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General description

1-3 Wiring diagram

PART-1

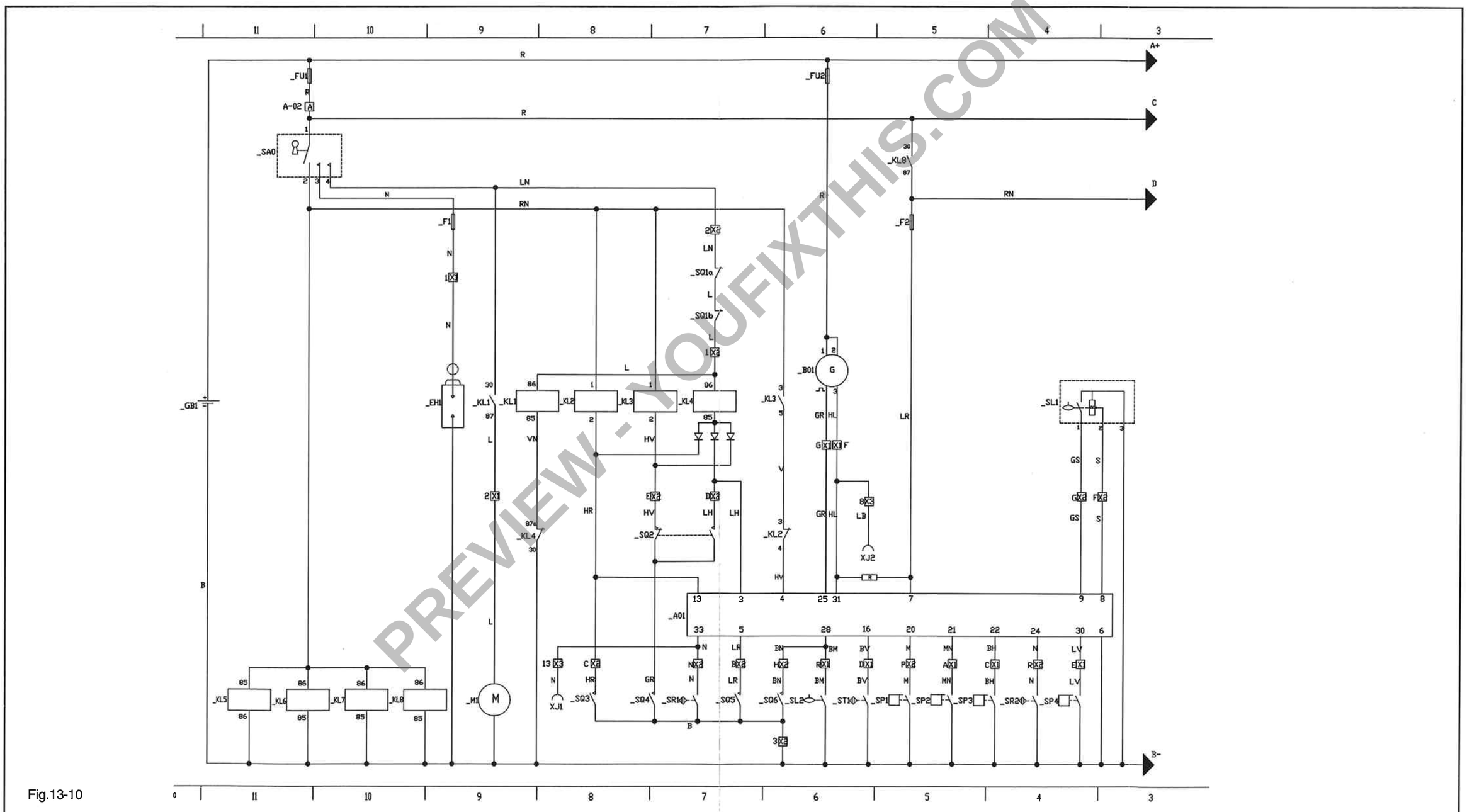


Fig.13-10

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General description

1-3 General wiring diagram

PART -1

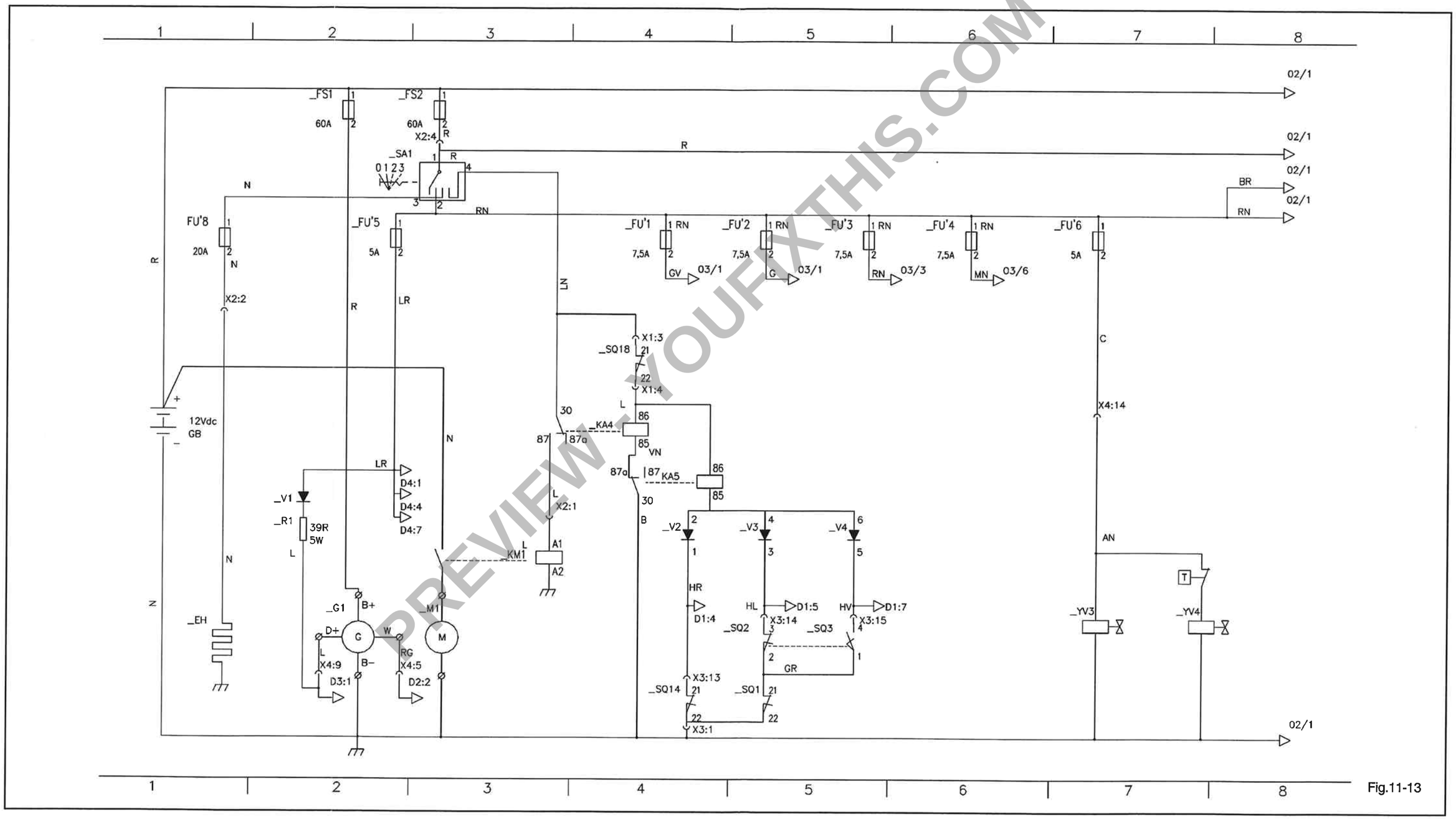


Fig.11-13

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CHAP.8

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Sect.1 - General description

