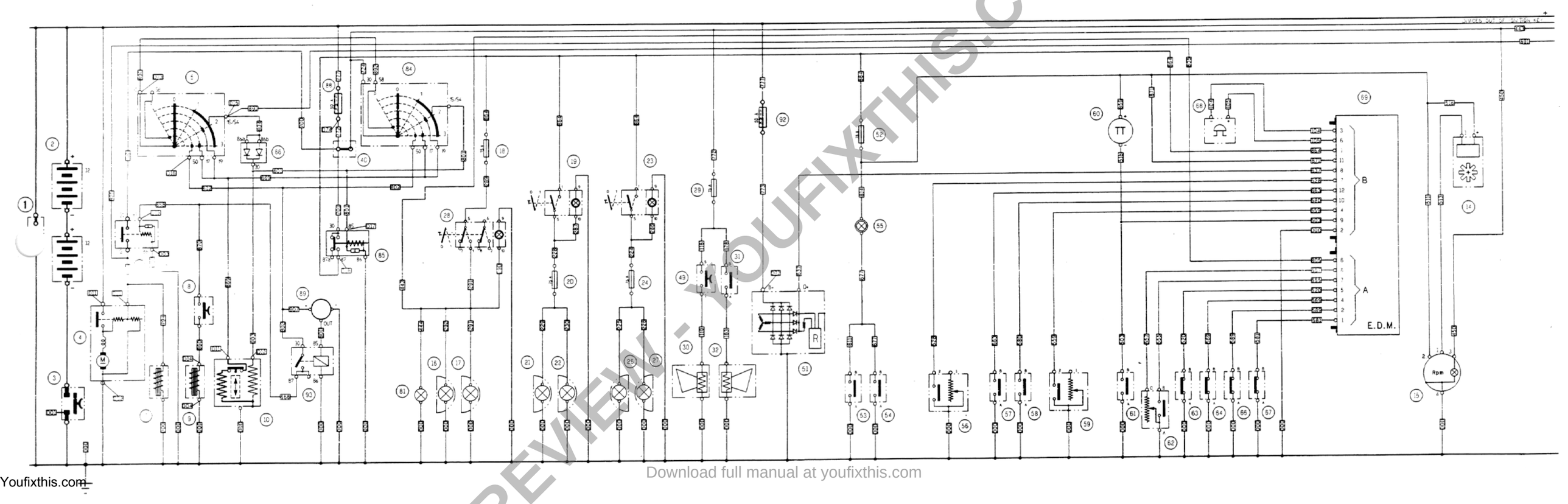
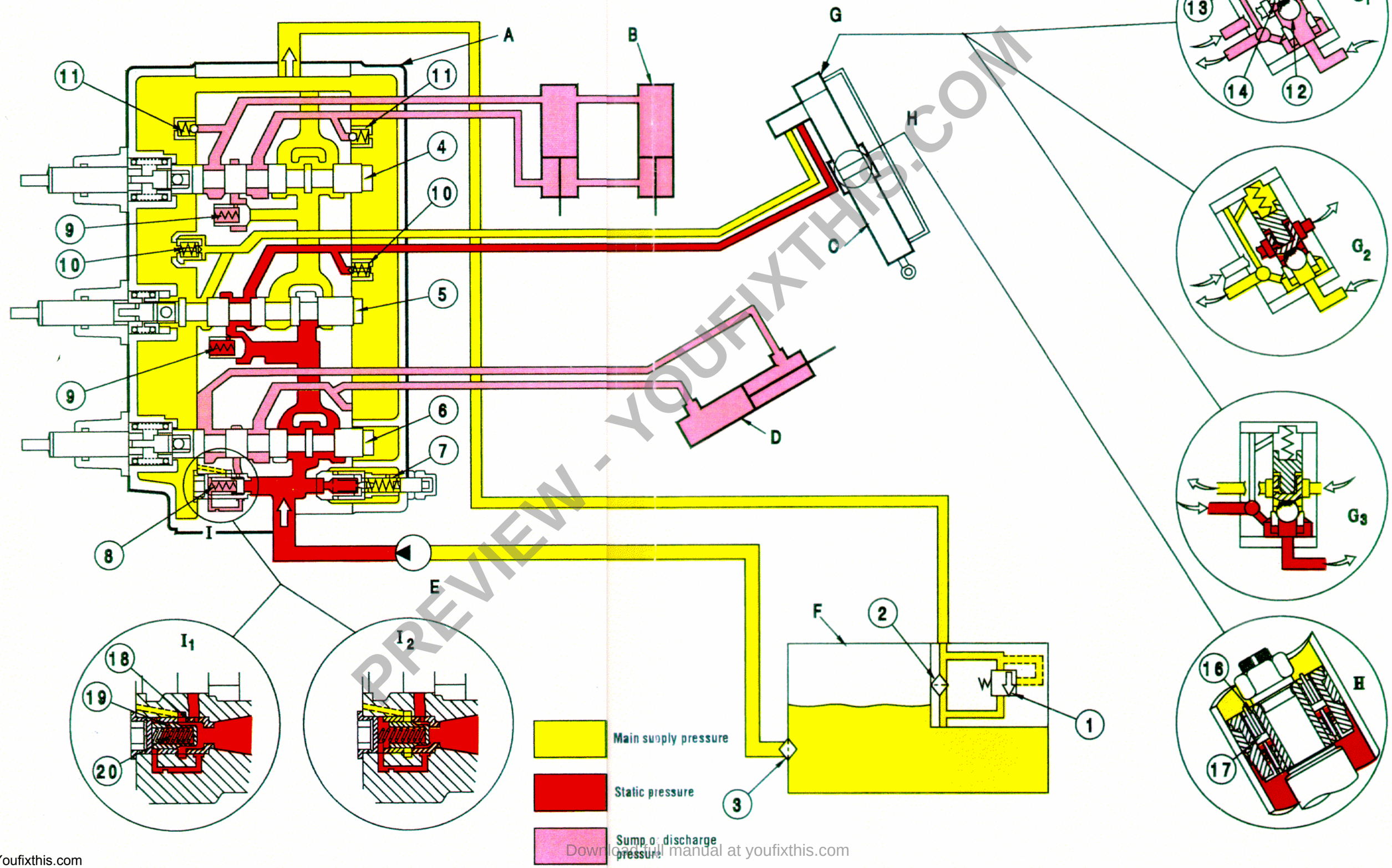


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IMPLEMENT HYDRAULIC SCHEMATIC



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"Alternator"

DISASSEMBLY

Remove machine alternator and disassemble according to the following instructions:

- For some operations use a plastic hammer only.

- While separating the 3 phase connections, use pliers to release overheating.

- After disassembling, wash the pieces with "electric liquid" only. Pay attention to safety because of the volatility of liquids, and carry suitable gloves and glasses. Dry carefully the washed pieces by compressed air and clean cloths.

