

CHAP.1

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Pre-delivery inspection and maintenance

4-3 Periodical maintenance table

Work hours	N° operation	Maintenance operations	Top up level	Clean	Adjust	Replace	Check efficiency	Lubricate
Variable maintenance (4)	1	Engine oil level	●					
	2	Oil level of transmission and hydraulic power lift circuit	●					
	3	Battery	●					
	4	Fuel filter		●				
	5	Engine coolant radiator	●					
	6	Engine coolant radiator fins		●				
	7	Gearbox and hydraulic circuit oil radiator		●				
	8	Power steering circuit oil level	●					
	9	Dry air filter discharge valve		●				
	10	Dry air filter outer cartridge		●				
	11	Oil-bath air cleaner (if installed)		●				
	12	Fan and alternator belt			●			
	13	Main clutch control pedal			●			
	14	PTO clutch disengaging hand lever			●			
	15	Brake circuit oil level	●					
	16	Brake pedals (5)			●			
	17	Parking brake			●			
	18	Oil level in rear final drives	●					
	19	Oil level in front differential housing and front final drives	●					
Miscellaneous	20	Check tyre pressures					●	
		Check wheel nut tightness					●	
		Check tightness of nuts and bolts in general					●	
		Check tightness of safety frame fixing bolts					●	
Every 100 hours service	21	General lubrication						●
	22	Lubrication of 4WD front axle						●
	23	Lubrication of 2WD front axle (if installed)						●
Every 250 hours service	24	Engine sump				●		
	25	Engine oil filter				●		
	26	Oil filter on power lift's pump intake				●		

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Technical specifications

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Engine-gearbox assembly (Speedfour version)

A3 - Guide lines for disassembly

REMOVAL OF THE ENGINE-GEARBOX ASSEMBLY

WARNING : lift and handle all heavy parts with lifting means of adequate carrying capacity. Make sure that the assemblies or parts are supported by appropriate harness and hooks. Make sure that there are no bystanders near the load as it is lifted.

- split the engine from theassembly;
- unscrew the screws that fix the covers of the axle housing and gearbox casing;

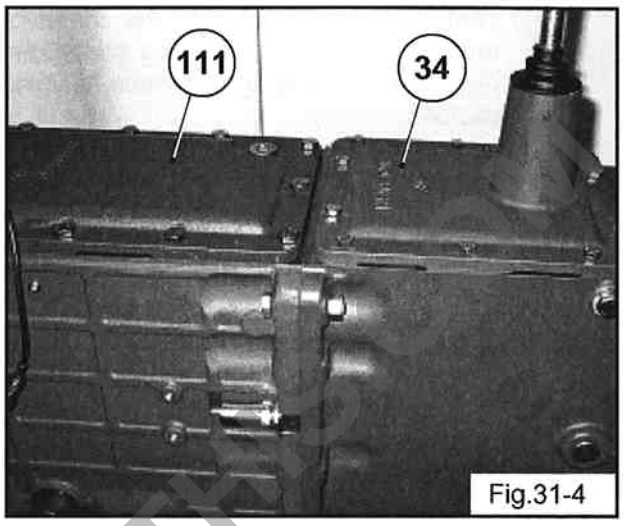


Fig.31-4

- remove the gearbox cover (111);

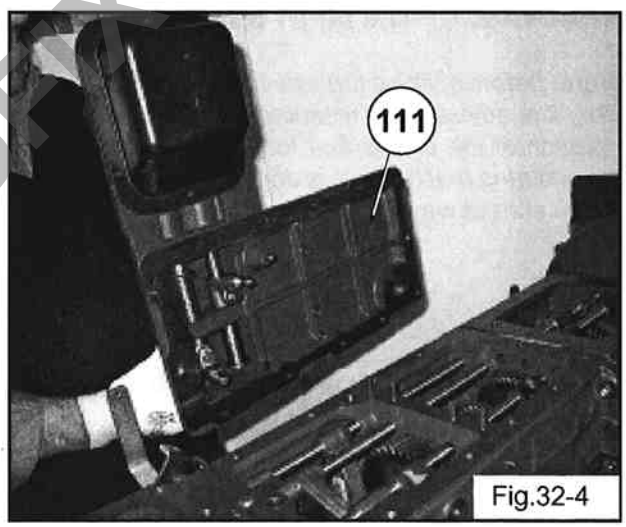


Fig.32-4

- remove the axle cover (34).

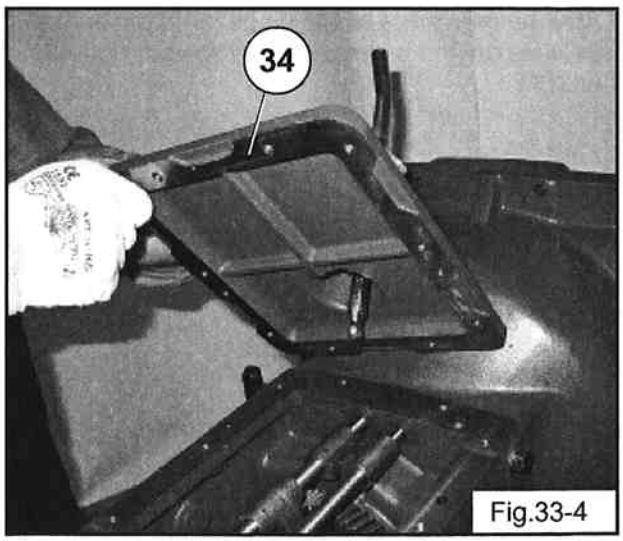


Fig.33-4

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Gearbox

INSPECTION AND RE-ASSEMBLY OF THE UPPER SHAFT (RANGES)

- check the ball bearing (179) for wear;

- check the thrust bearing (180) for wear;

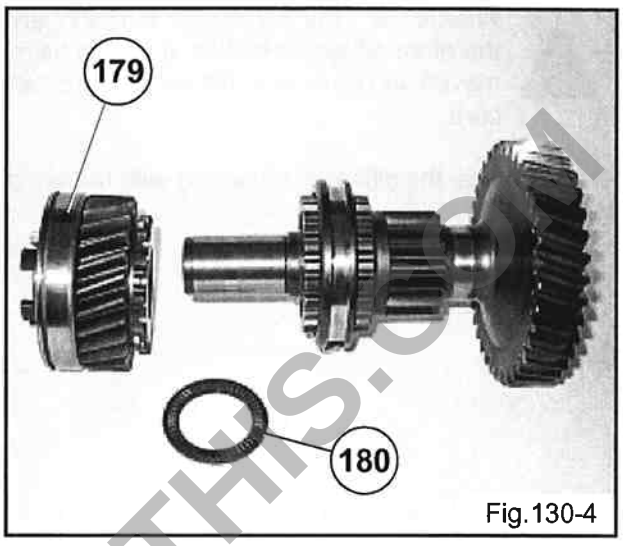


Fig.130-4

Note: *set the fork (181) that engages the slow/fast range in its housing before assembling the upper range shaft (109);*

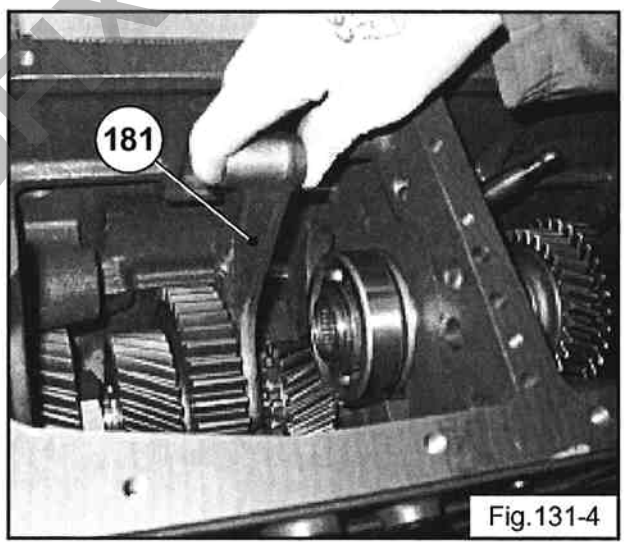


Fig.131-4

- assemble the upper range shaft (109) in the gearbox housing along with all its components.

