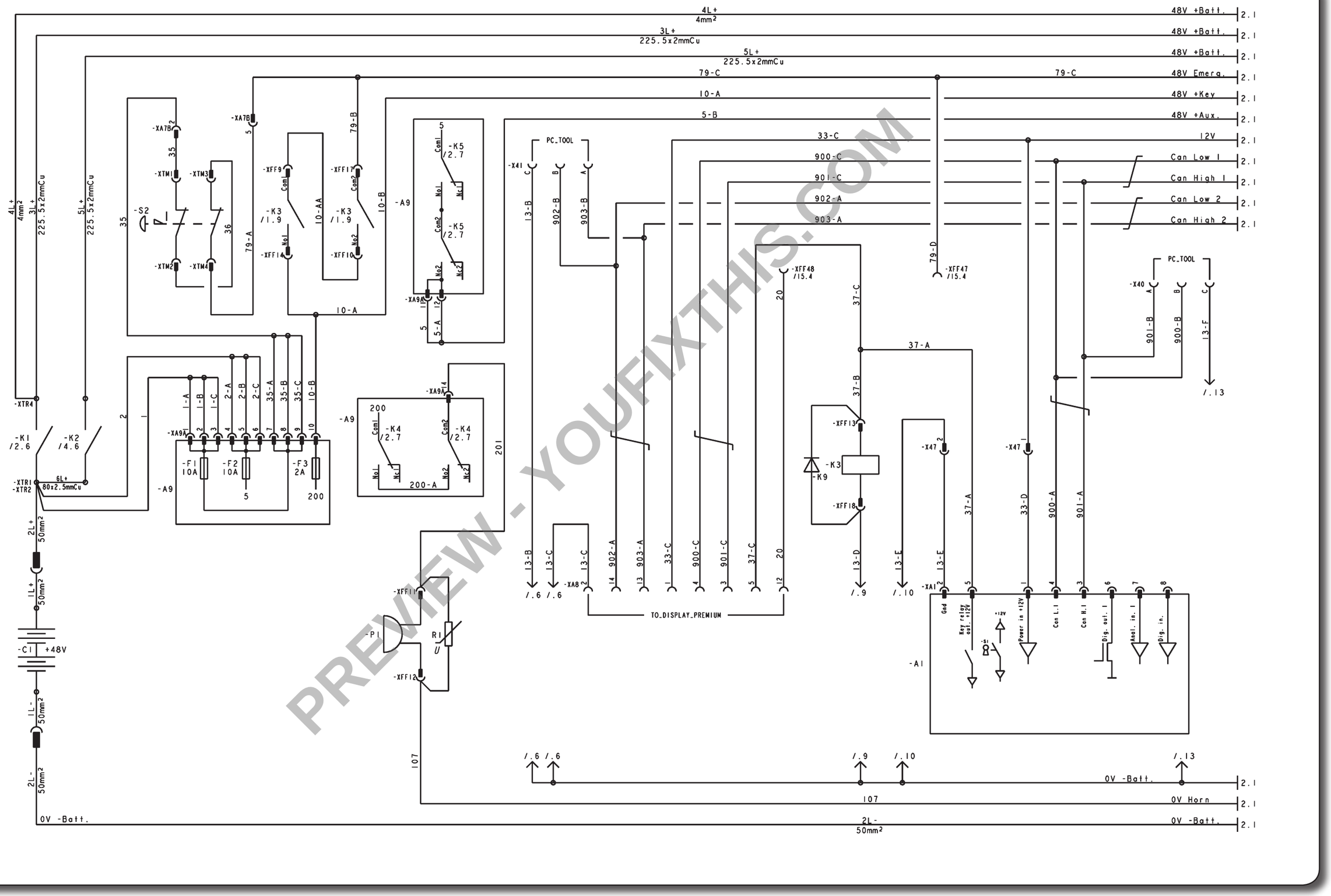
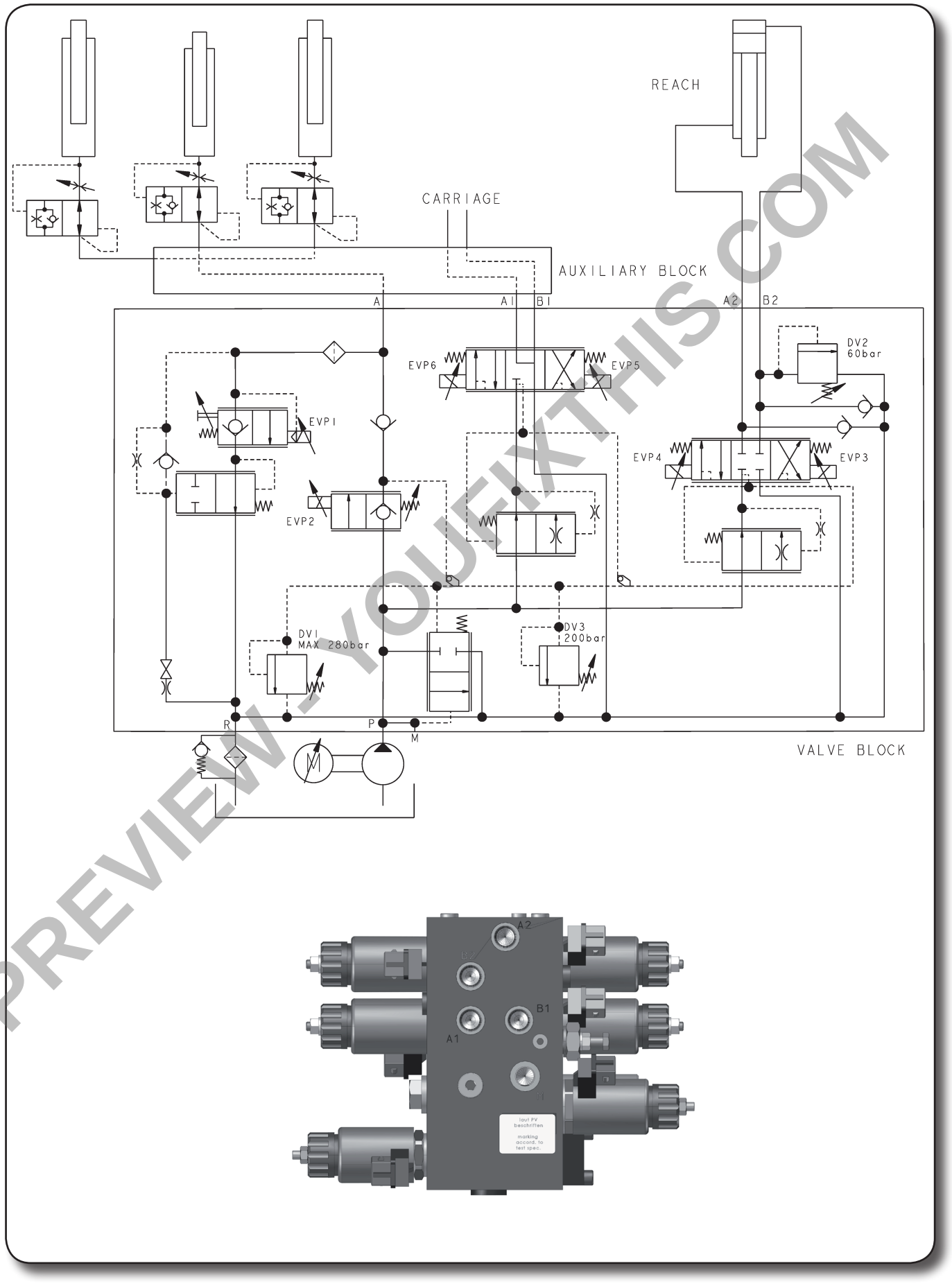


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MAIN HYDRAULIC DIAGRAM



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TORQUE SETTINGS FOR SCREWS, NUTS AND FITTINGS

Before disassembling the various parts and nuts and bolts, read the following carefully.

