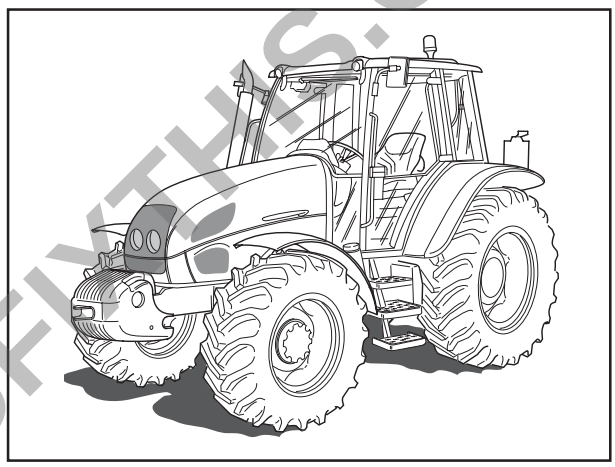
Vision
80-90-100



Training manual
P/N° 3667238M2

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Landini

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Driving torques

2-2 Recommended driving torques for 1004.42/1004.40T engines

Cylinder head

Torque all the screws to **110 Nm** in compliance with the numeric order of Fig. 1-2.

With the aid of the tool (1) shown in Fig. 2-2 or making a mark on the screws and on the cylinder head, tighten the screws further in compliance with the numeric order and the rotation degrees shown in Fig. 3-2

Screws **S** by **150°**, screws **M** by **180°** and screws **L** by **210°**.

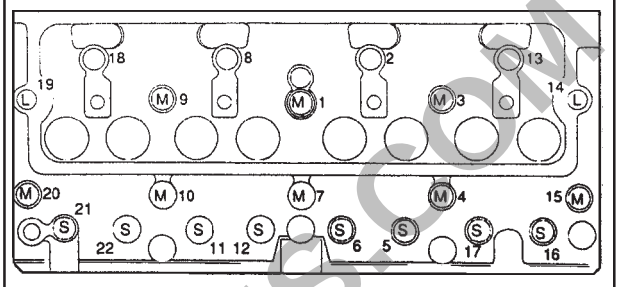


Fig.1-2

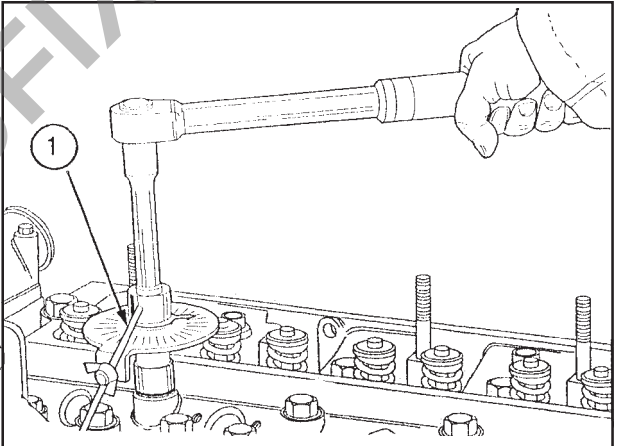


Fig.2-2

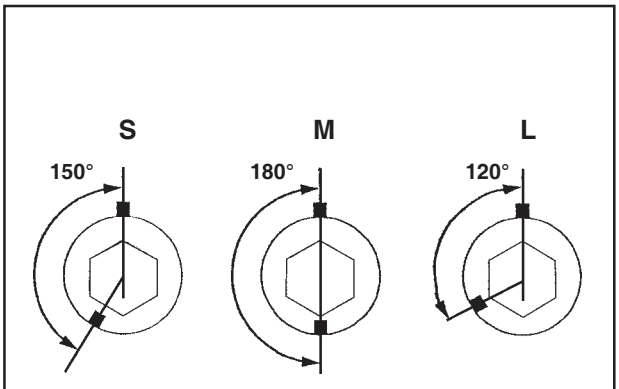


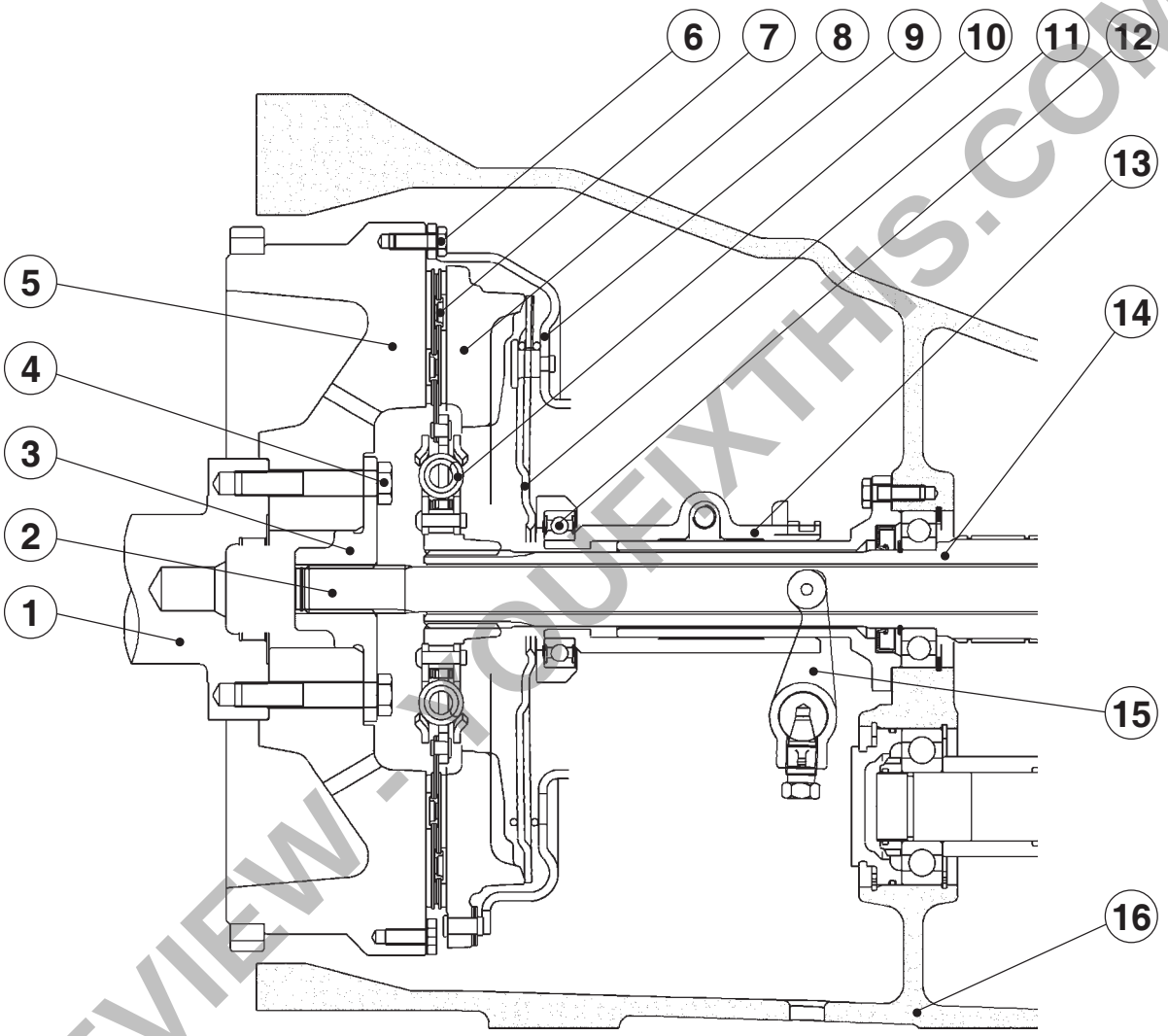
Fig.3-2

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Sect.1 - General description

1-1 Drawing of assembly and components (Speedfive version)



1 - Drive shaft
2 - PTO transmission shaft
3 - Shrunk-on hub
4 - Hub fixing screws
5 - Flywheel
6 - Clutch fixing screws
7 - Main clutch plate
8 - Pressure plate
9 - Clutch cover
10 - Flexible coupling spring
11 - Diaphragm spring
12 - Thrust bearing
13 - Clutch disengaging cover
14 - Gearbox input shaft
15 - Thrust bearing control fork
16 - Engine-gearbox assembly casing

Fig.1-3

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Sect.1 - General description

1-1 Introduction

Regardless of its power rating, the transmission of **VISION** tractors can consist of various mechanical assemblies that enable it to move forwards and in reverse with different speed ratios.
It is the modular type and can house various compositions in the engine-gearbox assembly:
- assembly formed by a single-plate clutch and mechanical reverse shuttle ("Speedfive" version) (Fig.1-4);
- assembly formed by a damper plate and hydraulic reverse shuttle ("Powershuttle" version) (Fig.2-4);
- assembly formed by a damper plate, a hydraulic reverse shuttle (Powershuttle) and a further reduction half-geare (Powerfive) that can be engaged on load (Fig.3-4).

The gearbox has 5 synchronized speeds, three ranges (slow-medium-fast), a pinion-ring gear assembly and differential, brakes and side final drives.
On request, the gearbox can be fitted with a creeper operated by means of the range control lever. As a consequence, the creeper can be engaged as an alternative to the actual ranges.
In all **VISION** tractor configurations, the PTO is equipped with an electrohydraulically engaged oil-cooled multiple-plate clutch.
The synchronized reverse shuttle allows the operator to make fast, safe manoeuvres and facilitates handling jobs or work with front loaders.

