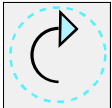


# Pulsefree pumping

Gear pumps allow differential pressures up to max. 5.6 bar



ISMATEC gear pumps run only in the clockwise direction (Exception REGLO-Z *Digital*)



## Safe and easy to operate

- Developed for continuous duty, 24 hours a day, 7 days a week
- Compact drives with hermetically sealed and magnetically coupled pump-heads
- Safe overload protection – magnetically driven pump-heads decouple when load exceeds the coupling torque
- Internal bypass valve limits the differential pressure
- Pump-heads are interchangeable within seconds
- MAX key enables rapid filling of the system (BVP-Z and MCP-Z pumps)

## Application range of gear pumps

Industries	Applications	Special media
<ul style="list-style-type: none"> <li>– Biotechnological</li> <li>– Chemical</li> <li>– Food</li> <li>– Mining</li> <li>– Power</li> <li>– Pulp and Paper</li> <li>– Semiconductor</li> <li>– Textile</li> </ul>	<ul style="list-style-type: none"> <li>– Sampling</li> <li>– Refrigeration technology</li> <li>– Water treatment</li> <li>– Liquid chromatography</li> <li>– Surface treatment</li> <li>– Distillation systems</li> </ul>	<ul style="list-style-type: none"> <li>– Biozides</li> <li>– Dye stuffs</li> <li>– Thixotropic products</li> <li>– Liquid waxes</li> <li>– Hydrogen peroxide</li> <li>– Flux</li> </ul> <p>Not suited for media containing particulates</p>

## Multifunctional

- Interchangeable pump-heads for different flow rates available in specific, media-resistant materials
- Virtually no pulsation
- Very accurate dispensing pumps due to calibrateable drives
- REGLO-Z *Digital* with reversible rotation direction
- Specially designed pump-heads (Suction Shoe Design) for elevated differential pressures
- Excellent media compatibility  
stainless steel housing  
gears available in PTFE, Graphite, PPS or PEEK
- Pump-heads for media with elevated viscosities

## Low operation costs

- Interchangeable, magnetically coupled pump-heads
- Maintenance-free drives
- Only few wearing parts (gears, seals)
- Service kits allow the user to exchange worn parts
- High quality and precision for an optimum performance even after many years of intensive use

## ISMATEC gear pumps are

- Easy to service
- Almost maintenance-free
- Leak-free
- Differential pressure up to 5.6 bar

## Overview of pump-heads from MICROPUMP® fitting ISMATEC® drives

### Series 120 (pages 49, 53)

For REGLO-Z / ZS, MCP-Z, and BVP-Z drives  
Pump-heads: 120, 122, 130, 140, 142, 150

Flow rates up to 5.4 liters/min  
Differential pressure up to 5.6 bar



### Series 180 (pages 49, 53)

For REGLO-Z / ZS, MCP-Z, and BVP-Z drives  
Pump-heads: 181, 183, 186, 1830

Flow rates up to 0.56 liters/min  
Differential pressure up to 5.2 bar



### Series 200 (page 53)

For MCP-Z and BVP-Z drives  
Pump-heads: 200 and 201

Flow rates up to 7.2 liters/min  
Differential pressure up to 5.2 bar



### Series 220 (page 55)

For FC71-MP drive  
Pump-heads: 219, 220, and 221

Flow rates up to 12.1 liters/min  
Differential pressure up to 5.2 bar



**MICROPUMP**

All microprocessor controlled drives are Labview compatible and can easily be integrated into process control systems.

ISMATEC tubing pumps are RoHS compatible

**NOTE**

## Overview of gear pumps Flow rates and models

Flow rates	ml/min		Bar	Model	Page
	min.	max.			
1		3290	5.6	REGLO-Z Analog, Digital	48
1		3290	5.6	REGLO-ZS Analog, Digital	48
1		7241	5.6	MCP-Z Standard	50
1		7241	5.6	BVP-Z Standard	51
1		7241	5.6	MCP-Z Process	52
29	12	112	5.2	FC71-MP	54

## Unique!

Only the ISMATEC® gear pump  
MCP-Z Process features:



### Carrying out programs independently of a PC

- Create the application profile in the PC (with ProgEdit software, page 69)
- Download the file data into the pump memory
- Disconnect the pump from the PC
- Carry out your application on the spot, using the pump as a stand-alone unit



