2. MTC

Introduction

MTC pumps are vertical multistage centrifugal pumps designed for pumping of cooling lubricants for machine tools, condensate transfer and similar applications.

TM02 8540 0404

Fig. 52 Grundfos MTC pumps

The pumps can be used for applications involving spark machine tools, grinding machines, machine centers, cooling units, industrial washing machines, filtering systems etc. The pumps are designed to be mounted on top of tanks with the pump stack immerged in the pumped liquid.

Grundfos MTC pumps come with various pump sizes and numbers of stages to provide the flow, the pressure and the length required.

The pumps consist of two main components: The motor and the pump unit. The motor is a Grundfos standard ML motor or Grundfos specified motor designed to NEMA standards.

The pump unit consists of optimized hydraulics, a variety of connections, a motor stool, a given number of chambers and various other parts.

Applications

Application	MTC
Lathes	•
Spark machine tools (EDM)	-
Grinding machines	•
Swarf conveyors	•
Machining centers	•
Cooling units	•
Industrial washing machines	•
Filtering systems	•

• The pump is suitable for this application.

Pumped liquids

MTC pumps are designed to pump non-explosive liquids that do not chemically attack the pump materials.

When pumping liquids with a density and/or viscosity higher than that of water, oversized motors may be required.

Whether a pump is suitable for a particular liquid depends on a number of factors of which the most important are the chloride content, pH-value temperature and content of chemicals, oils, etc.

Please note that aggressive liquids may attack or dissolve the protective oxide film of the stainless steel and thus cause corrosion.

Pumping of solid particles

MTC pumps are fitted with a suction strainer. The strainer prevents large solid particles from entering and damaging the pump.

The table below describes the size of the passage in the strainer and the impeller.

Pump type	Strainer passage [Ø in. (Ø mm)]	Free strainer passage [in.^{2} (mm^2)]	Impeller passage [in. (mm)]
MTC 2	0.08 (2)	3.6 (2322)	0.10 (2.6)
MTC 4	0.08 (2)	3.6 (2322)	0.11 (2.8)

If the pumped liquid contains solid particles larger than the size of the holes in the strainer, the passage of the strainer may be blocked. In such situations the performance will drop as a result of a reduced flow through the pump.

Note: If the strainer is removed from the suction port, solid particles may enter the pump and cause a seizure or even damage the pump.

In grinding applications Grundfos recommends that the pumped liquid is screened for abrasive particles before entering the pump. When pumped, abrasive particles reduce the life of the pump components.

Wear of the pump components caused by abrasive particles starts when the concentration exceeds 20 ppm.

MTC features and benefits

MTC pumps

MTC pumps are fitted with an integrated Grundfos motor where the rotor shaft is used as pump shaft. Thisgivesthe pump a compact design.

Motors for MTC pumps

MTC motors are totally enclosed, fan-cooled, 2-pole Grundfos standard motors.

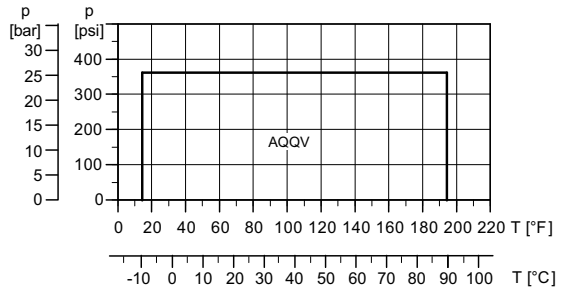
Electrical data

Insulation class	F
Efficiency class	IE2 IE3 available on request
Enclosure class	TEFC - Totally Enclosed Fan Cooled
Supply voltage, 60 Hz Tolerance - 10 %/+ 10 %	3 x 208-230/460 V

As standard all MTC motors are supplied with CE approval.

Shaft seal for MTC

The operating range of the shaft seal depends on operating pressure, pump type, type of shaft seal and liquid temperature.



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Shaft seal	Description	Temperature range [°F (°C)]
AQQV	O-ring seal with fixed seal driver, tungsten carbide/ tungsten carbide, FKM	14 °F to 194 °F (-10 °C to +90 °C)

MTC identification

MTC type key example

Example	MTC	2	-6	/3	-A	-W	-A	-AQQV
Pump type								
Rated flow rate [m^3/h]								
Number of chambers								
Number of impellers								
Code for pump version A: Basic								
Internal thread (NPT)								
Code for materials A: Basic								
Code for shaft seal								

Mechanical shaft seal

Example	H	U	U	V
A: O-ring seal with fixed driver				
H: Balanced cartridge seal				
Q: Silicone carbide				
U: Cemented tungsten carbide				
E: EPDM				
V: FKM				

