surface. Care must be exercised to prevent damage to these surfaces during assembly. Protect exposed surfaces, openings and ports from damage or foreign material.**
- **Replace all seals whenever a transaxle is disassembled.**
- **Lubricate the new seals with petroleum jelly before installation.**
- **After disassembly, wash all parts inside the housing with clean solvent and blow the parts dry with air.**
- **All Sealant material must be removed from the housing halves prior to assembly.**
- **Inspect all parts for damage, nicks or unusual wear patterns.**
- **Replace all parts having unusual, excessive wear or discoloration.**
- **The running surfaces of the cylinder blocks must be flat and free from scratches. If scratches or wear are found on the running surface of the cylinder block or center section, replace the parts.**
- **Before mounting the hydrostatic transaxle to the vehicle, be sure to check the hydrostatic transaxle.**

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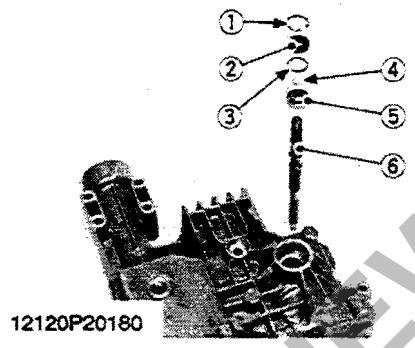


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Trunnion Arm

1. Inspect the sealing surface, and metal bearing surface. Polish the sealing are as on the shaft if necessary.
2. Apply clean fluid to trunnion arm.
3. Install the trunnion arm.
4. Wrap the shaft with a thin plastic or cellophane tape to prevent damage to new seal lip during installation.
5. Slide the seal over the shaft and press it into the housing bore.

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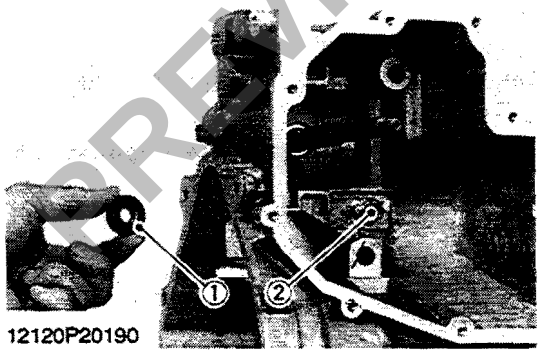
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Input Shaft Assembly

1. Inspect the sealing surface, bearing surface and shaft splines. Polish the sealing are as on the shaft if necessary.
2. Inspect the ball bearing.
3. Apply clean fluid to input shaft (6) and ball bearing (5).
4. Install the ball bearing (5), wire retaining ring (4), spacer (3) and seal (2) onto the input shaft (6).
5. Install the input shaft assembly and internal snap ring (1).

(1) Internal Snap Ring
(2) Seal
(3) Spacer
(4) Wire Retaining Ring
(5) Ball Bearing
(6) Input Shaft

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Bypass Actuator

1. Install the bypass actuator (2).
2. Slide the seal (1) over the bypass actuator and press it into the main housing bore.