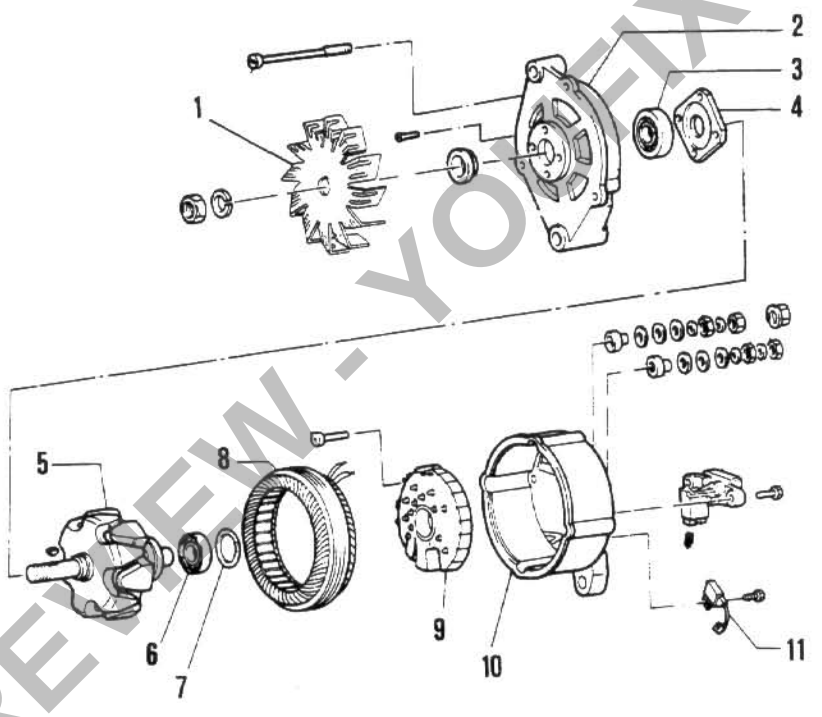
- Check that the disassembled parts do not have any worn or damaged points. The parts that have been damaged by a short circuit must be changed.

- Always change brushes, gaskets and washers.

- For tester check, lay the parts onto a working table that is insulated from workbench ground.

- The insulation between a phase and the stator must be perfect; if the insulation is not perfect, change the stator.

- If rotor collecting rings show some grooves or wearings, change the rotor.



Disassembled parts of the BOSCH alternator N1 - 28V - 10/55 A.

1. Fan - 2. Support - 3. Bearing - 4. Plate - 5. Rotor - 6. Bearing - 7. O-ring - 8. Stator - 9. Straightener - 10. Support - 11. Condensator -

Study SAFETY RULES in the front of this manual thoroughly for the protection of machine and safety of personnel.

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NUTS (ZNT)					SCREWS (ZNT/DEIDR)		
Resistance class: 10 (R80)					Resistance class: 10.9 (R100)		
Diameter and step mm	Normal daNm	Low type daNm	with polyamide ring		Diameter and step mm	Normal ZNT daNm	Selflocking ZNT daNm
			normal da Nm	low type daNm			
M6x1	1.3	1.2	-	-	M6x1	1.3	-
M8x1.25	3.2	2.6	3.9	3.2	M8x1.25	1.3	3.5
M10x1.25	7.2	5.2	8.2	6.2	M10x1.25	7.1	7.9
M10x1.5	6.5	5	7.7	6	M10x1.5	6.5	7
M12x1.25	13	8.7	14.5	10.2	M12x1.25	12.7	13.9
M12x1.75	11	8.1	12.9	9.6	M12x1.75	11	12
M14x1.5	19.5	13	21.6	15	M14x1.5	20	22
M14x2	18	12.5	20	14.6	M14x2	18	19
M16x1.5	30	17	34	20	M16x1.5	30	33
M16x2	-	-	-	-	M16x2	-	-
M18x1.5	45	25	50	29	M18x1.5	45	48
M18x2.5	-	-	-	-	M18x2.5	-	-
M20x1.5	60	30.5	64.5	35	M20x1.5	60	65
M20x2.5	-	-	-	-	M20x2.5	-	-
M22x1.5	80	41	-	-	M22x1.5	80	90
M22x2.5	-	-	-	-	M22x2.5	-	-
M24x2	100	47	108	52.5	M24x2	100	110
M24x3	-	-	-	-	M24x3	-	-
M27x2	95	40.1	-	-	M27x2	100	-
M30x2	130	49.4	-	-	M30x2	140	-
M33x2	170	-	-	-	M33x2	190	-
M36x3	220	-	-	-	M36x3	240	-

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SYMPTOM	PROBABLE CAUSE	TOOLS REQUIRED	TEST	SOLUTION
Low lube oil pressure indicator light turns on with engine running.	Low transmission oil level	Operator's manual	Pull dipstick and check level	Fill transmission with specified oil and to proper level
	Blocked converter pump suction filter			Clean the filter
	External leakage allowing air to enter pump		If oil foams, check for leakage	Correct leakage
	Defective hose		Restriction in suction hose	Replace or clean hose
	Incorrect oil	Operator's manual	Compare oil specification with factory data	Drain old and replace with the specified grade and quantity of oil.
	Defective indicator		Nothing seems to correct problem	Replace indicator

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FLUID CAPACITY

ITEM	QUANTITY	FIAT PRODUCT		REFILL
	Litres	Trade name	Designation	
Cooling system	52	PARAFLU	PARAFLU 11	Mixture of water and reputable high quality commercial permanent fluid (providing adequate oxidation, foaming, corrosion, scaling and freezing protection down to - 35°C (31°F).
Fuel tank	345	–	–	Diesel Fuel ASTM N.2-D Grade TT of reputable quality and Make
Crankcase	15	AMBRA SUPER	AMBRA SUPER	Engine oil to MIL-L-2104 C or API Service "CD"
Converter/transmission	27.5	TUTELA	GI/M	ATF Type A SUFFIX A
Bevel gear - steering clutches - brakes	28	AMBRA SUPER	AMBRA SUPER	Engine oil to MIL-L-2104 D or API Service "CD"
Hydraulic system - "BD" version - "AD" version (hydr. tilt - 1 cyl.)	 72.5 (°) 71.5 (°)	IDRAULICAR AP	IDRAULICAR AP/31-51	Hydraulic oil to MIL-H-24459 or DIN 51524/51525
Final Drives (each)	18	TUTELA	W90 / M-DA	Oil for mechanical drives MIL-L-2104 D
Track idlers and rollers	7 (°)	AMBRA SUPER	AMBRA SUPER	Engine oil to MIL-L-2104 D or API Service "CD"
Grease fittings	–	TUTELA	G9	Lithium - calcium base grease, N.L.G.I. no. 2 consistency
Cab tilting system	0.5	TUTELA	GI/M	ATF Type A SUFFIX A

Oil quantities indicated are for periodical changes as detailed in the drainage and refill instructions for each item, as applicable.

(°) First supply.

