Pulsefree pumping

with Gear Pumps from ISMATEC

www.ismatec.com

1 ml/min to 12 litres/min

For different applications in Chemistry, Biotechnology and Industries, such as food, paper, textile, etc.

ISMATEC®

SOLUTIONS FOR FLUID HANDLING

IDEX CORPORATION

ISMATEC gear pumps are

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

Application range of gear pumps

Industries	Applications	Special media
– Biotechnological – Chemical – Food – Mining – Power – Pulp and Paper – Semiconductor – Textile	Sampling – Refrigeration technology – Water treatment – Liquid chromatography – Surface treatment – Distillation systems	– Biocides – Dye stuffs – Thixotropic products – Liquid waxes – Hydrogen peroxide – Flux

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 run only in the clockwise direction

(Exception REGLO-Z *Digital*)

Safe and easy to operate

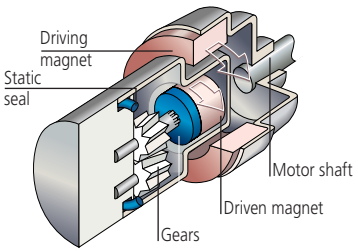
- Developed for continuous duty, 24 hours a day, 7 days a week
- Compact drives with hermetically sealed and magnetically coupled pump-heads
- Safe overload protection – magnetically driven pump-heads decouple when load exceeds the coupling torque
- Internal bypass valve limits the differential pressure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

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
– 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

The magnetically coupled drive principle from MICROPUMP®

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-geared pumps)

MICROPUMP
A Unit of IDEX Corporation

Further pump-head options

- Integral drive
- High system pressure
- Deck ports
- ¼-18 NPT ports
- Tri-clamp fittings

For more pump-head information

see page 8

Contents

ISMATEC Objectives for Quality

We constantly observe our services and the life cycle of our products. By providing products of high quality and competent service we contribute to our customers' success.

ISO 9001 certification:
1994, 1997, 2000 and 2004

Robust, powerful gear pump drive

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

BVP-Z *Standard*

1–7241 ml/min

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

Order No. Drive ISM 446
Magnet included

Interfaces

– Speed control (0–5 or 0–10V, 0–20 or 4–20mA)
– Speed output (0–10VDC or 0–12 kHZ)
– Start/Stop

Compact and powerful Foot print only 10 by 18 cm!

- 10 cm wide, 13.5 cm high
- 15 interchangeable Micropump® pump-heads
- Pulseless fluid delivery

REGLO-Z *Analog*

1–3290 ml/min

– Variable speed
– Differential pressure max. 5.2 bar

Order No. Drive ISM 895
Magnet included

REGLO-ZS *Analog*

1–3290 ml/min

same as REGLO-Z Analog, but drive and pump-head are separated by a 2 m long cable

Order No. Drive ISM 896
Magnet included

Interfaces

- Speed control (0-5 or 0-10V, 0-20 or 4-20mA)
- Speed output (0-10 kHz)
- Start/Stop

Ordering Information Pump-heads
for BVP-Z drive see page 9
for REGLO-Z drive see page 10

For high flow rates
Powerful gear pumps

- Fixed or variable speed
- Explosion-proof (Model RF71-M2) EEx-e-II-T3
- 4 interchangeable Micropump® pump-heads
- IP-54, dust- and splash-tight drives

Specifications

BVP-Z *Standard*

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	230VAC/50Hz,115VAC/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)

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	230VAC/50Hz,115VAC/60Hz adjustable
Protection rating	IP 30
Depth/Width/Height	
Pump drive	169 x 65 x 80 mm
Control unit	175 x100 x135 mm
Weight	
Pump drive	2.0 kg
Control unit	1.6 kg

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

Never use a gear pump for media containing particulates.

FC71-MP
11 ml/min –12 litres/min
Flow rates and differential pressure depend on the pump-head mounted.

