

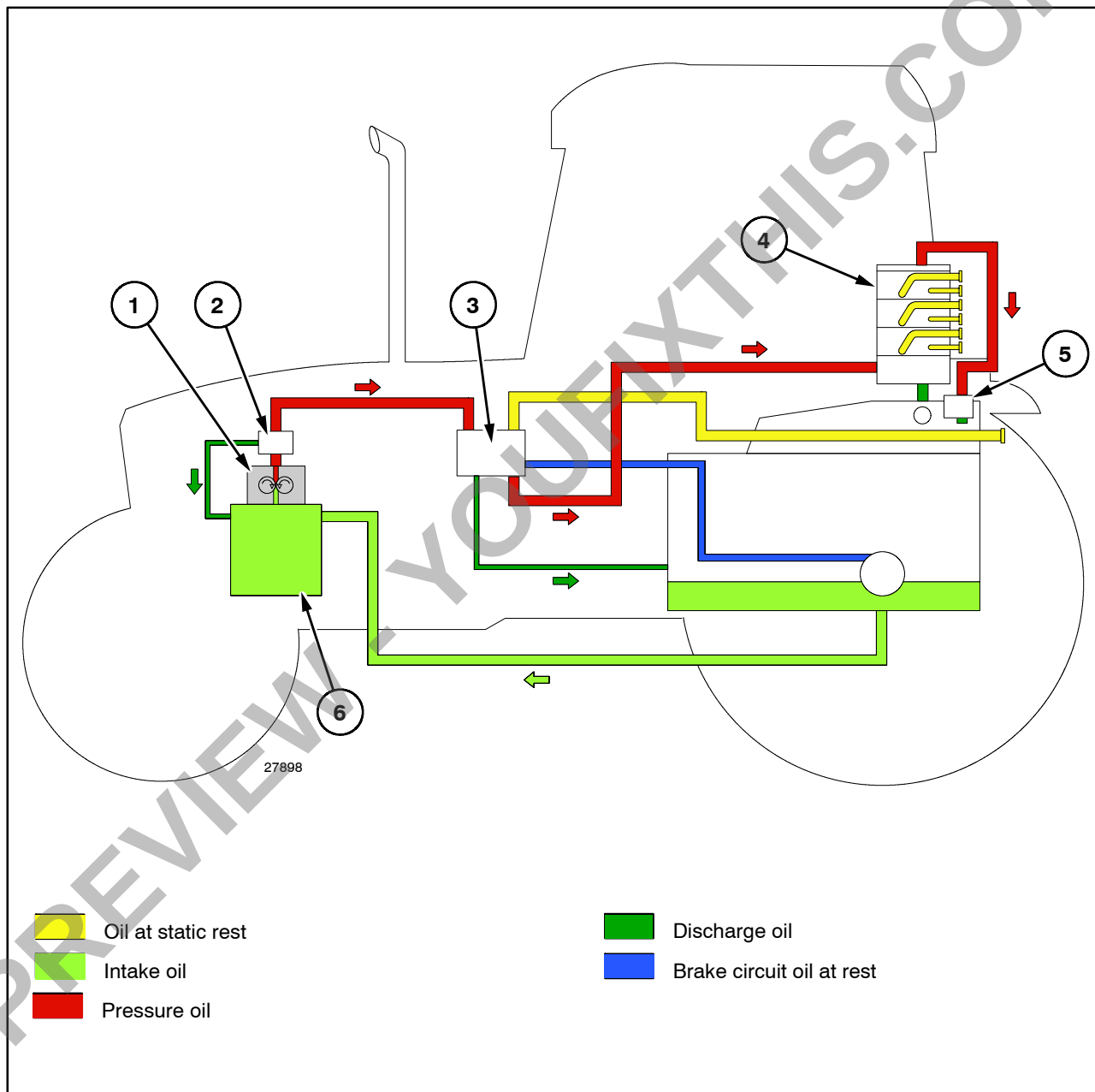
DESCRIPTION AND OPERATION

The mechanical lift can operate with controlled position and draft, and with mixed control.

The lift is controlled by two special levers located on the operator's right-hand side. It also features the Fast Raise/Lower device which raises and lowers the implement without having to use the position and draft control levers.

Draft control is performed by the flex bar, positioned in the seat mounted in the rear transmission housing.

The lower lift arms and corresponding control rods are connected to the flex bar.



10

HYDRAULIC LIFT CIRCUIT

- | | |
|---------------------------|-----------------------------------|
| 1. Hydraulic Pump. | 4. Rear auxiliary control valves. |
| 2. Pressure relief valve. | 5. Lift hydraulic control valve. |
| 3. Trailer brake valve. | 6. Filter. |

MINIMUM HARDWARE TIGHTENING TORQUES

IN NEWTON-METERS (FOOT POUNDS) FOR NORMAL ASSEMBLY APPLICATIONS

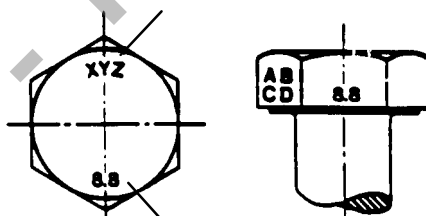
METRIC NON-FLANGED HARDWARE AND LOCKNUTS

NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCKNUT CL.8 W/CL8.8 BOLT
	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	UNPLATED	PLATED W/ZnCr	
M4	1.7 (15)*	2.2 (19)*	2.6 (23)*	3.4 (30)*	3.7 (33)*	4.8 (42)*	2.3 (20)*
M6	5.8 (51)*	7.6 (67)*	8.9 (79)*	12 (102)*	13 (115)*	17 (150)*	7.8 (69)*
M8	14 (124)*	18 (159)*	22 (195)*	28 (248)*	31 (274)*	40 (354)*	19 (169)*
M10	28 (21)	36 (27)	43 (32)	56 (41)	61 (45)	79 (58)	38 (28)
M12	49 (36)	63 (46)	75 (55)	97 (72)	107 (79)	138 (102)	66 (49)
M16	121 (89)	158 (117)	186 (137)	240 (177)	266 (196)	344 (254)	164 (121)
M20	237 (175)	307 (226)	375 (277)	485 (358)	519 (383)	671 (495)	330 (243)
M24	411 (303)	531 (392)	648 (478)	839 (619)	897 (662)	1160 (855)	572 (422)

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION HEX CAP SCREW AND CARRIAGE BOLTS CLASSES 5.6 AND UP

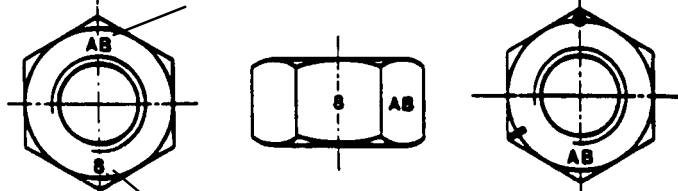
MANUFACTURER'S IDENTIFICATION



PROPERTY CLASS

HEX NUTS AND LOCKNUTS CLASSES 05 AND UP

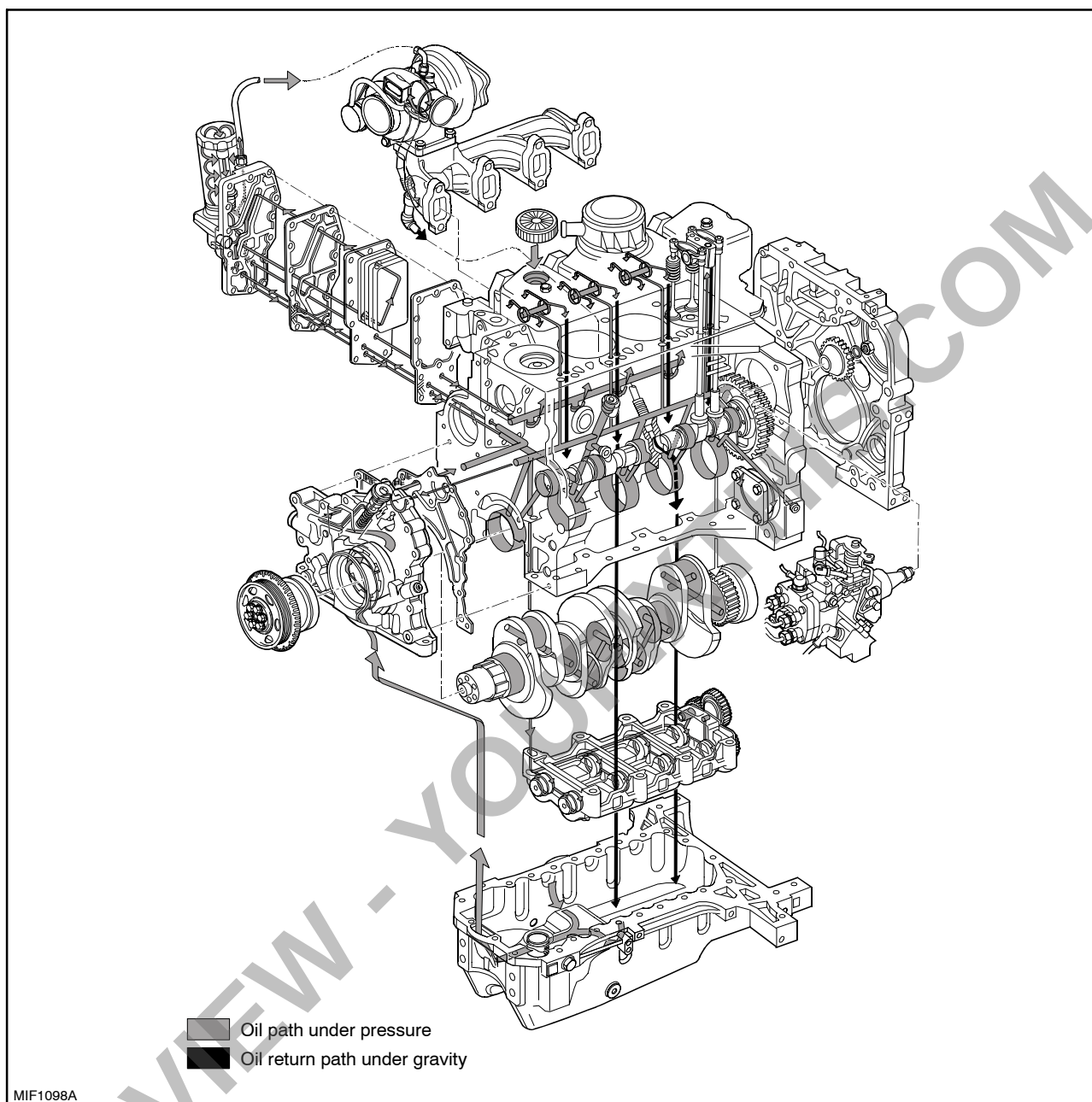
MANUFACTURER'S IDENTIFICATION



PROPERTY CLASS

CLOCK MARKING

86529681 REV F 5.1



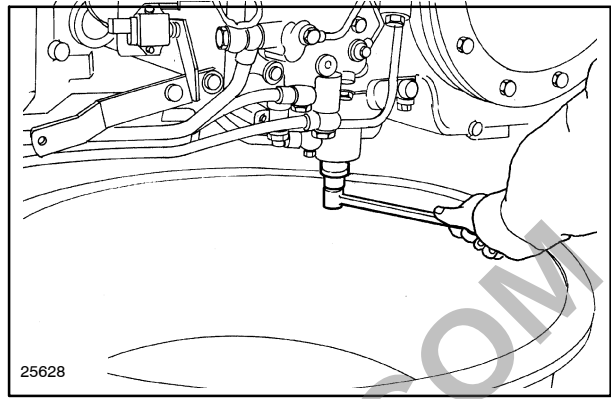
2

Engine lubrication diagram

Forced-circulation lubrication is accomplished by the following components:

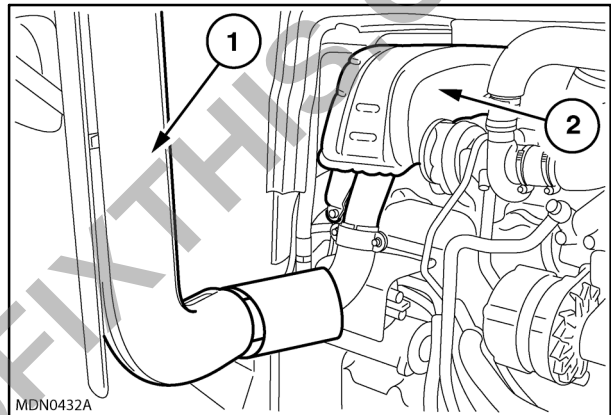
- oil pump, housed at the front of the crankcase, driven by the grooved bushing keyed onto the shank of the crankshaft;
- water / oil cooler, housed in the crankcase;
- oil pressure control valve incorporated in the cooler assembly;
- by-pass valve to cut off clogged oil filter, incorporated in the cooler assembly;
- cartridge oil filter.

