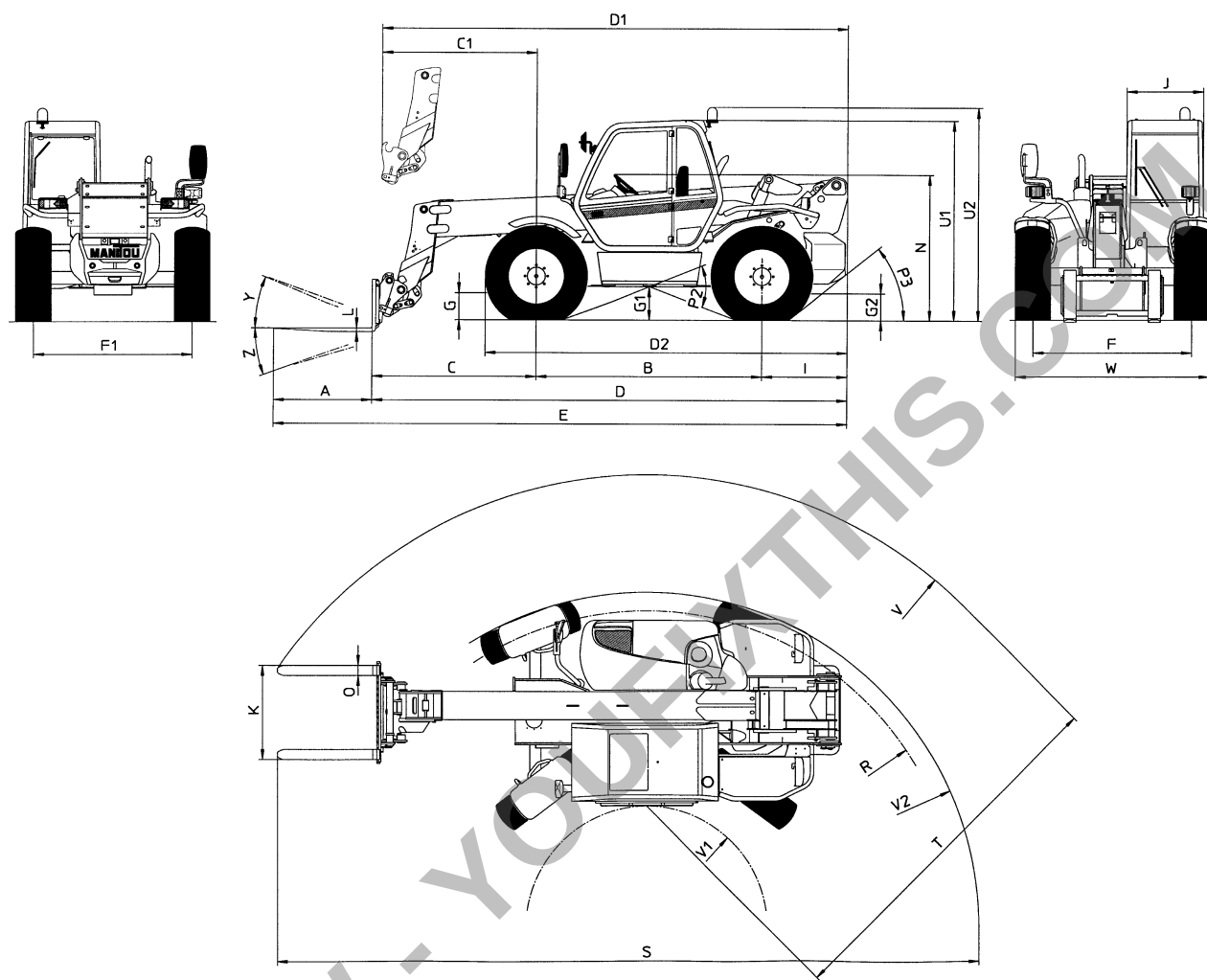
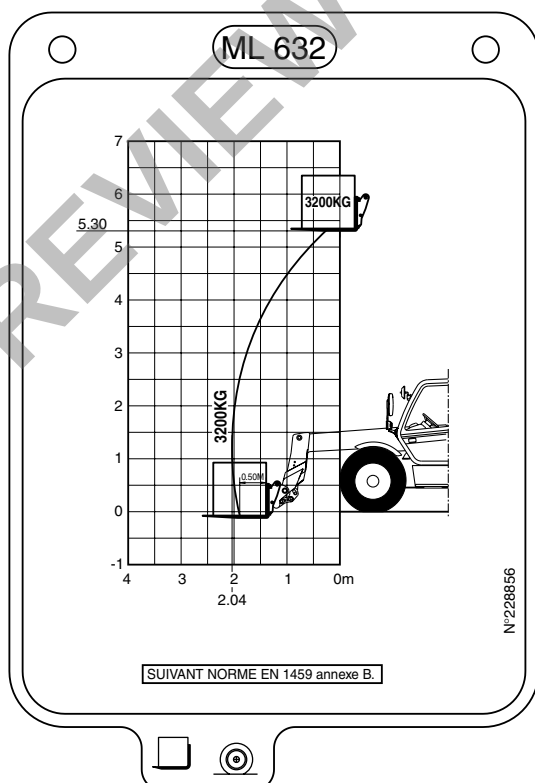
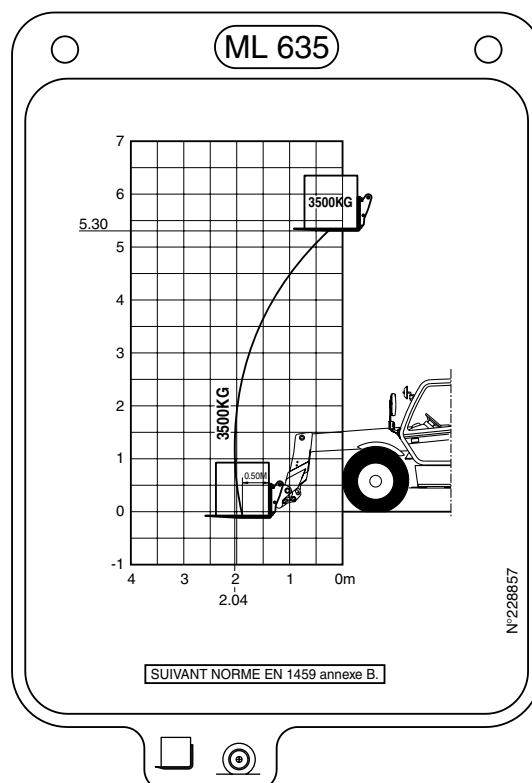
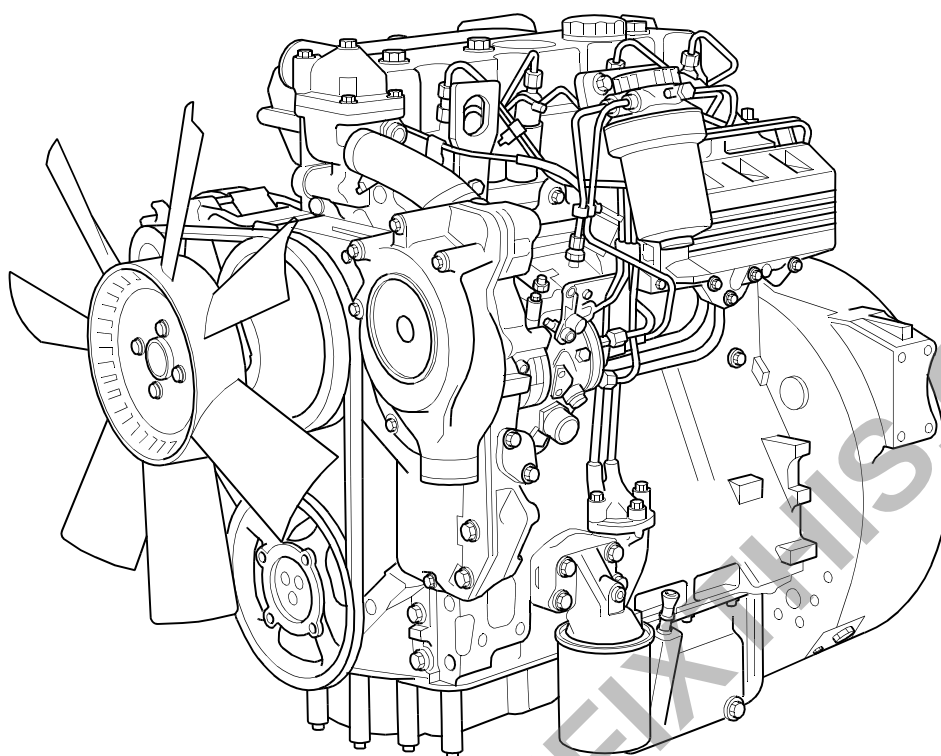
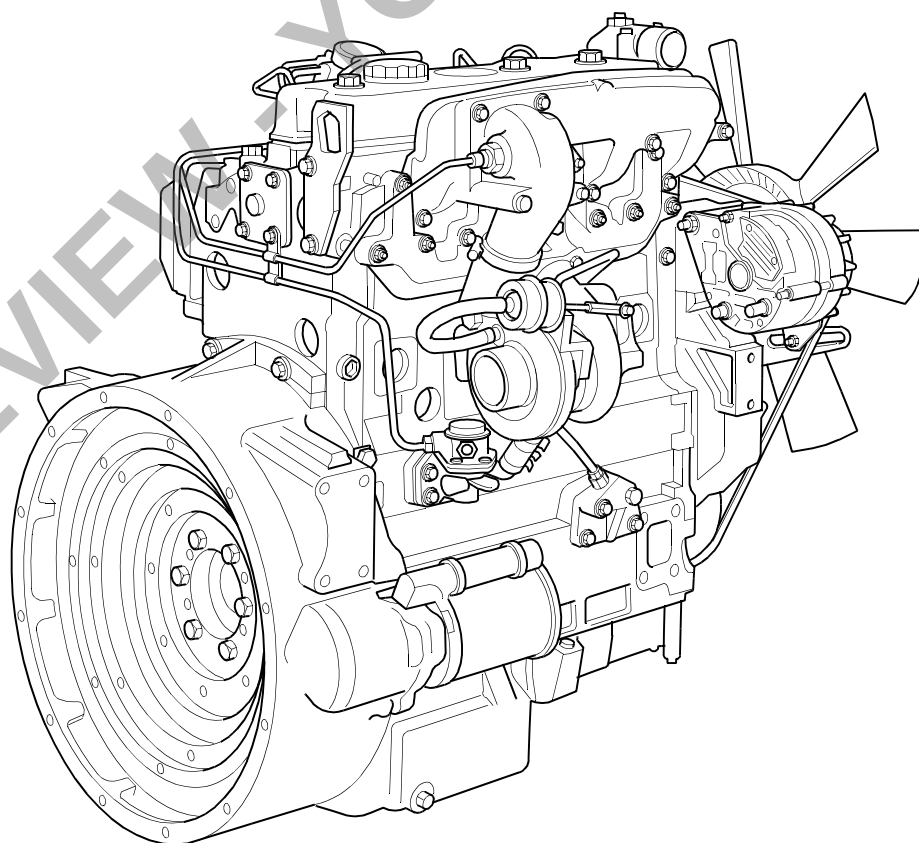


DIMENSIONS AND LOAD CHART





A0378N



A0379

12

Cylinder head assembly

General description

In a diesel engine there is little carbon deposit and for this reason the number of hours run is no indication of when to overhaul a cylinder head assembly. The factors which indicate when an overhaul is necessary are how easily the engine starts and its general performance.

