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Package Rooftop Units – 60Hz



Quality Assurance
Certificate Reg. No:
04 100 950420



Subject to change without notice
Manufacturing point: Jeddah, Saudi Arabia
Nearest port of embarkation: Jeddah Islamic port
Product classification: Commercial

Installation, Operation and Maintenance Instructions

50TJM – 60Hz Unit Size 15 - 30 Tons HFC R-410A Refrigerant

Note: This manual discusses the Mechanical Installation of this unit, Start-up Procedures, Operating Sequences and Service Instructions.

Read thoroughly the entire installation instruction manual before starting the unit installation, to get familiarized with all steps and to identify if any additional reference materials as required.

The 50TJM units are single side discharge rooftop cooling unit utilizing electric heat as an option. Units are pre-wired, pre-charged with R-410A refrigerant, and tested at the factory. These units can be placed on the side of a building or can be placed on a roof without roof curbs. Each unit is designed to occupy a minimal space. Piping and drain connections are readily accessible.

For a complete list of options and accessories, refer to the Product Data Catalog.

Contact your local Carrier representative for additional reference materials.

Table of Contents

1.0 – Safety Considerations.....	2
Physical Data.....	4
Unit Dimensional Drawing.....	6
2.0 – Installation.....	9
Electrical Data.....	12
Typical Wiring Schematic.....	14
3.0 – Start-Up Instructions.....	20
4.0 – Service.....	21
5.0 – Replacement Parts.....	23
Fan Performance Table.....	24
Charging Chart.....	28
R-410A Refrigerant Quick Reference Guide.....	31
Troubleshooting.....	32
Air Conditioner Troubleshooting Chart.....	33
Start-Up Check List.....	34

1 – Safety Considerations

1.1 – General

Improper installation, adjustment, alteration, service, maintenance or use can cause explosion, fire, electrical shock or other conditions which may cause personal injury or property damage. Consult a qualified installer; service agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all the safety codes. Wear safety glasses and work gloves. Use quenching cloths for brazing operations and have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions attached to the unit. Consult local building codes for special requirements. In absence of local codes, it is recommended that the USA standard ANSI/NFPA 70, National Electrical Code (NEC), be followed.

It is important to recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

1.2 – Installation Safety Considerations

After the unit has been received and when it is ready to be installed or reinstalled, it must be inspected for damage. If damage is detected upon receipt, immediately file a claim with the shipping company or repair.

This machine must be installed in a location that is not accessible to the public and protected against access by non-authorized people. This machine must not be installed in an explosive atmosphere.

Do not remove the skid or the packaging until the unit is in its final position. These units can be moved with a fork lift truck, as long as the forks are positioned in the right place and direction on the unit.

The units can also be lifted with slings, using only the designated lifting points marked on the unit (labels on the chassis and a label with all unit handling instructions are attached to the unit). Use slings with the correct capacity, and always follow the lifting instructions on the certified drawings supplied for the unit.

Safety is only guaranteed, if these instructions are carefully followed. If this is not the case, there is a risk of material deterioration and injuries to personnel. These units are not designed to be lifted from above.

1.3 – Warranty

Warranty is based on the general terms and conditions of the manufacturer. Any modifications to the design and/or installation made without discussion with Carrier and without advance written agreement will result in the loss of the right to any warranty claims and any claim for injury to personnel as a result of these modifications.



WARNING

ELECTRIC SHOCK HAZARD

Failure to follow this warning could cause personal injury or death.

Before performing service or maintenance operations on unit, always turn off main power switch to unit and install lockout tag. Unit may have more than one power switch.



CAUTION

CUT HAZARD

Failure to follow this warning could cause personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts and servicing air conditioning equipment



WARNING

UNIT OPERATION AND SAFETY HAZARD

Failure to follow this warning could cause personal injury, death and /or equipment damage.

Puron® (R-410A) refrigerant systems operate at higher pressures than standard R-22 systems. Do not use R-22 service equipment or components on Puron® refrigerant equipment.



WARNING

PERSONAL SAFETY AND ENVIRONMENTAL HAZARD

Failure to follow this warning could cause personal injury or death damage.

Relieve pressure and recover all refrigerant before system repair or final unit disposal. Wear safety glasses and gloves when handling refrigerants. Keep torches and other ignition sources away from refrigerants and oils.



NOTE

IMPORTANT

Units have high ambient operation limits. If limits are exceeded, the unit will automatically lock the compressor out of operation. Manual reset will be required to restart the compressor.

