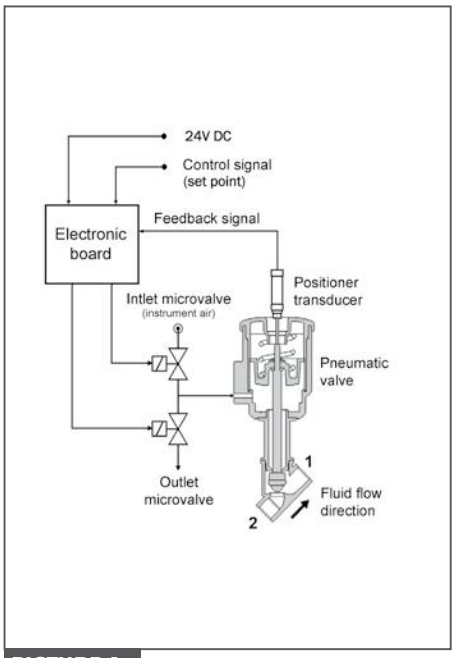
CONTROL PISTON ACTUATED VALVE WITH INTEGRATED POSITIONER

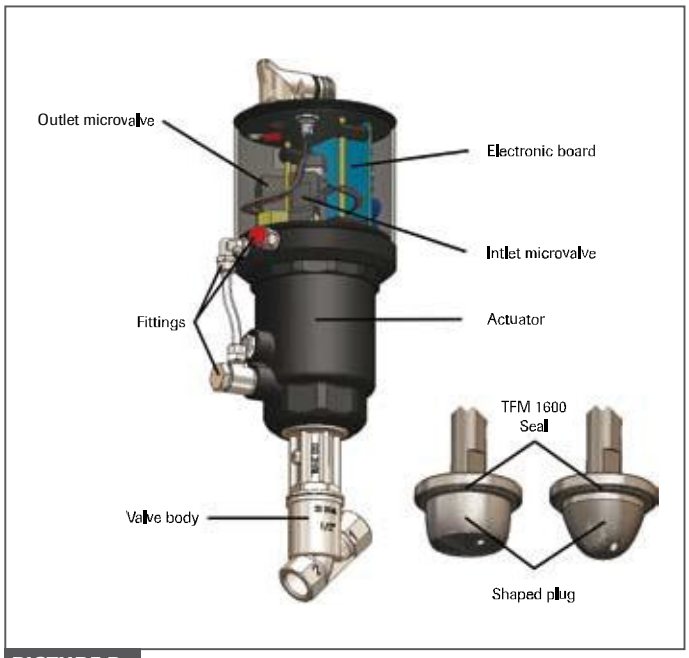
OPERATING PRINCIPLES AND DESCRIPTION

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.

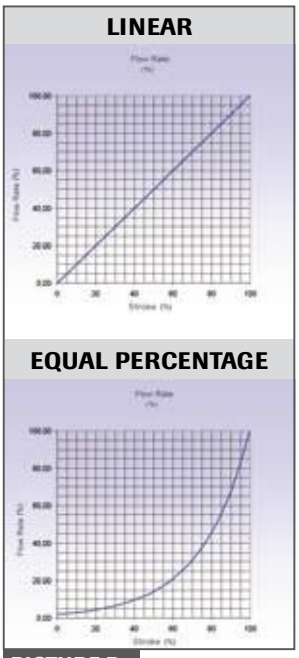
The proportionality between the stroke of the valve and the instantaneous flow is guaranteed by the special plug design: linear plug and equal percentage plug (PICTURE **B1**; the graphs show an ideal curve, which cannot be reproduced exactly but varies according to the DN of the valve and the specific installation parameters). When fully closed the valve is leakage tight thanks to the main seal of TFM 1600, as in M&M standard on/off piston actuated valves (see PICTURE **B**).



