Bulletin HE-2
November 2016

REFRIGERANT HEAT EXCHANGERS

- COAXIAL DESIGN FOR OPTIMUM HEAT TRANSFER
- SIZES TO FIT 1/3 TO 50 H.P. CAPACITY SYSTEMS
- 1/3 H.P. THROUGH 10 H.P. CONSTRUCTED WITH COPPER OUTER TUBE AND RED BRASS INNER TUBE
- 15 H.P. THROUGH 50 H.P. CONSTRUCTED WITH STEEL OUTER TUBE AND STAINLESS STEEL INNER TUBE
- C–UL RECOGNIZED OR LISTED

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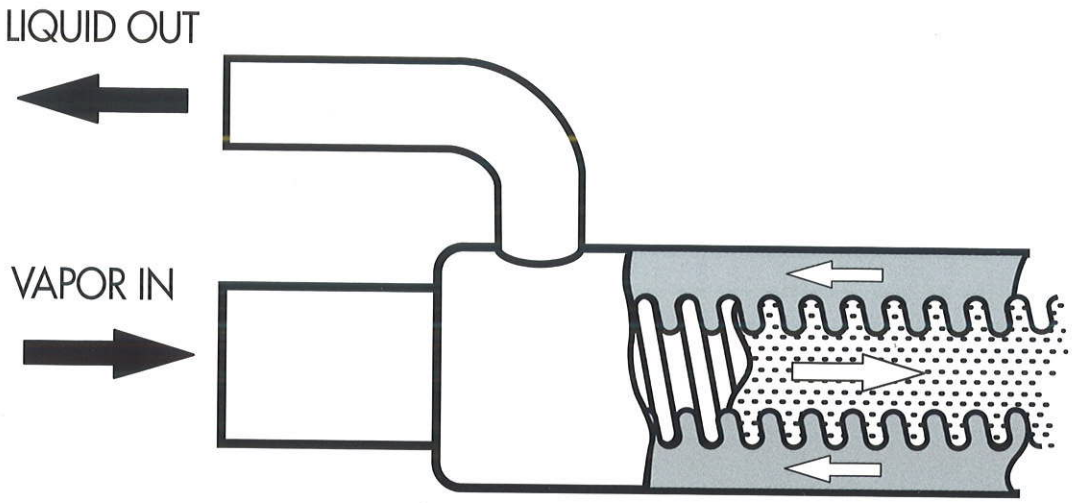
TURBO HEAT EXCHANGERS

Packless Turbo Heat Exchangers are specifically intended for application on refrigeration systems to transfer heat between liquid refrigerant leaving the condenser on the high pressure side of the system and refrigerant vapor leaving the evaporator on the low pressure side of the system. This heat transfer may be desirable for several reasons:

(a) To raise the vapor temperature to prevent frosting or condensation on the suction line.
(b) To evaporate any remaining liquid in the vapor stream to prevent possible compressor damage.
(c) To subcool the liquid to prevent flash gas in the liquid line.
(d) To increase system refrigerating capacity.

Packless utilizes a counterflow "tube-in-tube" design for Turbo Heat Exchangers:



Refrigerant vapor flows through the inner tube in a counterflow direction to the liquid refrigerant flowing in the annulus between the inner and outer tube. This counterflow path provides the greatest temperature difference between the two refrigerant streams to yield optimum heat transfer. To further maximize heat exchanger performance with minimum size, the inner tube is convoluted to impart turbulance to both refrigerant flows while the straight-through design helps maintain low refrigerant pressure drops.

Two model series of Turbo Heat Exchangers are available to fit refrigeration systems of 1/3 to 50 tons capacity:

HXR Series—8 standard sizes for nominal 1/3 to 10 ton systems.
LHXR Series—9 standard sizes from nominal 15 to 50 ton systems.

