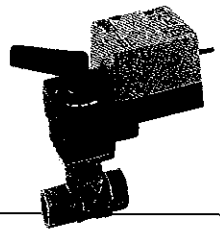
BELIMO

Characterized Control Ball Valves

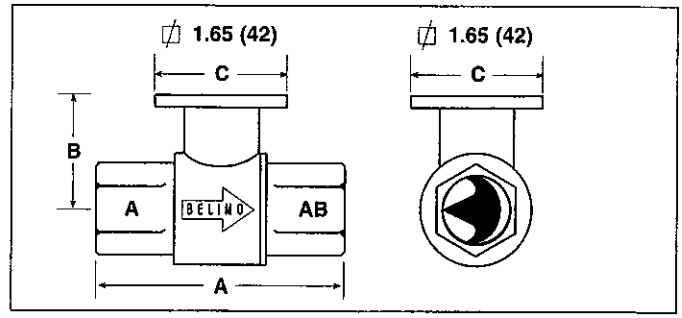
Installation instructions

70427



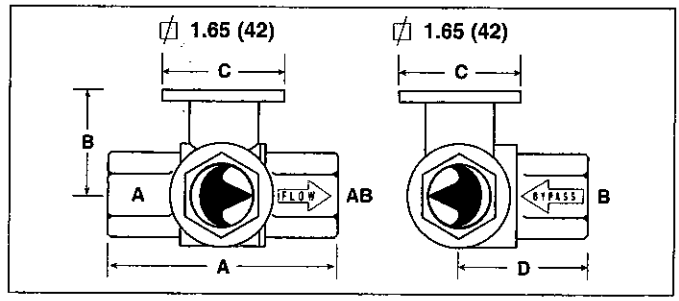
Specifications

Service	chilled or hot water, glycol up to 50%
Flow characteristic	2-way: equal percentage 3-way: A control port equal percentage B bypass port complimentary
Action	90° rotation 2-way: valve open CCW, valve close CW 3-way: A open CCW, A close CW
Sizes	1/2" to 2"
Type of end fitting	female, NPT
Materials:	
Body	forged brass, nickel plated
Ball	stainless steel (standard), chrome plated brass (indicate model #...B)
Stem	stainless steel (standard) bronze (indicate model #...B)
Seals	fiberglass reinforced teflon® PTFE
Characterizing disc	TEFZEL (not in full port valves or B230, B230B)
Packing	2 Viton O-rings
Pressure rating	600 psi (1/2" to 1 1/4") 400 psi (1 1/2" to 2")
Media temp. range	0°F to 212°F (-18°C to 121°C)
Close off pressure	200 psi
Maximum differential pressure (ΔP)	Full port: on/off 150 psi Characterized port: modulating: 30 psi for quiet service, 50 psi maximum
Rangeability	500 : 1



Two-Way Ball Valve for use with Electronic Actuator

Valve Size	Dimensions in inches (mm)		
	A	B	C
1/2"	2.60 (66)	1.78 (45.2)	1.65 (42)
3/4"	2.95 (75)	1.87 (47.5)	1.65 (42)
1"	3.43 (87)	1.87 (47.5)	1.65 (42)
1 1/4"	4.02 (102)	1.87 (47.5)	1.65 (42)
*1 1/4"	4.45 (113)	2.05 (52.0)	1.65 (42)
1 1/2"	4.45 (113)	2.05 (52.0)	1.65 (42)
2"	5.00 (127)	2.27 (57.7)	1.65 (42)



Three-Way Ball Valve for use with Electronic Actuator

Valve Size	Dimensions in inches (mm)			
	A	B	C	D
1/2"	2.60 (66)	1.78 (45.2)	1.65 (42)	1.34 (34)
3/4"	2.95 (75)	1.87 (47.5)	1.65 (42)	1.52 (38.5)
1"	3.43 (87)	1.87 (47.5)	1.65 (42)	1.71 (43.5)
1 1/4"	4.02 (102)	1.87 (47.5)	1.65 (42)	2.0 (50.8)
*1 1/4"	4.45 (113)	2.05 (52.0)	1.65 (42)	2.22 (56.5)
1 1/2"	4.45 (113)	2.05 (52.0)	1.65 (42)	2.22 (56.5)
2"	5.00 (127)	2.27 (57.7)	1.65 (42)	2.50 (63.5)

