

**FEATURES**

- The spool valves satisfy all relevant EC directives
- Accepts a wide range of operators
- Used in fluid remote control and servo systems

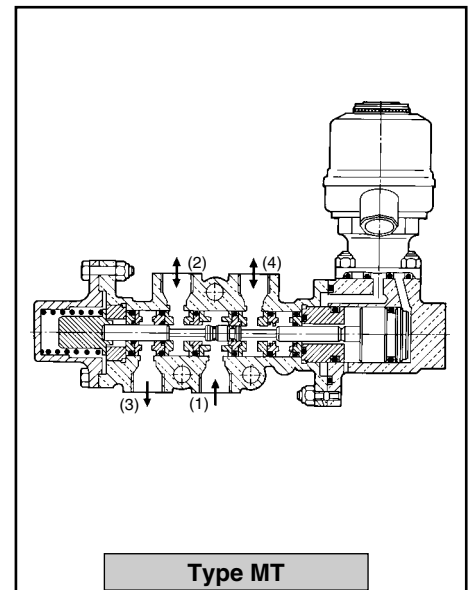
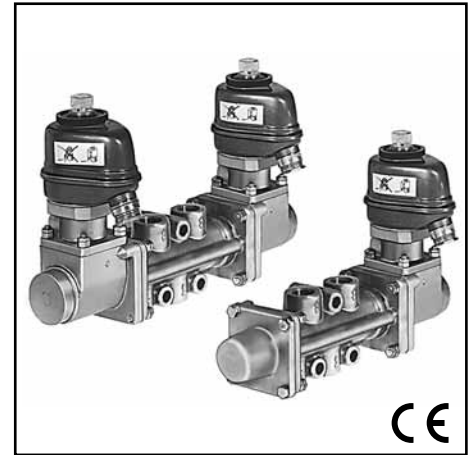
**GENERAL**

fluids (*)	temperature range (TS)	seal materials (*)
water, air, inert gas, oil	-10°C to +80°C	NBR (nitrile)

Differential pressure 0 to 12 bar [1 bar = 100 kPa]

Maximum allowable pressures and functions:

symbol	operator	(C)	pipe size	maximum allowable pressure		
				air (*) (bar)	water (*) (bar)	oil (*) (bar)
<b>air operated - spring return (monostable function)</b>						
	piston	1	3/8	35	30	25
		1	1/2	30	25	20
	membrane	2	3/8	35	30	25
		2	1/2	30	25	20
<b>air operated - air return (bistable function)</b>						
	piston	3	3/8	35	30	25
		3	1/2	30	25	20
	membrane	4	3/8	35	30	25
		4	1/2	30	25	20
<b>solenoid-air operated - spring return (monostable function)</b>						
	pilot type MB (1) (series 121)	5	3/8	35 (1)	30 (1)	25
		5	1/2	30 (1)	25	20
<b>solenoid-air operated and return (bistable function)</b>						
	pilot type MB (1) (series 121)	6	3/8	35 (1)	30 (1)	25
		6	1/2	30 (1)	25	20
<b>direct electric operated and return (bistable function)</b>						
	"ET" type electromagnets	~ 7	3/8	30	20	10
		= 8				



Maximum viscosity 40 cSt (mm<sup>2</sup>/s)  
 Ambient temperature range (TS) -10°C to +40°C  
 Pilot Water, air, inert gas, oil (40 cSt max.)  
 Pilot pressure See "Specifications" overleaf  
 Pilot fluid temperature +60°C max.

**MATERIALS IN CONTACT WITH FLUID**

(\*) Ensure that the compatibility of the fluids in contact with the materials is verified

Body Brass (G3/8) - Bronze (G1/2)  
 Internal parts Stainless steel  
 Spring Steel  
 Seals NBR  
 Shading coil Copper  
 Pressure operator:  
     piston Stainless steel, NBR seal  
     diaphragm NBR

**OTHERS MATERIALS**

3/2 solenoid-air operator:  
     series 121 (type MB) See 05-75  
     solenoid head In metal housing to IP65  
 Direct electric operator:  
     solenoid "ET" Heads MPV1 (AC ~) and CPV1 (DC =), see 09-05-32  
     MPV1 (~) Metal housing to IP54  
     CPV1 (=) Cast housing to IP65

(C) Configuration number, see "Dimensions"  
 (1) Maximum allowable pressure > 25 bar, use external pilot supply option (see "Options")

