K-CON®

ACTUATED BALL VALVES

FOR USE WITH CITY MULTI VRF PUMP DOWN SYSTEMS

Installation Manual

Instructions for :-

KS8-5/8 ABV

KS8-3/4 ABV

KS8-7/8 ABV

KS8-1.1/8 ABV

KS8-1.3/8 ABV

KS8-1.5/8 ABV

For safe and correct use please read the installation manuals supplied with the equipment.

Manufactured on behalf of
MITSUBISHI ELECTRIC UK

MITSUBISHI ELECTRIC

Contents

Safety precautions

Before installation and electric work

Before installing the unit, make sure you read all the “Safety precautions”.

Symbols used in the text

⚠ Warning: Describes precautions that should be observed to prevent danger of injury or death to the user.
⚠ Caution: Describes precautions that should be observed to prevent damage to the unit.

⚠ Warning: Carefully read the labels affixed to the main unit.

⚠ Warning:

- Ask the dealer or an authorised technician to install the unit.
  Improper installation by the user may result in water leakage, electric shock, or fire.
- Use the specified cables for wiring. Make the connections securely so that any outside forces acting on the cables are not applied to the terminals. Inadequate connection and fastening may generate heat and cause a fire.
- Never repair the unit. If the controller must be repaired, consult the dealer.
  If the unit is repaired improperly, electric shock, or fire may result.
- When handling this product, always wear protective equipment. EG: Gloves, full arm protection namely boiler suit, and safety glasses.
  Improper handling may result in injury.
- If refrigerant gas leaks during installation work, ventilate the room.
  If the refrigerant gas comes into contact with a flame, poisonous gases will be released.
- Install the controller according to this Installation Manual.
  If the unit is installed improperly, electric shock, or fire may result.
  Have all electric work done by a licensed electrician according to "Electric Facility Engineering Standard", "Interior Wire Regulations" and the instructions given in this manual and always use a special circuit.
- If the power source capacity is inadequate or electric work is performed im-properly, electric shock and fire may result.
  Keep the electric parts away from any water - washing water etc…
  Contact may result in electric shock, fire or smoke.
- After completing installation work, make sure that refrigerant gas is not leaking.
  If the refrigerant gas leaks and is exposed to a fan heater, stove, oven, or other heat source, it may generate noxious gases.
- Do not reconstruct or change the settings of the protection devices.
  If the pressure switch, thermal switch, or other protection device is shorted or operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result.

To dispose of this product, consult your dealer. Do not use a leak detection additive.

Precautions for devices that use R410A refrigerant

⚠ Caution:

- Do not use the existing refrigerant piping.
  The old refrigerant and refrigerator oil in the existing piping contains a large amount of chlorine which may cause the refrigerator oil of the new unit to deteriorate. Use refrigerant piping made of C1220 (CU-DHP) phosphorus deoxidized copper as specified in the JIS H3300" Copper and copper alloy seamless pipes and tubes". In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shav-ing particles, oils, moisture, or any other contaminant.
  Contaminants on the inside of the refrigerant piping may cause the refriger-ant residual oil to deteriorate.
- Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Store elbows and other joints in a plastic bag.) If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor problems may result.
- Use ester oil, ether oil or alkylbenzene (small amount) as the refrigerator oil to coat flares and flange connections.
  The refrigerator oil will degrade if it is mixed with a large amount of mineral oil.
- Use liquid refrigerant to fill the system.
  If gas refrigerant is used to seal the system, the composition of the refrigerant in the cylinder will change and performance may drop.
- Do not use a refrigerant other than R410A.
  If another refrigerant (R22, etc.) is used, the chlorine in the refrigerant may cause the refrigerator oil to deteriorate.
- Use a vacuum pump with a reverse flow check valve.
  The vacuum pump oil may flow back into the refrigerant cycle and cause the refrigerator oil to deteriorate.
  Do not use the following tools that are used with conventional refrigerants. (Gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, refrigerant recovery equipment.)
- If the conventional refrigerant and refrigerator oil are mixed in the R410A, the refrigerant may deteriorate.
  If water is mixed in the R410A, the refrigerator oil may deteriorate.
  Since R410A does not contain any chlorine, gas leak detectors for conventional refrigerants will not react to it.
- Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.
  Be especially careful when managing the tools.
- If dust, dirt, or water gets in the refrigerant cycle, the refrigerant may deteriorate.

Safety precautions

Before installation

⚠ Caution:

- Do not install the unit where combustible gas may leak.
  If the gas leaks and accumulates around the unit, an explosion may result.