SPEEDFIVE TRANSMISSION ASSEMBLY

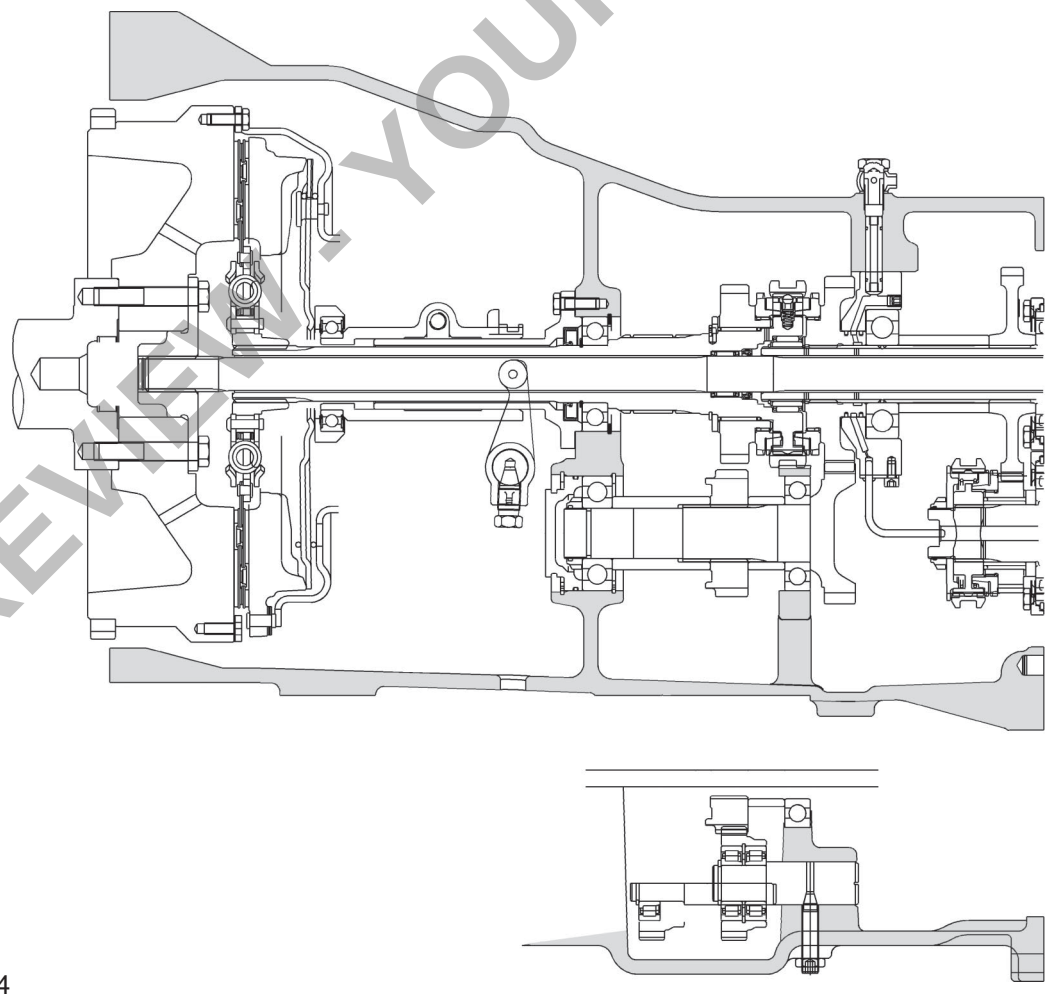


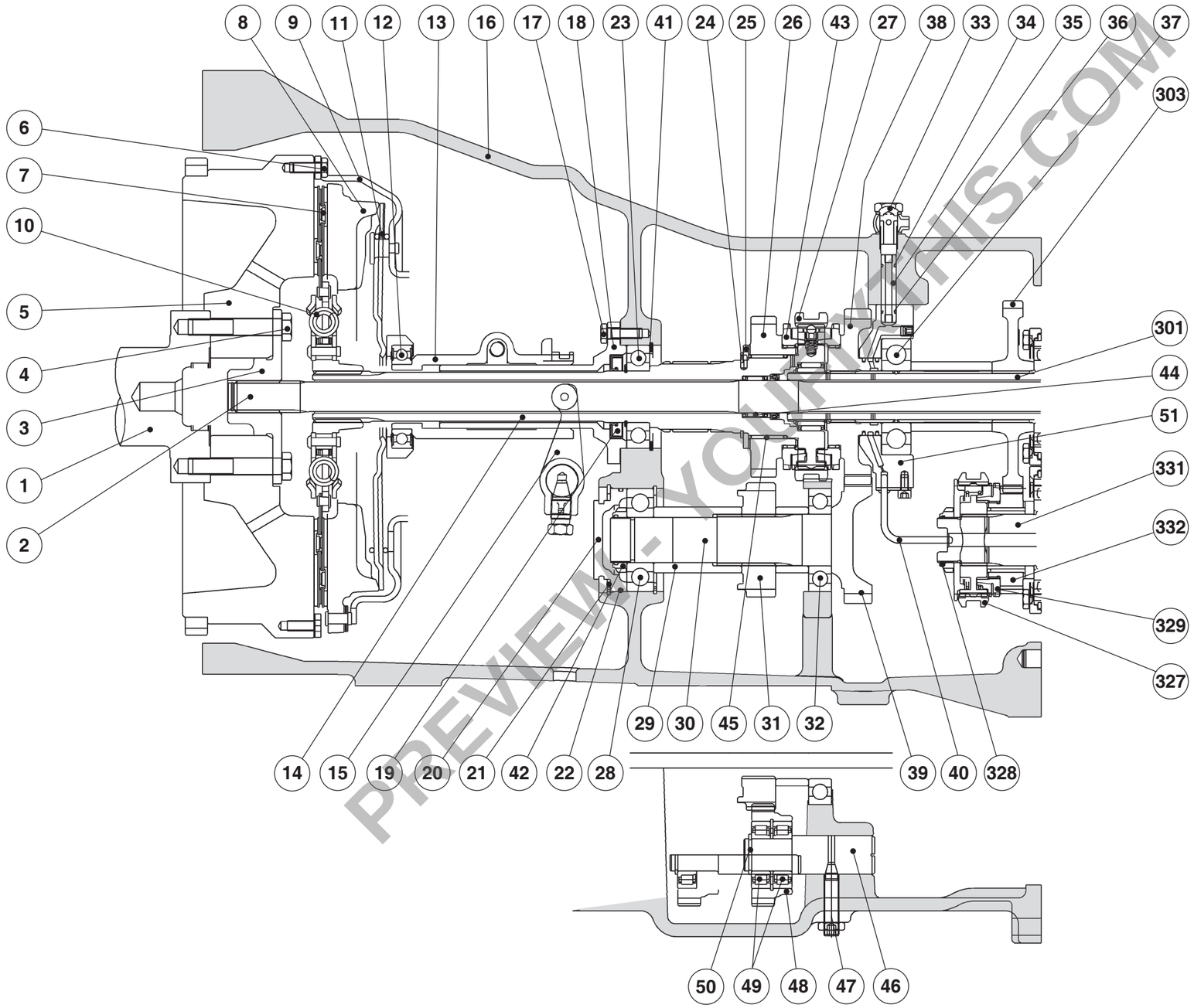
Fig.1-4

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A - Engine-gearbox ass'y (Speedfive version)

A1 - Drawing of assembly and main components



1 - Drive shaft
2 - PTO transmission shaft
3 - Keyed hub
4 - Hub fixing screw
5 - Flywheel
6 - Clutch fixing bolt
7 - Gearbox clutch plate
8 - Pressure plate
9 - Clutch cover
10 - Flexible coupling spring
11 - Diaphragm spring
12 - Thrust bearing
13 - Clutch disengaging collar
14 - Gearbox input shaft
15 - Thrust bearing control fork
16 - Engine/gearbox ass'y housing
17 - Clutch collar support fixing screw
18 - Clutch collar support
19 - Retention ring
20 - Plug
21 - Spring ring
22 - Retention ring (O-ring)
23 - Ball bearing
24 - Spring ring
25 - Thrust plate
26 - Reverse shuttle gear
27 - Reverse shuttle synchromesh
28 - Ball bearing
29 - Spacer
30 - Reverse shuttle receiver shaft
31 - Gear for reverse shuttle
32 - Ball bearing
33 - Lubrication union
34 - Retention ring (O-ring)
35 - Lubrication tube
36 - Retention ring (O-ring)
37 - Ball bearing
38 - Forward/reverse gear
39 - Reverse shuttle gear
40 - Gearbox lubrication tube
41 - Spring ring
42 - Ring nut
43 - taper ring for reverse shuttle synchromesh
44 - Needle cage
45 - Needle cage
46 - Shaft for reverse shuttle gear
47 - Reverse shuttle shaft fixing plug
48 - Reverse shuttle gear
49 - Roller bearing
50 - Spring ring
51 - Ball bearing housing
301 - Main shaft
303 - 5th speed gear driving gear
327 - 5th speed gear synchromesh
328 - Ring nut
329 - Taper ring for 5th speed gear synchromesh
331 - Transmission shaft
332 - 5th speed gear driven gear

Fig.26 -4

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D - Gearbox

D1 - Drawing of assembly (version with creeper)

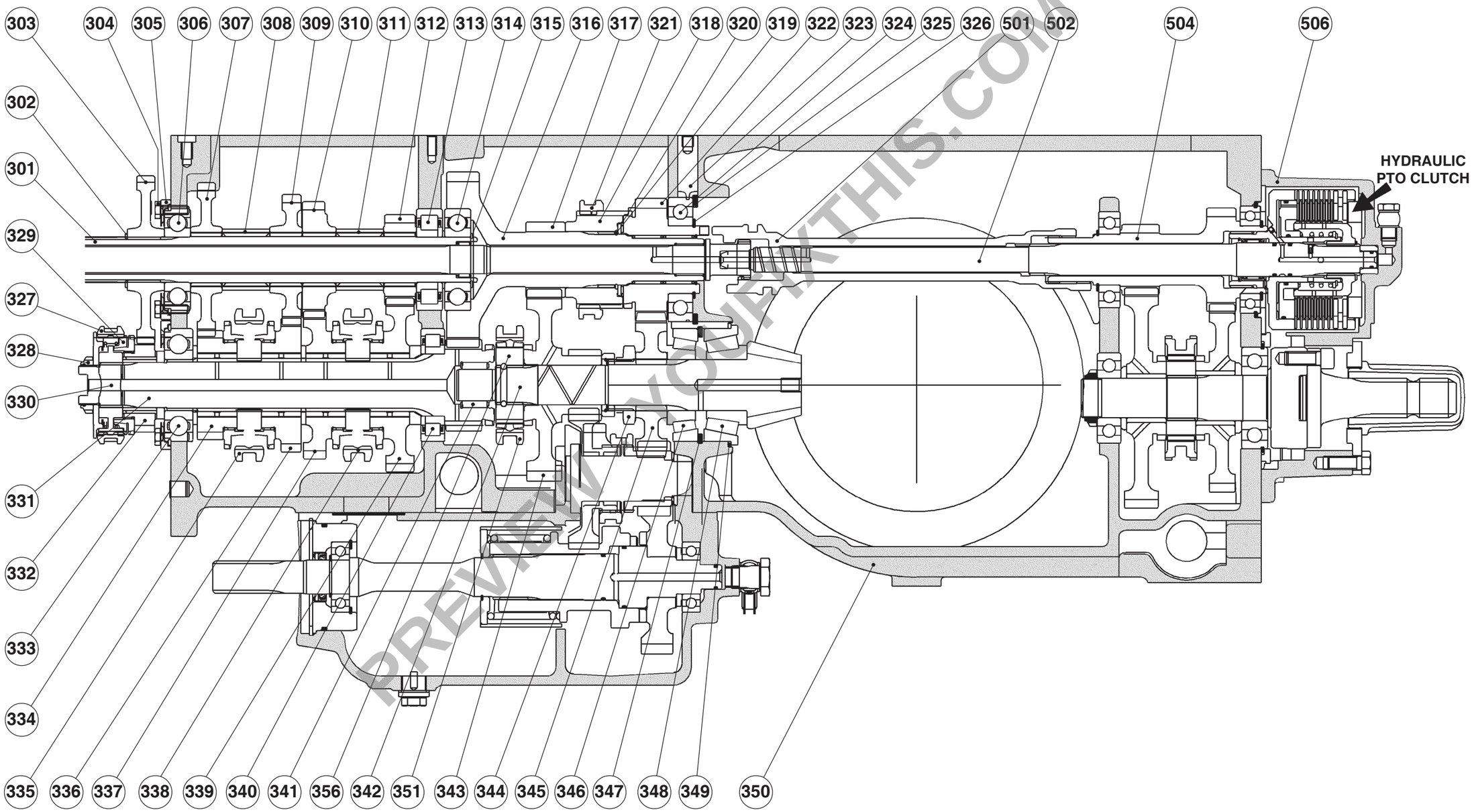


Fig.124-4

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Sect. 1 - General description

