

***Copeland***<sup>®</sup>

**COPELAND QR  
COMPRESSORS  
CLEARLY THE BEST**



**EMERSON**<sup>™</sup>  
Climate Technologies



## PRODUCT DESCRIPTION

In 1990 Copeland introduced the QR line of compressors. The low sound characteristics of this compressor family were quickly recognized by the commercial air conditioning market. This recognition has led to mass production of the new model line and has sent Copeland into an era of sound sensitivity never experienced before.

The QR Copelaweld model shown in this book is produced by the Copeland Corporation, the world leader in manufacturing of welded, semi-hermetic, and scroll motor compressors for the air conditioning, heat pump, and refrigeration markets. Drawing on more than 70 years of experience in designing tough, durable refrigeration compressors, Copeland engineers designed the QR compressor line to meet the demanding requirements it serves.

The capacity range of the QR compressor is 7.5 to 12 horsepower (5.6 to 9 KW). All models have four cylinders and a double scotch yoke assembly in place of the normal piston rod assembly. The pistons, yokes, and slide blocks are made of special alloyed aluminum and the piston rings are cast iron. The pistons are housed in the rugged compressor body which uses precision bearings and a steel forged crankshaft well suited for high speed operation.

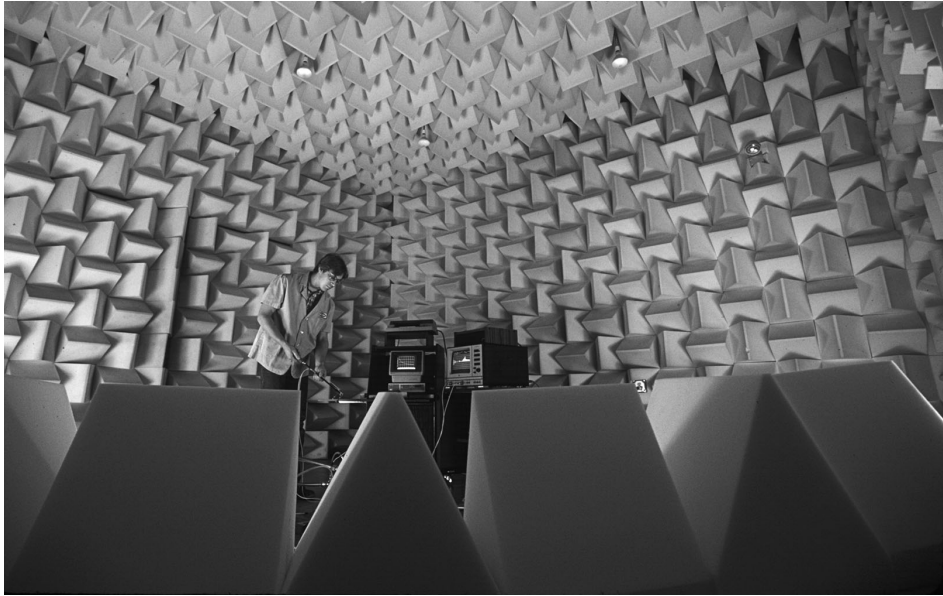
The five basic QR models are available with either stub tube or threaded rotalock external connections. Motors used in these compressors are three phase suction cooled. Effective internal line break motor protection is used in most models. An external solid state protection module, coupled with internal temperature sensors, is used on one special voltage QR15 model. The compressor is internally lubricated with a low foaming white mineral oil and external wrap-around crankcase heaters are standard on all models.

Model selections, electrical choices and operating conditions can be found in the pages that follow. We hope that the color coded 50 versus 60 hertz information, new bill of material listings, and expanded tabular performance data better assist you with your final product selection.

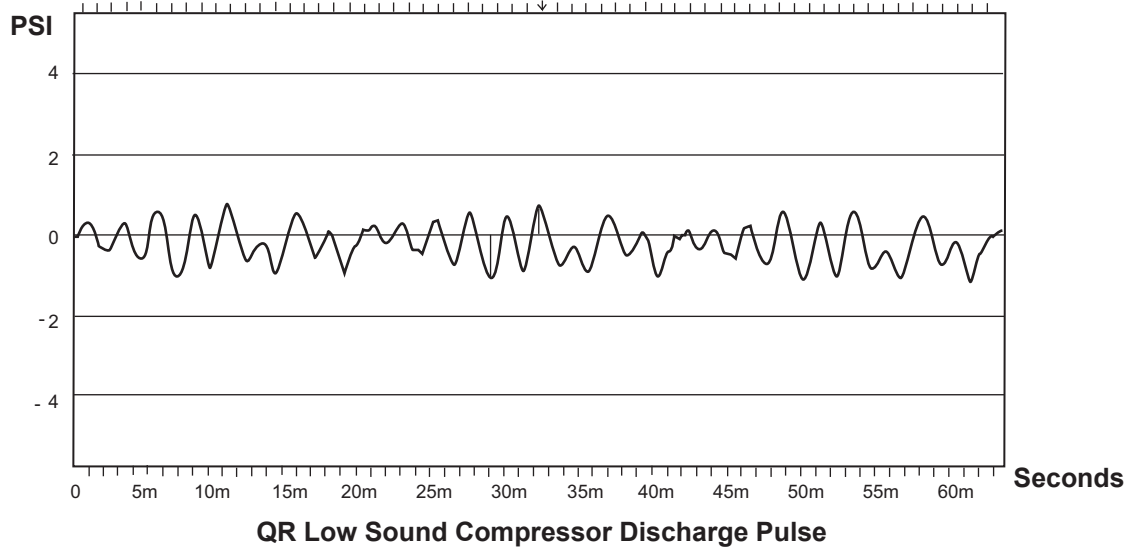
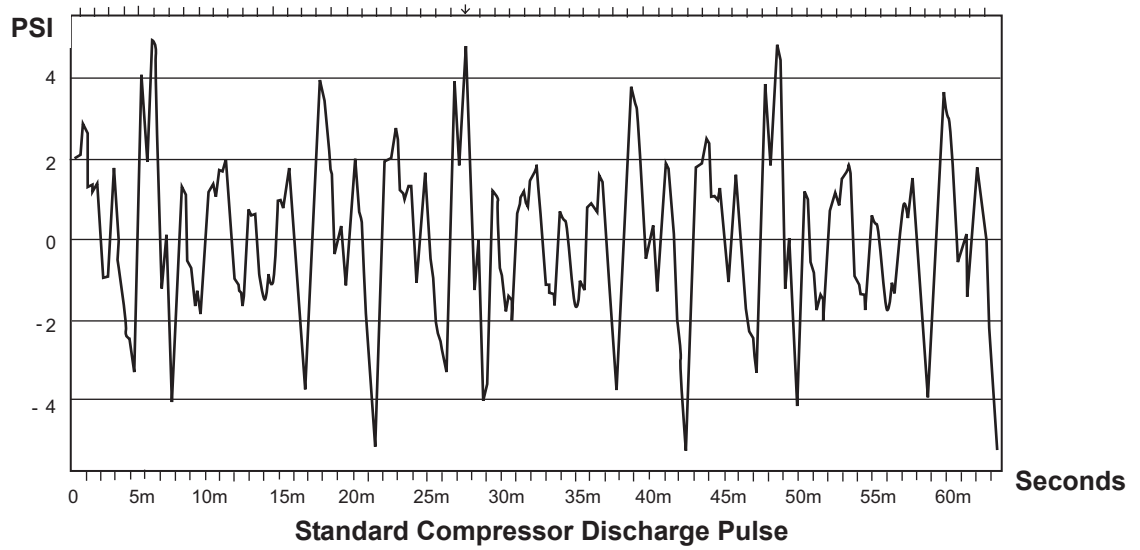
We at Copeland International are committed to supplying the best products and customer support since we cannot be successful unless you are.

## CONTENTS

	Page
Product Description . . . . .	1
Discharge Pulse Comparison . . . . .	2
Features . . . . .	3
Low Sound Story . . . . .	3
Performance Nominals -50 Hertz . . . . .	4
Performance Nominals -60 Hertz . . . . .	5
Mechanical Specifications . . . . .	6
Electrical Specifications. . . . .	6
Bill of Material Provisions . . . . .	7
Accessory Information . . . . .	7
Bills of Material . . . . .	8 to 11
Service Valves . . . . .	12
Dimensional Drawings . . . . .	13 to 16
Wiring Diagrams . . . . .	17, 18
Tabular Performance Data . . . . .	19 to 32
Application Range and Notes . . . . .	33
Compressor Specification . . . . .	34
Conversion Chart . . . . .	34
Packaging and Shipping Information . . . . .	35
Nomenclature . . . . .	36



The world is demanding quieter air conditioning equipment.  
Copeland is committed to meet this demand.



## FEATURES

- Low Discharge Pulse Levels
- Lower Airborne Sound Transmission
- Wide Selection Range
- 50 Hertz 68200 to 119100 BTUH  
17200 to 30000 KCALH  
20000 to 34900 WATTS
- 60 Hertz 85300 to 142000 BTUH  
21500 to 35800 KCALH  
25000 to 41600 WATTS
- Wide Voltage Selection
- Wide Operating Range
- Internal Suspension
- Semi-Directional Gas Flow for Even Motor Cooling
- Low Foaming Mineral Base Lubricant
- Oil Level Test Valve
- Full Maximum Load Rundown Capability
- Internal Inherent Line Break Motor Protection on TFC, TFD, TFE Models
- Solid State Motor Protection on TSD Model
- Crankcase Heater on All Models
- Rotalock Connections or Stub Tubes
- Optional Oil Sight Glass
- Convenient Arrangement of Fittings and Terminal Box
- Nomenclature Reflects Nominal Capacity

## QR LOW SOUND STORY

Copeland responds to your needs. After surveying commercial air conditioning customers' needs and visiting field installations, a Copeland engineering strategic task force set out with a focus on one goal - "Design a low sound compressor for the commercial air conditioning market."

Working closely with Copeland's sound laboratory staff and using its vast acoustic diagnosis equipment, the needed breakthrough took place. The task force prescribed a new quieter compressor for the 7.5 to 12 ton air conditioning market.

The new Copelaweld QR compressor is quietest in its size. Compared to equivalent sized Copeland and competitive models, the sound reduction statistics are as follows:

Discharge pulse which causes condenser noise. "QR reduces pulse by as much as 80%"

Airborne sound transmitted through the shell. "QR reduces sound by as much as 8 dBA"

These statistics show that the QR can make a significant sound reduction in your air conditioning equipment. In one case the condenser fan became the predominant sound once the QR replaced the previously existing compressor model. We hope that the QR compressor is the right low sound compressor for you.

As the world is demanding quieter air conditioning equipment, Copeland is committed to meet this demand.

**50 HERTZ**

**PERFORMANCE NOMINALS**

**R22**

THREE PHASE					220-3-50 380-3-50 500-3-50 TEST VOLTAGE				
MODEL	RATING CONDITION	CAPACITY			MOTOR WATTS	AMPERES*	ENERGY EFFICIENCY RATING		
		BTU HOUR	KCAL HOUR	WATTS			BTUH MOTOR WATTS	KCALH MOTOR WATTS	WATTS MOTOR WATTS
QR85K1-TFC/D/E	A	68700	17300	20100	6870	21.4/12.4/9.4	10.0	2.5	2.9
	B	68200	17200	20000	6880	21.4/12.4/9.4	9.9	2.5	2.9
	C	91400	23000	26800	5790	18.7/10.8/8.2	15.8	4.0	4.6
QR90K1-TFC/D/E	A	74700	18800	21900	7560	23.0/13.3/10.1	9.9	2.5	2.9
	B	74100	18700	21700	7580	23.0/13.3/10.1	9.8	2.5	2.9
	C	99600	25100	29200	6370	20.0/11.6/8.8	15.6	3.9	4.6
QR11M1-TFC/D/E	A	84500	21300	24800	8720	26.6/15.4/11.7	9.7	2.4	2.8
	B	83800	21100	24600	8740	26.6/15.4/11.7	9.6	2.4	2.8
	C	112900	28500	33100	7350	23.3/13.5/10.3	15.4	3.9	4.5
QR12M1-TFC/D/E	A	96800	24400	28400	10100	29.9/17.3/13.1	9.6	2.4	2.8
	B	96000	24200	28100	10120	29.9/17.3/13.1	9.5	2.4	2.8
	C	129700	32700	38000	8540	26.3/15.2/11.6	15.2	3.8	4.4
QR12ME-TFD	A	100800	25400	29500	10180	-/19.5/-	9.9	2.5	2.9
	B	100000	25200	29300	10200	-/19.5/-	9.8	2.5	2.9
	C	130000	32800	38100	8630	-/17.5/-	15.1	3.8	4.4
QR15M1-TFC/D	A	120100	30300	35200	12880	38.3/22.2/-	9.3	2.4	2.7
	B	119100	30000	34900	12910	38.3/22.2/-	9.2	2.3	2.7
	C	152800	38500	44800	10840	33.0/19.1/-	14.1	3.6	4.1
QR15M2-TSD	A	120100	30300	35200	12880	-/22.2/-	9.3	2.4	2.7
	B	119100	30000	34900	12910	-/22.2/-	9.2	2.3	2.7
	C	152800	38500	44800	10840	-/19.1/-	14.1	3.6	4.1

\* Ampere values shown are at 220 volts/380 volts/500 volts.

RATING CONDITION	RATING STANDARD	EVAPORATING TEMPERATURE °F/°C	CONDENSING TEMPERATURE °F/°C	AMBIENT TEMPERATURE °F/°C	LIQUID TEMPERATURE °F/°C	RETURN GAS TEMPERATURE °F/°C
A	ASRE/T	45	130	95	115	95
		7.2	54.4	35.0	46.1	35.0
B	ARI	45	130	95	115	65
		7.2	54.4	35.0	46.1	18.3
C	CHEER ★	45	100	95	85	65
		7.2	37.8	35.0	29.4	18.3

See expanded performance data on green pages 19 to 31.

See full operating range on page 33.

Production compressors to meet above nominal performance values within ± 5%.