To make the threaded matings secure, *LOCTITE 270* is used for tightening the screws.

If it is not possible to unscrew the bolts because this product has been used, avoid applying extensions to the tools, instead slightly heat the area (at most 50°C) so as to eliminate the *LOCTITE 270* effect.

In the cases described, reapply *LOCTITE 270* during installation in a moderate quantity (30% of the mating surface).

The torque setting used for tightening the threaded couplings is extremely important to make the coupling secure and the machine safe.

The tables on this page give the classes of bolts normally used with the relevant torque settings.

Nominal diameter	TORQUE SETTING Nm	
	Class 8	Class 10
M3	4	5.2
M4	7	9.15
M5	12.14	14.8
M6	17.2	20.9
M8	31.8	38.1
M10	50.5	60.3
M12	74.2	88.5
M14	101.2	120.8
M16	138.2	164.9
M18	176.6	203.5
M20	225.4	259.7
M22	278.8	321.2
M24	324.8	374.2
M27	422.3	486.5
M30	516.1	594.7

				Pre-load N	TORQUE SETTING Nm					
					Class 5.8		Class 8.8		Class 10.9	
M4	0.7	7	3	2400	1.92	1.44	3.07	2.3	4.17	3.13
M5	0.8	8	4	3880	3.88	2.91	6.2	4.65	8.43	6.33
M6	1	10	5	5490	6.58	4.94	10.5	7.9	14.3	10.8
M8	1.25	13	6	9990	16	12	25.6	19.2	34.8	26.1
M8	1	13	6	10700	17.1	12.8	27.4	20.5	37.3	27.9
M10	1.5	16	8	15825	31.7	23.8	51	38	69	52
M10	1.25	16	8	16700	33.4	25.1	53	40.1	73	55
M12	1.75	18	10	23025	55	41.4	88	66	120	90
M12	1.25	18	10	25150	60	45.3	96	72	130	98
M14	2	21	12	31400	88	66	140	105	190	145
M14	1.5	21	12	34125	96	72	155	115	210	155
M16	2	24	14	42850	135	105	220	165	300	225
M16	1.5	24	14	45600	145	110	235	175	320	240
M20	2.5	30	17	66875	270	200	430	320	580	435
M20	1.5	30	17	74250	295	225	475	355	650	485

= with lubricant

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ACE2 PUMP AND TRACTION MODULE DIAGNOSIS SYSTEM

ACE2 PUMP AND TRACTION MODULE ALARMS

programmer message	message sicos	description	effect	state of the truck
WATCHDOG	CALL SERVICE	The Watchdog signal is not in the correct state.	MC open, EB activated, traction/pump stationary.	• Start up • Stand-by • During traction
	Re-start procedure: Re-start up of the key.			
EEPROM KO	CALL SERVICE	Error detected in EEPROM or in EEPROM management.	The control device works using the default parameters.	• Continuous
	Re-start procedure: None.			
LOGIC FAILURE #3	CALL SERVICE	Hardware protection circuit failure due to high current.	MC not closed, EB activated, traction/pump stationary.	• Start up
	Re-start procedure: Make a traction or hydraulic request.			
LOGIC FAILURE #2	CALL SERVICE	Motor phase voltage feedback circuit failure.	MC open, EB activated, traction/pump stationary.	• Switch-on (immediately after the MC closes)
	Re-start procedure: Make a traction or hydraulic request.			
LOGIC FAILURE #1	CALL SERVICE	A condition of undervoltage/overvoltage has been detected.	MC not closed, EB activated, traction/pump stationary.	• Start up • Stand-by • During traction
	Re-start procedure: Make a traction or hydraulic request.			
VMN LOW	CALL SERVICE	Motor output voltage lower than expected.	MC open, EB activated, traction/pump stationary.	• Start up • During traction
	Re-start procedure: Make a traction or hydraulic request.			
VMN HIGH	CALL SERVICE	Motor output voltage higher than expected.	MC not closed, EB activated, traction/pump stationary.	• Start up • Stand-by
	Re-start procedure: Make a traction or hydraulic request.			
CONTACTOR CLOSED	CALL SERVICE	The LC contact is locked	MC not closed (the control has not been activated), EB activated, traction/pump stationary.	• Start up
	Re-start procedure: Make a traction or hydraulic request.			

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UNLOADING OFF THE TRUCK AND FITTING THE MAST TO THE TRUCK BASE

Equipment and tools


fork lift truck
load capacity
2500 kg


crane truck or
bridge crane
load capacity
2500 kg


open ended span-
ner
19 mm


torque wrench


lifting sling
load capacity
2500 kg


ladder

Procedure

Before starting work, ensure that you are wearing suitable protective clothing.



Phase 1

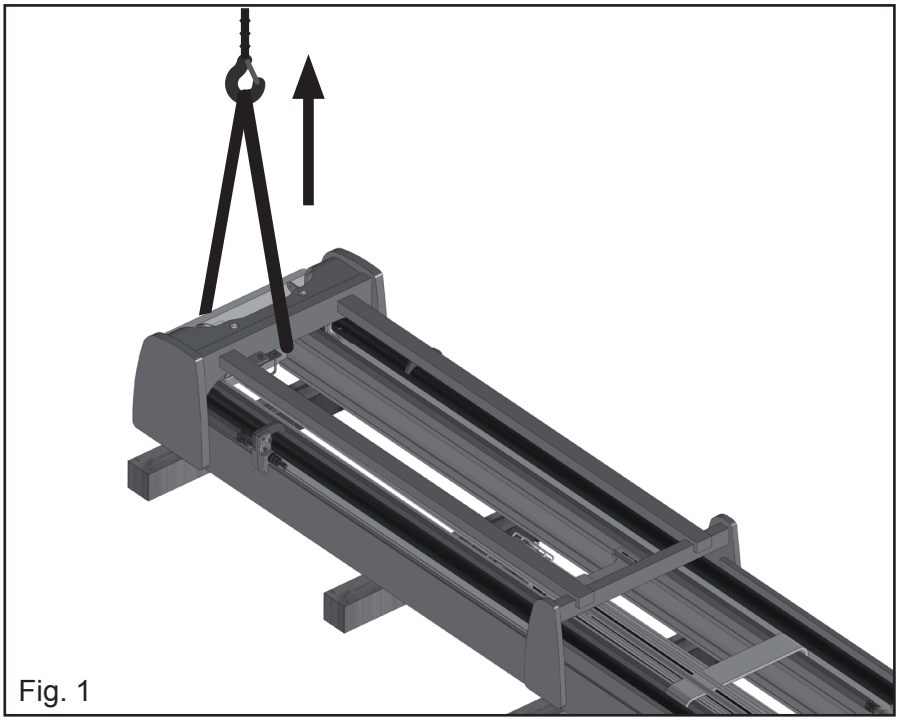
TRUCK BATTERY - FORK LIFT TRUCK LOAD CAPACITY 2500kg

Connect the battery to the truck base, switch on the forklift and transfer it to a place equipped with a crane truck or bridge crane. Using the lift truck, fork the pallet on which the mast assembly is secured, raise it and carry it to the same place as the truck base.

