Removal/refitting

Fuel filter

Removal of the fuel filter bracket

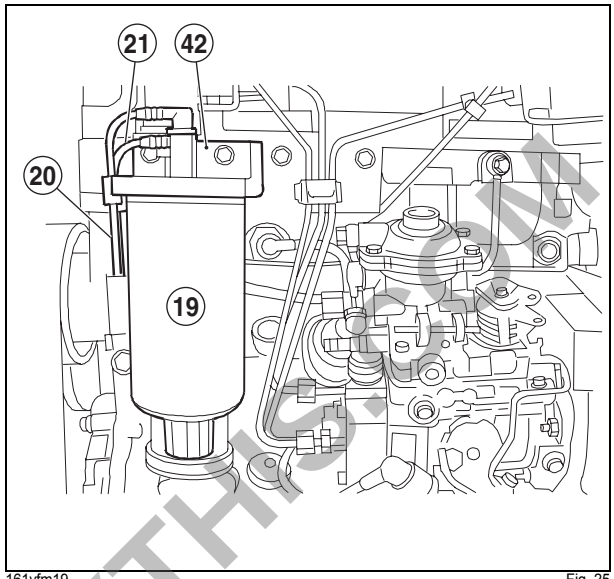
– Place a container under the fuel filter and unscrew the condensation drain covers under the filter. Drain out all the fuel present.

– Unscrew fully the valve and remove the fuel filter (19).

– Disconnect the fuel lines (20), (21) from the feed pump to the filter bracket and from the latter to the injector pump.

– Remove the fuel filter bracket (42).

To disconnect the fuel lines (20), (21) (Fig. 25), press down on the fastener (54) as shown in figure (B). After disconncting the lines, withdraw the fastener (54) to its locked position (Fig. A).

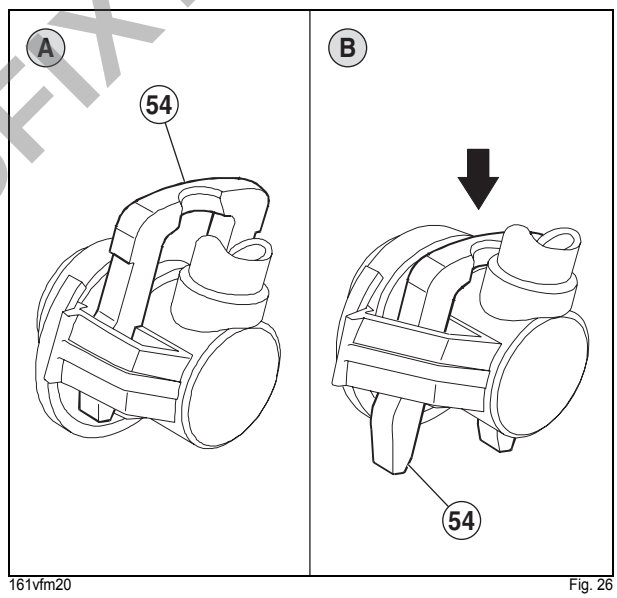


161vfm19 Fig. 25

Refitting the fuel filter

Proceed in reverse order to the removal operations.

N.B.: Before refitting the fuel filter (19), it must be refilled with fuel to facilitate the bleeding of the fuel feed system.



161vfm20 Fig. 26

Injection system

Injection system bleeding

Refer to the user manual.

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Description

Injector pump

The pinion of the rotary injector pump is driven by the camshaft pinion.

Identification plate

The identification plate is located on the pump body.
Typical identification: VE4/12F1150L955.

V = Rotary distributor piston.

E = Pump size.

4 = 4 cylinder engines (3 = 3 cylinder engines).

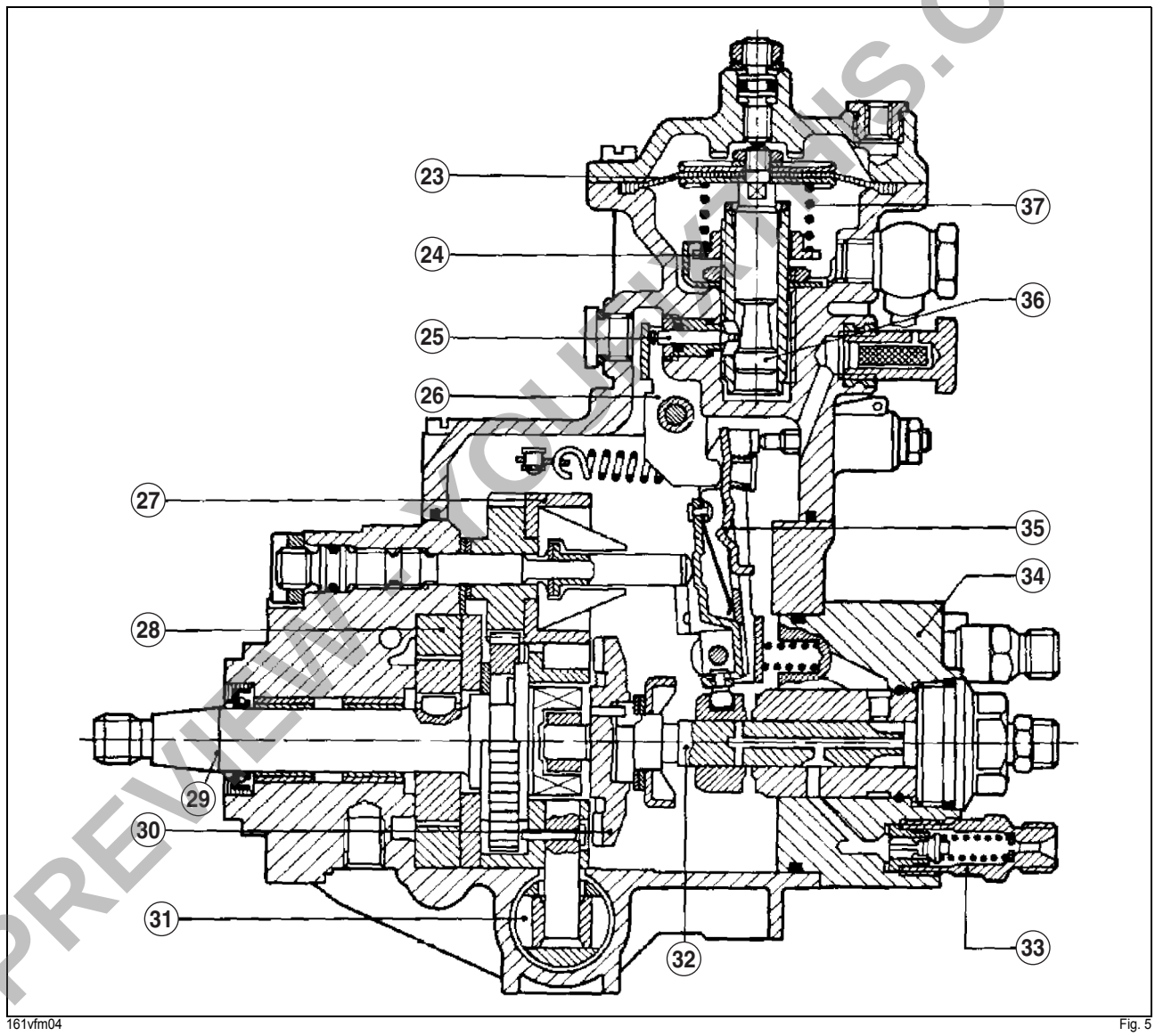
12 = Diameter of distributor piston (in mm).

F = Mechanical regulator.

1 150 = Pump rpm.

L = Direction of rotation.

955 = Pump model variant.



161vfm04 Fig. 5

Nomenclature (injector pump longitudinal section)

23 Membrane.
24 Adjustment collar.
25 Pushrod.
26 Operating lever.
27 Speed regulator.
28 Transfer pump.
29 Drive shaft.
30 Cam plate.
31 Advance mechanism.
32 Distributor piston.
33 Return connector.
34 Hydraulic head.
35 Control platen.
36 Floating shaft.
37 Return spring.

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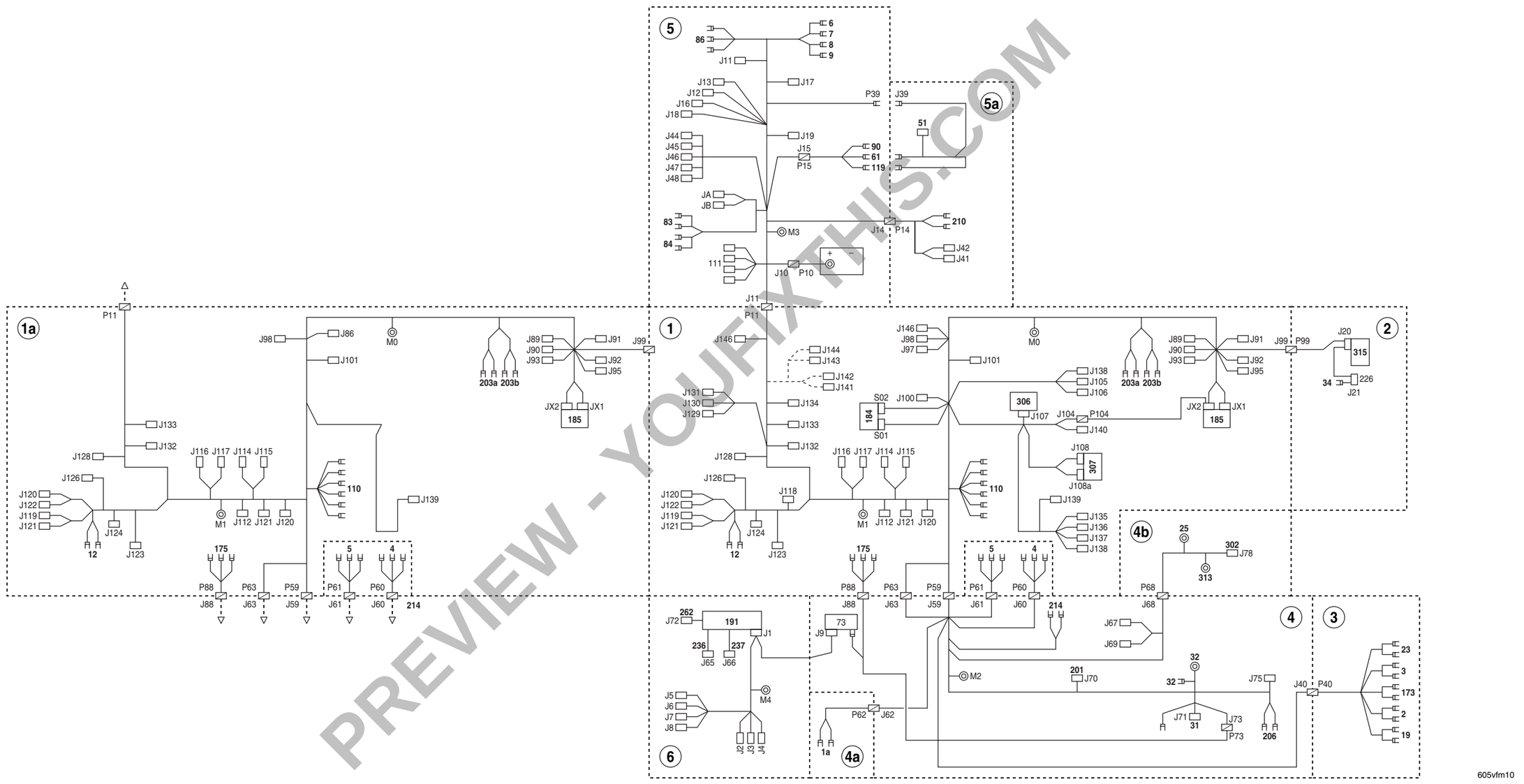
GENERAL WIRING