1-1 Drawing of assembly

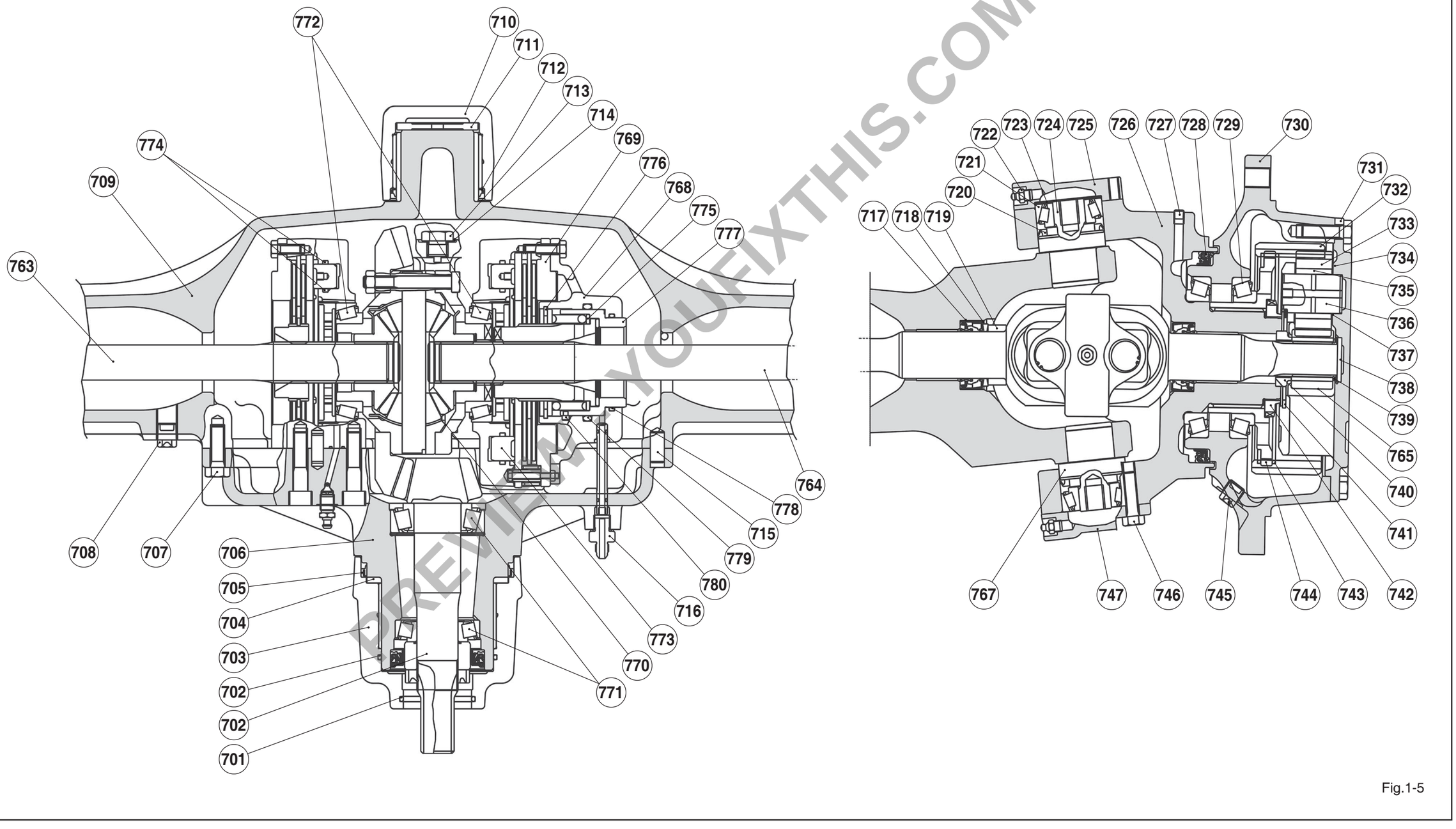
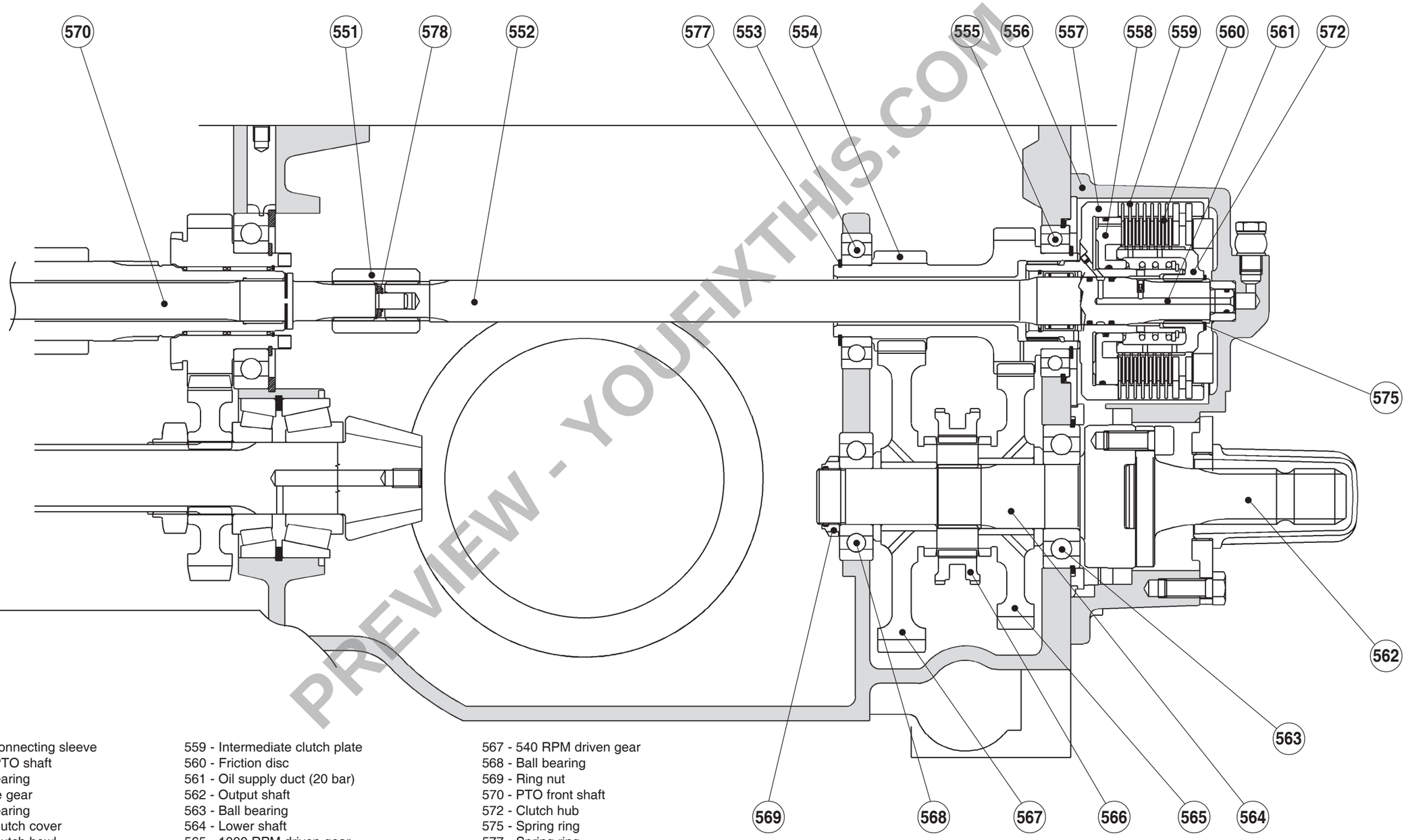


Fig.1-5

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Sect.1 - General description

1-1 Drawing of assembly and main components (version with independent PTO only)



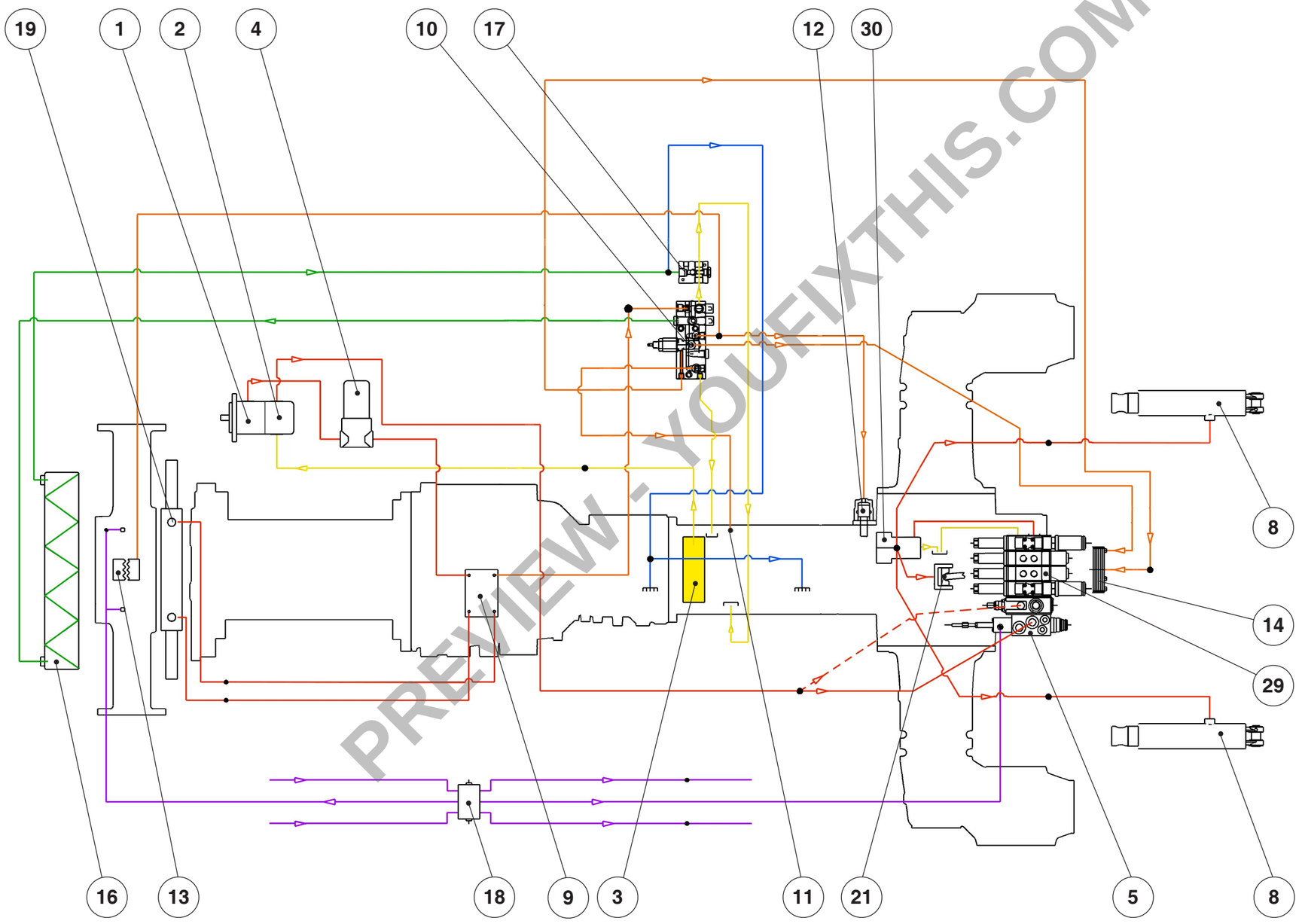
551 - PTO connecting sleeve
552 - Rear PTO shaft
553 - Ball bearing
554 - Double gear
555 - Ball bearing
556 - PTO clutch cover
557 - PTO clutch bowl
558 - Piston
559 - Intermediate clutch plate
560 - Friction disc
561 - Oil supply duct (20 bar)
562 - Output shaft
563 - Ball bearing
564 - Lower shaft
565 - 1000 RPM driven gear
566 - 540 or 1000 RPM selection sleeve
567 - 540 RPM driven gear
568 - Ball bearing
569 - Ring nut
570 - PTO front shaft
572 - Clutch hub
575 - Spring ring
577 - Spring ring
578 - Spring ring

Fig.1-6

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Sect.1 - General hydraulic circuit (Speedfive version)