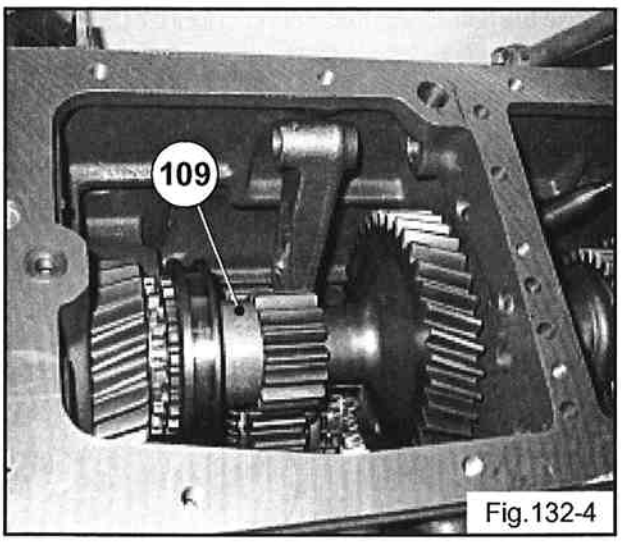


Fig.132-4

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Side final drives

G5 - Driving torques and sealants (C-Max 105)

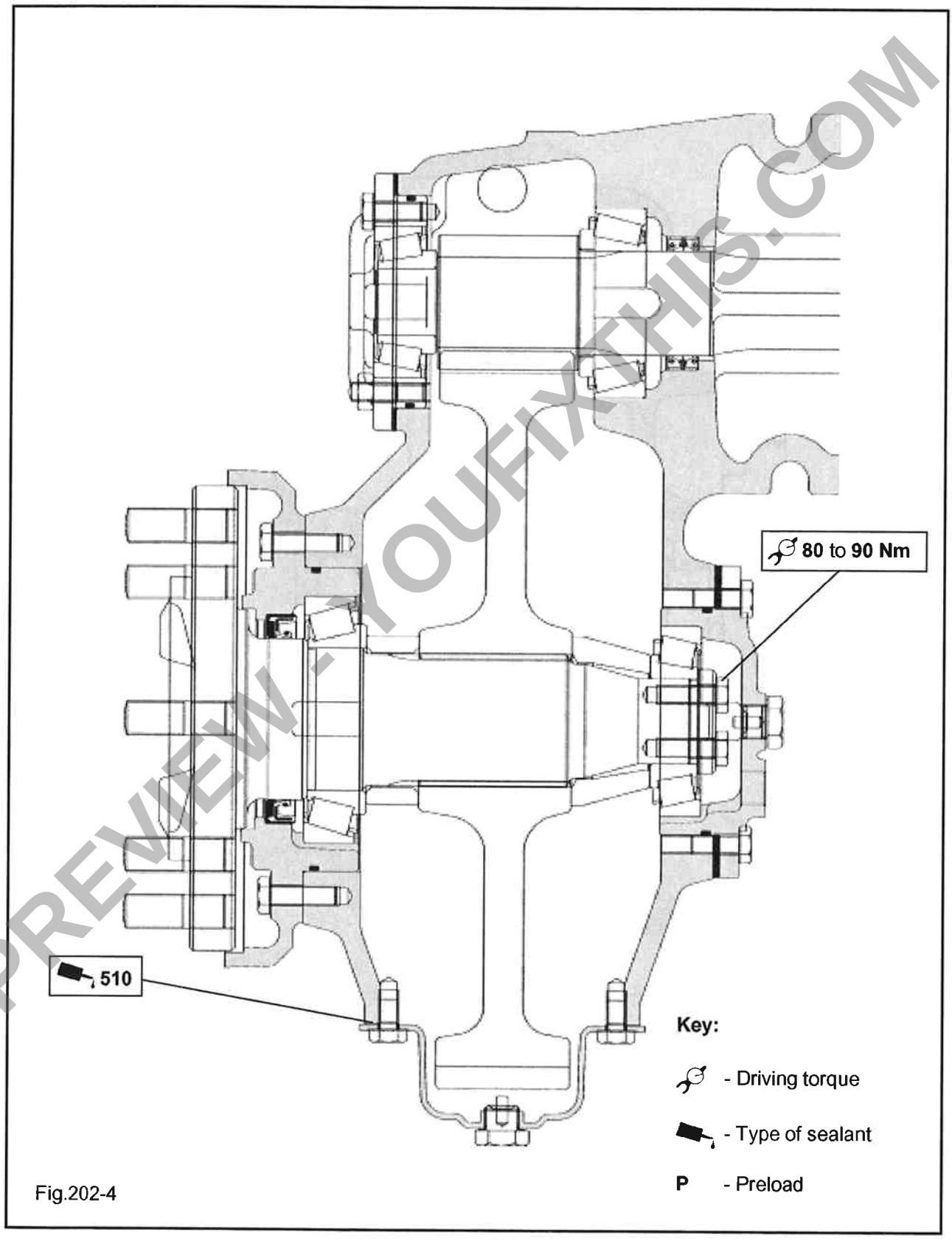


Fig.202-4

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Guide lines for disassembly, re-assembly and adjustment

3 - HOW TO OBTAIN THE PLAY BETWEEN THE PINION RING GEAR TEETH AND THE PRE-LOAD FOR THE DIFFERENTIAL BEARINGS

Turn the ring nut (H) with the aid of tool **03 DT MYT** in order to obtain the required play between the pinion-ring gear teeth (**0.20-0.30 mm**) measured in 4 points at 90° to each other.

Use the ring nut (I) to take up the float between the cones and cups of the bearings (L).
Turn the ring nut again until a total rotation movement of **32 to 35 Nm** measured on the bevel pinion is obtained, inclusive of the resistance from the retention ring.
Make 1+1 opposed caulks to lock the ring nuts.