Wiring schematic



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605vfm10

Nomenclature

1 Instrument panel and transmission harness (direction change under load).
1a Instrument panel and transmission harness (mechanical reverser).
2 Preheating control harness (option).
3 Radiator cowling harness.
4 Engine harness.
4a Spotlight wiring harness (roll bar).
4b Injector pump interface harness.
5 Cab top harness.
5a Air conditioning harness.
6 Harness TCE 6 (option).
Optional components.
Follow the arrow to resume the corresponding interconnection.

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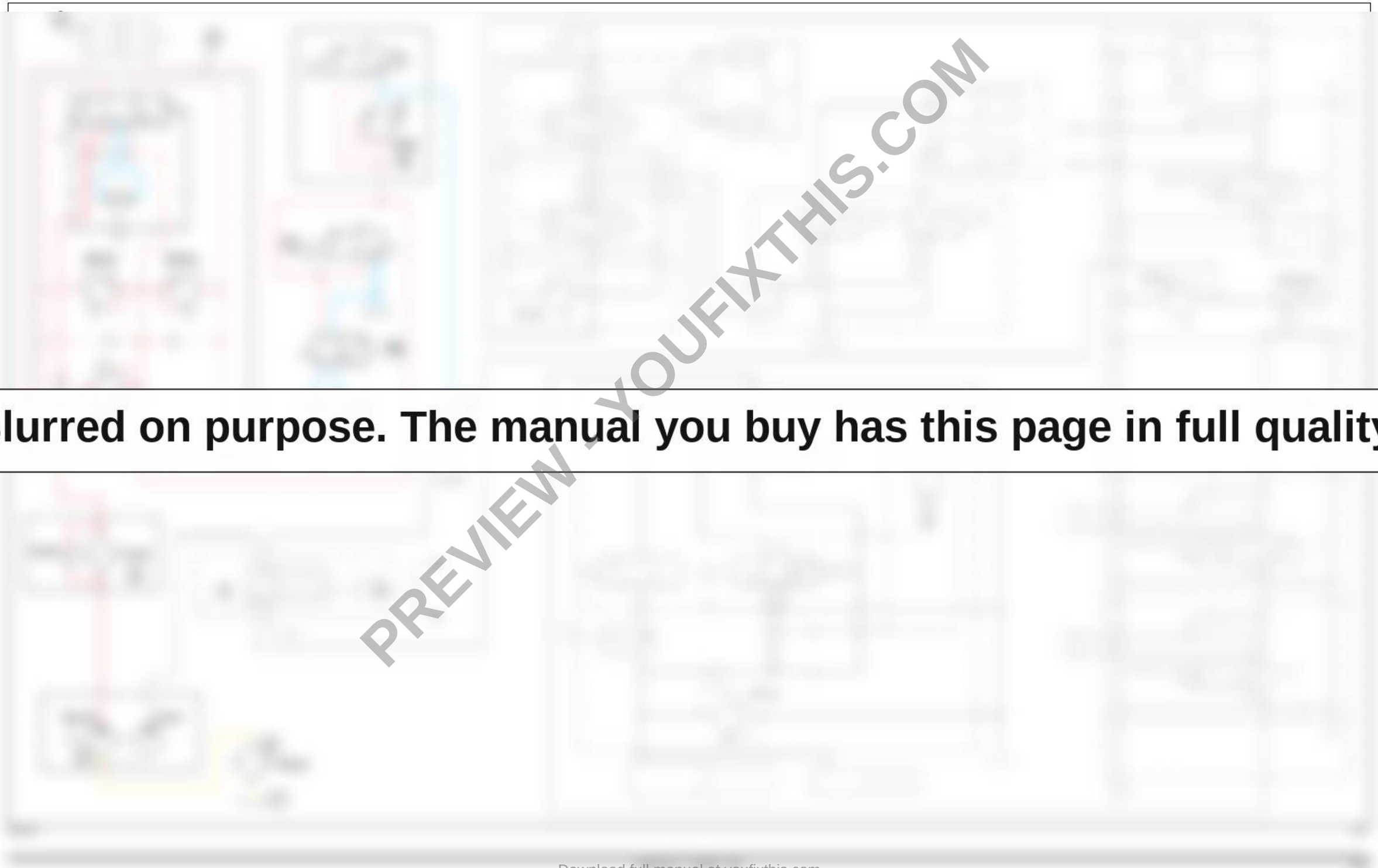
Schematic diagram of hydraulic reverser and mechanical doubler



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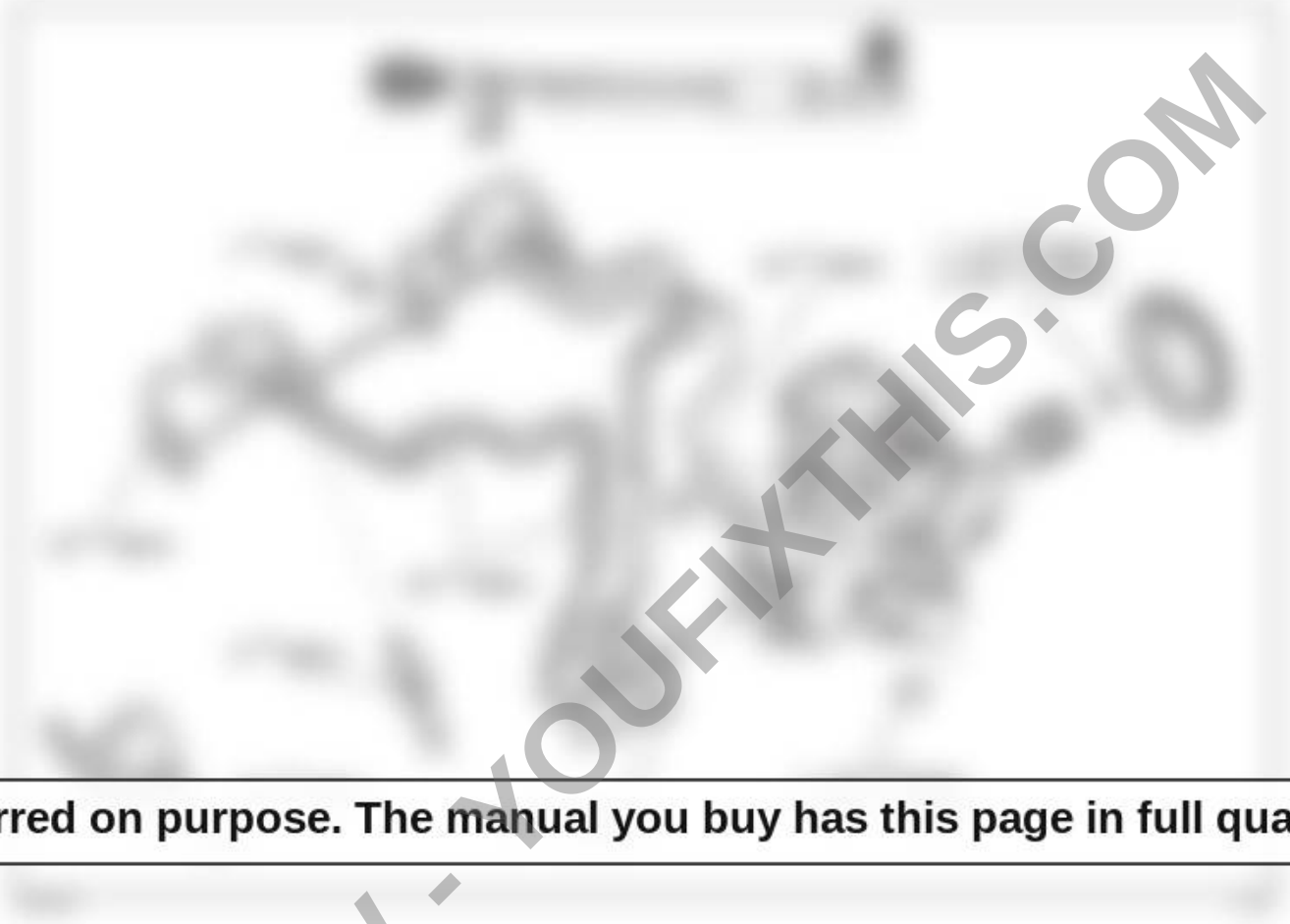
Torque settings

Torque settings



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Transmission application

4 "Diagnostic trouble codes" (DTC) (see table below).
5 Information on last calibration. "OK" or fail.
6 Tractor speed.
7 Crawler range light.
8 2-position range lever: I or II, III.
9 Transmission oil temperature.
10 Battery voltage.
11 Unit overvoltage protection indicator light. The light illuminates if a solenoid valve is short-circuited or if the current is too high.
12 Reverser lever (forward, neutral, reverse).
13 Clutchless reverser hydraulic unit (identification of solenoid valves by colour code).
14 Mean current consumed (average value of last 10 readings in the unit over about 2 seconds).
I = ~ 2 A.

