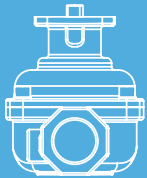
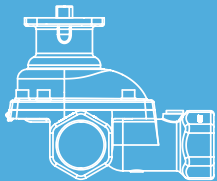


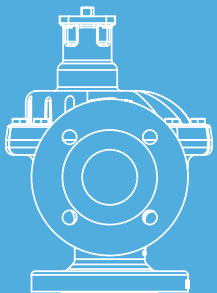
Emech Valve to G1 Electric Actuator Mounting Instructions



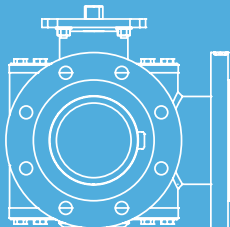
F2



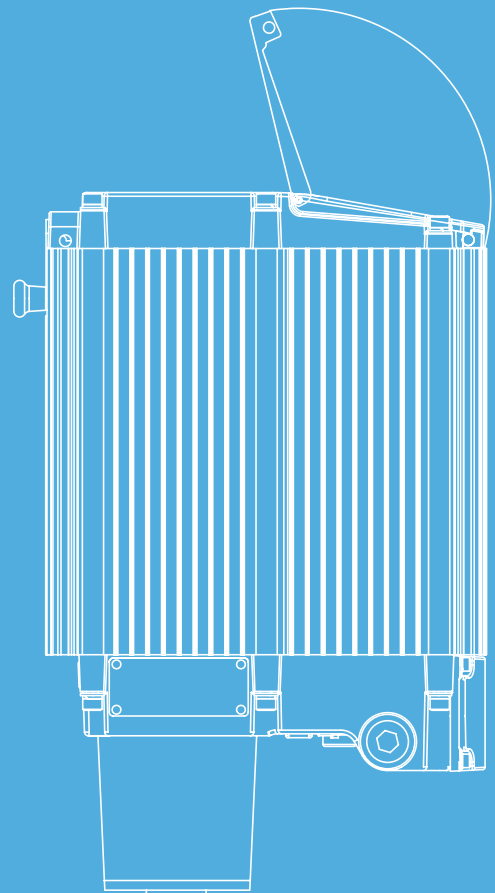
F3/F5



F4



F8T



**Emech G1.2 or G1.3 actuator mounting instructions for standard
Emech F2, F3, F4, F5 or F8T control valves**

Introduction

This document provides instructions to mount an Emech G1.2 or G1.3 actuator onto standard Emech F2, F3, F4, F5 or F8T control valves.

All actuators are shipped configured to the customers requirements specified at time of purchase. Warranty or replacement actuators are configured as per the actuator to be replaced. There should be no need to re-configure the actuator but the latest support CD-Rom is supplied with configuration software and supporting documentation or can be downloaded from the emech web site www.emechcontrol.com.

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4.0 F3 and F5 valve mounting instructions.....	5
5.0 F4 valve mounting instructions.....	7
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7.0 Assembly of G1 onto other valves.....	12
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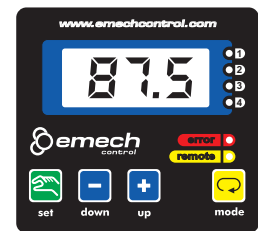
1.0 Preparing the actuator for assembly onto Emech valves

Before fitting the actuator to the valve assembly, ensure the actuator is in the zero position. All new or replacement Emech actuators are shipped in the zero position. To check the actuator position or to re-zero an actuator follow section 1.1 if a power supply is available or section 1.2 for manual re-zeroing.

1.1 Automatically zeroing the actuator (24Vdc power supply required)

Power on the actuator (a 24Vdc regulated power supply is required). Refer Section 3 of the G1 actuator installation, operation and maintenance manual for electrical installation.

With a temperature sensor connected to Port 1 of the actuator ensure the actuator is in Temperature Controller mode (hold **mode** and press **down (-)** on the actuator keypad to toggle between Positioner or Temperature mode). Now disconnect the temperature probe from the actuator. The actuator will move automatically to the 'zero' position and display "E2" on the keypad display.

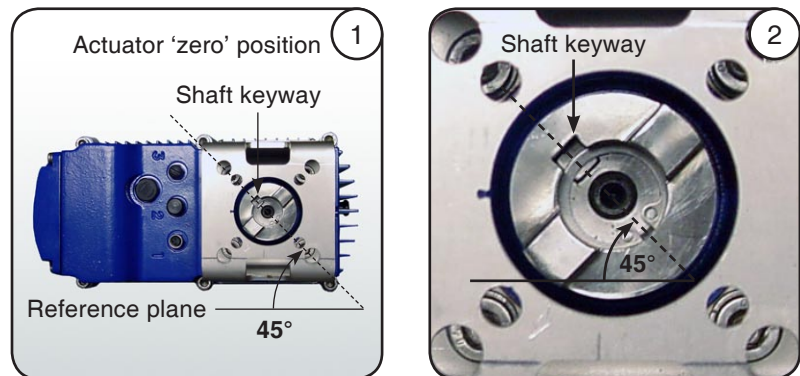


G1 actuator keypad

1.2 Manually zeroing the actuator

If there is no power available to 'zero' the actuator it is possible to use the actuator's manual override handle to adjust the actuator shaft position.