The cylinder head assembly has two valves fitted for each cylinder, each fitted with single valve springs.

The ports for the inlet and exhaust are on the right side of the cylinder head.

The face angle of the valves is either 45° or 30°. The angle of the valve seats in the cylinder head is either 46° or 31°.

The valves move in phosphated steel guides which can be renewed. The exhaust valve guide has a counterbore to prevent seizure of the valve stem caused by a build up of carbon under the head of the valve.

Both valve stems are fitted with oil seals that fit over the top of the valve guides.

The engines have steel valve seat inserts fitted in the cylinder head for both inlet and exhaust valves.

15

Timing case and drive assembly

General description

The timing case (A) is for engines fitted with a gear driven coolant pump. The timing case (B) is for engines fitted with a belt driven coolant pump. The timing case is made of either aluminium or cast iron.

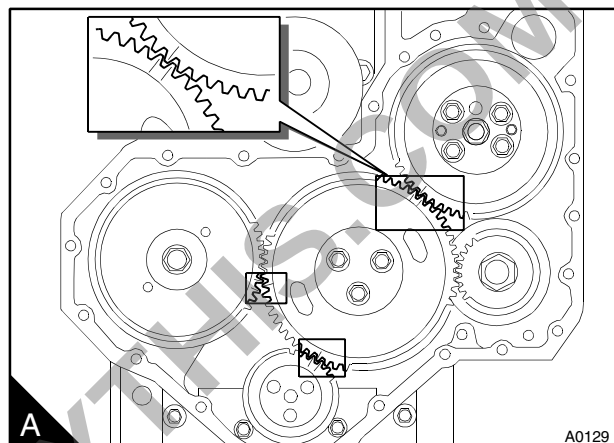
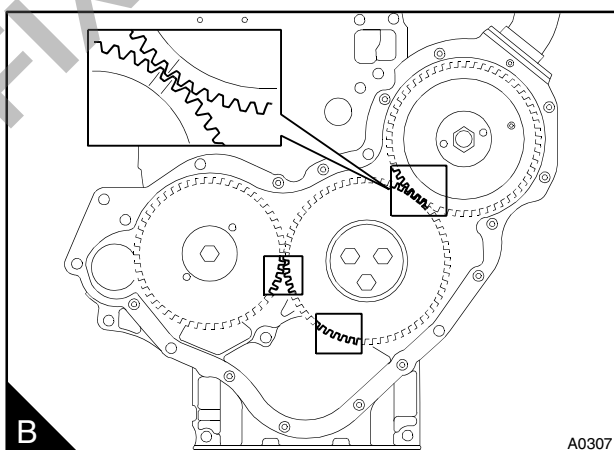
The timing gears on most engines are made of steel, but cast iron gears are used on certain low rated engines. A power take-off is available on the left side of the aluminium timing case or from both sides of the timing case made of cast iron. Some applications that need a power take-off from both sides of the timing case can have an idler gear assembly that uses needle roller bearings.

The drive from the crankshaft gear passes through an idler gear to the camshaft gear and to the gear of the fuel injection pump. The drive from the crankshaft gear also passes through a lower idler gear to the gear of the lubricating oil pump or, on some four cylinder engines, to the gear of the balancer unit. The gear driven coolant pump is driven by the gear of the fuel injection pump. The camshaft and the fuel injection pump run at half the speed of the crankshaft.

The aluminium cover of the timing case contains the front oil seal; this is made of viton and has a dust lip in front of the main lip. On some engines the cover has a noise shield fitted to its front face.

Warning! Read the safety precautions for "Viton" seals on [page 20](#).

The camshaft is made of cast iron. The cam lobes and the eccentric for the fuel lift pump are chill hardened.



19

Lubrication system

General description

Four cylinder engine lubrication system (page 160/A)

Pressure lubrication is supplied by a rotor type pump which is driven through an idler gear from the crankshaft gear. The pump has an inner rotor and an outer rotor which are off-centre to each other. There is a key between the inner rotor and the drive shaft. The inner rotor has six lobes which mesh with the seven lobes of the outer rotor. When the pump rotates, the space between the lobes of the outer rotor which are in mesh increases to cause a suction or decreases to cause a pressure increase. If a balancer unit (page 161/A) is fitted, the oil pump is fitted to the balancer frame and is driven by the balancer drive shaft.

Lubricating oil (page 160/A1) from the sump passes through a strainer and pipe to the suction side of the pump.

The lubricating oil (page 160/A2) passes from the outlet side of the pump through a pipe to a relief valve, which is fitted to the bottom of the left side of the cylinder block. If a balancer unit is fitted, the relief valve is fitted in the frame of the balancer. The relief valve opens if the oil pressure is too high and allows some of the lubricating oil to return to the sump.

From the relief valve, lubricating oil passes to a plate type oil cooler (some naturally aspirated engines do not have an oil cooler). The oil cooler is either fitted to the left side of the cylinder block and has seven plates, or it is fitted between the oil filter head and the filter canister and has ten plates. Some oil coolers are fitted with a by-pass valve. If cold oil increases the restriction in the cooler, the by-pass valve opens and the oil passes directly from the inlet side to the outlet side of the cooler.

Lubricating oil from the oil cooler, passes to an oil filter. The oil filter can be fitted to the left or right side of the engine. If the filter is fitted to the right side (19A.04/A) of the engine, the oil passes through a pipe connected between the relief valve and the right side of the cylinder block. The oil passes from the pipe through a passage in the right side of the cylinder block to an oil cooler and then to the oil filter. When the oil filter is on the right side of the engine, and an oil cooler is fitted, the oil cooler will be between the oil filter head and the oil filter canister.

The lubricating oil passes from the filter to the pressure rail which is drilled the complete length of the left side of the cylinder block. If the oil filter is on the right side of the engine, the oil passes through a passage drilled across the cylinder block to the pressure rail.

From the pressure rail, lubricating oil passes to the main bearings of the crankshaft and through passages in the crankshaft to the big end bearings. The pistons and the cylinder bores are lubricated by splash and oil mist.

Lubricating oil (page 160/A3) passes from the main bearings through passages in the cylinder block to the journals of the camshaft. Lubricating oil passes from the centre journal of the camshaft through a passage in the cylinder block and cylinder head to a restriction in the pedestal of the rocker shaft, at a reduced pressure (page 160/A4), to the rocker bushes. The oil passes through a passage in the rocker shaft to the bearings of the rocker levers. The valve stems, valve springs and the tappets are lubricated by splash and oil mist.

The hub of the idler gear is lubricated by oil from the pressure rail and the timing gears are splash lubricated.

The turbocharger is lubricated by oil after the filter. Oil is supplied from a connection on the right side of the cylinder block through an external pipe to the turbocharger. The oil passes through the turbocharger and returns through a pipe to the sump.

Turbocharged engines have piston cooling jets fitted. These jets are connected to the oil pressure rail and spray lubricating oil inside the pistons to keep them cool. Naturally aspirated engine types AR and AS have one piston cooling jet fitted to the number one cylinder position.

21

Cooling system

General description

Coolant from the bottom of the radiator passes through the centrifugal coolant pump, which is fitted onto the front of the timing case to assist the flow of the coolant through the system.

The pump is gear driven from the gear of the fuel injection pump.

On certain four cylinder applications the pump is driven by a "V" belt from the crankshaft pulley. Some engines are fitted with a belt driven coolant pump in a high position, these are identified by the thermostat housing which is part of the pump rear body. The rear body of these pumps has a connection to a coolant transfer plate, which allows coolant from the pump impeller to pass into the cylinder block.

Two types oil cooler are available for use on four cylinder engines: An integral oil cooler which is fitted to the left side of the cylinder block or a separate (cassette type cooler) fitted to the filter head.

The integral oil cooler has an aluminium cover with plate element and is fitted to the left side of the cylinder block.

The latest integral oil coolers for 6 cylinder engines have a pressed steel cover.

Four cylinder engines

From the pump, the coolant passes through a passage in the timing case to the water jacket in the left side of the cylinder block. Coolant pumps driven by a "V" belt do not pass the coolant through a passage in the timing case but direct to the front of the cylinder block. The coolant continues to the rear of the cylinder block where some of the coolant passes into the lubricating oil cooler, if one is fitted. Some of the coolant passes around the element of the integral cooler and then to the rear of the cylinder block.

Some four cylinder engines have a cassette type oil cooler fitted between the oil filter canister and the oil filter head. If the cassette oil cooler is fitted on the left side of the engine, coolant from the by-pass connection at the rear of the coolant pump passes through a pipe to the oil cooler. If the cassette oil cooler is fitted to the right side of the engine, a pipe is connected between the thermostat housing and the oil cooler. The coolant passes around the plates of the cooler and passes through a pipe to the cylinder block.

The coolant then passes from the rear of the cylinder block and into the cylinder head. The coolant leaves the cylinder head at the front and passes into the thermostat housing.

If the thermostat is closed, the coolant goes directly through a by-pass to the inlet side of the coolant pump. If the thermostat is open, the thermostat closes the by-pass and the coolant passes to the top of the radiator.

Some engines are fitted with two thermostats.

Six cylinder engines

On six cylinder engines the coolant divides as it enters the cylinder block. Most of the coolant passes along the right hand side of the cylinder block and around the outside of the cylinders to the rear of the cylinder block.

The remainder of the coolant passes along a passage on the left hand side of the cylinder block to the lubricating oil cooler.

The coolant flows around the element of the lubricating oil cooler to the rear of the cylinder block. The coolant then passes to the rear of the cylinder head.

Coolant passes forward through the cylinder head and into the thermostat housing. These engines have one thermostat. If the thermostat is closed, the coolant goes, through a by-pass, directly to the inlet side of the coolant pump. If the thermostat is open, the coolant passes to the top of the radiator.

