

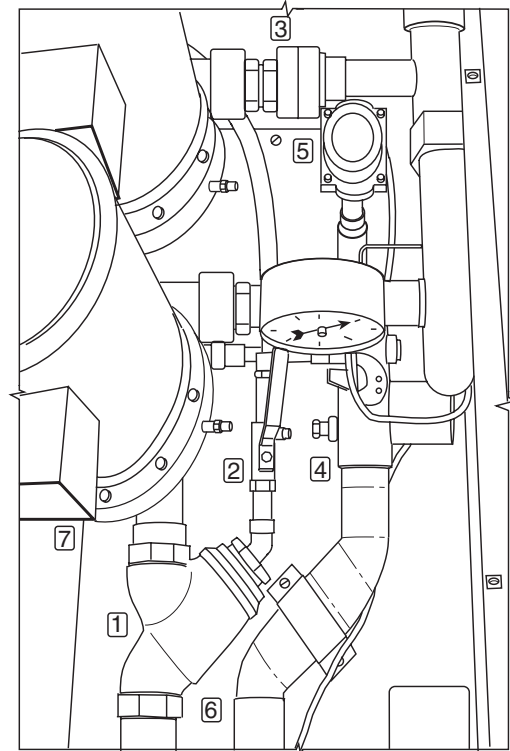
## Step 4 — Cooler Fluid and Drain Piping Connections (Units with Factory-Installed Hydronic Packages)

**WATER SYSTEM OVERVIEW** — The 30RA chillers with factory-installed hydronic packages are designed for use with closed systems, meaning that there is no more than one water-air interface in the water loop. Cooling tower loops, for example, have two water-air interfaces (sump and nozzles) and would thus be classified as open, whereas a correctly designed chilled water loop with the only water-air interface being in the expansion tank is closed. Since closed and open water systems behave very differently, these instructions assume that the chilled water loop is closed. A system installed incorrectly such that air is not handled properly — pipe leaks, vent leaks, air in pipes, etc. — may behave as an open system and thus have unsatisfactory operation. Pump seal wear can also cause leaks that cause poor system operation.

Proper closed system design and installation procedures should be followed closely. The system must be constructed with pressure tight components and thoroughly tested for installation leaks. Factory-supplied hydronic systems are available with single or dual (for back-up) pumps. The factory-installed system includes all of the components within the dashed lines in Fig. 10.

Installation of water systems should follow sound engineering practice as well as applicable local and industry standards. Improperly designed or installed systems may cause unsatisfactory operation and/or system failure. Consult a water treatment specialist or appropriate literature for information regarding filtration, water treatment, and control devices. Figure 10 shows a typical installation with components that might be installed with the hydronic package of the 30RA unit. Figure 11 illustrates a typical dual pump package for the 010-030 size models.

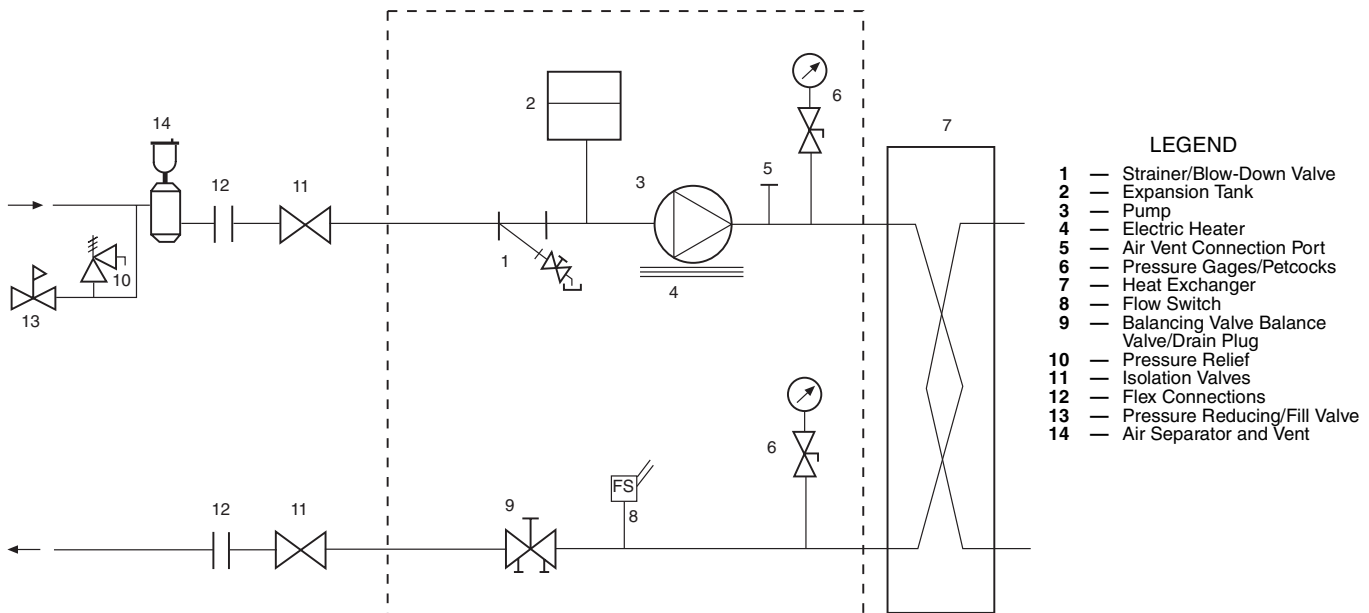
**NOTE:** It is recommended that isolation (shut-off) valves be placed exterior to the unit to allow removal and service of the entire pump assembly, if necessary. Also, if the unit is isolated with valves, a properly sized pressure relief valve should be installed in the piping between the unit and the valves, following all applicable state and local codes.



**LEGEND**

- |   |                       |
|---|-----------------------|
| 1 — Strainer                                | 5 — Flow Switch       |
| 2 — Blow-Down Valve                         | 6 — Field Connections |
| 3 — Discharge Check Valve (Dual Pumps Only) | 7 — Heater            |
| 4 — Balancing Valve with Drain Plug         |                       |

**Fig. 11 — Typical Dual Pump Package**



**LEGEND**

- |  |
|--|
| 1 — Strainer/Blow-Down Valve                 |
| 2 — Expansion Tank                           |
| 3 — Pump                                     |
| 4 — Electric Heater                          |
| 5 — Air Vent Connection Port                 |
| 6 — Pressure Gages/Petcocks                  |
| 7 — Heat Exchanger                           |
| 8 — Flow Switch                              |
| 9 — Balancing Valve Balance Valve/Drain Plug |
| 10 — Pressure Relief                         |
| 11 — Isolation Valves                        |
| 12 — Flex Connections                        |
| 13 — Pressure Reducing/Fill Valve            |
| 14 — Air Separator and Vent                  |

**Fig. 10 — Typical Piping Diagram on 30RA Units With Hydronic Package**