Control Piston Actuated Valve with Integrated Positioner

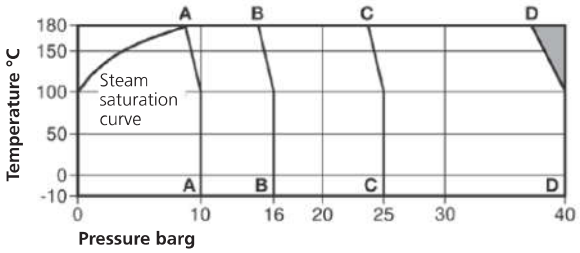
DN15 to DN50 – Stainless Steel

Specifications	
Type: ZP flow always under seat 2 → 1	NC (Direct) / NO (Reverse)
Media	Water, oil, air, aggressive media, steam[1]
Media Temperature	-10 °C to +180 °C
Ambient Temperature	-10 °C to +60 °C
Viscosity	max. 600 cSt (80° E)
Pilot Media	Dry and filtered air (mesh 25 µm)
Actuator Diameter	63 or 90
Body Material	Cast AISI 316L (CF3M), see page 39
Bonnet Material	Cast AISI 316L (CF3M), see page 39
Actuator Body Material	Polyamide PA6 (reinforced fiberglass 30%)
Seal Material	PTFE
Flow Characteristic	Linear or equal percentage
Electrical Characteristics	
Positioner Enclosure	Anodized aluminium (black)
Set Point Signal	0 to 10V; 4 to 20mA
Electrical Supply	24V DC
Maximum Power Consumption	6W (0,24A)
Set-up Point	Self-adjusting valve
Fail Safe Position	'Closed' or 'maintained'
Electrical Connections	M23 connector, 12 poles
Protection Class	IP65
Hysteresis	< 1% FS
Repeatability	< 0,5% FS
Minimum Set-point	< 2% FS

Features and Benefits

- Actuator housing rotation 360°
- Connector rotation 360° (90° steps)

Options Available
Seal material in PEEK
Body and shaped plug with hardening treatment
Body connection options: threaded, flanged, butt weld and clamp



A – A PN10
B – B PN16 - ANSI 150
C – C PN25
D – D PN40

The product must not be used in this region or beyond the body design conditions (PN) quoted in the selection chart as damage to the internals will occur!

DN	Flow Rate Kvs EQUI% TRIM 1:25	Flow Rate Kvs LINEAR TRIM 1:25	Working Pressure[1] Max.	Flow Direction	Pilot Pressure Min.	Pilot Pressure Max.	Actuator Ø	PN[2]
[mm]	[m³/h]	[m³/h]	[barg]	—	[barg]	[barg]	[mm]	—
15	4.5	4.9	16	2 → 1 only under seat	4.5	8	63	40
20	8.7	8.7	16					40
25	12.7	14.4	14	2 → 1 only under seat	4.5	8	90	40
32	20.4	22.8	12					25
40	29.7	34.2	8					25
50	36.3	39	6					16

Notes

1. Steam max. working pressure 10 bar (9 barg)
2. PN10 for all sizes for clamp

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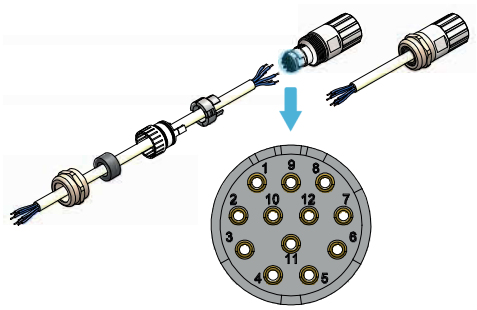
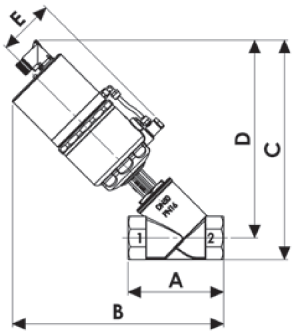
Electrical Connection Pin Connector

PIN No	Function
1	+ 24VDC (supply power)
2	0-10V (+) set-point
3	4-20mA (+) set-point
4	0 (common set-point)
5	Alarm signal: 0V the valve works properly / +24V valve on alarm
6	Test point
7	Auto set-up/remote reset
8	0 (supply power)
9	Earth
10	Pre-set configuration
11	NC
12	Pre-set configuration