5. Unscrew the plug and drain the oil from the rear transmission casing (the prescribed quantity is 42 liters [11 gallons]).



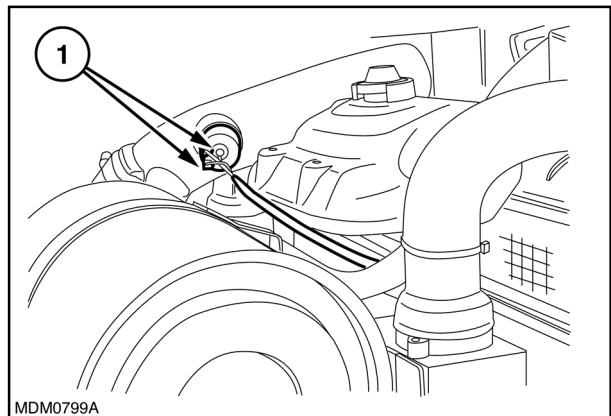
4

6. Unscrew the retaining bolts and remove the exhaust pipe and silencer.



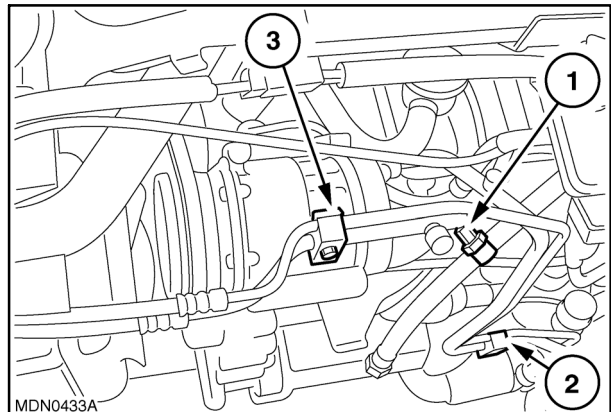
5

7. Disconnect the connections (1) from the clogged air filter sensor.

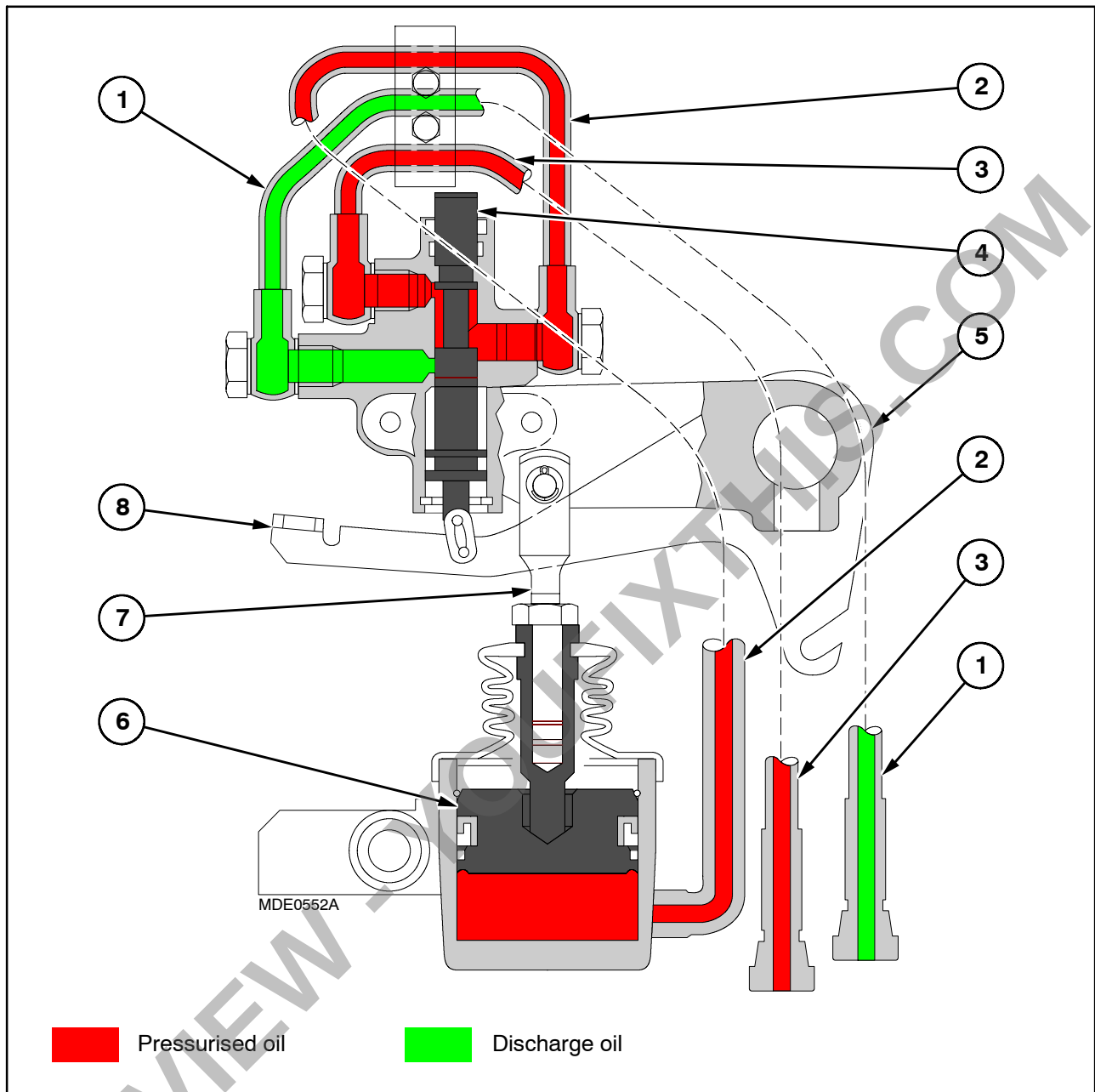


6

8. Disconnect the connection (1) and remove the cable. Unscrew the bolts and detach the fixing blocks (2 and 3) of the air-conditioning system pipes.



7



1

DESCRIPTION AND OPERATION

ENGAGING THE PTO CONTROL CLUTCH

The PTO clutch control system consists of a control lever (in the cab) and a cable connecting the lever to the servo control unit.

The servo control unit consists of a hydraulic control valve and piston.

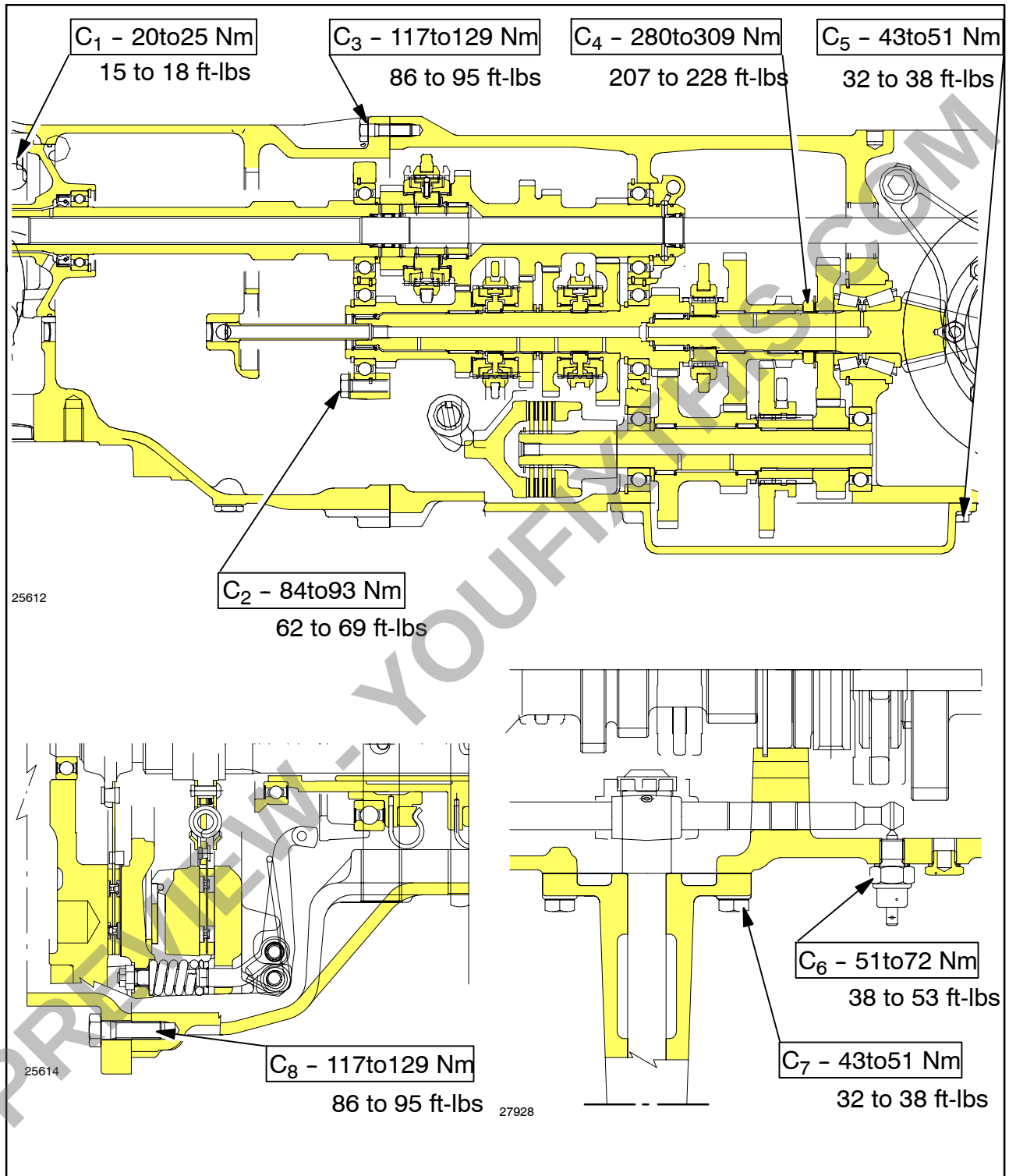
When the PTO clutch is engaged with the control lever in the cab, the connecting cable acts on the

lever (8) which, as it moves, pushes up the control valve drive pin (4).

When the pin (4) moves up it closes the hole leading to the oil discharge pipe (1).

The oil from the pump passes through line (3), line (2), and acts on the piston (6).

The piston (6), under an oil pressure of 15.7 (16) bar (kg/cm²) moves and, by means of tie-rod (7), moves lever (5), engaging the PTO clutch.