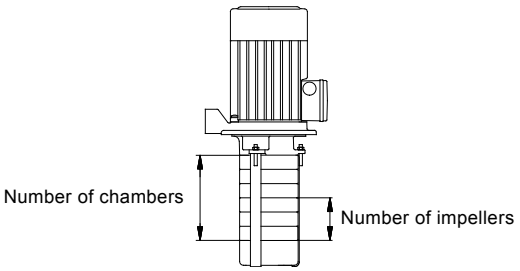

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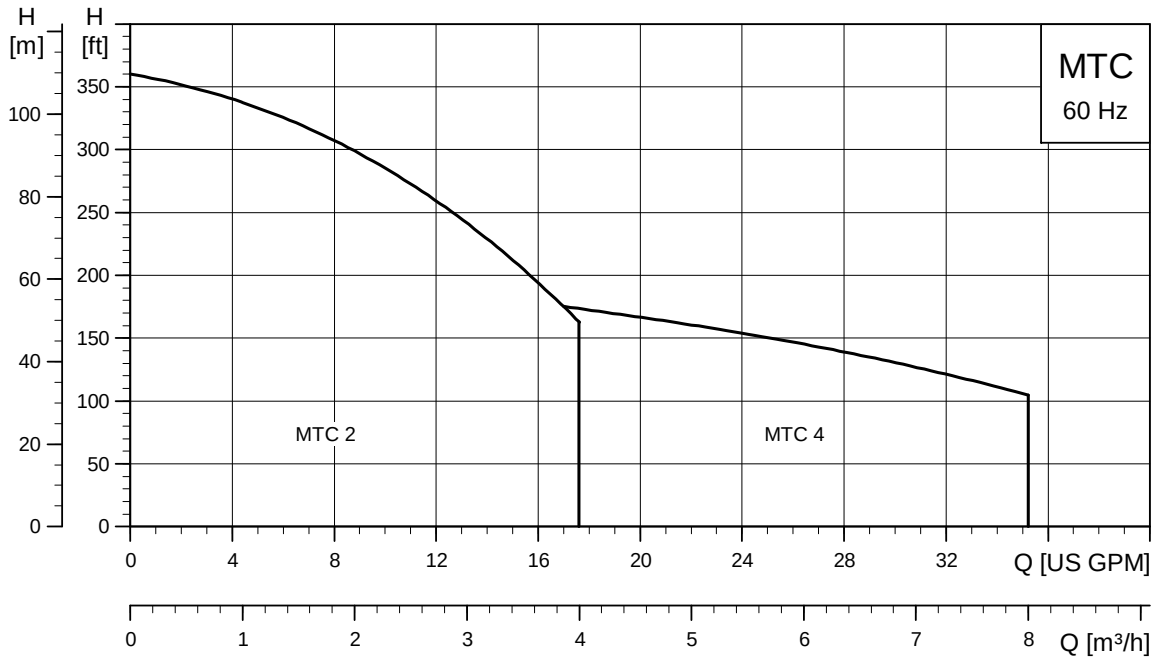
Fig. 53 Nameplate identifies number of chambers and number of impellers

MTC performance range

MTC 60 Hz



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Note: MTC pumps are not available in Canada.

MTC product range

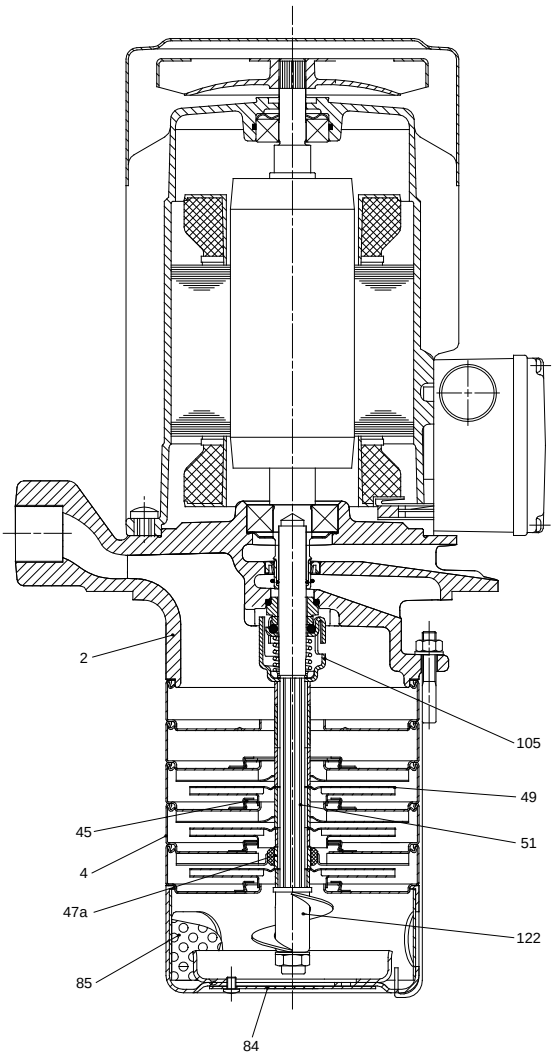
Range	MTC 2	MTC 4
Nominal flow rate [US gpm]	13	25
Nominal flow rate [m^3/h]	3.0	5.7
Temperature range [°F (°C)]	+14 to +194 °F (-10 to +90 °C)	
Max. pump efficiency [%]	44	44
Flow range [US gpm]	1.3 - 17.5	2.5 - 35.5
Flow range [m^3/h]	0.3 - 4.0	0.6 - 8.1
Maximum head [H (ft)]	360	220
Maximum head [psi]	155	95
Motor power [Hp]	0.25 - 2.0	0.5 - 2.1
Material variants		
MTC (AISI 304/cast iron)	•	•
MTCI (AISI 304/cast iron)	•	•
Pipe connection		
Internal thread [NPT]	0.75"	0.75"
Installation length		
inches	5.7 - 11.4	5.7 - 12.1
Shaft seal		
AQQV	•	•
AUUE★	•	•