Two-Way and Three-Way Ball Valve NPT for use with Electronic Actuator = Full port models. x = 2 for 2-way. x = 3 for 3-way

Valve Nominal Size		Flow Value													
		No Reduction (Full Port)		-1 step		-2 step		-3 step		-4 step		-5 step		-6 step	
Inches	DN mm	Model #	Cv	Model #	Cv	Model #	Cv	Model #	Cv	Model #	Cv	Model #	Cv	Model #	Cv
1/2"	15	Bx15	10	Bx14	7.4	Bx13	4.7	Bx12	3	Bx11	1.9	Bx10	1.2	Bx09	0.74
3/4"	20	Bx20	30	Bx19	10	Bx18	7.4	Bx17	4.7						
1"	25	Bx25	23	Bx24	19	Bx23	12	Bx22	7.4						
1 1/4"	32	*Bx32	39	*Bx31	29	Bx30	19	Bx29	12						
1 1/2"	40	Bx40	37	Bx39	29	Bx38	19								
2"	50	Bx50	57	Bx49	46	Bx48	31								

Example Bx13: Ball Valve 1/2", Inside Threads NPT, Flow Value reduced -2 steps.

*The 1 1/4" nominal valve has the same dimensions as the 1 1/2" valve. B230 is equal percentage without disc.

Installation instructions

Warning!

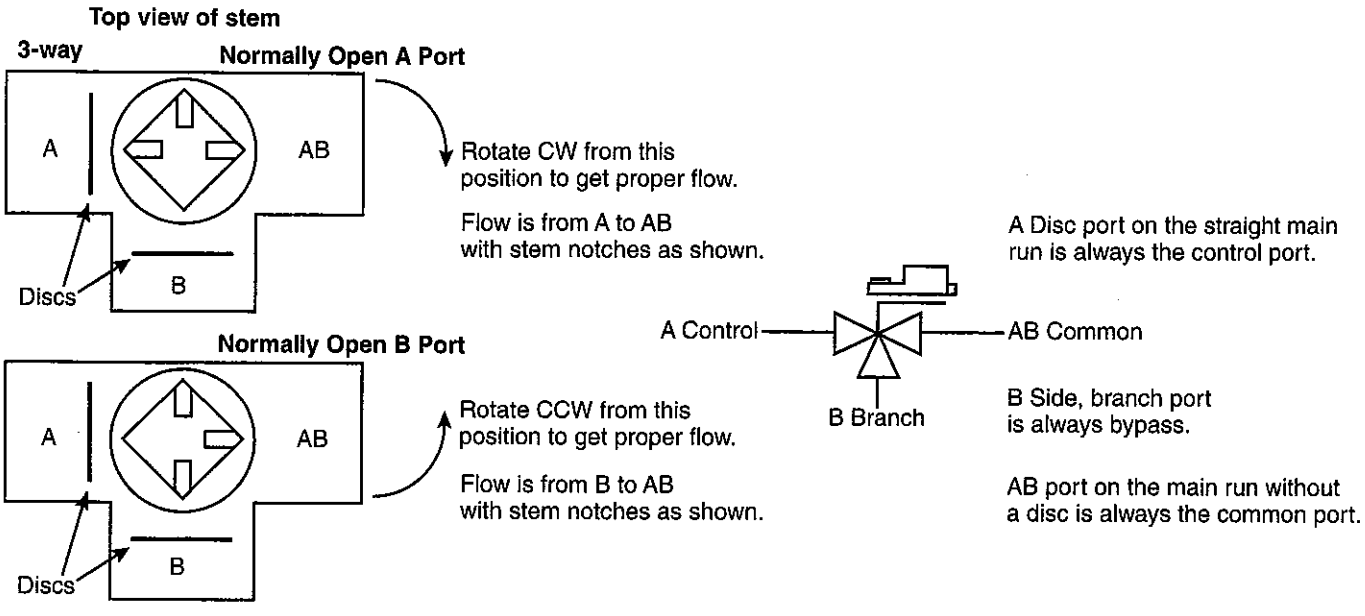
Valve should not be used for combustible gas applications. Gas leaks and explosions may result. Do not install in systems, which exceed the ratings of the valve.

