

MTC

Ⓢ Installation and operating instructions



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To obtain service under this warranty, the defective product must be returned to the distributor or dealer of Grundfos' products from which it was purchased together with proof of purchase and installation date, failure date, and supporting installation data. Unless otherwise provided, the distributor or dealer will contact Grundfos or an authorized service station for instructions. Any defective product to be returned to Grundfos or a service station must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed.

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Before beginning installation procedures, these installation and operating instructions should be studied carefully. The installation and operation should also be in accordance with local regulations and accepted codes of good practice.

1. Applications

The GRUNDFOS pumps, type MTC, are multistage centrifugal pumps designed for pumping liquids for machine tools, condensate transfer, liquid transfer in industrial washing machines and similar applications.



The pump must not be used for the transfer of inflammable liquids such as diesel oil, petrol or similar liquids.

The pumped liquid must not contain fibres.

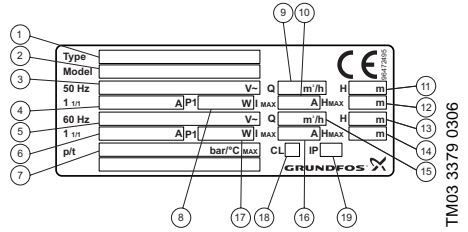
The pump is designed for pumping liquids with a density and viscosity corresponding to those of water.

When pumping liquids with a density or viscosity higher than that of water, the motor size should be taken into consideration.

2. Type designation

The standard range of pumps encompasses complete impeller in chamber combinations. Other lengths, against duty combinations, can be supplied by fitting empty chambers instead of standard chambers with impellers.

The pump key on the pump nameplate indicates the number of chambers and impellers fitted to the pump.



TIM03 3379 0306

Pos	Description
1	Type designation
2	Model
3	Voltage 50 Hz
4	Full load current 50 Hz
5	Voltage 60 Hz
6	Full load current 60 Hz
7	System pressure / max. liquid temp
8	Power consumption 50 Hz
9	Nominal flowrate 50 Hz
10	Max. current 50 Hz
11	Nominal head 50 Hz
12	Max. head 50 Hz
13	Max. head 60 Hz
14	Nominal head 60 Hz
15	Max. current 60 Hz
16	Nominal flowrate 60 Hz
17	Power consumption 60 Hz
18	Insulation class
19	Enclosure class

2.1 Pump key

Example	MTC 4 - 50 / 3 A -W-A -AUUV
Pump range	_____
Nominal flow rate in m ³ /h	_____
Number of stages x 10	_____
Number of impellers	_____
Code for pump version	_____
Code for pipework connection	_____
Code for materials	_____
Code for shaft seal and rubber pump parts	_____
AUUE = optional with EPDM rubber	
AUUV = Standard shaft seal	

3. Technical data

MTC	2 and 4	8, 12 and 16
Minimum liquid temperature [°C] / [°F]	-10/-14	
Maximum liquid temperature [°C] / [°F]	+90/+194	
Maximum ambient temperature [°C] / [°F]	+55/+131	+40/+104
Maximum operating pressure [bar] / [psi]	8/116	12/174
Enclosure class	IP 54 [TEFC]	

4. Installation



The pump must be installed so that persons cannot accidentally come into contact with the hot surface of the motor.

4.1 Pump location

The pump is designed for tank mounting in vertical position. The pump is positioned in a hole cut into the cover of the tank (upper side) and is secured to the tank by four hexagon head screws through the holes in the mounting flange. It is recommended to fit a sealing gasket between the pump flange and tank.

Note: The pumps can only be mounted in vertical position. The MTC 2 and 4 must have access to the tank from the drain channel in the motor stool.

