FR 130.2

wheel loader

operation and maintenance instruction manual

Form 604.00.557

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ATTENZIONE

STUDY THE OPERATION AND MAINTENANCE INSTRUCTION MANUAL THRUOGH BEFORE STARTING, OPERATING, MAINTAINING, FUELING OR SERVICING THIS MACHINE.

This symbol is your safety alert sign. It MEANS ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED.

Read and heed all safety instructions carrying the signal words WARNING and DANGER.

Machine mounted safety signs have been color coded yellow with black borders and lettering for WARNING and red with white borders and lettering for DANGER points.

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SAFETY RULES

GENERAL

Study the Operation and Maintenance Instruction Manual before starting, operating, maintaining, fueling, or servicing machine.

Read and heed all machine-mounted safety signs before starting, operating, maintaining, fueling or servicing machine.

Machine-mounted safety signs have been color coded yellow with black border and lettering for ***WARNING*** and red with white border and lettering for ***DANGER*** points.

Never attempt to operate the machine or its tools from any position other than seated in the operator's seat. Keep head, body, limbs, hands and feet inside operator's compartment at all times to reduce exposure to hazards outside the operator's compartment.

Do not allow unauthorized personnel to operate service or maintain this machine.

Always check work area for dangerous features. The following are examples of dangerous work areas: slopes, over hangs, timber, demolitions, fire, high walls, drop off, back fills, rough terrain, ditches, ridges, excavations, heavy traffic, crowded parking, crowded maintenance and closed areas. Use extreme care when in areas such as these.

An operator must know the machine's capabilities. When working on slopes or near drop offs be alert to avoid loose or soft conditions that could cause sudden tipping or loss of control.

Do not jump on or off machine. Keep two hands and one foot, or two feet and one hand, in contact with steps grab rails and handles at all times.

Do not use controls or hoses as hand holds when climbing on or off machine. Hoses and controls are movable and do not provide a solid support. Controls also may be inadvertently moved causing accidental machine or equipment movement.

Keep operator's compartment, stepping points, grab-rails and handles clear of foreign objects, oil, grease, mud or snow accumulation to minimize the danger of slipping or stumbling. Clean mud or grease from shoes before attempting to mount or operate the machine.

Be careful of slippery conditions on stepping points, hand rails, and on the ground. Wear safety boots or shoes that have a high slip resistant sole material.

For your personal protection. Do not attempt to climb on or off machine while machine is in motion.

Never leave the machine unattended with the engine running.

Always lock up machine when leaving it unattended. Return keys to authorized security. Heed all shut down procedures of the Operation and Maintenance Instruction Manual. Always set the parking brake when leaving the machine for any reason.

Do not wear rings, wrist watches, jewelry, loose or hanging apparel, such as ties, torn clothing, scarves, unbuttoned or unzipped jackets that can catch on moving parts. Wear proper safety equipment as authorized for the job. Examples: hard hats, safety shoes, heavy gloves, ear protectors, safety glasses or goggles, reflector vests, or respirators. Consult your employer for specific safety equipment requirements.

Do not carry loose objects in pockets that might fall unnoticed into open compartments. Do not use machine to carry loose objects by means other than attachments for carrying such objects.

DO NOT CARRY RIDERS unless the machine is equipped for carrying people to reduce personal exposure to being thrown off.

Do not operate machinery in a condition of extreme fatigue or illness. Be especially careful towards the end of the shift.

Roll Over Protective Structures are required on wheel loaders, dozer tractors, track type loaders, graders and scrapers by local or national requirements. *DO NOT* operate this machine without a Roll Over Protective Structure.

Do not operate a machine without a falling object protective structure (FOPS).

Do not operate this machine without a rear canopy screen when machine is equipped with rear mounted towing winch.

Seat belts are required to be provided with roll over protective structures or roll protection cabs by local or national regulations. Keep the safety belt fastened around you during operation.

Where noise exposure exceeds 90 dBA for 8 hours, wear authorized ear protective equipment per local or national requirements that apply.

Keep clutches and brakes on machine and attachments such as power control units, winches and master clutches adjusted according to Operation and Maintenance Instruction Manuals of the manufacturers at all times. *DO NOT* adjust machine with engine running except as specified.

Do not operate a machine with brakes out of adjustment. See the Operation and Maintenance Instruction Manual.

Move carefully when under, in or near machine or implements. Wear required protective equipment, such as hard hat, safety glasses, safety shoes, ear protectors.

To move a disabled machine, use a trailer or low boy truck if available. If towing is necessary, provide warning signals as required by local rules and regulations and follow Operation and Maintenance Instruction Manual recommendations. Load and unload on a level area that gives full support to the trailer wheels. Use ramps of adequate strength, low angle and proper height. Keep trailer bed clean of clay, oil and all materials that become slippery. Tie machine down securely to truck or trailer bed and block tracks (or wheels) as required by the carrier.

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TECHNICAL SPECIFICATIONS OF WHEELED LOADER FR 130.2

IDENTIFICATION - 2610.200.00.3

MARKING - R130.2

ENGINE

Net power at flywheel ..... 141HP/104.5 kW
Max. torque speed ..... 1500 rpm
Max. power speed ..... 2100 rpm
Brand and model ..... Fiat 8065.25.093
Type: diesel, 4 stroke, direct injection, turbocharged
Number of cylinders 6
Bore and stroke ..... 104 x 115 mm
Total displecement ..... 5861 cucm
Setting of injectors ..... 230 ÷ 238 bar
Valve/rocker arm clearance
intake ..... 0.30 mm
exhaust ..... 0.30 mm
Firing order 1-5-3-6-2-4

ENGINE SPEEDS

Low idle ..... 810 ÷ 890 rpm
Max. idle ..... 2265 ÷ 2365 rpm
Converter stall ..... 2140 ÷ 2280 rpm
Equipment stall ..... 2170 ÷ 2310 rpm
Full stall ..... 1590 ÷ 1790 rpm
Minimum starting temperature:
standard version ..... -15°C
with cold starting version ..... -25°C
Setting of engine coolant high temperature sender ..... 107 ± 3°C
Setting of engine oil low pressure switch and hourmeter drive ..... 0.4 ± 0.2 bar
Setting of engine oil resistor for pressure gauge ..... 0 ÷ 8 bar

TORQUE CONVERTER

Single stage, single phase type
Conversion ratio at stall ..... 2.91 : 1
Converter main pressure ..... 5 bar
Converter safety valve pressure ..... 8.5 bar

