CHARACTERISTICS

I.C. ENGINE

- Type	**PERKINS 1104C-44T RG81374**
- Number of cylinders	4 in line
- Number of strokes	4
- Suction	Turbocharged
- Injection system	Direct
- Ignition sequence	1.3.4.2.
- Clearance of rocker valve (cold)	
. Inlet	0,20 mm
. Exhaust	0,45 mm
- Capacity	4400 cm3
- Bore	105 mm
- Stroke	127 mm
- Compression ratio	17,5/1
- Nominal rating loaded	2200 rpm
- Rating slow unladen	850^{+20} rpm
- Max. rating unladen	2350 rpm
- Power ISO/TR 14396	101 cv/74,5 kw
- Maximum torque ISO/TR 14396	412 Nm at 1400 rpm
- Air cleaner	Dry 3 µ

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

HYDROSTATIC TRANSMISSION

HYDROSTATIC PUMP

- Type	**MANNESMANN REXROTH A4VG71DA1D7/32R** with variable cubic capacity and with automatic power governor
- Gear reverser	Electromagnetic 12V
. Number of forward gears	4 (2 low 2 speed)
. Number of reverse gears	2 (2 speed)
- Main pump	
. Max./Mini displacement	0 to 71 cm3/r
. Max. flow rate	170 L/mn
. Working pressure	470 Bar
- Boost pump	
. Displacement	19,6 cm3
. Max. flow rate	47 L/mn
. Boost pressure Max. R.P.M.	28 ±2 Bar (transmission in neutral)

HYDROSTATIC MOTOR

- Type	**MANNESMANN REXROTH A6VM107DA2/63W** with variable cubic capacity
. Max./Mini displacement	32 to 107 cm3/r

GEAR BOX

- Type	**DANA**

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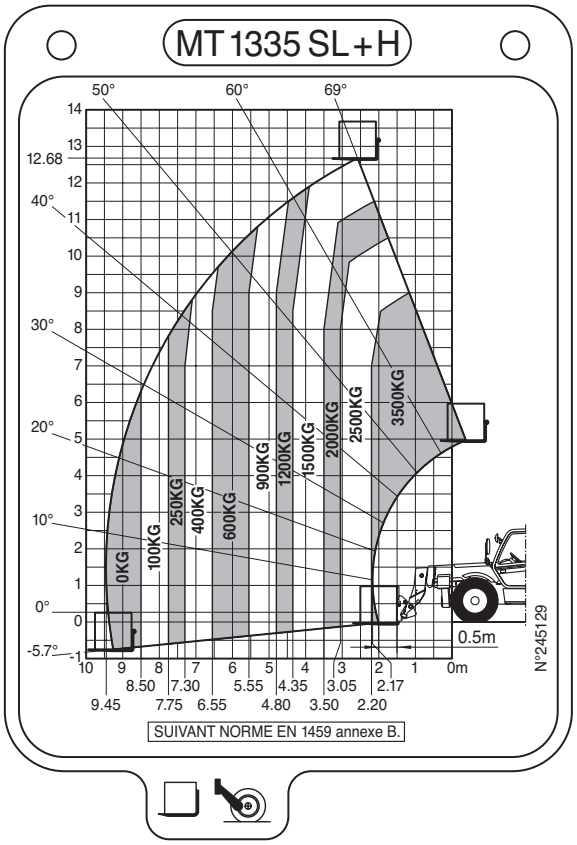
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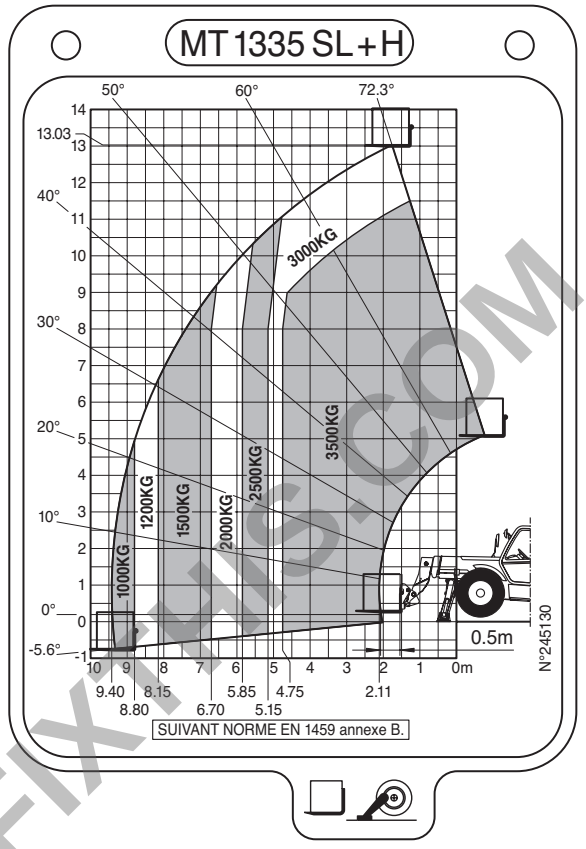
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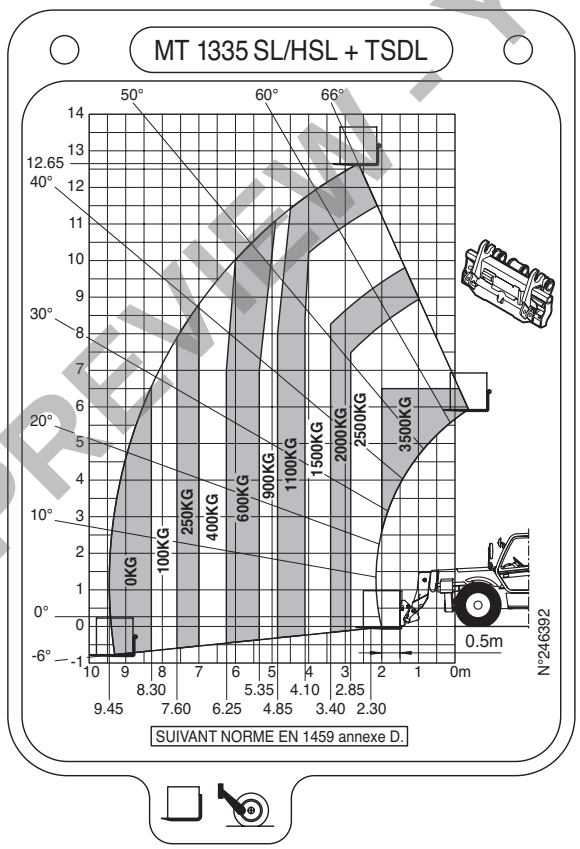
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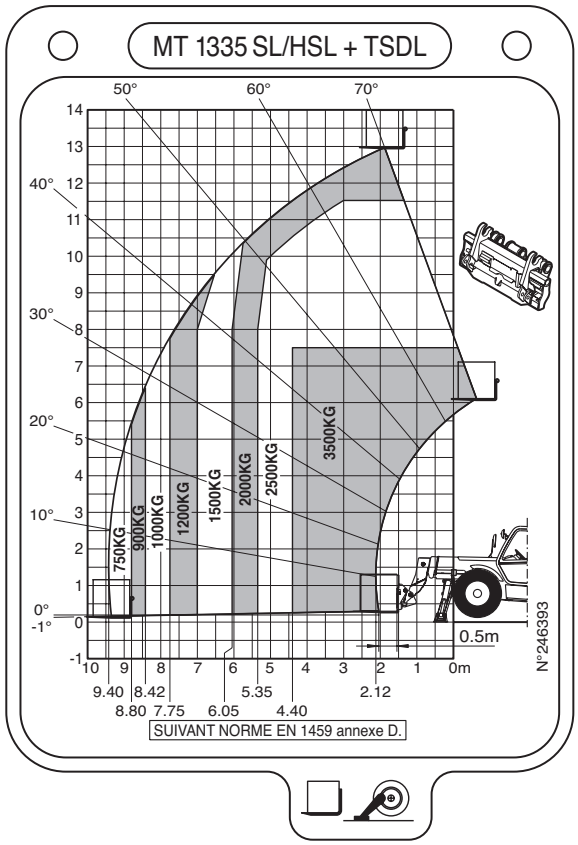
WITH SINGLE CARRIAGE





