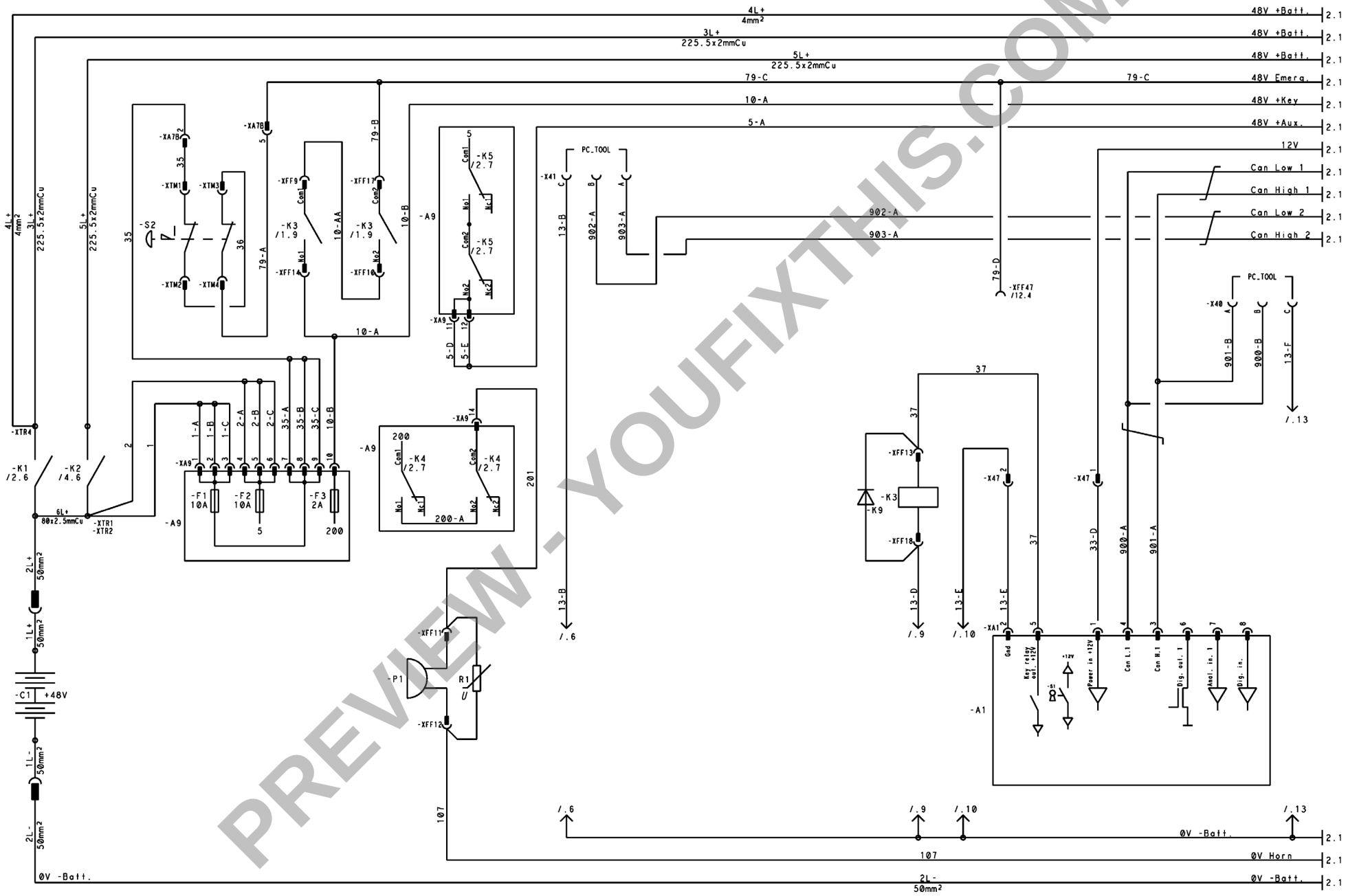
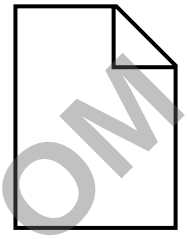


PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

TROUBLESHOOTING

The diagnosis system is divided into two main groups:

BLOCKING ALARMS
When a blocking alarm occurs, the current to all controls is interrupted by the main contactor and the electromagnetic brake is released (it is activated during braking).

Blocking alarms are caused by:
• faults in the controls, if due to breakage in the power and/or auxiliary connections.
• faults in the motors due to electrical problems.
• faults due to components directly and/or indirectly connected to safety functions.

WARNING ALARMS
Warning alarms are due to the following factors:
• incorrect starting sequences by the operator.
• conditions that require a reduction of performance (for example high temperature, ...)

ALARMS LOG DISPLAY
Enter MAIN MENU 1 / alarms on the display to view the last 32 alarms logged and other information comprising the total operating hours of the module, the number of times the alarm has been activated and the identification number of the alarm and the module.

MODULE 2: ACE2 Traction master
MODULE 34: ACE2 Traction Slave

MODULE 5: ACE2 Pump master
MODULE 37: ACE2 Pump Slave

MODULE 6: EPS ACW Master
MODULE 38: EPS ACW Slave

MODULE 1: VCM Master
MODULE 33: VCM Slave

DIAGNOSIS SYSTEM FOR ACE2 TRACTION CONTROL
The diagnostics system operates via CAN BUS communication.
Due to the dual microcontroller controls, the nodes for identifying each individual controller are:

Microcontroller	Node
Master	2
Slave	34

The alarms are shown on the display in the format xxx-yy, where xxx is the alarm code and yy is the node. For example 79A02 is the Incorrect Start alarm on the Master microcontroller

ACE2 TRACTION CONTROL - MASTER NODE 2

Alarm	Code MDI	Troubleshooting
WATCHDOG	**8**	This is an internal fault in the control. Replace the control
Cause: The system is provided with a self-diagnosis circuit. A microchip tests the self-diagnosis circuit to verify its correct operation. If the result is negative, this alarm appears		

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

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.

