wilo

COR 1MHI(E) /T**

EN Installation and operating instructions

29993081	COR 1MHI202/PS-EM-T150	29993091	COR 1MHI202/EC-EM-T150	29992982	COR 1MHI202/EC_EM_T90
29993082	COR 1MHI203/PS-EM-T150	29993092	COR 1MHI203/EC-EM-T150	29992983	COR 1MHI203/EC_EM_T90
29993083	COR 1MHI204/PS-EM-T150	29993093	COR 1MHI204/EC-EM-T150	29992984	COR 1MHI204/EC_EM_T90
29993084	COR 1MHI205/PS-EM-T150	29993094	COR 1MHI205/EC-EM-T150	29992985	COR 1MHI205/EC_EM_T90
29993085	COR 1MHI206/PS-EM-T150	29993095	COR 1MHI206/EC-EM-T150	29992986	COR 1MHI206/EC_EM_T90
29993086	COR 1MHI402/PS-EM-T150	29993096	COR 1MHI402/EC-EM-T150	29992987	COR 1MHI402/EC_EM_T90
29993087	COR 1MHI403/PS-EM-T150	29993097	COR 1MHI403/EC-EM-T150	29992988	COR 1MHI403/EC_EM_T90
29993088	COR 1MHI404/PS-EM-T150	29993098	COR 1MHI404/EC-EM-T150	29992989	COR 1MHI404/EC_EM_T90
29993089	COR 1MHI405/PS-EM-T150	29993099	COR 1MHI405/EC-EM-T150	29992990	COR 1MHI405/EC_EM_T90
29993090	COR 1MHI406/PS-EM-T150	29993100	COR 1MHI406/EC-EM-T150	29992991	COR 1MHI406/EC_EM_T90
29993135	COR 1MHIE205/DM-T150	29993101	COR 1MHI802/EC-EM-T150	29992992	COR 1MHI802/EC_EM_T90
29993136	COR 1MHIE205/EM-T150	29993102	COR 1MHI803/EC-EM-T150	29992993	COR 1MHI803/EC_EM_T90
29993137	COR 1MHIE402/DM-T150	29993103	COR 1MHI804/EC-EM-T150	29992994	COR 1MHI804/EC_EM_T90
29993138	COR 1MHIE403/DM-T150				
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29993140	COR 1MHIE404/DM-T150				
29993141	COR 1MHIE406/DM-T150				
29993142	COR 1MHIE802/DM-T150				
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CD_TE0063 rev00

Contents

1 General

The COR 1 booster set is a pressure boosting system designed for raising the pressure of water for wash down requirements. Using a single pump fixed or variable speed booster, 150 or 90 litre actual capacity tank with category 5 backflow prevention via an AB airgap.

ATTENTION! Installation and commissioning by qualified personnel only!

NOTE – An onsite audit must be completed once installed to ensure there are no contributing factors that may compromise the air gap (ie. foaming, splashing)

2 Safety

Any works carried out on COR 1 booster sets must be completed by a qualified person. Failure to comply to any of the information in this manual may cause potential hazards to people and the environment and may void the warranty.

Operators must be fully aware of all functions of the boosterset and any risks associated. For more information on training please contact Wilo Ph: 01283 523 000

WARNING! Local regulations must be complied to when installing and maintaining the booster set

2.1 Symbols and Signals

DANGER! Extremely dangerous situation. Non-observance could cause death or serious injuries.

WARNING! The user may suffer from injuries (serious). The mention of warning involves that personal (serious) injuries may happen when precautions are not observed.

ATTENTION! Damage could be caused to the pump or installation. The mention of attention is used to indicate that by ignoring the relevant safety instructions, damage could be caused to the pump or its operation.

NOTE – Useful remark for product handling. Any possible difficulty is mentioned.

2.2 Modification and Spare Parts

Modifications to the booster are prohibited and will invalidate the warranty. Wilo Approved spares must be used at all times. For information on spares see Table 4 of this manual

3 Transport and Storage

COR 1 booster must always be transported by pallet and moved with appropriate lifting equipment. Booster must be stored in a dry environment between –25 °C to +55 °C.