Phase 2

BRIDGE CRANE - LIFT BELT

Remove the packing of the mast assembly.
Slip the lifting belt beneath the upper crossbars of the mast assembly by making a noose and hook the other end to the bridge crane hook **(fig.1)**.
Start lifting slowly with the bridge crane and raise the mast assembly, separating it from the pallet. Take the mast assembly into the vertical position.


Fig. 1

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PUMP AND TRACTION ACE2 MODULE ALARM ANALYSIS AND TROUBLESHOOTING

ALARM	breakdown search
"Watchdog" Cause: This is a safety test. IT is a self-diagnosis test within the logic between the Master and Slave micro-controllers.	This alarm could be caused by a malfunctioning of the canbus shutting off Master-Slave communication.
"Eeprom ko" Cause: This alarm is due to a HW or SW defect in the integrated non-volatile memory that supports the parameters of the control device. This alarm does not inhibit machine operation, but the truck will work with the default values.	Try to carry out a CLEAR EEPROM operation (see the console manual). Turn off then on again with the key to verify the result. If the alarm persists, the control device needs replacing. If the alarm disappears, the parameters previously reset will be replaced by the default parameters.
"Logic failure #3" Cause: A hardware problem pertaining to the logic card as a protection against high current values (overload).	This type of failure is not connected to external components, so when it manifests itself the ACE logic board needs replacing.
"Logic failure #2" Cause: The fault pertains to the hardware section of the logic card that manages the retroaction of the phase voltage.	This type of failure is not connected to external components, so when it manifests itself the ACE2 logic board needs replacing.
"Logic failure #1" Cause: This alarm appears when the control device detects over or under voltage conditions. The overvoltage threshold is 45V, the undervoltage threshold is 9V on the 24V control device. On the 48V control device, the overvoltage threshold is 65V and the undervoltage threshold is 11V.	Finding the trouble appearing on start up or in standby, it is very likely in these cases that the fault is due to undervoltage, so it is advisable to check: • Diminishing pulsations of the key input signal (beneath the undervoltage threshold) due to external loads, such as switching on DC/DC converters, switching on relays or contactors, energizing/de-energizing solenoids. • Check the connection of the electrical cables to the battery terminal, positive and negative, to MC and to the control device +Batt and –Batt, which must be tightened to a torque of between 13Nm and 15Nm. • If no voltage transient is detected on the power supply line and the alarm is present every time the key is switched on, then the fault probably lies with the hardware of the control device and so the logic board needs replacing. Finding the trouble appearing during motor operation, in this case there could be undervoltage or overvoltage. • If the alarm appears during acceleration while in traction or operation of the hydraulic functions, it is most likely due to undervoltage; check the battery charge and the connection of the electrical cables. • If the alarm appears during brake release, it is most likely due to overvoltage; check the contact of the line contactor and the connection of the electrical cables of the battery.

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		GENERAL SPECIFICATIONS				
CHARACTERISTICS	1.2	manufacturer's type designation		**R1.4**	**R1.6**	**R1.6N**
	1.3	motor unit: battery, diesel, LPG, petrol, electric		electric (battery)		
	1.4	driving: manual, on ground, standing, seated		seated		
	1.5	load capacity/rated load	Q (t)	1.4	1.6	1.6
	1.6	load centre of gravity	c (mm)	600	600	600
	1.8	load distance from load wheel axle - forks	x (mm)	258	308	202
	1.9	wheelbase (WB)	y (mm)	1400	1450	1450
WEIGHTS	2.1	weight with no load (including battery)	kg	3495	3546	3498
	2.3	load on axle with no load (front/rear) [5]	kg	2055/1440	2103/1443	1955/1543
	2.4	load on axle with forks out with load (front/rear)	kg	885/4010	810/4336	757/4341
	2.5	load on axle with forks retracted with load (front/rear)	kg	1711/3184	1779/3367	1514/3584
WHEELS & TYRES	3.1	tyres: full rubber, polyurethane, vulkollan (front/rear)		vulkollan/vulkollan		
	3.2	front wheel size	ø (mm x mm)	343 x 140	343 x 140	343 x 140
	3.3	rear wheel size	ø (mm x mm)	285 x 100	285 x 100	285 x 100
	3.5	wheel quantity (x = traction) (front/rear)		1x/2	1x/2	1x/2
	3.7	rear track width	b 11 (mm)	1155	1155	1025
DIMENSIONS	4.1	mast tilt / forks forward/backward	α/β (°)	2 / 4	2 / 4	2 / 4
	4.2	height of closed mast	h1 (mm)	2195	2195	2195
	4.3	free lift	h2 (mm)	1648	1648	1648
	4.4	lifting height	h3 (mm)	5000	5000	5000
	4.5	height, mast extended [1]	h4 (mm)	5563	5563	5563
	4.7	height of protective roof assembly (cab) [2]	h6 (mm)	2175	2175	2175
	4.8	seat height	h7 (mm)	1082	1082	1082
	4.10	armrest height	h8 (mm)	308	308	308
	4.19	total length	l1 (mm)	2523	2523	2629
	4.20	length to face of forks	l2 (mm)	1373	1373	1479
	4.21	overall width [3]	b1/b2 (mm)	1265	1265	1125
	4.22	fork dimensions DIN ISO 2331	s/e/l (mm)	40/80/1150	40/120/1150	40/120/1150
	4.23	fork carriage ISO 2328, class/type A,B		2A	2A	2A
	4.24	fork carriage width	b3 (mm)	700	700	700
	4.25	outer fork width (min/max) [8]	b5 (mm)	220/640	260/680	260/680
	4.26	distance between the clamps of the load wheels	b4 (mm)	900	900	795
	4.28	retractable travel	l4 (mm)	441	491	385
	4.31	ground clearance under mast with load	m1 (mm)	75	75	75
	4.32	ground clearance at wheelbase centre	m2 (mm)	75	75	75
	4.34.1	working aisle for pallet length 1000 x 1200 crosswise	Ast (mm)	2825	2834	2898
	4.34.2	working aisle for pallet length 800 x 1200 lengthwise	Ast (mm)	2895	2896	2976
	4.35	turning radius	Wa (mm)	1671	1718	1700
	4.37	length between the wheel arms	l7 (mm)	1795	1845	1845
	4.42	wheelbase height (from ground to footboard)	mm	550	550	550
	4.43	wheelbase height (between the steps between the footboard and the ground)	mm	371	371	371
PERFORMANCE	5.1	traction speed with/without load [7]	km/h	11/11(14/14)	11/11(14/14)	11/11(14/14)
	5.1.1	traction speed with/without load reverse drive [7]	km/h	11/11(14/14)	11/11(14/14)	11/11(14/14)
	5.2	lift speed with/without load [7]	m/s	0,37 / 0,63 (0,47 / 0,73)	0,32 / 0,63 (0,42 / 0,73)	0,32 / 0,63 (0,42 / 0,73)
	5.3	lowering speed with/without load	m/s	0.55	0.55	0.55
	5.4	Retractable carriage speed	m/s	0,15 / 0,15	0,15 / 0,15	0.15 / 0.15
	5.7	grade ability with/without load	%	12 / 15	11 / 15	11 / 15
	5.8	maximum gradeability with/without load	%	12 / 15	12 / 15	12 / 15
	5.9	acceleration time, laden/unladen	s	- / -	- / -	- / -
	5.10	service brake		Electrical		
MOTOR UNITS	6.1	traction motor, power S2 60 minutes	kW	6,4	6,4	6,4
	6.2	lifting motor, power S3 15%	kW	14	14	14
	6.3	battery in compliance with DIN 43531/35/36 A,B,C, no		C	C	B
	6.4	battery rated voltage/capacity at 5 hours	V/Ah	48/700 [6]	48/700 [6]	48/700 [6]
	6.5	battery weight [4]	kg	1119	1119	1119
	6.6	consumption per VDI cycle	kWh/h	- / -	- / -	- / -
OTHER DATA	8.1	type of drive control		AC		
	10.1	working pressure for additional attachments	bar	180	180	180
	10.2	volume of oil for additional attachments	l/min	20	20	20
	10.7	noise level at the operating station	dB(A)	<69.7	<69.7	<69.7