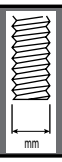
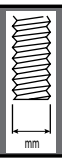
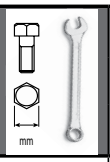
If it is not possible to unscrew the bolts because this product has been used, avoid applying extensions to the tools, instead slightly heat the area (at most 50°C) so as to eliminate the *LOCTITE 270* effect.

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

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

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


19 mm open
ended spanner


lifting sling
load capacity
2500 kg


torque wrench


socket wrench
size 10/13 mm


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.

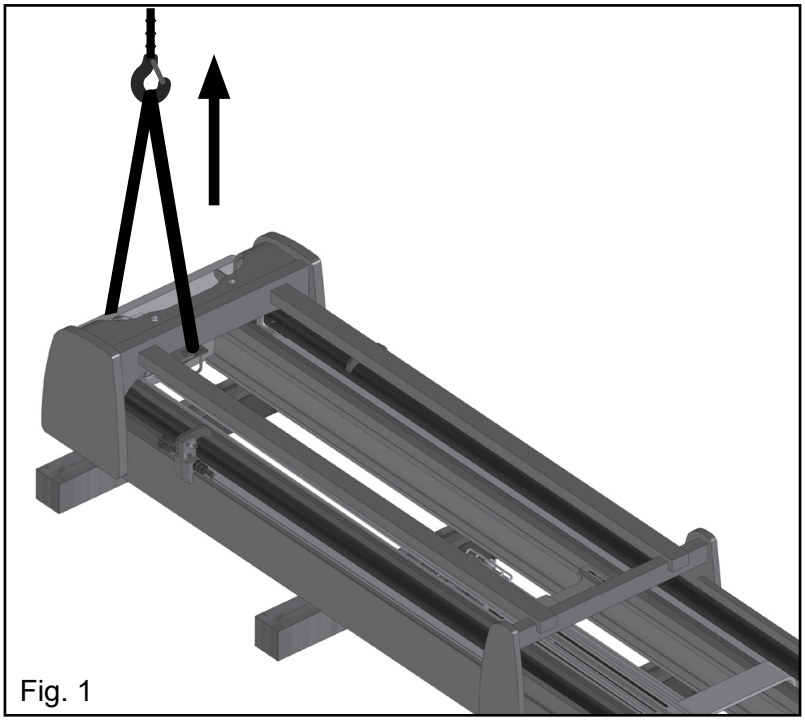
Phase 2

BRIDGE CRANE - LIFT BELT- 10MM HEX SOCKET WRENCH

Remove the packing of the mast assembly. Using the socket wrench, unscrew and remove the fastening screw **(ref.D fig.3)** and the traverse cylinder pin **(ref.E fig.3)**.

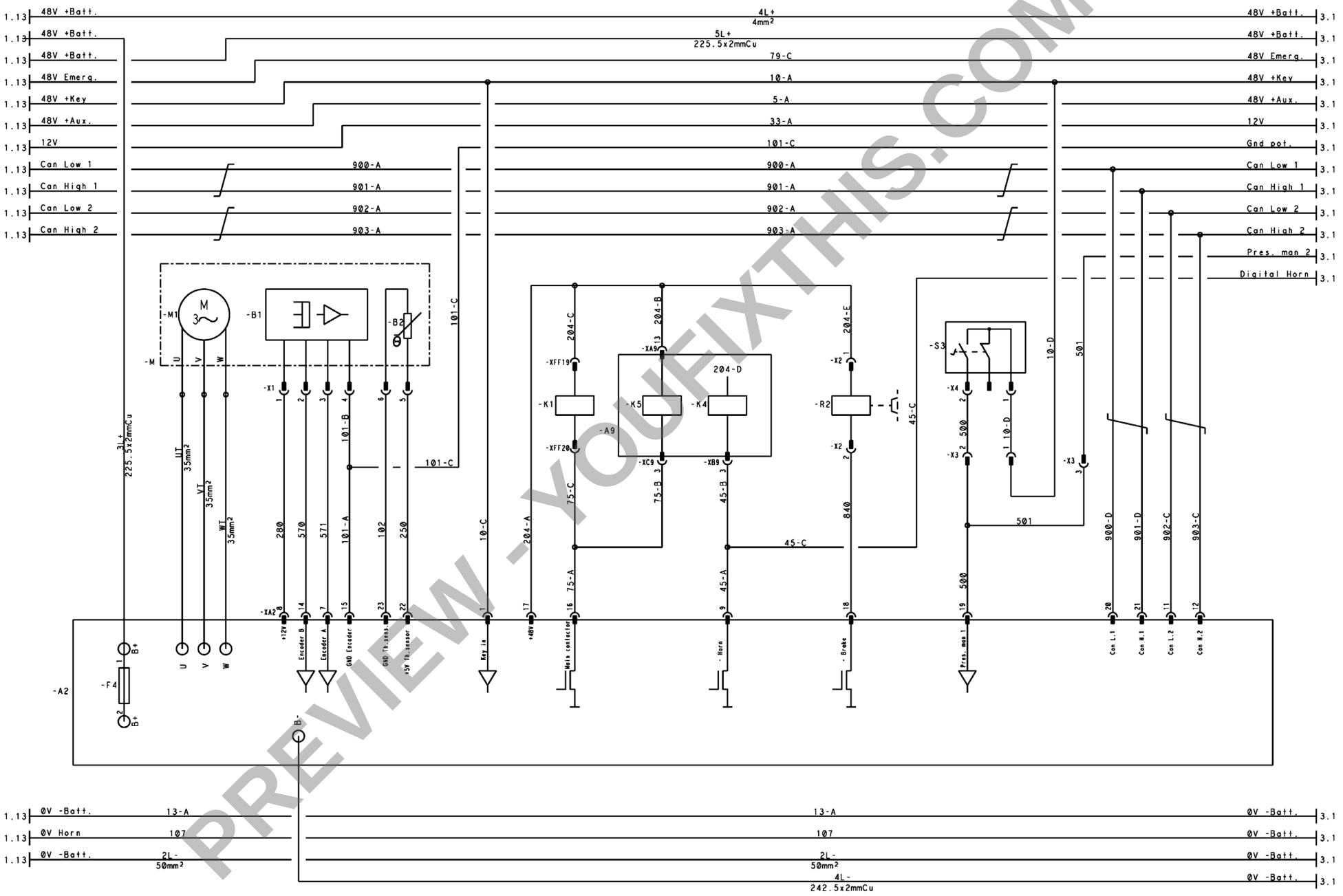
Slip the lifting belt beneath the upper crossbars of the mast assembly by making a noose and hook the other end to the bridge crane hook **(fig.1)**.

