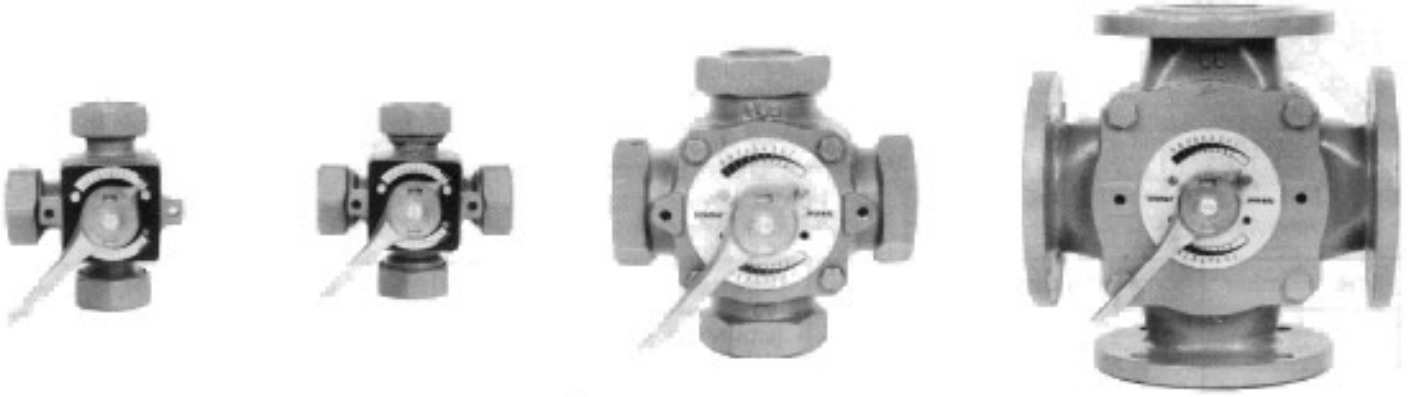
D 07
4/87

3-way Mixing Valves 114 & 115
4-way Mixing Valves 116 - 119
121 - 123

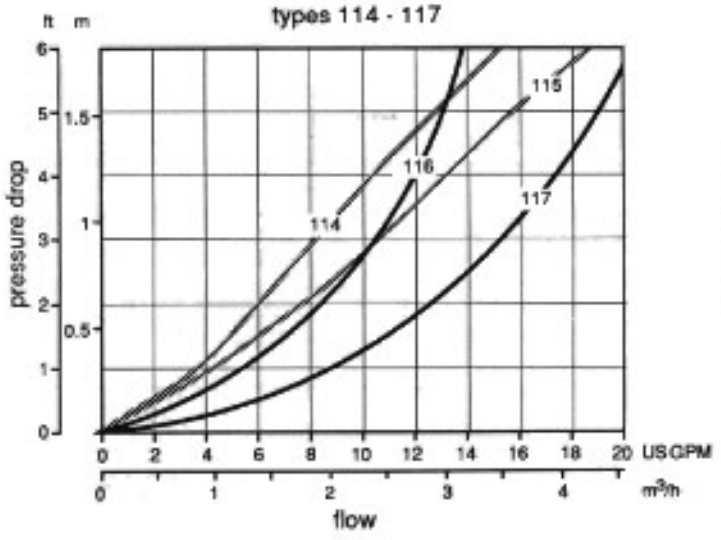
tekmar®
Control Systems

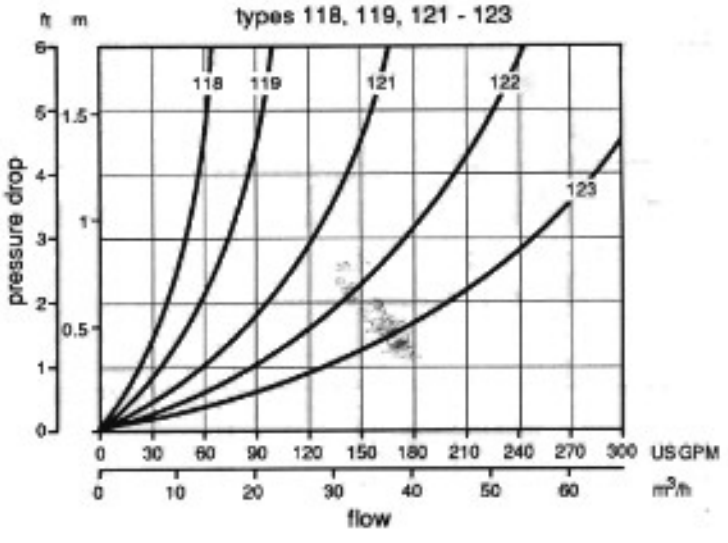
These quality mixing valves can be directly connected to a tekmar Motor-Electronic for fully automatic control. Since the valves have cast iron bodies, they should only be used in 'closed' heating sytems. **To reduce the risk of localized corrosion in the mixing valve we strongly recommend that iron pipes be installed between the boiler and the mixing valve and that an anti-corrosion agent be added to the heating system water.**
The valve shaft has double O-ring seals which enable it to withstand 90 psi (600 kPa) operating pressure. The operating temperature range for pure water is 32°F (0°C) to 230°F (110°C). For glycol solutions and other liquids the operating temperature range can be obtained by contacting tekmar® Control Systems. **For types 