

Masoneilan

a Baker Hughes business

MasoneilanTM 28000 Series VaripakTM Control Valves

Precise Microflow Valves with Compact Design

Created specifically for low flow applications, the Masoneilan 28000 Series Varipak control valve provides excellent throttling control performance with a wide range of options and capabilities to meet your specific needs. Designed with an extremely integrated and compact assembly, the valve's key design features include:

Heavy Top-Guiding

To promote excellent plug stability and control even under high-pressure drop conditions an integrated plug guide and seat ring provides rugged valve plug support along the entire stroke length. Heavy guiding is critical for controlling vibration damage, providing dependable control and seating performance, and minimizing trim mechanical wear.

Application Flexibility

One size hardly ever fits all applications. That's why the Varipak valve offers the flexibility of 10 standard contoured trim designs based on the same body platform. These multiple trim sets help reduce the effects of valve oversizing and improve control loop performance, resulting in better process efficiency.

Adjustable Flow Coefficient (C_v)

With the valve's adjustable C_v option, you can easily accommodate changing operating conditions. The C_v value can be increased or decreased simply by setting a knob within the actuator assembly

Compact Assembly

Varipak modular design and force amplification actuator technology enabled its space saving, compact assembly. In addition, the actuator includes a low-profile, top-mounted hand wheel option.

Anti-Cavitation Trim

Varipak is available with an effective high-pressure, liquid let-down, anti-cavitation trim solution – the *Varilog*[™] trim. This unique design includes a multi-stage axial flow plug and liner, which provides dirt-tolerant operation and high wear resistance.



Design Flexibility

Other standard configurations include a high-pressure ASME Class 2500 design, a zero-emissions Bellows seal design, and a design for cryogenic applications. Varipak is also available with an angle body design to accommodate existing piping configurations.

Ease of Maintenance

Varipak control valve's simple, top-entry, body construction includes an integrated body and bonnet design, which allows for easy access and removal of the quick change trim. The integral liner and seat ring construction reduces the number of components, simplifying assembly and disassembly. In addition, the modular actuator design further enhances the maintainability of this unique valve assembly.

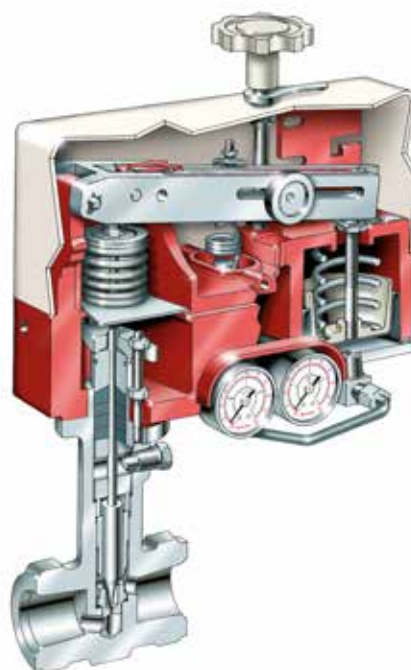
Microflow Control Innovation

Standard Flangeless Design

Due to its simple, compact, and versatile stainless steel body design, the standard flangeless Varipak valve is widely used across a variety of industries. Optionally, the valve is available in a flanged configuration (see the Masoneilan 28000 Varipak Tech-Spec for complete details).

Optimized C_v Characteristics

The VariPak valve outshines conventional microflow valves with its support of a wide range of nominal C_v values (from 0.0016 to 3.8), using only eight plugs and five seats.



Optional Flanged
Varipak Control Valve



High Pressure Varipak



Varipak full Stainless Steel



Varilog Trim Subassembly

Varilog Anti-Cavitation Trim Design

The Varilog multi-stage trim design for the Varipak control valve provides unmatched anti-cavitation performance in low flow applications.

By reducing erosion and vibrations, this design helps minimize failure that is often associated with conventional single-seated valves. The Varilog trim is available with the standard Varipak body designs in either the flanged or flangeless configurations.

High Pressure Design

The high-pressure Varipak valve design is recommended for applications involving conditions with very high upstream pressure or pressure drop that exceeds the pressure rating of the standard Varipak body design.

Bellows Seal Design

For applications that require zero leakage at the packing box, the Varipak valve is available with a Bellows seal. This design is ideal for applications that involve the handling of flammable, toxic, or explosive fluids.