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

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Alarm	Code MDI	Troubleshooting
EEPROM KO	**13**	• Try to perform a reset of the EEPROM (clear eeprom) from the programming console. • Turn the truck off and on again to check the result. • If the alarm persists, replace the control. • If the alarm disappears, the parameters previously recorded will be replaced by default parameters.
Cause: This alarm is due to a defect in the hardware or in the non volatile memory software that supports the control parameters. This alarm does not block machine operation, but the truck operates with default values.		

Alarm	Code MDI	Troubleshooting
LOGIC FAILURE #3	**17**	This type of fault is not connected to external components, so when it occurs the control must be replaced.
Cause: A hardware problem in the logic card circuit as a protection against high current (overload).		

Alarm	Code MDI	Troubleshooting
LOGIC FAILURE #2	**18**	This type of fault is not connected to external components, so when it occurs the control must be replaced.
Cause: A fault in the hardware section of the logic board that controls the retroaction of the phase voltage.		

Alarm	Code MDI	Troubleshooting
LOGIC FAILURE #1	**19**	• If the alarm appears on start up or in standby, it is very likely that the problem is due to undervoltage. In this case the following checks are recommended: Decreasing pulses of the Key switch input signal (below the undervoltage level) due to an external load, such as the startup of a DC/DC converter, startup of a relay or a contactor, charging/ discharging of coils. • If no change in the voltage is detected on the power supply line and the alarm is present every time the key switch is turned to ON, then the fault is probably in the control hardware. In this case the control needs to be replaced. If the fault appears while the truck is moving, then it could be due to undervoltage or overvoltage. • If the alarm appears during acceleration while in traction, it is most likely due to undervoltage; check the battery charge state and the power connections. • If the alarm appears when the brake is released, it is probably due to overvoltage; check the contactor contacts and the power connections.
Cause: This alarm appears when the control detects overvoltage or undervoltage conditions. The overvoltage limit is 65V, the undervoltage limit is 11V.		

Alarm	Code MDI	Troubleshooting
VMN LOW	**30**	If the fault appears at startup (the contactor does not close at all), check: • the internal motor connections (ohmic continuity); • the motor power connections; • If the motor connections are correct, then the problem could be located in the control, which therefore should be replaced. If the alarm takes place while the motor is operating, check: • The motor connections; • If the windings/phase wires of the motor are leaking towards the truck chassis; • The contactor's power contact is closing correctly • If no problems are found with the motors, then the fault lies in the control, which therefore must be replaced.
Cause 1: startup testing: Before closing the contactor, the software checks the power section: it powers on the Mosfets on the high side alternately and waits for the phase voltage to rise to the capacitor values. If the voltage is less than 66% of the capacitor voltage, this alarm appears. Cause 2: test during operation When the motor is operating, the power bridge is ON and the motor power supply voltage is monitored; if it is below the set value, error status is activated.		

Alarm	Code MDI	Troubleshooting
VMN HIGH	**31**	If the fault appears at startup (the contactor does not close at all), check: • the internal motor connections (ohmic continuity); • the motor power connections; • If the motor connections are correct, then the problem could be located in the control, which therefore should be replaced. If the problem appears after closing the contactor (the contactor closes and then re-opens immediately), check: • The motor connections; • If the windings/phase wires of the motor are leaking towards the truck chassis; • If no problems are found with the motors, then the fault lies in the control, which therefore must be replaced.
Cause 1: Before closing the contactor, the software checks the power section: it powers on the Mosfets on the low side alternately and waits for the phase voltage to fall to -BATT. If the voltage is more than 10% of the nominal battery voltage, this alarm appears. Cause 2: This alarm can also appear when the startup diagnosis is exceeded and the contactor closes. In this condition, the phase voltage should be lower than 1/2 Vbatt. If the voltage is higher, this alarm appears.		

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

CORRECT METHOD FOR APPLYING FEMALE FITTINGS

To assure a reliable seal between female fittings and the adapters in this manual, it is necessary to observe the following procedure, which differs from the one for assembling rigid pipes.

Female fittings without a gasket (metal/metal joint)

Screw on the nut by hand and then, with the aid of a wrench, tighten by another quarter turn.

Female fittings with O-ring

Screw on the nut by hand and then, with the aid of a wrench, tighten by another half turn.

In every case make sure that the pipe is properly aligned before tightening the nut on the adapter.

TORQUE SETTINGS

METRIC REVOLVING FEMALE			
UNF thread	Outside diameter of the pipe	Torque setting Nm	
		Nominal torque	min / max
M 12x1.5	6	20	15 -25
M 14x1.5	8	38	30 - 45
M 16x1.5	8	45	38 - 52
	10		
M 18x1.5	10	51	43 - 85
	12		
M 20x1.5	12	58	50 - 65
M 22x1.5	14	74	60 - 88
	15		
M 24x1.5	16	74	60 - 88
M 26x1.5	18	105	85 - 125
M 30x2	20	135	115 - 155
	22		
M 36x2	25	166	140 - 192
	28		
M 42x2	30	240	210 - 270
M 45x2	35	290	255 - 325
M 52x2	38	330	280 - 380
	42		

REVOLVING FEMALE jic 37°			
UNF thread	Size	Torque setting Nm	
		Nominal torque	min / max
7/16-20	-4	15	9 - 21
1/2-20	-5	20	13 - 27
9/16-18	-6	30	18 - 42
3/4-16	-8	50	30 - 70
7/8-14	-10	69	44 - 94
1.1/16-12	-12	98	63 - 133
1.3/16-12	-14	118	73 - 163
1.5/16-12	-16	140	90 - 190
1.5/8-12	-20	210	135 - 285
1.7/8-12	-24	290	200 - 380
2.1/2-12	-32	450	300 - 600

