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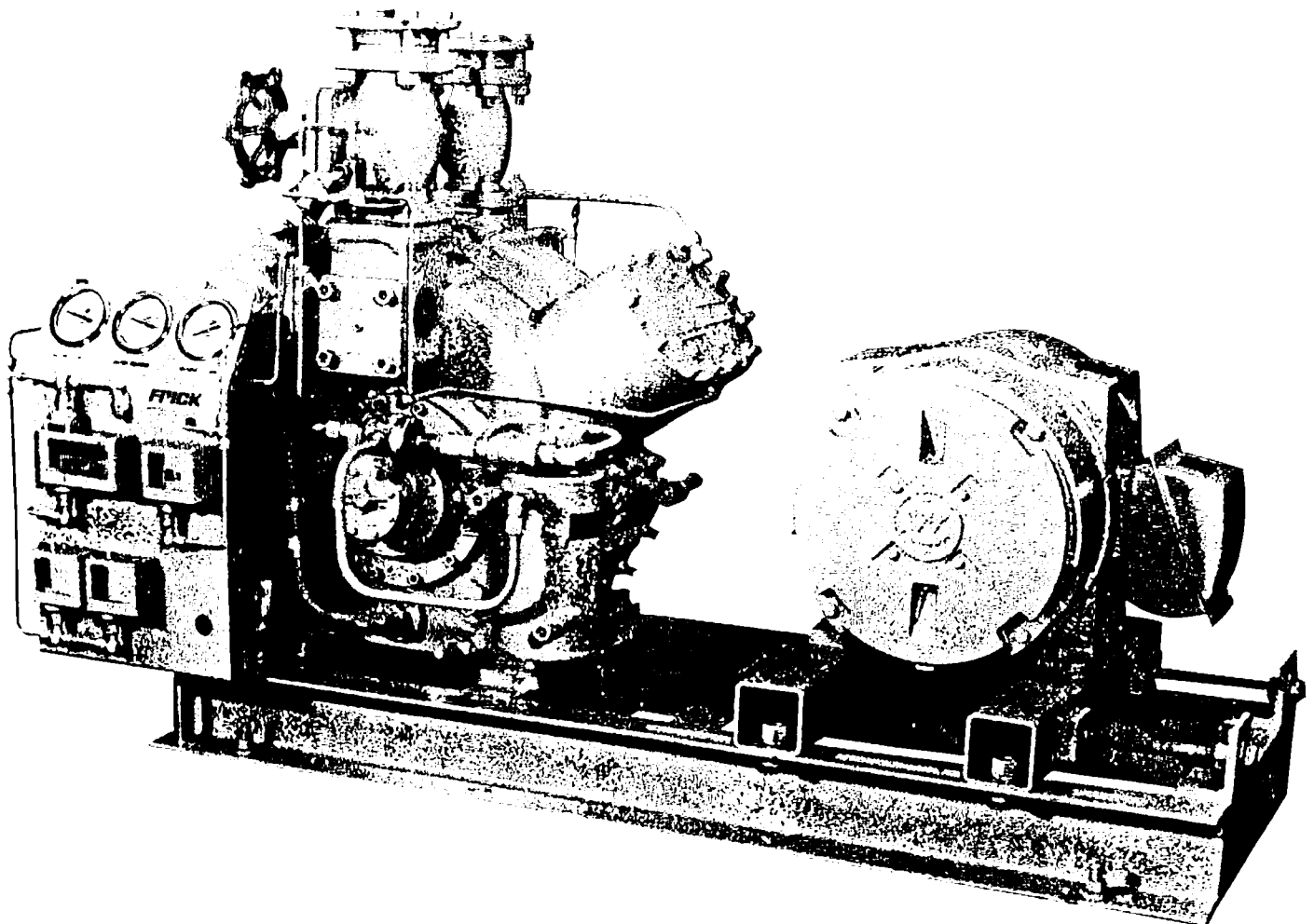
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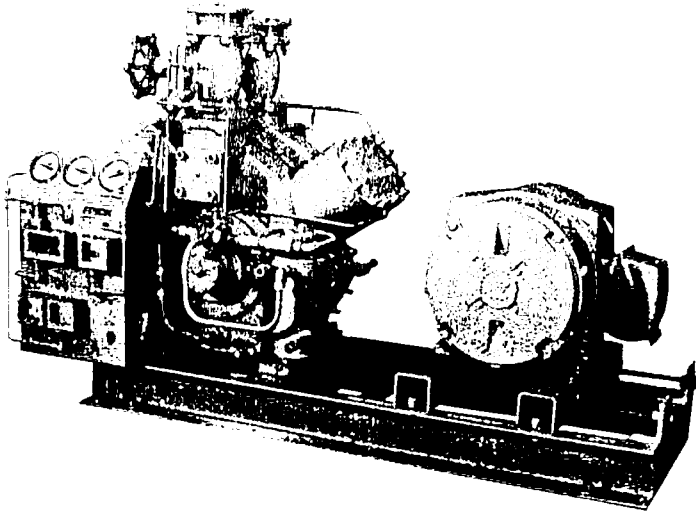
Specifications — Engineering Data — Dimensions

# FRICK INDUSTRIAL RECIPROCATING COMPRESSOR UNITS

SERIES MRI-90 — 2, 4, 6, 8 and 12 CYLINDERS  
High Stage and Booster Applications  
All Refrigerants

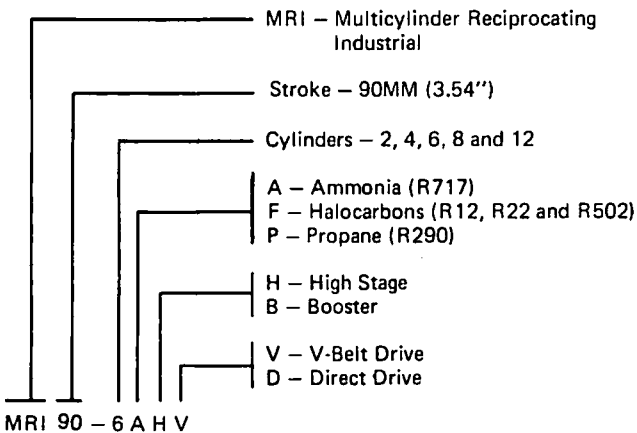


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STANDARD UNIT WITH CONTROL BOARD

MODEL EXPLANATION



DESCRIPTION

DYNA/METRIC (MRI) reciprocating compressors are engineered for heavy duty industrial refrigeration applications. Units are arranged for V-belt to 1200 RPM and direct drive at 1180 and 1450 RPM. Compressors are available in five (5) models having 2, 4, 6, 8 and 12 cylinders with a gross displacement of 94 to 560 CFM at 1200 RPM. The MRI compressor is designed for application with ammonia (R717), R12, R22, R502, R290 and other commonly used refrigerants. For added flexibility, compressors can be used for both high stage and booster duty.

All compressors are given a run test and inspected prior to shipment and include the following accessories as standard: combination external oil filter-cooler or filter, crankcase oil heater and oil strainer, suction scale traps, internal safety valve, suction and discharge service valves with weld flange kits, initial oil charge, compressor/motor base, drive components, and control board containing pressure gauges, operating controls and safety controls. Compressors for ammonia application include water cooled heads as standard.

SPECIAL FEATURES

Dependable suction and discharge valve design with fixed suction valve and floating discharge valve control mounted in cylinder. Discharge valves are protected from damage due to liquid slugging by individual cylinder safety heads.

Hydraulically actuated cylinder unloading (in lieu of gas operated) for unloaded starting permits the use of normal torque motors and reduced voltage starting. Partial unloaded starting is accomplished by the lack of oil pressure at start up required to free the suction valves for normal operation.

Vibration-free compressor operation is assured by virtue of the balanced "V" arrangement of integral cast cylinder blocks. Also, crankshafts, connecting rods and pistons are precision made and dynamically balanced.

Thermometer well connections are provided for both suction and discharge temperature.

Maximum interchangeability of parts among all MRI models is made possible with common cylinder bore and stroke and compressor components.

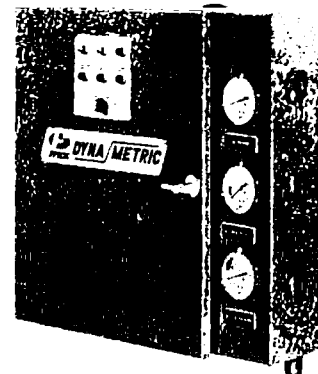
High volume refrigerant gas flow is assured with minimum resistance before and after compression. Suction gas continually cools cylinders. A large volume trap surrounds cylinders and protects internal valves from liquid refrigerant, oil and debris. The upper portion of the cylinder liners are designed to allow free expansion during heat build up under maximum operating conditions.

Control board is factory mounted and consists of the following: steel board; 115/1/60 or 50 HZ control circuit; suction pressure, discharge pressure and oil pressure gauges (in English or Metric units); high pressure cutout; low pressure cutout; oil pressure cutout and capacity control pressure switches.

OPTIONAL ACCESSORIES

Water Cooled Heads – Available for halocarbon refrigerant compressors when operated under maximum pressure and temperature conditions to remove compression heat. Refrigerant can also be circulated through cylinder head covers.

Refrigerant Cooling Controls – For oil cooler and heads when refrigerant cooling required.



CONTROL CENTER

Control Center – Supplied with on-off-auto switch, high and low pressure cutouts, oil pressure cutout, discharge temperature cutout, control relay, crankcase heater, capacity control pressurestats, power supply terminal block, external control connections, gauges for high and low pressure and oil pressure in Metric/English scales, indicating lights for HPCO, LPCO, OPCO, DTCO and crankcase heater. All of the above are installed in a Nema 1 steel cabinet.

**MECHANICAL SPECIFICATIONS – BASIC COMPRESSOR**  
4.92" (125MM) BORE x 3.54" (90MM) STROKE

**Compressor Crankcase** – High strength cast iron; designed to withstand high pressure and temperature. Covers on each side of crankcase permit easy access and inspection of compressor interior. Sight-glass at pump end permits observation of oil level in crankcase.

**Crankshaft** – Forged steel alloy of nickel, chromium and molybdenum. Shaft is statically and dynamically balanced.

**Cylinder Blocks** – Arranged for two cylinders each and integral part of compressor crankcase.

**Cylinder Liners** – Fine grained cast iron; removable. Burnished finish provides denser surface and greater resistance to wear. Break-in and operating wear takes place on rings and not the cylinder liner surfaces.

**Pistons** – Cast aluminum alloy; furnished with two compression rings and one oil ring for cylinder gas and oil control. Compression rings designed for equalized pressure against ring surfaces to minimize blow back. Oil ring has double scraper edge with ventilated inner circle.

**Connecting Rods** – Die forged aluminum alloy. Piston pin bushings are phosphor bronze alloy. Crank end bearings are steel backed, bab-bitt lined inserts. Bearing inserts have 360° oil groove for continuous cooling and lubrication of bearing and crank surfaces. Connecting rod and cap also have 360° oil groove for cooling of bearing insert.

**Piston Pins** – Precision ground, case hardened steel. Locked in place with internal retaining rings.

**Suction and Discharge Valves** – High performance, designed for minimum inertia and lift. Valves are plate type with leaf springs. Suction valve is mounted in cylinder head; discharge valve is held in place by safety head.

**Safety Heads** – Provide protection against damaging slugs of oil and liquid refrigerant. Each cylinder is equipped with multiple cup springs which, in presence of liquid, permit the entire safety head assembly to rise, allowing liquid to escape into discharge passage.

**Internal Safety Valve** – Built-in and factory set, releasing excessive discharge pressure to the low side.

**Main Bearings** – Sleeve type, solid bab-bitt with extra large bearing surfaces to support crankshaft. Both 8 and 12 cylinder models are designed with third middle bearing for positive crankshaft balance and support.

**Shaft End Roller Bearing** – Located in outer shaft seal housing for higher torque V-belt drive starting and operating requirements. All models are designed with double roller bearing for added durability.

**Shaft Seal** – Spring loaded, rotary type, full oil flooding assures positive lubrication and protection against excessive temperatures.

**Internal Manifolds** – Suction gas enters compressor through integral cast manifolds. Gas is discharged through integral cast manifolds having minimum exposure to suction gas and body of compressor.

**Suction Scale Trap** – Includes removable and cleanable fine mesh screen. Includes cloth filters for start-up period.

**Thermometer Well Connections** – Are included in both compressor suction and discharge.

**Crankcase Oil Heater** – Electric resistance type; 250 watts; 120 volt standard. Actuated on compressor shutdown.

**Lubrication** – Full forced feed to all bearing surfaces and shaft seal by internal gear pump driven by crankshaft. Shaft seal flow and pressure regulated by valve on seal end bearing housing. Protection from contaminants is provided by fine-mesh removable and cleanable oil strainer in the crankcase and replaceable filter in the lubrication circuit.

**Combination Oil Filter and Cooler** – Externally mounted, designed with ample heat exchange surface and efficient filtering to protect bearings and other vital points of lubrication. Oil cooler designed for use with either water or refrigerant coolants. Full flow type oil filter has replaceable element.

**Compressor Connections** – Suction and discharge service valves with weld type flange kits.

**Bases** – Rugged one-piece compressor and motor base; welded structural steel; motor rails included for V-belt drive arrangement.

**Control Board** – Factory installed and includes high and low pressure cutout; oil pressure cutout; capacity control pressurestats; gauges for high pressure, low pressure and oil pressure (in Metric/English scales). All factory mounted on the control board.

**Finish** – Compressor unit exterior is primed and then finished with high quality Frick blue enamel. Shipped with holding charge of dry nitrogen.

**DESIGN DATA**

MODEL NUMBER	CFM DISPL @ 1200 RPM	NOMINAL TR							DIMENSIONS VBD W/STEEL BASE			UNIT WEIGHT	
		HIGH STAGE*				BOOSTER**			L	W	H	VBD	DD
		R717	R12	R22	R502	R717	R12	R22					
MRI 90-2	94	29.8	14.1	25.0	25.0	6.2	4.8	8.0	73-1/2	41-1/2	40-7/8	1630	1470
MRI 90-4	187	59.5	28.2	50.0	50.0	12.3	9.6	15.9	73-1/2	41-1/2	39	1915	1755
MRI 90-6	281	89.3	42.3	75.0	75.0	18.5	14.4	23.9	73-1/2	44	44-7/8	2195	2055
MRI 90-8	374	119.0	56.4	100.0	100.0	24.6	19.2	31.9	79-1/2	58	45-1/2	2940	2830
MRI 90-12	560	178.5	84.6	150.0	150.0	36.9	28.8	47.8	79-1/2	58	59	3580	3410

\* Based on 20° F suction and 181 PSIG discharge (95° F condensing) for R717 and 105° F condensing temperature for R12, R22 and R502.

\*\* Based on -40° F suction and +20° F saturated intermediate discharge temperature for all refrigerants.

HIGH STAGE COMPRESSOR SELECTION

- (1) DYNA/METRIC high stage compressors are realistically rated in tons of refrigeration (TR) and brake horsepower (BHP). Rating tables for each refrigerant define the basis and conditions of ratings. Suction and discharge line pressure losses and the affect of suction gas superheat must be considered when selecting a compressor.
- (2) Precautions must be taken when designing and operating systems to prevent liquid refrigerant carry-over to the compressor. For halocarbon refrigerants, suction line gas and liquid heat exchangers are recommended. For ammonia refrigerant, a suction line trap with manual or automatic means to remove accumulated liquid refrigerant is recommended,
- (3) Compressor selections must always be within the design limits listed in TABLE 1 and on the rating tables.
- (4) Motors should be selected for peak load conditions where compressor may operate for short periods at pressures higher than the design (selected) operating conditions. Motor HP must be adequate for compressor starting and system pull down.