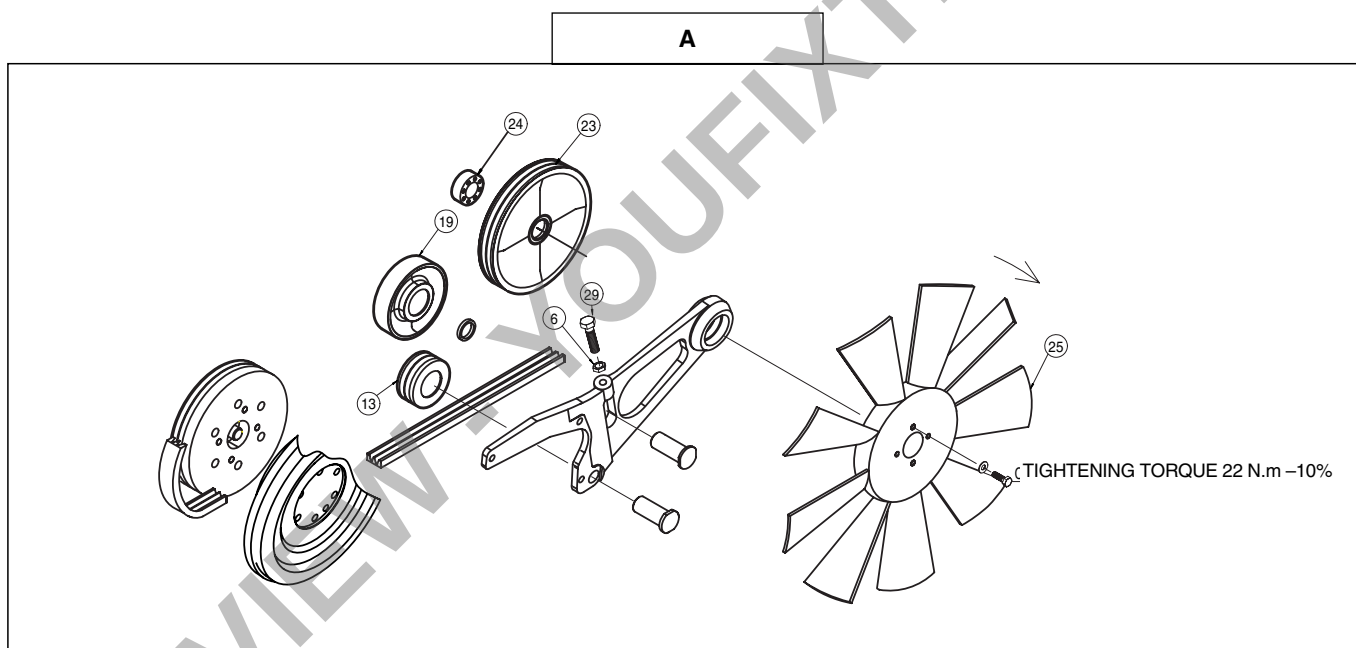
Some engines are fitted with two thermostats.

ADJUSTING THE FAN BELT

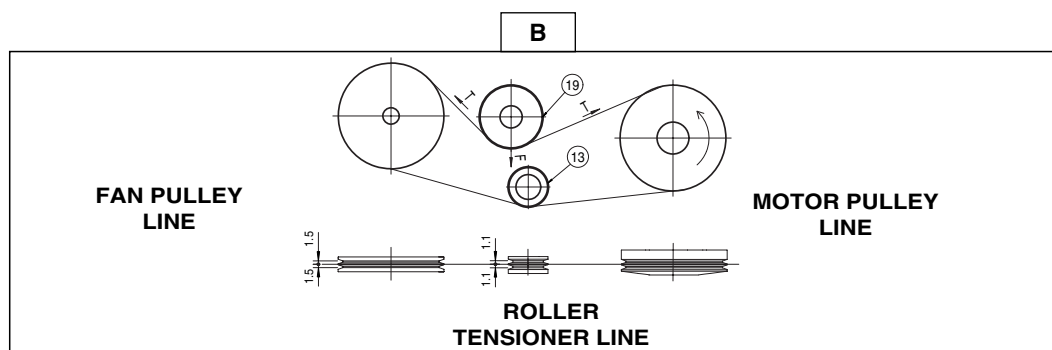
PROCEDURE FOR ADJUSTING THE FAN BELT TENSION

- 1 - Change the belt for cracks or signs of wear, and if necessary change it.
- 2 - Loosen the nut Mk 6 and the screw Mk 29.
- 3 - Bring Mk 19 into contact on the belt with the screw Mk 29. The belt should be in position in the pulley Mk 13.
- 4 - Tighten the screw Mk 29 by 5 turns. The belt tensioning strain T is $T = 450 \text{ N}$ per strand. This tension corresponds to a pull F of 28N (see sketch B).
- 5 - Immobilize the screw Mk 29 with the nut Mk 6.

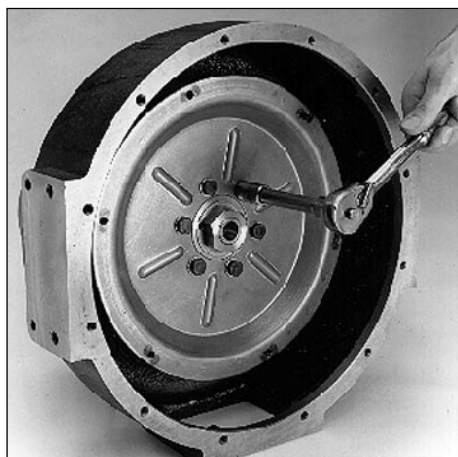
! If you are changing the fan belt, carry out operations 2 to 5 and then, after 30 minutes with the engine idling ($930 \text{ rpm} \pm 20$) loosen the nut Mk 6 (without turning the screw Mk 29) then tighten the screw Mk 29 1.5 turns and lock the nut Mk 6.



- Allowable pulley misalignment : See sketch B below.



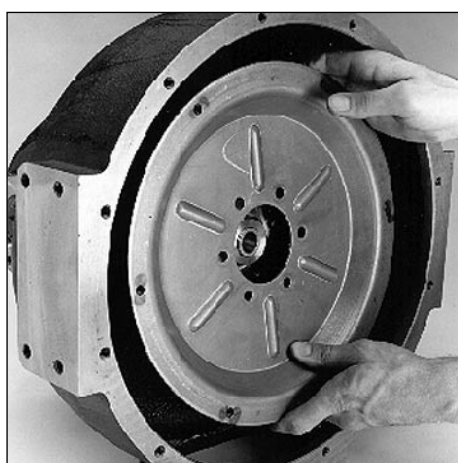
REMOVE



- 1 -

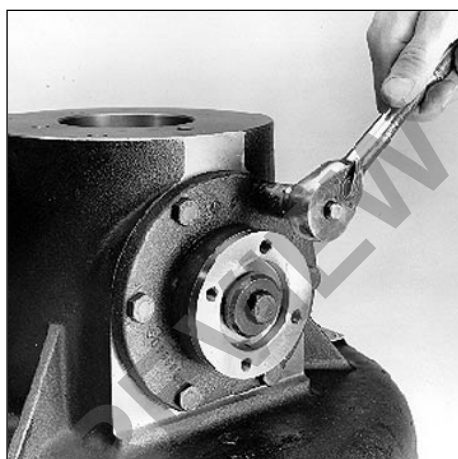
MAIN HOUSING DISASSEMBLY PROCEDURE

- Remove 6 bolts retaining the drive plate. (17 mm socket).



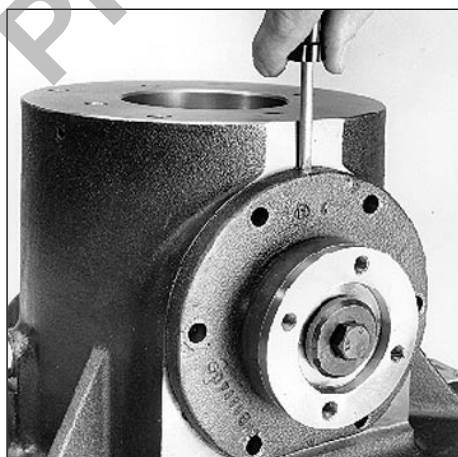
- 2 -

- Remove the drive plate.



- 3 -

- Remove 6 bolts retaining the input shaft housing. (17 mm socket).



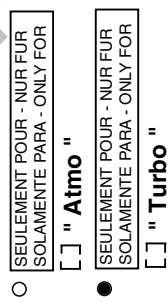
- 4 -

- Separate the input shaft housing using the levering slots if required.

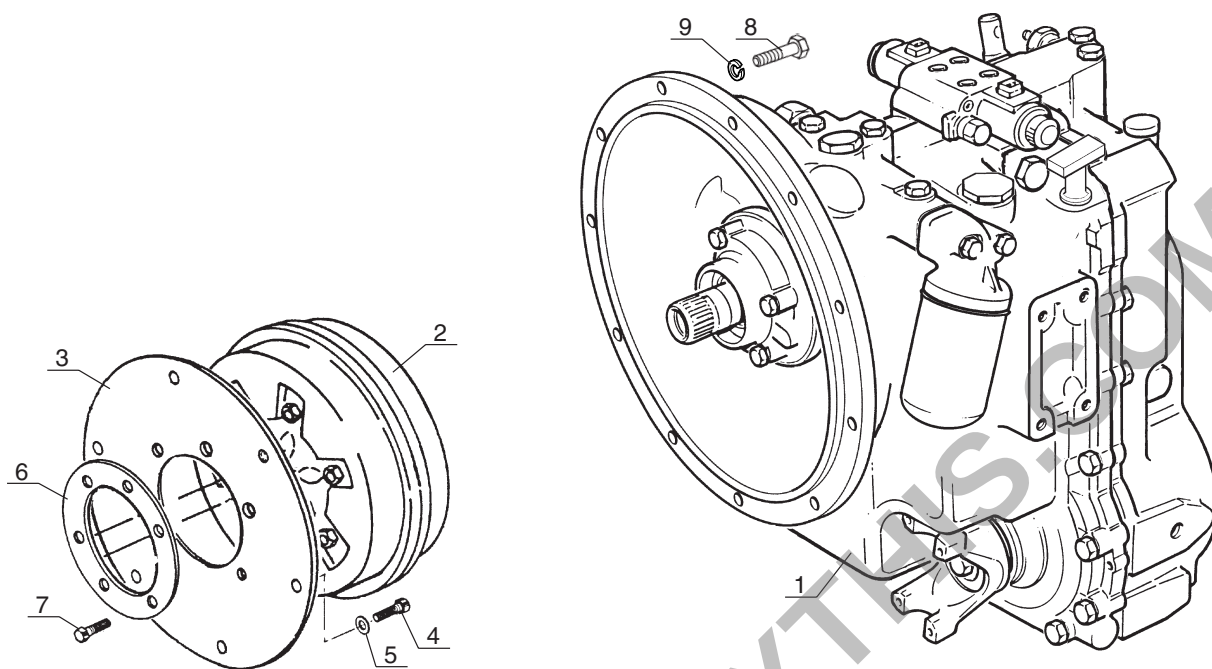
Exploded view diagram of a mechanical assembly, likely a pump or engine component. The diagram shows the main housing (1) and various internal and external components, including a shaft (2), a piston (3), a crankshaft (4), a connecting rod (5), a flywheel (6), a valve train (7-10), a timing belt (11), a timing cover (12), a water pump (13), a belt drive pulley (14), a timing chain (15), a timing chain guide (16), a timing chain tensioner (17), a timing chain sprocket (18), a timing chain cover (19), a timing chain cover gasket (20), a timing chain cover bolt (21), a timing chain cover nut (22), a timing chain cover washer (23), a timing chain cover seal (24), a timing chain cover O-ring (25), a timing chain cover gasket (26), a timing chain cover bolt (27), a timing chain cover nut (28), a timing chain cover washer (29), a timing chain cover seal (30), a timing chain cover O-ring (31), a timing chain cover gasket (32), a timing chain cover bolt (33), a timing chain cover nut (34), a timing chain cover washer (35), a timing chain cover seal (36), a timing chain cover O-ring (37), a timing chain cover gasket (38), a timing chain cover bolt (39), a timing chain cover nut (40), a timing chain cover washer (41), a timing chain cover seal (42), a timing chain cover O-ring (43), a timing chain cover gasket (44), a timing chain cover bolt (45), a timing chain cover nut (46), a timing chain cover washer (47), a timing chain cover seal (48), a timing chain cover O-ring (49), a timing chain cover gasket (50), a timing chain cover bolt (51), a timing chain cover nut (52), a timing chain cover washer (53), a timing chain cover seal (54), a timing chain cover O-ring (55), a timing chain cover gasket (56), a timing chain cover bolt (57), a timing chain cover nut (58), a timing chain cover washer (59), a timing chain cover seal (60), a timing chain cover O-ring (61), a timing chain cover gasket (62), a timing chain cover bolt (63), a timing chain cover nut (64), a timing chain cover washer (65), a timing chain cover seal (66), a timing chain cover O-ring (67), a timing chain cover gasket (68), a timing chain cover bolt (69), a timing chain cover nut (70), a timing chain cover washer (71), a timing chain cover seal (72), a timing chain cover O-ring (73), a timing chain cover gasket (74), a timing chain cover bolt (75), a timing chain cover nut (76), a timing chain cover washer (77), a timing chain cover seal (78), a timing chain cover O-ring (79), a timing chain cover gasket (80), a timing chain cover bolt (81), a timing chain cover nut (82), a timing chain cover washer (83), a timing chain cover seal (84), a timing chain cover O-ring (85).