⚠ Caution:

- Ground the unit.
  Do not connect the ground wire to gas or water pipes, lightning rods, or telephone ground lines. Improper grounding may result in electric shock.
- Install the power cable so that tension is not applied to the cable.
  Tension may cause the cable to break and generate heat which may, in turn, cause fire.
- Install a leak circuit breaker, as required.
  If a leak circuit breaker is not installed, electric shock may result.
- Use power line cables of sufficient current carrying capacity and rating.
  Cables that are too small may leak, generate heat, and cause a fire.
- Use only a circuit breaker and fuse of the specified capacity.
  A fuse or circuit breaker of a larger capacity or a steel or copper wire may result in a general unit failure or fire.
- Be very careful regarding product transportation.
  Two people should be used to carry products of 20kg or more.
- Some products use PP bands for packaging. Do not use any PP bands for a means of transportation.
- Safely dispose of the packing materials.
  Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
  Tear apart and throw away plastic packaging bags so that children will not play with them - If children play with a plastic bag which has not been torn apart, they face the risk of suffocation.

Before starting the test run

⚠ Caution:

- Do not touch the switches with wet fingers.
  Touching a switch with wet fingers can cause electric shock.
- Do not touch the refrigerant pipes during and immediately after operation.
  During and immediately after operation, the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes.
- Do not operate the air conditioner with the panels and guards removed.
  Rotating, hot, or high-voltage parts can cause injuries.
- Do not turn off the power immediately after stopping operation.
  Always wait at least five minutes before turning off the power. Otherwise, water leakage and other problems may occur.

Disclaimer

Warranty:

All products manufactured on behalf of Mitsubishi Electric UK are warranted against defective materials for a period of three years from the date of delivery to the original purchaser.

⚠ **Warning:**

Mitsubishi Electric UK assumes no liability for damages consequent to the user of this product. We reserve the right to change this manual at any time without notice. The information furnished by us is believed to be accurate and reliable. However, no responsibility is assumed by us for its use, nor for any infringements of patents or other rights of third parties resulting from its use.

Actuated Ball Valve Sizing

R2 YJM-A

Outdoor Unit Size	High Pressure Valve Size	Product Code	Low Pressure Valve Size	Product Code
200	KS8-5/8 ABV	70040081	KS8-3/4 ABV	70040082
250	KS8-3/4 ABV	70040082	KS8-7/8 ABV	70040083
300	KS8-3/4 ABV	70040082	KS8-7/8 ABV	70040083
350	KS8-3/4 ABV	70040082	KS8-1.1/8 ABV	70040084
400	KS8-7/8 ABV	70040083	KS8-1.1/8 ABV	70040084
450	KS8-7/8 ABV	70040083	KS8-1.1/8 ABV	70040084
450A1	KS8-7/8 ABV	70040083	KS8-1.1/8 ABV	70040084
500	KS8-7/8 ABV	70040083	KS8-1.1/8 ABV	70040084
550	KS8-1.1/8 ABV	70040084	KS8-1.1/8 ABV	70040084
600	KS8-1.1/8 ABV	70040084	KS8-1.1/8 ABV	70040084
650	KS8-1.1/8 ABV	70040084	KS8-1.1/8 ABV	70040084
700	KS8-1.1/8 ABV	70040084	KS8-1.3/8 ABV	70040085
750	KS8-1.1/8 ABV	70040084	KS8-1.3/8 ABV	70040085
800	KS8-1.1/8 ABV	70040084	KS8-1.3/8 ABV	70040085
850	KS8-1.1/8 ABV	70040084	KS8-1.5/8 ABV	70040086
900	KS8-1.1/8 ABV	70040084	KS8-1.5/8 ABV	70040086

R2 YKM-A

Outdoor Unit Size	High Pressure Valve Size	Product Code	Low Pressure Valve Size	Product Code
200	KS8-5/8 ABV	70040081	KS8-3/4 ABV	70040082
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600	KS8-1.1/8 ABV	70040084	KS8-1.1/8 ABV	70040084
650	KS8-1.1/8 ABV	70040084	KS8-1.1/8 ABV	70040084
700	KS8-1.1/8 ABV	70040084	KS8-1.3/8 ABV	70040085

Ball Valve Installation Instructions

When installing ball valves it is very important to note that when applying heat it should only be for a matter of seconds, not minutes.

For soft soldering - Use oxygen-acetylene or equivalent type heating torches.
For Silver Brazing - ONLY use an oxygen-acetylene heating torch capable of raising the temperature of the tube socket to the required brazing temperature within a time period of approximately one minute. Oxygen Free Nitrogen should be purged through the connecting pipework while brazing.