NOTE – If stored for future installation the film wrapping must not be removed and must be stored in a dry environment

4 Description and Operation

4.1 MHI PS-EM (Single Phase Fixed Speed)

4.1.1 Operating Mode

COR 1 PS-EM is a fixed speed booster set which is controlled with a Hand Off Auto (HOA) box via a pressure switch. When the switch is turned to Hand Mode the set will run at full speed constantly and will not turn off. When the switch is turned to Auto Mode the set will run until the pressure set on the pressure switch has been reached. Once the pressure has been achieved the set will run until the programmable timer times out

4.1.2 Operating Features

•Programmable pressure switch – Sets the pressure at which the timer starts via dials on the front of the switch (Fig 6)

•Programmable timer – Sets the length of time the booster will run once the set pressure has been achieved. Programmable in the HOA box (Fig 6)

•Low water cut out switch – Turns the booster off instantly once the water level drops below a set level to stop air from entering the pump (Fig 6)

•Volt Free Contacts (VFC) – Normally open and normally closed contacts signal if the pump has tripped under high current. (Fig 1)

NOTE – VFC and programmable timer is inside the HOA box. Timer is factory set at 120 seconds to reduce start/stop frequency of the set.

4.2 MHIE DM (Three Phase Variable Speed)

4.2.1 Operating Mode

COR 1 DM is a variable speed booster set which is controlled via an integrated motor mounted drive and pressure transducer. Once the pressure is set on the drive the speed of the pump will ramp up and down according to the demand of the system (see pump manual for the setting of the system pressure)

NOTE – No flow cut off time can be changed in the drive via menu 5.2.7.0 and is factory set at 30 seconds

4.2.2 Operating Features

•0–20mA pressure transducer monitors system pressure

•SBM Volt Free Contact (VFC) – Can be configured to switch on power up or run (see menu 4.7.6.0)

•SSM Volt Free Contact (VFC) – Switches when pump goes into fault conditions

•Low water cut out switch – Turns the booster off instantly once the water level drops below a set level to stop air from entering the pump

4.3 MHI EC–EM (Single Phase Variable Speed)

4.3.1 Operating Mode

COR 1 EC–EM is a variable speed booster set which is controlled via a water cooled inverter. The pressure is set in the drive by holding down the menu button (Table 1) and cycling through the drive settings by pressing the 'Enter' button and changing the settings with the up and down arrows. For full programmable settings see Table 2. Once the pressure is set on the drive press the 'Automatic Mode' button and the speed of the pump will ramp up and down according to the demand of the system.

To run the pumps at a constant 50Hz press and hold the 'Manual Mode' button

4.3.2 Operating Features

•Low water cut out switch – Turns the booster off instantly once the water level drops below a set level to stop air from entering the pump

•Programmable electronic menu with alarm log and run timer (Table 2)

4.4 MHIE–EM (Single Phase Variable Speed)

4.4.1 Operating Mode

MHIE–EM is a variable speed booster set which is controlled via an integrated motor mounted drive and pressure transducer. System pressure is set via the variable speed dial on the side of the motor (Fig10). System pressure is approximately 1 bar for every 10% on the dial. Set the system pressure by starting at 0% on the dial and slowly raising until required setpoint is reached.

ATTENTION! Test pressure setpoint, by isolating the system via isolation valve to reduce the risk of over pressure in the system

4.4.2 Operating Features

•Programmable electronic menu with alarm log and run timer (Table 2)

•Pump fail volt free contact 230V 1A (Fig3)

5 Installation

5.1 Hydraulic Connections (Fig5)

The mains water is connected directly onto the ½" male BSP thread equilibrium ball valve. The booster discharge is connected directly onto the isolation valve which has a 1" female BSP thread. All Cor 1 sets must be fitted with the supplied 8 litre diaphragm pressure vessel onto the vessel valve provided next to the isolation valve. Once the tank is filled the pump must be properly vented before use.

ATTENTION! Connections must be made according to local water authority regulations

5.2 Electrical Connections (Fig1–4)

Please use the correct wiring diagram provided with the booster for connection of mains voltage. Pay close attention to the terminals used and that the correct voltage is applied. Failure to do so may cause damage to pump or drives and will void the warranty.

DANGER! The electrical connections and testing must be carried out by a qualified electrician and in accordance with locally applicable standard specifications.

6 Commissioning

6.1 Commissioning

It is recommended that the first installation is commissioned by Wilo customer service. Contact us on service.uk@wilo.com or Ph: 012835230000

Before switching on for the first time check the customers wiring is compliant with local regulations and is fit for purpose.