Legend:

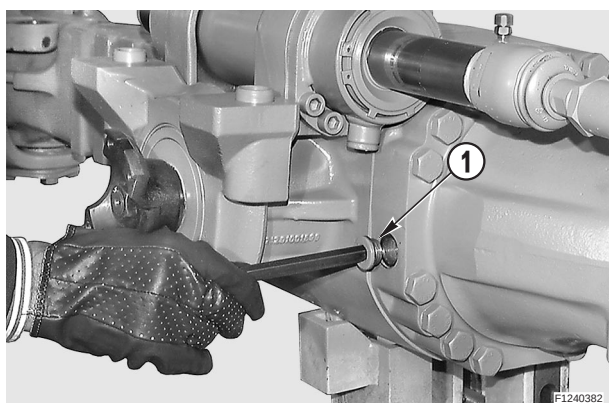
IR	DR
IR	DR



GEAR BOX AND CONVERTER



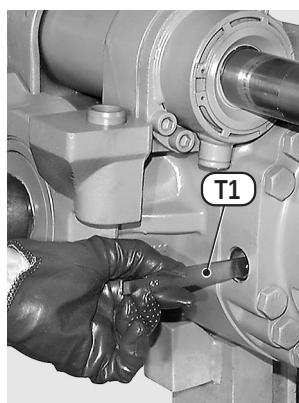
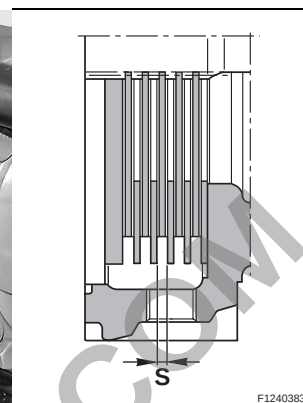
- 1 – Complete gear box
- 2 – Converter
- 3 – Intermediate piece
- 4 – Screw
- 5 – Washer
- 6 – Converter reinforcement plate
- 7 – Screw
- 8 – Screw
- 9 – Washer



GB

a

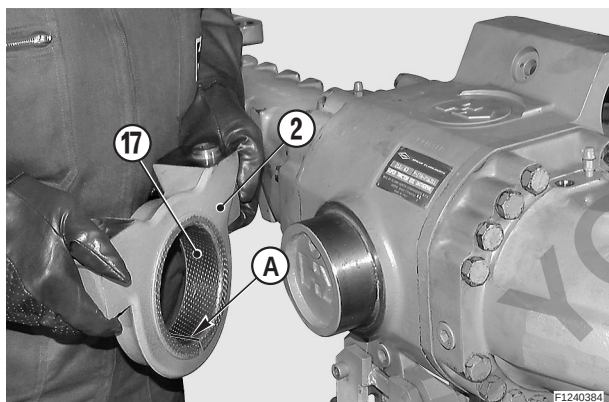
CAUTION! Perform all operations on both arms.
Remove the oil-level plug (1).



GB

b

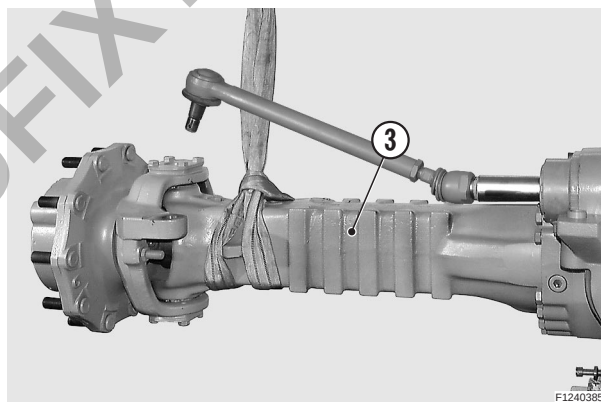
Apply the brakes and, keeping them under pressure, check the linings "S" between the disks using tool T1.
Minimum "S": 4.5 mm.
CAUTION! Replace the braking disks and the intermediate disks on both sides if necessary.



GB

c

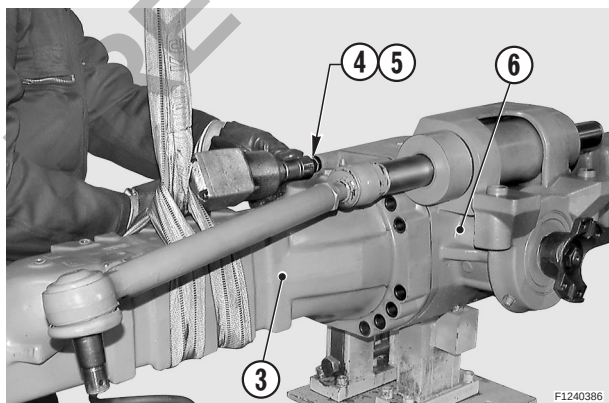
Remove the swinging support (2) on the side opposite the drive.
NOTE. If the bushing (17) is worn and needs replacing, note down the assembly side of the connection notch "A".



GB

d

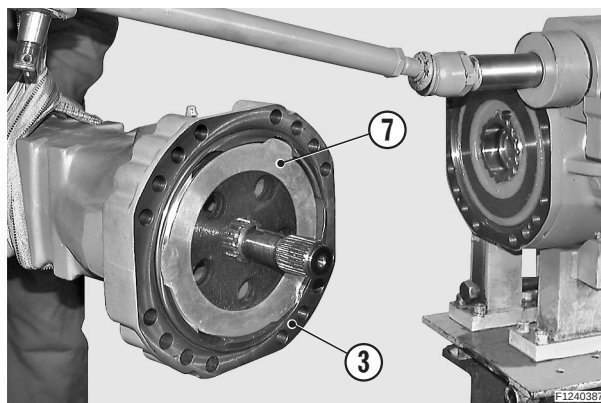
Disconnect the pins of the steering bars from the steering case (See «HOW TO REMOVE THE STEERING CYLINDER».)
Sling the arm (3) to be removed and put the rod under slight tension.



GB

e

Unloose and remove the screws (4) and the washers (5) that fix the arm (3) to the central body (6).



GB

f

Remove the arm (3) together with the pack of the braking disks (7).
Place the arm on a bench.

OPERATION OF THE MASTER CYLINDER

A) PRIMARY STAGE (SERVO BRAKE ASSISTANCE)

- At the rest position, the pressure coming from A1 is blocked by the Ball (1).

The servo brake piston (4) and the load sensing aperture A2 are connected with the return via the conical valve (2).

Braking

During the initial braking phase (a progressive rise in pressure) the conical valve (2) closes the return to A3, after the valve (3) moves 0.6 to 1.2 mm. The ball (1) allows pressure from aperture A1 to pass through. This pressure then acts on the surface of the piston (4) as well as aperture A2 which provides guiding pressure for load sensing for the valve of the LS pump.

When the displacement of valve (3) is stabilised (the valve does not move) braking pressure has been reached, the ball (1) and the conical valve (2) will move in succession so as to maintain the correct braking pressure on the piston (4).

- The maximum braking pressure is limited by a pressure limiter integrated in the valve located between the pump and aperture A1. A pressure which is too high can damage the brakes (maximum assistance pressure $\approx$ 40 bar).

During the final braking phase, the maximum pressure is applied in the servo brake, the valve (3) is displaced 1 to 2 mm with the same constant force. The extra pressure on the pedal allows an increase in the emergency brake pressure on piston 5.

B) SECONDARY STAGE (BRAKING)

Piston No. 5 pushes the floating plate (14) diam.38, which fills the brake pistons (filling phase of the secondary circuit).

During the braking phase, the increase in pressure in the secondary circuit is effected via the action of the piston's (15) wide diameter, followed by its narrow diameter. The pressure increase phase finishes when the valve (17) set at 15 bar opens.

From this moment on, the vortex chamber (8) communicates with the reservoir whereas pressure continues to be generated by the internal surface of the piston (15) and the joint (10) (a smaller diameter and thus a higher pressure).

With this increase in pressure, the rod (13) diam.3, pushes the ball (17) and keeps it open in order to cancel the resistance of the vortex chamber 8A.

**MT 835 MU + T.
MT 845 + T.
MT 940 L + T.**

**MT 845 T. MU
MT 940 L T. MU**

PROCEDURE

- Place the truck on a flat surface, position the jib horizontally.

NOTE : Ensure there is sufficient room to extract the telescope.

- Extract the telescope over 450 mm or so.
- Stop the engine.
- Decompress the attachment and tilt circuits.

Fig. A

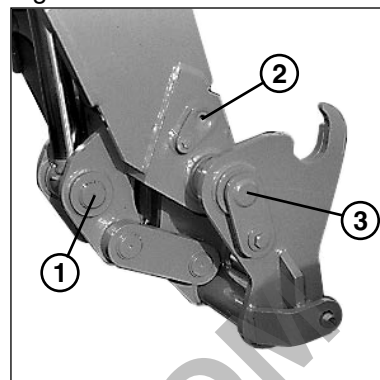


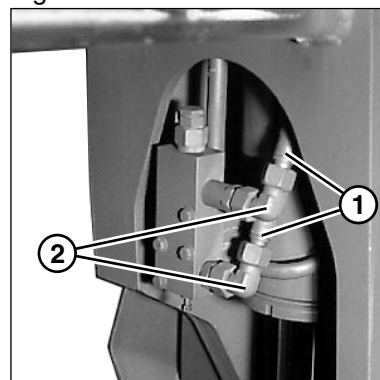
Fig. B



REMOVAL OF THE LIFT BRACKET

- Procure a suitable device (Pallet stacker, chain block, etc.) to remove the lift bracket.
- Remove head pin item 1 (Fig. A) on the tilt cylinder.
- Remove pin item 2 (Fig. A) on the connecting rod (Ensuring that the articulated parts do not fall down).
- Remove slewing pin item 3 (Fig. A) on the lift bracket.
- Remove the lift bracket (Fig. B).