The actuator 'zero' is achieved when the shaft keyway is at 45° to the reference plane as indicated in images 1 and 2.



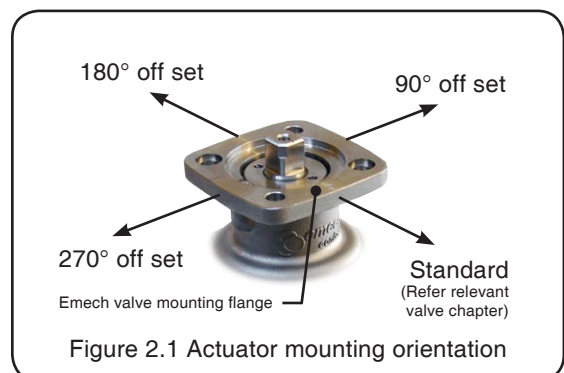
2.0 Actuator mounting orientation

To accommodate installation space restrictions the actuator may be mounted to an Emech valve in any one of four positions. The instructions provided in this document explain how to mount the actuator in the standard orientation for each type of Emech valve. To mount the actuator in one of the other three off-set orientations (see figure 2.1) follow the directions outlined in section 2.1.

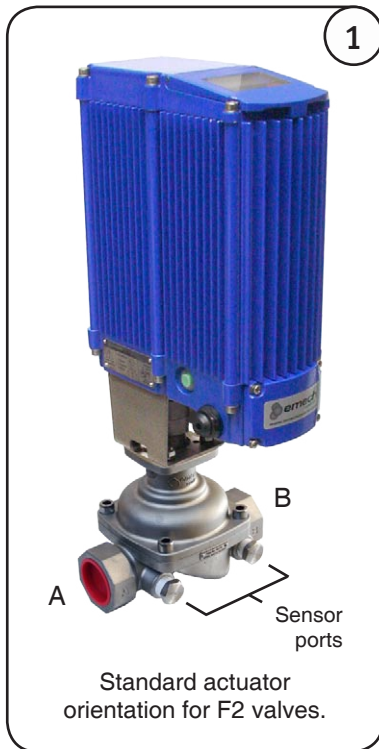
2.1 Non standard mounting orientations

Ensure the valve is in the "0" position by follow the standard mounting instructions for the valve in the relevant chapter of this document. When it comes to placing the graduated coupling onto the valve spindle orientate the coupling so the "0" mark aligns with the desired off set direction as indicated in figure 2.1.

Continue with the standard mounting instructions. Ensure the notch (zero indication on bracket) in the actuator bracket aligns with the coupling "0" when the actuator is fitted to the valve.



The valve and actuator will operate as per a standard mounting assembly.



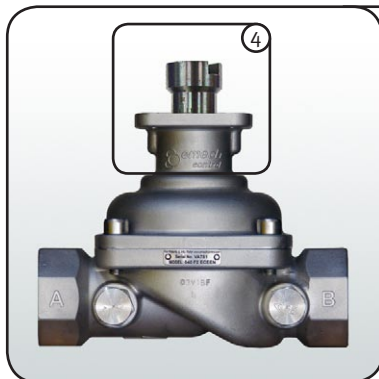
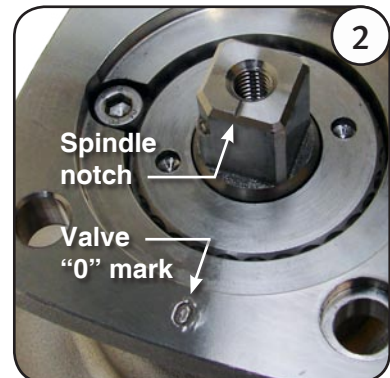
Assembly of G1 onto Emech F2 Valves

Note: The actuator may be mounted in any one of four positions refer section 2.0 for more information.

The instructions below explain how to mount the actuator as pictured in figure 1.

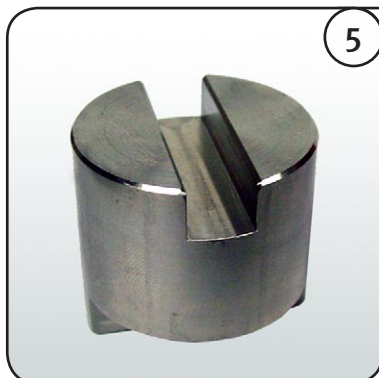
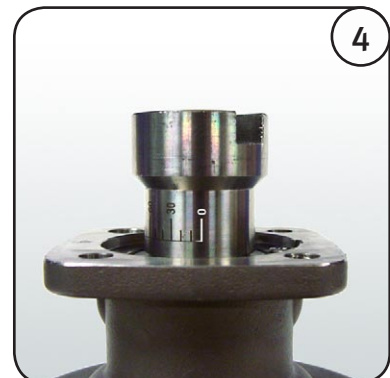
Ensure the actuator is in the 'zero' position, see Section 1.0 for details.

Set the Valve position to closed. Ensure the notch on spindle points towards the valves stamped "0" mark on the mounting flange (see figure 2).