GAS - NPT - WELDED ENDS	Dimensions & Weights		DN15	DN20	DN25	DN32	DN40	DN50
	Actuator	[mm]	Ø 63		Ø 90			
	A	[mm]	64	75	90	110	120	150
	B	[mm]	294	301	316	329	334	352
	C	[mm]	282.5	290	305	317	325	340
	D	[mm]	269	274	285	292.5	297.5	306.5
	E	[mm]	75	75	88	88	88	88
	Weight	[kg]	2.4	2.5	3.3	3.7	3.9	4.6



FLANGED EN1092-1	Dimensions & Weights		DN15	DN20	DN25	DN32	DN40	DN50
	Actuator	[mm]	Ø 63		Ø 90			
	A	[mm]	130	150	160	180	200	230
	B	[mm]	323	330	344	359	361	384
	C	[mm]	339.5	349.5	364.5	386	394	412.5
	D	[mm]	292	297	307	316	319	330
	E	[mm]	75	75	88	88	88	88
	Weight	[kg]	3.8	4.2	5.7	7.3	8.2	10.4

FLANGED ANSI B16.5	Dimensions & Weights		DN15	DN20	DN25	DN32	DN40	DN50
	Actuator	[mm]	Ø 63		Ø 90			
	A	[mm]	139.7	152.4	165.1	184.2	203.2	228.6
	B	[mm]	321	327	343	357	361	384
	C	[mm]	336.5	346	361	375	382.5	406
	D	[mm]	292	297	307	316	319	330
	E	[mm]	75	75	88	88	88	88
	Weight	[kg]	3.8	4.2	5.7	7.3	8.2	10.4

CLAMP ISO 2852	Dimensions & Weights		DN15	DN20	DN25	DN32	DN40	DN50
	Actuator	[mm]	Ø 63		Ø 90			
	A	[mm]	102	114	140	159	159	190
	B	[mm]	313	320.5	341	353.5	353.5	372
	C	[mm]	286	291	310	318	329.5	340
	D	[mm]	269	274	285	292.5	297.5	306.5
	E	[mm]	75	75	88	88	88	88
	Weight	[kg]	2.5	2.7	3.7	4.1	4.5	5.3

CLAMP ASME BPE	Dimensions & Weights		DN15	DN20	DN25	DN32	DN40	DN50
	Actuator	[mm]	Ø 63		Ø 90			
	A	[mm]	102	114	140	/	159	190
	B	[mm]	313	320.5	341	/	353.5	372
	C	[mm]	282.5	290	310	/	325	340
	D	[mm]	269	274	285	/	297.5	306.5
	E	[mm]	75	75	88	/	88	88
	Weight	[kg]	2.5	2.7	3.7	/	4.5	5.3

/ = not available

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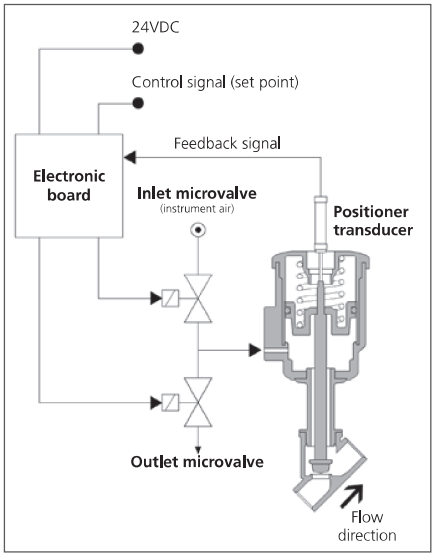
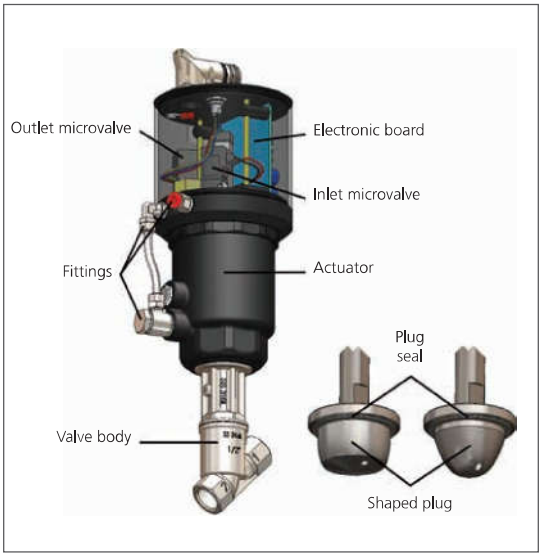
Operating Principles and Description

M&M control piston actuated valves are operated by a compact pneumatic integrated positioner working in a closed loop. Picture A shows the operating layout: the set-point signal (coming from the control panel of the plant) is compared with the internal signal (feed-back) of the position sensor. When the two values don't match, the electronic system inside the valve operates two microvalves (which open or close the pilot air feeding) to change the stroke until both signals match.