TABLE 1 – HIGH STAGE COMPRESSOR DESIGN LIMITS

ALL REFRIGERANTS							
MAX. RPM	MIN. RPM	MAX. COMP. RATIO	MAX. PRESS. DIFF.	MAX. DISCH. TEMP.		Max. Inlet Pressure PSIG	Max. Outlet Pressure PSIG
				Actual	Theoretical Adiabatic		
1200 VBD 1450 DD	900	9.5	250 PSI	310°F	290°F	170	300

METHOD OF SELECTION – HIGH STAGE APPLICATION

REQUIRED INFORMATION

- (1) Refrigerant
- (2) Tons of refrigeration.
- (3) Saturated suction temperature (°F) or corresponding pressure (PSIG) at the compressor inlet. (Assume that pressure drop losses from evaporator to compressor inlet have been calculated).
- (4) Suction gas superheat. (Heat pick up by suction gas between evaporator and compressor inlet.
- (5) Discharge pressure (PSIG) or corresponding saturated condensing temperature.
- (6) Drive arrangement.
- (7) RPM

EXAMPLE

- (1) R717
- (2) 40 TR
- (3) 10° F (23.8 PSIG)
- (4) 10° F. No correction required, since ratings based on 10° F superheat.
- (5) 197.2 PSIG (100° F)
- (6) Direct drive.
- (7) 1180 RPM

SELECTION PROCEDURE

- (1) Enter rating table at the required suction temperature and select the compressor having a capacity nearest to that required.
- (2) Correct TR and BHP for 1180 RPM.
- (1) At 10° F suction MRI 90-4 at 1200 RPM and 197.2 PSIG has a capacity of 43 TR and 65.35 BHP. (Interpolation within rating charts is permitted)
- (2) Use the direct ratio of actual RPM to 1200 RPM.  
 $43 \text{ TR} \times 1180/1200 = 42.3 \text{ TR}$   
 $65.35 \text{ BHP} \times 1180/1200 = 64.3 \text{ BHP}$

SELECTION: MRI 90-4 AHD at 1180 RPM direct drive; 42.3 TR and 64.3 BHP at 10° F suction and 197 PSIG discharge (100° F). Use 75 HP motor to insure adequate BHP for compressor start up and system pull down.

TABLE 2 – R717 CAPACITY AND BRAKE HORSEPOWER RATINGS

2 CYL

		MODEL MRI 90-2 HIGH STAGE COMPRESSOR 2 CYL. @ 1200 RPM						
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 3.6	-10 9.0	0 15.7	10 23.8	20 33.5	30 45.0	40 58.6
85° 151.7	TR BHP	8.5 18.5	13.3 23.5	18.5 27.0	24.8 29.8	31.8 31.9	41.0 33.2	53.0 33.5
90° 165.9	TR BHP	7.5 18.5	12.4 23.8	17.6 27.6	23.8 30.7	30.8 33.1	39.8 34.8	51.8 35.8
95° 181.1	TR BHP	6.5 18.5	11.5 24.0	16.6 28.3	22.8 31.6	29.8 34.3	38.5 36.3	50.5 38.0
100° 197.2	TR BHP		10.3 24.3	15.5 28.9	21.5 32.7	28.4 35.9	37.0 38.4	48.8 40.4
105° 214.2	TR BHP		9.0 24.5	14.4 29.5	20.3 33.8	27.0 37.5	35.5 40.5	47.0 42.8
110° 232.3	TR BHP		7.8 24.8	13.1 30.1	18.9 34.6	25.6 38.9	33.9 42.1	45.0 44.9
115° 251.5	TR BHP		6.7 25.0	11.8 30.8	17.5 35.8	24.1 40.3	32.3 43.8	43.0 47.0

SEE PAGE 8 FOR TR AND BHP NOTES.

TABLE 2A – R717 CAPACITY AND BRAKE HORSEPOWER RATINGS

4 CYL

		MODEL MRI 90-4 HIGH STAGE COMPRESSOR 4 CYL. @ 1200 RPM						
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 3.6	-10 9.0	0 15.7	10 23.8	20 33.5	30 45.0	40 58.6
85° 151.7	TR BHP	17.00 37.00	26.50 47.00	37.00 54.00	49.50 59.50	63.50 63.75	82.00 66.40	106.00 67.00
90° 165.9	TR BHP	15.00 37.00	24.75 47.50	35.10 55.25	47.50 61.35	61.50 66.13	79.50 69.50	103.50 71.50
95° 181.1	TR BHP	13.00 37.00	23.00 48.00	33.20 56.50	45.50 63.20	59.50 68.50	77.00 72.60	101.00 76.00
100° 197.2	TR BHP		20.50 48.50	31.00 57.75	43.00 65.35	56.75 71.75	74.00 76.80	97.50 80.75
105° 214.2	TR BHP		18.00 49.00	28.80 59.00	40.50 67.50	54.00 75.00	71.00 81.00	94.00 85.50
110° 232.3	TR BHP		15.65 49.50	26.15 60.25	37.75 69.25	51.10 77.75	67.75 84.25	90.00 89.75
115° 251.5	TR BHP		13.30 50.00	23.50 61.50	35.00 71.50	48.20 80.50	64.50 87.50	86.00 94.00

SEE PAGE 8 FOR TR AND BHP NOTES.

R717

TABLE 2B – R717 CAPACITY AND BRAKE HORSEPOWER RATINGS

6 CYL

MODEL MRI 90-6 HIGH STAGE COMPRESSOR 6 CYL. @ 1200 RPM								
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 3.6	-10 9.0	0 15.7	10 23.8	20 33.5	30 45.0	40 58.6
85° 151.7	TR BHP	25.5 55.5	39.8 70.5	55.5 81.0	74.3 89.3	95.3 95.6	123.0 99.6	159.0 100.5
90° 165.9	TR BHP	22.5 55.5	37.1 71.3	52.7 82.8	71.3 92.0	92.3 99.2	119.3 104.3	155.3 107.3
95° 181.1	TR BHP	19.5 55.5	34.5 72.0	49.8 84.8	68.3 94.8	89.3 102.8	115.5 108.9	151.5 114.0
100° 197.2	TR BHP		30.8 72.8	46.5 86.6	64.5 95.0	85.1 107.6	110.0 115.2	146.3 121.1
105° 214.2	TR BHP		27.0 73.5	43.2 88.5	60.8 101.3	81.0 112.5	106.5 121.5	141.0 128.3
110° 232.3	TR BHP		23.5 74.3	39.2 90.4	56.6 103.9	76.7 116.6	101.6 126.4	135.0 134.6
115° 251.5	TR BHP		20.0 75.0	35.3 92.3	52.5 107.3	72.3 120.8	96.8 131.3	129.0 141.0

**R717**

SEE PAGE 8 FOR TR AND BHP NOTES.

TABLE 2C – R717 CAPACITY AND BRAKE HORSEPOWER RATINGS

8 CYL

MODEL MRI 90-8 HIGH STAGE COMPRESSOR 8 CYL. @ 1200 RPM								
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 3.6	-10 9.0	0 15.7	10 23.8	20 33.5	30 45.0	40 58.6
85° 151.7	TR BHP	34.0 74.0	53.0 94.0	74.0 108.0	99.0 119.0	127.0 127.5	164.0 132.8	212.0 134.0
90° 165.9	TR BHP	30.0 74.0	49.5 95.0	70.2 110.5	95.0 122.7	123.0 132.3	159.0 139.0	207.0 143.0
95° 181.1	TR BHP	26.0 74.0	46.0 96.0	66.4 113.0	91.0 126.4	119.0 137.0	154.0 145.2	202.0 152.0
100° 197.2	TR BHP		41.0 97.0	62.0 115.5	86.0 130.7	113.5 143.5	148.0 153.6	195.0 161.5
105° 214.2	TR BHP		36.0 98.0	57.6 118.0	81.0 135.0	108.0 150.0	142.0 162.0	188.0 171.0
110° 232.3	TR BHP		31.3 99.0	52.3 120.5	75.5 138.5	102.2 155.5	135.5 168.5	180.0 179.5
115° 251.5	TR BHP		26.6 100.0	47.0 123.0	70.0 143.0	96.4 161.0	129.0 175.0	172.0 188.0

SEE PAGE 8 FOR TR AND BHP NOTES.

TABLE 2D – R717 CAPACITY AND BRAKE HORSEPOWER RATINGS

12 CYL

**R717**

MODEL MRI 90-12 HIGH STAGE COMPRESSOR 12 CYL. @ 1200 RPM								
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 3.6	-10 9.0	0 15.7	10 23.8	20 33.5	30 45.0	40 58.6
85° 151.7	TR BHP	51.0 110.0	79.5 141.0	110.0 162.0	148.5 178.5	190.5 191.3	246.0 199.2	318.0 201.0
90° 165.9	TR BHP	45.0 110.0	74.3 142.5	105.3 165.8	142.5 184.1	184.5 198.4	238.5 208.5	310.5 214.5
95° 181.1	TR BHP	39.0 110.0	69.0 144.0	99.6 169.5	136.5 189.6	178.5 205.5	231.0 217.8	303.0 228.0
100° 197.2	TR BHP		61.5 145.5	93.0 173.3	129.0 196.1	170.3 215.3	220.0 230.4	292.5 242.3
105° 214.2	TR BHP		54.0 147.0	86.4 177.0	121.5 202.5	162.0 225.0	213.0 243.0	282.0 256.5
110° 232.3	TR BHP		47.0 148.5	78.5 180.8	113.3 207.8	153.3 233.3	203.3 252.8	270.0 269.3
115° 251.5	TR BHP		39.9 150.0	70.5 184.5	105.0 214.5	144.6 241.5	193.5 262.5	258.0 282.0

NOTES:

- Capacity ratings are based on suction gas superheating of 10° F at the compressor suction inlet WITHOUT superheat contributing to the refrigeration effect.
- For every 5° F suction gas superheating above 10° F, reduce capacity by 1%.
- Capacities and brake horsepower are based on 1200 RPM. For higher and/or lower approved RPM for both V-belt and direct-drive, determine the actual capacity and brake horsepower by the factor of actual RPM to 1200 RPM. (See page 5 for Selection Procedure).
- Maximum brake horsepower for V-belt drive is 250 horsepower.

Ratings: Below heavy line for interpolation only. Do not exceed 9.5 to 1 compression ratio.

TABLE 3 – R12 CAPACITY AND BRAKE HORSEPOWER RATINGS

2 CYL

MODEL MRI 90-2 HIGH STAGE COMPRESSOR 2 CYL. @ 1200 RPM								
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 0.6	-10 4.5	0 9.2	10 14.6	20 21.0	30 28.5	40 37.0
85° 91.8	TR BHP	4.9 14.9	7.0 17.1	9.8 19.3	12.9 21.6	17.0 23.6	22.0 25.5	28.8 27.4
90° 99.8	TR BHP	4.6 14.7	6.7 17.0	9.3 19.4	12.3 21.5	16.3 23.9	21.1 25.7	27.7 27.8
95° 108.3	TR BHP	4.3 14.5	6.4 16.9	8.8 19.5	11.8 17.4	15.5 24.1	20.3 26.1	26.7 28.1
100° 117.2	TR BHP	4.0 14.1	6.0 16.8	8.3 19.5	11.2 21.9	11.8 24.5	19.3 26.7	25.1 28.7
105° 126.6	TR BHP		5.6 16.6	7.9 29.5	10.7 22.1	14.1 24.6	18.3 27.1	23.5 29.5
110° 136.4	TR BHP		5.3 16.4	7.5 19.6	10.3 22.3	13.6 25.1	17.6 27.6	22.5 29.9
115° 146.8	TR BHP		4.9 16.2	7.2 19.7	9.9 22.5	13.1 25.5	16.9 28.0	21.5 30.2
120° 157.7	TR BHP			6.9 19.7	9.4 22.6	12.6 25.8	16.2 28.4	20.6 31.1
125° 169.1	TR BHP			6.5 19.6	9.0 23.0	12.0 26.1	15.5 29.1	19.8 31.7

R12

TABLE 3A – R12 CAPACITY AND BRAKE HORSEPOWER RATINGS

4 CYL

MODEL MRI 90-4 HIGH STAGE COMPRESSOR 4 CYL. @ 1200 RPM								
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 0.6	-10 4.5	0 9.2	10 14.6	20 21.0	30 28.5	40 37.0
85° 91.8	TR BHP	9.75 29.80	14.00 34.25	19.50 38.60	25.75 43.25	34.00 47.25	44.00 51.00	57.50 54.80
90° 99.8	TR BHP	9.12 29.40	13.38 34.03	18.50 38.80	24.63 43.38	32.50 47.88	42.25 51.75	55.40 55.65
95° 108.3	TR BHP	8.50 29.00	12.75 33.80	17.50 39.00	23.50 43.50	31.00 48.50	40.50 52.50	53.30 56.50
100° 117.2	TR BHP	7.95 28.50	12.00 33.65	16.63 39.00	22.40 43.85	29.60 49.00	38.50 53.45	50.15 57.75
105° 126.6	TR BHP		11.25 33.50	15.75 39.00	21.30 44.20	28.20 49.50	36.50 54.50	47.00 59.00
110° 134.6	TR BHP		10.53 33.13	15.08 39.20	20.53 44.60	27.20 50.25	35.15 55.25	45.00 59.83
115° 146.8	TR BHP		9.80 32.75	14.40 39.40	19.75 45.00	26.20 51.00	33.80 56.00	43.00 60.75
120° 157.7	TR BHP			13.70 39.50	18.88 45.50	25.10 51.63	32.40 57.10	41.25 62.25
125° 169.1	TR BHP			13.00 39.50	18.00 46.00	24.00 52.25	31.00 58.20	39.50 63.75

SEE PAGE 11 FOR TR AND BHP NOTES.

TABLE 3B – R12 CAPACITY AND BRAKE HORSEPOWER RATINGS

6 CYL

MODEL MRI 90-6 HIGH STAGE COMPRESSOR 6 CYL. @ 1200 RPM								
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 0.6	-10 4.5	0 9.2	10 14.6	20 21.0	30 28.5	40 37.0
85° 91.8	TR BHP	14.6 44.7	21.0 51.2	29.3 57.9	38.6 64.7	51.0 70.7	66.0 76.5	86.3 82.2
90° 99.8	TR BHP	13.7 44.1	20.1 51.0	27.8 58.2	36.9 64.9	48.8 71.8	63.4 77.6	83.1 83.3
95° 108.3	TR BHP	12.8 43.5	19.1 50.7	26.3 58.5	35.3 65.1	46.5 72.6	60.8 78.6	80.0 84.6
100° 117.2	TR BHP	11.9 42.6	18.0 50.3	24.9 58.5	33.6 65.6	44.4 73.5	57.8 80.0	75.2 86.6
105° 126.6	TR BHP		16.9 50.1	23.6 58.5	32.0 66.3	42.3 74.1	54.8 81.6	70.5 88.5
110° 136.4	TR BHP		15.8 49.5	22.6 58.8	30.8 66.9	40.8 75.2	52.7 82.7	67.5 89.7
115° 146.8	TR BHP		14.7 49.1	21.6 59.1	29.6 67.5	39.3 76.5	50.7 84.0	64.5 91.1
120° 157.7	TR BHP			20.6 59.0	28.3 68.1	37.7 77.4	48.6 85.5	61.9 93.2
125° 169.1	TR BHP			19.5 59.1	27.0 69.0	36.0 78.2	46.5 87.3	59.3 95.6

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TABLE 3C – R12 CAPACITY AND BRAKE HORSEPOWER RATINGS

8 CYL

MODEL MRI 90-8 HIGH STAGE COMPRESSOR 8 CYL. @ 1200 RPM								
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 0.6	-10 4.5	0 9.2	10 14.6	20 21.0	30 28.5	40 37.0
85° 91.8	TR BHP	19.5 59.6	28.0 68.5	29.0 77.2	51.5 86.5	68.0 94.5	88.0 102.0	115.0 109.6
90° 99.8	TR BHP	18.2 58.8	26.8 68.0	37.0 77.6	49.3 86.6	65.0 95.6	84.5 103.5	110.8 111.3
95° 108.3	TR BHP	17.0 58.0	25.5 67.6	35.0 78.0	47.0 87.0	62.0 97.0	81.0 105.0	106.6 113.0
100° 117.2	TR BHP	15.9 57.0	24.0 67.3	33.3 78.0	44.8 87.7	59.2 98.0	77.0 106.9	100.3 115.5
105° 126.6	TR BHP		22.5 67.0	31.5 78.0	42.6 88.4	56.4 99.0	73.0 109.0	94.0 118.0
110° 136.4	TR BHP		21.0 66.1	30.0 78.4	41.0 89.2	54.4 100.5	70.3 110.5	90.0 119.6
115° 146.8	TR BHP		19.6 65.5	28.8 78.8	39.5 90.0	52.4 102.0	67.6 112.0	86.0 121.5
120° 157.7	TR BHP			27.4 78.9	37.8 91.0	50.2 103.1	64.8 114.2	82.5 124.5
125° 169.1	TR BHP			26.0 79.0	36.0 92.0	48.0 104.5	62.0 116.4	79.0 127.5

SEE PAGE 11 FOR TR AND BHP NOTES.