**ELECTRICAL CHARACTERISTICS**

**Coil isolation class** E (class B for CPV1)  
**Coil connection** Terminals integral with coil  
**Cable entry** Cable gland Pg 11M [MB] or Pg 11P [ET]  
**Electrical safety** IEC 335  
**Standard voltages** DC (=): 24V  
 (Other voltages and 60 Hz on request) AC (~): 24V - 115V - 230V / 50 Hz

pilot type	solenoid head	nominal power rating				ambient temperature range (TS) (°C)	coil class	coil construction
		inrush	holding		=			
		(VA)	(VA)	(W)	(W)			
MB (series 121)	screws-12W	75	22	12	8	-10 to +40	E	wrapped
ET	MPV1(~) CPV1(=) (1)	600	55	15	-	-10 to +40	E B	wrapped moulded
		-	-	-	80			

**SPECIFICATIONS**

pipe size	orifice size	flow coefficient Kv		maximum differential pressure (bar)			pilot pressure		operator type	(C)	(M)	catalogue number	reference	
		(m³/h)	(l/min)	min.	maximum (PS) air/water/oil (*)	min.	max.							
(G*)	(mm)				~	=	(bar)	(bar)				NBR seals		
<b>air operated - spring return</b>														
3/8	9	0,84	14	0	12	12	3	30	piston	1	×	23200060	T402 RH	
1/2	15	3,18	53	0	12	12	3	30	piston	1	×	23200091	T403 RH	
3/8	9	0,84	14	0	12	12	1	15	diaphragm	2	×	23200061	T402 RN	
1/2	15	3,18	53	0	12	12	1,5	15	diaphragm	2	×	23200092	T403 RN	
<b>air operated and air return</b>														
3/8	9	0,84	14	0	12	12	3	30	pistons	3	×	23200042	T402 H2	
1/2	15	3,18	53	0	12	12	3	30	pistons	3	×	23200132	T403 H2	
3/8	9	0,84	14	0	12	12	0,7	15	diaphragms	4	×	23200043	T402 N2	
1/2	15	3,18	53	0	12	12	1	15	diaphragms	4	×	23200090	T403 N2	
<b>solenoid-air operated - spring return (2)</b>														
												(~)	(=)	
3/8	9	0,84	14	3 (3)	12	12	3 (3)	12	pilot MB	5	×	23200062	23200066	MT 402
1/2	15	3,18	53	3 (3)	12	12	3 (3)	12	pilot MB	5	×	23200093	23200100	MT 403
<b>solenoid-air operated and air return (2)</b>														
3/8	9	0,84	14	3 (3)	12	12	3 (3)	12	pilot MB	6	×	23200044	23200048	M2T 402
1/2	15	3,18	53	3 (3)	12	12	3 (3)	12	pilot MB	6	×	23200101	23200103	M2T 403
<b>direct electric operated and air return</b>														
3/8	9	0,84	14	0	10	10	-	-	ET-MPV1 (~)	7	×	23200052	-	ET 402 (~)
									ET-CPV1 (=)	8	×	-	23200347	ET 402 (=)

- (M) Manual operator    × : without (manual operator on request, see "Options" below)  
 (C) Construction type, see "Dimensions"  
 (1) With DC, control must be by pulse. If voltage is maintained, each solenoid must be provided with a fuse (contact us)  
 (2) With internal pilot fluid supply (external supply optional)  
 (3) Working pressure < 3 bar, use external pilot supply option

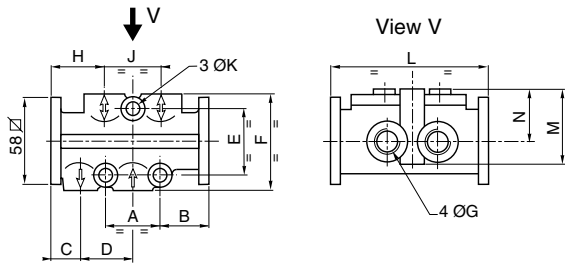
**OPTIONS**

- Valve body:**
  - Impulse or maintained (screwdriver type) manual return
  - FPM seal (fluoroelastomer) - maximum allowable pressure 20 bar max.
  - Oxygen rated, catalogue number **970521**
  - Control valve for pressure differential > 12 bar max. (limited by maximum allowable pressure) (Kv reduced by 30%)
  - Closed centre neutral position control valve (W1) or centre open to exhaust (W3) - only in air operated and return (piston type) or solenoid-air operated and return (MB pilots) versions - maximum differential pressure 12 bar
- With air operated:**
  - Locking or non-locking manual operator (screwdriver type)
- With solenoid-air operated:**
  - External pilot fluid supply
  - Button or impulse manual operator
  - Flameproof enclosure to Ex **d**, for potentially explosive atmospheres according to "ATEX/CENELEC":
    - . pilot MB (series 121) see X019-105
    - . solenoid ET (series 131) see X019-110
  - Pilots certified to Ex **m**, for potentially explosive atmospheres according to "ATEX/CENELEC" (contact us)
  - Options concerning pilot MB, see 55-75
  - Options concerning solenoid ET, see 09-05-15