1-1 High pressure hydraulic circuit

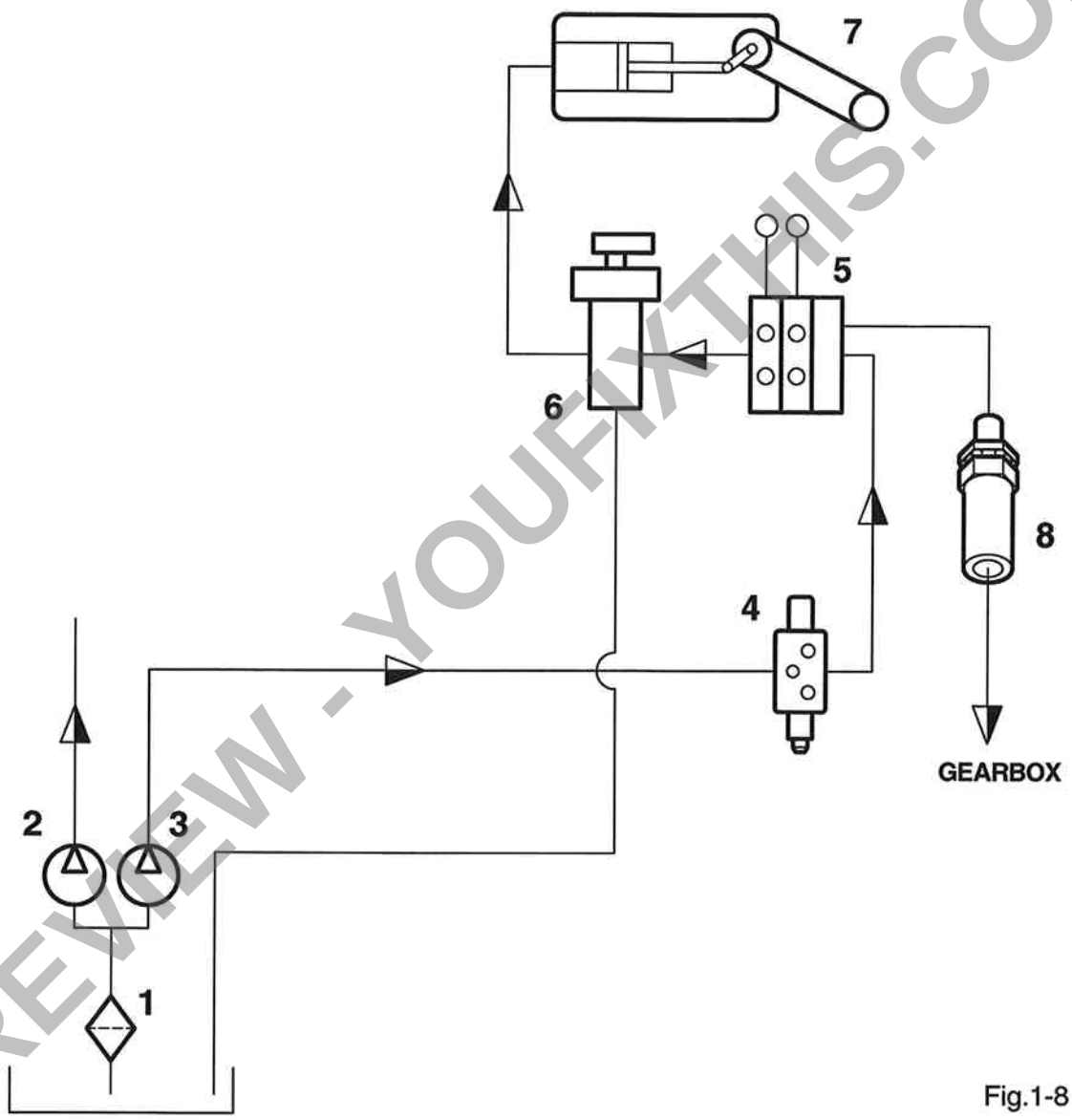


Fig.1-8

1 - Oil filter
2 - Gear pump (low pressure)
3 - Gear pump (high pressure)
4 - Trailer brake valve
5 - Auxiliary control valves
6 - Power lift valve system
7 - Hydraulic power lift
8 - 1.5 bar governor valve

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A - Engine-gearbox axle assembly

A1 - Drawing of assembly and main components

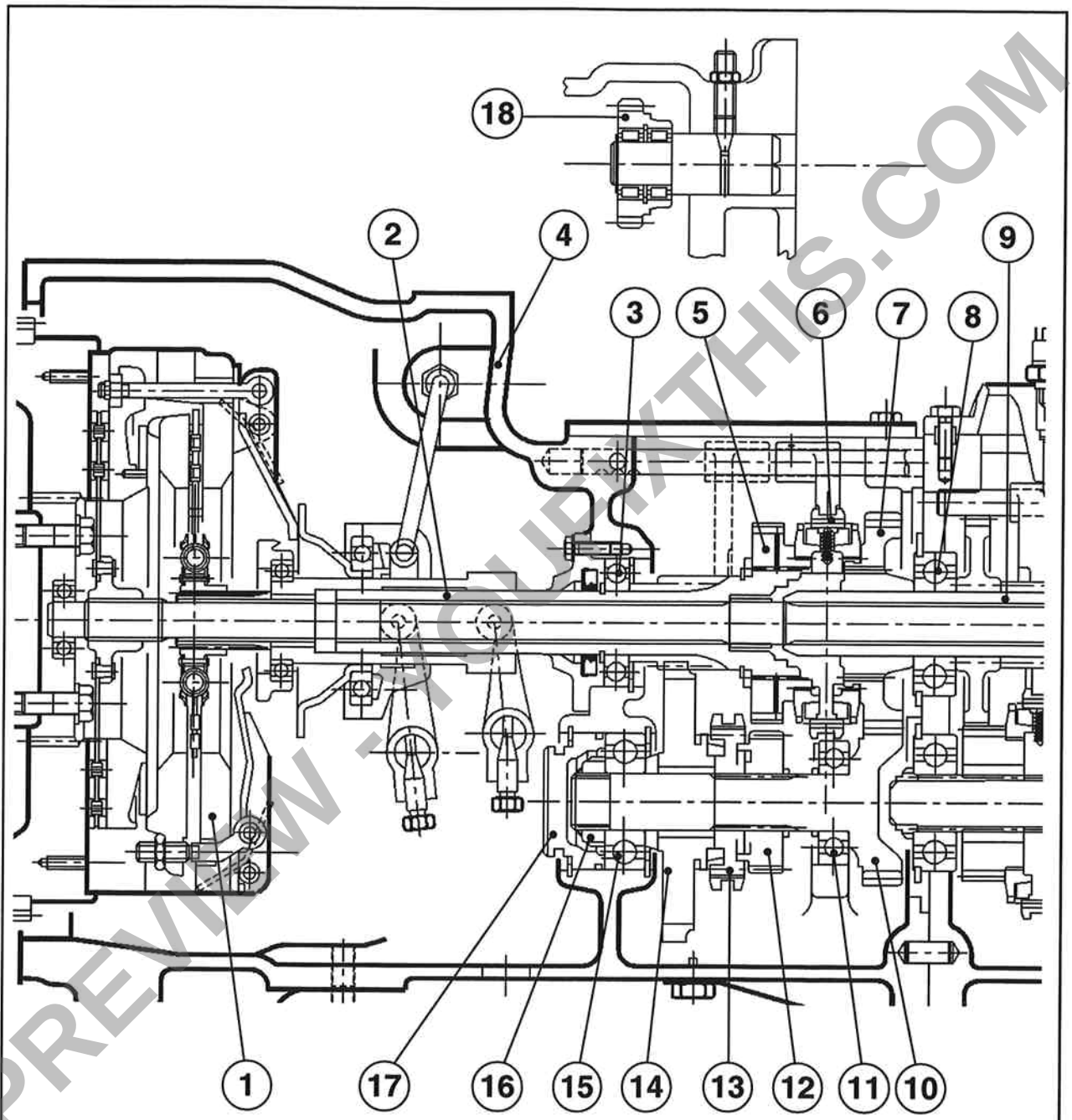


Fig.15-4

1 - Clutch
2 - Transmission shaft
3 - Ball bearing
4 - Axle housing
5 - Reverse shuttle gear
6 - Synchromesh unit
7 - Upper underdrive gear
8 - Ball bearing
9 - Main gearbox shaft
10 - Transmission shaft
11 - Ball bearing
12 - Reverse shuttle transmission shaft gear
13 - Creeper engaging sleeve
14 - Creeper transmission shaft gear
15 - Ball bearing
16 - Ring nut
17 - Cover
18 - Reversing gear

