



TEMPERATURE CONTROLLERS... PORTABLE CHILLERS... CENTRAL CHILLERS... PUMP TANK STATIONS... TOWER SYSTEMS...

SUBJECT: CHILLER OPTIONS : LOW FLOW BYPASS, OVERHEAD PIPING KIT & PROCESS LINE SHUTOFF VALVES FYI #299 5/03/2012

LOW FLOW BYPASS VALVE

It is critical that your Advantage chiller be provided with a constant water or water/glycol flow rate. Standard chillers require 2.4 gallons per minute (gpm) per ton of rated cooling. For example, a 10-ton chiller requires a constant flow of 24 gpm. If the flow rate is less than 24 gpm performance is affected and the unit may trip on its low pressure limit switch. Customized units may be designed for lower or higher flow rates.

If your process will experience lower than design flow rates or intermittent flow, a low flow bypass valve will be required. For example, intermittent flow rates may occur when temperature control solenoid valves open and close or when more than one process is being served by the chiller and the processes don't always operated continuously.

The factory installed optional low flow bypass may be a manual ball valve (Figure B) or a pressure actuated automatic valve (Figure A & C) and it is installed between the "to process" and "from process" lines on the chiller. It may be installed inside or outside the sheet metal enclosure depending on the specific chiller model.

Adjusting the Low Flow Bypass:

- For Manual Low Flow Bypass Valves (Figure C), start with the bypass completely closed and gradually open the valve until the low refrigerant pressure gauge reading is in the normal operating range for the refrigerant type used in the chiller.
- For Automatic Low Flow Bypass Valves (Figure A), a "T" handle or adjusting stem is located on the top of the valve. Turning the "T" handle or adjusting stem in the clockwise direction puts more pressure on the valve's spring reducing

Automatic Low Flow Bypass Valve

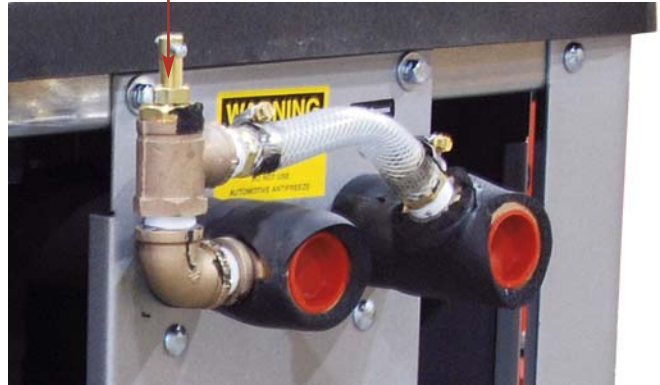


Figure A

Typical optional automatic low flow bypass valve. Shown without insulation on bypass circuit and valve. Shown on 10 ton, water-cooled portable chiller.

Manual Low Flow Bypass Valve Overhead Piping Kit Solenoid Valve On From Process Line



Figure B

Overhead piping kit Check Valve (under insulation) on To Process Line Process Line Shutoff Valves

Typical optional manual low flow bypass valve (with ball valve), overhead piping kit and process line shut off valves. Shown on 3 ton, air-cooled chiller.

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bypass flow. Turning the “T” handle or adjusting stem counter clockwise puts less pressure on the spring and increases bypass flow. Adjust the “T” handle or adjusting stem until the low pressure gauge reading is in the normal operating range for the refrigerant type used in the chiller. If the low pressure gauge reading is below normal, reduce the pressure on the spring to provide more bypass.