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

Order No. Drive ISM 506
Magnet included

Interfaces
- With digital frequency converter
- Speed control 0-10V, 4-20mA

Pump-head design	Cavity style		Suction shoe		
Pump-head No.	**Z-223**	**Z-114**	**Z-219**	**Z-220**	**Z-221**
Flow rate (ml/min) max.	**12.1**	**10.8**	**2,8**	**6,4**	**12.1**
Flow rate (ml/min) min.	**122**	**11**	**29**	**65**	**122**
Differential pressure max. (bar)	4.5	3.5	5.2	5.2	3.4
Gear material	PPS	PTFE	PPS	PPS	PPS
Seals	TEV (1)	PTFE	Viton	Viton	Viton
Stainless steel housing	SS316	SS316	SS316	SS316	SS316
System pressure, max. (bar)	69	69	69	69	69
Operating temperature in °C	-29...+121	-29...+54	-29...+177	-29...+177	-29...+177
Internal bypass	—	—	—	—	—
Ports (internal thread)	1/8"-18NPT	1/8"-18NPT	1/8"-18NPT	1/8"-18NPT	1/8"-18NPT
Order No.	MI0038	MI0308	MI0026	MI0028	MI0029

(1) 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

Multi-purpose
4 program memories for different applications

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

MCP-Z *Standard*
1–7241 ml/min
with dispensing functions

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

– Membrane key-pad, LED display
– 4 program memories for saving individual application parameters
– 12 interchangeable Micropump® pump-heads (pre-programmed)

Order No. Drive ISM 405
Magnet included

Interfaces
– RS232 (PC controllable)
– Speed control (0–5 or 0–10V, 0–20 or 4–20mA)
– Speed output (0–10VDC or 0–12 kHZ)
– Start/Stop
– Autostart

New!

Compact and powerful Dosing Pump

- 10 cm wide, 13.5 cm high
- Ideal for dosing and filling
- 15 interchangeable Micropump pump-heads (see page 10)
- Reversible rotation (with Cavity Style Pump-heads)

REGLO-Z *Digital*
1–3290 ml/min
with dispensing functions

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

– Membrane key-pad
– LED display with settings menu
– Differential pressure up to 2.8 bar (40 psi) with Z-1830 pump-head up to 5.2 bar (75 psi)
– Excellent repeatability

Repetitive error (rel.)
0.5% at 5 ml
< 0.2% at 20 ml
< 0.1% at 100 ml

Order No. Drive ISM 901
Magnet included

Interfaces
– RS232 (PC controllable)
– Speed output (0–10 kHz)
– Start/Stopp
– Autostart

Specifications

MCP-Z *Standard*

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	230VAC/50Hz,115VAC/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)

New!

REGLO-Z *Digital*

Motor type	DC motor
Speed	50 – 5000 rpm
Speed setting	rpm, resolution rpm
Flow rate setting	ml/min
Power consumption	60 W
Power supply	85–264 V_{AC} / 47 – 60 Hz
Protection rating	IP 30
Depth/Width/Height	175 x 97 x 135 mm (without pump-head)
Weight	1.7 kg (without pump-head)

MCP-Z *Process*

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 VAC / 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)

Never use a gear pump for media containing particulates.

Ordering Information Pump-heads
for BVP-Z drive see page 9
for REGLO-Z drive see page 10

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, or in clean room areas
  (IP 65, dust-tight and protected against water jets)

IP 65

With this pressure control unit you have your system pressure under control.

A typical application of pumping through a filter.
As long as the filter is new, the flow rate will remain constant. As soon as the filter starts to clog, a warning lamp starts to blink and the rotation rate is automatically reduced. This prevents the system from exceeding a pre-set pressure, even if the filter cannot be exchanged immediately. In the 'worst case' the pump is automatically stopped.