Check the pipe connections are stress free

Fill the storage tank and visually check for leaks

Close discharge valve and turn power on

Run pump against closed valve until pump switches off. This may require the adjustment of the pressure switch

Open system valve partially and allow unit to fill the system and switch off.

Ensure storage tank fill is adequate for the system, Do not allow pump to run dry, this may cause damage to the mechanical seal and other components.

Once system is filled fully open the system valve.

DANGER! Risk of fatal injury! Tighten all connection terminals prior to commissioning!

6.2 Maintenance

To ensure maximum reliability in operation we recommend that the expansion vessel is checked at least annually. This may require more frequent checks if the unit is subject to higher frequencies of use.

Checks should be made on condition of stored water tank and must be debris free.

Checks should be made on switching frequencies and operation.

The general safety instructions must be observed when carrying out any remedial work. Please follow the Installation and Operation manual for pump and control u*nit.*

ATTENTION! Any maintenance must be completed by a trained and competent person. Any damage to the booster could void warranty if this is not adhered to

7 Warranty

WILO reserve the right to inspect an installation to verify that the equipment has been installed in accordance with the written instructions. The full warranty document is downloadable at www.wilo.com/gb/en/downloads. Click on local information then downloads. Before requesting a site visit, the following information must be available to the service team:

• Article number of the equipment

• A purchase order to cover the work in the event that no manufacturing defect is found.