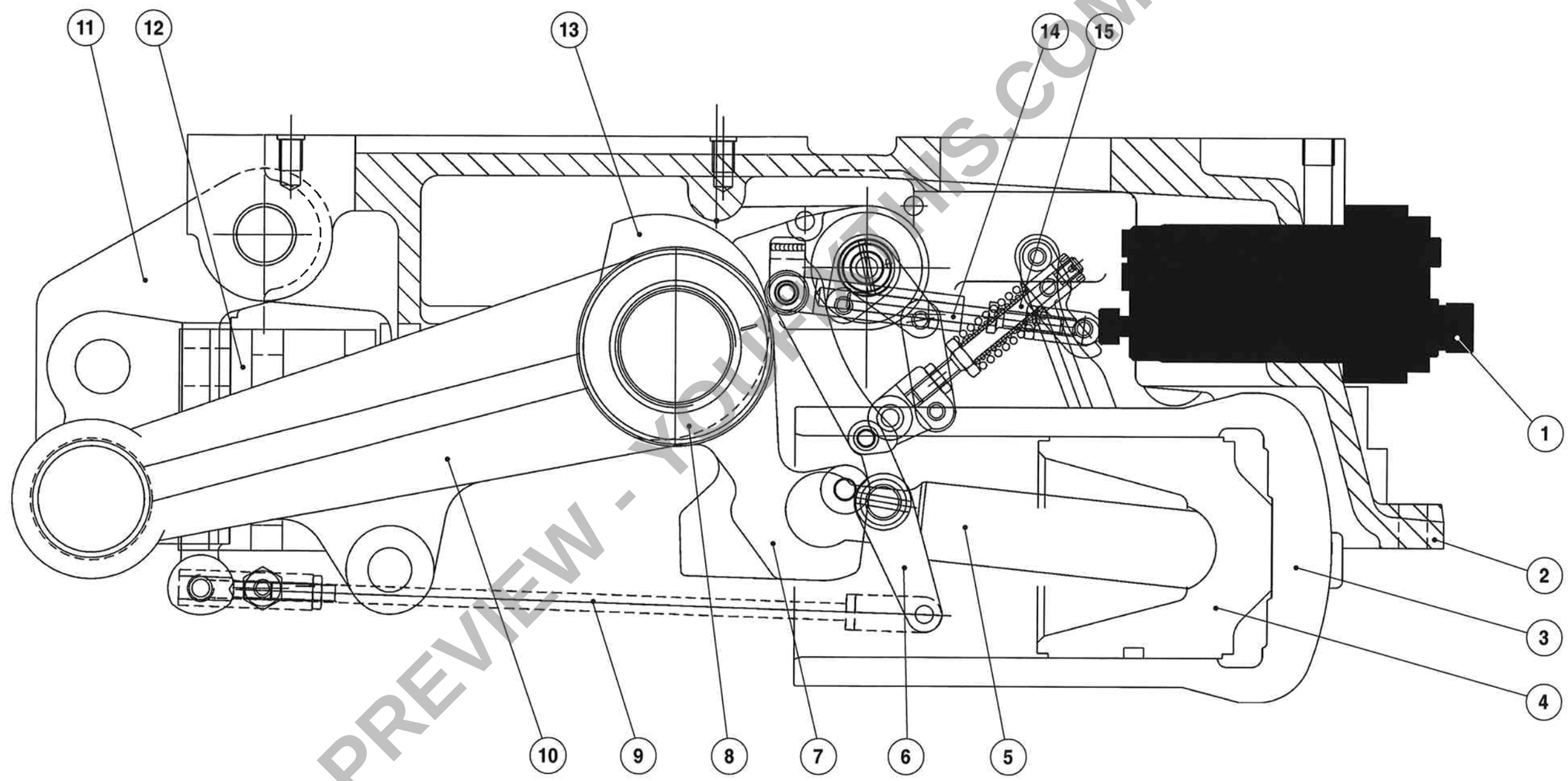
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Sect.1 - General description

1-1 Drawing of assembly and main components



1 - Control auxiliary valve
2 - Lift housing
3 - Cylinder
4 - Piston
5 - Link
6 - Draft control lever
7 - Link holder shaft lever
8 - Link holder shaft
9 - External draft control lever
10 - Lift link
11 - Swinging support
12 - Spring
13 - Position control cam
14 - End of stroke telescopic rod
15 - Spring rod

Fig.1-9

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Sect. 7 - Bolt driving torques

MATERIAL	8.8		10.9		12.9	
BOLT	Z	B	Z	B	Z	B
M 8 x 1	25	27	36	38	43	46
M 8 (1.25)	23	25	33	35	40	42
M 10 x 1.25	50	55	70	75	85	90
M 10 (1.5)	46	50	66	70	80	85
M 12 x 1.25	90	97	127	135	143	155
M 12 (1.75)	82	86	115	120	138	145
M 14 x 1.5	142	153	200	215	240	260
M 14 (2)	130	140	182	195	220	235
M 16 x 1.5	215	230	300	320	360	390
M 16 (2)	200	215	280	300	340	360
M 18 x 1.5	310	330	435	470	520	560
M 18 (2.5)	270	295	385	415	460	495
M 20 x 1.5	430	460	610	660	720	770
M 20 (2.5)	390	415	550	585	660	705
3/8" -24 UNF	44	47	62	67	75	80
3/8" -16 UNC	40	43	56	60	68	72
1/2" -20 UNF	105	112	147	157	175	190
1/2" -13 UNC	95	102	135	145	160	173
9/16" -18 UNF	150	160	210	225	250	270
9/16" -12 UNC	135	145	190	205	230	245
5/8" -18 UNF	205	215	285	305	345	365
5/8" -11 UNC	185	200	260	280	315	335
3/4" -16 UNF	355	380	500	535	600	645
3/4" -10 UNC	325	345	455	490	550	585

Torque values in Nm Z = galvanized bolt B = burnished bolt

TORQUING TOLERANCES

Critical assembly	**+5% / -5%**
Important assembly	**+5% / -15%**
Secondary assembly	**+5% / -30%**

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4.41 engine timing

3-2 Finding the compression TDC of cylinder N°1

1 - Fix a temporary indicator on the cover of the valve gear housing with the tip near to the outer edge of the pulley or drive shaft damper (6 Fig. 8-2).

2 - Slacken off the packing gland bolts that fix the injectors.

3 - Demount the tappet cover.

4 - Turn the drive shaft clockwise (viewed from the front) until the rod of the intake valve tappet of the rear cylinder is about to close.

5 - Remove the elastic clamp and spacer from the front part of the rocker arm. Unscrew the bolts of the two front pedestals of the rocker arm and demount the front rocker arm. Tighten the bolts of the rocker arm pedestals.

6 - Demount the valve springs from the front valve using - Perkins tool PD 6118B - and adapter PD 6118-7 for the pedestal stud bolts, or adapter PD 6118-8 for the pedestal fixing screws.

Warning: Mount a suitable collar near the upper part of the valve to hold it if the drive shaft is turned too much.

7 - Allow the valve to be held by the top part of the piston.

8 - Fix a dial comparator with its feeler resting on the top part of the valve stem (2 Fig. 8-2) in order to make a eading.
Slowly turn the drive shaft clockwise until the pointer of the comparator stops turning clockwise.
Make a suitable mark on the pulley or damper of the drive shaft in order to align it with the temporary indicator.
Keep turning the drive shaft in the same direction until the comparator pointer starts to move anticlockwise.
Make another mark on the pulley or damper to align it with the pointer.
Mark the central point between the two marks

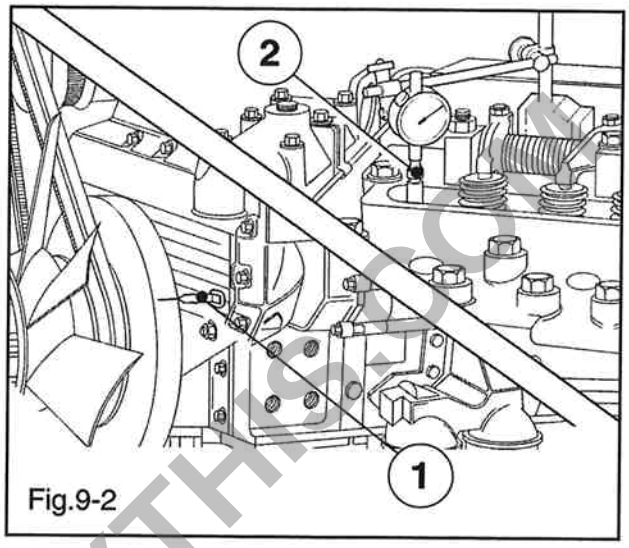


Fig.9-2

onthe pulley or on the damper and remove the other two.