## This mark indicates dispensing functions

- Pumping by speed or flow rate
- Dispensing by volume or time
- Interval dispensing by volumes with a pause
- Interval dispensing by time with a pause
- Programming a number of dispensing cycles
- **Calibrating** the flow rate and dispensing volume
- Factory set gear pump heads

You find dispensing gear pumps on pages 50, 52, 48

## Selection Criteria

Find the optimum pump-head design

2

	Cavity Style	Suction Shoe
<b>Flow performance and pressure</b>		
Only flow	✓	✓
Pre-pressure necessary	—	✓
Back-pressure		
Flow rate stable	—	✓
Back-pressure high		
BVP-Z and MCP-Z drives	✓	✓
Forward and reverse delivery	✓	—
Bypass depending on pump-head/Series	120	200
<b>Range of flow rates (ml/min)</b>		
Series 180 1–560	—	✓
Series 120 33–3950 (Reglo-Z)	✓	—
Series 120 55–5480 (MCP-Z)	✓	—
Series 200 35–7241	—	✓
<b>Max. operating temperature</b>		
54°C (129°F), 77°C (170°F), 99°C (210°F) (depending on the seals)	✓	—
Up to 177°C (350°F)	—	✓
<b>Max. suction height varies (depends on pump-head, speed and tubing) for water</b>		
wetted gears 1 m	✓	—
30 cm	✓	✓
flooded 8 m	✓	—
3 m	✓	✓
<b>Pumping out of vacuum</b>		
recommended up to 200 mbar		
absolutely	✓	—
not suitable	—	✓
<b>Viscosity</b>		
0.2 to 1500 cp	✓	✓
max 2000 cp, depending on pump-head	✓	—
<b>Particles up to 5 µm</b>	Z-150WI	—
<b>Gear material</b>		
PTFE	✓	—
Graphite	—	✓
PEEK	✓	✓
PPS	✓	✓
NiC	Z-150WI	—

## Cavity Style



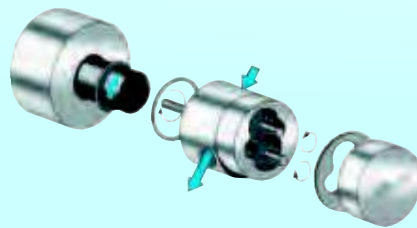
Pump-heads based on the conventional technique: 114, 120, 122, 130, 140, 142, 150, 223

- Max. suction height with water and flooded pump-head: 8 m, depending on pump-head and tubing
- Pumping out of a vacuum of 200 mbar
- Based on the traditional gear pump technology
- For application with moderate differential pressure

In comparison to the Suction Shoe pump-heads, the Cavity style pump-heads can be used for viscous media and applications with a certain suction height

### Advantages:

- Excellent chemical resistance
- Smooth operation at a low noise level
- Low internal friction



## Suction Shoe Style



Pump-heads with suction shoe: 200, 201, 219, 220, 221, 181, 183, 186, 1830

- An exclusive Micropump product featuring a patented technology
- Modified pump chamber compared to the conventional gear pump technique

This type of pump-head design has a seal plate mounted with a deliberate play in the suction part of the pump chamber (hence the expression Suction Shoe). Discharge pressure keeps the Suction Shoe seated tightly on top of the gears which prevents flow from decreasing in high-pressure applications.

### Advantages:

- Temperature range from –46...177 °C (–51...350°F)
- The Suction Shoe acts as a dynamic seal element which results in a temperature- and pressure-independent pump chamber.
- Ease of servicing due to fewer parts. The service kit, including the Suction Shoes, enables an extended pump life; conventional pumps require more frequent replacement.