SPECIAL TOOLS

**WARNING**

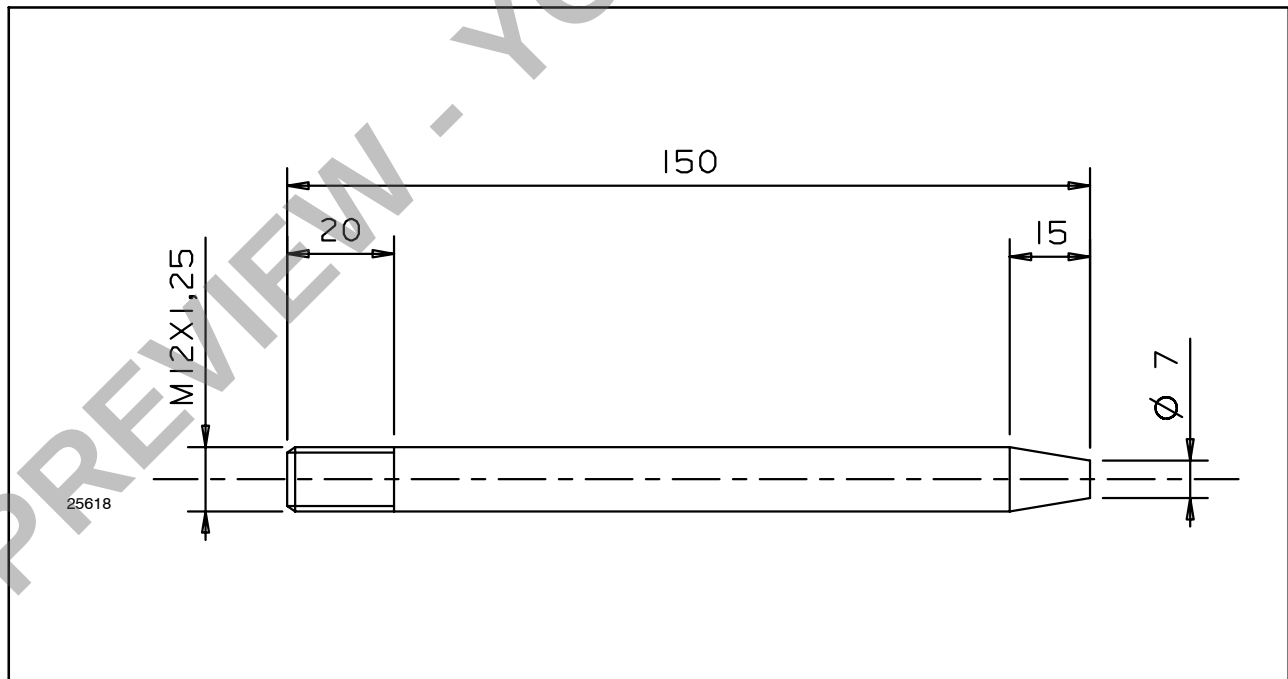
The operations described in this section can only be carried out with **ESSENTIAL** tools indicated by an (X).

To work safely and efficiently and obtain the best results, it is also necessary to use the recommended specific tools listed below and certain other tools, which are to be made according to the drawings included in this manual.

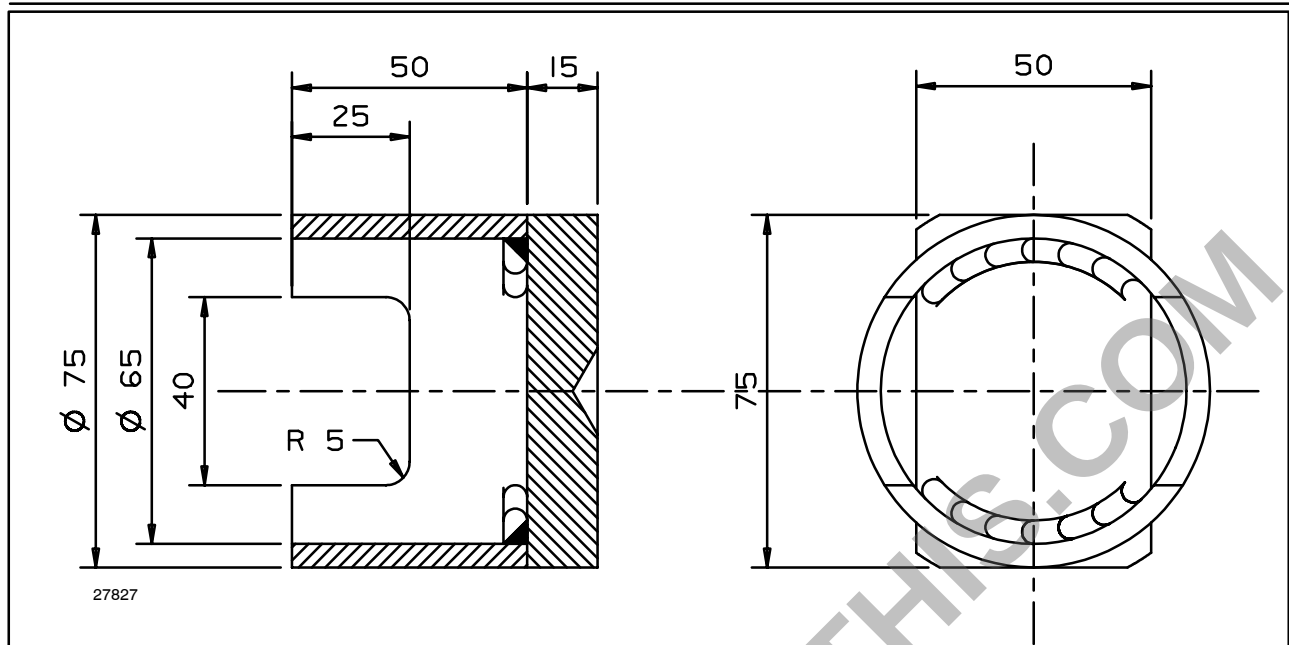
List of specific tools required for the various operations described in this Sect.

- 380000227** Clutch casing lift hook.
- 380000301** Turning stand for overhaul.
- X 380001614** Tool for gearbox driving and driven shafts adjustment.
- X 380001621** Driving shaft rod for lifting unit.
- X 380001616** Driven shaft retaining tool.

- X 380001610** Adjuster handle (with **380001620** and **380001609**).
- X 380001620** Power take-off drive shaft seal splining tool (with **380001610**).
- X 380001609** Power take-off drive shaft roller bearings splining tool (with **380001610**).
- X 380001617** Pliers for gearbox shafts circlips.
- X 380001618** Driving shaft assembly guide.
- X 380001619** Driven shaft fitting guide.
- X 380000171** Adaptor (with **380000291**).
- X 380000291** Tool for hydraulic clutch piston springs (with **380000171**).
- X 380000240** Hydraulic pressure testing kit.
- X 380000278** Hydraulic pressure testing kit.
- 50091** Tool for removal-installation final drives (see section 27).



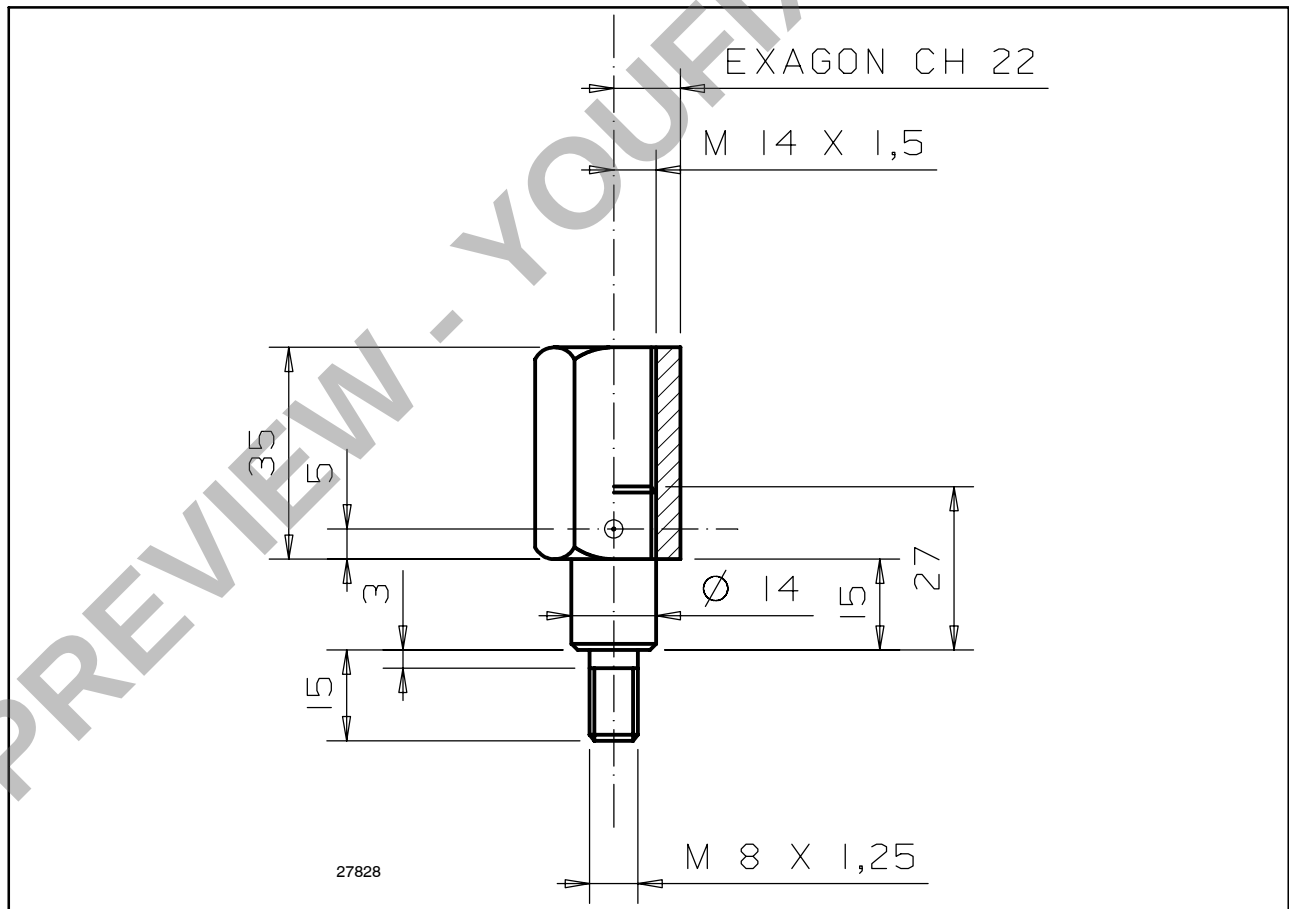
Guide pin for re-fitting the gearbox in the casing. (Mark part with no. 50158 - Measurements in mm)
Make in C 40 material.



2

Tool to make for drive gear unit spring removal (stamp no. 50161 on the tool - Measurements in mm)

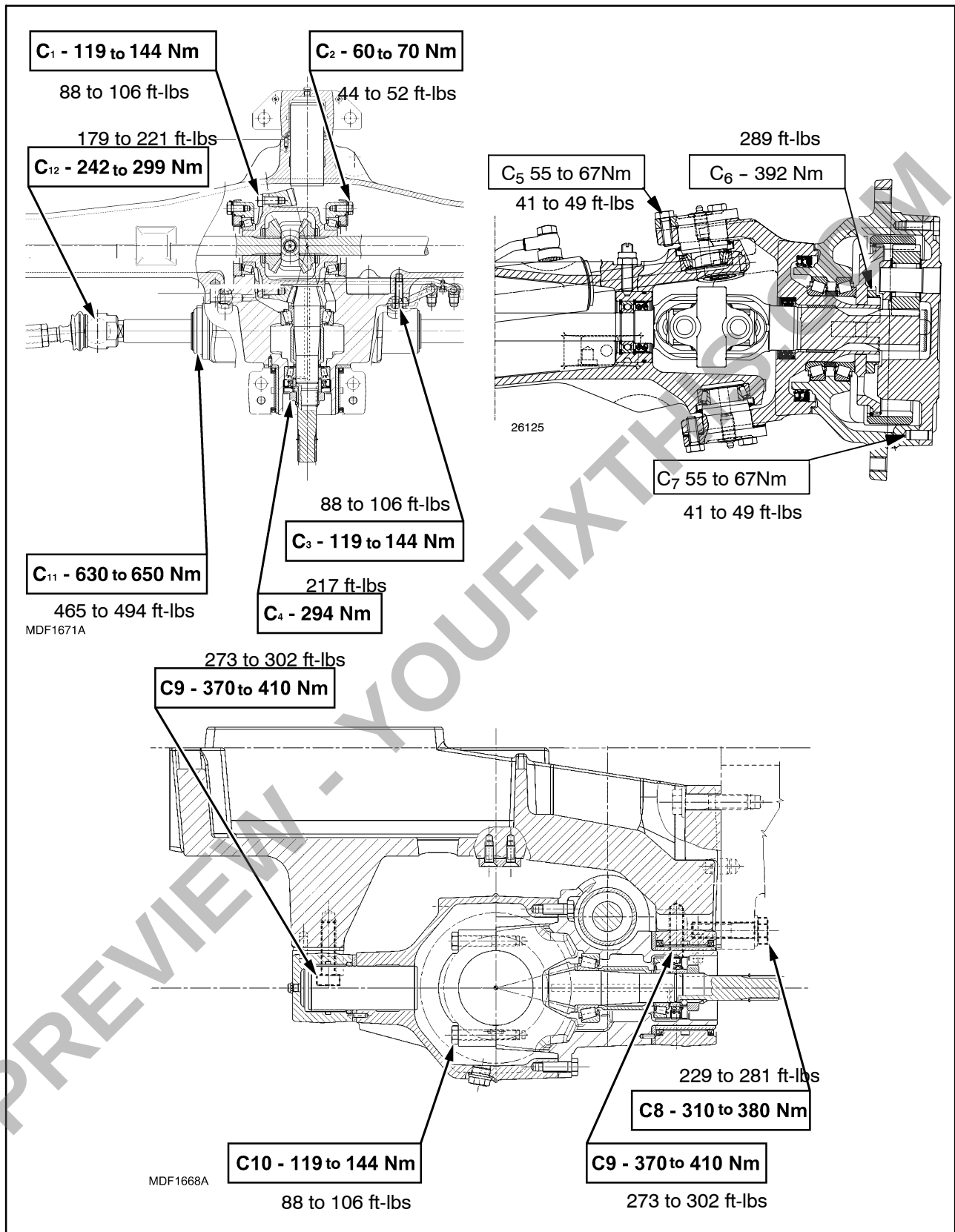
Make in Fe 42C material.