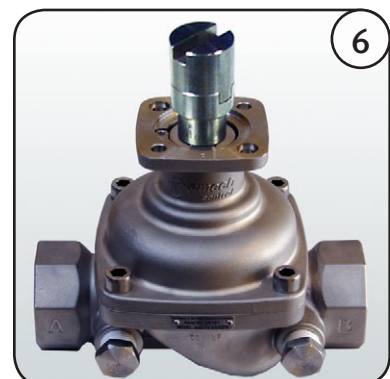
Place the graduated coupling (figure 3) on the spindle & ensure that zero points to the valves "0" mark (figure 4).

If the actuator is to be mounted in one of the other three orientations, rotate the zero graduation to the desired position BEFORE placing on the spindle. Refer section 2.1 for more detail.



Place the centre coupling (figure 5) on the graduated coupling (figure 6).

Continued...

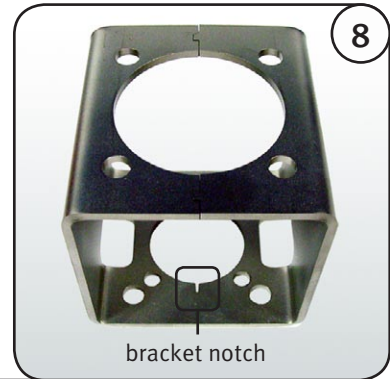




7

Place the actuator on the valve in the desired position (figure 7). The coupling "0" mark should align with the notch on the bracket (figure 8) .

Insert one M8 X 20 socket cap screw into one of the mounting holes with M8 Spring Washer and Nut. Insert the remaining three cap screws and fasten.



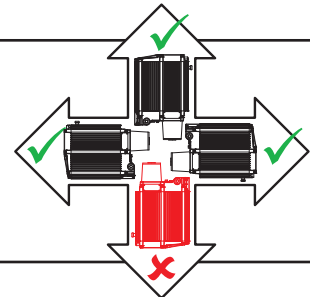
8

Note: Actuator Configuration for the F2 or other 1/4 turn valve.

Select "Set Defaults G1.X F2 (1/4 Turn)" from the "Tools> Standard Config" menu of the EmechConfig software.



THE ACTUATOR MUST NOT BE INSTALLED UPSIDE DOWN OR SUBJECT TO HIGH PRESSURE WASH DOWN





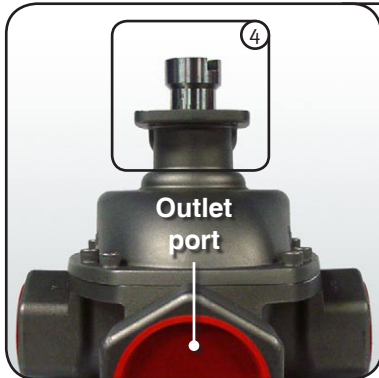
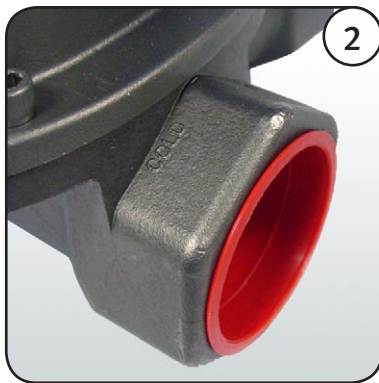
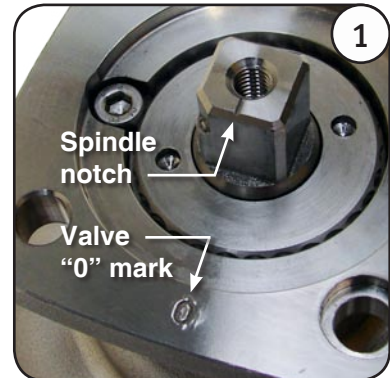
Assembly of G1 onto Emech F3 and F5 Valves

Note: The actuator may be mounted in any one of four positions.

The instructions below explain how to mount the actuator facing the outlet port as per figure 7.

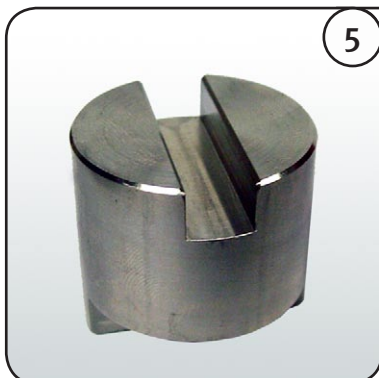
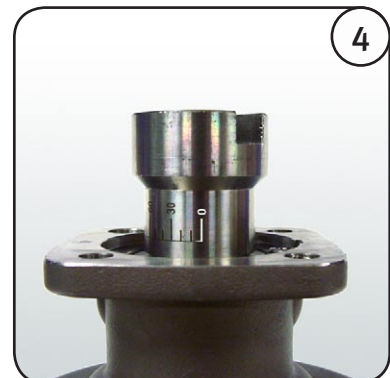
Ensure the actuator is in the 'zero' position, see Section 1.0 for details.

Set the Valve position to closed. Ensure the notch on spindle (figure 1) points towards the valve "0" mark and the cold port (figure 2).



Place the graduated coupling (figure 3) on the spindle & ensure that zero points to the outlet port (figure 4).

