General specifications

Engine specifications

MODEL	CERES 326	CERES 336	CERES 346
ENGINE TYPE	8000		
Make	Iveco		
Model	8045.05.775	8045.05.785	8045.25.785
Cycle	Diesel, 4 - stroke		
Induction	Naturally Aspirated		Turbo Charged
Fuel Injection	Direct		
No. of cylinder	4 (In-line)		
Cylinder liner	Dry type		
Bore x Stroke (mm)	104 x 115		
Displacement (cm3)	3908		
Compression ratio	18 : 1		
Max power SAE (kW)	53	59.7	68.5
Max speed (rpm)	2500		
Rated speed (rpm)	2350		
Idle speed (rpm)	650		
Rpm at max. torque	1400		
Injection timing	9° BTDC		4° BTDC
Firing order	1-3-4-2		
FIP: make/type	Bosch/Rotary		
Governor	Variable speed		
Injector pressure (bar)	260		
Lub. Oil pump delivery (Lt/min)	19		31
Coolant pump delivery (Lt/min)	150		
Min. oil pressure (bar)	0.5		
Oil consumption (g/kWh)	0.8		
Valve clearance-Inlet (mm)	0.25-0.35		
Valve clearance-Exhaust (mm)	0.25-0.35		

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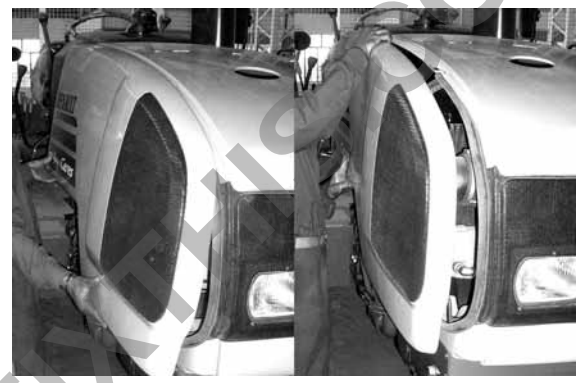
Engine removal & installation

Precaution: Lift and handle all heavy parts using suitable lifting equipment. Make sure that the load is supported by means of suitable slings and hooks. Make sure that no one is standing in the vicinity of the load to be lifted.

Note: Disconnect the battery terminals before under going any operation on the tractor.

Engine removal

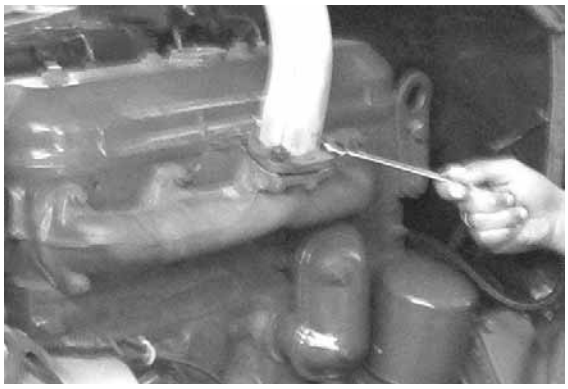
Step 1
Unlock lateral bonnets from bottom and pull them away.



Step 2
Remove the pre-cleaner (If wet air cleaner).



Step 3
Unbolt the exhaust muffler and remove it.



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General specifications

Tightening torque

(A) TORQUE SETTINGS WITH ANGLE

Part	Thread	Preliminary torque		Angle
		Nm	Kg m	
Cylinder head bolts	M12 x 1.25	70	7.1	$90^{o} + 90^{o}$
Main bearing cap bolts	M14 x 1.5	80	8.2	90^{o}
Big – end cap bolts	M11 x 1.5	40	4.1	60^{o}
Flywheel mounting bolts	M12 x 1.25	40	4.1	60^{o}

(B) TIGHTENNING TORQUE DATA

Part	Thread	Tightening torque	
		Nm	Kg m
Rocker shaft retaining bolts	M8	25	2.5
Crankshaft hub retaining nut	M30 x 1.5	294	30
Fan and alternator pulley bolts	M10 x 1.25	55	5.6
Additional counterweight retaining bolts	M12 x 1.25	110	11.2
Inlet manifold retaining bolts	M 8	25	2.6
Alternator and belt tension adjustment nut	M10 x 1.25	55	5.6
Coolant pump retaining bolts	M10 x 1.25	55	5.6
Rocker cover nuts	M 8	15	1.5
Oil pump and pump cover retaining bolts	M 8	25	2.6
Timing gear case and cover bolt	M 8	25	2.6
Intermediate flange journal bolts	M10 x 1.25	55	5.6
Cam shaft thrust plate retaining bolts	M 8	35	3.6
Rear crank case cover bolts	M 8	25	2.6
Tappet adjusters lock nuts	M 8	22	2.2
Nuts for injector mounting studs	M 8	25*	2.6*
Exhaust manifold retaining bolts	M 8	25	2.6
Injection pump mounting bolts	M8	25	2.6
Sump pan retaining bolts to: -Inner rear timing cover and gear case -Cylinder block and flywheel case	M10 x 1.25	39 to 49	4 to 5
• Model 8045.05.775, 8045.05.785	M10 x 1.25	49 to 59	5 to 6
• Model 8045.25.785	M10 x 1.25	49 to 69	5 to 7

(*)Tighten nuts in two stages.