TRANSMISSION

Max. speeds (forward - reverse) in kmph (mph) (with 20.5 x 25 tyres):

Speeds	I	II	III	IV
-forward	7,07	12,85	27,09	38,79
-reverse	7,19	13,08	27,57	-

Reduction valve pressure ..... 10 bar
Pump delivery ..... 65 Ltr/min (17.19 USGal/min)
Main pressure on control valve ..... 16 ÷ 18 bar
Transmission oil filters (q.ty 2) one of which paper (15 ÷ 25 u) and one metal (-600 u)
Gap for adjustement between induction sensors on transmission and gear teeth ..... 0.5 ÷ 0.8 mm
Setting of transmission oil low pressure switch ..... 11.5 ± 0.5 bar
Setting of transmission oil high temperature sensor ..... 119 ± 3°C
Transmission oil low pressure timer ..... 5÷7 s

AXLES

Axles complete with oil-bath disc brakes
Self-locking Super Max-Trac differentials
Planetary reduction units in wheel hubs
Rigid, load-bearing structure type front axle
Reduction ratio 1:21.1
Oscillating, load-bearing structure rear axle
Reduction ratio 1:21.1

TYRES

Type: tubeless
MICHELIN 20.5-25 XHA Radials
Inflation pressure, operation
front ..... 3.25 bar
rear ..... 1.5 bar
Inflation pressure, travel
front ..... 2 bar
rear ..... 2 bar
Wheels tightening torque ..... 60 daNm

BRAKES

Brakes pump delivery .... 11.35 Ltr/min (3.0 USGal)
Operation pressure ..... 150 bar
Accumulators recharge starting pressure ..... 115 ÷ 121 bar
Accumulators recharge ending pressure ..... 150 ÷ 160 bar
Accumulators precharge pressure (2 Ltr) ..... 60 bar
Accumulator precharge pressure (0,7 Ltr) .... 60 bar
Setting of transmission cut-off pressure switch ..... 15 ± 1 bar
Seting of stop lights pressure switch .. 1.8 ± 0.5 bar
Setting of parking brake ON pressure switch ..... 60 ± 5 bar

STEERING SYSTEM

Pump delivery (at 1000 rpm - 7 bar) ... 55 cucm/turn
Max. operating pressure 210 bar
Cylinders..... 2 x double stroke
bore x stroke ..... 70 x 440 mm
Setting of priority valve ..... 175 bar
Setting of emergency steering low pressure swithc ..... 0.8 ÷ 1.2 bar
Setting of steering main pump low pressure swithc ..... 0.8 ÷ 1.2 bar
Emergency steering timer ..... T = 5 ÷ 7 sec.s

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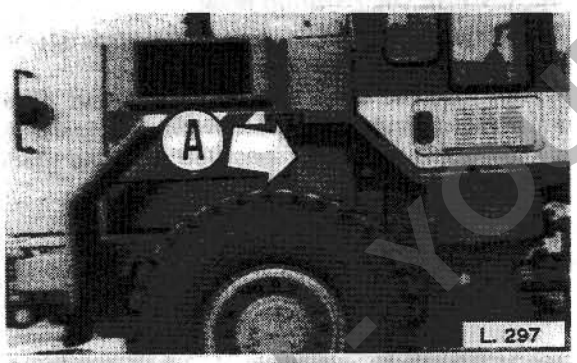
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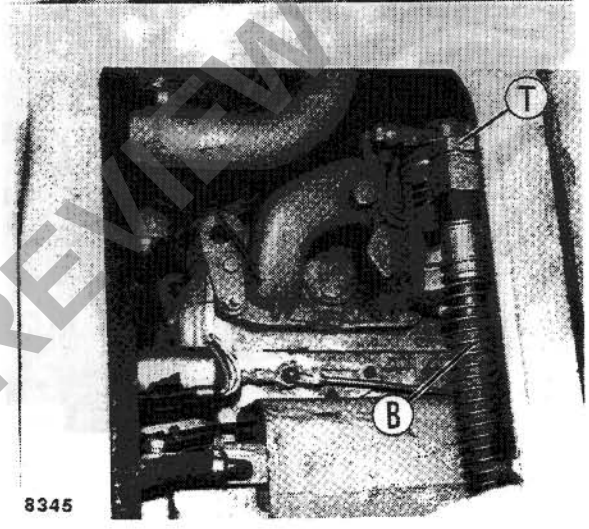
29. HYDRAULIC CONTROL SYSTEM - Change oil.

WARNING

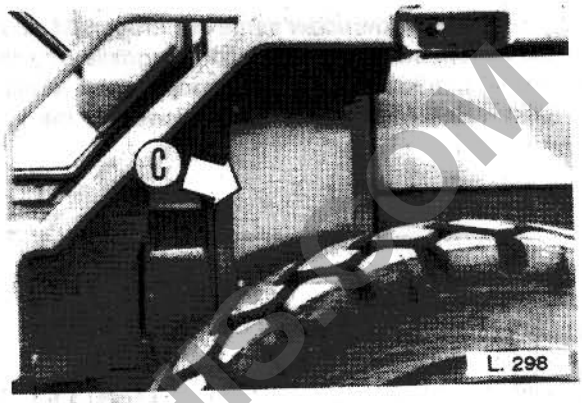
Fluid under pressure. Turn cap or cover slowly to relieve pressure before removing.
Do not run engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Position the machine on flat ground with parking brake ON.
Drain fluid from the hydraulic system, preferably when at working temperature.
Stop engine. Remove guard plate **A**. Pull out hose **B** provided and place free end in a suitably sized container for oil collection. Unscrew drain plug **T**.
Remove filler **D** - see item 6 - to allow full ventilation of the tank for complete drainage.

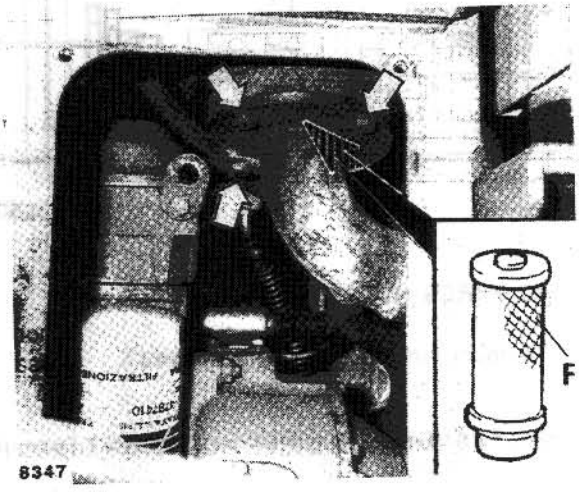




Suction filter servicing
Remove guard plate **C**.