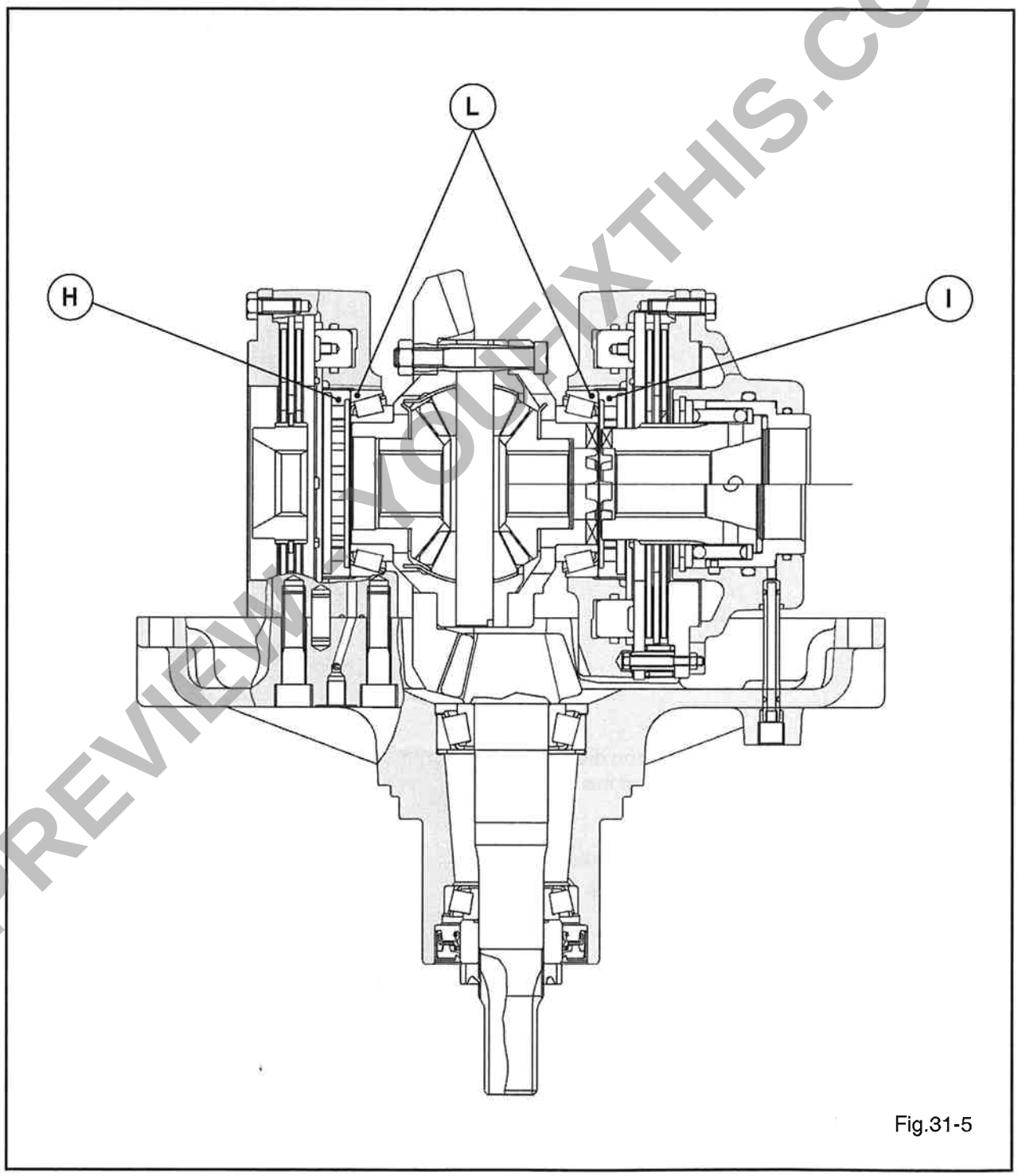


Fig.31-5

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Guidelines for disassembly, re-assembly and adjustments

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General hydraulic system (Powershuttle version)

1-2.4 Description of the high flow circuit

The high flow circuit is so called because of oil flow in greater quantity than in the low flow circuit.
This circuit is also supplied by the independent hydraulic pump, assembled and operating in tandem with the low flow one.
Hydraulic oil used by the transmission is sucked up by the pumps by means of a single pipe system, after passing through a cartridge filter (51).
The high flow pump, thus supplied, can send pressurized oil with absolute priority to the trailer brake valve (45) (if mounted), controlled by a valve calibrated for a pressure of **130/140 bar.**
The oil flows then to the auxiliary control valves (38), in second priority, and can be directed to the quick couplings, with relative rams, then flow on to the valve controlling the rear hydraulic power lift.
In both cases, a valve with a **180 bar** setting installed in the flow divider (when installed) or on the inlet plate of the auxiliary control valves, monitors the pressure, discharging the oil sent by the pump into the differential housing. The power lift's valve system can send pressurized oil to its lifting cylinders (47) when required by the operator.

Key

34 - High flow pump
38 - Auxiliary control valve unit
40 - Hydraulic lift rod
41 - Shut-off valves
42 - Hydraulic top link
45 - Trailer brake control valve
47 - Mechanical power lift's internal ram
48 - Lift control valve
51 - Cartridge filter on the intake

high pressure
discharge/intake

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Left-hand hydraulic power pack

4-4.2 Description of the operating mode

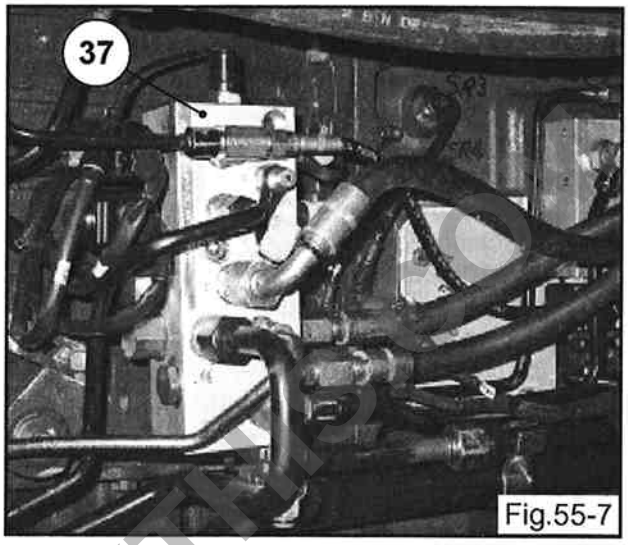


Fig.55-7

The lh hydraulic power pack (37 Fig.55-7) is installed on the right-hand side of the transmission and is fixed to the gearbox housing. The plant is a suitably machined aluminium block housing, containing the low pressure (22 bar) calibration valve (126), the pressure feeler (_SP6), the 9.5 bar calibration valve (125) of the cooling circuit and the calibration valve (124) of the 7-bar lubrication circuit.
On the plant are also screwed 2 solenoid valves with unions and tubes to supply oil to various users, to the cooling circuit, the lubrication circuit and to the free discharge. These 2 solenoid valves are used like a tap that completely opens or closes the flow of pressurized oil to the respective users. They are installed on the left-hand part of the power pack (viewed frontally installed on the tractor) (Fig.56-7). The solenoid valve is opened and closed, thus allowing oil to proceed towards the users or to be shut off, by transmitting voltage to its winding.
The solenoid valves (_YV3/_YV4) let pressurized oil flow on when they are energized, the valve (_YV3) engages the differential lock, the valve (_YV4) disengages the 4WD (spring-on).
Oil is thus maintained at a low pressure (22 bar) and is also sent to the power pack (46) to control clutch and brake of the rear PTO, and to the power pack (36) to control the clutches of the Powershuttle and Powerfour units.

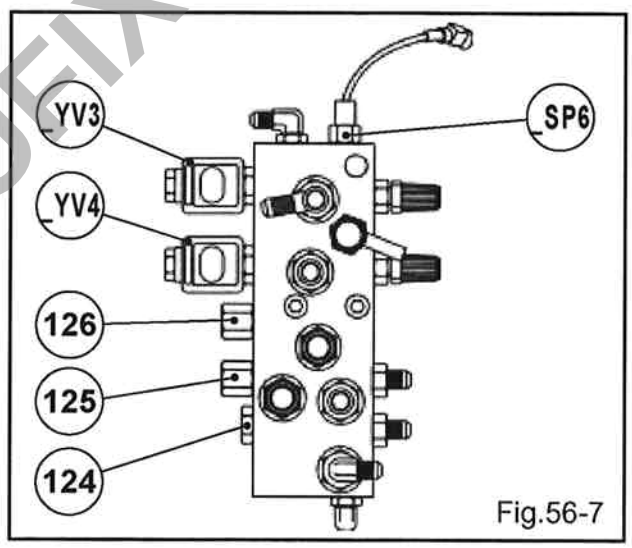


Fig.56-7

_YV3 Front/rear diff lock

_YV4 4WD disengagement (spring-on)