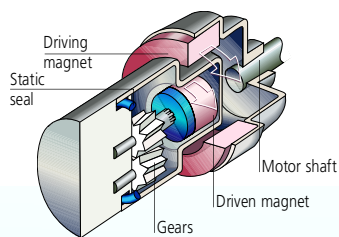
## Main features of pump-head designs

	Reverse delivery	Main sealing zone	Max. suction height - dry	Max. suction height flooded	Recommended for	Temperature range	Differential pressure	Suction from vacuum	Wearing material	Pulseless helical gearing	Pulseless spur gearing
Cavity Style	Yes	Tooth edges	1 m	8 m	High flow rate	54°C, 77°C, 99°C depending on seals	only low	200 mbar	– Service kit – Cavity plate	Head: 114, 120, 223	
Suction Shoe	No	Front surfaces of gears	30 cm	3 m	Preferred for diff. pressure	from –46 to 177°C (–29°C 200 series)	5.6 bar 8.7 bar*	not suitable	Service kit incl. suction shoe	Head: 200, 201, 220, 221	Head: 186, 181, 183, 1830

\*Pump-head for Industrial drive provided by customer

## The magnetically coupled drive principle

Consists of two magnets, a driving magnet that attaches to the motor shaft and a driven magnet that is completely sealed within the pump-head and is connected to the driving gear. The driven magnet is a wetted component and is totally encapsulated.



The two magnets couple automatically such that the driving magnet turns the driven magnet and gears without physical contact.

Decoupling occurs when the pump load exceeds the coupling torque between the two magnets. This feature can act as a safety device to prevent damage to the pump and motor as well as associated piping. The magnets can be recoupled by bringing the motor to a complete stop, then eliminating the cause of the decoupling and restarting.

## Pump-head material options

Enhance the chemical compatibility and application potential

- Base material  
Standard: Stainless steel 316  
Options: e.g. Hastelloy B2, Hastelloy C-276, Alloy 20 and Titan
- Gears  
Standard: PPS, Graphite, PTFE (depends on pump-head)  
Options: e.g. PEEK, PPSKV
- Static seals  
Standard: Viton®, PTFE (depends on pump-head)  
Options: EP, Buna N, Kalrez®
- Magnets  
Standard: Ferrite  
Options: e.g. SmCo, NdFeB

PTFE = Polytetrafluoroethylene  
PPS = Polyphenylenesulphide  
PEEK = Polyetheretherketone

## Internal Bypass

- An adjustable fluid bypass valve helps protect against decoupling and system damage from high-pressure build-up
- It allows for adjustment of a max. differential pressure (from 0.7 bar up to the max. differential pressure, depending on the individual pump-head)
- Should only be used for safety purposes and not for pressure controlling (bypass conditions may create a sufficient temperature rise to cause significant swelling in PTFE-gear pumps)



**MICROPUMP**

## Further pump-head options

- Integral drive
- High system pressure
- Deck ports
- 1/4-18 NPT ports
- Tri-clamp fittings

# Compact and powerful

Foot print only 10 by 18 cm!



- Pulseless fluid delivery
- 10 cm wide, 13.5 cm high
- Reversible rotation  
(with Cavity Style Pump heads)
- Interchangeable Micropump® pump-heads
- Excellent repeatability
 

Repetitive error (rel.)	5 ml	0.5%	(REGLO-Z Digital)
	20 ml	<0.2%	
	100 ml	<0.1%	

## REGLO-Z Digital 1–3290 ml/min

with dispensing functions

- Membrane key-pad
- LED display with setting menu
- Differential pressure max. 5.2 bar



## REGLO-Z Analog 1–3290 ml/min

- Variable speed
- Differential pressure max. 5.2 bar

## REGLO-ZS

Drive and pump-head are separated by a 2 m long cable.



Interchangeable pump-heads

### Specifications REGLO-Z/VS Analog

Motor type	DC motor
Speed	50 – 5000 rpm
Speed setting	1–99%, resolution 1 % 2-digit potentiometer
Power consumption	50 W
Mains connection	230V <sub>AC</sub> /50Hz, 115V <sub>AC</sub> /60Hz adjustable
Protection rating	IP 30
Depth/Width/Height	
Drive REGLO-Z	178 x 100 x 143 mm
Drive REGLO-ZS	175 x 65 x 80 mm
External control unit	178 x 100 x 143 mm
Weight	
Drive REGLO-Z	2.1 kg (without pumphead)
Drive REGLO-ZS	0.7 kg (without pumphead)
External control unit	1.7 kg