**60 HERTZ**

**PERFORMANCE NOMINALS**

**R22**

THREE PHASE					230-3-60 460-3-60 575-3-60		TEST VOLTAGE		
MODEL	RATING CONDITION	CAPACITY			MOTOR WATTS	AMPERES*	ENERGY EFFICIENCY RATING		
		BTU HOUR	KCAL HOUR	WATTS			BTUH MOTOR WATTS	KCALH MOTOR WATTS	WATTS MOTOR WATTS
QR85K1-TFC/D/E	A	86000	21700	25200	8890	26.6/13.3/10.6	9.7	2.4	2.8
	B	85300	21500	25000	8910	26.6/13.3/10.6	9.6	2.4	2.8
	C	112700	28400	33000	7530	23.2/11.6/9.3	15.0	3.8	4.4
QR90K1-TFC/D/E	A	92000	23200	27000	9580	27.8/13.9/11.1	9.6	2.4	2.8
	B	91300	23000	26800	9600	27.8/13.9/11.1	9.5	2.4	2.8
	C	119900	30200	35100	8120	24.4/12.2/9.8	14.8	3.7	4.3
QR11M1-TFC/D/E	A	102900	25900	30100	10690	31.2/15.6/12.5	9.6	2.4	2.8
	B	102100	25700	29900	10710	31.2/15.6/12.5	9.5	2.4	2.8
	C	134300	33800	39300	9070	27.3/13.7/10.9	14.8	3.7	4.3
QR12M1-TFC/D/E	A	116000	29200	34000	12660	36.4/18.2/14.6	9.2	2.3	2.7
	B	115100	29000	33700	12690	36.4/18.2/14.6	9.1	2.3	2.7
	C	151400	38200	44400	10710	31.9/16.0/12.8	14.1	3.6	4.1
QR12ME-TFD	A	123000	31000	36000	12770	-/20.3/-	9.6	2.4	2.8
	B	122000	30700	35700	12800	-/20.3/-	9.5	2.4	2.8
	C	155000	39100	45400	11300	-/18.7/-	13.7	3.5	4.0
QR15M1-TFC/D	A	143100	36100	41900	15790	45.4/22.7/-	9.1	2.3	2.7
	B	142000	35800	41600	15820	45.4/22.7/-	9.0	2.3	2.6
	C	177900	44800	52100	13870	40.5/20.3/-	12.8	3.2	3.8
QR15M2-TSD	A	143100	36100	41900	15790	-/22.7/-	9.1	2.3	2.7
	B	142000	35800	41600	15820	-/22.7/-	9.0	2.3	2.6
	C	177900	44800	52100	13870	-/20.3/-	12.8	3.2	3.8

\* Ampere values shown are at 230 volts/460 volts/575 volts.

RATING CONDITION	RATING STANDARD	EVAPORATING TEMPERATURE °F/°C	CONDENSING TEMPERATURE °F/°C	AMBIENT TEMPERATURE °F/°C	LIQUID TEMPERATURE °F/°C	RETURN GAS TEMPERATURE °F/°C
A	ASRE/T	45	130	95	115	95
		7.2	54.4	35.0	46.1	35.0
B	ARI	45	130	95	115	65
		7.2	54.4	35.0	46.1	18.3
C	CHEER ★	45	100	95	85	65
		7.2	37.8	35.0	29.4	18.3

See expanded performance data on red pages 20 to 32.

See full operating range on page 33.

Production compressors to meet above nominal performance values within ± 5%.

**MECHANICAL SPECIFICATIONS**

MODEL	NOMINAL KW HP	IN <sup>3</sup> CM <sup>3</sup> CUBIC INCH PER REVOLUTION CUBIC CENTIMETERS PER REVOLUTION	CFH M <sup>3</sup> /HOUR CUBIC FEET PER HOUR CUBIC METERS PER HOUR		COMPRESSOR NET WEIGHT POUNDS KILOGRAMS
			50 HZ 2900 RPM	60 HZ 3500 RPM	
QR85K1-TFC/D/E	7.0	10.227	1030	1243	149
	5.2	167.58	29.16	35.19	67.6
QR90K1-TFC/D/E	7.5	10.829	1090	1316	149
	5.6	177.44	30.86	37.26	67.6
QR11M1-TFC/D/E	9.0	12.032	1211	1462	153
	6.7	197.16	34.28	41.39	69.4
QR12M1-TFC/D/E	10.0	13.536	1363	1645	153
	7.5	221.80	38.59	46.57	69.4
QR12ME-TFD	10.0	13.536	1363	1645	156
	7.5	221.80	38.59	46.57	70.8
QR15M1-TFC/D	12.0	16.243	1635	1974	160
	9.0	266.16	46.29	55.88	72.6
QR15M2-TSD	12.0	16.243	1635	1974	164
	9.0	266.16	46.29	55.88	74.4

**ELECTRICAL SPECIFICATIONS**

VOLTAGE CODE	TFC		TFD		TSD		TFE	
NOMINAL VOLTAGE-PHASE-HERTZ	200/240-3-50 208/230-3-60		380/420-3-50 460-3-60*		380/420-3-50 380/460-3-60		500-3-50 575-3-60	
VOLTAGE RANGE 50 HERTZ 60 HERTZ	180-264 187-253		342-462 414-506		342-462 342-506		450-550 518-633	
MODEL	RATED LOAD AMPS RLA	LOCKED ROTOR AMPS LRA	RATED LOAD AMPS RLA	LOCKED ROTOR AMPS LRA	RATED LOAD AMPS RLA	LOCKED ROTOR AMPS LRA	RATED LOAD AMPS RLA	LOCKED ROTOR AMPS LRA
QR85K1	30.1	183.0	15.8	91.1			12.4	73.3
QR90K1	30.1	183.0	15.8	91.1			12.4	73.3
QR11M1	38.5	193.0	19.3	96.5			14.4	77.2
QR12M1	42.1	207.0	21.1	104.0			16.9	82.8
QR12ME			22.1	143.0				
QR15M1	42.0	267.0	27.6	135.0				
QR15M2					27.6	135.0		

Rated load and locked rotor amps shown apply at both 50 and 60 hertz.

\*QR85K1, QR90K1, QR11M1 and QR12ME are approved for 380/460-3-60 nominal voltage.



<b>BILL OF MATERIAL PROVISIONS</b>	<b>ACCESSORY INFORMATION</b>				
<p>Copeland is pleased to offer the bills of material shown on the following pages that present a complete and versatile choice to compressor selection. In addition to the marked features, each compressor will include the following:</p> <ul style="list-style-type: none"> <li>• Terminal box and cover complete with wiring diagram.</li> <li>• Terminal connector block with screws. Mounting feet welded to the compressor. Four mounting holes provide a 8.656 x 8.656 inch (219.9 x 219.9 mm) mounting pattern.</li> <li>• White oil (highly refined low foaming mineral oil with lubricity additives).             <ul style="list-style-type: none"> <li>• Initial oil charge 110 ounces (3.25 liters).</li> <li>• For service use a 106 ounce (3.13 liter) refill oil charge, after the compressor has been drained.</li> </ul> </li> <li>• Oil level test valve used to remove excess oil from the compressor.</li> <li>• See outline drawing pages 13 through 16 for stub tube and rotalock connection sizes.</li> </ul>	<ul style="list-style-type: none"> <li>• The efficient 70 watt wrap around resistance type crankcase heater, provided with the compressor, is one of the following part numbers and voltages depending on the compressor bill of material number. If a 115 or 575 volt heater is required, please contact Copeland International for compressor bill of material number.             <table style="margin-left: 40px; border: none;"> <tr> <td style="padding-right: 20px;">518-0019-00</td> <td>230 volts</td> </tr> <tr> <td>518-0019-02</td> <td>460 volts</td> </tr> </table> </li> <li>• For replacement purposes the mounting part kits (set of four for one compressor) are as follows:             <ul style="list-style-type: none"> <li>Rubber grommets 527-0156-00</li> <li>Springs 527-0137-00</li> </ul> <p style="margin-left: 40px;">Note: Spring mounting parts add 1.00 inch (25.4 mm) to the compressor height when compared to rubber grommet mounting parts.</p> </li> <li>• The grounding hole, when provided as part of the bill of material is located in the side of the compressor terminal box.</li> <li>• Service valves can be acquired as part of the compressor bill of material or ordered separately. See page 12 for part number selection.</li> </ul>	518-0019-00	230 volts	518-0019-02	460 volts
518-0019-00	230 volts				
518-0019-02	460 volts				



# QR LOW SOUND BILLS OF INTERNATIONAL

The bill of material includes features as shown by the X.  
These bill of material compressors can be single or multipacked.

MODEL	BILL OF MATERIAL NUMBER	STUB TUBE CONNECTIONS	ROTALOCK CONNECTIONS WITH GAGE PORTS AND GAGE PORT BRASS CAPS	SERVICE VALVE KIT 998-5100-24	SERVICE VALVE KIT 998-5100-25
QR85 AND QR90	501	X			
	505		X		
	510		X	X	
	511		X		X
	520	X			
	521		X		
	522		X	X	
	530	X			
	531		X		
	550	X			
	551		X		
	552		X	X	
	561	X			
	565		X		
QR11	501	X			
	505		X		
	510		X		X
	511		X	X	
	520	X			
	521		X		
	522		X		X
	530	X			
	531		X		
	550	X			
	551		X		
	552		X		X
	561	X			
	565		X		

# COMPRESSORS MATERIAL FOR THE MARKET



	CRANKCASE HEATER 230 VOLT	CRANKCASE HEATER 460 VOLT	OIL SIGHT GLASS	GROUNDING HOLE, SCREW, NUT, AND WASHER	RUBBER GROMMET MOUNTING PARTS	SPRING MOUNTING PARTS
	X				X	
	X				X	
	X				X	
	X				X	
	X			X	X	
	X			X	X	
	X			X	X	
		X			X	
		X			X	
	X		X	X	X	
	X		X	X	X	
	X		X	X	X	
	X					X
	X					X
	X				X	
	X				X	
	X				X	
	X				X	
	X			X	X	
	X			X	X	
	X			X	X	
		X			X	
		X			X	
	X		X	X	X	
	X		X	X	X	
	X		X	X	X	
	X					X
	X					X



# QR LOW SOUND BILLS OF INTERNATIONAL

The bill of material includes features as shown by the X.  
These bill of material compressors can be single or multipacked.

MODEL	ELECTRICAL	BILL OF MATERIAL NUMBER	STUB TUBE CONNECTIONS	ROTALOCK CONNECTIONS WITH GAGE PORTS AND GAGE PORTS BRASS CAPS	SERVICE VALVE KIT 998-5100-27	CRANKCASE HEATER 230 VOLT	
QR12	ALL	501	X			X	
		505		X		X	
		510		X	X	X	
		520	X			X	
		521		X		X	
		522		X	X	X	
		530	X				
		531		X			
		550	X			X	
		551		X		X	
		552		X	X	X	
		561	X			X	
		565		X		X	
QR15	TFC AND TFD	501	X			X	
		505		X		X	
		510		X	X	X	
		520	X			X	
		521		X		X	
		522		X	X	X	
		530	X				
		531		X			
		550	X			X	
		551		X		X	
		552		X	X	X	
		561	X			X	
	565		X		X		
	TSD		501	X			X
			505		X		X
			510		X	X	X
			520	X			X
			521		X		X
			522		X	X	X
			530	X			
			531		X		
			550	X			X
			551		X		X
			552		X	X	X
561			X			X	
565		X		X			

# COMPRESSORS MATERIAL FOR THE MARKET



	CRANKCASE HEATER 460 VOLT	OIL SIGHT GLASS	GROUNDING HOLE, SCREW, NUT, AND WASHER	RUBBER GROMMET MOUNTING PARTS	SPRING MOUNTING PARTS	INTERNAL LINE BREAK PROTECTOR	EXTERNAL SOLID STATE MOTOR PROTECTION MODULE 230 VOLT
				X		X	
				X		X	
				X		X	
			X	X		X	
			X	X		X	
			X	X		X	
	X			X		X	
	X			X		X	
		X	X	X		X	
		X	X	X		X	
		X	X	X		X	
					X	X	
					X	X	
				X		X	
				X		X	
			X	X		X	
			X	X		X	
			X	X		X	
	X			X		X	
	X			X		X	
		X	X	X		X	
		X	X	X		X	
		X	X	X		X	
					X	X	
					X	X	
				X			X
				X			X
				X			X
			X	X			X
			X	X			X
			X	X			X
					X		X
					X		X

**ROTALOCK SERVICE VALVES**

If your QR rotalock connection compressor bill of material does not include valves or a bill of material does not come with the valves you prefer, please order the valves separately by choosing them from the tables below.

Valve Style

Table A illustrates the style for each valve listed in Tables B and C. The drawings in this table will show gage port quantity and location. The gage ports are 1/4 inch flare fittings and include brass caps.

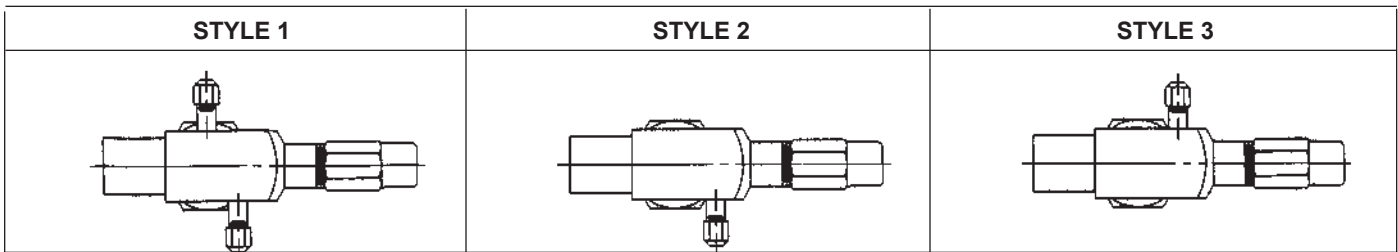
Valve Kits

The kits listed in Table B below, include rotalock suction and discharge service valves and seals for the QR models shown. Use of these with your QR rolock connection compressors will simplify your order and inventory process.

Special Valves

If the kits are not ordered, special valves and seals should be selected from Table C below to fit the rotalock connections supplied on the QR compressor. A suggestion is to select valves having the same line sizes as the connections supplied on compressors with stub tubes. Be sure to match rotalock connection sizes.