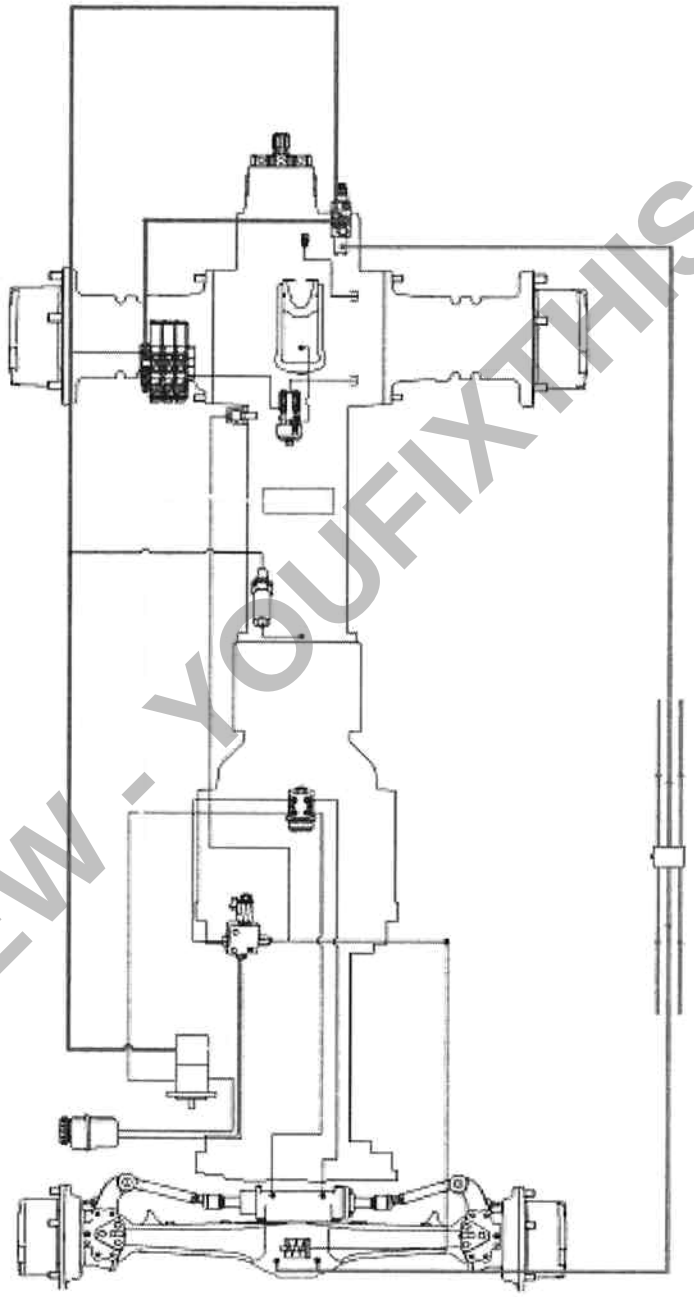
Lh side = powered

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Trailer brake

5-2.1 Hydraulic system

SPEEDFOUR VERSION



Key

2 - High flow pump
3 - High flow filter on the intake
5 - Trailer brake control valve
6 - Auxiliary control valves
18 - Brake on-off valve

high pressure
discharge/intake
brakes

Fig.107-7

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Operating pressure tests

L - CHECKING THE PRESSURE OF THE LOW FLOW CIRCUIT'S CALIBRATION VALVE (POWERSHUTTLE VERSION) (FIG.170-7)

Remove the plug that protects the quick coupling (142) on the hydraulic power pack (37) and fit on a **0 to 60 bar** pressure gauge. When the engine is running, the pressure gauge must indicate a value between **21 and 23 bar**.

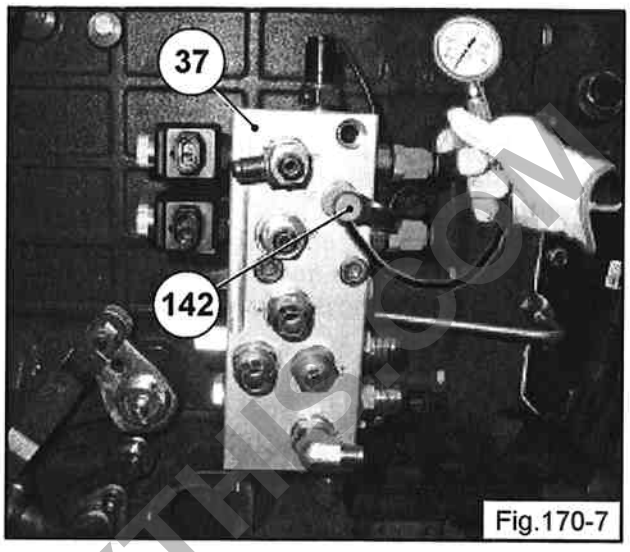


Fig.170-7

M - CHECKING THE PRESSURE OF THE COOLING CIRCUIT'S CALIBRATION VALVE (9.5 BAR) (POWERSHUTTLE VERSION) (FIG.171-7)

Detach the tube (A) that connects the hydraulic power pack (37) to the radiator and install tool **05 IDR MYT** with to adapter **122 IDR GL** and a **0** to **25 bar** pressure gauge applied. Re-connect the tube (A) to tool **05 IDR MYT** and measure the pressure value. It must be between **8.5 and 10.5 bar** when the engine is running.

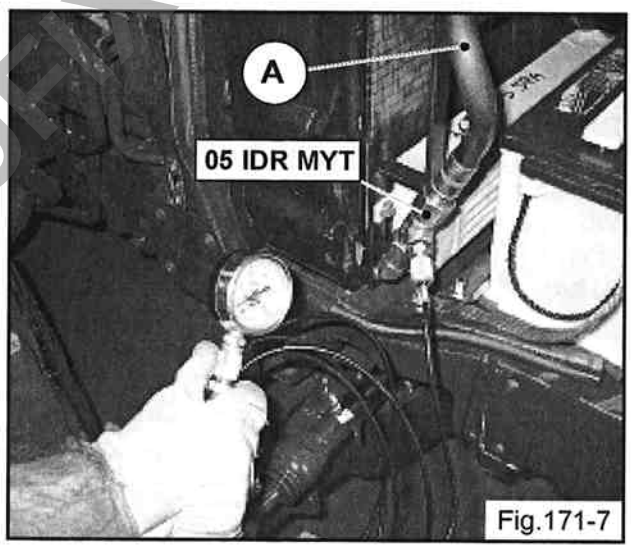


Fig.171-7

N - CHECKING THE PRESSURE OF THE LUBRICATION CIRCUIT'S CALIBRATION VALVE (7 BAR) (POWERSHUTTLE VERSION) (FIG.172-7)

Remove the lubrication circuit supply union (145) and install tool **05 IDR REX** with adapter **122 IDR GL** and with a **0 to 25 bar** pressure gauge applied. When the engine is running, the pressure gauge must indicate a value between **6** and **8 bar**.

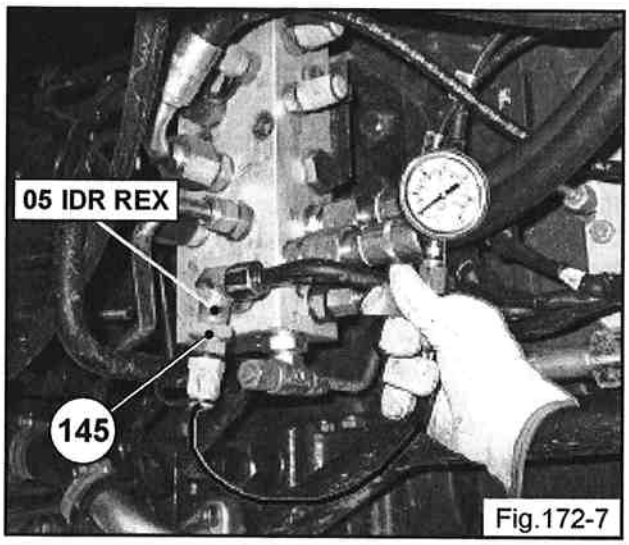


Fig.172-7

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Inspections, adjustments and troubleshooting

3-2 Adjustments of C-Max ED power lift

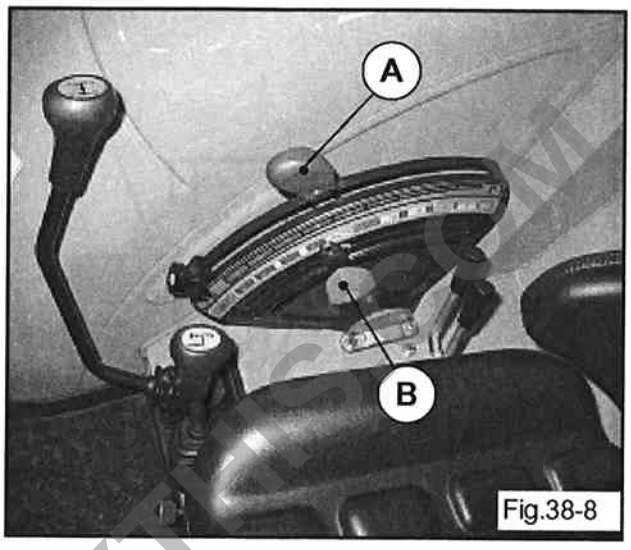


Fig.38-8

A - FOREWORD

The hydraulic power lift will not normally need to be periodically adjusted as there are no parts liable to appreciable wear.