PICTURE A



PICTURE B



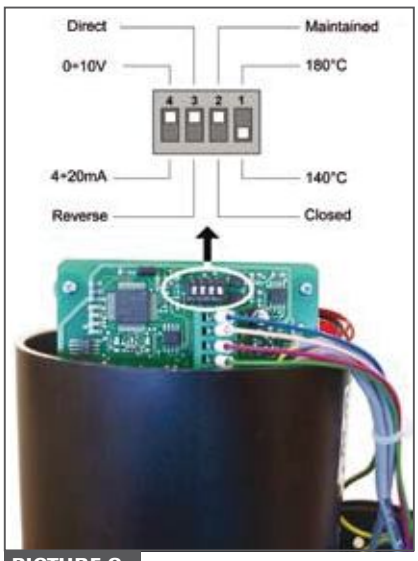
PICTURE B1

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



PICTURE C

Contact No. 1 – Process Temperature -

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 o 4mA	Closed
	10V o 20mA	Open 100%
Reverse (NO)	0V o 4mA	Open 100%
	10V o 20mA	Closed

CONTROL PISTON ACTUATED VALVE WITH INTEGRATED POSITIONER DN15 ÷ DN50; STAINLESS STEEL

TECHNICAL SPECIFICATIONS

Media: water, oil, aggressive media and steam
Media temperature: -10°C ÷ +180°C
Ambient temperature: -10°C ÷ +60°C
Viscosity: max 600 cSt (80° E)

Actuator Ø: 63 - 90
Actuator body material: Polyamide PA6 (reinforced fiberglass 30%)
Pilot media: dry and filtered air mesh (25 µm)
Bonnet material: cast AISI 316L (CF3M), see page 37
Body material: cast AISI 316L (CF3M), see page 37
Seal material: PTFE
Flow: linear or equal percentage

Positioner enclosure: anodized aluminium (black)
Set point signal: 0 ÷ 10V ; 4 ÷ 20mA
Electrical supply: 24V DC
MAX power consumption: 6W (0,24A)
Function: NC (Direct) / NO (Reverse)
Set-up point: self-adjusted valve
Fail Safe Position: "closed", "maintained"
Electrical connections: M23 connector, 12 poles
Protection class: IP65
Hysteresis: < 1% f.s.
Repetability: < 0,5% f.s.
Minimum set-point: < 2% f.s.

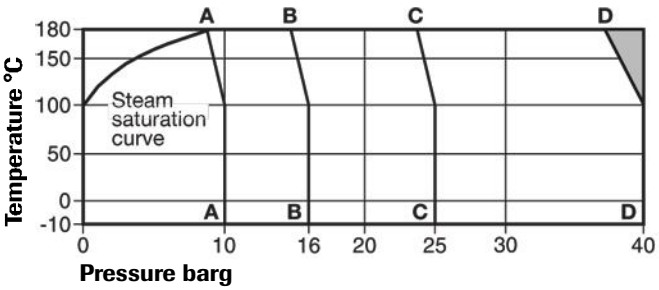
BENEFITS

Actuator housing rotation 360°
Valves DN32-DN50 complying with 97/23 Directive Category I
Connector rotation 360° (90° steps)

OPTIONS

Connection options: screwed, flanged, butt weld, socket weld and sanitary clamp
Seal material PEEK
Body and shaped plug with hardening treatment
Low friction stem seal (media temp.: -10°C ÷ +140°C)

TYPE: CONTROL PAV NC



A – A PN10, **B – B** PN16 e 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 TABLE as damage to the internals will occur.