• A site contact name and number

• A FULL description of the alleged fault

8) Figures

Fig. 1 – MHI PS-EM Electrical Connections

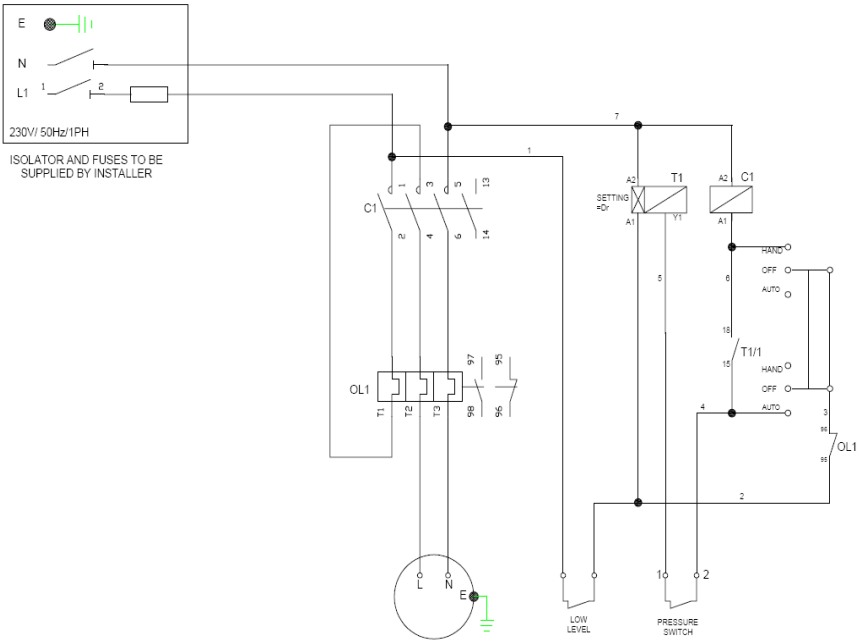


Fig. 2 – MHIE-DM Electrical Connections

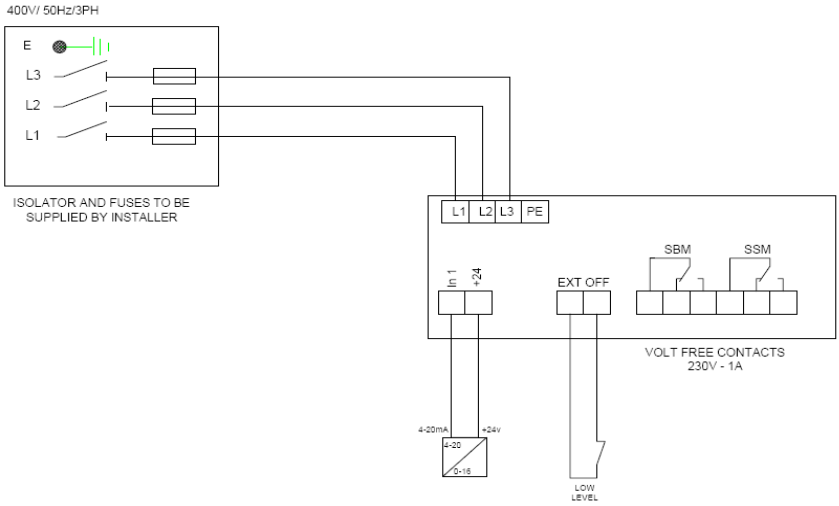


Fig. 3 – MHIE-EM Electrical Connections

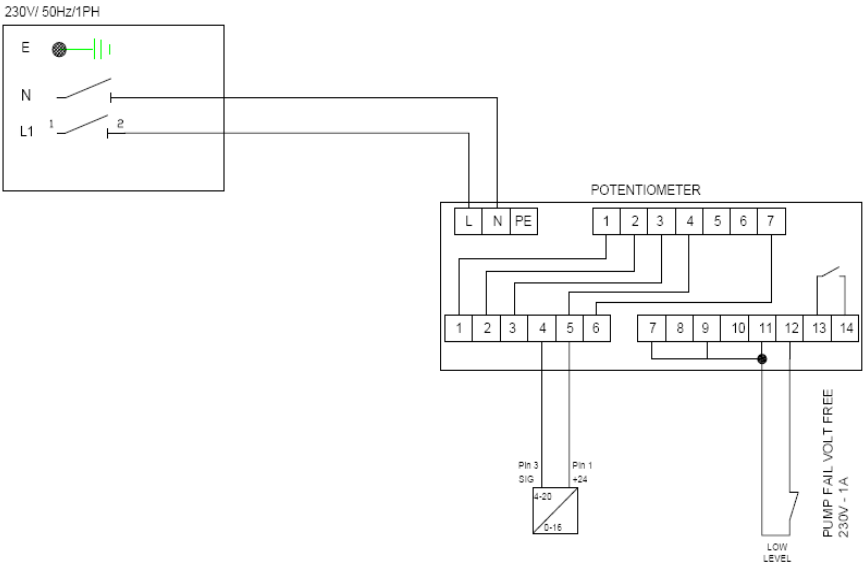


Fig. 4 – MHI EC-EM

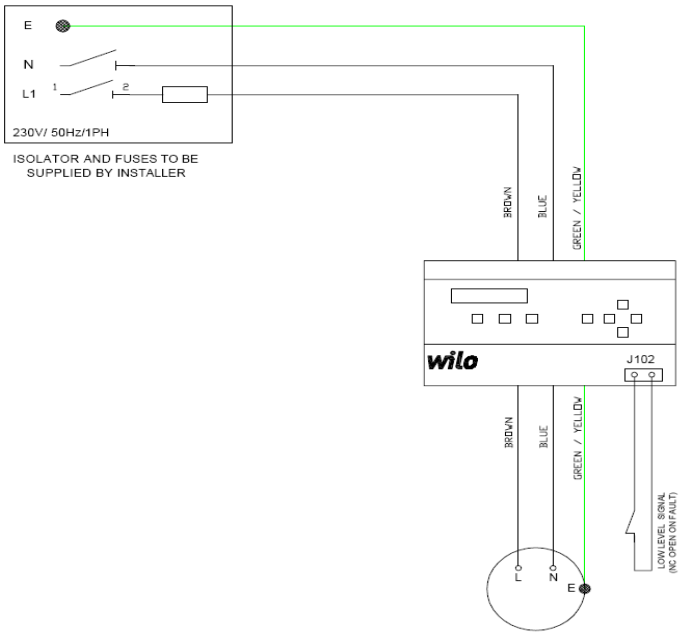


Fig. 5 General Arrangement (Hydraulic)

