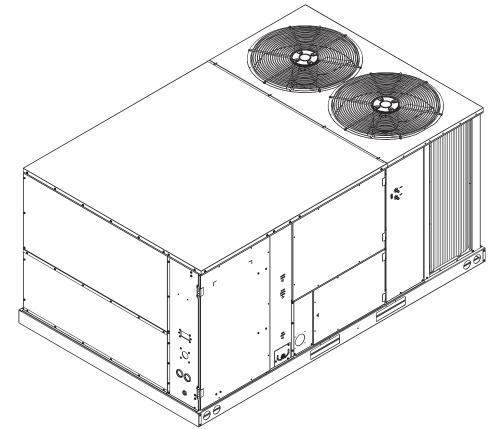
# INSTALLATION INSTRUCTIONS PACKAGE HEAT PUMPS FEATURING EARTH-FRIENDLY R410 REFRIGERANT

RJNL-B/RJNL-C SERIES 7.5 & 10 TON 60 Hz MODELS





Recognize this symbol as an indication of Important Safety Information!

## **DO NOT DESTROY**

PLEASE READ CAREFULLY AND KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

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THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED, LICENSED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS UNIT. READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION, ADJUSTMENT, SERVICE OR MAINTENANCE POSSIBLY RESULTING IN FIRE, ELECTRICAL SHOCK, PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.



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Recognize this symbol as an indication of Important Safety Information!

## II. INTRODUCTION

### **A** WARNING

THE MANUFACTURER'S WARRANTY DOES NOT COVER ANY DAMAGE OR DEFECT TO THE HEAT PUMP CAUSED BY THE ATTACHMENT OR USE OF ANY COMPONENTS, ACCESSORIES OR DEVICES (OTHER THAN THOSE AUTHORIZED BY THE MANUFACTURER) INTO, ONTO OR IN CONJUNCTION WITH THE HEAT PUMP. YOU SHOULD BE AWARE THAT THE USE OF UNAUTHORIZED COMPO-NENTS, ACCESSORIES OR DEVICES MAY ADVERSELY AFFECT THE OPERATION OF THE HEAT PUMP AND MAY ALSO ENDANGER LIFE AND PROPERTY. THE MANUFAC-TURER DISCLAIMS ANY RESPONSIBILITY FOR SUCH LOSS OR INJURY RESULTING FROM THE USE OF SUCH UNAUTHORIZED COMPONENTS, ACCESSORIES OR DEVICES. This booklet contains the installation and operating instructions for your package heat pump. There are a few precautions that should be taken to derive maximum satisfaction from it. Improper installation can result in unsatisfactory operation or dangerous conditions.

Read this booklet and any instructions packaged with separate equipment required to make up the system prior to installation. Give this booklet to the owner and explain its provisions. The owner should retain this booklet for future reference.

## **III. CHECKING PRODUCT RECEIVED**

Upon receiving the unit, inspect it for any damage from shipment. Claims for damage, either shipping or concealed, should be filed immediately with the shipping company. Check the unit model number, heating size, electrical characteristics, and accessories to determine if they are correct.

#### IV. EQUIPMENT PROTECTION FROM THE ENVIRONMENT

The metal parts of this unit may be subject to rust or deterioration in adverse environmental conditions. This oxidation could shorten the equipment's useful life. Salt spray, fog or mist in seacoast areas, sulphur or chlorine from lawn watering systems, and various chemical contaminants from industries such as paper mills and petroleum refineries are especially corrosive.

If the unit is to be installed in an area where contaminants are likely to be a problem, special attention should be given to the equipment location and exposure.

- 1. Avoid having lawn sprinkler heads spray direction on the unit cabinet.
- 2. In coastal areas, locate the unit on the side of the building away from the waterfront.
- 3. Shielding provided by a fence or shrubs may give some protection.

Regular maintenance will reduce the buildup of contaminants and help to protect the unit's finish.

## **A**WARNING

DISCONNECT ALL POWER TO THE UNIT BEFORE START-ING MAINTENANCE. FAILURE TO DO SO CAN RESULT IN SEVERE ELECTRICAL SHOCK OR DEATH.

- 1. Frequent washing of the cabinet, fan blade and coil with fresh water will remove most of the salt or other contaminants that build up on the unit.
- 2. Regular cleaning and waxing of the cabinet with a good automobile polish will provide some protection.
- 3. A good liquid cleaner may be used several times a year to remove matter that will not wash off with water.

Several different types of protective coatings are offered in some areas. These coatings may provide some benefit, but the effectiveness of such coating materials cannot be verified by the equipment manufacturer.

The best protection is frequent cleaning, maintenance and minimal exposure to contaminants.

## **V. SPECIFICATIONS**

#### A. GENERAL

The Packaged Heat Pump is available without auxiliary heat or with 15, 20, 30 or 40 kW electric heat. Cooling and heating capacities of 7½, and 10 nominal tons are available. Units are convertible from horizontal supply and return to bottom supply and return by relocation of supply and return air access panels. See cover installation detail.

The units are weatherized for mounting outside of the building.

The information on the rating plate is in compliance with the FTC and DOE rating for single phase units. The following information is for three phase units which **are not** covered under the DOE certification program.

1. The efficiency rating of this unit is a product thermal efficiency rating determined under continuous operating conditions independent of any installed system.

#### **B. MAJOR COMPONENTS**

The unit includes a hermetically-sealed refrigerating system (consisting of a compressor, condenser coil, evaporator coil biflow thermal expansion valve, reversing valve), a circulation air blower, a condenser fan, and all necessary internal electrical wiring. The cooling system of these units is factory-evacuated, charged and performance tested. Refrigerant amount and type are indicated on rating plate.

#### C. R-410A REFRIGERANT

All units are factory charged with R-410A refrigerant.

1. Specification of R-410A:

Application: <u>R-410A is not a drop-in replacement for R-22;</u> equipment designs must accommodate its higher pressures. It cannot be retrofitted into R-22 units.

**Pressure:** The pressure of R-410A is approximately 60% (1.6 times) greater than R-22. Recovery and recycle equipment, pumps, hoses and the like need to have design pressure ratings appropriate for R-410A. *Manifold sets need to range up to 800 psig high-side and 250 psig low-side with a 550 psig low-side retard.* Hoses need to have a service pressure rating of 800 psig. Recovery cylinders need to have a 400 psig service pressure rating. DOT 4BA400 or DOT BW400.

**Combustibility:** At pressures above 1 atmosphere, mixture of R-410A and air can become combustible. <u>R-410A and air</u> should never be mixed in tanks or supply lines, or be allowed to accumulate in storage tanks. Leak checking should never be done with a mixture of R-410A and air. Leak checking can be performed safely with nitrogen or a mixture of R-410A and nitrogen.

#### 2. Quick Reference Guide For R-410A

• R-410A refrigerant operates at approximately 60% higher pressure (1.6 times) than R-22. Ensure that servicing equip-

ment is designed to operate with R-410A.

- R-410A refrigerant cylinders are pink.
- R-410A, as with other HFC's is only compatible with POE oils.
- Vacuum pumps will not remove moisture from POE oil.
- R-410A systems are to be charged with liquid refrigerants. Prior to March 1999, R-410A refrigerant cylinders had a dip tube. These cylinders should be kept upright for equipment charging. Post March 1999 cylinders do not have a dip tube and should be inverted to ensure liquid charging of the equipment.
- Do not install a suction line filter drier in the liquid line.
- A liquid line filter drier is standard on every unit.
- Desiccant (drying agent) must be compatible for POE oils and R-410A.
- 3. Thermostatic Expansion Valve (TXV)

The Bi-Flow TXV is specifically designed to operate with R-410A heat pumps. Replacement of the TXV should only be made with the factory specified bi-flow R-410A valve. Do not use an R-22 TXV.

4. Tools Required For Installing & Servicing R-410A Models

Manifold Sets:

- -Up to 800 PSIG High side
- -Up to 250 PSIG Low Side
- -550 PSIG Low Side Retard

Manifold Hoses:

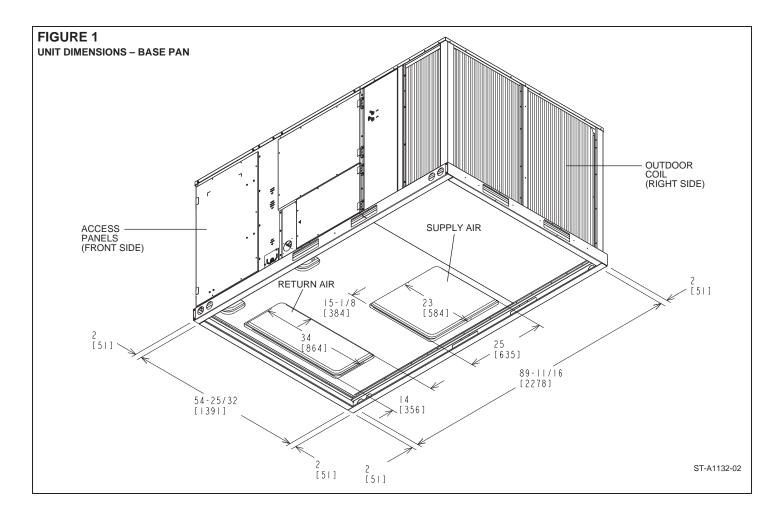
-Service Pressure Rating of 800 PSIG

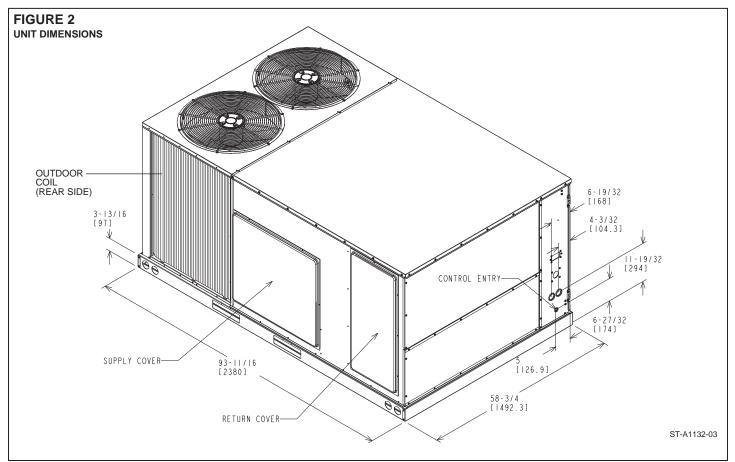
Recovery Cylinders: -400 PSIG Pressure Rating

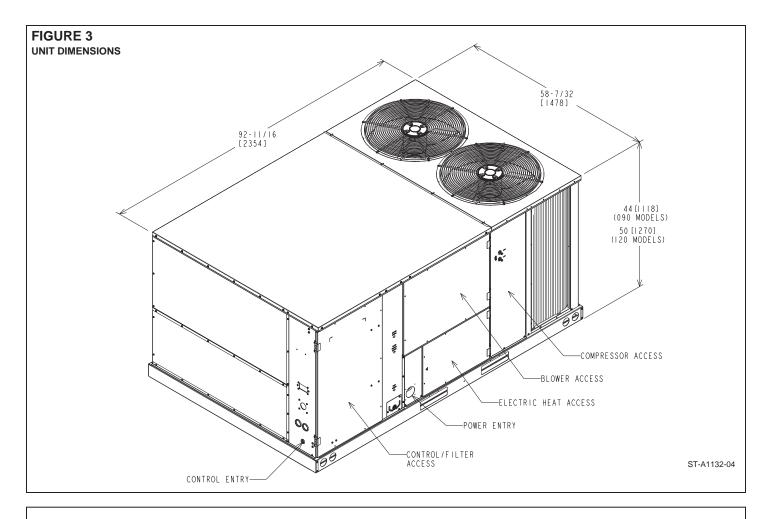
-Dept. of Transportation 4BA400 or BW400

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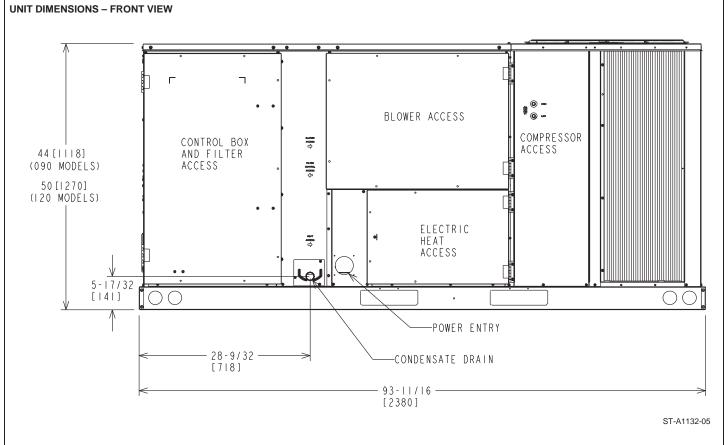
R-410A systems operate at higher pressures than R-22 systems. Do not use R-22 service equipment or components on R-410A equipment.

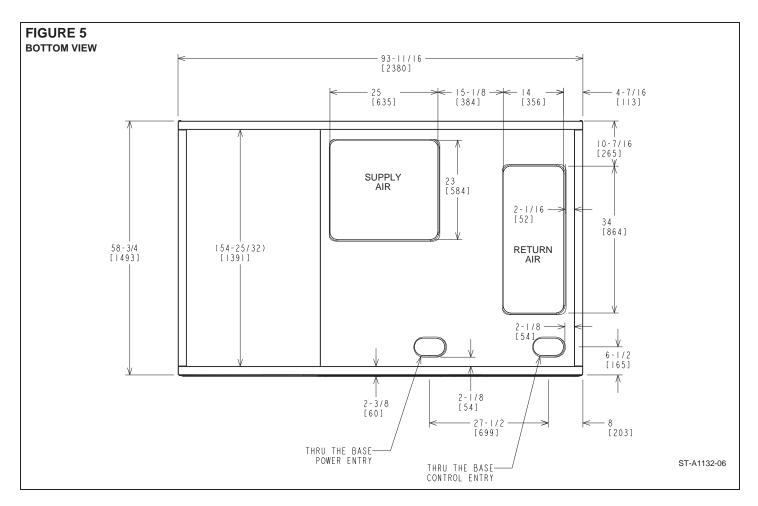


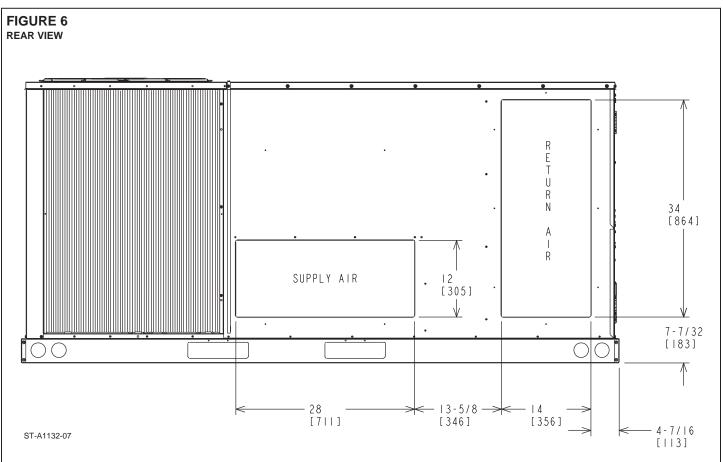




#### FIGURE 4







## **GENERAL DATA**

Model RJNL-Series	B090CL/C090CL	B090CM/C090CM	B090CN/C090CN	B090DL/C090DL
Cooling Performance <sup>1</sup>				CONTINUED
Gross Cooling Capacity Btu [kW]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]
EER/SEER <sup>2</sup>	11.1/NA	11.1/NA	11.1/NA	11.1/NA
Nominal CFM/ARI Rated CFM [L/s]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]
ARI Net Cooling Capacity Btu [kW]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]
Net Sensible Capacity Btu [kW]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]
Net Latent Capacity Btu [kW]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]
IEER <sup>3</sup>	11.9	11.9	11.9	11.9
Net System Power kW	8.47	8.47	8.47	8.47
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Rating	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]
System Power KW / COP	7.5/3.4	7.5/3.4	7.5/3.4	7.5/3.4
Low Temp Btuh [kW] Rating	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]
System Power KW / COP	6.62/2.3	6.62/2.3	6.62/2.3	6.62/2.3
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB) <sup>5</sup>	88	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]
Rows / FPI [FPcm]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP			
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	2	2	3	2
Motor RPM Motor Frame Size	1725 56	1725 56	1725 56	1725 56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes		Yes
(No.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]
Refrigerant Charge Oz. [g]	350 [9922]	350 [9922]	350 [9922]	350 [9922]
Weights				
Net Weights Ibs. [kg]	1009 [458]	1009 [458]	1017 [461]	1009 [458]
Ship Weights Ibs. [kg]	1089 [494]	1089 [494]	1097 [498]	1089 [494]

#### NOTES:

Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.

2. EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.

3. Integrated Part Load Value is rated in accordance with AHRI Standard 210/240 or 360. Units are rated at 80° F ambient, 80° F entering dry bulb, and 67° F entering wet bulb at AHRI rated cfm.

Model RJNL-Series	B090DM/C090DM	B090DN/C090DN	B090YL/C090YL	B <u>090YM/C090YM</u>
Cooling Performance <sup>1</sup>				CONTINUED
Gross Cooling Capacity Btu [kW]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]	98,000 [28.71]
EER/SEER <sup>2</sup>	11.1/NA	11.1/NA	11.1/NA	11.1/NA
Nominal CFM/ARI Rated CFM [L/s]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]	3000/2925 [1416/1380]
ARI Net Cooling Capacity Btu [kW]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]	94,000 [27.54]
Net Sensible Capacity Btu [kW]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]	70,800 [20.74]
Net Latent Capacity Btu [kW]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]	23,200 [6.8]
IEER <sup>3</sup>	11.9	11.9	11.9	11.9
Net System Power kW	8.47	8.47	8.47	8.47
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Rating	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]	87,000 [25.49]
System Power KW / COP	7.5/3.4	7.5/3.4	7.5/3.4	7.5/3.4
Low Temp Btuh [kW] Rating	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]	52,000 [15.24]
System Power KW / COP	6.62/2.3	6.62/2.3	6.62/2.3	6.62/2.3
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB) <sup>5</sup>	88	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]	24.88 [2.31]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]	13.5 [1.25]
Rows / FPI [FPcm]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]	3 / 18 [7]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP			
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	2	2	2	2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(No.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]	(6)2x18x18 [51x457x457]
Refrigerant Charge Oz. [g]	350 [9922]	350 [9922]	350 [9922]	350 [9922]
Weights				
Net Weights Ibs. [kg]	1009 [458]	1017 [461]	1009 [458]	1009 [458]

#### NOTES:

Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.

2. EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.

3. Integrated Part Load Value is rated in accordance with AHRI Standard 210/240 or 360. Units are rated at 80° F ambient, 80° F entering dry bulb, and 67° F entering wet bulb at AHRI rated cfm.

Model RJNL-Series	B090YN/C090YN	B120CL/C120CL	B120CM/C120CM	B120DL/C120DL
Cooling Performance <sup>1</sup>				CONTINUED
Gross Cooling Capacity Btu [kW]	98,000 [28.71]	125,000 [36.62]	125,000 [36.62]	125,000 [36.62]
EER/SEER <sup>2</sup>	11.1/NA	11/NA	11/NA	11/NA
Nominal CFM/ARI Rated CFM [L/s]	3000/2925 [1416/1380]	4000/4000 [1888/1888]	4000/4000 [1888/1888]	4000/4000 [1888/1888]
ARI Net Cooling Capacity Btu [kW]	94,000 [27.54]	120,000 [35.16]	120,000 [35.16]	120,000 [35.16]
Net Sensible Capacity Btu [kW]	70,800 [20.74]	91,600 [26.84]	91,600 [26.84]	91,600 [26.84]
Net Latent Capacity Btu [kW]	23,200 [6.8]	28,400 [8.32]	28,400 [8.32]	28,400 [8.32]
IEER <sup>3</sup>	11.9	11.6	11.6	11.6
Net System Power kW	8.47	10.91	10.91	10.91
Heating Performance (Heat Pumps)				
High Temp. Btuh [kW] Rating	87,000 [25.49]	109,000 [31.94]	109,000 [31.94]	109,000 [31.94]
System Power KW / COP	7.5/3.4	9.39/3.4	9.39/3.4	9.39/3.4
Low Temp Btuh [kW] Rating	52,000 [15.24]	69,000 [20.22]	69,000 [20.22]	69,000 [20.22]
System Power KW / COP	6.62/2.3	8.79/2.3	8.79/2.3	8.79/2.3
Compressor				
No./Type	1/Scroll	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB) <sup>5</sup>	88	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	24.88 [2.31]	28.8 [2.68]	28.8 [2.68]	28.8 [2.68]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Indoor Coil—Fin Type	Louvered	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	13.5 [1.25]	15.75 [1.46]	15.75 [1.46]	15.75 [1.46]
Rows / FPI [FPcm]	3 / 18 [7]	4 / 15 [6]	4 / 15 [6]	4 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan—Type	Propeller	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	Direct/1	Direct/1
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/3 HP	2 at 1/3 HP	2 at 1/3 HP	2 at 1/2 HP
Motor RPM	1075	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1	1
Motor HP	3	2	3	2
Motor RPM	1725	1725	1725	1725
Motor Frame Size	56	56	56	56
Filter—Type	Disposable	Disposable	Disposable	Disposable
Furnished	Yes	Yes	Yes	Yes
(No.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(3)2x18x18 [51x457x457]	(3)2x18x18 [51x457x457]	(3)2x18x18 [51x457x457]
		(3)2x18x24 [51x457x610]	(3)2x18x24 [51x457x610]	(3)2x18x24 [51x457x610]
Refrigerant Charge Oz. [g]	350 [9922]	496 [14062]	496 [14062]	496 [14062]
Weights	000 [0022]	130[13002]	1002]	ן אטטדין טטד
	1017 [461]	1105 [500]	1100 [5/1]	1105 [500]
Net Weights Ibs. [kg]	1017 [461] 1097 [498]	1185 [538] 1265 [574]	1193 [541] 1273 [577]	1185 [538] 1265 [574]
Ship Weights Ibs. [kg]				

#### NOTES:

Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.

2. EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.

3. Integrated Part Load Value is rated in accordance with AHRI Standard 210/240 or 360. Units are rated at 80° F ambient, 80° F entering dry bulb, and 67° F entering wet bulb at AHRI rated cfm.

Model RJNL-Series	B120DM/C120DM	B120YL/C120YL	B120YM/C120YM
Cooling Performance <sup>1</sup>			
Gross Cooling Capacity Btu [kW]	125,000 [36.62]	125,000 [36.62]	125,000 [36.62]
EER/SEER <sup>2</sup>	11.1/NA	11/NA	11/NA
Nominal CFM/ARI Rated CFM [L/s]	4000/4000 [1888/1888]	4000/4000 [1888/1888]	4000/4000 [1888/1888]
ARI Net Cooling Capacity Btu [kW]	120,000 [35.16]	120,000 [35.16]	120,000 [35.16]
Net Sensible Capacity Btu [kW]	91,600 [26.84]	91,600 [26.84]	91,600 [26.84]
Net Latent Capacity Btu [kW]	28,400 [8.32]	28,400 [8.32]	28,400 [8.32]
IEER <sup>3</sup>	11.6	11.6	11.6
Net System Power kW	10.91	10.91	10.91
Heating Performance (Heat Pumps)			
High Temp. Btuh [kW] Rating	109,000 [31.94]	109,000 [31.94]	109,000 [31.94]
System Power KW / COP	9.39/3.4	9.39/3.4	9.39/3.4
Low Temp Btuh [kW] Rating	69,000 [20.22]	69,000 [20.22]	69,000 [20.22]
System Power KW / COP	8.79/2.3	8.79/2.3	8.79/2.3
Compressor			
No./Type	1/Scroll	1/Scroll	1/Scroll
Outdoor Sound Rating (dB) <sup>5</sup>	88	88	88
Outdoor Coil—Fin Type	Louvered	Louvered	Louvered
Tube Type	Rifled	Rifled	Rifled
Tube Size in. [mm] OD	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	28.8 [2.68]	28.8 [2.68]	28.8 [2.68]
Rows / FPI [FPcm]	2 / 22 [9]	2 / 22 [9]	2 / 22 [9]
Refrigerant Control	TX Valves	TX Valves	TX Valves
Indoor Coil—Fin Type	Louvered	Louvered	Louveredd
Tube Type	Rifled	Rifled	Rifled
Tube Size in. [mm]	0.375 [9.5]	0.375 [9.5]	0.375 [9.5]
Face Area sq. ft. [sq. m]	15.75 [1.46]	15.75 [1.46]	15.75 [1.46]
Rows / FPI [FPcm]	4 / 15 [6]	4 / 15 [6]	4 / 15 [6]
Refrigerant Control	TX Valves	TX Valves	TX Valves
Drain Connection No./Size in. [mm]	1/1 [25.4]	1/1 [25.4]	1/1 [25.4]
Outdoor Fan—Type	Propeller	Propeller	Propeller
No. Used/Diameter in. [mm]	2/24 [609.6]	2/24 [609.6]	2/24 [609.6]
Drive Type/No. Speeds	Direct/1	Direct/1	
CFM [L/s]	8000 [3775]	8000 [3775]	8000 [3775]
No. Motors/HP	2 at 1/2 HP	2 at 1/2 HP	2 at 1/2 HP
Motor RPM	1075	1075	1075
Indoor Fan—Type	FC Centrifugal	FC Centrifugal	FC Centrifugal
No. Used/Diameter in. [mm]	1/15x15 [381x381]	1/15x15 [381x381]	1/15x15 [381x381]
Drive Type/No. Speeds	Belt/Variable	Belt/Variable	Belt/Variable
No. Motors	1	1	1
Motor HP	3	2	3
Motor RPM Motor Frame Size	1725 56	1725 56	1725 56
Filter—Type	Disposable	Disposable	Disposable
	•		
Furnished			
(No.) Size Recommended in. [mm x mm x mm]	(6)2x18x18 [51x457x457]	(3)2x18x18 [51x457x457]	(3)2x18x18 [51x457x457]
	(3)2x18x24 [51x457x610]	(3)2x18x24 [51x457x610]	(3)2x18x24 [51x457x610]
Refrigerant Charge Oz. [g]	496 [14062]	496 [14062]	496 [14062]
Weights			
Net Weights Ibs. [kg]	1193 [541]	1185 [538]	1193 [541]
Ship Weights Ibs. [kg]	1273 [577]	1265 [574]	1273 [577]

NOTES:

Cooling Performance is rated at 95° F ambient, 80° F entering dry bulb, 67° F entering wet bulb. Gross capacity does not include the effect of fan motor heat. AHRI capacity is net and includes the effect of fan motor heat. Units are suitable for operation to ±20% of nominal cfm. Units are certified in accordance with the Unitary Air Conditioner Equipment certification program, which is based on AHRI Standard 210/240 or 360.

2. EER and/or SEER are rated at AHRI conditions and in accordance with DOE test procedures.

 Integrated Part Load Value is rated in accordance with AHRI Standard 210/240 or 360. Units are rated at 80° F ambient, 80° F entering dry bulb, and 67° F entering wet bulb at AHRI rated cfm.

			ELE	CTRICAL I	DATA – RJ	NL- SERIE	S			
		B090CL/C090CL	B090CM/C090CM	B090CN/C090CN	B090DL/C090DL	B090DM/C090DM	B090DN/C090DN	B090YL/C090YL	B090YM/C090YM	B090YN/C090YN
	Unit Operating Voltage Range	187-253	187-253	187-253	414-506	414-506	414-506	517-632	517-632	517-632
ation	Volts	208/230	208/230	208/230	460	460	460	575	575	575
Unit Information	Minimum Circuit Ampacity	43/43	43/43	45/45	21	21	22	16	16	17
Unit	Minimum Overcurrent Protection Device Size	50/50	50/50	60/60	25	25	25	20	20	20
	Maximum Overcurrent Protection Device Size	60/60	60/60	60/60	30	30	30	20	20	25
	No.	1	1	1	1	1	1	1	1	1
oto	Volts	208/230	208/230	208/230	460	460	460	575	575	575
Ň	Phase	3	3	3	3	3	3	3	3	3
Compressor Motor	RPM	3450	3450	3450	3450	3450	3450	3450	3450	3450
bre	HP, Compressor 1	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4	10 1/4
Son	Amps (RLA), Comp. 1	25/25	25/25	25/25	12.2	12.2	12.2	9	9	9
-	Amps (LRA), Comp. 1	164/164	164/164	164/164	100	100	100	78	78	78
r	No.	2	2	2	2	2	2	2	2	2
Condenser Motor	Volts	208/230	208/230	208/230	460	460	460	575	575	575
er N	Phase	1	1	1	1	1	1	1	1	1
lens	HP	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
ond	Amps (FLA, each)	2.4/2.4	2.4/2.4	2.4/2.4	1.4	1.4	1.4	1	1	1
ပ	Amps (LRA, each)	3.9/3.9	3.9/3.9	3.9/3.9	1.8	1.8	1.8	1.5	1.5	1.5
	No.	1	1	1	1	1	1	1	1	1
Fan	Volts	208/230	208/230	208/230	460	460	460	575	575	575
tor	Phase	3	3	3	3	3	3	3	3	3
oora	HP	2	2	3	2	2	3	2	2	3
Evaporator	Amps (FLA, each)	8/8	8/8	13/13	4	4	7	4	4	8
	Amps (LRA, each)	56/56	56/56	74.5/74.5	28	28	38.1	19	19	20

		ELECTRI	CAL DATA	– RJNL- S	SERIES		
		B120CL/C120CL	B120CM/C120CM	B120DL/C120DL	B120DM/C120DM	B120YL/C120YL	B120YM/C120YM
	Unit Operating Voltage Range	187-253	187-253	414-506	414-506	517-632	517-632
ation	Volts	208/230	208/230	460	460	575	575
Unit Information	Minimum Circuit Ampacity	50/50	52/52	28	29	20	21
Unit	Minimum Overcurrent Protection Device Size	60/60	60/60	35	35	25	25
	Maximum Overcurrent Protection Device Size	70/70	80/80	40	45	30	30
	No.	1	1	1	1	1	1
do	Volts	200/230	200/230	460	460	575	575
N N	Phase	3	3	3	3	3	3
sso	RPM	3450	3450	3450	3450	3450	3450
bre	HP, Compressor 1	12 3/4		12 3/4	12 3/4	12 3/4	12 3/4
Compressor Motor	Amps (RLA), Comp. 1	30.1/30.1	30.1/30.1	16.7	16.7	12.2	12.2
	Amps (LRA), Comp. 1	225/225	225/225	114	114	80	80
r	No.	2	2	2	2	2	2
Condenser Motor	Volts	208/230	208/230	460	460	460	460
er	Phase	1	1	1	1	1	1
lens	HP	1/2	1/2	1/2	1/2	1/2	1/2
ond	Amps (FLA, each)	2.3/2.3	2.3/2.3	1.5	1.5	1	1
O	Amps (LRA, each)	5.6/5.6	5.6/5.6	3.1	3.1	2.2	2.2
	No.	1	1	1	1	1	1
Fan	Volts	208/230	208/230	460	460	575	575
ator	Phase	3	3	3	3	3	3
pora	HP	2	3	2	3	2	3
Evaporator Fan	Amps (FLA, each)	8/8	13/13	4	7	4	8
	Amps (LRA, each)	56/56	74.5/74.5	28	38.1	19	20

## **VI. INSTALLATION**

#### A. GENERAL

1. PRE-INSTALLATION CHECK-POINTS

Before attempting any installation, the following points should be carefully considered:

- a. Structural strength of supporting members. (rooftop installation)
- b. Clearances and provision for servicing.
- c. Power supply and wiring.
- d. Air duct connections.
- e. Drain facilities and connections.
- f. Location for minimum noise.

#### 2. LOCATION

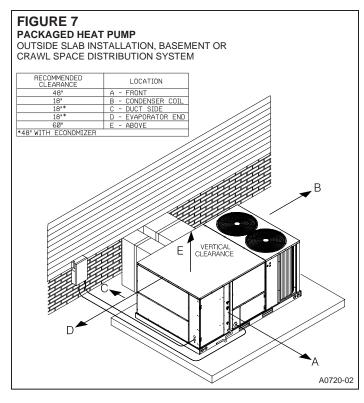
These units are designed for outdoor installations. They can be mounted on a slab or rooftop. They are not to be installed within any part of a structure such as an attic, crawl space, closet, or any other place where condenser air flow is restricted or other than outdoor ambient conditions prevail. Since the application of the units is of the outdoor type, it is important to consult your local code authorities at the time the first installation is made.

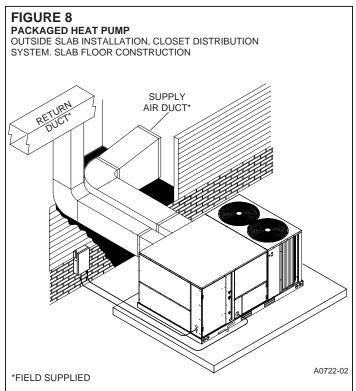
- B. OUTSIDE SLAB INSTALLATION (Typical outdoor slab installations are shown in Figures 7 and 8.)
  - 1. Select a location where external water drainage cannot collect around the unit.
  - 2. Provide a level concrete slab extending 3" beyond all four sides of the unit. The slab should be sufficient above grade to prevent ground water from entering the unit. *IMPORTANT:* To prevent transmission of noise or vibration, slab should not be connected to building structure.
  - 3. The location of the unit should be such as to provide proper access for inspection and servicing.
  - Locate unit where operating sounds will not disturb owner or neighbors.
  - Locate unit so roof runoff water does not pour directly on the unit. Provide gutter or other shielding at roof level. Do not locate unit in an area where excessive snow drifting may occur or accumulate.
  - 6. It is essential that the unit be elevated above the base pad to allow for condensate drainage and possible refreezing of condensation. Provide a base pad which is slightly pitched away from the structure. Route condensate off base pad to an area which will not become slippery and result in personal injury.
  - 7. Where snowfall is anticipated, the height of the unit above the ground level must be considered. Mount unit high enough to be above average area snowfall and to allow for proper condensate drainage.

#### C. CLEARANCES

The following minimum clearances must be observed for proper unit performance and serviceability.

- 1. Provide 48" minimum clearance at the front of the unit. Provide 18" minimum clearance at all other sides of the unit.
- 2. Provide 60" minimum clearance between top of unit and maximum 3 foot overhang.
- 3. Unit is design certified for application on combustible flooring with 0" minimum clearance.
- 4. See Figure 7 for illustration of minimum installation-service clearances.



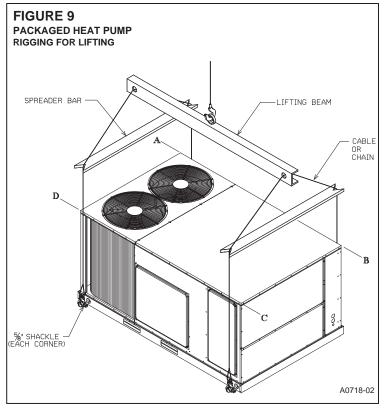


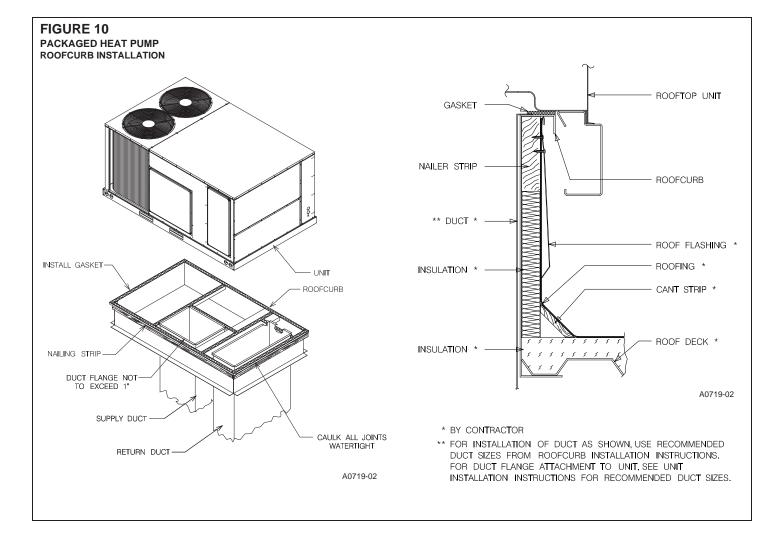
#### D. ROOFTOP INSTALLATION

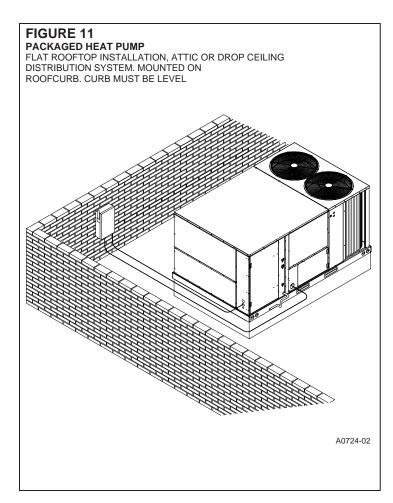
- Before locating the unit on the roof, make sure that the strength of the roof and beams is adequate at that point to support the weight involved. This is very important and user's responsibility.
- 2. For rigging and roofcurb details, see Figures 9 and 10. Use field-furnished spreaders.
- 3. For roofcurb assembly, see Roofcurb Installation Instructions.
- If the roofcurb is not used, provisions for disposing of condensate water runoff during defrosting must be provided.
- 5. The unit should be placed on a solid and level roofcurb or platform of adequate strength. See Figure 11.
- 6. The location of the unit on the roof should be such as to provide proper access for inspection and servicing.

**IMPORTANT:** If unit will not be put into service immediately, cover supply and return openings to prevent excessive condensation.

CORNER	WEIGHTS	BY PERC	ENTAGE
A	В	С	D
32%	26%	20%	22%







### **VII. DUCTWORK**

Ductwork should be fabricated by the installing contractor in accordance with local codes and NFPA90A. Industry manuals may be used as a guide when sizing and designing the duct system - contact Air Conditioning Contractors of America, 1513 16th St. N.W., Washington, D.C. 20036.

### **A** WARNING

DO NOT, UNDER ANY CIRCUMSTANCES, CONNECT RETURN DUCTWORK TO ANY OTHER HEAT PRODUCING DEVICE SUCH AS A FIREPLACE INSERT, STOVE, ETC. UNAUTHORIZED USE OF SUCH DEVICES MAY RESULT IN FIRE, CARBON MONOXIDE POISONING, EXPLOSION, PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

The unit should be placed as close to the space to be air conditioned as possible allowing clearance dimensions as indicated. Ducts should be run as directly as possible to supply and return outlets. Use of non-flammable waterproof flexible connectors on both supply and return connections at the unit to reduce noise transmission is recommended.

It is preferable to install the unit on the roof of the structure if the registers or diffusers are located on the wall or in the ceiling. A slab installation could be considered when the registers are low on a wall or in the floor.

On ductwork exposed to outside air conditions of temperature and humidity, use a minimum of 2" of insulation and a vapor barrier. Distribution system in attic, furred space or crawl space should be insulated with at least 2" of insulation with vapor barrier. One-half to 1" thickness of insulation is usually sufficient for ductwork inside the air conditioned space. Balancing dampers should be provided for each branch duct in the supply system. Ductwork should be properly supported from the structure.

When installing ductwork, consider the following items:

- 1. Noncombustible flexible connectors should be used between ductwork and unit to reduce noise and vibration transmission into the ductwork.
- 2. When auxiliary heaters are installed, use noncombustible flexible connectors and clearance to combustible material of 0" for the first 3 feet of discharge duct. Clearance to unit top and side is 0".

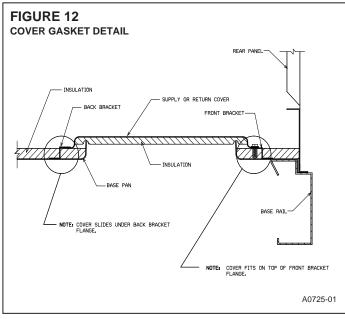
### **VIII. FILTERS**

This unit is provided with disposable filters. (See Physical Data Section for size and quantity.) When replacing filters, ensure they are inserted fully to the back to prevent bypass. Remove filters by sliding out the metal trays.

## IX. CONVERSION PROCEDURE

DOWNFLOW TO HORIZONTAL

- 1. Remove the screws and covers from the outside of the supply and return sections.
- 2. Install the covers over the bottom supply and return openings, painted side up inserting the leading flange under the bracket provided. Place the back flange to the top of the front bracket provided. See Figure 12.
- 3. Secure the return and supply cover to the front bracket with one (1) screw.



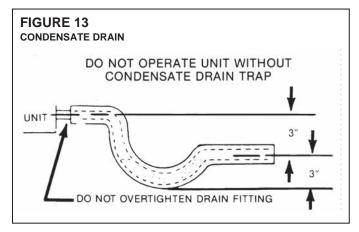
### X. CONDENSATE DRAIN

IMPORTANT: Install a condensate trap to ensure proper condensate drainage. See Figure 13.

The condensate drain pan has a threaded female 1 inch NPT (11.5 TPI) connection. Consult local codes or ordinances for specific requirements of condensate drain piping and disposal.

- To use the removable drain pan feature of this unit, some of the condensate line joints should assembled for easy removal and cleaning.
- Use a thin layer of Teflon tape or paste on drain pan connections and install only hand tight.
- Do not over tighten drain pan connections as damage to the drain pan may occur.
- Drain line MUST NOT block service access panels.

- Drain line must be no smaller than drain pan outlet and adequately sized to accommodate the condensate discharge from the unit.
- Drain line should slope away from unit a minimum of 1/8" per foot to ensure proper drainage.
- Drain line must be routed to an acceptable drain or outdoors in accordance with local codes.
- Do not connect condensate drain line to a closed sewer pipe.
- Drain line may need insulation or freeze protection in certain applications.



## XI. CONDENSATE DRAIN, OUTDOOR COIL

The outdoor coil during heating operation will sweat or run water off. The outdoor coil will also run water off during the defrost cycle. See Section VI, Installation, Page 13 for mounting precautions.

## XII. ELECTRICAL WIRING

Field wiring must comply with the National Electrical Code (C.E.C. in Canada) and local ordinances that may apply.