WITH SINGLE SIDE-SHIFT CARRIAGE





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GROUP 30

AXLE ASSEMBLY

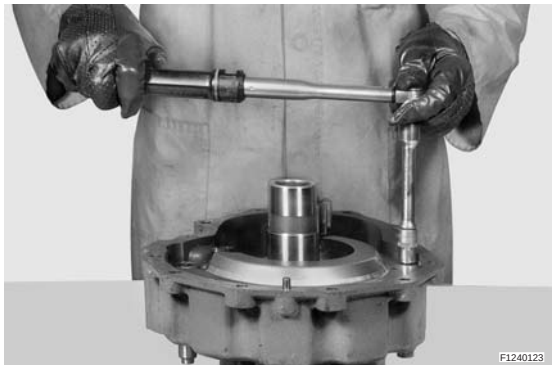


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ASSEMBLY OF DIRECTLY FLANGED REDUCTION GEAR 357 - ASSEMBLAGGIO GRUPPO RIDUTTORE 357 AFFLANGIATO - DIREKT GEFLANSCHTER REDUZIERER 357 MONTIEREN - MONTAJE GRUPO REDUCTOR 357 CON BRIDA - ASSEMBLAGE DU GROUPE REDUCTEUR BRIDE 357



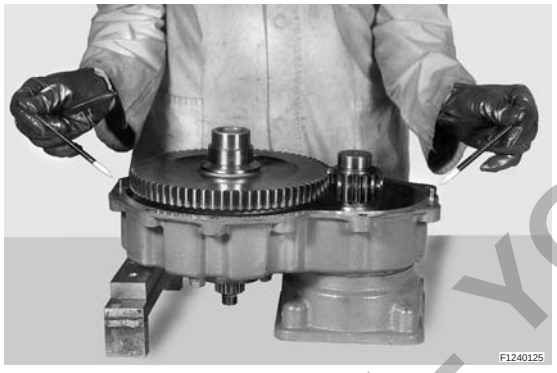
GB a

Tighten screws using a torque wrench setting of 25–26 Nm.



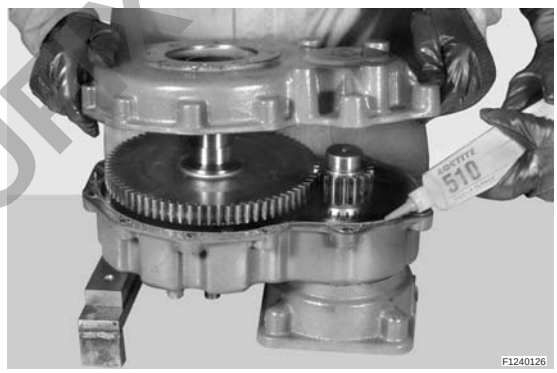
GB b

Re-assemble needle bearings, gear and distance piece.



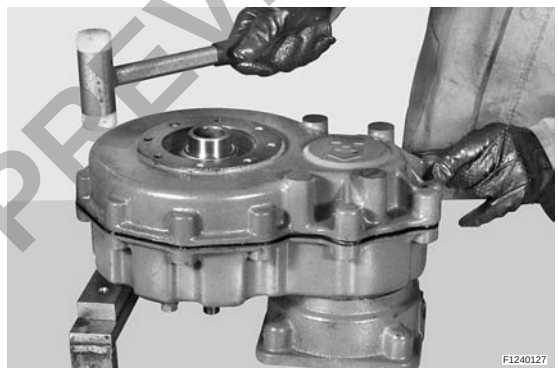
GB c

Check the insertion of pins.



GB d

Spread LOCTITE 510 on the surface and assemble the cover.



GB e

Fasten the cover.

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- Tension hoses of lower layer (Fig. R), then refit protective plate 6, brackets 7 and support 8 on end of hose guide with four mounting bolts.

Fig. R

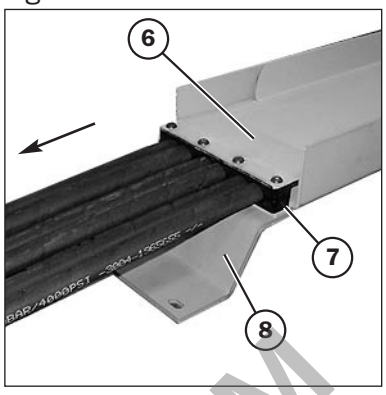
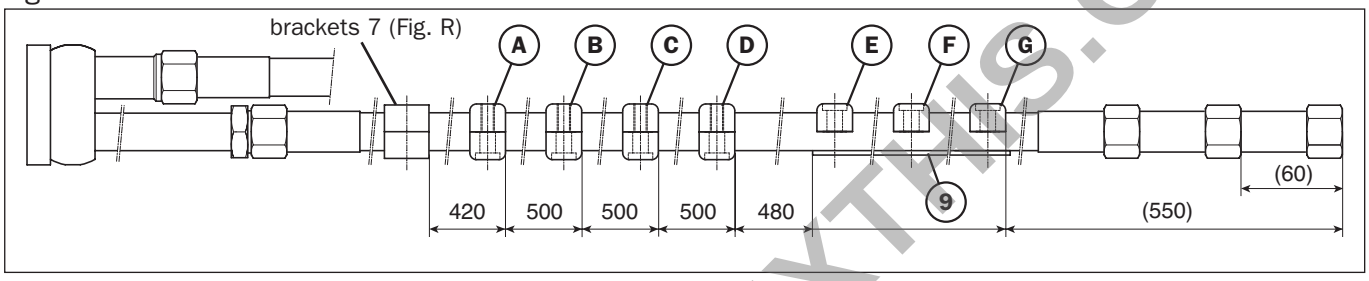


Fig. S



- Position plate 9 under hoses (Fig. S and T).
- Fit four double brackets A, B, C, D (Fig. U) at dimensions shown (Fig. S).
- Fit three single brackets E, F, G (Fig. V) at dimensions shown (Fig. S) on plate 9.

Fig. T

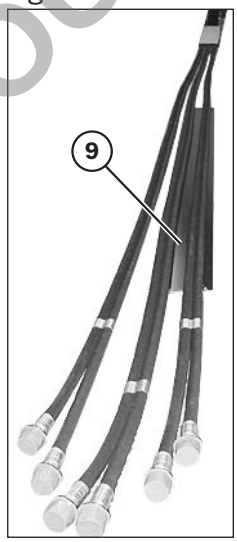


Fig. U

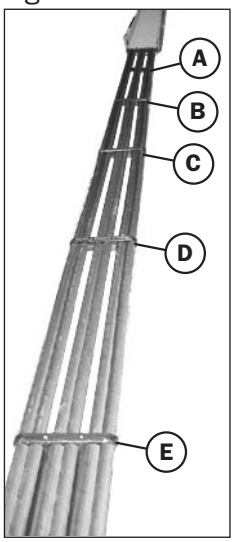
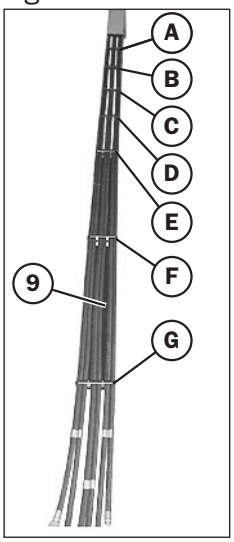


Fig. V



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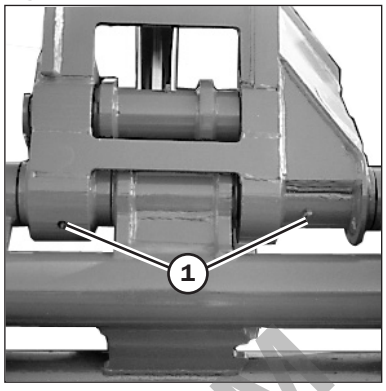
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- Reassemble the lift bracket.

- Install both greasing nipples item 1 (Fig. Q) previously recovered on the first telescope and lubricate the lift bracket joint.

- Replace the hoses inside the jib.

Fig. Q



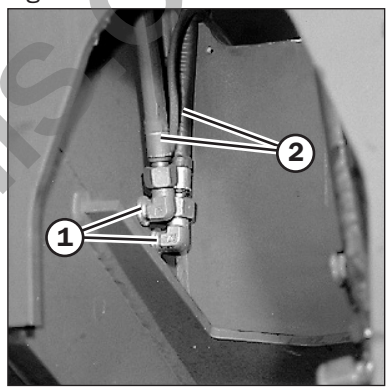
- Reassemble the bulkhead fittings item 1 (Fig. R) on the telescope.