DTC	Audio warning:	Problem	Solution
0	Yes	Excessive clutch slip: > 30 seconds.	Do not rest your foot on the clutch pedal. Check adjustment of clutch pedal potentiometer, connections and wiring then calibrate the clutch pedal using Win Métadiag©. Ignoring this message may lead to damage to the clutch.
2	Yes	Oil temperature too high: > 110°C.	Stop the tractor and wait for the oil temperature to return to normal. Ignoring this message may lead to severe damage to the transmission and hydraulic system.
3	No	Temperature sensor signal out of range: Too high.	Reduced transmission performance. Check temperature sensor, conections and wiring.
5	Yes	Clutch pedal sensor signal out of range: Too low.	Adjust and calibrate the clutch pedal potentiometer. Check connections and wiring.
6	Yes	Clutch pedal sensor signal out of range: Too high.	Adjust and calibrate the clutch pedal potentiometer. Check connections and wiring.
7	Yes	Incorrect comparison between sensor signal and angular detector.	Adjust end-of-travel sensor. Adjust and calibrate the clutch pedal potentiometer. Check sensor connections and wiring.
8	Yes	Front road clutch solenoid valve: – Short circuit to ground of the return wire. – Open circuit in solenoid or wiring. – Power supply (Pin 11/SO 2) disconnected.	Check each possibility.
9	Yes	Front field clutch solenoid valve: – Short circuit to ground of the return wire. – Open circuit in solenoid or wiring. – Power supply (Pin 11/SO 2) disconnected.	Check each possibility.
10	Yes	Rear clutch solenoid valve: – Short circuit to ground of the return wire. – Open circuit in solenoid or wiring. – Power supply (Pin 11/SO 2) disconnected.	Check each possibility.

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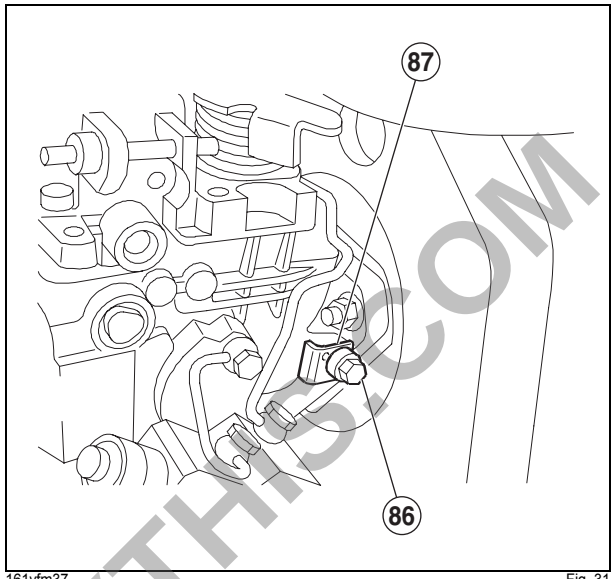
Removal/refitting

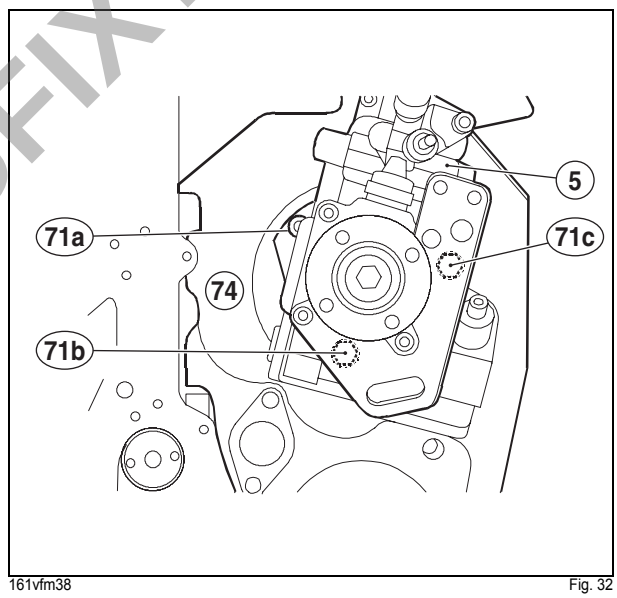
– Unscrew screw (86), remove the "L"-shaped spacer (87) and screw down screw (86) to retain the pump's internal setting.

– Keep the "L"-shaped spacer with the pump body.



161vfm37 Fig. 31

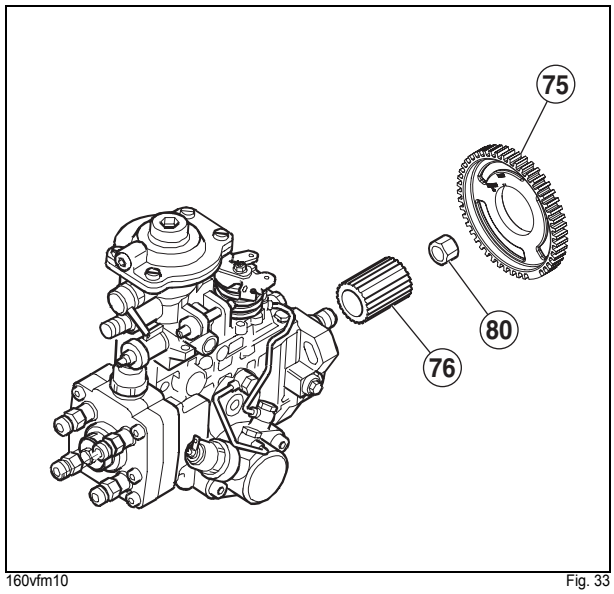
– Remove the 3 nuts (71a), (71b), (71c) that attach the injector pump (5) to the block (74) and free it from its housing (the pinion remains inside the distributor casing).



161vfm38 Fig. 32

– Remove the nut (80).

– Extract the spacer (76) using extractor reference n° 00 11 310 950, if it is planned to adjust the pump.



160vfm10 Fig. 33

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Crankshaft

Measuring main journals and crank pins

If there any signs of seizure, scoring or excesssive ovalisation on the main journals and crank pins they require regrinding. Before regrinding, measure the crankshaft journals (126) using a micrometer (14).

Regrind undersizes are 0,250 - 0,500 mm.

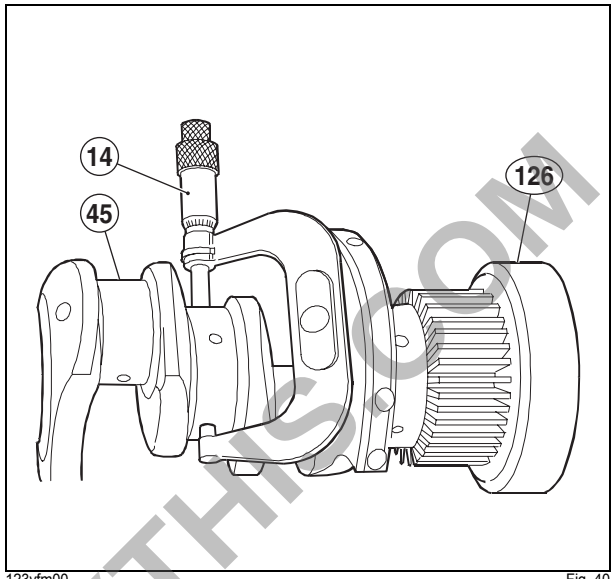
Main journals and crank pins must always be reground in the same position.

After regrinding the main journals and crank pins, this must be indicated by special marking on the side of crankshaft web n° 1 (fan end).

For reground crank pins, the letter "M".

For reground main journals, the letter "B".

For reground main and crank pin journals, the letters "MB".

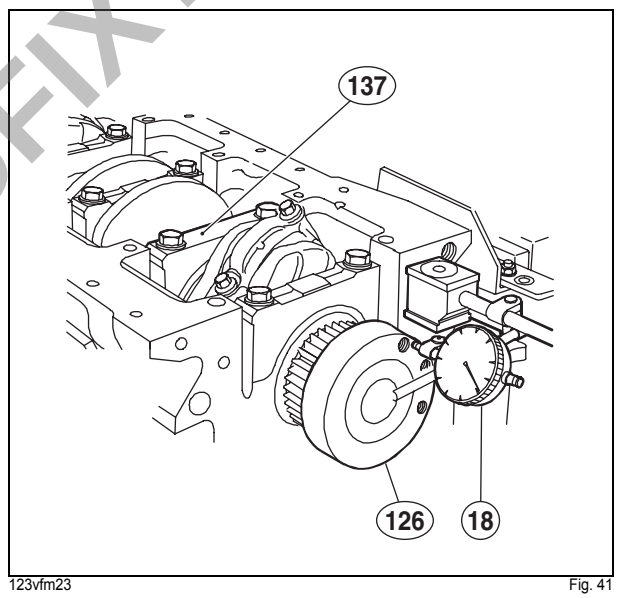


123vfm00 Fig. 40

Check of crankshaft end float

Crankshaft end float is measured by placing a dial gauge (18) with magnetic stand on the engine block and placing the shaft on the end of the crankshaft (126); end float should be between 0,068 and 0,410 mm (Fig. 41).

If the end float is greater than this, replace the bearing shells in the last but one main bearing cap (137) that includes a thrust bearing and repeat the measurement of free play between crankshaft bearings and bearing cap shells.