TABLE 3D – R12 CAPACITY AND BRAKE HORSEPOWER RATINGS

12 CYL

MODEL MRI 90-12 HIGH STAGE COMPRESSOR 12 CYL. @ 1200 RPM								
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION							
	°F PSIG	-20 0.6	-10 4.5	0 9.2	10 14.6	20 21.0	30 28.5	40 37.0
85° 91.8	TR BHP	29.3 89.4	42.0 102.6	58.5 115.8	77.3 129.6	102.0 141.6	132.0 153.0	172.5 164.4
90° 99.8	TR BHP	27.4 88.2	40.1 102.0	55.5 116.4	73.9 130.1	97.5 143.6	126.8 155.1	166.2 166.8
95° 108.3	TR BHP	25.5 87.0	38.3 101.4	52.5 117.0	70.5 130.5	93.0 145.5	121.5 157.5	159.9 169.5
100° 117.7	TR BHP	23.9 85.5	36.0 100.8	49.9 117.0	67.2 131.4	88.8 147.0	115.5 160.2	150.5 173.1
105° 126.6	TR BHP		33.8 100.5	47.3 117.0	63.9 132.6	84.6 148.5	109.5 163.5	141.0 177.0
110° 136.4	TR BHP		31.6 99.2	45.2 117.6	61.6 133.8	81.6 150.6	105.5 165.6	135.0 179.3
115° 146.8	TR BHP		29.4 98.1	43.2 118.2	59.3 135.0	78.6 153.0	101.4 168.0	129.0 182.1
120° 157.7	TR BHP			41.1 118.2	56.6 136.5	75.3 154.7	97.2 171.3	123.8 186.6
125° 169.1	TR BHP			39.0 118.5	54.0 138.0	72.0 156.6	93.0 174.6	118.5 191.1

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NOTES:

- Capacity ratings are based on suction gas superheating of 20° F at the compressor suction inlet WITH the superheat contributing to the refrigeration effect, and on liquid subcooling of 5° F.
- Capacities may be increased 1/2% per degree of liquid refrigerant subcooling available above the standard of 5° F subcooling.
- Capacities and brake horsepower are based on 1200 RPM. For higher and/or lower approved RPM for both V-belt and direct-drive, determine the actual capacity and brake horsepower by the factor of actual RPM to 1200 RPM. (See page 5 for Selection Procedure).
- Maximum brake horsepower for V-belt drive is 250 horsepower.

Ratings: Below heavy line for interpolation only. Do not exceed 9.5 to 1 compression ratio.

TABLE 4 – R22 CAPACITY AND BRAKE HORSEPOWER RATINGS

2 CYL

MODEL MRI 90-2 HIGH STAGE COMPRESSOR 2 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	°F PSIG	-30 4.9	-20 10.1	-10 16.5	0 24.0	10 32.8	20 43.0	30 54.9	40 68.5
85° 155.7	TR BHP	5.5 18.4	9.2 22.0	13.3 25.5	18.2 29.0	23.6 32.3	30.1 35.3	38.2 37.5	47.5 39.6
90° 168.4	TR BHP	5.0 18.4	8.8 22.0	12.9 25.8	17.5 29.5	22.6 33.3	28.9 36.0	36.2 38.8	45.0 41.3
95° 181.8	TR BHP	4.7 18.4	8.3 22.0	12.1 26.3	16.7 30.0	21.8 33.8	27.9 37.0	35.0 40.2	43.8 43.0
100° 195.9	TR BHP	4.3 18.4	7.7 22.0	11.4 26.4	15.8 30.4	20.6 34.3	26.3 37.9	32.9 41.0	41.0 44.2
105° 210.8	TR BHP		7.3 22.0	10.8 26.5	14.9 30.5	19.5 34.7	25.0 39.2	31.3 42.7	38.8 45.8
110° 226.4	TR BHP		6.8 22.0	10.3 26.8	14.4 30.8	18.9 35.3	24.0 39.8	30.3 43.5	37.5 47.0
115° 242.7	TR BHP			9.7 27.0	13.5 31.0	18.0 35.5	23.3 40.4	29.3 44.0	36.8 48.5
120° 259.9	TR BHP				12.5 31.3	17.0 36.0	22.3 41.0	28.2 46.0	35.5 50.4

SEE PAGE 14 FOR TR AND BHP NOTES.

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TABLE 4A – R22 CAPACITY AND BRAKE HORSEPOWER RATINGS

4 CYL

MODEL MRI 90-4 HIGH STAGE COMPRESSOR 4 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	°F PSIG	-30 4.9	-20 10.1	-10 16.5	0 24.0	10 32.8	20 43.0	30 54.9	40 68.5
85° 155.7	TR BHP	10.96 36.75	18.45 44.00	26.50 51.00	36.35 58.00	47.25 64.60	60.28 70.50	76.40 75.00	95.00 79.20
90° 168.4	TR BHP	9.98 36.75	17.50 44.00	25.75 51.60	35.00 59.00	45.20 66.50	57.70 72.00	72.40 77.50	90.00 82.50
95° 181.8	TR BHP	9.30 36.75	16.50 44.00	24.20 52.50	33.30 50.90	43.50 67.50	55.75 74.00	70.00 80.40	87.50 86.00
100° 195.9	TR BHP	8.50 36.75	15.30 44.00	22.75 52.75	31.50 60.75	41.25 68.50	52.50 75.75	65.80 82.00	82.00 38.40
105° 210.8	TR BHP		14.50 44.00	21.50 53.00	29.84 61.00	39.00 69.42	50.00 78.80	62.50 85.40	77.50 91.50
110° 226.4	TR BHP		13.50 44.00	20.50 53.50	28.75 61.50	37.80 70.60	48.00 79.50	60.50 87.00	75.00 94.00
115° 242.7	TR BHP			19.30 54.00	27.00 62.00	36.00 71.00	46.50 80.70	58.50 88.00	73.50 97.00
120° 259.9	TR BHP				25.00 62.50	34.00 72.00	44.67 82.00	56.30 92.00	71.00 100.75

SEE PAGE 14 FOR TR AND BHP NOTES.

TABLE 4B – R22 CAPACITY AND BRAKE HORSEPOWER

6 CYL

MODEL MRI 90-6 HIGH STAGE COMPRESSOR 6 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	°F PSIG	-30 4.9	-20 10.1	-10 16.5	0 24.0	10 32.8	20 43.0	30 54.9	40 68.5
85° 155.7	TR BHP	16.4 55.1	27.7 66.0	39.8 76.5	54.5 87.0	70.9 96.9	90.4 105.8	114.6 112.5	142.5 118.8
90° 168.4	TR BHP	15.0 55.1	26.3 66.0	38.6 77.4	52.5 88.5	67.8 99.8	86.6 108.0	108.6 116.3	135.0 123.8
95° 181.8	TR BHP	14.0 55.1	24.8 66.0	36.3 78.8	50.0 89.9	65.3 101.3	83.6 111.0	105.0 120.6	131.3 129.0
100° 195.9	TR BHP	12.8 55.1	23.0 66.0	34.1 79.1	47.3 91.1	61.9 102.8	78.8 113.6	98.7 123.0	123.0 132.6
105° 210.8	TR BHP		21.8 66.0	32.3 79.5	44.8 91.5	58.5 104.1	75.0 117.5	93.8 128.1	116.3 137.3
110° 226.4	TR BHP		20.3 66.0	30.8 80.3	43.1 92.3	56.7 105.9	72.0 119.3	90.8 130.5	112.5 141.0
115° 242.7	TR BHP			29.0 81.0	40.5 93.0	54.0 106.5	69.8 121.1	87.8 132.0	110.3 145.5
120° 259.9	TR BHP				37.5 93.8	51.0 108.0	67.0 123.0	84.5 138.0	106.5 157.1

SEE PAGE 14 FOR TR AND BHP NOTES.

TABLE 4C – R22 CAPACITY AND BRAKE HORSEPOWER RATINGS

8 CYL

MODEL MRI 90-8 HIGH STAGE COMPRESSOR 8 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	°F PSIG	-30 4.9	-20 10.1	-10 16.5	0 24.0	10 32.8	20 43.0	30 54.9	40 68.5
85° 155.7	TR BHP	21.9 73.5	36.9 88.0	53.0 102.0	72.7 116.0	94.5 129.2	120.6 141.0	152.8 150.0	190.0 158.4
90° 168.4	TR BHP	20.0 73.5	35.0 88.0	51.5 103.2	70.0 118.0	90.4 133.0	115.4 144.0	144.8 155.0	180.0 165.0
95° 181.8	TR BHP	18.6 73.5	33.0 88.0	48.4 105.0	66.6 119.8	87.0 135.0	111.5 148.0	140.0 160.8	175.0 172.0
100° 195.9	TR BHP	17.0 73.5	30.6 88.0	45.5 105.5	63.0 121.5	82.5 137.0	105.0 151.5	131.6 164.0	164.0 176.8
105° 210.8	TR BHP		29.0 88.0	43.0 106.0	59.7 122.0	78.0 138.8	100.0 156.6	125.0 170.8	155.0 183.0
110° 226.4	TR BHP		27.0 88.0	41.0 107.0	57.5 123.0	75.6 141.2	96.0 159.0	121.0 174.0	150.0 188.0
115° 242.7	TR BHP			38.6 108.0	54.0 124.0	72.0 142.0	93.0 161.4	117.0 176.0	147.0 194.0
120° 259.9	TR BHP				50.0 125.0	68.0 144.0	89.4 164.0	112.6 184.0	142.0 201.4

SEE PAGE 14 FOR TR AND BHP NOTES.

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TABLE 4D – R22 CAPACITY AND BRAKE HORSEPOWER RATINGS

12 CYL

MODEL MRI 90-12 HIGH STAGE COMPRESSOR 12 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	°F PSIG	-30 4.9	-20 10.1	-10 16.5	0 24.0	10 32.8	20 43.0	30 54.9	40 68.5
85° 155.7	TR BHP	32.9 110.3	55.4 132.0	79.5 153.0	109.1 174.0	141.8 193.8	180.8 211.5	229.2 225.0	285.0 237.6
90° 168.4	TR BHP	29.9 110.3	52.5 132.0	77.3 154.8	105.0 177.0	135.6 199.5	173.1 216.0	217.2 232.5	270.0 247.5
95° 181.8	TR BHP	27.9 110.3	49.5 132.0	72.6 157.5	99.9 179.7	130.5 202.5	167.3 222.0	210.0 241.2	262.5 258.0
100° 195.9	TR BHP	25.5 110.3	45.9 132.0	68.3 158.3	94.5 182.3	123.8 205.5	157.5 227.3	197.4 246.0	246.0 265.2
105° 210.8	TR BHP		43.5 132.0	64.5 159.0	89.5 183.0	117.0 208.3	150.0 234.9	187.5 256.2	232.5 274.5
110° 226.4	TR BHP		40.5 132.0	61.5 160.5	86.3 184.5	113.4 211.8	144.0 238.5	181.5 261.0	225.0 282.0
115° 242.7	TR BHP			57.9 162.0	81.0 186.0	108.0 213.0	139.5 242.1	175.5 264.0	220.5 291.0
120° 259.9	TR BHP				75.0 187.5	102.0 216.0	134.0 246.0	168.9 276.0	213.0 302.3

NOTES:

- Capacity ratings are based on suction gas superheating of 20° F at the compressor suction inlet WITH the superheat contributing to the refrigeration effect, and on liquid subcooling of 5° F.
- Capacities may be increased 1/2% per degree of liquid refrigerant subcooling available above the standard of 5° F subcooling.
- Capacities and brake horsepower are based on 1200 RPM. For higher and/or lower approved RPM for both V-belt and direct-drive, determine the actual capacity and brake horsepower by the factor of actual RPM to 1200 RPM. (See page 5 for Selection Procedure).
- Maximum brake horsepower for V-belt drive is 250 horsepower.

Ratings: Below heavy line for interpolation only. Do not exceed 9.5 to 1 compression ratio.

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TABLE 5 – R502 CAPACITY AND BRAKE HORSEPOWER RATINGS

2 CYL

MODEL MRI 90-2 HIGH STAGE COMPRESSOR 2 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	°F PSIG	-30 9.4	-20 15.5	-10 22.8	0 31.2	10 41.1	20 52.5	30 65.4	40 80.2
85° 172.5	TR BHP	7.2 22.7	10.2 26.0	13.8 29.3	18.1 32.7	23.8 36.0	30.9 39.3	39.3 42.5	50.5 45.9
90° 185.8	TR BHP	6.6 21.4	9.6 25.0	13.1 28.7	17.3 32.5	22.8 36.2	29.5 39.9	37.9 43.5	48.8 47.2
95° 199.7	TR BHP	6.1 20.1	8.9 24.0	12.4 28.1	16.5 32.4	21.8 36.4	28.1 40.5	36.5 44.4	47.0 48.5
100° 214.4	TR BHP	5.7 19.3	8.3 23.5	11.5 27.8	15.6 32.2	20.4 36.6	26.6 40.9	34.8 45.2	44.4 49.4
105° 229.7	TR BHP	5.3 18.5	7.8 23.0	10.5 27.5	15.1 32.1	19.0 36.8	25.0 41.3	33.0 46.0	41.8 50.3
110° 245.8	TR BHP	4.6 17.1	7.1 22.6	9.9 27.0	14.7 32.1	18.3 37.1	23.8 42.0	31.4 47.2	39.6 51.9
115° 262.6	TR BHP	4.0 15.6	6.5 21.0	9.3 26.5	13.1 32.1	17.5 37.5	22.7 42.8	29.9 48.5	37.5 53.5
120° 280.3	TR BHP	3.5 14.0	6.0 20.5	8.5 25.8	12.0 31.5	16.8 37.6	21.5 43.5	28.5 49.1	36.0 55.0

SEE PAGE 17 FOR TR AND BHP NOTES.

TABLE 5A – R502 CAPACITY AND BRAKE HORSEPOWER RATINGS

4 CYL

MODEL MRI 90-4 HIGH STAGE COMPRESSOR 4 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	F PSIG	-30 9.4	-20 15.5	-10 22.8	0 31.2	10 41.1	20 52.5	30 65.4	40 80.2
85° 172.5	TR BHP	14.3 45.30	20.40 52.00	27.50 85.50	36.20 65.30	47.50 72.00	61.75 78.50	78.50 85.00	101.00 91.80
90° 185.8	TR BHP	13.22 42.73	19.10 50.00	26.15 57.35	34.60 65.03	34.56 72.36	59.00 79.75	75.77 86.94	97.50 94.40
95° 199.7	TR BHP	12.13 40.16	17.80 48.00	24.80 56.20	33.00 64.75	43.63 72.72	56.25 81.00	73.04 88.87	94.00 97.00
100° 214.4	TR BHP	11.32 38.58	16.65 47.00	22.90 55.60	31.13 64.49	40.82 73.11	53.13 81.75	69.52 90.46	88.76 98.82
105° 229.7	TR BHP	10.50 37.00	15.50 46.00	21.00 55.00	30.29 64.24	38.00 73.50	50.00 82.50	66.00 92.00	83.51 100.64
110° 245.8	TR BHP	9.25 34.10	14.25 45.25	19.75 54.00	29.45 64.21	36.50 74.25	47.65 84.03	62.86 94.48	79.26 103.82
115° 262.6	TR BHP	8.00 31.20	12.00 42.00	18.50 53.00	26.25 64.18	35.00 75.00	45.30 85.56	39.72 96.96	75.00 107.00
120° 280.3	TR BHP	7.00 28.00	12.00 41.00	17.00 51.50	24.00 63.00	33.50 75.20	43.00 87.00	57.00 98.20	72.00 110.00

**R502**

SEE PAGE 17 FOR TR AND BHP NOTES.

TABLE 5B – R502 CAPACITY AND BRAKE HORSEPOWER RATINGS

6 CYL

MODEL MRI 90-6 HIGH STAGE COMPRESSORS 6 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	°F PSIG	-30 9.4	-20 15.5	-10 22.8	0 31.2	10 41.1	20 52.5	30 65.4	40 80.2
85° 172.5	TR BHP	21.5 68.0	30.6 78.0	41.3 87.8	54.3 98.0	71.3 108.0	92.6 117.8	117.8 127.5	151.5 137.7
90° 185.8	TR BHP	19.8 64.1	28.7 75.0	39.2 86.0	51.9 97.5	68.3 108.5	88.5 119.6	113.7 130.4	146.3 141.6
95° 199.7	TR BHP	18.2 60.2	26.7 72.0	37.2 84.3	49.5 97.1	65.4 109.1	84.4 121.5	109.6 133.3	141.0 145.5
100° 214.4	TR BHP	17.0 57.9	25.0 70.5	34.4 83.4	46.7 96.7	61.2 109.7	79.7 122.6	104.3 135.7	133.1 148.2
105° 229.7	TR BHP	15.8 55.5	23.3 69.0	31.5 82.5	45.5 96.4	57.0 110.3	75.0 123.8	99.0 138.0	125.3 151.0
110° 245.8	TR BHP	13.9 51.2	21.4 67.9	29.6 81.0	44.2 96.3	54.8 111.4	71.5 126.0	94.3 141.7	118.9 155.7
115° 262.6	TR BHP	12.0 46.8	19.5 63.0	27.8 79.5	39.4 96.3	52.5 112.5	68.0 128.3	89.6 145.4	112.5 160.5
120° 280.3	TR BHP	10.5 42.0	18.0 61.5	25.5 77.3	36.0 94.5	50.3 112.8	64.5 130.5	85.5 147.3	108.0 165.0

SEE PAGE 17 FOR TR AND BHP NOTES.