- Avoid installations where valve may be exposed to excessive moisture, corrosive fumes, vibration, high ambient temperatures, elements, or high traffic areas with potential for mechanical damage.
- Valve assembly location must be within ambient ratings of actuator. If temperature is below -22°F a heater is required.
- The valve assembly will require heat shielding, thermal isolation, or cooling if combined effect of medium and ambient temperatures –conduction, convection, and radiation -- is above 122°F for prolonged time periods at the actuator.
- Strainers should be installed before coil and valve
- Visual access must be provided. Assembly must be accessible for routine scheduled service. Contractor should provide unions for removal from line and isolation valves.
- Avoid excessive stresses. Mechanical support must be provided where reducers have been used and the piping system may have less structural integrity than full pipe sizes.
- Sufficient upstream and downstream piping runs must be provided to ensure proper valve capacity and flow response. Five diameters in each direction are recommended.
- Life span of valve stems and O-rings is dependent on maintaining non-damaging conditions. Poor water treatment or filtration, corrosion, scale, other particulate can result in damage to trim components. A water treatment specialist should be consulted.
- Normal thread engagement between male pipe thread and valve body should be observed. Pipe run that is in too far will damage the valve.

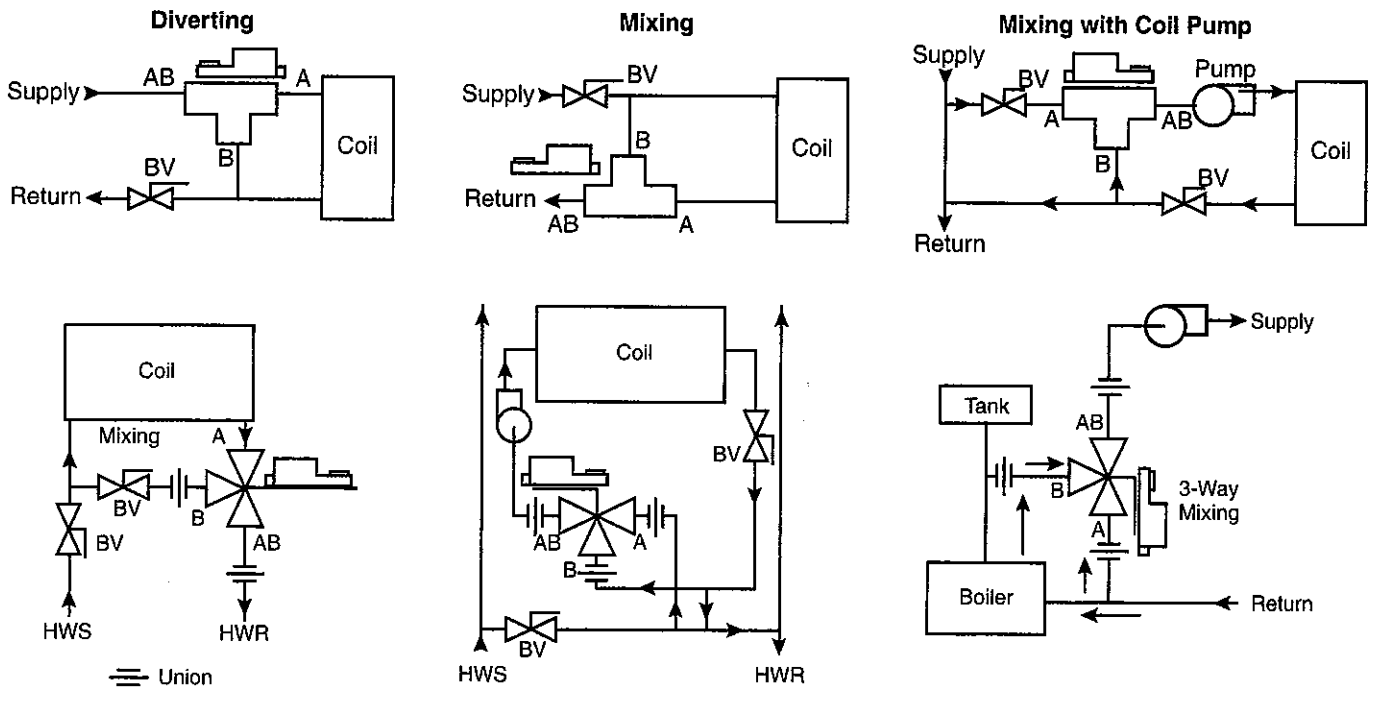
Valve Size (NPT)	Normal	Valve Size (NPT)	Normal
1/2"	1/2"	1-1/2"	11/16"
3/4"	9/16"	2"	3/4"
1"	11/16"	2-1/2	15/16"
1-1/4"	11/16"	3"	1"