### Specifications REGLO-Z/VS Digital

Motor type	DC-Motor
Speed range	50 – 5000 rpm
Speed setting	rpm, resolution 1 rpm
Flow rate setting	ml/min, liters/min
Power Consumption	60 W
Mains connection	85–264 V <sub>AC</sub> / 47 – 60 Hz
Protection rating	IP 30
Depth/Width/Height	
Drive REGLO-Z	178 x 100 x 135 mm
Drive REGLO-ZS	175 x 65 x 80 mm
External control unit	178 x 100 x 135 mm
Weight	
Drive REGLO-Z	1.7 kg (without pumphead)
Drive REGLO-ZS	0.7 kg (without pumphead)
External control unit	1.2 kg

### Ordering Information

Model	Order No.
REGLO-Z Analog	ISM 895
REGLO-ZS Analog	ISM 896
REGLO-Z Digital	ISM 901
REGLO-ZS Digital	ISM 1143
Foot switch	ISM 891
Pump-head	see page 49
2 Nipples	see page 49

Labview drivers for Reglo-Z / -ZS Digital  
download for free: [www.ismatec.com](http://www.ismatec.com)

## MICROPUMP

### Ordering Information pump-heads for REGLO-Z / -ZS

#### Pump-heads »Suction shoe«

- Enhanced pumping performance at elevated differential pressures
- Suited for elevated temperature ranges
- Not recommended for applications requiring a suction lift

Suction Shoe	Pump-head No.	Order No.	Flow rate (ml/min)		Differential pressure max. bar	Gear material	Seals	Stainless steel housing	System pressure, max. (bar)	Temperature range °C	Internal Bypass
	Z-186	MI0006	0.85	85	1.4	Graphite	PTFE	SS316	21	–46...+177	–
	Z-186 P	MI0312	0.85	85	2.3	PEEK	PTFE	SS316	21	–46...+177	–
	Z-181	MI0007	2.1	210	2.8	Graphite	PTFE	SS316	21	–46...+177	–
	Z-183	MI0008	4.2	420	2.8	Graphite	PTFE	SS316	21	–46...+177	–
	Z-1830	MI0131	4.6	460	5.2	PPS	PTFE	SS316	22	–46...+177	–
	Z-1830 P	MI0280	4.6	460	5.2	PEEK	PTFE	SS316	22	–46...+177	–
For corrosive media	Z-186 HC	MI0309	0.85	85	1.4	Graphite	PTFE	Hastelloy-C276	21	–46...+177	–
	Z-183 HC	MI0310	4.2	420	2.8	Graphite	PTFE	Hastelloy-C276	21	–46...+177	–

- Ports (internal thread) 1/8"-27NPT
- Flow rates without differential pressure
- Operating temperature: with other seals up to 99°C possible

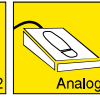
#### Pump-heads, »Cavity style«

- Can be used for viscous media and applications requiring a certain suction lift
- Excellent chemical resistance
- Smooth and precise flow

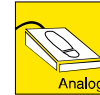
Cavity Style	Pump-head No.	Order No.	Flow rate (ml/min)		Differential pressure max. bar	Gear material	Seals	Stainless steel housing	System pressure, max. (bar)	Temperature range °C	Internal Bypass
	Z-120	MI0013	32	3200	1	PTFE	PTFE	SS316	21	–46...+54	✓
	Z-140	MI0016	32	3200	1	PTFE	PTFE	SS316	21	–46...+54	–
	Z-140 P	MI0313	32	3200	1	PEEK	PTFE	SS316	21	–46...+54	–
	Z-130	MI0019	32	3200	1	PPS	PTFE	SS316	21	–46...+54	✓
	Z-150	MI0020	32	3200	1	PPS	PTFE	SS316	22	–46...+54	–
	Z-140 HC	MI0284	32	3200	1	PTFE	PTFE	Hastelloy-C276	21	–46...+54	–
For corrosive media	Z-140 HC	MI0284	32	3200	1	PTFE	PTFE	Hastelloy-C276	21	–46...+54	–
For abrasive media	Z-150 WI	MI0265	32	3200	1	NIC	PTFE	Surface hardened	21	–46...+54	–

- Ports (internal thread) 1/8"-27NPT
- Flow rates without differential pressure
- Operating temperature: with other seals up to 99°C possible

### Interfaces



**REGLO Digital**  
PC-controllable  
Analog: only speed output  
(see Reglo **Analog**),  
start/stop and autostart



**REGLO Analog**  
– Speed control  
(0–5 or 0–10 V,  
0–20 or 4–20 mA)  
– Speed output  
2-channel: 0–8 kHz  
4-channel: 0–5 kHz  
– Start/Stop  
– Rotation direction

For applications with differential pressures exceeding 1 bar (14.5 psi) we recommend using the MCP-Z drive.