Order No. IS 3825

MCP-Z *Process*

1–7241 ml/min

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

- 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

Order No. Drive ISM 918
Magnet included

Software ProgEdit
English/German switchable
→ can be downloaded for free!
www.ismatec.com

Interfaces

- RS232 (PC controllable)
- Speed control (0–5 or 0–10V, 0–20 or 4–20mA)
- Speed output (0–10VDC or 0–12 kHZ)
- Start/Stop
- Autostart
- 2 universal inputs
- 2 universal outputs

Gear pumps showing this mark feature the following dispensing functions:

- Pumping **by speed or flow rate**
- Dispensing by **volume or time**
- **Dispensing a volume within a time**
- Entering a pause 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

UNIQUE

This feature you will only find on the MCP-Z Process gear pump

Control your processes independently of a PC

- Create your application program in the PC using the ProgEdit software
- Download and save the program in the pump
- Disconnect the pump from the PC

Run your application on location (without PC), e.g. sensor-controlled by

- Pressure
- Temperature
- Flow rate
- pH
- Level
- etc.

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		120	200
Range of flow rates (ml/min)			
Series 180	1–560	—	✓
Series 120	33–3950 (Reglo-Z)	✓	—
Series 120	55–5480 (MCP-Z)	✓	—
Series 200	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 5 µm		Z-150WI	—
Gear material			
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	1m	8m	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

ISMATEC Gear Pumps

Ordering Information
Pump-heads for BVP-Z/MCP-Z drives

The complete gear pump system consists of:
- Drive and magnet (included)
- Pump-head and 2 tubing adaptors

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

Pump-head No.	Z-120	Z-140	Z-140 P	Z-142	Z-130	Z-150
Flow rate (ml/min) max.	**3950**	**3950**	**3950**	**5480**	**3950**	**3950**
Flow rate (ml/min) min.	**40**	**40**	**40**	**55**	**40**	**40**
Differential pressure max. (bar)	3.5	3.5	5.6	3.5	5.2	5.2
Gear material	PTFE	PTFE	PEEK	PTFE	PPS	PPS
Seals	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Stainless steel housing	SS316	SS316	SS316	SS316	SS316	SS316
System pressure, max. (bar)	21	21	21	21	21	21
Operating temperature in °C	-46...+54	-46...+54	-46...+54	-46...+54	-46...+54	-46...+54
Internal bypass	—	—	—	—	✓	—
Ports (internal thread)	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT
Order No.	MI0013	MI0016	MI0313	MI0018	MI0019	MI0020

1) Operating temperature: with other seals up to 99° possible

	For corrosive media		For abrasive media
Pump-head No.	**Z-140 HC**	**Z-142 HC**	**Z-150 WI**
Flow rate (ml/min) max.	**3950**	**5480**	**3950**
Flow rate (ml/min) min.	**40**	**55**	**40**
Differential pressure max. (bar)	3.5	3.5	5.2
Gear material	PTFE	PTFE	NiC
Seals	PTFE	PTFE	PTFE
Stainless steel housing	Hastelloy C276	Hastelloy C276	Surface hardened
System pressure, max. (bar)	21	21	21
Operating temperature in °C	-46...+54	-46...+54	-46...+54
Internal bypass	—	—	—
Ports (internal thread)	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT
Order No.	MI0284	MI0311	MI0265

Pump-head No.	Z-186	Z-186 P	Z-181	Z-183	Z-1830	Z-1830 P
Flow rate (ml/min) max.	**99**	**99**	**252**	**504**	**560**	**560**
Flow rate (ml/min) min.	**1**	**1**	**3**	**5**	**6**	**6**
Differential pressure max. (bar)	1.4	2.3	2.8	2.8	5.2	5.2
Gear material	**Graphite**	PEEK	**Graphite**	**Graphite**	PPS	PEEK
Seals	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Stainless steel housing	SS316	SS316	SS316	SS316	SS316	SS316
System pressure, max. (bar)	21	21	21	21	21	21
Operating temperature in °C	-46...+177	-46...+177	-46...+177	-46...+177	-46...+177	-46...+177
Internal bypass	—	—	—	—	—	—
Ports (internal thread)	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT
Order No.	MI0006	MI0312	MI0007	MI0008	MI0131	MI0280