Remove also the flange mounting screws shown. Pull out filter **F** and wash thoroughly in a non-toxic, non-flammable solvent.



Oil refills
Re-install drain plug **T** and fill tank through filler **D** (see item 6) using fresh oil of the specified type and grade (see page 64). Re-fit cap **D**.
Start the engine after a few minutes and operate implement controls repeatedly to fill the bucket cylinders and lines.Top-up the oil supply to the max level as instructed under item 6.

Important:
after refilling with fluid as described, bleed air from the system, as described in item 37.

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LUBRICATION AND SERVICE GUIDE

10 hour services	1. CAB AIR FILTER - Check
50 hour services	2. BUCKET ARTICULATION - Lubricate 3. CAB AIR FILTER - Clean
100 hour services	4. BOOM AND BUCKET ARTICULATIONS - Lubricate 5. GREASE FITTINGS - Lubricate 6. IMPLEMENT HYDRAULIC CONTROL SYSTEM - Check oil level 7. AXLES - Check oil level
250 hour services	8. ENGINE OIL - Change 9. FUEL FILTERS - Change 10. FUEL TRANSFER PUMP FILTER - Clean 11. FUEL TANK - Drain condensation 12. ALTERNATOR/FAN DRIVE BELTS - Check 13. VARIOUS VENTS - Clean vents on hydraulic oil tank, axles and transmission 14. TYRES - Check pressure
500 hour services	15. ENGINE OIL FILTERS - Change 16. HYDRAULIC SYSTEM - Change oil return filter 17. PILOT CONTROL SYSTEM FILTER - Change 18. DRIVE SHAFT - Lubricate 19. CAB AIR FILTER - Change 20. HYDRAULIC RESERVOIR BREATHER FILTER - Check
1000 hour services	21. TRANSMISSION - Change oil 22. ENGINE - Check valve clearance 23. ENGINE - Check injector setting 24. TRANSMISSION/DRIVE HOUSING - Change oil filter 25. BATTERIES - Check electrolyte level 26. S.M.T. AXLES - Change oil
2000 hour services	27. ENGINE COOLANT - Change 28. AIR CLEANER - Change cartridges 29. Hydraulic and brake system - Change oil and clean suction filter
As required	30. TIRES - Check inflation pressure 31. TRANSMISSION/DRIVE HOUSING - Top-up oil level 32. ENGINE - Top-up oil level 33. RADIATOR - Add coolant 34. AIR CLEANER - Clean/change cartridges 35. HYDRAULIC SYSTEM - Change oil return filter 36. BRAKE AND PILOT SYSTEM - Check efficiency
Occasional	37. FUEL SYSTEM BLEEDING 38. BRAKE SYSTEM BLEEDING

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OPERATING WARNINGS

WARNING

Study the operation and maintenance instruction manual through before starting, operating, maintain-ing, fueling, or servicing this machine.

This symbol is safety alert sign. It MEANS ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED.

Read and heed all safety instructions carrying the signal words WARNING and DANGER.

Do not jump on or off machine. Use the ladder and grab handles at all times. Keep operator's compartment, stepping points, grab-rails and handles clear of foreign objects, oil, grease, mud or snow accumulation to minimize the danger of slipping or stumbling.

This machine and its attachments are to be operated only by a qualified operator seated in the operator's seat.

Your safety and the safety of those around you depend upon the care and judgement in operating this machine and its equipment.
Understand the position of function of all controls and stability characteristics of the machine ibefore starting to operate.

Before starting machine, check, adjust and lock the operator's seat for maximum confort and control of the machine.

Before moving machine or attachments be sure exposed people in the area are clear of the machine. Walk completely around machine before mounting. Sound horn.

Keep people clear of attachments and tools while in raised position to prevent possible injury.

Never attempt to operate the machine or its tools from any position other than seated in the operator's seat. Keap head, body, limbs, hands and feet inside operator's compartment.

Be sure exhaust system is free of leaks under the hood.

For darkness operation, keep all machine mounted lights in operating condition. Report burned out lights and replace immediately.

Never leave the machine unattended with the engine running.
The attachment or tools can be lowered in response to attachment control lever movement with or without engine power.

Always before leaving the operator's seat and after making certain all people are clear of the machine, slowly lower the attachments or tools flat to the ground in a positive ground support position. Move any multipurpose tool to positive closed position. Return the controls to hold. Place engine controls to off position. Engage all control locks and lock the master (key) switch.