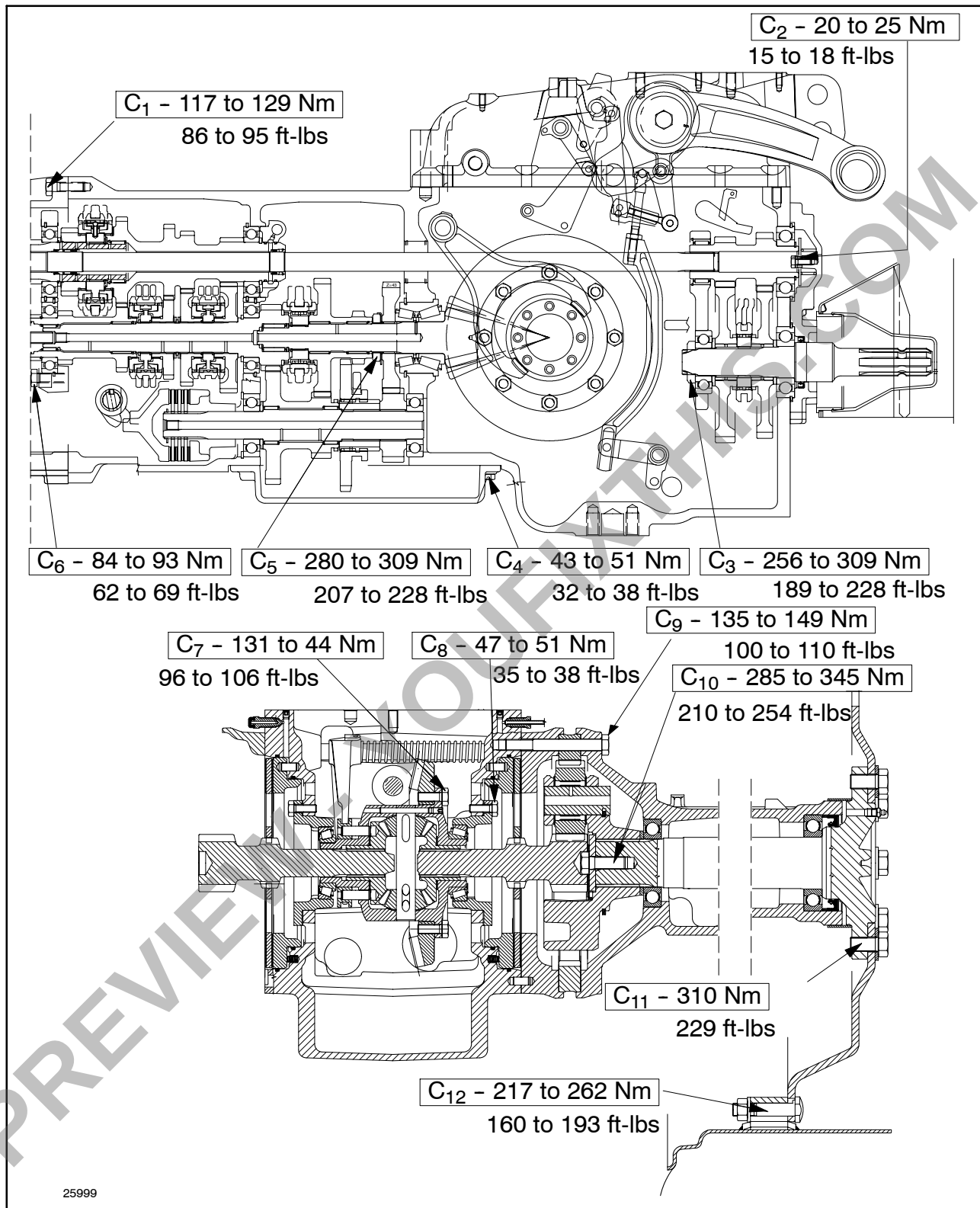


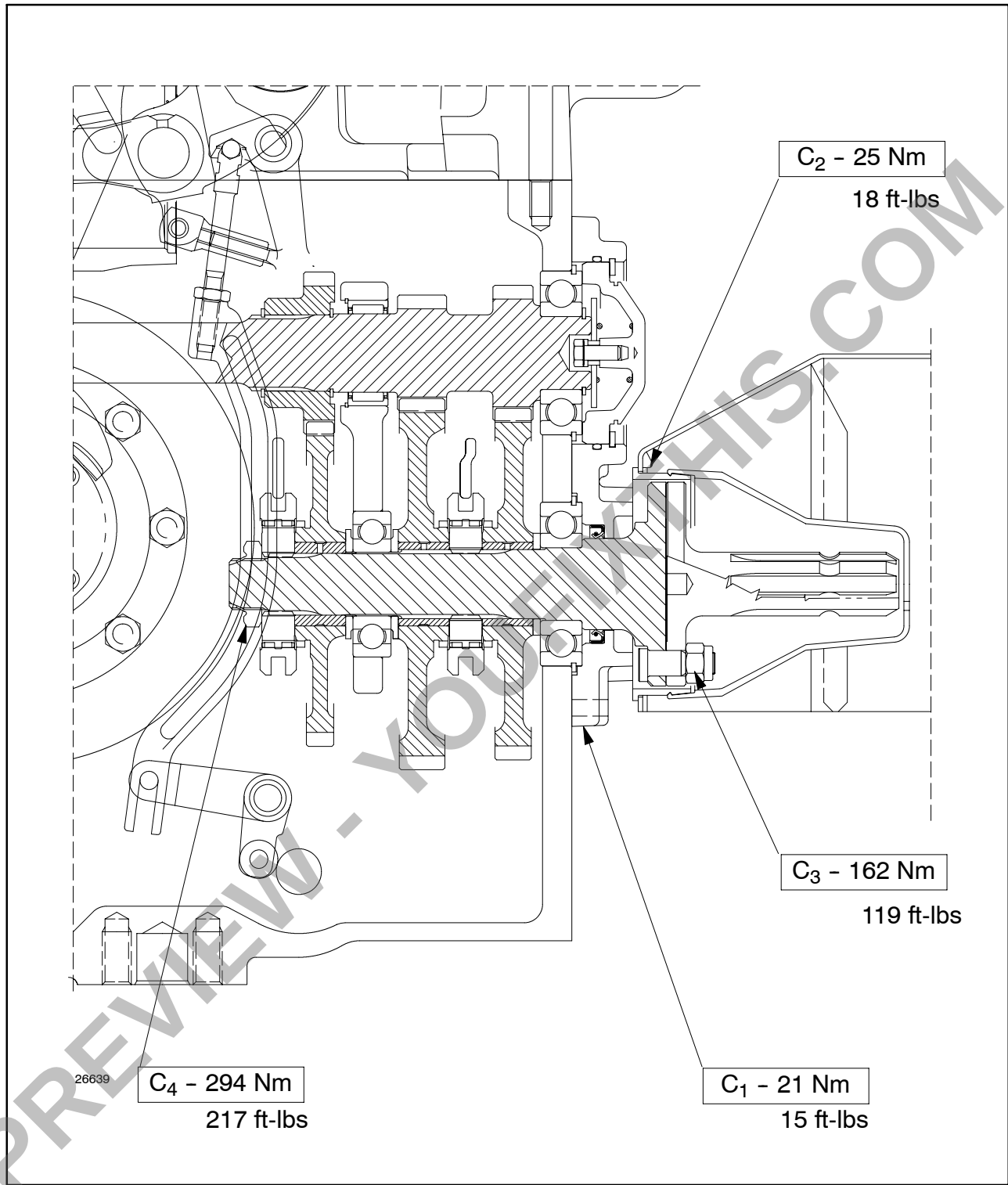
3

**Punch to make for gearbox driving shaft disassembly
(mark part with No. 50141 on the tool - Measurements in mm)**

Construct in C40 material - Pin 3 x 20 mm.