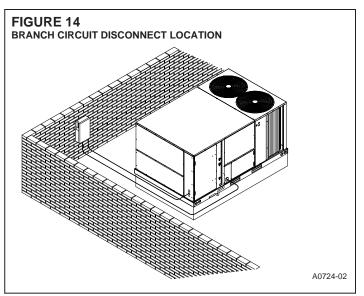
#### A. POWER WIRING

- 1. This unit incorporates single-point electrical connections for the unit and electric heat accessory.
- 2. It is important that proper electrical power is available to the unit. Voltage should not vary more than 10% from the values marked on the unit rating plate. Phase voltages must be balanced within 3%.
- Install a branch circuit disconnect within sight of the unit. Use the unit rating plate or heater kit tables to determine the required size.
- 4. The branch circuit wire must be sized in accordance with the National Electrical Code (C.E.C. in Canada) and local ordinances that may apply using the minimum circuit ampacity found on the unit rating plate.
- 5. Field-installed power wiring must be run through grounded rain-tight conduit attached to the unit power entry panel and connected as follows:

**UNITS WITHOUT ELECTRIC HEAT -** Connect power wiring to the power terminal block located on the left side of the electric heat compartment. Connect the ground wire to the adjacent ground lug (see Figure 15).

**UNITS WITH FACTORY INSTALLED ELECTRIC HEAT** -Connect power wiring to the power terminal block located on the electric heater kit (see Figure 16). Connect the ground wire to the adjacent ground lug. DO NOT connect aluminum wiring directly to the electric heater terminal block. Wiring to the unit contactors is factory-connected.

6. For field installation of an electric heater kit, follow the instructions below. Refer to the information supplied with the kit.

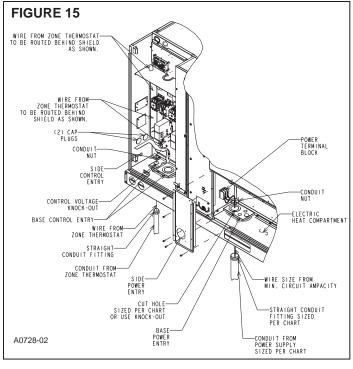


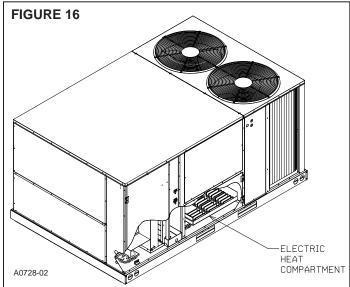
- a. Removing screws as required, open heater access door and detach adjacent power entry panel.
- b. Remove wires to unit contactor (1L1, 1L2, 1L3) from unit terminal block on the left side of the electric heat compartment. Remove and discard the terminal block and the adjacent ground lug.
- c. Remove the heater kit block-off panel and install the heater kit in its place using 9 of the 12 screws previously removed.
- d. Connect the unit contactor wires (1L1, 1L2, 1L3) to the compressor fuse block on the heater kit.
- e. Re-install the power entry panel & run conduit and the proper size field wiring through the opening in the panel.
- f. Connect field wiring to the power terminal block located on the electric heater kit. Connect ground wire to the adjacent ground lug.
- g. Connect heater kit control plug to the receptacle on the control wiring harness.
- h. Close heater access door and secure with screws previously removed.

#### B. CONTROL WIRING (Class II)

- 1. Low voltage wiring should not be run in conduit with power wiring.
- 2. Control wiring is routed through the 7/8" hole in the unit side panel. See Figure 2. Use a minimum #18 AWG thermostat wire. For wire lengths exceeding 50', use #16 AWG thermostat wire. Connect the control wiring to the low voltage terminal block located below the unit control box.
- It is necessary that only approved heat pump thermostats be used. Please contact your distributor for part number information. See thermostat specification catalog for recommended thermostats.
- Figure 17 shows representative low voltage connection diagrams. Read your thermostat installation instructions for any special requirements for your specific thermostat.
- C. INTERNAL WIRING
  - A diagram of the internal wiring of this unit is located on the inside of the control access panel and in this manual. If any of the original wire must be replaced, the wire gauge and insulation must be the same as original wiring.

Transformer is factory-wired for 230 volts on 208/230 volt models and must be changed for 208-volt applications. See unit wiring diagram for 208 volt wiring.





#### D. GROUNDING

#### A WARNING

THE UNIT MUST BE PERMANENTLY GROUNDED. A GROUNDING LUG IS PROVIDED IN THE ELECTRIC HEAT ACCESS AREA FOR A GROUND WIRE. FAILURE TO GROUND THIS UNIT CAN RESULT IN FIRE OR ELECTRICAL SHOCK CAUSING PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

GROUNDING MAY ALSO BE ACCOMPLISHED BY GROUNDING THE POWER LINE CONDUIT TO THE UNIT. MAKE SURE THE CONDUIT NUT LOCKING TEETH HAVE PIERCED THE INSULATING PAINT FILM OF THE SIDE PANEL.

#### E. THERMOSTAT

The thermostat should be mounted on an inside wall about five feet above the floor in a location where it will not be affected by unconditioned air, sun, or drafts from open doors or other sources. READ installation instructions in heat pump thermostat package CAREFULLY because each has some different wiring requirements.

## XIII. INDOOR AIR FLOW DATA

Belt-drive blower models have motor sheaves set for proper CFM at a typical external static. See Airflow Data Tables to determine if adjustments are necessary.

## **XIV. CRANKCASE HEAT**

Crankcase heat is standard on  $7\frac{1}{2}$  & 10 ton models. The auxiliary switch on the compressor contactor turns off the heater when the compressor is running.

## **XV. PRE-START CHECK**

- 1. Is unit properly located and slightly slanted toward indoor condensate drain?
- 2. Is ductwork insulated, weatherproofed, with proper spacing to combustible materials?
- 3. Is air free to travel to and from outdoor coil? (See Figure 7.)
- 4. Is the wiring correct, tight, and according to unit wiring diagram?
- 5. Is unit grounded?
- 6. Are field supplied air filters in place and clean?
- 7. Do the outdoor fan and indoor blower turn freely without rubbing, and are they tight on the motor shafts?
- 8. Is unit elevated to allow for outdoor coil condensate drainage during heating operation and defrost?

## **XVI. STARTUP**

- 1. Turn thermostat to "OFF," turn "on" power supply at disconnect switch.
- 2. Turn temperature setting as high as it will go.
- 3. Turn fan switch to "ON."
- 4. Indoor blower should run. Be sure it is running in the right direction.
- 5. Turn fan switch to "AUTO." Turn system switch to "COOL" and turn temperature setting below room temperature. Unit should run in cooling mode after 5 minute compressor ondelay has expired.
- 6. Are outdoor fans operating correctly in the right direction?
- 7. Is compressor running correctly.
- 8. Turn thermostat system switch to "HEAT." Unit should stop. Raise temperature setting to above room temperature. Unit should run in heating mode after 5 minute delay. Auxiliary heaters, if installed, will energize 30 to 50 seconds after the initiation of a "W3" call.
- Check the refrigerant charge using the instructions located on compressor access panel cover. Replace service port caps. Service port cores are for system access only and will leak if not tightly capped.
- 10. Turn thermostat system switch to proper mode "HEAT" or "COOL" and set thermostat to proper temperature setting. Record the following after the unit has run some time.

A. Operating Mode	
B. Discharge Pressures (High)	PSIG
C. Vapor Pressure at Compressors (Low)	PSIG
D. Vapor Line Temperature at Compressors	°F.
E. Indoor Dry Bulb	°F.
F. Indoor Wet Bulb	°F.
G. Outdoor Dry Bulb	°F.
H. Outdoor Wet Bulb	°F.
I. Voltage at Contactor	Volts
J. Current at Contactors	Amps
K. Model Number	
L. Serial Number	
M.Location	
N. Owner	
O. Date	