TABLE 5C – R502 CAPACITY AND BRAKE HORSEPOWER RATINGS

8 CYL

MODEL MRI 90-8 HIGH STAGE COMPRESSORS 8 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	°F PSIG	-30 9.4	-20 15.5	-10 22.8	0 31.2	10 41.1	20 52.5	30 65.4	40 80.2
85° 172.5	TR BHP	28.6 90.6	40.8 104.0	55.0 117.0	72.4 130.6	95.0 144.0	123.5 157.0	157.0 170.0	202.0 183.6
90° 185.8	TR BHP	26.4 85.5	38.2 100.0	52.3 114.7	69.2 130.1	91.1 144.4	118.0 159.5	151.5 173.9	195.0 188.8
95° 199.7	TR BHP	24.3 80.3	35.6 96.0	49.6 112.4	66.0 129.5	87.3 145.4	112.5 162.0	146.1 177.74	188.0 194.0
100° 214.4	TR BHP	22.6 77.2	33.3 94.0	45.8 111.2	62.3 129.0	81.6 146.2	106.3 163.5	139.0 180.9	177.5 197.6
105° 229.7	TR BHP	21.0 74.0	31.0 92.0	42.0 110.0	60.6 128.5	76.0 147.0	100.0 165.0	132.0 184.0	167.0 201.3
110° 245.8	TR BHP	18.5 68.2	28.5 90.5	39.5 108.0	58.9 128.4	73.0 148.5	95.3 168.1	125.7 189.0	158.5 207.6
115° 262.6	TR BHP	16.0 62.4	26.0 84.0	37.0 106.0	52.5 128.4	70.0 150.0	90.6 171.1	119.4 193.9	150.0 214.0
120° 280.3	TR BHP	14.0 56.0	24.0 82.0	34.0 108.0	48.0 126.0	67.0 150.4	86.0 174.0	114.0 196.4	144.0 220.0

SEE PAGE 17 FOR TR AND BHP NOTES.

R502

TABLE 5D – R502 CAPACITY AND BRAKE HORSEPOWER RATINGS

12 CYL

MODEL MRI 90-12 HIGH STAGE COMPRESSOR 12 CYL. @ 1200 RPM									
SATURATED COND. TEMP. °F AND CORRESP. PRES. PSIG	SUCTION TEMP. (°F) AND CORRESPONDING PRESSURE (PSIG) AT SATURATION								
	°F PSIG	-30 9.4	-20 15.5	-10 22.8	0 31.2	10 41.1	20 52.5	30 65.4	40 80.2
85° 172.5	TR BHP	42.9 135.9	61.2 156.0	82.5 175.5	108.6 195.9	142.5 216.0	185.3 235.5	235.5 255.0	303.0 275.4
90° 185.8	TR BHP	39.7 128.2	57.3 150.0	78.5 172.1	103.8 195.1	136.7 217.1	177.0 239.3	227.3 260.8	292.5 283.2
95° 199.7	TR BHP	36.4 120.5	53.4 144.0	74.4 168.6	99.0 194.3	130.9 218.2	168.8 243.0	219.1 266.6	282.0 291.0
100° 214.4	TR BHP	34.0 115.74	50.0 141.0	68.7 166.8	93.4 193.5	122.5 219.3	159.4 245.3	208.6 271.4	266.3 296.46
105° 229.7	TR BHP	31.5 111.0	46.5 13.0	63.0 165.0	90.9 192.7	114.0 220.5	150.0 247.5	198.0 276	250.5 301.9
110° 245.8	TR BHP	27.8 102.3	42.8 135.8	59.3 162	88.4 192.6	109.5 222.8	143.0 252.1	188.6 283.4	237.8 311.5
115° 262.6	TR BHP	24.0 93.6	39.0 126.0	55.5 159.0	78.8 192.5	105.0 225.0	135.9 256.7	179.2 290.9	225.0 321.0
120° 280.3	TR BHP	21.0 84.0	36.0 123.0	51.0 154.5	72.0 189.0	100.5 225.6	129.0 261.0	171.0 294.6	216.0 330.0

NOTES:

- Capacity ratings are based on suction gas superheating of 20°F at the compressor suction inlet WITH the superheat contributing to the refrigeration effect, and on liquid subcooling of 5° F.
- Capacities may be increased 1/2% per degree of liquid refrigerant subcooling available above the standard of 5° F subcooling.
- Capacities and brake horsepower are based on 1200 RPM. For higher and/or lower approved RPM for both V-belt and direct-drive, determine the actual capacity and brake horsepower by the factor of actual RPM to 1200 RPM. (See page 5 for Selection Procedure).
- Maximum brake horsepower for V-belt drive is 250 horsepower.

Ratings: Below heavy line for interpolation only. Do not exceed 9.5 to 1 compression ratio.

**R502**

BOOSTER COMPRESSOR SELECTION

- (1) DYNA/METRIC booster compressors are realistically rated in tons of refrigeration (TR) and brake horsepower (BHP). Rating tables for each refrigerant define the basis and conditions of ratings. Suction and discharge line pressure losses and effect of suction gas superheat must be considered when selecting a compressor.
- (2) Precautions must be taken when designing and operating systems to prevent liquid refrigeration carry-over to the compressor. For halocarbon refrigerants suction line gas and liquid heat exchangers are recommended. For ammonia refrigerant a suction line trap with manual or automatic means to remove accumulated liquid refrigerant is recommended.
- (3) Compressor selections must always be within the design limits listed in TABLE 6 and on the rating tables.
- (4) Motors should be selected for peak load conditions where compressor may operate for short periods at pressures higher than the design (selected) operating conditions. Motor HP must be adequate for compressor starting and system pull down.

TABLE 6 – BOOSTER COMPRESSOR DESIGN LIMITS

ALL REFRIGERANTS							
MAX. RPM	MIN. RPM	MAX. COMP. RATIO	MAX. PRESS. DIFF.	MAX. DISCH. TEMP.		Max. Inlet Pressure PSIG	Max. Outlet Pressure PSIG
				Actual	Theoretical Adiabatic		
1200 VBD 1450 DD	900	9.5	250 PSI	310°F	290°F	170	300

REQUIRED INFORMATION

- (1) Refrigerant
- (2) Tons of refrigeration
- (3) Saturated suction temperature (° F) or corresponding pressure (PSIG) at the compressor inlet. (Assume that pressure drop losses from evaporator to compressor inlet have been calculated.)
- (4) Saturated intermediate discharge temperature or corresponding pressure (PSIG).
- (5) Drive arrangement
- (6) RPM

EXAMPLE

- (1) NH<sub>3</sub>
- (2) 26TR
- (3) -45° F (8.7" HG)
- (4) 10° F (23.8 PSIG)
- (5) V-belt drive
- (6) To be determined

SELECTION PROCEDURE

- (1) Enter rating table at the required saturated suction temperature and intermediate discharge temperature. Select the compressor having a capacity nearest to that required.
- (2) Correct TR and BHP for 1065 RPM.
- (1) At -45° F suction and 10° F intermediate discharge temperatures, MRI 90-12 at 1200 RPM has a capacity of 32.0 TR and 56.0 BHP.
- (2) Use the direct ratio of actual RPM to 1200 RPM.  
 $32 \text{ TR} \times 1065/1200 = 28.4 \text{ TR}$   
 $56.0 \text{ BHP} \times 1065/1200 = 49.1 \text{ BHP}$

SELECTION: MRI 90-12 ABV at 1065 RPM, V-belt drive; 28.4 TR and 49.1 BHP at -45° F suction and 10° F intermediate discharge. Use 50 HP motor. To insure adequate BHP for system pull down use 60 HP motor.

TABLE 7 – R717 CAPACITY AND BRAKE HORSEPOWER RATINGS 1200 RPM

	SUCTION		INTERMEDIATE DISCHARGE PRESS. (PSIG) & SAT. TEMP. (°F)															
	SAT. TEMP. (°F)	PRESS. (PSIG)	12.2 -5°		15.7 0°		19.6 5°		23.8 10°		28.4 15°		33.5 20°		39.0 25°		45.0 30°	
			TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP
MRI 90-2	-65	20.4*	2.4	6.5	2.2	6.8	2.1	6.9										
	-60	18.6*	3.0	7.0	2.8	7.3	2.7	7.8	2.6	7.9	2.5	7.9	2.4	7.9				
	-55	16.6*	3.8	7.4	3.7	7.8	3.5	8.0	3.3	8.3	3.2	8.4	3.1	8.6	3.0	8.8		
	-50	14.3*	4.9	7.8	4.6	8.1	4.4	8.5	4.2	8.9	4.1	9.0	4.0	9.3	3.9	9.5	3.8	9.8
	-45	11.7*	6.0	8.1	5.8	8.5	5.6	8.9	5.3	9.3	5.2	9.6	5.1	9.9	4.9	10.3	4.8	10.6
	-40	8.7*	7.4	8.4	7.1	8.8	6.8	9.3	6.6	9.8	6.3	10.1	6.2	10.5	6.0	10.9	5.9	11.4
	-35	5.4*	8.9	8.6	8.6	9.1	8.2	9.6	8.0	10.2	7.8	10.6	7.5	11.0	7.2	11.6	7.1	12.0
	-30	1.6*	10.7	8.7	10.4	9.3	10.1	9.9	9.7	10.5	9.5	11.0	9.2	11.5	8.9	12.1	8.6	12.6
	-25	1.3	12.7	8.8	12.3	9.5	12.0	10.3	11.6	10.8	11.3	11.6	11.0	12.0	10.7	12.6	10.3	13.2
	-20	3.6			14.5	9.6	14.2	10.5	13.9	11.1	13.5	11.9	13.2	12.5	12.7	13.1	12.4	13.7
	-15	6.2							16.5	11.4	16.1	12.1	15.7	12.8	15.4	13.5	14.9	14.1
MRI 90-4	-65	20.4*	4.7	13.0	4.4	13.5	4.2	13.8										
	-60	18.6*	6.0	14.0	5.7	14.5	5.4	15.5	5.2	15.8	5.0	15.8	4.8	15.8				
	-55	16.6*	7.7	14.9	7.4	15.5	7.0	16.0	6.7	16.7	6.5	16.9	6.3	17.2	6.0	17.5		
	-50	14.3*	9.7	15.6	9.3	16.3	8.9	17.0	8.5	17.8	8.3	18.0	8.0	18.5	7.8	19.0	7.6	19.5
	-45	11.7*	12.1	16.2	11.6	17.0	11.2	17.8	10.7	18.7	10.4	19.2	10.1	19.8	9.8	20.6	9.6	21.2
	-40	8.7*	14.7	16.7	14.1	17.5	13.6	18.5	13.2	19.5	12.6	20.2	12.3	21.0	11.9	21.8	11.7	22.7
	-35	5.4*	17.8	17.1	17.1	18.1	16.5	19.3	16.0	20.3	15.5	21.2	14.9	22.0	14.4	23.1	14.2	24.0
	-30	1.6*	21.4	17.4	20.9	18.6	20.2	19.9	19.5	21.0	19.0	22.0	18.3	23.0	17.8	24.3	17.2	25.3
	-25	1.3	25.3	17.6	24.6	19.0	23.9	20.5	23.3	21.7	22.6	23.1	21.9	24.0	21.4	25.3	20.7	26.3
	-20	3.6			29.0	19.3	28.4	20.9	27.8	22.3	27.0	23.8	26.4	25.0	25.5	26.2	24.8	27.3
	-15	6.2							33.0	22.8	32.1	24.3	31.4	25.5	30.8	27.0	29.9	28.3
MRI 90-6	-65	20.4*	7.1	19.5	6.6	20.3	6.3	20.6										
	-60	18.6*	9.0	21.0	8.5	21.8	8.1	23.3	7.7	23.6	7.5	23.6	7.2	23.6				
	-55	16.6*	11.5	22.3	11.0	23.3	10.4	24.0	10.0	25.0	9.7	25.3	9.4	25.7	9.0	26.3		
	-50	14.3*	14.6	23.4	13.9	24.4	13.3	25.5	12.7	26.6	12.4	27.0	12.0	27.8	11.7	28.5	11.3	29.3
	-45	11.7*	18.1	24.3	17.3	25.5	16.7	26.6	16.0	28.0	15.5	28.7	15.2	29.6	14.6	30.9	14.3	31.8
	-40	8.7*	22.1	25.1	21.2	26.3	20.3	27.8	19.7	29.3	18.9	30.3	18.5	31.5	17.9	32.7	17.6	34.1
	-35	5.4*	26.7	25.7	25.7	27.2	24.7	28.9	24.0	30.5	23.3	31.7	22.4	33.0	21.6	34.7	21.2	36.0
	-30	1.6*	32.0	26.0	31.3	27.9	30.2	29.8	29.2	31.5	28.5	33.0	27.5	34.5	26.6	36.4	25.8	37.9
	-25	1.3	38.0	26.4	36.9	28.5	35.9	30.8	34.9	32.5	33.8	34.7	32.9	36.0	32.1	37.9	31.0	39.5
	-20	3.6			43.4	28.9	42.5	31.4	41.6	33.4	40.5	35.6	39.6	37.5	38.2	39.2	37.1	41.0
	-15	6.2							49.5	34.1	48.2	36.4	47.1	38.3	46.1	40.5	44.8	42.4
MRI 90-8	-65	20.4*	9.4	26.0	8.8	27.0	8.4	27.5										
	-60	18.6*	12.0	28.0	11.3	29.0	10.8	31.0	10.3	31.5	10.0	31.5	9.6	31.5				
	-55	16.6*	15.3	29.7	14.7	31.0	13.9	32.0	13.3	33.3	12.9	33.7	12.5	34.3	12.0	35.0		
	-50	14.3*	19.4	31.2	18.5	32.5	17.7	34.0	16.9	35.5	16.5	36.0	16.0	37.0	15.6	38.0	15.1	39.0
	-45	11.7*	24.1	32.4	23.1	34.0	22.3	35.5	21.3	37.3	20.7	38.3	20.2	39.5	19.5	41.2	19.1	42.4
	-40	8.7*	29.4	33.4	28.2	35.0	27.1	37.0	26.3	39.0	25.2	40.4	24.6	42.0	23.8	43.6	23.4	45.4
	-35	5.4*	35.6	34.2	34.2	36.2	32.9	38.5	32.0	40.6	31.0	42.3	29.8	44.0	28.8	46.2	28.3	48.0
	-30	1.6*	42.7	34.7	41.7	37.2	40.3	39.7	38.9	42.0	38.0	44.0	36.6	46.0	35.5	48.5	34.4	50.5
	-25	1.3	50.6	35.2	49.2	38.0	47.8	41.0	46.5	43.3	45.1	46.2	43.8	48.0	42.8	50.5	41.3	52.6
	-20	3.6			57.9	38.5	56.7	41.8	55.5	44.5	54.0	47.5	52.8	50.0	50.9	52.3	49.5	54.6
	-15	6.2							66.0	45.5	64.2	48.5	62.8	51.0	61.5	54.0	59.7	56.5
MRI 90-12	-65	20.4*	14.1	39.0	13.2	40.5	12.6	41.3										
	-60	18.6*	18.0	42.0	17.0	43.5	16.2	46.5	15.5	47.3	15.0	47.3	14.4	47.3				
	-55	16.6*	23.0	44.6	22.1	46.5	20.9	48.0	20.0	50.0	19.4	50.6	18.8	51.5	18.0	52.5		
	-50	14.3*	29.1	46.8	27.8	48.8	26.6	51.0	25.4	53.3	24.8	54.0	24.0	55.5	23.4	57.0	22.7	58.5
	-45	11.7*	36.2	48.6	34.7	51.0	33.5	53.3	32.0	56.0	31.1	57.5	30.3	59.3	29.3	61.8	28.7	63.6
	-40	8.7*	44.1	50.1	42.3	52.5	40.7	55.5	39.5	58.5	37.8	60.6	36.9	63.0	35.7	65.4	35.1	68.1
	-35	5.4*	53.4	51.3	51.3	54.3	49.4	57.8	48.0	60.9	46.5	63.5	44.7	66.0	43.2	69.3	42.5	72.0
	-30	1.6*	64.1	52.1	62.6	55.8	60.5	59.6	58.4	63.0	57.0	66.0	54.9	69.0	53.3	72.8	51.6	75.8
	-25	1.3	75.9	52.8	73.8	57.0	71.7	61.5	69.8	65.0	67.7	69.3	65.7	72.0	64.2	75.8	62.0	78.9
	-20	3.6			86.9	57.8	85.1	62.7	83.3	68.8	81.0	71.3	79.2	75.0	76.4	78.5	74.3	81.9
	-15	6.2							99.0	68.3	96.3	72.8	94.2	76.5	92.3	81.0	89.6	84.8

**R717**

\*Inches of mercury below one standard atmosphere.