**INSTALLATION**

- Possible spool valve control configurations:
  - air operators: **all positions**
  - solenoid-air operator, pilot MB (series 121): all positions, **except solenoid head downwards**
  - direct operated, solenoid ET: **magnetic head must remain horizontal**
  - all operator and return systems can be oriented in 90° increments in relation to pipes
- For electrically-operated control valve "ET" on DC: observe power supply precautions in note (2) on preceding page
- Pipe connections (G\*) have standard combination thread according to ISO 228/1 and ISO 7/1
- Spare parts and replacement coils available

**DIMENSIONS (mm), WEIGHT (kg)**



**G 3/8 and G 1/2 body**

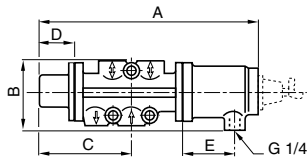
(G*)	A	B	C	D	E	F	H	J	ØK	L	M	N
3/8	36	43	25	36	44	64	41	40	8,5	122	51	40
1/2	50	55	30	50	60	84	55	50	10,5	160	75	55

Ø K: 3 fixing holes

NOTE: all operators and return systems are rotatable at 90° increments in relation to pipes

Piston type air operator - return spring

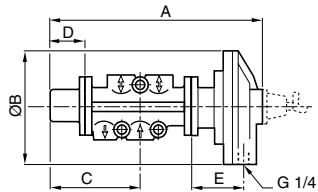
**Construction 1**



(G*)	A	B	C	D	E	weight
3/8	219	64	95	34	39	3,2
1/2	281	72	114	46	50	6,4

Diaphragm type air operator - return spring

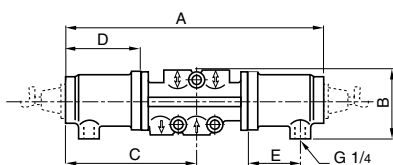
**Construction 2**



(G*)	A	B	C	D	E	weight
3/8	225	114	95	34	52	3,8
1/2	275	114	114	46	52	7

Piston type air operator and return

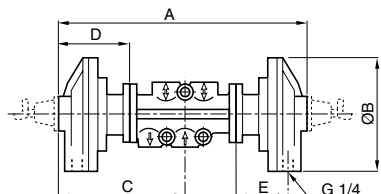
**Construction 3**



(G*)	A	B	C	D	E	weight
3/8	248	64	124	63	39	4,1
1/2	310	72	155	75	50	7,8

Diaphragm type air operator and return

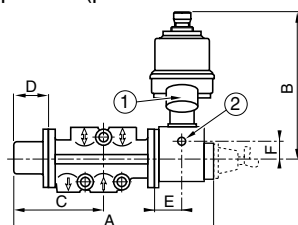
**Construction 4**



(G*)	A	B	C	D	E	weight
3/8	260	114	130	69	52	5,3
1/2	298	114	149	69	52	8

Solenoid-air operator (pilot MB series 121) - spring return

**Construction 5**



(G*)	A	B	C	D	E	F	weight
3/8	218	137	95	34	26,5	20	3,5
1/2	298	143	114	46	53,5	26	6,7

① Cable gland (Pg 11M)

② Optional external supply (G 1/4)

Solenoid-air operator and return - pilot MB (series 121)

WEIGHT (kg)

**Construction 6**

(G <sup>+</sup> )	A	B	C	E	F	weight
3/8	246	137	123	26,5	20	4,9
1/2	344	143	172	53,5	26	8,6

AC direct electric operator and return (solenoid heads MPV1)

**Construction 7**

(G <sup>+</sup> )	A	B	C	D	E	weight
3/8	396	95	198	137	34	8

DC direct electric operator and return (magnetic heads CPV1)

**Construction 8**

(G <sup>+</sup> )	A	B	C	D	E	F	H	weight
3/8	450	97	225	171	66	46	67	17
1/2	488	97	244	171	66	46	67	18

**OPTIONS**

Additional manual operator

(G <sup>+</sup> )	A	B	weight
3/8	74	68	0,21
1/2	74	68	0,21

Manual return device on control valve

(G <sup>+</sup> )	A	B	weight
3/8	79	73	0,35
1/2	82	76	1

Control valve with neutral position (centre closed W1), operated by pistons

(G <sup>+</sup> )	A	B	C	E	weight
3/8	318	30	159	30	5,4
1/2	410	36	205	36	9

Control valve with neutral position (centre closed W1), operated by MB pilots

(G <sup>+</sup> )	A	B	C	E	F	weight
3/8	318	137	159	26,5	20	6
1/2	436	143	218	53,5	26	9,6

- ① Cable gland (Pg 11P)
- ② External supply (G 1/4) option
- ③ Impulse manual operator
- ④ Maintained manual operator
- ⑤ Optional auxiliary contact with 2 cable glands (Pg 11P)