				Organic solvents	For corrosive media	
Pump-head No.	**Z-200**	**Z-200 P**	**Z-201**	**Z-201 PKC**	**Z-186 HC**	**Z183 HC**
Flow rate (ml/min) max.	**3509**	**3509**	**7241**	**7241**	**99**	**504**
Flow rate (ml/min) min.	**35**	**35**	**73**	**73**	**1**	**5**
Differential pressure max. (bar)	5.2	4.8 / 5.2	3.5	3.5	1.4	2.8
Gear material	PPS	PEEK	PPS	PEEK	**Graphite**	**Graphite**
Seals	Viton	Viton	Viton	Kalrez®	PTFE	PTFE
Stainless steel housing	SS316	SS316	SS316	SS316	Hastelloy C-276	Hastelloy C-276
System pressure, max. (bar)	21	21	21	21	21	21
Operating temperature in °C	-29...+177	-29...+177	-29...+177	-29...+177	-46...+177	-46...+177
Internal bypass	✓	✓	✓	✓	—	—
Ports (internal thread)	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT
Order No.	MI0022	MI0306	MI0023	MI0341	MI0309	MI0310

Accessories

Nipple 1/8" -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 ID in mm
AR0001	3/8" 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 mm (outside)
Threaded connectors in Hastelloy-C			
AR0001-HC	1/8" NPT	Tube nozzle	6 m

Ordering Information
Pump-heads for **REGLO-Z**

The complete gear pump system consists of:
- Drive and magnet (included)
- Pump-head and 2 tubing adaptors

Delivery pump
REGLO-Z/ZS *Analog*
ISM 895/896
Magnet included

Suction Shoe							For corrosive media	
Pump-head No.	**Z-186**	**Z-186 P**	**Z-181**	**Z-183**	**Z-1830**	**Z-1830 P**	**Z-186 HC**	**Z-183 HC**
Flow rate (ml/min) max.	**85**	**85**	**210**	**420**	**460**	**460**	**85**	**420**
Flow rate (ml/min) min.	**0.85**	**0.85**	**2.1**	**4.2**	**4.6**	**4.6**	**0.85**	**4.2**
Differential pressure max. (bar)	1.4	2.3	2.8	2.8	5.2	5.2	1.4	2.8
Gear material	Graphite	PEEK	Graphite	Graphite	PPS	PEEK	Graphite	Graphite
Seals	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Stainless steel housing	SS316	SS316	SS316	SS316	SS316	SS316	Hastelloy-C276	Hastelloy-C276
System pressure, max. (bar)	21	21	21	21	22	22	21	21
Operating temperature in °C	-46...+177	-46...+177	-46...+177	-46...+177	-46...+177	-46...+177	-46...+177	-46...+177
Internal bypass	—	—	—	—	—	—	—	—
Ports (internal thread)	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT
Order No.	**MI0006**	**MI0312**	**MI0007**	**MI0008**	**MI0131**	**MI0280**	**MI0309**	**MI0310**