1. Inspect shipping package, valve, linkage, and actuator for physical damage. If shipping damage has occurred notify appropriate carrier. Do not install.
2. If a replacement, remove existing valve, linkage and actuator from the piping system.
3. If actuator and linkage are removed, they must be reinstalled correctly. The actuator must be rotated so that the valve seats properly for close off.
4. Install valve with the proper ports as inlets and outlets. See drawings below. Check that inlet and outlet of 2-way valves are correct; check that the "A","B", and "AB" ports of three way valves are piped correctly. Flow direction arrows must be correct.
5. Blow out all piping and thoroughly clean before valve installation.
6. Clean male pipe threads with wire brush and rag. If threads have been damaged or exposed to weather, running a tap or die over the threads may straighten them. Clean pipes, threads, and valve threads before installation; check for any foreign material that can become lodged in trim components. Strainers should be cleaned after initial startup.
7. Pipe sealing compound should be applied sparingly after cleaning and may not be applied to the two lead threads of a screwed pipe, which are innermost inside the valve. Sealing compound is to be placed on male threads only. The purpose is to lubricate the pipes when tightening.
8. Valve must be installed with the stem towards the vertical, not below horizontal.
9. Start the connection by turning the valve or pipe by hand as far as possible. Be certain the threads mate by the "feel" of the connection.
10. Use wrenches to tighten the valve to the pipe. Do not over tighten or strip the threads. Two wrenches are necessary to avoid damaging the valve.
11. Two-way valve Normally Open or Closed configurations must be verified by examining both the mechanical drawings and the valve and actuator. See details below.
12. Three-way valve Normally Open or Closed configurations for the Control Port and the Bypass Port must be verified by examining both the mechanical drawings and the valve and actuator.

Three-way valve applications



Normally Open B Port
See two-way valve for actuator direct and reverse relationships.



Installation instructions

Mounting

The flange allows the actuator to be either parallel or perpendicular to the pipe; there are four orientations possible.

If field installing a spring return actuator, disconnect power and allow actuator to spring closed. Flip actuator over if necessary to achieve proper rotation direction. DO NOT USE THE REVERSING SWITCH TO DO THIS.

Two-Way Valves Mounting

For NORMALLY CLOSED operation:
The ball of the valve must be rotated so that the ball is CLOSED to flow.
The actuator should be mounted with the clamp fully rotated CW (R).
Spring return actuators will show the CW (R) symbol near the clamp and position indicator. Depressing the gear release to move the clamp rotates non-spring return actuators.

For NORMALLY OPEN operation:
The ball of the valve must be rotated so that the ball is OPEN to flow.
The actuator should be mounted the clamp fully rotated CCW (L).
Spring return actuators will show the CCW (L) symbol near the clamp and position indicator. Depressing the gear release to move the clamp rotates non-spring return actuators.

There are marks on the top of the valve stem, which indicate the port directions. See the drawings on the following pages.

Three-Way Valves Mounting

The control port is ALWAYS the straight main run. The bypass port is ALWAYS the branch tee.

For NORMALLY CLOSED Control Port operation:

The ball of the valve must be rotated CW (R) so that the "A" port is CLOSED to flow.
The actuator should be full CW (R) rotation of the clamp.
Spring return actuators will show the CW (R) symbol near the clamp and position indicator.
CCW (L) rotation of the actuator will open the control port and close the bypass port.