123vfm23 Fig. 41

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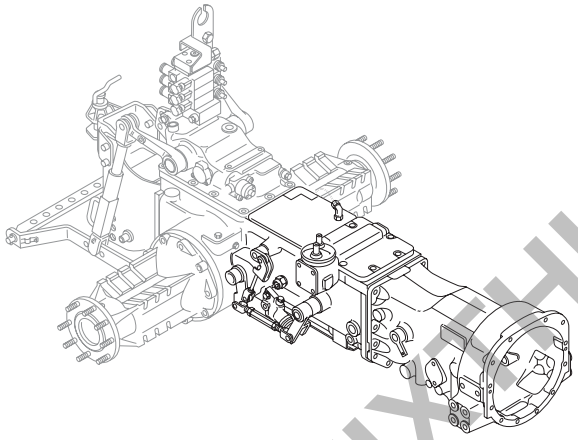
CLAAS

T 506 GEARBOX



B1
MECHANICAL PART

B2
HYDRAULIC PART

B3
ELECTRONIC COMPONENTS

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	Chapter B
Nectis 207	**00 11 302 370 – 12.2005 publication**

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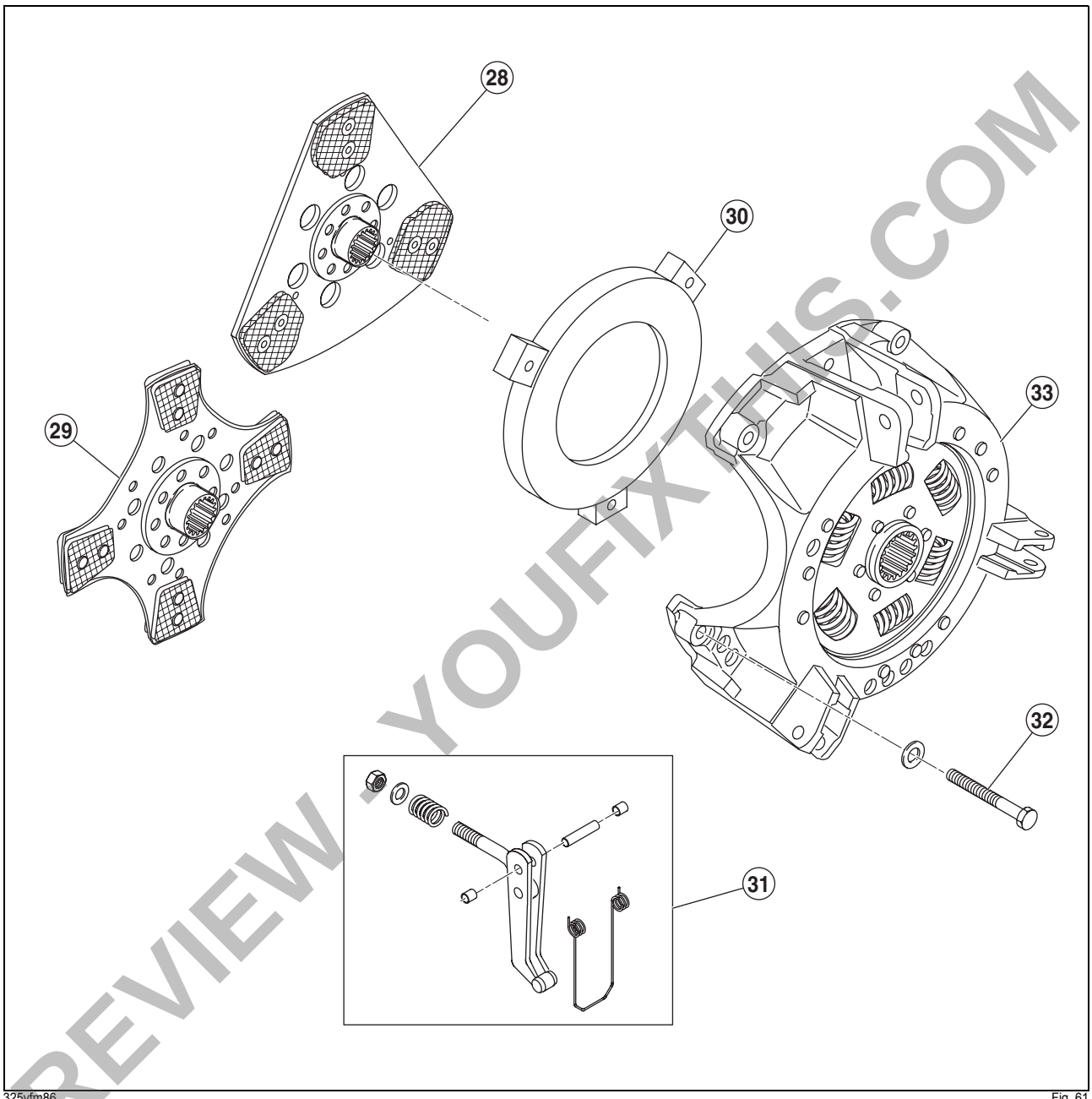
Transmission with hydraulic reverser and doubler

Exploded view of PTO clutch



325vfm86 Fig. 61

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Nomenclature

28 PTO clutch driven plate (3-cylinder engine).
29 PTO clutch driven plate (4-cylinder engine).
30 PTO clutch pressure plate.
31 PTO clutch release levers.
32 Screws.
33 Clutch body with sprung hub.

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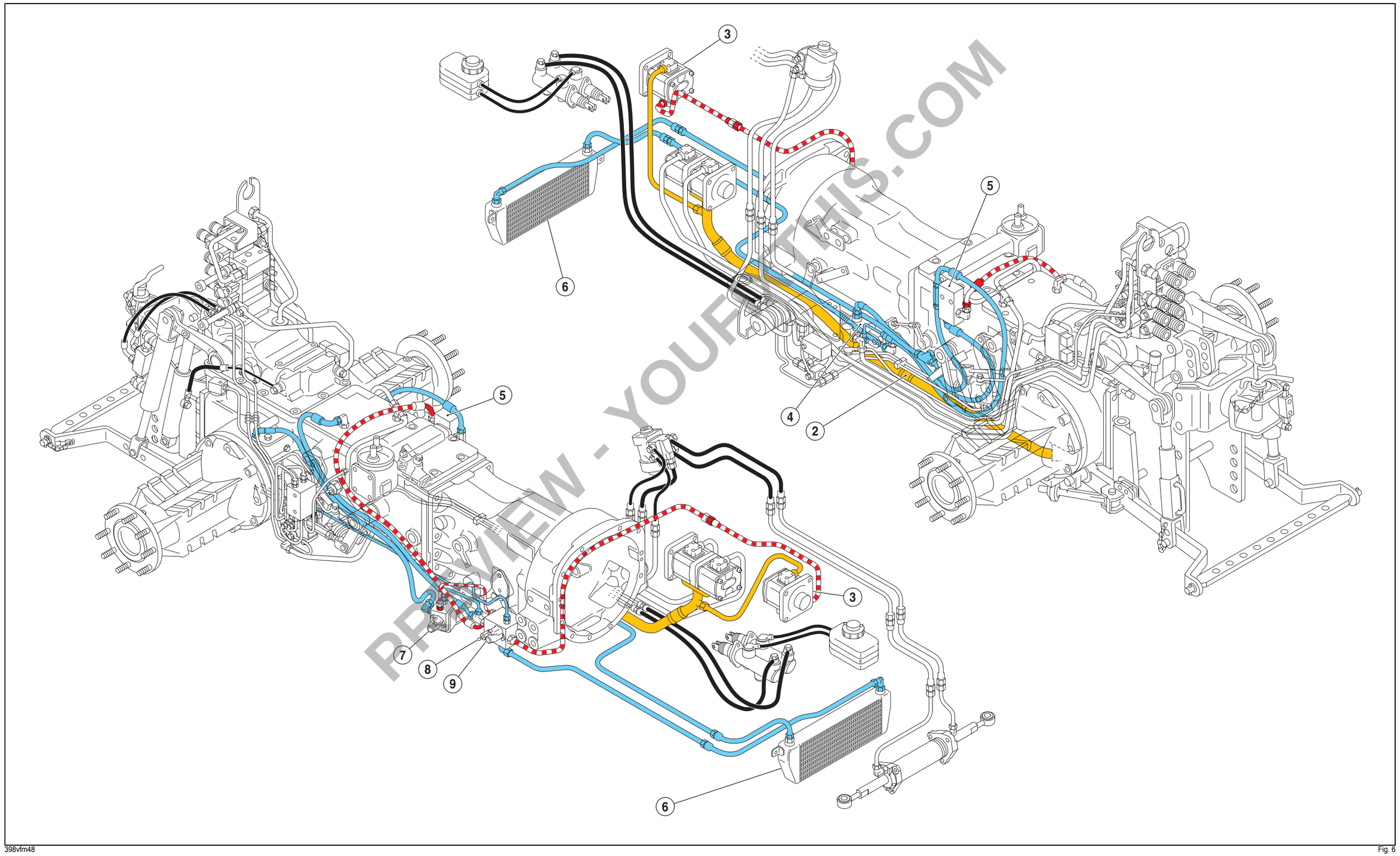
Location of reverser and mechanical doubler components



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398vfm48

Fig. 6

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"Inspection results" sheet

This sheet may be copied and should be completed for each operation on the tractor. If it has to be returned to the manufacturer's after sales department; the following must be included:

Tractor type: .....

The serial number: .....

Total operating hours: .....

Date of operation: .....