Dispensing pump
REGLO-Z *Digital*
ISM 901
Magnet included

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

Cavity Style						For corrosive media	For abrasive media
Pump-head No.	**Z-120**	**Z-140**	**Z-140 P**	**Z-130**	**Z-150**	**Z-140 HC**	**Z-150 WI**
Flow rate (ml/min) max. [1]	**3200**	**3200**	**3200**	**3200**	**3200**	**3200**	**3200**
Flow rate (ml/min) min. [1]	**32**	**32**	**32**	**32**	**32**	**32**	**32**
Differential pressure max. (bar)	[2]	[2]	[2]	[2]	[2]	[2]	[2]
Gear material	PTFE	PTFE	PEEK	PPS	PPS	PTFE	NiC
Seals	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Stainless steel housing	SS316	SS316	SS316	SS316	SS316	Hastelloy-C276	Surface hardened
System pressure, max. (bar)	21	21	21	21	22	21	21
Operating temperature in °C [3]	-46...+54	-46...+54	-46...+54	-46...+54	-46...+54	-46...+54	-46...+54
Internal bypass	—	—	—	✓	—	—	—
Ports (internal thread)	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT	1/8"-27NPT
Order No.	**MI0013**	**MI0016**	**MI0313**	**MI0019**	**MI0020**	**MI0284**	**MI0265**

[1]) Flow rates without differential pressure

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

[3]) Operating temperature: with other seals up to 99°C possible

The "**Cavity Style**" pump-head is well suited for all standard pumping applications in laboratories or production.

This type of pump-head can even be recommended for fluids featuring an elevated viscosity or the use in applications requiring a slight suction lift.

The same pump-heads can be used with the REGLO-Z *Analog* and REGLO-Z *Digital* drive.

Accessories

Nipple 1/8" -27NPT thread for tubing with 6.4 mm ID

AR0001	for all REGLO-Z drives

Tubing adaptors for pump-heads
Threaded stainless steel connectors

Order No.	External thread	Tubing adaptor	Tubing ID in mm
AR0001	3/8" 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 mm (outside)

Threaded connectors in Hastelloy-C

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

Application range of gear pumps

Single-channel delivery and dispensing processes und pressure for solvents without solids.

With pump-head 140 and 186
Pulseless dispensing of various reagents with 2 pumps in different quantity ratios by means of mixing valve under pressure in a reactor.

Cryogenic engineering and air conditioning
Delivery of coolant

Water treatment
Dosage of reagents

Industrial ink-jet printer
Ink feed at 3 to 4 bar differential pressure

Liquid chromatography
– Medium pressure chromatography
– Flash chromatography

Sampling – environmental technology
Dyeing / coating of textile fibres

Liquid absorption of baby-napkins
Various dosage volumes

Distillation plants
Sump pump, sampling

Test stands for the motorcar industry
Delivery of coolant and engine oil

Special media
with recommended pump-head material

Hydrochloric acid
– Hastelloy-C276
– PTFE

Organic solvents
– SS316
– PTFE

Trichloroacetic acid 25%
– Hastelloy-C276
– PTFE

Tetrahydrofurane
– SS316
– PPS

Pigmented ink
– Z-150 WI

Weakly acid
– SS316
– PPS
– PTFE
– Graphite

– **Biocides**
– **Dyes**
– **Thixotropic products**
– **Fluxes**
– **Liquid waxes**
– **Hydrogen peroxide**

International representatives wordwide

See our web-site: www.ismatec.com

The accuracy of ISMATEC® pumps is known worldwide. Profit from our leading technology and experience.

Customers

- Industry
  (Research, Development, Production)
  - Chemical
  - Pharmaceutical
  - Biotechnological
  - Food and Beverages
  - Environmental
  - Cosmetics
  - Electronics
  - OEM
- University Institutes
- Clinics
  - Blood laboratory
  - Microbiological

ISMATEC products

- Tubing Pumps
- Gear Pumps
- Ceramic Rotary Piston Pumps

- **OEM**
  Tubing, Gear and
  Ceramic Rotary Piston Pumps

- ASA
  Systems for Sample Preparation
- ASA-AROMA System
  Automated Quality Control of flavours and fragrancy

ISMATEC SA
Labortechnik-Analytik
A Unit of IDEX Corporation

Feldeggstrasse 6
CH-8152 Glattbrugg

Phone +41 (0) 44 874 94 94
Fax +41 (0) 44 810 52 92

sales.ismatec@idexcorp.com
www.ismatec.com

7000 e/zd/march 05