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LUBRICATION AND SERVICE GUIDE

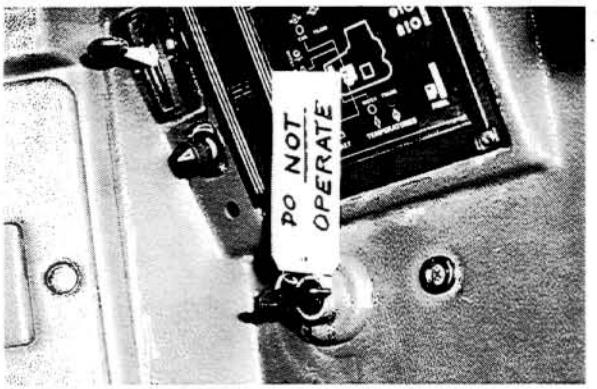
EVERY 10 HOURS	1. TRACK FRAME INBOARD SUPPORTS - Lubricate 2. CAB VENTILATION AIR FILTER - Check
EVERY 50 HOURS	3. CAB VENTILATION AIR FILTER - Clean
EVERY 100 HOURS	4. BEVEL GEAR/STEERING CLUTCHES AND BRAKES - Check oil levels 5. FINAL DRIVES - Check oil level 6. HYDRAULIC SYSTEM - Check oil level 7. FUEL TANK - Drain condensation 8. BLADE CYLINDER ARTICULATION - Lubricate 9. RIPPER LINKAGE ARTICULATIONS - Lubricate
EVERY 250 HOURS	10. ENGINE OIL - Change (*) 11. ALTERNATOR AND FAN BELTS - Check tension 12. BRAKES - STEERING CLUTCHES DELIVERY OIL FILTER - Change
EVERY 500 HOURS	13. ENGINE OIL FILTERS - Change 14. FUEL FILTERS - Change 15. CONVERTER/TRANSMISSION - Change oil and filters maintenance 16. HYDRAULIC SYSTEM - Change return oil filter 17. STEERING CLUTCHES AND BRAKES - Filters maintenance 18. ENGINE COOLANT INHIBITOR FILTER - Change 19. CAB VENTILATION AIR FILTER - Change
EVERY 1000 HOURS	20. ENGINE - Fuel injectors calibration 21. ENGINE - Valves adjustment check 22. BEVEL GEAR/STEERING CLUTCH AND BRAKES - Change oil 23. FINAL DRIVES - Change oil 24. DRIVE SHAFT - Grease fittings 25. TRACK FRAME OUTBOARD SUPPORTS - Lubricate 26. BATTERIES - Check electrolyte level 27. FUEL SEDIMENTATION PRE-FILTER - Change
EVERY 2000 HOURS	28. HYDRAULIC SYSTEM - Change oil 29. RADIATOR - Change coolant 30. ENGINE AIR CLEANER - Replace elements
WHEN REQUIRED (Operations to be performed whenever Electronic Data Monitor lights)	31. ENGINE OIL - Check level and top-up 32. CONVERTER/TRANSMISSION - Check oil level and top-up 33. RADIATOR - Add coolant 34. HYDRAULIC SYSTEM - Change return oil filter 35. AIR CLEANER - Clean elements 36. FUEL SEDIMENTATION PRE-FILTER - Water drainage
WHEN REQUIRED	37. TRACKS - Check sag 38. IDLERS AND ROLLERS 39. FUEL SYSTEM BLEEDING

(*) The oil can be changed at 500 hours with oil corresponding to CCMC D5 specifications.

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1.4 REPAIR PROCEDURES

SM-0001



1.4.1 ENGINE & CONVERTER

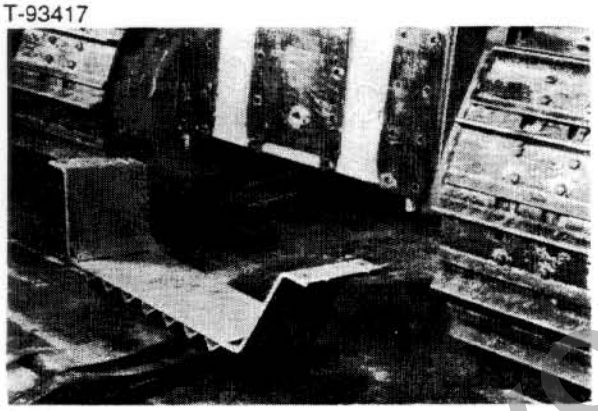
1.4.1.1 REMOVAL

1.4.1.1.1

Place machine on a level surface. Turn master electrical switch to the "OFF" position. Tag the unti with a "DO NOT START" tag.

Refer to the CAB Section of this manual and tilt the cab.

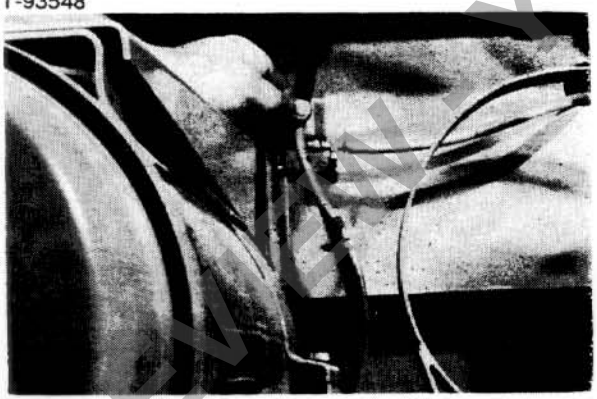
T-93417



1.4.1.1.2

Remove the center belly guards.

T-93548

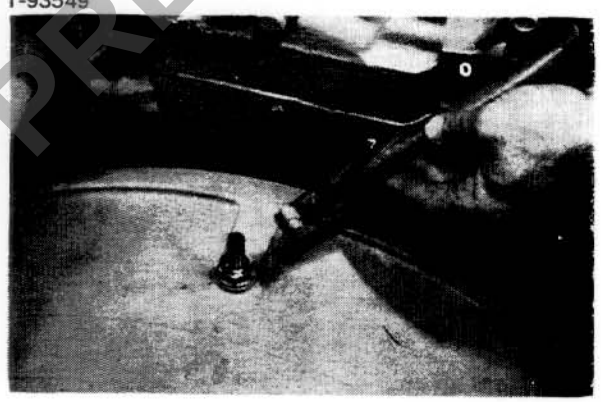


1.4.1.1.3

Disconnect windshield and door window washer hoses from engine, hood and side doors support.

NOTE: Plug lines to keep from draining reservoirs.

T-93549



1.4.1.1.4

Disconnect vent hose from flywheel housing from vent.

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SPECIFICATIONS

ENGINE

Make and Model 8365.26.541
Diesel cycle, 4-stroke, direct-injection, with exhaust gas driven turbocharger.
Number of cylinders 6
Bore ..... 112 mm
Stroke ..... 130 mm
Total Piston Displacement .... 7685 cc (468.9 cu. in)
Compression ratio ..... 15.8 : 1
Rated speed ..... 2000 rpm
Rated speed at max. torque ..... 1400 rpm
Engine speed at minimum idle .....
..... 925 ± 25 rpm (on bench)
Engine speed at maximum idle .....
..... 2300 ± 20 rpm

Lubrication System

Type: Force-fed by gear pump.
Oil filters: Strainer on pump suction line. Full flow in delivery line through a replaceable element.
Engine oil cooled by heat-exchanger connected to the engine panel.
Low oil pressure warning light in DATA MONITOR PANEL.

Engine valves

Overhead valve, camshaft in cylinder block.
- Intake:
  - Opens - B.T.D.C. ..... 17° 32
  - Closes - A.B.D.C. ..... 38° 44
- Exhaust:
  - Opens - B.B.D.C. ..... 53° 08
  - Closes - A.T.D.C. ..... 13° 37

Valve clearance:
- intake ..... 0.40 ± 0.05 mm
- exhaust ..... 0.40 ± 0.05 mm

The adjustment must be performed only in case the clearance is 0.15 mm different from the nominal value.

Fuel system

Fuel pump, piston type.
In line injection pump, integral all-speed governor and automatic advance variator.
Fixed advance of beginning of delivery 13° ± 30', B.T.D.C. with cylinder no. 1 in compression phase (beginning of delivery).
Firing order: 1-5-3-6-2-4
Fuel injector release pressure: ..... 240 + 12 bar
Throwaway cartridge fuel filters.
Dry type, paper - cartridge air cleaner with centrifugal separator. Restriction indicator light on dashboard (EDM).