| All controls and the control of the   | 5         6         733         111         0.8           728         729         101         733         749           729         1140         759         759         759           727         1420         759         759         756           777         1426         804         759         756           777         1426         804         775         756         813           777         1426         804         775         746         813         756           8         777         1426         803         775         746         813         776           8         177         1426         803         775         813         813         776           1         777         1426         814         564         833         813         813         813           0.6         700         661         661         1         6         813         914         813         914         813         914         813         914         813         914         813         914         813         914         813         914         813         914         813  
   | External Stemal Stema           External Stemal Stema           External Stemal Stema           Pm
        V           Pm         Pm   | External Static Pressure         I           External Static Pressure         I           220         0.9         [221]         1.0         [231]         1.1           w         RPM         w         RPM         w         RPM           066         771         1119         802         1175         833           1140         725         100         812         1316         847           1141         725         1005         813         1316         847           1141         725         1036         814         1316         843           1141         725         1036         813         1432         867           1141         821         1435         857         1633         833         1442         833           1142         821         1431         833         1432         873         1432         873           1214         864         1737         883         1831         1313         933           1214         864         1737         883         1831         1313         931           1714         864         1779         901         1901         1912 <th>2550rre         In           W         RFM           W         RFM           1175         833           1175         833           1175         833          
1175         833           1175         833           1175         833           1175         833           1175         833           1175         833           1180         903           1180         913           1180         913           1180         913           1180         914           1181         913           1181         914           1181         914           1181         914           1181         914           1181         914           1127         2           2         2           2         2           11127         1127</th> <th>Inches         of Water         KPa           11         127         12         300         1.1           71         12         300         1.3         1.2         300         1.1           833         1234         864         1296         895         895         1.2         300         1.1           847         1381         876         1248         881         1500         910         903           857         1381         876         1448         902         923         931         932         932         933         935         944         933         944         933         944         946         933         944<th>ater         (KPa]           ater         (KPa]           w         RPM           W         RPM           1334         901           1344         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         914           1018         666           1018         666           1018         666           1018         666</th><th>S2         1.32         1.4           W         RPM         RPM           1361         924         921           1412         11412         935           1573         940         940           1787         956         940           1787         956         982           2005         975         2055           2005         975         982           968         966         966</th><th>6         6         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         955         1.5.51         955         955         955         955         955         955         955         955         955         955         956         95</th><th>W         RPM         1.6           W         RPM         1.6         1.6           1520         987         1.22         993           1212         1290         1003         1.25           1257         1023         1.010         1.011           1252         1013         1.023         1.013           1253         1013         1.023         1.012           2255         1.023         1.012         1.024           1353         1.012         1.024         1.013           2255         1.023         1.012         1.024           1353         1.013         1.012         1.012           1454         1.013         1.012         1.012           1013         1.013         1.013         1.013           1014         1.013         1.013         1.013</th><th>Clip Control         Clip Control&lt;</th><th>Image: 143         Image: 143         Image: 143         Image: 144         Image:</th><th>Image: 107         Image: 107         <thimage: 107<="" th="">         Image: 107         Image: 1</thimage:></th><th>M         RPM         W           W         RPM         W           1329         1107         1916           1107         1107         2017           2020         11107         2028           2020         11107         2028           2020         11113         2408           2026         11113         2408           2026         11113         2408           2026         11113         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2828           2026         11127         2828</th></th> | 2550rre         In           W         RFM           W         RFM           1175         833           1175         833           1175         833           1175         833           1175         833           1175         833           1175         833           1175         833           1175         833           1180         903           1180         913           1180         913           1180         913           1180         914           1181         913           1181         914           1181         914           1181         914           1181         914           1181         914           1127         2           2         2           2         2           11127         1127   | Inches         of Water         KPa           11         127         12         300         1.1           71         12         300         1.3         1.2         300         1.1           833         1234         864         1296         895         895         1.2         300         1.1           847         1381         876         1248         881         1500         910         903           857         1381         876         1448         902         923         931         932         932         933         935         944         933         944         933         944         946         933         944 <th>ater         (KPa]           ater         (KPa]           w         RPM           W         RPM           1334         901           1344         905           1914         905           1914         905           1914         905           1914   
     905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         914           1018         666           1018         666           1018         666           1018         666</th> <th>S2         1.32         1.4           W         RPM         RPM           1361         924         921           1412         11412         935           1573         940         940           1787         956         940           1787         956         982           2005         975         2055           2005         975         982           968         966         966</th> <th>6         6         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         955         1.5.51         955         955         955         955         955         955         955         955         955         955         956         95</th> <th>W         RPM         1.6           W         RPM         1.6         1.6           1520         987         1.22         993           1212         1290         1003         1.25           1257         1023         1.010         1.011           1252         1013         1.023         1.013           1253         1013         1.023         1.012           2255         1.023         1.012         1.024           1353         1.012         1.024         1.013           2255         1.023         1.012         1.024           1353         1.013         1.012         1.012           1454         1.013         1.012         1.012           1013         1.013         1.013         1.013           1014         1.013         1.013         1.013</th> <th>Clip Control         Clip Control&lt;</th> <th>Image: 143         Image: 143         Image: 143         Image: 144         Image:</th> <th>Image: 107         Image: 107         <thimage: 107<="" th="">         Image: 107         Image: 1</thimage:></th> <th>M         RPM         W           W         RPM         W           1329         1107         1916           1107         1107         2017           2020         11107         2028           2020         11107         2028           2020         11113         2408           2026         11113         2408           2026         11113         2408           2026         11113         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2828           2026         11127         2828</th> | ater         (KPa]           ater         (KPa]           w         RPM           W         RPM           1334         901           1344         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         905           1914         914           1018         666           1018         666           1018         666           1018         666   | S2         1.32         1.4           W         RPM         RPM           1361         924         921           1412         11412         935           1573         940         940           1787         956         940           1787         956         982           2005         975         2055           2005         975         982           968         966         966  
   | 6         6         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         1.5.51         955         1.5.51         955         955         955         955         955         955         955         955         955         955         956         95   | W         RPM         1.6           W         RPM         1.6         1.6           1520         987         1.22         993           1212         1290         1003         1.25           1257         1023         1.010         1.011           1252         1013         1.023         1.013           1253         1013         1.023         1.012           2255         1.023         1.012         1.024           1353         1.012         1.024         1.013           2255         1.023         1.012         1.024           1353         1.013         1.012         1.012           1454         1.013         1.012         1.012           1013         1.013         1.013         1.013           1014         1.013         1.013         1.013   
   | Clip Control         Clip Control<   | Image: 143         Image: 143         Image: 143         Image: 144         Image:  | Image: 107         Image: 107 <thimage: 107<="" th="">         Image: 107         Image: 1</thimage:> | M         RPM         W           W         RPM         W           1329         1107         1916           1107         1107         2017           2020         11107         2028           2020         11107         2028           2020         11113         2408           2026         11113         2408           2026         11113         2408           2026         11113         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2408           2026         11127         2828           2026         11127         2828 |  |
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| Air Flow<br>CFM [Ls]         Voltage 208/20, 460, 5/5 - 3 phase           CFM [Ls]         01 (102)<br>RPM W         02 (103)<br>RPM W         0.3 (107)<br>RPM W         0.4 (10)<br>RPM W         0.5 (12)<br>RPM P         0.  | 0.7         (17)         0           78         1015         1715         1015         1715           708         1015         1715         1015         1715         1015         1715           775         1140         77         1140         77         1140         1717         1416         1140         1141        
1141         1141         1141 <t< th=""><th>External 5<br/>8 (20) 0.9<br/>100 771<br/>1196 771<br/>1196 771<br/>1196 771<br/>1196 771<br/>1196 771<br/>1196 881<br/>1196 881<br/>11714 864<br/>11714 865<br/>11714 865<br/>11714 865<br/>11714 865<br/>11714 865<br/>11714 8</th><th>VI 35.</th><th>258ure         In           111         111           1115         833           1115         833           1125         833           1125         834           1125         835           1125         834           1125         833           1127         833           1136         847           1159         884           1159         884           1159         884           1159         884           1159         884           1159         884           1159         884           1150         883           1150         893           1168         914           1127         2           1127         1127</th><th>Image: color with the color withe color with the color with the color with the color wit</th><th>Image: New Section 1         Image: Ne</th><th>(.32)         1.4           w         RPM           w         RPM           1361         224           1422         931           1423         932           1754         940           1750         950           1720         950           1720         950           2033         950           2033         950           2036         968           2055         989           2056         989           2058         989           2056         989           2056         989           2056         989           2058         989           2058         989           2058         989           2058         989           2058         989           968         968</th><th>(.35)         1.5.           (.35)         1.5.           1435         957           1435         957           1546         967           1546         964           1566         964           1567         983           1568         9973           1788         973           1789         983           1939         988           1939         988           1939         989           1939         989           1939         989           1939         999           2030         999           2030         999           2031         1993           2031         1993           2031         1993           2031         1902           2031         1902           2145         1002           2154         1012           1915         1912           1916         1912           1916         1912</th><th>1.371         1.6           w         RPM           1550         993           1552         993           1552         993           1552         1003           1552         1003           1552         1003           1552         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1655         1003           1655         1003           1655         1003           1655         1003           1035         1035           1035         1035</th><th>I.40         1.7           w         RPM         N           x84         1016         1017           1201         1011         1011           1201         1011         1011           1201         1011         1011           1201         1011         1011           1201         1012         1022           1382         1028         1038           1383         1028         1033           1383         1028         1033           1383         1028         1033           141         1058         1058           1236         1058         1058           2346         1058         1058           2345         1058         1058           2345         1058         1058</th><th>[.42]         1.8           1542         1.8           1782         1049           1782         1049           1782         1049           1782         1049           1782         1049           1782         1049           1782         1049           1051         2259           2555         1081           2555         1081           2555         1081           2555         1081           2555         1081           2555         1081</th><th>1.9         1.077           1.077         1.077           1.078         1.078           1.080         1.088           1.090         1.098           1.091         1.099           1.1091         1.099           1.1092         1.1091</th><th><b>2.0</b><br/>11107<br/>11107<br/>11108<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>1111</th></t<> | External 5<br>8 (20) 0.9<br>100 771<br>1196 771<br>1196 771<br>1196 771<br>1196 771<br>1196 771<br>1196 881<br>1196 881<br>11714 864<br>11714 865<br>11714 865<br>11714 865<br>11714 865<br>11714 865<br>11714 8  
   | VI 35.  
   | 258ure         In           111         111           1115         833           1115         833           1125         833           1125         834           1125         835           1125         834           1125         833           1127         833           1136         847           1159         884           1159         884           1159         884           1159         884           1159         884           1159         884           1159         884           1150         883           1150         893           1168         914           1127         2           1127         1127  | Image: color with the color withe color with the color with the color with the color wit   
   | Image: New Section 1         Image: Ne  | (.32)         1.4           w         RPM           w         RPM           1361         224           1422         931           1423         932           1754         940           1750         950           1720         950           1720         950           2033         950           2033         950           2036         968           2055         989           2056         989           2058         989           2056         989           2056         989           2056         989           2058         989           2058         989           2058         989           2058         989           2058         989           968         968  
  | (.35)         1.5.           (.35)         1.5.           1435         957           1435         957           1546         967           1546         964           1566         964           1567         983           1568         9973           1788         973           1789         983           1939         988           1939         988           1939         989           1939         989           1939         989           1939         999           2030         999           2030         999           2031         1993           2031         1993           2031         1993           2031         1902           2031         1902           2145         1002           2154         1012           1915         1912           1916         1912           1916         1912  | 1.371         1.6           w         RPM           1550         993           1552         993           1552         993           1552         1003           1552         1003           1552         1003           1552         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1555         1003           1655         1003           1655         1003           1655         1003           1655         1003           1035         1035           1035         1035   | I.40         1.7           w         RPM         N           x84         1016         1017           1201         1011         1011           1201         1011         1011           1201         1011         1011           1201         1011         1011           1201         1012         1022           1382         1028         1038           1383         1028         1033           1383         1028         1033           1383         1028         1033           141         1058         1058           1236         1058         1058           2346         1058         1058           2345         1058         1058           2345         1058         1058  
   | [.42]         1.8           1542         1.8           1782         1049           1782         1049           1782         1049           1782         1049           1782         1049           1782         1049           1782         1049           1051         2259           2555         1081           2555         1081           2555         1081           2555         1081           2555         1081           2555         1081  | 1.9         1.077           1.077         1.077           1.078         1.078           1.080         1.088           1.090         1.098           1.091         1.099           1.1091         1.099           1.1092         1.1091  | <b>2.0</b><br>11107<br>11107<br>11108<br>11111<br>11111<br>11111<br>11111<br>11111<br>11111<br>1111   |  |
| Image: block of the b   | 0.7         1.17         0.0.7         1.17         0.01         1.17         0.01         27         101         201         27         101         201         27         101         27         101         27         101         27         101         27         101         27         101         27         101         27         101         27         111         27         111         27         111         27         111         27         111         27         111         27         111         27         111         27         111         27         111         27         111         27         111         27         111         27         111         27         111         27         211 </th <th>8         (20)         0.9           M         W         RPM         RPM           M         V         877         771     
   771         <td< th=""><th>V [35].</th><th>111         121         131           1117         833         1117         833           1117         833         1315         842           1316         847         1316         847           1317         855         847         842           1318         847         1316         847           1318         867         1318         867           1318         867         1318         863           1318         1323         867         918           1318         1329         879         914           1318         914         918         914           1318         914         918         914           1318         2         2         2           1349         918         918         914           14127         11227         11227         11227</th><th>Image: Constraint of the second sec</th><th>Image         Image         <thimage< th=""> <thi< th=""><th>1.32         1.4.           w         RPM           w         RPM           1.105         923           1.115         935           1.115         935           1.115         955           1.116         955           1.116         956           1.116         982           2.205         975           2.205         975           2.206         975           2.206         975           2.206         975           2.206         975           2.206         975           2.208         982           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           3.208         975           3.208         975           3.208</th><th>(.33)         1.5.           w         RPM           w         RPM           1403         355           1403         355           1404         355           1505         961           1505         961           1516         961           1526         983           1529         983           1529         983           1529         993           1529         1012           1529         102           1529         102           1529         101           156         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           158         101           159         101           150         101</th><th>(.37)         1.6           15.60         875           15.60         875           15.62         990           15.62         991           15.62         990           15.61         1000           1811         1000           1811         1000           1875         1024           2025         1013           2215         1014           2215         1014           1035         1013           22138         1035           22138         1035           1035         1034           1035         1034           1135         1024           22138         1035           22138         1035           2214         1035           2215         1034           1035         1034</th><th>(40)         1.7.           (41)         (11)           (11)<th>(4.2)         (1.3)         (1.3)           12150         10.404         10.404           12150         10.404         10.404           13141         1050         1056           13121         1010         1057           13121         1010         1052           13121         1057         1061           12121         1017         1058           2357         1071         1064           2357         1081         1072           2255         1081         1072           2255         1081         1077           2255         1081         1077</th><th>1.9           1.077           1.077           1.077           1.077           1.078           1.079           1.079           1.081           1.096           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104</th><th>2.0<br/>1107<br/>1107<br/>1110<br/>1110<br/>11110<br/>11110<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>1111</th></th></thi<></thimage<></th></td<></th>   | 8         (20)         0.9           M         W         RPM         RPM           M         V         877         771 <td< th=""><th>V [35].</th><th>111         121         131           1117         833         1117         833           1117         833         1315         842           1316         847         1316         847           1317         855         847         842           1318         847         1316         847           1318         867         1318         867           1318         867         1318         863           1318         1323         867         918           1318         1329         879         914           1318         914         918         914           1318         914         918         914           1318         2         2         2           1349         918         918         914           14127         11227         11227         11227</th><th>Image: Constraint of the second sec</th><th>Image         Image         <thimage< th=""> <thi< th=""><th>1.32         1.4.           w         RPM           w         RPM           1.105         923           1.115         935           1.115         935           1.115         955           1.116         955           1.116         956           1.116         982           2.205         975           2.205         975           2.206         975           2.206         975           2.206         975           2.206         975           2.206         975           2.208         982           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           3.208         975           3.208         975           3.208</th><th>(.33)         1.5.           w         RPM           w         RPM           1403         355           1403         355           1404         355           1505         961           1505         961           1516         961           1526         983           1529         983           1529         983           1529         993        
  1529         1012           1529         102           1529         102           1529         101           156         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           158         101           159         101           150         101</th><th>(.37)         1.6           15.60         875           15.60         875           15.62         990           15.62         991           15.62         990           15.61         1000           1811         1000           1811         1000           1875         1024           2025         1013           2215         1014           2215         1014           1035         1013           22138         1035           22138         1035           1035         1034           1035         1034           1135         1024           22138         1035           22138         1035           2214         1035           2215         1034           1035         1034</th><th>(40)         1.7.           (41)         (11)           (11)<th>(4.2)         (1.3)         (1.3)           12150         10.404         10.404           12150         10.404         10.404           13141         1050         1056           13121         1010         1057           13121         1010         1052           13121         1057         1061           12121         1017         1058           2357         1071         1064           2357         1081         1072           2255         1081         1072           2255         1081         1077           2255         1081         1077</th><th>1.9           1.077           1.077           1.077           1.077           1.078           1.079           1.079           1.081           1.096           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104</th><th>2.0<br/>1107<br/>1107<br/>1110<br/>1110<br/>11110<br/>11110<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>1111</th></th></thi<></thimage<></th></td<> | V [35].   
   | 111         121         131           1117         833         1117         833           1117         833         1315         842           1316         847         1316         847           1317         855         847         842           1318         847         1316         847           1318         867         1318         867           1318         867         1318         863           1318         1323         867         918           1318         1329         879         914           1318         914         918         914           1318         914         918         914           1318         2         2         2           1349         918         918         914           14127         11227         11227         11227   | Image: Constraint of the second sec  
  | Image         Image <thimage< th=""> <thi< th=""><th>1.32         1.4.           w         RPM           w         RPM           1.105         923           1.115         935           1.115         935           1.115         955           1.116         955           1.116         956           1.116         982           2.205         975           2.205         975           2.206         975           2.206         975           2.206         975           2.206         975           2.206         975           2.208         982           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           3.208         975           3.208         975           3.208</th><th>(.33)         1.5.           w         RPM           w         RPM           1403         355           1403         355           1404         355           1505         961           1505         961           1516         961           1526         983           1529         983           1529         983           1529         993           1529         1012           1529         102           1529         102           1529         101           156         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           158         101           159         101           150         101</th><th>(.37)         1.6           15.60         875           15.60         875           15.62         990           15.62         991           15.62         990           15.61         1000           1811         1000           1811         1000           1875         1024           2025         1013           2215         1014           2215         1014           1035         1013           22138         1035           22138         1035           1035         1034           1035         1034           1135         1024           22138         1035           22138         1035           2214         1035           2215         1034           1035         1034</th><th>(40)         1.7.           (41)         (11)           (11)<th>(4.2)         (1.3)         (1.3)           12150         10.404         10.404           12150         10.404         10.404           13141         1050         1056           13121         1010         1057           13121         1010         1052           13121         1057         1061           12121         1017         1058           2357         1071         1064           2357         1081         1072           2255         1081         1072           2255         1081         1077           2255         1081         1077</th><th>1.9           1.077           1.077           1.077           1.077           1.078           1.079           1.079           1.081           1.096           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104</th><th>2.0<br/>1107<br/>1107<br/>1110<br/>1110<br/>11110<br/>11110<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>1111</th></th></thi<></thimage<> | 1.32         1.4.           w         RPM           w         RPM           1.105         923           1.115         935           1.115         935           1.115         955           1.116         955           1.116         956           1.116         982           2.205         975           2.205         975           2.206         975           2.206         975           2.206         975           2.206         975           2.206         975           2.208         982           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           2.208         975           3.208         975           3.208         975           3.208  
   | (.33)         1.5.           w         RPM           w         RPM           1403         355           1403         355           1404         355           1505         961           1505         961           1516         961           1526         983           1529         983           1529         983           1529         993           1529         1012           1529         102           1529         102           1529         101           156         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           156         101           157         101           158         101           159         101           150         101  | (.37)         1.6           15.60         875           15.60         875           15.62         990           15.62         991           15.62         990           15.61         1000           1811         1000           1811         1000           1875         1024           2025         1013           2215         1014           2215         1014           1035         1013           22138         1035           22138         1035           1035         1034           1035         1034           1135         1024           22138         1035           22138         1035           2214         1035           2215         1034           1035         1034   
   | (40)         1.7.           (41)         (11)           (11) <th>(4.2)         (1.3)         (1.3)           12150         10.404         10.404           12150         10.404         10.404           13141         1050         1056           13121         1010         1057           13121         1010         1052           13121         1057         1061           12121         1017         1058           2357         1071         1064           2357         1081         1072           2255         1081         1072           2255         1081         1077           2255         1081         1077</th> <th>1.9           1.077           1.077           1.077           1.077           1.078           1.079           1.079           1.081           1.096           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104</th> <th>2.0<br/>1107<br/>1107<br/>1110<br/>1110<br/>11110<br/>11110<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>11111<br/>1111</th>  | (4.2)         (1.3)         (1.3)           12150         10.404         10.404           12150         10.404         10.404           13141         1050         1056           13121         1010         1057           13121         1010         1052           13121         1057         1061           12121         1017         1058           2357         1071         1064           2357         1081         1072           2255         1081         1072           2255         1081         1077           2255         1081         1077  | 1.9           1.077           1.077           1.077           1.077           1.078           1.079           1.079           1.081           1.096           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104           1.0104   | 2.0<br>1107<br>1107<br>1110<br>1110<br>11110<br>11110<br>11111<br>11111<br>11111<br>11111<br>11111<br>11111<br>1111   |  |
| RPM         W         RPM   | RPM         W         RFPM         ZES         ZES <thzes< th=""> <thzes< th=""> <thzes< th=""></thzes<></thzes<></thzes<>   
   | M         W         RPM           M         W         RPM           N         1066         771           1140         782         782           11140         782         782           11141         786         811           11141        
864         812           11141         864         812           11141         864         812           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714         864         817           11714   | w RPM<br>11119 802<br>11205 818<br>11205 818<br>11205 818<br>11425 818<br>11425 818<br>11425 818<br>11425 818<br>11425 818<br>11425 818<br>11479 818<br>11779 8179<br>11779 8179<br>11779 8179<br>11779<br>11779 81779 81779 81779<br>11779<br>1   
  | w         RPM           1175         833           1177         833           1316         847           1316         847           1316         847           1317         853           1318         847           1318         847           1318         847           1318         867           1328         867           1329         867           1539         875           1539         875           1549         914           1349         918           1427         2           1427         1127   
   | w         RPM           1234         864           1234         864           1381         876           1381         876           1381         876           1381         876           1381         876           1381         876           1381         876           1437         881           1533         910           1533         910           1703         910           1859         925           1993         933           1993         942           1993         942           1994         942           1074         1074           1074         1074   | N         RPM           1338         895           1349         901           1448         905           1448         905     
     1448         905           1448         905           1448         905           1448         905           1448         905           1448         905           1200         929           1920         936           1920         936           1920         936           1920         936           1920         936           1920         936           1921         1936           1936         936           1937         936           1938         946           1938         946           1938         946           1938         946           1938         946           1938         946           1938         946           1938         946           1938         946           1938         946           1938         946           1938         946  | w         RPM           w         RPM           w         RPM           1410         931           1410         931           1450         931           1541         940           1542         940           1543         940           1544         941           1553         950           1553         950           1365         950           1365         950           1365         950           1365         950           1365         950           1365         950           1365         950           1365         950           1365         950           1365         950           1460         975           2005         975           2058         982           2058         982           2056         975           2058         982           2058         982           2058         982           2058         982           2058         982           2058         982 <tr< td=""><td>w         RPM           w         RPM           w         RPM           1443         355           1443         355           1443         951           1546         961           1566         964           1752         983           1933         993           2167         1005           2167         1002           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2168         9103           1012         1012</td><td>W RPM 15-08 885 15-08 895 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 1000</td><td>w RPM RPM 1354 1015 1354 1015 1019 1019 1019 1019 1019 1019 1019</td><td>w         k RPM           1553         1046           1553         1046           1314         1050           1311         1057           1311         1057           1311         1057           1311         1057           1311         1053           1311         1055           1311         1053           1312         1061           1313         1061           1319         1053           1053         1061           1253         1061           1253         1061           1072         2235           1072         2235           1072         2235           1072         2235           1072         2235          
1077         2352           1077         2358           1077         2358           1077         2358           1077         2358           1081         1077           2358         1081           1077         2358           1081         1077           1081         1077           1081</td><td>RPM<br/>1077<br/>1077<br/>1078<br/>1078<br/>1078<br/>1078<br/>1078<br/>1078</td><td>RPM<br/>1107<br/>1107<br/>1107<br/>11107<br/>11111<br/>11111<br/>11111<br/>11127<br/>11124<br/>11127<br/>11127<br/>11127</td></tr<> | w         RPM           w         RPM           w         RPM           1443         355           1443         355           1443         951           1546         961           1566         964           1752         983           1933         993           2167         1005           2167         1002           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2167         1012           2168         9103           1012         1012   | W RPM 15-08 885 15-08 895 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 990 15-08 1000   | w RPM RPM 1354 1015 1354 1015 1019 1019 1019 1019 1019 1019 1019  
  | w         k RPM           1553         1046           1553         1046           1314         1050           1311         1057           1311         1057           1311         1057           1311         1057           1311         1053           1311         1055           1311         1053           1312         1061           1313         1061           1319         1053           1053         1061           1253         1061           1253         1061           1072         2235           1072         2235           1072         2235           1072         2235           1072         2235           1077         2352           1077         2358           1077         2358           1077         2358           1077         2358           1081         1077           2358         1081           1077         2358           1081         1077           1081         1077           1081  | RPM<br>1077<br>1077<br>1078<br>1078<br>1078<br>1078<br>1078<br>1078   | RPM<br>1107<br>1107<br>1107<br>11107<br>11111<br>11111<br>11111<br>11127<br>11124<br>11127<br>11127<br>11127  |  |
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  | 708         1015         7.2           772         1140         77           773         1140         77           775         1233         175           776         1361         75           775         1440         75           777         1456         1361           777         1456         1361           801         1464         88           814         1664         88           828         1774         88           828         1774         88           828         1774         88           828         1774         88           828         1774         88           828         1774         88           828         1774         88           828         1774         88           828         1774         88           97         000         661           700         6114         104           817         coil. Add         417           817         coil. Add         26           6         360         360   
   | 0         1006         771           10106         771         775           11196         788         711           11197         785         11136         788           11191         785         11136         788           11111         11136         812         711           11111         11116         811         811           11111         11116         817         81           11111         814         811         811           11111         864         817         864           11111         864         817         864           11111         817         817         864           11111         817         864         817           11111         817         817         817           11111         817         817         817           11111         817         817         817           11111         817         817         817           11111         817         817         817           111111         817         817         817           111111         817         817         817   
   | 1119 802<br>1205 818<br>1205 818<br>1308 824<br>1365 831<br>1355 857<br>1355 857<br>1355 857<br>1355 857<br>1355 857<br>1355 857<br>1426 833<br>1357 901<br>1179<br>1179<br>1179<br>1179<br>1179<br>1179<br>1179<br>1   
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  | 1107<br>11107<br>11108<br>11111<br>11111<br>11111<br>11127<br>11124<br>11127<br>11127   |  |
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  | 715 1053 72<br>722 1053 72<br>729 1140 75<br>756 1341 75<br>756 1341 75<br>777 1426 88<br>884 1544 88<br>884 1564 88<br>828 1724 88<br>828 1724 88<br>828 1724 88<br>828 1724 88<br>828 1724 88<br>828 1726 88<br>700 661<br>700 661<br>700 661<br>700 661<br>700 661<br>700 661<br>700 760<br>700 360 360 360   
   | 5         1103         775           11149         782         782           11149         782         781           11149         785         803           5         1247         795           5         1361         812           5         1491         821           5         1491         821           5         1491         821           5         1491         821           6         1436         877           7         1491         821           7         1491         821           7         1494         852           7         1496         877           8         0         0           0         0         0           1796         877           8         0         0  
   | 11100 807<br>11250 8181<br>11250 8181<br>11350 8181<br>11350 8181<br>11450 8181<br>11450 8181<br>1179 889<br>1179 889<br>1179 889<br>1179 889<br>1179<br>1179<br>1179   
   | 1218 837<br>1316 847<br>1316 847<br>1316 847<br>1359 867<br>1559 867<br>1559 884<br>1358 903<br>1318 905<br>1318 905<br>1318 905<br>1318 905<br>1318 905<br>1005<br>1005<br>1005<br>1005<br>1  | 11279         867           1137         881           1381         871           1381         871           1381         871           1381         875           1437         881           1438         888           1438         888           1438         888           1498         888           1498         888           1593         919           1779         919           1859         925           1998         942           1998         942           1998         942           1074         1074           1074         1074   
  | 1343         1397           1348         907           1448         905           1450         910           1450         910           1450         915           1468         935           1478         936           1488         936           1498         936           1498         936           1498         936           1018         946           1018         1018           1018         1018           11         1018           12         1018   | 1410         927           1410         927           1519         940           155         940           1579         940           1579         940           1579         952           1772         952           1787         952           1787         952           1787         952           1787         953           968         968   
   | 1460         957           1466         964           1166         964           1167         968           1158         973           1159         973           1159         982           1159         993           1159         993           1159         993           1159         993           1159         993           1159         993           1159         993           1159         993           11006         2269           11012         2269           11012         2149           11012         2149           11012         11012           1161         11612  | 1542 999<br>1683 999<br>1883 9996<br>1811 1000<br>1950 1009<br>1950 1009<br>1950 1003<br>12253 1023<br>2233 1033<br>2338 1035<br>2338 1035<br>2338 1035  | 1011 1012<br>1763 1022<br>18827 1025<br>1884 1028<br>1884 1028<br>1286 1033<br>1035 1035<br>1038 1033<br>1286 1043<br>1038 1033<br>1386 1043<br>1048 1043<br>1058<br>1048<br>1043<br>1058<br>1048<br>1048<br>1048<br>1048<br>1048<br>1048<br>1048<br>104  
  | 7721 1047<br>1241 1047<br>1346 1050<br>1390 1055<br>1390 1055<br>1213 1061<br>1052 1058<br>1054<br>1077<br>2525 1081<br>2525 1081<br>2525 1081<br>2525 1081<br>2525 1081<br>2525 1081   | 1077<br>1078<br>1078<br>1078<br>1078<br>1082<br>1082<br>1093<br>1103<br>1103<br>1103<br>11104   | 11107<br>11107<br>11108<br>11111<br>11111<br>11111<br>11127<br>11127<br>11127<br>11127  |  |
| Zoon (1247)         State of sec   | 7.2         1.400 <th 1<="" td=""><td>0         0     
   0         0</td><td>VI 135.</td><td>11316 847<br/>11316 847<br/>11318 857<br/>11399 856<br/>11599 856<br/>11599 858<br/>11599 913<br/>11349 913<br/>1149 913<br/>11427<br/>1127<br/>1127<br/>1127<br/>1127<br/>1127<br/>1127<br/>1127<br/>1128</td><td>M<br/>1381 876<br/>1437 881<br/>1438 888<br/>1458 888<br/>1553 894<br/>1773 919<br/>1773 919<br/>1943 935<br/>1943 935<br/>1943 935<br/>1948 942<br/>1973 14<br/>1074<br/>1074<br/>1074</td><td>1448 900,<br/>1448 900,<br/>1500 915<br/>1500 915<br/>1780 915<br/>1781 915<br/>1</td><td>1.11         <td< td=""><td>mine tota</td><td>IIII 100<br/>11/146 996<br/>11/146 9</td><td>2110 1022<br/>1827 1025<br/>1837 1028<br/>1839 1028<br/>2035 1039<br/>2035 1043<br/>2149 1039<br/>2340 1058<br/>2440 1058<br/>2440 1058<br/>2440 1058<br/>2440 1058</td><td>esserure.</td><td>107/9<br/>1087<br/>1087<br/>1087<br/>1097<br/>11095<br/>11095<br/>11095<br/>11095<br/>11095<br/>11095<br/>11095<br/>111095<br/>111095</td><td>1112<br/>1112<br/>1112<br/>1112<br/>1112<br/>1112<br/>1127<br/>1127</td></td<></td></th>   | <td>0         0</td> <td>VI 135.</td> <td>11316 847<br/>11316 847<br/>11318 857<br/>11399 856<br/>11599 856<br/>11599 858<br/>11599 913<br/>11349 913<br/>1149 913<br/>11427<br/>1127<br/>1127<br/>1127<br/>1127<br/>1127<br/>1127<br/>1127<br/>1128</td> <td>M<br/>1381 876<br/>1437 881<br/>1438 888<br/>1458 888<br/>1553 894<br/>1773 919<br/>1773 919<br/>1943 935<br/>1943 935<br/>1943 935<br/>1948 942<br/>1973 14<br/>1074<br/>1074<br/>1074</td> <td>1448 900,<br/>1448 900,<br/>1500 915<br/>1500 915<br/>1780 915<br/>1781 915<br/>1</td> <td>1.11         <td< td=""><td>mine tota</td><td>IIII 100<br/>11/146 996<br/>11/146 9</td><td>2110 1022<br/>1827 1025<br/>1837 1028<br/>1839 1028<br/>2035 1039<br/>2035 1043<br/>2149 1039<br/>2340 1058<br/>2440 1058<br/>2440 1058<br/>2440 1058<br/>2440 1058</td><td>esserure.</td><td>107/9<br/>1087<br/>1087<br/>1087<br/>1097<br/>11095<br/>11095<br/>11095<br/>11095<br/>11095<br/>11095<br/>11095<br/>111095<br/>111095</td><td>1112<br/>1112<br/>1112<br/>1112<br/>1112<br/>1112<br/>1127<br/>1127</td></td<></td>  | 0          
  | VI 135.  
   | 11316 847<br>11316 847<br>11318 857<br>11399 856<br>11599 856<br>11599 858<br>11599 913<br>11349 913<br>1149 913<br>11427<br>1127<br>1127<br>1127<br>1127<br>1127<br>1127<br>1127<br>1128   
   | M<br>1381 876<br>1437 881<br>1438 888<br>1458 888<br>1553 894<br>1773 919<br>1773 919<br>1943 935<br>1943 935<br>1943 935<br>1948 942<br>1973 14<br>1074<br>1074<br>1074  | 1448 900,<br>1448 900,<br>1500 915<br>1500 915<br>1780 915<br>1781 915<br>1  | 1.11        
1.11         1.11 <td< td=""><td>mine tota</td><td>IIII 100<br/>11/146 996<br/>11/146 9</td><td>2110 1022<br/>1827 1025<br/>1837 1028<br/>1839 1028<br/>2035 1039<br/>2035 1043<br/>2149 1039<br/>2340 1058<br/>2440 1058<br/>2440 1058<br/>2440 1058<br/>2440 1058</td><td>esserure.</td><td>107/9<br/>1087<br/>1087<br/>1087<br/>1097<br/>11095<br/>11095<br/>11095<br/>11095<br/>11095<br/>11095<br/>11095<br/>111095<br/>111095</td><td>1112<br/>1112<br/>1112<br/>1112<br/>1112<br/>1112<br/>1127<br/>1127</td></td<> | mine tota  | IIII 100<br>11/146 996<br>11/146 9   | 2110 1022<br>1827 1025<br>1837 1028<br>1839 1028<br>2035 1039<br>2035 1043<br>2149 1039<br>2340 1058<br>2440 1058<br>2440 1058<br>2440 1058<br>2440 1058  | esserure.   | 107/9<br>1087<br>1087<br>1087<br>1097<br>11095<br>11095<br>11095<br>11095<br>11095<br>11095<br>11095<br>111095<br>111095  | 1112<br>1112<br>1112<br>1112<br>1112<br>1112<br>1127<br>1127 |
| 2800 [1321]         561         973         510         513 <t< td=""><td>73         1190         7           746         1243         7           756         1340         73           775         1446         83           775         1446         83           789         1445         83           814         1544         83           814         1544         83           828         1724         83           814         1544         83           828         1724         83           814         1544         83           814         1544         83           814         1544         83           814         1544         83           8174         1544         83           8174         1544         83           8174         83         1724           817         500         66           CG         6         0           550         360         360</td><td>0         0           1302         803           1302         803           1302         803           1414         812           1561         831           1561         831           1796         877           10         10</td><td>Mn.<br/>Mn.<br/>Mn.<br/>Mn.<br/>Mn.<br/>Mn.<br/>Mn.<br/>Mn.</td><td>1371 853<br/>1430 860<br/>1432 867<br/>1453 884<br/>1553 884<br/>1703 893<br/>1703 893<br/>1704 893<br/>1704<br/>1702 893<br/>1704 894<br/>1704 893<br/>1704 89</td><td>M<br/>1074<br/>1077<br/>1017<br/>1017<br/>1017<br/>11779<br/>11779<br/>11948<br/>11779<br/>11948<br/>11779<br/>11948<br/>11779<br/>11948<br/>11779<br/>11948<br/>11074<br/>11074<br/>11074<br/>1074<br/>1074<br/>1074<br/>1074<br/>1</td><td>1507         3100           1569         915           1656         915           1770         936           1780         936           1888         943           1888         943           1888         943           1995         936           2000         958           2000         958           2000         958           1018         1018           resistanc         resistanc</td><td>15:79         940           15:79         940           17:70         950           18:75         955           18:87         968           2002         397           2002         397           2002         397           2002         397           2003         968           968         968</td><td>1657         968           11732         973           11732         973           11732         973           11939         988           11939         988           2012         993           2012         993           222167         1000           222168         1001           2415         9105           915         915</td><td>1746 995<br/>1811 1000<br/>1820 1009<br/>1222 1013<br/>2028 100<br/>2028 100<br/>2020</td><td>31821 1025<br/>11839 1025<br/>1203 1039<br/>1039 1039<br/>1039 1039<br/>1039 1039<br/>1039<br/>1038<br/>1033<br/>1038<br/>1033<br/>1038<br/>1033<br/>1038<br/>1038</td><td>essure.</td><td>1082<br/>1087<br/>1087<br/>1093<br/>1109<br/>1109<br/>11095<br/>11095</td><td>1108<br/>1111<br/>1112<br/>1112<br/>1112<br/>1112<br/>1112<br/>1112</td></t<> | 73         1190         7           746         1243         7           756         1340         73           775         1446         83           775         1446         83           789         1445         83           814         1544         83           814         1544         83           828         1724         83           814         1544         83           828         1724         83           814         1544         83           814         1544         83           814         1544         83           814         1544         83           8174         1544         83           8174         1544         83           8174         83         1724           817         500         66           CG         6         0           550         360         360  
   | 0         0           1302         803           1302         803           1302         803           1414         812           1561         831           1561         831           1796         877           10         10  
   | Mn.<br>Mn.<br>Mn.<br>Mn.<br>Mn.<br>Mn.<br>Mn.<br>Mn.  
   | 1371 853<br>1430 860<br>1432 867<br>1453 884<br>1553 884<br>1703 893<br>1703 893<br>1704 893<br>1704<br>1702 893<br>1704 894<br>1704 893<br>1704 89  | M<br>1074<br>1077<br>1017<br>1017<br>1017<br>11779<br>11779<br>11948<br>11779<br>11948<br>11779<br>11948<br>11779<br>11948<br>11779<br>11948<br>11074<br>11074<br>11074<br>1074<br>1074<br>1074<br>1074<br>1   
  | 1507         3100           1569         915           1656         915           1770         936           1780         936           1888         943           1888         943           1888         943           1995         936           2000         958           2000         958           2000         958           1018         1018           resistanc         resistanc   
  | 15:79         940           15:79         940           17:70         950           18:75         955           18:87         968           2002         397           2002         397           2002         397           2002         397           2003         968           968         968   | 1657         968           11732         973           11732         973           11732         973           11939         988           11939         988           2012         993           2012         993           222167         1000           222168         1001           2415         9105           915         915  
  | 1746 995<br>1811 1000<br>1820 1009<br>1222 1013<br>2028 100<br>2028 100<br>2020 | 31821 1025<br>11839 1025<br>1203 1039<br>1039 1039<br>1039 1039<br>1039 1039<br>1039<br>1038<br>1033<br>1038<br>1033<br>1038<br>1033<br>1038<br>1038   | essure.   | 1082<br>1087<br>1087<br>1093<br>1109<br>1109<br>11095<br>11095  | 1108<br>1111<br>1112<br>1112<br>1112<br>1112<br>1112<br>1112  |  |
| 2300 [1368]         573         551         602         592         613         1036         663         1136         713         718         728         1337         728         1337         1337         728         1337         728         1335         731         1337         731         1331         775         1330         1337         775         1333         1337         731         1337         731         1337         731         1337         731         1331         775         1331         1337         775         1333         776         1333         776         1333         776         1331         776         1331         776         1331         776         1331         776   
  | 746         1243         7           756         1380         75           7756         1380         75           775         1256         1380         75           779         1425         83         1435         83           801         1567         88         801         1564         83           814         1564         88         1734         88         828         1734         88           828         1734         88         1734         88         8         9         9         9         9         9         1344         8         9         1344         8         1344         8         1344         88         1344         88         1344         88         1344         88         1344         88         1344         88         1344         88         1344         88         1344         88         1344         145   
   | 5 1302 803<br>1 1361 812<br>1 14 14 14 18 18 1<br>5 1561 811<br>1 1561 813<br>1 1566 857<br>1 1566 857<br>1 1566 877<br>1 1   | 1365 833<br>1425 839<br>1549 8548<br>1551 857<br>1571 859<br>1871 901<br>1179<br>1179<br>1179<br>1179   
   | 1430         860           1452         867           1452         867          
1553         88           1703         893           1703         893           1703         893           1704         918           1949         918           1127         1127           1127         1127  | 1498         888           11563         894           11031         910           11773         919           11779         919           11779         919           11779         919           11779         919           11779         919           11779         919           11998         942           11998         942           11074         1           1074         1           1074         1           1074         1           1074         1   
  | 1559         915           1556         915           1358         923           1200         926           1201         956           1202         950           1202         950           1203         956           1204         950           1207         956           1018         1           11         1           12         1           13         1           14         1           15         1           16         1           16         1   | 1474         945           1120         950           1187         956           1187         956           1193         968           1193         968           1193         968           1205         975           2005         975           2005         975           2005         975           2005         996           968         968           2005         997           2005         997           2005         996           2005         996           2005         997           2005         997           2005         997           2005         996           968         968           968         968           968         968           968         968           968         968           968         968           968         968           968         968           968         968           968         968           968         968           968         968  
   | 1/72         9/37           1/32         9/37           1/38         9/37           1/38         9/37           1/38         9/37           1/38         9/38           2/31         19/39           2/32         10/10           2/34         10/10           2/34         10/10           9/15         9/15  | 1829 1000<br>1829 1004<br>2025 1013<br>2025 1013<br>2025 1013<br>2028 1013<br>2028 1018<br>2028 1008<br>2028 1                               | 1894 1028<br>1965 1031<br>2208 1030<br>2286 1043<br>2286 1043<br>2381 1058<br>2430 1058<br>2440 1 | 1980 1055 1058 1055 2250 1056 2277 1068 2277 1068 2277 1068 2277 1068 2277 1077 2340 1077 2340 1077 2352 108111 2352 108111 23552 10811 2352 108111 23552 | 1082<br>1092<br>1096<br>1096<br>11096<br>11096<br>11104   
   | 1111<br>1111<br>1112<br>1112<br>1112<br>1112<br>1112<br>111   |  |
| 3000 [1416]         586         97         613         1006         643         1006         672         1135         700         1136         728         1237         728         1237         728         1237         728         1237         728         1237         728         1237         751         1330         751         753         753  
  | 756         1300         75           756         1361         75           775         1425         88           801         1567         88           814         1564         88           828         1734         88           828         1734         88           928         1734         88           928         1734         88           928         1734         88           928         1734         88           929         1734         88           920         66         700           93         7730         66           93         7734         88           94         700         66           95         6         700           94         700         66           14         700         66           15         700         70           17         84         70           17         94         70           17         95         70   
   | a 1361 812<br>14 1361 812<br>1516 821<br>11718 864<br>1716 877<br>1716 877<br>1716 877<br>1716 877<br>1716 877<br>0<br>1716 877<br>0<br>1776 877<br>0<br>1776 877<br>0<br>1776 877<br>0<br>1776 877<br>1776 8776 877<br>1776 877<br>1777<br>1777<br>1777<br>1777<br>1777<br>1777<br>1777   | 1425 839<br>1490 848<br>1558 857<br>1779 878<br>1871 901<br>1871 901<br>1779<br>1179<br>1179<br>1179   
   