NOTES:

1. Direct interpolation of TR and BHP ratings is permissible. Extrapolation beyond limits of tables is not permissible.
2. Capacity ratings are based on suction gas superheating of 20°F at the compressor inlet. For every 5°F of suction gas superheating above 20°F, reduce capacity by 1%.
3. Capacity ratings are based on liquid subcooling of refrigerant serving the low stage to within 5°F of intermediate saturated temperature. Reduce booster capacity (TR) 1% for each additional 5°F increase in temperature of liquid refrigerant.
4. Capacity and brake horsepower are based on 1200 RPM. For higher and/or lower RPM for both V-belt and direct-drive, determine the actual capacity and horsepower by the factor of actual RPM to 1200 RPM. (See page 18 for Selection Procedure).

TABLE 8 - R12 CAPACITY AND BRAKE HORSEPOWER RATINGS 1200 RPM

	SUCTION		INTERMEDIATE DISCHARGE PRESS. (PSIG) & SAT. TEMP. (°F)																			
	SAT. TEMP (°F)	PRESS. (PSIG)	6.7 -5°		9.1 0°		11.8 5°		14.6 10°		17.7 15°		21.0 20°		24.6 25°		28.4 30°		32.6 35°		37.0 40°	
			TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP
MRI 90-2	-65	20.5*	2.4	6.3	2.3	6.3	2.1	6.4														
	-60	19.0*	3.0	6.8	2.8	6.9	2.6	6.9	2.5	7.0	2.3	7.2	2.1	7.3	1.9	7.3						
	-55	17.3*	3.6	7.2	3.4	7.3	3.2	7.4	3.1	7.5	2.9	7.7	2.7	7.8	2.5	7.9	2.2	8.0	2.0	8.0	1.8	8.1
	-50	15.4*	4.3	7.5	4.1	7.8	3.9	8.0	3.7	8.1	3.5	8.2	3.3	8.4	3.1	8.5	2.9	8.6	2.6	8.8	2.4	8.8
	-45	13.3*	5.1	7.9	4.9	8.2	4.7	8.4	4.5	8.5	4.3	8.8	4.0	8.9	3.8	9.1	3.5	9.3	3.3	9.6	3.0	9.7
	-40	11.0*	5.9	8.1	5.7	8.4	5.5	8.6	5.3	8.9	5.1	9.2	4.8	9.4	4.6	9.6	4.3	9.9	4.0	10.0	3.8	10.1
	-35	8.4*	6.9	8.3	6.7	8.6	6.4	9.0	6.2	9.2	6.0	9.6	5.7	9.9	5.4	10.1	5.1	10.3	4.9	10.5	4.6	10.7
	-30	5.5*	8.0	8.4	7.7	8.8	7.5	9.2	7.2	9.5	7.0	9.9	6.7	10.3	6.4	10.5	6.1	10.9	5.8	11.1	5.5	11.4
	-25	2.3*					8.6	9.4	8.3	9.7	8.1	10.4	7.7	10.5	7.4	11.0	7.1	11.3	6.8	11.6	6.5	12.0
-20	0.6															8.3	11.7	7.9	12.0	7.6	12.4	
MRI 90-4	-65	20.5*	4.9	12.6	4.6	12.7	4.2	12.9														
	-60	19.0*	6.0	13.5	5.6	13.8	5.3	13.9	4.9	14.1	4.6	14.3	4.2	14.5	3.8	14.7						
	-55	17.3*	7.2	14.3	6.9	14.7	6.5	14.8	6.1	15.1	5.8	15.4	5.3	15.6	4.9	15.8	4.5	15.9	4.1	16.0	3.6	16.2
	-50	15.4*	8.6	15.1	8.2	15.6	7.8	15.9	7.4	16.2	7.1	16.5	6.6	16.8	6.2	17.1	5.7	17.3	5.3	17.5	4.8	17.7
	-45	13.3*	10.2	15.8	9.8	16.4	9.3	16.8	8.9	17.0	8.5	17.5	8.0	17.9	7.6	18.1	7.1	18.5	6.6	19.1	6.1	19.3
	-40	11.0*	11.9	16.2	11.5	16.9	11.0	17.3	10.5	17.7	10.1	18.5	9.6	18.9	9.1	19.3	8.6	19.7	8.1	20.0	7.6	20.2
	-35	8.4*	13.8	16.6	13.4	17.3	12.8	18.0	12.4	18.5	11.9	19.1	11.3	19.7	10.8	20.2	10.3	20.7	9.7	21.1	9.2	21.4
	-30	5.5*	15.9	16.9	15.4	17.6	14.9	18.5	14.4	19.0	13.9	19.8	13.3	20.6	12.8	21.1	12.2	21.7	11.6	22.3	11.0	22.7
	-25	2.3*					17.2	18.7	16.6	19.4	16.1	20.8	15.4	21.1	14.9	21.9	14.3	22.7	13.6	23.2	13.0	23.9
-20	0.6															16.5	23.4	15.9	24.0	15.2	24.8	
MRI 90-6	-65	20.5*	7.3	18.9	6.8	19.0	6.3	19.3														
	-60	19.0*	9.0	20.3	8.5	20.7	7.9	20.8	7.4	21.1	6.9	21.5	6.3	21.8	5.7	22.0						
	-55	17.3*	10.8	21.5	10.3	22.0	9.7	22.1	9.2	22.6	8.6	23.0	8.0	23.3	7.4	23.7	6.7	23.9	6.1	24.0	5.4	24.2
	-50	15.4*	12.9	22.6	12.3	23.3	11.8	23.9	11.1	24.2	10.6	24.7	9.9	25.1	9.2	25.6	8.6	25.9	7.9	26.3	7.2	26.5
	-45	13.3*	15.2	23.6	14.6	24.5	14.0	25.1	13.4	25.5	12.8	26.3	12.0	26.8	11.3	27.2	10.6	27.8	9.9	28.7	9.2	29.0
	-40	11.0*	17.8	24.3	17.2	25.3	16.5	25.9	15.8	26.6	15.2	27.7	14.4	28.3	13.7	28.9	12.9	29.6	12.1	29.9	11.3	30.2
	-35	8.4*	20.7	24.9	20.0	25.9	19.2	27.0	18.5	27.7	17.9	28.7	17.0	29.6	16.3	30.3	15.4	31.0	14.6	31.6	13.8	32.1
	-30	5.5*	23.9	25.3	23.2	26.4	22.4	27.7	21.6	28.4	20.9	29.7	20.0	30.8	19.1	31.6	18.3	32.6	17.4	33.4	16.5	34.1
	-25	2.3*					25.8	28.1	24.9	29.1	24.2	31.2	23.2	31.6	22.3	32.9	21.4	34.0	20.4	34.7	19.5	35.9
-20	0.6															24.8	35.0	23.8	36.0	22.8	37.2	
MRI 90-8	-65	20.5*	9.7	25.2	9.1	25.3	8.5	25.7														
	-60	19.0*	11.9	27.0	11.3	27.6	10.6	27.7	9.9	28.1	9.2	28.6	8.4	29.0	7.6	29.3						
	-55	17.3*	14.4	28.6	13.7	29.3	13.0	29.5	12.2	30.1	11.5	30.7	10.6	31.1	9.8	31.6	9.0	31.8	8.1	32.0	7.2	32.3
	-50	15.4*	17.2	30.1	16.5	31.1	15.7	31.8	14.9	32.3	14.1	32.9	13.2	33.5	12.3	34.1	11.4	34.5	10.5	35.0	9.6	35.3
	-45	13.3*	20.3	31.5	19.5	32.7	18.7	33.5	17.8	34.0	17.0	35.0	16.0	35.7	15.1	36.2	14.2	37.0	13.2	38.2	12.2	38.6
	-40	11.0*	23.8	32.4	22.9	33.7	22.0	34.5	21.1	35.4	20.3	36.9	19.2	37.7	18.2	38.5	17.2	39.4	16.2	39.9	15.1	40.3
	-35	8.4*	27.8	33.2	26.7	34.5	25.7	36.0	24.7	36.9	23.9	38.2	22.7	39.4	21.7	40.4	20.6	41.3	19.5	42.1	18.4	42.8
	-30	5.5*	31.9	33.7	30.9	35.2	29.8	36.9	28.8	37.9	27.9	39.6	26.6	41.1	25.5	42.1	24.4	43.4	23.2	44.5	22.0	45.4
	-25	2.3*					34.4	37.4	33.2	38.8	32.3	41.6	30.9	42.1	29.7	43.8	28.5	45.3	27.2	46.3	26.0	47.8
-20	0.6															33.1	46.7	31.8	48.0	30.4	49.6	
MRI 90-12	-65	20.5*	14.6	37.8	13.7	38.0	12.7	38.6														
	-60	19.0*	17.9	40.5	16.9	41.4	15.9	41.6	14.8	42.2	13.8	42.9	12.6	43.5	11.4	44.0						
	-55	17.3*	21.7	42.9	20.6	44.0	19.5	44.3	18.3	45.2	17.3	46.1	15.9	46.7	14.7	47.4	13.5	47.7	12.2	48.0	10.8	48.5
	-50	15.4*	25.8	45.2	24.7	46.7	23.5	47.7	22.3	48.5	21.2	49.4	19.8	50.3	18.5	51.2	17.1	51.8	15.8	52.5	14.4	53.0
	-45	13.3*	30.5	47.3	29.3	49.1	28.0	50.3	26.7	51.0	25.5	52.5	24.0	53.6	22.7	54.3	21.2	55.5	19.8	57.3	18.3	57.9
	-40	11.0*	35.7	48.6	34.4	50.6	33.0	51.8	31.6	53.1	30.4	55.4	28.8	56.6	27.3	57.8	25.8	59.1	24.3	59.9	22.7	60.5
	-35	8.4*	41.4	49.8	40.1	51.8	38.5	54.0	37.1	55.4	35.8	57.3	34.0	59.1	32.5	60.6	30.9	62.0	29.2	63.2	27.5	64.2
	-30	5.5*	47.8	50.6	46.3	52.8	44.7	55.4	43.2	56.9	41.8	59.4	39.9	61.7	38.3	63.2	36.6	65.1	34.8	66.8	33.0	68.1
	-25	2.3*					51.5	56.1	49.8	58.2	48.4	62.4	46.3	63.2	44.6	65.7	42.8	68.0	40.8	69.5	39.0	71.7
-20	0.6															49.6	70.1	47.6	72.0	45.6	74.4	

\* Inches of mercury below one standard atmosphere

NOTES:

1. Direct interpolation of TR and BHP ratings is permissible. Extrapolation beyond limits of table is not permissible.
2. Capacity ratings are based on suction gas superheating of 20°F at the compressor inlet.
3. Capacity ratings are based on liquid subcooling of refrigerant serving the low stage to within 10°F of intermediate saturated temperature. Reduce booster capacity by 3.5% for each additional 10°F increase in temperature of liquid refrigerant.
4. Capacity and brake horsepower are based on 1200 RPM. For higher and/or lower RPM for both V-belt and direct-drive, determine the actual capacity and horsepower by the factor of actual RPM to 1200 RPM. (See page 18 for Selection Procedure).