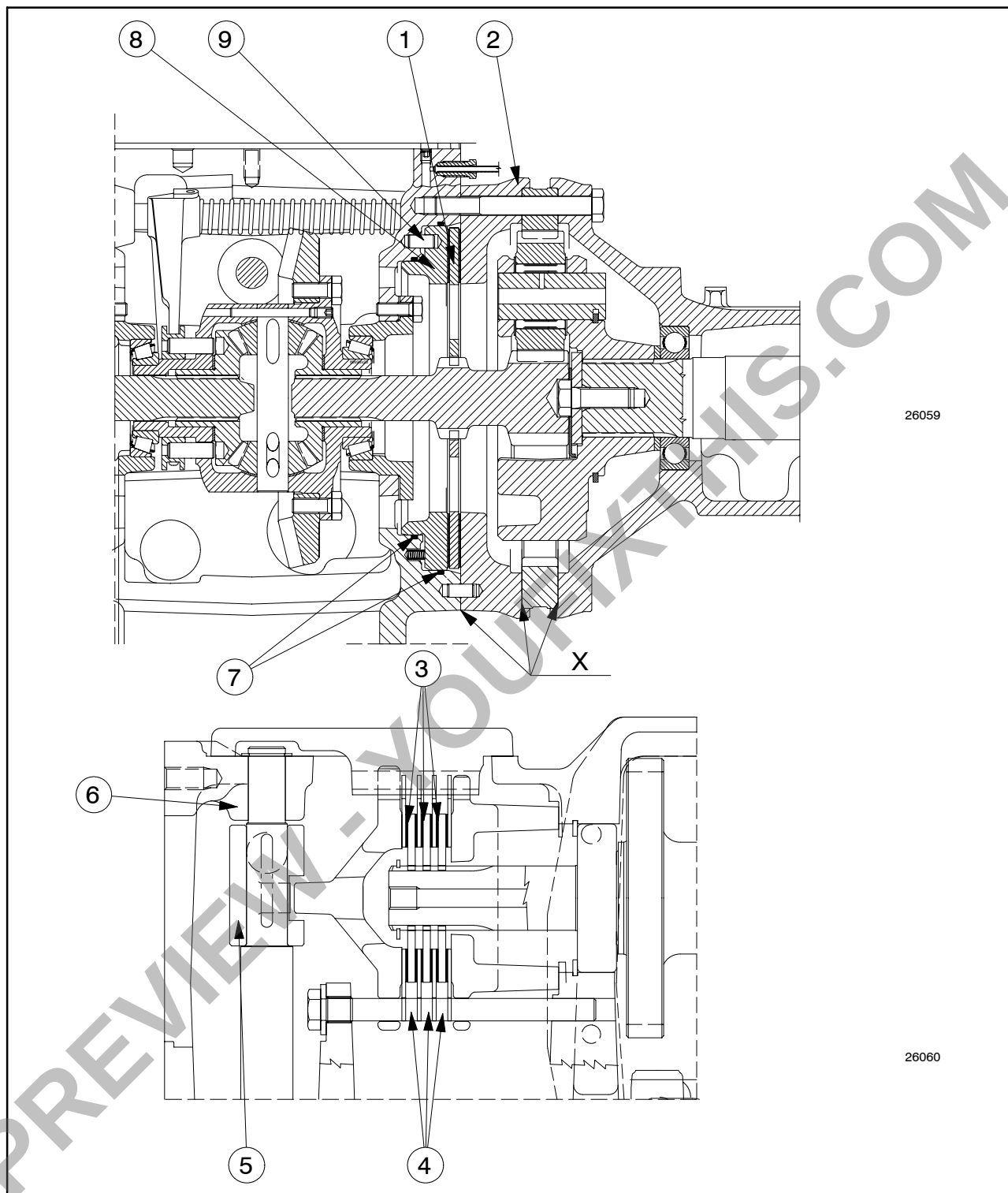






540/540E/1000 rpm power take-off

SECTIONAL VIEWS

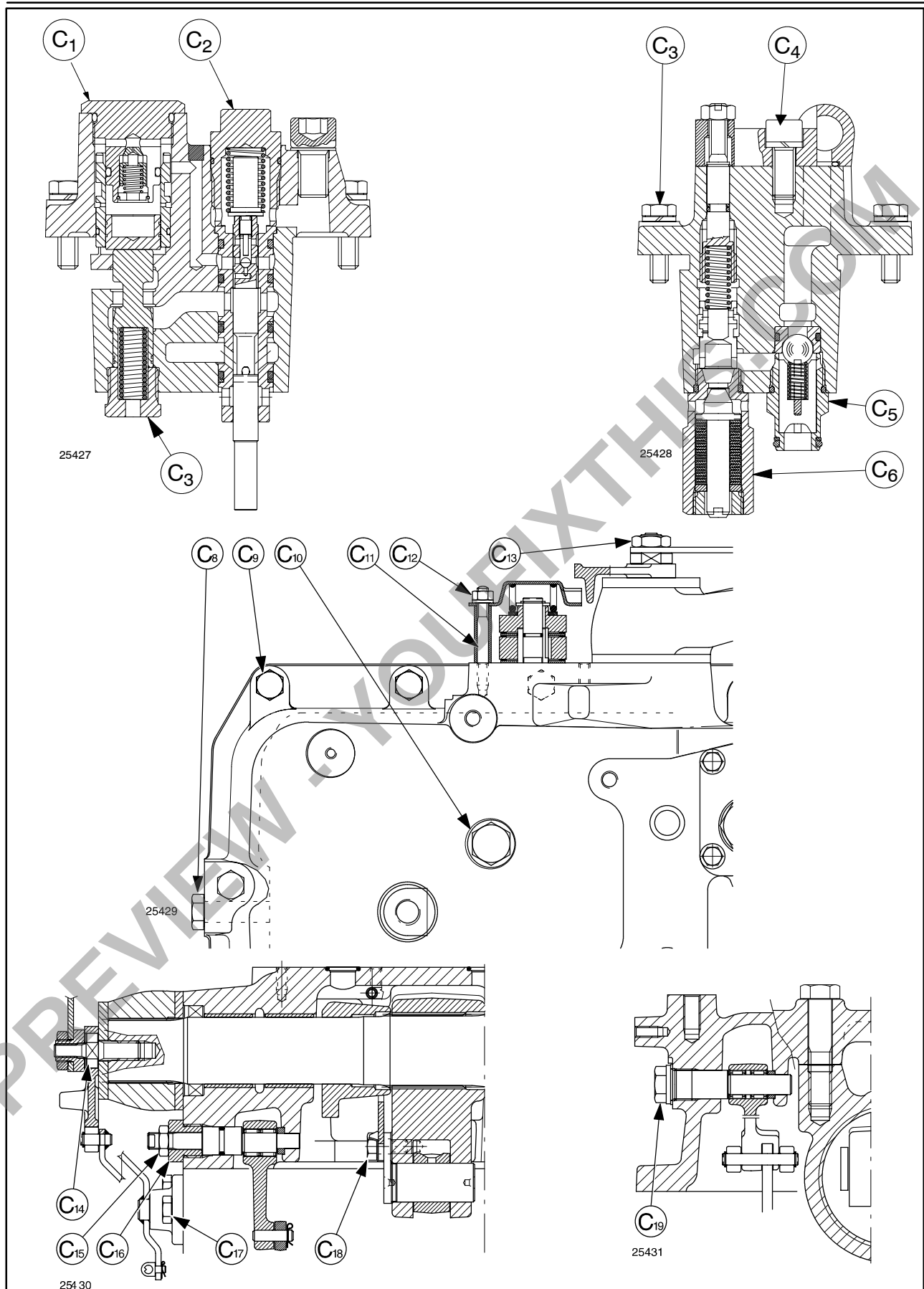


2

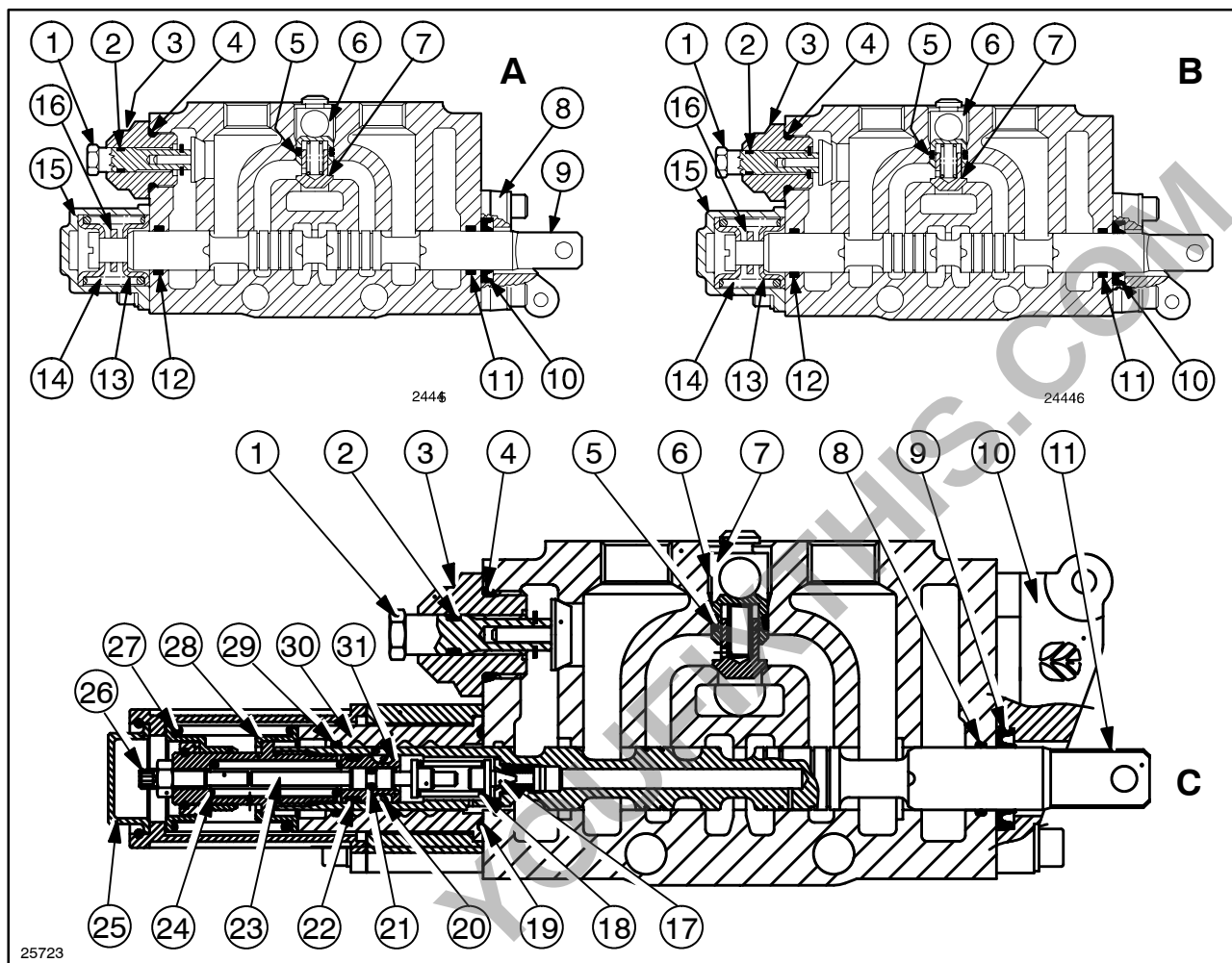
Service brake and parking brake sectional drawings

- | | |
|--|---------------------------|
| 1. Service brake disc. | 6. Parking brake support. |
| 2. Final drive casing spacer. | 7. Seals. |
| 3. Parking brake discs. | 8. Brake piston. |
| 4. Braking sectors. | 9. Guide grub screw. |
| 5. Parking brake internal control lever. | |

NOTE: When fitting apply sealing compound to surfaces **X** as shown on page 10.



SECTIONAL VIEWS



Auxiliary control valve cross-sectional views (fig. 1- 2- 3)

- | | |
|---|--|
| <p>A. Auxiliary control valve configured for operation of a double-acting cylinder.</p> <p>B. Auxiliary control valve configured for operation of a single-acting cylinder.</p> <p>C. Auxiliary control valve configured for operation of a single/double-acting cylinder with float control and automatic detent release.</p> <p>D. Auxiliary control valve configured for operation of a single/double-acting cylinder with automatic detent release.</p> <p>E. Auxiliary control valve configured for operation of a single/double-acting cylinder with switching float control</p> | <p>11. Control valve rod.</p> <p>12. Seal.</p> <p>13. End Cap.</p> <p>14. Control valve rod return spring.</p> <p>15. Cover.</p> <p>16. Spacer.</p> <p>17. Tapered needle.</p> <p>18. Spring.</p> <p>19. Seal.</p> <p>20. Coupling balls.</p> <p>21. Seal.</p> <p>22. Seal.</p> <p>23. Internal plunger.</p> <p>24. Spring.</p> <p>25. Cover.</p> <p>26. Detent release pressure adjuster screw.</p> <p>27. Control valve rod return spring.</p> <p>28. End Cap.</p> <p>29. Seal.</p> <p>30. Detent notch body.</p> <p>31. Ball support.</p> <p>32. Seal.</p> <p>33. Seal.</p> |
|---|--|
1. Single/double-acting operation switching valve.
 2. Seal.
 3. Valve retaining plug.
 4. Seal.
 5. Seal.
 6. Non-return valve seat.
 7. Non-return valve.
 8. Seal.
 9. Seal.
 10. Control support.

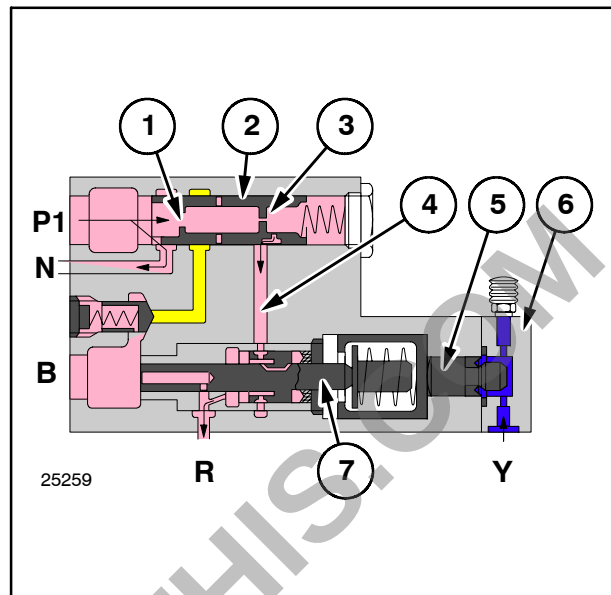
TRAILER BRAKES OFF

With the trailer brakes off, the oil from the hydrostatic circuit connected to the control valve by union (Y) is not pressurised and therefore the piston (5) of the pilot valve (6) and the spool (7) are in the rest positions indicated in fig. 2.

The oil from the hydraulic pump arrives at the union (P₁), passing through the diaphragm (1) and the pressure in the restriction (3) drops, thereby causing the flow control element (2) to shift to the right.

The majority of the oil flows through the union (N) to the auxiliary control valves, while the rest of the oil is discharged to the hydraulic lift through the line (4), the stem (7) and the union (R).

- Pressurised oil
- Oil in suction, delivery or return
- Oil at static rest
- Tractor brake circuit oil at rest
- Pressurised tractor brake circuit oil



2

Trailer brakes off.

- N. To the auxiliary control valves.
- P₁. From the hydraulic pump to the lift circuit.
- R. To the lift return line.
- Y. From the tractor brakes.