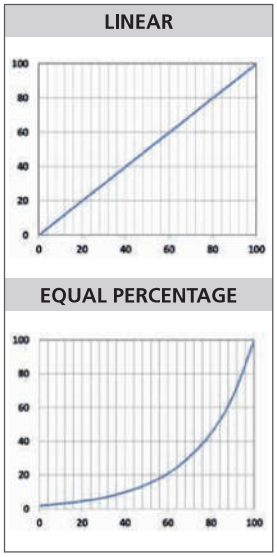
The proportionality between the stroke of the valve and the instantaneous flow is guaranteed by the special plug design: linear plug and equal percentage plug (Picture C) the graphs show an ideal curve, which cannot be reproduced exactly but varies according to the DN of the valve and the specific installation parameters. When fully closed the valve is leakage tight thanks to the soft seal, as in M&M standard on/off piston actuated valves (see Picture B).



Picture A



Picture B



Picture C

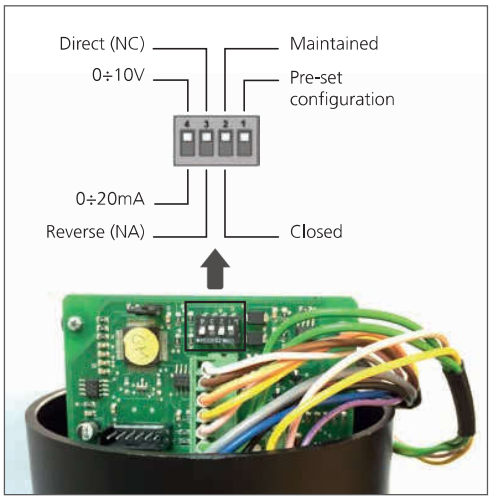
The pneumatic positioner is electronic and not programmable. It accepts the most common set-point signals (4 to 20 mA; 0 to 10 V).

All calibration operations are automatically implemented by pushing a LED button on top of the control box (integrated self-starter).

The pneumatic positioner can be fitted both to M&M Ø 63 and Ø 90 pneumatic actuators (this version must be expressely requested upon order).

Fluid direction always under seat!

Control Piston Actuated Valves with integrated positioner are set up, adjusted and tested by the manufacturer according to Customer's specifications and requests. The relevant parameters are set up by 4 dip-switches (see Picture D).



Picture D

Electronic board:

Contact No. 1 – Pre-set configuration -

Contact No. 2 – Fail Safe Position -

Contact No. 3 – Function Set-up -

Contact No. 4 – Set Point -

Function set-up (contact No. 3)	Set Point	Valve status
Direct (NC)	0V or 4mA	Closed
	10V or 20mA	Open 100%
Reverse (NO)	0V or 4mA	Open 100%
	10V or 20mA	Closed

Travel Switch

Technical Specifications

The travel switch detects the open position of the valve relaying back an electrical signal. The signal is provided by a magnetic sensor with a non contact switch (free NC, NO switch)

Specifications	
Max. Switching Voltage	500V
Max. Switching Current	0,5 A
Max. Switching Power	30 W/VA
Max. Switching Frequency	150 Hz
Contact Actuation Time	4,5 ms
Repeatability	± 0,3 mm
Temperature Limits	25 °C to +100 °C
Protection Class	IP67
Housing Material	Brass with electroless nickel plating treatment
Plug For Cable	3x0,5 mm^2; Ø 4-6 mm (DIN EN 60947/5/2)

Notes

The option must be expressly requested upon order
It is available for actuators sizes ø63 & ø90 only (e.g. code RPG205TWI0)
It is available only assembled ex-factory

Stroke Regulator

Features and Benefits

With the stroke regulator the flow be can manually adjusted from 0% to 100% integrated position indicator. In normally open valves it can also be used as manual override.