TABLE 9 – R22 CAPACITY AND BRAKE HORSEPOWER RATINGS 1200 RPM

	SUCTION		INTERMEDIATE DISCHARGE PRESS. (PSIG) & SAT. TEMP. (°F)																			
	SAT. TEMP. (°F)	PRESS. (PSIG)	20.1 -5°		24.0 0°		28.2 5°		32.8 10°		37.7 15°		43.0 20°		48.7 25°		54.9 30°		61.5 35°		68.5 40°	
			TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP	TR	BHP
MRI 90-2	-65	14.4*	4.1	8.6	3.9	8.6	3.6	8.6	3.4	8.6	3.1	8.6	2.8	8.6	2.5	8.6						
	-60	12.0*	4.8	9.4	4.8	9.4	4.5	9.4	4.2	9.5	3.9	9.6	3.6	9.6	3.3	9.8	3.0	9.8				
	-55	9.2*	6.0	10.1	5.8	10.2	5.5	10.3	5.2	10.4	4.9	10.6	4.6	10.7	4.2	10.8	3.9	10.9	3.6	11.0	3.2	11.3
	-50	6.1*	7.2	10.8	6.9	10.9	6.6	11.1	6.3	11.3	5.9	11.4	5.6	11.6	5.3	11.8	4.9	11.9	4.6	12.1	4.2	12.5
	-45	1.7*	8.4	11.1	8.1	11.5	7.8	11.9	7.5	12.1	7.1	12.3	6.8	12.5	6.4	12.6	6.0	12.8	5.7	13.1	5.2	13.8
	-40	0.5	9.7	11.5	9.4	11.9	9.0	12.4	8.7	12.9	8.3	13.1	8.0	13.3	7.6	13.5	7.2	13.8	6.8	14.3	6.4	14.9
	-35	2.6	11.3	11.7	11.0	12.3	10.6	12.9	10.2	13.5	9.9	13.8	9.5	14.0	9.1	14.3	8.7	14.6	8.2	15.3	7.8	15.8
	-30	4.9	12.9	11.9	12.5	12.6	12.1	13.3	11.7	14.0	11.3	14.4	10.9	14.6	10.5	15.0	10.03	15.5	9.6	16.1	9.2	16.8
	-25	7.4																				
	-20	10.1																				
MRI 90-4	-65	14.4*	8.3	17.3	7.8	17.3	7.3	17.3	6.7	17.3	6.2	17.3	5.6	17.3	5.0	17.3						
	-60	12.0*	9.6	18.8	9.6	18.8	9.0	18.8	8.4	19.0	7.9	19.3	7.3	19.3	6.7	19.5	6.0	19.5				
	-55	9.2*	12.1	20.3	11.6	20.4	11.0	20.6	10.4	20.9	9.8	21.1	9.1	21.4	8.5	21.6	7.8	21.8	7.1	22.0	6.4	22.5
	-50	6.1*	14.3	21.5	13.8	21.9	13.1	22.3	12.5	22.5	11.9	22.9	11.2	23.3	10.6	23.5	9.8	23.8	9.1	24.3	8.4	25.0
	-45	1.7*	16.8	22.3	16.2	23.0	15.6	23.8	14.9	24.3	14.2	24.6	13.5	25.0	12.8	25.3	12.1	25.5	11.4	26.3	10.5	27.5
	-40	0.5	19.4	23.0	18.8	23.8	18.0	24.8	17.4	25.8	16.7	26.3	15.9	26.6	15.2	27.0	14.4	27.5	13.6	28.5	12.8	29.8
	-35	2.6	22.6	23.4	21.9	24.5	21.2	25.8	20.5	27.0	19.7	27.5	18.9	28.0	18.2	28.5	17.3	29.3	16.4	30.5	15.6	31.5
	-30	4.9	25.7	23.8	24.9	25.3	24.2	26.5	23.4	28.0	22.6	28.8	21.8	29.3	20.9	30.0	20.1	31.0	19.2	32.3	18.3	33.5
	-25	7.4																				
	-20	10.1																				
MRI 90-6	-65	14.4*	12.4	25.9	11.6	25.9	10.9	25.9	10.1	25.9	9.3	25.9	8.4	25.9	7.5	25.9						
	-60	12.0*	14.4	28.1	14.3	28.1	13.6	28.1	12.7	28.5	11.8	28.9	10.9	29.3	9.0	29.3						
	-55	9.2*	18.1	30.4	17.3	30.6	16.5	30.9	15.6	31.3	14.7	31.7	13.7	32.1	12.7	32.4	11.7	32.6	10.7	33.0	9.7	33.8
	-50	6.1*	21.5	32.3	20.6	32.8	19.7	33.4	18.8	33.8	17.8	34.3	16.8	34.9	15.9	35.3	14.8	35.6	13.7	36.4	12.6	37.5
	-45	1.7*	25.3	33.4	24.3	34.5	23.4	35.6	22.4	36.4	21.3	36.9	20.3	37.5	19.2	37.9	18.1	38.3	17.0	39.4	15.7	41.3
	-40	0.5	29.1	34.5	28.1	35.6	27.1	37.1	28.1	28.6	25.0	39.4	23.9	39.9	22.8	40.5	21.6	41.3	20.4	42.8	19.2	44.6
	-35	2.6	33.9	35.1	32.9	36.8	31.8	38.6	30.7	40.5	29.6	41.3	28.4	42.0	27.3	42.8	26.0	43.9	24.6	34.8	23.4	47.3
	-30	4.9	38.6	35.6	37.4	37.9	36.3	39.8	35.2	42.0	34.1	43.1	32.7	43.9	31.4	34.0	30.1	46.5	28.8	48.4	29.5	50.3
	-25	7.4																				
	-20	10.1																				
MRI 90-8	-65	14.4*	16.5	34.5	15.5	34.5	14.5	34.5	13.5	34.5	12.4	34.5	11.2	34.5	10.0	34.5						
	-60	12.0*	19.2	37.5	19.1	37.5	18.1	37.5	16.9	38.0	15.8	38.5	14.6	38.5	13.4	39.0	12.0	39.0				
	-55	9.2*	24.2	40.5	23.1	40.8	22.0	41.3	20.8	41.8	19.6	42.3	18.3	42.8	17.0	43.3	15.7	43.5	14.3	44.0	12.9	45.0
	-50	6.1*	28.7	43.0	27.5	43.8	26.3	44.5	25.0	45.0	23.7	45.8	22.4	46.5	21.2	47.0	19.7	47.5	18.2	48.5	16.7	50.0
	-45	1.7*	33.7	44.5	32.4	46.0	31.2	47.5	29.9	48.5	28.5	49.3	27.1	50.0	25.6	50.5	24.1	51.0	22.7	52.5	21.0	55.0
	-40	0.5	38.8	46.0	37.5	47.5	36.1	49.5	34.8	51.5	33.4	52.5	31.9	53.3	30.3	54.0	28.8	55.0	27.2	57.0	25.6	59.5
	-35	2.6	45.2	46.8	43.9	49.0	42.4	51.5	41.0	54.0	39.4	55.0	37.9	56.0	36.3	57.0	34.7	58.5	32.8	61.0	31.2	63.0
	-30	4.9	51.4	47.5	49.9	50.5	48.4	53.0	46.9	56.0	45.3	57.5	43.6	58.5	41.9	60.0	40.1	62.0	38.4	64.5	36.6	67.0
	-25	7.4																				
	-20	10.1																				
MRI 90-12	-65	14.4*	24.8	51.8	23.3	51.8	21.8	51.8	20.2	51.8	18.6	51.8	16.8	51.8	15.0	51.8						
	-60	12.0*	28.8	56.3	28.7	56.3	27.1	56.3	25.3	57.0	23.7	57.8	21.8	57.8	20.0	58.5	18.1	58.5				
	-55	9.2*	36.3	60.8	34.7	61.1	33.0	61.9	31.1	62.6	29.4	63.4	27.4	64.1	25.5	64.9	23.5	65.3	21.4	66.0	19.3	67.5
	-50	6.1*	43.0	64.5	41.3	65.6	39.4	66.8	37.5	67.5	35.6	68.6	33.6	69.8	31.8	70.5	29.5	71.3	27.4	72.8	25.1	75.0
	-45	1.7*	50.5	66.8	48.5	69.0	46.7	71.3	44.8	72.8	42.7	73.9	40.6	75.0	38.4	75.8	36.2	76.5	34.1	78.8	31.5	82.5
	-40	0.5	58.2	69.0	56.3	71.3	54.1	74.3	52.2	77.3	50.1	78.8	47.8	79.9	45.5	81.0	43.1	82.5	40.8	85.5	38.4	89.3
	-35	2.6	67.9	70.1	65.8	73.5	63.6	77.3	61.4	81.0	59.1	82.5	56.8	84.0	54.5	85.5	52.0	87.8	49.3	91.5	46.8	94.5
	-30	4.9	77.1	71.3	74.8	75.8	72.6	79.5	70.3	84.0	67.9	86.3	65.4	87.8	62.8	90.0	60.2	93.0	57.7	96.8	54.9	100.5
	-25	7.4																				
	-20	10.1																				

R22

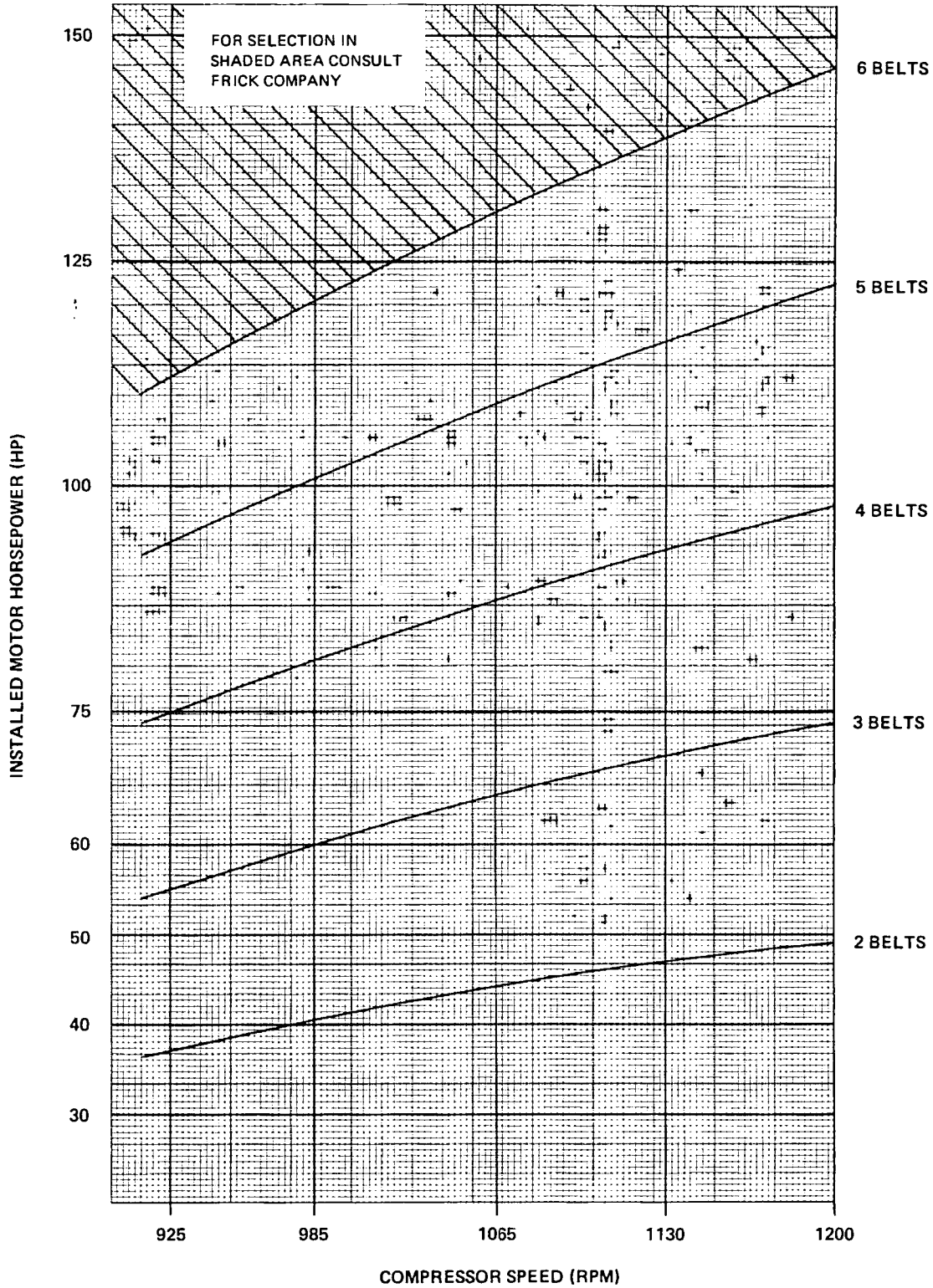
\*Inches of mercury below one standard atmosphere

NOTES:

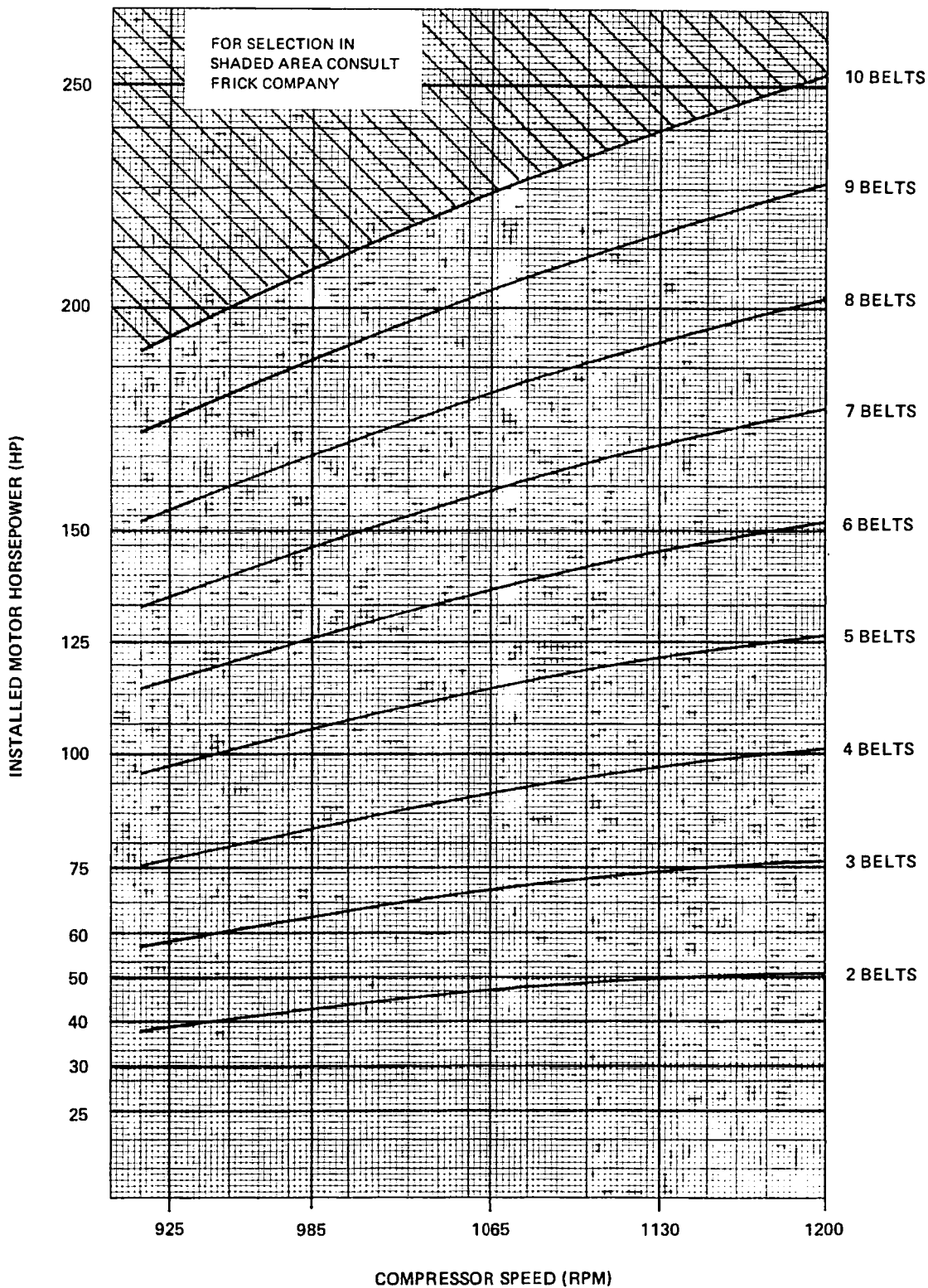
1. Direct interpolation of TR and BHP ratings is permissible. Extrapolation beyond limits of table is not permissible.
2. Capacity ratings are based on suction gas superheating of 20° F at the compressor inlet.
3. Capacity ratings are based on liquid subcooling of refrigerant serving the low stage to within 10° F of intermediate saturated temperature. Reduce booster capacity by 2.5% for each additional 10° F increase in temperature of liquid refrigerant.
4. Capacity and brake horsepower are based on 1200 RPM. For higher and/or lower RPM for both V-belt and direct-drive, determine the actual capacity and horsepower by the factor of actual RPM to 1200 RPM. (See page 18 for Selection Procedure).

MRI INDUSTRIAL RECIPROCATING COMPRESSOR UNITS  
ENGINEERING DATA

MRI 90-2, -4 and -6 CYLINDER VEE BELT DRIVE SELECTION (1780 RPM MOTOR)  
(Based on use of 19.5" P.D. compressor flywheel and 5 V section belts)



MRI 90-8, and -12 CYLINDER VEE BELT DRIVE SELECTION (1780 RPM MOTOR)  
(Based on use of 19.5" P.D. compressor flywheel and 5 V section belts)



MRI INDUSTRIAL RECIPROCATING COMPRESSOR UNITS  
ENGINEERING DATA

- Transmission data is based on 1780 RPM for 60 cycle motors; 1480 RPM for 50 cycle motors.
- The maximum compressor speed for all models is 1200 RPM and minimum speed is 900 RPM. Operation must be within these limits.
- For most efficient operation, belt pull should be on the bottom of the drive. Compressor rotation must be in the direction shown by the arrow on the compressor seal housing for 8 and 12 cylinder models.
- 6100 FPM is maximum permissible rim speed of cast iron pulleys. (38,000 psi minimum tensile stress.)
- Motor pully and actual number of belts furnished will be in accordance with data on pages 22, 23 and Table 10 below.

TABLE 10 – V-BELT DRIVE TRANSMISSION DATA (inches)

COMP. MODEL	Pitch Dia. of Belt Wheel	Face of Belt Wheel	Weight (No.) of Belt Wheel	Face of Motor Pulley	Max. Number of Belts	Belt Size	Pitch Length of Belts	60 CYCLE				50 CYCLE			
								Nom. R.P.M.	Nom. F.L. Motor R.P.M.	Pitch Dia. of Motor Pulley	C to C Wheel & Pulley	Nom. R.P.M.	Nom. F.L. Motor R.P.M.	Pitch Dia. of Motor Pulley	C to C Wheel & Pulley
								<b>MRI-HIGH STAGE and BOOSTER COMPRESSORS</b>							
MRI 90-2	19.5	5	179	2-5/8	3	5V	118	1200	1780	13.1	33-1/4	1200	1480	15.9	31-1/8
	19.5	5	179	2-5/8	3	5V	118	1130	1780	12.4	33-7/8	1130	1480	14.9	31-7/8
	19.5	5	179	2-5/8	3	5V	118	1065	1780	11.7	34-1/4	1050	1480	13.9	32-5/8
	19.5	5	179	2-5/8	3	5V	118	985	1780	10.8	34-7/8	995	1480	13.1	33-1/4
	19.5	5	179	2-5/8	3	5V	118	925	1780	10.2	35-3/8	900	1480	11.7	34-1/4
MRI 90-4	19.5	5	175	3-3/16	4	5V	118	1200	1780	13.1	33-1/4	1200	1480	15.9	31-1/8
	19.5	5	175	3-3/16	4	5V	118	1130	1780	12.4	33-7/8	1130	1480	14.9	31-7/8
	19.5	5	175	3-3/16	4	5V	118	1065	1780	11.7	34-1/4	1050	1480	13.9	32-5/8
	19.5	5	175	3-3/16	4	5V	118	985	1780	10.8	34-7/8	995	1480	13.1	33-1/4
	19.5	5	175	3-3/16	4	5V	118	925	1780	10.2	35-3/8	900	1480	11.7	34-1/4
MRI 90-6	19.5	5	170	4-11/16	6	5V	118	1200	1780	13.1	33-1/4	1200	1480	15.9	31-1/8
	19.5	5	170	4-11/16	6	5V	118	1130	1780	12.4	33-7/8	1130	1480	14.9	31-7/8
	19.5	5	170	4-11/16	6	5V	118	1065	1780	11.7	34-1/4	1050	1480	13.9	32-5/8
	19.5	5	170	4-11/16	6	5V	118	985	1780	10.8	34-7/8	995	1480	13.1	33-1/4
	19.5	5	170	4-11/16	6	5V	118	925	1780	10.2	35-3/8	900	1480	11.7	34-1/4
MRI 90-8	19.5	6	195	5-13/16	8	5V	140	1200	1780	13.1	44-1/4	1200	1480	15.9	42-1/8
	19.5	5	195	5-13/16	8	5V	140	1130	1780	12.4	44-7/8	1130	1480	14.9	42-7/8
	19.5	6	195	5-13/16	8	5V	140	1065	1780	11.7	45-3/8	1050	1480	13.9	43-5/8
	19.5	5	195	5-13/16	8	5V	140	985	1780	10.8	45-7/8	995	1480	13.1	44-1/4
	19.5	6	195	5-13/16	8	5V	140	925	1780	10.2	46-3/8	900	1480	11.7	45-3/8
MRI 90-12	19.5	8	235	7-3/16	10	5V	140	1200	1780	13.1	44-1/4	1200	1480	15.9	42-1/8
	19.5	8	235	7-3/16	10	5V	140	1130	1780	12.4	44-7/8	1130	1480	14.9	42-7/8
	19.5	8	235	7-3/16	10	5V	140	1065	1780	11.7	45-3/8	1050	1480	13.9	43-5/8
	19.5	8	235	7-3/16	10	5V	140	985	1780	10.8	45-7/8	995	1480	13.1	44-1/4
	19.5	8	235	7-3/16	10	5V	140	925	1780	10.2	46-3/8	900	1480	11.7	45-3/8

DIRECT DRIVE TRANSMISSION DATA @ 1180 RPM (60 Hz) AND 1450 RPM (50 Hz) AVAILABLE UPON REQUEST – CONTACT HOME OFFICE FOR SHAFT COUPLING SIZE REQUIRED. COUPLING SELECTION BASED ON SHORT SHAFT MOTOR.