However, adjustments are essential after a general overhaul or when the power lift controls behave in a faulty way, such as reacting in delay to the manual and automatic commands.

It is not particularly difficult to adjust the hydraulic power lift. However, these adjustments must be carried out with particular care, so it is advisable to have them done by skilled personnel.
Before beginning the operations described below, make sure that the entire hydraulic circuit operates perfectly by conducting the hydraulic tests described in the previous chapter if necessary.

B - ADJUSTMENTS

There are 5 adjustments to be made in the following order:

1 - **Control lever coupling to the power lift's output levers;**
2 - **Adjustment of the valve system's sensitivity;**
3 - **Adjustment of the end of travel position of the links in the draft control function;**
4 - **Adjustment of the end of travel position of the links in the position control function;**
5 - **Draft control adjustment.**

Note: *these adjustments must be carried out whenever the lifting unit is overhauled or when the power lift operates in a faulty way that cannot be ascribed to the hydraulic circuit.*

WARNING: before starting the engine, make sure that the screws that fix the valve system to the power lift and the cover screws of the discharge valve are well tightened.

WARNING: keep well away of moving parts when the engine is running.

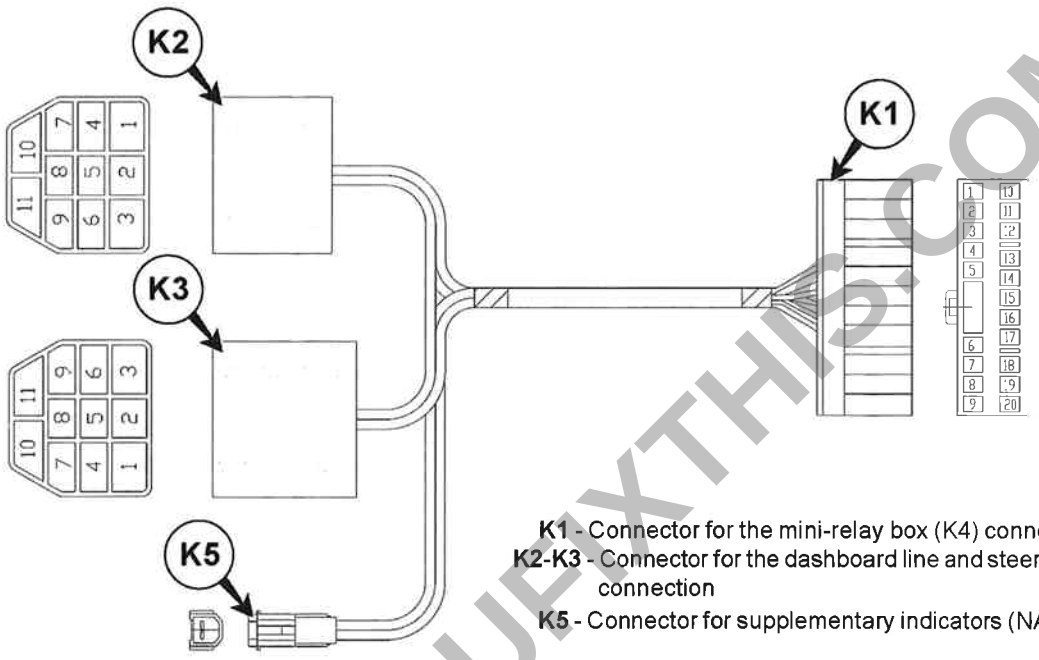
WARNING: before loosening the screws of the discharge valve cover, stop the engine and fully lower the power lift links until the pressure in the cylinder has completely discharged.

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Technical specifications and diagrams

WIRING



K1 - Connector for the mini-relay box (K4) connections
K2-K3 - Connector for the dashboard line and steering connection
K5 - Connector for supplementary indicators (NAO)

Fig.20-9

MULTIPLE WIRING DIAGRAM

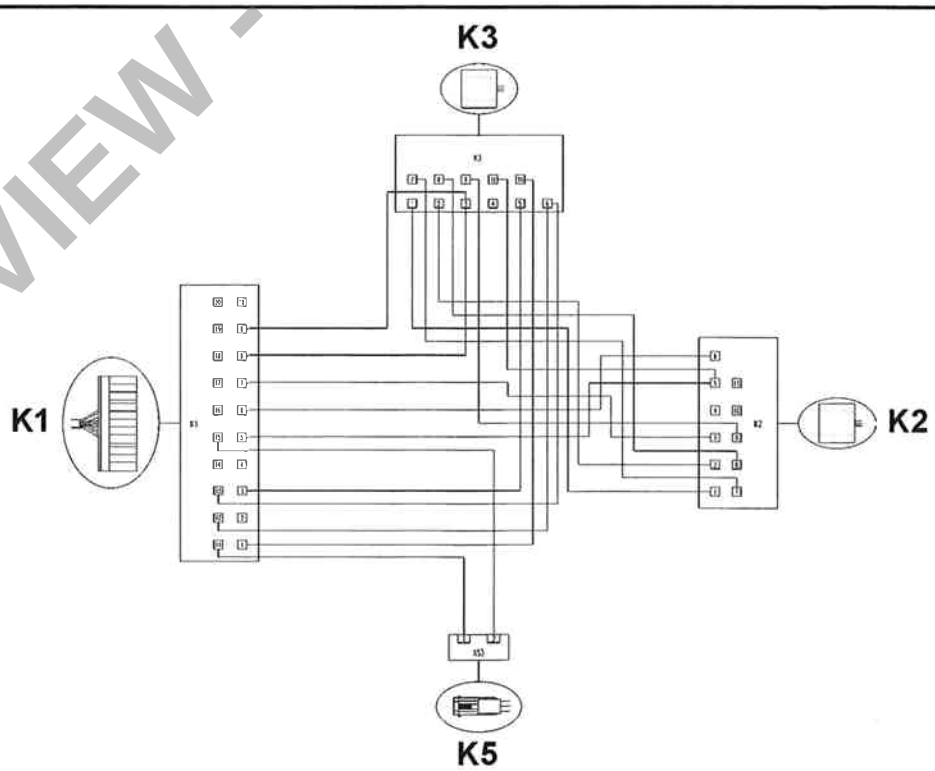


Fig.21-9

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A - C-Max Speedfour Footstep version

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B - C-Max Speedfour cab version

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Dashboard line

TERMINAL BOARD (XS1) FOR DASHBOARD / FRONT LINE

Terminal	Colour of wire	To connector or component	Terminal
1	L	_K1	5
2	L	_K1	5
3	VB	C33	B21
4	R	BUS1	A
5	RV	C34	A3
6	C	_F6	B
7	GL	C34	A7
8	HL	C33	B10
9	R	BUS1	A
10	GR	C33	B1
11	ZN	C8	1
12	ZB	C34	A9
13	VL	C19	2
14	MN	_K8	3
15	R	_K16	3
16	R	k16	3
17	R	_F25	A
18	(not used)		
19	(not used)		
20	H	_F10	B
21	HN	_F10	B
22	V	_F11	B
23	VN	_F11	B
24	(not used)		
25	(not used)		
26	R	C7	30
27	(not used)		
28	N	C7	19
29	V	C13	5
30	(not used)		
31	R	_K11	3
32	(not used)		
33	R	_F24	A
34	R	_36	A