Fig. C



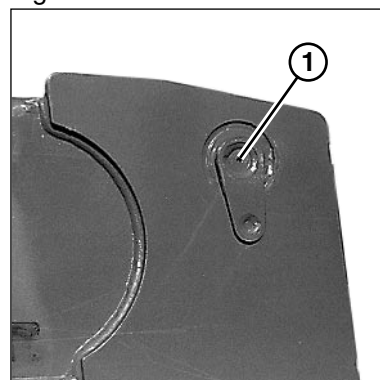
REMOVAL OF THE TILT CYLINDER

- Position a pan under the tilt cylinder.
- Disconnect both hoses item 1 (Fig. C) on the tilt cylinder (30 mm wrench).

NOTE : Oth elbows item 2 (Fig. C) must stay on the cylinder valve.

- Place caps on the hoses.
- Place a wedge under the tilt cylinder.
- Remove pin item 1 (Fig. D) from the base of the tilt cylinder.
- Remove the tilt cylinder.

Fig. D

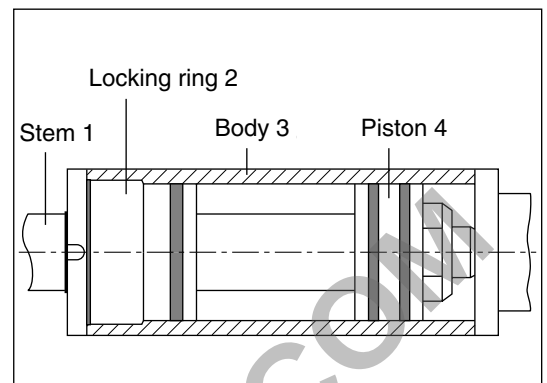


A - REMOVAL AND REASSEMBLY OF THE COMPLETE STEM

REMOVAL

- Place the cylinder in a vice fitted with false jaws.
- Tighten the vice, ensuring that the body does not get distorted.
- Free locking ring 2 (Fig. A1) using a spanner wrench.
- If you find it difficult to free the ring, see subsection "REMOVAL" in section E.
- Completely unscrew locking ring 2 (Fig. A1).
- Extract the complete stem from the cylinder body.

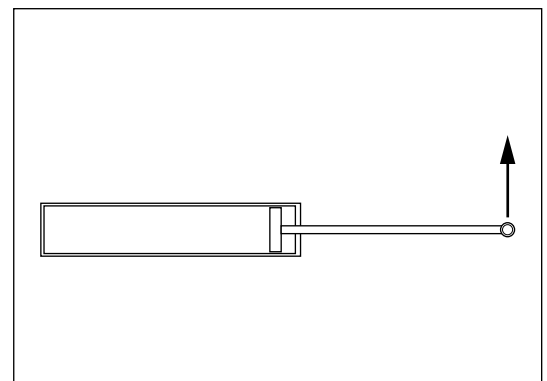
A1



NOTE : VERY LONG CYLINDERS

- Take out the stem over 200 mm maximum.
- Give a half turn to the locking ring to loosen it (very slowly and evenly).
- Take out the stem by about 2500 mm.
- Support the stem end to prevent it from weighing on the locking ring (Fig. A2).
- Carry on unscrewing the locking ring. If the effort is excessive, lift and lower the stem to reduce the friction.

A2



Never force the ring when unscrewing it as this could cause it to seize.

INSPECTION

- Degrease and clean the cylinder chamber.
- Visually inspect the cylinder chamber, there should be no scratches, burrs, oxidisation, etc...

CHECKING OF HYDRAULIC PRESSURES

MAIN CIRCUIT

Necessary parts

- 1 Pressure gauge (0 - 400 bar)	549 885
- Or 1 digital pressure gauge (0 - 600 bar)	554 118
- 1 Test hose	549 888
- 1 Test terminal	58 181

Method

- Check the level of hydraulic oil.
- Remove the control valve boot and protection plate.
- Bring the oil to the operating temperature (60°C) by operating the hydraulic mechanism.

The pressure relief valves are checked and adjusted at full capacity and with the engine at MAXIMUM speed.

The flap valves are checked and adjusted at minimum capacity and with the engine revolving at 1000 rpm.

*** Checking and adjustment of the main pressure relief valve on inlet section EE or EE1 (Fig. A).**

- Connect the pressure gauge to the pressure point.
- Lower the jib to the maximum, maintain the lifting cylinder in hydraulic stop and read the pressure on the pressure gauge (See values chart).

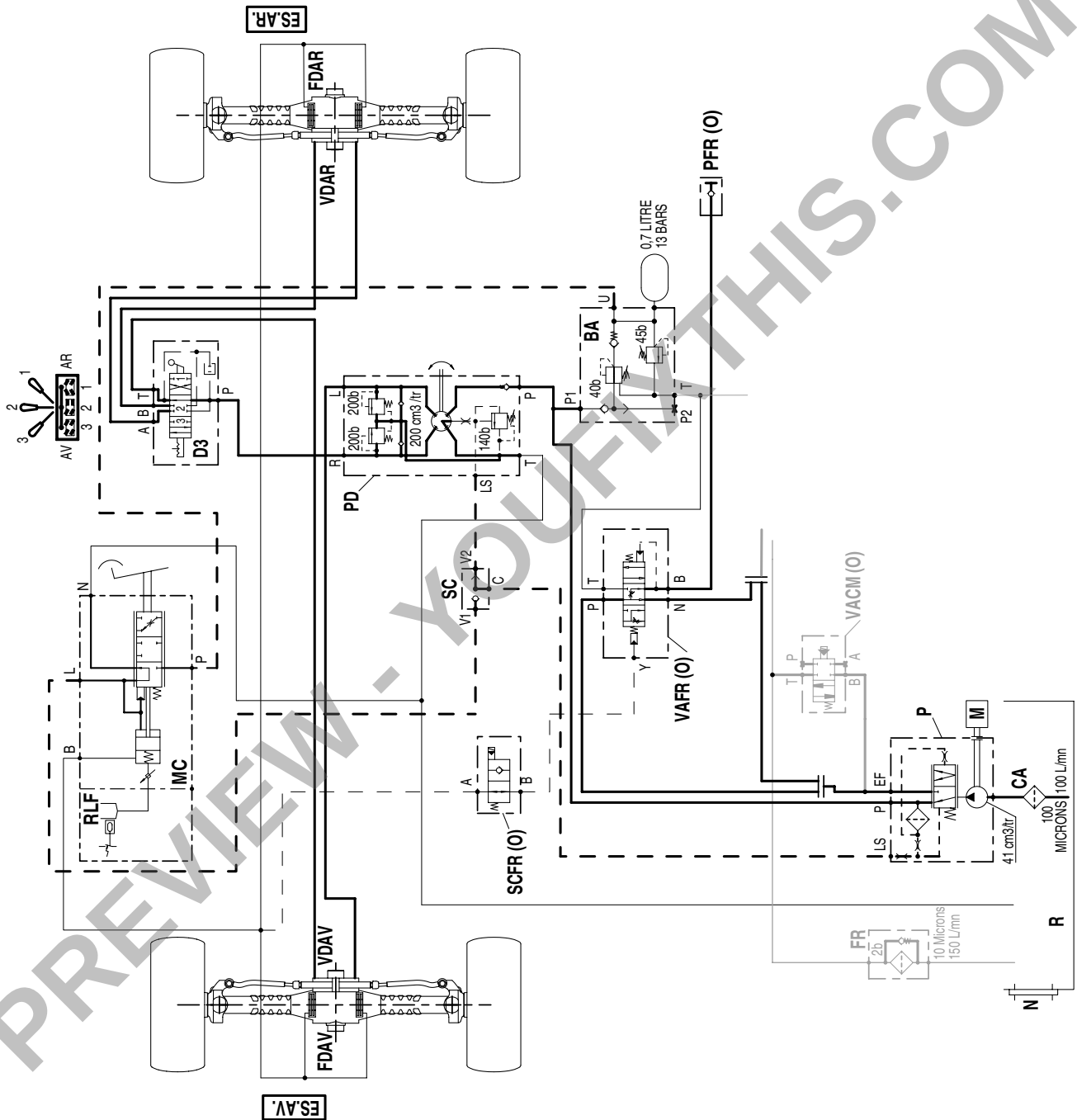
*** Checking and adjustment of the flap valves.**

- For these operations, it is first necessary to surcalibrate the main pressure relief valve on the inlet section EE or EE1 and EE2 (Fig. A) of + 10 bar.
- Connect the pressure gauge to the pressure point.
- Maintain the involved cylinder at end stroke and read the pressure on the pressure gauge (See values chart).
- At the end of these operations of adjustment re-set the main pressure relief valve to their previous adjustments on the inlet section EE or EE1 and EE2 (Fig. A) (See values chart).

*** Checking and adjustment of the main pressure relief valve on inlet section EE2 (Fig. A).**

- Connect the pressure gauge to the pressure point.
- Extend one or the telescopes, maintain the telescope cylinder in hydraulic stop and read the pressure on the pressure gauge (See values chart).
- For this operation, check first that the flap valve in the telescope section ET, ET1 or ET2 is correctly calibrated (See values chart).

HYDRAULIC DIAGRAM ML 632 - ML 635 + Turbo



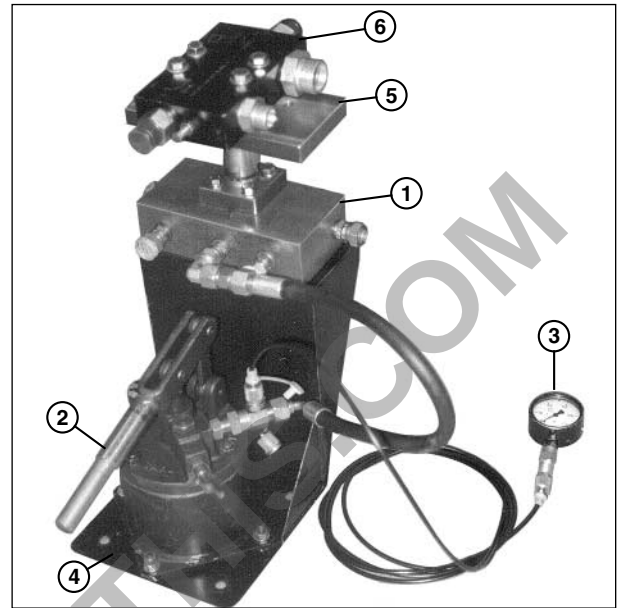
DESCRIPTION

Prior to checking and adjusting the valves, it is necessary to dismantle them and to fit them on the test bench.

The hydraulic supply of the bench is via a hand pump, the calibration readings are taken from a pressure gauge connected to the supply circuit (See fig. A).