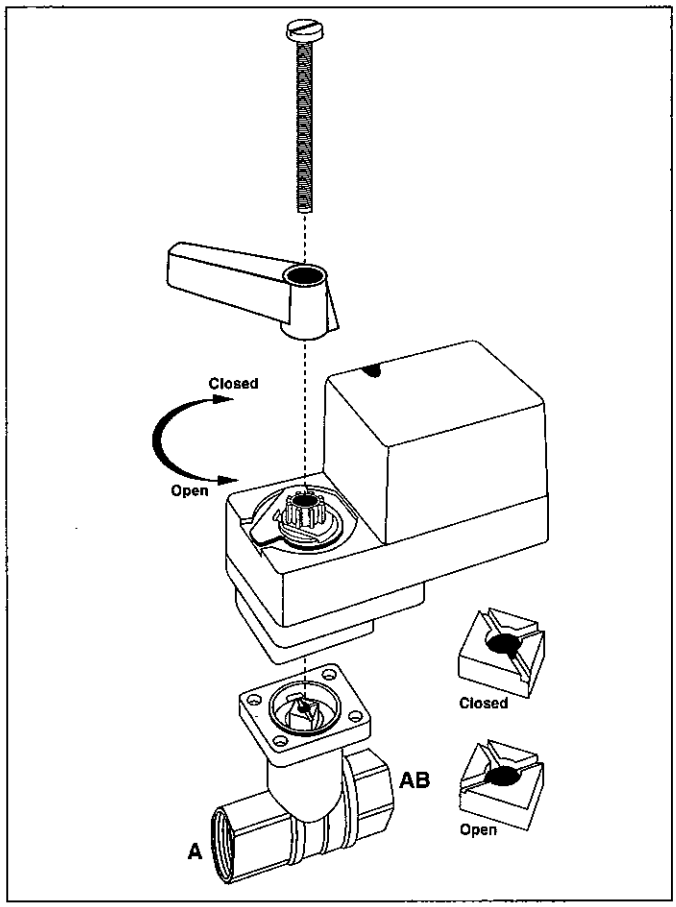
For NORMALLY OPEN operation:
The ball of the valve must be rotated CCW (L) so that the "A" port is OPEN to flow.
The actuator should be full CCW (L) rotation of the clamp.
Spring return actuators will show the CCW (L) symbol near the clamp and position indicator.
CW (R) rotation of the actuator will close the control port and open the bypass port.

There are marks on the top of the valve stem which indicate the port directions. See the drawings on the following pages.

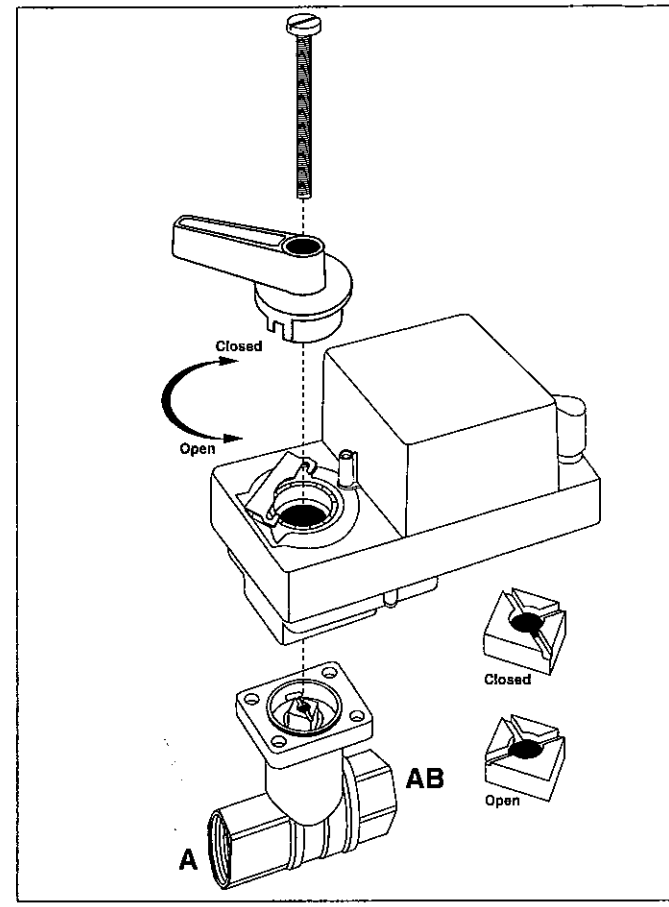
Then the actuator-linkage can be set onto the valve. The square hole of the adapter fits easily onto the square stem extension. Rotate the ball as necessary using a wrench.