IMPORTANT : Before installing the valve in the line, remove the actuator and schrader valve and turn the stem to the open position.

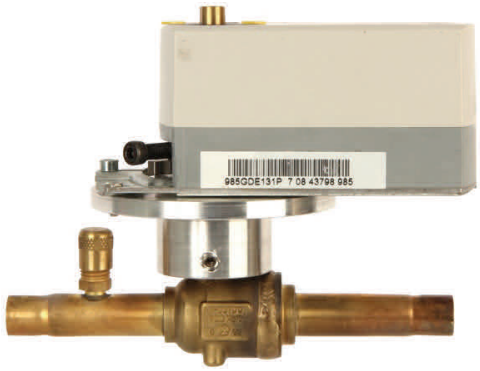
WARNING : Damage may result if the actuator is not re fitted correctly after installation of the ball valve, see instructions overleaf.

Recommended procedure for silver brazing to copper tubing

- Cut tube ends square. Remove burrs.
- Remove all grease and oil from joint area and clean the outside of the tube with emery cloth.
- Insert tube to full depth of connection socket to ensure proper fit. Withdraw tube half way out of the socket, apply brazing flux evenly over the tube and outside of the socket and reinsert tube.
- Wrap a wet cloth around the valve body and bonnet, but away from the socket to be brazed. With the torch adjusted to a reducing flame apply heat to the entire circumference of the tube over a distance of approximately 15mm to 50mm from the valve socket to expand the tube and carry the heat down inside the socket.
- Continue heating until the flux on the tube becomes liquid at which time the flame should be directed on the valve socket as well as the tube but pointed away from the valve body.
- When the flux has become very fluid and watery in appearance apply the brazing alloy against the heated tube starting at the bottom of the junction of the tube and valve socket. If the joint is at the proper temperature the brazing alloy will flow quickly around the tube and into the socket. If the alloy does not flow readily continue heating until the proper temperature is reached.
- Remove the flame as soon as the liquid brazing alloy has covered the entire joint and penetrated down to the socket. After a few seconds when the alloy has set, apply a water soaked cloth to the joint and to the entire valve to carry away excess heat as quickly as possible and remove residual flux.
- When the temperature has been lowered so that the valve is cool enough to touch, proceed in the same manner to complete the second brazed joint. Remove all excess flux using a wire brush if necessary. Finally, check joints for refrigerant leakage.

Actuated Ball Valve Installation Instructions

Components



Ball Valve with schrader

Actuator plate / actuator shaft

Actuator Shaft Clamp

Actuator

Actuated Ball Valve Installation Instructions

After brazing the ball valve into position fit the actuator plate / actuator shaft assembly to the ball valve (Fig.1)ensuring it is screwed firmly into place and that the shaft aligns with the valve mechanism. Next tighten the two grub screws located on each side of the actuator plate to secure to the ball valve body (Fig.2).

Fig.1

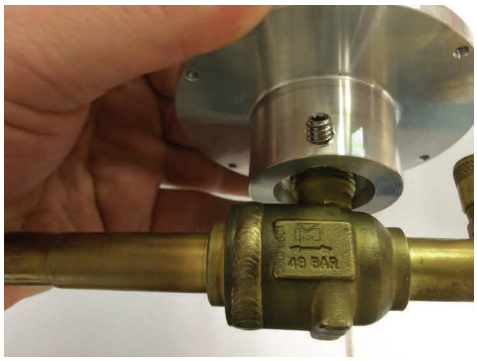
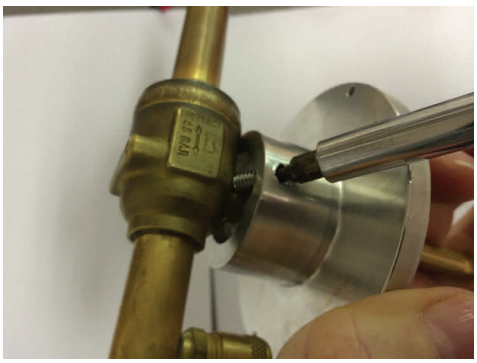


Fig.2



Insert the actuator shaft clamp into the bottom of the actuator ensuring it is fitted in alignment with the in the correct position as indicated in Fig.3 & Fig.4.