Checking pressure switches (118a) (118b) (118c)

Test conditions	Nominal values	Recorded values
	Contact state	Contact state
Engine stopped, contact open	Closed	
Engine running, reverser in forwards or reverse drive		

Checking temperature sensor (114)

Test conditions	Recorded values	
	Temperature (°C)	Resistance (kΩ)
Increase the sensor temperature progressively		

Checking the speed sensor (37)

Test conditions	Sensor terminals	Resistance (MΩ)	Recorded values
Static check, sensor disconnected	2 - 1	8	
	3 - 1	19,5	
	3 - 2	5	

Checking supply voltages to units (184) (306)

Test conditions Power on	Connector	Pin	Supply voltage (volts)	Recorded values	
"EHM24" unit	S01	1	0		
	S01	2	12		
"safety patch" unit	J107	B9	12		
	J107	B4	12		
	J107	B3	0		
	J107	A9	0		

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Brakes

Removal/refitting of brake pedals

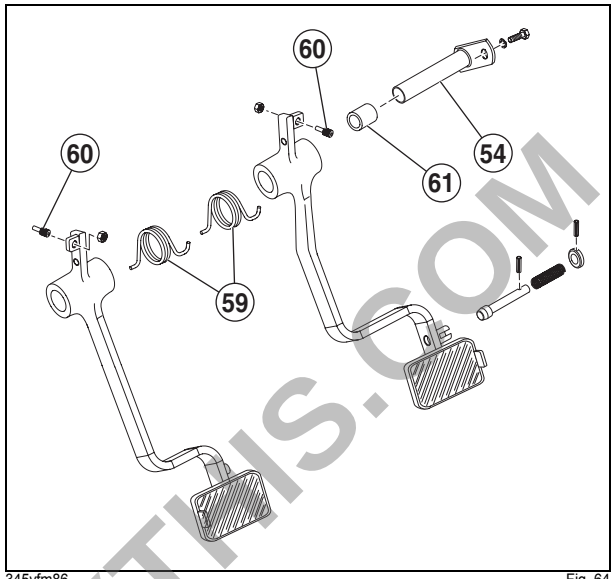
• Release the springs (59).

• Extract the shaft (54).

• Remove the pedals.

• If required, replace the bushes (61); grease and press in place.

• Refit in reverse order to removal.



345vfm86 Fig. 64

Adjustment of the brake pedals

• Adjust the upper stops so that both pedals sit at the same height.

Removal/refitting of master cylinders

• Drain and remove the brake fluid reservoir (see chapter "C2").

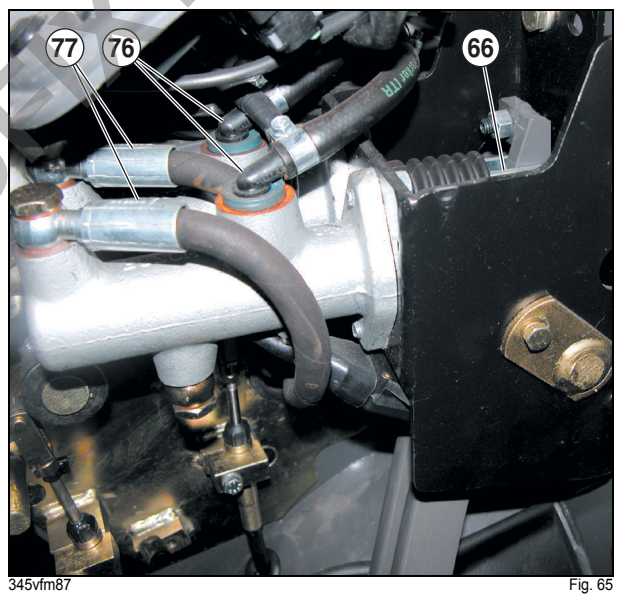
• Remove the inlet (76) and outlet pipes (77).

• Disconnect the fork end (66).

• Remove the master cylinder(s).

• Refit in reverse order to removal.

N.B.: See chapter "B2" for instructions on bleeding the brakes.



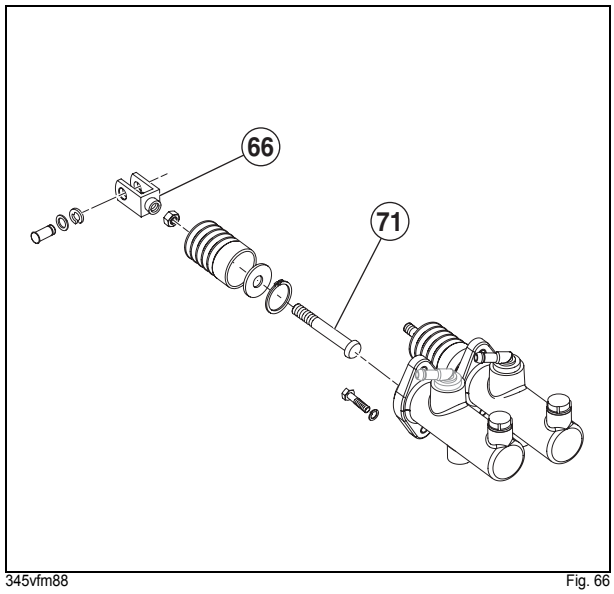
345vfm87 Fig. 65

Adjusting the master cylinders

• Fully depress the brake pedal on the relevant master cylinder.

• Adjust the fork end (66) so that the push rod (71) is not contacting the end of the master cylinder (Fig. 66).

• Fit the fork end to the pedal.



345vfm88 Fig. 66

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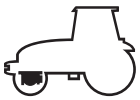

Reduction and front/rear inter-axle ratios

Number of teeth							
Tractor type	**Axle reference**	**Maximum speed**	**Power take-off**	**Crown wheel and pinion**	**Reducer ring gear/planet/sun gears**	**Final drive**	**Front/Rear inter-axle ratio**
"VE" tractor	20.09 C (147533)	40 km/h	52/57	13/30	43/15/11	1/3,909	1,60124
			52/58				1,57364
	20.09 C (147586)		52/60	15/32			1,64551
	20.09 C (148450)	30 km/h	52/57	11/32			1,6446
			52/58	11/32			1,61624
			52/59	11/32			1,58885
			52/60	11/32			1,56237
"VL" tractor	20.09 (148423)	40 km/h	52/57	16/29	48/17/12	1/5	1,59387
			52/59				1,53984
	20.09 (148425)		52/57	18/31			1,67742
			52/59				1,62056
	20.09 (148424)	30 km/h	52/57	13/30			1,62082
			52/59				1,56588
			52/60				1,53978
	20.09 (148422)		52/60	15/32			1,66563
"F" tractor	20.09 (148455)	40 km/h	52/57	18/32			1,625
			52/60				1,54375
	20.09 (148456)		52/57	15/29			1,49425
			52/60				1,41954
	20.09 (148457)	30 km/h	52/58	13/32			1,49332
			52/60				1,44354
	20.09 (148458)		52/57	13/30			1,62082
			52/60				1,53978

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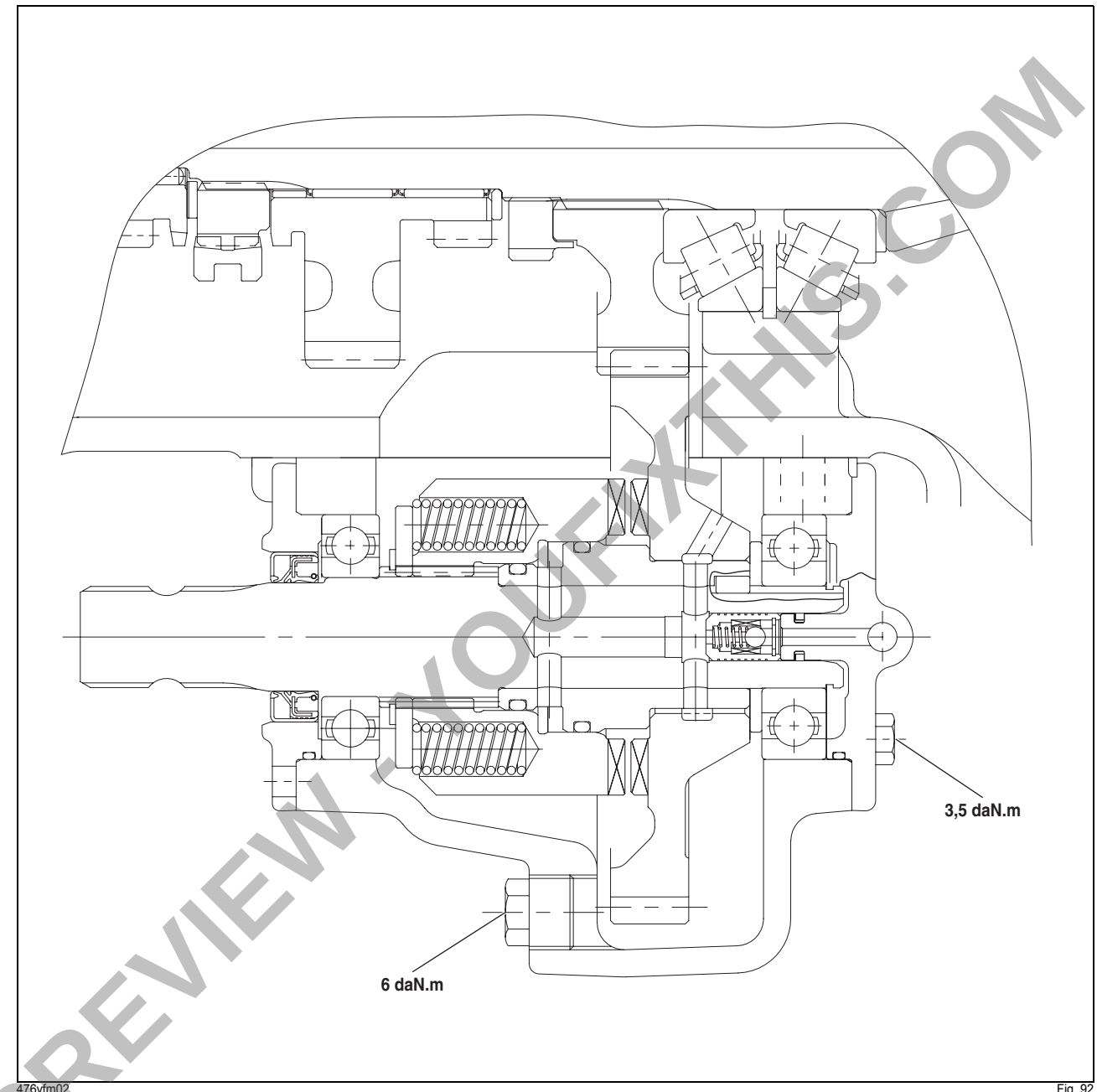
4-wheel drive unit with electro-hydraulic engagement