Cooling System

Coolant, force-circulated by centrifugal pump.
Radiator: 6 tube row core.
Fan: 7 blade, pusher.
Coolant circulation between engine and radiator governed by thermostat.
Engine coolant temperature and level indicators on dashboard (EDM).

Starting

By electric motor.
Starter heater with control unit, with pre-heating/post-heating function as a function of the coolant temperature.

TRANSMISSION

Hydraulic torque converter.
Stall torque ratio 2.682 : 1.
Transmission providing three speeds forward and three reverse, controlled by hydraulic powershift mechanism acting on five clutches.
Pilot control gearshift lever located on the left side on the operator.
Safety lock in "locked" position prevents the use of gearshift lever and applies automatically the brakes.
Torque converter/transmission oil cooling throgh heat exchanger with coolant recirculated from radiator.
Oil filtration: two full-flow filters, one mesh type and magnetic rod on suction line and one with cartridge and built-in by pass valve on delivery line.

Reduction gears

Central bevel gear set in rear drive housing.
Side final drives: double - reduction gear sets at sprocket ends.
Reduction ratio: ..... 1 : 12.3

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MACHINE OPERATION

WARNING

Never attempt to use machine or attachment except when seated in the operator's seat. Keep head, body, limbs, hands and feet inside operator's compartment to reduce exposure to hazards outside the operator's compartment.

Keep attachments low or in a position for maximum visibility and control of machine.

Never use the implements as a man lift.

Do not start suddenly at full speed against a tow chain or cable. Take up slack carefully.

Only designated towing or pulling attachment points are to be used for towing or pulling. Use care in making attachment. Be sure pins and locks, as provided, are secure before pulling.

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

Do not coast the machine at any time with transmission in neutral.

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

Work on sloping ground is dangerous.

Be particularly careful when working near overhanging banks or where cave-ins may occur. Use a signal person when visibility of the work area by the Operator is inadequate. The signal person must be in direct communication with the operator who must pay close attention to the signals.

Be on the lokout for caving edges, slides or falling objects. Beware of concealment by brush and undergrowth or other obstacles of these dangerous conditions.

When working in or nearby wells, trenches or in proximity of high banks, shore or brace as required to prevent cave-ins.

Before working in the vicinity of gas lines or other utility lines always contact the nearest utility office before beginning work.
You and the utility representative must jointly determine whast specific precautions must be taken to insure safety.

Work in proximity of overhead or underground power lines involves serious body injuries and death hazards, thus special precautions must be taken according to national and local safety regulations.

For the purposes of this Manual you are considered to be working in the proximity of power lines when the attachment or the load raised by machine, in any position, can reach to within the minimum distances specified by local and national safety regulations.

Slow down the operating cycle. Reaction time may be too slow and distances may be misjudged.

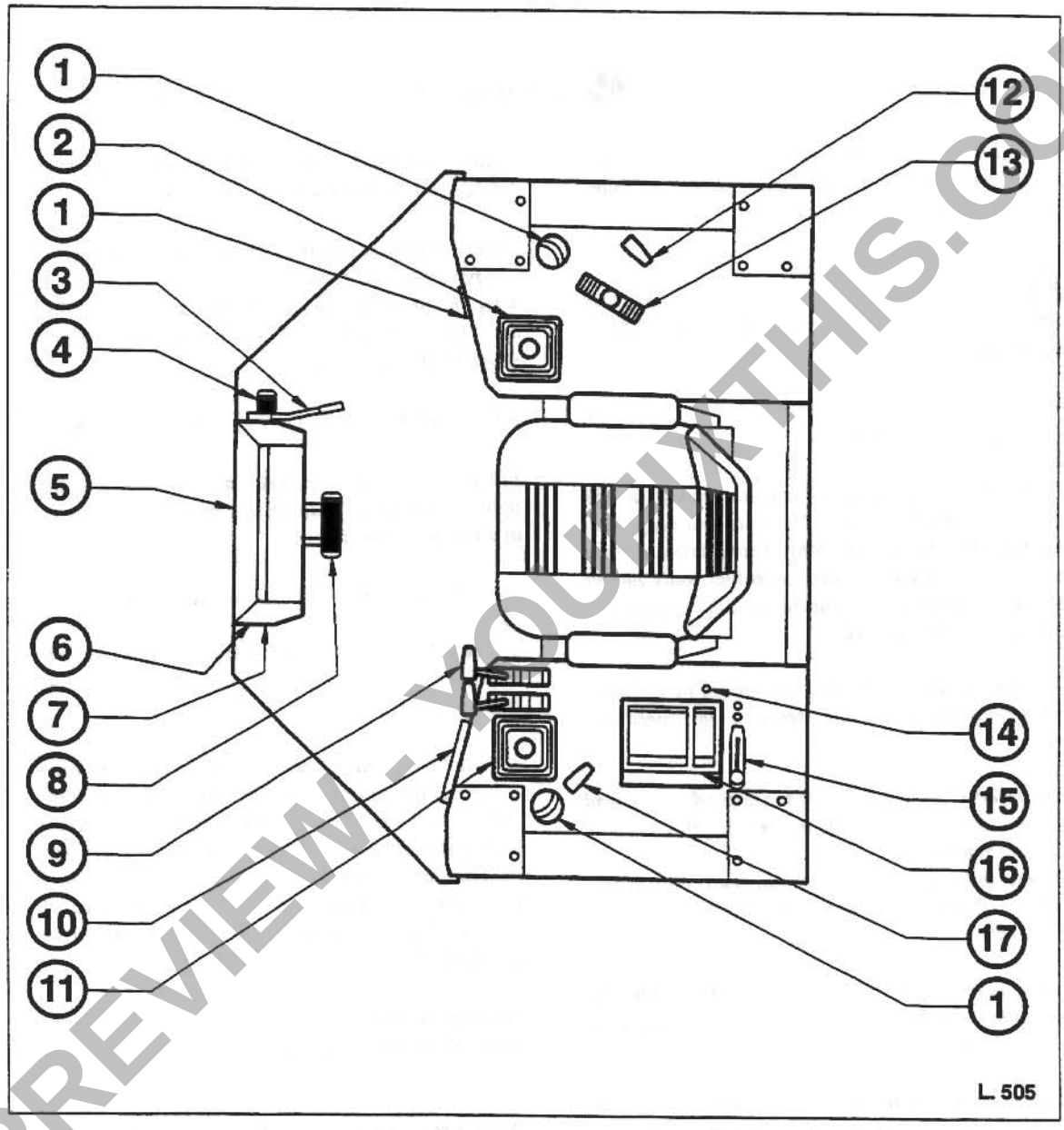
NOTE

Generally when the operator first gets on the machine he must practice raising and lowering the implements.
This will enable the operator to get the feel of the controls and learn how they respond to the control lever positions.

Keep in mind that when the levers are in hold position the implements become a rigid unit with the machine: in other words, the implements will follow any up and down or sideway movement of the machine.