9 - Turn the drive shaft through 45° in an anti-clockwise direction (viewed from the front) and then clockwise until the mark on the pulley or damper aligns with the indicator. Piston number 1 will be on TDC of its compression stroke.

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General description

1-4 Valve system operating phases

Three phases always occur when the power lift operates, regardless of whether it is used in the position control, draft control or mixed position and draft control (Intermix) positions.

A - Valve system is neutral phase
B - Valve system in lifting phase
C - Valve system in discharging phase

These three phases will now be described individually for reasons of clarity. However, remember that when the power lift operates, particularly in the draft control and intermix modes, the three phases occur alternatively without any specific order.

A- VALVE SYSTEM IN NEUTRAL PHASE (FIG.11/12-9)

As soon as the engine starts, the pump (23) draws oil from the reservoir (24) through the filter (25) and sends it through the duct (a) where it encounters the valve stem (6) in the central position of its travel, which blocks the delivery route to the control (c). Meanwhile, the oil flows through the duct (a) formed around the valve system and reaches the check valve (11) which supplies the ram (17). However, this remains closed because oil from the pump is unable to reach a sufficient pressure to open it owing to the poorer opening resistance of the servo valve (10) which is thus able to open thanks to the open piloting hole (c). This allows the oil in the piloting chamber (d) to discharge into the casing through ducts (c) and (e). Oil from the pump thus discharges into the casing through duct (b).
Note that ducts (a) and (f) in the valve system have races all around the casing (20) so that oil is able to reach the various valves.
The oil in the ram (17) and duct (f) is blocked by the discharge valve (15) which is closed, thus the circuit is tight.
The anti-shock valve (12) protects the circuit between the ram (17) and the discharge valve (15), opening and discharging the pressure peaks due to the tractor jolting or the implement hitting against the ground.

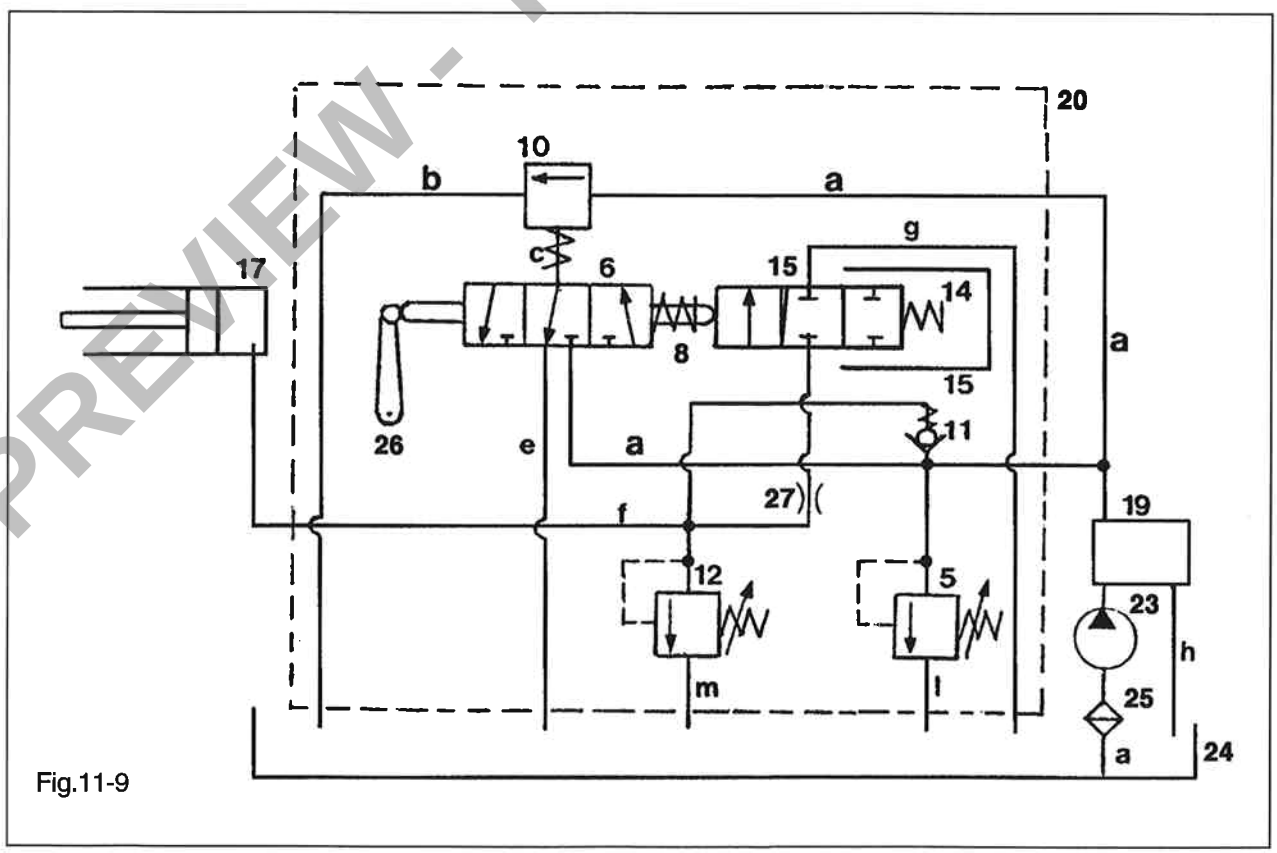


Fig.11-9

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Inspections, adjustments and troubleshooting

3-4 Troubleshooting

FAULTS	PROBABLE CAUSES	REMEDIES
The power lift fails to lift when empty	- Servovalve (10 Fig.9-9) locked in the open position	- Check to make sure that the valve slides smoothly and check it for tightness
	- The pump fails to deliver oil because it is not primed	- Prime by filling the pump and suction pipe with transmission oil
The power lift fails to lift the implement or is slow to lift it	- Clogged filter on the intake	- Demount and clean the filter
	- Inefficient pump	- Replace the pump
	- Imperfect servovalve tightness (10 Fig.9-9)	- Check tightness
	- Calibration (5) or safety valve (12 Fig.9-9) with a low setting	- Check and calibrate the two valves
	- Lower retention ring of valve gear housing faulty	- Replace the ring
	- Leaking discharge valve (1 Fig.9-9)	- Check and overhaul the discharge valve
	- Faulty switch retention rings	- Replace the rings
	- Implement too heavy	- Change the implement or move the hitch nearer
The power lift fails to keep the implement in the raised position	- Defective seal of the non-return ball (11 Fig.9-9)	- Conduct hydraulic bench tests on the valve system to locate the leaks
	- Leaking discharge valve (1 Fig.9-9)	- Check and if necessary replace the discharge valve
	- Leaking safety valve (12 Fig.9-9)	- Check and overhaul the safety valve
	- Upper retention ring of valve gear housing faulty	- Replace the ring
	- Faulty switch retention ring	- Replace the ring
	- Faulty seals on lifting cylinder piston	- Replace the ring
	- Aluminium plugs that shut the machined holes on the cylinder and power lift cover	- Replace the plugs

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Tractor identification and technical specifications

2-3 Engine specifications

Engine

		Atlantis 75	Atlantis 85
Type		Perkins 4-stroke diesel engine with direct injection	
Model		4.41	4.41
Fuelling		Natural	Natural
Number of cylinders		4	4
Bore	mm	101	101
Stroke	mm	127	127
Swept volume	liters	4.1	4.1
Compression ratio		18.5 : 1	18.5 : 1
Power (DIN 70020)	HP/kW	71,5/52,5	82/60
ISO power rating	HP/kW	75/55	84/62
Max. speed under load	RPM	2200	2200
Max. speed with no load	RPM	2310	2310
Max. torque (DIN 70020)	Nm	255	281
Max. torque speed	RPM	1200	1300
Idling speed	RPM	750	750
Valve gear			
Type		Overhead valves controlled by tappets	
Tappet gap with engine cold			
Intake	mm	0,20	0,20
Exhaust	mm	0,45	0,45
Fuel system			
Fuel pump		Diaphragm type	
Injection pump		LUCAS rotary	
Filter on injection pump delivery		C.A.V	
Injection order		1-3-4-2	1-3-4-2
Injectors		Perkins	Perkins
Injector pressure setting	Bar	290	294
Cold starting device		Thermostarter	
Air filter		dry, with two elements removable for maintenance	

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Pre-delivery inspections and maintenance

