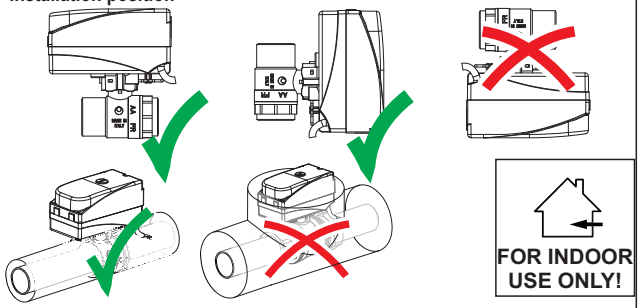
Installation position

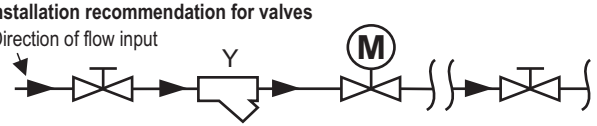


FOR INDOOR USE ONLY!

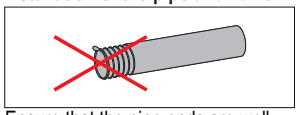
Do not mount actuator under pipes fittings and other valves due to possible leakage of water. The installation site has to be frost-proof and the protection of the device from chemicals, paints, detergents, solvents and their vapours and environmental influences must be guaranteed.

Installation recommendation for valves

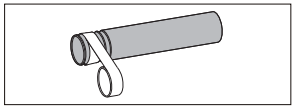
Direction of flow input



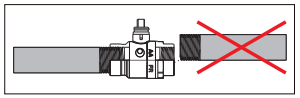
Installation of the pipe and valve



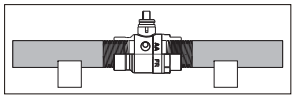
Ensure that the pipe ends are well treated and without scraps.



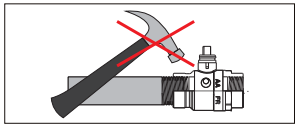
Do not put more than necessary sealing material on the pipe threads.



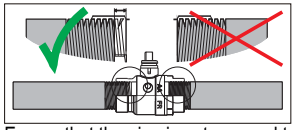
The connection pipes must be placed on the same axis and should be straight between them.



To avoid bending, the pipes must be substeined.



Avoid any damage to the valve because problems with sealing can occur.

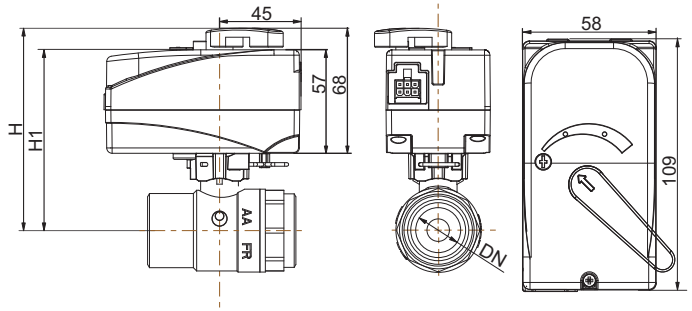


Ensure that the pipe is not screwed to the end of the thread.

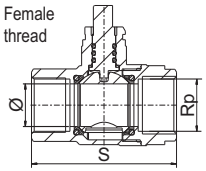
Maximum screwing torque of the connecting pipes into valves

	DN15	DN 20	DN 25	DN 32
Internal threads	50 Nm	60 Nm	80 Nm	90 Nm
	Maximum thread/lenght for the pipe			
	max 14 mm	max 15 mm	max 18 mm	max 18 mm
External threads	25 Nm	40 Nm	55 Nm	80 Nm
Compression fittings		40/60 Nm	60/80 Nm	
	Number of turns to tight with tool after tightening by hand			
		1/2-3/4	1/2-3/4	