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General specifications

Fault Diagnosis Chart

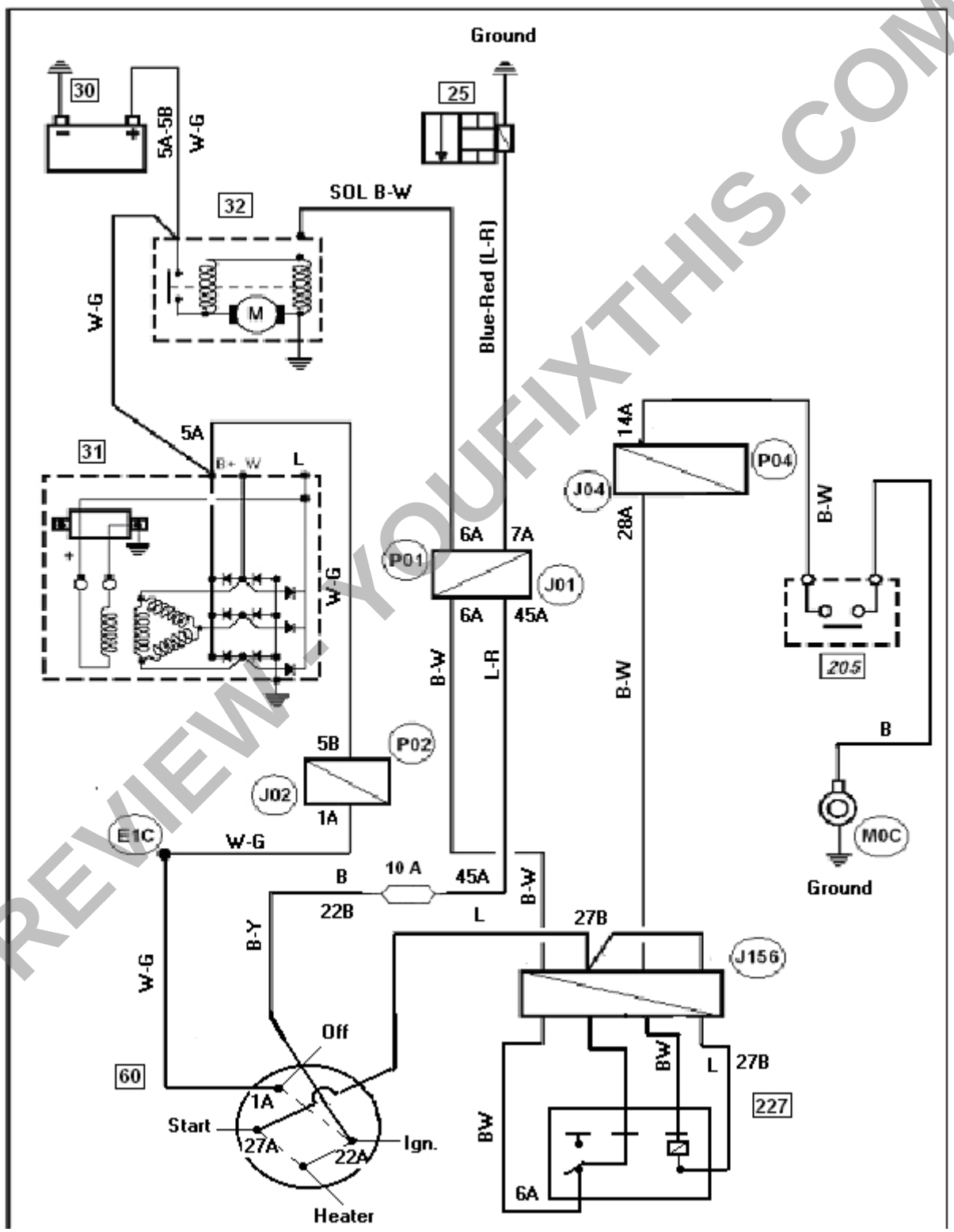
Problems	Possible causes	Remedies
Engine does not start	1.Battery partially discharged.	Check and recharge battery. Replace if necessary.
	2.Battery terminal connections corroded or loose.	Clean, inspect and tighten terminal nuts. Replace terminals and nuts if excessively corroded.
	3.Injection pumps timing incorrect	Adjust injection pump timing.
	4.Impurities or water in fuel lines.	Disconnect fuel lines from injection pump and clean thoroughly. If necessary clean and try the fuel tank.
	5.No fuel in tank (below suction point)	Fill tank.
	6.Fuel supply pump malfunction.	Check and replace pump if necessary.
	7.Air in fuel system.	Check fuel lines, unions, supply pump, filters and injection pump for air, and then bleed system.
	8.Started motor faulty	Repair or replace starter motor.
	9.Thermostarter faulty.	Check and replace thermo starter if necessary.
Engine stalls	1.Idle speed too low.	Adjust idle speed.
	2.Irregular delivery from injection pump.	Check injection pump delivery on test bench.
	3.Impurities or water in fuel lines.	Disconnect fuel lines from injection pump and clean thoroughly. If necessary clean and dry the fuel tank.
	4.Fuel filters clogged.	Renew filter cartridges.
	5.Incorrect valve clearances.	Adjust valve clearances.
	6.Burnt or cracked valves.	Replace valves.
	7.Air in fuel system.	Check fuel lines, unions, supply pump, filters and injection pump for air, and then bleed system.
	8.Injection pump drive mechanism damaged.	Replace damaged parts.
Coolant pump malfunction	1.Coolant pump malfunction.	Overhaul pumps or replace.
	2.Thermostat faulty.	Replace thermostat.
	3.Radiator inefficient.	Remove internal deposits by flushing. Check for leaks and repair.
	4.Deposits in cylinder head and crankcase coolant passages.	Flush out coolant system.
	5.Coolant pump and fan belt drive slack.	Check and adjust belt tension.
	6.Coolant level low.	Top up expansion tank with specified coolant mixture.
	7.Incorrect timing.	Check and adjust.
	8.Injection pump calibration incorrect – delivery too much or too little fuel.	Calibrate pump on test bench to values specified in calibration tables.
	9.Air filter clogged.	Clean filter unit and replace filter element if necessary.