4-3 Routine maintenance guide for Atlantis tractors

ASS'Y	DESCRIPTION	Daily or as required(4)	100 HOURSW	250 HOURS	500 HOURS	1000(1) HOURS	Servicing points (Fig.25-1)
LUBRICATION	General lubrication	○					-
	Lubricate three-point linkage		○				21
	Wheel hub for 2WD axle				○		27
ENGINE	Check engine oil level	○					1
	Change engine oil			□			22
	Change engine oil filter			□			23
	Check valve clearance *				□		25
	Clean engine open breather: every 2000 hours*						36
FUEL SYSTEM	Clean fuel filter bowl	△					2
	Change fuel filter cartridges					□	26
	Check injector settings and injection pump *					□	28
	Dry air filter: clean drain valve	△					3
	Dry air filter: clean or change cartridge	△					4
	Drain sludge from fuel tank					△	29
COOLING SYSTEM	Check coolant level in radiator	○					5
	Clean radiator fins	△					6
	Wash out cooling circuit					△	30
TRANSMISSION HYDRAULIC POWER LIFT	Check oil level in gearbox, front differential, rear and front final drives	○					7-9-10
	Change oil in gearbox(2), front differential, rear and front final drives					□	31-32
	Clean lift oil filter			△			24
	Clean transmission oil radiator (if installed)	△					
	Check and adjust free travel of clutch pedal, PTO clutch lever and brake pedals	▽					12-13-14
	Check oil level in brake fluid reservoir	○					11
STEERING SYSTEM	Check oil level in hydraulic power steering reservoir	○					8
	Clean oil filter in hydraulic power steering				△		27
	Change oil in hydraulic power steering					□	34
ELECTRIC SYSTEM	Check level of electrolyte in battery	○					12
	Check fan and alternator belt tension	▽					13
	Check efficiency of alternator and starter motor*					□	28
OTHERS	Check tyre pressure	○					14
	Check wheel nut tightness	○					15
	Check tightness of nuts and bolts in general	○					17
	Check tightness of safety frame fixing bolts	○					16

REFERENCE MARKS FOR THE OPERATIONS

○ Inspection, filling, lubrication.

□ Replacement.

△ Cleaning or washing.

▽ Adjustment

□ Operations that must be carried out by the Dealer.

* Operations marked by an asterisk must be carried out by the Dealer.

NOTES

(1) *Operation to be carried out at least once a year.*

(2) *Initially after the first 500 hours operation, then every 1000 hours.*

(3) ***ATTENTION:*** *Clean the filter of the steering circuit after the first 50 hours to protect the circuit itself. Following this, clean the filter every 500 hours.*

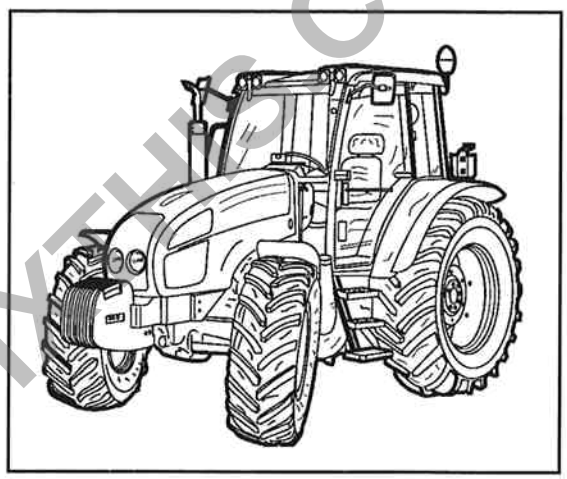
(4) ***ATTENTION:*** *Use your own discretion and experience when deciding on the actual intervals for variable interval service and maintenance operations. Always remember, however, that it is better to carry out them too often than not often enough.*

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Atlantis 70-75-80-85-90-100
Ghibli 80-90-100



Training manual

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Chap. 2 ENGINE

Chap. 3 CLUTCH

Chap. 4 STANDARD TRANSMISSION

Chap. 5 OPTIONAL TRANSMISSION

Cap. 6 4WD FRONT AXLE

Chap. 7 POWER TAKE-OFF

Chap. 8 LOW PRESSURE HYDRAULIC CIRCUIT

Chap. 9 HIGH PRESSURE HYDRAULIC CIRCUIT

Chap. 10 OPTIONAL HYDRAULIC CIRCUIT

Chap. 11 MECHANICAL POWER LIFT

Chap. 12 GHIBLI TRACTOR ELECTRICAL SYSTEM

Chap. 13 ATLANTIS TRACTOR ELECTRICAL SYSTEM

Chap. 14 AIR CONDITIONING SYSTEM

Chap. 15 SPECIAL TOOLS

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Sect.3 - Working in safety

3-1 Essential rules for prevention

The structures, systems and equipment in repair shops must conform to the current laws governing labour safety in order to safeguard the health and safety of each worker.
Although they are obviously only partial, the regulations given in this section inform the workers about the dangers they may encounter on the job.

Always bear your safety and that of others in mind whenever you work on a machine, whichever type it may be.
To work in complete safety, it is essential to know the nature of the job, to correctly use the tools and materials required and to rely on your common sense.

To prevent accidents, it is important to:

- **BEHAVE** correctly and act with caution;
- Pay **ATTENTION** and keep your actions under control;
- Comply with the **REGULATIONS** and rules of behaviour of a general character.





This is the warning symbol. Any time you see it, either on the machine or in the manual, pay attention to the possible danger of accidents.

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Tractor identification and technical specifications

2-2 Weights and dimensione

ATLANTIS TRACTORS

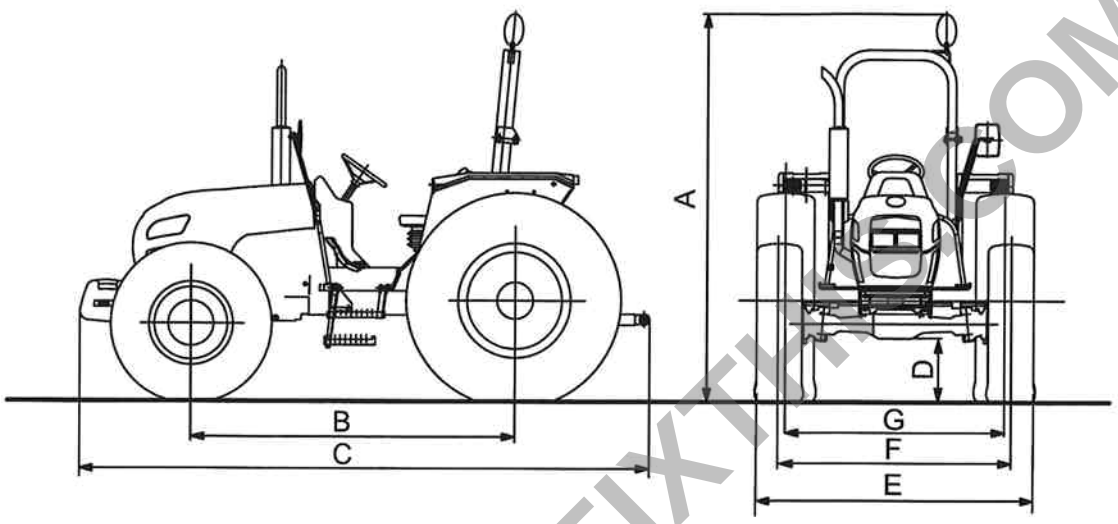


Fig.8-1

General specifications

* Atlantis 75 and 85 are sold on some markets only

	Atlantis 70 Atlantis 75		Atlantis 80 Atlantis 85		Atlantis 90 Atlantis 100	
	2 WD	4 WD	2 WD	4 WD	2 WD	4 WD
With tyres						
- front	7.50-18	12.4R24	9.00-16	380/70R24	9.00-16	380/70R24
- rear	16.9R30	16.9R30	18.4R30	480/70R30	480/70R34	480/70R34
Weights						
- In running order, without front and rear ballast and safety frame						
With steel rings ..... Kg	3010	3250	3090	3300	3090	3300
With cast iron rings ..... Kg	3160	3410	3240	3460	3240	3460
Dimensions						
A - Height at safety frame (rotating beacon) ..... mm	2820	2820	2870	2870	2870	2870
B - Wheelbase ..... mm	2350	2350	2380	2380	2380	2380
C - Max. length with front ballast ..... mm	4200	4200	4200	4200	4200	4200
D - Ground clearance (under front axle) ..... mm	520	350	520	400	540	420
E - Max. length on road ..... mm	2080	2080	2080	2080	2080	2080
F - Front track ..... mm	See track tables		See track tables		See track tables	
G - Rear track ..... mm						

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Precautions and safety warnings

How to lift the engine safely

WARNING : make sure that there are no bystanders near the load.

