



HAYS

Water Source Heat Pumps & Fan Coil Piping Packages

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

GENERAL INFORMATION

1. Clean the lines of all foreign material, (welding slag, pipe scale, dirt, thread chips etc.). Upstream installation of a strainer may be necessary in dirty systems.
2. Air should be eliminated from the system prior to startup to assure quiet operation and freedom from water hammer.
3. Flow control valves may be installed horizontally, vertically or any angle in between. Additional straight sections of pipe upstream or downstream of the Automatic flow control valves are unnecessary for proper operation. Straight sections of pipe approximately 10 inside pipe diameters upstream and 5 diameters downstream of Manual Balance Valves is recommended for maximum flow reading accuracy.
4. Standard reducing bushings or flanges may be directly connected to the hose ends if required.
5. The ATC Actuator may be mounted above or alongside piping but must never be mounted where condensation can accumulate or come in contact with electrical or mechanical components. ATC valves marked Stem Up, must be mounted with stem up.
6. All Hays Automatic and Manual Flow Control Valves are marked with direction of flow. Automatic valves will be labeled with the GPM and Manual Valves will be labeled with the Cv. **THE FLOW ARROW MUST POINT IN THE DIRECTION OF FLOW FOR PROPER OPERATION.**
7. Flow Control Valves, Automatic or Manual, must be located in the RETURN Line.
8. Hays Hose kits must be free of kinks, contact with other objects, sharp bends, tension or torsion.

INSTALLATION

1. Threaded components are made with the inch series NPT threads in accordance with ANSI STD B1.20.1 and are intended for use in Building Services Piping meeting the requirements of ASME B 31.9.
2. Determine which is the Supply Hose and which is the Return Hose. The Strainer is only on the Supply Side. Flow controls are only on the Return Side. The electric valve can be on either side.
3. Swivels are usually mounted closest to the Heat pump, but one may be on the strainer to facilitate flushing.
4. Check application for proper hose length, so as to prevent Kinks, Twists, Sharp Bends, Stretching and Chaffing.

5. ½” through 1-1/4” hoses have a removable threaded adapter. There should be a fiber gasket inside the female swivel end of the hose to prevent leaking when the adapter is connected to the end of the hose. This gasket must be in place to prevent leaking. Do not use any type of tape or compound on the adapter or female swivel connection. These are straight threads and require a gasket to form a proper seal. Use of any sealant material will not prevent leaking and will void any warranty that may be expressed or implied.
6. Apply thread sealant to male pipe threads, starting with the second or third thread from the end. (CAUTION, If factory applied thread sealant is present, DO NOT ADD ADDITIONAL SEALANT) Torque the connection to 75 foot pounds per inch of pipe size minimum.

Example: (1 ½”, 1.5 X 75= 113 ft lb Min.) (1/4”, .25 x 75 = 19 ft lb Min)

7. Rotate the components having Pressure/Temperature Ports or Pressure Taps so they are Not Pointing Down.
8. Sweat fitting valves have their end connections formed to ANSI STD B16.22 requirements and are intended for use in Building Services Piping meeting the requirements of ASME B 31.9. The Temperature/Pressure rating of the Solder Joint is dependent upon the type of solder used. ANSI STD B16.22 Pressure Ratings should be reviewed prior to selecting a solder and sweating.

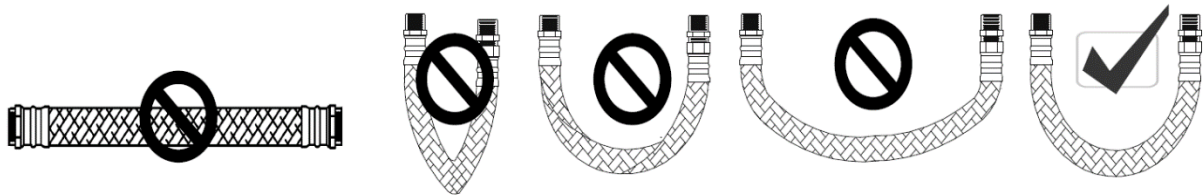
UNIONS, UNION END PIECES ON VALVES AND THREADED SWEAT ADAPTERS ARE SHIPPED LOOSE AND SHOULD BE UNATTACHED DURING SWEATING.