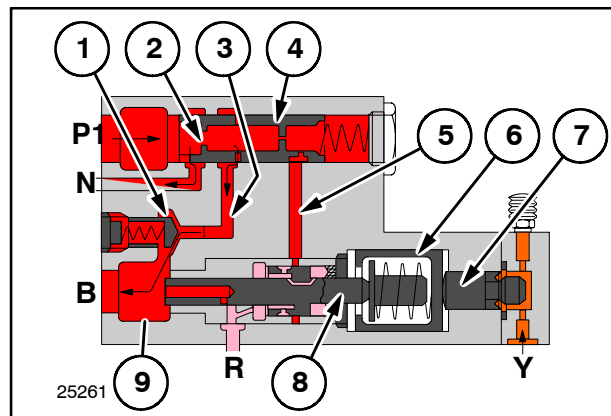
START OF BRAKING

On operating the tractor brake pedals, the oil of the hydrostatic circuit in port (Y) is pressurized and thus shifts the piston (7) to the left, the pressure limiter (6) and the stem (8) which closes the passage between the oil return port (R), trailer brake port (B) and the line (5).

The oil inside the flow control valve (4) is maintained at a uniform pressure, allowing the valve element, under the action of the spring, shifts to the left to assume the position indicated in fig. 3.

The oil from the hydraulic pump in the union (P₁) partly flows to the auxiliary control valves through the union (N) while the remainder flows to the trailer braking device via the diaphragm (2), line (3), check valve (1) and union (B).

As the pressure of the oil in the trailer brake port (B) increases, it acts on the active surface (9) of the spool (8), opposing the pressure applied on piston (7) by the oil in the hydrostatic tractor brake circuit.



3

Start of braking.

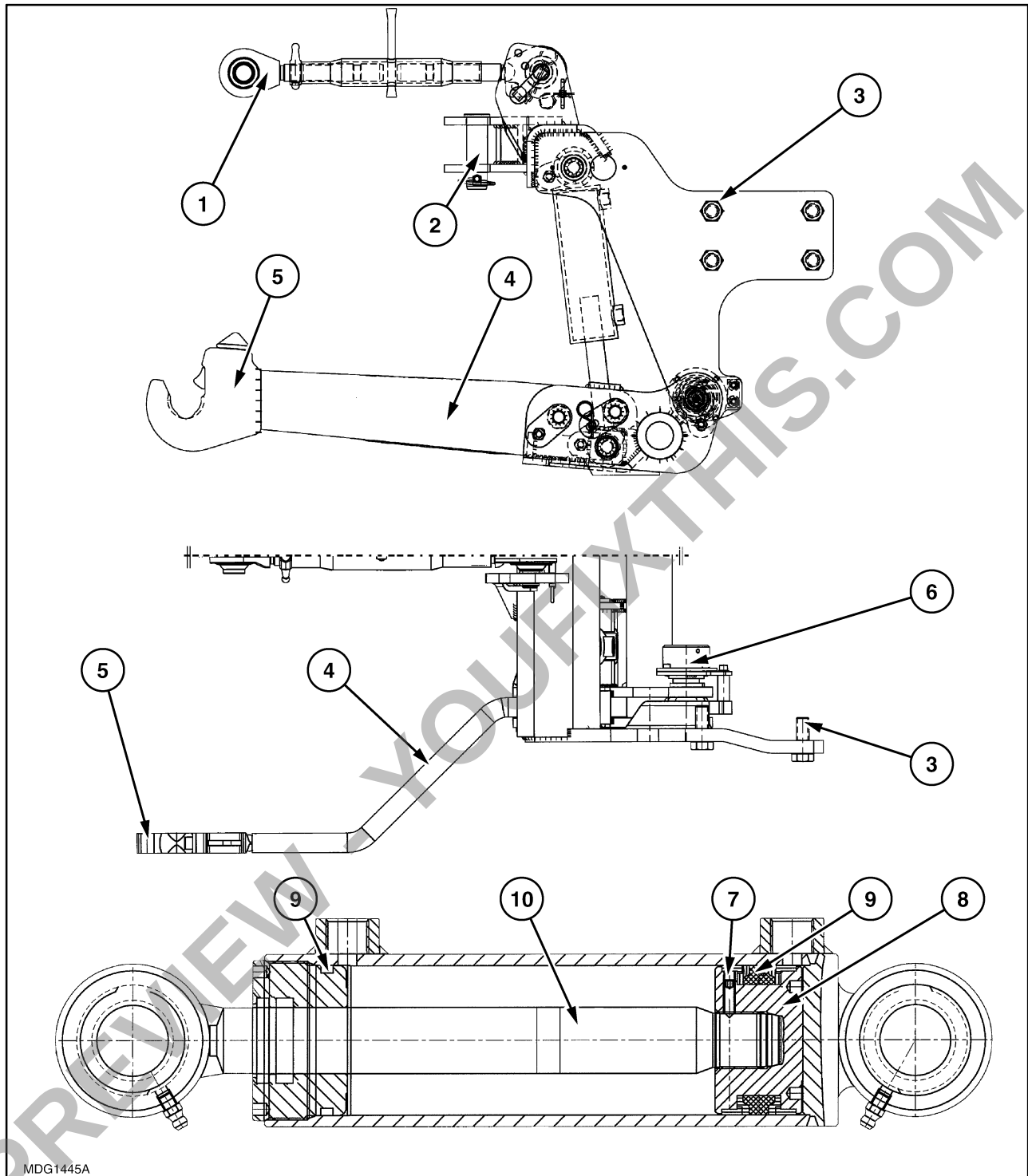
- B. To the trailer brake.
- N. To the auxiliary control valves.
- P₁. From the hydraulic pump to the lift circuit.
- R. To the return line in the lift.
- Y. From the tractor brakes.



Bracket to be made for overhauling lift to rotating stand (mark tool with No. 50155 - measurements in mm)
Make in Aq 42 material - (*) Area for fixing bore to rotating stand.



**Modification to make to a 36 mm wrench for removing, overhaul and re-fitting the controlled draft sensor
(mark tool with No. 50155 - measurements in mm)**



Longitudinal sectional views of the front lift assembly.

- | | |
|--|-----------------------------------|
| 1. Third point. | 6. Arm lift detection device. |
| 2. Tractor tow hook. | 7. Rod to plunger security dowel. |
| 3. Bolts securing assembly to chassis frame. | 8. Piston. |
| 4. Lift lower arm. | 9. Seals. |
| 5. Lower arms quick hitch. | 10. Link rod. |

DESCRIPTION AND OPERATION

OPERATION

Neutral Position

When the steering wheel (V, fig. 2) is not moving, the rotating valve (5) is located in the neutral position in relation to the sleeve (6). In this position, retained by springs (2, sect. A-A), the following occurs:

- the pin (1, sect. B-B) will be in the central position in relation to the holes on the valve (5);
- the ducts (13 and 14) are aligned (sect. C-C) and the oil, from the pump (P), flows freely to and from the reservoir;
- the grooves (15, 17 and 19) on valve (sect. D-D, E-E) are not aligned with the ducts (16, 18 and 20) on the sleeve, therefore all connecting lines with the cylinder remain closed (See diagrams A and d, fig. 2 and 3).

Right-hand Steering Control**B, R-ht, e, f, (see figure 2 and 3).**

By turning the steering wheel (V) clockwise, the springs (2, sect. A-A) allowing the valve (5) to rotate in relation to the sleeve (6), until the clearance G1 is recovered (sect. B-B).

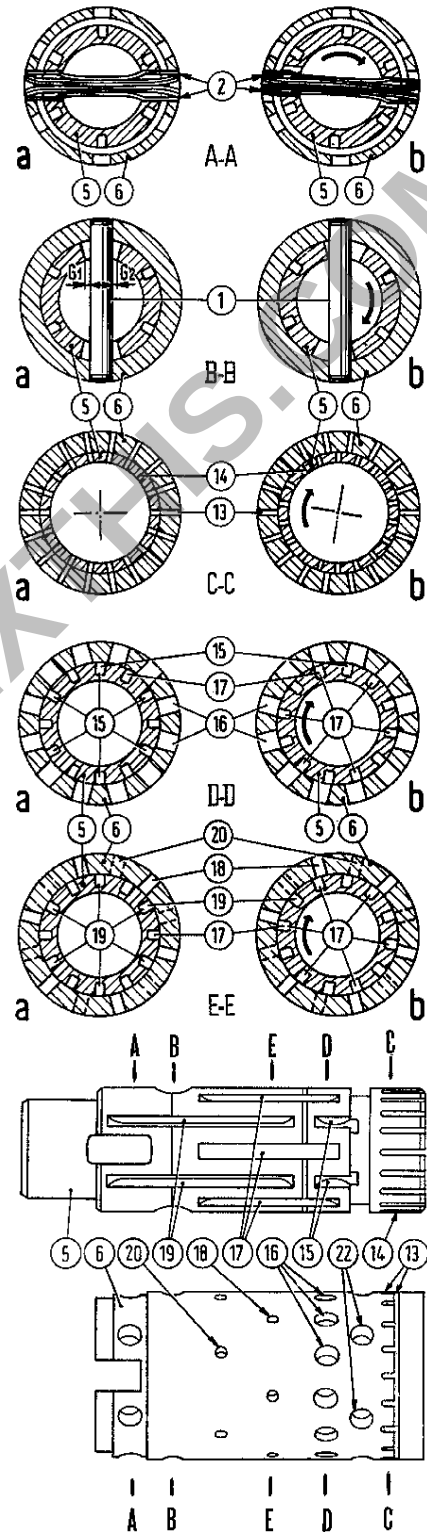
Under these conditions the following occurs:

- the ducts are not aligned (13 and 14, sect. C-C), therefore the oil discharge flow is interrupted;
- the six grooves are aligned (15, sect. D-D) with the same number of ducts (16), that are connected with the compartments on the rotor in the suction phase;
- the six delivery grooves are aligned (17, sect. E-E) with the ducts (18) connected to the cylinder and, at the same time, the grooves are aligned with the remaining ducts (16, sect. D-D), that are connected with the compartments on the rotor in the delivery phase;
- the six discharge grooves (19) are aligned with the ducts (20, sect. E-E) connecting to the cylinder.

Once the clearance (G1) has been recovered, the valve (5) rigidly transmits the steering wheel rotation to the sleeve (6) and rotor (9, fig. 2), by means of the pin (9) and shaft (11).

The details (e, f, fig. 3), illustrate how the mechanism operates at the start of a turn to the right and after a certain number of steering wheel rotations.

Note that there is an uninterrupted connection between the oil from the pump with the compartments on the rotor in the suction phase (and with oil when the compartments on the rotor are in the delivery phase) and the relative duct connected to the cylinder.