Cryogenic Design

Simplified maintenance requirements

This Varipak control valve design meets the requirements of cryogenic processes that require thermal insulation. An insulating interface sets up between the valve body (cold zone) and the body extension located in the higher temperature area (warm zone). The valve body assembly and its thermal extension are positioned inside the cold box, and the plug can easily be removed and inspected without disturbing the valve body. This eliminates the need for any preliminary, complicated dismounting, and more importantly, prevents any interference with the cold box.

Body Design

Manufactured from a material suitable for low temperatures, the valve body maintains ductility in service. It can be conveniently mounted to suit specific piping needs as long as the angle between the valve axis and vertical does not exceed 60°.

Designed to prevent leakage of cryogenic fluid into the insulated zone, the body gasket is outside of the cold zone and the bonnet is located away from the fluid.

Body extension

To reduce the inflow of heat by conduction, thin-walled metal tubes are used for the body extension and coupling sleeve. In addition, the annular space is reduced in order to exclude convection currents.

Plug

The design of the plug allows the working parts to be accurately centered in relation to the seat and provides a uniform temperature zone for the guiding.



Cryogenic Varipak
Control Valve



Specifications

Body

Type:	globe style angle style optional
Sizes:	1" (DN 25) standard 1/2" (DN 15) and 3/4" (DN 20) optional
Materials:	Standard: type 316L St. St. Optional: Monel®, Hastelloy® C, Alloy 20, others
Options:	Flanged valve Anti-cavitation Varilog High pressure Bellows seal Cryogenic Angle valve NACE version
Trim	
Plug type:	contoured, heavy top guided multi-staged anti-cavitation (Varilog) optional
Seat type:	metal seat
C_v ratio:	500:1 at max. C _v 200:1 at min. C _v
Flow characteristics:	linear (trim No. 0 to 5) modified linear (trim No. 6 to 9)
Flow Direction:	flow-to-open flow-to-close optional

Actuator

Type:	spring-opposed rolling diaphragm
Action:	direct or reverse, easily performed without additional parts
C_v adjustment:	optional adjustable knob/lever
Handwheel:	optional top mounted
Air connection:	1/8" NPT



Accessories and options

Pneumatic Positioner (Model 7700P)

Type	pneumatic, force balance	Supply pressure effect	0.05% of full stroke variation per psi supply pressure change (0.07% per 100 mbar)
Mounting	built-in bracket in actuator	Open loop gain	70
Action	direct: increasing instrument signal increases air output	Linearity	± 0.5%
Characteristics	linear	Sensitivity	0.1%
Instrument signal	3 to 15, 6 to 30 or 3 to 27 psi 200 to 1000, 400 to 2050 or 200 to 1850 mbar) 3 to 9, and 9 to 15 psi (200 to 600 and 600 to 1000 mbar) split range	Repeatability	0.1%
Connections	1/4" NPT instrument and supply – 1/8" NPT output	Full stroke time	less than one second
Average air consumption	0.15 scfm at 30 psi supply (0.26 Nm ³ /h at 2.1 bar supply)	Weight	3.3 lbs (1.5 kg)
Max. air output	4.20 scfm (7 Nm ³ /h)	Other Accessories	Proximity sensors and limit switches Digital positioners – HART® and Fieldbus Foundation Handwheel, airsets and solenoid valves

Electropneumatic Positioner (Model 7700E)

Type	electropneumatic, force balance	Weight	7.7 lbs (3.5 kg)
Mounting	compact, without external linkage to the actuator	Hazardous Location Protection	
Action	direct: increasing instrument signal increases air output	ATEX Approvals (94/9/EC Directive)	Explosionproof No. SIRA 02 ATEX 1274 Intrinsic Safety No. SIRA 02 ATEX 2277 X
Characteristics	linear	FM (Factory Mutual) Approvals	Explosionproof Intrinsic Safety Non-incendive and Dust-ignitionproof
Instrument signal	4–20 mA	CSA Approvals (Canadian Standards Association)	Explosionproof Intrinsic Safety Non-incendive
Air Connections	1/4" NPT supply – 1/8" NPT output		
Average air consumption	0.24 scfm (0.4 Nm ³ /h)		
Electrical connections	1/2" NPT or M20		