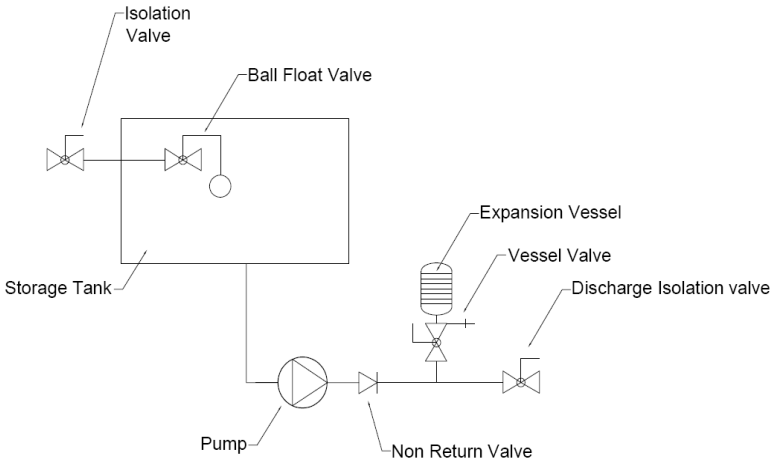


Fig. 6 PS-EM-T150 Layout

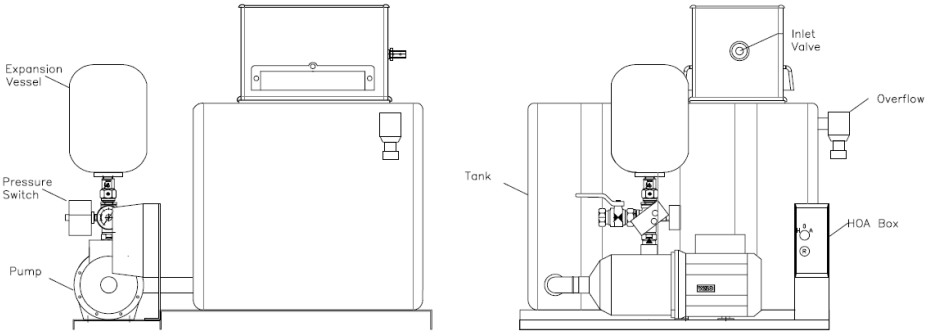


Fig. 7 MHIE/EM-DM-T150 Layout

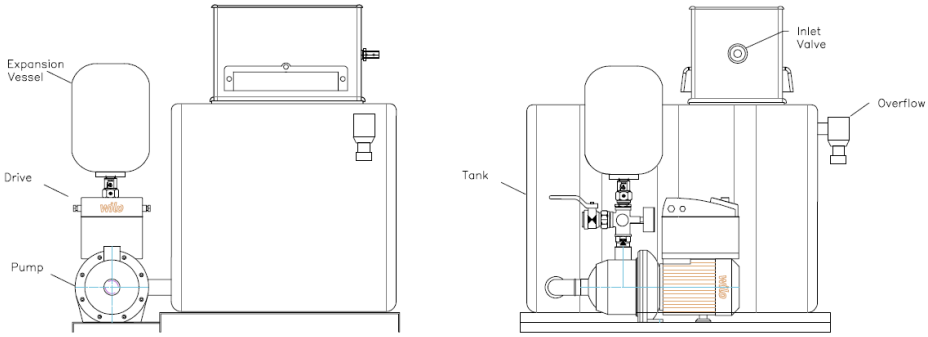


Fig. 8 MHI EC-EM-T150 Layout

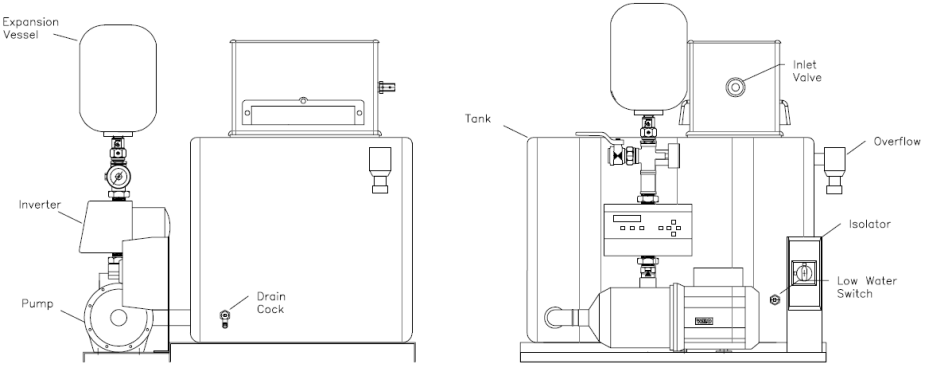


Fig. 9 MHI EC-EM-T90

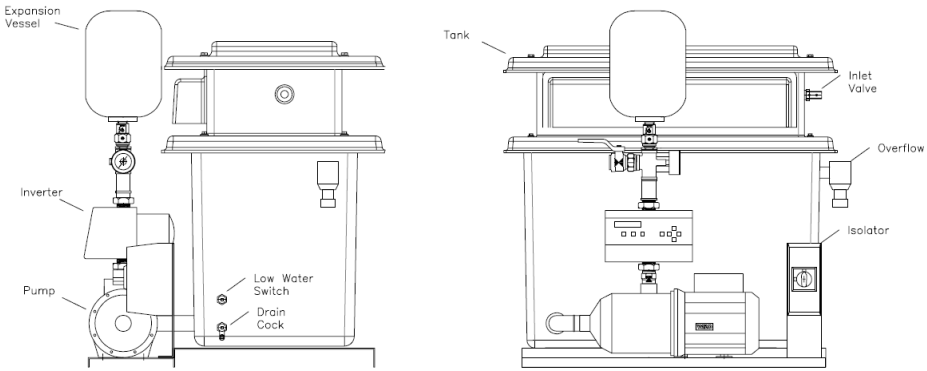


Fig. 10 MHIE-EM Controls

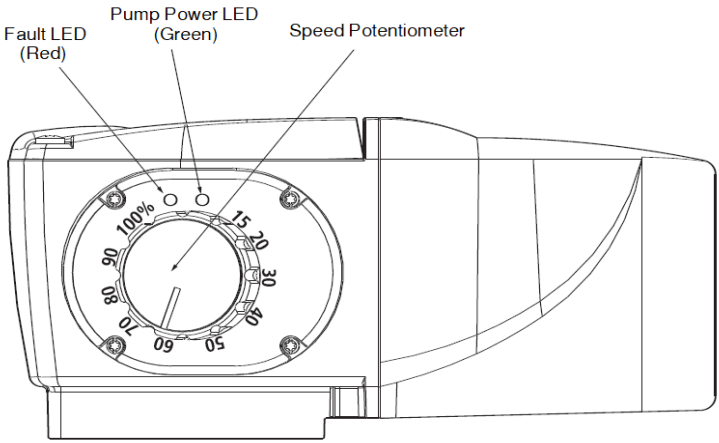
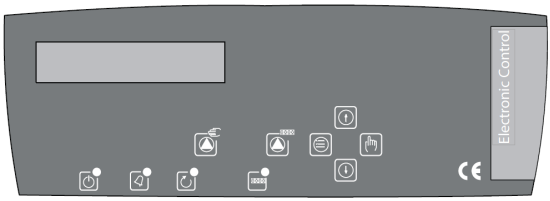


Table 1 Driver User Interface (EC-EM)



	Manual Mode		Inverter On	(Green LED)
	Automatic Mode		Alarm	(Red LED)
	Menu		Pump Running	(Yellow LED)
	Enter	auto	Pump in Automatic Mode	(Green LED)

Table 2 Settings Menu (EC-EM)

MENU	SETTINGS	FACTORY	UNIT
Language	Language select	English	
I max	Set the maximum current rating of the pumps	*	Amps
Rotation Sense	Change the rotation of the motors	Clockwise	
Min Speed	Minimum running speed of the motor	15	Hz
Dry Run Prot	Turn on or off the dry running protection	Yes	
Pressure Setting	System pressure that you want the booster to achieve	**	Bar
Start Delta	Difference in pressure before the pumps start	0.3	Bar
Time Before Stop	Time the pumps will run once the pressure has been reached at no flow	15	Sec
MENU	**HISTORIC**		
Running Time	Total pump running hours		Hrs
Pump Cycles	Total number of pump cycles (one cycle = one run and stop)		
Power On	Number of times the drive has been powered on		
Max Pressure	Maximum pressure of the installation		Bar
Short Circuit	Total number of short circuit alarms		
Over Current	Total number over current alarms		
Over Temp.	Total number of over temperature alarms		
Dry Run	Total number of dry run alarms		