- Reconnect both hoses item 2 (Fig. R).

- Reassemble and reconnect the tilt cylinder.

- Reassemble the rear plates (Fig. F).

Fig. R



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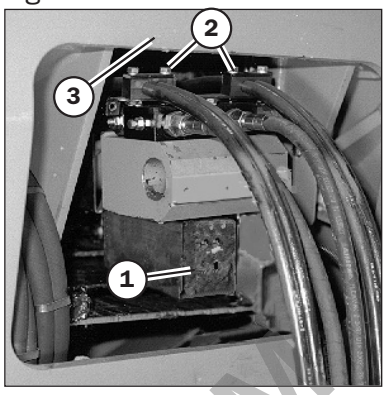
- Start the truck.

- Operate the tilt (Solution B).

- Extract the cylinder by about 150 mm.

- Lower the block (Item 1, Fig. G) on the 1st telescope in order to stop the flanges (Item 2) from interfering with the frame (Item 3, Fig. G).

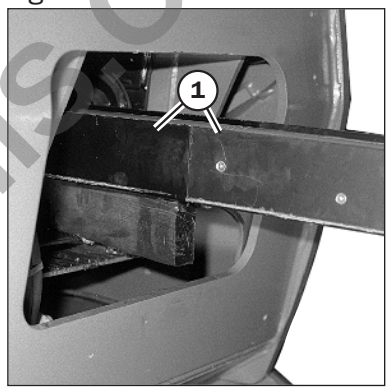
Fig. G



- Extract the cylinder by about 2500 mm up to the junction between the two half hose guides (Item 1, Fig. H).

Check that the block does not fall out while extracting the cylinder.

Fig. H



- Disassemble both guides (Item 1) and the 4 clips (Item 2, Fig. 1) on each side of the cylinder.

Block the carrier to stop it from tipping over.

- Disassemble the circlips and the top pin on the tilt cylinder (Fig. J) to make it easier to reach the fittings on the attachment circuit.

- Disconnect both hoses (Item 1, Fig. K) on the attachment circuit inside the tip of the telescope, Mark the hose position with colour tape.

Fig. I

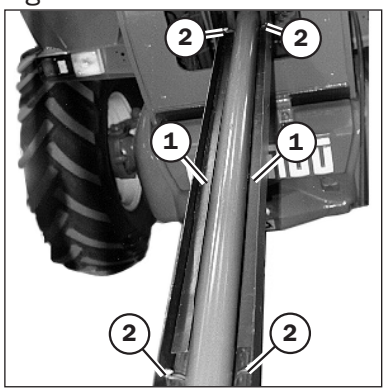


Fig. J

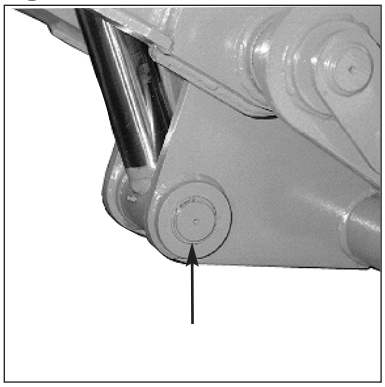
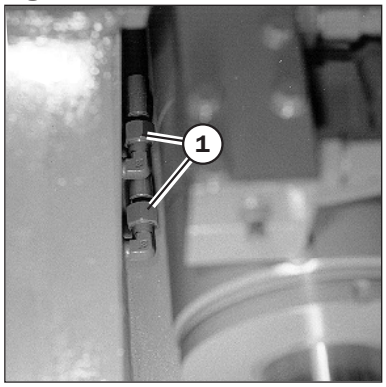


Fig. K



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- Position the flange bracket (Item 1) between the fixing screws on the valve (Item 2, Fig. B1).

- Reassemble the 4 fixing collars (Item 1) and the 2 cover plates (Item 2, Fig. C1).

- Continue inserting the attachment and tilt hoses using the strings.

NOTE : From the rear, check that the hoses are placed flat in the sleeve and that the plastic collars do not get caught in the edge of the sleeve.

- Fix the hydraulic blocks (Item 1, Fig. D1) checking that the hoses unfold correctly inside the jib.

- Remove the pieces of string and connect the attachment circuit hoses (Fig. E1) inside the jib head and the hoses on the attachment cylinder (Fig. F1).

- Start the truck and draw in the telescope cylinder over the three fourths of its length.

- Position the wooden block (Item 1, Fig. H1) under the cylinder.

- Remove the supporting device under the cylinder.

Fig. B1

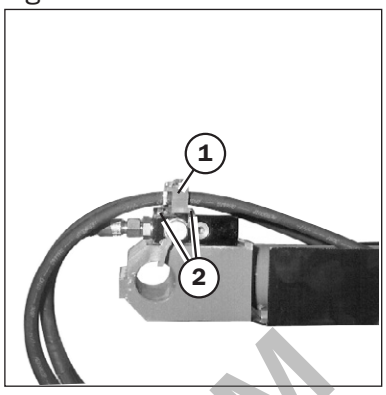


Fig. C1



Fig. D1

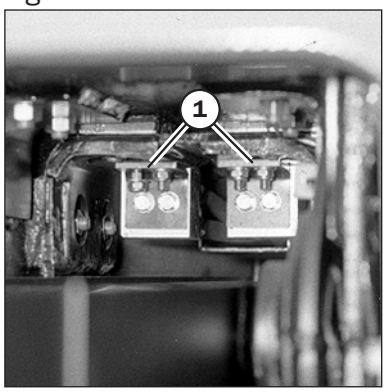


Fig. E1

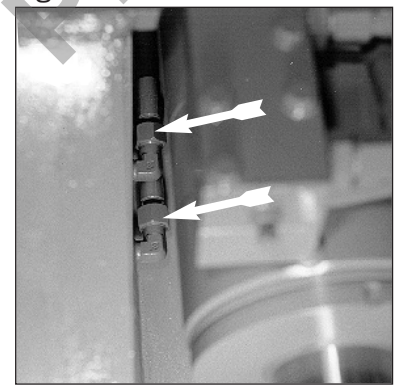


Fig. F1

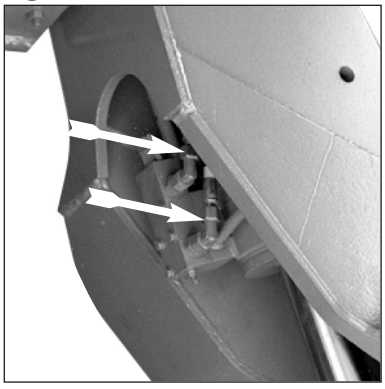


Fig. H1



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OPERATIONS A EFFECTUER POUR REMPLACER LA SERIE DES JOINTS SUR LES POMPES KP 30 VERSION LOAD SENSING

A



A1

Appliquez sur les mâchoires de l'étau des mordaches en aluminium ou de matériau tendre pour ne pas endommager les surfaces usinées de la pompe.

Placer la pompe verticalement avec l'arbre d'entraînement tourné vers le bas, puis serrer l'étau. Veiller à ne pas abîmer des parties usinées pendant le serrage.

Tracer un repère avec un feutre sur la pompe pour le remontage correct des pièces.



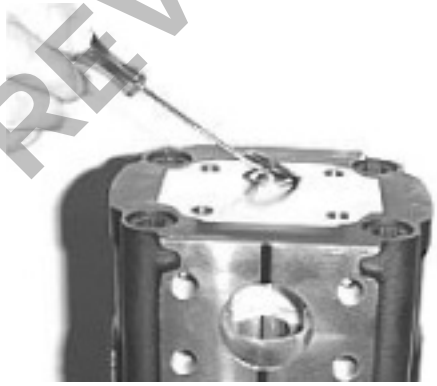
A2

Desserrer les vis de fixation à l'aide d'une clé.



A3

Déposer le couvercle arrière et les vis.



A4

Déposer la bague d'étanchéité.