Service Kits  
contain the wearing parts (bushings, seals, gears)



These pump-heads are also available  
as OEM version.

Ask for the detailed data sheet.

### Nipple

1/4"-27NPT thread for tubing with 6.4 mm id  
**AR0001** for all REGLO-Z / -ZS drives

### Tubing adaptors for pump-heads

Threaded stainless steel connectors

Order No.	External thread	Tubing adaptor	Tubing iØ id mm
AR0001	1/8" NPT	Tube nozzle	6
AR0002	1/8" NPT	Tube nozzle	3
AR0008	1/8" NPT	Tube nozzle	8
AR0024	1/8" NPT	Pipe connection	6 (outside)

Threaded connectors in Hastelloy-C

**AR0001-HC** 1/8" NPT Tube nozzle 6



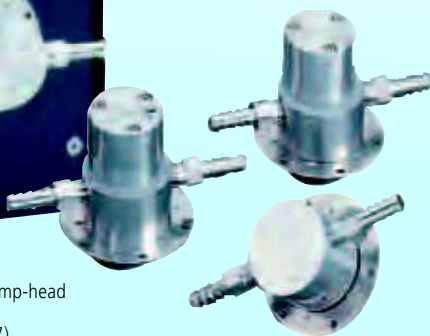
# Multi-purpose

Saves individual application parameters!

- Microprocessor controlled
- Ideal for dispensing and filling
- Pulseless pumping
- Robust, powerful gear pump drive
- Up to 5.2 bar differential pressure



MCP-Z Standard  
with interchangeable gear pump-head  
(see page 53)  
(material options, see page 47)



## MCP-Z Standard

with dispensing functions

- Membrane key-pad, LED display
  - **4 program memories for saving individual application parameters**
  - 12 interchangeable Micropump® pump-heads (pre-programmed)
- Flow rates and differential pressure depend on the pump-head mounted

## Interfaces



- PC-controllable:
- RS232



- Speed control (0–5 or 0–10V, 0–20 or 4–20mA)
- Speed output (0–10V<sub>DC</sub> or 0–12 kHz)
- Start/Stop
- Autostart



and calibrating  
see page 45

## Specifications

Motor type	DC motor
Speed	60 – 6000 rpm
Speed setting	rpm, resolution 1 rpm
Flow rate setting	µl/min, ml/min, liters/min
Power consumption	150 W
Mains connection	230V <sub>AC</sub> /50Hz, 115V <sub>AC</sub> /60Hz adjustable
Protection rating	IP 30
Depth/Width/Height	220 x 155 x 260 mm (without pump-head)
Weight	6.4 kg (without pump-head)

## Ordering information

The complete pump system MCP-Z Standard consists of:

Drive (magnet included)	ISM 405
Pump-head	see page 53
2 Nipples	see page 53

## Accessories

- Foot switch (see page 69) IS 10039

## Applications

Single-channel delivery and dispensing processes of particulate-free fluids under pressure.

**With pump-heads 140 and 186**  
Pulseless dispensing under pressure of different reagents with 2 pumps in different quantity ratios via a mixing valve into a reactor.

NOTE

# Economical

Robust, powerful gear pump drive

- Variable speed (no dispensing functions)
- Pulseless pumping
- Up to 5.2 bar differential pressure

## Interfaces



- Speed control (0–5 or 0–10V, 0–20 or 4–20mA)
- Speed output (0–10V<sub>DC</sub> or 0–12 kHz)
- Start/Stop

2



### BVP-Z Standard

without dispensing functions

- **3-digit potentiometer** (for speed setting)
- 12 interchangeable Micropump® pump-heads

Flow rates and differential pressure depend on the pump-head mounted



BVP-Z Standard  
with interchangeable gear pump-heads  
(see page 53)  
(material options, see page 47)