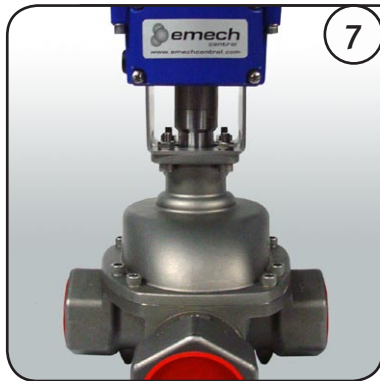
If the actuator is to be mounted in one of the other three positions, rotate the zero graduation to the desired position BEFORE placing on spindle.



Place the centre coupling (figure 5) on the graduated coupling (figure 6).

Continued...

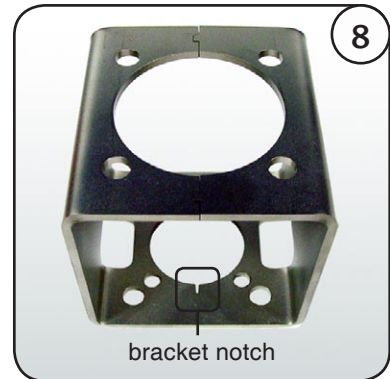




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Place the actuator on the valve in the desired position (figure 7). The zero on the coupling should align with the bracket notch (zero indication on the bracket) (figure 8).

Insert one M8 X 20 socket cap screw into one of the mounting holes with M8 Spring Washer and Nut. Insert the remaining three cap screws and fasten.

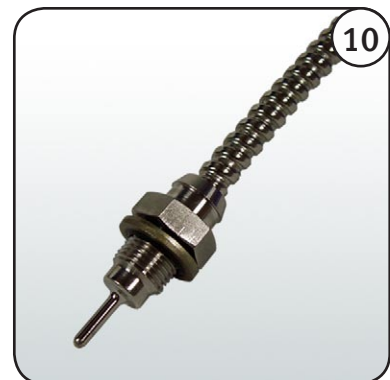


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Ensure the bonded washer (figure 9) is on the sensor (figure 10).



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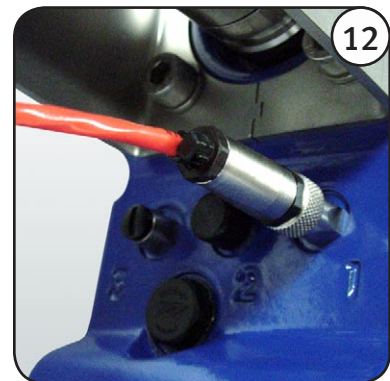


11

Screw the sensor into the outlet port of the valve (figure 11) and tighten.

After connecting to the valve plug the sensor connector into the actuator input port labelled "1" and tighten. The actuator is now assembled correctly.

For checking the actuator software configuration see section 5.0 of the actuator installation, operation and maintenance manual.



12

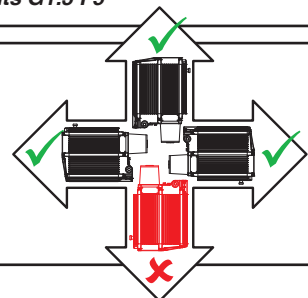


Note: Actuator Configuration differs for F3 and F5 valves.

To configure the actuator select the correct actuator valve combination from the "Tools> Standard Config" menu of the EmechConfig software. E.g. "Set Defaults G1.3 F3" or "Set Defaults G1.3 F5"



THE ACTUATOR MUST NOT BE INSTALLED UPSIDE DOWN OR SUBJECT TO HIGH PRESSURE WASH DOWN



Assembly of G1 onto Emech F4 Valves

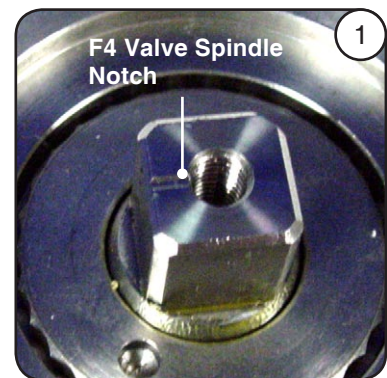
Usually the F4/G1.3 system is supplied configured as per the customers request. If a change is required, follow the instructions below.

For ease of installation the Emech F4 can have either inlet port configured as HOT or COLD. All F4 and actuator assemblies are shipped to the customers requirements specified at time of purchase. The standard configuration has Port A as the COLD inlet, Port B as the HOT inlet. There is an alternative configuration where the supplies can be reversed as indicated in table 5.1.

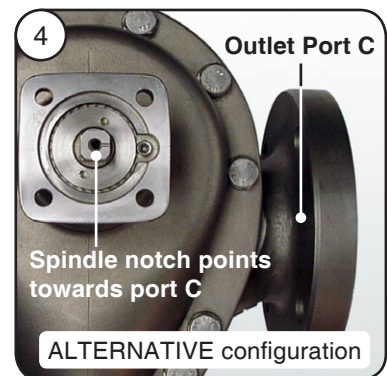
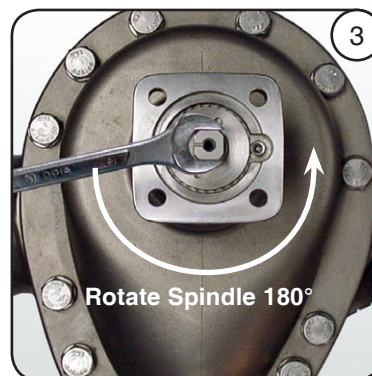
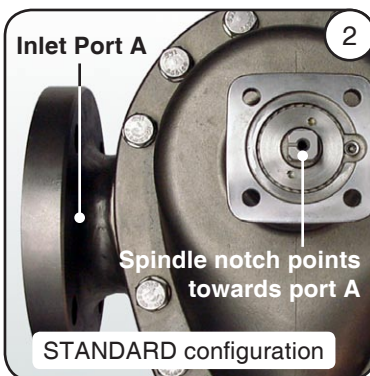
To configure the valve, the actuator must first be removed. Before removing the actuator, ensure the actuator is in the 'zero' position. To do so power on the actuator (a 24V DC regulated power supply is required). Ensure the actuator is in Temperature Controller mode (hold **mode** and press **down** (-) on the actuator keypad to toggle between Positioner or Temperature mode). Disconnect the temperature probe from the actuator. The actuator will move automatically to the 'zero' position and the keypad display will show "E2".