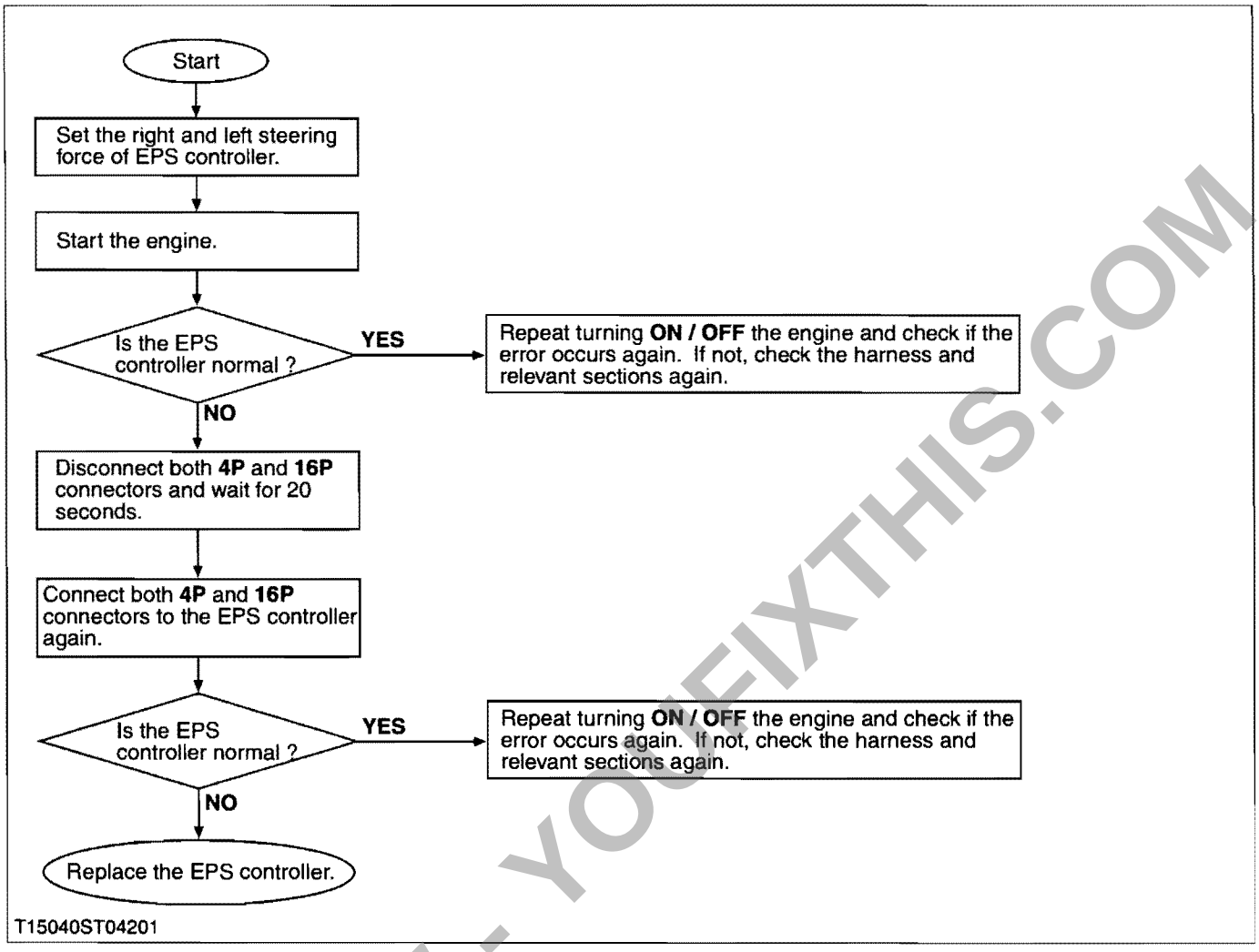
(1) Seal
(2) Bypass Actuator

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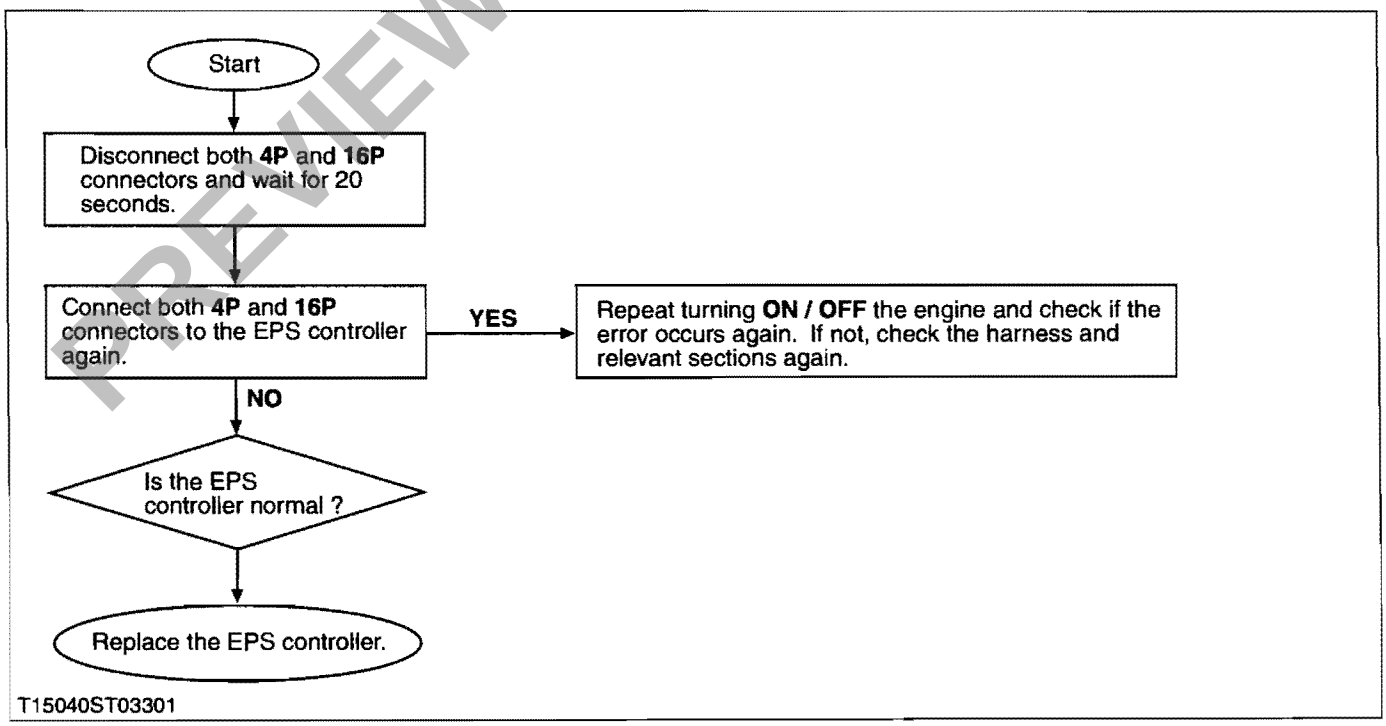
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(11) Error code 32



