SAFETY PRECAUTIONS FOR REMOVAL AND REFITTING OPERATIONS

★ When removing or refitting parts, always take the following safety precautions.

1. PRECAUTIONS FOR REMOVAL OPERATIONS

- Unless otherwise indicated, lower the working equipment until it rests on the ground.
- After disconnecting hydraulic and fuel system pipes, always fit plugs to the open ends of the pipes to prevent ingress of impurities.
- Before removing a cylinder, fully retract the piston and secure it in this position using a retaining strap.
- Use containers of sufficient capacity when draining oil, coolant or fuel.
- Before removing a part from the machine, check for alignment markings indicating the correct assembly position. If necessary, make new markings to ensure correct assembly.
- When unplugging electrical connectors, always grip the connectors firmly to avoid pulling on the wires.
- Where necessary, label wires and pipes before removal to avoid confusion when reconnecting.
- Check the number and thickness of any shims removed and keep them together in a safe place.
- To lift the machine or any of its main components, use lifting equipment of suitable capacity.
- When using eyebolts for lifting tractor components, first check that they are not deformed or damaged, screw them fully home and then turn the bolt so that the eye is aligned with the lifting hook.
- Before removing a part, clean the surrounding area and, after removing the part, cover it to prevent the ingress of dirt and dust.

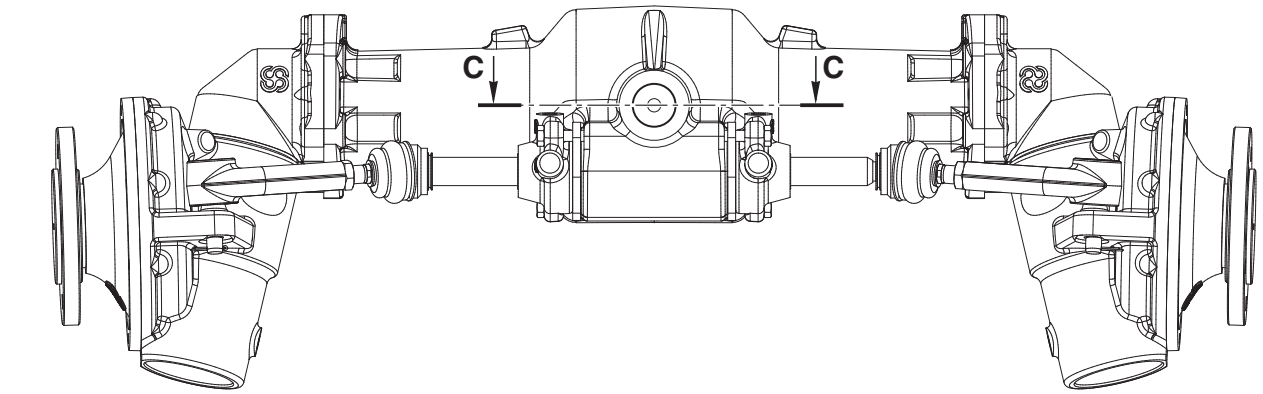
2. PRECAUTIONS FOR REFITTING OPERATIONS

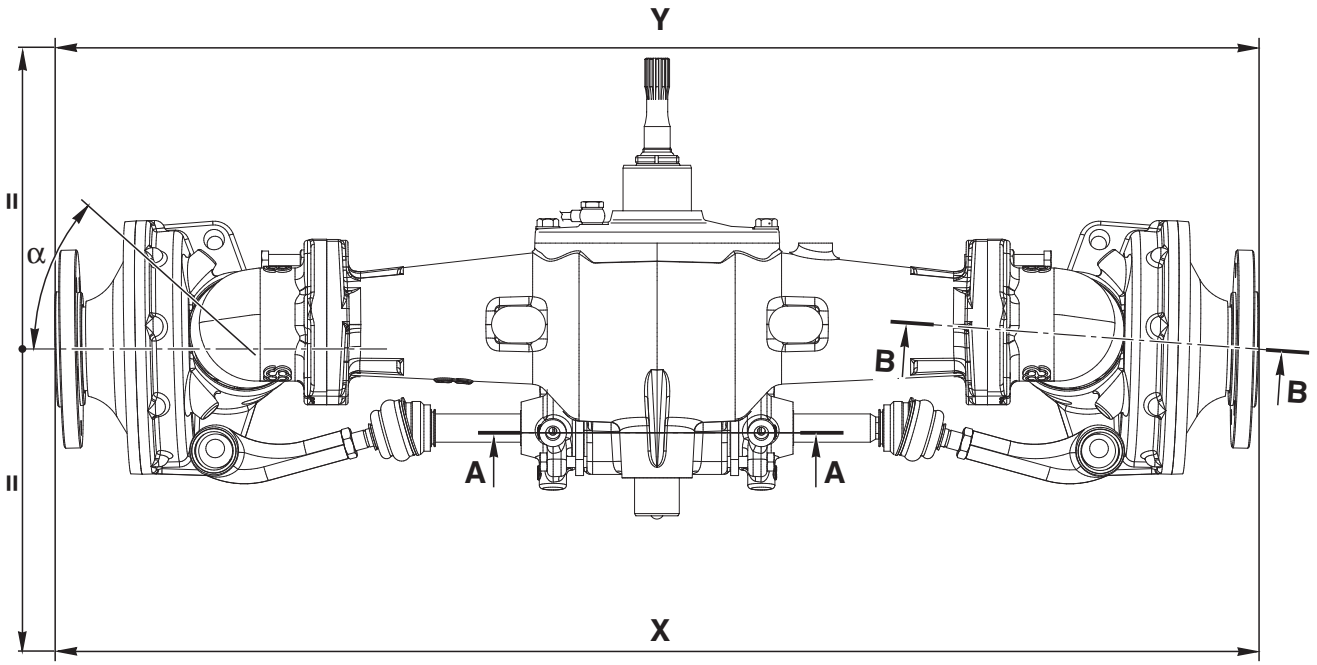
- Tighten nuts and bolts to the specified tightening torques.
- When refitting flexible pipes and wires, take care not to twist or tangle them.
- Always fit new seals, O-rings, cotter pins and safety stop rings on reassembly; make sure that the ends of the cotter pins are separated and bent back so that the pin cannot be withdrawn from the hole.
- Ensure that circlips are correctly installed in their seatings.
- Always fit new seals, O-rings, cotter pins and safety stop rings; ensure that cotter pins are bent over so that they cannot work loose.
- When applying sealant, first clean the surface removing all traces of oil and grease and check for dirt or indentations, then apply the sealant evenly making sure that it forms a continuous film around any fixing holes.
- Clean all parts, removing dirt, oxidisation, carbon deposits, burrs and indentations.