**TABLE A**



**TABLE B**

KIT PART NUMBER	SUCTION VALVE			DISCHARGE VALVE			ROTALOCK CONNECTION SIZE IN INCHES AND SEAL PART NUMBER		SUGGESTED USAGE
	SIZE IN INCHES	TYPE AND VALVE PART NUMBER	STYLE	SIZE IN INCHES	TYPE AND VALVE PART NUMBER	STYLE	SUCTION	DISCHARGE	
998-5100-24	1 1/8	Solder 510-0330-04	3	3/4	Solder 510-0080-04	2	1 3/4 - 12 020-0028-03	1 1/4 - 12 020-0028-02	QR85, QR90, QR11
998-5100-25	1 3/8	Solder 510-0330-03	3	3/4	Solder 510-0080-04	2			QR85, QR90, QR11
998-5100-27	1 3/8	Solder 510-0330-03	3	7/8	Solder 510-0080-07	2			QR12, QR15

**TABLE C**

ROTALOCK CONNECTION SIZE IN INCHES	VALVE PART NUMBER	SIZE IN INCHES	TYPE	STYLE	SEAL PART NUMBER (ONE PER VALVE REQUIRED)
1 1/4 - 12 Discharge	510-0105-03	5/8	Solder	3	020-0028-02
	510-0080-04	3/4	Solder	2	
	510-0080-07	7/8	Solder	2	
	510-0105-00	7/8	Solder	3	
	510-0133-04	7/8	Solder	1	
	510-0080-06	1 1/8	Solder	2	
1 3/4 - 12 Suction	510-0133-05	1 1/8	Solder	1	020-0028-03
	510-0330-05	7/8	Solder	3	
	510-0330-04	1 1/8	Solder	3	
	510-0330-03	1 3/8	Solder	3	

**NOTES:**

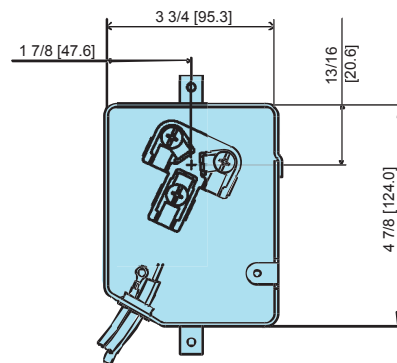
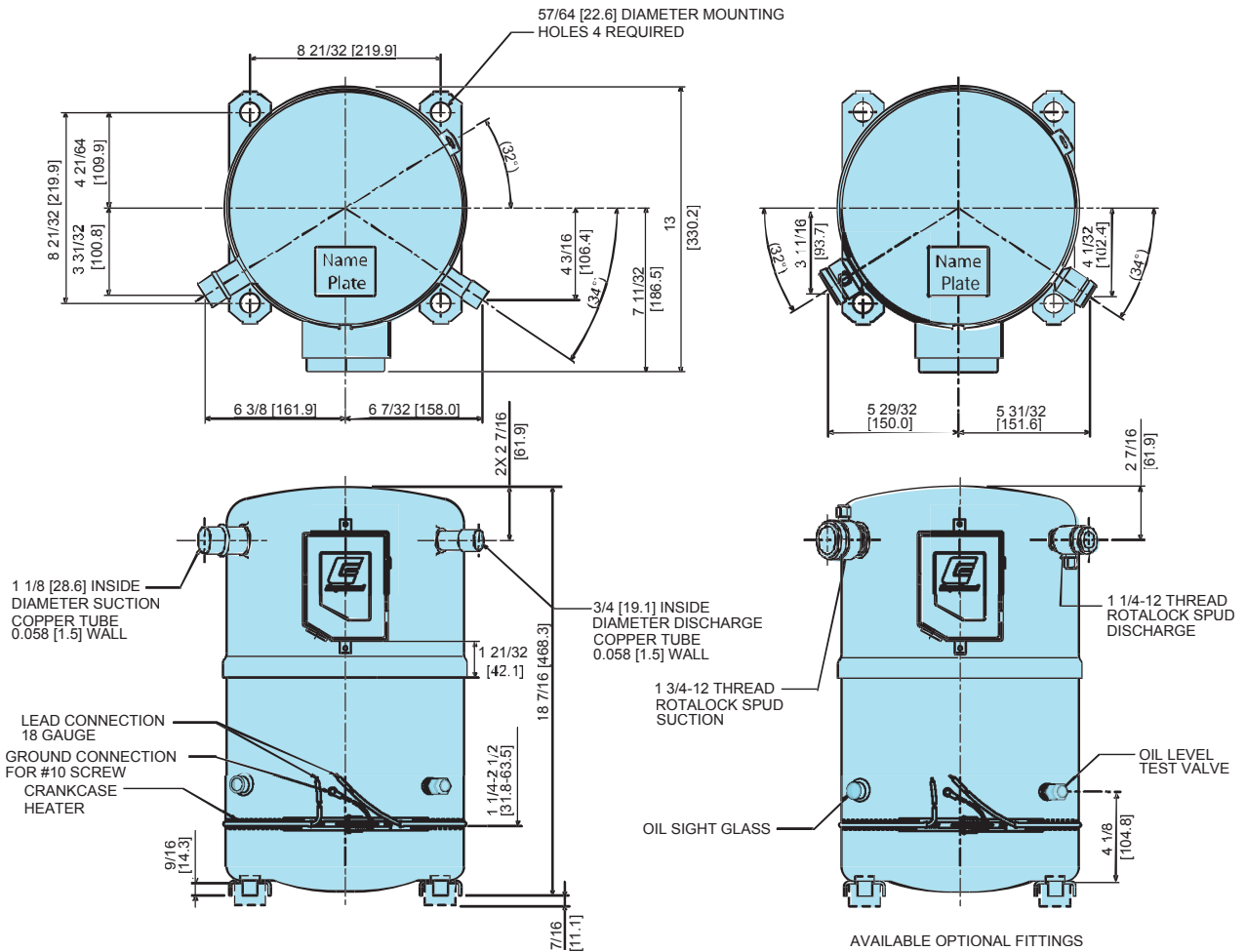
1. ALL TOLERANCES ± 0.062 [1.57] UNLESS OTHERWISE SPECIFIED.
2. STUB TUBE, ROTALOCK, AND OIL SIGHT GLASS FITTINGS ARE SHOWN. BILLS OF MATERIAL PAGES 8 THROUGH 11 SHOW B/M NUMBERS FOR EACH TYPE OF FITTING.
3. LINEAR MEASUREMENTS IN [ ] ARE MILLIMETER CONVERSIONS.

THIRD ANGLE PROJECTION



**DIMENSIONAL INFORMATION**

MODEL NUMBER	INTERNAL FREE VOLUME CM <sup>3</sup> [IN <sup>3</sup> ] EXCLUDING OIL CHARGE
QR85K1-TFC	939 [15390]
QR85K1-TFD	939 [15390]
QR85K1-TFE	939 [15390]
QR90K1-TFC	939 [15390]
QR90K1-TFD	939 [15390]
QR90K1-TFE	939 [15390]



DUE TO ACCUMULATED ASSEMBLY TOLERANCES THE LISTED COMPONENTS MAY VARY FROM THE MOUNTING HOLES AS TABULATED.

DISCHARGE FITTING	± 0.125	[3.18]
SUCTION FITTING	± 0.187	[4.75]
PROCESS TUBE	± 0.187	[4.75]

TYPICAL TERMINAL BOX LAYOUT

FOR THE INTERNATIONAL MARKET  
**QR85K1, QR90K1**  
 HEAT PUMP AND  
 AIR CONDITIONING MODELS

**NOTES:**

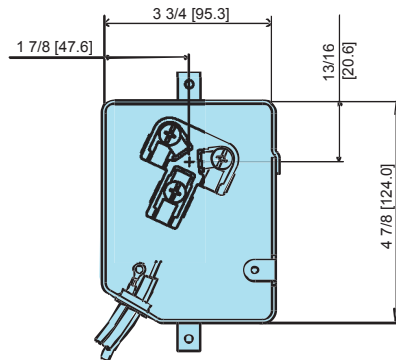
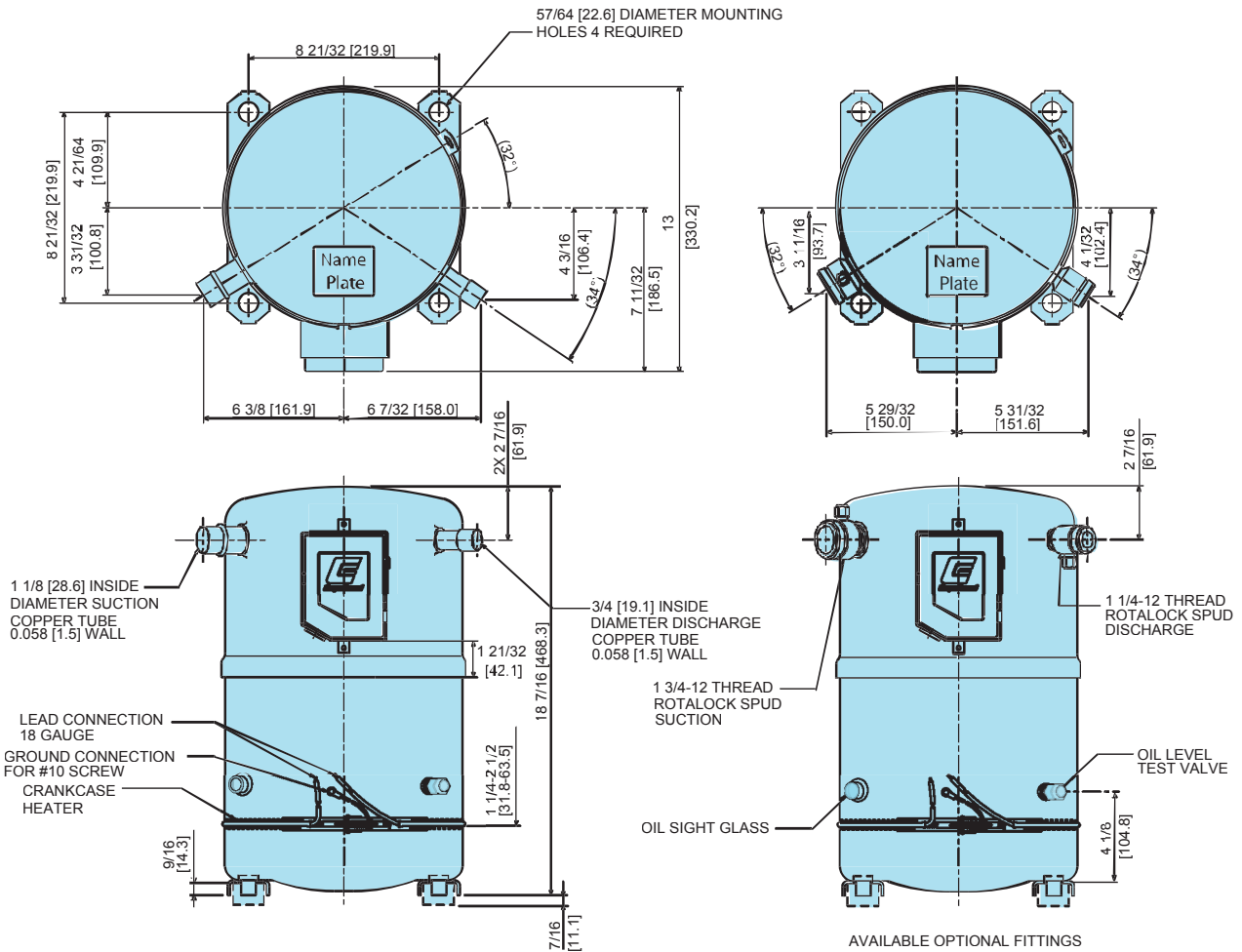
1. ALL TOLERANCES ± 0.062 [1.57] UNLESS OTHERWISE SPECIFIED.
2. STUB TUBE, ROTALOCK, AND OIL SIGHT GLASS FITTINGS ARE SHOWN. BILLS OF MATERIAL PAGES 8 THROUGH 11 SHOW B/M NUMBERS FOR EACH TYPE OF FITTING.
3. LINEAR MEASUREMENTS IN [ ] ARE MILLIMETER CONVERSIONS.

THIRD ANGLE PROJECTION



**DIMENSIONAL INFORMATION**

MODEL NUMBER	INTERNAL FREE VOLUME CM <sup>3</sup> [IN <sup>3</sup> ] EXCLUDING OIL CHARGE
QR11M1-TFC	939 [15390]
QR11M1-TFD	939 [15390]
QR11M1-TFE	939 [15390]
QR12M1-TFC	939 [15390]
QR12M1-TFD	939 [15390]
QR12M1-TFE	939 [15390]
QR12ME-TFD	939 [15390]



DUE TO ACCUMULATED ASSEMBLY TOLERANCES THE LISTED COMPONENTS MAY VARY FROM THE MOUNTING HOLES AS TABULATED.

