



PRESSURE REDUCING & SUSTAINING HYDROMETER

Model IR-923-M0-3W-KXZ

The BERMAD pressure reducing and sustaining Hydrometer with manual selector combines a Woltman-type turbine water meter with a hydraulically operated, diaphragm-actuated control valve. Functioning as both a mainline flow meter and a pressure reducing & sustaining valve, it sustains a preset minimum upstream pressure, reduces downstream pressure to a constant maximum, or opens fully when hydraulic conditions allow. It features a vacuum-sealed register for precise volume measurement. An optional pulse output is available to further enhance system capabilities.



[1] BERMAD Model IR-923-M0-3W-KXZ sustains supply system pressure, prevents system emptying, reduces downstream pressure, protecting lines and laterals, and measures flow.

Features & Benefits

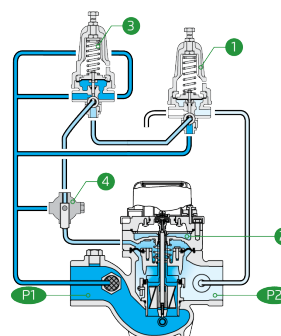
- Integrated "All-in-One" Control Valve & Flow Meter
 - Saves space, cost and maintenance
- Line Pressure Driven, Hydraulically Controlled
 - Protects downstream systems
 - Prioritizes pressure zones
 - Controls system fill-up
- Magnetic Drive with Vacuum-Sealed Register
 - Water-free gear train mechanism
 - Reed-switch tension free pulse output
 - Various pulse combinations
- Internal Inlet & Outlet Flow Straighteners
 - Saves on straightening distances
 - Maintains accuracy
- Integrated Flow Metering Calibration Device
 - Precise measurement
- User-Friendly Design
 - Easy pressure setting
 - Simple in-line inspection and service

Typical Applications

- Remote Flow Data Read-Out
- Flow Monitoring & Leakage Control
- Line Fill-Up Control Solutions
- Line Emptying Prevention
- Pressure Reducing Systems
- Systems Subject to Varying Supply Pressure

Operation:

The Pressure Reducing Pilot (PRP) **[1]** hydraulically connects to the Control Chamber **[2]** through the Pressure Sustaining Pilot (PSP) **[3]** and the Manual Selector **[4]**. In AUTO mode, the PSP throttles the Hydrometer closed if upstream pressure **[P1]** drops below its setpoint. When P1 rises above PSP setpoint, the PRP takes control, closing the Hydrometer if downstream pressure **[P2]** exceeds its setpoint. The Hydrometer fully opens when P2 drops below PRP setpoint, while P1 remains above PSP setpoint. Setting the Manual Selector to CLOSE shuts the Hydrometer.





Technical Data

Pressure Rating:

10 bar

Operating Pressure Range:

0.5-10 bar

Materials

Body & Cover: Ductile Iron

Diaphragm: NR, Nylon fabric reinforced

Seals: NR, Nylon fabric reinforced

Spring: Stainless Steel

Internals: Stainless Steel & Plastic Reinforced Nylon

Impeller: Polypropylene

Pivots and Bearings:

Polypropylene

**Other materials are available on request*

Control Loop Accessories

PR Pilot: PC-SHARP-X-P

PS Pilot: PC-SHARP-X-P

Tubing and Fittings:

Polyethylene and Polypropylene

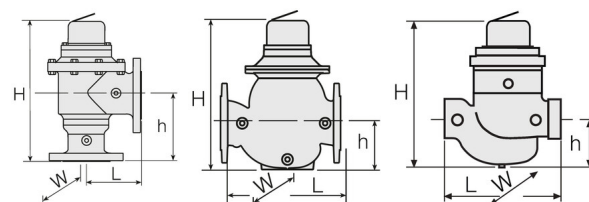
Spring	Spring Color	Setting range
J	Green	0.2-1.7 bar
K	Gray	0.5-3.0 bar
N	Natural	0.8-6.5 bar
V	Blue & White	1.0-10.0 bar

Standard spring - marked in bold

Technical Specifications

For other patterns and end connection types,

Please refer to [BERMAD](#) full engineering page.



Size	Pattern	End Connection	Weight (Kg)	L (mm)	H (mm)	h (mm)	W	CCDV (Lit)	KV
1½" ; DN40	Globe	Threaded	7.2	250	270	95	143	0.16	41
2" ; DN50	Globe	Threaded	7.3	250	277	95	143	0.16	46
2" ; DN50	Angle 90°	Threaded	8.1	120	353	155	143	0.16	51
3"R ; DN80R	Globe	Threaded	7.3	250	277	79	143	0.16	50
3"R ; DN80R	Globe	Flanged	16	310	298	100	200	0.16	50
3" ; DN80	Globe	Flanged	23	300	382	123	210	0.49	115
3" ; DN80	Angle 90°	Flanged	25.8	150	402	196	210	0.49	126
4" ; DN100	Globe	Flanged	31	350	447	137	250	1	147
4" ; DN100	Angle 90°	Flanged	36.1	180	481	225	250	1	180

CCDV = Control Chamber Displacement Volume • **Threaded** = BSP & NPT are available.

• Extra length for male Threaded: 1½" Globe= 67(mm) ; 2" Globe & Angle= 77(mm)

Flow Properties

Size	Accuracy	DN40	DN50	DN80R	DN80	DN100
Q @ (m³/h)		1½"	2"	3"R	3"	4"
Q1 Minimum Flow	±5%	0.8	0.8	1.2	1.2	1.8
Q2 Transitional Flow	±2%	1.3	1.3	3	3	4.5
Q3 Permanent Flow	±2%	25	40	100	100	160
Q4 Maximum Flow (Short Time)	±2%	31	50	125	125	200

*ISO 4604

Pulse Option

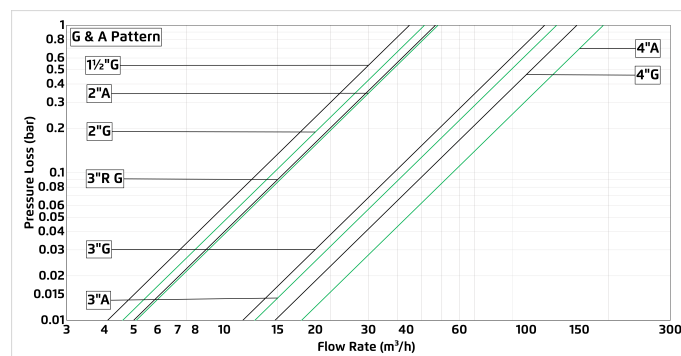
Register Type	Reed Switch - Single				Reed Switch - Combined				Electronic			
Size	One pulse per				One pulse per				One pulse per			
	10L	100L	1m³	10m³	10L+100L	1m³+10m³	10L	100L	1m³	10m³	10L	100L
1½"-4" ; DN40-100	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4"-10" ; DN100-250	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- 10L pulse (only available with electronic register) suitable for flows up to 180 m³/h.
- Two parallel pulses are transmitted. other pulse rates are available on request.

Additional Features

Code	Description
ME	Electronic register (upgrade kit is available)

Flow Chart



Differential Pressure & Flow Calculation

$$\Delta P = \left(\frac{Q}{K_v} \right)^2$$

$$K_v = \frac{Q}{\Delta P}$$

$$Q = \text{m}^3/\text{h} \text{ @ } \Delta P \text{ of 1 bar}$$

$$\Delta P = \text{bar}$$