SELECTION TABLE

DN	Max working pressure ❶	Flow direction	Pilot pressure min	Pilot pressure max	Actuator Ø	PN ❷
[mm]	[barg]	[2 → 1]	[barg]	[barg]	[mm]	-
15	16	only under seat	4.5	8	63	40
20	16					40
25	14	only under seat	4.5	8	90	40
32	12					25
40	8					25
50	6					16

❶ Steam: max working pressure 10 bar (9 barg) or lower according to valve max pressure
❷ PN10 for all sizes for sanitary Clamp

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EQUI% TRIM 1:25 - FLOW RATE

Connection	DN	Actuator Ø	% STROKE
-	[mm]	[mm]	Kvs [m³/h]
1/2″	15	63	4,5
3/4″	20		8,7
1″	25	90	12,7
1 1/4″	32		19,8
1 1/2″	40		29,7
2″	50		36,3

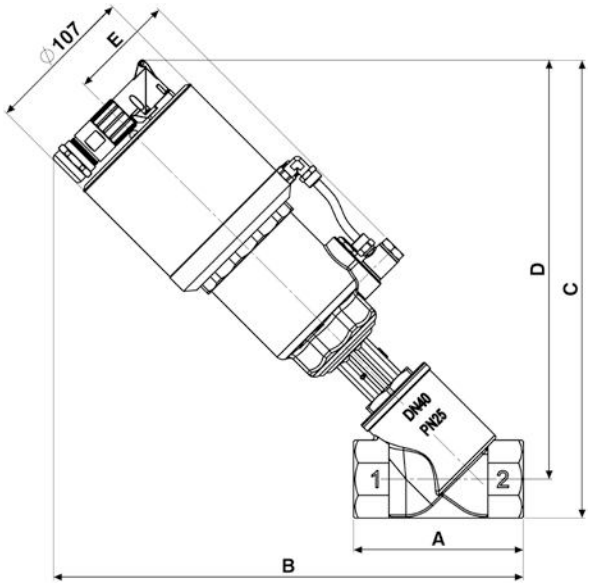
LINEAR TRIM 1:25 - FLOW RATE

Connection	DN	Actuator Ø	% STROKE
-	[mm]	[mm]	Kvs [m³/h]
1/2″	15	63	4,9
3/4″	20		8,7
1″	25	90	14,4
1 1/4″	32		22,8
1 1/2″	40		34
2″	50		39

DIMENSIONS & WEIGHTS

ALL MODELS

Actuator Ø	E
[mm]	[mm]
63	75
90	88



CONNECTION: GAS, NPT, WELDED ENDS

DN	Actuator Ø	A	B	C	D	Weight
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
15	63	65	294	282,5	269	2,4
20		75	301	290	274	2,5
25	90	90	316	305	285	3,3
32		110	329	317	292,5	3,7
40		120	334	325	297,5	3,9
50		150	352	340	306,5	4,6

CONNECTION: FLANGED EN 1092-1

DN	Actuator Ø	A	B	C	D	Weight
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
15	63	130	323	339,5	292	3,8
20		150	330	349,5	297	4,2
25	90	160	344	364,5	307	5,7
32		180	359	386	316	7,3
40		200	361	394	319	8,2
50		230	384	412,5	330	10,4

CONNECTION: FLANGED ANSI B 16.5

DN	Actuator Ø	A	B	C	D	Weight
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
15	63	139,7	321	336,5	292	3,8
20		152,4	327	346,0	297	4,2
25	90	165,1	343	361,0	307	5,7
32		184,2	357	375,0	316	7,3
40		203,2	361	382,5	319	8,2
50		228,6	384	406,0	330	10,4

CONNECTION: CLAMP ISO 2852

DN	Actuator Ø	A	B	C	D	Weight
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
15	63	102	313	286	269	2,5
20		114	320,5	291	274	2,7
25	90	140	341	310	285	3,7
32		159	353,5	318	292,5	4,1
40		159	353,5	329,5	297,5	4,5
50		190	372	340	306,5	5,3

CONNECTION: CLAMP ASME BPE

DN	Actuator Ø	A	B	C	D	Weight
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]
15	63	102	313	282,5	269	2,5
20		114	320,5	290	274	2,7
25	90	140	341	310	285	3,7
32		NA	NA	NA	NA	NA
40		159	353,5	325	297,5	4,5
50		190	372	340	306,5	5,3

NA = not available