Fig.3 (bottom view)

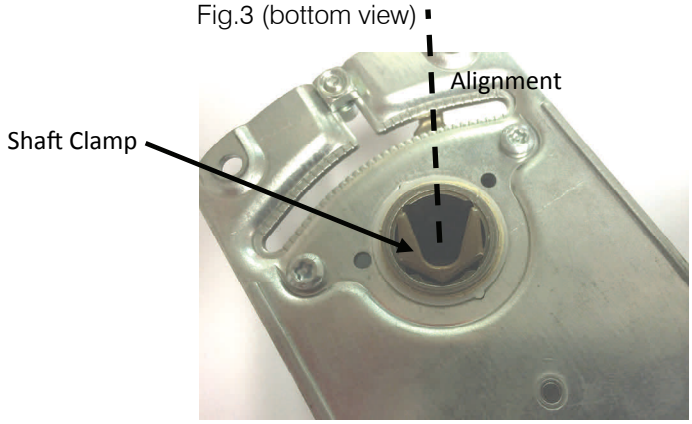
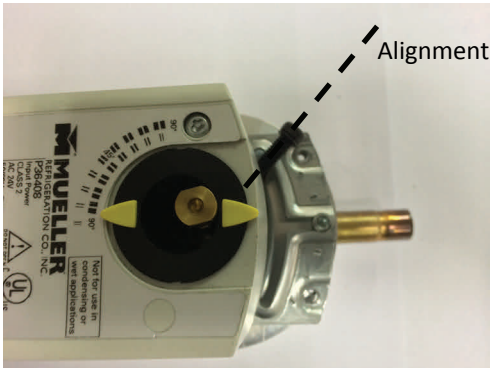


Fig.4 (top view)



Place the actuator in position on the actuator plate / shaft. Slide the button as shown (Fig.5) back to move the actuator from position in Fig.6 to position in Fig.7 to enable access to the screw fixing points. Insert and tighten screws supplied.

Fig.5

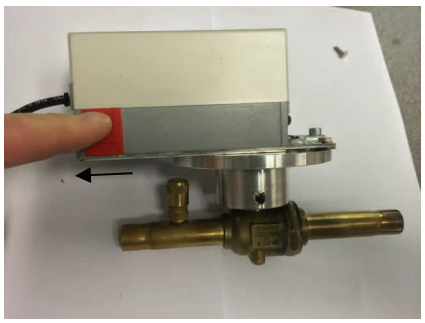


Fig.6

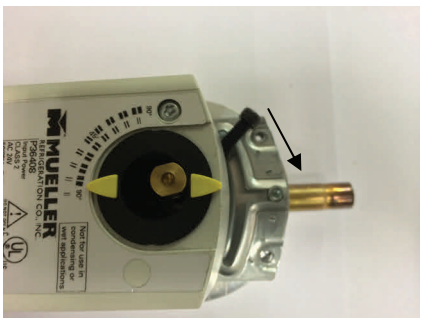
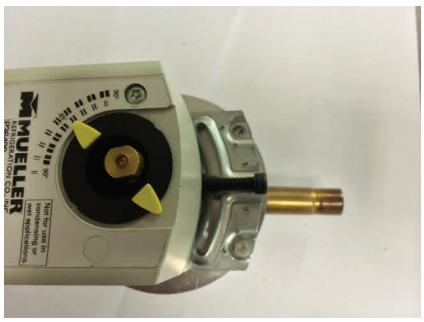


Fig.7



Actuated Ball Valve Installation Instructions

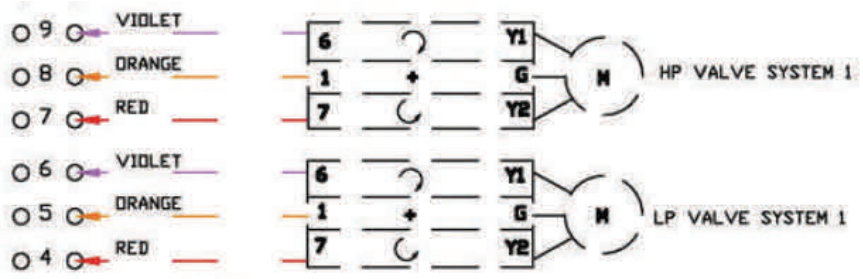
Return the actuator back to the position shown on Fig.6 ensuring that the yellow direction indicators are aligned with the valve and tighten as shown in Fig.8.

Fig.8

Complete the installation by wiring the high pressure actuator to CH1 and the low pressure actuator to CH2 in the Pump Down Control Panel.

KS8 ABV Ball Valve Actuator Wiring to Pump Down Panel

(Example shown for KS8-OC1 Panel)



Please be sure to put the contact address/telephone number
on this manual before handing it to the customer.

MITSUBISHI ELECTRIC UK

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