THREADLOCKERS, ADHESIVES, SEALANTS AND LUBRICANTS

FUNCTION	DESIGNATION	DESCRIPTION
THREADLOCKER	**Loctite 222** Colour: opaque fluorescent purple	Anaerobic product suitable or low-strength locking of retaining, adjustment and precision fasteners. All traces of lubricant must first be removed using the specific activator.
	Loctite 242 Colour: fluorescent blue	Anaerobic product that prevents loosening of all types of nut and bolt; used in place of conventional mechanical locking systems. Used for medium-strength locking. All traces of lubricant must first be removed using the specific activator.
	Loctite 243 Colour: opaque fluorescent blue	Alternative product to 242; oil tolerant and so can used on lightly lubricated surfaces without prior use of activator.
	Loctite 270 Colour: fluorescent green	Anaerobic product for high-strength locking of bolts and studs that do not normally require disassembly. Parts must be heated to approximately 80°C for removal. All traces of lubricant must first be removed using the specific activator.
DEGREASERS AND ACTIVATORS	**Loctite 703**	Product used for degreasing and cleaning parts prior to application of Loctite anaerobic products; after drying, promotes uniform curing of threadlockers.
	Loctite 747	Product used for specifically for treatment of passive metals prior to use of slow-cure anaerobic threadlockers(series 5 and 6). Can also be used to increase cure speed at low temperatures or in applications where there is large gaps between the parts.
SEALANTS (for faces and flanges)	**Loctite 510** Colour: red	Super-rapid anaerobic sealant for sealing between rigid metal faces; can eliminate the need for conventional gaskets as it can fill gaps up to 0.4 mm. Does not shrink and therefore fasteners do not need re-tightening to specified torque values after curing.
	Loctite 542 Colour: brown	Anaerobic product used a liquid sealant for threaded fittings up to 3/4” gas; rapid curing and parts may be disassembled with ordinary tools.
	Loctite 554 Colour: red	Anaerobic sealant and locking compound used for sealing cooling and industrial fluid circuits. Slow curing, also suitable for use on non-ferrous alloys.
	Loctite 572 Colour: white	Anaerobic sealant and locking compound used for sealing pipes and threaded fittings up to 2" in diameter. Very slow curing on most metal surfaces.
	Loctite 573 Colour: green	Thixotropic anaerobic product used for sealing joints between metal faces. Ensures total contact between surfaces with maximum tolerance of 0.10 mm, filling micro-voids caused by flatness errors. Very slow curing on most metal surfaces and requires prior application of an activator.
	Loctite 576 Colour: brown	Anaerobic product used a liquid thread sealant for large diameter threaded fittings (up to 2"). Very slow curing; also suitable for non-ferrous alloys and parts requiring subsequent removal.

2. FRONT AXLE



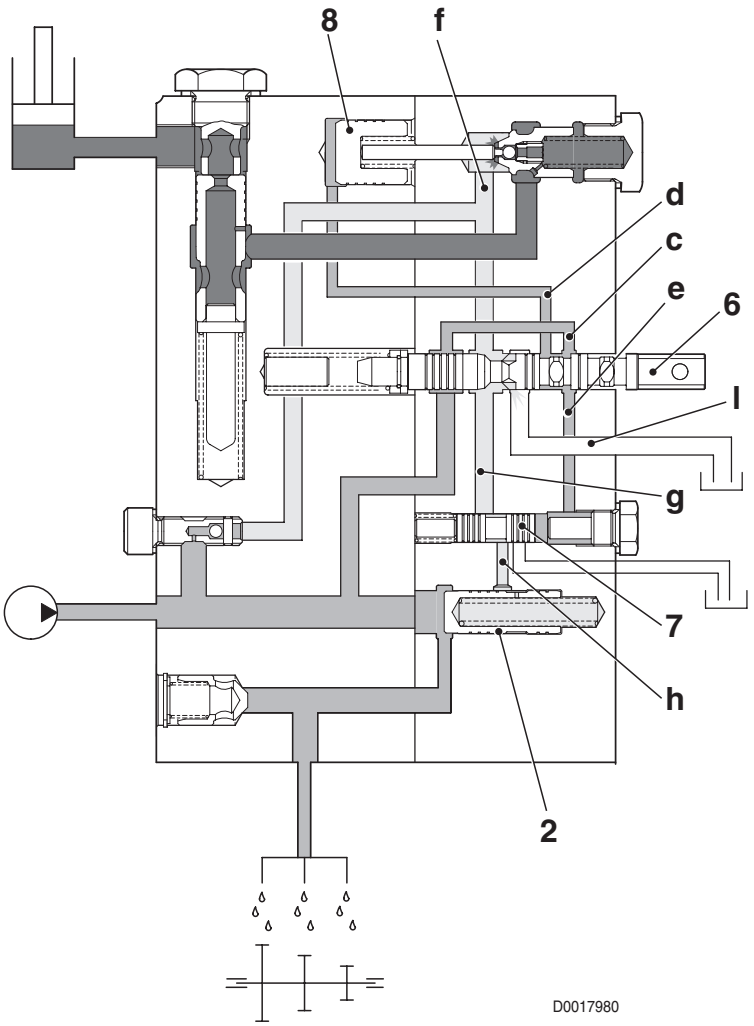


D0017870

Tractor	Version	Track (X)	Toe-in (X – Y)	Steering angle maximum (α)
50 CV	Standard	1200	+ 0 – 2	max. 57°
40 CV	Standard	1050	+ 0 – 2	max. 57°
30 CV	Standard	1050	+ 0 – 2	max. 57°
	Narrow	916	+ 0 – 2	max. 50°

2. When the lift is lowered

- When the spool (6) is shifted to the left, lift lowering begins; this can be divided into two stages:
  - **STAGE 1**
    When the spool (6) is shifted to the right, this connects:
    - line **c** with line **d**, thereby allowing the piston (8) to move to the right.
    - line **f** to drain line **l**, thereby allowing the pressure in line **f** to fall.



FUEL TANK

Removal

1 - Do not smoke or allow naked flames in the vicinity during the removal, refitting and filling of the fuel tank.

2 - Wipe up any spilt fuel immediately before someone slips on it.

3 - Disconnect the negative lead (–) from the battery and apply the parking brake.

1 - Remove the instrument panel.
For details see «INSTRUMENT PANEL»).

2 - Remove the front console shrouds.
(For details see «FRONT CONSOLE SHROUDS»).

3 - Remove the engine hood.
(For details see «ENGINE HOOD»).

4 - Remove the silencer support.
(For details see «SILENCER»).

5 - Using a suitable pump, draw off all the fuel from the fuel tank.

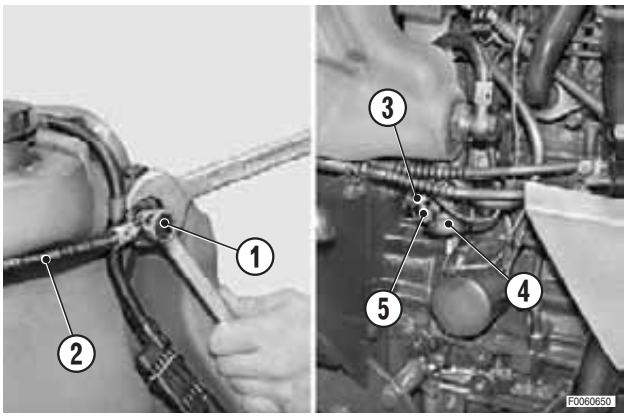
Fuel: 35 ℓ (9.24 US.gall.)