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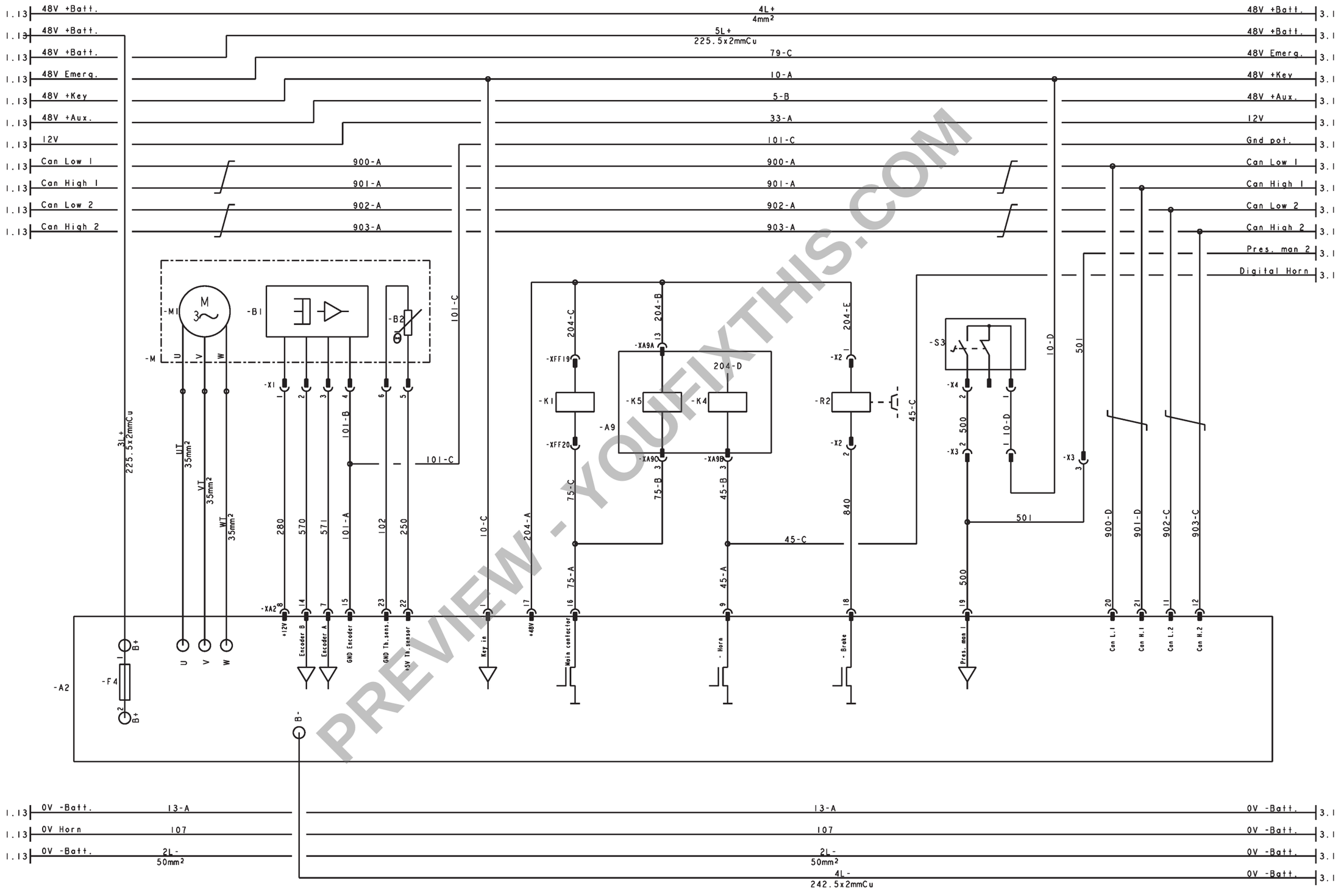
SCHEDULED MAINTENANCE

■ = checks and maintenance to be performed by the operator or the person assigned to truck maintenance (refer to the instructions given in the MAINTENANCE section of the operator's manual)
● = checks and maintenance operations that should only be performed by a technician authorised by the truck manufacturer (refer to the instructions given under the following headings in this section)
x = replacement of parts that should only be performed by a skilled technician authorised by the truck manufacturer (refer to the instructions given in the sections of this manual)

	Operation description	Maintenance intervals			
		every 8 hours 1 day	every 1000 hours 1 year	every 3000 hours 2 years	every 5000 hours 3 years
FRAME, CAB, OVERHEAD GUARD	Check the screws and bolts		●		
	Check the integrity of the cab and frame fixing supports		●		
	Check the conditions of the guides for sliding the retractable carriage		●		
	Clean the guides for sliding the retractable carriage		●		
	Check the height of the outriggers off the ground(1)		●		
	Visually check the main welds				●
	Check the functionality of the levers for emergency exit (cab for application in cold room)	■			
	Check the adjustment of the door closing device and lubrication (Cab for application in cold room) (6)				
	Check the conditions of the door hinge bearings (cab for application in cold room) (6) (2)				
	Replacement of heater filter (cab for application in cold room) (6)				
BRAKING SYSTEM	Dynamic braking action check	■	●		
	Reverse braking action check	■	●		
	Normal braking action check	■	●		
	Emergency braking action check	■	●		
	Electromagnetic parking brake and coil efficiency check		●		
	Electromagnetic parking brake liner wear check(2)			●	
	Load wheels brake liner wear check(2)		●		
HYDRAULIC SYSTEM	Oil leak check	■	●		
	Valve operation check	■			
	Tank oil level check		●		
	Check the condition and tension of the hoses(3)		●		
	Tank oil change			x	
	Renew oil filter cartridge			x	
	Renew plug with air cleaner			x	
MOTORS	Motor insulation check		●		
	Cable connection check		●		
	Fixing nut condition check		●		
	Bearing noise check		●		
	General cleaning		●		
REDUCTION UNIT	Oil leak check	■	●		
	Check oil level		●		
	Change oil in reduction unit(4)				
	General cleaning		●		
	Check reduction unit outer gear teeth wear (steering crown wheel and pinion)		●		