121-123, the valve mechanism must be removed from the valve body when welding the flanges because excessive heat will damage the internal rubber seals.**



type 114 1" **type 115** 1-1/4"	**type 116** 1" **type 117** 1-1/4"	**type 118** 1-1/2" **type 119** 2"	**type 121** 2-1/2" **type 122** 3" **type 123** 4"
includes: Mixing valve Unions Gaskets	includes: Mixing valve Unions Gaskets	includes: Mixing valve (has internal NPT threads)	includes: Mixing valve Butt-welded flanges Gaskets, nuts, bolts

Performance Curves:

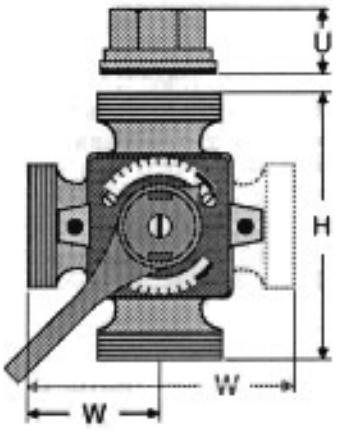




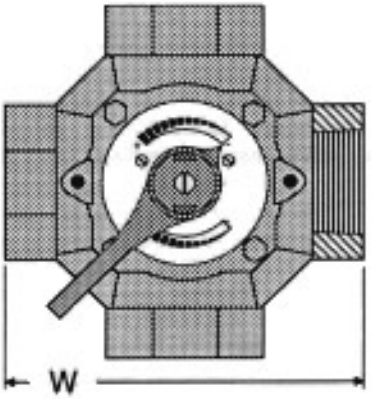
CV value: CV is defined as the flow of water in US GPM at 60°F through a valve in the full open position with 1 psi (2.307 feet) pressure differential across the valve.

type number	CV Value	type number	CV Value	type number	CV Value	type number	CV Value
116	9	118	40	121	100	123	210
117	14	119	60	122	150		

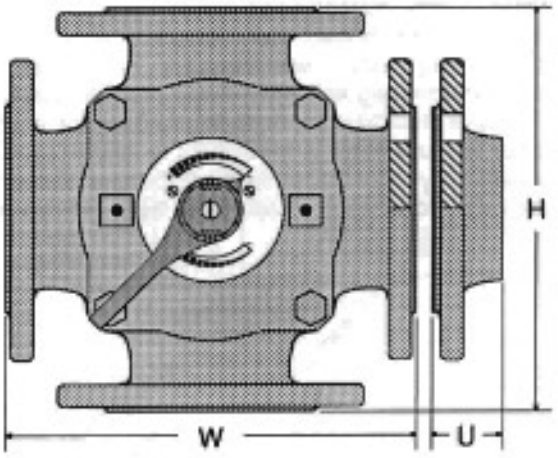
Dimensional drawings:



types 114-117



types 118-119

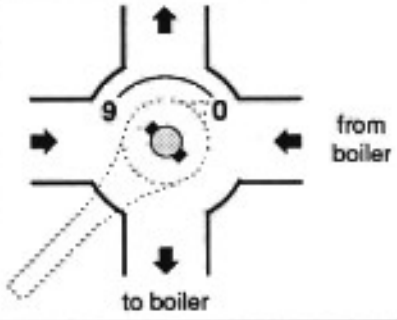
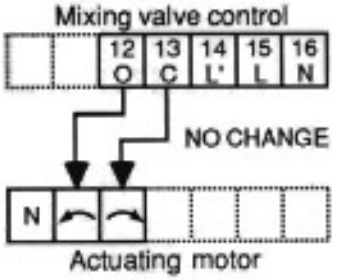
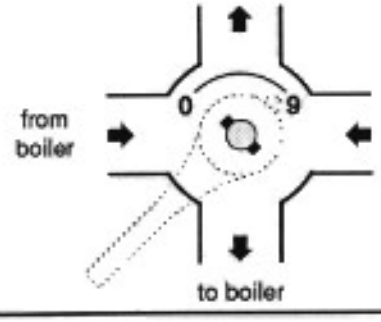
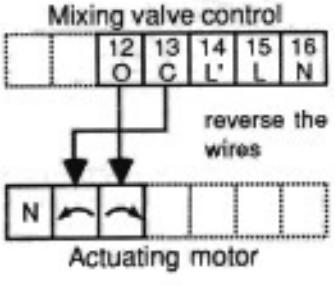


types 121-123

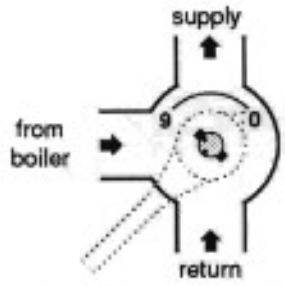
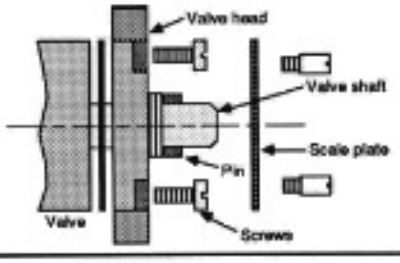
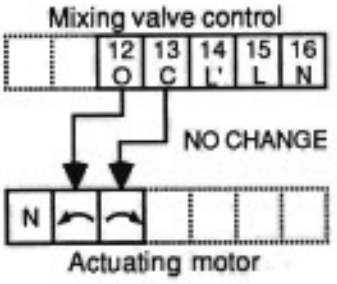
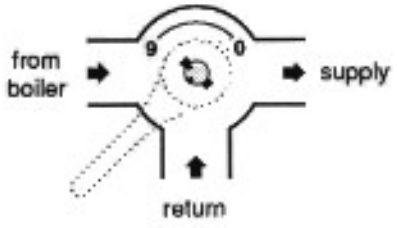
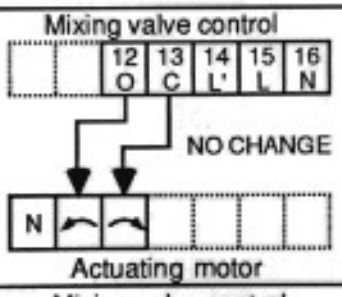
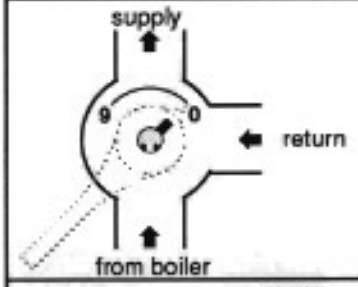
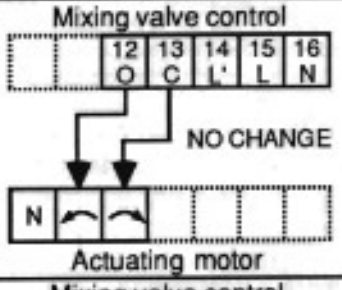
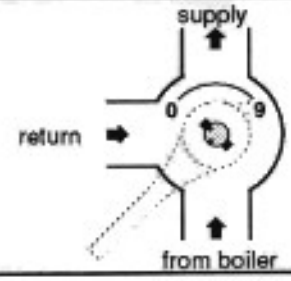
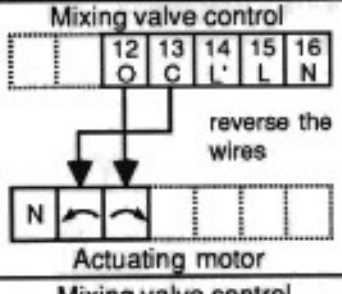
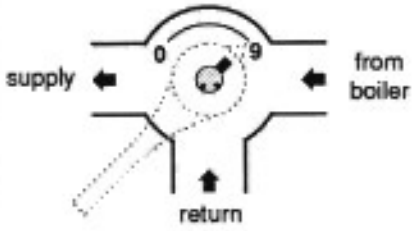
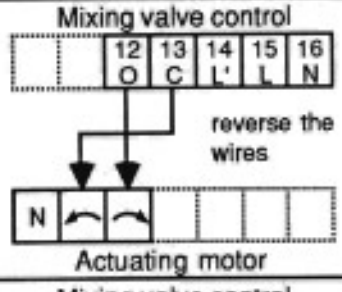
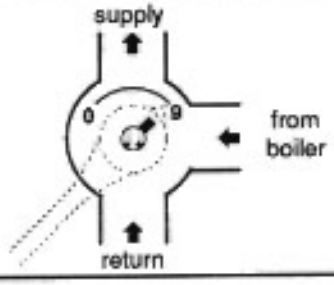
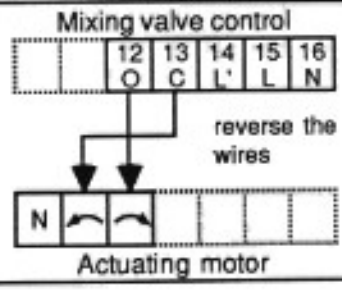