## Specifications

Motor type	DC motor
Speed	60 – 6000 rpm
Speed setting	1–99.9%, resolution 0.1 % 3-digit potentiometer
Power consumption	150 W
Mains connection	230V <sub>AC</sub> /50Hz, 115V <sub>AC</sub> /60Hz adjustable
Protection rating	IP 30
Depth/Width/Height	220 x 155 x 260 mm (without pump-head)
Weight	5.7 kg (without pump-head)

## Ordering information

The complete pump system BVP-Z Standard consists of:

Drive (magnet included)	ISM 446
Pump-head	see page 53
2 Nipples	see page 53

### Accessories

– Foot switch (see page 69)	ISM 891
– Valve	on request

## Applications

- Single-channel delivery processes under pressure for particulate-free fluids, e.g.: addition of reagents/solvents in organic synthesis at laboratory scale.
- Pumping propylene oxide into a laboratory reactor with a dispensing precision of +/-1% and a differential pressure of up to max. 3 bar.

NOTE



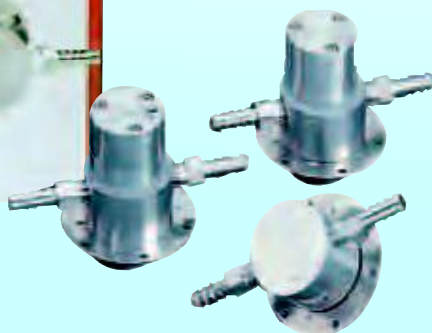
# Programmable

Programs can be carried out on the spot independently of a PC! Protection rating IP 65

- Suitable for industries, extremely robust gear pump drive
- For pulseless pumping (up to 5.2 bar)
- Ideal for dispensing and filling applications in a dusty, humid or corrosive environment, and in clean room areas (IP 65, dust-tight and protected against water jets)



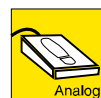
MCP-Z Process  
with interchangeable gear pump-heads  
(material options, see page 47)



## Interfaces



PC-controllable:  
– RS232



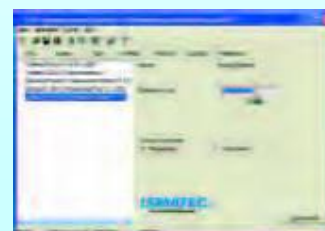
– Speed control (0–5 or 0–10V, 0–20 or 4–20mA)  
– Speed output (0–10V<sub>DC</sub> or 0–12 kHz)  
– Start/Stop  
– Autostart  
– 2 universal inputs  
– 2 universal outputs



and calibrating  
see page 45

## MCP-Z Process

- Stainless steel housing
  - Membrane key-pad with LED display
  - **4 program memories for saving individual application parameters or PC programmed command sequences**
  - pre-programmed pump-heads
  - 12 interchangeable Micropump® pump-heads
- Flow rates and differential pressure depend on the pump-head mounted (see page 53)



Software ProgEdit  
LabVIEW drivers  
Free download on [www.ismatec.com](http://www.ismatec.com)

## Specifications

Motor type	DC motor
Speed	60–6000 rpm
Speed setting	rpm, resolution 1 rpm
Flow rate setting	µl/min, ml/min, liters/min
Power consumption	150 W
Mains connection	85–264 V <sub>AC</sub> / 47 – 60 Hz
Protection rating	IP 65
Depth/Width/Height	260 x 160 x 262 mm (without pump-head)
Weight	6.9 kg (without pump-head)

## Ordering information

The complete pump system MCP-Z Process consists of:

Drive (magnet included)	ISM 918
Pump-head	see page 53
2 Nipples	see page 53

## Accessories

- Software ProgEdit (page 69) free download
- Foot switch (page 69) IS 10039
- **LabVIEW** drivers free download

## Applications

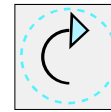
- Single-channel delivery and dispensing processes under pressure for particulate-free solutions
- Addition of various reagents in different quantity ratios via mixing valve into reactor

NOTE

## Ordering Information pump-heads for BVP-Z / MCP-Z

### Pump-heads »Suction shoe«


- Enhanced pumping performance at elevated differential pressures
- Suited for elevated temperature ranges
- Not recommended for applications requiring a suction lift



ISMATEC gear pumps run only in the clockwise direction.

Never use a gear pump for media containing particulates.