Do not force. Do not use the actuator to turn the pipe or the stem. Do not use any toothed tool such as pliers, which may damage the stem.

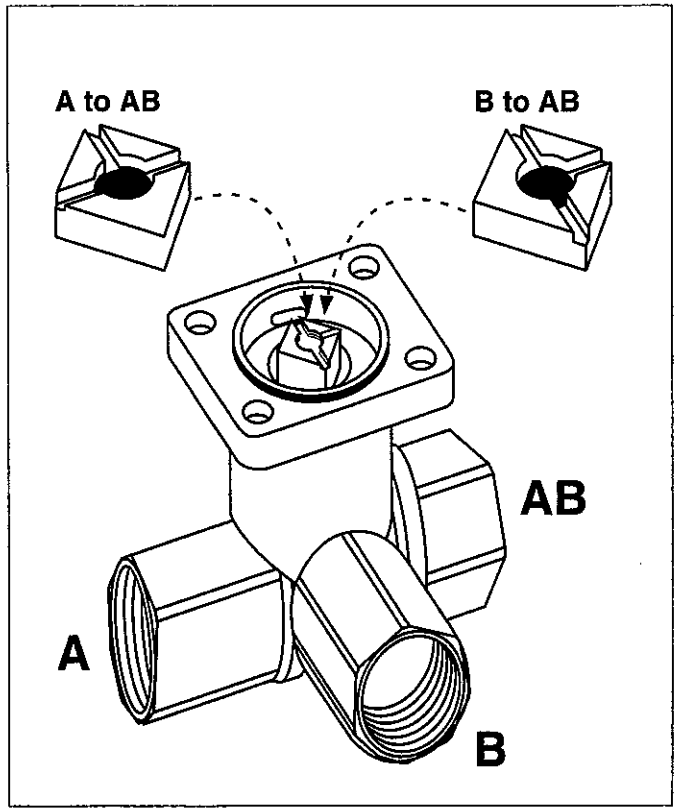
- Check that the actuator rotates so that the valve seats for close off and also rotates open to achieve full Cv. Use the gear release or the AF crank to verify. For LF or NF models apply power and control signal if necessary.
- Verify that CCW (L) rotation of the actuator will open the ball to flow.
- Install and tighten the hold down screw not more than 1/2 turn beyond the point where resistance is felt.



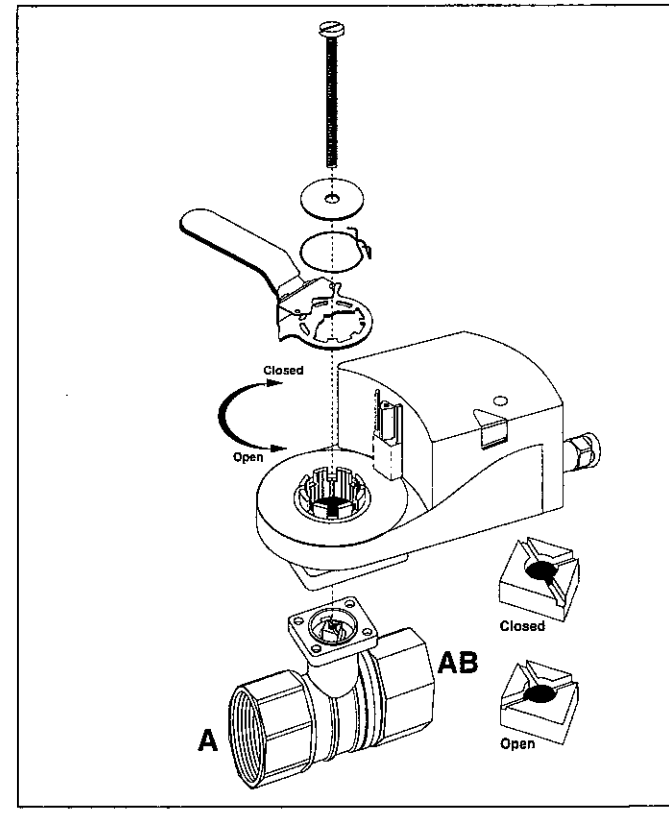
Quick Mount Visual Instructions, Model LR...