DISCHARGE FITTING	± 0.125	[3.18]
SUCTION FITTING	± 0.187	[4.75]
PROCESS TUBE	± 0.187	[4.75]

FOR THE INTERNATIONAL MARKET

**QR11, QR12**  
HEAT PUMP AND  
AIR CONDITIONING MODELS



**NOTES:**

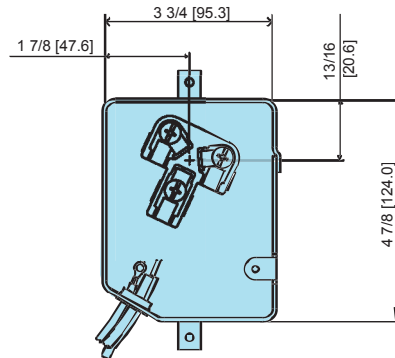
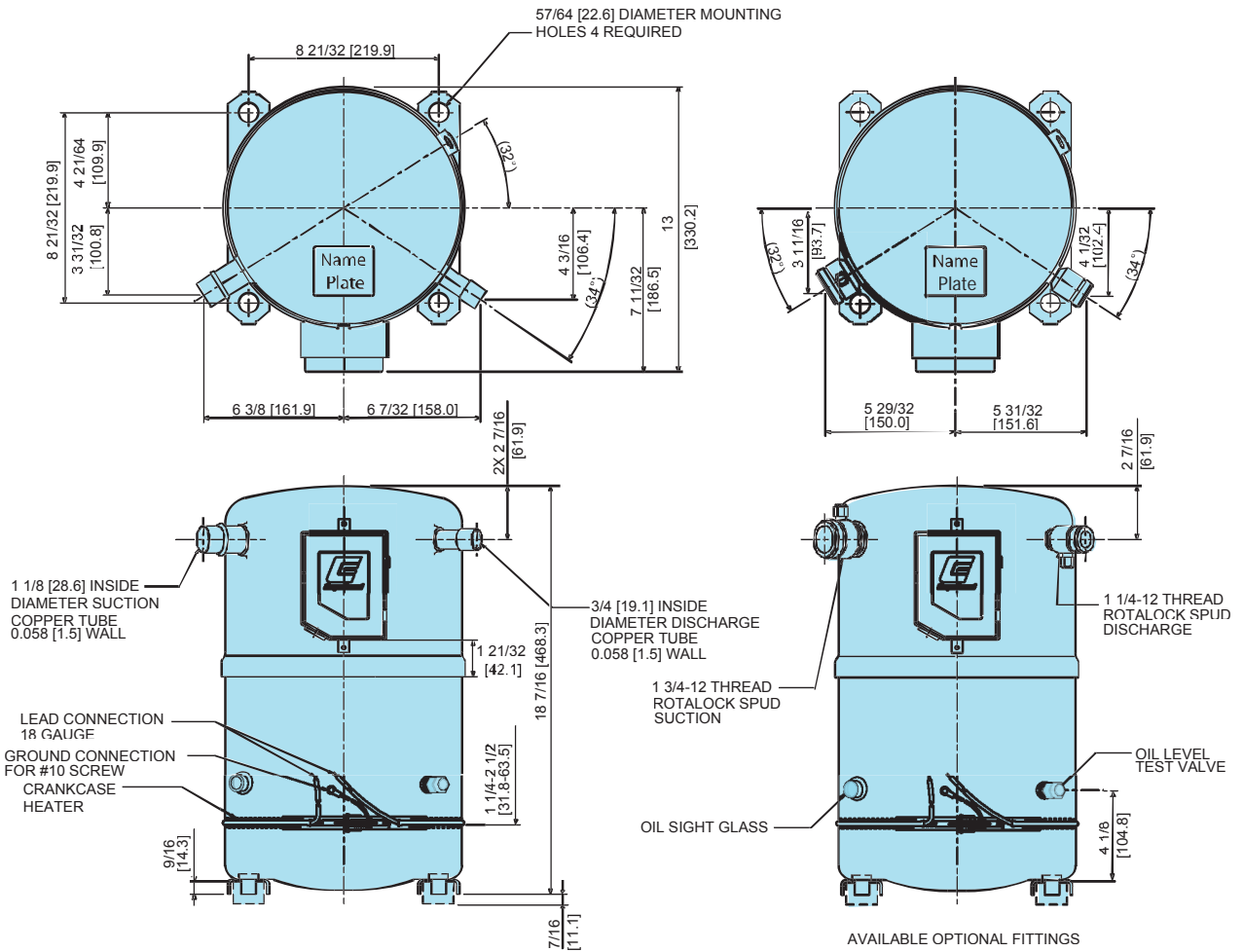
1. ALL TOLERANCES ± 0.062 [1.57] UNLESS OTHERWISE SPECIFIED.
2. STUB TUBE, ROTALOCK, AND OIL SIGHT GLASS FITTINGS ARE SHOWN. BILLS OF MATERIAL PAGES 8 THROUGH 11 SHOW B/M NUMBERS FOR EACH TYPE OF FITTING.
3. LINEAR MEASUREMENTS IN [ ] ARE MILLIMETER CONVERSIONS.

THIRD ANGLE PROJECTION



**DIMENSIONAL INFORMATION**

MODEL NUMBER	INTERNAL FREE VOLUME CM <sup>3</sup> [IN <sup>3</sup> ] EXCLUDING OIL CHARGE
QR15M1-TFC	939 [15390]
QR15M1-TFD	939 [15390]



TYPICAL TERMINAL BOX LAYOUT


DUE TO ACCUMULATED ASSEMBLY TOLERANCES THE LISTED COMPONENTS MAY VARY FROM THE MOUNTING HOLES AS TABULATED.

DISCHARGE FITTING	± 0.125	[3.18]
SUCTION FITTING	± 0.187	[4.75]
PROCESS TUBE	± 0.187	[4.75]

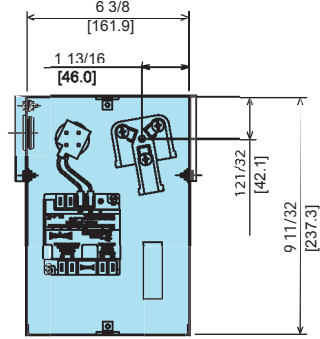
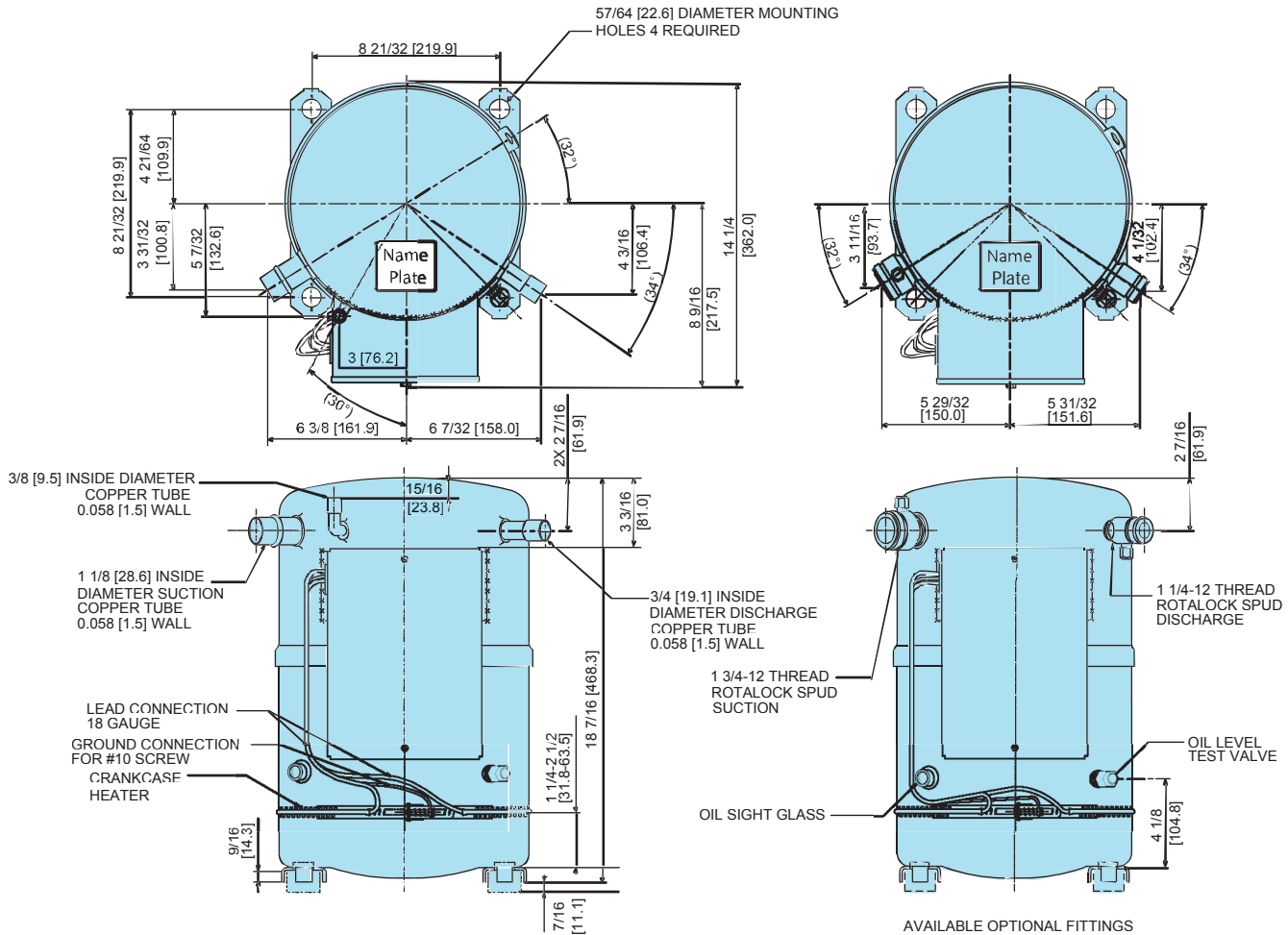
FOR THE INTERNATIONAL MARKET

**QR15M1**  
HEAT PUMP AND  
AIR CONDITIONING MODELS

**DIMENSIONAL INFORMATION**

- NOTES:**
1. ALL TOLERANCES ± 0.062 [1.57] UNLESS OTHERWISE SPECIFIED.
  2. STUB TUBE, ROTALOCK, AND OIL SIGHT GLASS FITTINGS ARE SHOWN. BILLS OF MATERIAL PAGES 8 THROUGH 11 SHOW B/M NUMBERS FOR EACH TYPE OF FITTING.
  3. LINEAR MEASUREMENTS IN [ ] ARE MILLIMETER CONVERSIONS.
- THIRD ANGLE PROJECTION
- 

MODEL NUMBER	INTERNAL FREE VOLUME CM <sup>3</sup> [IN <sup>3</sup> ] EXCLUDING OIL CHARGE
QR15M2-TSD	939 [15390]



DUE TO ACCUMULATED ASSEMBLY TOLERANCES THE LISTED COMPONENTS MAY VARY FROM THE MOUNTING HOLES AS TABULATED.

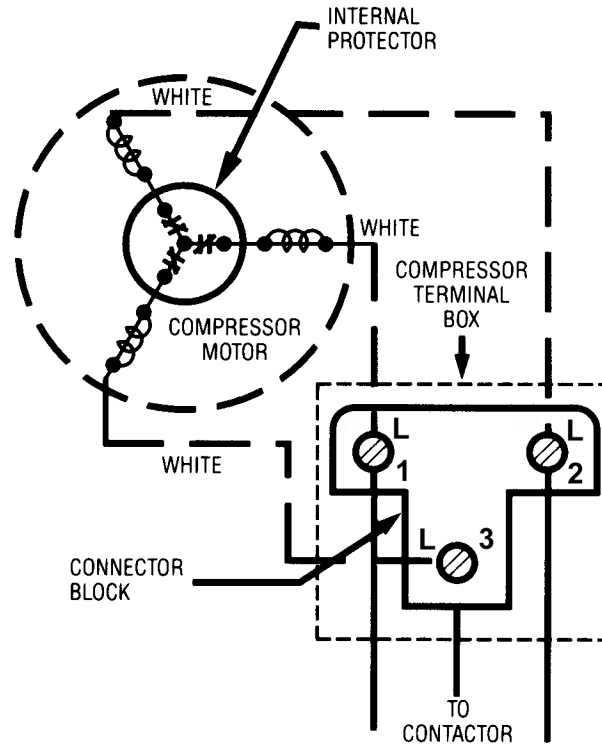
DISCHARGE FITTING	± 0.125	[3.18]
SUCTION FITTING	± 0.187	[4.75]
PROCESS TUBE	± 0.187	[4.75]

FOR THE INTERNATIONAL MARKET

**QR15M2-TSD**  
HEAT PUMP AND AIR  
CONDITIONING MODELS

COMPRESSOR WIRING DIAGRAM

QR-TFC/TFD/TFE  
INTERNAL INHERENT MOTOR PROTECTION SYSTEM



FAN(S) WHEN REQUIRED

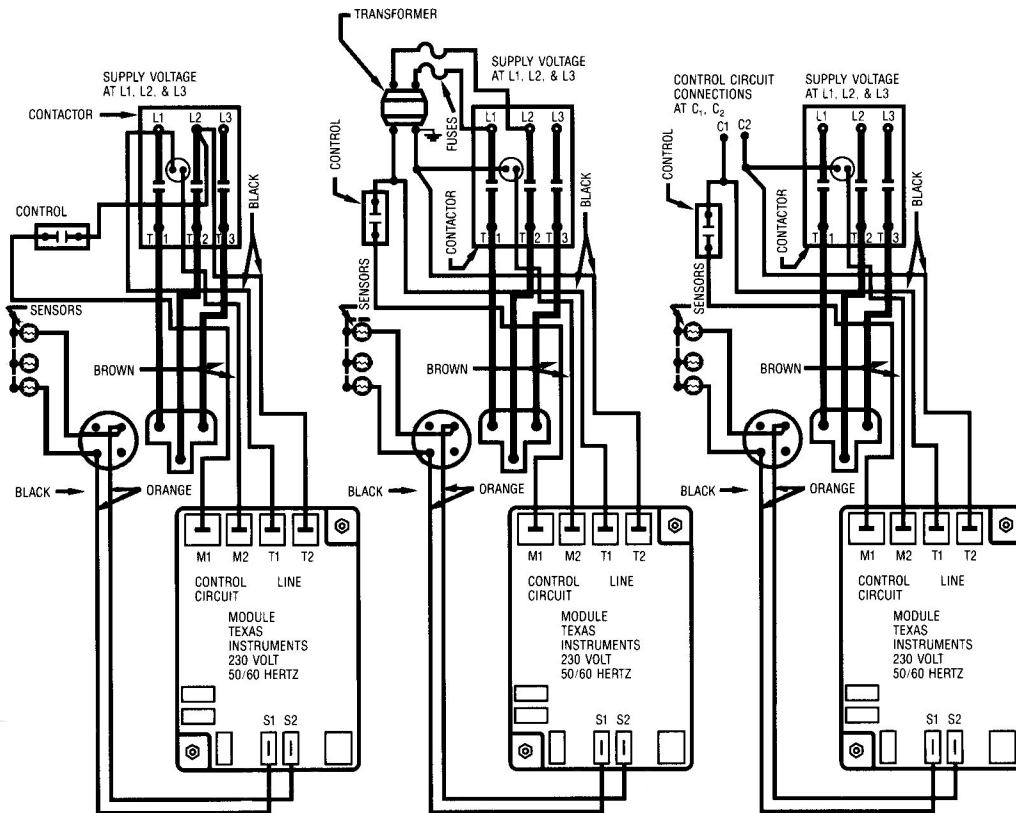
CONNECT LEADS TO TERMINALS OF DIFFERENT POLARITY ON LOAD SIDE OF CONTACTOR OR THROUGH A SUITABLE TRANSFORMER ON LOAD SIDE OF CONTACTOR.

CRANKCASE HEATER MUST BE FIELD CONNECTED, THROUGH PROPER FUSING, TO A SEPARATE VOLTAGE SOURCE.

USE THIS EQUIPMENT ON A GROUNDED SYSTEM ONLY.  
USE COPPER CONDUCTORS

COMPRESSOR WIRING DIAGRAM

QR-TSD  
SOLID STATE MOTOR PROTECTION SYSTEM



FOR USE WHEN  
 • SUPPLY VOLTAGE IS 230 VOLTS  
 • LINE VOLTAGE IS 230 VOLTS  
 • CONTROL CIRCUIT VOLTAGE IS 230 VOLTS  
 • MODULE VOLTAGE IS 230 VOLTS

FOR USE WHEN  
 • SUPPLY VOLTAGE IS 380, 420, 460, 500 OR 575 VOLTS  
 • LINE VOLTAGE IS 230 VOLTS USING A TRANSFORMER  
 • CONTROL CIRCUIT VOLTAGE IS 230 VOLTS USING A TRANSFORMER  
 • MODULE VOLTAGE IS 230 VOLTS

FOR USE WHEN  
 • SUPPLY VOLTAGE IS 380, 420, 460, 500, OR 575 VOLTS  
 • LINE VOLTAGE IS 230 VOLTS FROM A SEPARATE VOLTAGE SOURCE  
 • CONTROL CIRCUIT VOLTAGE IS 230 VOLTS FROM A SEPARATE VOLTAGE SOURCE  
 • MODULE VOLTAGE IS 230 VOLTS



FAN(S) WHEN REQUIRED

CONNECT LEADS TO TERMINALS OF DIFFERENT POLARITY ON LOAD SIDE OF CONTACTOR OR THROUGH A SUITABLE TRANSFORMER ON LOAD SIDE OF CONTACTOR.

CRANKCASE HEATER MUST BE FIELD CONNECTED, THROUGH PROPER FUSING, TO A SEPARATE VOLTAGE SOURCE.

USE THIS EQUIPMENT ON A GROUNDED SYSTEM ONLY.  
 USE COPPER CONDUCTORS.

WARNING-TO AVOID DAMAGE USE OHMMETER ONLY (6 VOLT MAXIMUM), TO CHECK SENSOR RESISTANCE. DO NOT SHORT ACROSS THE TERMINALS. RESISTANCE ACROSS EACH MOTOR SENSOR SHOULD BE APPROXIMATELY 500 TO 2400 OHMS WITH A MOTOR TEMPERATURE BELOW 140°F (60°C). SENSORS ARE TO BE DISCONNECTED FROM THE MODULE DURING TEST.

IN THE EVENT OF A PROTECTOR TRIP OR LOSS OF MODULE POWER, THE MODULE HAS A FOUR MINUTE TIME DELAY BEFORE IT WILL RESET.

<b>50 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
200/240-3-50 (TFC) Rated Voltage 220-3-50 (TFC) Test Voltage	380/420-3-50 (TFD) Rated Voltage 380-3-50 (TFD) Test Voltage	500-3-50 (TFE) Rated Voltage & Test Voltage

**QR85K1-TFC/TFD/TFE**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	21700	30000	42100	57600	76100	97200	108700	120600	133000
90 (32.2)	19700	26800	37600	51900	69100	89000	99800	111100	122800
100 (37.8)	18000	23800	33500	46500	62600	81200	91400	102100	113200
110 (43.3)		21200	29600	41500	56300	73800	83400	93400	104000
120 (48.9)			26000	36700	50400	66700	75700	85200	95100
130 (54.4)			22400	32000	44600	59800	68200	77100	86500
140 (60.0)				27400	38900	53000	60900	69200	78100
150 (65.6)				22800	33200	46200	53600	61400	69700

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	5470	7560	10600	14500	19200	24500	27400	30400	33500
90 (32.2)	4960	6750	9480	13100	17400	22400	25100	28000	30900
100 (37.8)	4540	6000	8440	11700	15800	20500	23000	25700	28500
110 (43.3)		5340	7460	10500	14200	18600	21000	23500	26200
120 (48.9)			6550	9250	12700	16800	19100	21500	24000
130 (54.4)			5640	8060	11200	15100	17200	19400	21800
140 (60.0)				6900	9800	13400	15300	17400	19700
150 (65.6)				5750	8370	11600	13500	15500	17600

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	6360	8790	12300	16900	22300	28500	31800	35300	39000
90 (32.2)	5770	7850	11000	15200	20200	26100	29200	32600	36000
100 (37.8)	5270	6970	9820	13600	18300	23800	26800	29900	33200
110 (43.3)		6210	8670	12200	16500	21600	24400	27400	30500
120 (48.9)			7620	10800	14800	19500	22200	25000	27900
130 (54.4)			6560	9380	13100	17500	20000	22600	25300
140 (60.0)				8030	11400	15500	17800	20300	22900
150 (65.6)				6680	9730	13500	15700	18000	20400

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	2950	3360	3790	4210	4570	4820	4890	4920	4900
90 (32.2)	3020	3460	3950	4430	4880	5230	5360	5450	5490
100 (37.8)	3050	3530	4070	4620	5150	5610	5790	5940	6050
110 (43.3)		3560	4150	4780	5390	5950	6190	6400	6580
120 (48.9)			4190	4890	5590	6250	6560	6830	7070
130 (54.4)			4180	4950	5750	6520	6880	7220	7530
140 (60.0)				4970	5860	6740	7160	7560	7940
150 (65.6)				4940	5920	6910	7390	7860	8300

Production compressors to meet above nominal performance values within ± 5%.

<b>60 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
208/230-3-60 (TFC) Rated Voltage 230-3-60 (TFC) Test Voltage	380/460-3-60 (TFD) Rated Voltage 460-3-60 (TFD) Test Voltage	575-3-60 (TFE) Rated Voltage & Test Voltage

**QR85K1-TFC/TFD/TFE**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	27500	40000	54400	71500	91700	115700	129200	144000	160000
90 (32.2)	23000	35500	49700	66200	85500	108400	121300	135300	150500
100 (37.8)	18000	30500	44400	60300	78800	100500	112700	126000	140300
110 (43.3)		25200	38800	54000	71700	92200	103700	116200	129700
120 (48.9)			32900	47600	64300	83700	94500	106200	118900
130 (54.4)			27100	41200	57000	75200	85300	96300	108100
140 (60.0)				35100	50000	66900	76400	86500	97500
150 (65.6)				29400	43400	59100	67900	77200	87400

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	6930	10100	13700	18000	23100	29200	32600	36300	40300
90 (32.2)	5800	8950	12500	16700	21500	27300	30600	34100	37900
100 (37.8)	4540	7690	11200	15200	19900	25300	28400	31800	35400
110 (43.3)		6350	9780	13600	18100	23200	26100	29300	32700
120 (48.9)			8290	12000	16200	21100	23800	26800	30000
130 (54.4)			6830	10400	14400	19000	21500	24300	27200
140 (60.0)				8850	12600	16900	19300	21800	24600
150 (65.6)				7410	10900	14900	17100	19500	22000

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	8060	11700	15900	20900	26900	33900	37900	42200	46900
90 (32.2)	6740	10400	14600	19400	25100	31800	35500	39600	44100
100 (37.8)	5270	8940	13000	17700	23100	29400	33000	36900	41100
110 (43.3)		7380	11400	15800	21000	27000	30400	34000	38000
120 (48.9)			9640	13900	18800	24500	27700	31100	34800
130 (54.4)			7940	12100	16700	22000	25000	28200	31700
140 (60.0)				10300	14700	19600	22400	25300	28600
150 (65.6)				8610	12700	17300	19900	22600	25600

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	3780	4480	5030	5480	5870	6240	6430	6640	6860
90 (32.2)	3690	4550	5240	5810	6300	6750	6980	7220	7460
100 (37.8)	3510	4540	5380	6090	6700	7260	7530	7800	8080
110 (43.3)		4440	5450	6310	7050	7720	8040	8360	8680
120 (48.9)			5420	6450	7330	8130	8510	8880	9260
130 (54.4)			5270	6470	7520	8460	8910	9340	9770
140 (60.0)				6360	7590	8690	9210	9710	10200
150 (65.6)				6100	7520	8800	9390	9970	10530

Production compressors to meet above nominal performance values ± 5%.

<b>50 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
200/240-3-50 (TFC) Rated Voltage 220-3-50 (TFC) Test Voltage	380/420-3-50 (TFD) Rated Voltage 380-3-50 (TFD) Test Voltage	500-3-50 (TFE) Rated Voltage & Test Voltage

**QR90K1-TFC/TFD/TFE**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	23900	32800	45800	62600	82700	105700	118100	131100	144600
90 (32.2)	21500	29100	40900	56300	75100	96800	108600	121000	133900
100 (37.8)	19600	25900	36300	50500	68000	88400	99600	111300	123600
110 (43.3)		23100	32200	45000	61200	80300	90800	101900	113500
120 (48.9)			28300	39800	54700	72500	82400	92800	103800
130 (54.4)			24700	34900	48400	64900	74100	83900	94200
140 (60.0)				30100	42300	57400	66000	75100	84800
150 (65.6)				25500	36300	50100	58000	66400	75500

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	6020	8270	11500	15800	20800	26600	29800	33000	36400
90 (32.2)	5420	7330	10300	14200	18900	24400	27400	30500	33700
100 (37.8)	4940	6530	9150	12700	17100	22300	25100	28000	31100
110 (43.3)		5820	8110	11300	15400	20200	22900	25700	28600
120 (48.9)			7130	10000	13800	18300	20800	23400	26200
130 (54.4)			6220	8790	12200	16400	18700	21100	23700
140 (60.0)				7590	10700	14500	16600	18900	21400
150 (65.6)				6430	9150	12600	14600	16700	19000

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	7000	9610	13400	18300	24200	31000	34600	38400	42400
90 (32.2)	6300	8530	12000	16500	22000	28400	31800	35500	39200
100 (37.8)	5740	7590	10600	14800	19900	25900	29200	32600	36200
110 (43.3)		6770	9430	13200	17900	23500	26600	29900	33300
120 (48.9)			8290	11700	16000	21200	24100	27200	30400
130 (54.4)			7240	10200	14200	19000	21700	24600	27600
140 (60.0)				8820	12400	16800	19300	22000	24800
150 (65.6)				7470	10600	14700	17000	19500	22100

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	3240	3690	4170	4640	5040	5320	5400	5430	5400
90 (32.2)	3330	3810	4340	4880	5370	5760	5900	5990	6030
100 (37.8)	3380	3890	4480	5090	5670	6170	6370	6530	6640
110 (43.3)		3930	4570	5260	5940	6550	6810	7040	7230
120 (48.9)			4620	5390	6160	6890	7220	7520	7780
130 (54.4)			4610	5460	6340	7180	7580	7950	8290
140 (60.0)				5470	6450	7420	7890	8330	8750
150 (65.6)				5410	6500	7600	8140	8660	9150

Production compressors to meet above nominal performance values ± 5%.

<b>60 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
208/230-3-60 (TFC) Rated Voltage 230-3-60 (TFC) Test Voltage	380/460-3-60 (TFD) Rated Voltage 460-3-60 (TFD) Test Voltage	575-3-60 (TFE) Rated Voltage & Test Voltage

**QR90K1-TFC/TFD/TFE**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	29300	42700	58200	76400	98000	123700	138300	154200	171400
90 (32.3)	24500	38000	53200	70700	91200	115500	129200	144100	160300
100 (37.8)	19100	32700	47600	64500	84100	107000	119900	133900	149100
110 (43.3)		26900	41600	58000	76700	98300	110400	123600	137800
120 (48.9)			35300	51200	69000	89500	100900	113200	126500
130 (54.4)			28700	44200	61300	80600	91300	102800	115200
140 (60.0)				37100	53500	71800	81800	92500	104100
150 (65.6)				29900	45700	63000	72400	82500	93200

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	7380	10760	14700	19300	24700	31200	34900	38900	43200
90 (32.2)	6170	9580	13410	17800	23000	29100	32600	36300	40400
100 (37.8)	4810	8240	12000	16300	21200	27000	30200	33700	37600
110 (43.3)		6780	10500	14600	19300	24800	27800	31100	34700
120 (48.9)			8900	12900	17400	22600	25400	28500	31900
130 (54.4)			7230	11100	15400	20300	23000	25900	29000
140 (60.0)				9350	13500	18100	20600	23300	26200
150 (65.6)				7530	11500	15900	18200	20800	23500

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	8580	12500	17100	22400	28700	36200	40500	45200	50200
90 (32.2)	7180	11100	15600	20700	26700	33800	37900	42200	47000
100 (37.8)	5600	9580	13900	18900	24600	31400	35100	39200	43700
110 (43.3)		7880	12200	17000	22500	28800	32300	36200	40400
120 (48.9)			10300	15000	20200	26200	29600	33200	37100
130 (54.4)			8410	13000	18000	23600	26800	30100	33800
140 (60.0)				10900	15700	21000	24000	27100	30500
150 (65.6)				8760	13400	18500	21200	24200	27300

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	4070	4820	5420	5900	6320	6720	6930	7150	7390
90 (32.3)	3980	4900	5640	6260	6790	7280	7530	7790	8060
100 (37.8)	3800	4900	5800	6560	7220	7830	8120	8420	8730
110 (43.3)		4800	5880	6800	7600	8330	8680	9030	9380
120 (48.9)			5850	6940	7900	8770	9180	9590	10000
130 (54.4)			5690	6970	8100	9120	9600	10070	10540
140 (60.0)				6860	8170	9360	9920	10460	11000
150 (65.6)				6580	8090	9460	10110	10730	11350

Production compressors to meet above nominal performance values ± 5%.



<b>50 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
200/240-3-50 (TFC) Rated Voltage 220-3-50 (TFC) Test Voltage	380/420-3-50 (TFD) Rated Voltage 380-3-50 (TFD) Test Voltage	500-3-50 (TFE) Rated Voltage & Test Voltage

**QR11M1-TFC/TFD/TFE**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	26900	36900	51800	70800	93600	119500	133500	148000	163100
90 (32.3)	24400	32900	46300	63900	85300	109800	123100	137000	151500
100 (37.8)	22300	29300	41100	57200	77100	100300	112900	126200	140000
110 (43.3)		26000	36200	50800	69300	91000	103000	115500	128600
120 (48.9)			31800	44800	61700	82000	93200	105100	117500
130 (54.4)			27800	39200	54600	73300	83800	94900	106600
140 (60.0)				34100	47800	65000	74700	85100	96000
150 (65.6)				29400	41500	57100	66000	75600	85800

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	6780	9300	13100	17800	23600	30100	33600	37300	41100
90 (32.2)	6150	8290	11700	16100	21500	27700	31000	34500	38200
100 (37.8)	5620	7380	10400	14400	19400	25300	28500	31800	35300
110 (43.3)		6550	9120	12800	17500	22900	26000	29100	32400
120 (48.9)			8010	11300	15500	20700	23500	26500	29600
130 (54.4)			7010	9880	13800	18500	21100	23900	26900
140 (60.0)				8590	12000	16400	18800	21400	24200
150 (65.6)				7410	10500	14400	16600	19100	21600

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	7880	10800	15200	20700	27400	35000	39100	43400	47800
90 (32.2)	7150	9640	13600	18700	25000	32200	36100	40100	44400
100 (37.8)	6530	8580	12000	16800	22600	29400	33100	37000	41000
110 (43.3)		7620	10600	14900	20300	26700	30200	33800	37700
120 (48.9)			9320	13100	18100	24000	27300	30800	34400
130 (54.4)			8150	11500	16000	21500	24600	27800	31200
140 (60.0)				9990	14000	19000	21900	24900	28100
150 (65.6)				8610	12200	16700	19300	22200	25100

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	3740	4260	4820	5360	5810	6130	6220	6250	6220
90 (32.3)	3830	4390	5010	5630	6190	6640	6800	6910	6960
100 (37.8)	3880	4480	5160	5870	6540	7120	7350	7540	7680
110 (43.3)		4520	5270	6060	6840	7550	7860	8130	8350
120 (48.9)			5320	6210	7100	7940	8330	8680	8990
130 (54.4)			5320	6300	7300	8280	8740	9170	9570
140 (60.0)				6320	7440	8560	9100	9610	10100
150 (65.6)				6280	7520	8780	9390	9990	10570

Production compressors to meet above nominal performance values ± 5%.

<b>60 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
208/230-3-60 (TFC) Rated Voltage 230-3-60 (TFC) Test Voltage	380/460-3-60 (TFD) Rated Voltage 460-3-60 (TFD) Test Voltage	575-3-60 (TFE) Rated Voltage & Test Voltage

**QR11M1-TFC/TFD/TFE**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	32700	47900	65300	85700	110000	138800	155100	172800	192000
90 (32.3)	27600	42600	59600	79300	102300	129500	144900	161600	179700
100 (37.8)	21600	36700	53300	72200	94200	119800	134300	150000	167000
110 (43.3)		30200	46500	64800	85700	109900	123600	138300	154300
120 (48.9)			39400	57100	77000	100000	112800	126600	141600
130 (54.4)			32100	49300	68400	90000	102100	115100	129100
140 (60.0)				41600	59900	80400	91700	103900	116900
150 (65.6)				34100	51600	71100	81700	93100	105300

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	8240	12100	16500	21600	27700	35000	39100	43500	48400
90 (32.2)	6960	10700	15000	20000	25800	32600	36500	40700	45300
100 (37.8)	5440	9250	13400	18200	23700	30200	33800	37800	42100
110 (43.3)		7610	11700	16300	21600	27700	31100	34900	38900
120 (48.9)			9930	14400	19400	25200	28400	31900	35700
130 (54.4)			8090	12400	17200	22700	25700	29000	32500
140 (60.0)				10500	15100	20300	23100	26200	29500
150 (65.6)				8590	13000	17900	20600	23500	26500

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	9580	14000	19100	25100	32200	40700	45400	50600	56300
90 (32.2)	8090	12500	17500	23200	30000	37900	42500	47300	52700
100 (37.8)	6330	10800	15600	21200	27600	35100	39300	44000	48900
110 (43.3)		8850	13600	19000	25100	32200	36200	40500	45200
120 (48.9)			11500	16700	22600	29300	33100	37100	41500
130 (54.4)			9410	14400	20000	26400	29900	33700	37800
140 (60.0)				12200	17600	23600	26900	30400	34300
150 (65.6)				9990	15100	20800	23900	27300	30900

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	4530	5390	6060	6600	7070	7520	7750	7990	8260
90 (32.3)	4440	5480	6320	7000	7590	8140	8420	8700	9010
100 (37.8)	4230	5470	6490	7340	8070	8740	9070	9400	9750
110 (43.3)		5360	6570	7590	8480	9290	9680	10070	10470
120 (48.9)			6530	7750	8810	9770	10230	10690	11150
130 (54.4)			6360	7790	9040	10170	10710	11240	11760
140 (60.0)				7680	9140	10460	11090	11700	12300
150 (65.6)				7420	9110	10630	11350	12050	12730

Production compressors to meet above nominal performance values ± 5%.

<b>50 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
200/240-3-50 (TFC) Rated Voltage 220-3-50 (TFC) Test Voltage	380/420-3-50 (TFD) Rated Voltage 380-3-50 (TFD) Test Voltage	500-3-50 (TFE) Rated Voltage & Test Voltage

**QR12M1-TFC/TFD/TFE**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	30700	42500	59700	81700	107900	137600	153500	170000	187000
90 (32.3)	28000	37700	53100	73500	98100	126300	141500	157300	173800
100 (37.8)	25800	33600	47100	65600	88600	115200	129700	144800	160600
110 (43.3)		30100	41600	58300	79400	104400	118100	132500	147500
120 (48.9)			36700	51400	70700	94000	106900	120500	134800
130 (54.4)			32600	45200	62600	84000	96000	108800	122200
140 (60.0)				39700	55000	74500	85600	97500	110100
150 (65.6)				34900	48100	65600	75700	86700	98400

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	7740	10700	15000	20600	27200	34700	38700	42800	47100
90 (32.2)	7060	9500	13400	18500	24700	31800	35700	39600	43800
100 (37.8)	6500	8470	11900	16500	22300	29000	32700	36500	40500
110 (43.3)		7590	10500	14700	20000	26300	29800	33400	37200
120 (48.9)			9250	13000	17800	23700	26900	30400	34000
130 (54.4)			8220	11400	15800	21200	24200	27400	30800
140 (60.0)				10000	13900	18800	21600	24600	27700
150 (65.6)				8790	12100	16500	19100	21800	24800

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	9000	12500	17500	23900	31600	40300	45000	49800	54800
90 (32.2)	8200	11000	15600	21500	28700	37000	41500	46100	50900
100 (37.8)	7560	9840	13800	19200	26000	33800	38000	42400	47100
110 (43.3)		8820	12200	17100	23300	30600	34600	38800	43200
120 (48.9)			10800	15100	20700	27500	31300	35300	39500
130 (54.4)			9550	13200	18300	24600	28100	31900	35800
140 (60.0)				11600	16100	21800	25100	28600	32300
150 (65.6)				10200	14100	19200	22200	25400	28800

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	4350	4950	5590	6210	6740	7110	7220	7260	7230
90 (32.3)	4460	5110	5820	6540	7190	7720	7900	8040	8100
100 (37.8)	4510	5210	6000	6810	7590	8260	8540	8760	8920
110 (43.3)		5250	6110	7030	7930	8750	9110	9430	9690
120 (48.9)			6170	7190	8220	9190	9640	10050	10400
130 (54.4)			6180	7300	8450	9580	10120	10610	11070
140 (60.0)				7350	8640	9920	10540	11140	11690
150 (65.6)				7360	8780	10220	10930	11610	12270

Production compressors to meet above nominal performance values ± 5%.

<b>60 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
208/230-3-60 (TFC) Rated Voltage 230-3-60 (TFC) Test Voltage	460-3-60 (TFD) Rated Voltage & Test Voltage	575-3-60 (TFE) Rated Voltage & Test Voltage

**QR12M1-TFC/TFD/TFE**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	36800	53800	73500	96600	124000	156300	174600	194500	216000
90 (32.3)	31100	48000	67100	89300	115300	145900	163200	182000	202200
100 (37.8)	24500	41300	60000	81300	106100	135100	151400	169000	188100
110 (43.3)		34000	52400	72900	96500	123900	139300	155900	173900
120 (48.9)			44400	64300	86800	112700	127100	142800	159600
130 (54.4)			36300	55500	77000	101500	115100	129800	145600
140 (60.0)				46900	67400	90600	103400	117200	131900
150 (65.6)				38600	58300	80200	92200	105000	118900

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	9270	13600	18500	24300	31200	39400	44000	49000	54400
90 (32.2)	7840	12100	16900	22500	29100	36800	41100	45900	51000
100 (37.8)	6170	10400	15100	20500	26700	34000	38200	42600	47400
110 (43.3)		8570	13200	18400	24300	31200	35100	39300	43800
120 (48.9)			11200	16200	21900	28400	32000	36000	40200
130 (54.4)			9150	14000	19400	25600	29000	32700	36700
140 (60.0)				11800	17000	22800	26100	29500	33200
150 (65.6)				9730	14700	20200	23200	26500	30000

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	10800	15800	21500	28300	36300	45800	51200	57000	63300
90 (32.2)	9110	14100	19700	26200	33800	42700	47800	53300	59200
100 (37.8)	7180	12100	17600	23800	31100	39600	44400	49500	55100
110 (43.3)		9960	15400	21400	28300	36300	40800	45700	51000
120 (48.9)			13000	18800	25400	33000	37200	41800	46800
130 (54.4)			10600	16300	22600	29700	33700	38000	42700
140 (60.0)				13700	19700	26500	30300	34300	38600
150 (65.6)				11300	17100	23500	27000	30800	34800

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	5390	6380	7160	7800	8360	8890	9160	9460	9770
90 (32.3)	5250	6470	7460	8270	8970	9610	9940	10270	10620
100 (37.8)	4990	6460	7670	8680	9550	10330	10710	11100	11490
110 (43.3)		6320	7770	9000	10060	11010	11460	11900	12350
120 (48.9)			7720	9190	10460	11600	12130	12650	13170
130 (54.4)			7480	9210	10720	12070	12690	13300	13900
140 (60.0)				9030	10800	12380	13110	13820	14500
150 (65.6)				8600	10650	12490	13340	14150	14950

Production compressors to meet above nominal performance values ± 5%.

<b>50 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
346/420-3-50 Rated Voltage		380-3-50 Test Volts

**QR12ME-TFD**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	32200	44900	61700	82300	107000	134000	149000	165000	181000
90 (32.2)	28600	40000	55700	75200	98400	125000	140000	155000	171000
100 (37.8)	25700	35700	50000	68300	90300	116000	130000	145000	160000
110 (43.3)		32000	44800	61600	82400	107000	120000	134000	149000
120 (48.9)		28800	39900	55300	74500	97400	110000	124000	138000
130 (54.4)			35600	49200	66800	88200	100000	113000	127000
140 (60.0)			31700	43500	59400	79100	90300	102000	115000
150 (65.6)				38200	52200	70100	80400	91600	104000

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	8110	11300	15500	20700	27000	33800	37500	41600	45600
90 (32.2)	7210	10100	14000	19000	24800	31500	35300	39100	43100
100 (37.8)	6480	9000	12600	17200	22800	29200	32800	36500	40300
110 (43.3)		8060	11300	15500	20800	27000	30200	33800	37500
120 (48.9)		7260	10100	13900	18800	24500	27700	31200	34800
130 (54.4)			8970	12400	16800	22200	25200	28500	32000
140 (60.0)			7990	11000	15000	19900	22800	25700	29000
150 (65.6)				9630	13200	17700	20300	23100	26200

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	9430	13200	18100	24100	31400	39300	43700	48300	53000
90 (32.2)	8380	11700	16300	22000	28800	36600	41000	45400	50100
100 (37.8)	7530	10500	14700	20000	26500	34000	38100	42500	46900
110 (43.3)		9380	13100	18000	24100	31400	35200	39300	43700
120 (48.9)		8440	11700	16200	21800	28500	32200	36300	40400
130 (54.4)			10400	14400	19600	25800	29300	33100	37200
140 (60.0)			9290	12700	17400	23200	26500	29900	33700
150 (65.6)				11200	15300	20500	23600	26800	30500

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	4410	5110	5750	6340	6870	7330	7540	7720	7890
90 (32.2)	4490	5260	5980	6650	7270	7830	8090	8330	8550
100 (37.8)	4540	5380	6180	6950	7660	8320	8630	8930	9210
110 (43.3)		5460	6360	7220	8030	8800	9170	9520	9860
120 (48.9)		5500	6490	7450	8370	9250	9680	10100	10500
130 (54.4)			6570	7630	8670	9670	10200	10600	11100
140 (60.0)			6590	7760	8910	10000	10600	11100	11700
150 (65.6)				7820	9090	10300	11000	11600	12200

Production compressors to meet above nominal performance values ± 5%.

**60 HERTZ**

**PERFORMANCE DATA**

**R22**

20 F° (11.1 C°) Superheat

15 F° (8.3 C°) Subcooling

95° F (35° C) Ambient (Air Over)

380/460-3-60 Rated Voltage

460-3-60 Test Voltage

**QR12ME-TFD**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	39800	56200	75600	98500	126000	158000	176000	196000	217000
90 (32.2)	35200	51200	69800	91700	118000	148000	165000	184000	204000
100 (37.8)	30500	46000	63800	84700	109000	138000	155000	172000	191000
110 (43.3)		40600	57700	77600	101000	128000	144000	160000	178000
120 (48.9)		35000	51400	70300	92300	118000	133000	148000	165000
130 (54.4)			45000	62900	83600	108000	122000	136000	152000
140 (60.0)			38400	55300	74800	97500	110000	124000	139000
150 (65.6)				47600	65900	87000	98900	112000	126000

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	10000	14200	19100	24800	31800	39800	44400	49400	54700
90 (32.2)	8870	12900	17600	23100	29700	37300	41600	46400	51400
100 (37.8)	7690	11600	16100	21300	27500	34800	39100	43300	48100
110 (43.3)		10200	14500	19600	25500	32300	36300	40300	44900
120 (48.9)		8820	13000	17700	23300	29700	33500	37300	41600
130 (54.4)			11300	15900	21100	27200	30700	34300	38300
140 (60.0)			9680	13900	18800	24600	27700	31200	35000
150 (65.6)				12000	16600	21900	24900	28200	31800

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	11700	16500	22200	28900	36900	46300	51600	57400	63600
90 (32.2)	10300	15000	20500	26900	34600	43400	48300	53900	59800
100 (37.8)	8940	13500	18700	24800	31900	40400	45400	50400	56000
110 (43.3)		11900	16900	22700	29600	37500	42200	46900	52200
120 (48.9)		10300	15100	20600	27000	34600	39000	43400	48300
130 (54.4)			13200	18400	24500	31600	35700	39800	44500
140 (60.0)			11300	16200	21900	28600	32200	36300	40700
150 (65.6)				13900	19300	25500	29000	32800	36900

**POWER MOTOR (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	5810	6660	7460	8210	8920	9620	9970	10300	10700
90 (32.2)	5950	6940	7860	8720	9530	10300	10700	11100	11500
100 (37.8)	5920	7060	8120	9100	10000	10900	11300	11700	12200
110 (43.3)		7050	8250	9370	10400	11400	11900	12300	12800
120 (48.9)		6920	8290	9560	10700	11800	12400	12900	13400
130 (54.4)			8250	9680	11000	12300	12800	13400	14000
140 (60.0)			8170	9780	11300	12700	13300	14000	14600
150 (65.6)				9860	11500	13100	13800	14500	15200

Production compressors to meet above nominal performance values ± 5%.

<b>50 HERTZ</b>		<b>PERFORMANCE DATA</b>		<b>R22</b>	
20 F° (11.1 C°) Superheat		15 F° (8.3 C°) Subcooling		95° F (35° C) Ambient (Air Over)	
200/240-3-50 (TFC) Rated Voltage 220-3-50 (TFC) Test Voltage			380/420-3-50 (TFD) Rated Voltage 380-3-50 (TFD) Test Voltage		

**QR15M1-TFC/TFD**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	39200	55200	75400	99400	127000	158000	174600	191900	210000
90 (32.3)	35400	50000	68900	91600	118000	147800	163800	180700	198200
100 (37.8)	32000	45100	62500	83800	108900	137400	152800	169100	186000
110 (43.3)		40600	56400	76200	99800	126900	141700	157200	173500
120 (48.9)			50700	68800	90800	116300	130400	145200	160800
130 (54.4)			45400	61700	82000	105900	119100	133100	147900
140 (60.0)				55000	73400	95500	107800	121000	135000
150 (65.6)				48700	65100	85300	96700	109000	122000

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	9880	13900	19000	25000	32000	39800	44000	48400	52900
90 (32.2)	8920	12600	17400	23100	29700	37200	41300	45500	49900
100 (37.8)	8060	11400	15800	21100	27400	34600	38500	42600	46900
110 (43.3)		10200	14200	19200	25100	32000	35700	39600	43700
120 (48.9)			12800	17300	22900	29300	32900	36600	40500
130 (54.4)			11400	15500	20700	26700	30000	33500	37300
140 (60.0)				13900	18500	24100	27200	30500	34000
150 (65.6)				12300	16400	21500	24400	27500	30700

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	11500	16200	22100	29100	37200	46300	51200	56200	61500
90 (32.2)	10400	14700	20200	26800	34600	43300	48000	52900	58100
100 (37.8)	9380	13200	18300	24600	31900	40300	44800	49500	54500
110 (43.3)		11900	16500	22300	29200	37200	41500	46100	50800
120 (48.9)			14900	20200	26600	34100	38200	42500	47100
130 (54.4)			13300	18100	24000	31000	34900	39000	43300
140 (60.0)				16100	21500	28000	31600	35500	39600
150 (65.6)				14300	19100	25000	28300	31900	35700

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	5330	6230	7090	7900	8650	9330	9640	9930	10200
90 (32.3)	5440	6440	7380	8280	9110	9860	10200	10520	10820
100 (37.8)	5500	6620	7680	8680	9610	10460	10840	11210	11540
110 (43.3)		6740	7940	9070	10120	11090	11530	11950	12330
120 (48.9)			8130	9410	10610	11720	12230	12710	13160
130 (54.4)			8220	9680	11050	12320	12910	13470	14000
140 (60.0)				9830	11400	12850	13530	14180	14800
150 (65.6)				9840	11620	13290	14070	14820	15540

Production compressors to meet above nominal performance values ± 5%.

<b>60 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
208/230-3-60 (TFC) Rated Voltage 230-3-60 (TFC) Test Voltage		460-3-60 (TFD) Rated Voltage & Test Voltage

**QR15M1-TFC/TFD**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	50500	68300	90300	116500	147000	181800	200800	220900	242000
90 (32.3)	45800	62800	83800	108900	138100	171300	189400	208500	228700
100 (37.8)	41100	57300	77300	101200	129000	160600	177900	196100	215200
110 (43.3)		51700	70800	93500	119800	149800	166100	183400	201600
120 (48.9)			64100	85500	110400	138800	154200	170500	187700
130 (54.4)			57300	77400	100800	127500	142000	157400	173500
140 (60.0)				69100	91000	115900	129500	143900	159000
150 (65.6)				60500	80900	104100	116700	130100	144200

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	12700	17200	22800	29400	37000	45800	50600	55700	61000
90 (32.2)	11500	15800	21100	27400	34800	43200	47700	52500	57600
100 (37.8)	10400	14400	19500	25500	32500	40500	44800	49400	54200
110 (43.3)		13000	17800	23600	30200	37700	41900	46200	50800
120 (48.9)			16200	21500	27800	35000	38900	43000	47300
130 (54.4)			14400	19500	25400	32100	35800	39700	43700
140 (60.0)				17400	22900	29200	32600	36300	40100
150 (65.6)				15200	20400	26200	29400	32800	36300

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	14800	20000	26500	34100	43100	53300	58800	64700	70900
90 (32.2)	13400	18400	24600	31900	40500	50200	55500	61100	67000
100 (37.8)	12000	16800	22600	29700	37800	47100	52100	57500	63100
110 (43.3)		15100	20700	27400	35100	43900	48700	53700	59100
120 (48.9)			18800	25100	32300	40700	45200	50000	55000
130 (54.4)			16800	22700	29500	37400	41600	46100	50800
140 (60.0)				20200	26700	34000	37900	42200	46600
150 (65.6)				17700	23700	30500	34200	38100	42300

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F / °C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	6960	7950	8910	9880	10900	12000	12600	13230	13900
90 (32.3)	7150	8280	9350	10410	11480	12620	13220	13850	14510
100 (37.8)	7250	8540	9740	10910	12060	13250	13870	14510	15170
110 (43.3)		8710	10070	11360	12620	13880	14530	15190	15870
120 (48.9)			10310	11760	13140	14500	15180	15870	16580
130 (54.4)			10460	12080	13610	15090	15820	16550	17290
140 (60.0)				12310	14010	15630	16420	17210	17990
150 (65.6)				12440	14330	16110	16970	17820	18670

Production compressors to meet above nominal performance values ± 5%.



<b>50 HERTZ</b>	<b>PERFORMANCE DATA</b>	<b>R22</b>
20 F° (11.1 C°) Superheat	15 F° (8.3 C°) Subcooling	95° F (35° C) Ambient (Air Over)
380/420-3-50 Rated Voltage		380-3-50 Test Voltage

**QR15M2-TSD**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	39200	55200	75400	99400	127000	158000	174600	191900	210000
90 (32.3)	35400	50000	68900	91600	118000	147800	163800	180700	198200
100 (37.8)	32000	45100	62500	83800	108900	137400	152800	169100	186000
110 (43.3)		40600	56400	76200	99800	126900	141700	157200	173500
120 (48.9)			50700	68800	90800	116300	130400	145200	160800
130 (54.4)			45400	61700	82000	105900	119100	133100	147900
140 (60.0)				55000	73400	95500	107800	121000	135000
150 (65.6)				48700	65100	85300	96700	109000	122000

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	9880	13900	19000	25000	32000	39800	44000	48400	52900
90 (32.2)	8920	12600	17400	23100	29700	37200	41300	45500	49900
100 (37.8)	8060	11400	15800	21100	27400	34600	38500	42600	46900
110 (43.3)		10200	14200	19200	25100	32000	35700	39600	43700
120 (48.9)			12800	17300	22900	29300	32900	36600	40500
130 (54.4)			11400	15500	20700	26700	30000	33500	37300
140 (60.0)				13900	18500	24100	27200	30500	34000
150 (65.6)				12300	16400	21500	24400	27500	30700

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	11500	16200	22100	29100	37200	46300	51200	56200	61500
90 (32.2)	10400	14700	20200	26800	34600	43300	48000	52900	58100
100 (37.8)	9380	13200	18300	24600	31900	40300	44800	49500	54500
110 (43.3)		11900	16500	22300	29200	37200	41500	46100	50800
120 (48.9)			14900	20200	26600	34100	38200	42500	47100
130 (54.4)			13300	18100	24000	31000	34900	39000	43300
140 (60.0)				16100	21500	28000	31600	35500	39600
150 (65.6)				14300	19100	25000	28300	31900	35700

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/°C								
	-10 -23.3	0 -17.8	10 -12.1	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	5330	6230	7090	7900	8650	9330	9640	9930	10200
90 (32.3)	5440	6440	7380	8280	9110	9860	10200	10520	10820
100 (37.8)	5500	6620	7680	8680	9610	10460	10840	11210	11540
110 (43.3)		6740	7940	9070	10120	11090	11530	11950	12330
120 (48.9)			8130	9410	10610	11720	12230	12710	13160
130 (54.4)			8220	9680	11050	12320	12910	13470	14000
140 (60.0)				9830	11400	12850	13530	14180	14800
150 (65.6)				9840	11620	13290	14070	14820	15540

Production compressors to meet above nominal performance values ± 5%.

<b>60 HERTZ</b>		<b>PERFORMANCE DATA</b>		<b>R22</b>	
20 F° (11.1 C°) Superheat		15 F° (8.3 C°) Subcooling		95° F (35° C) Ambient (Air Over)	
380/460-3-60 Rated Voltage			460-3-60 Test Voltage		

**QR15M2-TSD**

**CAPACITY (BTU/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/ °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	50500	68300	90300	116500	147000	181800	200800	220900	242000
90 (32.3)	45800	62800	83800	108900	138100	171300	189400	208500	228700
100 (37.8)	41100	57300	77300	101200	129000	160600	177900	196100	215200
110 (43.3)		51700	70800	93500	119800	149800	166100	183400	201600
120 (48.9)			64100	85500	110400	138800	154200	170500	187700
130 (54.4)			57300	77400	100800	127500	142000	157400	173500
140 (60.0)				69100	91000	115900	129500	143900	159000
150 (65.6)				60500	80900	104100	116700	130100	144200

**CAPACITY (KCAL/HOUR)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/ °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	12700	17200	22800	29400	37000	45800	50600	55700	61000
90 (32.2)	11500	15800	21100	27400	34800	43200	47700	52500	57600
100 (37.8)	10400	14400	19500	25500	32500	40500	44800	49400	54200
110 (43.3)		13000	17800	23600	30200	37700	41900	46200	50800
120 (48.9)			16200	21500	27800	35000	38900	43000	47300
130 (54.4)			14400	19500	25400	32100	35800	39700	43700
140 (60.0)				17400	22900	29200	32600	36300	40100
150 (65.6)				15200	20400	26200	29400	32800	36300

**CAPACITY (WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/ °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	14800	20000	26500	34100	43100	53300	58800	64700	70900
90 (32.2)	13400	18400	24600	31900	40500	50200	55500	61100	67000
100 (37.8)	12000	16800	22600	29700	37800	47100	52100	57500	63100
110 (43.3)		15100	20700	27400	35100	43900	48700	53700	59100
120 (48.9)			18800	25100	32300	40700	45200	50000	55000
130 (54.4)			16800	22700	29500	37400	41600	46100	50800
140 (60.0)				20200	26700	34000	37900	42200	46600
150 (65.6)				17700	23700	30500	34200	38100	42300

**POWER (MOTOR WATTS)**

CONDENSING TEMPERATURE °F/°C	EVAPORATING TEMPERATURE °F/ °C								
	- 10 - 23.3	0 - 17.8	10 - 12.1	20 - 6.7	30 - 1.1	40 4.4	45 7.2	50 10.0	55 12.8
80 (26.7)	6960	7950	8910	9880	10900	12000	12600	13230	13900
90 (32.3)	7150	8280	9350	10410	11480	12620	13220	13850	14510
100 (37.8)	7250	8540	9740	10910	12060	13250	13870	14510	15170
110 (43.3)		8710	10070	11360	12620	13880	14530	15190	15870
120 (48.9)			10310	11760	13140	14500	15180	15870	16580
130 (54.4)			10460	12080	13610	15090	15820	16550	17290
140 (60.0)				12310	14010	15630	16420	17210	17990
150 (65.6)				12440	14330	16110	16970	17820	18670

Production compressors to meet above nominal performance values ± 5%.

**50  
60 HERTZ**

**APPROVED COMPRESSOR  
OPERATING RANGE**

**R22**

**AN OKAY INDICATES AN APPROVED POINT FOR COMPRESSOR OPERATION  
AN \*\*\*\* INDICATES A NON-APPROVED POINT FOR COMPRESSOR OPERATION**

CONDENSING TEMPERATURE °F/°C		EVAPORATING TEMPERATURE °F/°C								
°F	°C	-10 -23.3	0 -17.8	10 -12.2	20 -6.7	30 -1.1	40 4.4	45 7.2	50 10.0	55 12.8
80	26.7	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY
90	32.2	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY
100	37.8	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY
110	43.3	****	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY
120	48.9	****	****	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY
130	54.4	****	****	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY
140	60.0	****	****	****	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY
150	65.6	****	****	****	OKAY	OKAY	OKAY	OKAY	OKAY	OKAY

Approved range is based on 20°F (11.1°C) of superheat.

### APPLICATION NOTES

- The QR compressor includes the features below that are important to every application.
  - Four cylinders provide smooth operation.
  - Scotch yokes and slide blocks that replace conventional connecting rods permit a compact design.
  - Aluminum piston/cast iron ring assemblies provide reduced reciprocating mass and positive pressure seal.
  - Centrifugal oil pump supplies positive lubrication to bearing surfaces.
  - External baked enamel finish provides rust protection.
- The motor protector used in the QR-TFC, TFD, TFE compressors is mounted internally and its proven design is the result of extensive laboratory research and field testing. It protects the motor from maximum operating overload, both high and low voltage, and loss of refrigerant charge. It is both current and heat sensing. It is wired at the connection point of the motor's three legs. Therefore, the protector protects all three legs and if a problem occurs with one QR more of them, the protector breaks all three phases. The QR-TSD model uses solid state sensors and a module working together to provide excellent protection against high motor temperature resulting from locked rotor, loss of charge, or motor overload. In combination with low voltage sensing and a time delay used to prevent short cycling, this protection system maintains safe motor operation.
- There is no internal pressure relief valve so an external high pressure control is required.
- The rotational speeds of the QR compressor are:
  - 50 Hertz 2900 RPM
  - 60 Hertz 3500 RPM
- The QR compressor has the approval to operate as a heat pump within the R22 operating range.
- A suction accumulator is mandatory when:
  - The QR12 or QR15 are used in a condensing unit.
  - The system refrigerant charge exceeds 16 lbs. (7.3 Kg).
  - The system is a heat pump.
- A continuous pumpdown should be used if the system refrigerant charge exceeds 30 lbs. (13.6 Kg).
- To guard against lack of oil return under loss of charge conditions a low pressure control is required.
- The QR compressor requires air over it for proper cooling.
- Excess oil may need to be removed from the QR compressor after initial operation if the compressor is installed in a used system. A Schrader valve is provided for this purpose. See AE4-1240 for more information.

- Rated load amps is the value used for contactor and other electrical component selection. It is calculated by dividing the maximum continuous current that the compressor draws under the condition of maximum load operation and the lowest operating voltage by 1.4. See Application Bulletin AE 9-1154 for a detailed explanation.
- The following compressors have R22 high temperature voltage approval and nameplate stamping as shown:
  - QR85K1- TFD 380/420-3-50, 380/460-3-60
  - QR90K1- TFD 380/420-3-50, 380/460-3-60
  - QR11M1- TFD 380/420-3-50, 380/460-3-60
  - QR12ME- TFD 346/420-3-50, 380/460-3-60
  - QR15M2- TSD 380/420-3-50, 380/460-3-60
 All of the above compressors are approved for 346-3-50 operation, though at this point, only the QR12ME-TFD has this value stamped on the nameplate.
- Complete R22 performance curves are available at both 50 and 60 Hertz in the units as follows:
  - Capacity BTU/Hr .
  - Power Input Watts
  - Current Amps
  - Efficiency BTUH/Watt
- The QR compressor is available in air cooled condensing units that will operate at R22 HT.
- Copeland has compiled a book of compressor Application Bulletins. Please see the following bulletins, from the book, for more QR compressor application information as entitled below:
  - Mounting Parts . . . . .AE 4-1111
  - Application of BR/QR Compressors . . . . .AE 4-1240
  - Nameplate Amperage Rating . . . . .AE 9-1154
  - Nameplate Voltages . . . . .AE 9-1228
  - Power Factor Correction with Capacitors . .AE 9-1249
  - Maximum Continuous Current Rating . . .AE 9-1250
  - Solid State Motor Protection . . . . .AE 10-1264
  - Potential Nuisance Field Problems with Impedance Lockout Relays on Solid State Protected Compressors . . . . .AE 10-1267
  - Suction Accumulators . . . . .AE 11-1147
  - Suction Accumulators for Heat Pump Application . . . . .AE 11-1247
  - High Pressure Controls . . . . .AE 17-1214
  - Air to Air Heat Pumps . . . . .AE 17-1243
  - Design Considerations for High Ambient Conditions . . . . .AE 17-1251
  - Air to Water Heat Pumps . . . . .AE 17-1263
  - Liquid Refrigerant Control . . . . .AE 22-1182

**COMPRESSOR SPECIFICATION**

The compressor shall be of four cylinders, and have a discharge pulse equal to or less than 2.7 PSI (0.19 Kg/cm<sup>2</sup>). For maximum compressor life, the compressor should include a minimum of 110 ounces (3.25 liters) of oil. The compressor shall be capable of operating on R22 within the evaporating range of -10°F to 55°F (-23.3°C to 12.8°C). The compressor must also

be capable of operating at condensing temperatures up to 150°F (65.6°C). The compressor shall operate at an ARI point minimum efficiency of 9.0 BTU/WATT. Efficiencies of better than 9.0 BTU/WATT are acceptable, but efficiency below 9.0 BTU/WATT are not acceptable. The compressor shall be of the Copeland QR type or approved equal.

**UNITS CONVERSION CHART**

BTUH × 0.252 = KCALH

BTUH × 0.293 = WATTS

(°F - 32) ×  $\frac{5}{9}$  = °C

POUNDS × 0.454 = KILOGRAMS

INCHES × 25.4 = MILLIMETERS

CUBIC INCHES × 16.386 = CUBIC CENTIMETERS

FLUID OUNCES × 0.02957 = LITERS

CUBIC FEET × 0.02831 = CUBIC METERS

HORSEPOWER × 0.746 = KILOWATTS

**MULTIPACK PACKAGING AND SHIPPING INFORMATION**

Compressors are placed on a heavy-duty skid, overpacked with a protective shroud, and banded.

MODEL	BILLS OF MATERIAL	NUMBER OF COMPRESSORS PER MULTIPACK	MULTIPACK WEIGHT POUNDS KILOGRAMS	MULTIPACK DIMENSIONS LENGTH x WIDTH x HEIGHT INCHES CENTIMETERS	MULTIPACK CUBE CUBIC FEET CUBIC METERS	NUMBER OF MULTIPACKS PER 20 FOOT STEEL CONTAINER	NUMBER OF COMPRESSORS PER 20 FOOT STEEL CONTAINER	TOTAL WEIGHT INSIDE 20 FOOT CONTAINER POUNDS KILOGRAMS
QR85K1 QR90K1	All Except 510, 511 522, 552	6	975 442	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	40	240	39000 17700
QR85K1 QR90K1	510, 511 522, 552	6	995 451	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	39	234	38800 17600
QR11M1 QR12M1	All Except 510, 511 522, 552	6	1000 454	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	39	234	39000 17700
QR11M1 QR12M1	510, 511 522, 552	6	1020 463	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	38	228	38800 17600
QR12ME	All Except 510 522, 552	6	1020 463	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	38	228	38800 17600
QR12ME	510 522, 552	6	1040 472	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	37	222	38500 17450
QR15M1-TFC/D	All Except 510 522, 552	6	1040 472	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	37	222	38500 17450
QR15M1-TFC/D	510 522, 552	6	1060 481	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	36	216	38200 17350
QR15M2-TSD	All Except 510 522, 552	6	1065 483	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	36	216	38300 17350
QR15M2-TSD	510 522, 552	6	1085 492	43 x 32 x 25 109.2 x 81.3 x 63.5	19.9 0.564	35	210	38000 17250

**SINGLE PACK PACKAGING AND SHIPPING INFORMATION**

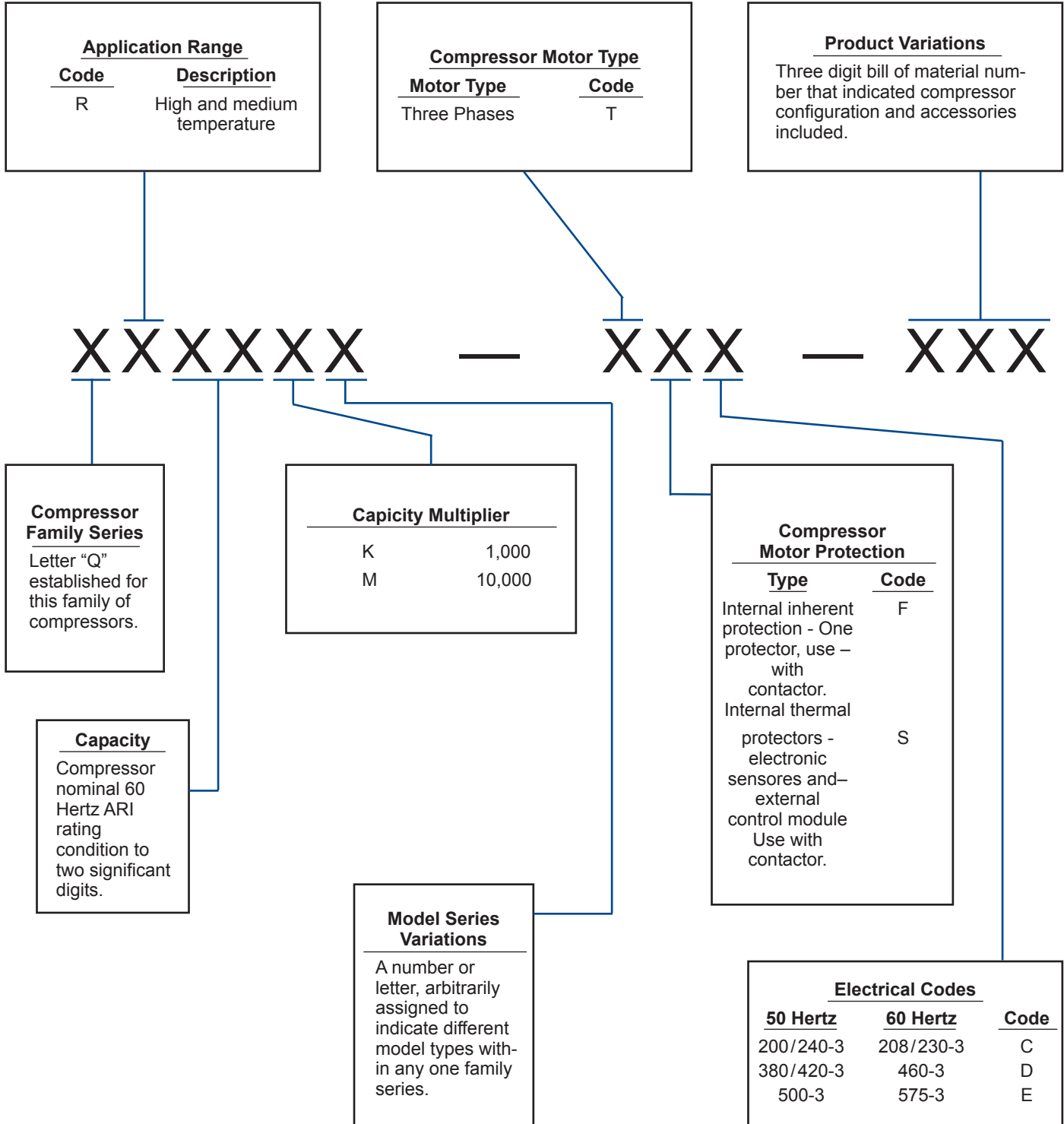
Weight (pounds/kilograms) of a pallet of 8 single pack cartons placed on a wooden skid, overpacked with a protective shroud, and banded. Multipack dimensions (cube) are 44 x 35 x 47 inches (41.9 FT<sup>3</sup>), 111.8 x 88.9 x 119.4 centimeters (1.19 m<sup>3</sup>).

MODEL	NO SERVICE VALVES	WITH SERVICE VALVES
	BILLS OF MATERIAL 501, 505, 520, 521, 530, 531, 550, 551, 561, 565	BILLS OF MATERIAL 510, 511, 522, 552
QR85K1, QR90K1	1360 617	1383 627
QR11M1, QR12M1	1392 631	1415 642
QR12ME	1416 642	1439 653
QR15M1-TFC/D	1448 657	1471 667
QR15M2-TSD	1480 671	1503 682

For your domestic shipments of 1 single pack, the box dimensions (cube) are 17.5 x 16.5 x 21.5 inches (3.6 FT<sup>3</sup>), 44.5 x 41.9 x 54.6 centimeters (0.10 m<sup>3</sup>), and the weights (pounds/kilograms), with accessories noted, are shown below.

MODEL	NO SERVICE VALVES	WITH SERVICE VALVES
	BILLS OF MATERIAL 501, 505, 520, 521, 530, 531, 550, 551, 561, 565	BILLS OF MATERIAL 510, 511, 522, 552
QR85K1, QR90K1	161 73.0	164 74.4
QR11M1, QR12M1	165 74.8	168 76.2
QR12ME	168 76.2	171 77.6
QR15M1-TFC/D	172 78.0	175 79.4
QR15M2-TSD	176 79.8	179 81.2

# MODEL NUMBER NOMENCLATURE



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Form 92-17 R3  
Revised 5/03  
Printed in U.S.A.



## **CONTENTS**

	<b>Page</b>
Product Description .....	1
Discharge Pulse Comparison .....	2
Features .....	3
Low Sound Story .....	3
Performance Nominals -50 Hertz .....	4
Performance Nominals -60 Hertz .....	5
Mechanical Specifications .....	6
Electrical Specifications .....	6
Bill of Material Provisions .....	7
Accessory Information .....	7
Bills of Material .....	8 to 11
Service Valves .....	12
Dimensional Drawings .....	13 to 16
Wiring Diagrams .....	17, 18
Tabular Performance Data .....	19 to 32
Application Range and Notes .....	33
Compressor Specification .....	34
Conversion Chart .....	34
Packaging and Shipping Information .....	35
Nomenclature .....	36