After ensuring the actuator is in the 'zero' position, isolate the power from the actuator. Remove the actuator bracket bolts, and lift the actuator off the valve. Take care to retain the 3-piece actuator shaft coupling. Set and secure the actuator to one side. Refer below to consider which configuration is best suited for the valve installation; STANDARD or ALTERNATIVE.

STANDARD	ALTERNATIVE
Port A - Cold fluid	Port A - Hot fluid
Port B - Hot fluid	Port B - Cold fluid
Spindle Notch - Point to Port A	Spindle Notch - Point to Port C



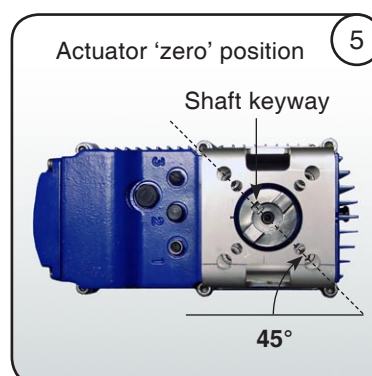
Set the valve 0° spindle position by rotating the spindle (image 1) to point towards the appropriate port indicated in table 5.1. Images 2 to 4 show how to configure the F4 valve from the STANDARD configuration to the ALTERNATIVE.



Re-mounting the Actuator

Ensure the actuator is in the 'zero' position (see above). If there is no power available to 'zero' the actuator, it is possible to use the manual override handle.

The actuator 'zero' is achieved when the shaft keyway is 45° as indicated in images 5 and 6.



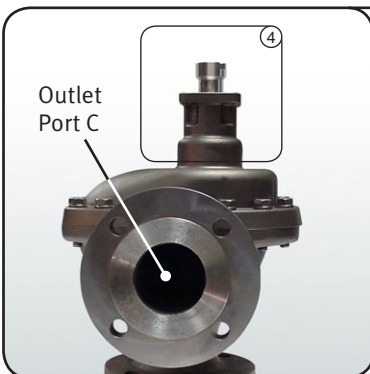
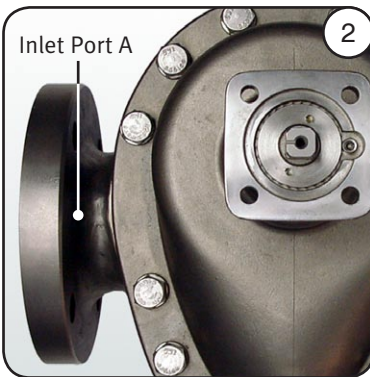
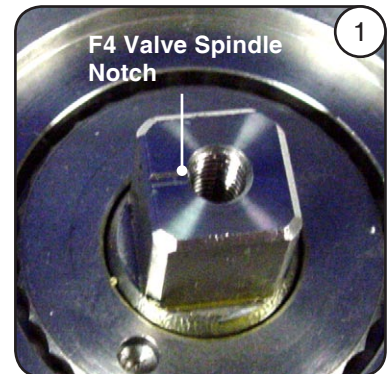


Note: The actuator may be mounted in any one of four positions.

The instructions below explain how to mount the actuator facing the outlet port as per image 7 page 9.

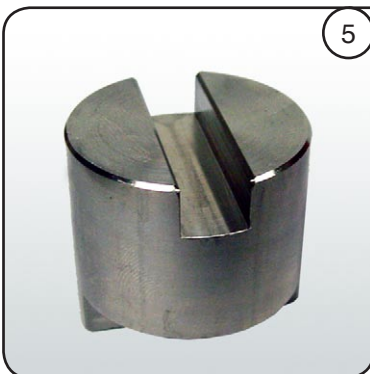
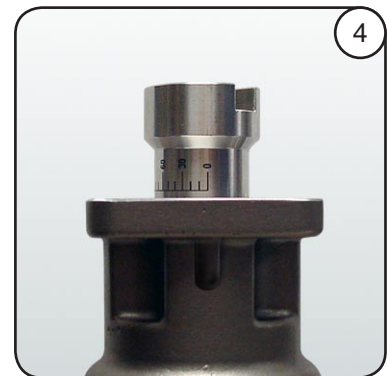
Ensure the actuator is in the 'zero' position, see Section 1.0 for details.

Set the valve position to the 0° position. Ensure the notch on spindle (image 1) points towards the correct port for the desired port configuration. See Table 5.1 and images 2-4 on page 7.