Quick Mount Visual Instructions, Model NM...



3-Way Valve

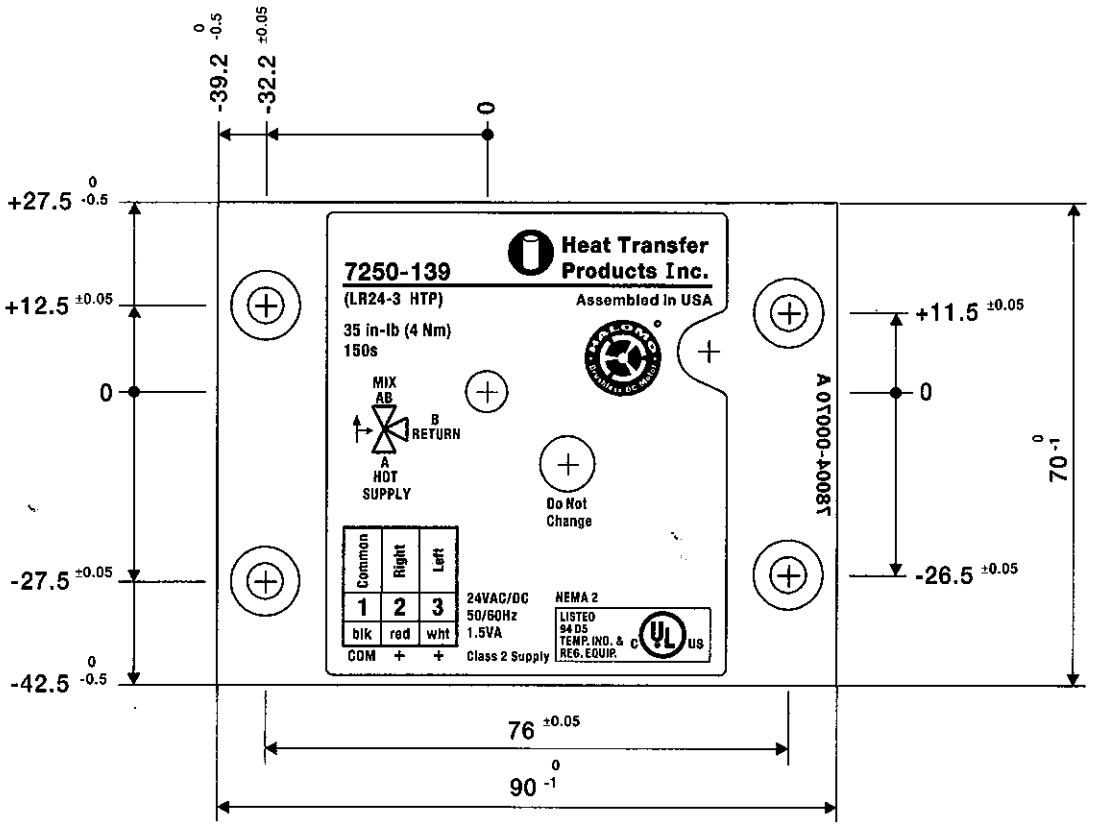


Quick Mount Visual Instructions, Model AM...

Heat Transfer Products Inc.

Manufacturers of Quality High Efficiency
Heating and Water Heating Appliances

Logo has too bad dissolving, useless.
Suitable document not found.



Mat.: siehe Bestelltext
mat.: see order text

Nacharbeit gemäss Bohrlehre: 81085
rework in accordance with drill-gauge: 81085

					Datum	Name
				Bearb.	02.11.04	DS
				Gepr.		
				Massstab:	1:1	

Cliché

(spiegelbildlich gezeichnet)
(mirror-image drawn)

78004-00070 **A**

Rev	AeM Nummer	Datum	Name	Aehnliche Zeichnung:	Ersatz fuer:	Ersetzt durch:
				.	.	.