WARNING : the engine is very heavy. Proceed with great care and comply with all the safety instructions.

Before lifting the engine :

- Always use the appropriate, approved equipment of the correct capacity to lift the engine.
  Use lifting equipment of the type illustrated in figure 1a - 2. This equipment must be able to lift the engine vertically above the lifting brackets (1). Never ever use a single lifting bracket to lift the engine.
- Make sure that the lifting brackets are not damaged and that they are firmly fixed before you begin to lift the engine.
- To prevent the rocker arm cover from being damaged, make sure that there is a gap between the hooks and the actual cover itself.
- Use lifting equipment or ask for help from another technician if you must lift heavy engine components, such as the engine block, the cylinder head, flywheel housing, drive shaft and flywheel.

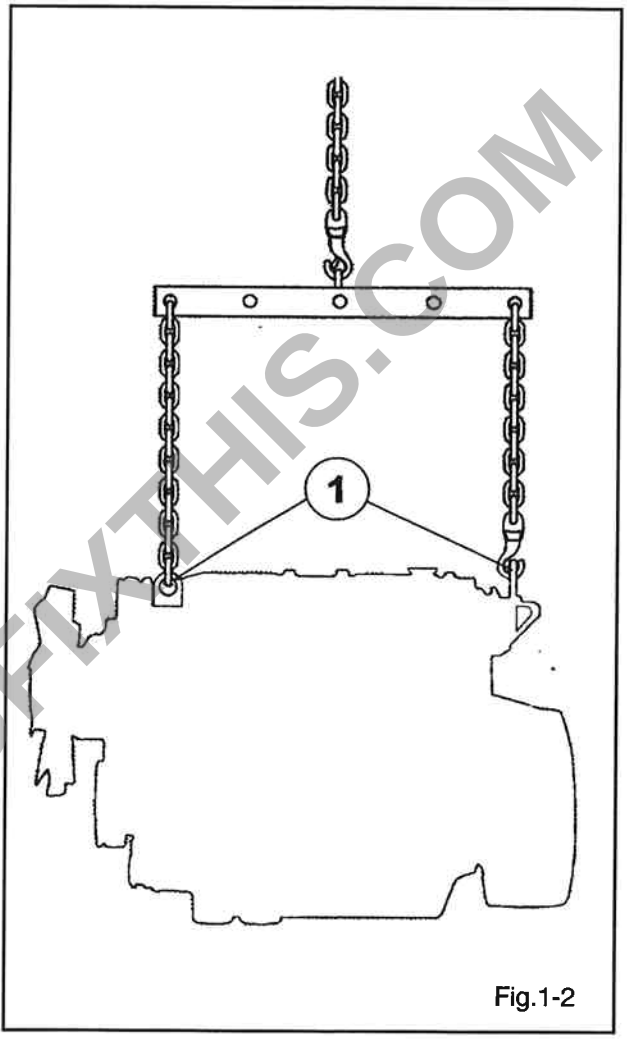


Fig.1-2

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Gearbox

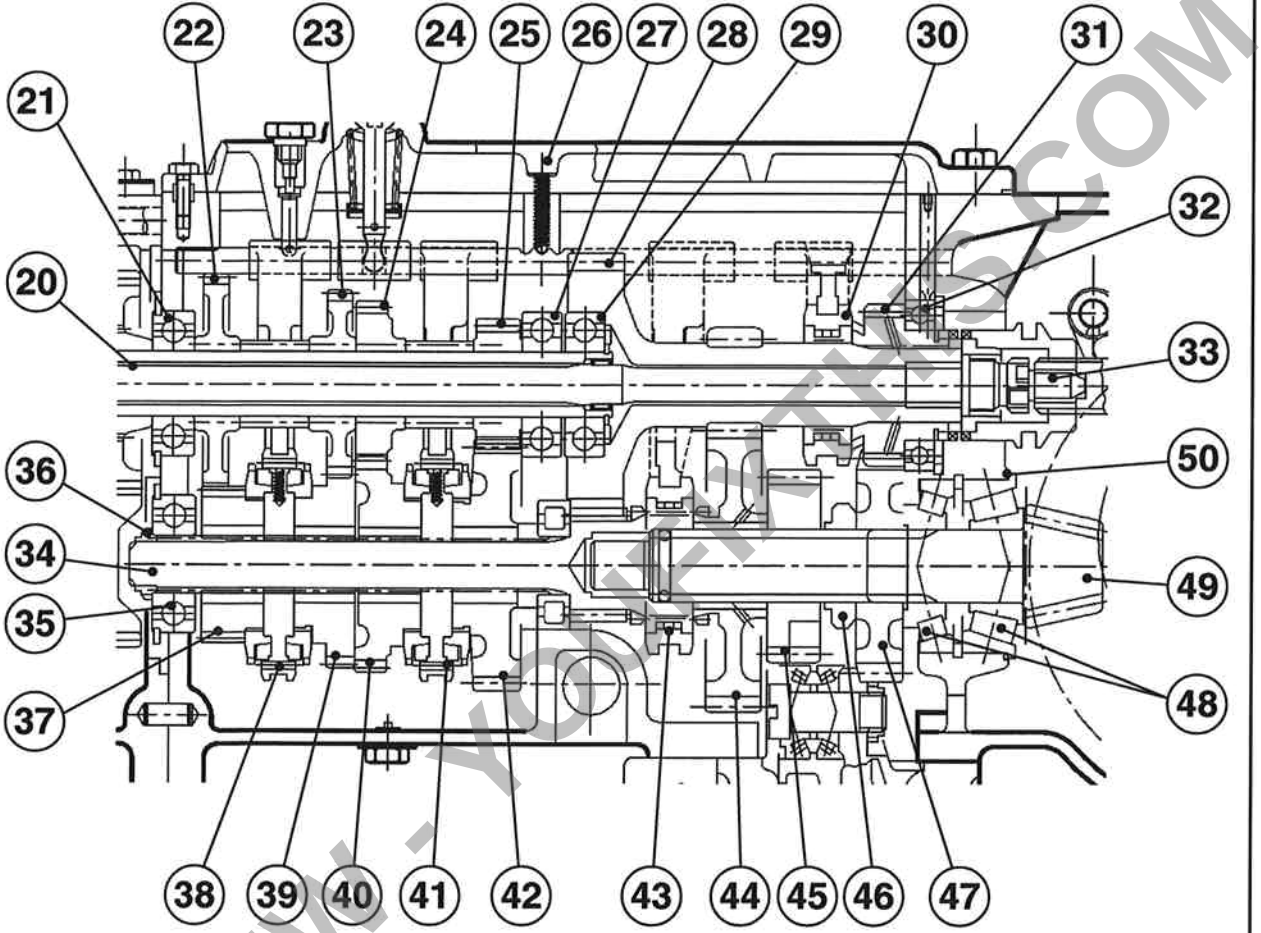


Fig.36-4

B2 - Description of operation

Main shaft (20) drive reaches the four speed control gears: (25) 1st, (24) 2nd, (23) 3rd, (22) 4th and depending on the selected speed (lever A), sleeve (41) engages for the 1st and 2nd or (38) for the 3rd and 4th.
Drive thus reaches the transmission shaft which is infinitely meshed with gear (28) which allows drive to reach the upper part.
The fast range is selected (lever B) if the sleeve is moved towards the left, while the slow range is selected if it is moved towards the right. The normal range is selected if sleeve (30) is moved towards the right.

