

# MTH

## Installation and operating instructions

GB D F I E P GR NL S FIN DK RO  
CZ SK



## **(GB) Declaration of Conformity**

We, Grundfos, declare under our sole responsibility that the products MTH, to which this declaration relates, are in conformity with these Council directives on the approximation of the laws of the EC member states:

- Machinery Directive (2006/42/EC).  
Standards used: EN 809: 2009, EN 60204-1: 2006.
- Low Voltage Directive (2006/95/EC).  
Standards used: EN 60335-1: 2002 and EN 60335-2-51: 2003.
- EMC Directive (2004/108/EC).

## **(F) Déclaration de Conformité**

Nous, Grundfos, déclarons sous notre seule responsabilité, que les produits MTH, auxquels se réfère cette déclaration, sont conformes aux Directives du Conseil concernant le rapprochement des législations des Etats membres CE relatives aux normes énoncées ci-dessous :

- Directive Machines (2006/42/CE).  
Normes utilisées : EN 809 : 2009, EN 60204-1 : 2006.
- Directive Basse Tension (2006/95/CE).  
Normes utilisées : EN 60335-1 : 2002 et EN 60335-2-51 : 2003.
- Directive Compatibilité Electromagnétique CEM (2004/108/CE).

## **(E) Declaración de Conformidad**

Nosotros, Grundfos, declaramos bajo nuestra entera responsabilidad que los productos MTH, a los cuales se refiere esta declaración, están conformes con las Directivas del Consejo en la aproximación de las leyes de las Estados Miembros del EM:

- Directiva de Maquinaria (2006/42/CE).  
Normas aplicadas: EN 809: 2009, EN 60204-1: 2006.
- Directiva de Baja Tensión (2006/95/CE).  
Normas aplicadas: EN 60335-1: 2002 y EN 60335-2-51: 2003.
- Directiva EMC (2004/108/CE).

## **(GR) Δήλωση Συμμόρφωσης**

Εμείς, η Grundfos, δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα MTH στα οποία αναφέρεται η παρούσα δήλωση, συμμορφώνονται με τις εξής Οδηγίες του Συμβουλίου περί προσέγγισης των νομοθεσιών των κρατών μελών της ΕΕ:

- Οδηγία για μηχανήματα (2006/42/ΕΕ).  
Πρότυπα που χρησιμοποιήθηκαν: EN 809: 2009, EN 60204-1: 2006.
- Οδηγία χαμηλής τάσης (2006/95/ΕΕ).  
Πρότυπα που χρησιμοποιήθηκαν: EN 60335-1: 2002 και EN 60335-2-51: 2003.
- Οδηγία Ηλεκτρομαγνητικής Συμβατότητας (EMC) (2004/108/ΕΕ).

## **(S) Försäkran om överensstämmelse**

Vi, Grundfos, försäkrar under ansvar att produkterna MTH, som omfattas av denna försäkran, är i överensstämmelse med rådets direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende:

- Maskindirektivet (2006/42/EG).  
Tillämpade standarder: EN 809: 2009, EN 60204-1: 2006.
- Lågspänningsdirektivet (2006/95/EG).  
Tillämpade standarder: EN 60335-1: 2002 och EN 60335-2-51: 2003.
- EMC-direktivet (2004/108/EG).

## **(DK) Overensstemmelseserklæring**

Vi, Grundfos, erklærer under ansvar at produkterne MTH som denne erklæring omhandler, er i overensstemmelse med disse af Rådets direktiver om indbyrdes tilnærmelse til EF-medlemsstaternes lovgivning:

- Maskindirektiv (2006/42/EF).  
Anvendte standarder: EN 809: 2009, EN 60204-1: 2006.
- Lavspændingsdirektiv (2006/95/EF).  
Anvendte standarder: EN 60335-1: 2002 og EN 60335-2-51: 2003.
- EMC-direktiv (2004/108/EF).