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Function diagrams

Starting circuit



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Presentation

Principle diagram

2 Wheel drive tractors

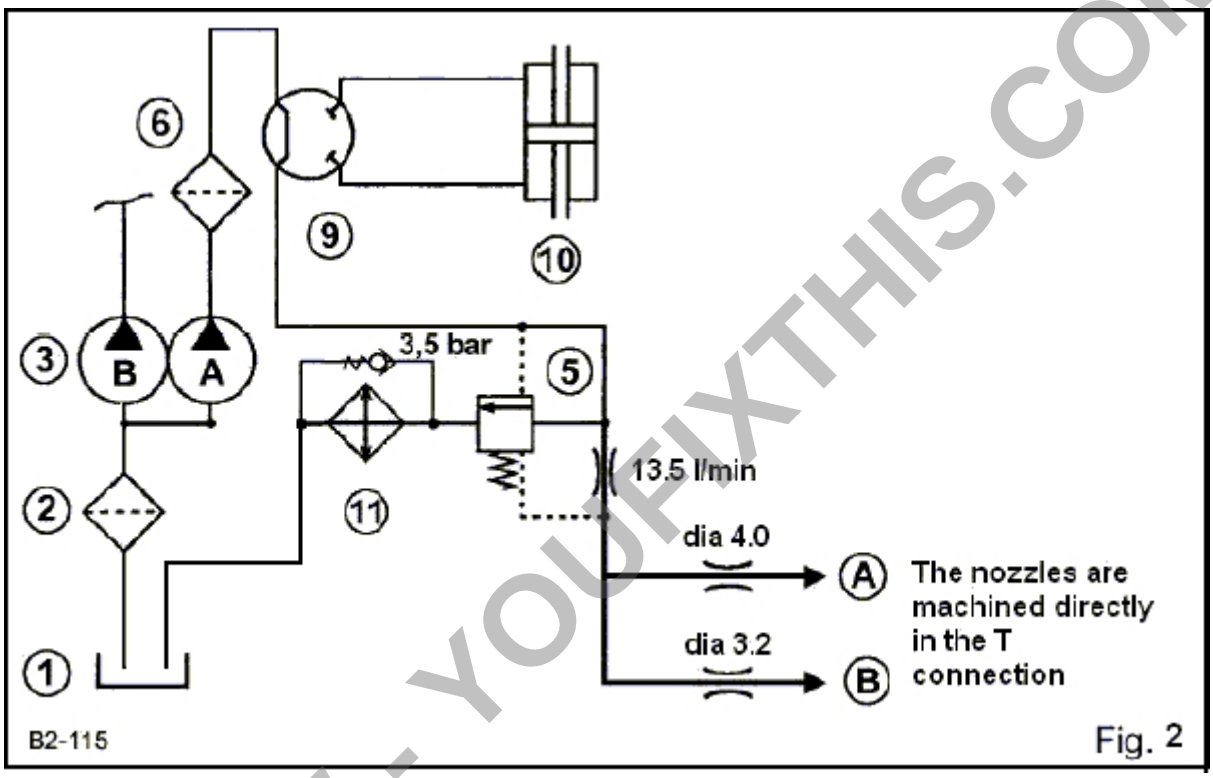


Fig. 2

1. Tank
2. Suction strainer
3. Pumps
5. Flow divider / regulator
6. By-pass filter
9. Steering housing
10. Steering cylinder
11. Cooler
A. Gearbox lubrication
B. Brake lubrication

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General specifications

Fault Diagnosis Chart

Problems	Possible causes	Remedies
Engine lacks power and runs unevenly (continued).	1.Injection pumps timing incorrect.	Adjust pump timing.
	2.Auto advance regulator in injection pump damaged.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	3.Distributor journal worn.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	4.Injection pumps delivery irregular.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	5.All-speed governor damaged.	Overhaul injection pump and adjust on test bench to values specified in calibration table.
	6.Injectors partially obstructed or damaged.	Clean, overhaul and calibrate injectors.
	7.Impurities or water in fuel lines	Disconnect fuel line from injection pump and clean thoroughly. If necessary clean and dry the fuel tank.
	8.Fuel supply pump damaged.	Replace fuel supply pump.
	9.Incorrect valve clearances	Adjust valve clearances.
	10.Cylinder compression low	Test compression and overhaul engine if necessary.
	11.Air filter clogged.	Clean air filter unit (wet type) and/or replace element (dry type) if necessary.
	12.Tie-rod in linkage between accelerator and injection pump incorrectly adjusted.	Adjust to correct length.
	13.Max.speed screw on injection pump incorrectly adjusted.	Adjust max. speed screw.
Engine produces abnormal knocking noise.	1.Injectors partially obstructed or damaged	Clean, overhaul and calibrate injectors.
	2.Impurities accumulating in fuel lines.	Clean fuel lines and replace severely dented pipes. Clean injection pump if necessary.
	3.Incorrect injection pumps timing.	Adjust injection pump timing.
	4.Crankshaft knocking due to excessive ply in one or more main or big end bearings or excessive end float.	Regrind crankshaft journals and crank pins. Fit oversize shell bearings and thrust washers.
	5.Crankshaft unbalanced.	Check crankshaft alignment and balance; replace if necessary.
	6.Flywheel bolt loose	Replace any bolts that have worked loose and tighten all bolts to the specified preliminary and angular torque values.
	7.Connecting rod axes not parallel.	Straighten connecting rods, check axes parallelism; replace connecting rod if necessary.