Item 1	Test bench
Item 2	Hand pump
Item 3	Pressure gauge
Item 4	Stand
Item 5	Hydraulic flange (Needed for certain valves)
Item 6	Valve undergoing checks (Example)

A



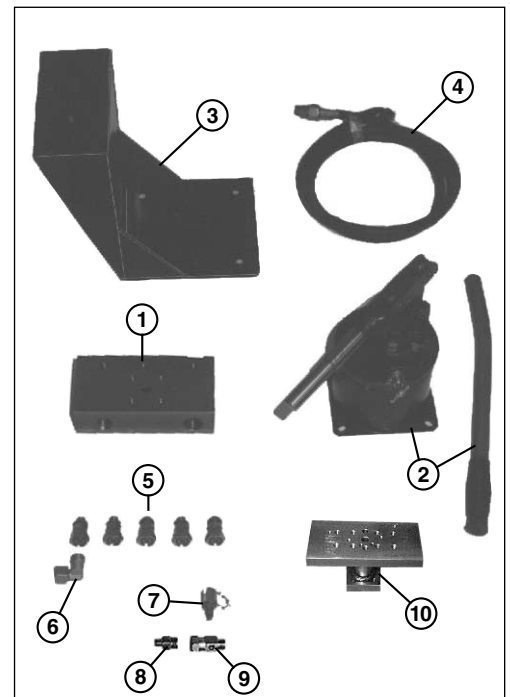
The test bench is supplied as a kit.

Complete kit (Fig. B) Ref. 216 741

CONTENTS OF KIT 216 741 :

1	Test bench	Ref. 552 407
2	Hand pump	Ref. 195 186
3	Stand	Ref. 195 188
4	Supply hose	Ref. 195 187
5	Fitting (x5) (M20x150 - 1/4 BSP)	Ref. 35 348
	Copper rings (x5)	Ref. 35 348
6	Elbow fitting (M20x150)	Ref. 405 955
7	Pressure fitting	Ref. 58 181
8	Fitting (MA 12S / MA 1/4 BSP JE)	Ref. 191 728
9	Fitting (FE 12S / MA 12S modified)	Ref. 194 771
10	Hydraulic flange	Ref. 214 360
	Zinc plated hexagonal M8 - 50 screw (x2)	Ref. 58 531
	Zinc plated hexagonal M10 - 30 screw (x2)	Ref. 63 544
	Zinc plated M8 N washer (x4)	Ref. 61 674
	Zinc plated M10 N washer (x2)	Ref. 29 437
	Zinc plated W10 washer (x2)	Ref. 42 232
	Zinc plated hexagonal M8 nut (x4)	Ref. 58 528
	Zinc plated M8 - 30 Chc screw (x4)	Ref. 60 845
	Seal (flange)	Ref. 189 960

B

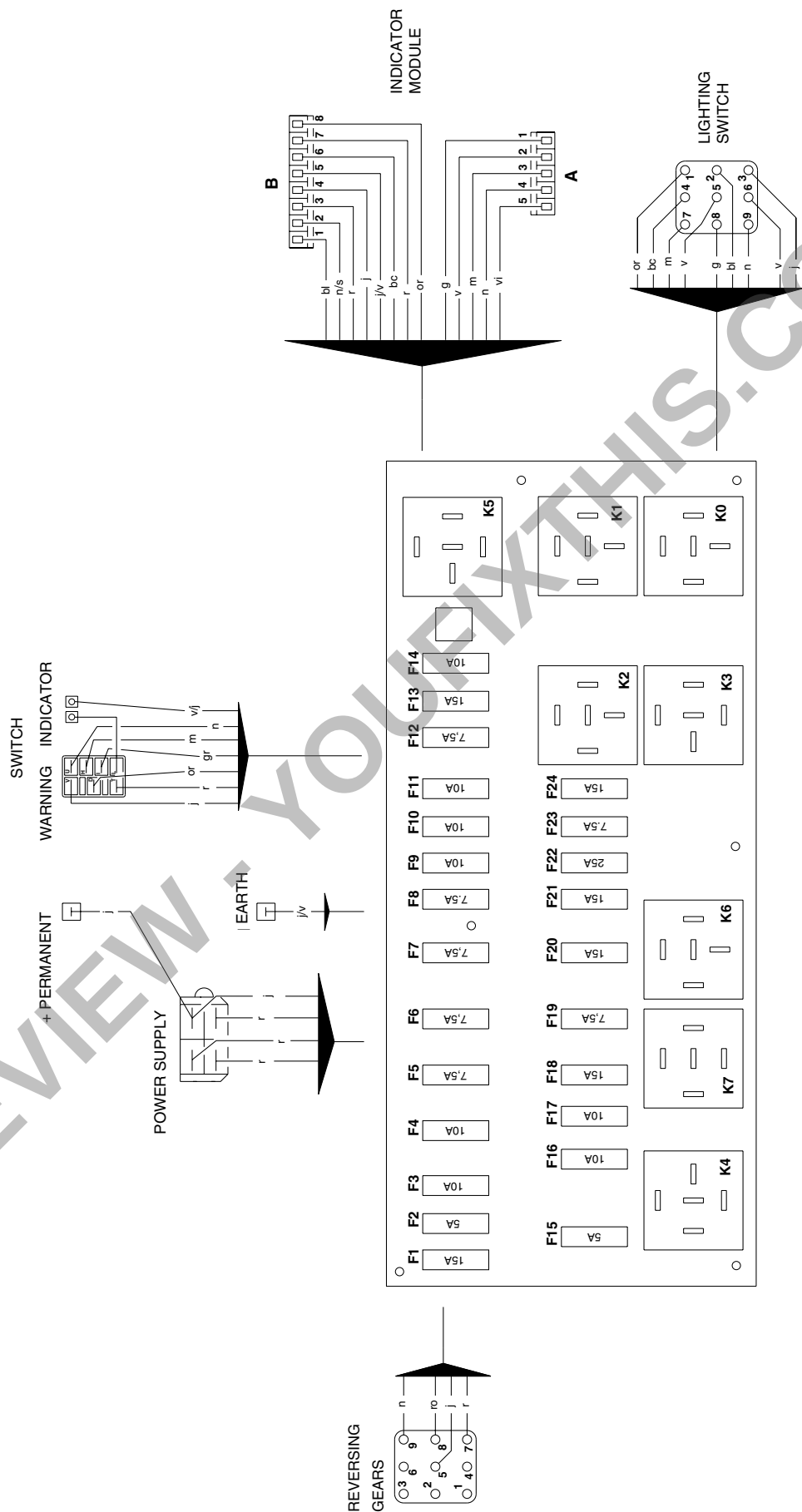


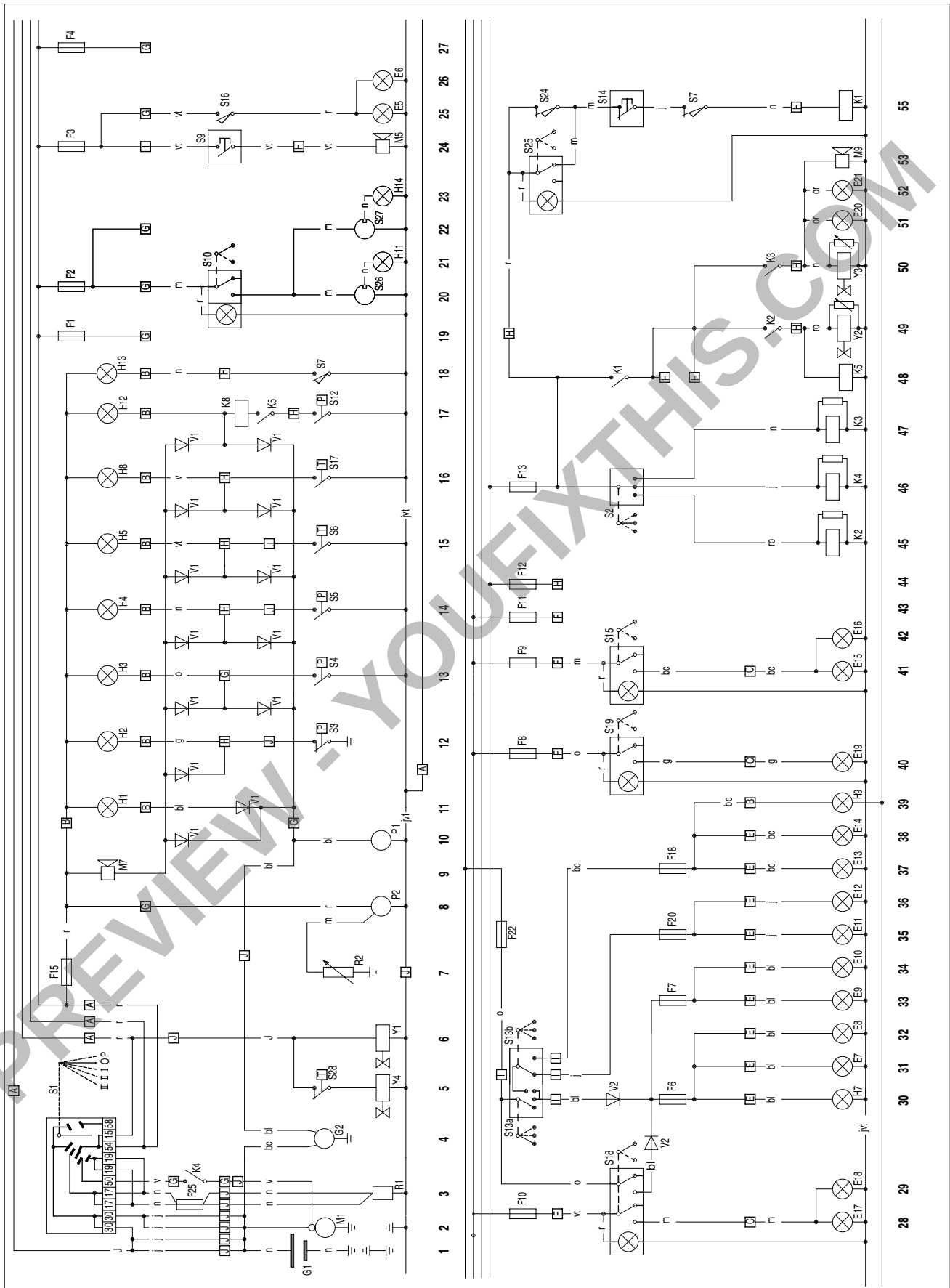
CAUTION :

In order to precisely check the pressures, it is indispensable to have a pressure gauge in working order, with a range from 0 to 400 bar minimum, and graduated from ten to ten bar.