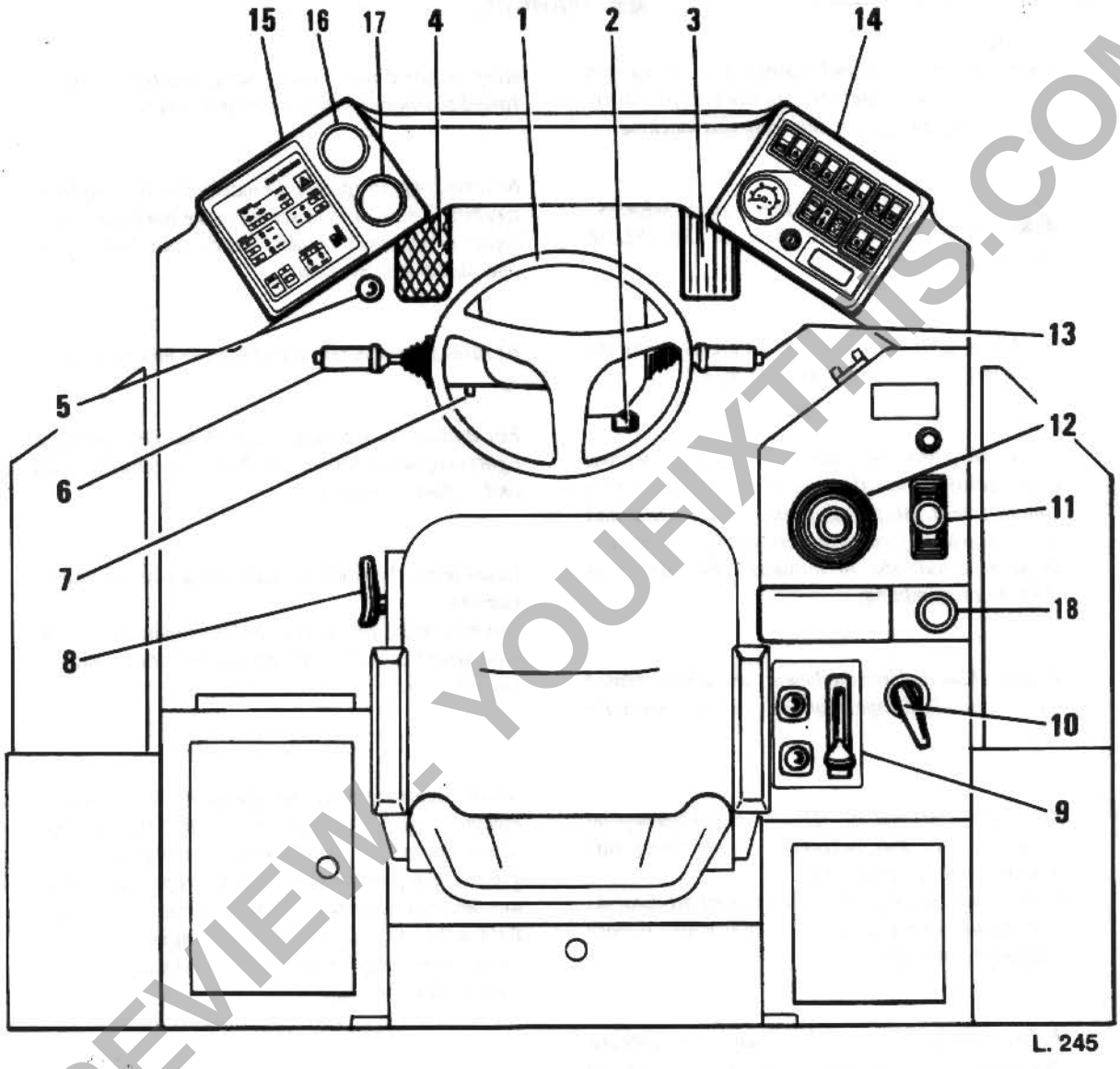
Do not park on downgrades without first immobilizing the machine safely to prevent accidental movements.

Always set parking brake when leaving the machine for any reason.

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CONTROLS AND INSTRUMENTS

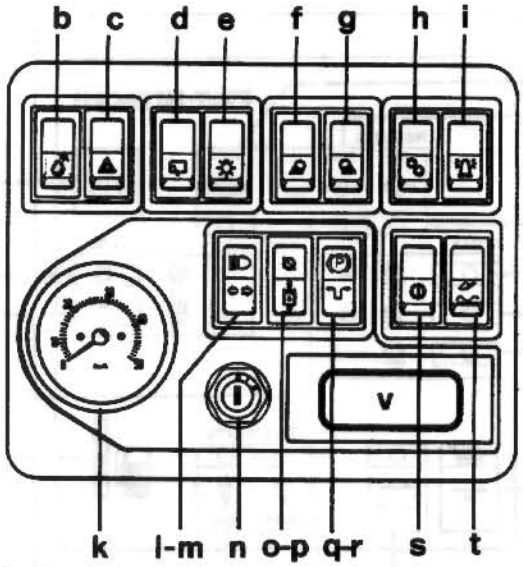


Note - The terms LEFT and RIGHT as referred to in this Manual, are determined by sitting on the Operator's seat and facing the front (bucket) end of the loader.

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14. INSTRUMENT PANEL (Right side)



L. 271

b. Cold starting aid switch.

c. Hazard warning switch (incorporates indicator light)

d. Back wiper switch

e. Two-position switch: front/tail lights and headlamp low beams

f. Cab front work lights switch (incorporates indicator light)

g. Cab rear work lights switch (incorporates indicator light)

h. Transmission neutralizer switch (incorporates indicator light)

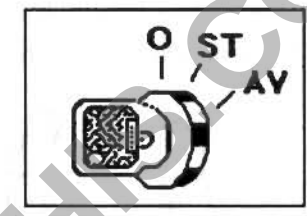
l. Revolving beacon switch (incorporates indicator light)

l. High beams indicator (higher)

m. Turn signal indicator (lower)

n. Engine starting switch

Turn key as follows for operation :
- pos. 0 : removable key
- pos. ST : Electric system energized (except engine starting)
- pos. AV : **Press IN and turn key clockwise** to start engine (when released, key snaps back automatically to pos. ST).



o. Transmission sensor deficiency indicator (higher)

p. Hydraulic fluid hight temperature indicator (lower)

q. Parking brake ON indicator (higher)

r. Emergency steering warning light (lower)

WARNING - DANGER

The light turning ON, while the machine is working, indicates a fault in the steering system with activation of the "emergeny steering systen".
This malfunction is also signalled by a warning buzzer.
Stop immediately the machine. Engage parking brake. Report to authorized Service Center.
NOTE - This indicator is activated while the machine is not moving.

s. Kick-down ON switch

t. LTS ON switch with indicator

This device allows to avoid the pitching of the machine, when travelling on rough terrains with a full bucket. The switch has three positions:

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1.3 REPAIRS

1.3.1 REMOVAL/INSTALLATION OF ENGINE

1.3.1.1 - Removal

Place the main switch in OFF position.

WARNING

Always turn the master switch to the "OFF" position before cleaning, repairing, servicing, or parking the unit to prevent injuries.

Drain coolant from the engine opening the draining valve located in the lower part of the radiator, as illustrated.
To facilitate the draining, remove the radiator filler cap.

WARNING

FLUID UNDER PRESSURE: turn cap or cover slowly to relieve pressure before removing.

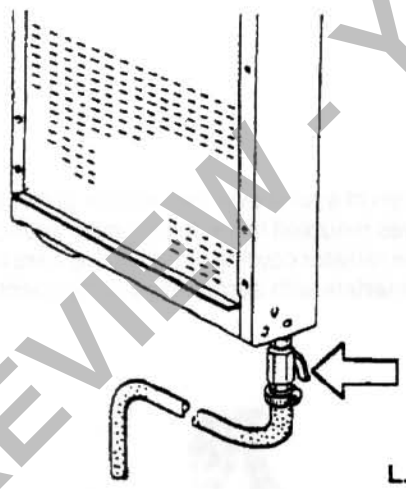


Fig. 1.7

Remove ladder (**1**), rear mudguards (**2**), side doors (**3**) and side panels (**4**).
Remove the silencer extension pipe (**5**) and the access cover to hydraulic reservoir (**6**). Remove the nuts and washers from the studs and the screw and washer from the cowling.
Remove the cowling using an appropriate hoist.