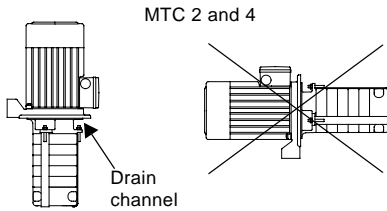


Fig. 1

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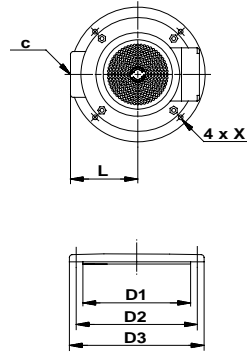


Fig. 2

Pump mounting flange dimensions:

MTC	2 and 4	8, 12 and 16
D1 [mm] / [in]	140/5.51	180/7.09
D2 [mm] / [in]	160/6.30	210/8.27
D3 [mm] / [in]	180/7.09	200/8.27
L [mm] / [in]	121/4.76	100/3.94
C	¾" NPT	1 ¼" NPT
X [mm] / [in]	7/0.28	9/0.35

4.2 Suction conditions

The bottom of the pump strainer must be at least 25 mm above the bottom of the tank.

The pumps are designed to provide full performance down to a level of A mm above the bottom of the strainer.

At a liquid level between A and B mm above the bottom of the strainer, the built-in priming screw will protect the pump against dry running.

MTC	2 and 4	8, 12 and 16
A [mm] / [in]	37/1.1	40/1.6
B [mm] / [in]	22/0.9	25/1.0

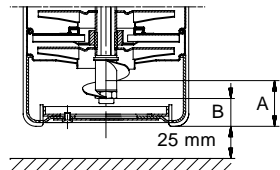


Fig. 3 MTC 2 and 4

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TM00 4841 3897

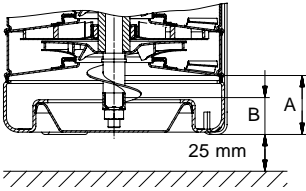


Fig. 4 MTC 8, 12 and 16

TM01 4326 5298

5. Electrical connection

The electrical connection should be carried out in accordance with local regulations.



Never make any connections in the pump terminal box unless the electricity supply has been switched off.

If the pump is not connected to an electric installation, it must be connected to an external mains switch.

The operating voltage and frequency are marked on the pump nameplate. Please make sure that the motor is suitable for the electricity supply on which it will be used.

The motor must be connected to a motor starter.

Motors up to and including 1.1 kW (2.0 hp):

The terminal box can be turned to four positions, in 90° steps, see fig. 5.

Proceed as follows:

1. Remove the four bolts securing the motor to the motor stool.
2. Turn the motor to the required position.
3. Replace and tighten the four bolts.

The electric motor should be connected to the supply as shown in the diagram inside the terminal box cover.

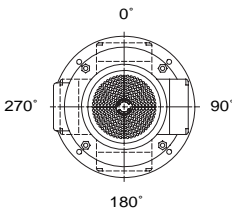


Fig. 5

TM00 4257 2294

Motors of 1.5 kW (2.0 hp) and up:

The terminal box has one fixed position.

6. Start-up



MTC 8, 12 and 16:

Pay attention to the direction of the vent hole and take care to ensure that the escaping water does not cause injury to persons or damage to the motor or other components, see fig. 6.

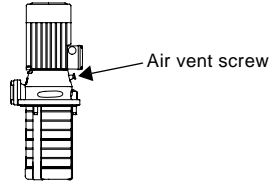


Fig. 6

TM02 0835 0401

Before starting the pump, make sure:

- that all pipe connections are tight.
- that the pump body is partly filled with liquid (partly submerged).
- that the strainer is not blocked by impurities.

Start the pump as follows:

1. Close the isolating valve on the discharge side of the pump.
2. See the correct direction of rotation of the pump on the motor fan cover. When seen from the top, the pump should rotate *counter-clockwise*.
3. Start the pump and check the direction of rotation.
4. **MTC 2 and 4:**
Open the discharge isolating valve a little. Completely open the discharge isolating valve.
5. **MTC 8, 12 and 16:**
Loosen the air vent screw in the motor stool. When a steady stream of liquid runs out of the vent hole, tighten the air vent screw and completely open the isolating valve.

The pump has now been vented and is ready for operation.