OVERHEAD PIPING KIT

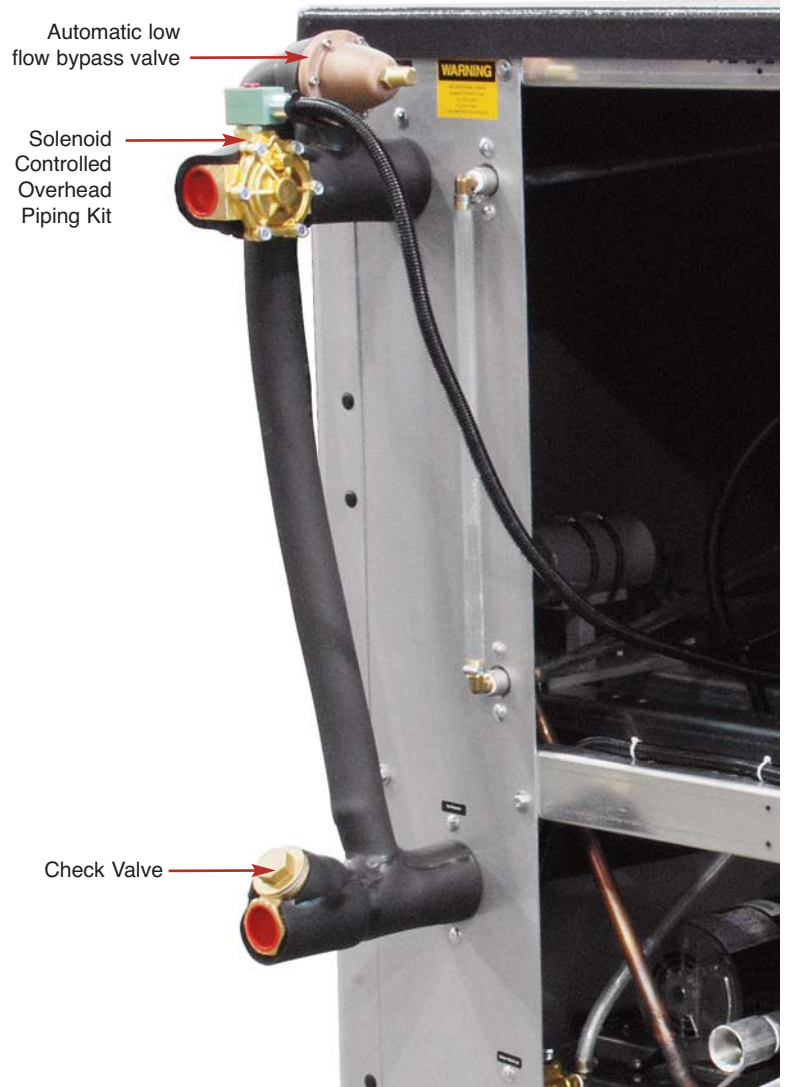
Most Advantage chillers include an integral open to atmosphere water reservoir and pumping system. On portable chillers and small central chillers these reservoirs have adequate volume to support the flow rate of the process but may not have adequate reserve volume to hold the water that remains in overhead system piping. When overhead piping is installed in the system and the system is in the “off” position the water in any overhead piping may drain to the lower point in the system which is the open reservoir in your chiller. If the chiller reservoir does not have adequate volume, the reservoir will over flow.

To avoid reservoir overflow, Advantage recommends the installation of an optional overhead piping kit (see Figures B & C). The overhead piping kit consists of a full line size solenoid valve in the “from process” line that is interlocked with the pump and a check valve (single direction valve) in the “to process” line. When the chiller pump is on, the solenoid valve opens and the check valve allows flow to process. When the chiller pump is off, the solenoid valve closes and the check valve prevents water from flowing back to the open reservoir trapping the water in the overhead piping.

The overhead piping kit is normally factory installed but it can be field installed when necessary.

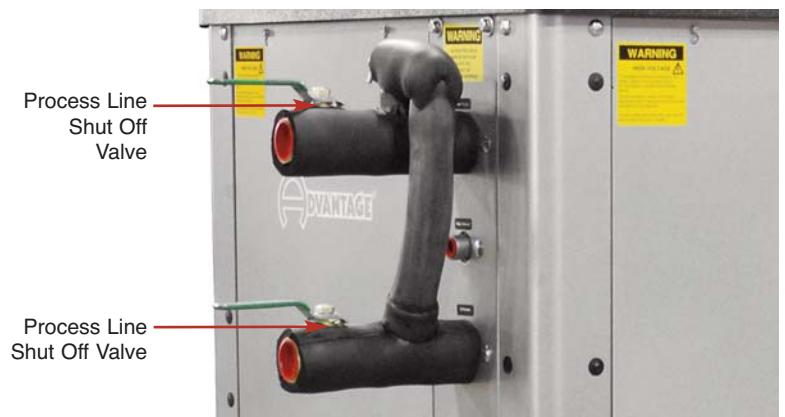
PROCES LINE SHUT OFF VALVES

Advantage chillers can be equipped with factory installed process line shut off valves. These valves are full size ball valves installed on the “to” and “from” process lines at the exit of the chiller. These valves can be used to adjust the process flow rate and to shut off the flow rate to isolate the chiller (see Figures B & C).



Typical optional low flow bypass valve, overhead piping kit solenoid valve and check valve. Shown on 15 ton, water-cooled portable chiller.

Figure C



Typical process line shut off valves. Low flow bypass circuit also shown. Shown on 7.5 ton, air-cooled portable chiller.

Figure D