BSP REVOLVING FEMALE		
UNF thread	Torque setting Nm	
	Nominal torque	max
G1/4	20	15 - 25
G3/8	34	27 - 41
G1/2	60	42 - 76
G5/8	69	44 - 94
G3/4	115	95 - 135
G1	140	115 - 165
G1.1/4	210	140 - 280
G1.1/2	290	215 - 365
G2	400	300 - 500

ORFS REVOLVING FEMALE			
UNF thread	Size	Torque setting Nm	
		Nominal torque	max.
9/16-18	-4	14	16
11/16-16	-6	24	27
13/16-16	-8	43	47
1-14	-10	60	68
1.3/16-12	-12	90	95
1.3/16-12	-14	90	95
1.7/16-12	-16	125	135
1.11/16-12	-20	170	190
2-12	-24	200	225
2-1/2-20	-32	460	490

The values given in the tables refer to galvanized steel fittings. Fittings of other materials have other values.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Phase 3

19 mm OPEN ENDED SPANNER

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.

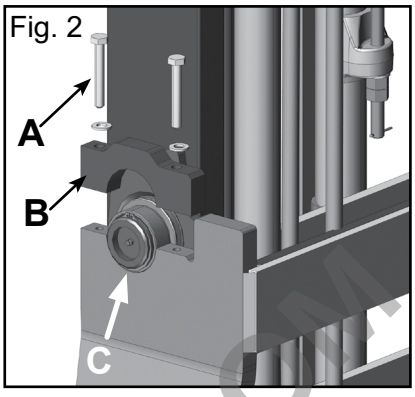


Fig. 2

Phase 4

10 MM HEX SOCKET WRENCH - BRIDGE CRANE -LIFT BELT

Insert the traverse cylinder pin **(ref. E fig 3)** and use a socket wrench to tighten the fastening screw **(ref.D fig.3)**; this operation permits fastening the mast also to the base.
Using the bridge crane, lower the mast assembly to the ground.
Climb up the ladder and remove the belt from the mast assembly.

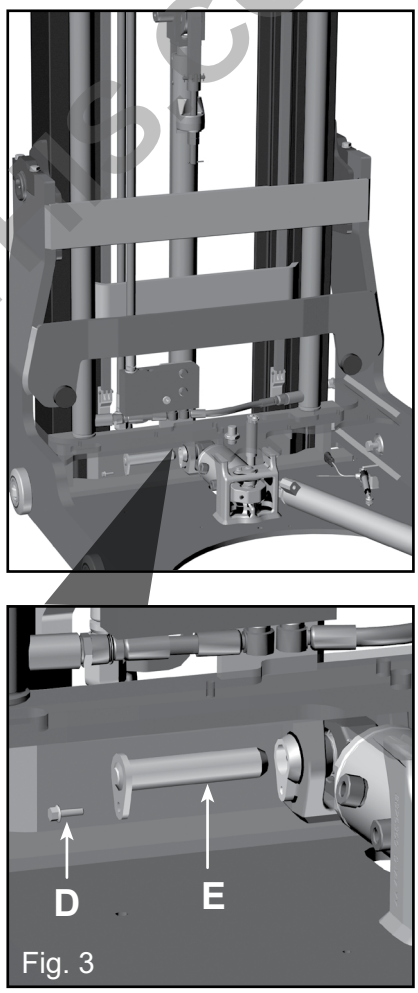


Fig. 3

Phase 5

Make the electrical connections (connector X58) and connect the hydraulic tubes from the distributor to the truck base and the one on the mast **(fig.4 ref.F and fig.5 ref.G-H).**