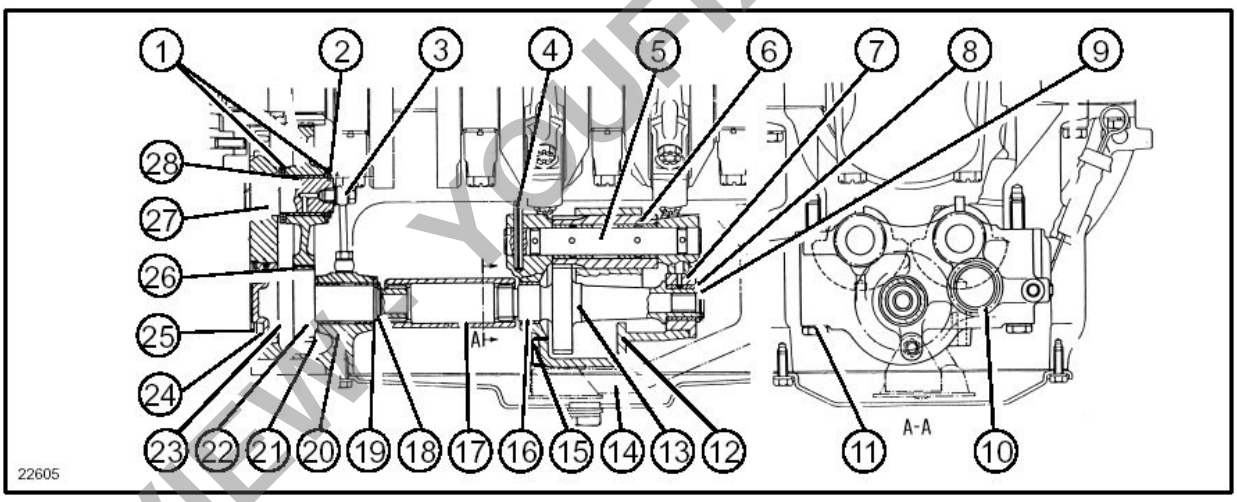
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Engine disassembling & assembling

Engine disassembling

Step 59
Remove spring ring (2), gear (26) and the thrust washers (1).
Step 60
Inspect the shaft (27). If signs of scoring or wear are evident, the shaft must be replaced.
Step 61
Withdraw the spring pins (4) and dismantle the counter weight shaft using a suitable drift.
Step 62
Remove the counterweight drive gear (13) by removing the spring ring (9) and the carrier retaining bolts (6).
Step 63
Remove spring ring (4) and intermediate gear (3).



1. Thrust washers.
2. Spring ring.
3. Lubricating oil pipe for bushing (28).
4. Shaft retaining spring pin (5).
5. Counterweight rotation shaft.
6. Counterweight.
7. Carrier for counterweight drives gear (13).
8. Thrust washer.
9. Circlip.
10. Counterweight intermediate gear.
11. Bolts securing counterweight housing to sump.
12. Counterweight housing.
13. Counterweight drives gear.
14. Screen filter.
15. Screen filter retaining bolt
16. Bushing.
17. Rigid coupling sleeve.
18. Spring ring.
19. Thrust washer.
20. Carrier for gear (22).
21. Thrust washer.
22. Counterweight drives gear.
23. Cover.
24. O-ring seal.
25. Spring ring.
26. Intermediate gear.
27. Shaft for gear (26).
28. Bushing.

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Checks, dimensions & repairs

Rotating counterweight dynamic balancer

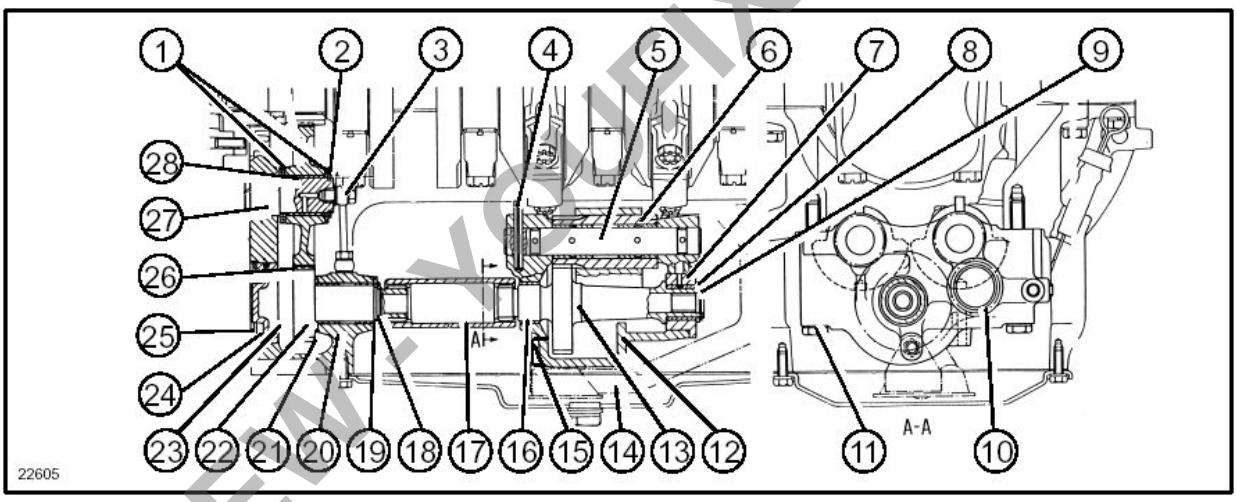
WARNING: Handle all parts carefully. Do not put your hands or fingers between parts.
Always use suitable tools to align holes in parts.
Wear suitable safety clothing – safety goggles, gloves and shoes.

Clean all parts carefully before proceeding with the operations described below.

Check component wear and replace any defective parts.

If the bushings of the counterweight are to be replaced, pre-heat the new bushings in oil to a temperature of 140° to 160°C before force fitting in their bores.

Ream the new bushings after fitting using a reamer with expanding cutters to the inside diameter specified in the data table.



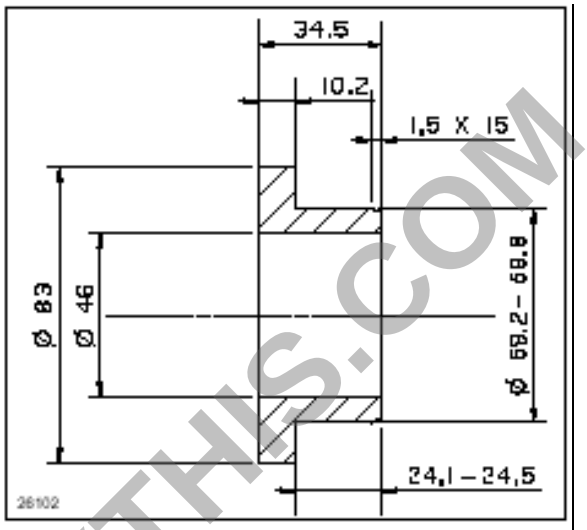
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20. Carrier for gear (22).
21. Thrust washer.
22. Counterweight drives gear.
23. Cover.
24. O-ring seal.
25. Spring ring.
26. Intermediate gear.
27. Shaft for gear (26).
28. Bushing.