General hydraulic circuit



Key

1 - Low pressure pump
2 - High pressure pump
3 - Intake cartridge filter
4 - Oil filter on the delivery
5 - Hydraulic valve for trailer brake
8 - Supplementary lifting cylinders
9 - Power steering
10 - Hydraulic power pack
11 - 4WD clutch (Spring-on)
12 - Rear diff lock
13 - Front diff lock
14 - Hydraulic PTO clutch
16 - Transmission oil cooling radiator
17 - Lubrication circuit calibration valve
18 - Brake circuit on-off valve
19 - Steering circuit
21 - Internal power lift cylinder
29 - Auxiliary control valve ass'y
30 - Mechanical power lift valve system

high pressure
low pressure
discharge/intake
cooling
lubrication
brakes

Fig.1-7

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Sect.3 - Hydraulic braking system

3-1 Hydraulic braking circuit

Key

2 - High pressure pump
3 - Intake cartridge filter
5 - Hydraulic valve for trailer brake
18 - Brake circuit on-off valve

high pressure
discharge/inlet
brakes

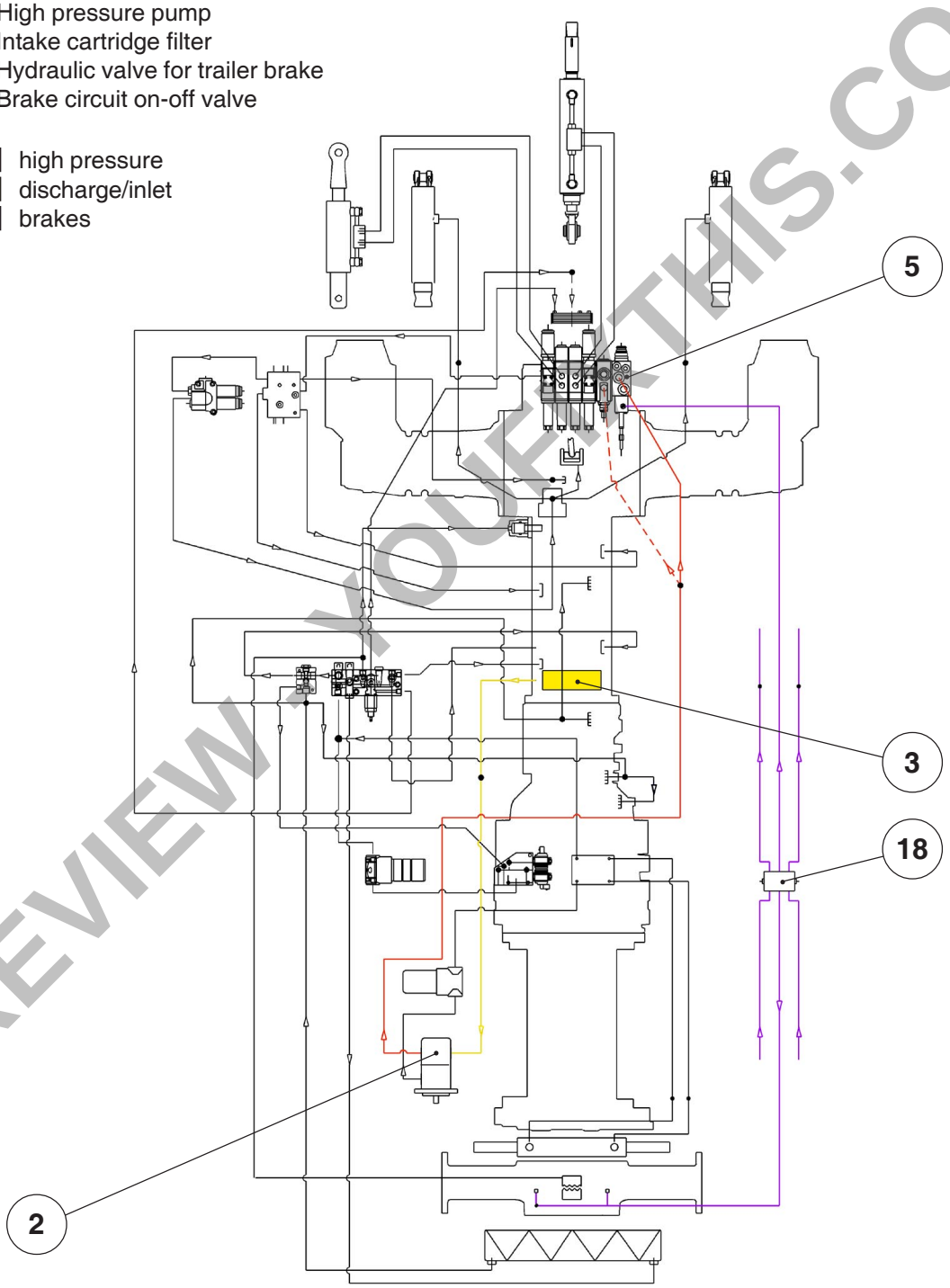


Fig.16-7

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A - Hydraulic pump

A1 - Main components

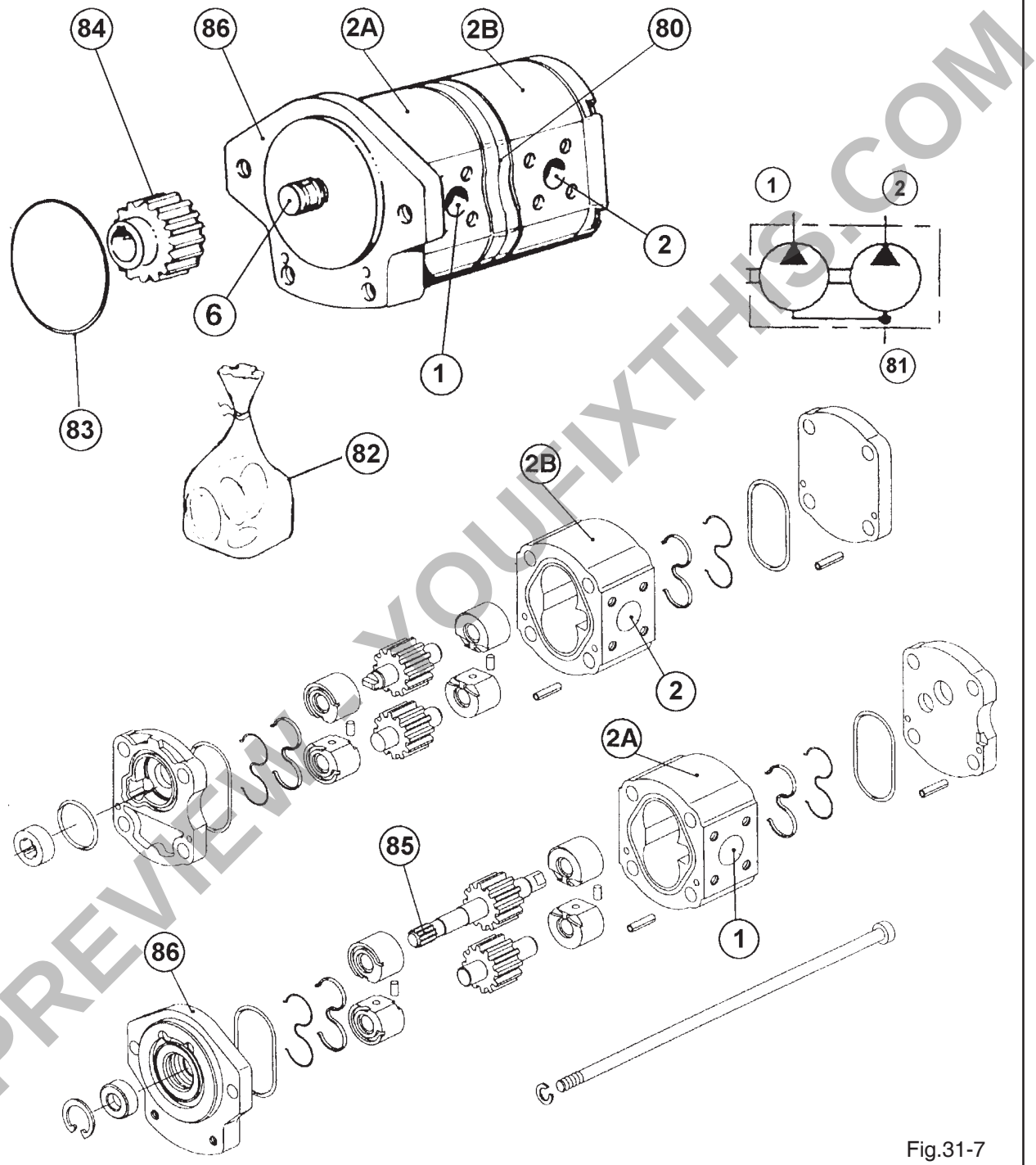


Fig.31-7

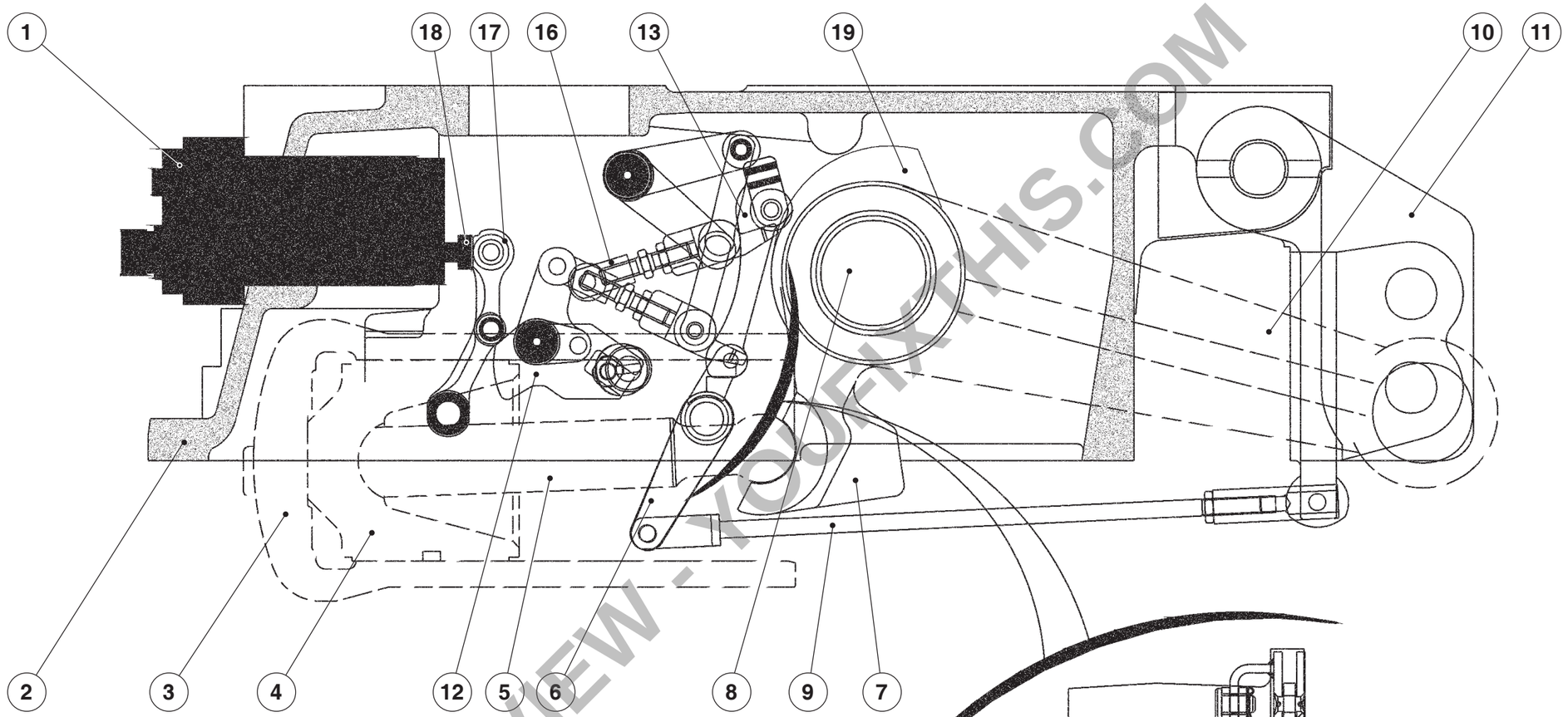
1 - Low pressure delivery hole 2A
2 - High pressure delivery hole 2B
80 - Double casing pump
81 - Common inlet hole
82 - Set of seals
83 - O-Ring for flange
84 - Pump driving gear
85 - Pump shaft
86 - Engine coupling flange