WARNING

Lift and handle all heavy parts with equipment of adequate capacity. Make sure that heavy parts are lifted by appropriate links and hooks. Use lifting eyes provided. Watch out for people in the vicinity of the load being lifted.

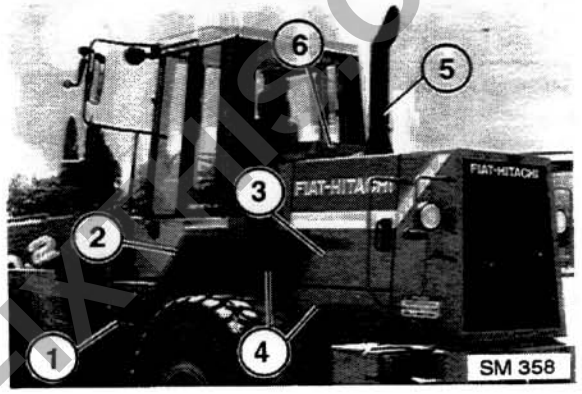


Fig. 1.7 - bis

Remove fan guards (**1**), disconnect overflow pipe (**2**) between the upper part of radiator and heat exchanger pipe.
Remove upper sleeve (**3**) between radiator and water pump.
Remove silencer (**4**), disconnect and tag coolant level sensor wire (**5**).

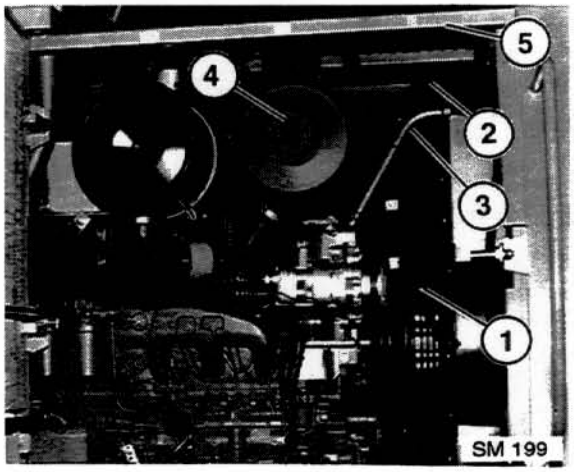


Fig. 1.8

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1.3.4 TROUBLE-SHOOTING THE TURBO-CHARGING SYSTEM

Troubles	Probable causes	Remedies
Temperature of exhaust gases higher than prescribed values with increased turbo-charging pressure (abnormal exhaust smoke)	Injection pump over calibrated.	Re-calibrate pump.
Low turbo-charging pressure. High temperature of exhaust gases and presence of black exhaust smoke.	a) Irregular operation of turbo-charger. b) Air filter clogged.	a) Overhaul turbo-charger. b) Perform air cleaner maintenance.
The engine does not deliver rated power.	a) Injection pump under-calibrated. b) Leakages in intake and exhaust manifolds.	a) Check injection system. b) Check air intake and exhaust gases systems, including checking torque of nuts and screws securing turbo-charger and manifolds.
Operation noisy or vibrations.	a) Insufficient lubrication. Shaft, bushings or wheels damaged. b) Accumulation of dirt deposits on back of wheels. c) Axial and radial play of turbo-charger higher than prescribed. d) Compressor wheel or turbine unbalanced caused by damages or deposits of foreign materials.	Check lubrication system and overhaul turbo-charger.

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1.3.3 TURBO-CHARGER REMOVAL/INSPECTION/INSTALLATION

WARNING

Normally the turbo-charger is removed from the engine for one of the following three reasons: inspection, repair or overhaul. When the turbo-charger is removed from the engine, always keep all openings of the intake and exhaust manifolds totally closed. This will prevent dirt from entering the manifolds and damage the turbo-charger or the engine, when the latter is returning to operating conditions.

1.3.3.1 Removal

Before removing the turbo-charger clean externally the group to prevent entry of dirt into the engine during the removal.