  | 1492 867<br>1559 875<br>1559 875<br>1523 883<br>1781 903<br>1781 903<br>1781 903<br>1781 903<br>1781 903<br>1781 903<br>1781 903<br>1781 903<br>1781 903<br>1781 903<br>1782 71<br>1727 7<br>1127 7<br>1 | 1563         894           1631         902           17703         919           1859         925           1943         933           1998         942           1998         942           1998         942           1998         942           1998         942           1998         942           1074         1074           1074         1074   | 14636 923<br>1706 929<br>1888 943<br>1924 950<br>2008 958<br>2008 958<br>1924 950<br>1958 945<br>1958 945<br>1958
945<br>1958 945<br>1018<br>1018<br>1018   | 1722         950           1787         956           1395         968           2005         975           2005         975           2005         975           989         975           2068         968           968         968   
   | 11798 977<br>11867 982<br>210129 9988<br>2167 1006<br>2249 1012<br>915<br>915  | 1557 1004<br>1950 1009<br>2098 1018<br>2175 10241<br>2175 10241<br>2255 1024<br>2255 1024<br>2338 1035<br>2338 1035<br>2358 1035<br>2558 1058 1058 1058 1058 1058 1058 1058 1   | 1963 1031 1035 1035 1035 1035 1035 1035 103  | 2050 1058 1058 1058 2279 1066 12277 1066 12277 1072 2257 1072 2349 1077 2525 1081 2275 1081 1077 2555 1081 1075 1075 1075 1075 1075 1075 1075 107  | 1084<br>1093<br>11093<br>11004<br>1104  
   | 1111<br>1113<br>1112<br>11120<br>11120<br>11121<br>11121  |  |
| 3100 [1463]         600         1047         528         1050         1540         1741         1240         731         1345         731         1345         731         1345         731         733         733         733  
  | 766         1361         75           777         1436         83           801         1567         83           814         1567         83           828         1724         82           828         1724         82           828         1724         82           828         1244         83           828         1724         82           828         1724         82           828         1724         82           828         1724         82           920         661         100           93         6         700           93         6         700           94         700         661           174         93         83           93         83         1724           94         94         94           174         95         94           175         95         100  
   | 4         1424         821           4         1491         831           7         1568         842           7         1568         877           8         1774         864           1796         877           8         7         9           1796         877           8         7           9         1796           8         7           9         1796           877         8           0         0           1         0           1         0           1         0  
   | 1490 848<br>1551 857<br>1767 878<br>1777 889<br>1871 901<br>1179<br>1179<br>1179<br>1179  
   | 1559 875<br>1559 875<br>1751 903<br>1751 903<br>1751 903<br>1751 903<br>1751 903<br>1751 903<br>1761 1727<br>1127<br>1127<br>1127<br>1127<br>1127  | 1631         902           1703         910           1857         925           1993         925           1993         925           1993         923           1993         923           1993         923           1993         923           1993         923           1074         1074           1074         1074  
  | 1706         929           1780         936           1941         950           2000         958           2001         958           2002         956           1018         1018           resistanc         resistanc  
                                | 1.787         956           1.857         952           1.857         952           2.005         975           2.005         975           2.005         968           968         968  | 1367         982           1393         988           1393         989           2068         999-1           2167         1006           2249         1012           215         913           9         95           9         95           9         95           9         1012           1012         1016           1012         1016           1012         1012           1012         1012           1012         1012           1013         1012  | 1950 1009<br>2022 1013<br>2275 10218<br>2255 10218<br>2255 1029<br>2338 1035<br>2338 1035  
   | 2003 1035 1035 2009 1039 2039 2039 2039 2048 2048 2048 2048 2048 2048 2048 2048  | essure.   | 10987<br>10903<br>11004<br>11040<br>11040   | 1113<br>1112<br>1120<br>1124<br>1127  |  |
| 3200 [15:0]         615         1147         666         1197         667         1230         753         1330         753         1331         753         753         1331         753         1331         753         1331         753         1331         753         1331         753         1331         753         1331         753         1331         753         1331         753         1331         753         1331         1331         1331   
  | 777         1426         88           789         1495         88           784         1494         186           814         1564         88           828         1724         88           828         1724         88           700         661         661           8.         380         1724         88           9.         50         6         6           700         661         404         404           ated airflow         ated airflow         26         -           CC         -         CC         -         404   
   | 1491         831           5         1561         841           7         1734         862           9         1734         862           9         1796         877           9         1796         877           8         0         0           0         0         0           1         1796         877           1         1796         877           1         0         0           1         0         0           1         0         0   
   | 1131 857<br>1331 857<br>1379 889<br>1377 901<br>1179<br>1179<br>1179  
   | 1529 884<br>1781 983<br>1858 914<br>1858 914<br>1949 918<br>1948 918<br>1127<br>1127<br>1127   | 1703         910           1773         919           1943         925           1943         925           1998         942           1998         942           1998         942           1998         942           1074         1074           1074         1074           1074         1074  
  | 1780 936<br>1888 943<br>2000 959<br>2007 956<br>2078 966<br>1018<br>1018<br>reference  
                                | 1387         962           1393         963           2082         992           2162         989           21162         989           968         968  | 1339         988           2012         993           2012         996           2120         909           2121         1001           221         221           221         221           221         221           221         221           221         221           221         221           221         221           221         221           221         221           221         221           915         915  | 1013 1013<br>2029 1018<br>2225 1029<br>2321 1029<br>2338 1035  
   | 2100 1033<br>2186 1043<br>2346 1054<br>2346 1054<br>2346 1058<br>2430 1058<br>2430 1058<br>2430 P  | essure.   | 1090<br>11096<br>1100<br>11104  | 1117<br>1117<br>1120<br>1127  |  |
| 3300 [157]         [50]         1138         557         1200         683         1232         733         1333         733         133         733         133         733         133         733         133         733         133         733         143         143         143         143         143         143         143         144         144         144         144         144         144         144         144         144         144         144         145         143         143         143         143         143         143         143         143         144         144         144         144         144         144         144         144  
  | 789         1495         81         1567         82           814         1564         82         1724         82           828         1724         82         1724         82           8         1724         82         1724         82           8         1724         82         1724         82           9         6         700         661         174           9         3         3         3         3         3           9         3         3         4         10         4           9         3         3         4         10         4           9         3         3         4         4         4         4           9         3         3         4  
   | 1261         841           7         1686         852           1314         864         864           1314         864         864           1314         864         864           1314         864         864           1314         864         864           1314         864         864           1314         864         864           1314         864         864           1314         864         864           1314         864         864           14         874         874           15         9         9           10 <b>TOI</b> 1   
   | 1179 887<br>11787 889<br>1871 901<br>1179<br>wn.<br>mum Exter<br>resistanc  
   | 1703 893<br>1781 903<br>13185 913<br>13185 913<br>13185 913<br>13185<br>13185<br>13185<br>1127<br>1127   | 11779 919<br>11984 925<br>11984 923<br>11984 923<br>11984 923<br>11984 923<br>11984 923<br>11074<br>11074<br>1074<br>1074  
  | 1382 943<br>1924 950<br>22000 958<br>956<br>1018<br>1018<br>refistanc  
                                | 1330         968           2005         975           2005         975           2162         989           968         968  | 2012 993<br>2089 999<br>22167 1006<br>2249 1012<br>915<br>915  | 1018 1018<br>2175 1024<br>22358 1029<br>22358 1029<br>1035<br>1035<br>1035<br>1035<br>1035<br>1035<br>1035<br>1035   
   | 2111 1043<br>2125 1043<br>2131 1053<br>2131 1053<br>2131 1058<br>2131 1058<br>2131 1058  | 2227 1068<br>2357 1072<br>2325 1081<br>2525 1081<br>65SUFe.   | 1005<br>1100<br>1104  | 1117<br>1120<br>1127  |  |
| 3400 [1604]         616         1220 [628]         1327 [123]         1328 [123]         1239 [123]         124           Diover Sheave         Iums Open         0         1         2         3         3         4         1           Motor H.P. [W]         RPM         853         816         779         339         739         1           Motor H.P. [W]         3         Re-adjustment of sheave required to achieve 1         4         1         7         3         4         1           Motor Shaave         1         0         1         2         3         3         4         <   
  | 801 1557 83<br>814 1564 83<br>828 1724 88<br>8.<br>9.<br>9.<br>9.<br>9.<br>9.<br>9.<br>9.<br>1724 88<br>1724   | 7 1636 852<br>9 1714 864<br>3 1796 877<br>6 open shor<br>at ARI minii<br>component  
   | 1179 878<br>1179 878<br>1871 901<br>1179<br>wn.<br>mum Exter<br>resistanc   
   |
1.781 903<br>11863 914<br>1949 918<br>1127<br>1127<br>1127<br>1127<br>1127<br>1127   | 1859 925<br>1998 942<br>1998 942<br>1998 942<br>1798 942<br>1074<br>1074<br>1074  
   | 1324 950<br>2000 958<br>9966<br>1018<br>1018<br>resistanc   | 2005 975<br>2082 982<br>2162 989<br>968<br>968  
  | 2009 999<br>2167 1006<br>2239 1012<br>915<br>915<br>915  | 12175 1024<br>2235 1035<br>2338 1035<br>1035<br>1035<br>1035   | 2265 1048<br>2346 1053<br>1053<br>1058<br>1058<br>1058<br>1058<br>1058<br>1058<br>1058<br>1058   
   | essure.   | 11006   | 1120  |  |
| 3500 [1652]         652         1235         568         1337         1313         1391         754         1551         789         1551         789         1557         1558         1557         1558         1557         1558         1557         1558         1557         1558         1550         1557         1558         1557         1558         1557         1558         1557         1558         156         159         159         159         159         159         150         158         168         179         179         159         159         159         159         150         159         159         159         159         150         159         150         159         159         150         159         159         150         159         150         159         150   
  | 814 1564 83<br>828 1724 88<br>5 6<br>700 661<br>aximum turn<br>aximum turn<br>ated airflow<br>dry coil. Add<br>CE - 1<br>500 3600 360  
   | 1714         864           3         1796         877           0         0         0           1         0         0           1         174         864           1         0         0           1         0         0           1         0         0           1         0         0   
   | 172 888<br>1871 901<br>1179<br>wn.<br>mum Exteresistanc   
   | 11853 914<br>11949 918<br>11127<br>11127<br>11127<br>1127<br>1127  | 1993 942<br>1998 942<br>1074<br>1074<br>1074   
  | 2000 958<br>2078 956<br>1018<br>resistanc  
                                | 2082 282<br>2162 989<br>968<br>968   | 2157 1006<br>2249 1012<br>915<br>915   | L Externa  
   | 2436 1053<br>2430 1058<br>Static Pr  | 2440 1077<br>2525 1081<br>essure.   |   | 1127  |  |
| 3500 [1659]         1531 [336]         1346 [331 [336]         1345 [331 [336]         1351 [336]         1361 [366]         1361 [366]   
  | 1228         1724         1828           5         6         700         661           700         667         380         360           aximum turm         aximum turm         aximum turm         360         56           CE         -         -         -         -         -   
   | 3 11796 1877<br>0<br>0<br>10 TOI  
   | N. 1357.1 901   
   | 11949 918 2  | 1998 942 1998 942 1<br>M<br>1074 1<br>1074 1   
  | 2078 966<br>1018<br>resistanc   | 2162 389<br>968<br>968   
   | 2249 1012<br>6 915<br>mine tota  | LEXTERNA   | 2430 1058<br>Static Pr  
  | 2525 1081)<br>essure.   | 2623  1104  | 224   1127   2  |  |
| IDI:re Fackage     L       Drive Package     L       Motor H.P. [W]     2 [1491.4]       Blower Sheave     2 [1491.4]       Blower Sheave     853     816     779       Motor Sheave     0     1     2     3     4       Motor Sheave     853     816     779     739       NOTES:     1. Factory sheave settings are shown in bold typ     2. Do not set motor sheave below minimum or m       3. Re-adjustment of sheave required to achievel     3. Re-adjustment of sheave required to achievel       4. Drive data shown is for horizontal airflow with       2. Component     3200     3300     340       fet coll     0.07     0.07     0.07     0.07       0.07     0.09     0.10     0.10     0.10       Downflow Economizer RA Damper Open     0.11     0.12     0.02       dorizontal Economizer RA Damper Open     0.11     0.12     0.03       Dorizontal Economizer RA Damper Open     0.11     0.12     0.12       Dorizontal Economizer RA Damper Open     0.01     0.01     0.01       Dorizontal Economizer RA Damper Open     0.11     0.12     0.03       Dorizontal Economizer RA Damper Open     0.11     0.12     0.03       Dorizontal Economizer OA Damper Open     0.11     0.0  
  | 5 6 661<br>  
   | open sho<br>tat ARI minii<br>component  
   | N. 1779<br>Num Exteresistanc  
   | 2<br>1127<br>teenal Stat   | M<br>3 [2237.1<br>1VP-44<br>1074<br>1074<br>1074   
  | resistanc  
                                | e to detei   | 915 mine tota  | Externa  
   | Static Pr  | essure.   |   |   |  |
| Drive Fackage     L       Motor H.P. [W]     2 [1491.4]       Blower Sheave     2 [1491.4]       Blower Sheave     853     816     779       Turns Open     0     1     2     3     4       RPM     2     1     2     3     4       S Re-adjustment of sheave settings are shown in bold typ     2     2     2       S Re-adjustment of sheave required to achieve it     3     3     3     3       COMPONENT AIRFLOW KESSISTAN     3     1     1     1       Met coll     1     1     1     1     1     1       Met coll     0.07     0.07     0.07     0.07     0.07       Met coll     0.07     0.07     0.07     0.10  | 5 6<br>700 667<br>aximum turn<br>ated airflow<br>dry
coil. Add<br><b>CE</b> 1 3   
  | o TOI  
  | wn.<br>resistanc   
  | 2<br>1127<br>ernal Stat  | M<br>3 [2237.1<br>BK65H<br>1VP-44<br>1074<br>1074<br>1074   
   | re 1018<br>resistanci   | e to deter  
  | 915 915 mine tota  | E Externa   
  | Static Pr  | essure.   |   |   |  |
| Motor H.P. Will         2         1         2           Motor Sheave         ER90H         2         1         4           Motor Sheave         Brown in bold typ         1         2         3         4         4           Motor Sheave         NOTES:         1. Factory sheave settings are shown in bold typ         2.00         739         739           Motor Sheave         0         1         2         3         4         4           Turns Open         0         1         2         3         4         739           NOTES:         1. Factory sheave settings are shown in bold typ         2.00         739         739         4           RPM         3. Brandiustment of sheave required to achieve to a chieve to a chieve to a chieve to the achieve to the achiever to the achieve to the achievet   | 5 6<br>700 661<br>aximum turn<br>aximum turn<br>axim   
   | s open sho  
   | wn.<br>mum Exteresistanc  
   | 1127<br>1127<br>ernal Stat  
  | 3         2237.1           BK65H         1/VP-44           1074         3           1074         1074           1074         1074  
  | 1018<br>1018<br>resistanci  | e to deter   
   | 915<br>mine tota   | E Externa  | Static Pr   
  | essure.   |   |   |  |
| Motor         1.11   
  | 5         6           50         661           2.         8           aximum turn<br>aximum turn<br>atry coil. Add         3           dry coil. Add         2           dry coil. 3         3   
   | open short at ARI mini  
   | wn.<br>num Exter<br>resistanc   
   | 1127<br>1127<br>ernal Stat   | 3         1074           1VP-44         1VP-44           1074         1074           ic Pressu         1   
  | 1<br>1018<br>resistanci  
                                | e to deter   | 915<br>915<br>mine tota  | E Externa  
   | Static Pr  | essure.   |   |   |  |
| Diower Sneave     Drower Sneave       Turbediation     0     1     2     3     4       Turbediation     0     1     2     3     4       Turbediation     853     816     779     739       Turbediation     853     816     779     739       Turbediation     3     816     779     739       Second State     2. Do not set motor sheave below minimum or m<br>3. Re-adjustment of sheave required to achieve<br>4. Drive data shown is for horizontal airflow with       COMPONENT AIRFLOW RESISTAN       Met Coil     0.07     0.07     0.07       Met Coil     0.07     0.07     0.07     0.07       Met Coil     0.01     0.01     0.01     0.01       Met Coil     0.07     0.07     0.07     0.07       Met Coil     0.01     0.01     0.01     0.01       Met Coil     0.01     0.01     0.01     0.01       Met Coil     0.01     0.01     0.01     0.01       Met Coil     0.03     0.03     0.03     0.  
   | 5 6<br>700 661<br>  
  | open short at ARI minii<br>component   
  | num Externesistanc   
  | 1127<br>1127<br>ernal Stat<br>ce (below  | 1074  
   | 1018<br>resistanci  | <b>5</b><br>968<br>e to deter   
  | 6<br>915<br>mine tota  | E Externa   
  | Static Pr  | essure.   |   |   |  |
| Motor Science         0         1         2         3         4           Turns Open         0         1         2         739         4           Turns Open         853         816         739         739         739           NOTES:         1. Factory sheave settings are shown in bold typ         2. Do not set motor sheave below minimum or m         3. Re-adjustment of sheave required to achieve         4. Drive data shown is for horizontal airflow with           3. Re-adjustment of sheave required to achieve         4. Drive data shown is for horizontal airflow with         3200         3400         3400           Component         3200         3300         3400         340         3400         3400           Met Coll         0.07         0.07         0.07         0.07         0.07         0.07         0.07           Met Coll         0.07         0.07         0.07         0.07         0.07         0.07           Met Coll         0.010         0.03         0.010         0.10         0.10         0.10           Met Coll         0.07         0.07         0.07         0.07         0.07         0.07           Met Coll         0.010         0.010         0.10         0.10         0.10         0.10  
  | 5         6           700         661  
   | 9<br>s open shor<br>at ARI mini<br>component  
   | nn.<br>resistanc  
   | 1127<br>1127<br>ernal Stat<br>ce (below  | 1074<br>1074<br>tic Pressul<br>() to duct r  
  | 1018<br>reference  
                                | 5<br>968<br>e to deter   | 6<br>915<br>mine tota  | Externa  
   | Static Pr  | essure.   |   |   |  |
| Iums Open         0         1         3         4         3           RPM         1         853         816         779         739         1           NOTES:         1. Factory sheave settings are shown in bold typ         2. Do not set motor sheave below minimum or m         3. Re-adjustment of sheave required to achieve         4. Drive data shown is for horizontal airflow with           3. Re-adjustment of sheave required to achieve         4. Drive data shown is for horizontal airflow with         3.         3400         1           A. Drive data shown is for horizontal airflow with         3.         3.00         3.400         1         1         1           A. Drive data shown is for horizontal airflow with         0.07         0.07         0.07         1   
  | 0         661               aximum turm         aximum turm           ated airflow            fry coil. Add <b>CE</b>  
   | s open sho<br>at ARI mini<br>component  
   | vn.<br>num Exteresistanc  
   | 1127<br>1127<br>ernal Stat<br>ce (below  | 1074<br>1074<br>tic Pressu<br>() to duct r   
  | 1018<br>reference  
                                | 968<br>968<br>e to detei   | 915<br>915<br>mine tota  | L Externa  
   | Static Pr  | essure.   |   |   |  |
| KPM       853       816       7/9       739         NOTES:       1. Factory sheave settings are shown in bold typ       2. Do not set motor sheave below minimum or m         3. Re-adjustment of sheave required to achievel       3. Re-adjustment of sheave required to achievel         4. Drive data shown is for horizontal airflow with         6. OMPONENT AIRFLOW RESISTAN         COMPONENT Airs (1990)         7.30         7.30         7.40         7.51  
  |  
   | s open sho<br>at ARI mini<br>component  
   | nn.<br>mum Exte<br>resistanc  
   | Final Stat   | 1074<br>tic Pressu<br>() to duct r   
  | 1018<br>re<br>resistanci   
                                | e to detei   | 915<br>mine tota   | ے<br>ا Externa   
   | Static Pr  | essure.   |   |   |  |
| NOTES: 1. Factory sheave settings are shown in bold typ<br>2. Do not set motor sheave below minimum or m<br>3. Re-adjustment of sheave required to achievel<br>4. Drive data shown is for horizontal airflow with<br><b>COMPONENT AIRFLOW RESISTAN</b><br><b>Component</b><br><b>Component</b><br><b>1570</b><br><b>1570</b><br><b>1570</b><br><b>1570</b><br><b>1570</b><br><b>1570</b><br><b>1570</b><br><b>1570</b><br><b>1570</b><br><b>1760</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1711</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b><br><b>1710</b>   
  | atimum turn<br>ated airflow<br>dry coil. Add<br><b>CE</b> , 3600 3600  
   | s open sho<br>at ARI mini<br>component  
   | vn.<br>num Exte<br>resistanc  
   | ernal Stat<br>ce (below  | ic Pressur<br>() to duct r   
  | re<br>resistano  
                                | e to detei   | mine tota  | ll Externa   
   | Static Pr  | essure.   |   |   |  |
| 3200         3300         3400           [1510]         [1557]         [1604]           0.07         0.07         0.07           0.07         0.07         0.07           0.09         0.10         0.10           0.016         [001]         [001]           0.012         [001]         [011]           0.111         0.12         0.12           0.131         [003]         [001]           0.11         0.12         0.12           0.13         [003]         [001]           0.11         0.12         0.12           0.13         [003]         [001]           0.14         0.12         0.12           0.11         0.12         0.12           1.033         [003]         [003]           0.14         D.14         0.13           DNA         DNA         DNA  
  |  
   |   
   | ŝ   
   | andard Inc   | Standard Indoor Airflow - CFM [L/s]  
  | ow - CFM   
                                | [L/s]  |  |  
   |  |   |   |   |  |
| [1510]         [1557]         [1604]           0.07         0.07         0.07           0.09         0.10         0.10           0.09         0.10         0.10           0.01         [021]         [021]           0.03         0.10         0.10           0.01         [021]         [021]           0.03         0.10         0.10           0.11         0.11         0.11           0.13         [031]         [031]           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.12         0.12           0.11         0.13         0.03           0.11         0.12         0.12           0.11         0.13         0.03  
  |  
   |   
   | 3800  
   | 3900   | 4000   
  | 4100   
                                | 4200   | 4300   | 4400   
   | 4500   | 4600  | 4700  | 4800  |  |
| 0.07 0.07 0.07<br>[02] [02] [02]<br>0.09 0.10 0.10<br>[02] [02] [02]<br>0.06 0.10<br>0.11 0.12 [01]<br>0.11 0.12 0.12<br>0.11 0.12 0.12<br>0.12 0.12 0.12 0.12 0.12<br>0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12  | [1652] [1699]  
   