**LUBRICATION**

All compressors are equipped with forced feed lubrication system which provides positive pressure lubrication to all internal moving parts. The heavy duty gear type oil pump is mounted for accessibility and is internally driven directly from the compressor crankshaft to assure positive oil pump operation with every crankshaft revolution. Bored oil passages in the crankshaft direct a generous oil supply to all main and connection rod bearings. Longitudinally drilled oil passages in each connecting rod permit pressure lubrication to the piston pins. An adjustable pressure regulating valve controls oil flow through the shaft seal to satisfy lubrication and cooling requirements.

MRI COMPRESSOR OIL CHARGE					
Cylinders	2	4	6	8	12
Oil Charge (Qts.)	8	9	10	21	23

**USE ONLY FRICK OIL TO PREVENT VOIDING OF COMPRESSOR WARRANTY.**

The oil supply contained in the compressor crankcase is drawn through a fine mesh strainer before circulation to the oil pump and other moving compressor parts.

The strainer traps any foreign particles which may have accidentally entered the compressor crankcase.

Oil level and condition can be easily observed through the built-in sight glass in the crankcase.

All compressors are equipped with an externally mounted oil filter. The cartridge type filter element is easily removed for inspection or replacement.

A crankcase oil heater is furnished as standard equipment on all compressors. The electric heating element maintains a constant oil temperature to minimize absorption of refrigerant by oil in the crankcase during compressor shutdown.

**REFRIGERANT COOLANT**

Refrigerant cooling of oil topheads is available as an option and the accessory package consists of a thermal expansion valve, solenoid and strainer. A built up 3-valve bypass and back pressure regulator valve are available as options also.

Liquid refrigerant may be used directly from the high pressure receiver. The suction line from the oil cooler should be connected to the suction main before the interstage cooler of a 2-stage system or the suction trap of a single stage system.

**WATER COOLANT**

Ammonia high stage and booster compressors are equipped with water cooled cylinder heads as standard. Halocarbon compressors are equipped with air cooled heads. Water cooled cylinder heads are available as an option for halocarbon compressors and recommended for R22 when applied above 110° F condensing temperature.

All R717, R12, R22, R290 and R502 compressors include an externally mounted oil cooler, as standard, as arranged for either water or refrigerant cooling. When water is used as the coolant, circulation should be directed through the oil cooler and cylinder heads in parallel. Refer to TABLE 11 for oil filter-cooler usage.

All high stage and booster (8, 12 cylinder) compressors include an externally mounted oil filter-cooler, as standard, arranged for either water or refrigerant cooling. When water is used as the coolant, circulation should be directed through the filter-cooler and cylinder heads in parallel. Refer to TABLE 11 for oil filter-cooler and or filter usage.

COMP. MODEL	HIGH STAGE	BOOSTER		
	ALL REFRIGERANTS	R717	R12	R22
MRI 90-2	1	3	3	3
MRI 90-4	1	3	3	3
MRI 90-6	2	3	3	3
MRI 90-8	2	1	1	1
MRI 90-12	2	1	1	1

1 - Indicates low capacity filter-cooler usage. (1 cartridge)  
2 - Indicates high capacity filter-cooler usage. (2 cartridge)  
3 - Indicates Cuno filter use only.

TABLE 11 - OIL FILTER-COOLER USAGE

Actual GPM water requirements will vary with the temperature of the water, compressor size and operating conditions. The flow rates in Table 12 will maintain discharge temperature and oil temperature within acceptable limits. The temperature of the water leaving the compressor cylinder heads and the oil cooler should not exceed 115° F.

COMP. MODEL	HIGH STAGE		BOOSTER
	R717, R22, R502	R290 R12	R12, R22, R717
MRI 90-2	3*	3*	1/2
MRI 90-4	4*	4*	1
MRI 90-6	5*	5*	1-1/2
MRI 90-8	6*	5*	4*
MRI 90-12	8*	6*	5*

Oil coolers for all compressors require 2 GPM water. Flow rates based on 85° water entering cooler and compressor cylinder covers.

\*Includes recommended 2 GPM water flow rate through oil cooler.

TABLE 12 - RECOMMENDED WATER FLOW RATES GPM

**UNLOADED STARTING**

All compressors are equipped with a percentage of unloaded start as standard which permits the use of normal torque motors and reduced voltage starters.

**EXTERNAL BYPASS**

When full unloaded compressor starting is required, an external bypass arrangement is recommended. This system consists of a bypass located between the compressor discharge and check valve to the suction inlet to the compressor. Depending on the bypass line size, a Frick pilot operated check valve or solenoid may be used. During compressor start up, discharge gas is circulated externally to the compressor. Starting against this reduced head pressure achieves essentially full unloaded start.

**AUTOMATIC CAPACITY REDUCTION**

Standard arrangements of automatic capacity reduction are installed to balance compressor capacity with the actual cooling load of the system. For system capacity reduction beyond standard compressor unloading, an external balanced loader arrangement is recommended.

All compressor capacity reduction arrangements are designed for automatic operation with the use of dependable pressurestats. Temperature controls are not generally recommended in view of the slower response, and are not used in the MRI control panel.

Capacity reduction is accomplished by the automatic unloading of selected cylinder banks by means of a hydraulic actuated control lever located in each cylinder cover. Oil pressure retracts the lever arms, which in turn frees the suction valves to operate in the normal manner. Lack of oil pressure permits the lever arms to hold the suction valves in the fully open position to unload compressor cylinders.

Three-way oil solenoids are used to control the flow of oil under pressure from the oil pump to the cylinder head covers. Oil solenoids are de-energized, relieving pressure from the lever arm, to achieve cylinder unloading.

Reduction in compressor capacity by cylinder unloading reduces brake horsepower requirements, in addition to balancing actual system cooling requirements. Table 13 indicates the approximate percent (%) of full capacity BHP expected at various steps of actual compressor capacity.

**ELECTRICAL**

To standardize the wiring diagram as applied to MRI High Stage Compressors, Frick Company uses the following system of component location and application:

- (1) At the extreme left of the diagram is a vertical column of numbers, located on a horizontal circuit line and continuing down through the entire diagram.
- (2) At the extreme right of the diagram a number or group of numbers appear at irregular intervals immediately opposite a respective relay or starter coil (symbolized by a circle). These numbers refer to the line or lines where a contact or contacts for these particular relays or starters may be found. Any under-

**EXTERNAL CAPACITY REDUCTION**

When freezing systems require a reduction in capacity for brief or extended periods in excess of compressor capability external unloading is recommended. The external system consists of a bypass line located between the compressor discharge and check valve to the suction side of the compressor. The preferred arrangement returns the discharge gas from the compressor directly to the inlet of the evaporator for necessary desuperheating. This method eliminates the need for gas desuperheating with liquid refrigerant and extra controls.

A Frick pilot operated check valve or solenoid may be used in conjunction with a back pressure regulating valve.

The external unloading or balanced loader system will take over only after the compressor has unloaded to its lowest step assuring continuous compressor operation at the required level of system capacity.

Another important advantage of the external unloading system is the ability to protect the compressor from exceeding maximum design compression ratio. A discharge temperature cutout should be included as a safety control whenever unloading is utilized.

MODEL	Unloaded Number Cylinders Unloaded	Starting Standard Unloaded Start (%)	Capacity Reduction %		Number Solenoid Valves
			Reduction Cap.	BHP	
MRI 90-2	1	50	50	33	1
MRI 90-4	2	50	50	33	1
MRI 90-6	2	66	33	25	1
	4		66	50	2
MRI 90-8	2	75	25	17	1
	4		50	33	2
	6		75	67	3
MRI 90-12	4	66	33	25	1
	6		50	33	2
	8		66	50	3

**TABLE 13 – UNLOADED STARTING AND CAPACITY REDUCTION**

scored numbers indicate the more infrequent normally closed contacts.

The motor starter should be mounted at a convenient location near the compressor. A fused disconnect switch should be installed in the power circuit ahead of the starter.

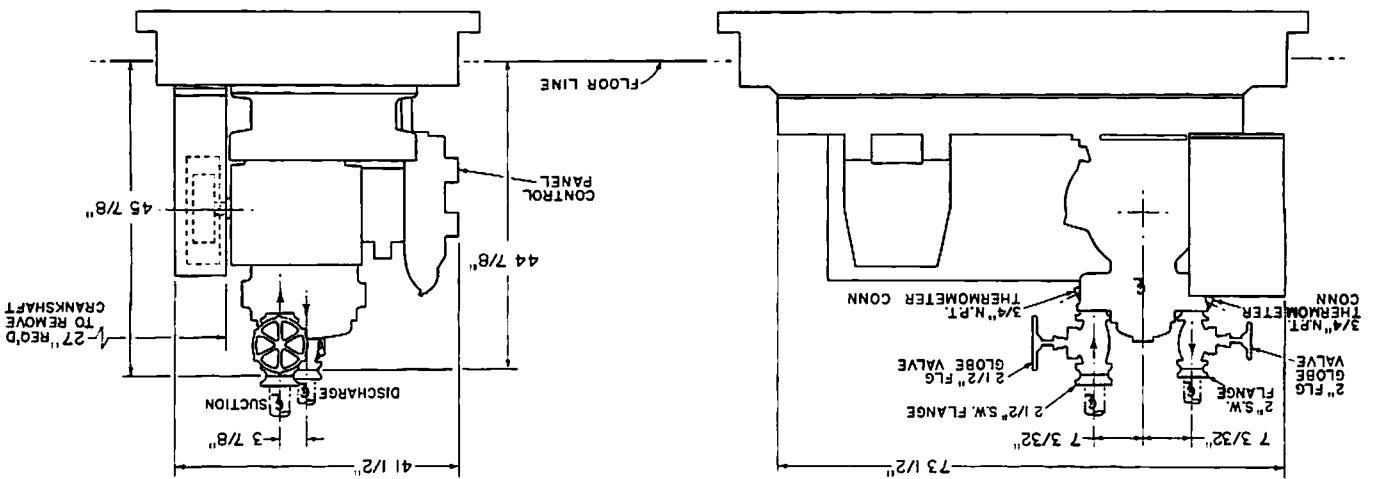
HIGH PRESSURE, LOW PRESSURE, DISCHARGE TEMPERATURE and OIL PRESSURE CUTOUTS (HPCO, LPCO, DTCO, OPCO) are major safety and operating controls furnished as standard by Frick Company and are necessary to provide protection during compressor operation.