6 - Remove the union (1) of the fuel return pipe (2).

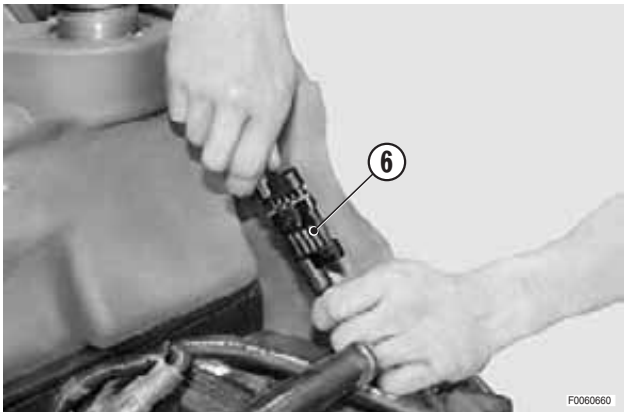
1

7 - Loosen the clip (3) and disconnect the suction pipe (5) from the fuel pump (4).

★ Plug the pipe to prevent fuel spillage.



8 - Unplug the connectors (6).



Removal

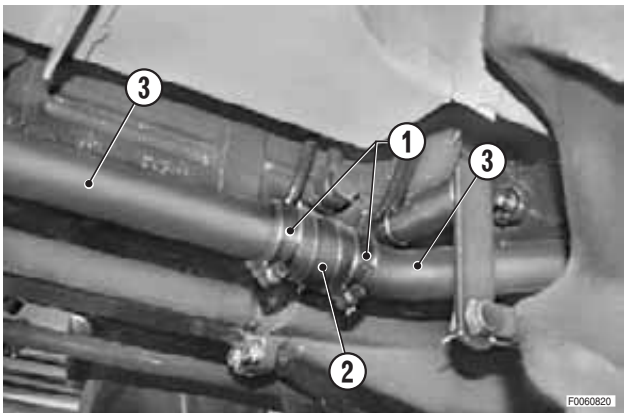
Disconnect the negative battery lead (–) and apply the parking brake.

1 - Drain off all the oil contained in the transmission and all the coolant. ※1

Transmission oil: max. 21 ℓ (5.5 US.gall.)

Coolant:
max. 5 ℓ (1.3 US.gall.)

2 - Loosen the hose clips (1) and disconnect the hose (2) from one of the pipes (3).



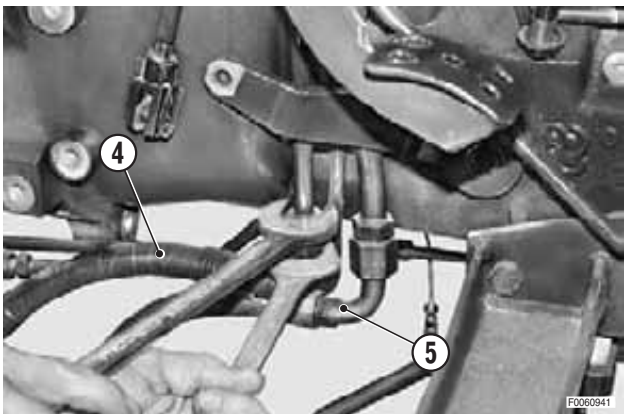
3 - Remove the front axle support.
(For details see «FRONT AXLE SUPPORT»).

4 - Disconnect the supply pipes (4) and (5) to the power steering and the lift.

★ Plug the pipes to prevent the entry of impurities.

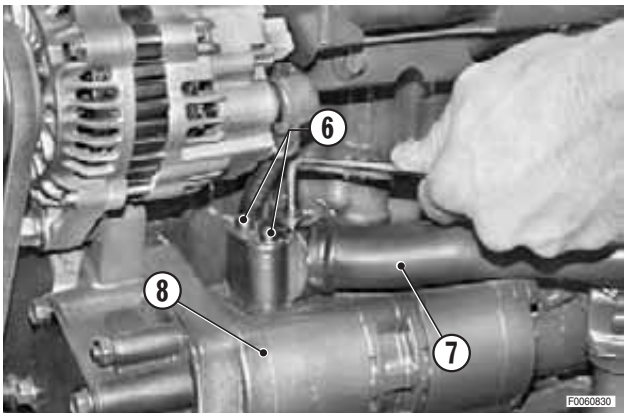
5 - Remove the front roll bar.
(For details see «ROLL BAR»).

6 - Remove the fuel tank.
(For details see «FUEL TANK»).

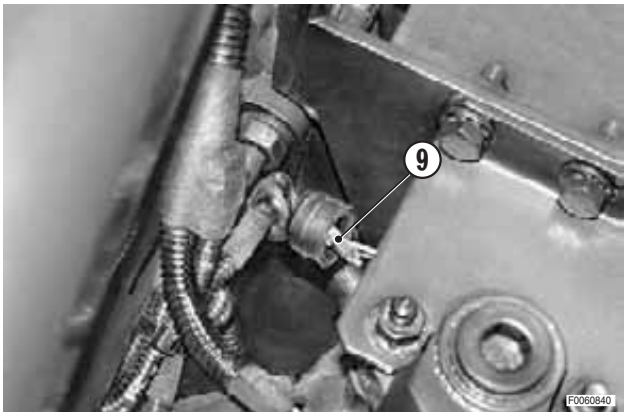


7 - Remove the 3 screws (6) and disconnect the suction pipe (7) from the pump (8).

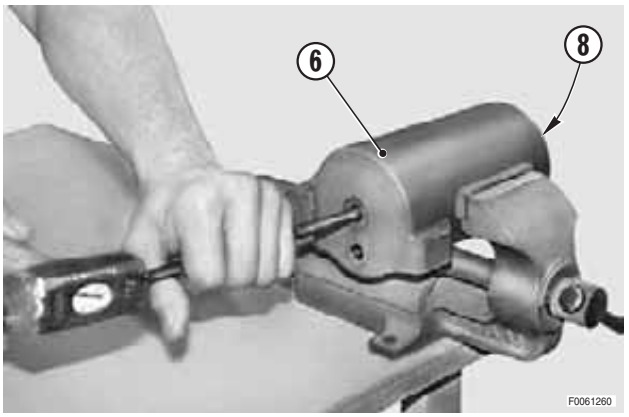
★ Recover the O-ring.



8 - Unplug the connector (9) of the filter clogging sensor.



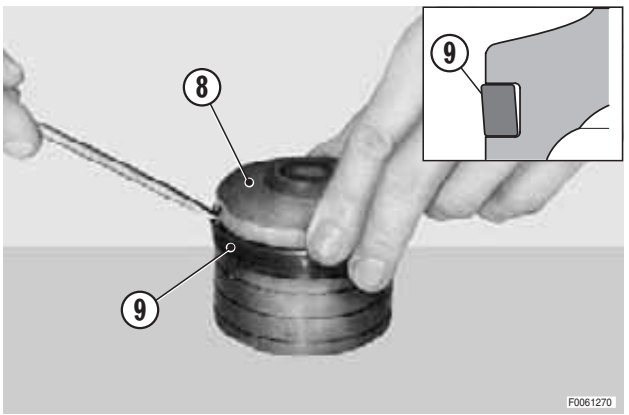
5 - Using a bar made of soft material, withdraw the piston (8) from the cylinder (6).



6 - Remove the seal (9) from the piston (8)

※ 2

★ Note which way round the seal is installed (8).



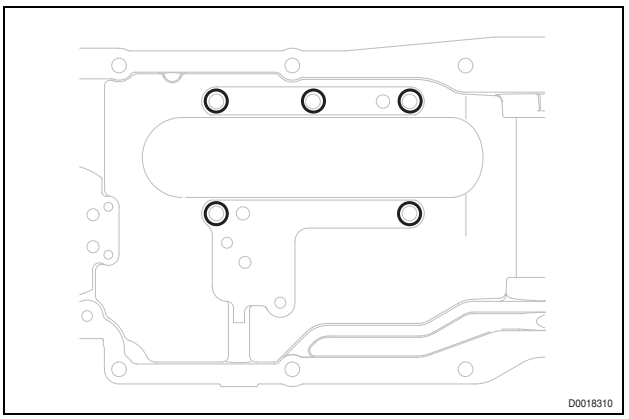
Assembly

- Assembly is the reverse of disassembly.

※ 1

1 - Apply a bead of sealant around the cylinder fixing holes.

Sealant: Loctite 510

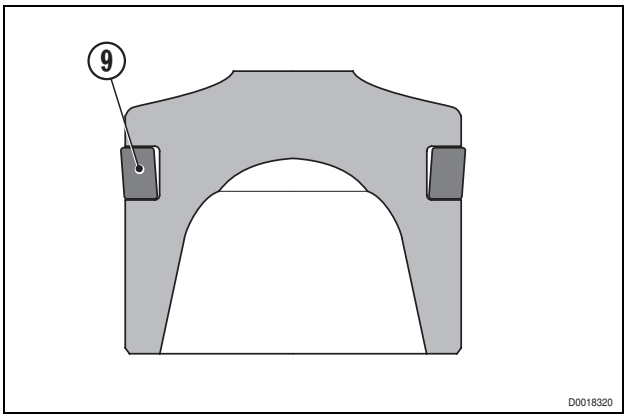


※ 2

1 - Check that the seal is installed the right way round (9).

2 - Lubricate the seal and the cylinder.

Seal and cylinder: transmission oil.

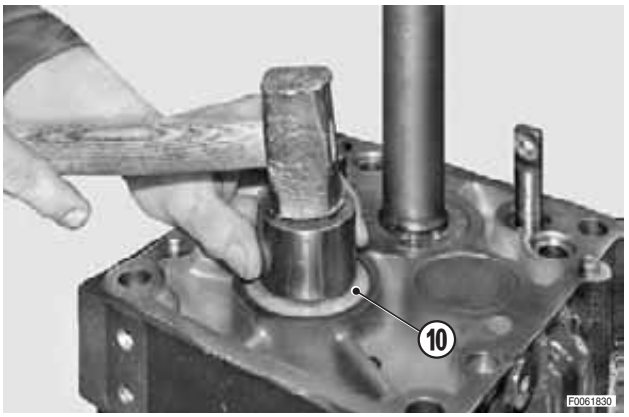


※ 3

1 - Apply a bead of sealant to the seating of the cover (10).

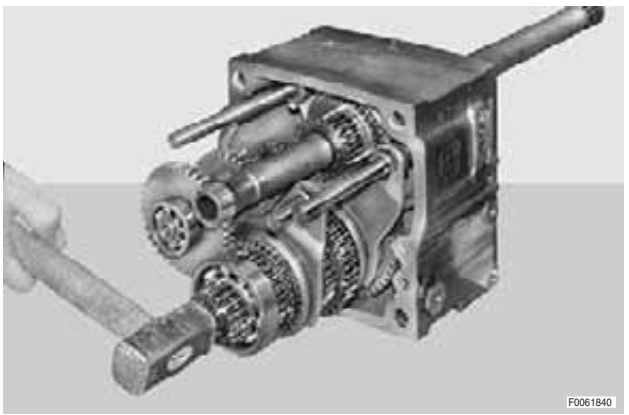
Cover: Loctite 601

2 - Locate the cover and secure in position by tapping it in the centre.



※ 4

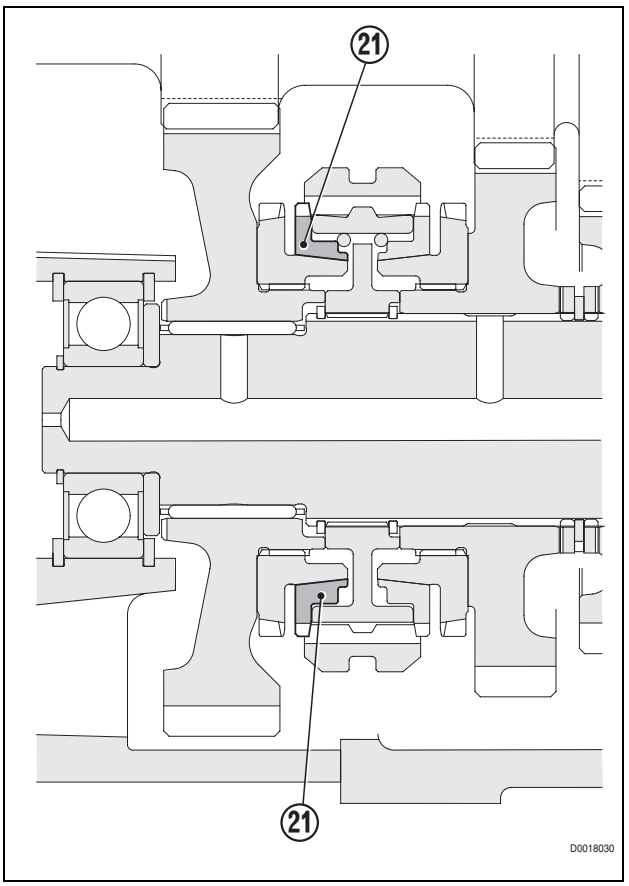
★ Insert all the shafts and forks simultaneously and, using a soft-faced mallet, tap each shaft in succession to gradually drive them up against the bearings in the gearbox casing.



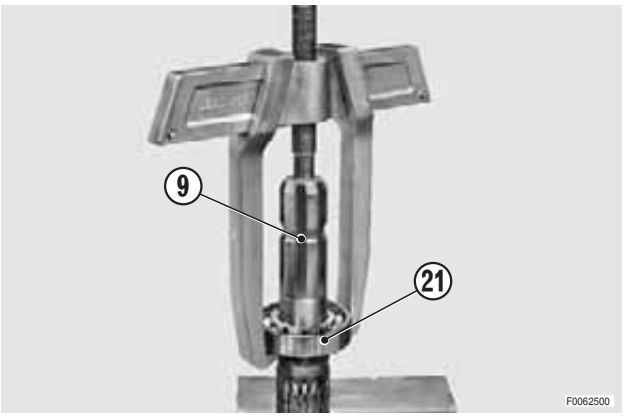
★ Take care that the friction ring (21) of the 1st gear synchronizer does not move out of position.

※ 5

★ Do not install the oil seals at this stage.



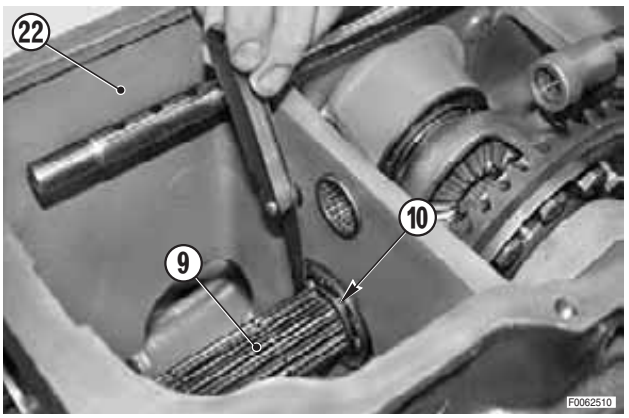
14 - Remove the bearing (21) from the PTO shaft (4).



Assembly

- To assemble, follow the disassembly steps in reverse order.

★ If the PTO shaft (9), the bearings (10) and (21) or the transmission casing (22) are to be renewed, form a shim pack to be installed between the PTO shaft (9) and the front bearing (10) to achieve play of 0.05–0.15 mm.



※ 1

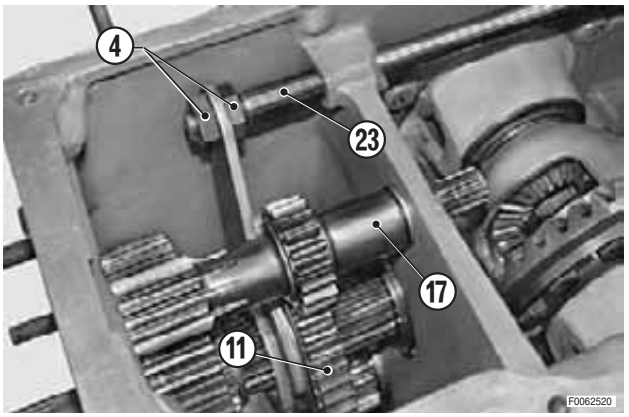
1 - Adjust the position of the PTO speed selector fork so that, when the rod (23) is in the 1000 rpm position, the selector gear (11) is positioned centrally relative to the gear (17).

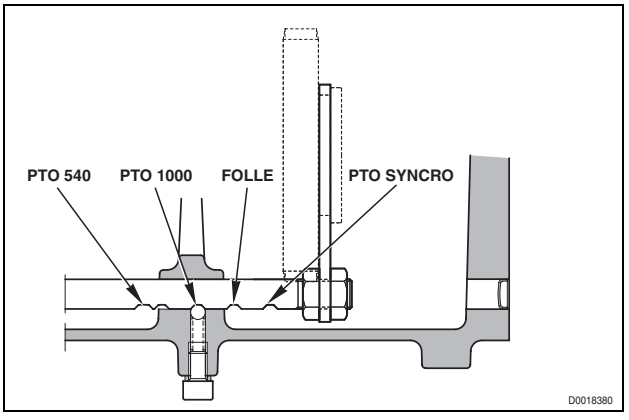
2 - Secure in position by tightening the nuts (4).

Nuts: Loctite 270

Nm Nuts: 90–105 Nm (66–77 lb.ft.)

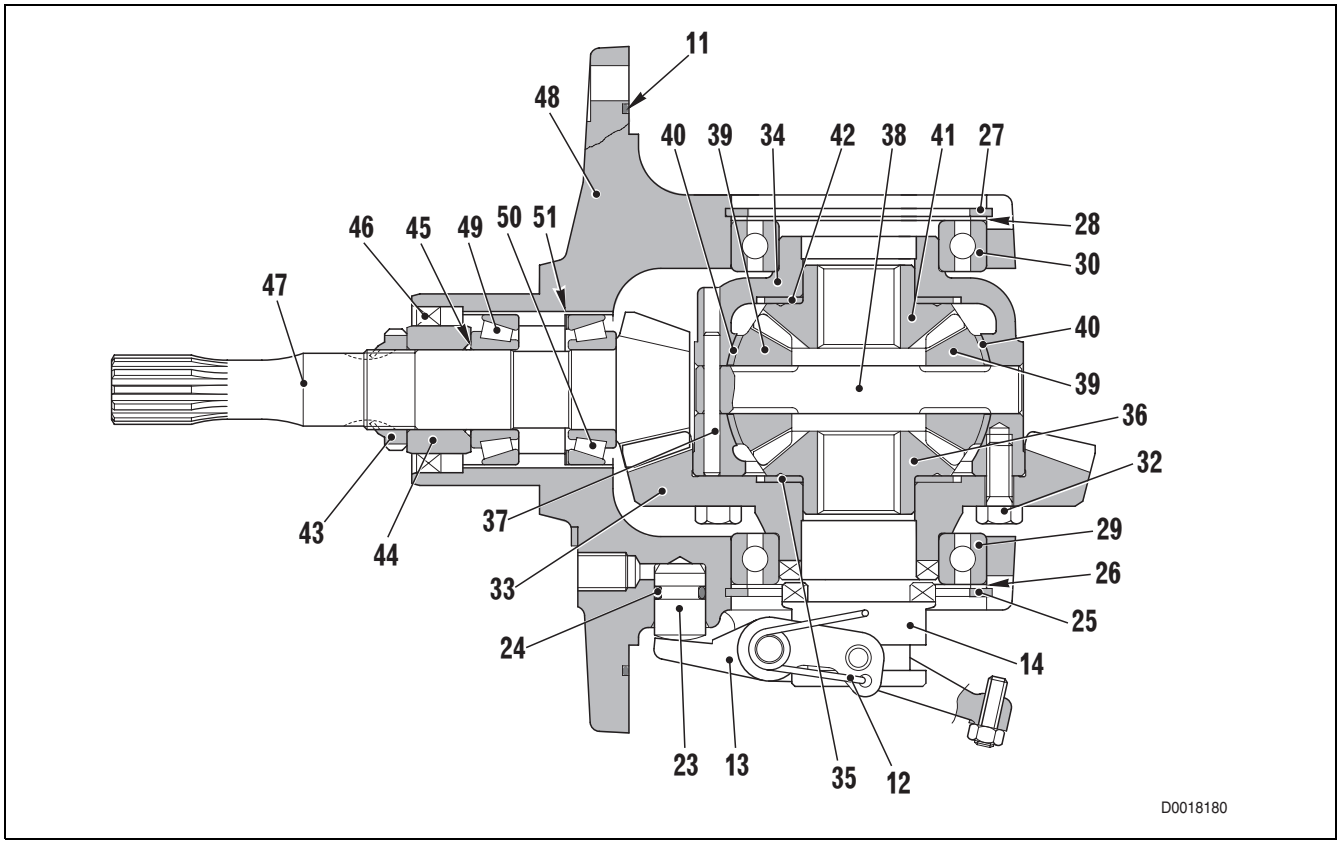
★ Fit the nuts so that their flat surfaces face the fork.





BEVEL GEAR PAIR

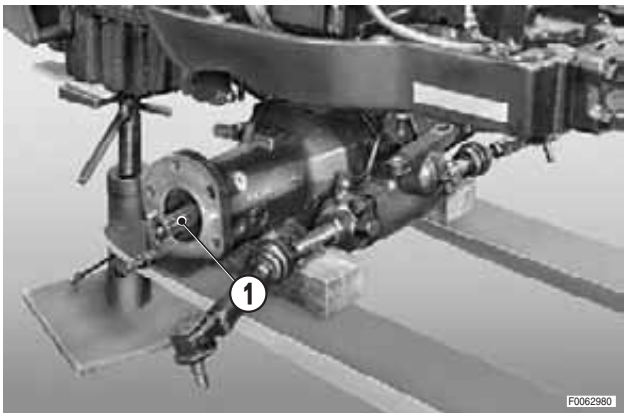
Disassembly



1 - Remove the final drive reduction units.
(For details see «FINAL DRIVE REDUCTION UNITS»).

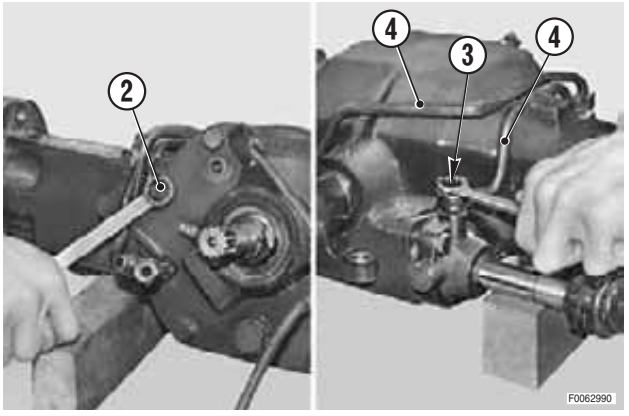
2 - Remove the axle.
(For details see «COMPLETE AXLE ASSEMBLY»).

3 - Remove the halfshafts (1).



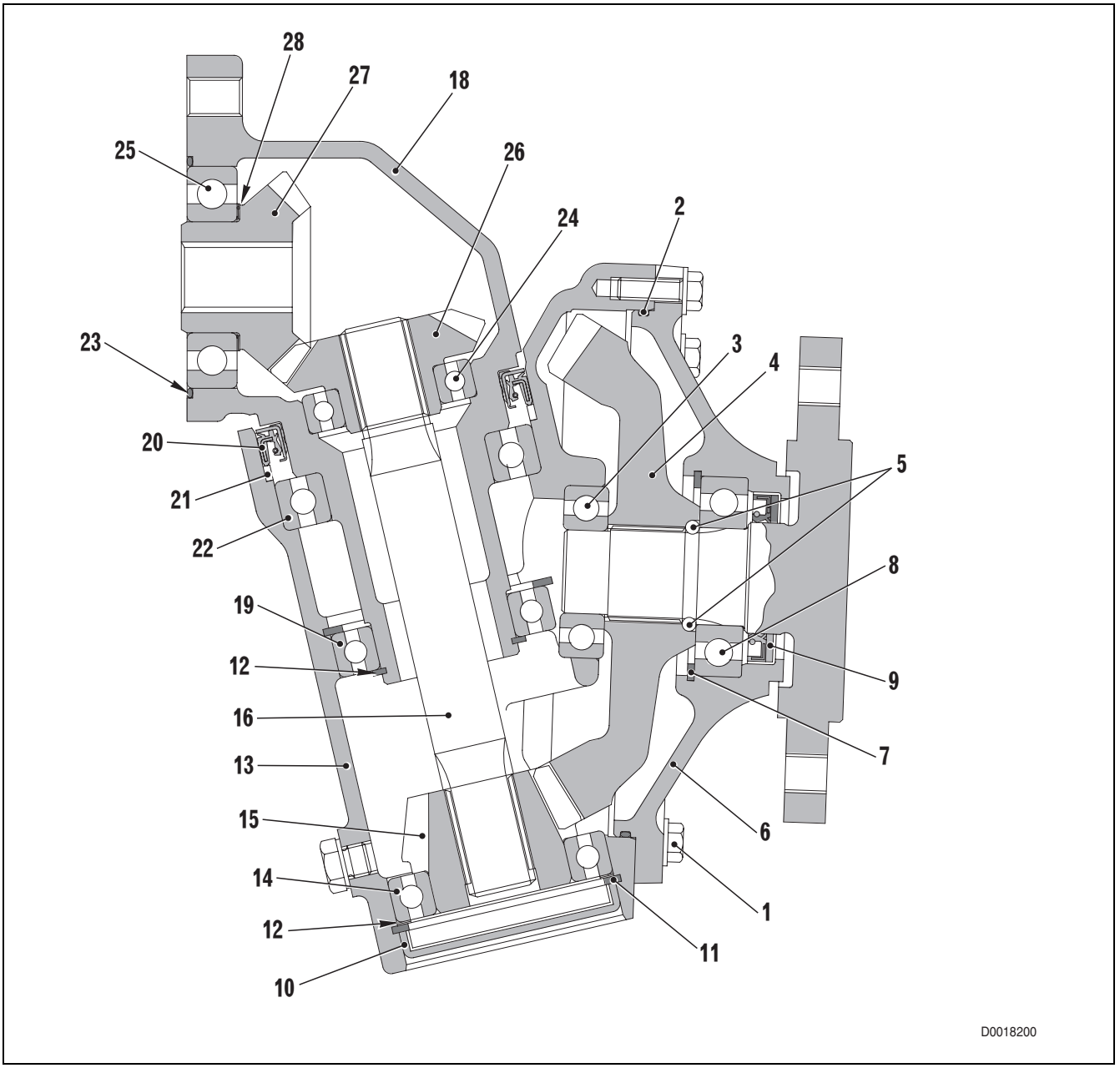
4 - Remove the screw (2) and the unions (3) and remove the steering control pipes (4).

★ Renew the copper washers on reassembly.

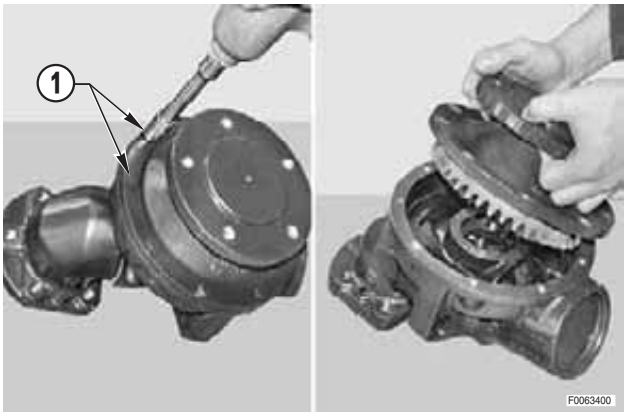


OUTPUT FLANGE

Disassembly



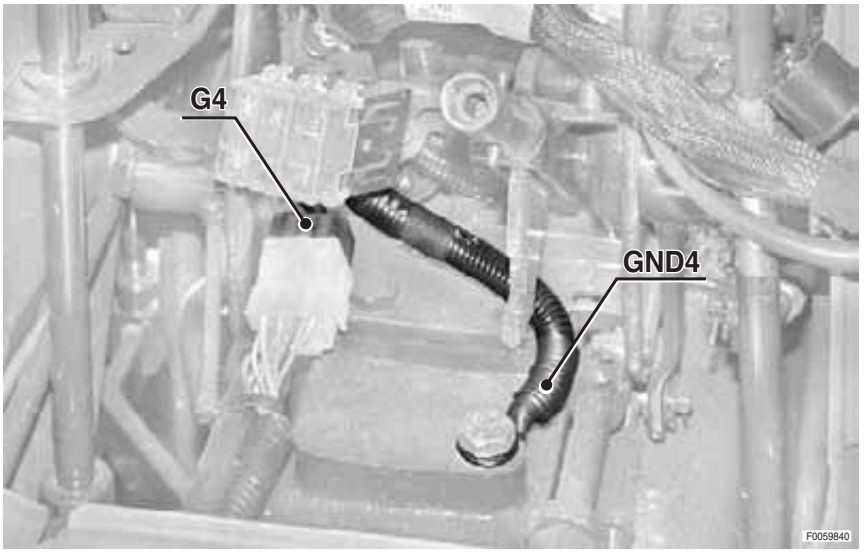
1 - Remove the bolts (1) and remove the complete flange assembly.



2.2 INDEX BY PART CODE

Code	Description	Technical descr'n (Chap. 3.2.xx)	Connector	System (para. 4.xx)
0.007.5944.0/20	Front diff lock control switch	14	X4	3
0.008.6957.4	Fuel lift pump		X33	5
0.009.4771.4	Engine stop solenoid		X35	2
0.010.2731.2	Glowplug		X24	2
0.010.2734.10	Alternator		B+ D+ W	2-5
0.010.2748.1	Engine coolant temperature sensor for warning lamp		X31	5
0.010.2749.1	Engine oil pressure switch		X34	5
0.010.2831.1	Solenoid controlling engagement of front diff lock	4	X41	3
0.011.0647.4	Engine stop control unit		X21	2
0.011.0647.4	Engine stop control unit		X22	2
0.013.3337.3/01	Lights selector switch	12	X19	4
2.6032.011.0	Auxiliary power socket		X1	5
2.7059.811.0	Fuel level sensor	7	X17	5
2.7099.180.0/10	Hydraulic oil filter clogging sensor	10	X27	5
2.7099.640.0/10	Engine coolant temperature sensor	5	X32	5
2.7659.087.0	PTO speed selector lamp switch	9	X42	5
2.7659.096.0/10	4WD engagement lamp switch	11	X36	5
2.7659.110.0	Hazard warning lights switch	15	X5	4
2.7659.127.0	Starter switch	13	X3	2-3-4-5
2.7659.202.0	Brake switch	3	X9	4
2.7659.202.0	Handbrake switch	8	X37	4
2.7659.246.0	PTO clutch engaged lamp switch	2	X8	5
2.7659.247.0	Clutch pedal switch to enable starting	1	X6	2
2.7659.247.0	PTO switch to enable starting	1	X7	2
2.8029.240.0/10	Number plate light		X44	4
2.8029.300.0	Worklight		X43	4
2.8339.230.0/30	Instrument panel		X12-X13-X14-X15-X16	2-4-5
2.8419.006.0	Horn		X29	4
2.8519.021.0	Preheating relay control unit		X11	2

10



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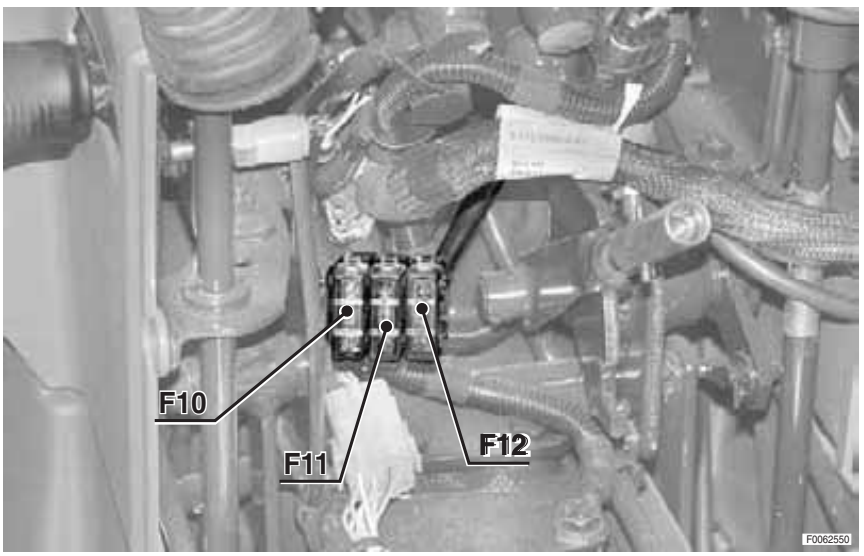
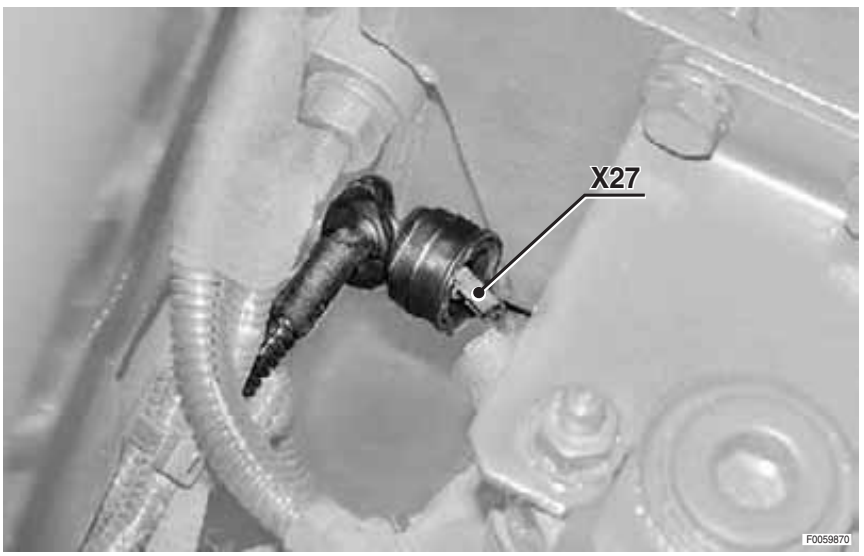


