

M-040 PN 10



Combination Air Valve for Water Meter Protection “Metair”

Description

The M-040 Combination Air Valve combines an air & vacuum orifice with an automatic air release orifice in one single body. The combination air valve discharges air during the filling of the system and admits air during drainage and pump shutoff while releasing accumulated air from the system while the system is operating under pressure.

The M-040 Combination Air Valve is designed to prevent problems caused by discontinuous or erratic water supply:

- Erroneous water metering.
- Damage to the spinning components of the water meter.
- Vibrations and water hammer in the pipeline and water meter.

Applications

- On a pressurized piping system, installed before the water meter.

Operation

OVERVIEW: The M-040 combination air valve is normally closed. When water supply is erratic and air builds up in the system, the M-040 prevents the air from passing through the water meter by releasing this accumulated air from the pipeline to the atmosphere. As water returns, it buoys the float, sealing the outlet to the atmosphere, opening the check valve and allowing the water to pass through water meter.

The air & vacuum component, with the large orifice, discharges air at high flow rates during the filling of the system and admits air into the system at high flow rates during its drainage and at water column separation.

High velocity air will not blow the float shut. Water will lift the float which seals the valve.

At any time during system operation, should internal pressure of the system fall below atmospheric pressure, air will enter the system. The smooth discharge of air reduces pressure surges and other destructive phenomena.

The intake of air in response to negative pressure protects the system from destructive vacuum conditions and prevents damage caused by water column separation. Air entry is essential to efficiently drain the system.

The automatic small orifice air release component releases entrapped air in pressurized systems.

Without air valves, pockets of accumulated air may cause the following hydraulic disturbances:

- Restriction of effective flow due to a reduction of the flow area. In extreme cases this will cause complete flow stoppage.
- Obstruction of efficient hydraulic transmission due to air flow

disturbances.

- Acceleration of cavitation damages.
- Increase in pressure transients and surges.
- Internal corrosion of pipes, fittings and accessories.
- Dangerous high-energy bursts of compressed air.
- Inaccuracies in flow metering.

As the system starts to fill, the combination air valve functions according to the following stages:

1. Air in the pipeline is discharged by the valve.
2. Liquid enters the air & vacuum component, lifting the float to its sealing position.
3. Liquid enters the air release component of the valve, lifting the float and pushing the rolling seal to its sealing position.
4. Entrapped air, accumulating at peaks and along the system, rises to the top of the air release valve, displacing the liquid in the valve's body.
5. The float drops, unsealing the rolling seal. The air release orifice opens and the accumulated air is released.
6. Liquid replaces the air released from the valve, buoying up the float and pushing the rolling seal back to its sealing position.

When internal pressure falls below atmospheric pressure (negative pressure):

1. The floats will drop down, immediately opening the air & vacuum and air release orifices.
2. Air will enter the system.

Main Features

- Working range: 0.2 - 10 bar
- Testing pressure: 16 bar.
- Maximum working temperature: 60°C.
- Maximum intermittent temperature: 90°C.
- Lightweight and small, made of corrosive-resistant composite materials.
- Spring-loaded check valve opens at 0.25 bar water pressure in the direction of the water meter. The check valve assures effective air trapping and prevents water drainage from the water meter.
- User-friendly integral shutoff valve: an innovative built-in shutoff valve in the valve cap enables the isolation of the air valve orifice with no interference to the water flow in the pipeline.
- Drainage System: Optional drainage outlet or screen outlet.
- The large orifice, with its self-cleaning mechanism, dramatically reduces obstruction due to debris.
- Integral air trapping non-return valve.
- Dynamic design allows high capacity air discharge while

preventing premature closure

- Maintenance free.

Valve Selection

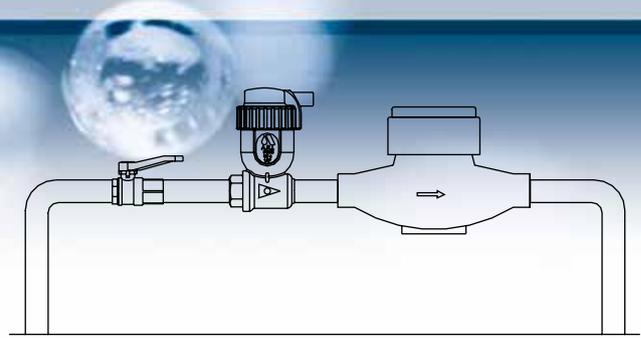
- Connections: M/F threaded 1/2", 3/4" BSPT or NPT

- Optional One-Way Out addition, allows air discharge only, prevents air intake.