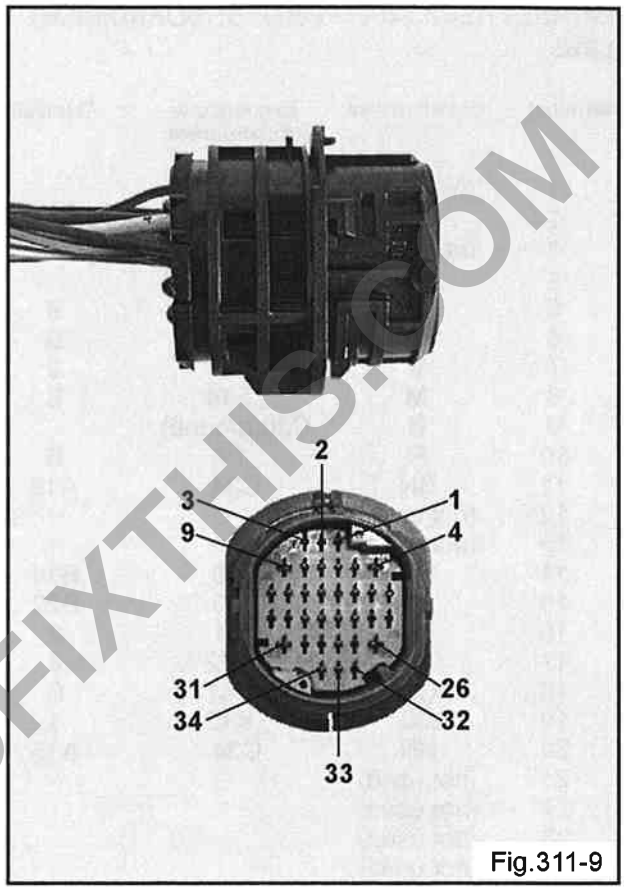


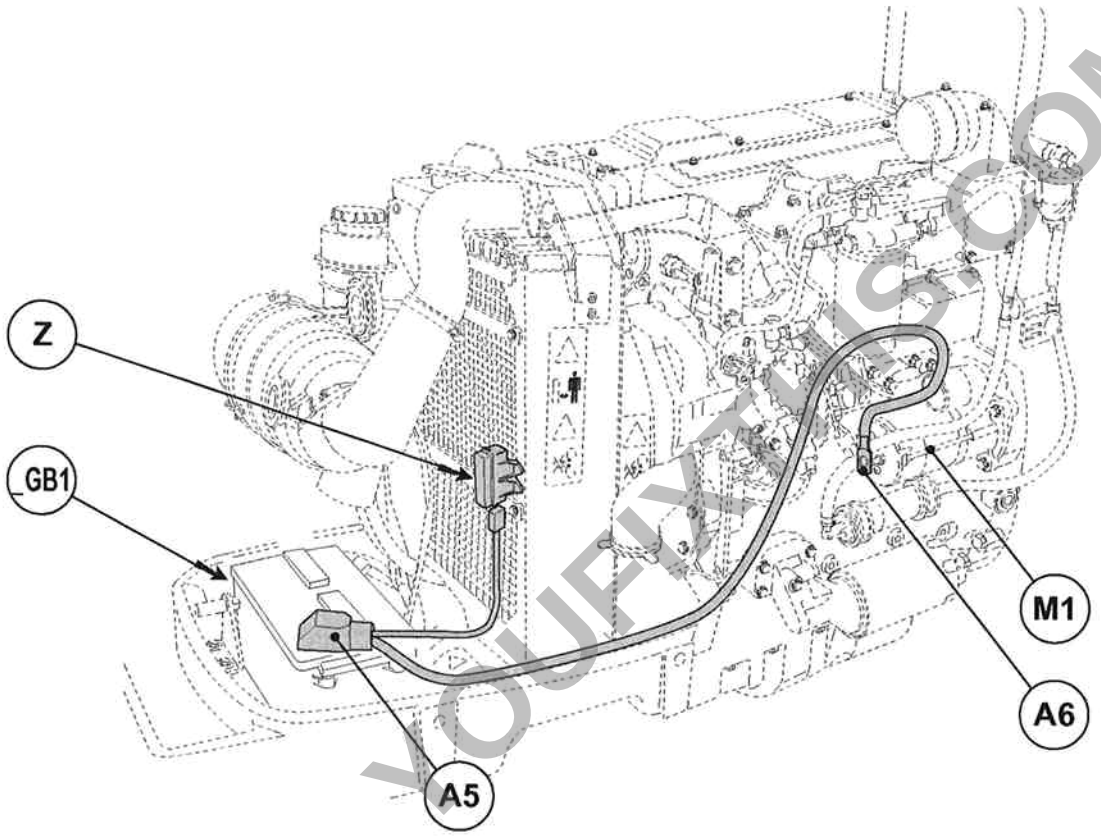
Fig.311-9

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Battery-starter motor line

C.2-2.3 Connector locations



_GB1- Battery
_M1- Starter motor
A5- Eyelet for battery positive post
A6- Starter motor connection terminal
Z- Front fuse box

Fig.378-9

The front fuse box (Z) is located before the battery (_GB1).

It contains four fuses that have the important function to protect the whole electric system of the tractor from short-circuits and excessive power draw.
Before replacing these fuses, the cause that led to the fault should be ascertained and removed.

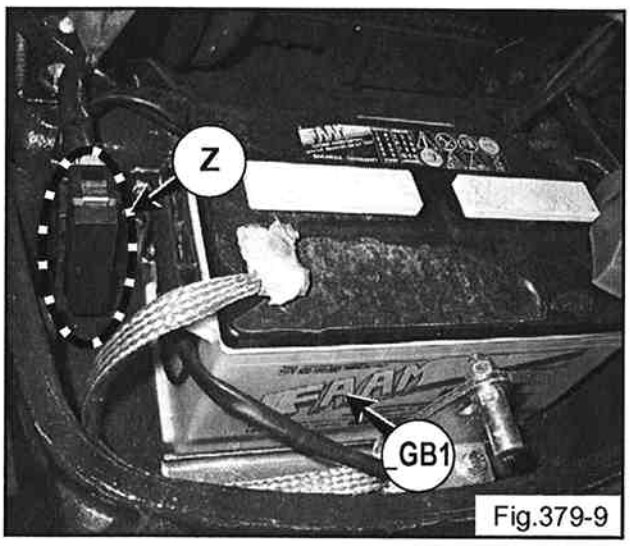


Fig.379-9

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Rear line

CONNECTOR (P5) FOR MICROSWITCH OF REAR FAST PTO

Terminal	Colour of wire	To connector or component	Terminal
1	HL	XS2	2
2	B	P23 (junction)	2

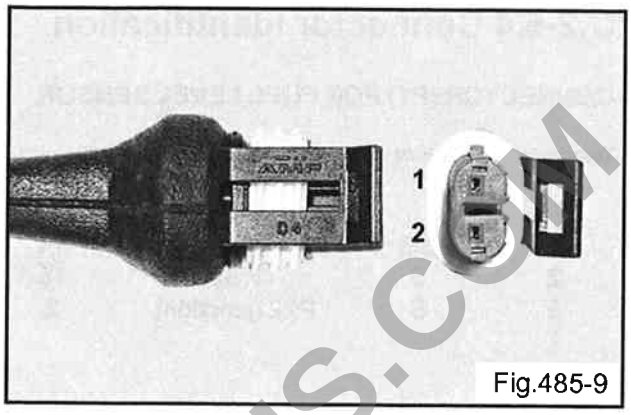


Fig.485-9

CONNECTOR (P6) FOR MICROSWITCH OF STARTING ENABLE IN GEARSHIFT LEVER

Terminal	Colour of wire	To connector or component	Terminal
1	LN	XS2	18
2	L	XS2	17

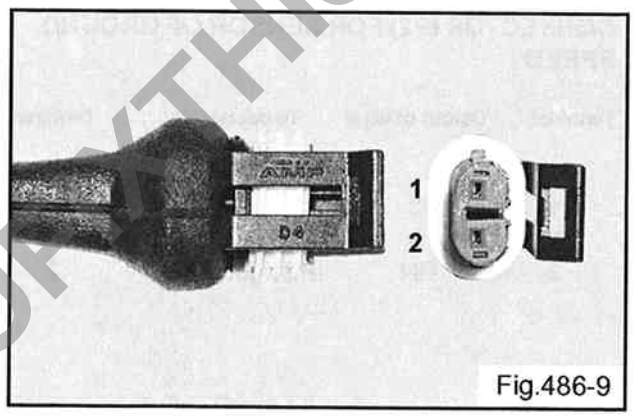
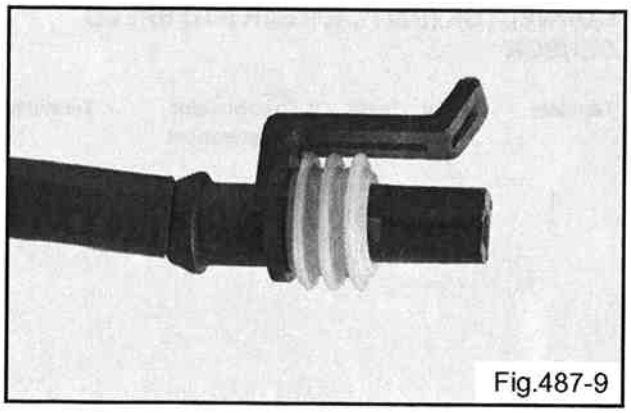