Remove the turbo-charger and disassemble it considering fig. 1.23

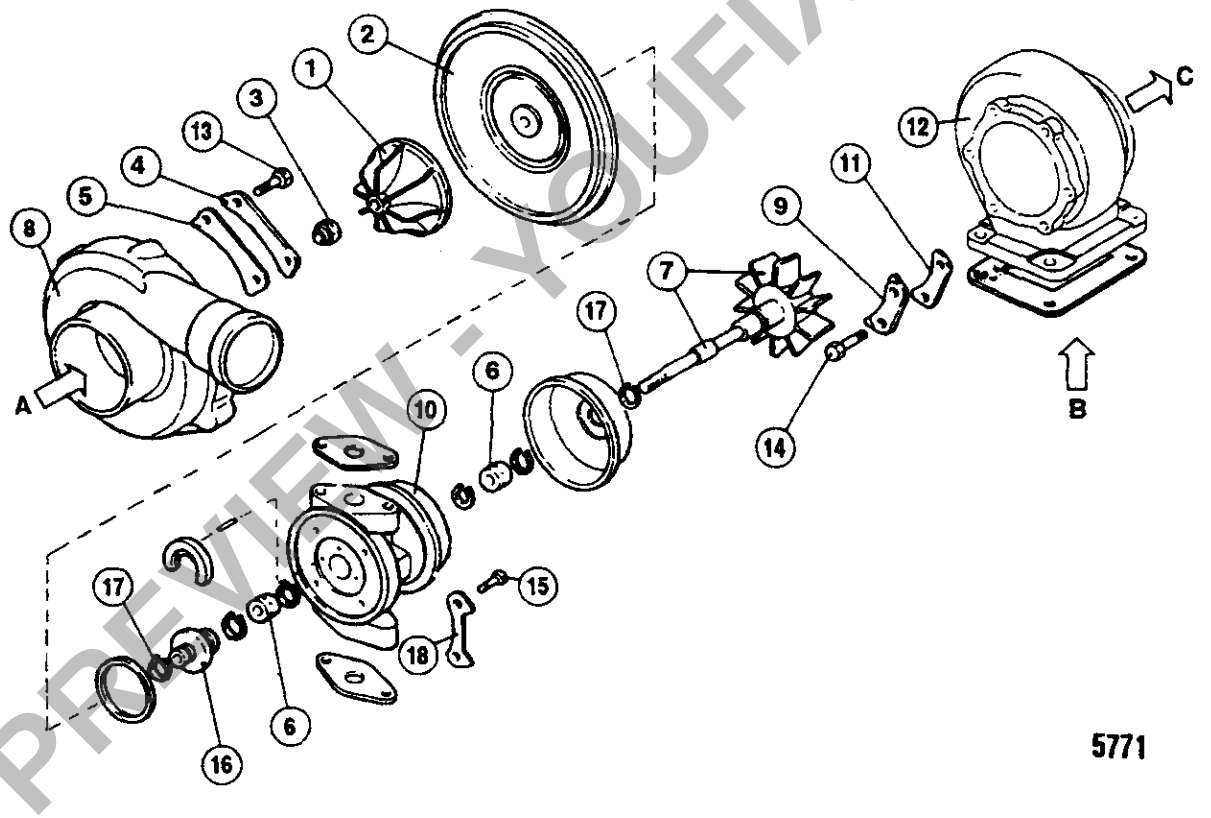


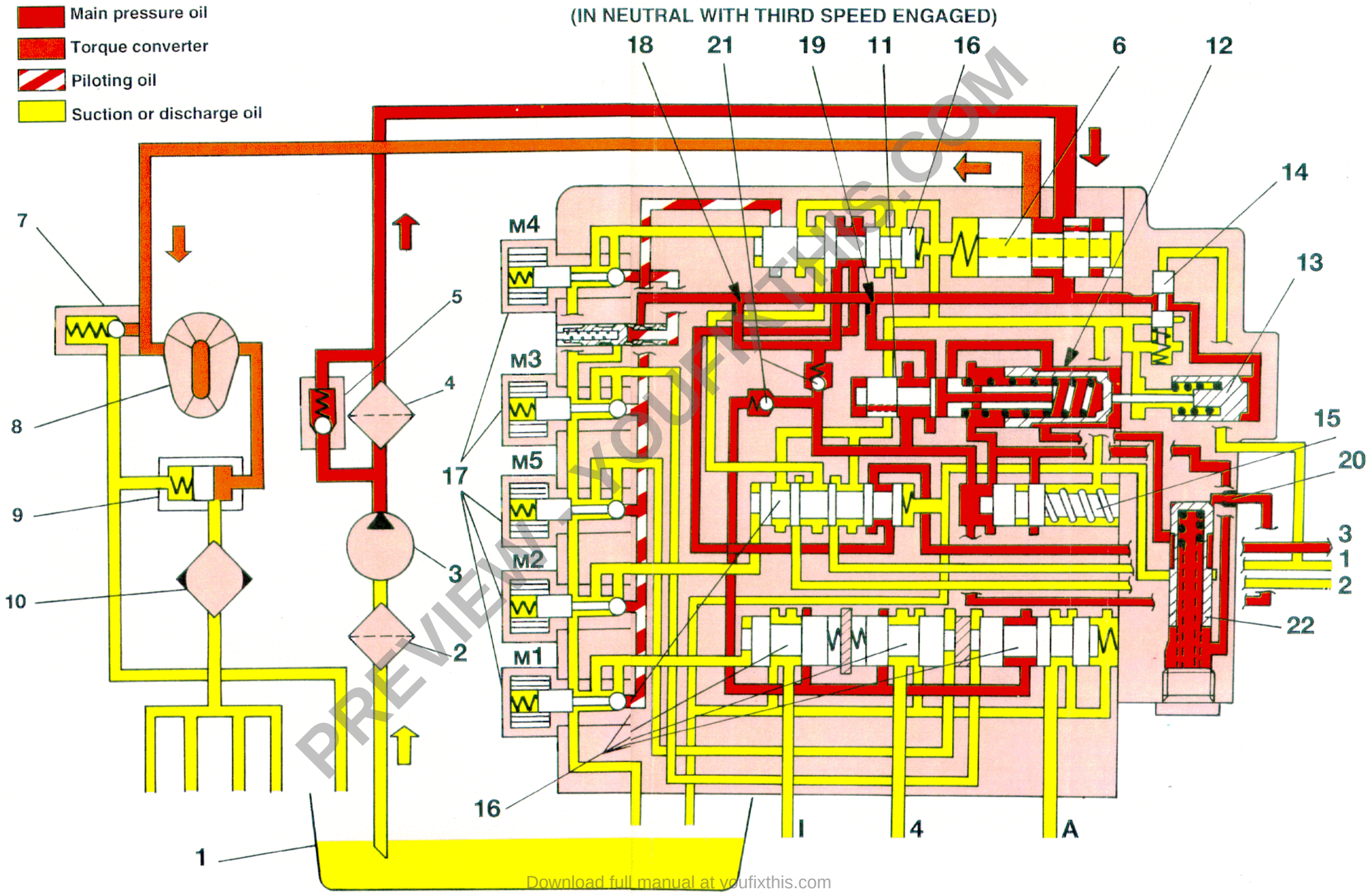
Fig.1.23 - Exploded view of turbocharger

A. Air intake - **B.** Exhaust gases arrival to turbine - **C.** Gas discharge - **1.** Compressor wheel - **2.** Rear cover - **3.** Compressor wheel securing nut - **4.** Lock-plate - **5.** Securing plate - **6.** Bearings - **7.** Turbine and shaft - **8.** Compressor body - **9.** Lock-plate - **10.** Central body - **11.** Securing plate - **12.** Turbine housing - **13, 14, 15.** Screws - **16.** Thrust collar - **17.** Seals.

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TRANSMISSION HYDRAULIC SYSTEM DIAGRAM

(IN NEUTRAL WITH THIRD SPEED ENGAGED)