2

 Suction Shoe	Pump-head No.	Order No.	Flow rate min.	(ml/min) max.	Differential pressure max. bar	Gear material	Seals	Stainless steel housing	System pressure, max. (bar)	Temperature range °C	Internal Bypass
	Z-186	MI0006	1	99	1.4	Graphite	PTFE	SS316	21	–46...+177	–
	Z-186 P	MI0312	1	99	2.3	PEEK	PTFE	SS316	21	–46...+177	–
	Z-181	MI0007	3	252	2.8	Graphite	PTFE	SS316	21	–46...+177	–
	Z-183	MI0008	5	504	2.8	Graphite	PTFE	SS316	21	–46...+177	–
	Z-1830	MI0131	6	560	5.2	PPS	PTFE	SS316	21	–46...+177	–
	Z-1830 P	MI0280	6	560	5.2	PEEK	PTFE	SS316	21	–46...+177	–
	Z-200	MI0022	35	3509	3.5	PPS	Viton	SS316	21	–29...+177	✓
	Z-200 P	MI0306	35	3509	3.5	PEEK	Viton	SS316	21	–29...+177	–
	Z-201	MI0023	73	7241	3.5	PPS	Viton	SS316	21	–29...+177	✓
Organic solvents	Z-201 PKC	MI0378	73	7241	3.5	PEEK	Kalrez®	SS316	21	–29...+177	✓
For corrosive media	Z-186 HC	MI0309	1	99	1.4	Graphite	PTFE	Hastelloy-C276	21	–46...+177	–
	Z-183 HC	MI0310	5	504	2.8	Graphite	PTFE	Hastelloy-C276	21	–46...+177	–

- Ports (internal thread) 1/8"-27NPT
- Flow rates without differential pressure
- Operating temperature: with other seals up to 99°C possible



### Pump-heads »Cavity style«

- Can be used for viscous media and applications requiring a certain suction lift
- Excellent chemical resistance
- Smooth and precise flow

#### Service Kits

contain the wearing parts (bushings, seals, gears)

 Cavity Style	Pump-head No.	Order No.	Flow rate min.	(ml/min) max.	Differential pressure max. bar	Gear material	Seals	Stainless steel housing	System pressure, max. (bar)	Temperature range °C	Internal Bypass
	Z-120	MI0013	40	3950	3.5	PTFE	PTFE	SS316	21	–46...+54	✓
	Z-140	MI0016	40	3950	3.5	PTFE	PTFE	SS316	21	–46...+54	–
	Z-140 P	MI0313	40	3950	5.6	PEEK	PTFE	SS316	21	–46...+54	–
	Z-142	MI0018	55	5480	3.5	PTFE	PTFE	SS316	21	–46...+54	–
	Z-130	MI0019	40	3950	5.2	PPS	PTFE	SS316	21	–46...+54	✓
	Z-150	MI0020	40	3950	5.2	PPS	PTFE	SS316	22	–46...+54	–
For corrosive media	Z-140 HC	MI0284	40	3950	3.5	PTFE	PTFE	Hastelloy-C276	21	–46...+54	–
	Z-142 HC	MI0311	55	5480	3.5	PTFE	PTFE	Hastelloy-C276	21	–46...+54	–
For abrasive media	Z-150 WI	MI0265	40	3950	5.2	NiC	PTFE	Surface hardened	21	–46...+54	–

- Ports (internal thread) 1/8"-27NPT
- Flow rates without differential pressure
- Operating temperature: with other seals up to 99°C possible



Delivery pump  
BVP-Z Standard  
ISM 446  
Magnet included



Dosing pump  
MCP-Z Standard  
ISM 405  
Magnet included



Programmed dosing  
MCP-Z Process IP65  
ISM 918  
Magnet included

#### Nipple

1/4 "-27NPT thread for tubing with 6.4 mm id

AR0001 for all BVP-Z and MCP-Z drives

#### Tubing adaptors for pump-heads

Threaded stainless steel connectors

Order No.	External thread	Tubing adaptor	Tubing iØ id mm
AR0001	1/8" NPT	Tube nozzle	6
AR0002	1/8" NPT	Tube nozzle	3
AR0008	1/8" NPT	Tube nozzle	8
AR0024	1/8" NPT	Pipe connection	6 (outside)

Threaded connectors in Hastelloy-C

AR0001-HC 1/8" NPT Tube nozzle 6

# For high flow rates

## Powerful gear pumps

2

- Variable speed
- 4 interchangeable Micropump® pump-heads
- IP-54, dust and splash-tight drives



### FC71-MP

**29 ml/min – 12 l/min**

- Variable speed
  - Drive and pump-head are separated from the control unit by a 1 m long cable
  - Differential pressure max. 5.2 bar
- Flow rates and differential pressure depend on the pump-head mounted.