## **(CZ) Prohlášení o shodě**

My firma Grundfos prohlašujeme na svou plnou odpovědnost, že výrobky MTH, na něž se toto prohlášení vztahuje, jsou v souladu s ustanoveními směrnice Rady pro sblížení právních předpisů členských států Evropského společenství v oblastech:

- Smernica pro strojní zařízení (2006/42/ES).  
Použité normy: EN 809: 2009, EN 60204-1: 2006.
- Smernica pro nízkonapětové aplikace (2006/95/ES).  
Použité normy: EN 60335-1: 2002 a EN 60335-2-51: 2003.
- Smernica pro elektromagnetickou kompatibilitu (EMC) (2004/108/ES).

## **(D) Konformitätserklärung**

Wir, Grundfos, erklären in alleiniger Verantwortung, dass die Produkte MTH, auf die sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmen:

- Maschinerichtlinie (2006/42/EG).  
Normen, die verwendet wurden: EN 809: 2009, EN 60204-1: 2006.
- Niederspannungsrichtlinie (2006/95/EG).  
Normen, die verwendet wurden: EN 60335-1: 2002 und EN 60335-2-51: 2003.
- EMV-Richtlinie (2004/108/EG).

## **(I) Dichiarazione di Conformità**

Grundfos dichiara sotto la sua esclusiva responsabilità che i prodotti MTH, ai quali si riferisce questa dichiarazione, sono conformi alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri CE:

- Direttiva Macchine (2006/42/CE).  
Norme applicate: EN 809: 2009, EN 60204-1: 2006.
- Direttiva Bassa Tensione (2006/95/CE).  
Norme applicate: EN 60335-1: 2002 e EN 60335-2-51: 2003.
- Direttiva EMC (2004/108/CE).

## **(P) Declaração de Conformidade**

A Grundfos declara sob sua única responsabilidade que os produtos MTH, aos quais diz respeito esta declaração, estão em conformidade com as seguintes Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da CE:

- Directiva Máquinas (2006/42/CE).  
Normas utilizadas: EN 809: 2009, EN 60204-1: 2006.
- Directiva Baixa Tensão (2006/95/CE).  
Normas utilizadas: EN 60335-1: 2002 e EN 60335-2-51: 2003.
- Directiva EMC (compatibilidade electromagnética) (2004/108/CE).

## **(NL) Overeenkomstigheidsverklaring**

Wij, Grundfos, verklaren geheel onder eigen verantwoordelijkheid dat de producten MTH waarop deze verklaring betrekking heeft, in overeenstemming zijn met de Richtlijnen van de Raad in zake de onderlinge aanpassing van de wetgeving van de EG Lidstaten betreffende:

- Machine Richtlijn (2006/42/EG).  
Gebruikte normen: EN 809: 2009, EN 60204-1: 2006.
- Laagspannings Richtlijn (2006/95/EG).  
Gebruikte normen: EN 60335-1: 2002 en EN 60335-2-51: 2003.
- EMC Richtlijn (2004/108/EG).

## **(FIN) Vaatimustenmukaisuusvakuutus**

Me, Grundfos, vakuutamme omalla vastuullamme, että tuotteet MTH, joita tämä vakuutus koskee, ovat EY:n jäsenvaltioiden lainsäädännön yhdenmukaistamiseen tähtäävien Euroopan neuvoston direktiivien vaatimusten mukaisia seuraavasti:

- Konedirektiivi (2006/42/EY).  
Sovellettavat standardit: EN 809: 2009, EN 60204-1: 2006.
- Pienjännitedirektiivi (2006/95/EY).  
Sovellettavat standardit: EN 60335-1: 2002 ja EN 60335-2-51: 2003.
- EMC-direktiivi (2004/108/EY).