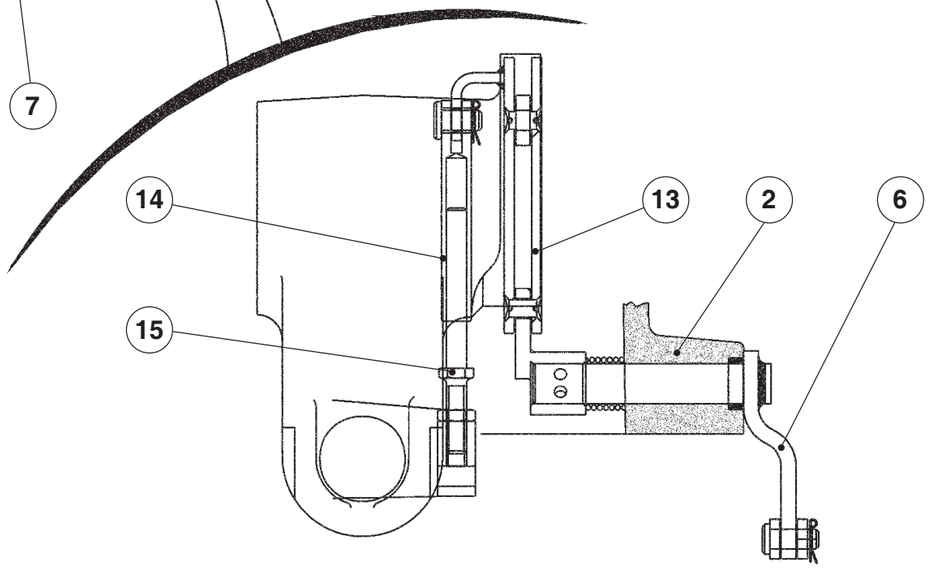
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Sect.1 - General description

1-1 Drawing of assembly and main components





1 - Control valve system
2 - Power lift assembly
3 - Cylinder
4 - Piston
5 - Link
6 - Draft control lever
7 - Link shaft lever
8 - Link shaft
9 - External draft control lever
10 - Power lift link
11 - Swinging support
12 - Control cam
13 - Selector guide
14 - Link
15 - Link adjuster screw
16 - Selector fork
17 - Control valve lever
18 - Control valve plunger
19 - Position control cam
20 - Position / draft selector lever
21 - Power lift control lever

Fig.1-8

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General description

1-2 Main components

The power lift control system consists of five basic components :

A - Control console installed inside the cab on the right-hand side;
B - Electronic plant installed behind the seat under the panel on the right-hand side;
C - External buttons on the rear mudguards;
D - Position sensor installed in contact with a cam mounted on the link bearing shaft;
E - Draft sensor on the third-point support;
F - Electrohydraulic valve system on the pack of auxiliary control valves.

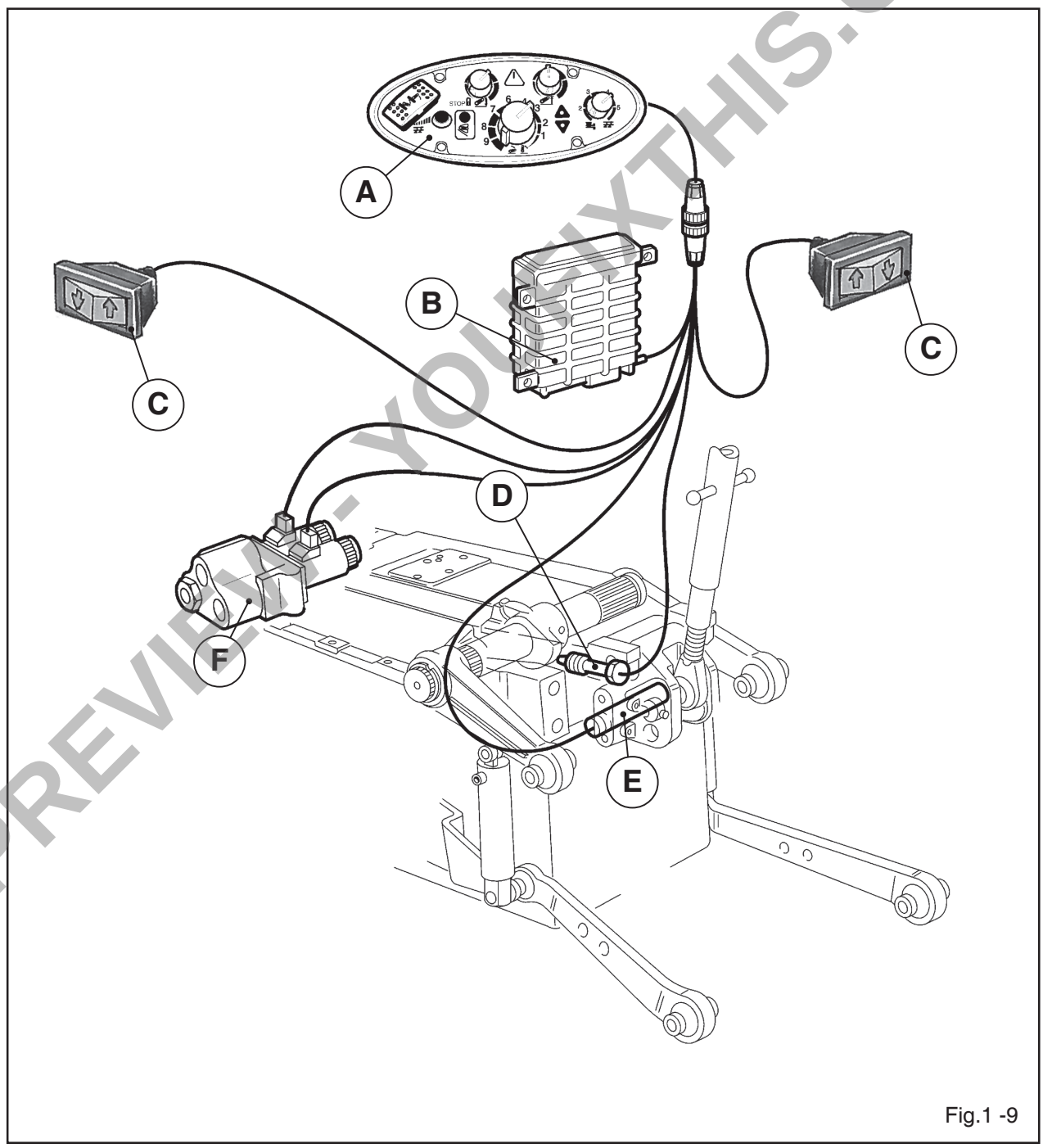


Fig.1 -9

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Sect. 1 - General description

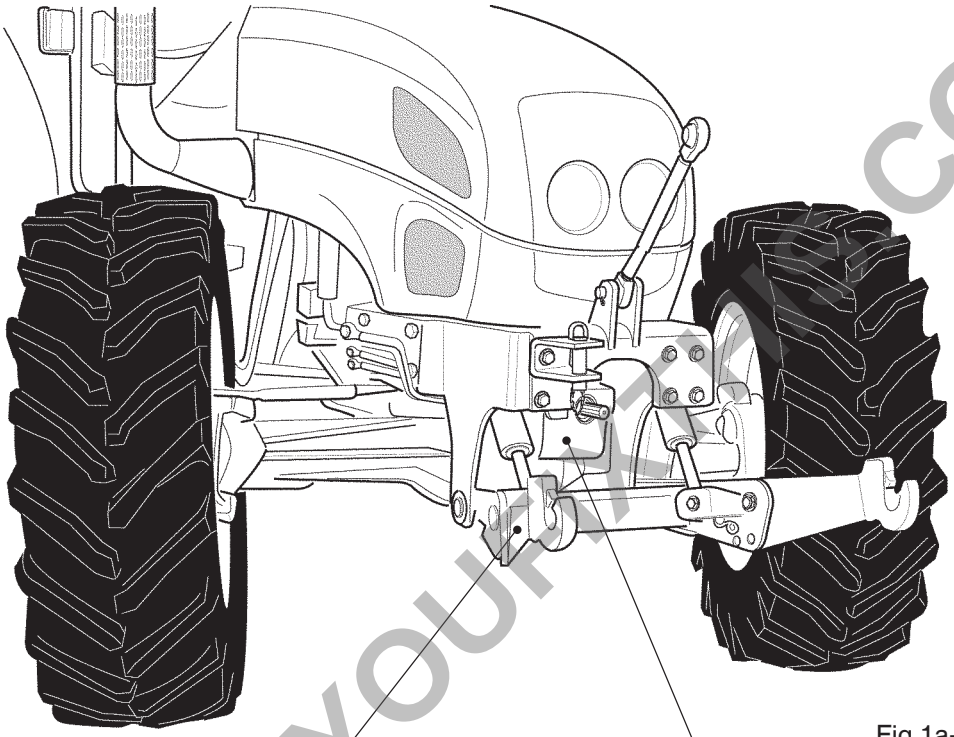


Fig.1a-10

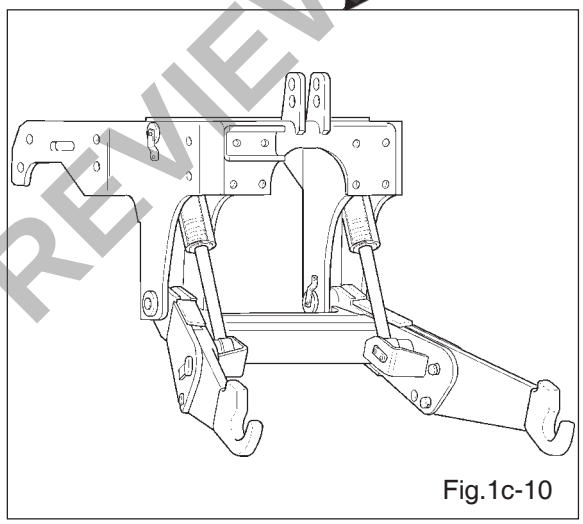


Fig.1c-10

FRONT POWER LIFT

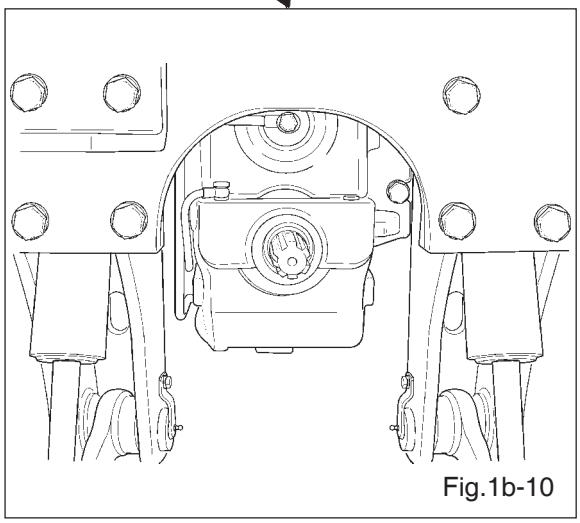


Fig.1b-10

FRONT PTO

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Precautions and Safety Recommendations.