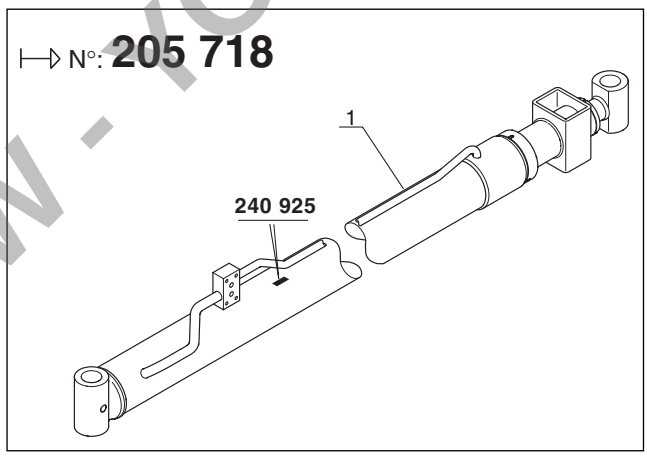
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DISMANTLING OUTSIDE EXTENSION CYLINDER

70-3-80-240925 EN

MT 1745 HSL Turbo ULTRA *Série 2-E2*
MT 1745 HSL Turbo ULTRA NACELLE ORH RC *Série 2-E2*
MT 1745 HSL Turbo MONO-ULTRA NACELLE ORH *Série 2-E2*

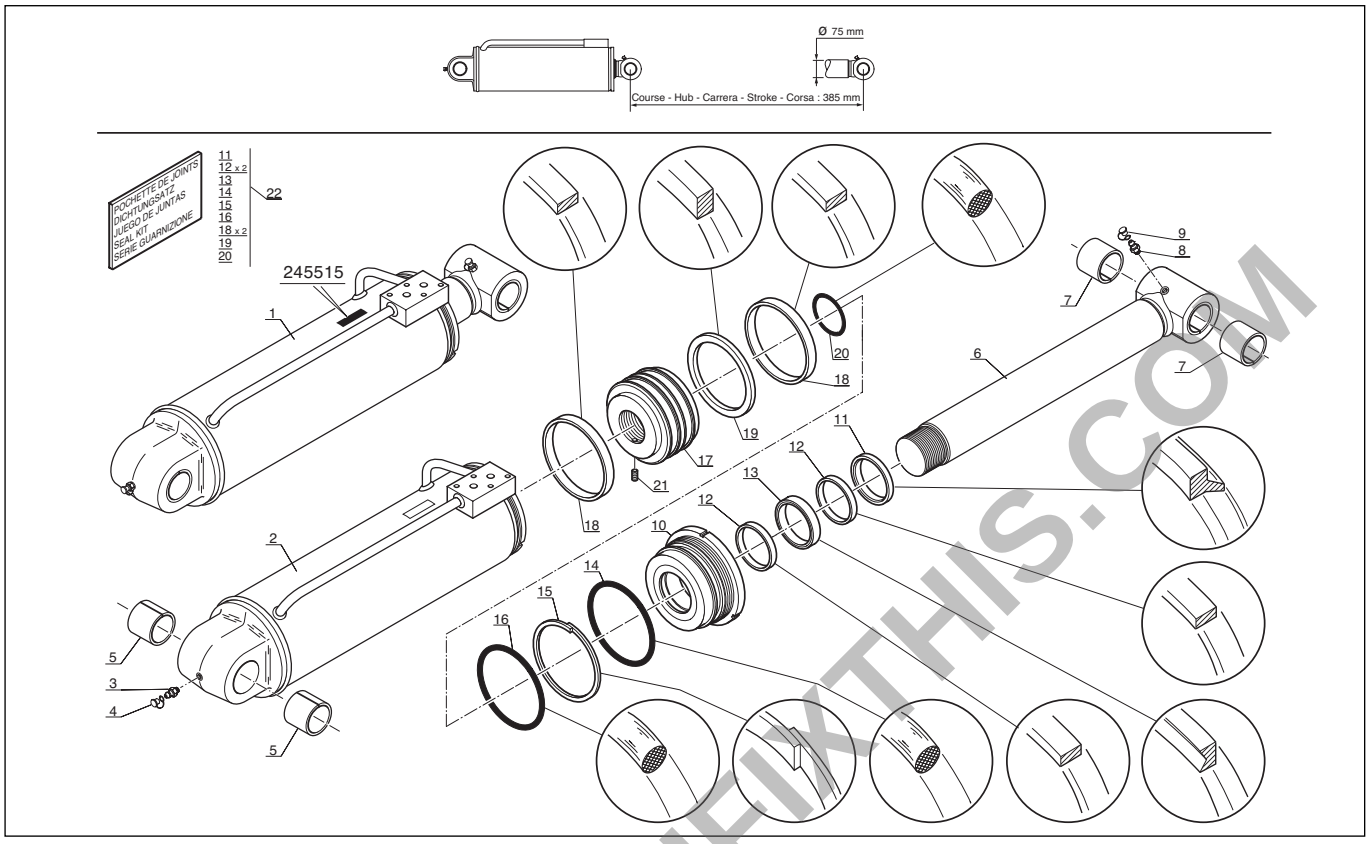


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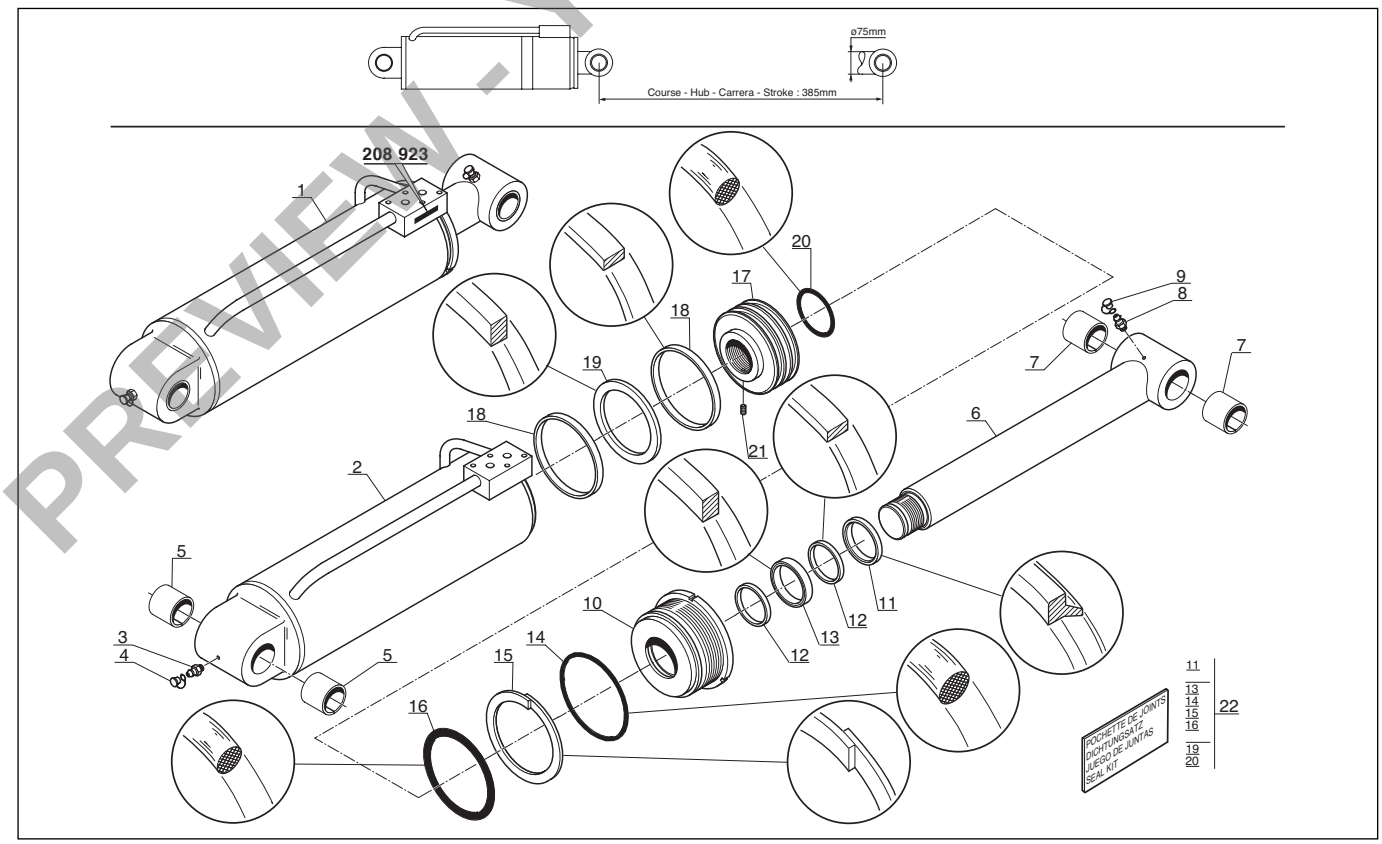
VÉRIN D'INCLINAISON

MLT 845 HT LSU. / MT 1335 H SLT... / MT 1745 H SLT Ultra ...