## **(RO) Declarație de Conformitate**

Noi, Grundfos, declaram pe propria răspundere că produsele MTH, la care se referă această declarație, sunt în conformitate cu aceste Directive de Consiliu asupra armonizării legilor Statelor Membre CE:

- Directiva Utilaje (2006/42/CE).  
Standarde utilizate: EN 809: 2009, EN 60204-1: 2006.
- Directiva Tensiune Joasă (2006/95/CE).  
Standarde utilizate: EN 60335-1: 2002 și EN 60335-2-51: 2003.
- Directiva EMC (2004/108/CE).

## **(SK) Prohlášení o konformite**

My firma Grundfos prehlasujeme na svoju plnú zodpovednosť, že výrobky MTH, na ktoré sa toto prehlásenie vztahuje, sú v súlade s ustanoveními smernice Rady pre zblíženie právnych predpisov členských štátov Európskeho spoločenstva v oblastiach:

- Smernica pre strojové zariadenie (2006/42/EC).  
Použíte normy: EN 809: 2009, EN 60204-1: 2006.
- Smernica pre nízkonapäťové aplikácie (2006/95/EC).  
Použíte normy: EN 60335-1: 2002 a EN 60335-2-51: 2003.
- Smernica pre elektromagnetickú kompatibilitu (2004/108/EC).

Tatabánya, 15th June 2010



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# MTH

<b>Installation and operating instructions</b>	<b>6</b>	<b>GB</b>
<b>Montage- und Betriebsanleitung</b>	<b>11</b>	<b>D</b>
<b>Notice d'installation et d'entretien</b>	<b>17</b>	<b>F</b>
<b>Istruzioni di installazione e funzionamento</b>	<b>22</b>	<b>I</b>
<b>Instrucciones de instalación y funcionamiento</b>	<b>27</b>	<b>E</b>
<b>Instruções de instalação e funcionamento</b>	<b>32</b>	<b>P</b>
<b>Οδηγίες εγκατάστασης και λειτουργίας</b>	<b>37</b>	<b>GR</b>
<b>Installatie- en bedieningsinstructies</b>	<b>42</b>	<b>NL</b>
<b>Monterings- och driftsinstruktion</b>	<b>47</b>	<b>S</b>
<b>Asennus- ja käyttöohjeet</b>	<b>52</b>	<b>FIN</b>
<b>Monterings- og driftsinstruktion</b>	<b>57</b>	<b>DK</b>
<b>Instrucțiuni de instalare și utilizare</b>	<b>62</b>	<b>RO</b>
<b>Montážní a provozní návod</b>	<b>67</b>	<b>CZ</b>
<b>Návod na montáž a prevádzku</b>	<b>73</b>	<b>SK</b>

## CONTENTS

	Page
1. Applications	6
2. Type designation	6
2.1 Type key	6
3. Technical data	6
4. Installation	6
4.1 Suction conditions	7
5. Electrical connection	7
6. Start-up	7
7. Operation and maintenance	8
7.1 Lubrication and maintenance	8
7.2 Filters	8
7.3 Periodic checks	8
8. Service	8
9. Sound pressure level	9
10. Fault finding chart	10
11. Disposal	10



Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

## 1. Applications

The Grundfos pumps, type MTH, 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 pumps are designed for pumping liquids with a density and viscosity corresponding to those of water. The pumped liquid must not contain abrasive particles or fibres.

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. On request, other lengths, against duty combinations, can be supplied by fitting empty intermediate 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.

## 2.1 Type key

Example	MTH 4 - 20 / 2 -x -x -x -xxxx
Pump range	
Nominal flow rate in m <sup>3</sup> /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	

## 3. Technical data

Pump type	MTH
Minimum liquid temperature [°C]	-10
Maximum liquid temperature [°C]	+90
Maximum ambient temperature [°C]	+40
Maximum operating pressure [bar]	10
Enclosure class	IP 54

## 4. Installation



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

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:** MTH 2 and 4 can only be mounted vertically.