Certain precautions and safety recommendations are described in this section. It is important for operators to comply with these instructions in order to prevent accidents. Moreover, always bear in mind the safety measures described in the Operation and Maintenance Manual and in chapter 1 of the training manual.
Carefully comply with the Warnings indicated by means of this symbol:



WARNING : Always consult the instructions in the operation and maintenance manual when working on the battery.



WARNING : Take all the necessary precautions when batteries containing sulphuric acid are installed. If the acid splashes on to the skin or into the eyes, immediately rinse the affected parts under clean running water.



WARNING : When the acid is mixed with water, SLOWLY POUR THE ACID INTO THE WATER, NEVER EVER POUR WATER INTO THE ACID.



WARNING : Explosive gas escapes when batteries are recharged. Work in places where there is good air circulation and keep well away from flames or sparks.



WARNING : Always switch off the charging apparatus before disconnecting the cables.



WARNING : Keep batteries well out of children's reach.



WARNING : Do not smoke when checking or handling batteries.



WARNING : Disconnect the negative terminal first. Connect the positive terminal first when installing the battery again. Always take great care to check the polarity of the terminals.



WARNING : Always disconnect the ground cable (-) of the battery before working on the electrical system.

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A - Vision Speedfive Footstep version

A.1-2 Relays and fuse holders

The electrical system of **Vision** tractors is protected against short-circuits and excessive power draw by means of fuses. The number of fuses installed in the electrical system depends on the components and functions that need protecting.
The fuses are installed in two dedicated boxes:

Z - front fuse box (Fig.29-11) installed at the front, near the battery that powers the system;

B - main fuse boxs (Fig.30-11), installed on the left-hand side of the dashboard cover.

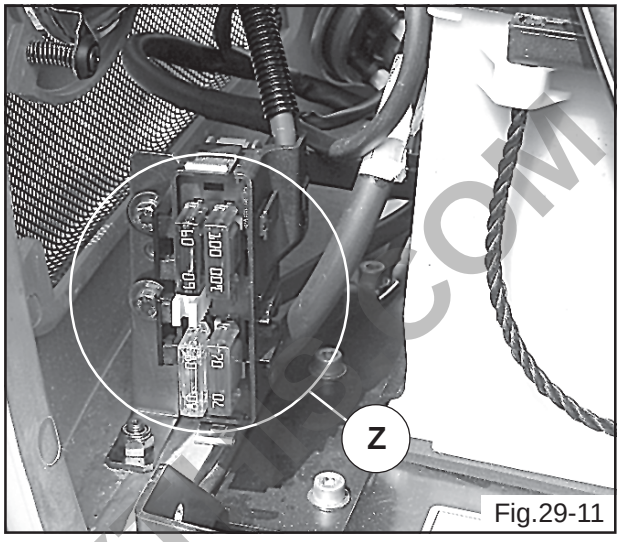


Fig.29-11

NOTE: *before changing a fuse with another of an equivalent type, first find out what caused the fault and repair it.*

There are 12 relays installed in **Vision Speedfive** tractors under the dashboard covering,on the left-hand side, just under the protection fuses (Fig.30-11). They are housed in the fuse box (B).

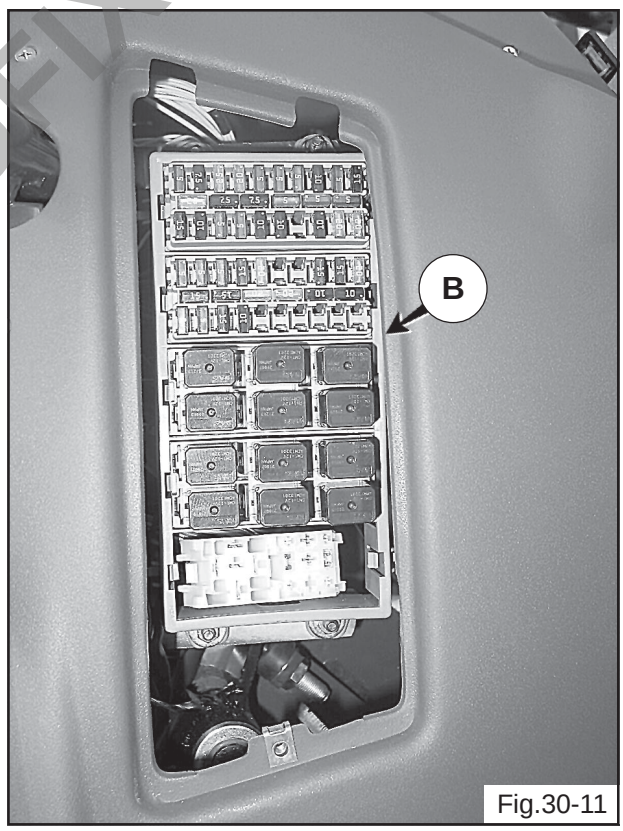


Fig.30-11

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B - Vision Speedfive Cab version

B.1-2 Relays and fuse holders

The electrical system of **Vision** tractors is protected against short-circuits and excessive power draw by means of fuses. The number of fuses installed in the electrical system depends on the components and functions that need protecting.
The fuses are installed in two dedicated boxes:

Z - front fuse box (Fig.161-11) installed at the front, near the battery that powers the system;

B - main fuse box (Fig.162-11), installed on the left-hand side of the dashboard cover.

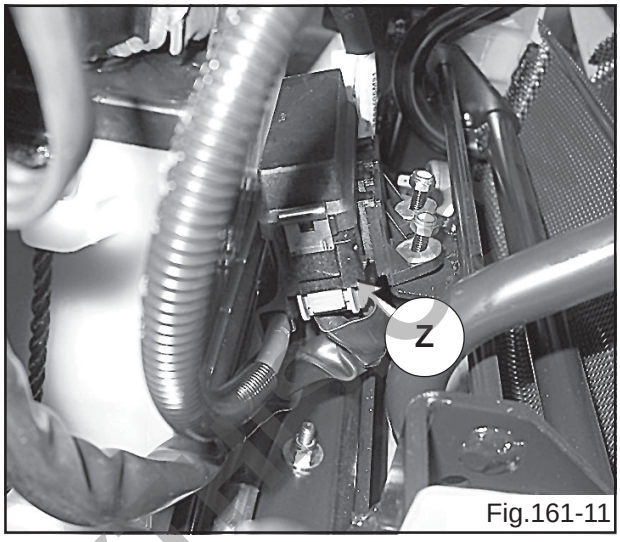


Fig.161-11

NOTE: *before changing a fuse with another of an equivalent type, first find out what caused the fault and repair it.*

There are 13 relays installed in **Vision Speedfive** tractors under the dashboard covering,on the left-hand side, just under the protection fuses (Fig.162-11). They are housed in the fuse box (B).

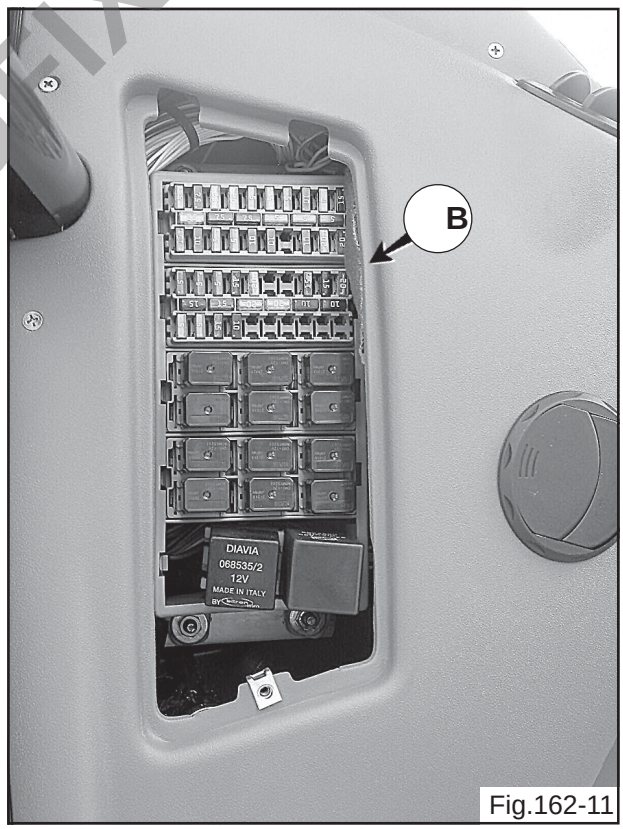


Fig.162-11

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C - Vision Powershuttle Footstep version

C.1-2 Relays and fuse holders

The electrical system of **Vision** tractors is protected against short-circuits and excessive power draw by means of fuses. The number of fuses installed in the electrical system depends on the components and functions that need protecting.
The fuses are installed in two dedicated boxes:

Z - front fuse box (Fig.343-11), installed at the front, near the battery that powers the system;

B - main fuse box (Fig.344-11), installed on the left-hand side of the dashboard covering.

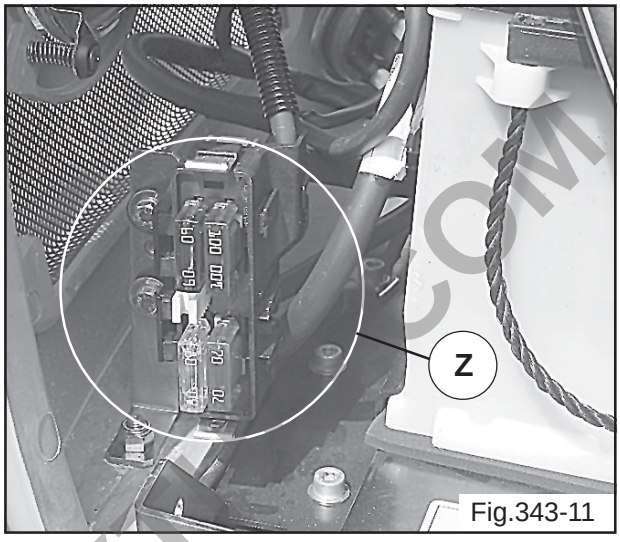


Fig.343-11

NOTE: *before changing a fuse with another of an equivalent type, first find out what caused the fault and repair it.*

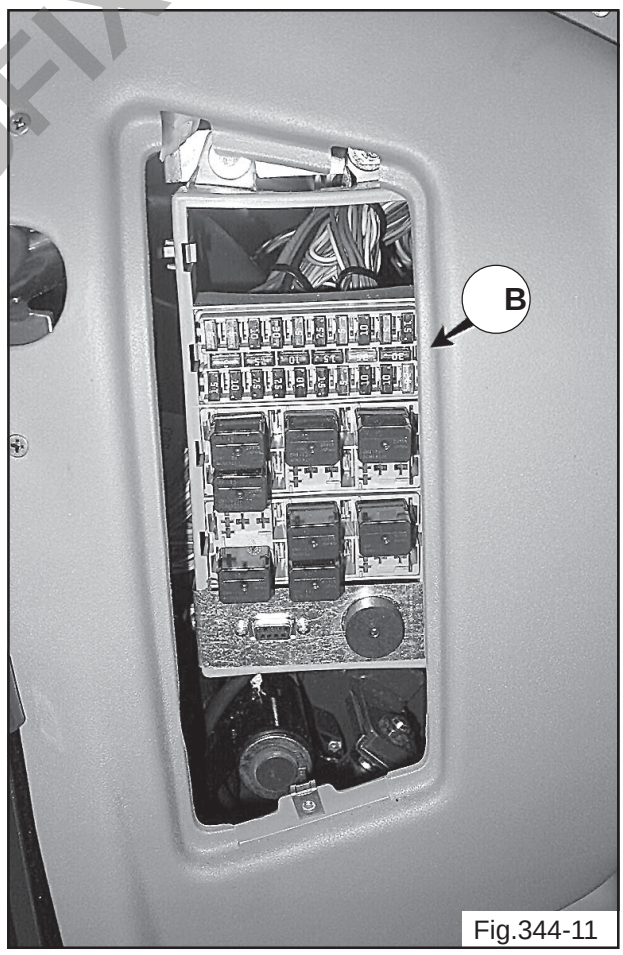


Fig.344-11

There are 8 relays installed in **Vision Powershuttle** tractors under the dashboard covering,on the left-hand side, just under the protection fuses (Fig.344-11). They are housed in the fuse box (B).