type number	Configuration	Pipe size	Dimension H	Dimension W	Dimension U	Net Weight
114	3 - way	1"	5-1/8" (129 mm)	2-9/16" (65 mm)	1-1/8" (29 mm)	5.8 lbs (2.7 kg)
115	3 - way	1-1/4"	5-1/4" (132 mm)	2-9/16" (65 mm)	1-1/4" (32 mm)	6.8 lbs (3.1 kg)
116	4 - way	1"	5-1/8" (129 mm)	5-1/8" (129 mm)	1-1/8" (29 mm)	6.6 lbs (3 kg)
117	4 - way	1-1/4"	5-1/8" (129 mm)	5-1/8" (129 mm)	1-1/4" (32 mm)	7.3 lbs (3.4 kg)
118	4 - way	1-1/2"	7-1/4" (182 mm)	7-1/4" (182 mm)	-	12.7 lbs (5.8 kg)
119	4 - way	2"	7-7/8" (198 mm)	7-7/8" (198 mm)	-	16 lbs (7.3 kg)
121	4 - way	2-1/2"	9-1/2" (234 mm)	9-1/2" (234 mm)	1-5/8" (41 mm)	54 lbs (24.5 kg)
122	4 - way	3"	10" (254 mm)	10 " (254 mm)	1-3/4" (45 mm)	85 lbs (38.5 kg)
123	4 - way	4"	11-1/2" (295 mm)	11-1/2" (295 mm)	1-7/8" (48 mm)	112 lbs (51 kg)