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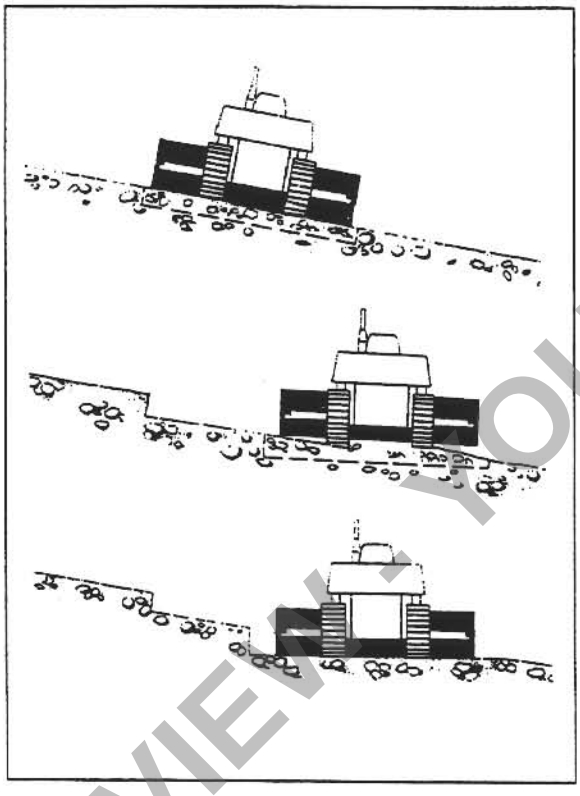
CONTROLS AND INSTRUMENTS



Note - The terms left and right used in the text of this Manual, refer to the operator seated in its seat and looking forward.

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When removing small trees make gradual contact with blade. Keep the blade raised high to gain the maximum leverage to push over the tree.
Doze the roots and stump clear of the ground. Felled trees can be pushed more easily lengthwise from the stump end. Larger trees may require a few passes to cut some of the outlying root structure. This should be done around entire circumference of the three as close to the trunk as possible. Build up an earth ramp opposite the direction the tree is to be felled. This, with the blade raised high, will increase the leverage and make pushing easier (avoid ramming the tree). Remember when the tree begins to fall, back up rapidly so that the uplifting roots will not catch under and tilt over the machine.



Dozing a shelf on side slopes by successive cuts across the slope.

OPERATING TIPS

Before beginning to doze the moldboard should have proper tilt and draft for the work to be performed. While dozing, always use the correct speed to obtain best results from the tractor. To get a smooth cut the operator should closely watch the ground pattern and when the tractor noses down or up, the control lever must be used to adjust blade height.

Note - Keep the cutting edges in good conditions. The middle section if worn can be turned over; the end sections must be replaced.

RIPPER

The ripper and its hydraulic control system are optional.
To lift or lower the ripper, move control lever backward of forward respectively; to stop the ripper in desired position, release the lever which will return to hold position.
The shanks are frame adjusted and may be used in combinations: all three shanks, the outer two, or the central shank.

To obtain the best results, the following considerations should be kept in mind:

Breakage. The soil can be broken in fine or coarse pieces depending on work depth, number and shape of shanks and pass spacing. Breakage must be established on the basis of the subsequent use of the ripped material.
For instance, if the broken material must be spread and back bladed, material needs to be finer than when it must be dozed away.

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covers, etc.); proceed as follows:
- apply tractor and trailer brakes;
- lower trailer rear stabilizers onto ground;
- align machine tracks properly with the ramps for correct climbing;
- seek the help of a flagman standing in a position from which he can easily keep in sight the ramps, loading platform, machine and Operator;
- lift implements only as high as will not intefere with the loading operation;
- climb up very slowly with blade or C-frame close to trailer platform; avoid any directional changes while machine is on the ramps;
- position machine on platform so as to ensure optimum load distribution: any shifting of machine should be done smoothly, avoiding sudden starts or stops;
- lower the blade or C-frame to rest on the trailer platform; apply the parking brake and follow all the procedures recommended to stop and leave the machine unattended.

Transport

There are some important preliminary operations to be performed before moving off:
- apply (and bolt) the wooden chocks to platform at track frame ends and safety bars or chains laterally for safe machine anchorage and immobilization during transport;
- make sure cab doors and any other movable parts are correctly shut and secure;
- unless machine size is within legally established limits, apply the necessary signals as per traffic code requirements.

Unloading

The operations and precautions are practically the same as those to be followed when loading except that in this case the blade or C-frame must be kept as low down as practical to prevent slipping or wavering of machine.

TOWING THE MACHINE

Should the engine be inoperative thus requiring towing the machine, it is necessary to disengage manually the brakes according to the procedure at page 57.

COLD CLIMATE PRECAUTIONS

When ambient temperatures are near 0°C (32°F), make sure that cooling system is filled with an antifreeze mixture (see chart).
Flush the cooling system before adding the antifreeze mixture.
The use of a permanent type (Glycol base) antifreeze solution is recommended.

WARNING

Fluid under pressure. Turn cap slowly to relieve pressure before removing or until pressure has been relieved as coolant may boil over and cause personal injury.

The use of FIAT PARAFLU 11 or equivalent antifreeze flui recommended in the percentages listed below to obtain the proper mixture for different ambient temperatures.

AMBIENT TEMPERATURE	ANTIFREEZE	WATER
Down to		
- 8° C	20 %	80 %
- 15° C	30 %	70 %
- 25° C	40 %	60 %
- 35° C	50 %	50 %

Run the engine for some time after adding the antifreeze fluid to ensure a proper mixing.

WARNING

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

Use proper viscosity oils for temperatures conditions as indicated in the fuel and lubricant specifications.

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SAFETY RULES

GENERALITIES

Study this Manual before starting, operating, maintaining, fuelling or servicing the machine.

Read and heed all safety rules before any intervention.

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

Avoid seating in the operator's compartment and start working if feeling in poor health conditions.

Do not wear rings, wrist watches, jewellery, loose or hanging apparels, such as ties, torn clothing, scarves, unbuttoned or unzipped jackets that can catch on moving parts. Wear proper safety equipment as recommended for the job. Examples: hard hat, heavy gloves, ear protection, safety glasses or goggles, reflector vests, respirator. Consult your employer for specific safety equipment requirements.

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.

Do not jump on or off the machine. Keep two hands and one foot, or two feet and one hand in contact with step 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.

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.

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.

Do not leave the machine until it is completely stopped.

Check the seat safety belt at least twice a year. If there are signs of wear or fraying or other signs of weakness that could lead to failure, replace it.

STARTING

NEVER START OR OPERATE AN UNSAFE MACHINE. Before operating a machine, always ensure 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 conditions.

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

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

Fasten your seat belt (when provided).

Obey all flag signals and signs.

Due to the presence on the machine of flammable fluids, never check or fill fuel reservoirs or batteries near open flames, smoking materials or sparks.

REMEMBER THAT STARTING FLUID IS FLAMMABLE. Follow recommendations printed on containers and in the Operation and Maintenance Manual.

DO NOT PUNCTURE OR BURN CONTAINERS.

Containers must be stored in fresh, well ventilated places, out of reach of unauthorised persons. Follow strictly the instructions provided by the Manufacturer.

Never use these preducts near open flames, smoking materials or sparks.

OPERATION

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

Roll Over Protective Structures are required on loaders, dozers, graders, excavators. NEVER OPERATE machines without ROPS.

Make sure the Operator's compartment is free of foreign objects, especially if not firmly secured. Never use the machine to transport objects, unless proper securing points are provided.