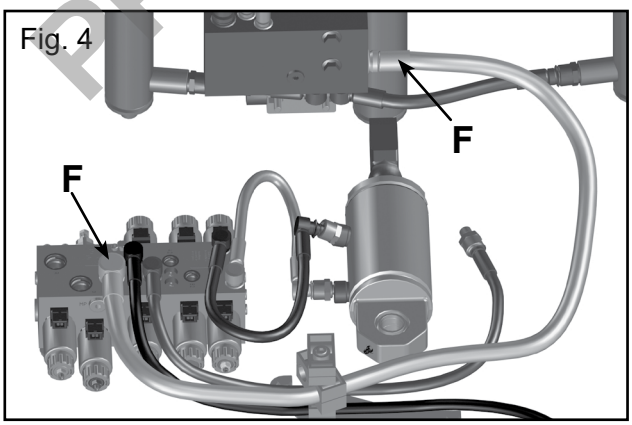


Fig. 4

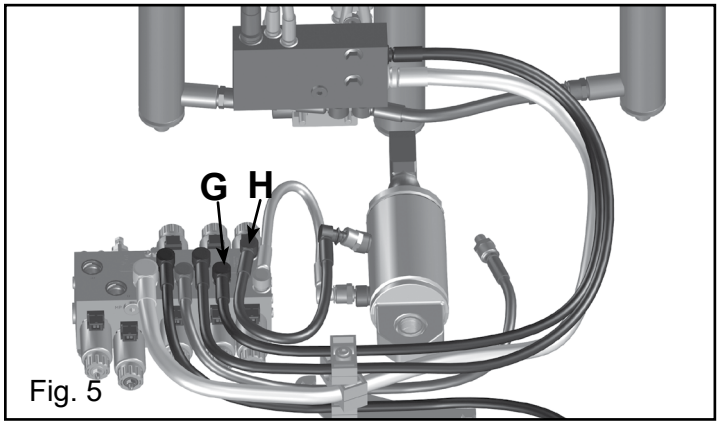
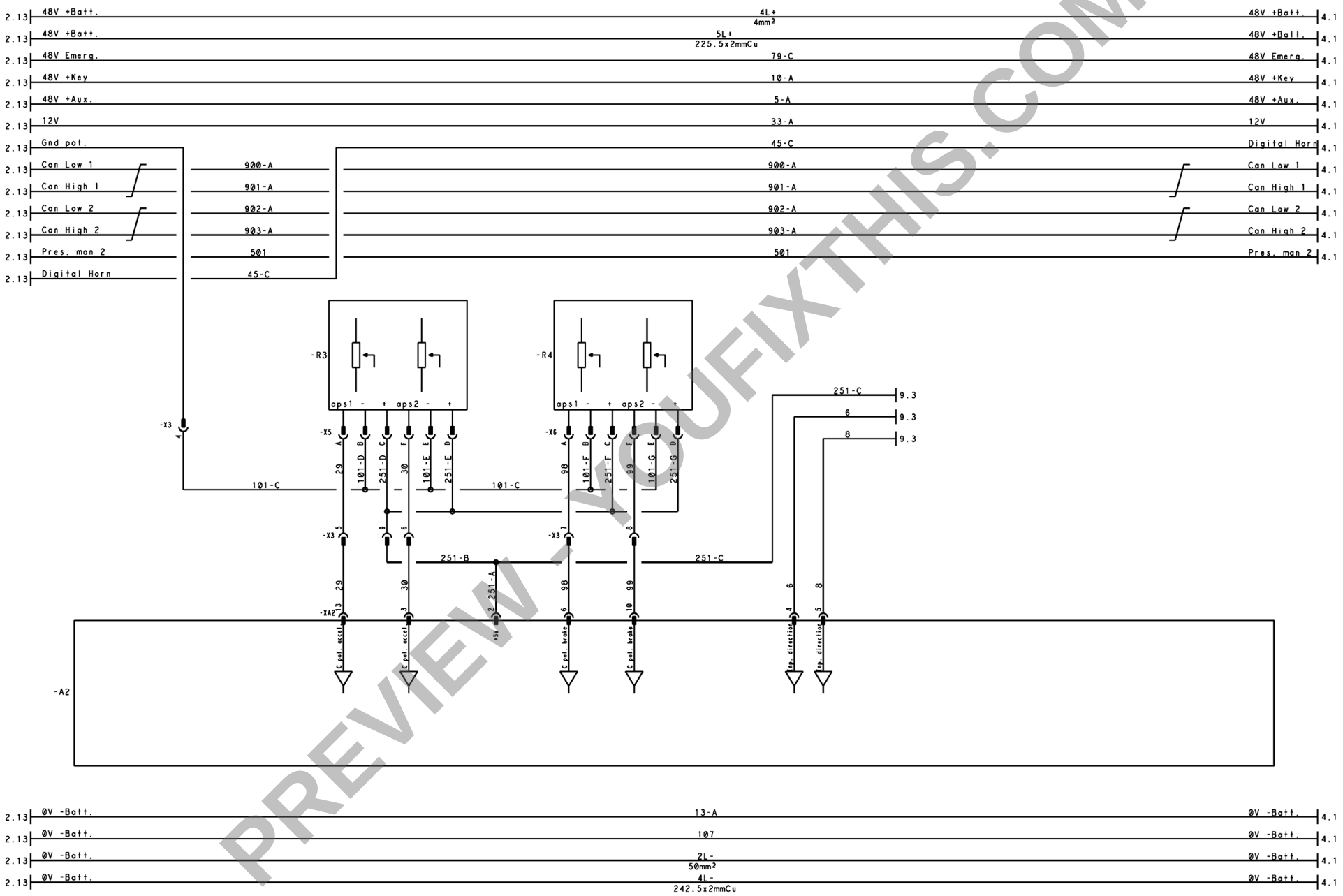


Fig. 5

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



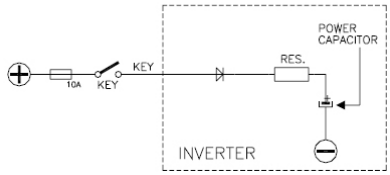
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Alarm	Code MDI	Troubleshooting
CONTACTOR CLOSED	**37**	• Check the contacts of the contactor. If the alarm persists, replace the control.
Cause: Before activating the contactor coil, the control checks whether the contactor is stuck. The control activates the power section for a few milliseconds to try to discharge the contactor capacitors. If the voltage of the capacitors does not decrease the key switch voltage by 20%, this alarm appears.		

Alarm	Code MDI	Troubleshooting
CONTACTOR OPEN	**38**	• Check the contacts of the contactor and, if necessary, replace the contactor. • If the contacts of the contactor function correctly, the problem lies within the control, which should be replaced.
Cause: The main contactor coil is activated by the control, but the contactor contacts do not close.		

Alarm	Code MDI	Troubleshooting
STBY I HIGH	**53**	This type of fault is not connected to external components. When it appears the control must be replaced.
Cause: I The current transducer (Hall effect sensor) or the power supply circuit inside the control is damaged.		

Alarm	Code MDI	Troubleshooting
CAPACITOR CHARGE	**60**	• There is an external load parallel to the capacitors, which reduces the control's pre-charge circuit current, preventing its charging. Check if a lamp or a dc/dc converter or an auxiliary load is connected. • The charge resistor is open; add a power resistor on the contactor terminals; if the alarm disappears it means that the charge resistor inside the module is damaged. Replace the control. • The charging circuit has a fault in the module. Replace the control. • There's a problem in the power section of the control. Replace the control.
Cause: To better understand the meaning of this alarm, see the following diagram:  When the key switch is turned to ON, the inverter tries to charge the capacitor through the power resistance and check if the capacitor is charged within a certain time frame. If the capacitor voltage is less than 20% of the nominal battery voltage, an alarm is generated; the main contactor is not closed.		

Alarm	Code MDI	Troubleshooting
TH.PROTECTION	**62**	• Check the temperature of the control. • If the alarm appears when the module is cold, there could be a fault in the temperature sensor or in the logic card. In this case the control needs to be replaced.
Cause: This alarm appears if the temperature measured on the control heat sink is above 85°C. When this temperature is reached, the current is reduced proportionally to the increase in temperature up to the value of 0 Ampere corresponding to 105°C.		