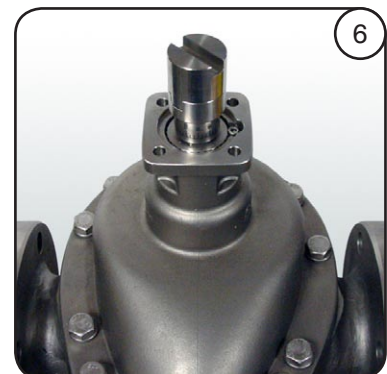
Place the graduated coupling (image 3) on the spindle & ensure that zero points to the outlet port (Port C) as image 4.

If the actuator is to be mounted in one of the other three positions, rotate the zero graduation to the desired position BEFORE placing on the spindle.



Place the centre coupling (image 5) on the graduated coupling (image 6).

Continued...

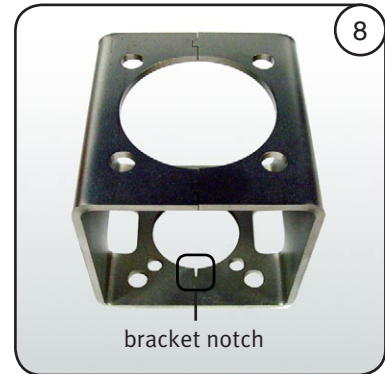




7

Place the actuator on the valve in the desired position (image 7). The zero mark on the coupling (image 4) should align with the notch on the bracket (image 8).

Insert one M8 X 20 socket cap screw into one of the mounting holes with M8 Spring Washer and Nut. Insert the remaining three cap screws and fasten.

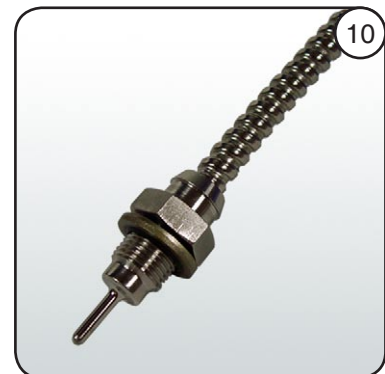


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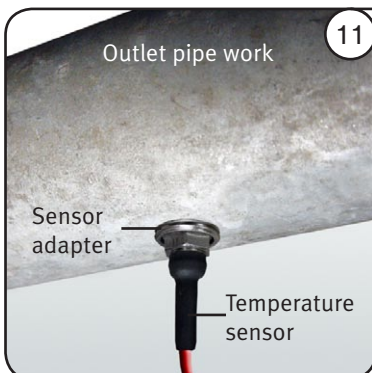


9

Ensure the bonded washer (image 9) is on the temperature sensor as per image 10.



10

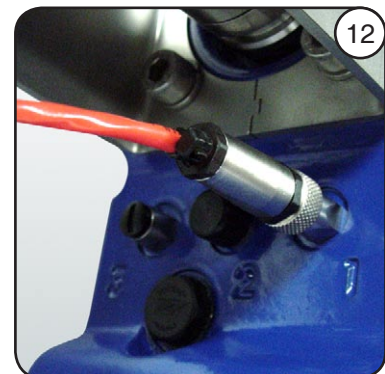


11

Screw the temperature sensor into the sensor adapter (image 11) and tighten.

Plug the sensor connector into the actuator input port labelled "1" and tighten (image 12).

The actuator is now assembled correctly. For checking the actuator software configuration see the actuator Installation, Operation and Maintenance manual.



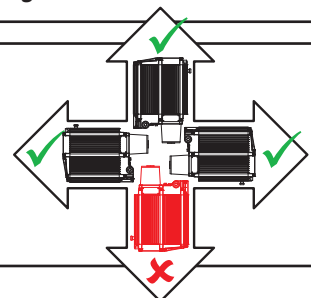
12

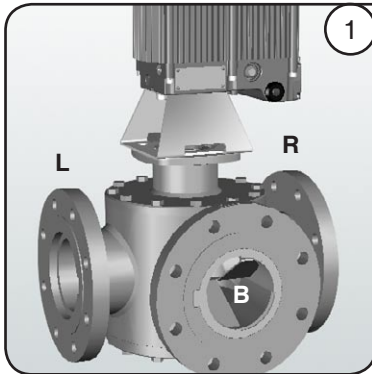
Note: Actuator Configuration for the F4.

Select "Set defaults G1.3 F4" from the "Tools> Standard Config" menu of the EmechConfig software.



THE ACTUATOR MUST NOT BE INSTALLED UPSIDE DOWN OR SUBJECT TO HIGH PRESSURE WASH DOWN

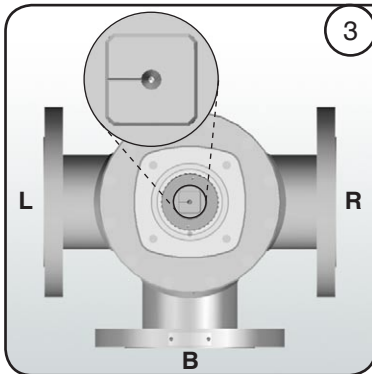
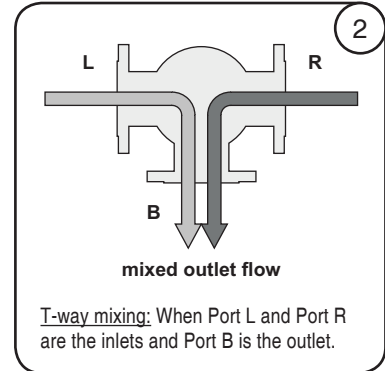




Note: The actuator may be mounted in any one of four positions.

