

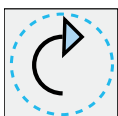


Gear Pumps

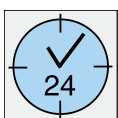
Pulsefree pumping

Gear pumps allow differential pressures up to maximum 5.6 bar

2



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"> - Biotechnological - Chemical - Food - Mining - Power - Pulp and Paper - Semiconductor - Textile 	<ul style="list-style-type: none"> - Sampling - Refrigeration technology - Water treatment - Liquid chromatography - Surface treatment - Distillation systems 	<ul style="list-style-type: none"> - Biozides - Dye stuffs - Thixotropic products - Liquid waxes - Hydrogen peroxide - Flux <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

MICROPUMP®

ISMATEC gear pumps are

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

Note

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

Overview of gear pumps

Flow rates and models

Flow rates	ml/min		Bar	Model	Page
	min.	max.			
1	3290	5.2	REGLO-Z <i>Analog, Digital</i>	44	
1	3290	5.2	REGLO-ZS <i>Analog, Digital</i>	44	
1	7241	5.2	BVP-Z <i>Standard</i>	46	
1	7241	5.2	MCP-Z <i>Standard</i>	47	
1	7241	5.2	MCP-Z <i>Process</i>	48	

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 61)
- 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 function
(You'll find dispensing gear pumps on pages 44, 47, 48)

- 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

NEW pump-head reference chart

The Micropump pump-head numbers have recently been updated to new series product code to simplify the global understanding of the products we provide. Below, you'll find an easy reference chart updating the old Pump-head numbers to the new series product code. Please note that ISMATEC order numbers for Micropump pump-heads have now been updated to the Micropump order number.



OLD Order No.	OLD Pump-head No.	NEW Pump-head No.	Order No.
Series GA			
MI0006	Z-186	GA-X21.CFS.B	82092
MI0007	Z-181	GA-V21.CFS.B	82114
MI0008	Z-183	GA-V23.CFS.B	82115
MI0131	Z-1830	GA-T23.PFS.B	81473
MI0312	Z-186 P	GA-X21.JFS.B	L20820
MI0280	Z-1830 P	GA-T23.JFS.B	L18489
MI0309	Z-186 HC	GA-X21.CFC.B	L17164
MI0310	Z-183 HC	GA-V23.CFC.B	L2383
Series GB			
MI0022	Z-200	GB-P25.PVS.A.B1	81281
MI0023	Z-201	GB-P35.PVS.A.B1	81281
MI0306	Z-200 P	GB-P25.JVS.B	220004
MI0378	Z-201 PKC	GB-P35.JKS.B	L22609
Series GJ			
MI0013	Z-120	GJ-N23.FF1S.B.B1	82004
MI0015	Z-122	GJ-N25.FF1S.B.B1	82006
MI0016	Z-140	GJ-N23.FF1S.B	82001
MI0018	Z-142	GJ-N25.FF1S.B	82003
MI0019	Z-130	GJ-N23.PF1S.B.B1	81529
MI0020	Z-150	GJ-N23.PF1S.B	81531
MI0313	Z-140 P	GJ-N23.JF1S.B	L197735
MI0284	Z-140 HC	GJ-N23.FF1C.B	L20284
MI0311	Z-142 HC	GJ-N25.FF1C.B	L21812



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Selection criteria

Find the optimum pump-head design

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

Cavity style:

Series GJ

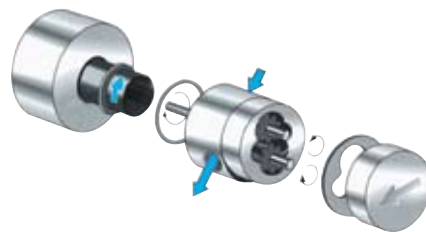


- Max. suction height with water and flooded pump-head: 8 m, depending on pump-head and tubing
- Pumping out of a vacuum of 200 mbar
- Based on the traditional gear pump technology
- For application with moderate differential pressure

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:

Series GA and GB

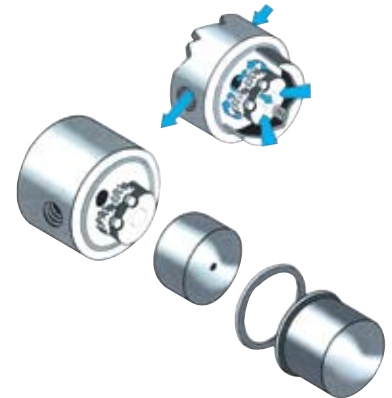


- An exclusive Micropump product featuring a patented technology
- Modified pump chamber compared to the conventional gear pump technique



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.