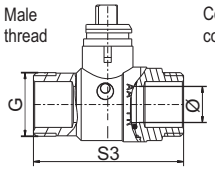
Dimensions



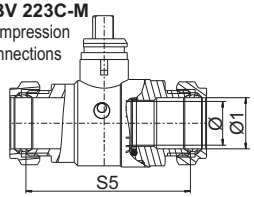
FBV 220C-M
Female thread



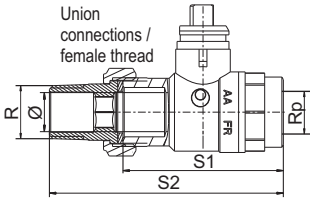
FBV 224C-M
Male thread



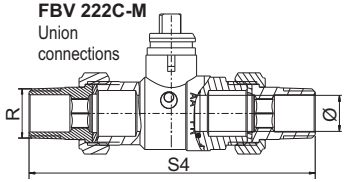
FBV 223C-M
Compression connections



FBV 221C-M
Union connections / female thread



FBV 222C-M
Union connections



Dimensions (mm)	DN 15		DN 20		DN 25		DN 32	
H	104		107		112		117	
H1	94		97		102		107	
Ø	15		20		25		32	
Ø1 (EN 1254-2)	15		22		28		-	
Rp (EN 10226-1)	1/2"		3/4"		1"		1 1/4"	
R (EN 10226-1)	1/2"		3/4"		1"		1 1/4"	
G (ISO 228-1)	3/4"		1"		1 1/4"		1 1/2"	
S	62		68		81		86	
S1	62		70		81		79	
S2	90		102		114		117	
S3	62		74		82		83	
S4	119		138		149		158	
S5	62		72		82		-	
Weight (kg)	M	K	M	K	M	K	M	K
FF FBV 220C-M (kg)	0,54	0,58	0,65	0,69	0,83	0,87	1,02	1,06
MF FBV 221C-M (kg)	0,60	0,64	0,74	0,78	1	1,04	1,22	1,26
MM FBV 222C-M (kg)	0,67	0,71	0,85	0,89	1,16	1,20	1,47	1,51
CC FBV 223C-M (kg)	0,57	0,61	0,71	0,75	0,92	0,96	-	-
MM FBV 224C-M (kg)	0,55	0,59	0,68	0,72	0,90	0,94	1,08	1,12

Legend:
M - Molex connection,
K - cable

FIRST®

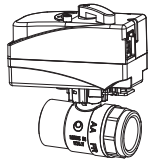
EMV 110..9xx7-M/K MOD X

Actuators S9000 MOD X with modulating control signal with FBV 200C-M valves

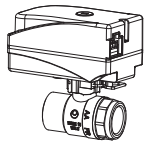
MOD X - modulating control signal

Modulating control		0-10 V DC 4-20 mA

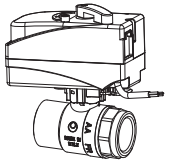
EMV 110..9Fx7-M MOD X
With handle, Molex connection



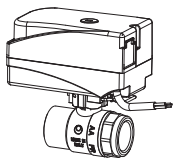
EMV 110..91x7-M MOD X
Without handle, Molex connection



EMV 110..9Fx7-K MOD X
With handle,cable connection



EMV 110..91x7-K MOD X
Without handle, cable connection



+55°C.. 0°C

PN10, ΔP<3 bar +2..+90°C

Product designation: **EMV 110 ..** 9 X X 7 - X MOD X

Series	9000
Actuator type	1=without manual control F=with manual control
Rotation time	V=20s/90°,T=40s/90°,S=55s/90°, E=80s/90°,R=110s/90 °
Voltage	7=24 V AC, 50Hz with (0)2...10V modulating
Connection type	M=Molex connection K=cable

English

Information

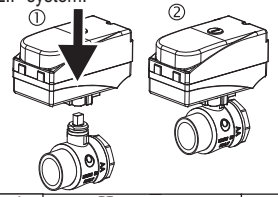
FIRŠT d.o.o
Koroška cesta 56, 3320 Velenje,
Slovenia

tel: ++386 (0)3 898 35 00
fax: ++386 (0)3 898 35 35
info@first.si, http://www.first.si

English

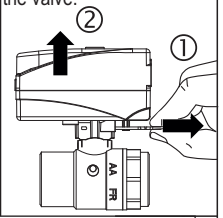
Assembly of the actuator on the valve

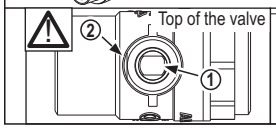
Actuator can be installed only in one position.Easy and fast installation of actuator on the valve with single push - CLIP system.

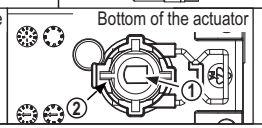


Disassembly of the actuator from the valve

First pull out the spring, then lift the actuator from the valve.

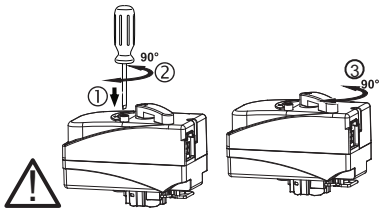






Manual operation:Only for EMV110.. 9Fx7

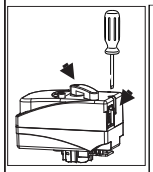
1. With screwdriver push the button down.
2. Turn the screwdriver for 90°.
3. Turn the handle of actuator for 90°.

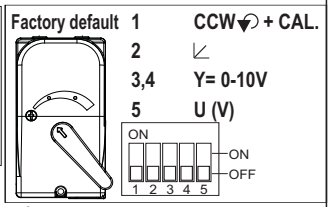


Note:
When the operation button for manual operating is in MAN position, actuator stays in permanent position irrespective of control signal.

Parameter setting using DIP switches

DIP switches are located inside actuator. To open the actuator it is necessary to loosen the screws on the cover (1x), and remove handle.