★ On request.

MTC construction

Sectional drawings

Sectional drawing of MTC 2



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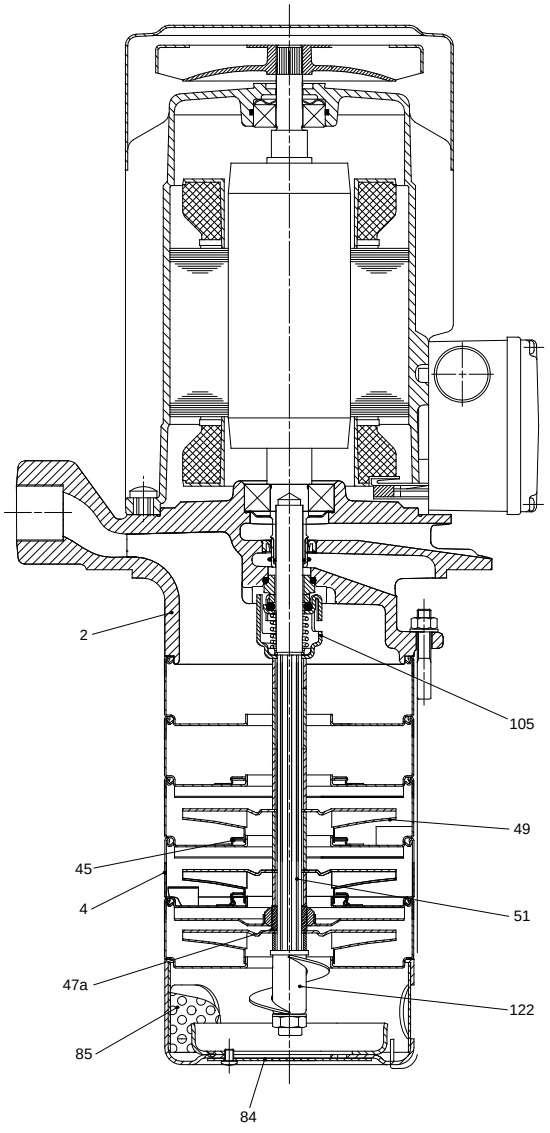
Material specification - MTC, MTCI

Pos.	Description	Materials	EN/DIN	AISI/ASTM
2	Pump head	Cast iron EN-GJL-200	0.6020	ASTM 25B
		Stainless steel (MTCI)	1.4408	CF 8M*
4	Chamber	Stainless steel	1.4301	AISI 304
45	Neck ring	PTFE (only MTC 2)		
47a	Bearing ring	Tungsten carbide		
49	Impeller	Stainless steel	1.4301	AISI 316
51	Pump shaft	Stainless steel	1.4057	AISI 431
84	Suction trainer, ∅0.08" holes	Stainless steel	1.4301	AISI 304
85	Strainer	Stainless steel	1.4301	AISI 304
105	Shaft seal	AQQV		
122	Priming screw	Stainless steel	1.4301	AISI 304

* CF 8M is cast equivalent of AISI 316 stainless steel

Sectional drawing of MTC 4



TM02 8691 0704

Material specification - MTC, MTCI

Pos.	Description	Materials	EN/DIN	AISI/ASTM
2	Pump head	Cast iron EN-GJL-200	0.6020	ASTM 25B
		Stainless steel (MTCI)	1.4408	CF 8M*
4	Chamber	Stainless steel	1.4301	AISI 304
45	Neck ring	PTFE (only MTC 2)		
47a	Bearing ring	Tungsten carbide		
49	Impeller	Stainless steel	1.4301	AISI 316
51	Pump shaft	Stainless steel	1.4057	AISI 431
84	Suction trainer, ∅0.08" holes	Stainless steel	1.4301	AISI 304
85	Strainer	Stainless steel	1.4301	AISI 304
105	Shaft seal	AQQV		
122	Priming screw	Stainless steel	1.4301	AISI 304

* CF 8M is cast equivalent of AISI 316 stainless steel