Notes

This option must be expressly requested upon order
It is available for actuators sizes Ø63 & Ø90 only (e.g. code CG205STWR0)
It is available only assembled ex-factory

Position Module for Piston Actuated Valve

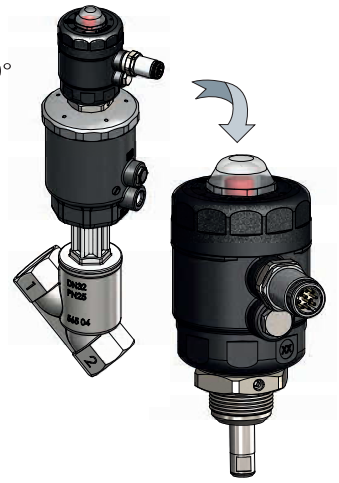
Specifications	
Electrical Position Feedback	Mechanical limit switches or inductive limit switches
Body/Cover Material	Polyamide PA6 (reinforced fiberglass 30%)
Connector Material	Copper-zinc alloy / aluminium alloy / cast zinc – nickel plating treatment
Electrical Connection	Connector M16 – 10 poles / wire Ø 5 - 9 mm
Ambient Temperature	-10 °C to +60 °C
Protection Class	IP65
Specifications: Mechancial Switches	
Number of Switches	2
Type of Switch	Change over contacts (NC and / or NO)
Contacts Material	Silver
Maximum Tension	Connector 230VAC with dirt level 2 / 160VAC with dirt level 3
Maximum Current	6A with resistive load - 2A with inductive load
Specifications: Inductive Switches	
Number of Switches	2
Output Version	Normally open contact (PNP)
Power Supply	12 to 24V DC
Maximum Load Current	50mA per output
Power Consumption	13mA max. at 24VDC without load

M&M position modules offer an electrical position feedback for reading the valve position of piston actuated valves open or closed.

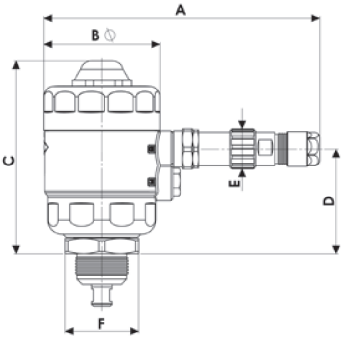
The position detection is carried out through a mechanical or inductive switch that can be fitted to all M&M standard Piston Valves.

Features and Benefits

- Actuator housing rotation 360°

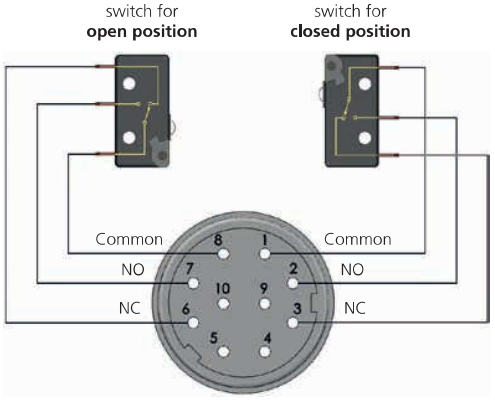


Dimensions & Weights		Position Module
Actuator	**[mm]**	**45/63/90**
A	[mm]	134
B	[mm]	57
C	[mm]	95
D	[mm]	51.5
E	[mm]	20
F	[mm]	Hex 36
Weight	[kg]	0.43



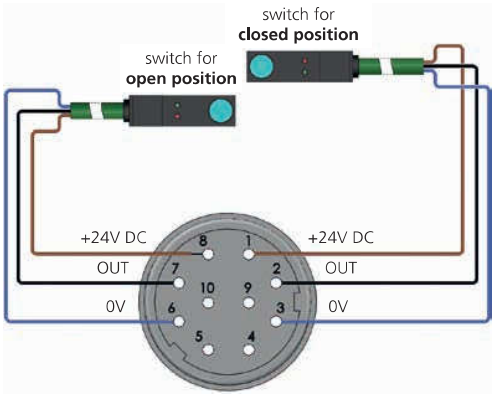
ELECTRICAL CONNECTION SCHEME FOR MECHANICAL SWITCHES

Connector frontal view:



ELECTRICAL CONNECTION SCHEME FOR INDUCTIVE SWITCHES

Connector frontal view:



Position Module	Actuator Ø	Electrical Position Feedback
Code	**[mm]**	**—**
857 030-	63/90	Mechanical
857 040-	45	
857 031-	63/90	Inductive
857 041-	45	