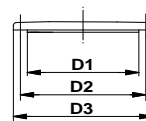
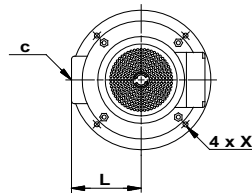


Fig. 1 Dimensional sketch

Pump mounting flange dimensions:

Pump type	D1	D2	D3	L	C	X
MTH 2 and 4	140	160	180	121	Rp ¾	ø7
MTH 8, 12 and 16	180	210	200	100	Rp 1 ¼	ø9

#### 4.1 Suction conditions

The bottom of the pump strainer must be at least 25 mm above the bottom of the tank, see fig. 2 or 3. MTH pumps must be installed vertically and the drain hole in the motor stool must have access to 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.

Pump type	A [mm]	B [mm]
MTH 2 and 4	37	25
MTH 8, 12 and 16	40	25

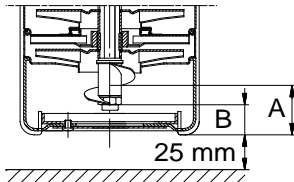


Fig. 2 MTH 2 and 4

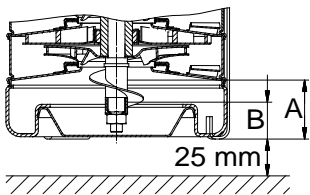


Fig. 3 MTH 8, 12 and 16

#### 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.

Single-phase Grundfos motors incorporate a thermal overload switch and require no additional motor protection.

Three-phase motors must be connected to a motor starter.

The terminal box can be turned to three positions, in 90° steps, see fig. 4.

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.
4. Replace the coupling guards.

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

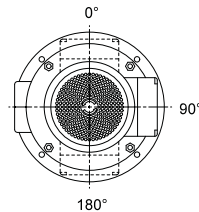


Fig. 4 Terminal box positions

#### 6. Start-up



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.

**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.

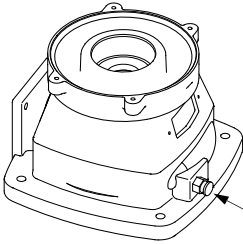
**Start the pump as follows:**

1. Close the isolating valve on the discharge side of the pump.
2. If the pump is fitted with a vent valve, this valve must be opened, see fig. 5.

TM00 4841 3897

TM01 4326 5298

TM03 5356 3406



TM02 6024 4802

**Fig. 5** Vent valve position

3. 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*.
4. Start the pump and check the direction of rotation.
5. Open the discharge isolating valve a little.
6. If the pump is fitted with a vent valve, this valve must be closed when a steady stream of liquid runs out of it.

7. Completely open the discharge 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.

The mechanical shaft seal 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 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.

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

### MTH 2, 4

Motor P <sub>1</sub> [kW]	$\bar{L}_{pA}$ [dB(A)]	Motor P <sub>1</sub> [kW]	$\bar{L}_{pA}$ [dB(A)]
	50 Hz		60 Hz
220	<70	340	<70
310	<70	505	<70
340	<70	540	<70
455	<70	740	<70
520	<70	870	<70
570	<70	980	<70
680	<70	1155	<70
730	<70	1250	<70
820	<70	1365	<70
925	<70	1600	<70
1150	<70	–	–
1340	<70	–	–

### MTH 8, 12 and 16

Motor P <sub>1</sub> [kW]	$\bar{L}_{pA}$ [dB(A)]	Motor P <sub>1</sub> [kW]	$\bar{L}_{pA}$ [dB(A)]
	50 Hz		60 Hz
870	<70	1505	<70
1200	<70	2075	71
1530	<70	2645	71
1745	<70	3018	71
1760	<70	3044	71
1860	<70	3215	71
2190	<70	3785	71
2520	<70	4355	71
2610	<70	4515	71
2640	<70	4566	71
3475	73	–	–
3520	73	–	–
4340	73	–	–
4400	73	–	–

## 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.

GB

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

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

Subject to alterations.

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