   | [1746]  
   | [1793]  
   | [1840]   | [1888]   
  | [1935]  | [1982]   
   | [2029]   | [2076]   
   | [2123]   | [2171]  | [2218]  | [2265]  |  |
| 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07  
  | -  
   |   
   | Re  
   | Resistance -   |  
  | of Water [kPa]   
                                | kPa]   | •  |  
   |  | •   |   |   |  |
| 0.09<br>0.09<br>0.02<br>0.05<br>0.05<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.01<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03<br>0.03   
  |  
   | 0.08  
   | 0.08  
   | 0.09   | 0.09   
  | 0.09   
                                | 0.09   | 0.10   | 0.10   
   | 0.10   | 0.10  | 0.11<br>[ 03]   | 0.11<br>[ 03]   |  |
| [.02]         [.02]         [.02]         [.02]           [.01]         [.01]         [.01]         [.01]           [.01]         [.01]         [.01]         [.01]           [.01]         0.12         [.01]         [.01]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.03]         [.03]         [.03]         [.03]           [.04]         [.04]         [.04]         [.04]   
  | 0.11 0.11  
   | 0.12  
   | 0.12  
   | 0.13   | 0.13   
  | 0.14   
                                | 0.14   | 0.15   | 0.15   
   | 0.16   | 0.16  | 0.17  | 0.17  |  |
| [010]         [010]         [010]           0.11         0.12         0.12           0.31         0.33         [03]           0.31         0.34         0.37           0.31         0.34         0.37           0.31         0.33         0.37           0.31         0.34         0.37           0.31         0.03         0.37           0.31         0.03         DNA   
  | -  
   | 0.06  
   | 0.07  
   | 0.07   | 0.07   
  | 0.07   
                                | 0.08   | 0.08   | 0.08   
   | 0.04   | 0.04  | 0.04  | 0.10  |  |
| 0.11 0.12 0.12<br>[.03] [.03] [.03]<br>0.31 0.34 0.37<br>[.08] [.08] [.09]<br>DNA DNA DNA  
  |  
   | [.02]   
   | [.02]   
   | [.02]  | [.02]  
  | [.02]  
                                | [.02]  | [.02]  | [.02]  
   | [.02]  | [.02]   | [.02]   | [.02]   |  |
| 0.31 0.34 0.37<br>[.08] [.08] [.09]<br>DNA DNA DNA   
  | 0.13 0.13<br>[.03] [.03]   
   | 0.14<br>[.03]   
   | 0.14<br>[.04]   
   | 0.15<br>[.04]  | 0.15<br>[.04]  
  | 0.16<br>[.04]  
                                | 0.16<br>[.04]  | 0.17<br>[.04]  | 0.17<br>[.04]  
   | 0.18<br>[.04]  | 0.19<br>[.05]   | 0.19<br>[.05]   | 0.20<br>[.05]   |  |
| DNA DNA DNA  
  |  
   | DNA   
   | DNA   
   | DNA  | DNA  
  | DNA  
                                | DNA  | DNA  | DNA  
   | DNA  | DNA   | DNA   | DNA   |  |
|  
  | DNA 0.17   
   | 0.18<br>[ 04]   
   | 0.18<br>[ 04]   
   | 0.20   | 0.21<br>[ 05]  
  | 0.23   
                                | 0.24<br>[ 06]  | 0.25<br>[ 06]  | 0.27   
   | DNA  | DNA   | DNA   | DNA   |  |
| DNA DNA DNA  
  | DNA DNA  
   |   
   | DNA   
   | AND  | AND  
  | AND  
                                | AND  | AND  | AND  
   | DNA  | 0.31  | 0.31  | 0.32  |  |
| & riansuori namo-croo<br>Note: Add component resistance to determine external static pressure  
  | _  
   | DNA – Data not available  
   | aldelieve   
   |  |  
  |  
                                |  |  |  
   |  | [on.]   | [on-]   | [on-]   |  |
| <b>AIRFLOW CORRECTION FACTORS</b>  
  |  
   | 10 TON [35.1kW  
   | 5.1k/   
   | Ň  |  
  |  
                                |  |  |  
   |  |   |   |   |  |
| 3200 3300 3400   
  |  
   |   
   | 3800  
   | 3900   | 4000   
  | 4100   
                                | 4200   | 4300   | 4400   
   | 4500   | 4600  | 4700  | 4800  |  |
| [1557] [1604]  
  | [1652] [1699]  
   | [1746]  
   | [1793]<br>0.00  
   | [1840]<br>1.00   | [1888]   
  | [1935]   
                                | [1982]   | [2029]   | [2076]   
   | [2123]<br>102  | [2171]  | [2218]<br>1.03  | [2265]<br>1.04  |  |
| 0.87 0.88 0.90   
  | -  
   | 0.95  
   | 0.97  
   | 0.99   | 1.00   
  | 1.02   
                                | 1.04   | 1.06   | 1.07   
   | 1.09   | 1.11  | 1.12  | 1.14  |  |
| 0.99 0.99  
  |  
   | 1.00  
   | 1.00  
   | 1.00   | 1.01   
  | 1.01   
                                | 1.01   | 1.01   | 1.02   
   | 1.02   | 1.02  | 1.03  | 1.03  |  |

	Model RJNL-B120/C120 Voltage 208/230, 460, 575 — 3 phase	IL-B120 )8/230, 4	/C120 /60, 57:	5 — 3	phase																								
CFM [L/s]			•	1		L		•	H		•	:xterna	I Static	External Static Pressure — Inches of Water [kPa]	i e –	ches of	Water [	kPa]	L			L			L			L	
, La	0.1 [.02] RPM W R	RPM W	RPM	۲ ۲	0.4 [.10] RPM W	Ľ.		L12] 0.6 [13] W RPM W	102	2	U.8 RPM		0.9 [.22] RPM W	RPM W RPM W	RPM	N R	T Z [.30] PM W	T 3 [ 32] RPM W	2	T.4 [.35] T.5 PM W RPM	RPM W	~	0 <del>1</del>	RPM V	W RPM	T 8 45 1 19 PM W RPM	RPM W	~	N Md
3200 [1510] -	1		1	1	679 1177	77 707		736	1294 76	1354	791		8 1476	1476 844 1538	870	1601 896	6 1666	921 17	1731 946	1797	970 18	1864 994	1931	1017 2000		2069	1063 2140	40 1085	2211
3300 [1557] -	1		662	1171 6	691 123		1291	747			802	1478 828	8 1542	854 1607	880	1673 905	5 1740			1876			2016	1025 20		8 2159	1070 2232	32 1091	1 2306
3400 [1604] -	1	1		1226 7	703 128	1288 731	1352		1416 78	786 1481	812	1546 839	1613	865 1681	890	1749 915	5 1819		1889 964	1960	987 20	2032 1010	1010 2105	1033 21	2179 1055	2254	1077 23	2329 1098	3 2406
3500 [1652] -	1				715 1351		1417				823		1689	875	900					2049		2124 1019 2199	2199			2353		_	1106 2510
3600 [1699]		671 1285	669		727 14:		1488	782			834	1698 860	1770	885	910		4 1991	958 20			1005 22	2143 1005 2220 1027 2298 1049 2377	2298	1049 23	377 1071	2457	1092 2538		1113 2620
0 [1746] —			712		740 1492		1563	793	1635 820	0 1707	1707 846 1	1781 871		1855 896 1931	920	2007 944	4 2084	968	2162 991		1014 23	21 1036	5 2402	1057 24	2241 1014 2321 1036 2402 1057 2484 1079	2566	1100 2650 1120 2734	50 112	0 273
3800 [1793] 669	1354	697 1425	725	1496 7	752 150	1569 779	1643	805	1717 831	31 1792	857	1869 882		906 2024	931	2103 954	4 2183	977 22	2263 1000 2345	0 2345	1023 24	2427 104	1 2511	1044 2511 1066 2595	595 1087	2680	1107 2766	66 1127	7 2853
3900 [1840] 682	1428	710 1502	738	1576	765 16	1651 791	1728	817	1805 84	843 1883	868	1961 893	2041	917 2122	941	2203 964	4 2286	987 23	2369 1010 2453	0 2453	1032 25	1032 2538 1053 2624 1074	\$ 2624	1074 27	2711 1095	1095 2799	1115 2887	87 —	1
-	1507	724 1584	751	1661	777 173		1817	829		855 1977	880		4 2141	928	951	2308 974	4 2393	997 24	2479 1019	9 2566	1041 26	2654 1062	2742	1083 28			1123 3013	13 –	1
4100 [1935] 710	1592	737 1670	764	1750	790 183	1830 816	1912	842	1994 867	57 2077	891	2161 915	2246	939 2332	962	2418 985	5 2506	1007 25	2595 1029	1029 2684	1050 27	1050 2774 1071 2865 1092	. 2865	1092 29	2957 1113	1112 3050	1131 3144	44 –	T
4200 [1982] 724	1680	751 1762	777	1844 8	803 193	1927 829	2011	854	2096 879	79 2181	903	2268 927	2356	950 2444	973	2533 995	2624	1017 27	2715 1039 2807	9 2807	1060 29	2900 1080	2993	1100 30	3088 1120	3184	1	1	T
4300 [2029] 738	1774	764 1858	791	1943 8	816 2028		842 2115	866	2202 891	91 2291	915	2380 938	2470	961	984	2653	1006 2746	1027 28	1027 2840 1048 2934	3 2934	1069 30	3030 1089 3126 1109	3126	1109 32	3223 1129	9 3321	1	1	Ι
4400 [2076] 752	1873	778 1959	804	2046	829 213	2135 854	2224	879	2314 903	33 2405	926	2497 950	2589	972 2683	995	2778 10:	1016 2873	1038 2969	969 1058	3 3066	1079 31	1058 3066 1079 3165 1099 3264	3264	1118 33	3363 —	1	1	1	1
	1976	792 2065	818	2155	843 224	2246 867	2338	892	2430 91	915 2524	939	2618 961	2714	984 2810	10 1006 2907		1027 3005	1048 31	3104 1069	3204	1089 33	3304 1108	3406	1127 35	3508 —	1	1		1
4600 [2171] 78	781 2084 8	806 2176	6 831	2268 8	856 230	2362 880 2456	2456	904	2551 92	928 2648 951	951 2	2745 973	3 2842	2842 995 2941	41 1017 3041	3041 103	1038 3142	1059 3243	243 1079	1079 3346	1099 34	1099 3449 1118 3553	3553	1	1	I	1	1	Ι
	795 2197 820 2291 845 2386 870 2483 894 2579	820 229	1 845	2386 8	870 24	83 894	2579	917		2776	963	2876 985	5 2976	2976 1007 3078 1028 3180	78 1028	3180 104		1069 33	1069 3387 1089 3492	3492	1109 3598	98 1128	3705	1	1	I	1	1	Т
4800 [2265] 81	0 2315 8	835 241.	2 859	2509 {	883 26.	08 907	2708	930	2808 95	953 2909	975	012 99	3115	1018 3219	1039	3324	1060 3430	1080 35	1080 3536 1099 3644	3644	1119 37	3752 —	I	1	1	I	1	1	1
NOTE: L-Drive left of bold line, M-Drive right of bold line.	eft of bol	ld line, I	M-Driv	e right	t of boi	ld line.																							
Drive Package	ge									_				Σ									z						
Motor H P [W	M		ĺ		2 [1491.4]	91.4]								2 [1491.4]	91.4]							e	3 [2237.1	Ē				r	
Blower Sheave	ive				BK110H	HOH								BK90H	HO								BK65H	 _				1	
Motor Sheave	ve				1VP-44	44								1VP-44	-44								1VP-44	4				r	
Turns Open	Ē	1	2	Ľ	3	4		5	9		-	2	L	3	4	5		9	-		2	e		4	5		9	r	
RPM		708	676	ė	646	612		580	548		868	830		794	752	713		673	1192		1134	1085		1031	979	6	919		
NOTES:	3. R D 3. R 3. R	<ol> <li>Factory sheave settings are shown in bold type.</li> <li>Do not set motor sheave below minimum or maximum turns open shown.</li> <li>Re-adjustment of sheave required to achieve rated airflow at ARI minimum External Static Pressure</li> </ol>	sheav et mo: stment	e sett tor sh t of sh	ings a eave l teave	tre shc below require	wn in minim ed to ;	bold num ol achiev	type. r maxi /e rate	imum t ∍d airflo	urns o ow at <i>i</i>	ıpen s∣ ARI m	hown. inimun	ר Exteri	nal Stat	tic Pres	sure												
	4 D	Drive dâ	ita shc	own is	for hc	orizont	tal airfi	jow w∣	ith dry	/ coil. ⁄	Add co	uodu	ent res	with dry coil. Add component resistance (below) to duct resistance to determine total External Static Pressure.	i (below	/) to du	ct resis	tance	to dete	ermine	tota	Extern	al Stat	ic Pre	ssure.				
AIRFLOW CORRECTION FACTORS	MC	COF	RE	CT	0	4 F A	<b>\</b> CT	-OR	S					_	COMPONENT AIRFLOW RESISTANCE	ЛРО	<b>N</b> EI	Ļ	AIRF	F C	Š	RE	<u> S</u>	IAN	NCE NCE				
Actual CFM	EM:	2400	-	2600	2800	_	3000	32	3200	3400		3600		L								Sta	ndard	ndoor	Standard Indoor Airflow-CFM [L/s]	w-CFM	[r/s]		
[r/s]	_	[1133]		[1227]	[1321]		[1416]		[1510]	[1604]		[1699]					tananan		L	2400	26	2600	2800		3000	3200		3400	3600
	ĺ		ļ	I	ļ	┞			ŀ		ľ	[		-		50	DOTIBILL		_			-							