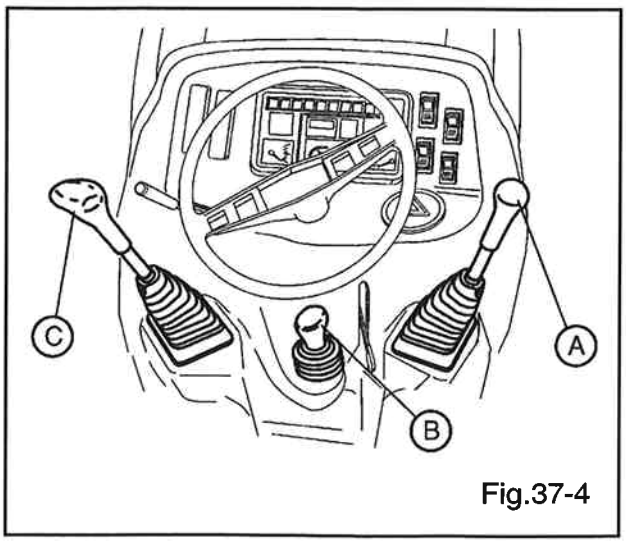


Fig.37-4

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Hydrostatic power steering system

B1 - Steering low pressure hydraulic circuit

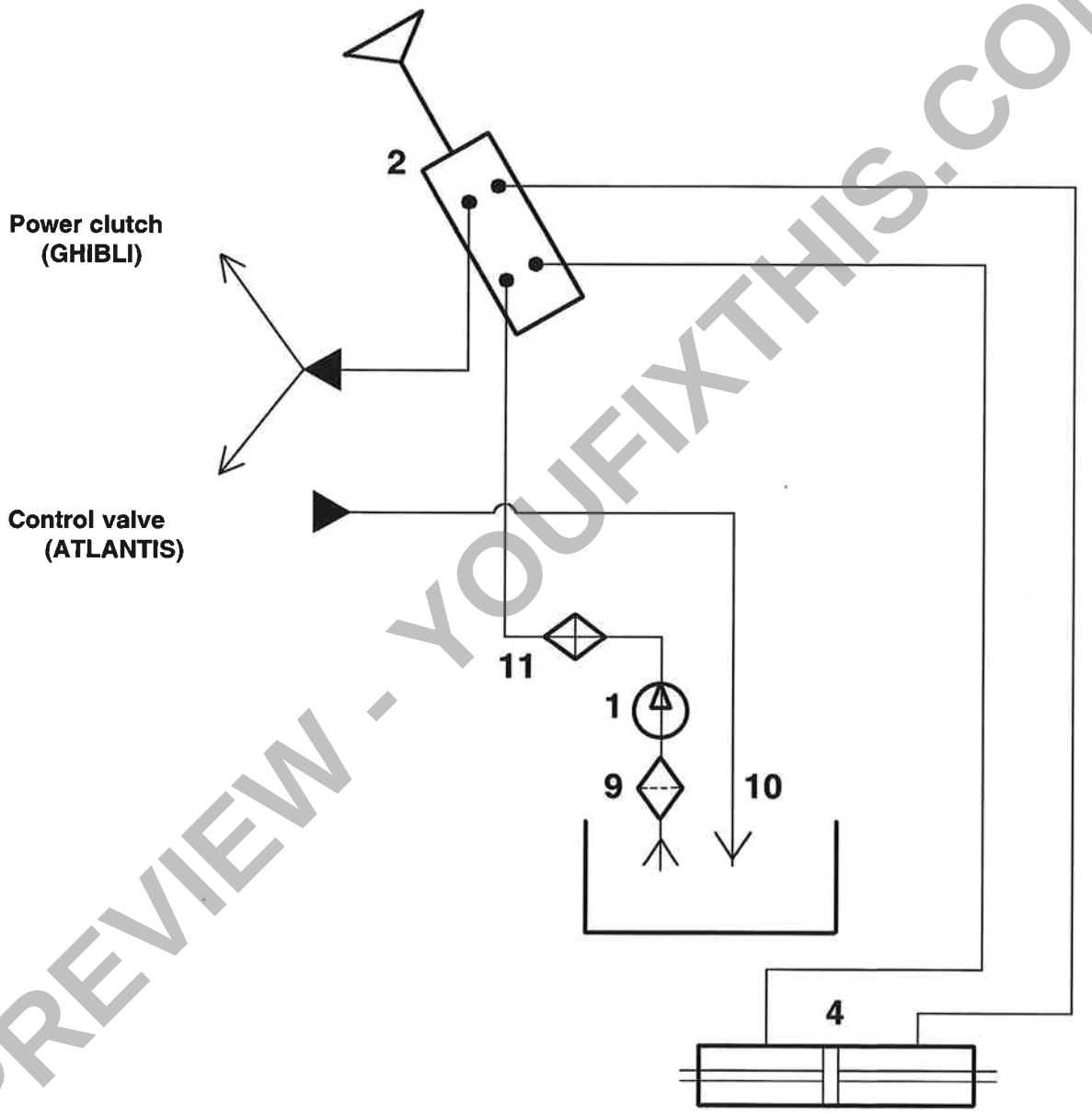


Fig.5-7

1 - Pump
2 - Steering distributor
4 - Steering cylinder
9 - Filter
10 - Reservoir
11 - Filter (Ghibli tractors only)

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Main components of the high pressure circuit

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General description

PART-2

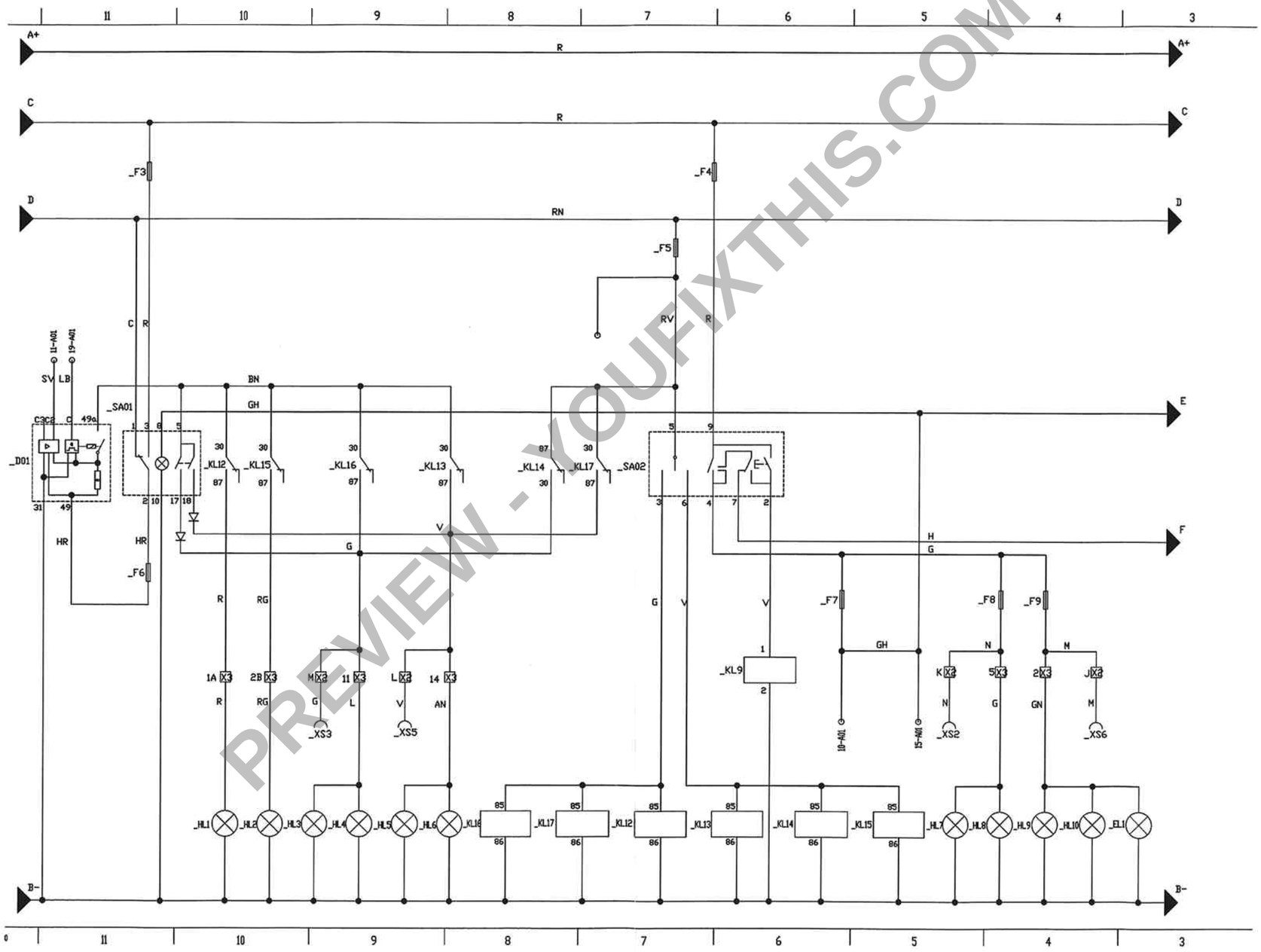


Fig.18-10

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Roof-cab line

CONNECTOR (E30) FOR LICENCE PLATE LIGHT

Terminal	Wire colour	To connector or component	Terminal
1	B	E29	2
2	GN-GN	X3a-E28	2-1