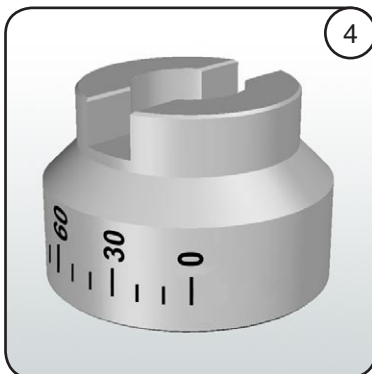
The instructions below explain how to mount the actuator in the standard orientation (LRB) with the actuator facing port R as per image 1.

The F8T is capable of both T-way mixing (image 2) and L-way mixing. Refer to the F8T installation, operation and maintenance manual for L-way port configurations. (Document number: CPAC0039).



For T-way mixing, the Emech F8T can have either inlet port configured as HOT or COLD. All F8T and actuator assemblies are shipped to the customers requirements specified at time of purchase. The standard configuration has Port L as the COLD inlet and Port R as the HOT inlet. There is an alternative configuration where the supplies can be reversed as indicated in table 6.1.

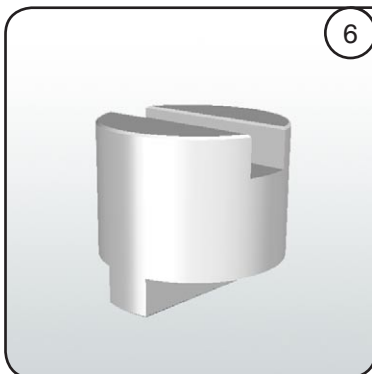
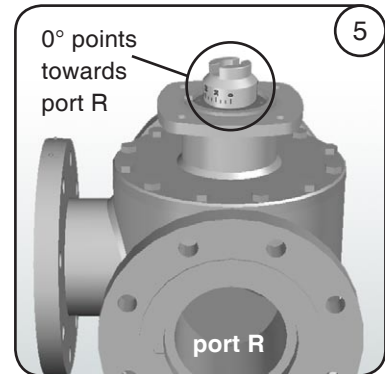
STANDARD - LRB	ALTERNATIVE - RLB
Port L - Cold fluid	Port R - Cold fluid
Port R - Hot fluid	Port L - Hot fluid
Valve 0° - spindle notch points to port L	Valve 0° - spindle notch points to port R
CCW opening direction	CW opening direction
NOTE: Refer to the F8T installation manual for L-way mixing port configurations.	



Rotate the valve spindle to the 0° position (image 3).

Note: The valve 0° position depends on the installation type outlined in table 6.1.

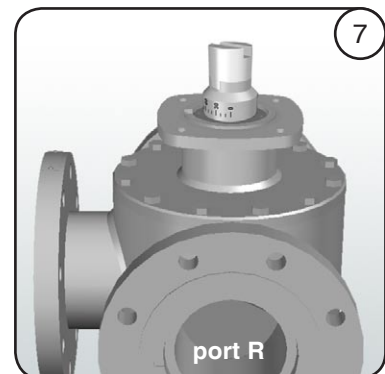
For a valve in the 'LRB' (standard) port orientation ensure the notch on the spindle points towards port L (image 4).



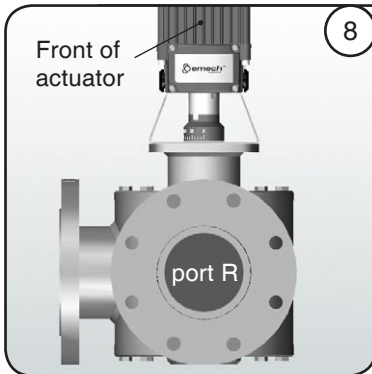
Place the graduated coupling (image 4) on the spindle & ensure that zero points to the port R (image 5).

If the actuator is to be mounted in one of the other three positions, rotate the zero graduation to the desired position BEFORE placing on spindle.

Place the center coupling (image 6) on the graduated coupling (image 7).



Continued...



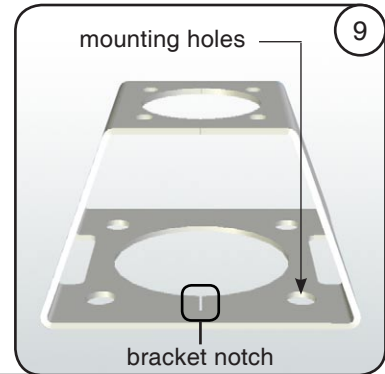
8

If the bracket has not been fitted to the actuator secure it onto the base of the actuator with the M8 cap screws and spring washers supplied. Fit these screws with Loctite 243 and tighten to 220 in.lbf (25 Nm). Do not over tighten! Note: the bracket should be orientated so the notch (image 9) points to the front of the actuator (image 8).