1. Direction of rotation:

- CCW/CW + calibration:
- CCW - opening to the right
- CW - opening to the left

DIP	CCW	CW
1	OFF	ON

During changing position of DIP1 is performed calibration proces.The actuator turns into left and right position. **During proces leave the button for manual control in position AUTO!**

2.Control signal: direct/inverse

DIP		
2	OFF	ON

3,4.Range settings

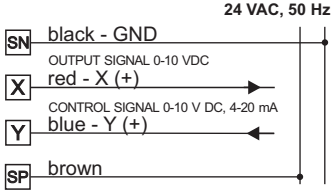
DIP	0,16-9,84V 0-20mA	2-9,84V 4-20mA	0,16-4,88V	5,12-9,84V
3	OFF	OFF	ON	ON
4	OFF	ON	OFF	ON

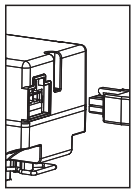
5.Y-Control signal U(V)/I(mA)

DIP	U(V)	I(mA)
5	OFF	ON

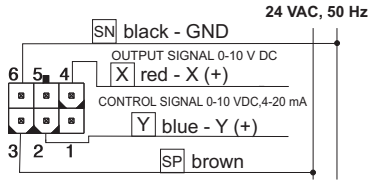
Electrical connection

EMV 110..9xx7-K, Cable connection





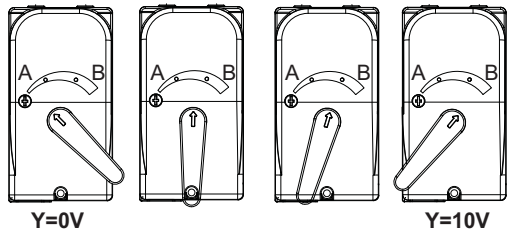
EMV 110..9xx7-M, Molex connection



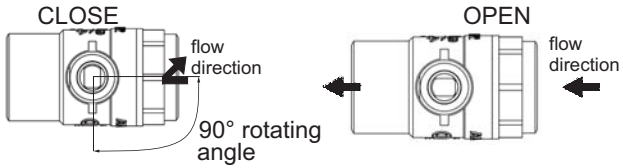
Switch off power supply before making electrical connections or servicing to prevent electrical shock and equipment damage!

Position indication and flow direction

FACTORY DEFAULT: Y=0V



Positon of modulating insert in valve



WARNING

- The actuator must be protected by a fuse 1A.
- It is not allowed to open the actuator housing!
- The actuator must be electrically connected in accordance with technical norms.
- Observe the correct connection voltage!
- Installers, and users are responsible for the safe and proper installation / operation of the actuator.

Safety information:

- Before installation wash pipes, sealing material must not go inside the valve
- During installation, avoid soldering or welding near the valve
- Any deterioration or destruction of any part of the valves shall result in the need to replace the complete valve: alterations to any part of the complete valve shall result in the valve no longer being in compliance with the performance requirements of this document.
- Place of assembly must be protected against frost, the device must be protected from chemicals, paints, detergents, solvents and their vapors and other environmental influences (vibration).
- All installations should be performed in accordace with existing local installation regulations end codes of practice where they exist.
- It's imperative to follow the installation instructions of the valve manufacturer.
- If the valve is installed in the heating installation the water quality in the system has to comply with the VDI 2035 requirements.

Tehnical data

Supply voltage	24V AC, 50Hz
Running time	EMV 110 9x**X**7 (9x**V**x, 9x**T**x, 9x**S**x, 9x**E**x, 9x**R**x,) **V**=20s/90°,**T**=40s/90°,**S**=55s/90°,**E**=80s/90°,**R**=110s/90°
Power consumption	3,5 VA at 24 VAC
Torque	Max. 5 Nm
Protection class	II ⧈
Degree of protection	Cable connection: IP44 Molex connection: IP40 (IP44 only with special connector- by special request)
Connection	EMV 110 9xx7-K: Cable l=1 m (4 x 0,5 mm^2) EMV 110 9xx7-M: Molex connection
Rotation direction	defined CW/CCW 90° (selectable by controller (DIP))
Manual control	with handle - EMV 110..9Fx7 only
Position indicator	mechanical indicator/handle on the cover
Ambient temperature	0°C…+55°C
Relative Humidity	0..80% r.H Non-condensing
Storage temperature	-10°...+70°
Maintaining	maintenance free

We reserve us the right to modify the technical instructions and product data without prior notice.

Ball valve	FBV 220C-M	FBV 221C-M	FBV 222C-M	FBV 223C-M	FBV 224C-M
Pipe connection thread	F/F Female thread	F/M Female thread / Union connection	M/M (U) Union connections male thread	C/C Compression connections	M/M Male thread

Fluid	water, glycol <50%,not aggressive fluids **The use is not allowed for flammable liquids, combustible gases or explosive liquids!** **Water quality as per VDI 2035.**
Fluid temperature	+2°C...+90°C
Nominal pressure	PN10 According to EN 13828:2003
Max. differential pressure	3 bar (recommended max. diff. pressure for low noise oper.: 2 bar)

Materials

Valve body	Brass, CW617N
Ball	Brass, CW617N
Seals	PTFE, EPDM Perox, FPM
Modulating insert	PPS