Alarm	Code MDI	Troubleshooting
MOTOR TEMPERAT.	**65**	• Check the temperature sensor in the motor; • Check the ohm value of the sensor and the wiring. If the sensor does not have problems, improve motor ventilation. If the alarm is present when the motor is cold, the problem is located in the module.
Cause: This alarm appears when the temperature sensor is open or the motor temperature exceeds 150°C.		

Alarm	Code MDI	Troubleshooting
BATTERY LOW	**66**	• Charge the battery. • If the alarm is still present, measure the battery voltage with a voltmeter and compare it with the value of the VOLTAGE BATTERY parameter. If the values do not match, adjust the value of ADJUST BATTERY function connected to the pin of the right connector making sure they are not interrupted. • If the alarm persists, the problem lies in the control, which must be replaced.
Cause: This alarm appears when the battery charge is lower than or equal to 10% of the full charge.		

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

TOPPING UP THE OIL RESERVOIR

Before topping up the oil in the hydraulic oil reservoir make sure that the forks are fully lowered.

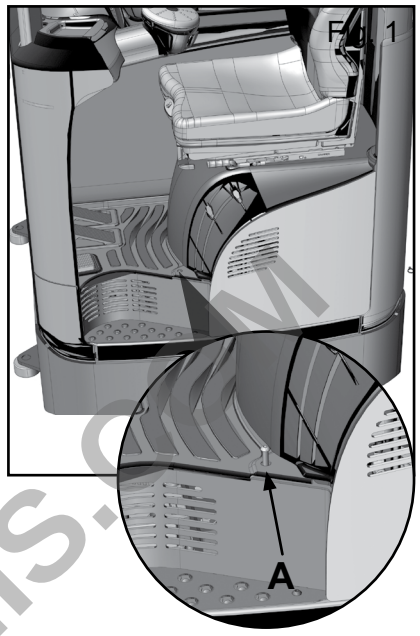


Fig. 1

Equipment and tools


funnel

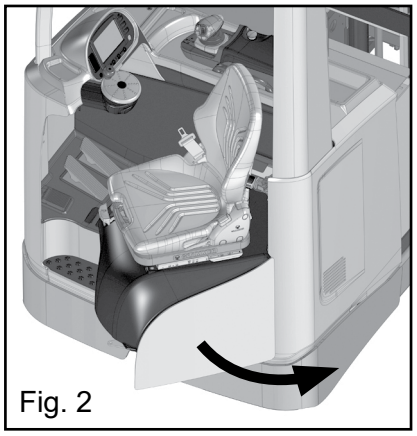

oil resistant gloves


hexagonal "T" section spanner 5 mm

Procedure

Before starting work, ensure that you are wearing suitable protective clothing.
Move the carriage to a safe place, away from areas of transit of other vehicles and all pedestrians. Turn the key switch to OFF and disconnect the battery.




Fig. 2

Phase 1

5 mm T HANDLE HEX KEY

Use the T-handle hex key to unscrew and remove the motor cover screw **(ref.A fig.1)**.
Completely open the cover **(fig.2)**.

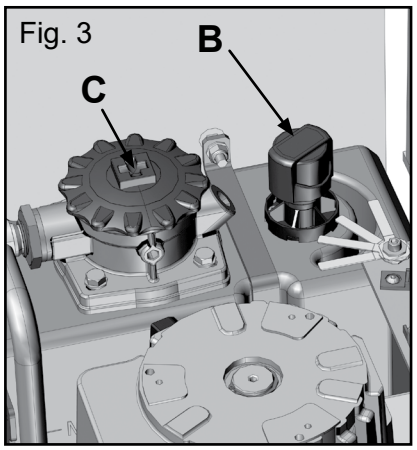


Fig. 3

Phase 3

To facilitate the filling of the tank unscrew the breather valve **(ref.B fig.3)**, so that the air can come out when topping up.

Phase 3

FUNNEL

Unscrew the reservoir cap **(ref.C fig.3)**, place the funnel in the filler hole and top up the oil level.
Be sure not to fill the reservoir too much by checking the level via the marks on the reservoir **(fig.4).**

Screw the breather valve and the reservoir cap back on.

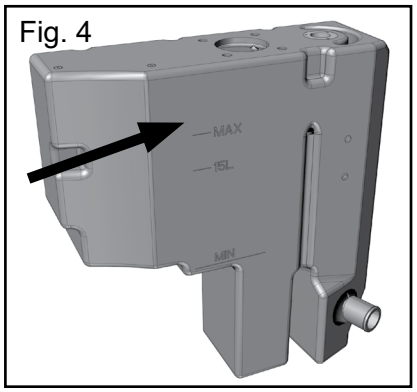


Fig. 4

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

SECTIONS

This handbook is composed of the following sections:

Section 1: **Presentation**
Section 2: **Installation and settings**
Section 3: **Diagnostics and measurements**
Section 4: **Electrical system**
Section 5: **Hydraulic system**
Section 6: **Truck base mechanics**
Section 7: **Mast assembly mechanics**
Section 8: **Small fork mast mechanics**
Section 9: **Reduction gear**
Section 10: **Braking system**
Section 11: **Routine maintenance**

Use the sections index with the numbered black bands to go quickly to the desired section.

SYMBOLS


Signals a danger that can cause accidents to people or damage to the machine.


Signals danger due to high temperatures.


Signals important notes or information to take into particular consideration.


Signals disposal/recycling of harmful substances under the protection of current legislation.

INSTALLATION PROCEDURES

For the installation procedures, carry out the reverse procedure to disassembly, observing any notes and information given for the truck to function properly.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

GENERAL SAFETY RULES

PERSONAL SAFETY

- Always wear the personal protective equipment in situations requiring it.
- Pay particular attention to the risk of getting crushed due to moving parts, oscillations, material not properly secured when performing lifting operations or moving loads.
- Do not wear any rings, watches, jewellery, loose or hanging items of clothing such as scarves, unbuttoned jackets or tops with open zippers that can get caught up in moving parts.
- Never do any cleaning, lubrication or maintenance work with the battery connected.
- Using compressed air to clean the parts, protect yourself with goggles that have side protection. The maximum air pressure must not exceed 1 bar.

