



Quick Reference Guide

930091-0027 Rev A

Air Source Heat Pumps
For
Water Heating (60 Hz)

General - Colmac HPA air source heat pumps offer commercial and industrial users of potable hot water, an energy efficient means of heating water to temperatures as high as 160°F. The Colmac HPA heat pump water heater uses the same operating principle as an air-conditioner or domestic refrigerator. The heat pump gathers heat from the surrounding air, and through the refrigeration cycle, deposits the heat into water at a useable temperature. This principle of moving heat with a heat pump, rather than generating it by burning fossil fuel (i.e. natural gas), or electric resistance, makes water heating with heat pumps the best choice for conserving energy. Depending on the temperature of the air supplied to the heat pump, water can be heated using one third to one fourth of the energy required by electric resistance, or gas.

Since the Colmac HPA uses the same principle as an air-conditioner, it produces cool air as it makes hot water. This "free" cool air benefit can be put to use to supplement the existing air-conditioning system, or to provide "spot cooling" to hot work areas.

Colmac HPA heat pumps can be successfully applied wherever there is a need for large amounts of hot water and there is a source of warm air available. The Colmac HPA is best suited for supplying hot water in facilities where demands for hot water and space cooling are concurrent.

Product Line Performance Comparison:

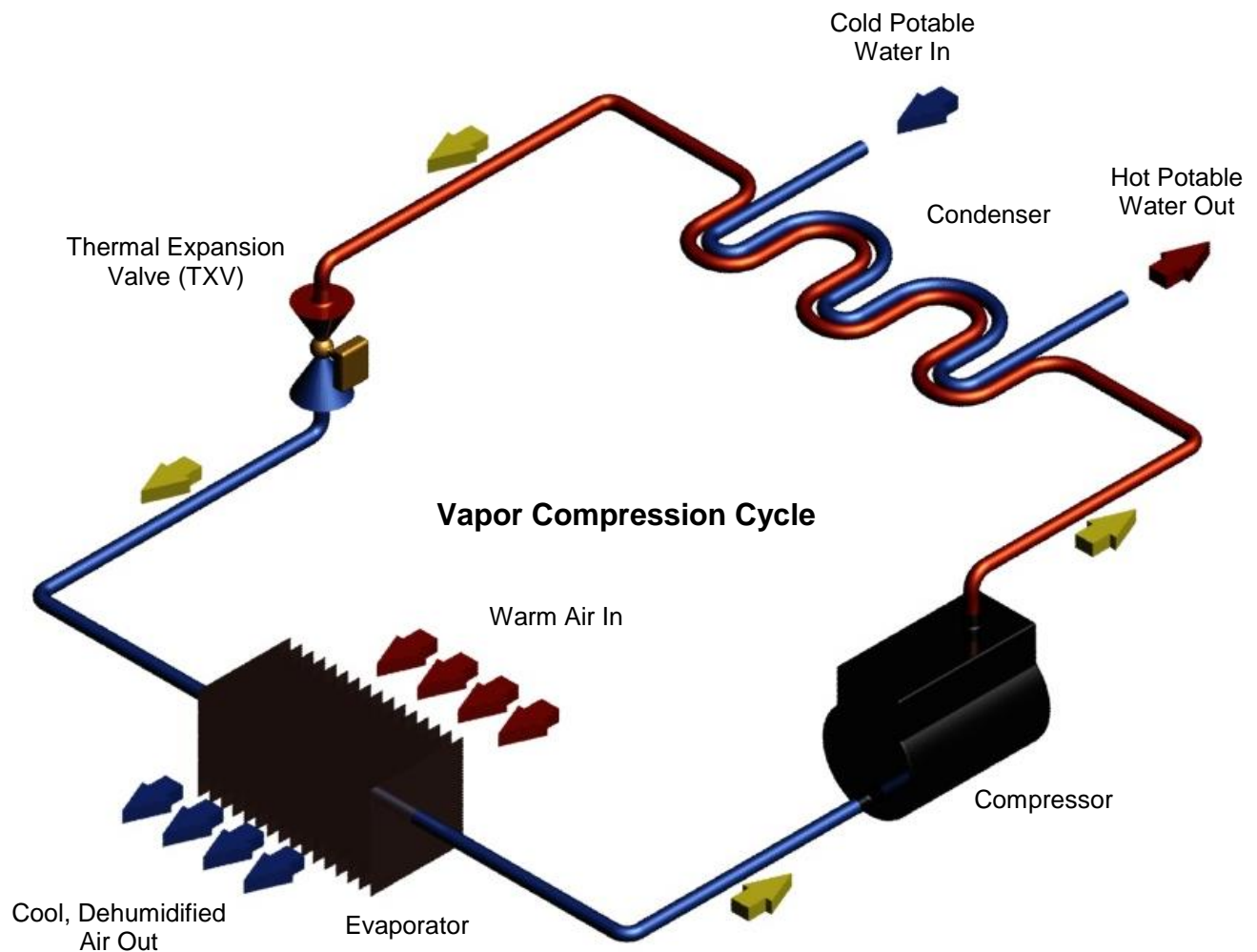
Model	Heating Capacity (MBH)	Cooling Capacity (MBH)	Heating COP	Cooling COP
HPA4	66	53	4.9	3.9
HPA7 (Axial)	111	86	4.5	3.5
HPA7 (Centrifugal)	111	81	3.7	2.7
HPA9 (Axial)	130	101	4.5	3.5
HPA9 (Centrifugal)	130	96	3.8	2.8
HPA11 (Axial)	169	133	4.7	3.7
HPA11 (Centrifugal)	169	128	4.1	3.1
HPA12 (Axial)	207	165	4.9	3.9
HPA12 (Centrifugal)	207	160	4.4	3.4
HPA15 (Axial)	270	220	4.4	3.4
HPA15 (Centrifugal)	270	215	4.2	3.2

Note: Based on 75°F entering air wet bulb temperature, 70°F entering potable water temperature and 140°F leaving potable water temperature. Source temperatures in excess of 82°F (27°C) consult the factory.