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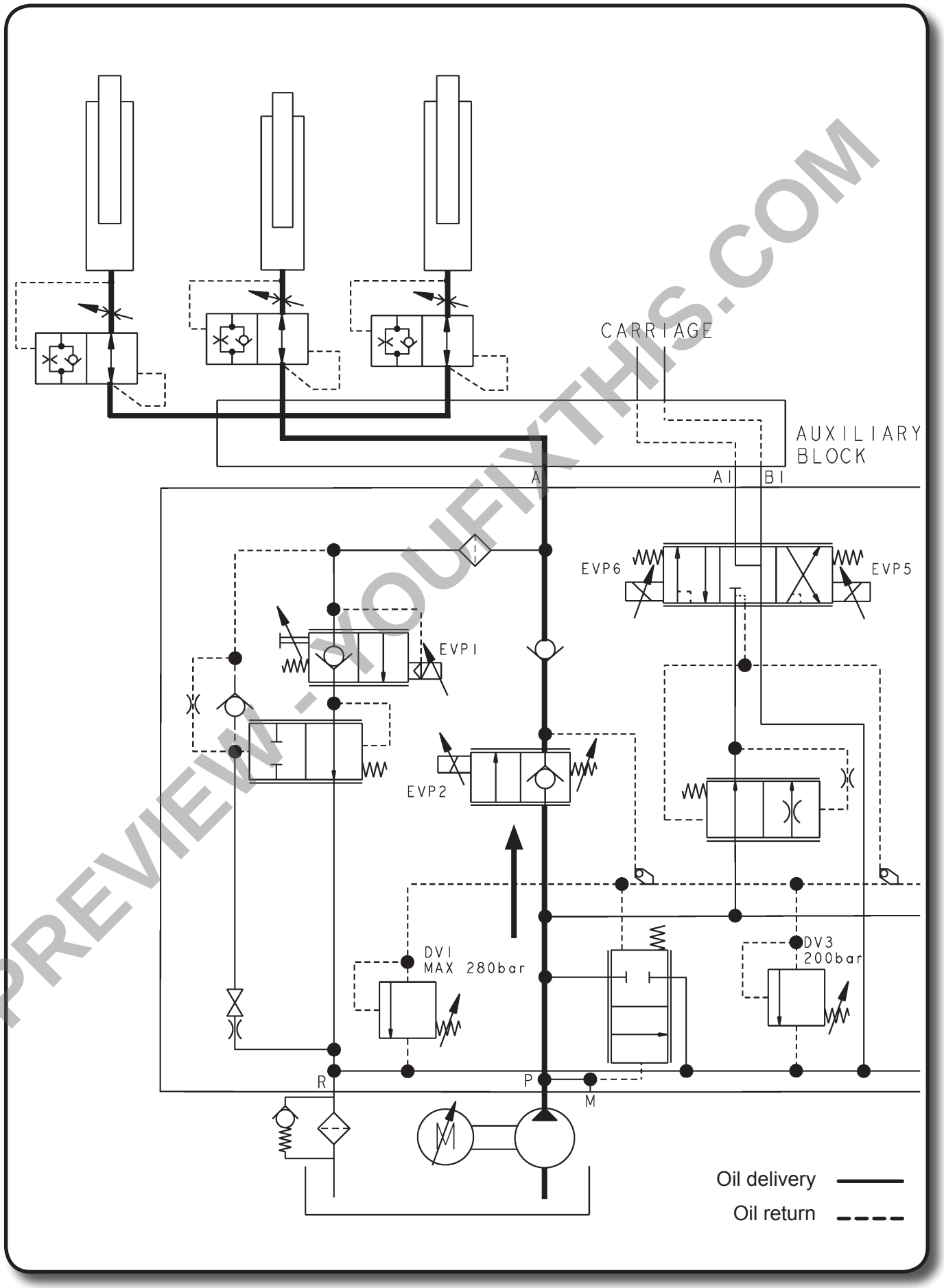
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HYDRAULIC FORK LIFTING DIAGRAM



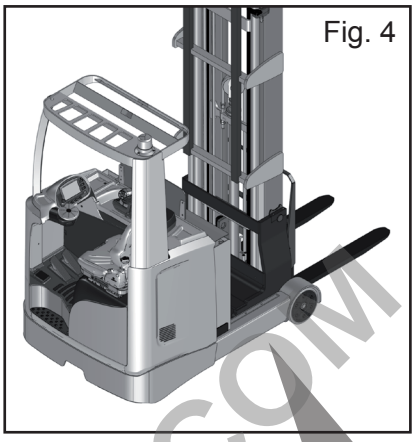
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Phase 3

FIXED GAUGE 13 mm SPANNER

Using the open ended spanner, unscrew and remove the screws fastening the control valve at the bottom of the truck **(ref.A fig.5)**.
Remove the control valve assembly.
Remove the O-rings from the seat, carefully clean the parts and install the new gasket set.


Fig. 4

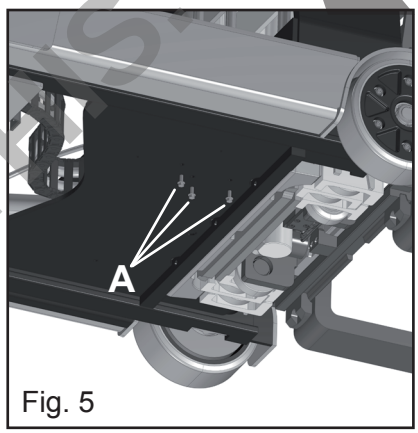


Fig. 5

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programmer message	message sicos	description	effect	state of the truck
CONTACTOR OPEN	CALL SERVICE	The MC coil has been activated, but the MC fails to close.	MC open, EB activated, traction/pump stationary.	• Switch-on (immediately after the MC closes) • Stand-by • During traction
	Re-start procedure: Make a traction or hydraulic request.			
STBY I HIGH	CALL SERVICE	In stand-by conditions (no current applied to the motor), current feedback is outside the permissible stand-by limits.	MC not closed, EB activated, traction/pump stationary.	• Start up
	Re-start procedure: Make a traction or hydraulic request.			
CAPACITOR CHARGE	CALL SERVICE	The voltage of the power capacitors fails to increase.	MC not closed, EB activated, traction/pump stationary.	• Start up
	Re-start procedure: Make a traction or hydraulic request.			
TH. PROTECTION	CALL SERVICE	The control device has reached the thermal reduction temperature of 85°C when the current is I_{MAX}.	The traction control device reduces the maximum current linearly from I_{MAX} (85°C) to 0A (105°C).	• Continuous
	Re-start procedure: None.			
MOTOR TEMPERAT.	CALL SERVICE	The motor temperature sensor is open (if digital) or has exceeded the 150°C threshold (if analogue).	The maximum current is halved and the speed is reduced.	• Continuous
	Re-start procedure: None.			
BATTERY LOW	CALL SERVICE	The battery is <= 10% when the BATTERY CHECK parameter is set to >0	The maximum current is halved and the speed is reduced (if CHECK OPTION=1).	• Start up • Stand-by • During traction
	Re-start procedure: Recharge the battery. Re-start up of the key.			
DRIVER SHORTED	CALL SERVICE	The MC driver has shorted and therefore is not capable of opening the contactor.	MC open (the control has been released), EB activated, traction/pump stationary.	• Start up • Stand-by • During traction
	Re-start procedure: Make a traction or hydraulic request.			

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Phase 3

OPEN ENDED SPANNER 19 mm

Using the open ended spanner, unscrew and remove the screws securing both side blocks of the mast assembly **(ref.A fig.2)**. Remove the blocks **(ref.B fig.2)**.
Using the bridge crane, slowly lift the mast assembly and rest it vertically on the truck base in the special housings **(ref.C fig.2)**. Keeping the belt taut, position both side blocks and, using a torque wrench, tighten the fixing screws **(ref.A fig.2)** to a torque of 88 **to** 97 Nm.