SAFETY AT THE WORKPLACE

- Make sure that all the work tools are perfectly efficient and ready for use. Keep the work surfaces clean and clear of debris that can come into contact with parts of the machine and cause damage.
- Make sure you keep sparks, naked lights and cigarettes away from fuels or flammable materials such as the gas of the batteries and fuels.
- Make sure that the work area is ventilated, well illuminated, dry and clean. Remove any puddles of water or oil stains.
- Make sure that the equipment, devices or lifting machinery used is able to sustain the load in a stable manner.
- Never use gasoline, diesel fuel or other flammable liquids such as detergents: instead use non-flammable and non-toxic trade solvents.
- When working outside the garage, move the machine preferably onto the level and block it. If working on a slope is inevitable, block the machine beforehand and move it onto a level area as soon as possible with a certain margin of safety.
- Disconnect the batteries and label all the controls to signal that work is in progress. Block the machine and every attachment that has to be raised.
- Never perform any servicing on the machine with persons at the controls, unless they are accredited operators and help with the operation to be performed.
- When towing use solely the prescribed coupling points and check that the pins and/or bolts are firmly secured before pulling. Lift and handle all the heavy parts with lifting equipment of adequate capacity. Use the lifting eyebolts intended for this purpose. Make sure no one is near the load to be lifted.
- Avoid twisting chains or metal ropes.
- Do not trust bent or damaged chains or ropes: do not use them for lifting or pulling. Always wear the safety gloves to handle them.
- Do not accumulate rags soaked in grease or oil: they are a great fire hazard. Always put them away into a closed metal container.
- Used oil must be specially collected. It must not be disposed of into normal drainage system pipes. Special companies can be employed to dispose of or recycle industrial oils according to the laws in force in individual countries.
- When welding is necessary, you must use appropriate safety protection: dark goggles, hard hat, overalls, gloves, safety footwear. Dark goggles must be worn also by those who are not doing the work if they remain nearby during the welding.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

ACE2 PUMP CONTROL - SLAVE NODE 37

The alarms of the Slave Node have the same descriptions and troubleshooting procedures as the Master Node, with the exception of those listed below

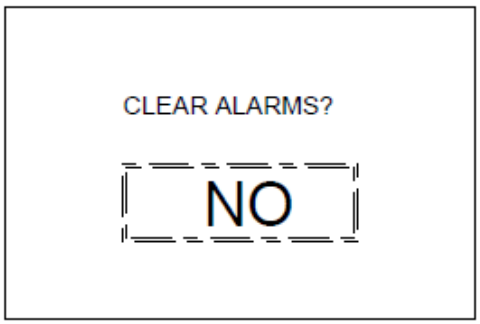
Alarm	Code MDI	Troubleshooting
WD SYNCHRO	**230**	• Try switching the truck off and then back on again. • If the error persists, the fault lies in the control, which must be replaced.
Cause: The slave microcontroller does not receive the watchdog signal.		
INPUT MISMATCH	**241**	• Try switching the truck off and then back on again. • If the error persists, the fault lies in the control, which must be replaced.
Cause: The inputs of the slave microcontroller differ to the inputs of the master microcontroller.		
SP MISMATCH	**242**	• Try switching the truck off and then back on again. • If the error persists, the fault lies in the control, which must be replaced.
Cause: The master microcontroller has detected incorrect set points on the slave microcontroller.		

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

MAIN MENU 2 \ CLEAR ALARMS

The **CLEAR ALARMS** function allows you to delete the alarms in the **ALARMS** menu

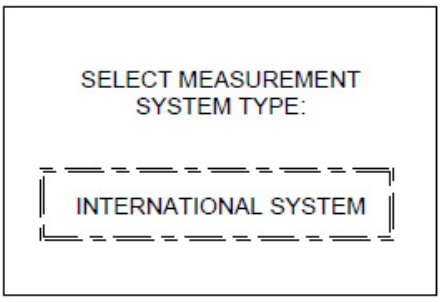


When this screen appears, pressing the direction buttons scrolls through the two possible options of **YES** and **NO**.
Pressing the **ENTER** key with **YES** displayed clears the saved alarms and takes you back to the **MAIN MENU 2** screen. Pressing the **ENTER** key with **NO** displayed exits without clearing the alarms and takes you back to the **MAIN MENU 2** screen.
With the **OUT** key you exit without clearing the alarms.

MAIN MENU 2 \ MEASURING SYSTEM

The **MEAS. SYSTEM TYPE** function allows you to convert the following units of measurement simultaneously, as follows:

- km/h into mph
- m into ft
- kg into lb



When this screen appears, by using the scroll buttons you can select the available systems of measurement (“INTERNATIONAL SYSTEM”/”IMPERIAL SYSTEM”) and, once selected, on pressing the **ENTER** key the units of measurement are converted by the display's software and you are taken back to the **MAIN MENU 2** screen. The metric system is present by default on “Can Bus”.

By pressing the "OUT" function key, you can exit the screen at any time.