(12) Error code 34

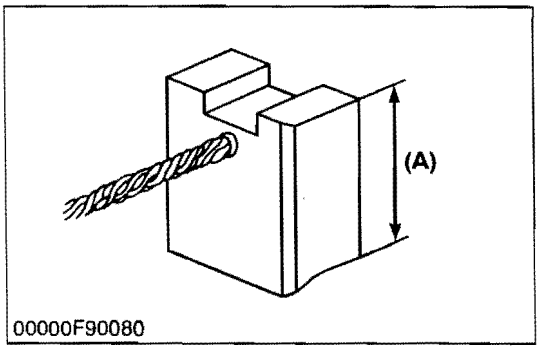


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Brush Wear

1. If the contact face of the brush is dirty or dusty, clean it with emery paper.
2. Measure the brush length **(A)** with vernier calipers.
3. If the length is less than the allowable limit, replace the yoke assembly and brush holder.

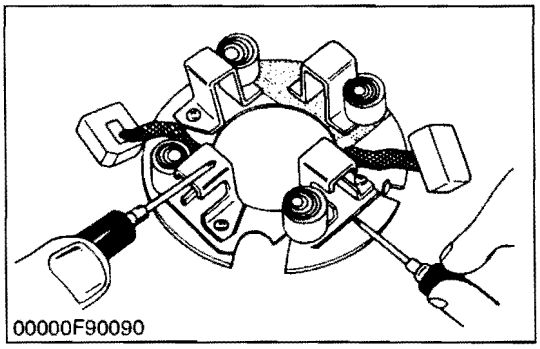
■ **Reduction type**

Brush length **(A)**	Factory spec.	13.0 mm 0.512 in.
	Allowable limit	8.5 mm 0.335 in.

■ **Planetary gear type**

Brush length **(A)**	Factory spec.	14.0 mm 0.551 in.
	Allowable limit	11.1 mm 0.437 in.

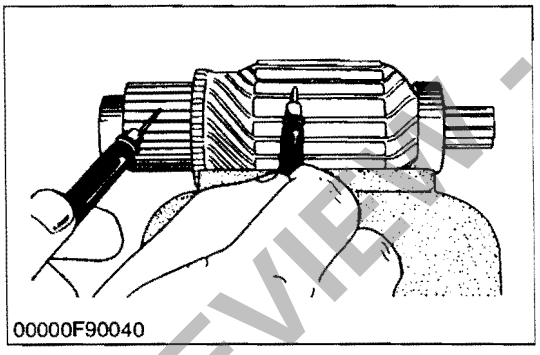
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Brush Holder

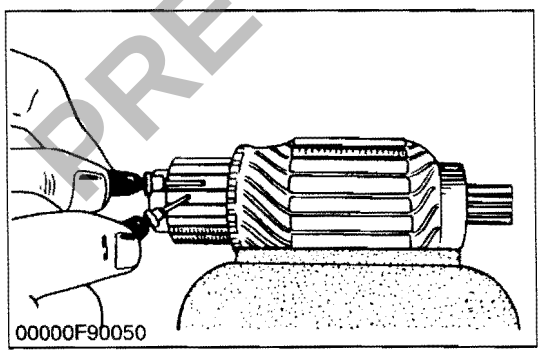
1. Check the continuity across the brush holder and the holder support with an ohmmeter.
2. If it conducts, replace the brush holder.

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Armature Coil

1. Check the continuity across the commutator and armature coil core with an ohmmeter.
2. If it conducts, replace the armature.
3. Check the continuity across the segments of the commutator with an ohmmeter.
4. If it does not conduct, replace the armature.



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