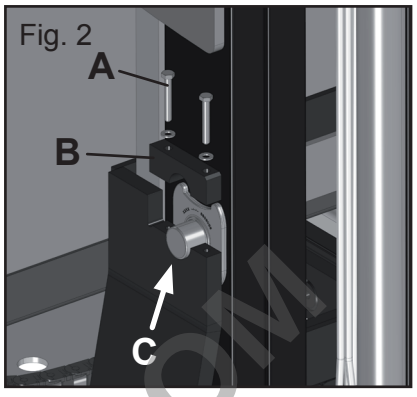
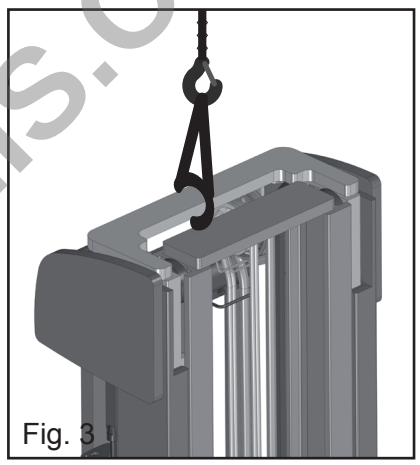


Fig. 2

Phase 4

BRIDGE CRANE - LADDER - LIFT BELT

Set the ladder next to the mast assembly and climb up.
Insert the lift belt beneath the upper crossbar of the middle section of the mast assembly by making a noose and hook the ends to the bridge crane hook **(fig.3)**. Climb down the ladder, raise the bridge crane to reveal the seats of the screws securing the mast assembly to the truck base **(fig.4)**.


Fig. 3

Phase 5

TORQUE WRENCH - BRIDGE CRANE - LIFT BELT

Using the torque wrench, tighten the bolts securing the mast assembly to the truck base **(ref.D fig.4)** to a torque of 300 **to** 330 Nm.
Using the bridge crane, lower the mast assembly to the ground.
Climb up the ladder and remove the belt from the mast assembly.

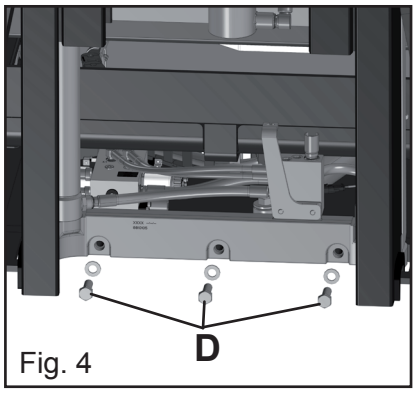
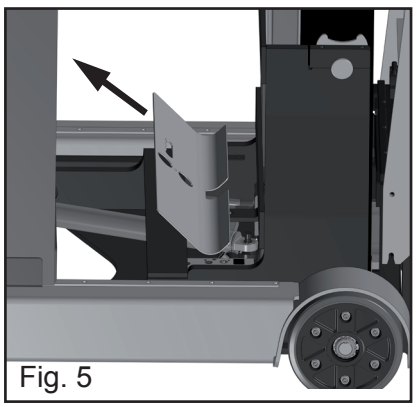
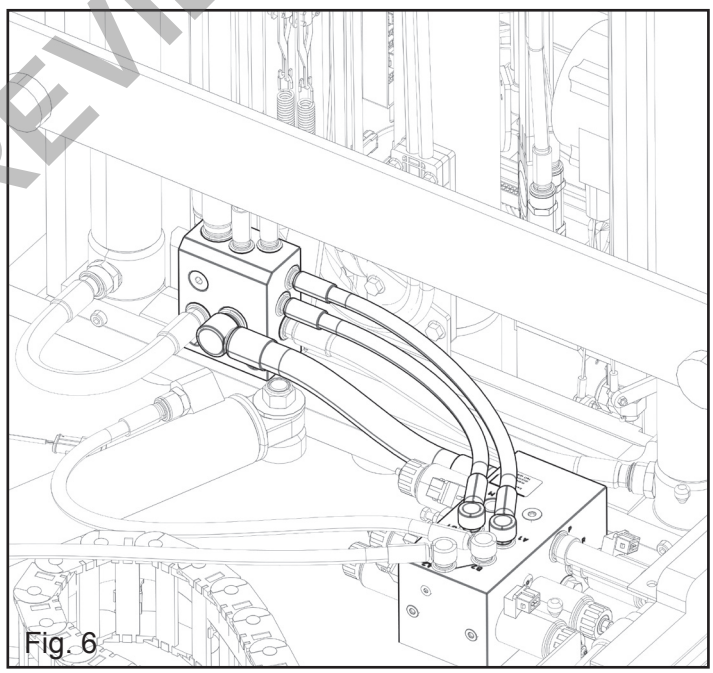


Fig. 4

Phase 6

Remove the cover to access the hydraulic control valve **(fig.5)**.
Connect the hydraulic pipes from the control valve on the truck base to the one on the mast assembly **(fig.6)**.


Fig. 5


Fig. 6

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ALARM	breakdown search
"Vmn low" Cause 1: Test on start-up. Before switching on the LC, the software checks the power bridge: it turns on the top side power MOSFETs alternately and waits until the phase voltage rises up to the value of the capacitor in parallel. If the voltage of the phases is under 66% of the voltage of the capacitor in parallel, this alarm appears. Cause 2: Motor operating test. When the motor is operating, the power bridge is ON and the motor voltage feedback is tested; if it is below the controlled value (considering a range of values), an error status appears.	If the problem appears on start up (LC doesn't close at all), check: • The internal motor connections (ohm continuity) • The motor power cable connections • Motor loss to the truck frame • If the motor connections are OK, the problem lies within the control device, so replace it. If the alarm takes place while the motor is operating, check: • The motor connections • If the coil-winding/cables of the motor phases show losses towards the truck's bodywork • That the LC power contact closes correctly, with a good contact • If no trouble is found with the motors, the problem lies within the control device, so replace it.
"Vmn high" Cause 1: Before switching on the LC, the software checks the power bridge: it turns on the bottom side power MOSFETs alternately and waits until the phase voltage decreases down to -BATT. If the voltage of the phases is under 10% of the nominal voltage of the battery, this alarm appears. Cause 2: This alarm may appear even once the start-up diagnosis has been passed and therefore the LC has closed. In this situation, the phase voltage should be less than 1/2 Vbatt. Should it exceed this value, an error status would appear.	If the problem appears on start up (LC doesn't close at all), check: • The internal motor connections (ohm continuity) • The motor power cable connections • If the motor connections are OK, the problem lies within the control device, so replace it. If the problem appears after having closed the LC (LC closes and then opens again), check: • The motor connections • If the coil-winding/cables of the motor phases show losses towards the truck's bodywork • If no trouble is found with the motors, the problem lies within the control device, so replace it.
"Contactor closed" Cause: Before activating the MC coil, the control device verifies whether the contactor is blocked. The control device activates the bridge for a few tens of milliseconds, trying to discharge the bank of capacitors If the capacitor voltage fails to decrease by 20% of the key voltage, an alarm is generated.	Please check the LC power contacts and replace it if necessary.
"Contactor open" Cause: The main contactor coil has been activated by the control device, but the contactor fails to close.	• It could be a problem with the contacts in the MC not working (not inserted), try replacing the MC. • If the MC contactors work properly, the problem lies within the control device, so replace it.
"Stby I high" Cause: The current transducer or the current feedback circuit has a fault in the control device.	This type of error is not connected to external components, so when it manifests itself the control device needs replacing.