Check monitoring instruments at start-up and frequently during operation if the brake pressure gauge sugnals a pressure lower than the minimum operation value, stop immediately the machine.

DO NOT CARRY RIDERS ON MACHINE.

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CONTENTS

TOPIC	PAGE
Safety Rules	I-VII
Foreword	VIII
Model Identification	2
SPECIFICATIONS	3
Preliminary instructions and running-in	6
OPERATING WARNINGS	7
Controls and instruments	8
Operating instructions	15
General notes	15
Stopping the machine	16
Stopping the engine	16
Starting at low temperature	17
Post-heating phase	17
Operator's seat adjustments	18
Fuel tank	18
Blade adjustment	19
Cab tilting system re-filling and bleeding	20
Towing the machine	21
Cold climate precautions	21
Preparation for storage	22
MACHINE OPERATION	23
CAB	31
MAINTENANCE	35
Walk around inspection	36
General	37
Lubrication and service guide	38
List ot tools provided	39
Every 10 hours	40
Every 50 hours	40
Every 100 hours	41
Every 250 hours	43
Every 500 hours	44
Every 1000 hours	48
Every 2000 hours	50
When required	53
Operations to be performed when required	55
ELECTRICAL SYSTEM	58
FLUID CAPACITY	61

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FD 175

crawler dozer

Operation and maintenance instruction manual

Print No. 604.00.854

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WARNING

STUDY THE OPERATION AND MAINTENANCE INSTRUCTION MANUAL THROUGH 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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Study and familiarize with escape routes alternate to normal exit routes.

Seat belts are required to be provided with Roll Over Protection Structures or cabs. Keep safety belts fastened around you during operation.

For your personal protection, do not climb on or off machine while machine in motion.

Make sure that exposed persons in the area of operation are clear of the machine, before starting the engine and operating the equipment. Obey all indications provided by flags and signals.

NEVER COAST the machine down grades and slopes with the transmission in neutral or neutralized, or power shift type machines, or clutch disengaged on manually shifted machines.

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

Do not operate machine with brakes out of adjustment.

Operate the machine at speeds slow enough to ensure complete control at all times.

Travel slowly over rough terrain, on slopes or near drop-offs, in congested areas or on ice or slippery surfaces.

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. STOP THE MACHINE.

Maintain a safe distance from other machines. Provide sufficient clearance for ground and visibility conditions. Yield right-of-way to loaded machines.

Maintain clear vision of areas of travel or work. Keep cab windows clean and repaired.

When machines are operating in tandem, the pusher (rear) must be equipped with the appropriate deflectors to protect the unit in front from the air stream coming from the radiator.

When pulling or towing through a cable or chain, do not start suddenly at full throttle; take-up slack carefully.

Inspect carefully for flaws or troubles before using.

Avoid kinking chains or cables. Do not pull through a kinked chain or cable to the high stresses and possibility of failure of the kinked area. Always wear heavy gloves when handling chains or cables.

Be sure chains and cables are anchored and the anchor points are strong enough to handle the expected load. Keep exposed personnel clear of anchor points and cables or chains.

DO NOT PULL UNLESS OPERATOR'S COMPARTMENT OF MACHINES INVOLVED ARE PROPERLY GUARDED AGAINST POTENTIAL CABLE OR CHAIN BACKLASH.

Be alert to soft ground conditions close to newly constructed walls. The fill material and weight of the machine may cause the wall collapse under the machine.

In darkness, check area of operation carefully before moving in with machine. Use all lights provided. Do not move into area of restricted visibility.

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

On machines supplied with suction radiator fans, be sure to periodically check engine exhaust parts for leaks, as exhaust fumes are dangerous to the operator.

In case of enclosed cabs, always let open a discharge to the outside, to ensure air circulation.

Operators must know thoroughly the performances of the machine they are operating. When working on slopes or near sudden level drops of the terrain, avoid areas where ground is loose or soft since rolling-over or loss of control of machine could result.

Where noise exposure exceeds 90 dBA for 8 hours, wear approved ear protection.

When counterweights are provided, do not work machine if they have been removed.

Overtaking manoeuvres must be performed only when absolutely necessary and unavoidable. Beware of possible uneven terrains, poor visibility conditions, the presence of other machinery or persons out of sight.

Operate the machine at a speed adequate to the working conditions in the site and slow enough to ensure complete control at all times.

Check monitoring instruments at start-up and frequently during operations. In case of abnormal condition warnings, stop immediately the machine.

Never use the machine as a work platform or scaffolding, nor other inappropriate operations (i.e pushing railway cars, trucks or other machines).

Be alert of people in the operating area of the machine.

When operating a machine, know what clearances will be encountered, overhead doors, cables, pipes, bearing load limitations of ground, bridges, floors or ramps.

When roading, find-out what conditions are likely to be encountered, clearances, traffic congestion, type of road surfacing, etc. Beware of fog, smoke or dust elements that obscure visibility.