15714

1

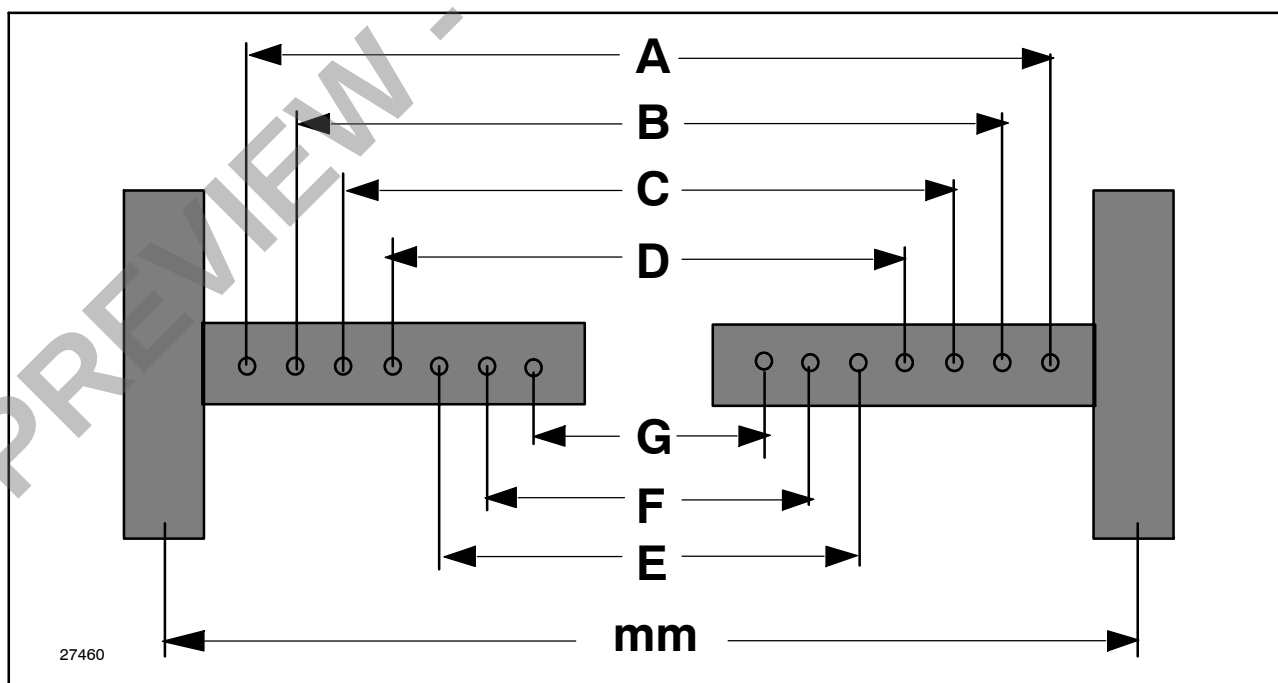
Hydrostatic steering operation sectional view

a. Cross-sectional views with the valve (5) in the neutral position - b. Cross-sectional views with the valve (5) rotated for a right-hand turn (for a left-hand turn, the valve rotates symmetrically in the opposite direction) - G1 and G2. Clearances between pin (1) and hole on valve (5) - 1. Pin driving sleeve (6) and shaft (11) - 2. Sleeve return springs (6) - 5. Rotating valve - 6. Valve seat sleeve (5) - 13 and 14. Oil lines in neutral position - 15. Delivery grooves (no.6) to the rotor compartments on suction - 16. Lines (no.12) communicating alternately with the grooves (15 and 17) - 17. Delivery grooves (no.6) to the cylinder communicating with the rotor compartments on delivery and lines (18 and 20) - 18. Cylinder right-hand chamber discharge or delivery lines (no.6) - 19. Cylinder discharge grooves (no.6) communicating with the lines (18 and 20) - 20. Cylinder left-hand chamber discharge or delivery lines (no.6) - 22. Supply lines for grooves (15).

(overleaf)

Models	Tires	Wheel tracks - mm (in.)						
		A	B	C	D	E	F	G
85C 95C	6.0016	1349 (53.11)	1449 (57.05)	1549 (60.98)	1649 (64.92)	1749 (68.86)	1849 (72.80)	1949 (76.73)
	6.5-16							
	6.50-16 F2							
	7.50-16	1357 (53.43)	1457 (57.36)	1557 (61.30)	1657 (65.24)	1757 (69.17)	1857 (73.11)	1957 (77.05)
	7.50-16 F2							
	9.15L 15 F2	1431 (56.34)	1531 (60.28)	1631 (64.21)	1731 (68.15)	1831 (72.09)	1931 (76.02)	2031 (79.96)
	27X9.5-15 F2							
	27X9.5-15 HF							
	11L-15 I1							
	11L-15 F3							
	25/10LLX15 TT							

2WD front wheel track diagram



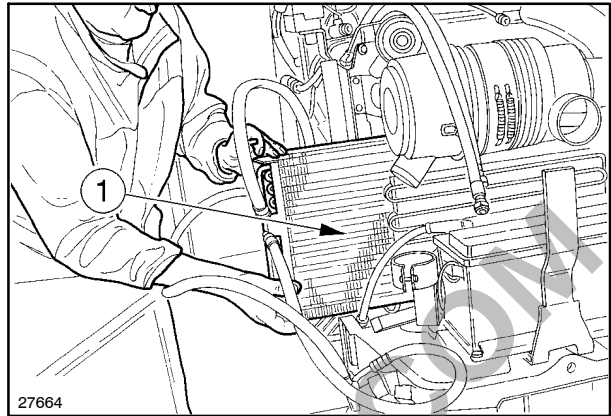
Condenser

The condenser (1) is the system component in which the refrigerant vapor condenses to form a liquid.

The condenser works in similar way to the engine cooling radiator, allowing the vapor to give up heat to the external air.

It comprises a series of inner tubes through the refrigerant flows and a outer shell consisting of a series of thin aluminium fins which increase the surface area in contact with the cooling air flowing through the condenser.

The condenser radiator is fitted under the engine bonnet, in front of the engine radiator. This is the ideal position to take full advantage of the air flow from the radiator cooling fan, necessary for heat exchange.

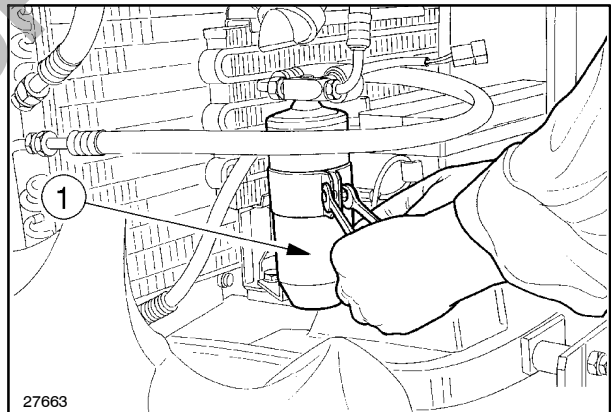


4

Dryer Filter

The filter/dryer (1) is fitted under the engine bonnet, positioned between the condenser and the expansion valve, performs two basic functions, acting as a filter to remove solid and liquid particles from the refrigerant and as a temporary storage container during variable charge stages.

It is important to eliminate water from the system to prevent corrosion and consequent damage to the components.

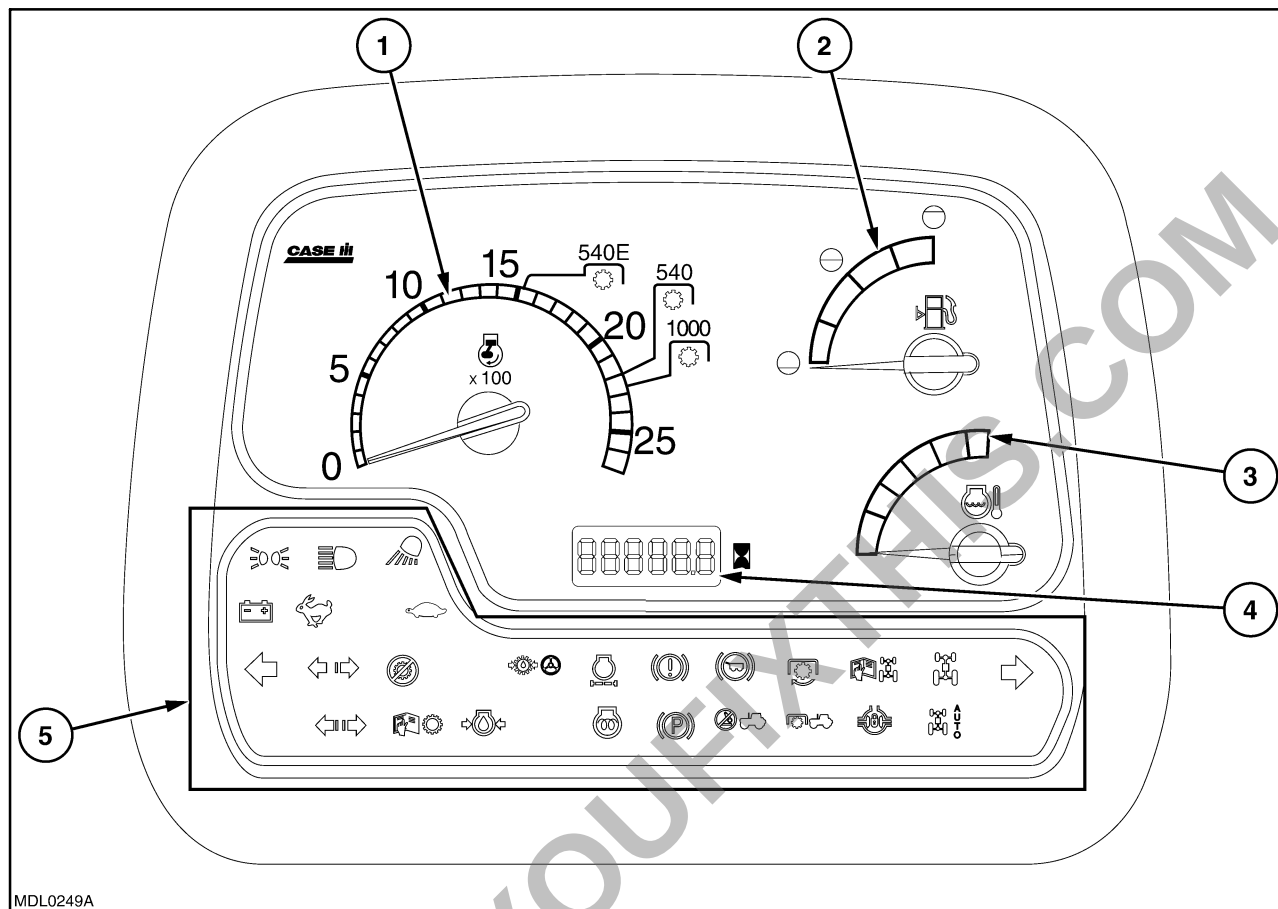


5

The filter therefore contains substances capable of absorbing humidity.

Solid particles, such as grit, metal particles produced by the mechanical wear of the compressor, oxides, etc., can also damage the system and so the filter incorporates screens to retain them.

ANALOG CONTROL PANEL

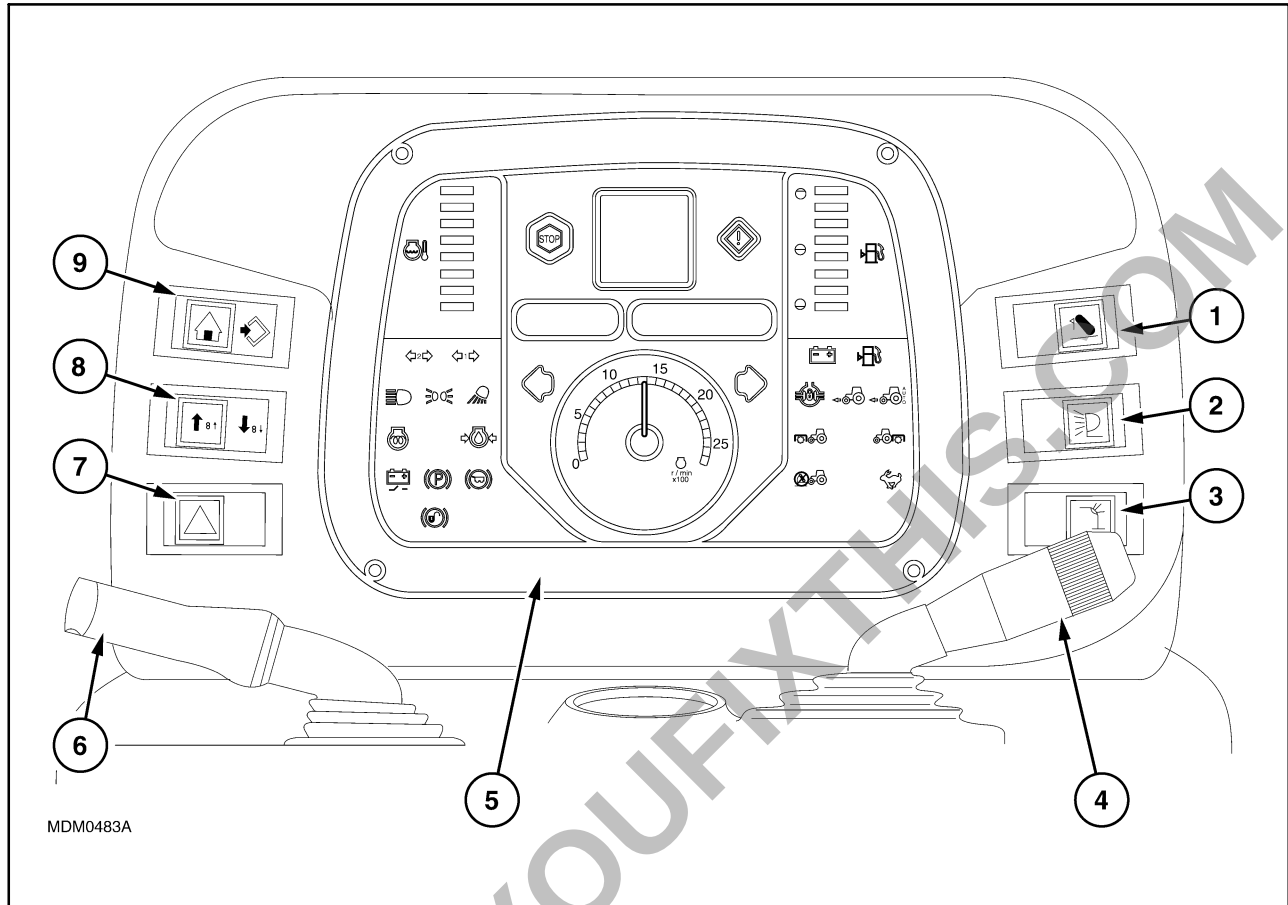


MDL0249A

1

1. Tachometer.
2. Fuel gauge.
3. Engine coolant temperature gauge.
4. Hours worked counter.
5. LED indicators to signal machine service status.