Note

For best suitability, it is recommended to send the fluid chemical properties along with the valve request.

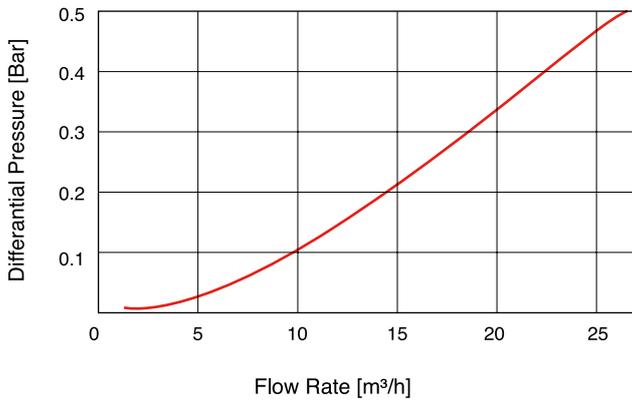
Upon ordering, please specify: model, size, working pressure, thread and flange standard and type of liquid.



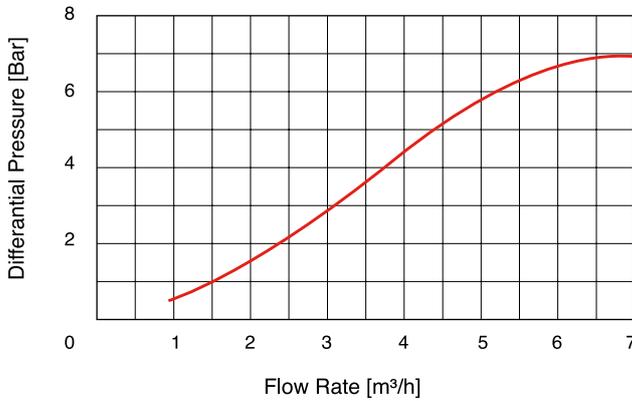
DIMENSIONS AND WEIGHT

Dimensions mm			Weight Kg.	Orifice Area mm ²	
A	B	C		Auto.	A / V
84	122	11	0.3	5.6	42

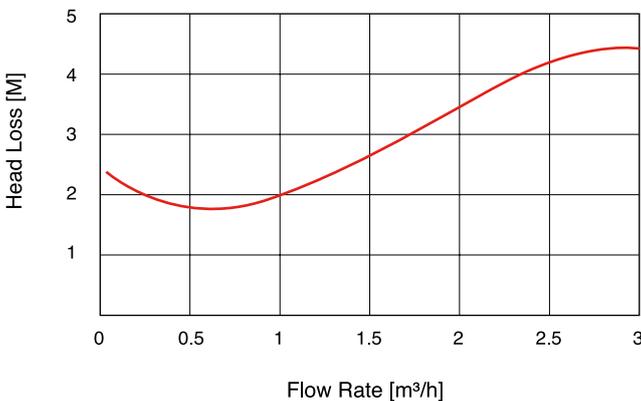
AIR & VACUUM FLOW RATE



AUTOMATIC AIR RELEASE FLOW RATE



HEAD LOSS



PARTS LIST AND SPECIFICATION

No.	Part	Material
1.	Cover	Acetal
2.	Discharge Outlet	Acetal
3.	Plug	EPDM
4.	O-Ring	BUNA-N
5.	Seat	Polypropylene
6.	Seal	EPDM
7.	Float	Foamed Polypropylene
8.	Body	Polypropylene
9.	O-Ring (x2)	BUNA-N
10.	Base	Brass
11.	Spring	Stainless Steel 302
12.	Valve Stopper	Acetal
13.	Valve Stem	Acetal
14.	O-Ring	BUNA-N