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LIST			
ITEM	PART-NAME	ITEM	PART-NAME
1	ELECTRICAL CONNECTOR FOR EXTERNAL STARTING	61	ENGINE OIL LOW PRESS. SWITCH AND HOURMETER CONTR.
2	BATTERIES	62	FUEL LEVEL SENSOR
3	MASTER SWITCH	63	COOLANT LEVEL SWITCH
4	STARTER MOTOR	64	ENGINE OIL LEVEL SWITCH
5	KEY IGNITION SWITCH	66	TRANSMISSION OIL LEVEL SWITCH
6	STARTER RELAY	67	TRANSMISSION OIL PRESSURE SWITCH
7	EXCESS FUEL SOLENOID	68	BUZZER
10	ENGINE STOP ELECTROMAGNET	69	ELECTRONIC DATA MONITOR
11	FUSE 7,5 A	75	ELECTROFAN
12	ADJUSTABLE CEILING LAMP	76	CONDITIONER TEMPERATURE SWITCH
13	SOCKET FOR LIGHTER AND LAMP	77	PRESSURE SWITCH
15	ELECTRONIC TACHOMETER	78	COMPRESSOR ELECTROMAGNETIC CLUTCH
16	FRONT R-H FLOOD LIGHT	79	RELAY 50 A
17	FRONT L-H FLOOD LIGHT	80	CONDENSER ELECTROFANS
18	FUSE 7,5 A	81	DASH BOARD LIGHT
19	FRONT CAB FLOOD LIGHT SWITCH	82	FUSE 20 A (ELECTROFAN)
20	FUSE 20 A	84	EXTERNAL KEY IGNITION SWITCH
21	FRONT R-H CAB FLOOD LIGHT	85	RELAY
22	FRONT L-H CAB FLOOD LIGHT	86	DIODE BOX
23	REAR FLOOD LIGHT SWITCH	87	50AMP CAB SERVICES RELAY
24	FUSE 4 A	88	LINK FUSE 50 A
26	REAR R-H CAB LIGHT	89	STARTER SAFETY PROXIMITY SWITCH
27	REAR L-H CAB LIGHT	92	LINK FUSE 50 A
28	LIGHTS SWITCH	93	STARTER SAFETY RELAY
29	FUSE 7,5 A	94	ELECTROFAN SWITCH
30	HORN	95	CONDITIONER SWITCH
31	BACK-UP ALARM PRESSURE SWITCH	96	PUSH-BUTTON SWITCH (BRAKES WARNING LIGHT TEST)
32	BACK-UP ALARM	97	ELECTRONIC TIMER (ENGINE STOP ELECTROMAGNET)
33	PUSH-BUTTON SWITCH	98	BUTTON (CONTROLLED EQUIPMENT)
34	SIDE WINDSHIELD WASHER MOTOR PUMP	99	SOLENOID VALVE (6 WAY BLADE)
35	FRONT AND REAR WINDSHIELD WASHER MOTOR PUMP	100	ELECTRONIC CONTROL UNIT
36	FUSE 7,5 A	101	TEMPERATURE SENDER
37	2 SPEED SIDE DOOR WIPER SWITCH	102	INDICATOR LIGHT (STARTER HEATER)
38	L-H DOOR WINDSHIELD WIPER MOTOR	103	STARTER HEATER
39	FUSE 7,5 A	104	STARTER HEATER FUEL SOLENOID VALVE
40	CONNECTIONS BOX	105	FUSE 4 AMP
41	R-H DOOR WINDSHIELD WIPER MOTOR	106	FUSE 4 AMP
42	FUSE 7,5 A	107	FUSE 30 AMP
43	PUSH-BUTTON SWITCH	108	ENGINE STOP COIL
44	FRONT WINDSHIELD WIPER MOTOR - 1 SPEED	109	SOLENOID SWITCH 20 AMP (FIRST FUEL FILTER HEATER)
45	FUSE 7,5 A	110	SOLENOID SWITCH 20 AMP (SECOND FUEL FILTER HEATER)
46	FRONT AND REAR WINDSHIELD WIPER SWITCH	111	SOLENOID SWITCH 20 AMP (FUEL PRE-FILTER HEATER)
47	REAR WINDSHIELD WIPER MOTOR - 1 SPEED	112	HEATER (FIRST FUEL FILTER)
48	FUSE 20 A (CONDITIONER)	113	THERMOSTAT (FUEL FILTERS)
49	HORN SWITCH	114	HEATER (SECOND FUEL FILTER)
50	RADIO (PROVISION)	115	HEATER (FUEL PRE-FILTER)
51	ALTERNATOR WITH ELECTRONIC REGULATOR	116	FUSE 20 AMP
52	FUSE 4 A	117	FUSE 20 AMP
53	R-H BRAKE FAILURE SWITCH	118	FUSE 20 AMP
54	L-H BRAKE FAILURE SWITCH	119	WATER LEVEL SENSOR (FUEL PRE-FILTER)
55	BRAKE WARNING LIGHT	120	DIODE REF. 86
56	ENGINE WATER HIGH TEMPERATURE SWITCH	121	INDICATOR TEST BUTTON
57	AIR CLEANER RESCRICTION SWITCH	122	WATER LEVEL SENSOR INDICATOR (FUEL PRE-FILTER)
58	IMPLEMENT OIL FILTER RESTRICTION SWITCH		
59	TRANSMISSION OIL HIGH TEMPERATURE SWITCH		
60	HOURMETER		

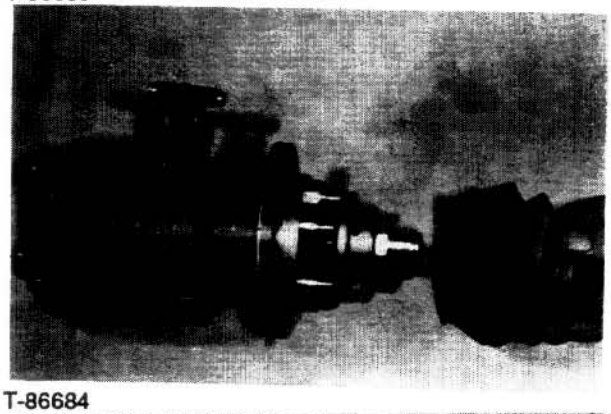
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SYMPTOM	PROBABLE CAUSE	TOOLS REQUIRED	TEST	SOLUTION
Hight trasmission oil pressure at all engine speeds	Pressure regulating valve stuck closed			Eliminate the sticking condition
High trasmission oil temperature	Low trasmission oil level	Operator's manual	Pull dipstick and check level	Fill trasmission with specified oil and to proper level
	Transmission heat exchanger blocked holding relief valve open		Test temperature difference between inlet and outlet of the heat exchanger. If exchanger blocked, then low difference.	Clean or replace heat exchanger
	Low operating pressure		Test transmission operating pressure	See remedies in **Low Oil Pressure fault**
	Burnt clutch plates binding when clutches are released			Renew transmission components
Normal trasmission oil pressure but machine starts to move at high revs only	Insufficient oil pump output			Conduct pump test
Machine creeps in forward while in neutral stops when shifted to reverse	Forward shifter spool stuck open			Eliminate spool sticking

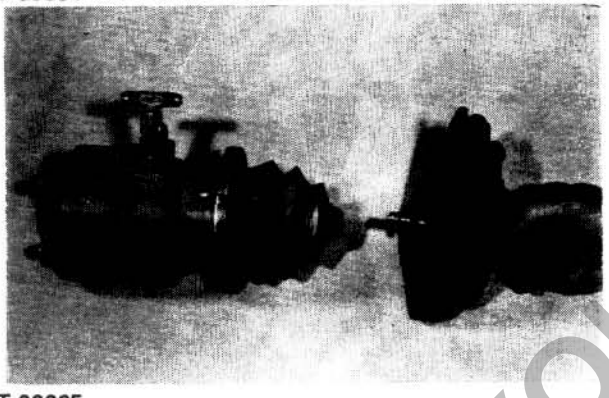
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T-86685



2.4.3.3.22
Install round boot.

T-86684



2.4.3.3.23
Install hand lever with square boot.

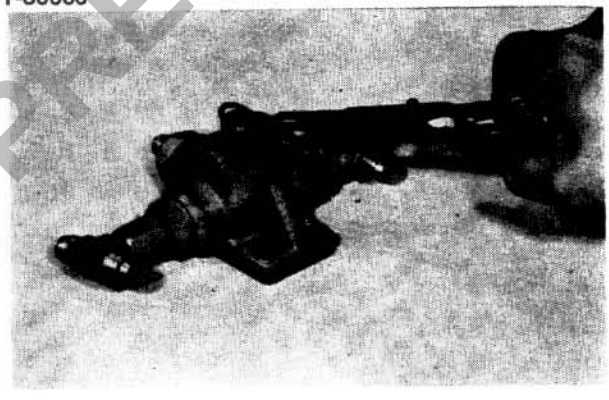
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2.4.3.4 NEUTRAL LOCK CHECK VALVE
The neutral lock check valve is located to the left side of the operator's seat. The function of this valve is to prevent the flow of oil to either direction clutch when lever is in the locked (up) position.

2.4.3.4.1
Remove pin from valve shaft.

T-86666



2.4.3.4.2
Remove snap ring from shaft.

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T-88309



2.4.2.3.60.2
Remove high range gear and piston housing from clutch assembly.

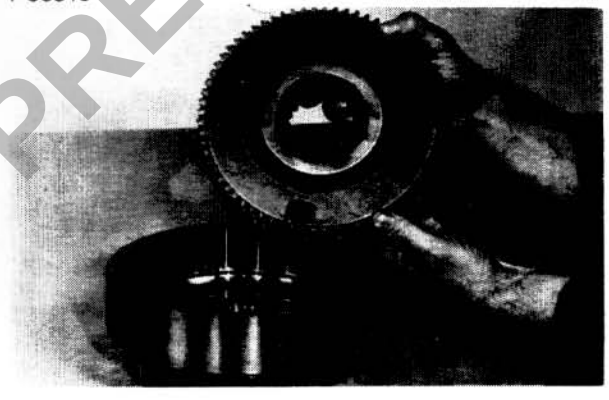
T-88311



2.4.2.3.60.3
Remove high range piston from piston housing.

2.4.2.3.60.4
Check piston and housing to insure they are within specifications. Install a new seal ring on piston and piston housing hub; reinstall piston in housing.