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

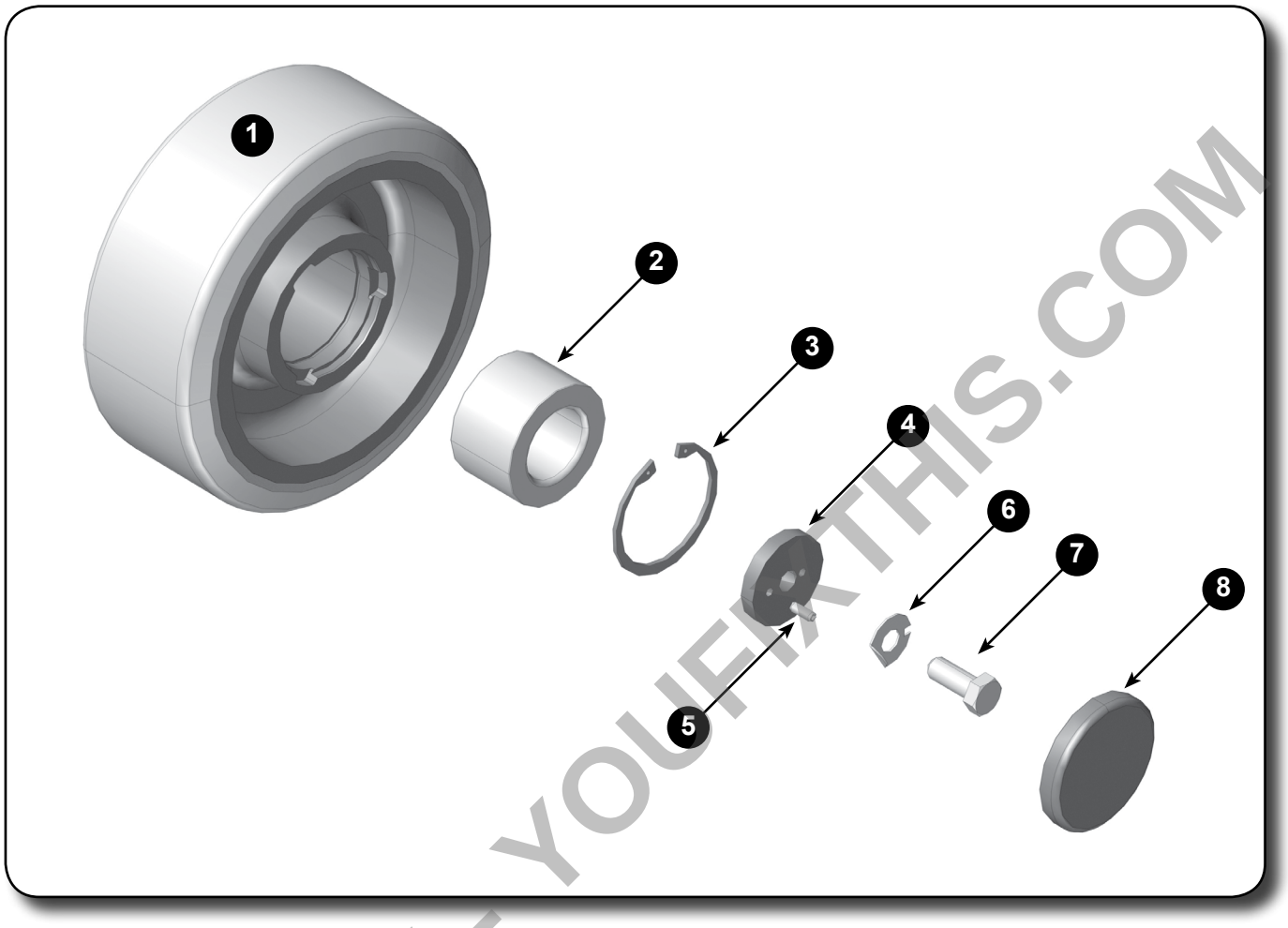
HYDRAULIC SYSTEM

HYDRAULIC FUNCTIONS....3
HYDRAULIC DIAGRAMS....4
SYMBOLS....4
MAIN HYDRAULIC DIAGRAM....5
HYDRAULIC DIAGRAMS BY FUNCTION....6
SOLENOID VALVE OPERATION TABLE....6
HYDRAULIC DIAGRAM FOR FORK LIFTING....7
HYDRAULIC FORK LOWERING DIAGRAM....8
HYDRAULIC RETRACTABLE CARRIAGE OUT DIAGRAM....9
HYDRAULIC RETRACTABLE CARRIAGE IN DIAGRAM....10
HYDRAULIC FORK DOWNWARD TILTING DIAGRAM....11
HYDRAULIC FORK UPWARD TILTING DIAGRAM....12
HYDRAULIC FORK RIGHT SIDE SHIFT DIAGRAM....13
HYDRAULIC FORK LEFT SIDE SHIFT DIAGRAM....14
HYDRAULIC EMERGENCY LOWERING DIAGRAM....15
HYDRAULIC DIAGRAM FOR OIL RETURN TO TANK THROUGH PRESSURE RELIEF VALVE....16
HYDRAULIC COMPONENTS....17
KEY TO HYDRAULIC COMPONENTS....17
KEY TO DISTRIBUTOR COMPONENTS....19
REMOVAL OF THE DISTRIBUTOR....20
REMOVAL OF THE PRESSURE RELIEF VALVE....22
CALIBRATION OF THE PRESSURE RELIEF VALVE....23
CARTRIDGE SOLENOID VALVES....24
KEY TO CARTRIDGE SOLENOID VALVE COMPONENTS....24
REPLACEMENT OF THE FORK SIDE SHIFT AND TILT SOLENOID VALVE....25
REPLACEMENT OF THE RETAINING VALVES....27
REPLACEMENT OF OVERCENTER VALVES....29
FILTER REPLACEMENT....31
REPLACEMENT OF THE DESCENT VALVE AND THE ASCENT VALVE....33
CYLINDERS....35
SINGLE ACTING CYLINDERS....35
IDENTIFICATION OF THE CENTRAL LIFT CYLINDER COMPONENTS....36
IDENTIFICATION OF THE SIDE LIFT CYLINDER COMPONENTS....37
KEY TO RETRACTABLE CARRIAGE CYLINDER COMPONENTS....38
IDENTIFICATION OF THE FORK TILTING CYLINDER COMPONENTS....39
CENTRAL LIFT CYLINDER DISASSEMBLY....40
SIDE LIFTING CYLINDER DISASSEMBLY....42

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

KEY TO LOAD WHEEL COMPONENTS FOR MODELS R1.0E-R1.2E



Ref.	Description
1	Wheel
2	Bearing
3	Circlip
4	Wheel locking ring
5	Dowel
6	Washer
7	Wheel fastening screw
8	Cap

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 18 of 380 pages

The full manual includes:

- All 380 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Hyster R1.0E, R1.2E, R1.4E Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual