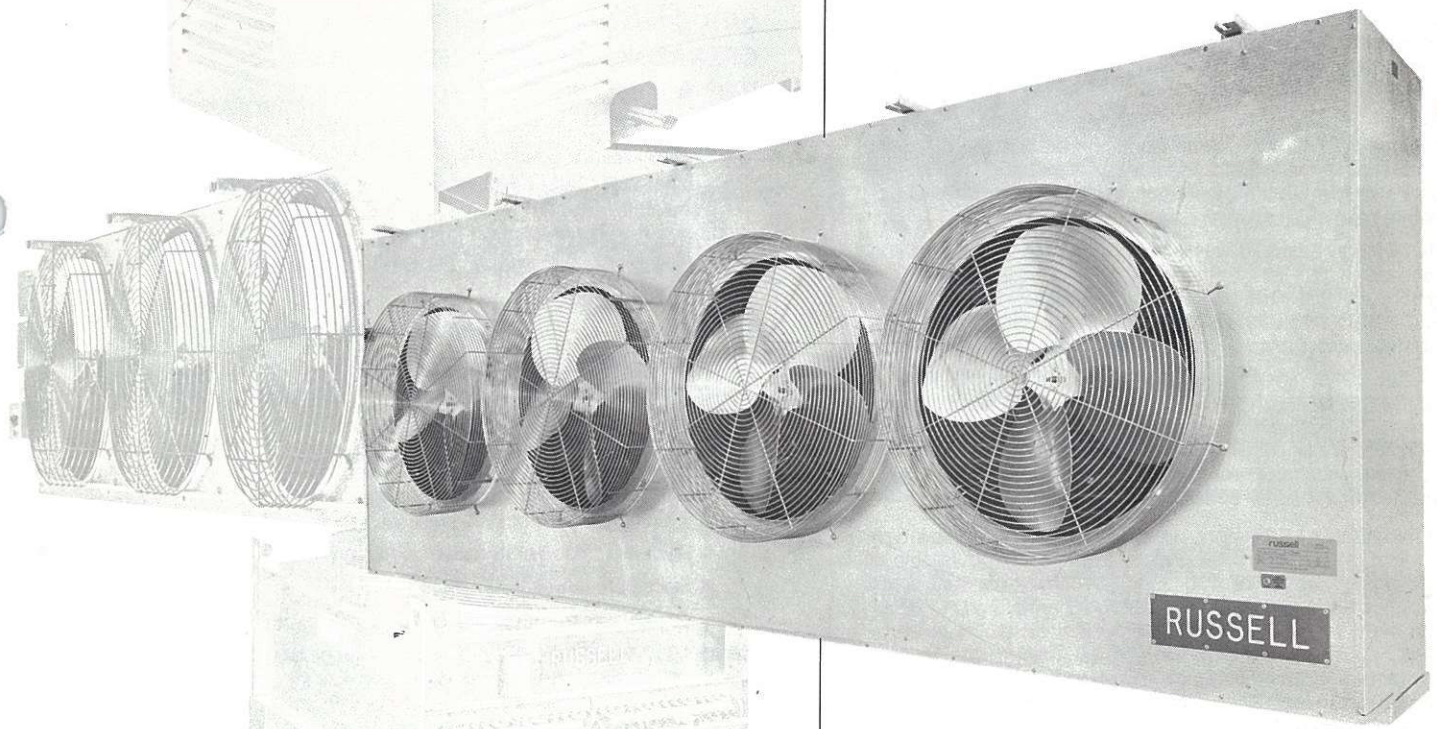
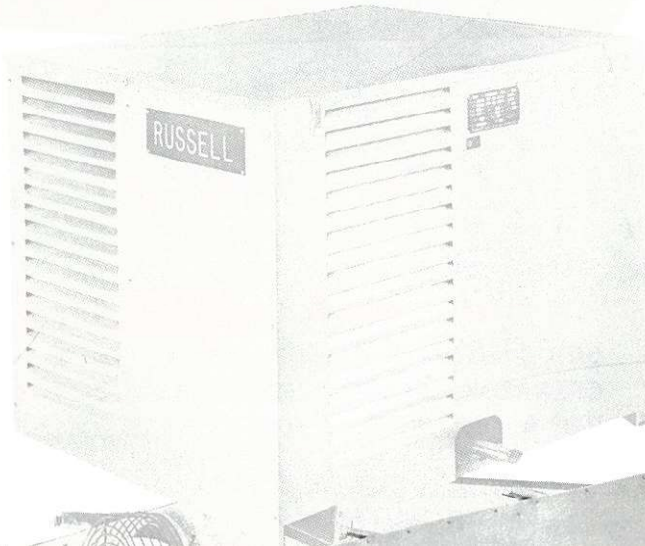
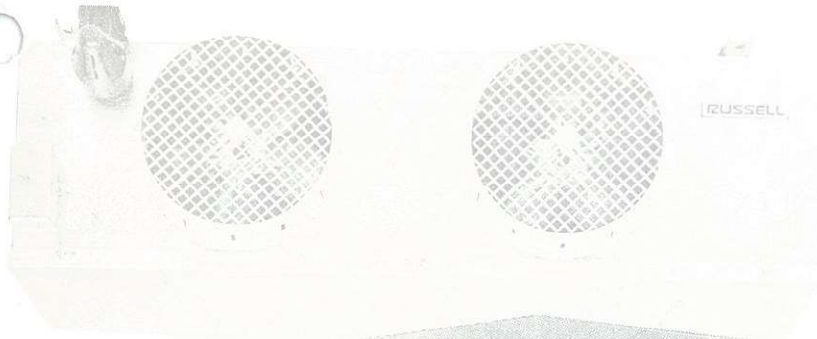


TECHNICAL BULLETIN
May 1983

UT

ultra-temp

**ULTRA HIGH POWERED
UNIT COOLERS**



Russell

Russell Coil Company

a subsidiary of ARDCO, INC.

221 South Berry Street Brea, California 92621

RUSSELL'S NEW ULTRA-TEMP UNIT COOLER is exceptionally versatile, covering all low temperature applications.

The 18 models are equipped with high efficiency, ¾ H.P. P.S.C. motors, giving a high rate of heat transfer required for cooling products to very low temperatures. It is available in fin spacings of 4 and 6 fins per inch allowing the ULTRA-TEMP to be used for a variety of applications where evaporator temperatures are required from +25° F to -60°F. For evaporator temperatures below -35°F, consult factory.

RUSSELL-BOND™, our exclusive manufacturing process, assures uniform, efficient heat transfer in every ULTRA-TEMP unit.

ULTRA-TEMP FEATURES:

SIZE — Large capacity, up to 160,000 BTUH in a compact, slim profile design.

HOUSING — Rust-proof, all aluminum. Easy to service — all components are readily accessible. All the refrigeration connections are in one compartment and all electrical connections — terminals, capacitors, DTFD (defrost termination, fan delay), etc., are in a separate compartment. For ease of installation, all units, 2 fan and up, come standard with lifting legs which allow for unit to be shipped upright and for easy lifting into place. It also has slotted hangers for fast installation.

COIL — Heavy guage rippled aluminum fins with staggered copper-tube pattern.

SPLIT CIRCUIT — On the 2 largest models of each fin spacing U•U 4-851, 4-1080 and U•U 4-1100, 4-1380, the unit is supplied standard with 2 equal circuits. This energy saving feature allows the user to use the complete unit for rapid temperature pull down, such as in fast freezing and, then by cutting off one thermal expansion valve, and unloading the compressors, use half the unit cooler to maintain the temperature. This solves problems such as oil logging.

FANS — Powerful, heavy-duty aluminum, carefully balanced, deep-pitched blades provide vibration-free operation. Sturdy motor mount designed for minimum air resistance. Fan guards are protected by thick, baked on coating for excellent corrosion resistance and pleasing appearance.

MOTORS — Standard ¾ H.P. motors are furnished for applications down to -60° F, minimum suction temperature. The motors are PSC, ball bearing type, available in 208/230 or 460 volts. Motors may be connected optionally for a 3Ø system. All motor wiring is brought out to the electrical compartment.

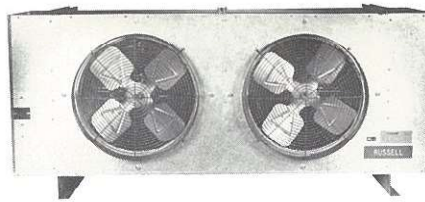
AIR-THROW — Air throw for the ULTRA-TEMP is approximately 75 feet. Air throw variation is caused by installation variables. Maximum air throw is obtained with high ceiling with no interference from beams. All aluminum air straightners available for increased air throw.

ELECTRICAL — Factory wired to convenient screw-type terminal blocks. All catalog models U.L. listed. Available in 208/230/1 or 3Ø or 460/1 or 3Ø. Motor contactors are supplied as required. On 208/230V/1Ø units the DTFD has sufficient rating to switch the motors, on all other units motor contactors are supplied standard. Heater contactors must be selected based on table, page 5. They can be purchased as an unmounted option with enclosure. It is strongly recommended that they be located outside of the cold box, usually in the condenser enclosure, or they can be supplied with a Russell condensing unit, mounted in the control panel. Defrost heater connections can easily be changed in the field from 1Ø to 3Ø operation or vice versa by adding or deleting jumpers in the electrical compartment.

REFRIGERANTS — For use with R-12, R-22, or R-502. Specify refrigerant when ordering.

DEFROST SYSTEM — The ULTRA-TEMP is available with either RUSSELL Lightning Electric Defrost or Hot Gas Defrost. The electric defrost in the ULTRA-TEMP is ultra efficient since the heaters are internal to the refrigeration coil, and are enclosed by the aluminum fins, allowing for very rapid heat transfer. The ULTRA-TEMP is also available in rapid Hot Gas, either re-evap or reverse cycle. Defrost termination is by temperature, using adjustable, remote-bulb thermostat.

APPLICATIONS — Large walk-ins, storage, and freezers. To correctly size, ULTRA-TEMP unit coolers to any job requirement, refer to Russell's Refrigeration Manual.



ultra-temp

UNIT COOLERS

designed for walk-in coolers, quick freezers, meat holding, packaging rooms and produce storage and large frozen food storage facilities.

from 11,800 to 160,000 BTU/per Hr.

OPERATING SPECIFICATIONS/RANGE:

FAN/AIR CAPACITY: 3,550 to 21,600 CFM.
1-4 fans, 20" or 24"

MOTORS: Standard ¾, 1075 or 1625 RPM PSC Ball bearing motors, either 208/230 or 460 volts. (For information on Motor Amps, see table, page 6).

ELECTRIC OR HOT GAS DEFROST: Available on all units.
Electric defrost: 5000 to 28000 watts. (For Amp levels, see table, page 5).

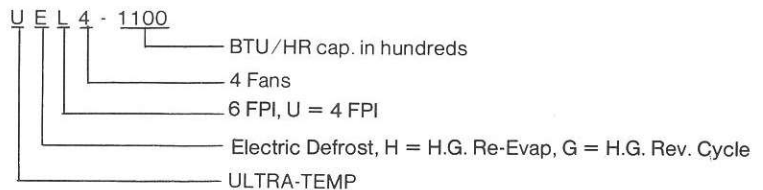
SELECTION/ORDERING INFORMATION:

Select the correct ULTRA-TEMP Unit Cooler(s) to meet application requirements and specify by part number. When ordering, specify the following:

1. Model number
2. Type of defrost
3. Electrical characteristics (voltage, frequency, phase)
4. Type of refrigerant (Standard, circuited R-502)
5. Suction temperature
6. Entering air-to-refrigerant T.D. (8 to 12°F is standard)

EXAMPLE: Model Number UEL 4-1100 is specified.

U = ULTRA-TEMP; E = Electric Defrost; L = 6 fpi; 4 = number of fans
1100 = BTU/HR capacity in hundreds (110,000)



Model Number UHU4 — 851

U = ULTRA-TEMP; H = Hot Gas, Re-Evap; U = 4 fpi; 4 = Number of fans; 851 = BTU capacity in hundreds (85,100);
For Hot Gas Reverse Cycle specify UGU.

Russell



SEPARATE ELECTRIC COMPARTMENT

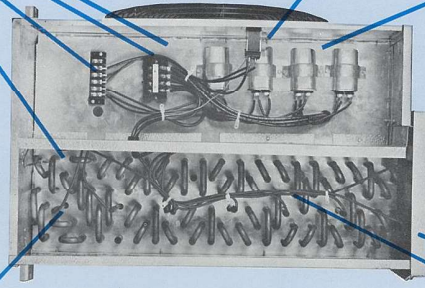
Internal electric heaters on electric defrost models for rapid defrost from inside out.

Heater series wired for 460V or parallel for 230V.

Heater terminal block with screw type connection for ease of installations on most models.

Control wiring terminal blocks with screw-type connections for ease of installation.

DITFD Bulb located inside coil on each model.



Accessible electrical components for ease of installation and trouble shooting.

DITFD

Drain pan heaters mounted on bottom of coil for ease of drain pan cleaning.

One type of internal defrost heater per coil.

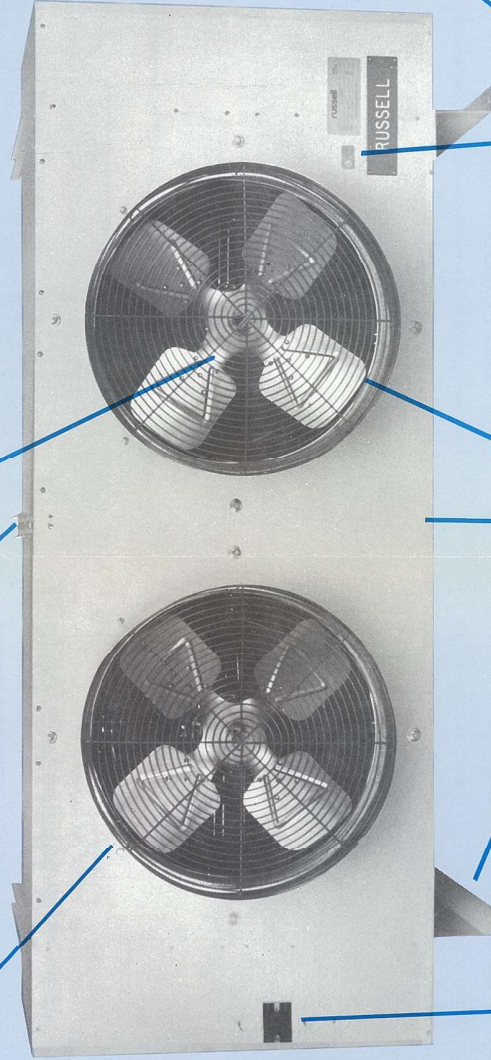
REFRIGERATION COMPARTMENT

RUSSELL QUALITY APPROVED. On the back of each unit the Blue Russell quality approved label is placed. It indicates the name and clock number of the final assembly quality operator. Inside each coil, in the refrigeration compartment, the brazer of the coil and leak tester also place their tags indicating the coil meets the high quality Russell standards.

High efficiency 3/4 HP PSC Fan Motors for high output with an air throw of 75 feet. (The air is moving at a rate of 50 feet per minute measured 75 feet from the unit cooler). The motors are 1075 or 1625 RPM PSC Ball Bearing motors, either 208/230V or 460V suitable for evaporator temperature down to -60° F.

Corrosion Resistance coated Fan Guard.

Slotted hangers for quick installation. The hangers are riveted to the tube sheets for extra strength. A bracket is supplied with every unit for pitching unit for drain to either end.



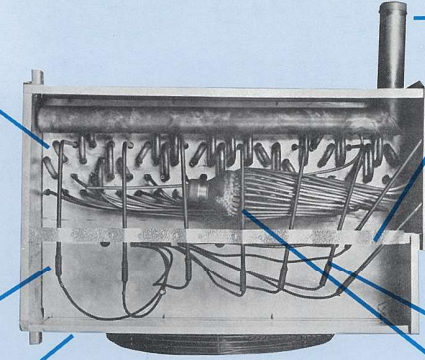
Lifting legs for easy installation. All two thru four fan units shipped upright, ready for easy installation. Removing the sides and top crating makes the ULTRA-TEMP ready for installation. The lifting legs should be removed after installation.

Adjustable remote bulb defrost thermostat with fan delay (DTFD). Properly set, the DTFD terminates the defrost and turns on the compressor. When the temperature of the coil reaches 25° F it turns on the fan motors. The thermostat is rated at 20 amps, therefore, a separate fan motor contactor is not required on 230V/1Ø units.

High efficiency, staggered tube pattern, with rippled aluminum fins.

Trim Line Design.

Full tube sheets for structural strength and complete separation of each fan section.



Individually balanced fans.

UL Listed

All Aluminum cabinet

Hinged drain pan.

Flexible heaters. They can be replaced with only a one foot clearance between the side wall and the ULTRA-TEMP.

Ample heat for TX Valve and distributor

Drain fitting on each end.

Heater clamps to maintain heater position.

Suction line.

MODEL	BTUH at 10 °TD Suction Temperature (hundreds)			CFM	No. & Size Fan	Motor HP	ELECTRIC DEFROST Amperage Ratings at 60 Hz.				Hot Gas Defrost				
	20° F.	-10 F.	-30 F.				208V.		230V.		460V		Watts * 60 Hz.	Re-Evap Use HEA	
							1Ø	3Ø	1Ø	3Ø	1Ø	3Ø			
4 fpi	U•U 1-118	151	129	118	3750	1-20"	3/4	19.9	13.2	22.0	14.6	11.0	9.5	5512	2A
	U•U 2-236	302	257	236	7500	2-20"	3/4	35.5	23.5	39.3	26.0	19.6	17.0	9832	3A
	U•U 2-355	454	387	355	8200	2-20"	3/4	35.5	23.5	39.3	26.0	19.6	17.0	9832	4A
	U•U 3-474	607	516	474	12450	3-20"	3/4	51.1	33.8	56.6	37.4	28.2	24.5	14,152	5A
	U•U 4-711	910	745	711	16400	4-20"	3/4	—	43.3	—	47.8	—	24.3	18,440	6A
	U•U 4-851	1089	928	851	21600	4-24"	3/4	—	57.7	—	63.8	—	31.9	27,660	2(two) 5A
	U•U 4-1080	1382	1177	1080	21600	4-24"	3/4	—	57.7	—	63.8	—	31.9	27,660	2(two) 5A
6 fpi	U•L 1-152	182	152	132	3650	1-20"	3/4	19.9	13.2	22.0	14.6	11.0	9.5	5512	3A
	U•L 1-193	232	193	168	3550	1-20"	3/4	19.9	13.2	22.0	14.6	11.0	9.5	5512	3A
	U•L 2-304	365	304	264	7300	2-20"	3/4	35.5	23.5	39.3	26.0	19.6	17.0	9832	4A
	U•L 2-361	433	361	314	8300	2-20"	3/4	35.5	23.5	39.3	26.0	19.6	17.0	9832	4A
	U•L 2-408	490	408	355	8100	2-20"	3/4	35.5	23.5	39.3	26.0	19.6	17.0	9832	5A
	U•L 3-540	648	540	470	12450	3-20"	3/4	51.1	33.8	56.6	37.4	28.2	24.5	14,152	5A
	U•L 3-613	736	613	533	12150	3-20"	3/4	51.1	33.8	56.6	37.4	28.2	24.5	14,152	6A
	U•L 4-722	866	722	627	16600	4-20"	3/4	—	43.3	—	47.8	—	24.3	18,440	6A
	U•L 4-817	980	817	711	16200	4-20"	3/4	—	43.3	—	47.8	—	24.3	18,440	2(two) 5A
	U•L 4-1100	1320	1100	957	21200	4-24"	3/4	—	57.7	—	63.8	—	31.9	27,660	2(two) 5A
	U•L 4-1380	1656	1380	1200	20400	4-24"	3/4	—	57.7	—	63.8	—	31.9	27,660	2(two) 6A

* 240 and 480 volts ** All units with 20" fans use 1725 rpm motors, units with 24" fans use 1075 rpm motors.

NOTES:

EXPANSION VALVES: All units require externally equalized expansion valves. Available as mounted or un-mounted option.

AIR-FLOW RESTRICTION: Install not less than 24" from back wall.

ELECTRIC DEFROST: Electric defrost includes adjustable defrost termination and fan delay (DTFD) and motor contactor, if required. Timer and heater contactor available as un-mounted options.

HOT GAS REVERSE CYCLE DEFROST UNITS:

Includes adjustable defrost termination and fan delay (DTFD), motor contactor (if required), drain pan circuitry, and is factory wired and piped per current Russell Hot Gas Technical Bulletin. On split coil units, drain pan connection to coil is field piped. Check valves and timer available as options.

HOT GAS RE-EVAP DEFROST UNITS: Includes adjustable defrost termination and fan delay (DTFD), motor contactor (if required), drain pan circuitry, heat exchanger-accumulator and is factory wired and piped per current Russell Hot Gas Technical Bulletin. On split coil units, drain pan connection to coil is field piped.

HEATER CONTACTORS

The following table lists the various contactors required for electric defrost heaters. Available as an un-mounted option with enclosure.

MODEL NUMBER	HEATER CONTACTORS		
	208/230V 1Ø	208/230V 3Ø	460V 3Ø
UEL 1-152, UEL 1-193, UEU 1-118	—	25 amps	25 amps
UEL 2-304, UEL 2-361, UEL 2-408, UEU 2-236, UEU 2-355	—	30 amps	25 amps
UEL 3-540, UEL 3-613, UEU 3-474	Recommend 3Ø Oper.	40 amps	25 amps
UEL 4-722, UEL 4-817, UEU 4-711	Recommend 3Ø Oper.	50 amps	25 amps
UEL 4-1100, UEL 4-1380, UEU 4-851, UEU 4-1080	Recommend 3Ø Oper.	(2) 35 amps	(2) 25 amps

208/230V/1Ø & 3Ø

Can be supplied wired 208/230V/3Ø at no extra cost 3 and 4 fan units wired 3Ø standard. Can be wired 1Ø at no extra cost. Please specify on order. See above for selection of heater contactors.

460V, wired 3Ø

See above for selection of heater contactors.

MOTOR AMPS

HP	Single Motor				1Ø Motors Arranged for 1Ø Operation			1Ø Motors Arranged for 3Ø Operation		
	208/230/60/1	460/60/1	380/50/1		208/230/60	460/60	380/50	208/230/60	460/60	380/50
¾	4.2	2.1	2.5	1 fan	4.2	2.1	2.5	NA	NA	NA
				2 fan	8.4	4.2	5.1	NA	NA	NA
				3 fan	12.6	6.3	7.6	7.3	3.6	4.4
				4 fan	16.8	8.4	10.2	11.1	5.6	6.8

MOTOR CONTACTORS

208/230V/1Ø

The DTFD has sufficient rating to switch the motors.

208/230V/3Ø

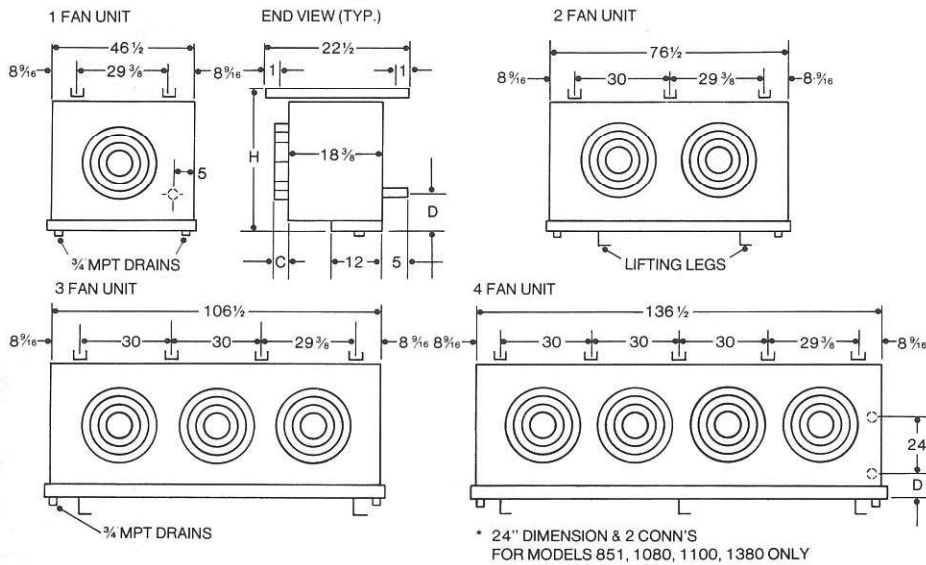
On 1 and 2 fan units, motors wired 1Ø. The DTFD has sufficient rating to switch the motors.

On 3 and 4 fan units, motors wired 3Ø. Motor contactor supplied.

460V/1Ø & 3Ø

On 1 and 2 fan units, motors wired 1Ø. On 3 and 4 fan units, motors wired 3Ø. Motor contactor supplied in electrical compartment.

MOUNTING SPECIFICATIONS/Mounting and Dimensions



MOUNTING SPECIFICATIONS/DIMENSIONS (per above diagrams)

MODEL	LIQUID CONN.	SUCTION CONN.	HOT GAS CONN.	DIMENSIONS			LIFTING LEGS	WEIGHT (LBS.)
				H	D	C		
U•U 1-118	½" F.N.	1½" O.D.S.	¾" O.D.S.	25½"	5¼"	3½"	NO	190
U•U 2-236	¾" O.D.S.	1¾"	¾"	25½"	3¾"	3½"	YES	370
U•U 2-355	¾"	1¾"	¾"	31½"	2¼"	3½"	YES	440
U•U 3-474	¾"	1¾"	¾"	31½"	2¼"	3½"	YES	570
U•U 4-711	¾"	2¼"	1¼"	31½"	2¾"	3½"	YES	665
U•U 4-851	¾" (2)	2¼" (2)	1¼" (2)	49½"	2¾"	5"	YES	875
U•U 4-1080	¾" (2)	2¼" (2)	1¼" (2)	49½"	2¾"	5"	YES	900
U•L 1-152	½" F.N.	1½" O.D.S.	¾" O.D.S.	25½"	5¼"	3½"	NO	200
U•L 1-193	¾" O.D.S.	1¾"	¾"	25½"	3¾"	3½"	NO	220
U•L 2-304	¾"	1¾"	¾"	25½"	3¾"	3½"	YES	400
U•L 2-361	¾"	1¾"	¾"	31½"	2¼"	3½"	YES	425
U•L 2-408	¾"	1¾"	¾"	31½"	2¼"	3½"	YES	446
U•L 3-540	¾"	2¼"	¾"	31½"	2¼"	3½"	YES	585
U•L 3-613	¾"	2¼"	¾"	31½"	2¼"	3½"	YES	620
U•L 4-722	¾"	2¼"	1¼"	31½"	2¾"	3½"	YES	675
U•L 4-817	1¾"	2¼"	1¼"	31½"	2¾"	3½"	YES	726
U•L 4-1100	¾" (2)	2¼" (2)	1¼" (2)	49½"	2¾"	5"	YES	885
U•L 4-1380	¾" (2)	2¼" (2)	1¼" (2)	49½"	2¾"	5"	YES	910

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Russell

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