Installation Configuration

4 - way valve configurations:

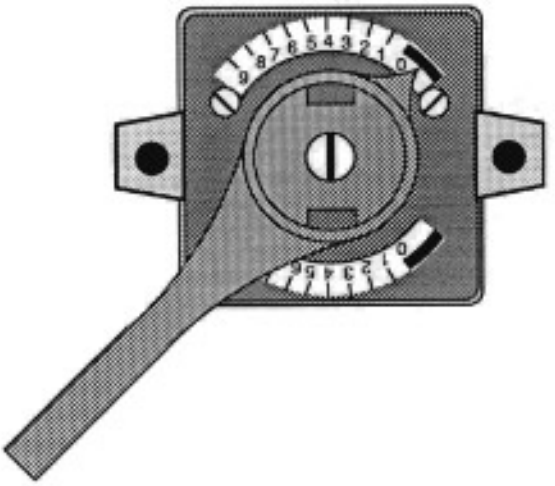
Configuration	Changes required from delivered configuration	Wiring diagram
	No changes required	
	Undo the scale plate; rotate it half a turn and reattach it so that the scale reads correctly	

3 - way valve configurations:

	As delivered from factory, no change. **Part description diagram:** 	
	Remove scale plate, and screws. Rotate valve head 1/4 turn clockwise. Reinstall the screws. Fit scale plate and handle as per sketch.	
	Remove scale plate, and screws. Rotate the valve shaft 1/4 turn counterclockwise & valve head 1/2 turn . Punch pin up, away from the marks on the shaft, so that it pokes out one side only. Fit scale plate and handle as per sketch.	
	Rotate the scale plate 1/2 turn so that the scale is as shown.	
	Remove scale plate, and screws. Rotate the valve shaft 1/4 turn counterclockwise & the valve head 1/4 turn clockwise. Punch the pin up, away from the marks on the top of the valve shaft until it pokes out one side only. Fit scale plate and handle as per sketch.	
	Remove scale plate, and screws. Rotate the valve shaft 1/4 turn counterclockwise & the valve head 1/2 turn. Punch the pin up, away from the marks on the top of the valve shaft until it pokes out one side only. Fit scale plate and handle as per sketch.	

Manual Operation of Mixing Valves

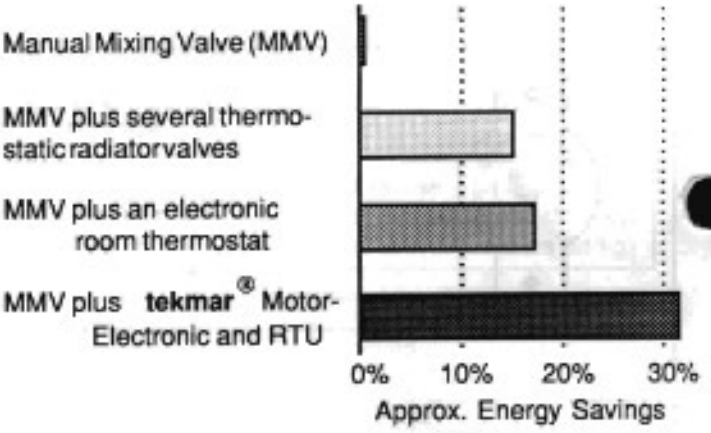
The tekmar mixing valve can be manually operated to regulate the amount of heat being delivered into a building. The scale on the mixing valve is a relative indication of the amount of heat delivered. For example, during warmer weather, move the handle to 1 or 2, and during colder weather, to 7 or 8. The larger the number, the warmer the building will become. Due to the physical properties of hydronic radiant floor heating, there could be up to 2 hours delay from a change in the setting of the mixing valve to a change in the resulting room temperature.



9 = Hot **0 = Cold**

The adjacent graph shows the approximate energy savings of various automatic control upgrades. The manual mixing valve used alone is the poorest control due to the lack of response to changes in outdoor air temperature. The tekmar Motor-Electronic with an RTU (Room Temperature Unit) is clearly the most energy efficient control strategy. The tekmar system also provides both increased comfort and extended system life due to precise regulation of the water temperature and programmable night setback.

For more information ask for tekmar brochure "Optimal Operation of Hydronic Heating Systems" (T01).



Limited Warranty

tekmar Control Systems (tekmar®) warrants to the original purchaser, each tekmar product against defects in workmanship and materials, when the product is installed by a qualified person and used in compliance with tekmar's instructions. This warranty covers the cost of parts and labor provided by tekmar to correct defects in material and/or workmanship, but does not cover parts or labor to remove, transport or reinstall the defective product. tekmar will not be liable for any damage other than repair or replacement of the defective part or parts and such repair or replacement shall be deemed to be the sole remedy from tekmar. This warranty shall not apply to any defects caused or repairs required as a result of unreasonable or negligent use, neglect, accident, improper installation, or unauthorized repair or alterations.

In case of defect, malfunction or failure to conform to warranty, tekmar Control Systems will, for 24 months from the date of invoice or for 12 months from the date of installation of the product, whichever occurs first, repair or exchange,at tekmar's option, the defective product. The warranty is not in effect until the warranty card has been filled out and returned to tekmar Control Systems. Any express or implied warranty which the purchaser may have, including merchantibility and fitness for a particular purpose, shall not extend beyond 24 months from the date of invoice or 12 months from the date of installation, whichever occurs first.

Warranty Procedure

The installer or other qualified service person must, at the owner's expense, determine which component has failed. If an actuating motor, electronic control, mixing valve, pump, sensor, or other tekmar component requires repair, only that component, together with the proof of purchase of the tekmar equipment must be returned to the original purchaser. In order for tekmar to process any warranty claim, the type number and fabrication number of the product and your name and address must be included with the defective component or product.

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