*Dependant on motor size

** Dependant on booster type (see test sheet)

Table 3 Drive Fault Codes

ERROR CODE	BOOSTER BEHAVIOUR	TROUBLESHOOT
E011 DRY RUN	The controller starts the pump every 30 minutes over 24 hours. If dry running remains, it switches off the pump.	Check the hydraulic supply. If a set point pressure higher than the pressure the pump can deliver is programmed, the controller will consider it as dry running.
E021 OVERLOAD	After the alarm detection the controller will try 4 times to start the pump. After these 4 trials the pump is switched off. Check the state of the fuses..	Check that the rotor is not locked. Check the input data in the controller
E025 DISCONNECT MOTOR	Motor will not start.	Check the motor winding. Check the supply cables. Check that the Imax is not set to off in the menu (Table 2)
E040 P SENSOR DEFFECT	The controller stops.	Contact the technical service department.
E031 OVER T°	If the temperature is too high, the controller will stop the motor from running.	Check that the water temperature does not exceed 40°C. Check that the ambient temperature does not exceed 50°C.
E023 SHT CIRCUIT	After the alarm detection the controller will try 4 times to start the pump. After these 4 trials the pump is switched off.	Check the motor connections and windings. If the problem remains contact the manufacturer.
E071 EEPROM	If the controller detects a defect on its internal memory this error will be displayed.	Contact the technical service department.
E005 HIGH VOLTAGE	If the controller detects an overvoltage, it stops over some seconds and then starts again.	Check the controller supply voltage.
E004 LOW VOLTAGE	If the controller detects an under voltage, it stops the pumps.	Check the controller supply voltage.
[WHITE SCREEN]	No function and nothing on the screen.	Check the controller supply voltage and circuit breakers in (Fig 1). Check the 20A fuses

		2999308I COR IMH202-PS-EM-T1SO	2999308Z COR IMH203-PS-EM-T1SO	2999308З COR IMH204-PS-EM-T1SO	2999308Ч COR IMH205-PS-EM-T1SO	2999308S COR IMH206-PS-EM-T1SO	2999308Ь COR IMH402-PS-EM-T1SO	2999308Г COR IMH403-PS-EM-T1SO	2999308Д COR IMH404-PS-EM-T1SO	2999308Ж COR IMH405-PS-EM-T1SO	2999308Б COR IMH406-PS-EM-T1SO	2999309О COR IMH4O6-PS-EM-T1SO	2999309Ш COR IMH4O5-PS-EM-T1SO	2999309Щ COR IMH4O4-PS-EM-T1SO	2999309Ъ COR IMH4O3-PS-EM-T1SO	2999309Ы COR IMH4O2-PS-EM-T1SO	2999309Ь COR IMH4O1-PS-EM-T1SO	2999309Э COR IMH4O0-PS-EM-T1SO	2999309Ю COR IMH4OЧ-PS-EM-T1SO	2999309Я COR IMH4OS-PS-EM-T1SO	2999309Ё COR IMH4O6-PS-EM-T1SO	2999310З COR IMHIE205/EM-T1SO	2999310Ч COR IMHIE205/DM-T1SO	2999310S COR IMHIE4O2/DM-T1SO	2999310Ь COR IMHIE4O3/DM-T1SO	2999310Г COR IMHIE4O3/EM-T1SO	2999310Д COR IMHIE4O4/DM-T1SO	2999310Ж COR IMHIE4O6/DM-T1SO	2999310Б COR IMHIE8O2/DM-T1SO	2999311З COR IMHIE8O3/DM-T1SO
Pumps																															
4024282	MHI202-1/E/1-230	■																													
4024284	MHI203-1/E/1-230		■																												
4024286	MHI204-1/E/1-230			■																											
4024288	MHI205-1/E/1-230				■																										
4024290	MHI206-1/E/1-230					■																									
4024292	MHI402-1/E/1-230						■																								
4024294	MHI403-1/E/1-230							■																							
4024296	MHI404-1/E/1-230								■																						
4024298	MHI405-1/E/1-230									■																					
4024300	MHI406-1/E/1-230										■																				
4148406	MHE205N-1/E/3											■																			
4073101	MHE205 1PHM2												■																		
4171776	MHE402N-1/E/3													■																	
4148412	MHE403N-1/E/3														■																
4073103	MHE403 1PHM2															■															
4171782	MHE404N-1/E/3																■														
4148418	MHE406N-1/E/3																	■													
4171788	MHE 802 N-1/E/3																		■												
4148424	MHE 803 N-1/E/3																			■											
Vessel																					■	■									
2815472	8L Expansion Vessel	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									
Controls																															
2818634	HOA BOX 3-5A	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									
2818635	HOA BOX 4.5-7A	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									
2818636	HOA BOX 6-10A	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									
2818736	Pressure Switch	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									
2085909	Pressure Sensor																						■	■	■	■	■	■	■	■	■
2818575	Low Water Switch	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									
Valves																															
2818409	1/2" Inlet Valve (float inc.)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2819156	1" Isolation Valve	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2520853	3/4" Vessel Valve	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2818056	1" Non Return Valve	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