7. Operation and maintenance

Note: The pump is not allowed to run against a closed discharge valve for more than approx. 5 minutes as this will cause an increase in temperature/formation of steam in the pump which may cause damage to the pump.

7.1 Lubrication and maintenance

Pumps installed in accordance with these instructions require very little maintenance.

When a mechanical shaft seal is fitted, it is self-adjusting and has wear-resistant seal rings which are lubricated and cooled by the pumped liquid.

The pump bearings are also lubricated by the pumped liquid. The motor ball bearings are grease packed and sealed for life. No further lubrication is necessary.

Pumps from 4 kW (5.0 hp) and up have angular contact bearings.

7.2 Filters

Chip trays, filters, etc. should be cleaned at regular intervals to ensure a correct flow of liquid.

7.3 Periodic checks

At regular intervals, depending on the conditions and time of operation, the following checks should be made:

- Check the quantity of liquid and operating pressure.
- Check that there are no leaks.
- Check that the motor is not overheating.
- Check the tripping of the motor starter.
- Check that all controls are operating satisfactorily.

If the above checks do not reveal any abnormal operating details, no further checks are necessary.

Should any faults be found, check the symptoms with section 10. *Fault finding chart.*

8. Service



If a pump has been used for pumping liquids which are injurious to human health or poisonous, it will be classified as contaminated.

Do not turn the pump upside down during service. Residual liquids from the chambers may damage the motor.

A contaminated pump must not be sent to Grundfos for service until Grundfos has received all necessary details about the pumped liquid, etc. Otherwise Grundfos can refuse to accept the pump for servicing.

Possible costs of returning the pump are to be paid by the customer.

9. Sound pressure level

Motor		\bar{L}_{pA} [dB(A)]	
[kW]	[hp]	50 Hz	60 Hz
0.25	0.34	<70	<70
0.37	0.50	<70	<70
0.55	0.75	<70	<70
0.75	1.0	<70	<70
1.1	2.0	<70	<70
1.5	2.0	<70	71
2.2	3.0	<70	71
3.0	5.0	<70	71
4.0	5.0	73	71
5.5	7.5	73	78
7.5	10	73	78

10. Fault finding chart



Before starting work on the pump, make sure that the electricity supply has been switched off and that it cannot be accidentally switched on.

Fault	Cause	Remedy
1. Motor does not run when started.	a) Supply failure.	Connect the electricity supply.
	b) Fuses are blown.	Replace fuses.
	c) Motor starter overload has tripped out.	Reactivate the motor protection.
	d) Main contacts in motor starter are not making contact or the coil is faulty.	Replace contacts or magnetic coil.
	e) Control circuit is defective.	Repair the control circuit.
	f) Motor is defective.	Replace the motor.
2. Motor starter overload trips out immediately when supply is switched on.	a) One fuse/automatic circuit breaker is blown.	Cut in the fuse.
	b) Contacts in motor starter overload are faulty.	Replace motor starter contacts.
	c) Cable connection is loose or faulty.	Fasten or replace the cable connection.
	d) Motor winding is defective.	Replace the motor.
	e) Pump mechanically blocked.	Remove the mechanical blocking of the pump.
	f) Overload setting is too low.	Set the motor starter correctly.
3. Motor starter overload trips out occasionally.	a) Overload setting is too low.	Set the motor starter correctly.
	b) Low voltage at peak times.	Check the electricity supply.
4. Motor starter has not tripped out but the pump does not run.	a) Check 1 a), b), d) and e).	
5. Pump runs but gives no liquid or pump capacity is not constant.	a) Pump strainer partly blocked by impurities.	Clean the strainer.
	b) Liquid level in tank too low.	Increase the liquid level.
	c) Pump rotates in the wrong direction.	Change the direction of rotation of the motor.

11. Disposal

Disposal of this product must be carried out according to the following guidelines:

1. Use the local public or private waste collection service.
2. In case such waste collection service does not exist or cannot handle the materials used in the product, dispose the product according to local regulations.

Subject to alterations.

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