Each unit is furnished with I.D. sweat connections on both the vapor and liquid sides for ease of installation. Standard sizes are recognized or listed by Underwriter's Laboratories, Inc. (U.L.) for use with the following refrigerants:

R12	R134A	R402B	R407C	R410B	R508
R22	R401A	R404A	R408A	R412A	R509
R23	R401B	R407A	R409A	R502	
R125	R402A	R407B	R507		

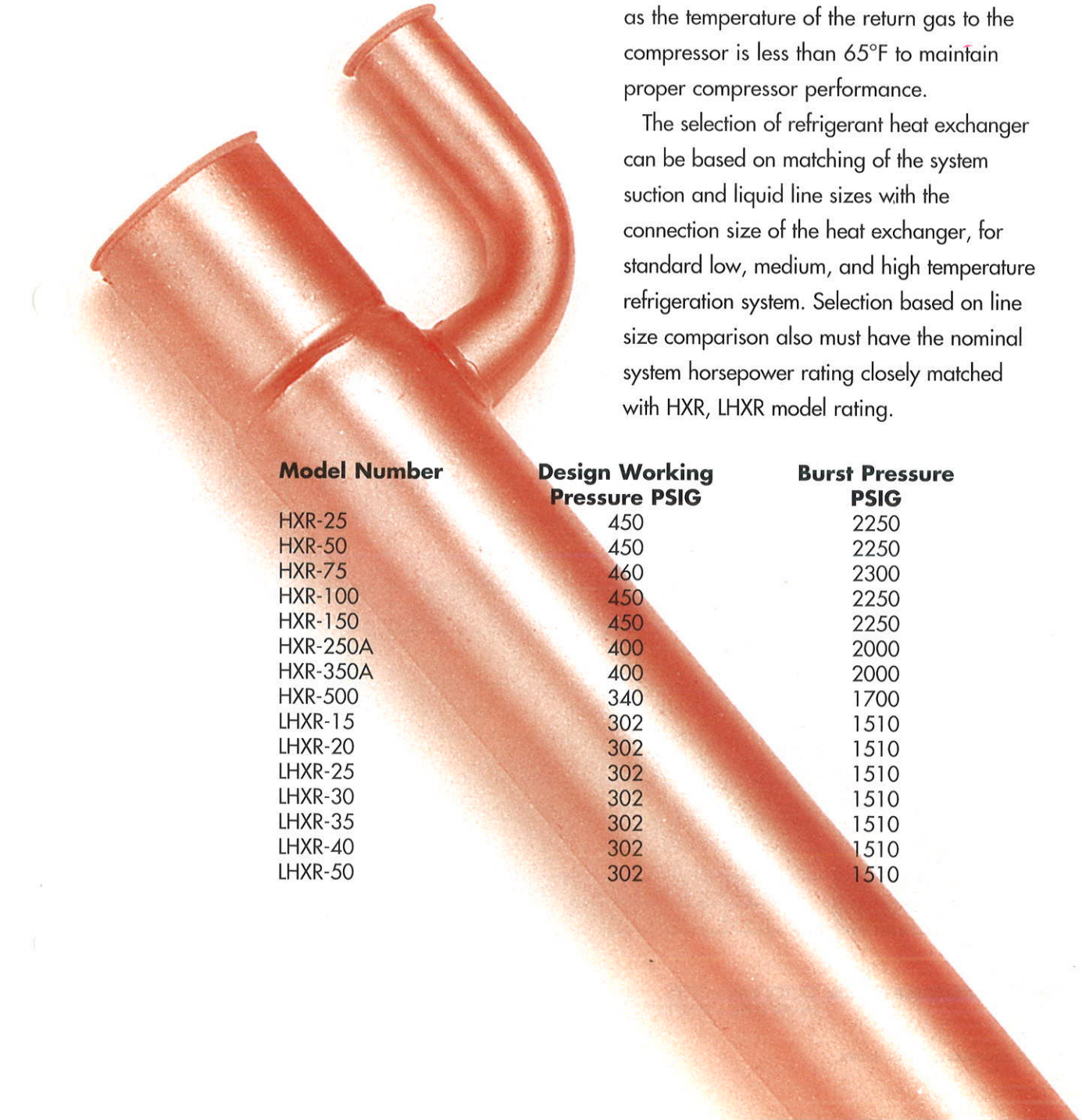
MADE IN USA

SELECTION PROCEDURE:

Typically, refrigerant heat exchanger selection is predominantly dependent on nominal system horsepower. The HXR and LHXR models are designed and rated to provide a nominal 10°F liquid subcooling and 20°F suction gas superheat for R-22 and R-502. At this rating point, the system is operating at 110°F condensing temperature and 25°F saturated suction temperature. As an example, select model HXR-250A for a nominal 5 HP system.

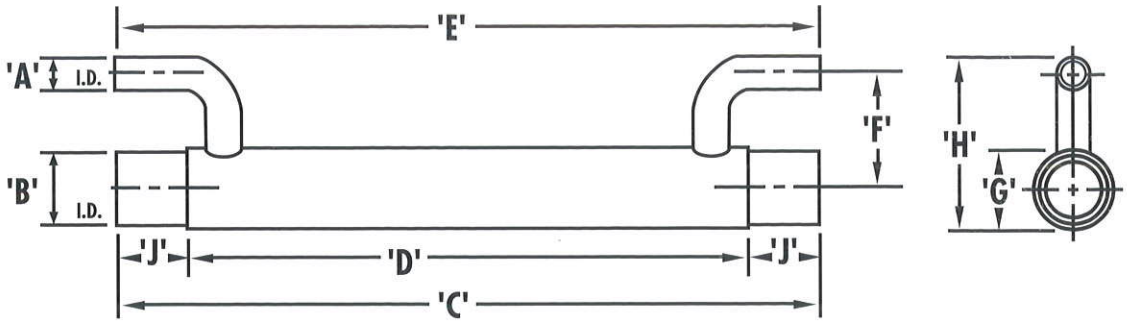
Caution must be exercised to avoid selecting undersized model. The use of undersized models can cause system operation problems such as gas whistling and high suction side pressure drop. This also may have adverse effect on overall system preformance. In some applications, the refrigerant heat exchangers selected are oversized to attain additional liquid subcooling and suction gas superheat. This is an acceptable application as long as the temperature of the return gas to the compressor is less than 65°F to maintain proper compressor performance.

The selection of refrigerant heat exchanger can be based on matching of the system suction and liquid line sizes with the connection size of the heat exchanger, for standard low, medium, and high temperature refrigeration system. Selection based on line size comparison also must have the nominal system horsepower rating closely matched with HXR, LHXR model rating.



Model Number	Design Working Pressure PSIG	Burst Pressure PSIG
HXR-25	450	2250
HXR-50	450	2250
HXR-75	460	2300
HXR-100	450	2250
HXR-150	450	2250
HXR-250A	400	2000
HXR-350A	400	2000
HXR-500	340	1700
LHXR-15	302	1510
LHXR-20	302	1510
LHXR-25	302	1510
LHXR-30	302	1510
LHXR-35	302	1510
LHXR-40	302	1510
LHXR-50	302	1510