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		GENERAL SPECIFICATIONS			
CHARACTERISTICS	1.2	manufacturer's type designation		**R2.0**	**R2.5**
	1.3	motor unit: battery, diesel, LPG, petrol, electric		electric (battery)	
	1.4	driving: manual, on ground, standing, seated		seated	
	1.5	load capacity/rated load	Q (t)	2.0	2.5
	1.6	load centre of gravity	c (mm)	600	600
	1.8	load distance from load wheel axle - forks	x (mm)	358	431
	1.9	wheelbase (WB)	y (mm)	1500	1650
WEIGHTS	2.1	weight with no load (including battery)	kg	3801	4230
	2.3	load on axle with no load (front/rear) (5)	kg	2296/1504	2565/1665
	2.4	load on axle with forks out with load (front/rear)	kg	770/5030	876/5855
	2.5	load on axle with forks retracted with load (front/rear)	kg	1971/3829	2306/4424
WHEELS & TYRES	3.1	tyres: full rubber, polyurethane, vulkollan (front/rear)		vulkollan/vulkollan	
	3.2	front wheel size	ø (mm x mm)	343 x 140	343 x 140
	3.3	rear wheel size	ø (mm x mm)	285 x 100	285 x 140
	3.5	wheel quantity (x = traction) (front/rear)		1x/2	1x/2
	3.7	rear track width	b 11 (mm)	1155	1195
DIMENSIONS	4.1	mast tilt / forks forward/backward	α/β (°)	2 / 4	2 / 4
	4.2	height of closed mast	h1 (mm)	2195	2195
	4.3	free lift	h2 (mm)	1582	1582
	4.4	lifting height	h3 (mm)	4650	4650
	4.5	height, mast extended (1)	h4 (mm)	5263	5263
	4.7	height of protective roof assembly (cab) (2)	h6 (mm)	2175	2175
	4.8	seat height	h7 (mm)	1082	1082
	4.10	armrest height	h8 (mm)	308	308
	4.19	total length	l1 (mm)	2523	2600
	4.20	length to face of forks	l2 (mm)	1373	1450
	4.21	overall width (3)	b1/b2 (mm)	1265	1345
	4.22	fork dimensions DIN ISO 2331	s/e/l (mm)	40/120/1150	45/120/1150
	4.23	fork carriage ISO 2328, class/type A,B		2A	2A
	4.24	fork carriage width	b3 (mm)	700	700
	4.25	outer fork width (min/max) (8)	b5 (mm)	260/680	260/680
	4.26	distance between the clamps of the load wheels	b4 (mm)	900	900
	4.28	retractable travel	l4 (mm)	541	614
	4.31	ground clearance under mast with load	m1 (mm)	65	65
	4.32	ground clearance at wheelbase centre	m2 (mm)	65	65
	4.34.1	working aisle for pallet length 1000 x 1200 crosswise	Ast (mm)	2846	2938
	4.34.2	working aisle for pallet length 800 x 1200 lengthwise	Ast (mm)	2900	2978
	4.35	turning radius	Wa (mm)	1767	1911
	4.37	length between the wheel arms	l7 (mm)	1895	2045
	4.42	wheelbase height (from ground to footboard)	mm	550	550
	4.43	wheelbase height (between the steps between the footboard and the ground)	mm	371	371
PERFORMANCE	5.1	traction speed with/without load (7)	km/h	14 / 14	14 / 14
	5.1.1	traction speed with/without load reverse drive (7)	km/h	14 / 14	14 / 14
	5.2	lift speed with/without load (7)	m/s	0.37 / 0.64	0.30 / 0.64
	5.3	lowering speed with/without load	m/s	0.55 / 0.50	0.55 / 0.50
	5.4	Retractable carriage speed	m/s	0,15 / 0,15	0.15 / 0.15
	5.7	grade ability with/without load	%	10 / 15	8 / 14
	5.8	maximum gradeability with/without load	%	12 / 15	12 / 15
	5.9	acceleration time, laden/unladen	s	- / -	- / -
	5.10	service brake		Electrical	
MOTOR UNITS	6.1	traction motor, power S2 60 minutes	kW	6,4	6,4
	6.2	lifting motor, power S3 15%	kW	14	14
	6.3	battery in compliance with DIN 43531/35/36 A,B,C, no		C	C
	6.4	battery rated voltage/capacity at 5 hours	V/Ah	48/700 (6)	48/840 (6)
	6.5	battery weight (4)	kg	1119	1306
	6.6	consumption per VDI cycle	kWh/h	- / -	- / -
OTHER DATA	8.1	type of drive control		AC	
	10.1	working pressure for additional attachments	bar	180	180
	10.2	volume of oil for additional attachments	l/min	20	20
	10.7	noise level at the operating station	dB(A)	<69.7	<69.7