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NUTS (ZNT)					SCREWS (ZNT / DEIDR)		
Strength grade: 10 (R 80)					Strength grade: 10,9 (R 100)		
Diameter and pitch mm	normal daNm	low type daNm	with polyamide ring		Diameter and pitch mm	normal ZNT daNm	self-locking ZNT daNm
			normal daNm	low type daNm			
M6 x 1	1,3	1,2	-	-	M6 x 1	1,3	-
M8 x 1,25	3,2	2,6	3,9	3,2	M8 x 1,25	1,3	3,5
M10 x 1,25	7,2	5,2	8,2	6,2	M10 x 1,25	7,1	7,9
M10 x 1,5	6,5	5	7,7	6	M10 x 1,5	6,5	7
M12 x 1,25	13	8,7	14,5	10,2	M12 x 1,25	12,7	13,9
M12 x 1,75	11	8,1	12,9	9,6	M12 x 1,75	11	12
M14 x 1,5	19,5	13	21,6	15	M14 x 1,5	20	22
M14 x 2	18	12,5	20	14,6	M14 x 2	18	19
M16 x 1,5	30	17	34	20	M16 x 1,5	30	33
M 16 x 2	-	-	-	-	M16 x 2	-	-
M18 x 1,5	45	25	50	29	M18 x 1,5	45	48
M18 x 2,5	-	-	-	-	M18 x 2,5	-	-
M20 x 1,5	60	30,5	64,5	35	M20 x 1,5	60	65
M20 x 2,5	-	-	-	-	M20 x 2,5	-	-
M22 x 1,5	80	41	-	-	M22 x 1,5	80	90
M22 x 2,5	-	-	-	-	M22 x 2,5	-	-
M24 x 2	100	47	108	52,5	M24 x 2	100	110
M24 x 3	-	-	-	-	M24 x 3	-	-
M27 x 2	95	40,1	-	-	M27 x 2	100	-
M30 x 2	130	49,4	-	-	M30 x 2	140	-
M33 x 2	170	-	-	-	M33 x 2	190	-
M36 x 3	220	-	-	-	M36 x 3	240	-

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Wiring diagram

1. Batteries
2. Master switch
3. Starter motor
4. Starter relay switch contact
5. Fuel booster coil
6. 4-Amp fuse
7. Engine starting key switch
8. Starter relay solenoid
9. Starting inhibitor solenoid
10. Diode ref. 8
11 Cold starting electrovalve
12. Engine shutoff control solenoid
13. LINK 50-Amp fuse
14. Solenoid
15. Instrument panel right lamp
16. Resistance
17. Right marker light
18. Front left parking light (TUV version)
19. Rear right parking light
20. 4-Amp fuse
21. Front left parking light
22. Front right parking light
23. 4-Amp fuse
24 .Diode
25. Outer lighting switch
26. Rear left parking light
27. Front right parking light (TUV version)
28. License plate light
29. Left marker light
30. Instrument panel left lamp
31. Front left low beam headlamp
32. 7.5-Amp fuse
33. Front right low beam headlamp
34. Front left high beam headlamp
35. 7.5-Amp fuse
36. Front right high beam headlamp
37. High beams indicator
38. Outer lighting change-over switch
39. Front left turn signal light
40. Front left turn signal light (TUV version)
41. Rear left turn signal light
42.7.5-Amp fuse
43.7.5-Amp fuse
44. Hazard warning light switch, w/indicator
45. Front right turn signal light
46. Front right turn signal light (TUV version)
47. Rear right turn signal light
48. Turn signal lights indicator
49. Electronic flasher
50. Front wiper motor-reduction unit
51. 7.5-Amp fuse
52. Light switch (front wiper/washer section)
53. Front washer pump
54. 7.5-Amp fuse
55. Rear wiper/washer switch
56. Rear wiper motor-reduction unit
57. Rear washer pump
58. 7.5-Amp fuse
59. Cab front work lights switch
60. Engine coolant temperature sensor
61. Cab front right work light
62. Cab front left work light
63. 7.5-Amp fuse
64. Cab rear work lights switch
65. Cab rear right work light
66. Cab rear left work light
67. Engine oil pressure sensor
68. 7.5-Amp fuse
69. Stop lights pressure switch
70 . Relay switch
71. Left stop light
72. Right stop light
73. Magnetic breaker (8A)
74. Emergency steering timer
75. Gearshift selector
76. Transmission neutralizer relay contact
77. Backup alarm relay switch
78. Kick-down indicator
79. Starter inhibitor relay switch
80. Backup alarm relay switch
81. 7.5-Amp fuse
82. Backup alarm
83. Transmission neutralizer switch (during brake application)
84.
86. 7.5-Amp fuse
87. Transmission/parking brake disconnect relay
88. Parking brake indicator pressure switch
89. Parking brake indicator

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SAFETY RULES

To prevent entrapment in cabs or mounted enclosures, observe and know the mechanics of alternate exit routes.

On machines equipped with suction radiator fans, be sure to periodically check all engine exhaust parts for leaks as exhaust gases are dangerous to the operator. Keep a vent open to outside air at all times when operating within a closed cab.

STARTING FLUID IS FLAMMABLE. Follow the recommendations as outlined in the Operation and Maintenance Instruction Manual and as marked on the containers. Store containers in cool, well-ventilated place secure from unauthorized personnel. *DO NOT PUNCTURE OR BURN CONTAINERS.*

Follow the recommendations of the manufacturer for storage and disposal.

Wire rope develops steel slivers. Use authorized protective equipment such as heavy gloves, safety glasses when handling.

OPERATION

Before starting machine, check, adjust and lock the operator's seat for maximum comfort and control of the machine.

DO NOT START OR OPERATE AN UNSAFE MACHINE. Before working the machine, be sure that any unsafe condition has been satisfactorily remedied. Check brakes, steering and attachment controls before moving. Advise the proper maintenance authority of any malfunctioning part or system. Be sure all protective guards or panels are in place, and all safety devices provided are in place and in good operating condition.

Check instruments at start-up and frequently during operation.

Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.

Be sure exposed personnel in the area of operation are clear of the machine before moving the machine or its attachments. *WALK COMPLETELY AROUND* the machine before mounting. Sound horn. Obey flag man, safety signals and signs.

Know the principles of cross steering of crawler tractors. Read section in Operation and Maintenance Instruction Manual on cross steering.

Keep engine exhaust system and exhaust manifolds clear of combustible material. Equip machine with screens and guards when working under conditions of flying combustible material.

If engine has a tendency to stall for any reason under load or idle, report this for adjustment to a proper maintenance authority immediately. Do not continue to operate machine until condition has been corrected.

Never use bucket as a man-lift.

Use recommended bucket for machine and material load ability and heaping characteristics of material, terrain, and other pertinent job conditions.

Avoid abrupt starts and stops when transporting a loaded bucket.

Inspect your seat belt webbing and hardware at least twice a year for signs of fraying, wear or other weakness that could lead to failure.

Use only designated towing or pulling attachment points. Use care in making attachment. Be sure pins and locks as provided are secure before pulling. Stay clear of draw bars, cables or chains under load.

When pulling or towing through a cable or chain, do not start suddenly at full throttle. Take up slack carefully. Guard against kinking chains or cables. Inspect carefully for flaws before using. Do not pull through a kinked chain or cable due to the high stresses and possibility of failure of the kinked area. Always wear heavy gloves when handling chain or cable.