Fig.486-9

CONNECTOR (P7) FOR TRAILER BRAKE PRESSURE SWITCH

Terminal	Colour of wire	To connector or component	Terminal
1	BN	XS2	11


Fig.487-9

CONNECTOR (P8) FOR SLOW REAR PTO MICROSWITCH

Terminal	Colour of wire	To connector or component	Terminal
1	LN	XS2	22
2	B	P25 (junction)	2
3	(not used)		

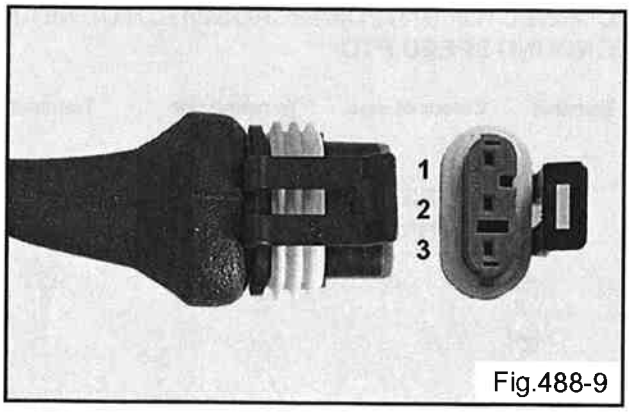


Fig.488-9

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Headlight extension line

D.2-4.4 Connector identification

CONNECTOR (H1) FOR LEFT-HAND HEADLIGHT

Terminal	Colour of wire	To connector or component	Terminal
1	B	H3	2C
2	H	H3	2B
3	V	H3	1A

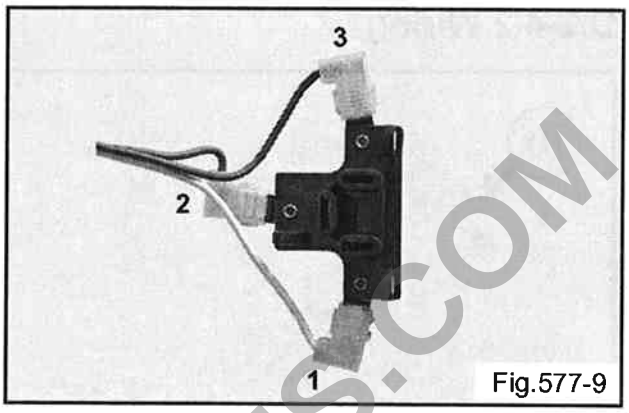


Fig.577-9

CONNECTOR (H2) FOR RIGHT-HAND HEADLIGHT

Terminal	Colour of wire	To connector or component	Terminal
1	B	H3	1C
2	HN	H3	2A
3	VN	H3	1B

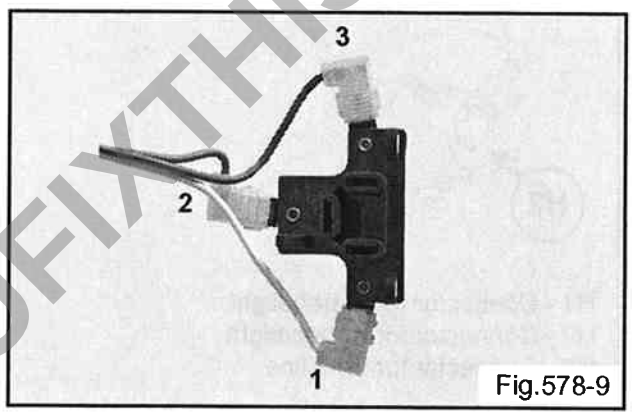


Fig.578-9

CONNECTO (H3) FOR FRONT LINE

Terminal	Colour of wire	To connector or component	Terminal
1A	V	H1	3
1B	VN	H2	3
1C	B	H2	1
2A	HN	H2	2
2B	H	H1	2
2C	B	H1	1

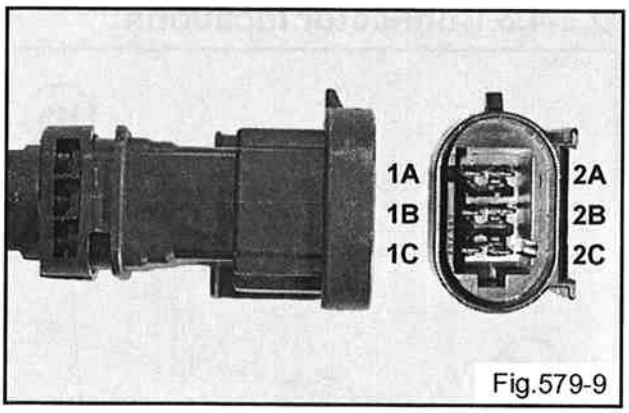


Fig.579-9

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Sect.4 - Main components

4-1 Introduction

This section describes the "main" electrical components installed in **C-Max** tractors and that require use of particular know-how and information concerning the servicing and regulating operations.
The potentiometers, sensors, solenoid valve, switches and buttons are identified with the same letters and progressive numbers used in the functional diagram. This identification is maintained throughout all the sections of this manual.

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Instrument

COMMERCIAL NAME	TYRE	RADIUS	N°
C-Max	12,4 R36	700	15
C-Max	13,6 R36	725	21
C-Max	13,6 R38	750	22
C-Max	14,9 R28	650	9
C-Max	14,9 R30	675	13
C-Max	16,9 R28	675	13
C-Max	16,9 R30	700	15
C-Max	16,9 R34	750	22
C-Max	18,4 R30	725	21
C-Max	480/65 R28	650	9
C-Max	480/70 R30	700	15
C-Max	480/70 R34	750	22
C-Max	540/65 R34	750	22

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Calibration procedure

HOW TO BEGIN THE CALIBRATION PROCEDURE (C5)

a - Start the engine.

b- Depress and keep depressed for 10" both buttons (_SB2 and _SB3) on the gearshift lever until the flashing message (**C 04**) appears on the display.

c - Press the upper button (_SB3) on the gearshift lever and keep it depressed to pass on to the next phase (**C 05**), until the flashing message (**C 05**) appears on the display.

b - depress and keep depressed again for 10" the buttons (_SB2 and _SB3); the flashing message (**AC 05**) should appear on the display.

e - engage the 1st gear in the fast range and bring the engine rate to 1500/2000 RPM.

f - Using the reverse shuttle lever (I fig.34-10), select the reverse gear by pushing the lever fully back: a number (e.g. 261 Fig.37-10) should appear on the display after a few seconds.

g - After a few seconds, the message (do) will appear, indicating that calibration has been completed.