[L/s]         [1133]         [1227]         [1321]         [1416]         [1510]         [1604]         [7699]           Total MBH         0.97         0.98         0.99         1.00         1.02         1.03         1.04           Sensible MBH         0.87         0.92         0.997         1.02         1.07         1.12         1.17           Power kW         0.98         0.99         0.99         1.00         1.01         1.01         1.02	Actual CFM	2400	2600	2800	3000	3200	3400	3600
MBH         0.97         0.98         0.99         1.00         1.02         1.03         -           ble MBH         0.87         0.92         0.97         1.02         1.12         1.12         - </th <th>[r/s]</th> <th>[1133]</th> <th>[1227]</th> <th>[1321]</th> <th>[1416]</th> <th>[1510]</th> <th>[1604]</th> <th>[1699]</th>	[r/s]	[1133]	[1227]	[1321]	[1416]	[1510]	[1604]	[1699]
0.87         0.92         0.97         1.02         1.07         1.12 <th< th=""><th>-</th><th>0.97</th><th>0.98</th><th>0.99</th><th>1.00</th><th>1.02</th><th>1.03</th><th>1.04</th></th<>	-	0.97	0.98	0.99	1.00	1.02	1.03	1.04
0.99 0.99 1.00 1.01 1.01	Sensible MBH	0.87	0.92	0.97	1.02	1.07	1.12	1.17
	Power kW	0.98	66'0	66.0	1.00	1.01	1.01	1.02

NOTES: 1. Multiply correction factor times gross performance data 2. Resulting sensible capacity cannot exceed total capacity.

[] Designates Metric Conversions

					•		
Component 2	2400	2600	2800	3000	3200	3400	3600
	[1133]	[1227]	[1321]	[1416]	[1510]	[1604]	[1699]
		Re	sistance –	Resistance — Inches of Water [kPa]	f Water [kF	a]	
10 0	0.047	0.051	0.055	0.06	0.065	0.071	0.076
	[.012]	[.013]	[.014]	[.015]	[.016]	[.018]	[.019]
Downflow Economizer 0	0.05	0.06	0.07	0.08	0.09	0.10	0.11
RA Damper 100% Open [.C	[.012]	[.015]	[.017]	[.020]	[.022]	[.025]	[.027]
Horizontal Economizer 0	0.03	0.04	0.04	0.05	0.05	90.0	0.06
RA Damper 100% Open [.C	[700.]	[.009]	[.010]	[.011]	[.012]	[.014]	[.015]
Horizontal Economizer 0	0.08	0.08	0.08	0.10	0.11	0.12	0.13
OA Damper 100% Open [0.1	0.020]	[0.020]	[0.020]	[0.024]	[0.027]	[0.030]	[0.032]
Concentric Grill RXRN-FA65 or RXRN		0.17	0.20	0.25	0.31	75.0	
FA75 with Transition RXMC-CD04		[0.042]	[0.050]	[0.062]	[0.077]	[0.092]	
(RN-	DNA	DNA	DNA	DNA	DNA	AND	0.17
AA71 with Transition RXMC-CE05							[0.042]

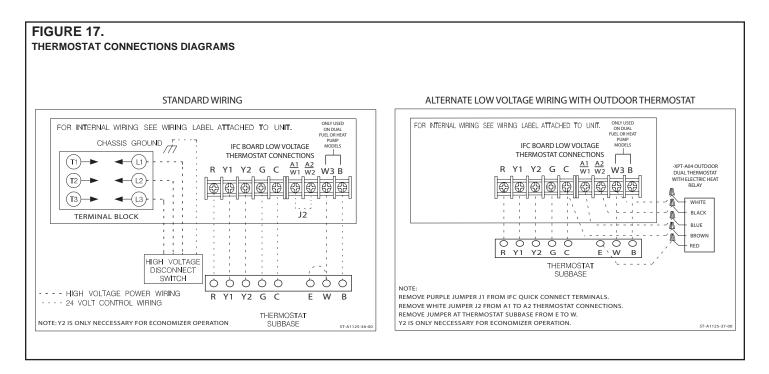
Note: Add component resistance to duct resistance to determine external static pressure. DNA = Data not available.

## TABLE 1. COPPER WIRE SIZE — AWG (1% VOLTAGE DROP)

	300	4	3	2	2	1	1/0	1/0	2/0	2/0	3/0	3/0	3/0	4/0	4/0	4/0	4/0	250	250	250	250	300	300	300
Supply	250	4	4	3	3	2	1	1	1/0	1/0	2/0	2/0	2/0	3/0	3/0	3/0	4/0	4/0	4/0	4/0	4/0	250	250	250
Wire	200	6	4	4	4	3	2	2	1	1	1/0	1/0	1/0	2/0	2/0	2/0	3/0	3/0	3/0	3/0	3/0	4/0	4/0	4/0
Length	150	8	6	6	4	4	4	3	3	2	2	1	1	1/0	1/0	1/0	1/0	2/0	2/0	2/0	2/0	2/0	3/0	3/0
Feet	100	10	8	8	6	6	6	4	4	4	3	3	2	2	2	1	1	1	1	1	1/0	1/0	1/0	1/0
	50	14	12	10	10	8	8	6	6	6	4	4	4	3	3	3	2	2	2	2	2	1	1	1
		15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125
												Circu	iit Amp	acity										

NOTE:

1. Wire size based on 60°C type copper conductors below 100 ampacity. 2. Wire size based on 75°C type copper conductors for 100 ampacity and above.



- 11. Adjust discharge air grilles and balance system.
- 12. Check ducts for condensation and air leaks.
- 13. Check unit for tubing and sheet metal rattles.
- 14. Instruct the owner on operation and maintenance.
- 15. Leave "INSTALLATION" and "USE AND CARE" instructions with owner.

## **XVII. OPERATION**

#### **COOLING MODE**

With thermostat in the cool mode, fan auto and the room temperature higher than the thermostat setting:

- A. Indoor blower contactor is energized through thermostat contact (G).
- B. Compressor contactor is energized through thermostat contact (Y1). A 5 minute short cycle delay is standard on this unit. Compressor will start immediately if test pins on the defrost board are shorted and released.
- C. Reversing valve is de-energized in the cooling mode through thermostat contact (B).
- D. Economizer enthalpy control (if installed) controls operation of first-stage cooling and positions fresh air damper to maintain mixed air temperature. Second-stage cooling operates normally as required by second stage of thermostats.
- E. The system will continue in cooling operation as long as all safety controls are closed, until the thermostat is satisfied.

### **HEATING MODE**

With thermostat in the heat mode, fan auto and the room temperature lower than the thermostat setting:

- A. Indoor blower contactor is energized through thermostat contact (G).
- B. Compressor contactor is energized through thermostat contact (Y1). A 5 minute short cycle delay is standard on this unit. Compressor will start immediately if test pins on the defrost board are shorted and released.
- C. Reversing valve is energized in the heating mode through thermostat contact (B).
- D. Economizer enthalpy control (if installed) is electrically bypassed with the heat pump control relay during heating operation.
- E. Should the heat requirement be more than the heat pump can supply, a portion of the electric heat accessory (if supplied) is energized through thermostat contact (W3).
- F. The system will continue in heating operation as long as all safety controls are closed, until the thermostat is satisfied.
- G. The unit will function in a defrost mode, reversing the refrigerant cycle to cooling and energizing the electric heat (if supplied) as required through the defrost relay.
- H. If the refrigerant system becomes inoperable during a need for heating, the thermostat may be set to emergency heat which will energize the electric heat (if supplied).

At initial start-up or after extended shutdown periods make sure the crankcase heater is energized for at least 12 hours before the compressor is started.

## XVIII. AUXILIARY HEAT

The amount of auxiliary heat required depends on the heat loss of the structure to be heated and the capacity of the heat pump. It is good practice to install strip heat to maintain at least 60°F indoor temperatures in case of compressor failure. The auxiliary heat is energized by the second stage of the thermostat. The amount of electric heat that is allowed to come on, as determined by the output of the heat pump, may be controlled by an outdoor thermostat.

## **A**WARNING

ONLY ELECTRIC HEATER KITS SUPPLIED BY THIS MAN-UFACTURER AS DESCRIBED IN THIS PUBLICATION HAVE BEEN DESIGNED, TESTED, AND EVALUATED BY A NATIONALLY RECOGNIZED SAFETY TESTING AGENCY FOR USE WITH THIS UNIT. USE OF ANY OTHER MANU-FACTURED ELECTRIC HEATERS INSTALLED WITHIN THIS UNIT MAY CAUSE HAZARDOUS CONDITIONS RESULTING IN PROPERTY DAMAGE, FIRE, BODILY INJURY OR DEATH.

## XIX. DEMAND DEFROST CONTROL AND HIGH/LOW PRESSURE CONTROLS

The demand defrost control monitors the outdoor ambient temperature, outdoor coil temperature and the compressor run time to determine when a defrost cycle is required.

**Enhanced Feature Demand Defrost Control:** This defrost control has high and low pressure control inputs with unique pressure switch logic built into the microprocessor to provide compressor and system protection without nuisance lockouts. The control cycles the compressor off for 30 seconds at the beginning and the end of the defrost cycle to eliminate the increased compressor noise caused by rapidly changing system pressures when the reversing valve switches. See next page for diagnostic flash codes and sensor resistance values at various temperatures.

#### **DEFROST INITIATION**

A defrost will be initiated when the three conditions below are satisfied:

- 1. The outdoor coil temperature is below 35°F as measured by a good coil sensor,
- 2. The compressor has operated for at least 34 minutes with the outdoor coil temperature below 35°F and
- 3. The measured difference between the ambient temperature and the outdoor coil temperature is greater than the calculated difference determined by the defrost control microprocessor.

#### **DEFROST TERMINATION**

Once a defrost is initiated, the defrost will continue until fourteen minutes has elapsed or the coil temperature has reached the selected termination temperature. The factory setting is 70°F but can be changed to 50°F, 60°F, or 80°F by relocating the jumper on the control board.

#### **TEMPERATURE SENSORS**

The coil sensor is located on the outdoor coil near the point fed by the distribution tubes from the expansion device, on the top most cross-over tube. The ambient air sensor is located outside the control box so it can sense outdoor temperatures. If the ambient sensor fails, the defrost control will initiate a defrost every 34 minutes of compressor run time with the coil temperature below  $35^{\circ}F$ .

If the coil sensor fails, the defrost control will not initiate a defrost.

#### TEST MODE

The test mode is initiated by shorting the TEST pins. The unit must have an active heat pump heating call to enter the test mode. In this mode of operation, the enable temperature is ignored and all timers are sped up. To initiate a manual defrost, short and hold the TEST pins. Remove the short when the system switches to defrost mode after the compressor noise abatement delay. The defrost will terminate on time (14 minutes) or when the termination temperature has been reached.

Test Sequence of Operation:

- 1) Provide a heating call to the heat pump.
- 2) Short test pins to bypass anti-short cycle timer. (If unit is running, this step is not necessary.)
- 3) Short test pins and hold them shorted to enter defrost mode.
- 4) Release test pins once control exits noise abatement delay.
- 5) Monitor coil temperature when control exits defrost.
- 6) Unit should return to heating mode.

#### TROUBLE SHOOTING DEMAND DEFROST

During the test mode the coil temperature should be monitored. If the system exits defrost at approximately the termination temperature, the control is operating normlly. If not, check the coil and ambient temperature sensor resistances, using the sensor temperature vs. resistance table at the end of this section.

Immerse the sensor in water and measure the resistance of the sensor. At  $35^{\circ}F$  the resistance of the sensor should be approximately 30,000 ohms.

Ensure that the coil sensor is properly installed that is not loose or touching the cabinet.

#### HIGH/LOW PRESSURE CONTROL MONITORING -ENHANCED DEFROST CONTROL

Status of high and low pressure controls is monitored by the enhanced feature demand defrost control and the following actions are taken.

**High Pressure Control** – Provides active protection in both cooling and heating modes at all outdoor ambient temperatures. The high pressure control is an automatic reset type and opens at approximately 610 psig and closes at approximately 420 psig. The compressor and fan motor will stop when the high pressure control opens and will start again if the high side pressure drops to approximately 420 psig where the automatic reset high pressure control resets. If the high pressure control opens 3 times within a particular call for heating or cooling operation, the defrost control will lock out compressor and outdoor fan operation.

**Low Pressure Control** – Provides active protection in both heating and cooling modes at all outdoor ambient temperatures. The low pressure control is an automatic reset type and opens at approximately 15 psig and closes at approximately 40 psig. Operation is slightly different between cooling and heating modes. **Cooling Mode:** The compressor and fan motor will stop when the low pressure control opens and will start again when the low side pressure rises to approximately 40 psig after the low pressure control automatically resets. If the low pressure switch opens 3 times within a particular call for cooling operation, the defrost control will lock out compressor and outdoor fan operation.

**Heating Mode:** The compressor and outdoor fan motor will stop when the low pressure control opens and will start again when the low side pressure rises to approximately 40 psig when the low pressure control automatically resets. If the low pressure switch trips 3 times within 120 minutes of operation during a particular call for heating operation, the defrost control will lock out compressor and outdoor fan operation. If the lock-out due to low pressure occurs at an outdoor ambient temperature below 5°F, the defrost control will automatically exit the lock-out mode when the outdoor ambient temperature rises to 5°F. This feature is necessary since the low pressure control could possibly have opened due to the outdoor ambient being very low rather than an actual system fault.

**Exiting Lock-Out Mode:** To exit the lock-out mode, remove 24 volts to the defrost control by removing power to the unit or by shorting the two defrost control pins together.

# ENHANCED FEATURE DEFROST CONTROL DIAGNOSTIC CODES

LED 1	LED 2	Control Board Status
OFF	OFF	No Power
ON	ON	Coil Sensor Failure
OFF	ON	Ambient Sensor Failure
FLASH	FLASH	Normal
OFF	FLASH	Low Pressure Lockout (short test pins to reset)
FLASH	OFF	High Pressure Lockout (short test pins to reset)
ON	FLASH	Low Pressure Control Open
FLASH	ON	High Pressure Control Open
Alternat	e Flashing	5 Minute Time Delay

# SENSOR TEMPERATURE VS. RESISTANCE TABLE

Degrees C	Degrees F	Ohms
-20	-4	96,974
-10	14	55,298
0	32	32,650
10	50	19,903
20	68	12,493
25	77	10,000
30	86	8,056
40	104	5,324

### **REPLACEMENT PARTS**

Contact your local distributor for a complete parts list.

### **CHARGE INFORMATION**

Refer to the appropriate charge chart on the unit, or in this booklet.

### TROUBLESHOOTING

Refer to the troubleshooting chart included in this manual.

### WIRING DIAGRAMS

Refer to the appropriate wiring diagram included in this manual.

## XX. HEATER KIT CHARACTERISTICS FOR RJNL MODELS TABLE 2. AUXILIARY HEATER KITS CHARACTERISTICS AND APPLICATION

	ər Kit		Protective	Min./Max. @ 240V	50/60		I	I		50/60			I		60/60	I			I	60/70	I				60/80				
	Separate Power Supply for Both Unit and Heater Kit	Heat Pump	Over Current Protective Device Size	Min./Max. N@ 208V	50/60					50/60					60/60					60/70					60/80				
LICATION	ply for Both		Min. Circuit Ampacity	208/240V	43/43					43/43					45/45					50/50					52/52				
S AND APP	e Power Sul	r Kit	Max. Fuse Size	208/240V	I	40/45	50/60	80/90	110/125	1	40/45	50/60	80/90	110/125		40/45	50/60	80/90	110/125		40/45	50/60	80/90	101/125	I	40/45	50/60	80/90	110/125
CTERISTIC:	Separat	Heater Kit	Min. Ckt. Ampacity	208/240V	I	38/44	50/58	76/87	101/116	1	38/44	50/58	76/87	101/116		38/44	50/58	76/87	101/116		38/44	50/58	76/87	101/116	I	38/44	50/58	76/87	101/116
<b>IS CHARAC</b>			Protective Size	Min./Max. @ 240V	50/60	100/100	110/110	150/150	175/175	50/60	100/100	110/110	150/150	175/175	60/60	100/100	125/125	150/150	175/175	60/70	100/110	125/125	150/150	175/175	60/80	110/110	125/125	150/150	200/200
HEATER KI		Heat Pump	Over Current Protective Device Size	Min./Max. @ 208V	50/60	06/06	100/100	125/125	150/150	50/60	06/06	100/100	125/125	150/150	60/60	100/100	110/110	150/150	175/175	60/70	100/110	110/110	150/150	175/175	60/80	100/110	110/125	150/150	175/175
208/240 VOLT, THREE PHASE, 60 HZ, AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION	ter Kit	-	Unit Min. Ckt. Ampacity @	208/240V	43/43	81/87	93/101	119/130	144/159	43/43	81/87	93/101	119/130	144/159	45/45	83/89	95/103	121/132	146/161	50/50	88/94	100/108	126/137	151/166	52/52	96/06	102/110	128/139	153/168
Z, AUXILIAI	Unit and Heater Kit		Heater Amp. @	208/240 V		30.1/34.7	40/46.2	60.2/69.4	80.1/92.4	1	30.1/34.7	40/46.2	60.2/69.4	80.1/92.4	1	30.1/34.7	40/46.2	60.2/69.4	80.1/92.4	1	30.1/34.7	40/46.2	60.2/69.4	80.1/92.4	1	30.1/34.7	40/46.2	60.2/69.4	80.1/92.4
PHASE, 60 H			Heater KBTU/Hr @	208/240 V		36.84/49.13	49.13/65.5	73.69/98.25	98.25/131	1	36.84/49.13	49.13/65.5	73.69/98.25	98.25/131	1	36.84/49.13	49.13/65.5	73.69/98.25	98.25/131	1	36.84/49.13	49.13/65.5	73.69/98.25	98.25/131	I	36.84/49.13	49.13/65.5	73.69/98.25	98.25/131
DLT, THREE	Single Power Supply for Both	Heater Kit	Rated Heater kW @	208/240 V		10.8/14.4	14.4/19.2	21.6/28.8	28.8/38.4	1	10.8/14.4	14.4/19.2	21.6/28.8	28.8/38.4		10.8/14.4	14.4/19.2	21.6/28.8	28.8/38.4		10.8/14.4	14.4/19.2	21.6/28.8	28.8/38.4	I	10.8/14.4	14.4/19.2	21.6/28.8	28.8/38.4
208/240 VC	Si		No. of Sequence	Steps	1	-	-	-	-		-	-	-	-		-	-	-	-		-	-	-	-	1	-	-	-	-
			RXJJ- Heater Kit Nominal	kW	No Heat	CC15C	CC20C	CC30C	CC40C	No Heat	CC15C	CC20C	CC30C	CC40C	No Heat	CC15C	CC20C	CC30C	CC40C	No Heat	CC15C	CC20C	CC30C	CC40C	No Heat	CC15C	CC20C	CC30C	CC40C
			Unit Model Number	RJNL-	B090CL/	CO90CL				B090CM/	C090CM				B090CN/	C090CN				B120CL/	C120CL				B120CM/	C120CM			