Be sure cables are anchored and the anchor point is strong enough to handle the expected load. Keep exposed personnel clear of anchor point and cable or chain. *DO NOT PULL OR TOW UNLESS OPERATOR'S COMPARTMENT OF MACHINES INVOLVED ARE PROPERLY GUARDED AGAINST POTENTIAL CABLE OR CHAIN BACKLASH.*

During operation always carry ripper in full raised position when not in use and lowered to ground when parked.

When counterweights have been provided, do not work machine if they have been removed unless their equivalent weight has been replaced. See the Operation and Maintenance Instruction Manual.

When operating a machine know what clearances will be encountered, overhead doors, wires, pipes, aisles, roadways; also the weight limitations of ground, floor, and ramps.

Know bridge and culvert load limits and do not exceed them. Know machine's height, width, and weight. Use a signal person when clearance is close.

Be sure that the exact location of gas lines, utility lines, sewers, overhead and buried power lines, and other obstructions or hazards are known. Such locations should be precisely marked by the proper authorities to reduce the risk of accidents. Obtain shut-down or relocation of any such facilities before starting work, if necessary.

Be certain to comply with all local, state, and federal regulations regarding working in the vicinity of power lines.

When roading find out what conditions are likely to be met - clearances, congestion, type of surface, etc. Be aware of fog, smoke or dust element that obscure visibility.

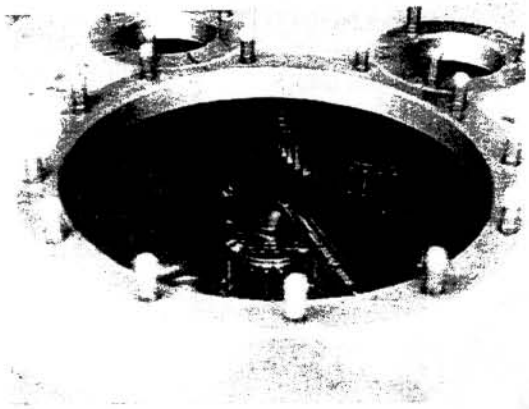
When backing, always look to where the machine is to be moved. Be alert to the position of exposed personnel. *DO NOT OPERATE* if exposed personnel enter the immediate work area.

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2.5.3.4 Disassembly of intermediate shaft

Remove the plate securing screw.



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Fig. 2.47

Remove the shaft securing screws.
Extract the shaft and remove the gear from the housing.



82

Fig. 2.48

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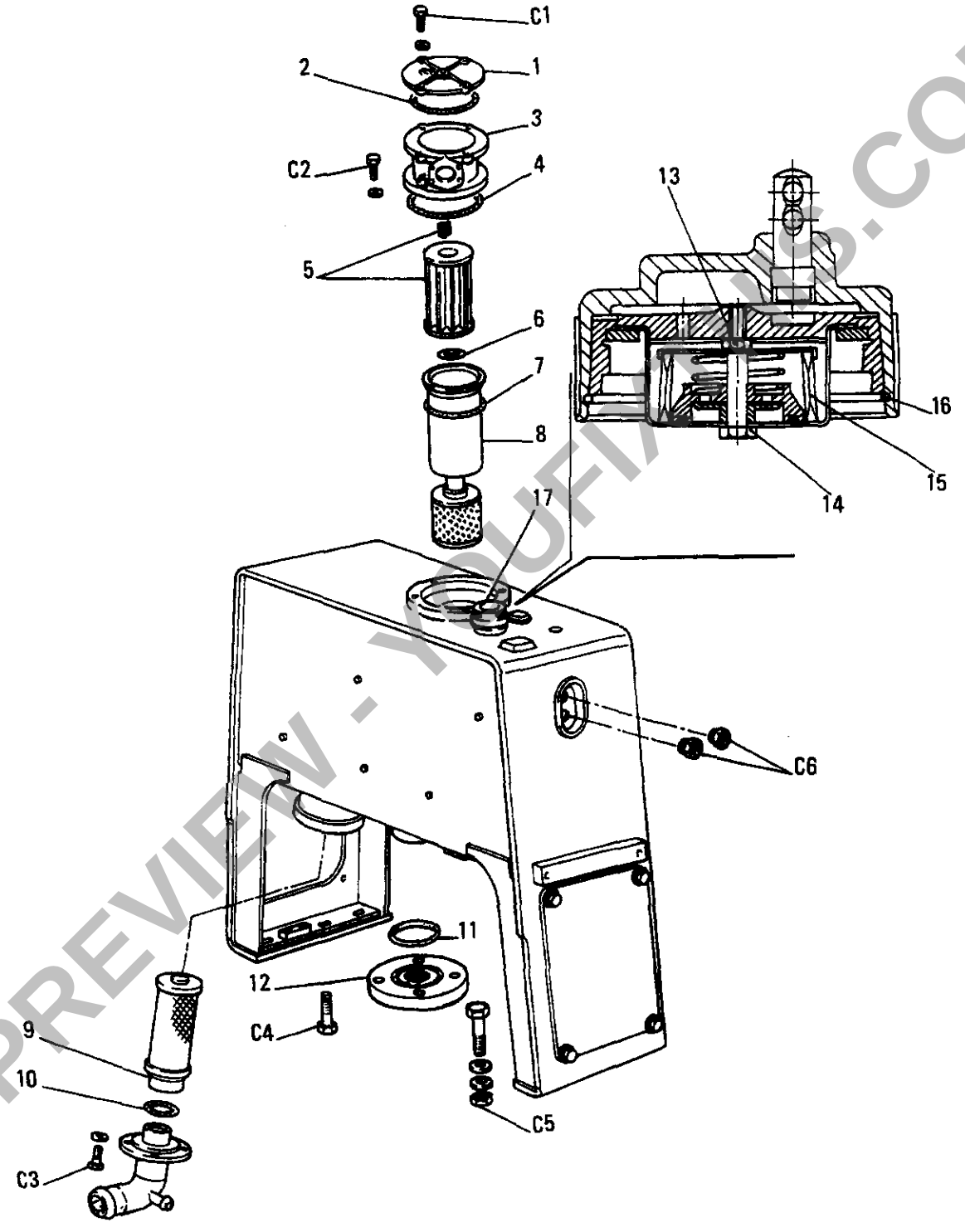


Fig. 6.7 - Hydraulic oil reservoir

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