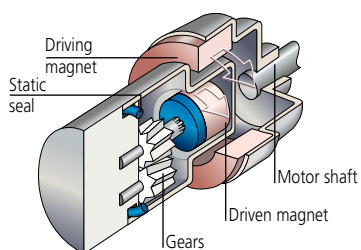
Main features of pump-head designs

	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: GJ												
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: GB	Head: GA											

*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

2

REGLO-Z, REGLO-ZS

Compact and powerful
Footprint only 10 by 18 cm!

2



REGLO-Z Analog

REGLO-ZS Analog

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.

- 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% | |



Interchangeable pump-heads



with Cavity Style pump-head, rotation direction is reversible



with Suction shoe pump-head, run only in the clockwise direction

Dispensing and calibrating function see Page 41



REGLO-Z Digital



REGLO-ZS Digital

REGLO-Z Digital
1–3290 ml/min

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



Specifications REGLO-Z/ZS 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 _{AC} /50Hz, 115V _{AC} /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/ZS 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	75 W
Mains connection	100 – 230V _{AC} /50 – 60Hz
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	Page 45
2 Nozzles	Page 45

LabVIEW drivers for Reglo-Z / -ZS Digital download for free: www.ismatec.com

Never use a gear pump for media containing particulates.

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
			min.	max.							
	GA-X21.CFS.B	MI0006	0.85	85	1.4	Graphite	PTFE	SS316	21	-46 – +177	–
	GA-X21.JFS.B	MI0312	0.85	85	2.3	PEEK™	PTFE	SS316	21	-46 – +177	–
	GA-V21.CFS.B	MI0007	2.1	210	2.8	Graphite	PTFE	SS316	21	-46 – +177	–
	GA-V23.CFS.B	MI0008	4.2	420	2.8	Graphite	PTFE	SS316	21	-46 – +177	–
	GA-V23.PFS.B	MI0131	4.6	460	5.2	PPS	PTFE	SS316	22	-46 – +177	–
	GA-V23.JFS.B	MI0280	4.6	460	5.2	PEEK	PTFE	SS316	22	-46 – +177	–
For corrosive media	GA-X21.CFC.B	MI0309	0.85	85	1.4	Graphite	PTFE	Hastelloy®-C276	21	-46 – +177	–
	GA-V23.CFC.B	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
			min.	max.							
	GJ-N23.FFS.B.B1	MI0013	32	3200	1*	PTFE	PTFE	SS316	21	-46 – +54	✓
	GJ-N23.FFS.B	MI0016	32	3200	1*	PTFE	PTFE	SS316	21	-46 – +54	–
	GJ-N23.JFS.B	MI0313	32	3200	1*	PEEK	PTFE	SS316	21	-46 – +54	–
	GJ-N23.JFS.B.B1	MI0019	32	3200	1*	PPS	PTFE	SS316	21	-46 – +54	✓
	GJ-N23.JFS.B	MI0020	32	3200	1*	PPS	PTFE	SS316	22	-46 – +54	–
For corrosive media	GJ-N23.FFC.B	MI0284	32	3200	1*	PTFE	PTFE	Hastelloy-C276	21	-46 – +54	–
For abrasive media	GJ-N23.9FD.B	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

* For applications with differential pressures exceeding 1 bar we recommend using the MCP-Z drive.



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



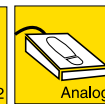
These pump-heads are also available as OEM versions. Ask for the detailed data sheet.

Interfaces



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



REGLO Digital

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

BVP-Z Standard

Economical

Robust, powerful gear pump drive

2

- 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_{DC} or 0–12 kHz)
- Start/Stop



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

CE

BVP-Z Standard
with interchangeable gear pump-heads
(see Page 49)
(material options, see Page 43)

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 _{AC} /50Hz, 115V _{AC} /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	Page 49
2 Nozzles	Page 49
Accessories	Page 61
– Foot switch	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.

MCP-Z *Standard*

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 49)
(material options, see Page 43)

MCP-Z *Standard*

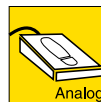
- with dispensing functions
- Membrane key-pad, LED display
 - **4 program memories for saving individual application parameters**
 - 12 interchangeable Micropump® pump-heads (pre-programmed)
- Flow rates and differential pressure depend on the pump-head mounted



Interfaces



- PC-controllable:
- RS232



- Speed control (0–5 or 0–10V, 0–20 or 4–20mA)
- Speed output (0–10V_{DC} or 0–12 kHz)
- Start/Stop
- Autostart



Dispensing and calibrating
function see Page 41

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 _{AC} /50Hz, 115V _{AC} /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	Page 49
2 Nozzles	Page 49
Accessories	Page 61
– Foot switch	IS 10039

Applications

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

With pump-heads GJ-N23 and GA-X21

Pulseless dispensing under pressure of different reagents with 2 pumps in different quantity ratios via a mixing valve into a reactor.