	Cit		ective	Min./Max. @ 480 V																									
	leater K		Current Prot Device Size					1				1						1							-	1	1		
	Unit and F	Heat Pump	Over Current Protective Device Size	Min./Max. @ 480 V	25/30	I		I	Ι	25/30				Ι	25/30				Ι	35/40	I			Ι	35/45	I	I		I
CATION	Separate Power Supply for Both Unit and Heater Kit		Min. Circuit Ampacity	480V	21					21					22					28				Ι	29				I
AND APPLI	e Power Su	er Kit	Max. Fuse	2126 400V	I	25	30	45	60		25	30	45	60		25	30	45	60	I	25	30	45	60	I	25	30	45	60
ERISTICS /	Separat	Heater Kit	Min. Ckt. Ampacity	480V	I	22	29	44	58		22	29	44	58	I	22	29	44	58	I	22	29	44	58	I	22	29	44	58
<b>CHARACT</b>			t Protective Size	Min./Max. @ 480 V						I					I					I									I
EATER KITS		Heat Pump	Over Current Protective Device Size	Min./Max. @ 480 V	25/30	50/50	60/60	70/70	06/06	25/30	50/50	60/60	70/70	06/06	25/30	50/50	60/60	80/80	06/06	35/40	60/60	60/60	80/80	06/06	35/45	60/60	70/70	80/80	100/100
AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION	ater Kit	-	Unit Min. Ckt. Ampacity @	480V	21	43	50	65	79	21	43	50	65	79	22	44	51	66	80	28	50	57	72	86	29	51	58	73	87
	Unit and Heater Kit		Heater Amp. @	480 V	I	17.4	23.1	34.7	46.2	I	17.4	23.1	34.7	46.2	I	17.4	23.1	34.7	46.2	I	17.4	23.1	34.7	46.2	I	17.4	23.1	34.7	46.2
IASE, 60 HZ,			Heater KBTU/Hr @	480 V	I	49.13	65.5	98.25	131	I	49.13	65.5	98.25	131	Ι	49.13	65.5	98.25	131	I	49.13	65.5	98.25	131	I	49.13	65.5	98.25	131
480 VOLT, THREE PHASE, 60 HZ,	Single Power Supply for Both	Heater Kit	Rated Heater	KW @ 400 V		14.4	19.2	28.8	38.4	I	14.4	19.2	28.8	38.4	I	14.4	19.2	28.8	38.4	I	14.4	19.2	28.8	38.4	I	14.4	19.2	28.8	38.4
480 VOL	Si		No. of Sequence	Steps	I	-	-	-	~		-	-	-	~		-	-	-	-	1	-	-	-	1	I	-	-	-	-
			RXJJ- Heater Kit Nominal	kΜ	No Heat	CC15D	CC20D	CC30D	CC40D	No Heat	CC15D	CC20D	CC30D	CC40D	No Heat	CC15D	CC20D	CC30D	CC40D	No Heat	CC15D	CC20D	CC30D	CC40D	No Heat	CC15D	CC20D	CC30D	CC40D
			Unit Model Number	RJNL-	B090DL/	CO90DL				B090DM/	C090DM				B090DN/	C090DN				B120DL/	C120DL				B120DM/	C120DM			

CATION	Separate Power Supply for Both Unit and Heater Kit	Heat Pump	Min. Circuit Device Size	600V Min./Max. Min./Max. @ 600 V @ 600 V	16 20/20 —					16 20/20 —					17 20/25 —					20 25/30 —					21 25/30 —				
STICS AND APP	Separate Power S	Heater Kit	Min. Ckt. Max. Fuse Ampacity sincenty	600V 9126 000V			24 25		49 50		18 20	24 25	37 40	49 50		18 20	24 25		49 50				37 40	49 50			24 25		49 50
AUXILIARY ELECTRIC HEATER KITS CHARACTERISTICS AND APPLICATION			Over Current Protective Mir Device Size Am	Min./Max. @ 600 V						1					1	I				1									
HEATER KIT		Heat Pump		Min./Max. @ 600 V	20/20	40/40	45/45	60/60	70/70	20/20	40/40	45/45	60/60	70/70	20/25	45/45	50/50	60/60	80/80	25/30	45/45	50/50	60/60	80/80	25/30	50/50	60/60	70/70	80/80
Y ELECTRIC	ater Kit		Unit Min. Ckt. Ampacity @	600V	16	34	40	53	65	16	34	40	53	65	17	35	41	54	99	20	38	44	57	69	21	39	45	58	70
	Unit and Heater Kit		Heater Amp. @	600 V		13.9	18.5	28.9	38.5	1	13.9	18.5	28.9	38.5	1	13.9	18.5	28.9	38.5	I	13.9	18.5	28.9	38.5	I	13.9	18.5	28.9	38.5
HASE, 60 HZ	upply for Both		Heater KBTU/Hr @	600 V		49.13	65.5	98.25	131	1	49.13	65.5	98.25	131	1	49.13	65.5	98.25	131	I	49.13	65.5	98.25	131		49.13	65.5	98.25	131
600 VOLT, THREE PHASE, 60 HZ,	Single Power Supply for Both	Heater Kit	Rated Heater			14.4	19.2	28.8	38.4	1	14.4	19.2	28.8	38.4		14.4	19.2	28.8	38.4	Ι	14.4	19.2	28.8	38.4	Ι	14.4	19.2	28.8	38.4
10V 009	S		No. of Sequence	Steps	I	~	-	-	<b>.</b>		-	-	-	-		-	-	-	-		-	-	-	-		-	~	-	-
			RXJJ- Heater Kit Nominal	kW	No Heat	CC15Y	CC20Y	CC30Y	CC40Y	No Heat	CC15Y	CC20Y	CC30Y	CC40Y	No Heat	CC15Y	CC20Y	CC30Y	CC40Y	No Heat	CC15Y	CC20Y	CC30Y	CC40Y	No Heat	CC15Y	CC20Y	CC30Y	CC40Y
			Unit Model Number	RJNL-	B090YL/	C090YL				B090YM/	C090YM				B090YN/	C090YN				B120YL/	C120YL				B120YM/	C120YM			

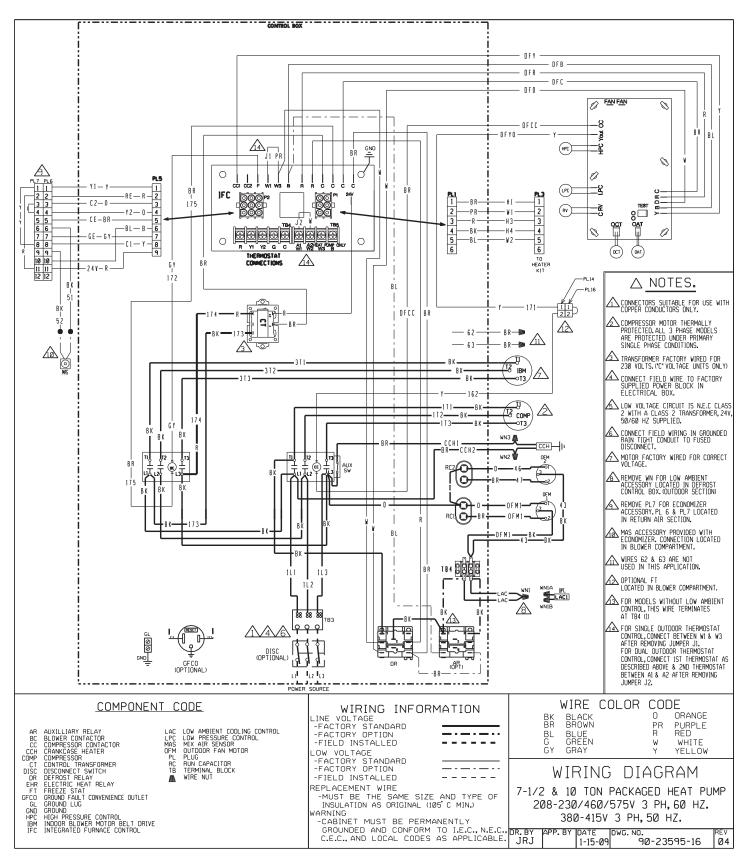
## **TROUBLE SHOOTING CHART**

## **A WARNING**

# DISCONNECT ALL POWER TO UNIT BEFORE SERVICING. CONTACTOR MAY BREAK ONLY ONE SIDE. FAILURE TO SHUT OFF POWER CAN CAUSE ELECTRICAL SHOCK RESULTING IN PERSONAL INJURY OR DEATH.

SYMPTOM	POSSIBLE CAUSE	REMEDY
Unit will not run	<ul> <li>Power off or loose electrical connection</li> <li>Thermostat out of calibration-set too high</li> <li>Defective contactor</li> <li>Blown fuses</li> <li>Transformer defective</li> <li>High pressure control open (if provided)</li> <li>Interconnecting low voltage wiring damaged</li> </ul>	<ul> <li>Check for correct voltage at compressor contactor in control box</li> <li>Reset</li> <li>Check for 24 volts at contactor coil - replace if contacts are open</li> <li>Replace fuses</li> <li>Check wiring-replace transformer</li> <li>Reset-also see high head pressure remedy-</li> <li>Replace thermostat wiring</li> </ul>
Condenser fan runs, compressor doesn't	<ul> <li>Run capacitor defective (single phase only)</li> <li>Loose connection</li> <li>Compressor stuck, grounded or open motor winding open internal overload.</li> <li>Low voltage condition</li> </ul>	<ul> <li>Replace</li> <li>Check for correct voltage at compressor - check &amp; tighten all connections</li> <li>Wait at least 2 hours for overload to reset. If still open, replace the compressor. At compressor terminals, voltage must be within 10% of rating plate volts when unit is operating.</li> </ul>
Insufficient cooling	<ul> <li>Improperly sized unit</li> <li>Improper airflow</li> <li>Incorrect refrigerant charge</li> <li>Air, non-condensibles or moisture in system</li> <li>Incorrect voltage</li> </ul>	<ul> <li>Recalculate load</li> <li>Check - should be approximately 400 CFM per ton.</li> <li>Charge per procedure attached to unit service panel.</li> <li>Recover refrigerant, evacuate &amp; recharge, add filter drier</li> <li>At compressor terminals, voltage must be within 10% of rating plate volts when unit is operating.</li> </ul>
Compressor short cycles	<ul> <li>Incorrect voltage</li> <li>Defective overload protector</li> <li>Refrigerant undercharge</li> </ul>	<ul> <li>At compressor terminals, voltage must be ± 10% of nameplate marking when unit is operating.</li> <li>Replace - check for correct voltage</li> <li>Add refrigerant</li> </ul>
Registers sweat	Low evaporator airflow	Increase speed of blower or reduce restriction - replace air filter
High head-low vapor pressures	Restriction in liquid line, expansion device or filter drier     TXV does not open	Remove or replace defective component     Replace TXV
High head-high or normal vapor pressure - Cooling mode	<ul> <li>Dirty condenser coil</li> <li>Refrigerant overcharge</li> <li>Condenser fan not running</li> <li>Air or non-condensibles in system</li> </ul>	<ul> <li>Clean coil</li> <li>Correct system charge</li> <li>Repair or replace</li> <li>Recover refrigerant, evacuate &amp; recharge</li> </ul>
High head-high or normal vapor pressure - Heating mode	<ul> <li>Low air flow - condenser coil</li> <li>Refrigerant overcharge</li> <li>Air or non-condensibles in system</li> <li>Dirty condenser coil</li> </ul>	<ul> <li>Check filters - correct to speed</li> <li>Correct system charge</li> <li>Recover refrigerant, evacuate &amp; recharge</li> <li>Check filter - clean coil</li> </ul>
Low head-high vapor pressures	Defective Compressor valves     TXV won't close	<ul><li>Replace compressor</li><li>Check TXV, replace</li></ul>
Low vapor - cool compressor - iced evaporator coil	<ul> <li>Low evaporator airflow</li> <li>Operating below 65°F outdoors</li> <li>Moisture in system</li> <li>TXV limiting refrigerant flow</li> </ul>	<ul> <li>Increase speed of blower or reduce restriction - replace air filter</li> <li>Add Low Ambient Kit</li> <li>Recover refrigerant - evacuate &amp; recharge - add filter drier</li> <li>Replace TXV</li> </ul>
High vapor pressure	Excessive load     Defective compressor	Recheck load calculation     Replace
Fluctuating head & vapor pressures	TXV hunting     Air or non-condensibles in system	<ul> <li>Check TXV bulb clamp - check air distribution on coil - replace TXV</li> <li>Recover refrigerant, evacuate &amp; recharge</li> </ul>
Gurgle or pulsing noise at expansion device or liquid line	Air or non-condensibles in system	Recover refrigerant, evacuate & recharge

FIGURE 18 JNL SERIES 7.5 & 10 TON



#### FIGURE 19 JNL SERIES 7.5 & 10 TON

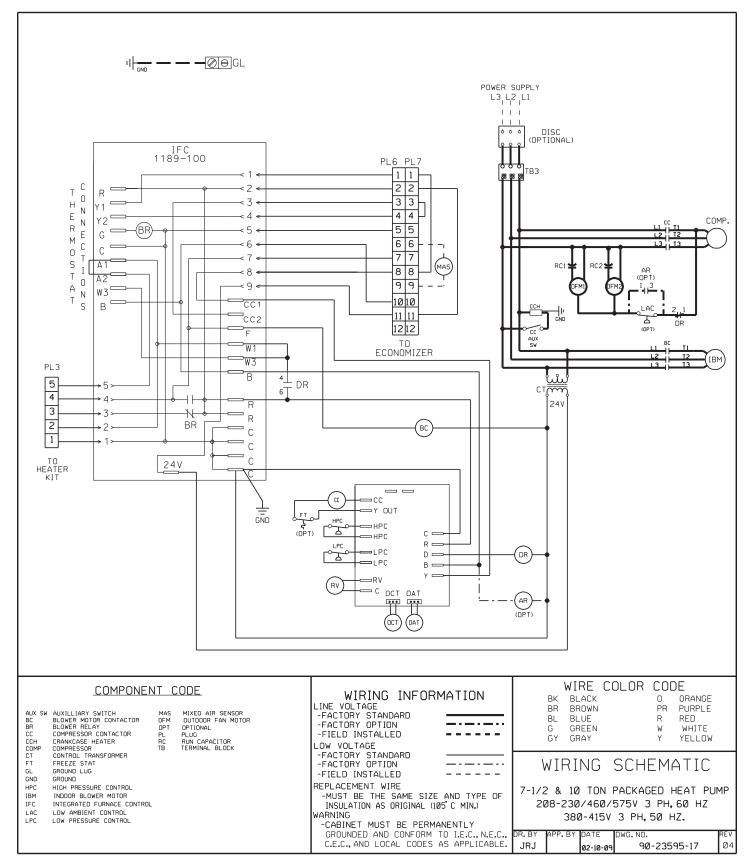
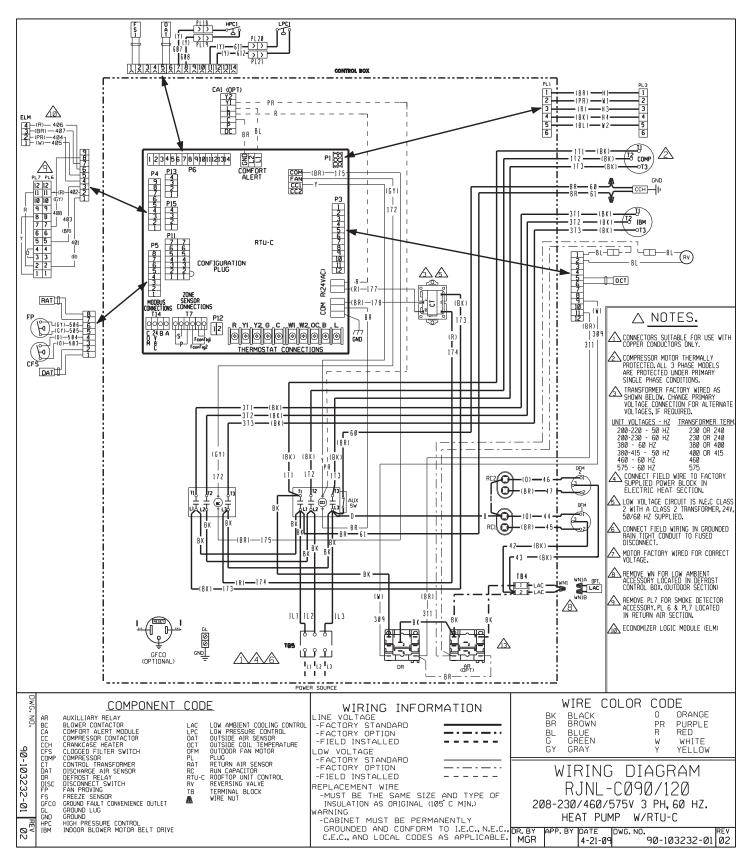


FIGURE 20 JNL SERIES 7.5 & 10 TON



RTU-C 1186-100 POWER SUPPLY 
 THERMOSTAT CONNECTIONS
 ZONE SENSOR

 R |Y1|Y2|G|C|W1|W2|0C|B|L|
 1 2 3 4 5 6
 CA1 (OPT) L3 L2 L1 <u>Y2</u> Y1 (OPTIONAL) GFCO (OPTIONAL) CALC CAL2 CAL1 1.1.1 666 твз 88 88 88 GND P11 ٦ COMP. CC 2 12 СТ P1 ||HEAT1 2 3 -||HEAT2 5 6 PL 3 1 2 3 4 5 6 HEATER KIT BC RCI RC2 CCI DR CCH (OPT) Aſ F AN FAN AR (OPT) -11<sup>CC1</sup> OPT GND Р CC AUX RV .. -||<sup>RV2</sup> OR (OPT) 10k ohms тост PL2 TD SMOKE DETECTOR Rſ 6 7 8 10 10 11 12 P4 2 
 E
 DETECTOR

 1 
 2

 3 

 4 

 -5 

 6 

 9 

 10 

 11 

 12 
 PL5
 (івм) 23456789 P5 123456789 P5 12345678 -----**\_\_\_** --\_ 1 TO ELM D CFS ₽Å₽₽ Т 1 L P6 123456789101123 10k ohms FS 1 1 Р НРС PLPC P12 P13 P15 I. WIRING INFORMATION WIRE COLOR CODE COMPONENT CODE LINE LINE VOLTAGE -FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED ORANGE BLACK BROWN 0 BK BR BLOWER CONTACTOR COMFORT ALERT MODULE COMPRESSOR CONTACTOR CRANKCASE HEATER CLOGGED FILTER SWITCH COMPRESSOR CONTROL TRANSFORMER DISCONNECT SWITCH FAN PROVING FALSE FALSE FALSE GROUND FAULT CONVENIENCE OUTLET GROUND LUG GROUND LUG HIGH PRESSURE CONTROL INDOOR BLOWER MOTOR BELT DRIVE INTEGRATED FURNACE CONTROL LDW AMBIENT COOLING CONTROL LDWT CONTROL WIX AIR SENSOR OUTSIDE AIR SENSOR OUTGOR FAN MOTOR PLUG RETURN AIR SENSOR RUN CAPACITOR RUN CAPACITOR SPACE COMFORT CONTROL SPARK ELECTRODE TERNINAL BLOCK WIRE NUT PR R PURPLE \_ . \_ . \_ . . BC CA CC CCH CFS COMP CT DISC FP IFC BLUE GREEN GRAY BL G - - - - - -LAC LC LPC MAS OAT OFM PL RAT RC SCC SE TB WHITE YELLOW W Y -FACTORY STANDARD -FACTORY STANDARD -FACTORY OPTION -FIELD INSTALLED ĞΥ 90-103264-01 WIRING SCHEMATIC REPLACEMENT WIRE -MUST BE THE SAME SIZE AND TYPE OF INSULATION AS ORIGINAL (105°C MIN.) RJNL-CØ90/120 FS GFCO GL GND HPC IBM 208-230/460/575V 3 PH,60 HZ. WARNING ANNING -CABINET MUST BE PERMANENTLY GROUNDED AND CONFORM TO I.E.C., N.E.C., C.E.C., AND LOCAL CODES AS APPLICABLE.DR.BY PACKAGED A/C REV 00 <u>₩</u> DATE DWG. NO. APP. BY MGR 7-16-09 90-103264-01 00