Air Source Heat Pump Basics

Energy from warm air is absorbed by refrigerant in the evaporator causing the refrigerant to change phase from a liquid to a gas. This gas refrigerant is then compressed by a compressor which adds temperature and pressure to the refrigerant. The high temperature, high pressure refrigerant gas is then condensed to a liquid in a condenser where energy is traded from the refrigerant to potable water suitable for human consumption. Finally, the high pressure, liquid refrigerant is passed through an expansion valve which causes the refrigerant pressure and temperature to drop so it can once again enter the evaporator and absorb energy from the air.

To maximize the efficiency of an air source heat pump provide the warmest and most humid air available and try to deliver the lowest potable water temperature acceptable. This minimizes the compressor work which is the largest operational cost associated with a heat pump.



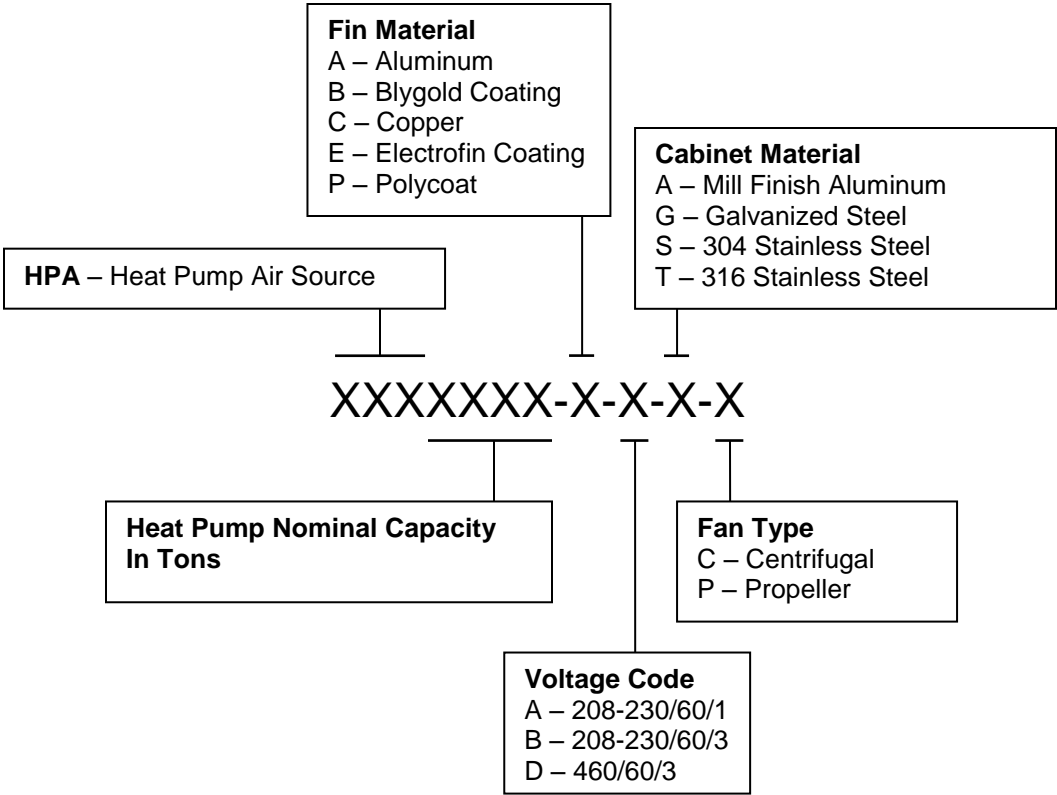
Standard Features:

- Environmentally friendly R134a refrigerant.
- Copeland scroll compressors.
- Vented, double wall, stainless steel, brazed plate condensers (potable water).
- Factory built and tested copper tube, aluminum fin evaporators.
- Adjustable TXV, moisture indicating sight glass, liquid line filter drier.
- Bronze hot water circulating pump (potable water).
- Electronic temperature control valve (e-TCV™).
- Automatic controls include high and low pressure cutouts, compressor time delay relay, phase failure relay, normal run and fault indicating lights.
- Cabinets are offered in mill finish aluminum, galvanized steel, 304 SST, and 316 SST.
- UL listing for electrical safety.

Optional Features:

- SMO Copper/Stainless Steel brazed plate condensers for pool and spa heating.
- Remote heat rejection for constant air conditioning.
- Remote enunciator panel.
- Evaporators can be constructed with copper, polycoat or coated fins.
- Coated fiber inlet air filters.
- BMS compatible Microprocessor Controller
- Air Defrost and Freeze Protection
- Electronic Expansion Valve

Unit Nomenclature:





Colmac reserves the right to change product design and specifications without notice.

For more information on Colmac products call us at 1-800-926-5622 or visit us online at:

WWW.COLMACWATERHEAT.COM