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D - Vision Powershuttle Cab version

D.1-2 Relays and fuse holders

The electrical system of **Vision** tractors is protected against short-circuits and excessive power draw by means of fuses. The number of fuses installed in the electrical system depends on the components and functions that need protecting.
The fuses are installed in two dedicated boxes:

Z - front fuse box (Fig.501-11) installed at the front, near the battery that powers the system;

B - main fuse box (Fig.502-11), installed on the left-hand side of the dashboard cover.

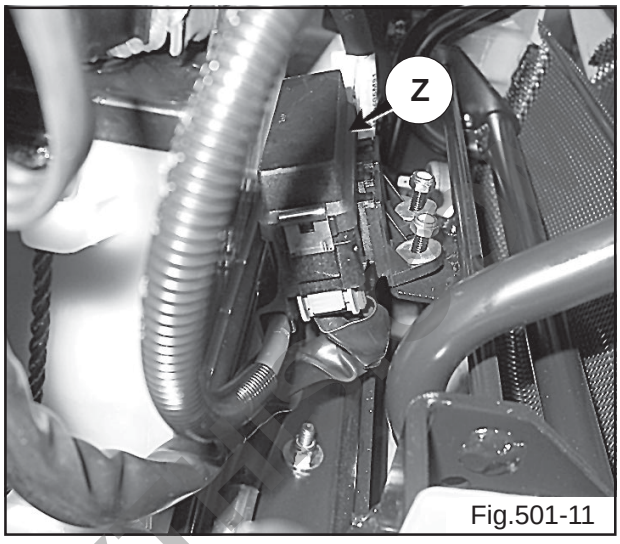


Fig.501-11

NOTE: *before changing a fuse with another of an equivalent type, first find out what caused the fault and repair it.*

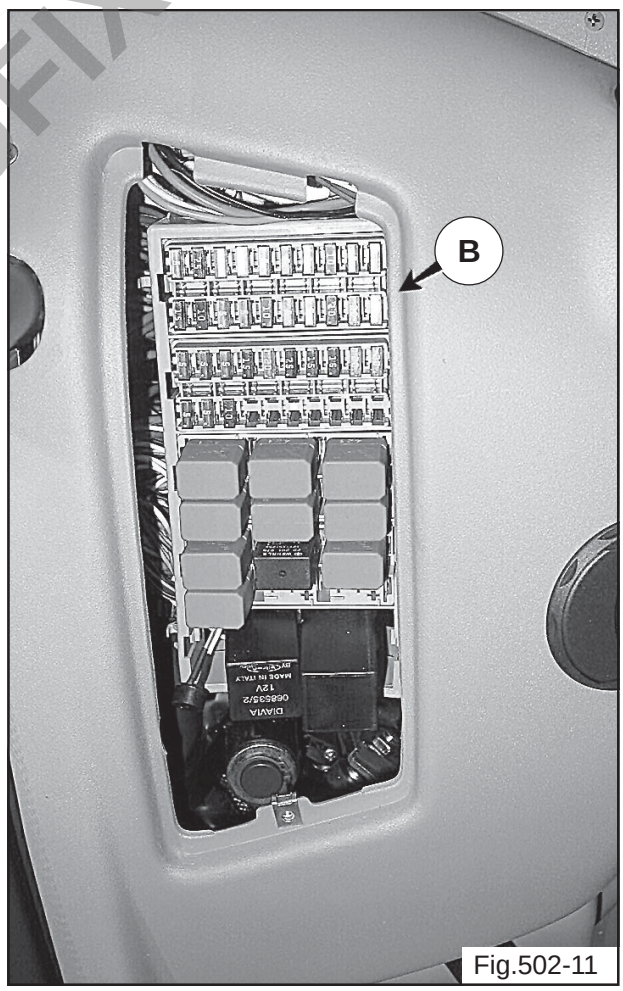


Fig.502-11

There are 12 relays installed in **Vision Powershuttle** tractors under the dashboard covering, on the left-hand side, just under the protection fuses (Fig.502-11). They are housed in the fuse box (B).

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Sensors and potentiometers

3A-2 Location

Unless specified differently, the indications given for locating the components are valid for all the **Vision** tractor versions.

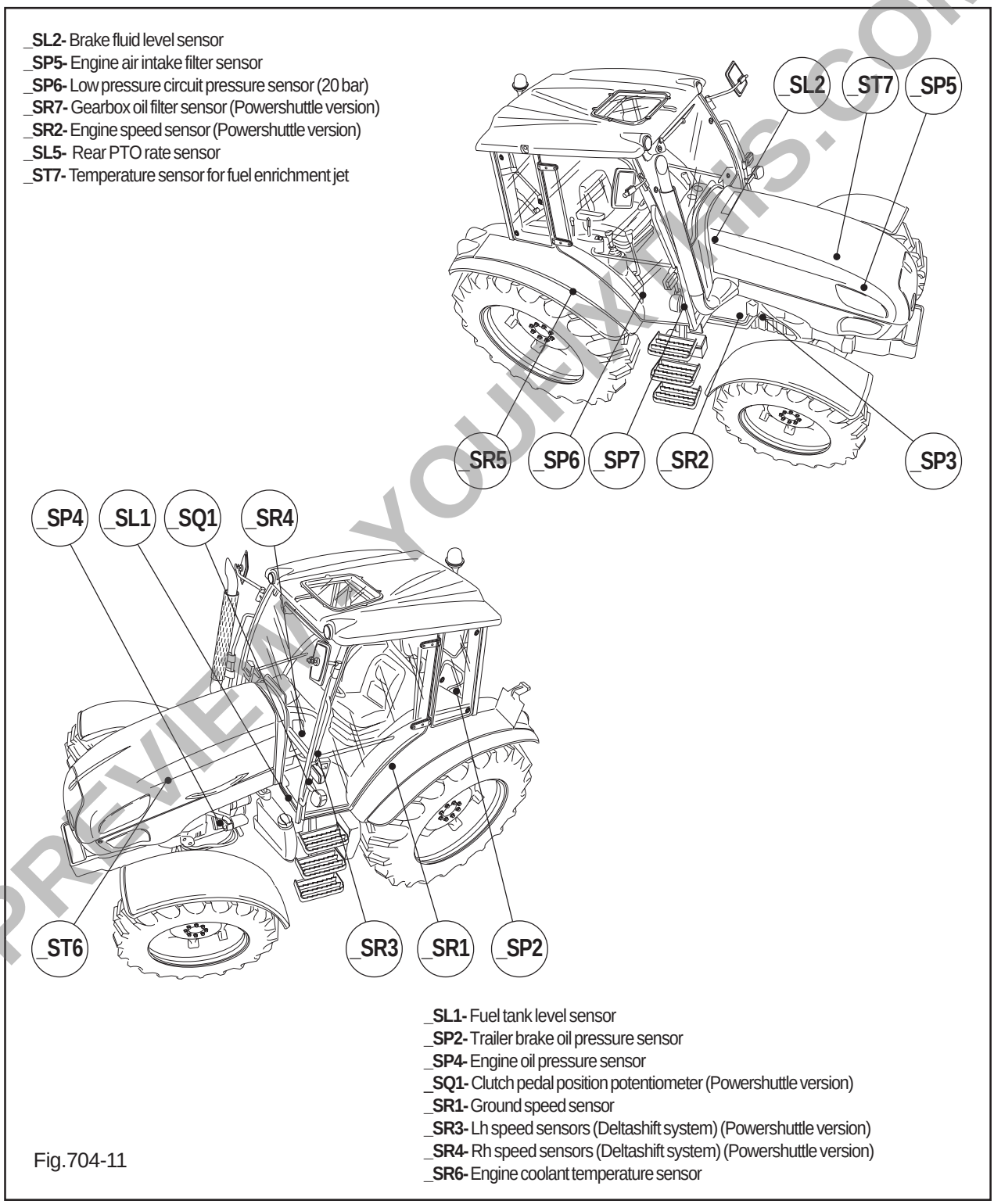


Fig.704-11

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Sect.1 - Introduction

1-1 Introduction to calibration

PURPOSE OF CALIBRATION
Calibration allows the tractor to operate in an excellent way in all conditions, guaranteeing:

- smooth, immediate and progressive start-ups
- acceleration proportional to the load
- smooth, immediate and progressive direction changes

WHEN TO CALIBRATE
Calibration is carried out accurately in the production plant and need not be done again, unless one or both of the proportional solenoid valves (_YV1/_YV2 Fig.2-6) of the electronic control unit _DO2 (Fig.3-12) are replaced.

HOW TO CALIBRATE
Using the buttons (_SB3/_SB4 Fig.1-6) on the gearshift lever to operate the processor in the electronic control unit (_D02 Fig. 3-12), which finds and synchronizes the times required for the hydraulic clutch assemblies (Main and Secondary Fig.4-12) to engage and optimizes the settings to allow the tractor to operate correctly.

WHICH CALIBRATIONS
C1: Valve calibration for the secondary clutch.
C2: Valve calibration for the main clutch.
C3: Clutch pedal calibration.
C4: Secondary clutch limit setting
C5: Main clutch limit setting