9. O-rings in the Union End Pieces must be removed and stored on the valve handle or on a nearby PT fitting during the sweating operation.
10. Ball Valves must be in the closed position during sweating.
11. The outside of the tubing, and the inside of the fitting are to be mechanically cleaned and then lightly coated with solder flux. The tube is then inserted one diameter into the fitting, and the **CENTRAL PORTION OF THE VALVE BODY WRAPPED WITH A WET RAG. WET SPONGE OR HEAT ABSORBING PUTTY.**
12. Heat is never to be applied to the Automatic Temperature Control Valve Body, without first removing all plastic parts and actuators. Valves without removable parts are to be set to the open position to prevent thermal damage. Heat may be applied, either to the tubing or to the end of the fitting to achieve solder flow. When the parts have achieved the necessary temperature, solder is to be added to the joint and the joint allowed to cool. The heat is to be applied for the shortest time possible, and never directly to the area where the solder is being applied. The internal parts of the Hays Piping Packages are capable of continuous use at 300°F but will quickly incur damage at higher temperatures. When soldering vertical assemblies care must be taken not to permit excess solder to drip into the valve. Heat discoloration from the sweating operation should not extend to the major diameter of the valve body.
13. If disassembled, the valve must be reassembled in the reverse order, with all of the parts returned to their original positions. Hays Valves, Strainers, and Unions are equipped with O-ring Seals in the Union Connection. These seals provide reliable, easy to use connections, but care must be taken to not damage them during installation. Do not heat valve assembly with the O-ring in place. When installing, be

sure the O-ring is fully seated in the channel and not twisted or misaligned. The seal is the last item installed prior to tightening the Union Nut to 80 Ft Lbs. for the 2514/2405, and 130 Ft Lbs for the 2524/2407 Hays products. (The Union Nut is shipped loose on sweat fitting 2500 and 2400 Series Products.)

If chlorinated flux has been used, all parts are to be flushed thoroughly to avoid premature corrosion failure.

14. Flanged valves are intended for use in Building Services Piping meeting the requirements of ASME B 31.9 and are supplied with ANSI B16.5, 1968 , 150 lb. raised face steel flanges. These flanges are to be connected into the piping system utilizing new ASTM A194, GR 2H, nuts, new ASTM A193 GR B7 bolts, size 5/8 inch, and two hardened steel washers under each nut. Remove inlet and outlet covers before installation. Appropriate gasket material must be used when installing flange mounted flow control valves. The thinnest practical gasket should be used whenever possible so as to optimize the joint performance. A non-metallic based lubricant such as oil or graphite is to be applied to the nuts and bolts, and the assembly uniformly torqued to 120 ft lb. for 4” Flanges, 200 ft lb. for 6” & 8” Flanges, and 320 ft lb. for 10” Flanges. Bolts should be torqued in at least three even steps using a star or crossing pattern until the final torque is reached.
15. Welded valves are to have their plastic inlet and outlet covers removed, and the valve placed in the pipe so as to minimize the entrance of weld slag into the plumbing. Welding is to be performed in accordance with the applicable requirements required for the system.
16. Inspect installation or Leaks, Kinks, Twists, Sharp Bends, Stretching and Chaffing.



OPERATION

1. For optimum operation, air entrainment in the system must be eliminated. The flow control valve must remain filled with fluid. The system must be clean and free of foreign materials.
2. Hays Hose Kits and Piping Packages must only be used with fluids that are compatible with Iron, Brass, Santoprene and EPDM materials. The temperature during operation must be limited to the range of 32°F to 225°F.
3. Hose kits and Piping Packages are fully compatible with Ethylene Glycol and Propylene Glycol with all concentrations.

MAINTENANCE

1. General maintenance is not required for Hays Flow Control Valves, however if the system experiences large amounts of pipe scale due to poor water conditions, as sometimes is found in older or retrofit systems, some may be required. Provisions should be made to keep the system clean. Proper water treatment is also recommended, and reverse flushing may be required.
2. Periodically check to make sure the hoses are free from strain or damage, and if Manual Balancing Valves are being used, that their handle is in its proper balancing position.

LIMITED WARRANTY

See Hays Fluid Controls Terms & Conditions for warranty information.