

FLOW CONTROL & PRESSURE REDUCING HYDROMETER

Model IR-972-M0-2W-KVZ

The BERMAD flow control and pressure reducing 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 flow control & pressure reducing valve, it limits excessive demand and reduces higher upstream pressure to a preset maximum downstream pressure. The Hydrometer features a magnetically coupled, vacuum-sealed register for precise accumulated volume measurement. An optional pulse output is available to further enhance system capabilities.



[1] BERMAD Model IR-972-M0-2W-KVZ limits over-demand, controls laterals and distribution line fill-up while reducing pressure, and measures flow.

Features & Benefits

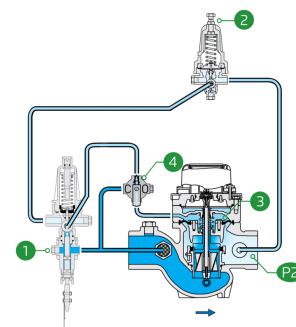
- Integrated "All-in-One" Control Valve & Flow Meter
 - Saves space, cost and maintenance
- Line Pressure Driven, Hydraulically Controlled
 - Limits fill-up rate and consumer excessive demand
 - Protects downstream systems
- Magnetic Drive with Vacuum-Sealed Register
 - Water-free gear train mechanism
 - Reed-switch tension free pulse output
 - Various pulse combinations
- Integrated Flow Metering Calibration Device
 - Precise measurement
- Paddle-Type Hydro-Mechanical Flow Pilot
 - Negligible head loss
 - Wide setting range
- Simple In-Line Inspection and Service

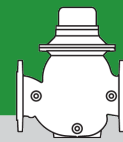
Typical Applications

- Automated Irrigation Systems
- Pressure Reducing Systems
- Remote Flow Data Read-Out
- Flow Monitoring & Leakage Control
- Line Fill-Up Control Solutions
- Multiple Independent Consumer Systems

Operation:

The Paddle type Flow Control Pilot (FCP) **[1]** hydraulically connects the Pressure Reducing Pilot (PRP) **[2]** to Hydrometer's Control Chamber **[3]** through the manual selector **[4]**. In AUTO mode, regulation is enabled and the FCP commands the Hydrometer to throttle closed should demand rise above setting or to modulate open when it drops. Downstream pressure (P2) regulated by the PRP, commanding the Hydrometer to reduce excessive upstream pressure to a constant Downstream Pressure setpoint. When the Manual Selector is set to CLOSE the Hydrometer shuts.





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-20-A-P

Spring	Spring Color	Setting range
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

FC Pilot: PC-70-P

Flow Pilot spring range:

Spring: E-Purple

Flow Velocity (m/sec): 1.5-3.5

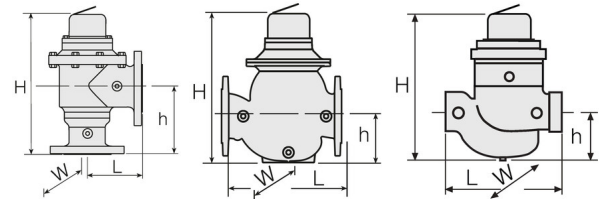
Tubing and Fittings:

Polyethylene and Polypropylene

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	✓	✓			✓		✓	✓	✓	✓	✓	✓

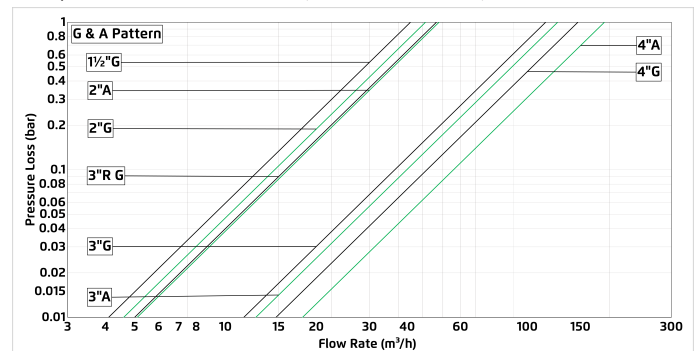
- 10L pulse (only available with electronic register) suitable for flows up to 180 m³/h.
- Two parallel pulses are transmitted. other pulse rates are available on request.

Additional Features

Code	Description
ME	Electronic register (upgrade kit is available)

Flow Chart

2-Way circuit "Added Head Loss" (for "V" below 2 m/s): 0.3 bar



Differential Pressure & Flow Calculation

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

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