DIGITAL INSTRUMENT CONTROL PANEL



5

1. Front lift up and down switch.

2. Hood/cab lights switch.

NOTE: The switch (4) on models with roll bar is replaced by the switch (A) of the electrohydraulic four-wheel drive control.

3. Angular headlight switch.

4. Lights switch.

5. Control panel.

6. Power Shuttle control lever.

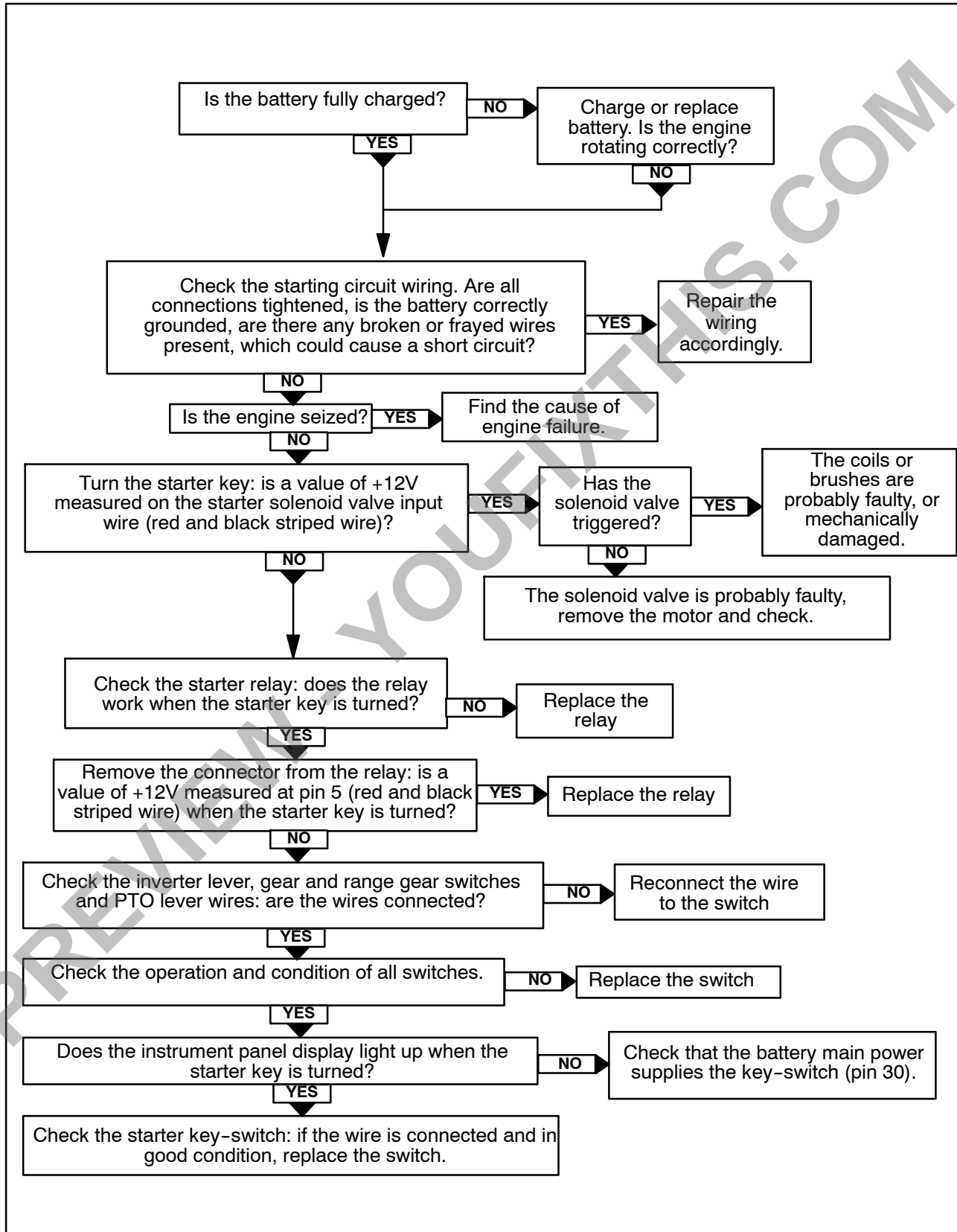
7. Hazard warning lights control switch.

8. Switch with dual function (UP DOWN) scrolling forwards or backwards in the menu.

9. Switch with dual function for navigating through the menu.

TROUBLESHOOTING

The engine does not turn over when the starter key is turned, with gears and range gears in neutral and PTO disengaged.



! DANGER !

If electrical system relays need to be changed, check that correct spare parts are used and that they are fitted in the correct positions. The use of structurally or functionally different relays - even if interchangeable - could seriously compromise tractor control with dangerous results

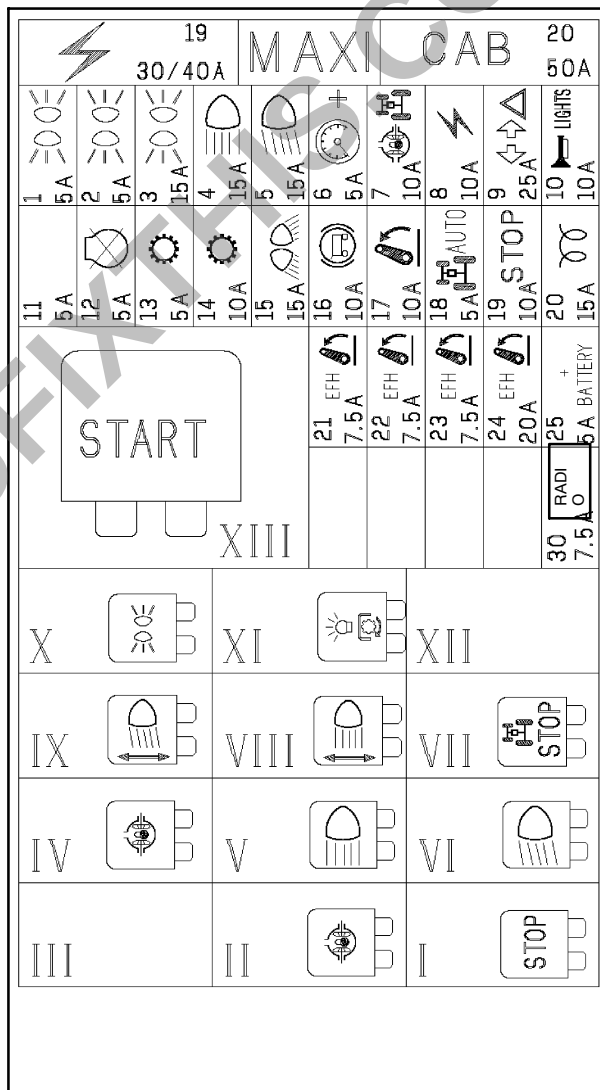
**VERSION 1 - TWO/FOUR-WHEEL DRIVE
MODELS WITH MECHANICAL
FOUR-WHEEL DRIVE AND MECHANICAL
LIFT**

Fitted for:

- Electrohydraulic differential lock.
- Power Shuttle unit.
- Digital instrument.
- 30/40A power socket.
- North America circuit.
- Trailer Brake.

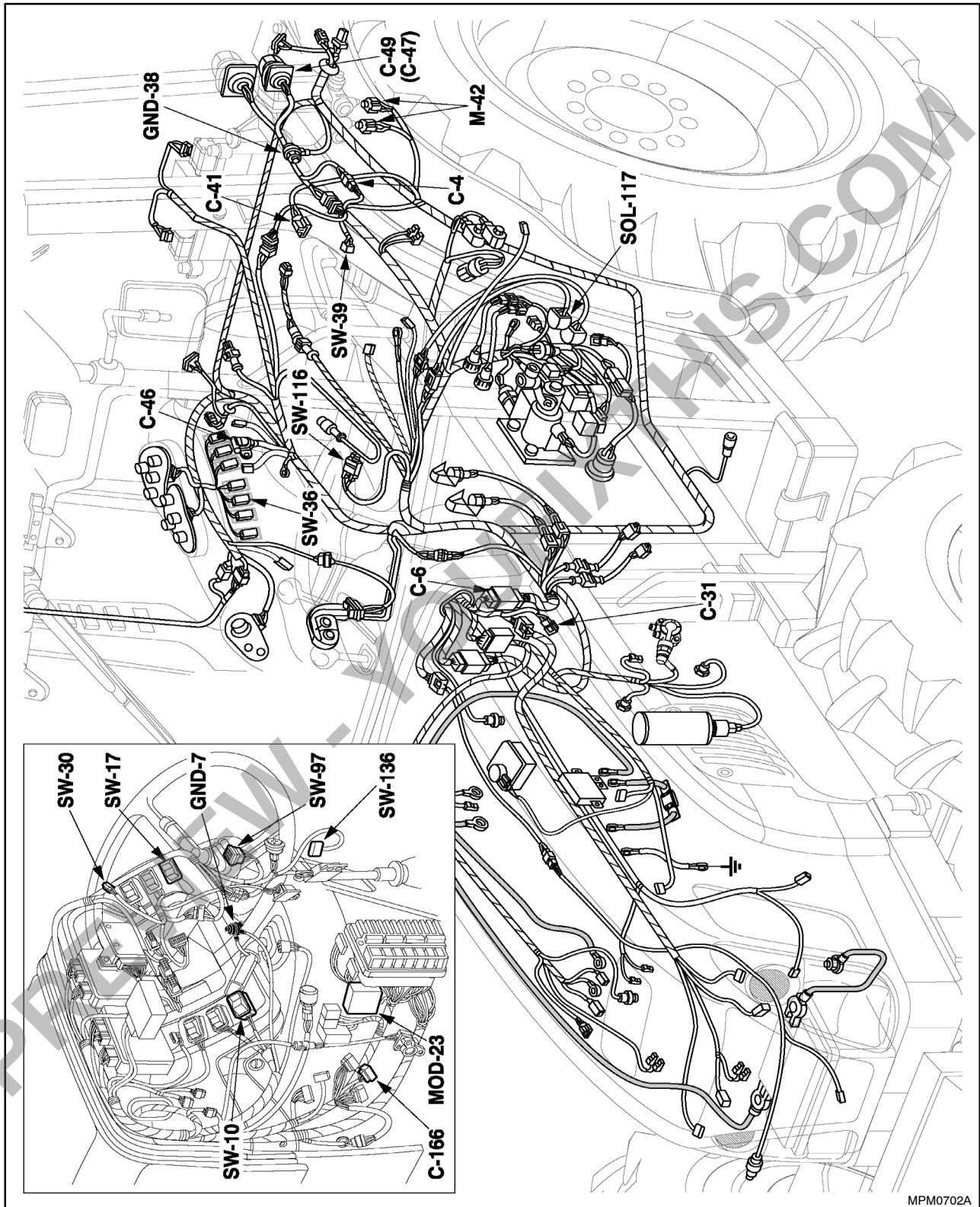
List of Relay Functions

- Brake lights circuit.
- Differential lock circuit
- Not used.
- Differential lock circuit
- Full beam headlight circuit.
- Dipped beam headlight circuit.
- Not used.
- Front headlight switchover circuit.
- Front headlight switchover circuit.
- Side lights circuit
- Front power take-off indicator light circuit.
- Not used.
- Engine starter circuit maxi-relay.



CIRCUIT DIAGRAMS

COMPONENT LOCATIONS - DIAGRAMS 1 THROUGH 4



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