NOTE: *If the messages fail to appear as listed, repeat the calibration operations again from the beginning.*

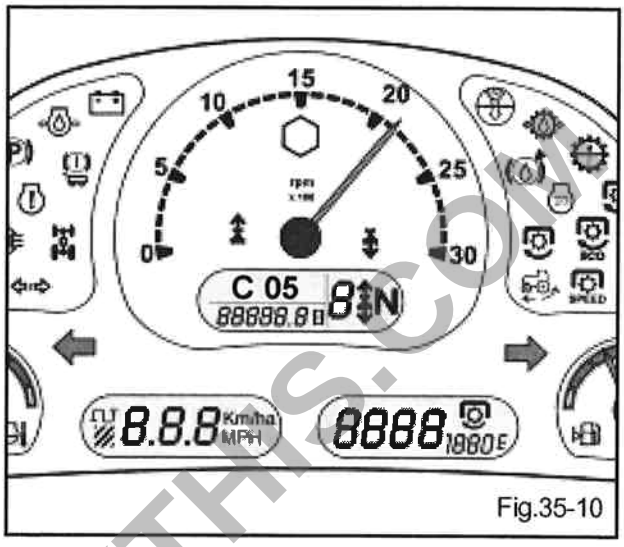


Fig.35-10

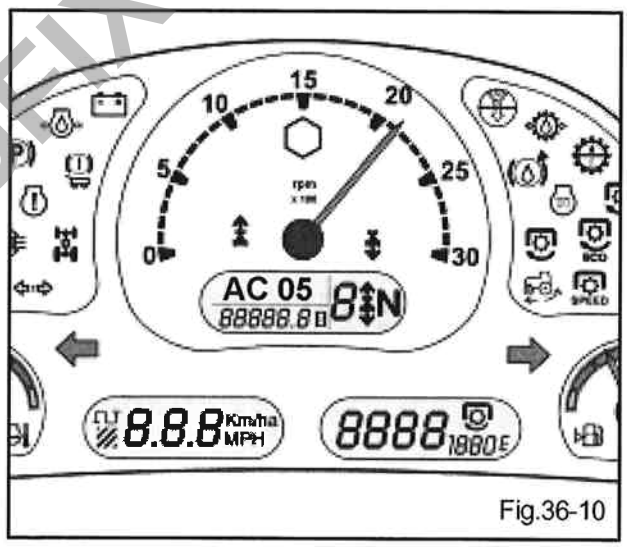


Fig.36-10

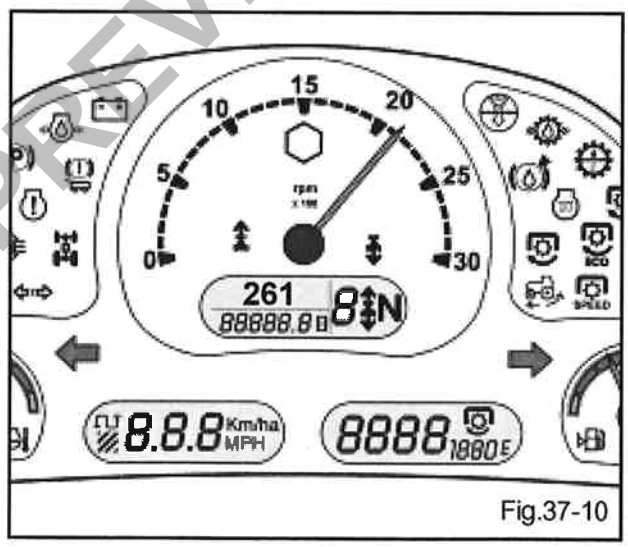


Fig.37-10

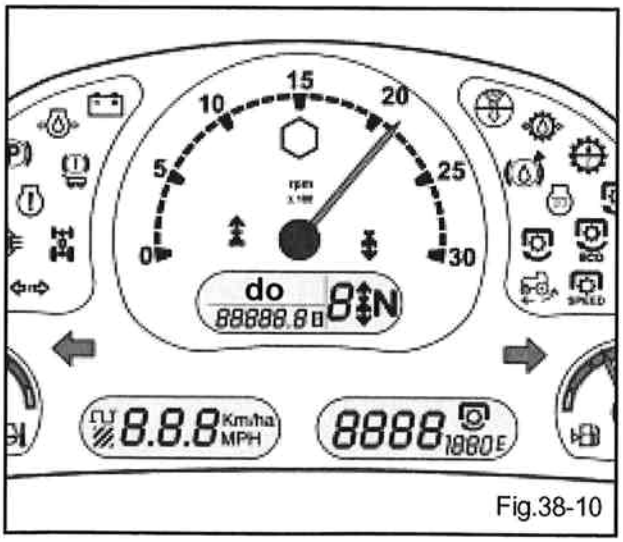


Fig.38-10

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Alarm codes

Alarm code (87)

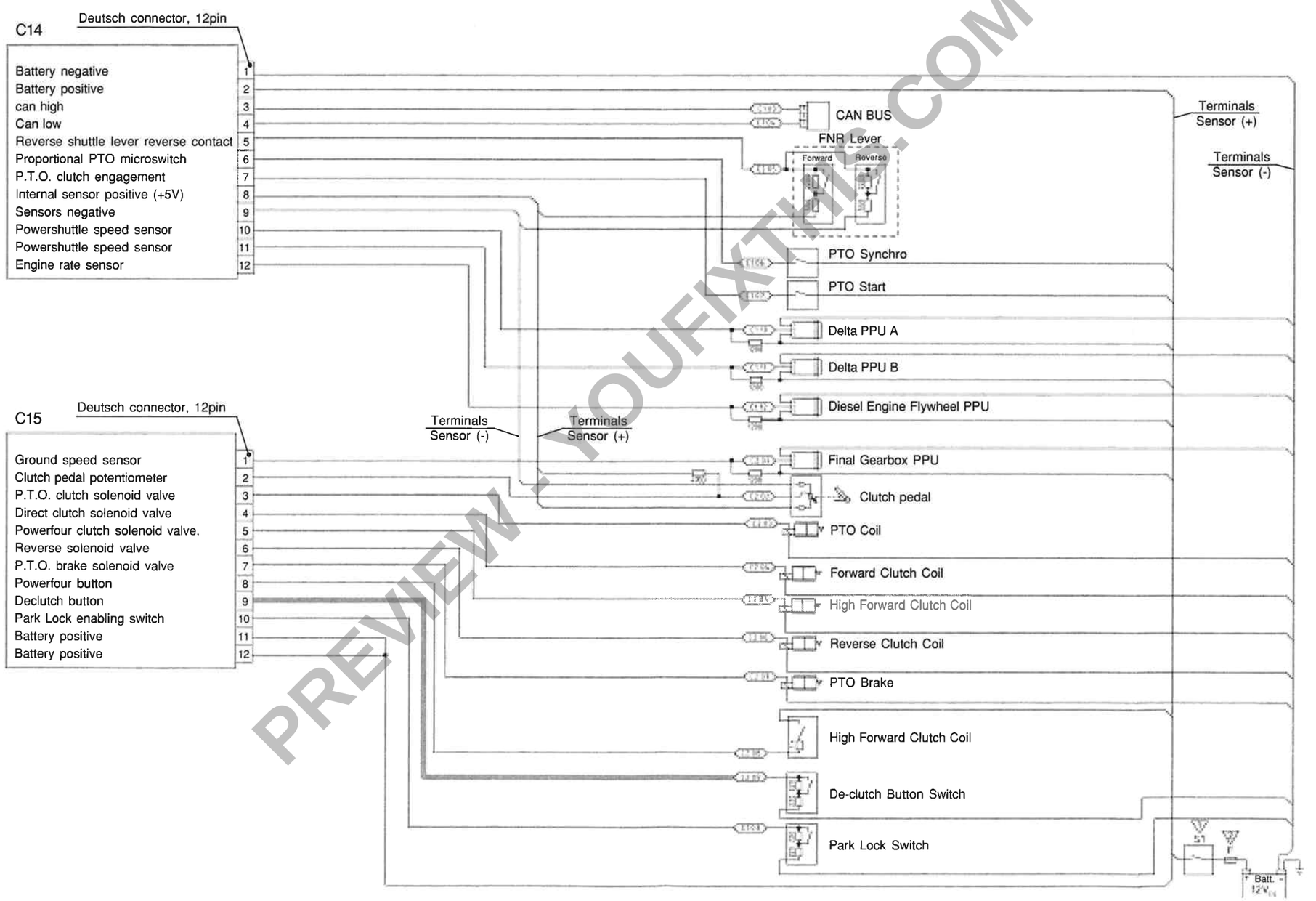


Fig.38-11

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Air conditioning system (AC)

INDEX

Sect.3 Air conditioning system (AC)

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3-2 Operating instructions 12-27

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