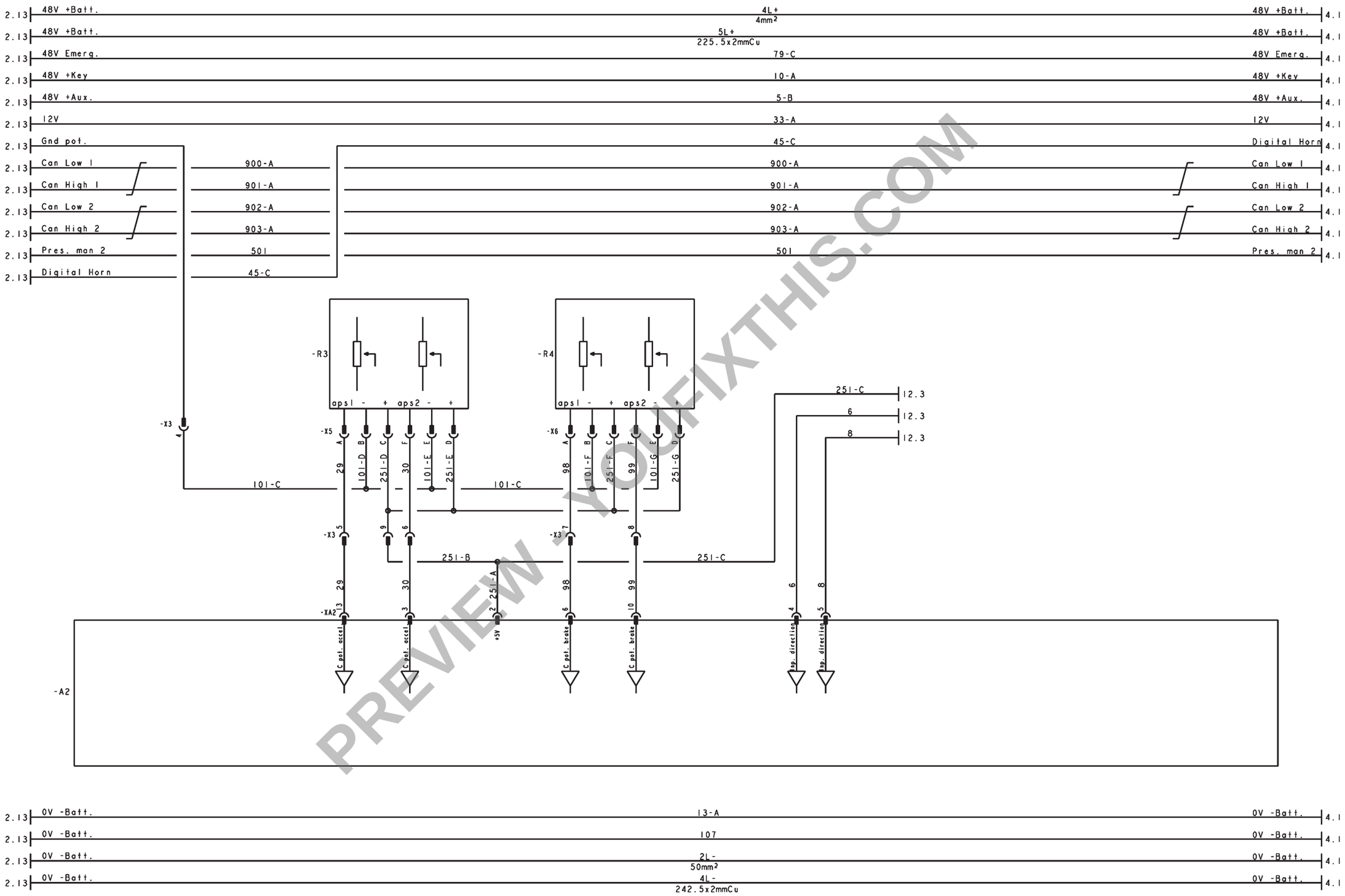
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	Operation description	Maintenance intervals			
		every 8 hours 1 day	every 1000 hours 1 year	every 3000 hours 2 years	every 5000 hours 3 years
RETRACTABLE CARRIAGE, MAST, FORKS	Adjust retractable carriage side rollers		●		
	Check the screws and bolts		●		
	Check chain tensioner conditions(2)		●		
	Check lifting chain link and pin wear(2)		●		
	Check lift chains stretch		●		
	Check conditions of chain pulleys, tubes and cables		●		
	Clean mast bearings sliding guides		●		
	Check conditions of mast bearings sliding guides		●		
	Check fork condition	■	●		
	Check conditions of bearings of retractable carriage and mast(2)		●		
3 STAGE MAST FORK SUPPORT DEVICE	Check the fork support device screws		●		
	Check play of side shift outrigger sliding blocks		●		
	Check side shift and tilt cylinder rods and check steering bushes(2)			●	
	Check wear of side shift upper and lower sliding blocks(2)			●	
	Check conditions of fork support device bearings(2)		●		
4 STAGE MAST FORK SUPPORT DEVICE	Check the screws securing the hooks and the tilt cylinders		●		
	Tilt cylinders integrity check		●		
	Check wear on slide blocks (2)		●		
	Check conditions of fork support device bearings (2)		●		
GREASING POINTS	Grease reduction unit outer gear (steering crown wheel and pinion)		●		
	Grease battery tray sliding blocks		●		
	Grease retractable carriage cylinder joint bearings		●		
	Grease retractable carriage bearings sliding guides		●		
	Grease mast bearings sliding guides		●		
	Lubricate lifting chains		●		
	Grease side shift		●		
CAB	Check the seat conditions and operation	■	●		
	Check seat belt conditions and operation	■	●		
CONTROLS, INSTRUMENTS	Check machine functions with actuating controls and instrumentation	■	●		
ELECTRICAL SYSTEM	Battery plug/socket integrity check	■	●		
	Check conditions of electrical power connections		●		
	Check conditions of electronic controllers auxiliary connections				●
	Electrical wiring check		●		
	Sensor operation check		●		
	General cleaning of electrical panel		●		

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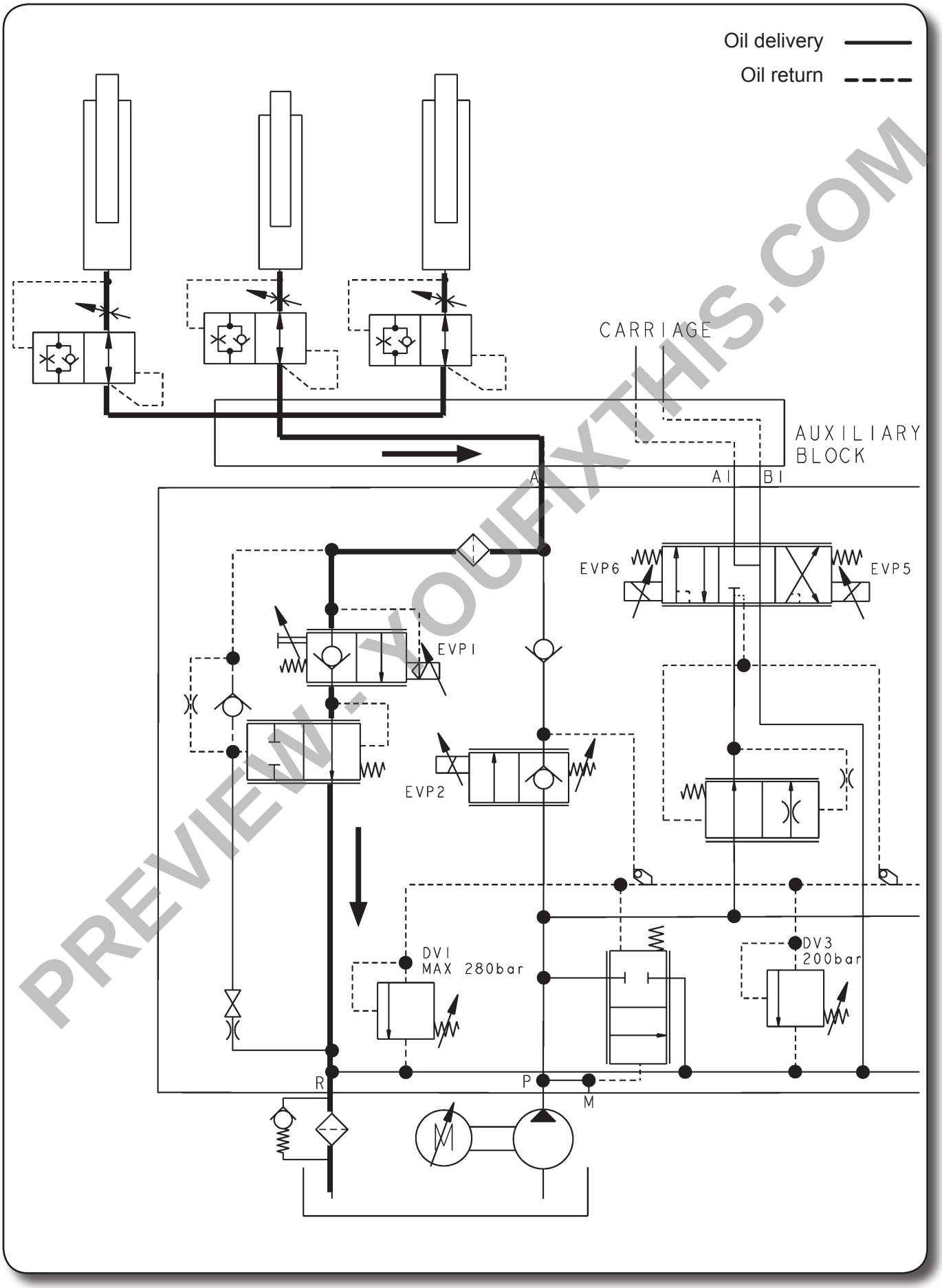
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HYDRAULIC FORK LOWERING DIAGRAM



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