MCP-Z Process

Programmable

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

2

- 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 43)

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
 - 21 interchangeable Micropump® pump-heads
- 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_{DC} or 0–12 kHz)
- Start/Stop
- Autostart
- 2 universal inputs
- 2 universal outputs



Software ProgEdit
LabVIEW drivers
Free download on www.ismatec.com



Dispensing and calibrating
function see page 41

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	200 W
Mains connection	100 – 230 V _{AC} / 50 – 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

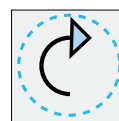
The complete pump system MCP-Z Process consists of:	
Drive (magnet included)	ISM 918
Pump-head	Page 49
2 Nozzles	Page 49
Accessories	Page 61
– Software ProgEdit	free download
– Foot switch	IS 10039

LabVIEW driver
download for free: www.ismatec.com

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

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



ISMATEC gear pumps run only in the clockwise direction.
Never use a gear pump for media containing particulates.

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
			min.	max.							
	GA-X21.CFS.B	MI0006	1	99	1.4	Graphite	PTFE	SS316	21	-46 – +177	–
	GA-X21.JFS.B	MI0312	1	99	2.3	PEEK™	PTFE	SS316	21	-46 – +177	–
	GA-V21.CFS.B	MI0007	3	252	2.8	Graphite	PTFE	SS316	21	-46 – +177	–
	GA-V23.CFS.B	MI0008	5	504	2.8	Graphite	PTFE	SS316	21	-46 – +177	–
	GA-V23.PFS.B	MI0131	6	560	5.2	PPS	PTFE	SS316	21	-46 – +177	–
	GA-V23.JFS.B	MI0280	6	560	5.2	PEEK	PTFE	SS316	21	-46 – +177	–
	GB-P25.PVS.B	MI0022	35	3509	3.5	PPS	Viton	SS316	21	-29 – +177	✓
	GB-P25.JVS.B	MI0306	35	3480	3.5	PEEK	Viton	SS316	21	-29 – +177	–
	GB-P35.PVS.B	MI0023	70	7020	3.5	PPS	Viton	SS316	21	-29 – +177	✓
Organic solvents	GB-P35.JKS.B	MI0378	73	7241	3.5	PEEK	Kalrez®	SS316	21	-29 – +177	✓
For corrosive media	GA-X21.CFC.B	MI0309	1	99	1.4	Graphite	PTFE	Hastelloy®-C276	21	-46 – +177	–
	GA-V23.CFC.B	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



Service Kits

contain the wearing parts (bushings, seals, gears)

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
			min.	max.							
	GJ-N23.FFS.B.B1	MI0013	40	3950	3.5	PTFE	PTFE	SS316	21	-46 – +54	✓
	GJ-N23.FFS.B	MI0016	40	3950	3.5	PTFE	PTFE	SS316	21	-46 – +54	–
	GJ-N23.JFS.B	MI0313	40	3950	5.6	PEEK	PTFE	SS316	21	-46 – +54	–
	GJ-N25.FFS.B	MI0018	55	5460	3.5	PTFE	PTFE	SS316	21	-46 – +54	–
	GJ-N23.JFS.B.B1	MI0019	40	3950	5.2	PPS	PTFE	SS316	21	-46 – +54	✓
	GJ-N23.JFS.B	MI0020	40	3950	5.2	PPS	PTFE	SS316	22	-46 – +54	–
For corrosive media	GJ-N23.FFC.B	MI0284	40	3950	3.5	PTFE	PTFE	Hastelloy-C276	21	-46 – +54	–
	GJ-N25.FFC.B	MI0311	55	5480	3.5	PTFE	PTFE	Hastelloy-C276	21	-46 – +54	–
For abrasive media	GJ-N23.9FD.B	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



Dosing pump
MCP-Z Standard
ISM 405



Programmed dosing
MCP-Z Process IP65
ISM 918

Tubing adaptors for gear pump-heads

Threaded stainless steel connectors

Order No.	External Tubing thread	Tubing adaptor	Tubing i.d. mm
AR0001	1/8" NPT	Tube nozzle	6
AR0002	1/8" NPT	Tube nozzle	3
AR0004	3/8" NPT	Tube nozzle	12
AR0008	1/8" NPT	Tube nozzle	8
AR0009	1/8" NPT	Tube nozzle	9.5
AR0024	1/8" NPT	Pipe connection	6 (outside)

Threaded connectors in Hastelloy-C

AR0001-HC	1/8" NPT	Tube nozzle	6
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