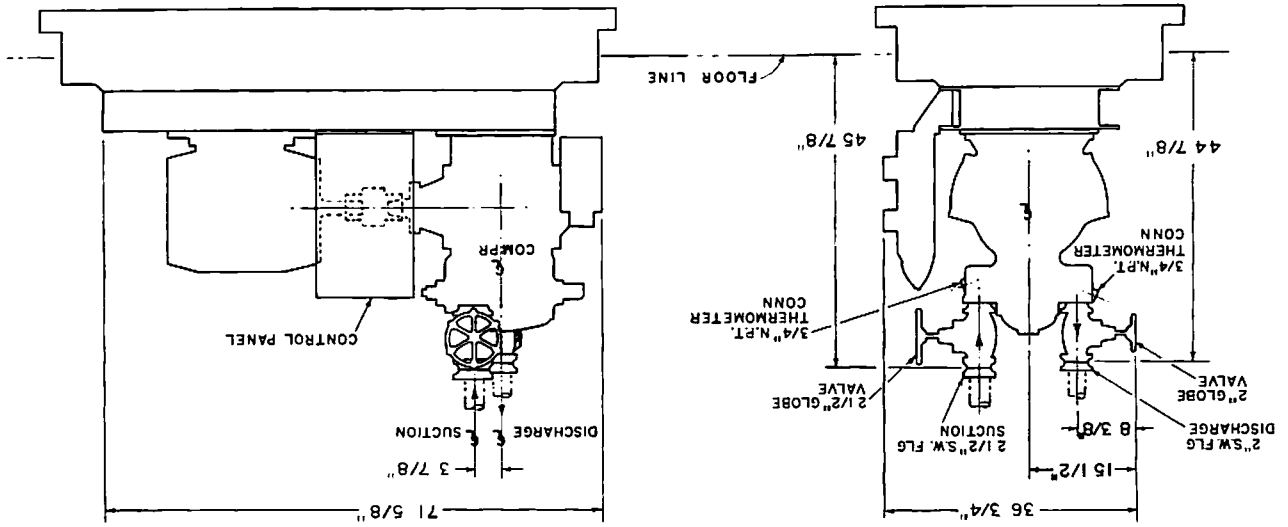
MRI INDUSTRIAL RECIPROCATING COMPRESSOR UNITS  
DIMENSIONS

MRI - 2 CYLINDER V-BELT DRIVE

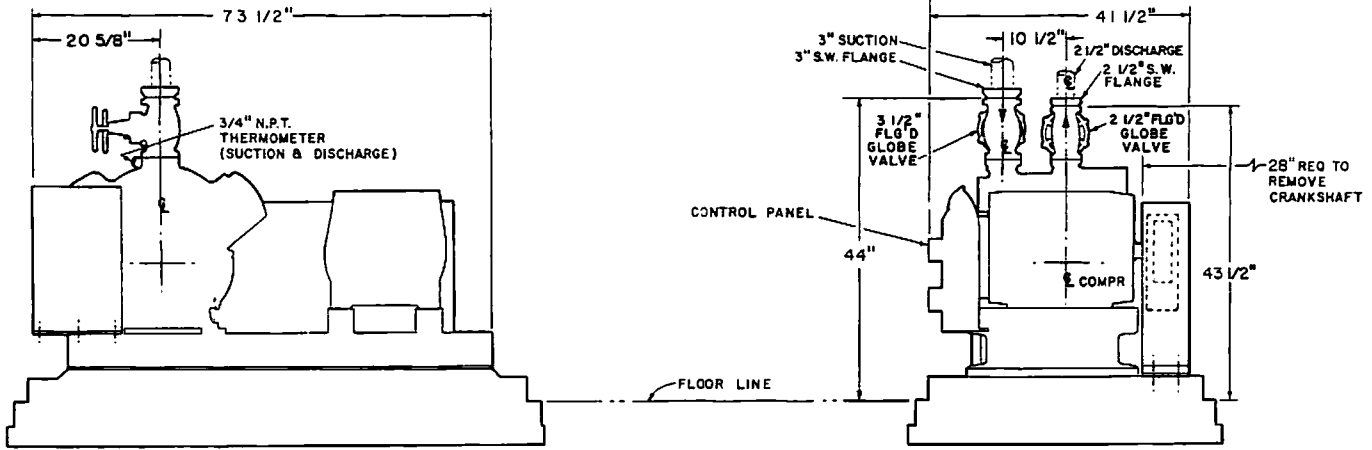


FOR REFERENCE ONLY -  
USE CERTIFIED DRAWINGS FOR ERECTION

MRI - 2 CYLINDER DIRECT DRIVE

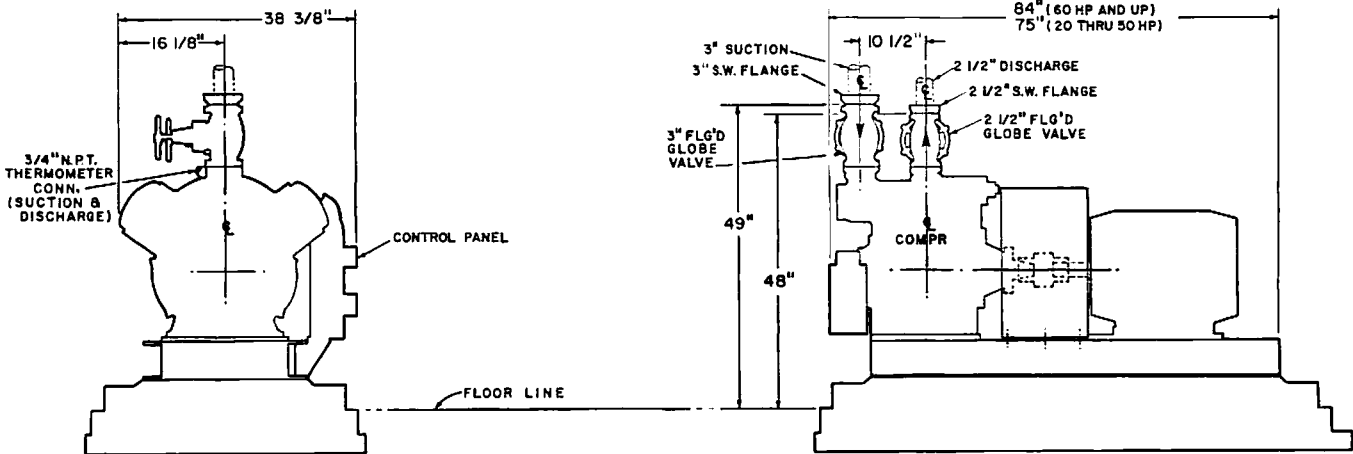


MRI INDUSTRIAL RECIPROCATING COMPRESSOR UNITS  
DIMENSIONS

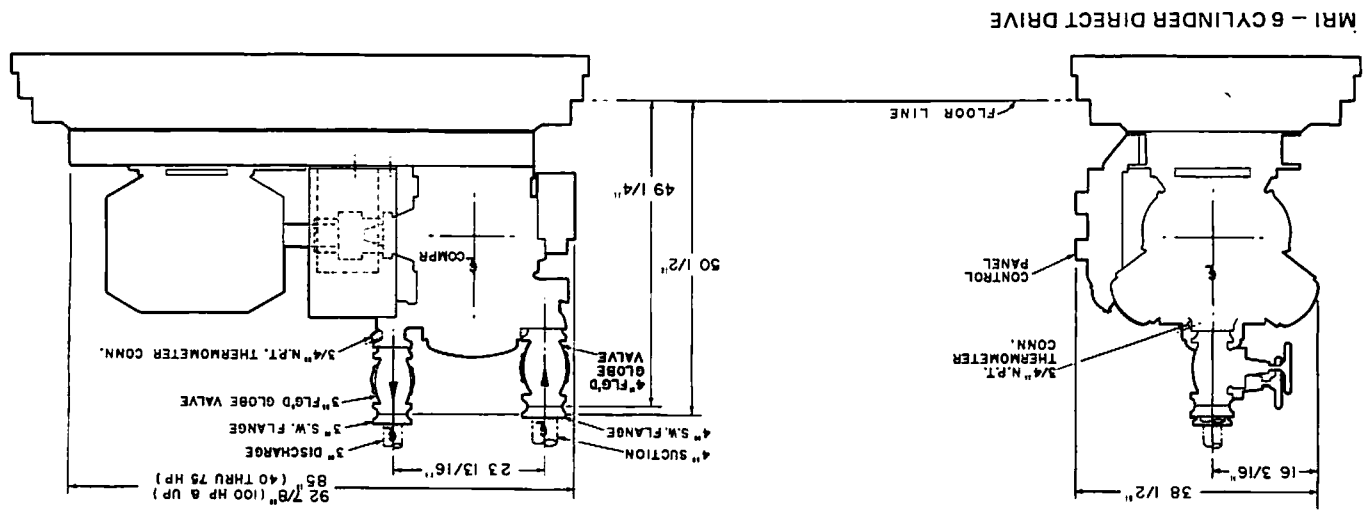


MRI - 4 CYLINDER V-BELT DRIVE

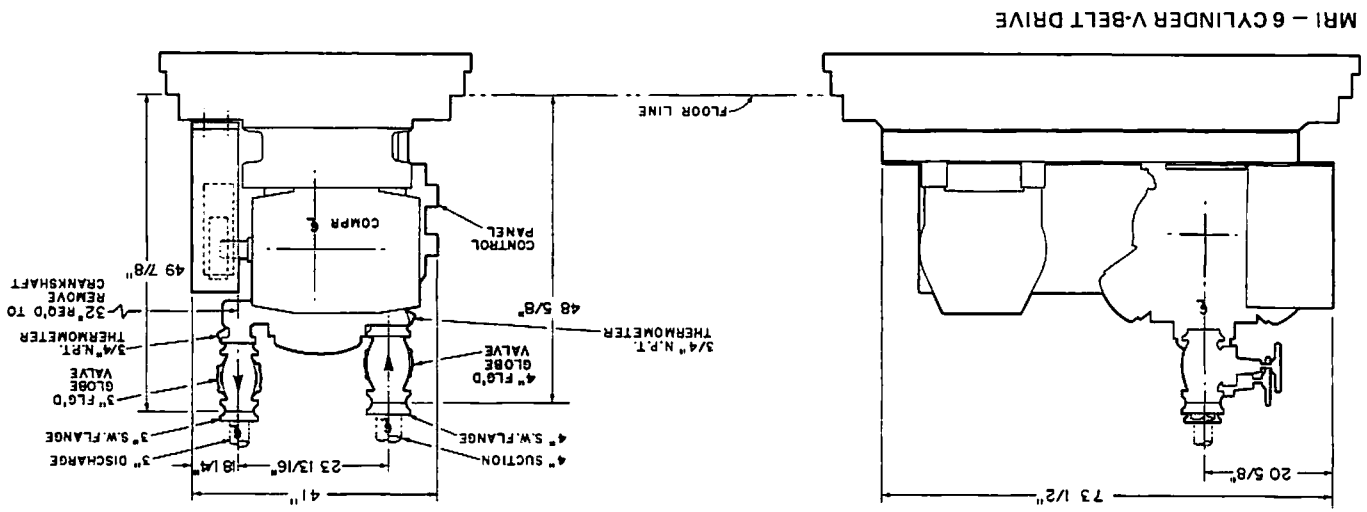
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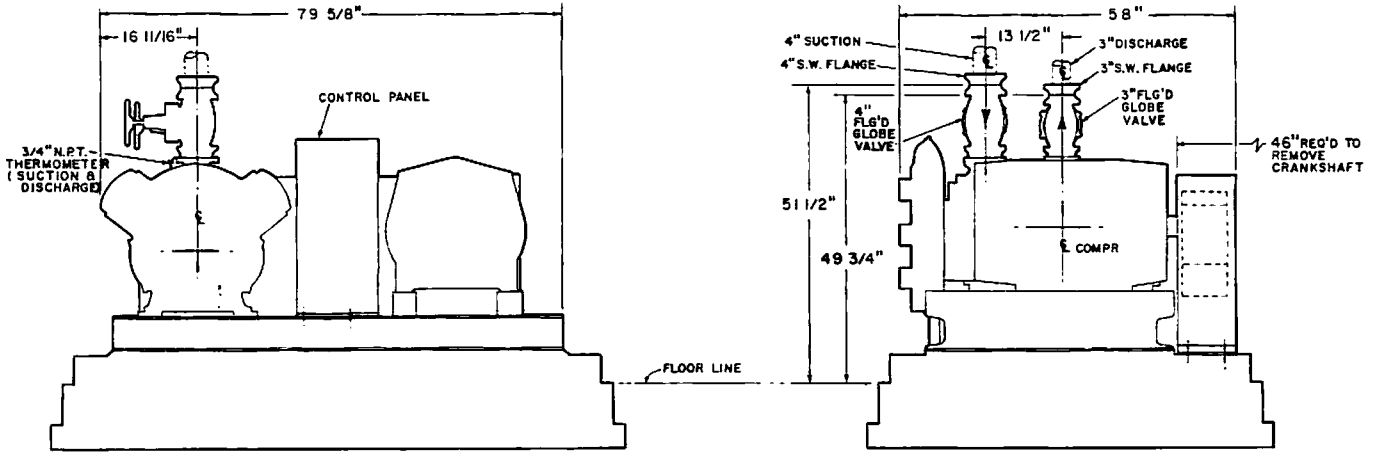


MRI - 4 CYLINDER DIRECT DRIVE



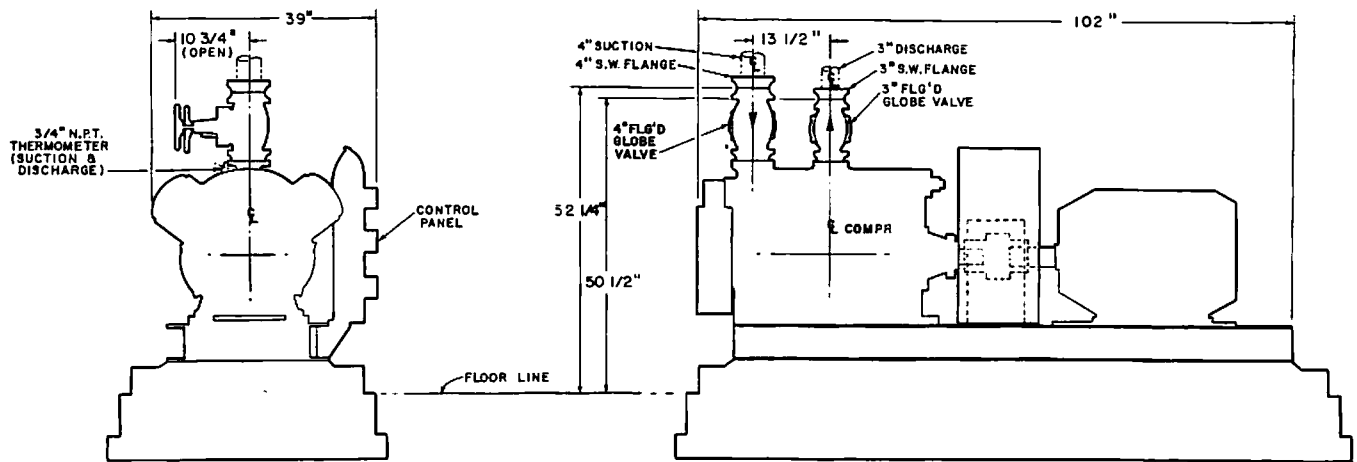
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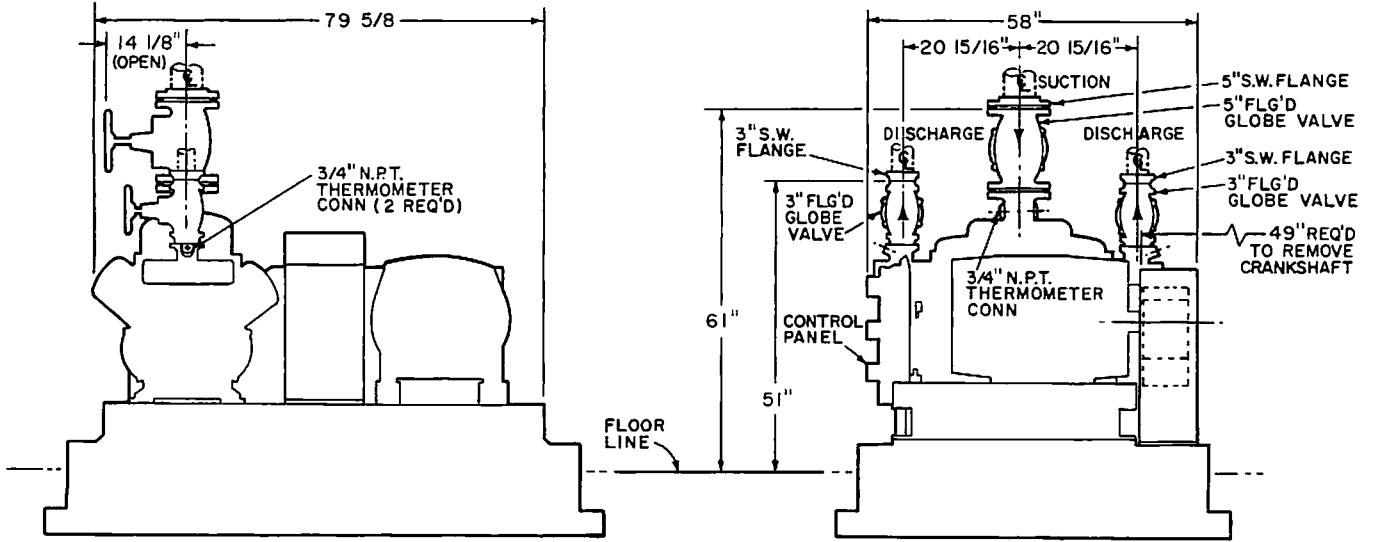


MRI - 8 CYLINDER V-BELT DRIVE

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USE CERTIFIED DRAWINGS FOR ERECTION

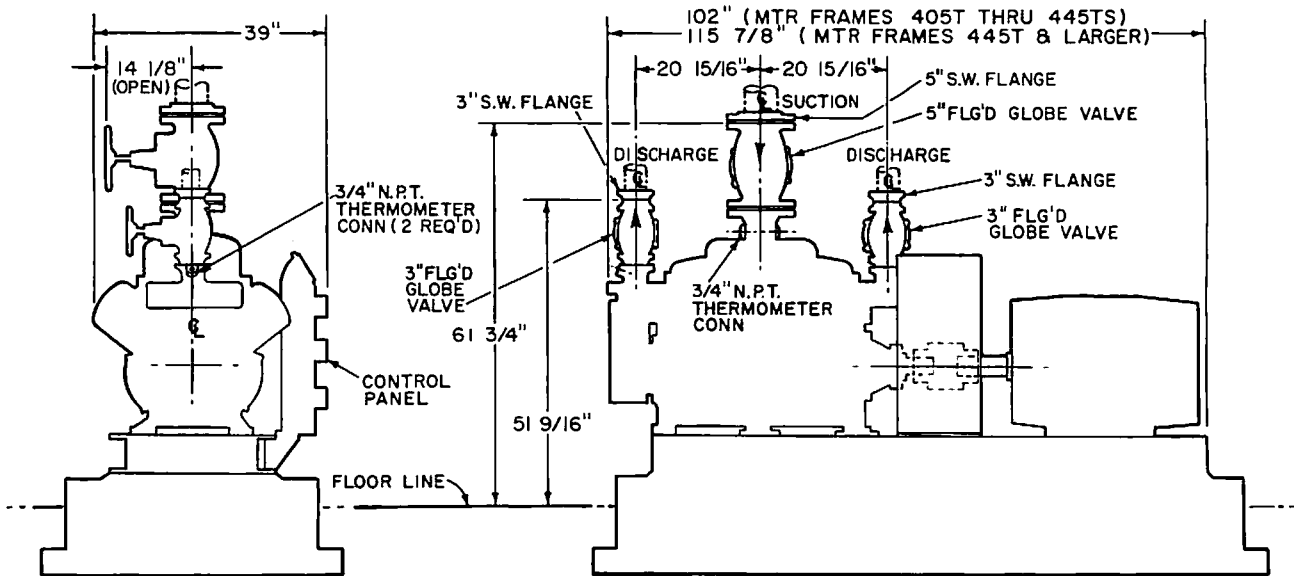


MRI - 8 CYLINDER DIRECT DRIVE



MRI - 12 CYLINDER V-BELT DRIVE

FOR REFERENCE ONLY—  
USE CERTIFIED DRAWINGS FOR ERECTION



MRI - 12 CYLINDER DIRECT DRIVE