For all spares enquiries please contact spareparts.uk@wilo.com

		2999391 CORE 1MHI202/EC-EM-T150	2999392 CORE 1MHI203/EC-EM-T150	2999393 CORE 1MHI204/EC-EM-T150	2999394 CORE 1MHI205/EC-EM-T150	2999395 CORE 1MHI206/EC-EM-T150	2999396 CORE 1MHI402/EC-EM-T150	2999397 CORE 1MHI403/EC-EM-T150	2999398 CORE 1MHI404/EC-EM-T150	2999399 CORE 1MHI405/EC-EM-T150	29993100 CORE 1MHI406/EC-EM-T150	29993101 CORE 1MHI802/EC-EM-T150	29993102 CORE 1MHI803/EC-EM-T150	29993103 CORE 1MHI804/EC-EM-T150	29992982 CORE 1MHI202/EC_EM_T90	29992983 CORE 1MHI203/EC_EM_T90	29992984 CORE 1MHI204/EC_EM_T90	29992985 CORE 1MHI205/EC_EM_T90	29992986 CORE 1MHI206/EC_EM_T90	29992987 CORE 1MHI402/EC_EM_T90	29992988 CORE 1MHI403/EC_EM_T90	29992989 CORE 1MHI404/EC_EM_T90	29992990 CORE 1MHI405/EC_EM_T90	29992991 CORE 1MHI406/EC_EM_T90	29992992 CORE 1MHI802/EC_EM_T90	29992993 CORE 1MHI803/EC_EM_T90	29992994 CORE 1MHI804/EC_EM_T90
Pumps																											
4024283	MHi202-1/E/3	■																									
4024285	MHi203-1/E/3		■																								
4024287	MHi204-1/E/3			■																							
4210718	MHi205-1/E/3				■																						
4210722	MHi206-1/E/3					■																					
4024293	MHi402-1/E/3						■																				
4024295	MHi403-1/E/3							■																			
4210725	MHi404-1/E/3								■																		
4210732	MHi405-1/E/3									■																	
4210735	MHi406-1/E/3										■																
4024302	MHi802-1/E/3											■															
4210743	MHi803-1/E/3												■														
4210747	MHi804-1/E/3													■													
Vessel																											
2815472	8L Expansion Vessel	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Controls																											
2818575	Low Water Switch	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
4160334	Water Cooled Inverter	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2818472	Isolator	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Valves																											
2818409	1/2" Inlet Valve (float inc.)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2819156	1" Isolation Valve	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2520853	3/4" Vessel Valve	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2818056	1" Non Return Valve	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

For all spares enquiries please contact spareparts.uk@wilo.com

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EC - Declaration of conformity

Herewith, we declare that **Wilo-COR1** of the series

COR 1MHI*/PS-EM-T150**

COR 1MHI*/EC-EM-T150**

COR 1MHI*/EC-EM-T90**

(The serial number is marked on the product site plant)
in its delivered state complies with the following relevant provisions:

EC-Machinery Directive	**2006 / 42 / EC**
Low Voltage Directive	**2014 / 35 / EU**
Electromagnetic Compatibility Directive	**2014 / 30 / EU**
WEEE Directive	**2012 / 19 / EU**
ROHS Directive	**2015 / 863 / EU**

As well as following harmonized standards

EN 809:1998 +A1:2009

EN60204-1 +A1 2009

EN61000-6-3:2007 +A1:2011

EN61000-6-2:2005

If the above mentioned series are technically modified without our approval, this declaration shall no longer be applicable

Authorized representative for the completion of the technical documentation:

Lee Tebbatt
Managing Director **07/09/2020**

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