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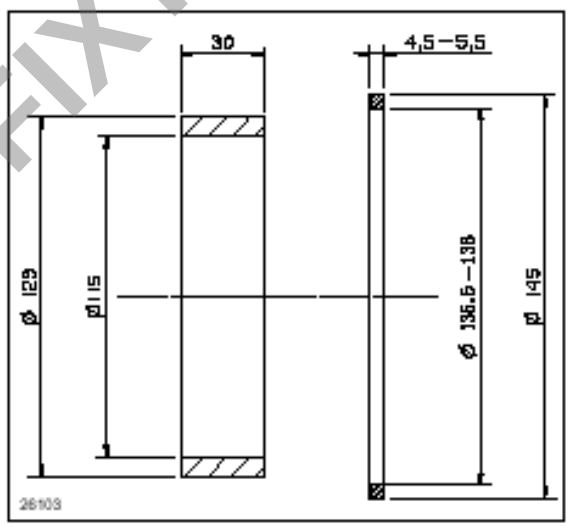
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Special Tools

Splining tool to be manufactured for assembling the crankshaft front seal (Material UNI C40).



Splining tool to be manufactured for assembling the crankshaft rear seal.
Material UNI C40



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Engine assembly

Step 13
Place crankshaft gently over main bearing and fit main bearing caps.



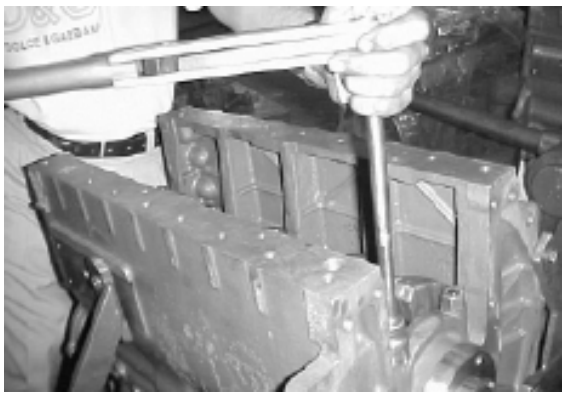
Step 14
Slide on the rear side of crankshaft thrust bearing Top-I and Top-II. Similarly slide thrust bearing bottom-I & bottom-II on front side.



Step 15
Take main bearing cap of rear side. Fit bearing holder (Radial B/B) 17/40x12ZZ (6203 ZZ) on the rear end of crankshaft. Fit internal circlip B-40 infront of bearing holder.



Step 16
Fit main bearing caps and torque (12 Kg. m) Nuts M14x1.5.



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THRUST BEARINGS AND GUIDE

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Gearbox controls

Gearboxes with creeper range + mechanical gear shuttler and reverser

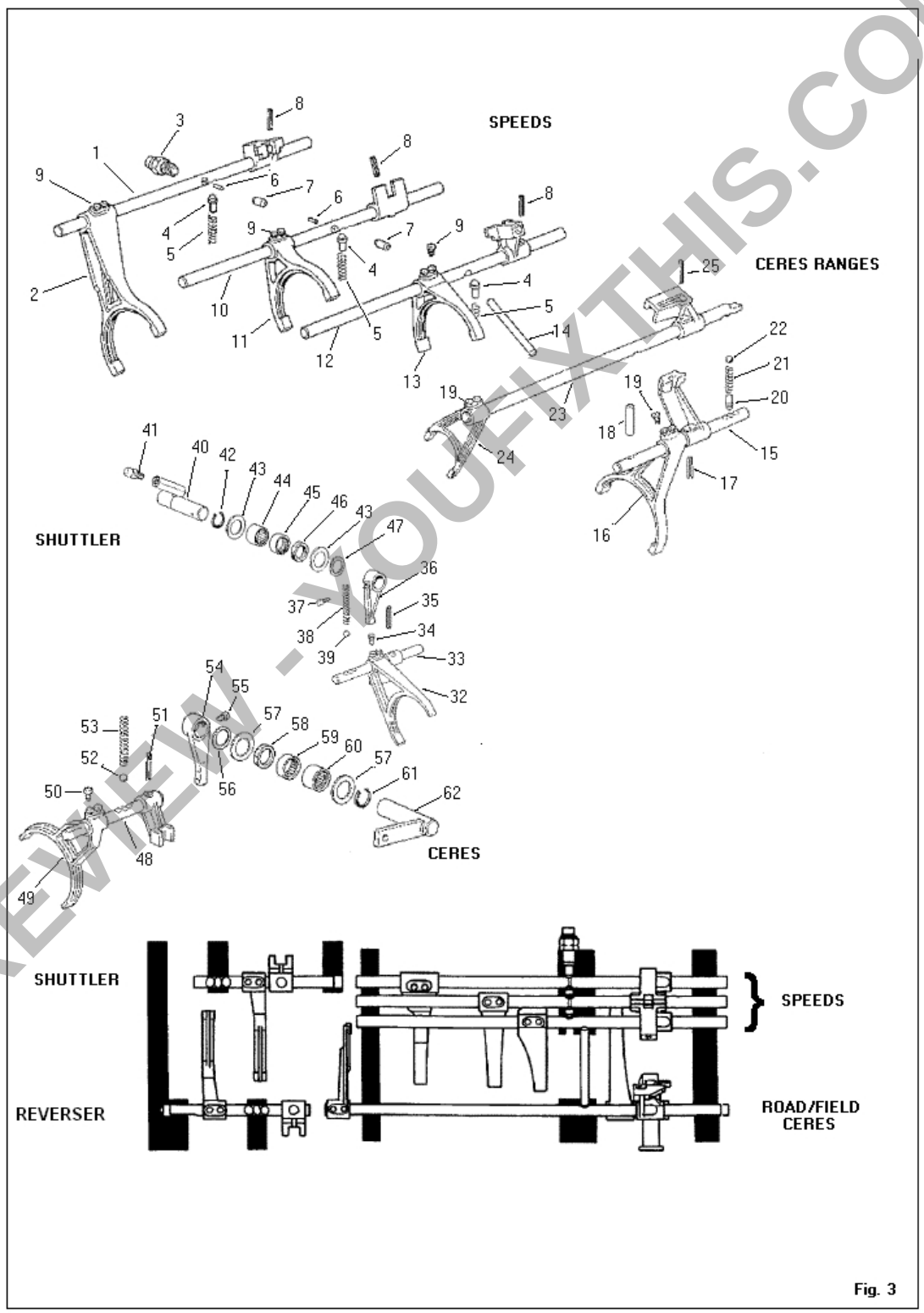


Fig. 3

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FRONT INTERMEDIATE SHAFT

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Hydraulic checks

Personal Notes

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Differential crown wheel and pinion

Adjustment of the pre-load of the bearings

Note: Preload is required only when fitting new bearings.

- Perform a pre-assembly of the differential.
- Install the bearings **(35)** with the original adjustment shims **(33)** (Fig.1).
- Tighten the two bolts **(A)** and **(B)** on the right bearing (Fig.10).
- Tighten gradually the two bolts **(C)** and **(D)** on the left bearing, while rotating the differential (Fig.11).

  If the bearings lock, add additional shims.
  If an axial clearance on the level of the differential remains, remove shims.
- Using a dynamometer, measure the force **(F).**

F must be included between 1.2 and 2.8N.m

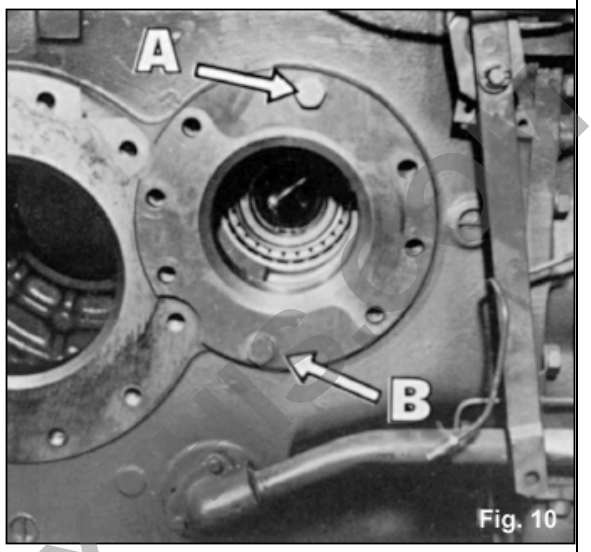


Fig. 10

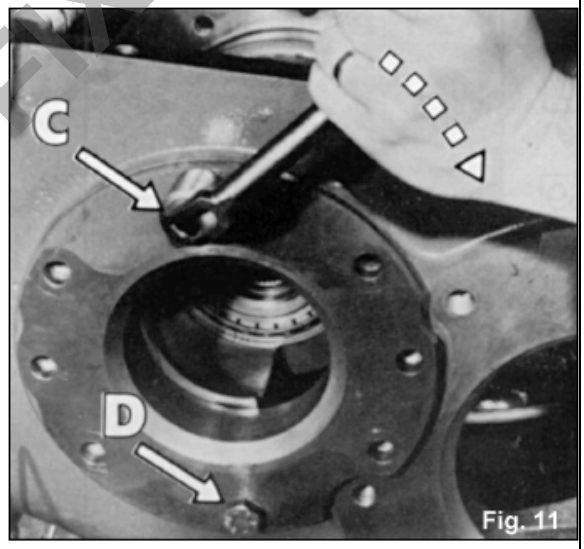
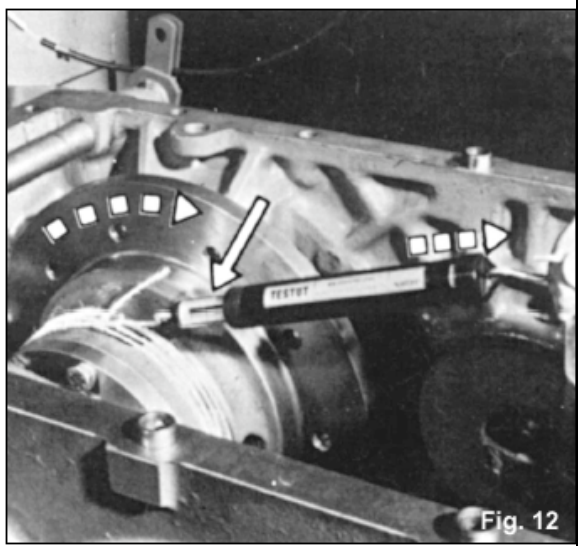


Fig. 11


Fig. 12

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Service brakes - Handbrake

Brake control adjustment HM 4 200

Service brake

- Release the handbrake **(L).**
- The lever **(A)** and **(B)** must not be in contact with the stop bolts **(C)** and **(D).**
- Loosen and remove the lock nut **(N).**
- Torque tightens the nut **(M)** to 5 Nm.
- Loosen the nut **(M)** by one turn and a half.
- Tighten and lock the locknut **(N).**

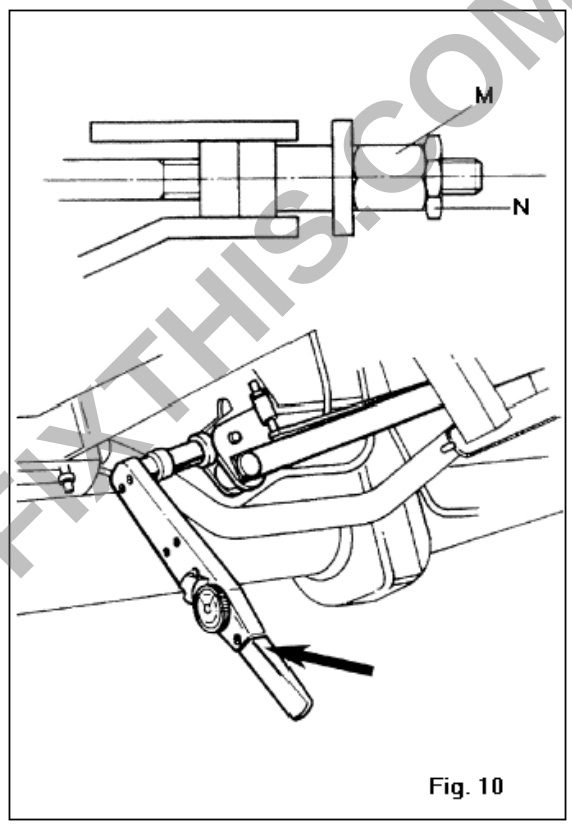


Fig. 10

Handbrake

Note: Adjust the service brake before the handbrake.

Right brake
- The hand brake lever must be pulled.
- Act on the bolt **(D)** in order to bring it into contact with the lever **(B)** without constraint. Lock the locknut.

Left brake
- Act on the bolt **(C)** in order to bring it into contact with the lever **(A)** without constraint.
- Unscrew the bolt **(C)** by half at turn. Lock the locknut.
- Release the lever **(L)** and check that the bolts **(C)** and **(D)** are not in contact with the levers **(A)** and **(B).**

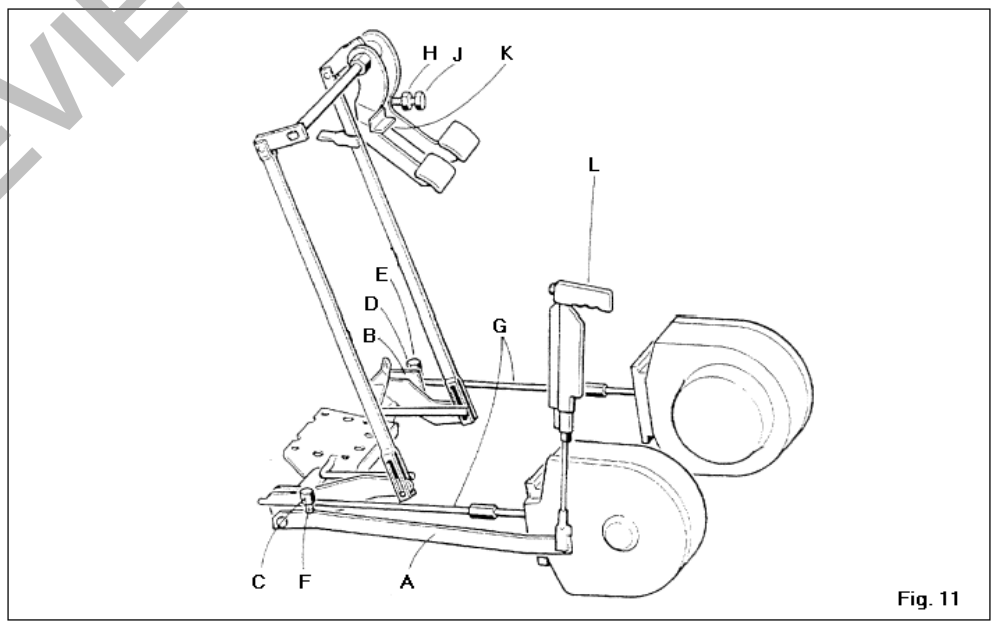


Fig. 11

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Tools

Personal Notes

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Removal / Installation

Disassembly of tie rod

1. Jack-up the tractor for servicing of front axle.
2. Remove the wheels by removing the wheel nuts.
3. Remove the tie-rod assembly by removing the ball joint nuts. Keep the tie-rod assembly aside. Ref. Fig.1.

WARNING: Please ensure that rubber boots are not damaged while removing the tie-rod assembly. If damaged, ball joints must be replaced.

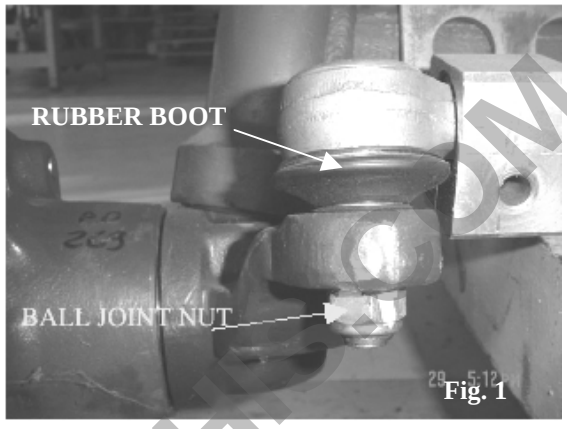


Fig. 1

Servicing of wheel end assembly

Disassembly of wheel end

1. Remove the complete wheel end assembly from main bearing by removing locker-clamping bolt as shown in (Fig. 2).
2. Remove locker.
3. Take out complete wheel end assembly.
4. Remove thrust bearing, bottom seal (Fig. 3).
5. Remove thrust washer and top seal from kingpin tube (Fig. 2).
6. Remove the hub cover.

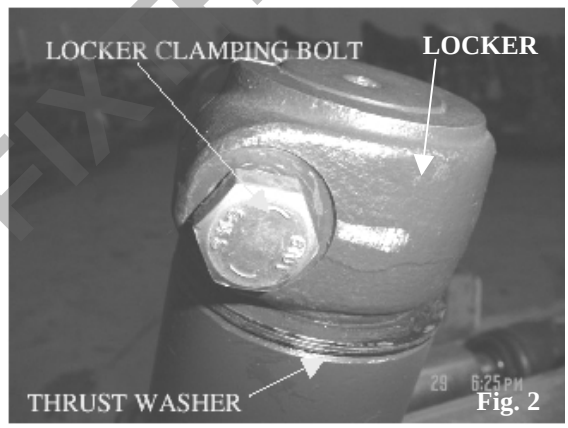


Fig. 2

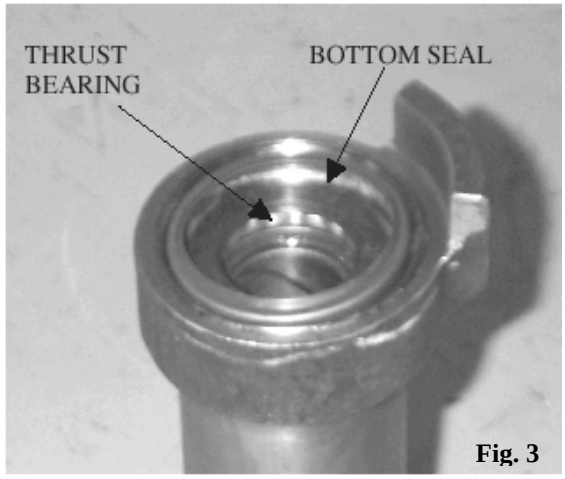
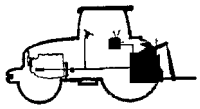


Fig. 3

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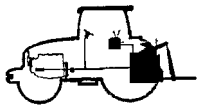


Removal / Installation of the elements

Personal Notes

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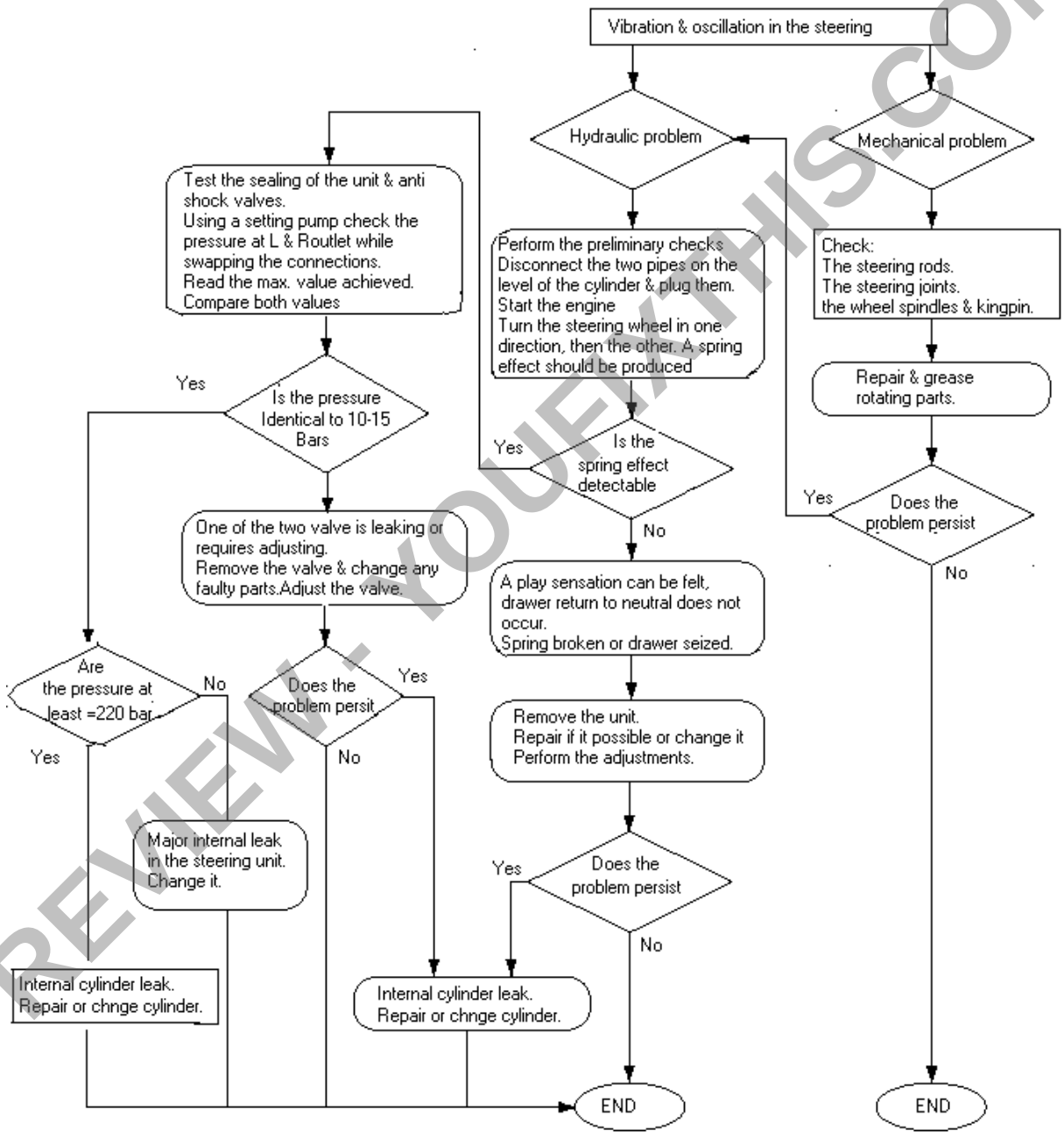
DIAGNOSTIC

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Diagnostic

Sheet N° 2 – Abnormal vibration in the wheel – Oscillation in the steering – Inaccurate steering – Path Correction



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