Sectional view



476vfm02

Fig. 92

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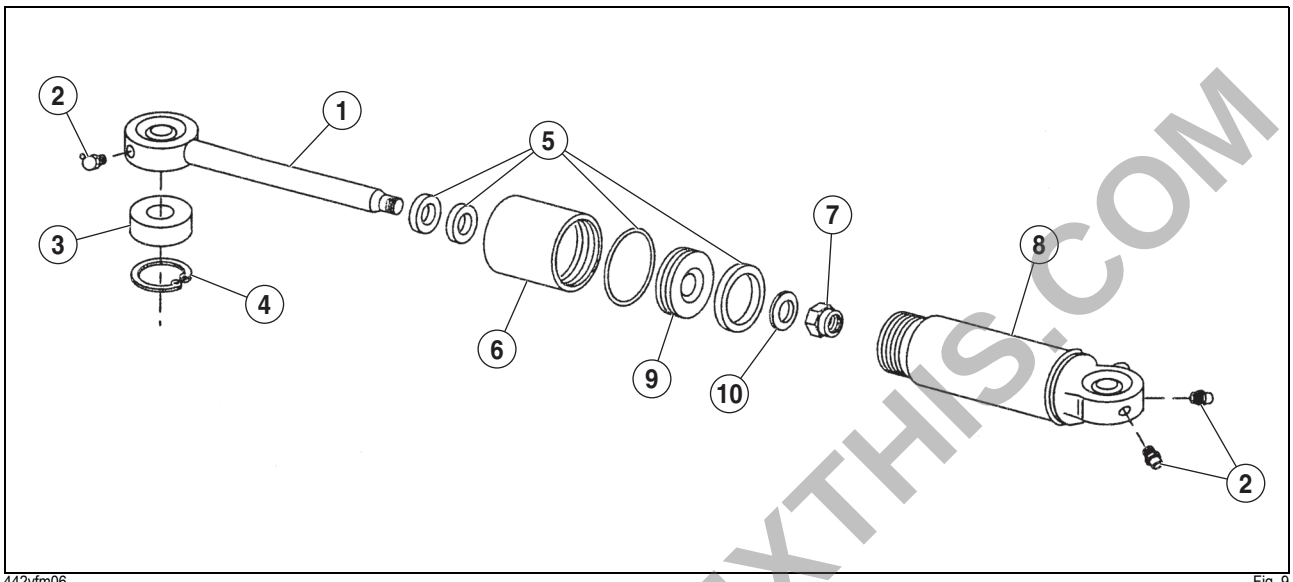
Steering actuator

Exploded view



442vfm06 Fig. 9

Nomenclature

1 Shaft.
2 Grease nipples.
3 Ball joint.
4 Circlip.
5 Seals.
6 Cover.
7 Locknut.
8 Actuator body.
9 Piston.
10 Washer.

Removal

– Disconnect the hydraulic hoses to the steering actuator.
– Undo the 2 actuator attachment bolts.
– Remove the steering actuator.

Refitting

– Refitting operations are in the reverse order of dismantling.
– Tighten the actuator attachment bolts to 30 daN.m.

Dismantling

– Open the actuator.
– Remove all seals.

Refitting

N.B.: New seals must be used and lubricated when refitting.

– Replace the nut (7).
– Refit by performing the removal operations in reverse.

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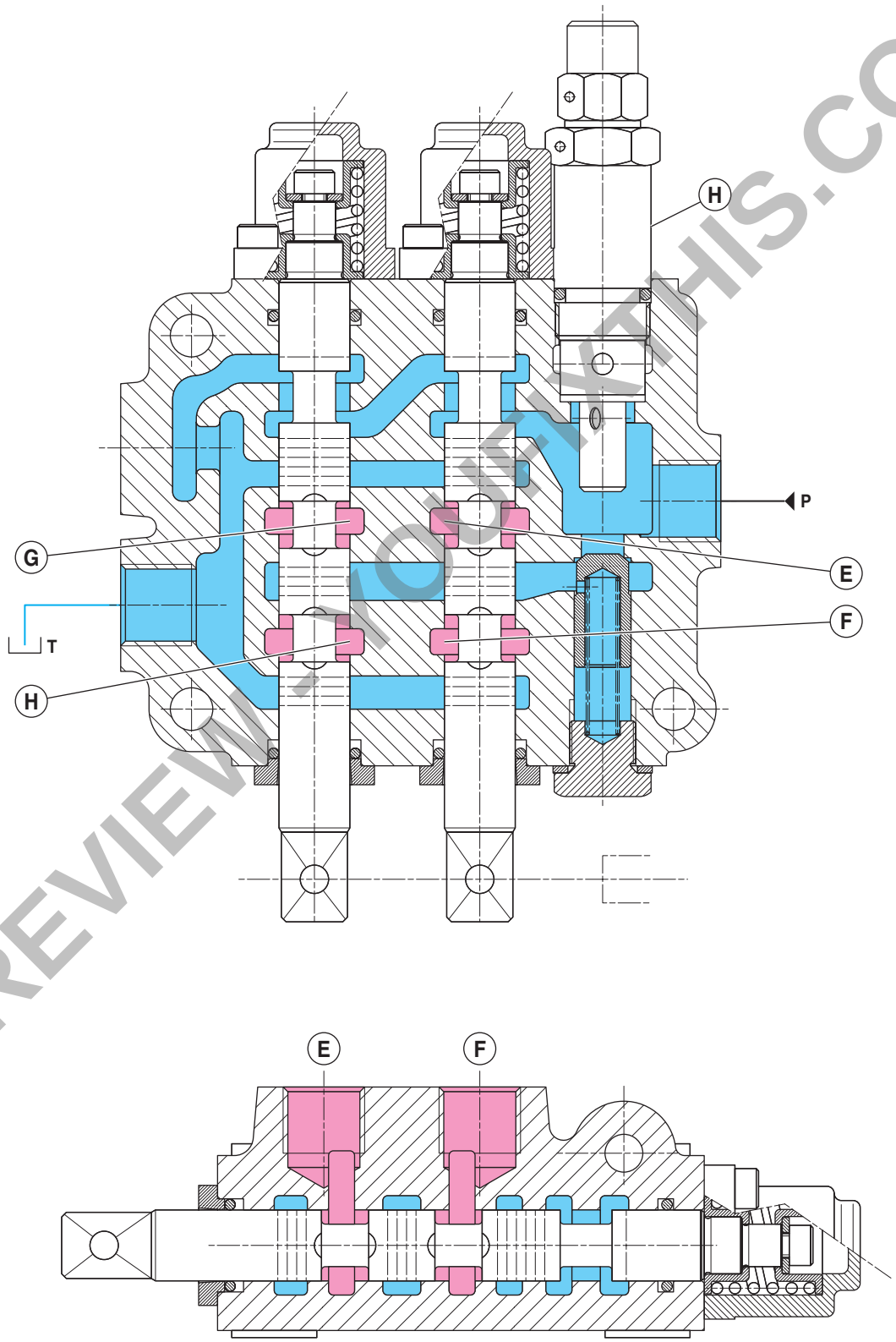
Dual spool valve

Sectional view

Neutral position



546vfm01

Fig. 53

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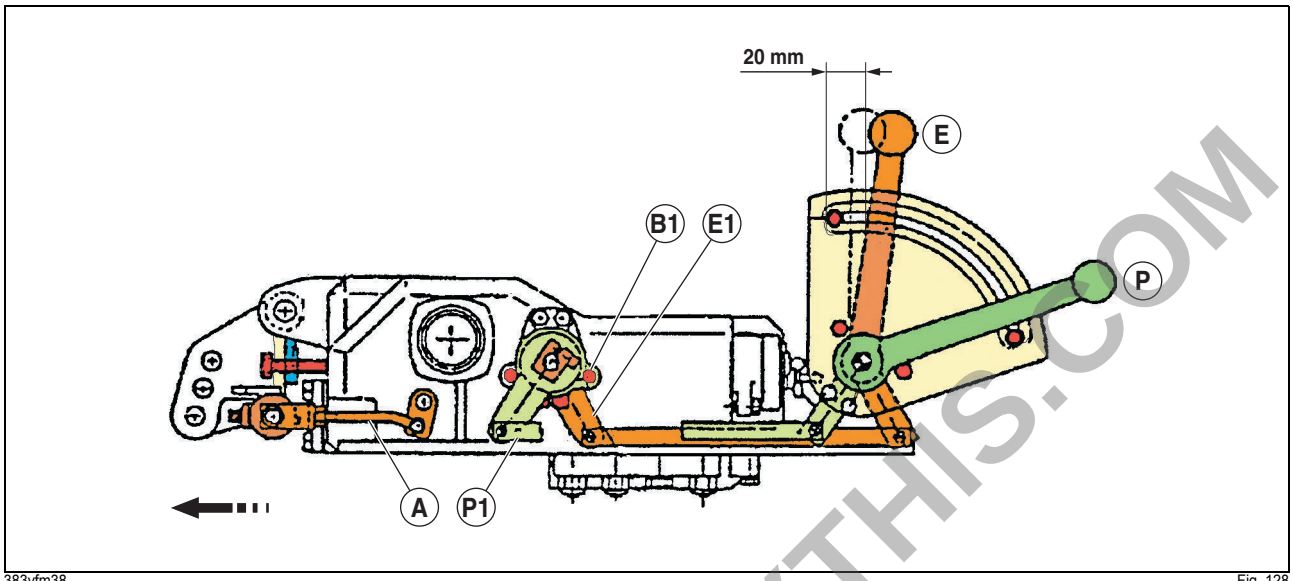
Linkage housing



383vfm38 Fig. 128

N.B.: Each 20 mm movement of the lever corresponds to a dimension of 4 mm between the strut "E1" and the stop "B1" (Fig. 129). If these values cannot be obtained, change the length of the strut or replace it if necessary.