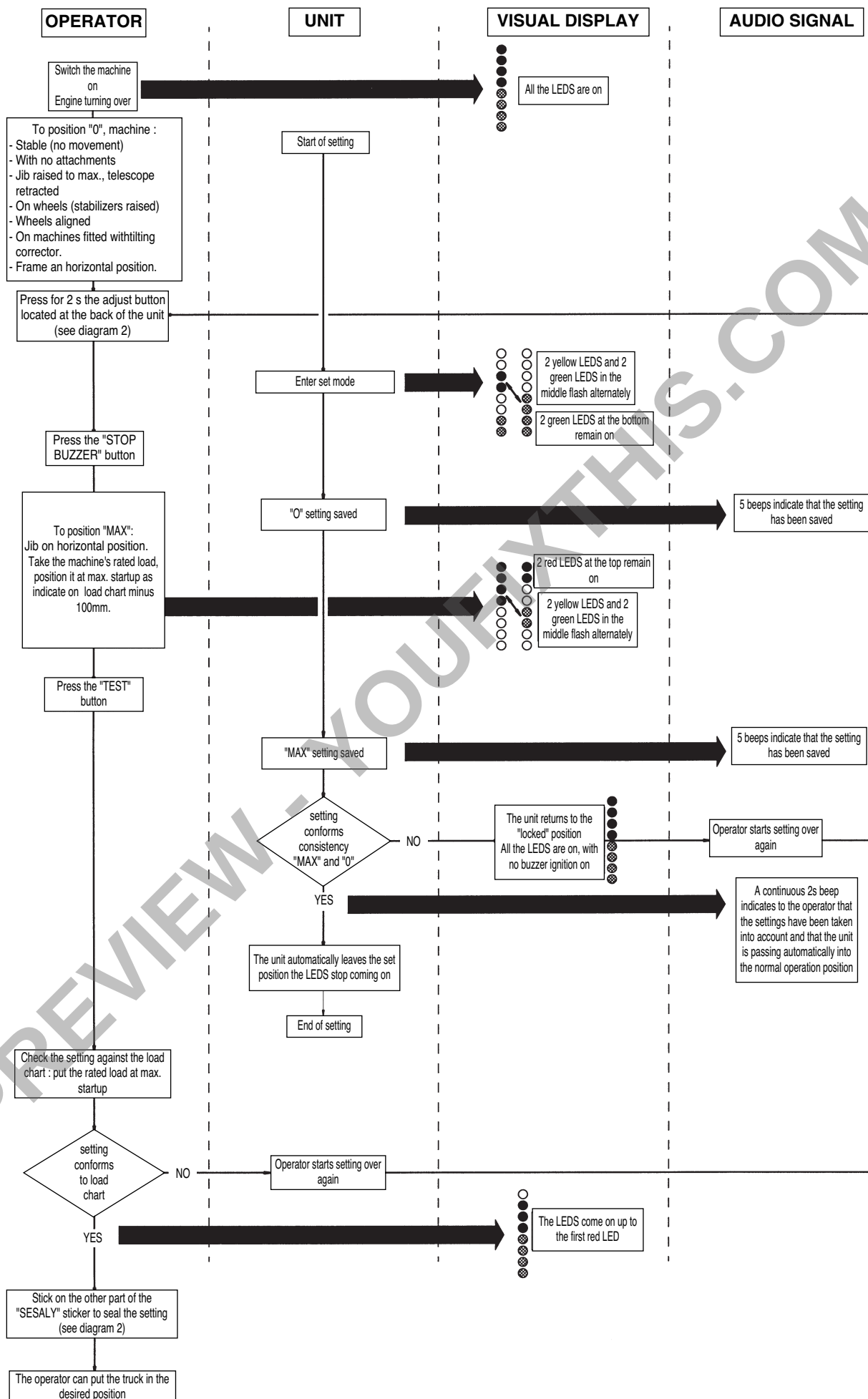
NOTE : The pressure gauge is not supplied with the kit.

DIAGRAM FOR FUSE AND RELAY PLATE

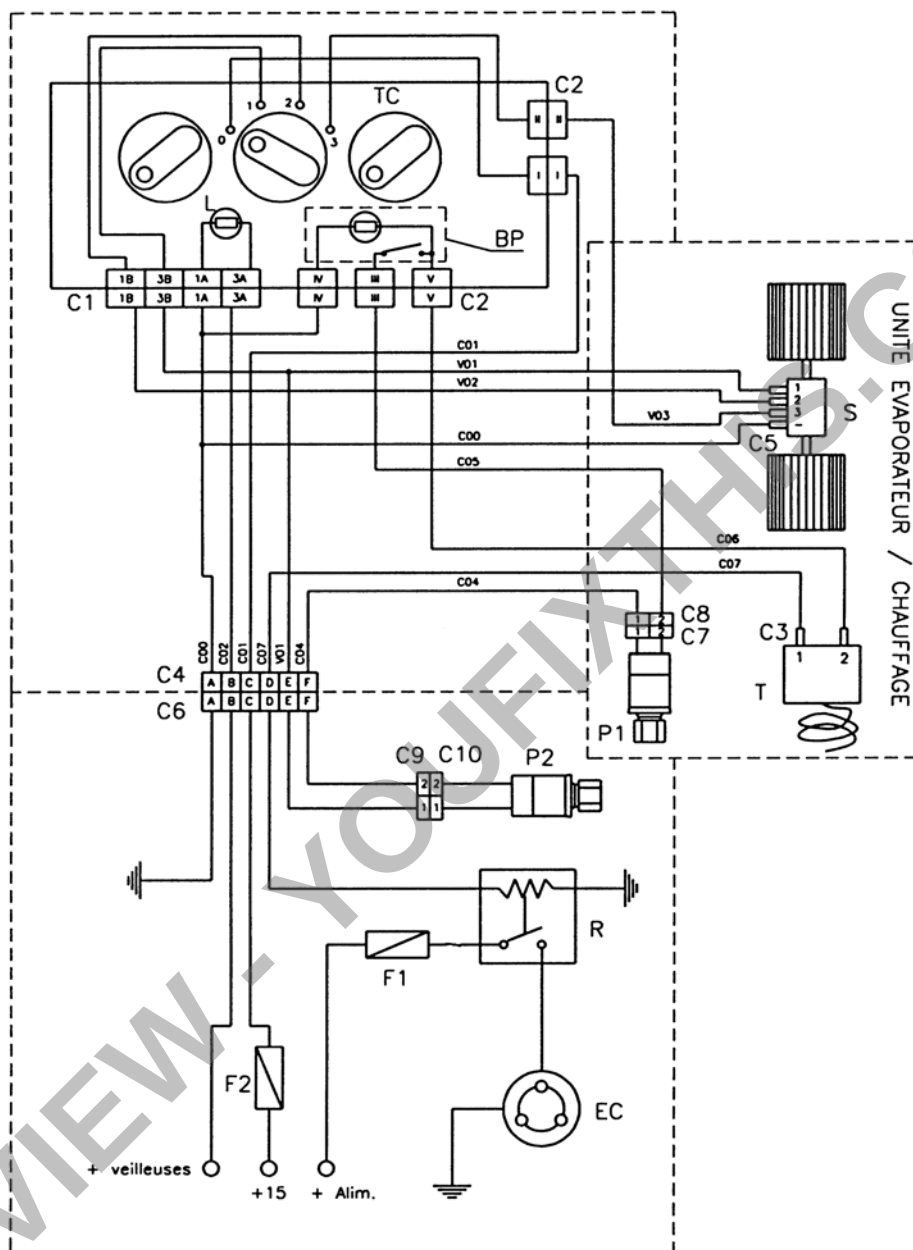




OPERATING AND SETTING OF THE LONGITUDINAL STABILITY ALARM



Electric skeleton diagram



TC	Control panel
BP	Bouton poussoir
L	Tongue
S	Blower
T	Thermostat
P1	Low pressure gauge
P2	High pressure gauge
R	Relay
EC	Compressor clutch
F1	7.5 A fuse
F2	30 A fuse

CONNECTORS	
C1	5-way, black AMP MIC IV-TV - Ref. 144 518-2
C2	6.35 x 0.8 mm female connector
C3	90" 6.35 x 0.8 mm female connector
C4	Deutsch Ref. HD10-6-12P
C5	1-way RKG female connector Ref. 920 510
C6	Deutsch Ref. HD16-6-12S-B010
C7	2-way female DT - Ref. 552 459
C8	2-way male DT - Ref. 552 457
C9	2-way male DT - Ref. 552 457
C10	2-way female DT - Ref. 552 459

CHARACTERISTICS

ENGINE

- Type	ML 632 <i>Série 2</i> ML 632 Turbo <i>Série 2</i> ML 635 <i>Série 2</i> ML 635 Turbo <i>Série 2</i>	PERKINS 1004.42 AR 81026 PERKINS 1004.40T AK 80920 PERKINS 1004.42 AR 81026 PERKINS 1004.40T AK 80920
- Number of cylinders		4 in line
- Number of strokes		4
- Suction	MOTEUR 1004.42 MOTEUR 1004.40T	Natural Compressed turbo Direct 1.3.4.2.
- Injection system		
- Ignition sequence		
- Clearance of rocker valve (Cold)		
. Inlet		0,20 mm
. Exhaust		0,45 mm
- Capacity	MOTEUR 1004.42 MOTEUR 1004.40T	4233 cm ³ 3990 cm ³
- Bore	MOTEUR 1004.42 MOTEUR 1004.40T	103 mm 100 mm
- Stroke		127 mm
- Compression ratio	MOTEUR 1004.42 MOTEUR 1004.40T	18.5 / 1 17.25 / 1
- Nominal rating loaded		2200 rpm
- Rating slow unladen		930 rpm ⁺²⁰ ₋₀
- Max. rating unladen	MOTEUR 1004.42 MOTEUR 1004.40T	2350 rpm 2400 rpm
- Power ISO 3046-1	MOTEUR 1004.42 MOTEUR 1004.40T	76 cv 56 kw 99 cv 73 kw
- Power ISO/TR 14396	MOTEUR 1004.42 MOTEUR 1004.40T	81,5 cv 60 kw 104 cv 76,5 kw
- Power SAE	MOTEUR 1004.42 MOTEUR 1004.40T	85 cv 62 kw 108 cv 79,5 kw
- Maximum torque ISO 3046-1	MOTEUR 1004.42 MOTEUR 1004.40T	283 Nm to 1400 rpm 387 Nm to 1400 rpm
- Maximum torque ISO/TR 14396	MOTEUR 1004.42 MOTEUR 1004.40T	290 Nm to 1400 rpm 394 Nm to 1400 rpm
- Air cleaner		Dry 3 microns

COOLING CIRCUIT

- Type	By water
- Fan	Puller
. Number of blades	10
. Diameter	508 mm
- Thermostat	
. Start opening	77 °C to 85 °C
. Full opening	92 °C to 98 °C

ELECTRIC CIRCUIT

- Earth	Negative
- Battery	12 V - 105 Ah - 680 A EN
- Alternator	12 V - 65 A
. Type	Magneti Marelli A127
. Tension regulator	Incorporated into the alternator
- Starter	12 V
. Type	Magneti Marelli M127

To eliminate air from the fuel system 20-9

If air enters the fuel system, it must be removed before the engine can be started.

Air can enter the system if:

- The fuel tank is drained during normal operation.
- The low-pressure fuel pipes are disconnected.
- A part of the low-pressure fuel system leaks during engine operation.

In order to eliminate air from the fuel system, proceed as follows:

Caution: If the fuel system is empty or if the canister of the fuel filter have been renewed, it will be necessary to eliminate air from the fuel system, especially the fuel injection pump.