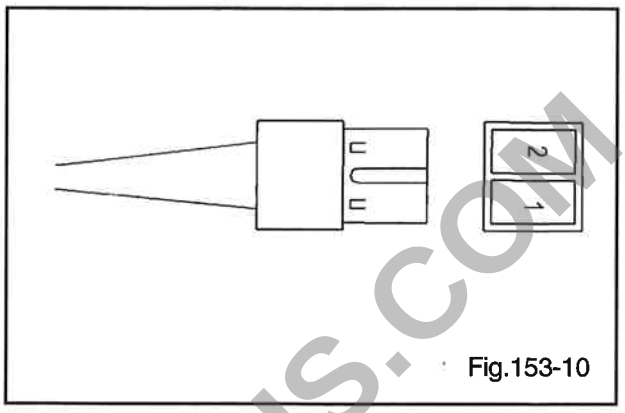
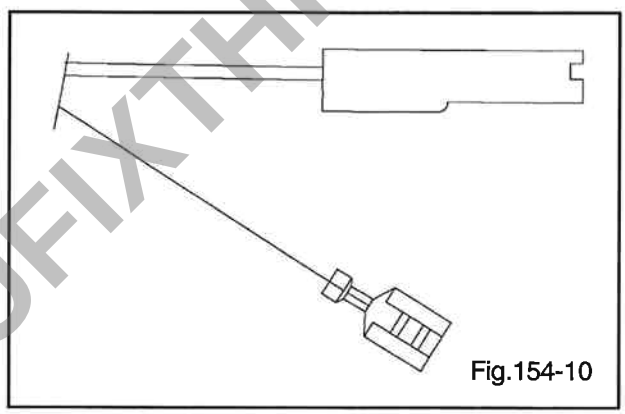


Fig.153-10

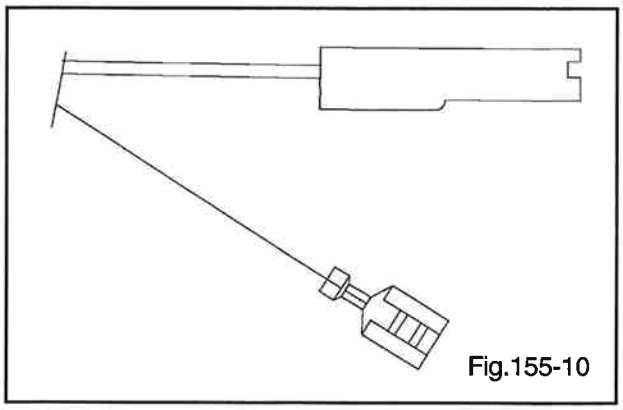
FASTON TERMINALS (E31) FOR ROTATING BEACON

Terminal	Wire colour	To connector or component	Terminal
1	RV	X3a	7
2	B	junction E36	-


Fig.154-10

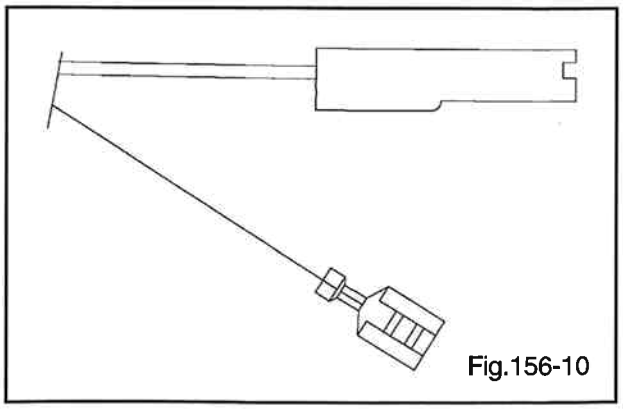
FASTON TERMINALS (E32) FOR LH REAR WORK LIGHTS

Terminal	Wire colour	To connector or component	Terminal
1	HN	E33	1
2	B	junction E36	-


Fig.155-10

TERMINALI FASTON (E33) FOR LH REAR WORK LIGHTS

Terminal	Wire colour	To connector or component	Terminal
1	HN-HN	E32-E34	1-3
2	B	junction E36	-


Fig.156-10

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General description

PART-3

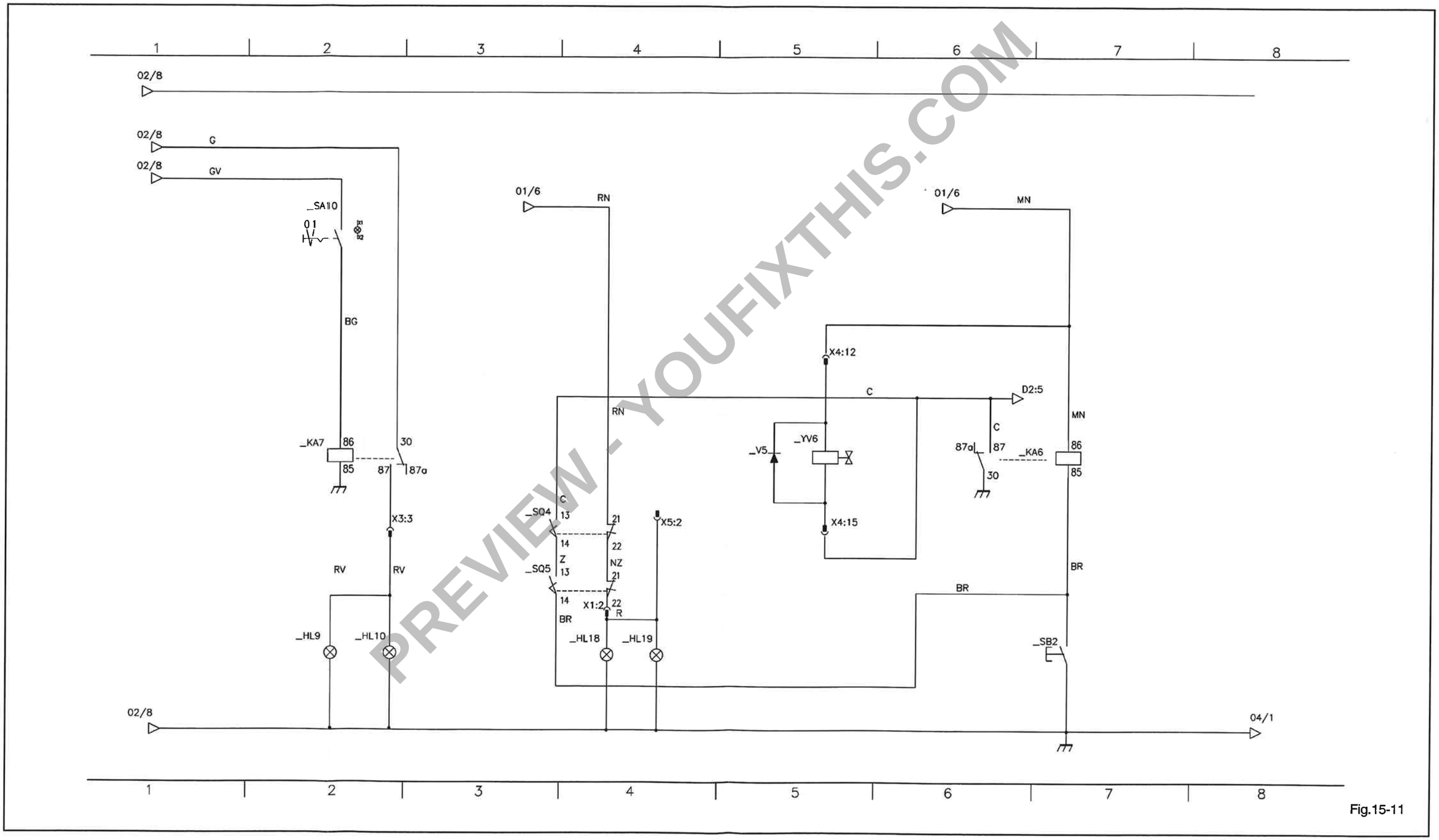


Fig.15-11

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Solenoid valves

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