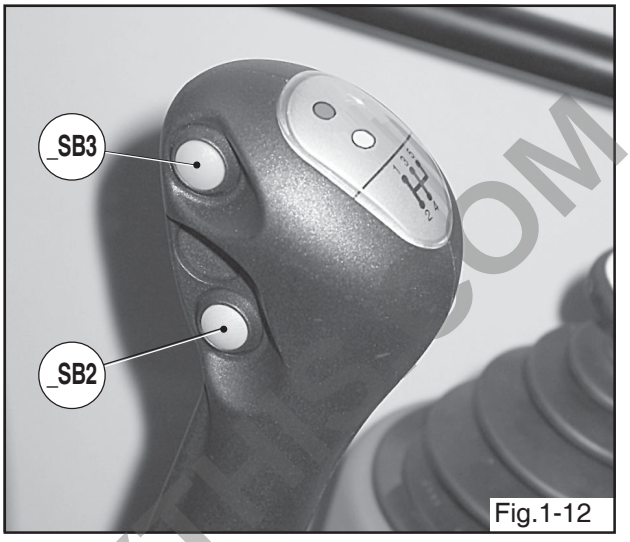


Fig.1-12

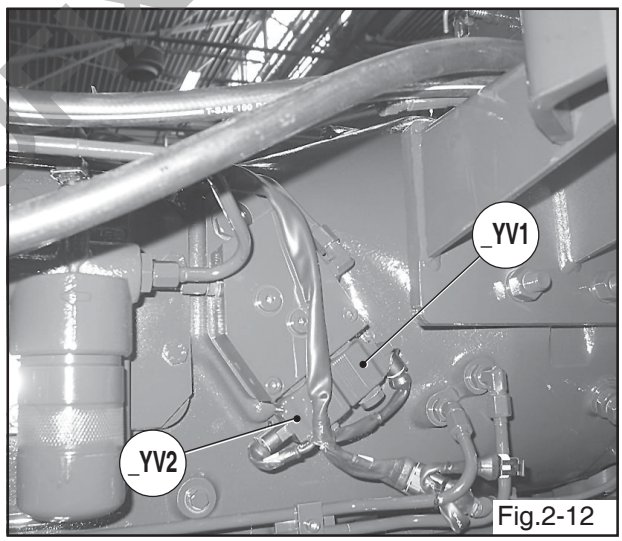


Fig.2-12

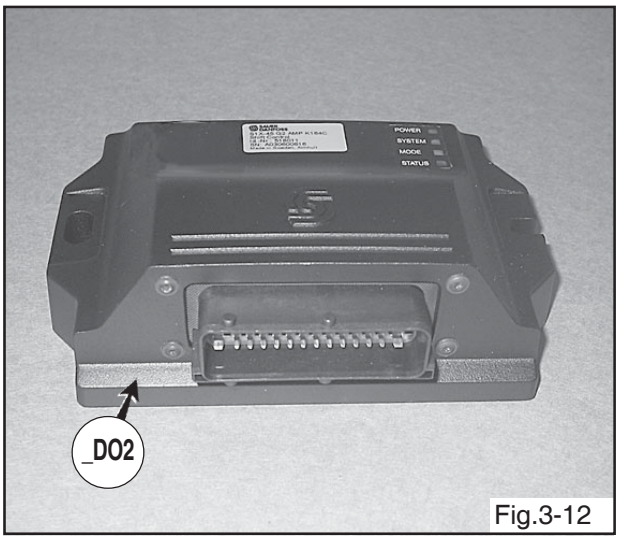


Fig.3-12

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General description

The instrument used to measure the pressure of fluids is the **pressure gauge** (Fig.2-14).

The pressure gauges normally used in practice are the differential type since they indicate the difference between the pressure of the environment in question and the atmospheric pressure.

The dials of differential pressure gauges have scales (in the required units of measurement) where the zero "0" corresponds to the atmospheric pressure and where the indicated pressure or manometric pressure is called **relative pressure.**

On the other hand, **absolute pressure** is the pressure measured on a scale where zero "0" is the absolute vacuum and "1" corresponds to the normal atmospheric pressure.
The absolute pressure is therefore given by the sum of the manometric (or relative) pressure and the normal pressure (= 1 by definition).
A relative pressure that is lower than the normal pressure is indicated as **negative pressure** or vacuum or degree of vacuum.
The instrument used to measure negative pressure is the **vacuometer** (Fig. 3-14).

Main conversions between the more common units of measurement for pressure:

1 N/m² = 1 Pa
1 N/cm² = 104 Pa
1 bar = 10^5 Pa = 10^5 N/m² = 10 N/cm²
1 atm = 101325 Pa = 1.01325 x 10^5 Pa
1 at = 98066.5 Pa = 0.980665 x 10^5 Pa
1 atm = 1.01325 bar = 10.1325 N/cm²
1 at = 0.980665 bar = N/cm²
1 bar = 0.98692 atm = 1.01972 at
1 psi = 0.068 atm = 0.069 bar = 6894.6 Pa
1 atm = 14.697 psi
1 bar = 14.505 psi

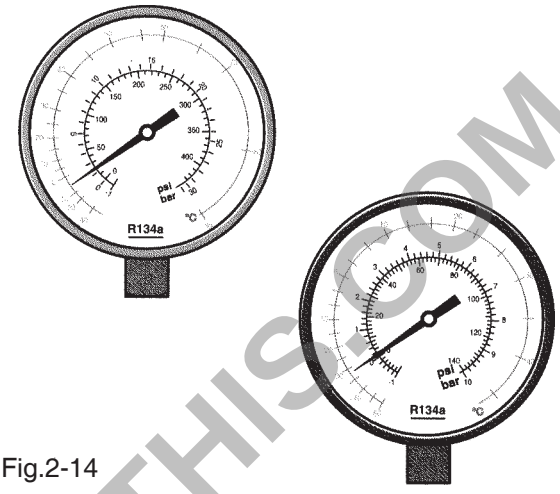
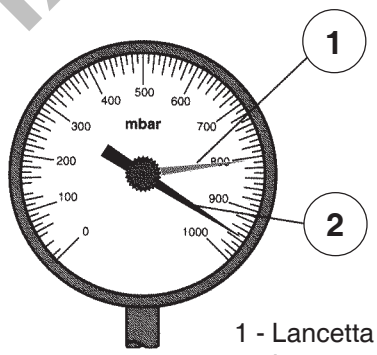


Fig.2-14



1 - Lancetta di riferimento
2 - Lancetta di misura

Fig.3-14

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CHAP.1

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E - Block for solenoid valves and reverse shuttle lubrication (Powerfive and/or Powershuttle version)

E1 - Main components and their positions

The block (15 Fig.62-7) is installed on the right-hand side of the engine-gearbox assembly housing.
The function of the block is to house two proportional solenoid valves (_YV1) and (_YV2) that control the clutch assemblies of the hydraulic reverse shuttle.
The block (15) also houses the lubrication duct (210 Fig.63-7) of the central clutch unit and the bearings mounted on the clutch shaft.

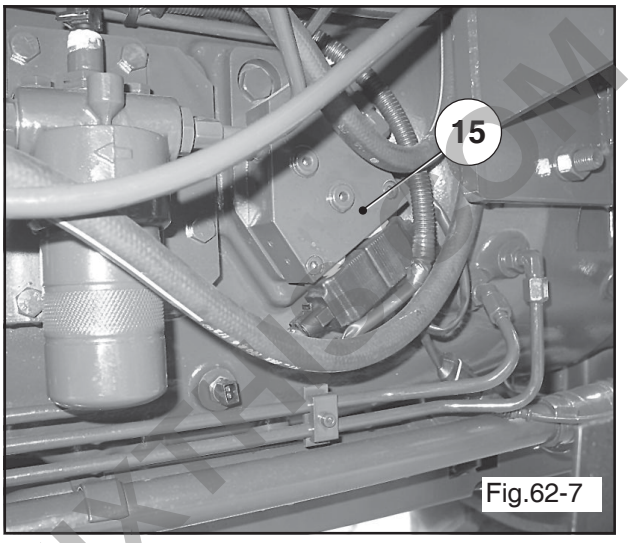


Fig.62-7

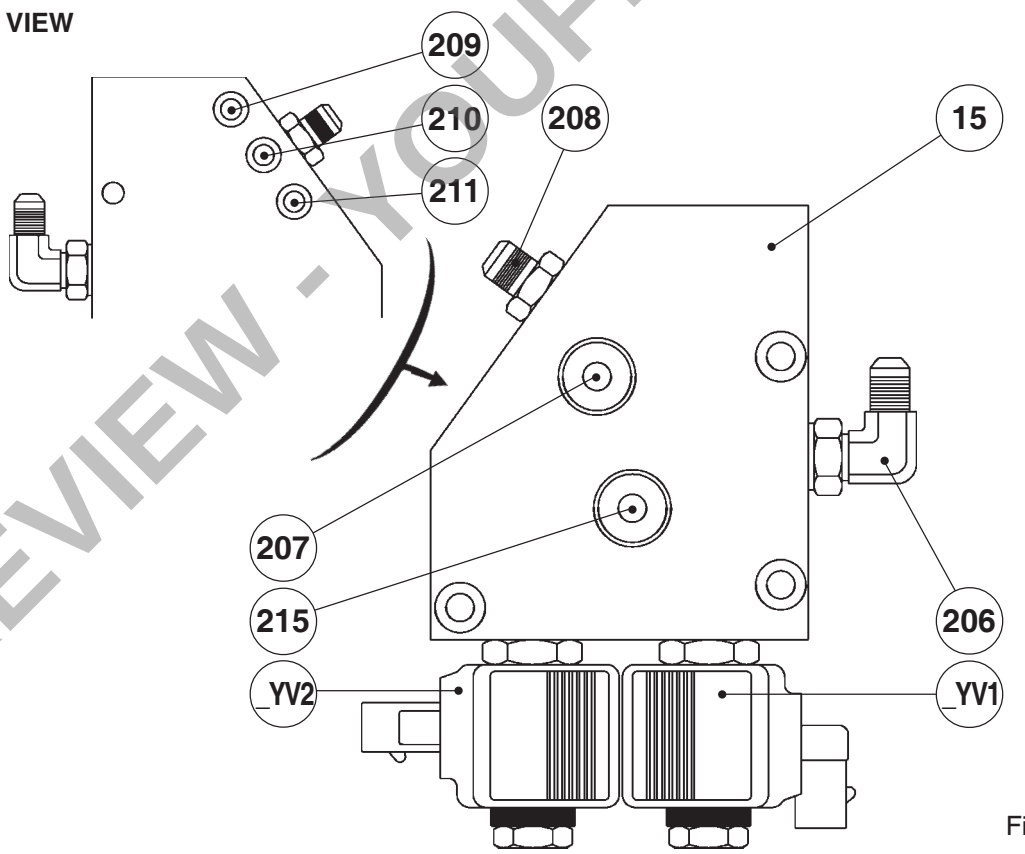


Fig.63-7

15 - Solenoid valve block
_YV1 - Solenoid valve (direct)
_YV2 - Solenoid valve (reverse)
206 - 20 bar supply
207 - Plug to detect the reverse drive pressure
208 - Lubrication union
209 - Clutch oil supply (direct)
210 - Lubrication supply
211 - Reverse drive clutch supply
215 - Plug to detect the forward drive pressure

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B - Vision Speedfive Cab version

CONNECTOR IDENTIFICATION

TERMINALS (P1) FOR THE TRAILER BRAKE OIL PRESSURE SENSOR

Terminal	Wire colour	To connector or component	Terminal
1	B	XS2-P2-P3-P4-P5-P6-P7	24-1-1-1-1-1-1
2	BN	XS2	15

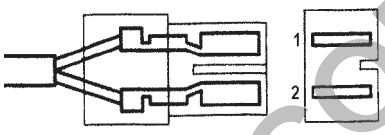


Fig.262-11

WINDSCREEN WASH PUMP TERMINALS (P2)

Terminal	Wire colour	To connector or component	Terminal
1	B	XS2-P1-P3-P4-P5-P6-P7	24-1-1-1-1-1-1
2	SR	XS2	12

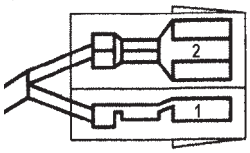


Fig.263-11

TERMINALS (P3) FOR THE REAR WINDOW WIPER MOTOR

Terminal	Wire colour	To connector or component	Terminal
1	B	XS2-P1-P2-P4-P5-P6-P7	24-1-1-1-1-1-1
2	LB	XS2	11

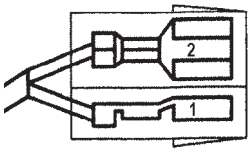


Fig.264-11

CONNECTOR (P4) FOR THE PTO RATE SENSOR (FAST)

Terminal	Wire colour	To connector or component	Terminal
1	B	XS2-P1-P2-P3-P5-P6-P7	24-1-1-1-1-1-1
2	NM	XS2	14

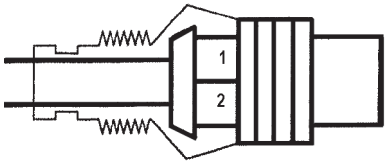


Fig.265-11

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