TILTING CYLINDER

MT 1435 H SLT...



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AC	Accumulator
BF	Fore block
BS3	Selector block 3 elements
BS4	Selector block 4 elements
BT	Transfer box
CA	Suction strainer
CAR	Back pressure valve
CPD	Double piloted valve
CSD	Double safety valve
CSP	Piloted safety valve
D	Valve bank 8 sections EA Attachment section ECD Levelling section EE1 Main inlet section EE2 Secondary inlet section EI Tilting section EL Lifting section ES Outlet section ESD R.H. stabilizer section ESG L.H. stabilizer section ET1 Telescope 1 section ET2 Telescope 2 section
D3	Steering valve bank 3 positions Position 1 : Steering short Position 2 : Steering front wheels Position 3 : Crab position
DSL	Lifting emergency control valve
DST	Telescope emergency control valve
ESAR	Rear axle
ESAV	Front axle
EVBE	Rear axle lock electrovalve
EVPV	Gear change electrovalve
F	Filter
FDAV	Front disk brake
FR	Return filter
M	I.C. Engine Rating slow unladen Nominal rating load Max. Rating unladen
MA	Joystick
MC	Master cylinder
MH	Hydrostatic motor
N	Level
P	Hydraulic pump
PAAV	Front attachment fitting (option)
PAAR(O)	Rear attachment fitting (Option)
PD	Steering pump
PH	Hydrostatic pump
PP	Pressure point
PRES	Pressure sensitive switch
PRF(O)	Drain-back fitting (option)
PS	Emergency pump
R	Hydraulic tank
RF	Cooler
RLF	Braking oil tank
R3V(O)	Tap 3 ways (option)
R3VD(O)	Tap double 3 ways (Option)
TH7	Joystick TH7
VARM	Manual control valve
VBE	Blocking rear axle cylinder DE
VC	Compensation cylinder DE
VCD	Levelling cylinder DE
VDAR	Rear steering cylinder
VDAV	Front steering cylinder
VI	Tilting cylinder DE
VL	Lifting cylinder DE
VN	Cockpit orientation cylinder DE
VPV	Gear change cylinder
VSD	R.H. stabilizer cylinder DE
VSG	L.H. stabilizer cylinder DE
VT1	Telescope 1 cylinder DE
VT2	Telescope 2 cylinder DE
VTSDL(O)	Translation cylinder TSDL (Option)
VVT(O)	Locking carriage cylinder (option) DE

NOTA :
1 - The main relief valve's pressure, on inlet sections are given at engine's maximum rating.
2 - The secundary valve's pressure, are given at 1000 rpm of the engine.
3 - Pressure relief valve's control must be done at an oil temperature of 50°C.

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HYDRAULIC DIAGRAM *MT 1435 HSL TURBO ULTRA*
NACELLE ORH RC SÉRIE 2-E2

AC Accumulator
AD Depressurization accumulator

BT Transfer box

CA Suction strainer
CAR Back pressure valve
CPD Double piloted valve
CSD Double safety valve
CSP Piloted safety valve

D1 Valve bank 3 sections
- EA Attachment section
- ECD Levelling section
- EE Inlet section
- ET2 Telescope 2 section

D2 Valve bank 5 sections
- EE Inlet section
- EI Tilting section
- EL Lifting section
- ESD R.H. stabilizer section
- ESG L.H. stabilizer section
- ET1 Telescope 1 section

D3 Steering valve bank 3 positions
- Position 1 : Steering short
- Position 2 : Steering front wheels
- Position 3 : Crab position

ESAR Rear axle
ESAV Front axle
EVBE Rear axle lock electrovalve
EVPV Gear change electrovave

FDAV Front disk brake
FHP High pressure filter
FR Return filter

M I.C. engine Type 1104C-44T (TURBO)
- Rating slow unladen 850 tr/min
- Nominal rating load 2200 tr/min
- Max rating unladen 2350 tr/min

MA Joystick
- C1 Extending telescope 1 & 2
- C2 Retracting telescope 1 & 2
- C3 Extending telescope 3
- C4 Retracting telescope 3
- BP1 Tap : Stabilizer / Levelling
- BP2 Tap : Attachment
- 1 Lifting
- 2 Reverse tilt
- 3 Lowering
- 4 Forward tilt

MC Master cylinder
MH Hydrostatic motor

N Level

P Hydraulic pump

PAAV(O) Front attachment fitting (option)
PD Steering pump
PH Hydrostatic pump
PP Pressure point
PRF(O) Drain-back fitting (option)
PS Emergency pump

R Hydraulic tank
RLF Braking oil tank
RF Cooler

TH7 Joystick TH7

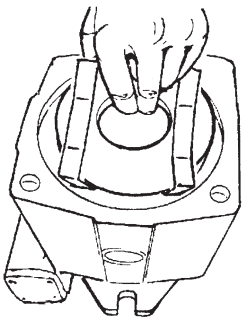
VBE Blocking rear axle cylinder DE
VC Compensation cylinder DE
VCD Levelling cylinder DE
VDAR Rear steering cylinder
VDAV Front steering cylinder
VI Tilting cylinder DE
VL Lifting cylinder DE
VN Cockpit orientation cylinder DE
VPV Gear change cylinder
VSD R.H. stabilizer cylinder DE
VSG L.H. stabilizer cylinder DE
VT1 Telescope 1 cylinder DE
VT2 Telescope 2 cylinder DE
VVT(O) Locking carriage cylinder (option) DE

NOTA :
1 - The main relief valve's pressure, on inlet sections are given at engine's maximum rating.
2 - The secundary valve's pressure, are given at 1000 rpm of the engine.
3 - Pressure relief valve's control must be done at an oil temperature of 50°C.

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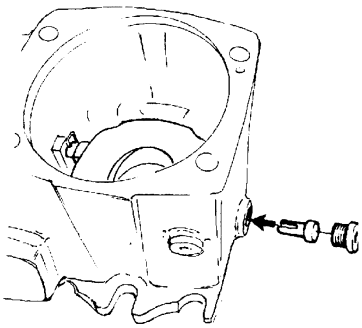
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Installation of the rotary group

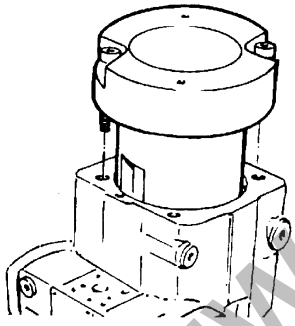


Insert completely swivel cradle into the housing.
Pay attention for correct seat of the swivel cradle in the housing.

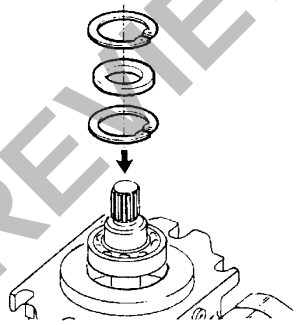
⚠ Remove auuxiliary device.



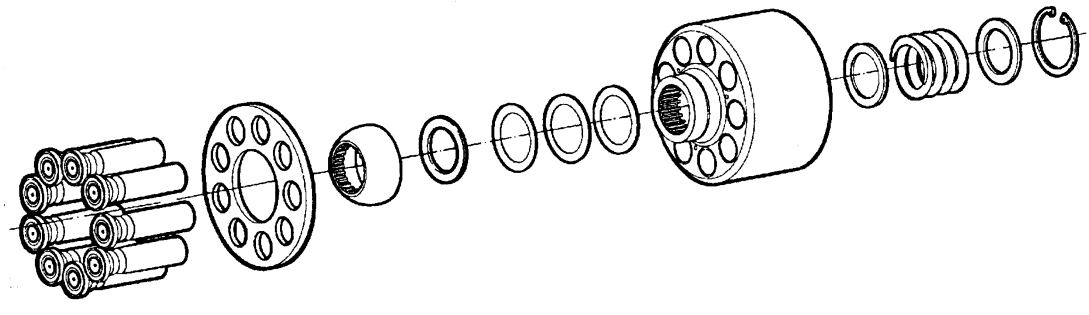
Assemble articulating pins.