– With the linkage arms at the down position, simulate a negative force by tightening the screw in the locally manufactured tool so as to seperate the bracket for the third point from the linkage cover (Fig. 126).

– Start the engine and allow it to tick over.

– Slowly raise the force control lever (E) until the arms begin to move and mark the position of the lever.

If the strut (A) is too long this will cause the linkage to rise too fast (linkage rises before the 20 mm mark is reached).

If the strut (A) is too short this will cause the linkage to rise too slowly (linkage rises after the 20 mm mark is reached).

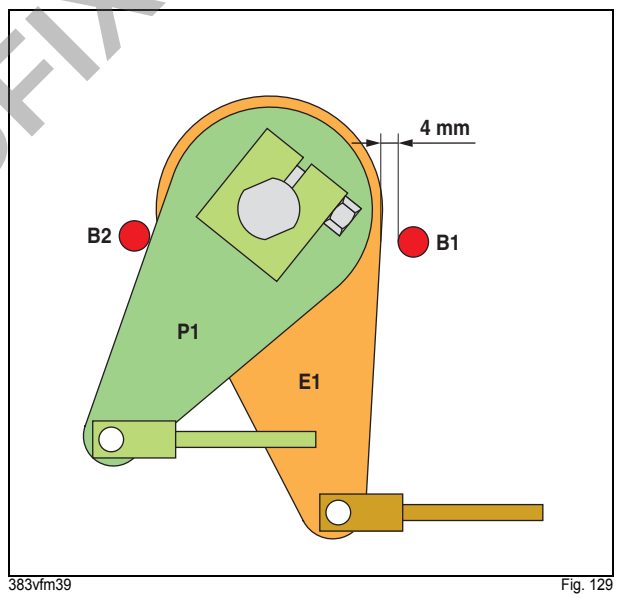
Depending on the result, adjust the length of the strut (A):

– Stop the engine for safety reasons.

– Remove the strut (A) and adjust it.

– Repeat the test until the correct length of the strut (A) is achieved.

– Remove the locally made tool.



383vfm39 Fig. 129

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Hydraulic measurement and checking points

Checking pressure at the primary linkage valve

Mechanical linkage

– Remove the mechanical linkage spool valve (see relevant paragraph).

– Install the linkage spool valve on tool n° 77 01 388 793.

– Place the tool in a vice.

– Connect a calibration pump to the linkage supply outlet (A).

– Screw a plug (B) onto the linkage actuator supply outlet.

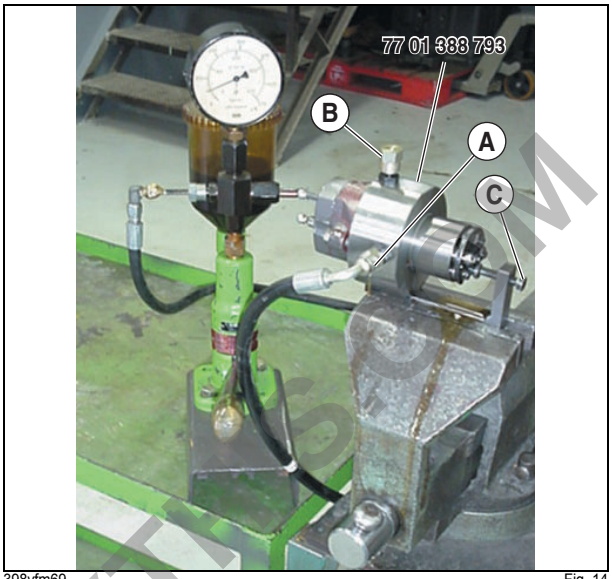
– Move the spool by turning screw (C) on the tool.

– Apply pressure using the calibration pump and note the opening pressure.

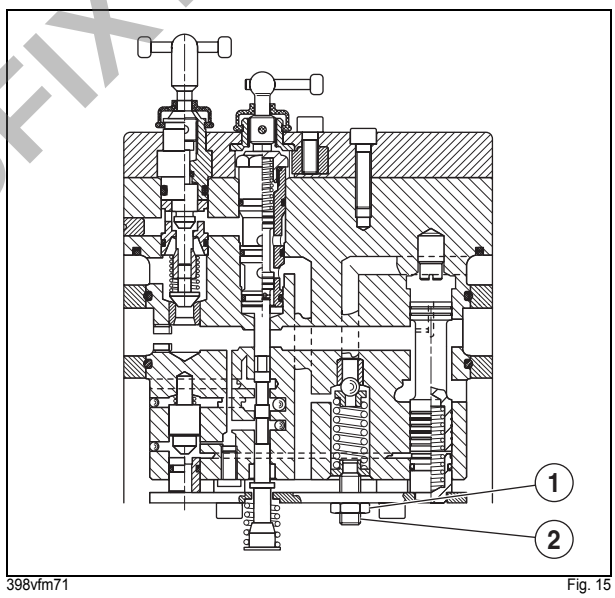
– The measured pressure must be 220 ± 10 bar. If this is not the case, adjust the antishock valves.

N.B.: To adjust the valve, unscrew the lock nut (1) and turn the screw (2) to obtain the desired value.

– Refit the linkage spool valve (see relevant paragraph).



398vfm69 Fig. 14



398vfm71 Fig. 15

Electronic linkage TCE 6

– Remove the LH rear wheel and place the tractor on jacks.

– Remove the TCE 6 spool valve (see relevant paragraph).

– Locally manufacture the clamp (Fig. 17).

– Attach the clamp to the linkage spool valve.

– Immobilise the assembly in a vice.

– Connect a calibration pump to the linkage spool valve.

– Apply pressure using the calibration pump and note the opening pressure.

– The measured pressure must be 220 ± 10 bar. If it is not, adjust the main valve.

– Also check that the pressure gauge reading does not decrease too fast (maximum allowable drop is from 150 to 100 bar in one minute) .

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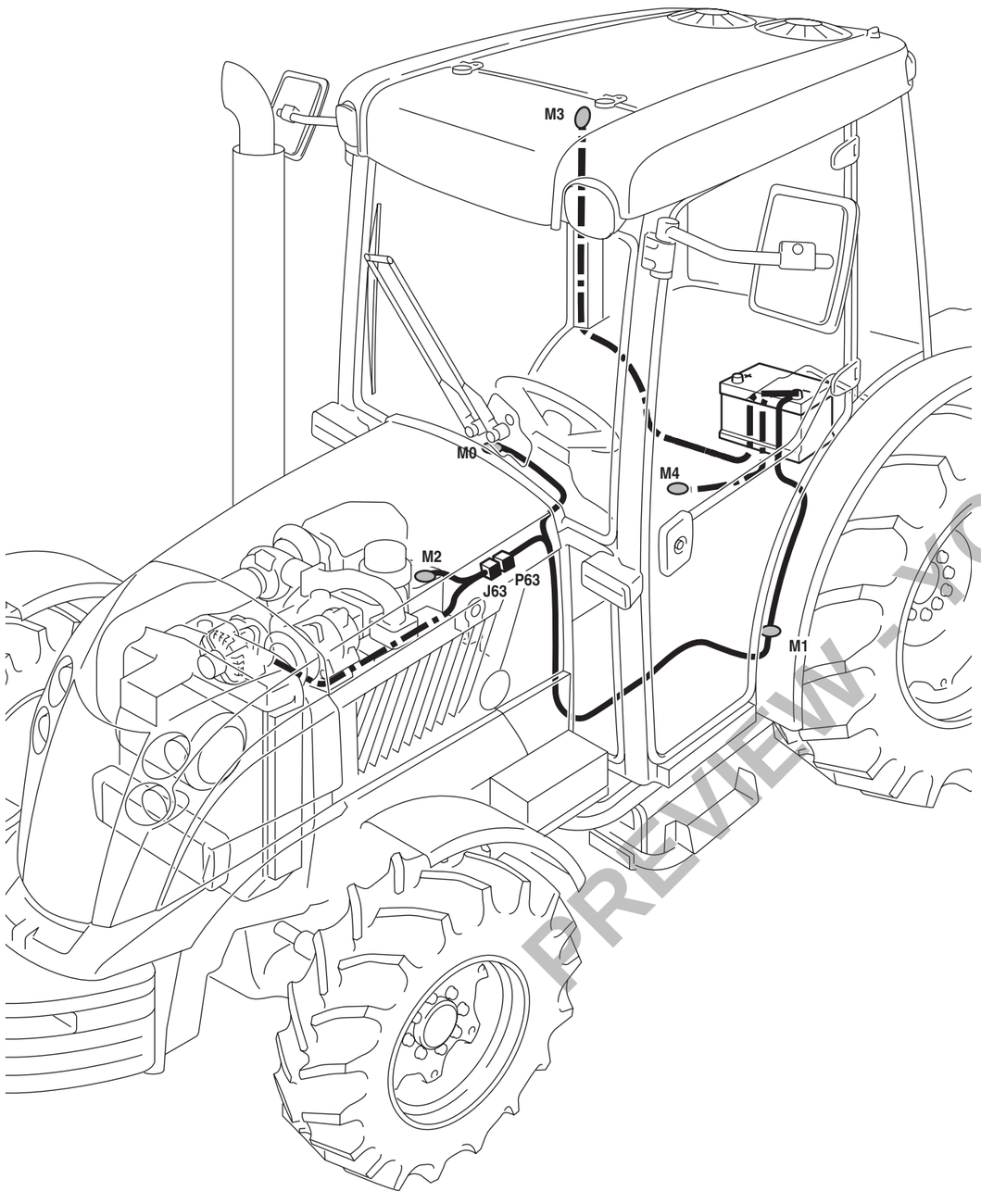
Earths

Earthing locations



606vfm48

Designation of earths

Earth link via chassis.