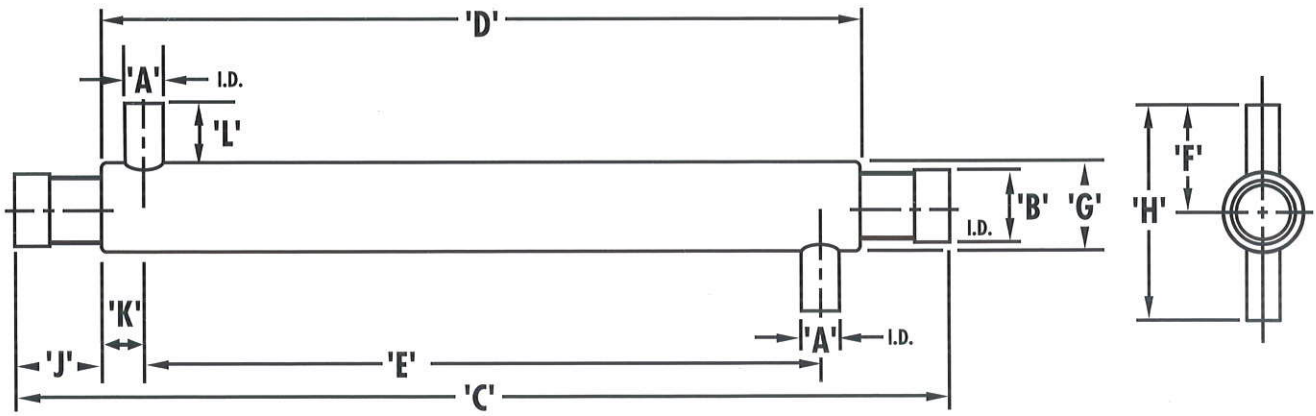
DIMENSIONS/HXR SERIES



NOM. H.P.	MODEL NO.	A	B	C	D	E	F	G	H	J
1/2	**HXR-25**	1/4	1/2	11-1/2	10	10-1/4	1-3/16	7/8	1-3/4	3/4
1	**HXR-50**	3/8	5/8	12-3/4	11	13	1-5/8	7/8	2-5/16	7/8
1-1/2	**HXR-75**	3/8	7/8	13-5/8	11	13	1-3/4	1-1/8	2-9/16	1-5/16
2	**HXR-100**	3/8	1-1/8	14-1/8	11	12-3/4	1-7/8	1-3/8	2-13/16	1-9/16
3	**HXR-150**	1/2	1-1/8	14-1/8	11	13-3/4	2	1-3/8	3	1-9/16
5	**HXR-250A**	5/8	1-3/8	14-1/4	11	14-1/4	2-3/8	1-5/8	3-9/16	1-5/8
7-1/2	**HXR-350A**	5/8	1-5/8	16-1/4	12	15-1/4	2-3/8	1-5/8	3-9/16	2-1/8
10	**HXR-500**	7/8	2-1/8	17-1/4	12	13	2-15/16	2-5/8	4-5/8	2-5/8

MATERIAL SPECIFICATIONS: OUTER TUBE—COPPER
INNER TUBE—RED BRASS
REFRIGERANT CONNECTIONS—COPPER

DIMENSIONS/LHXR SERIES



NOM. H.P.	MODEL NO.	A	B	C	D	E	F	G	H	J	K	L
15	**LHXR-15**	7/8	2-1/8	29-1/2	24	21-3/8	3-11/16	3-1/8	7-3/8	2-3/4	1-5/16	2-1/8
20	**LHXR-20**	1-1/8	2-1/8	29-1/2	24	21-3/8	3-11/16	3-1/8	7-3/8	2-3/4	1-5/16	2-1/8
25	**LHXR-25**	1-1/8	2-5/8	38	32-1/2	29-3/4	3-15/16	3-3/4	7-7/8	2-3/4	1-3/8	2-1/16
30	**LHXR-30**	1-3/8	2-5/8	38	32-1/2	29-3/4	4-1/8	3-3/4	8-1/4	2-3/4	1-3/8	2-1/4
35	**LHXR-35**	1-3/8	2-5/8	40-1/8	34-5/8	31-7/8	4-1/8	3-3/4	8-1/4	2-3/4	1-3/8	2-1/4
40	**LHXR-40**	1-3/8	3-1/8	31-3/4	26-1/4	22-3/4	4-3/8	4-1/4	8-3/4	2-3/4	1-3/4	2-1/4
50	**LHXR-50**	1-5/8	3-1/8	31-3/4	26-1/4	22-3/4	4-5/8	4-1/4	9-1/4	2-3/4	1-3/4	2-1/2

MATERIAL SPECIFICATIONS: OUTER TUBE—STEEL
INNER TUBE—STAINLESS STEEL
REFRIGERANT CONNECTIONS—COPPER
PAINT COLOR—BLACK

Note: All dimensions are in inches.