Assemble device for fixation of the swivel cradle.

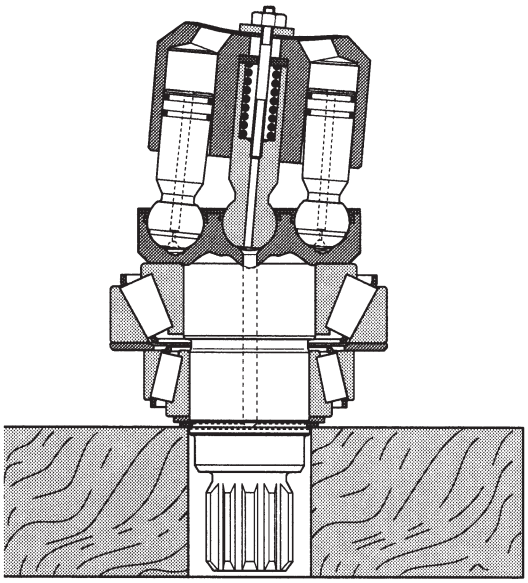


Assemble drive shaft with bearings and radial seal rings.

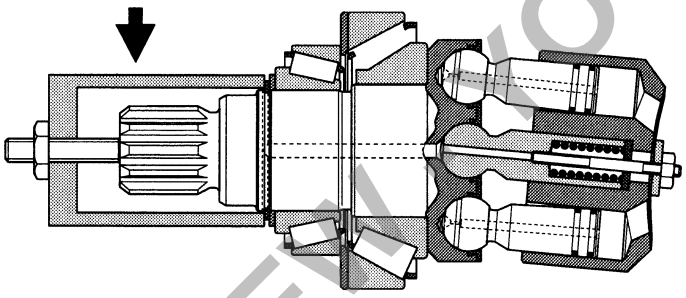


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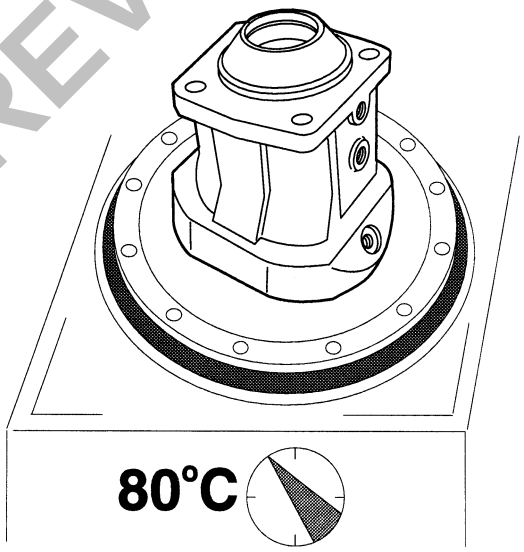
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Rotary group completely assembled ready for assembly.



Place assembly sleeve.

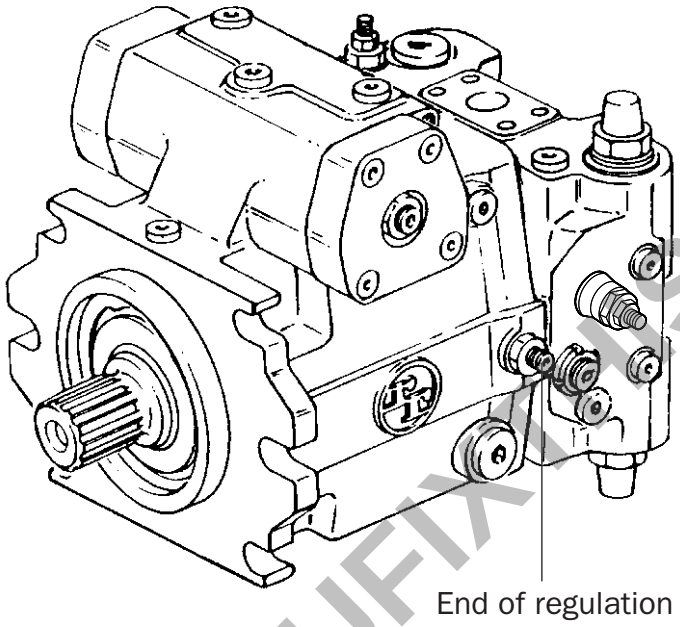


Warm up housing to 80°C.

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3 B. CHECK AND ADJUST END OF REGULATION

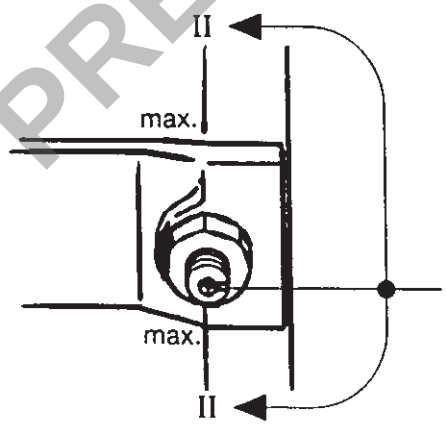


CHECK :

- The truck must be blocked, against a bay with a load on the fork arms for instance.
- Drive reverser in forward drive.
- Engine at low idle - check rpm.
- Gradually increase the engine speed until the forward HP reading is 410 bar.

END OF REGULATION :

- The adjustment of the pump end of regulation at 1650 rpm is obtained using an eccentric screw which restricts the pump flow creating back pressure against the swash plate.



This adjustment can only be set using a test bench.

IMPORTANT

The slot in the eccentric screw should point towards the boost pump (opposite to A4V pump where slot pointed to drive shaft). The adjustment must not go beyond 90 to the left or right - Do not exceed or damage may occur.
As for adjusting the HP, this adjustment must be done with the quick-release valve over-calibrated.

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ELECTRIC PRINCIPLE CIRCUIT

1 - Preheating
2 - Battery
3 - Starter
4 - Preheating relay
5 - Cold start
6 - Engine stop electrovalve
7 - Alternator
8 - Fuel level
9 - Machine fault sound alarm
10 - Hourmeter
11 - Load indicator
12 - Engine oil pressure
13 - Brake fluid
14 - Air filter clogging
15 - Engine water temperature
16 - Hydraulic return filter clogging
17 - Free
18 - Hand brake
19 - Control case (ORH)
20 - Front wheels alignment detector
21 - Front wheels alignment indicator light
22 - Rear wheels alignment detector
23 - Rear wheels alignment indicator light
24 - Sound alarm
25 - L.H. stoplight
26 - R.H. stoplight
27 - Free
28 - L.H. working head light
29 - R.H. working head light
30 - Control panel lighting
31 - R.H. rear position light
32 - R.H. front position light
33 - L.H. rear position light
34 - L.H. front position light
35 - L.H. front low beam
36 - R.H. front low beam
37 - L.H. front main beam
38 - R.H. front main beam
39 - Main beam indicator light
40 - Revolving light
41 - R.H. working tail light
42 - L.H. working tail light
43 - Free
44 - Control case (ORH)
46 - Hydraulic engine rotation electrovalve
47 - L.H. rear reverse light
48 - R.H. rear reverse light
49 - Reverse gear sound alarm
50 - Moving speed limitation electrovalve
51 - Forward electrovalve
52 - Reverse electrovalve
53 - Low speed indicator light
54 - High speed indicator light
55 - High speed electrovalve
56 - High speed control relay
57 - Low speed control relay
58 - Start safety relay
59 - Forward relay
60 - Reverse relay
61 - Rear reverse light relay
62 - Transmission cut-off relay
65 - Front windscreen washer
66 - Front windscreen wiper
67 - Blinking centre / warning
68 - Blinking centre / warning indicator light
69 - R.H. rear indicator light
70 - R.H. front indicator light
71 - L.H. rear indicator light
72 - L.H. front indicator light
73 - Warning unit / indicator light switch
74 - Roof light
75 - Cabin rear windscreen wiper
76 - Cabin roof windscreen wiper
79 - Ventilation
80 - Platform starter relay
81 - HP filter clogging

COLOUR CODING

bc : White	bl : Blue	g : Grey
j : Yellow	jvt : Yellow/Green	m : Brown
n : Black	o : Orange	r : Red
ro : Pink	vt : Green	v : Purple

CONNECTOR

A - Fuses box / relay (4 pin connection + 1 pin connection)
B - Indicator light module
C - Cabin
D - Front windscreen wiper
E - Fuses box / relay (13 pin connection)
F - Fuses box / relay (7 pin connection)
G - Fuses box / relay (11 pin connection)
H - Fuses box / relay (21 pin connection)
I - Light switch
J - Engine box
K - Control case (ORH)