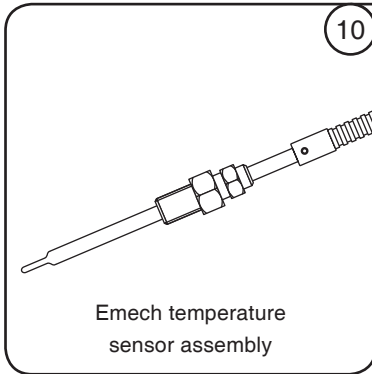
Set the actuator to the 'zero' position. Refer section 1.0 on page 2 of this document.

Place the actuator on the valve in the desired position (image 9). The zero mark on the coupling (image 5, page 13) should align with the notch on the bracket (image 10).

Insert one M12 X 20mm bolt into one of the mounting holes with a M12 spring washer and nut. Insert the remaining bolts and fasten.

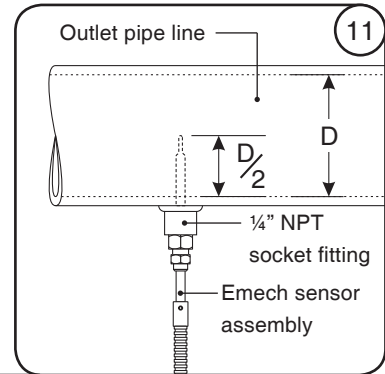


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Using a thread seal tape or thread sealing adhesive screw the temperature sensor assembly (image 11) into the socket fitting in the outlet pipe line (image 12).



11



12

Plug the sensor connector into the actuator input port labelled "1" and tighten (image 13).

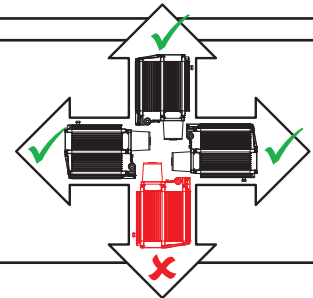
The actuator is now assembled correctly. To check the actuator software configuration see section 8.0.

Note: Actuator Configuration for the F8T.

Select "Set defaults G1.3 F8T LRB" from the "Tools> Standard Config" menu of the EmechConfig software.



THE ACTUATOR MUST NOT BE INSTALLED UPSIDE DOWN OR SUBJECT TO HIGH PRESSURE WASH DOWN



7.0 Assembly of G1 onto Other Valves

Please contact Emech Control for the assembly of the G1 onto other valves. A variety of standard and custom mounting kits are available. These will be supplied with appropriate actuator mounting instructions.

8.0 Actuator Configuration

NOTE: 95% of all applications can be set by selecting “Tools > Standard Configs > Set Default XXX”

Connect the serial cable between the Emech actuator and the PC. Make sure that the Emech actuator is powered and the push button is pressed for 2 seconds to turn the unit ON. Load the “EmechConfig Software” onto the PC from the supplied CD-ROM or download it from <http://www.emechcontrol.com/>.

To start EmechConfig, select it from the Start menu, or from the desktop shortcut. To establish a connection with the actuator, it is necessary to tell EmechConfig which COM Port to use. Use the ‘Detect Actuator’ function from the ‘Tools’ menu to automatically try each available COM port and test for the presence of an Emech actuator.

EmechConfig comes preloaded with several sets of standard configuration, which can be downloaded to a G1 actuator with a single click. To access these standard configurations, choose ‘Standard Config’ from the ‘Tools’ menu. This will show a list of available configurations. Each item represents the combination of a model of Emech actuator with a particular valve type.

Selecting the appropriate item will initiate the download of the standard settings. The process should take about 10 seconds, and a message will appear confirming that the operation is complete.

NOTE: The configuration software automatically unlocks and locks the actuator when configuring default settings.

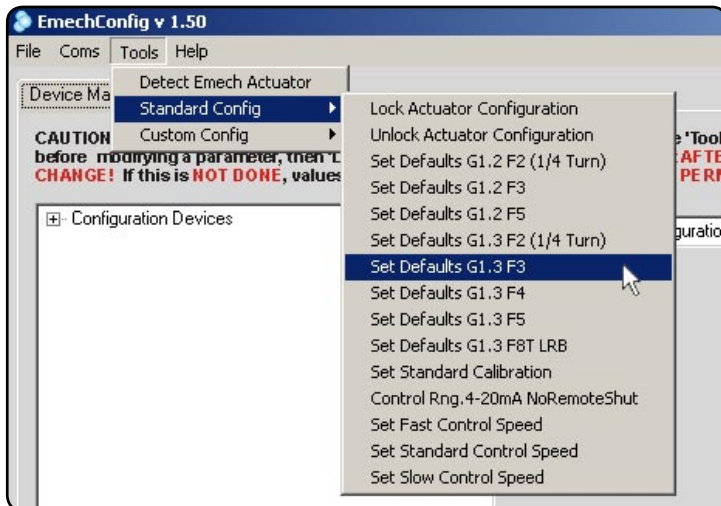


Figure 8.1: Selecting Default Configuration Settings.

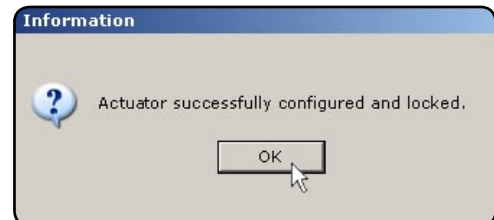


Figure 8.2: Confirmation message.

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