Interchangeable pump-heads (For material options refer to page 47)

### Specifications FC71-MP

Motor type	3-phase
Speed	0 to 3450 rpm
Speed setting	1 to 100%, resolution 1%
Power consumption	550 W
Mains connection	230V/ 50Hz
Protection rating	
Drive	IP 54
Control unit	IP 20
Depth/Width/Height	
Drive	275 x 145 x 180 mm
Control unit	160 x 125 x 135 mm
Weight	
Drive	11.0 kg
Control unit	1.9 kg

### Ordering information

Model	Order No.	Flow rates ml/min depends on pump-head	Channels	Speed rpm
FC71-MP (drive and control unit)	ISM 506	29 to 12'112	1	0 to 3450

### A gear pump consists of 3 parts.

When ordering, please ensure that you order all of the following parts:

- 1 drive (Magnet included)
- 1 pump-head
- 2 nipples for tube connection

## Pump-heads for FC71-MP drive

29 ml/min–12 l/min (depends on pump-head)

2

### Interfaces



FC71-MP

- With digital frequency converter
- Speed control (0–10V, 4–20mA)



### MICROPUMP


#### Pump-heads, »Cavity style«

- The »Cavity style« pump-head can be used for viscous media and applications requiring a certain suction lift
- Excellent chemical resistance
- Smooth and precise flow
- Low internal friction

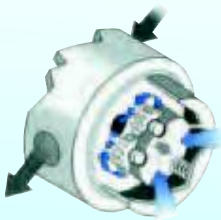


#### Service Kits

contain the wearing parts (bushings, seals, gears)

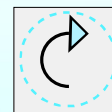
	Pump-head No.	Order No.	Flow rate (ml/min)		Differential pressure max. bar	Gear material	Seals	Stainless steel housing	System pressure, max. (bar)	Temperature range °C	Internal Bypass
 Cavity Style	Z-223	MI0038	122	12'112	4.5	PPS	TEV <sup>1)</sup>	SS316	69	–29...+121	–

Ports (internal thread) 1/8"-27NPT  
<sup>1)</sup> TEV Viton coated with Teflon




#### Pump-heads »Suction shoe«

- Enhanced pumping performance at elevated differential pressures
- Ease of servicing due to fewer parts
- Suited for elevated temperature ranges
- Not recommended for applications requiring a suction lift



ISMATEC gear pumps run only in the clockwise direction.

Never use a gear pump for media containing particulates.

	Pump-head No.	Order No.	Flow rate (ml/min)		Differential pressure max. bar	Gear material	Seals	Stainless steel housing	System pressure, max. (bar)	Temperature range °C	Internal Bypass
 Suction Shoe	Z-219	MI0026	29	2'839	5.2	PPS	Viton	SS316	69	–29...+177	–
	Z-220	MI0028	65	6'435	5.2	PPS	Viton	SS316	69	–29...+177	–
	Z-221	MI0029	122	12'112	3.4	PPS	Viton	SS316	69	–29...+177	–

Ports (internal thread) 1/8"-27NPT  
<sup>1)</sup> TEV Viton coated with Teflon

#### Pump-head ports for tubing adaptors

Stainless steel threads

Order No.	External thread	Tubing adaptor	Tubing ID
AR0004	3/8" NPT	Tubing nipple	12 mm

### Specifications

- Pump-head housing in stainless steel
- **Differential pressure**  
Difference between the pressure on the inlet and the discharge pressure
- **System pressure**  
Pressure within the pump-head max. 21 bar (with IEC adaptor up to 103 bar possible)
- **Gear materials**
  - PTFE = Polytetrafluoroethylene
  - PPS = Polyphenylene sulfide
  - Graphite = Carbon graphite
  - PEEK = Polyetheretherketone