ELECTRIC COMPONENTS

E1 - R.H. rear indicator light
E2 - R.H. front indicator light
E3 - L.H. rear indicator light
E4 - L.H. front indicator light
E5 - L.H. stoplight
E6 - R.H. stoplight
E7 - R.H. rear position light
E8 - R.H. front position light
E9 - L.H. rear position light
E10 - L.H. front position light
E11 - L.H. front low beam
E12 - R.H. front low beam
E13 - L.H. front main beam
E14 - R.H. front main beam
E15 - R.H. working tail light
E16 - L.H. working tail light
E17 - L.H. working head light
E18 - R.H. working head light
E19 - Revolving light
E20 - L.H. rear reverse light
E21 - R.H. rear reverse light
E22 - Roof light

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N°: 236905

ELECTRIC PRINCIPLE CIRCUIT

1 - Preheating
2 - Battery
3 - Starter
4 - Preheating relay
5 - Cold start
6 - Engine stop electrovalve
7 - Alternator
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15 - Engine water temperature
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17 - Free
18 - Hand brake
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57 - Low speed control relay
58 - Start safety relay
59 - Forwrd relay
60 - Reverse relay
61 - Rear reverse light relay
62 - Transmission cut-off relay
65 - Front windscreen washer
66 - Front windscreen wiper
67 - Blinker centre / warning
68 - Blinker centre / warning indicator light
69 - R.H. rear blinker
70 - R.H. front blinker
71 - L.H. rear blinker
72 - L.H. front blinker
73 - Warning switch / indicator light
74 - Roof light
75 - Cabin rear windscreen wiper
76 - Cabin roof windscreen wiper
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80 - Platform start relay
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ELECTRIC PRINCIPLE DIAGRAM

1 - Preheating
2 - Battery
3 - Starter
4 - Preheating relay
5 - Cold start
6 - Engine stop electrovalve
7 - Alternator
8 - Fuel level
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52 - Reverse electrovalve
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54 - High speed indicator light
55 - High speed electrovalve
56 - High speed control relay
57 - Low speed control relay
58 - Start safety relay
59 - Forward relay
60 - Reverse relay
61 - Rear reverse light relay
62 - Transmission cut-off relay
63 - Safety system
64 - Movements cut-off
65 - Movements cut-off suppression switch
66 - Movements cut-off electrovalve
67 - Stabilizer control switch
68 - Arm lifting angular sensor
69 - Free
70 - Arm angular safety electrovalve
71 - Free
72 - Front windscreen washer
73 - Front windscreen wiper
74 - Levelling movement safety
75 - Angular speed safety
76 - Movements safety (stabilizer)
77 - Retracted telescope safety
78 - Blinking centre / warning
79 - Blinking centre / warning indicator light
80 - R.H. rear blinker
81 - R.H. front blinker
82 - L.H. rear blinker
83 - L.H. front blinker
84 - Warning switch / indicator light
85 - Roof light
86 - Cabin rear windscreen wiper
87 - Cabin roof windscreen wiper
88 - Ventilation
89 - Free

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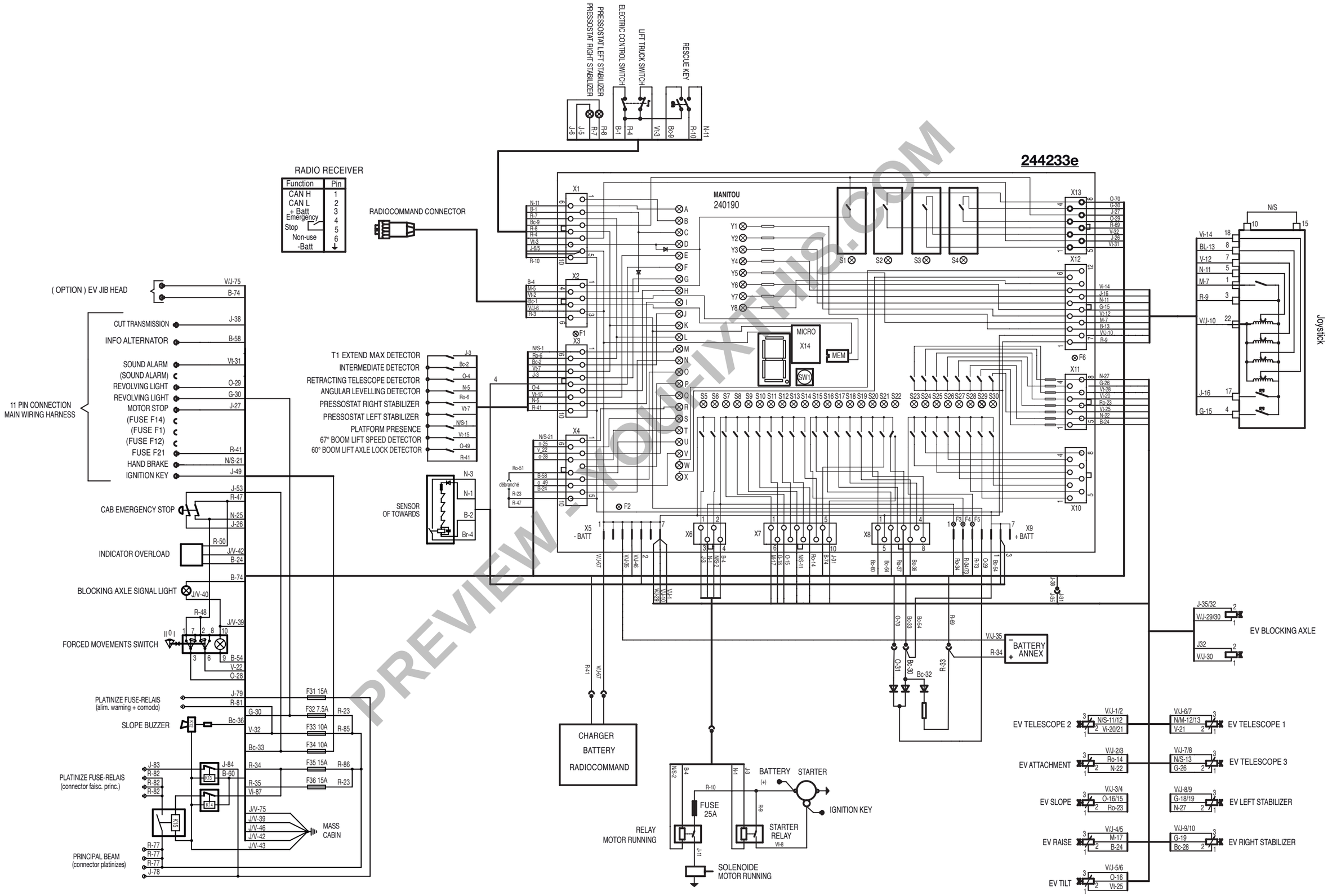
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E6 - R.H. stoplight
E7 - R.H. rear position light
E8 - R.H. front position light
E9 - L.H. rear position light