1 Loosen the banjo bolt (A1) on the top of the filter head. If a vent plug is fitted, loosen the vent plug instead.

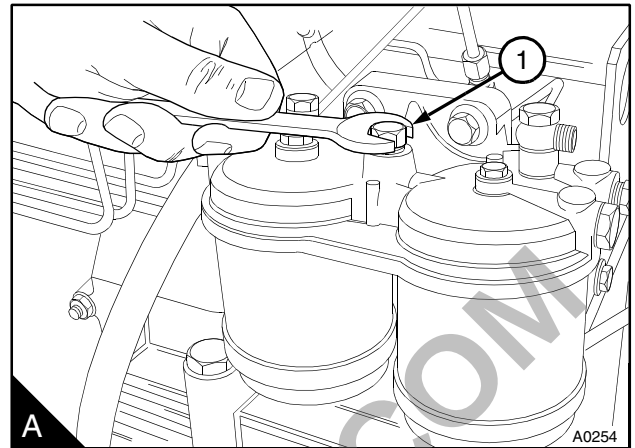
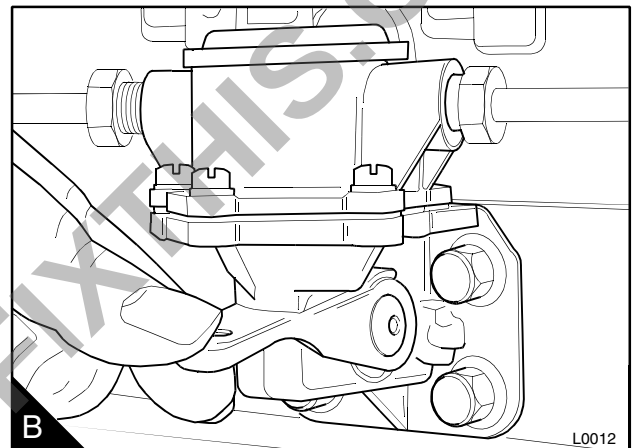
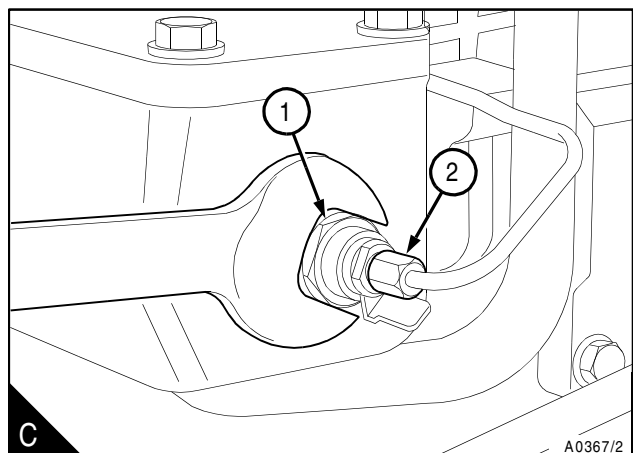
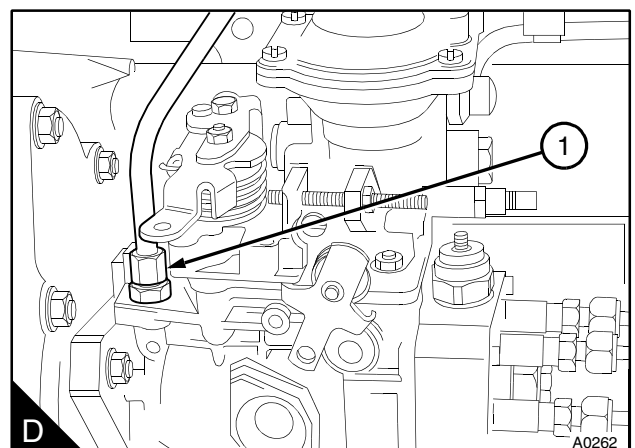
2 Operate the priming lever of the fuel lift pump (B) until fuel, free from air, comes from the banjo bolt. Tighten the banjo bolt. If the drive cam of the fuel lift pump is at the point of maximum lift, it will not be possible to operate the priming lever. In this situation, the crankshaft must be rotated one revolution.

Caution: Use a spanner to prevent movement of the fuelled starting aid (C1) when the union nut (C2) is loosened or tightened.

3 Loosen the union nut (C2) at the fuelled starting aid and operate the priming lever of the fuel lift pump until fuel, free of air, comes from the connection. Tighten the union nut at the starting aid.

4 Loosen the union nut of the fuel inlet pipe (D1). Operate the priming lever of the fuel lift pump until fuel, free from air, comes from the loose connection. Tighten the union nut.

Continued



ITA Lubrificare leggermente i dischi di frenatura (7) e montarli nel braccio con la giusta sequenza, orientati in modo che i fori di circolazione dell'olio ed i contrassegni "B" siano perfettamente allineati.

NOTA. I dischi in acciaio devono essere montati lasciando libera la cava corrispondente al tappo livello olio.

D Die Bremsscheiben (7) leicht schmieren und in der richtigen Reihenfolge auf den Arm montieren. Dabei müssen sie so orientiert sein, daß Ölleitungslöcher genau mit den Kennzeichnungen "B" übereinstimmen.

BEMERKUNG. Bei der Montage der Stahlscheiben die dem Ölfüllstopfen entspricht, freilassen.

ESP Lubricar ligeramente los discos de frenado (7) y montarlos en el brazo con la secuencia exacta, orientados de manera que los orificios de circulación del aceite y las marcas "B" estén perfectamente alineados.

NOTA. Los discos en acero deben de ser ensamblados dejando libre el nicho correspondiente a la tapa de nivel aceite.

F Lubrifier légèrement les disques de freinage (7), puis monter ceux-ci dans le bras à la juste séquence, orientés de telle sorte à ce que les trous de circulation de l'huile et ceux marqués "B" soient parfaitement alignés.

NOTE. Les disques en acier doivent être montés sans déranger la rainure du bouchon du niveau de l'huile.

ITA Controllare la planarità dei bracci con l'attrezzo **T2** e fissarli definitivamente con le viti (4) e le rondelle (5) con il metodo del serraggio incrociato.

Coppia di serraggio: 298 Nm

D Die Ebenheit der Arme mit dem Werkzeug **T2** kontrollieren und die Arme endgültig mit den Schrauben (4) und Unterlegscheiben (5) abwechselnd und gegenseitig festschrauben.

Anzugsmoments: 298 Nm

ESP Controlar la planaridad de los brazos utilizando la herramienta **T2** y fijarlos definitivamente con los tornillos (4) y las arandelas (5) con el método de torsión cruzado.

Par de torsión: 298 Nm

F Contrôler l'uniformité des bras à l'aide de l'outil **T2** puis fixer définitivement ces derniers avec les vis (4) et les rondelles (5) par le biais du mode de serrage croisé.

Couple de serrage: 298 Nm

ITA Verificare l'integrità ed il posizionamento dell'anello di tenuta (16) del braccio; installare il braccio completo. Fissarlo in posizione con due viti (4) e rondelle (5) contrapposte.

D Kontrollieren ob der Kolbenring (16) unbeschädigt und auf den Arm richtig montiert ist; den kompletten Arm montieren.

In seiner Position mit zwei Schrauben (4) und den entgegengesetzten Unterlegscheiben (5) befestigen.

ESP Comprobar la integridad y el posicionamiento del segmento de compresión (16) del brazo; instalar el brazo completo.

Fijarlo en su posición con dos tornillos (4) y arandelas (5) contrapuestas.

F Vérifier le bon état et la position de la bague d'étanchéité (16) du bras, installer le bras complet.

Fixer celui-ci à sa place à l'aide des deux vis (4) et des rondelles (5) superposées.

4 - ASSEMBLING THE SEALS ON THE SMALL PISTON (MK 12)

Make a visual inspection to check that the piston is clean.

Check that the groove bottoms are smooth and not scratched, and the faces likewise.

Check that the grooves are free of any foreign bodies such as shavings.

Put the seals in place as shown in the diagram below.

Mk 1 = 2 carrier seals placed by hand.

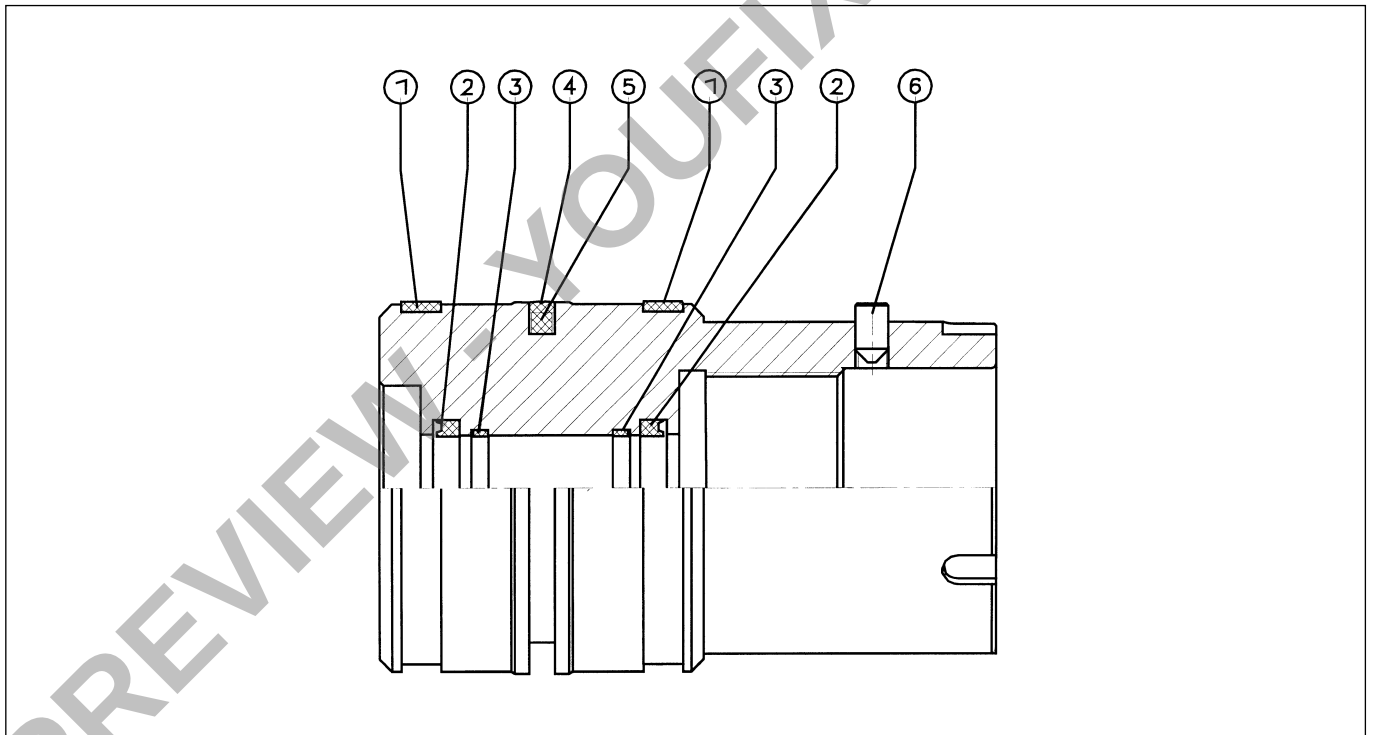
Mk 2 = 2 rod seals placed by hand. Watch the direction of the lips.

Mk 3 = 2 carrier seals placed by hand.

Mk 4 = 1 piston seal placed with a tool with no sharp edges.

Mk 5 = Make sure that the white line on the seal is pointing in towards the gasket.

Mk 6 = 1 locking screw mounted with glue (Ref. 187526).



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