Earths	Designations
M0	Instrument panel and transmission harness
M1	Transmission harness
M2	Engine harness
M3	Cabin roof and air conditioning harness
M4	Linkage TCE 6 harness

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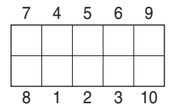
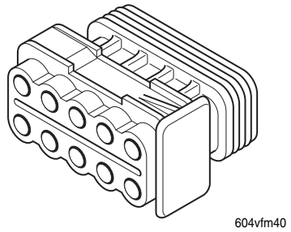
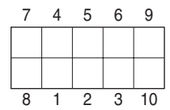
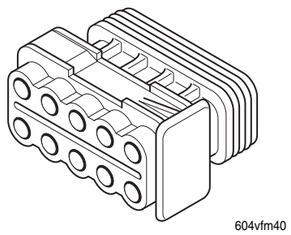
	J47	Ending	
▼			
2	Switch supply	Fb2	
3	Rear right working light	8	
▼			
5	Switch supply	Fb2	
6	Rear left working light	9	
7	Earth	M3	
8	+ APC lighting switch	Fb11	
▼			




604vfm40

	J48	Ending	
▼			
2	+AVC (constant source)	Fb12	
3	Rotating beacon control	J17	2
▼			
7	Earth	M3	
8	+ APC lighting switch	Fb11	
▼			

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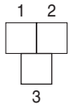
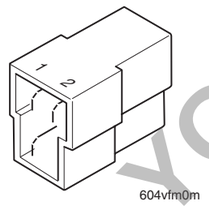
	P15	Ending	
1	Thermostat	119	
2	Ventilation earth	90	
3	Fan control	61	





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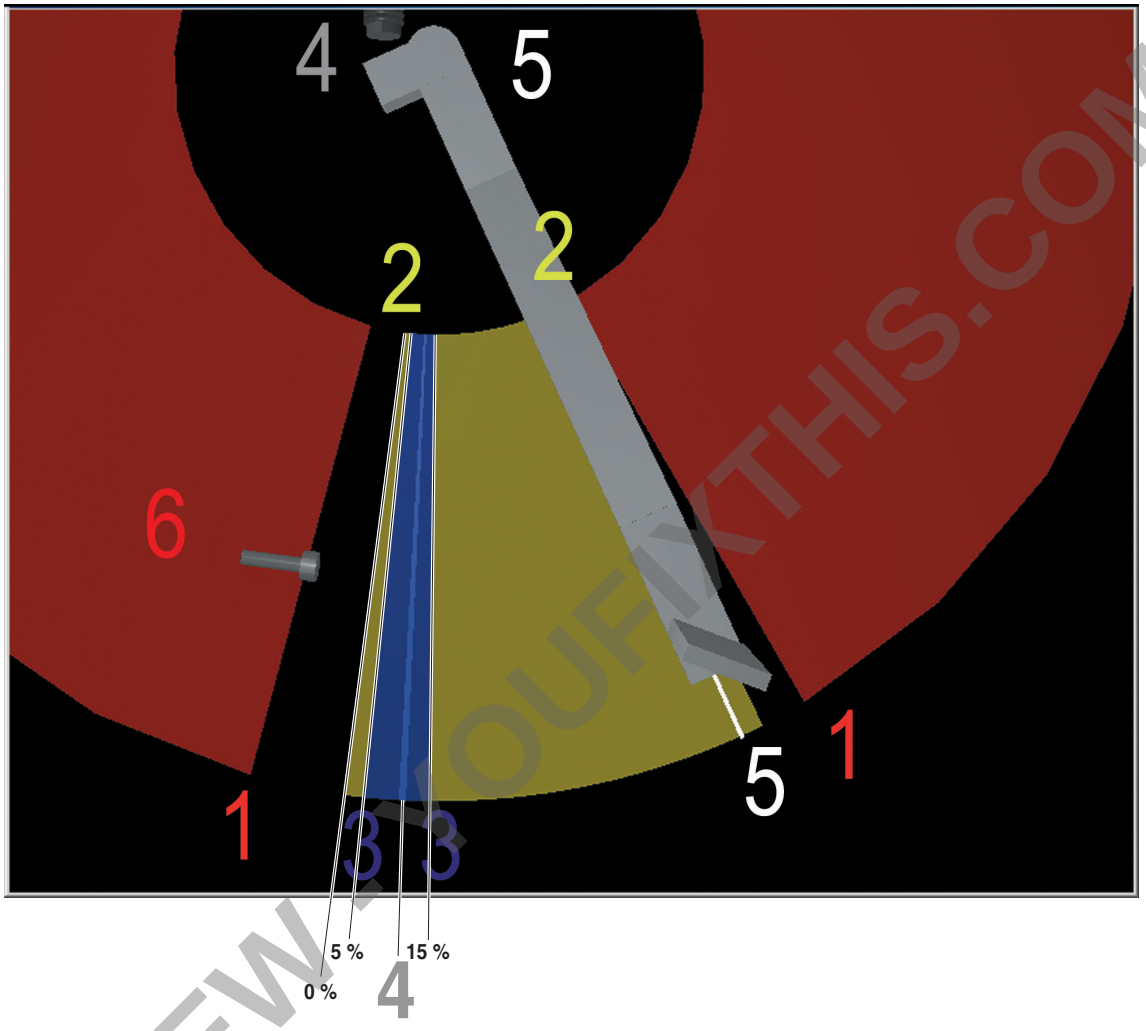
Transmission application

Detail of clutch pedal



586vfm06

Fig. 7

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Description of the platform

Identification

For the location of the structure identification plates:

– Type series N°.

– Certification N°.

– Safety structure identification N°. Refer to the user manual, chapter "A".

Important: A safety structure damaged (distorted) as the result of an accident, must never be repaired but must be replaced.

Safety instructions

Recommendations before raising

Important: Lift the platform only with a spreader bar to avoid any risk of distorting the lifting points.

Weight of the platform: About 150 kg.

Spreader bar reference nr 77 01 388 907.

Lifting kit reference 60 05 006 913.

Safety measures

To raise the platform, the hoist must be in full working order with sufficient height under the hook to clear the platform completely.

– Position the tractor on flat and level ground.

– Chock the wheels.

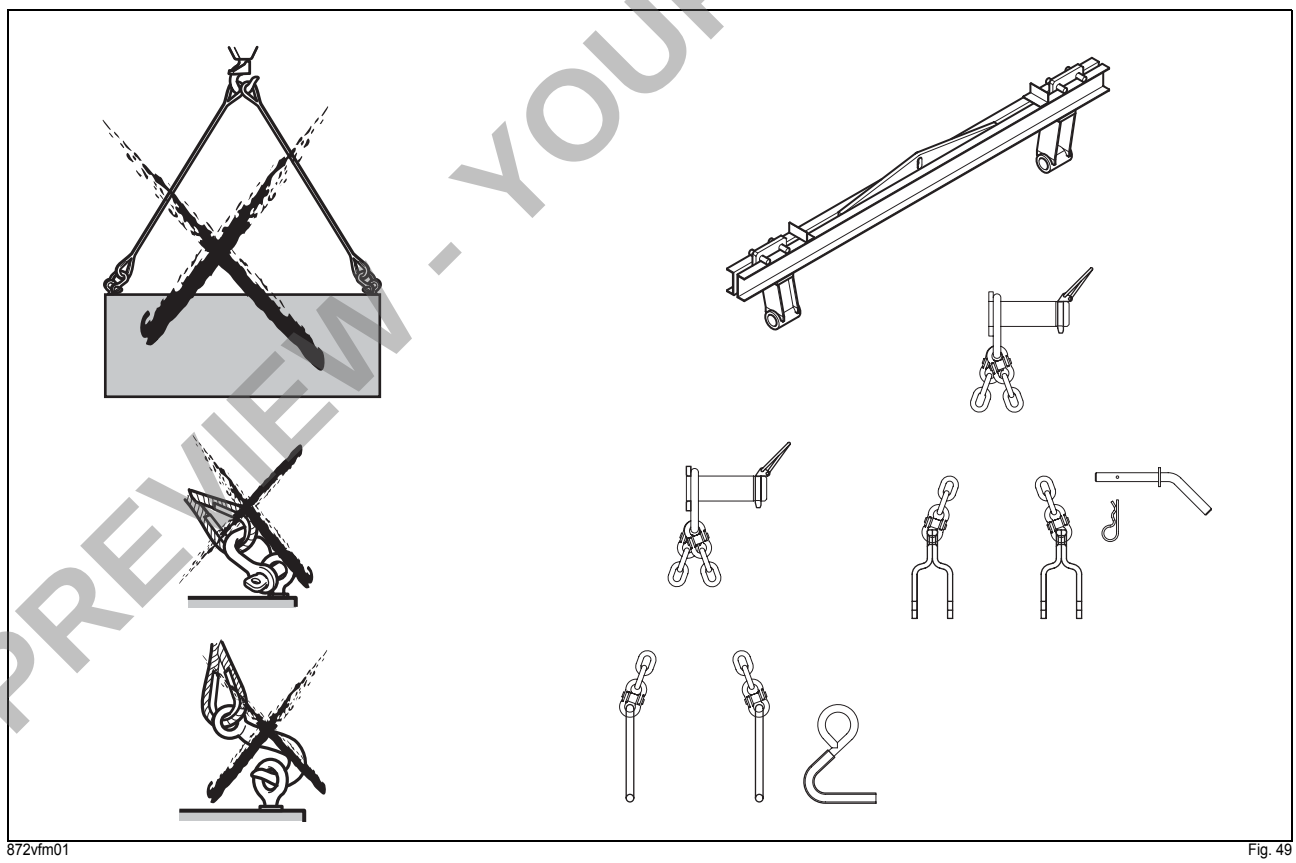
– Place warnings around the working area.

– Use a certified hoist in perfect working order.

– Use only approved shackles and slings that are in good condition.

– Respect safety instructions. Wear protective gloves and shoes.

Forbidden **Use spreader bar only**



872vfm01 Fig. 49

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