T-88310



2.4.2.3.60.5
Remove high range clutch hub and pack from clutch drum.

NOTE: Should replacement of the bearings in the clutch drum assembly be necessary, it is important that the thrust washer with drilled lube holes be properly reinstalled with the inside bevel edge facing away from the bearings.

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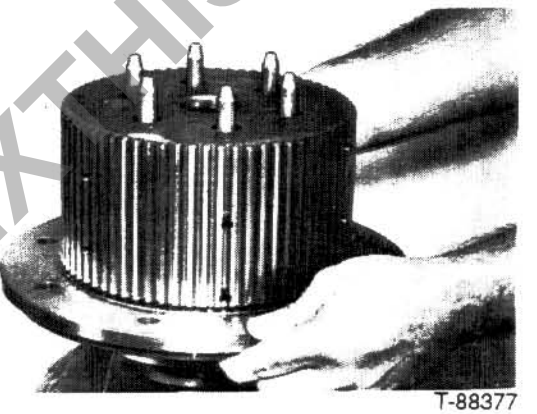
4.4.1.6.5
Install outer springs.

T-88375



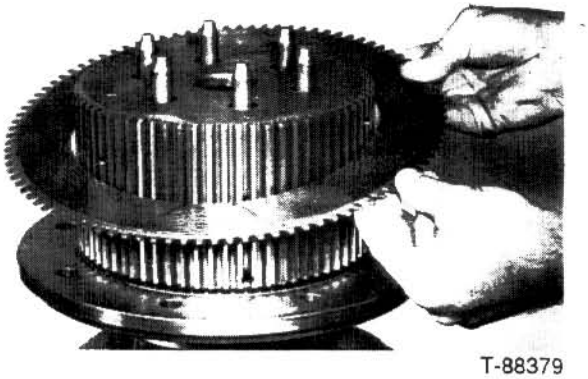
4.4.1.6.6
Install drive disc on drum.

T-88376



4.4.1.6.7
Install the clutch stack on the drum alternating internal and external toothed clutch plates. Begin with an external toothed disc against the drive.

T-88377



4.4.1.6.8
Install pressure plate.

T-88379



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4.6.3 STEERING FILTER

GENERAL

Pump intake filter	Full flow, metallic element with magnetic rod
Bevel gear housing oil return filter	By-pass type, spin-on
Filter mesh size	15 microns

4.6.4 BRAKES

GENERAL

Type	Full wrap around, oil-bath
Lining sections	5 each break
- Width	90 mm
- Thickness	5.85 ÷ 6.15 mm
- Wear limit	3.5 mm
Steering clutch drum O.D.	340 mm
Lining contact around drum	349°

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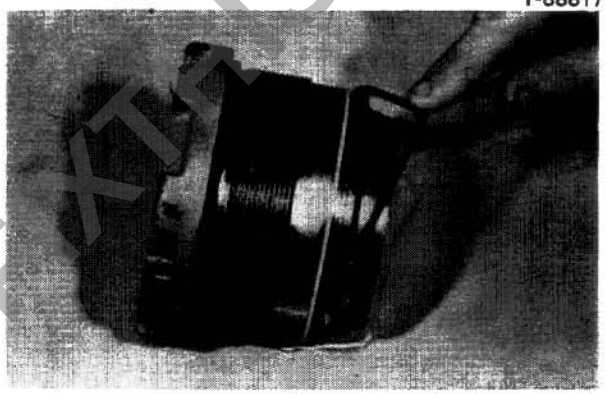
5.4.5.7.10
Remove the three seals from inside the head.

T-88816



5.4.5.7.11
Remove the seals from the outside of the head.

T-88817



5.4.5.8 CYLINDER ASSEMBLY

5.4.5.8.1
Assembly of the cylinder is reverse procedure of disassembly with the following exceptions.
5.4.5.8.2
Install all new bushings, seals and o-rings.
5.4.5.8.3
On the dozer lift and tilt cylinders, reassemble the limit travel valve components into the same position that they were removed and install the piston on the cylinder rod, also in the same position that it was removed, with seals

ble the dozer cylinder quick drop valve compo-
the same position they were removed and the
o assembly onto the cylinder, also in the same
hat it was removed.

5.4.5.8.4
Reassem
nents into
quick drop
position th

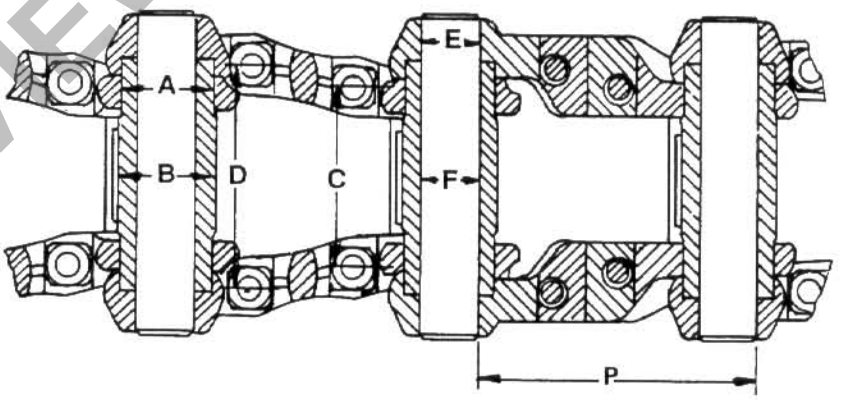
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6.6 SPECIFICATIONS

6.6.1 TRACK CHAIN

-	Track number	41
-	Tension (sag between idler & carrier roller)	30 ÷ 40 mm (1,18 ÷ 1,57")
A.	Bushing bore I.D. - Bushing O.D. (at link) - Bushing interference fit	61.69 ÷ 62.79 mm (2.429 ÷ 2.433") 61.97 ÷ 62.10 mm (2.440 ÷ 2.445") 0.18 ÷ 0.41 mm (0.007 ÷ 0.016")
B.	Bushing O.D. (at sprocket)	64.90 ÷ 65.10 mm (2.555 ÷ 2.563")
C.	Bolt hole spacing	124 mm (4.882")
D.	Bolt hole spacing	152 mm (5.984")
E.	Pin bore I.D. - Pin O.D. - Pin-to-bushing clearance	39.73 ÷ 39.80 mm (1.564 ÷ 1.567") 39.98 ÷ 40.08 mm (1.574 ÷ 1.578") 0.18 ÷ 0.35 mm (0.007 ÷ 0.014")
F.	Bushing I.D. - Pin O.D. - Pin to bushing clearance	40.25 ÷ 40.75 mm (1.585 ÷ 1.604") 39.98 ÷ 40.08 mm (1.574 ÷ 1.578") 0.17 ÷ 0.77 mm (0.007 ÷ 0.030")
P.	Step - Wearing limit	190 mm (7.48") 193.5 mm (7.618")



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