12



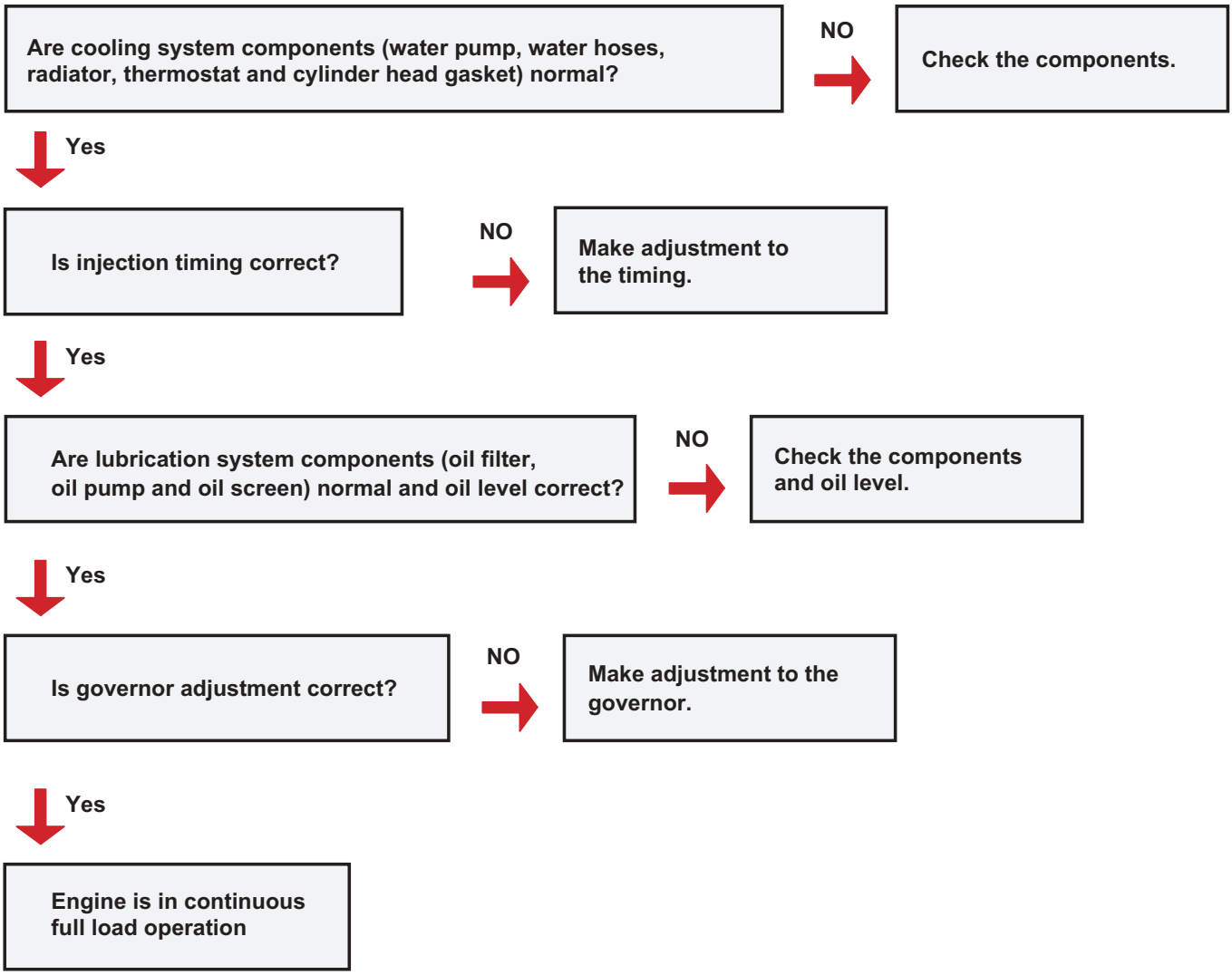
Problem 3: Overheating

(1) Items to be checked for ahead

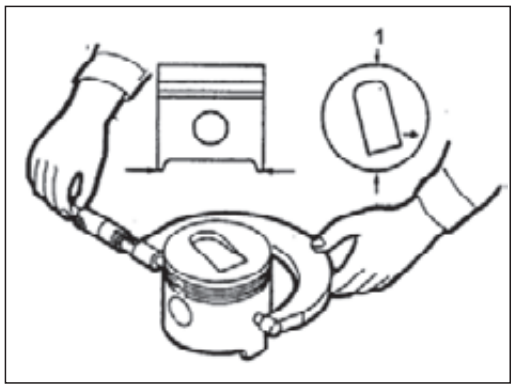
Overheating might also be caused by abnormal operating conditions. If the engine is overheating but its cooling system is not contributing to this trouble, it is necessary to check the difference between the ambient temperature and coolant temperature when the engine is in normal operation (with the thermostat fully open). If the ambient temperature is higher than the normal coolant temperature by more than 60°C (108°F), investigate other items than those related to the engine cooling system.

Insufficient coolant and exterior coolant leaks
Loose fan belt
Radiator core openings plugged with dirt

(2) Inspection procedure

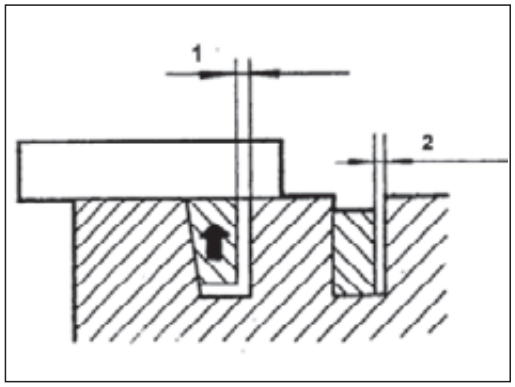


Inspection



Measuring diameter of piston

1 - Direction traverse to piston pin



Measuring clearance between piston ring and groove

1 - No. 1 compression ring clearance
2 - No. 2 compression ring clearance

1. Pistons, Piston Rings and Piston Pins

(1) Diameter of piston

Measure the diameter of the piston at its skirt in a direction transverse to the piston pin with a micrometer as shown in the illustration. If the diameter exceeds the limit, replace the piston.
Select a new piston so that the difference between average weight of all pistons in one engine does not exceed the standard.

Unit: mm (in)

Item		Nominal size	Standard	Limit
Diameter of piston	Standard	78.00 (3.0709)	77.93 to 77.95 (3.0681 to 3.0689)	77.80 (3.0630)
	0.25 (0.0098) oversize	78.25 (3.0807)	78.18 to 78.20 (3.0779 to 3.0787)	78.05 (3.0728)
	0.50 (0.0197) oversize	78.50 (3.0905)	78.43 to 87.45 (3.0878 to 3.0886)	78.30 (3.0827)
Maximum permissible difference between average weight of all pistons in one engine, g (oz)			5 (0.18)	-

(2) Clearance between piston ring and groove

(a) Measure the clearance between the groove and piston with a straight edge and a feeler gauge as shown in the illustration. If the clearance exceeds the limit, replace the ring.

Unit: mm (in)

Item	Standard	Limit
No. 1 compression ring	0.06 to 0.10 (0.0024 to 0.0039)	0.30 (0.0118)
No. 2 compression ring	0.06 to 0.10 (0.0024 to 0.0039)	0.20 (0.0079)
Oil ring	0.06 to 0.10 (0.0024 to 0.0039)	0.20 (0.0079)

(b) If the clearance still exceeds the limit after new piston rings have been installed, replace the piston.