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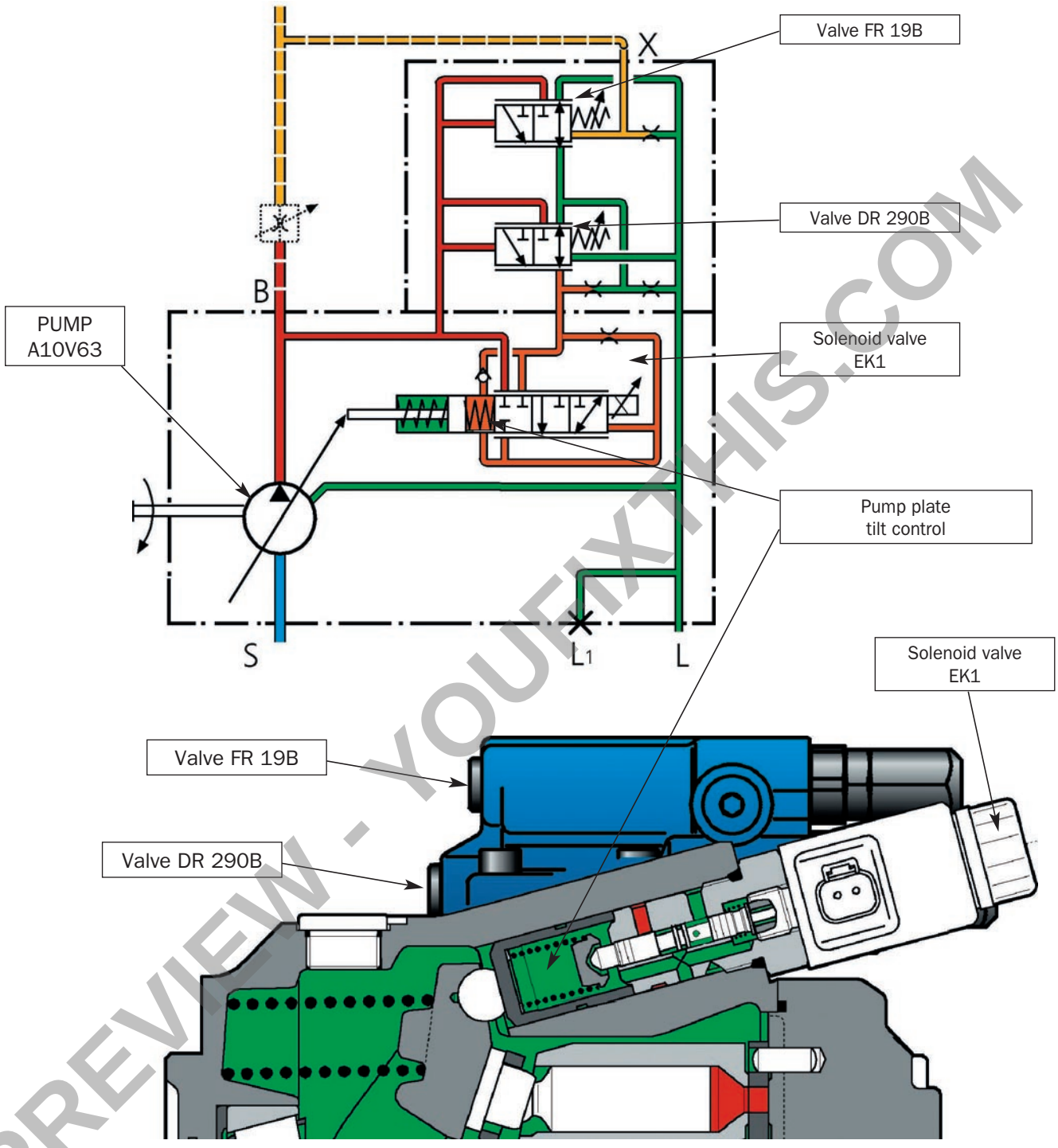
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7 - HYDRAULIC DIAGRAM

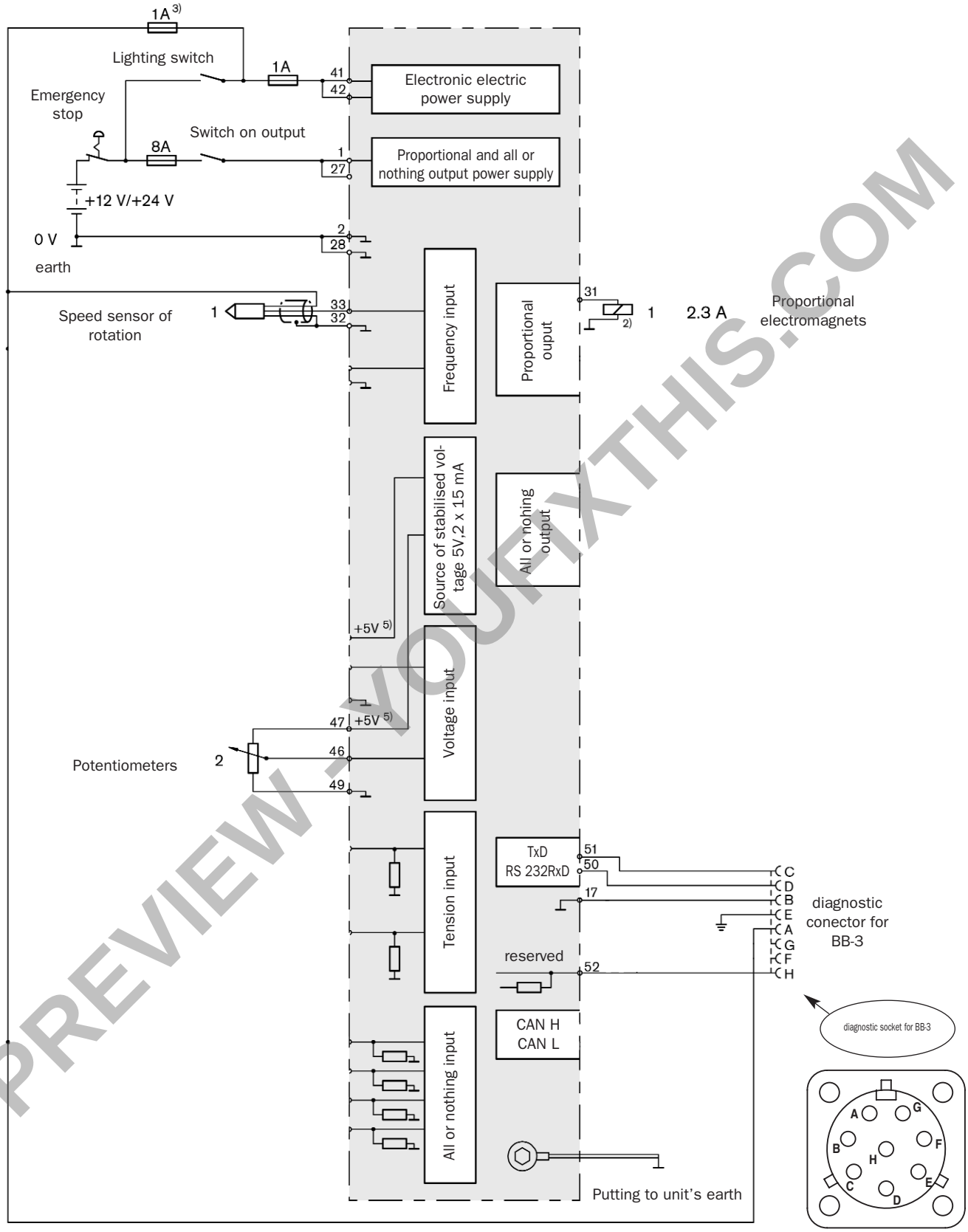


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	in general - 0,2 bar	
S - Suction	min : 1bar	(max flow)
	Max : 0bar	(zero flow)
B - Pressure	min : 19bar	(pump holding pressure)
	Max : 270bar	(control valve main limiter pressure)
X - LS	min : 0bar	(Δ p = 19bar)
Load signal	Max : 251bar	(270 - 19 bar)
L1	min : 0,0001bar	(19 bar)
	Max : 0,1bar	(270 bar)

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6 - WIRING DIAGRAM



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<u>Warning:</u> never connect the electronic board to the machine harness without having previously connected the unit's earth.

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1.1- GENERAL INFORMATION ON THE MANITOU AIR-CONDITIONING FUNCTION
1.2- THE COMPRESSOR
1.3- THE CONDENSER
1.4- THE DEHYDRATING FILTER
1.5- THE EXPANSION VALVE
1.6- THE EVAPORATOR
1.7- SAFETY PRESSURE SENSITIVE SWITCHES
1.8- THE THERMOSTAT
1.9- THE HOSES

2 -INSTRUCTIONS FOR STARTING UP THE MANITOU PRODUCTION UNIT

2.1- CHECK BEFORE LOADING
2.2- CHARACTERISTICS OF COOLANT R134a
2.3- SAFETY MEASURES FOR HANDLING COOLANT R134a
2.4- COOLING LOAD
2.5- CHECKING SETTINGS

3- MANITOU DEALER STARTING UP INSTRUCTIONS

3.1- CONTROL BEFORE USE
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3.3- FORMATION CLIENT

4- CUSTOMER USE MANUAL

4.1- PRESENTING THE MANITOU AIR CONDITIONER
4.2- FUNCTION OF THE MANITOU AIR CONDITIONER
4.3- DESCRIPTION OF THE CLIMATE CONTROL
4.4- HEATING FUNCTION
4.5- AIR CONDITIONING FUNCTION
4.6- DEMISTING FUNCTION

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