Table 1 - Physical Data

50TJM Unit Physical Data (60Hz) (SI)				
Unit 50TJM Model	18	24	28	34
Unit Size (Tons)	15	20	25	30
Refrigeration System				
Compressor No. / Type	2 / Scroll			
Refrigerant type	Puron® R410A			
Circuits No.#	2			
Charge per Circuit (1-Down / 2-Up) - kG	7.4 / 7.1	8.5 / 8.5	14.8 / 13.8	12.8 / 13.7
Metering Device	TXV- Adjustable			
Filter Drier Qty/ size	2 / 85		2 / 165	
High Pressure Switch (Trip/ Reset) - bar	43.4 / 33.1			
Low Pressure Switch (Trip/ Reset) - bar	3.7 / 4.8			
Freeze Protection Thermostat (Open / Close) ±1 °C	- 1/7			
Condenser Coil				
Coil Type	10mm Helical Grooved Copper Tube, 22mm Aluminum Double Wavy Fins			
Standard Coil Material (Pipes/Fins) *	Cu/Al			
Qty x Rows x Fins (m)*	1 x 3 x 1280	1 x 4 x 1280	2 x 3 x 1472	
Qty x Face Area (m ²)	1 x 2.5		2 x 2.7	
Coil test Pressure (PSIG)	31.0			
Condenser Fan & Motor				
Approx. Air Flow Rate (m ³ /hr)	27168		33960	
Quantity	2			
Diameter (mm) / No. of Blades	762 / 3		762 / 4	
Motor Type	Induction Motor- Totally Enclosed			
Motor HP/ RPS	1 / 19.0			
Evaporator Coil				
Coil Type	10mm Helical Grooved Copper Tube, 19mm Aluminum LSW Fins			
Standard Coil Material (Pipes/Fins) *	Cu/Al			
Qty x Rows x Fins (m)*	2 x 3 x 663	2 x 4 x 663		
Qty x Face Area (m ²)	2 x 0.91		2 x 0.96	
Coil test Pressure	24.1			
Drain Pan connection Size (mm)	19			
Return Air Filter Qtyx Size (in)	4 / 860 x 550		4 / 900 x 550	
Evaporator FAN & Motor Section				
Fan Quantity / Fan Size (mm)	1 / 400 x 400		1 / 450 x 450	
Fan Type	Centrifugal - Forward Blade			
Drive Type	Belt			
Motor Type	Induction Motor - TEFC			
Standard Static Application				
Motor BkW (230v /400v)	3.0	4.0	5.5	
Motor BkW (460v)	3.6	4.5	6.6	
Motor Frame Size/ Motor Shaft Diameter	100 / 28	112 / 28		132 / 38
Motor Pulley Pitch Diameter (Min/Max) (mm)	78.74 / 104.14			109 / 141.6
Fan RPM Range (r/s)*	17.0 - 12.0	17.4 - 12.2		16.7 - 12.0
Fan Pulley Pitch Diameter (mm)	175.3			264.2
Belt, Quantity..Type..Length(mm)	1 ... BX66			1 ... BX74
Pulley Center to Center Distance(mm)	620 - 699			
Movable Pullley Maximum Full Turns From Closed Position	6			
Aprox.Speed Change Per Full Turn Of Movable Pulley Flange (rps)	0.8	0.9		0.8
Factory Speed Setting	3.5			2.5
Approx. Factory Belt Standard Deflection (mm) @ Force (N)	10.2 @ 31.5 N	10.2 @ 38.9 N		10 @ 40 N
High Static Application				
Motor BkW (230v /400v)	4.0	5.5	7.5	
Motor BkW (460v)	4.5	6.6	8.6	
Motor Frame Size/ Motor Shaft Diameter (mm)	112 / 28	132 / 38		
Motor Pulley Pitch Diameter (Min/Max) (mm)	78.74 / 104.14	109 / 141.6	137 / 167	
Fan RPM Range (r/s)*	17.4 - 12.24		16.7 - 12.0	16.8 - 12.7
Fan Pulley Pitch Diameter (mm)	175.3	264.2		315
Belt, Quantity..Type..Length(mm)	1 ... BX66		1 ... BX74	1 ... BX79
Pulley Center to Center Distance(mm)	620 - 699			
Movable Pullley Maximum Full Turns From Closed Position	6			
Aprox.Speed Change Per Full Turn Of Movable Pulley Flange (rps)	0.9		0.8	0.7
Factory Speed Setting	3.5	2.5		
Approx. Factory Belt Standard Deflection (mm) @ Force (N)	10.2 @ 38.9 N		10 @ 40 N	10 @ 46 N

* Coils with Copper Fins are available in :

Evaporator Copper Coils : 630 Fins/m

Condenser Copper Coils : 591Fins/m for 50TJM18/24 and 630 Fins/m for 50TJM28/34

Table 1 - Physical Data

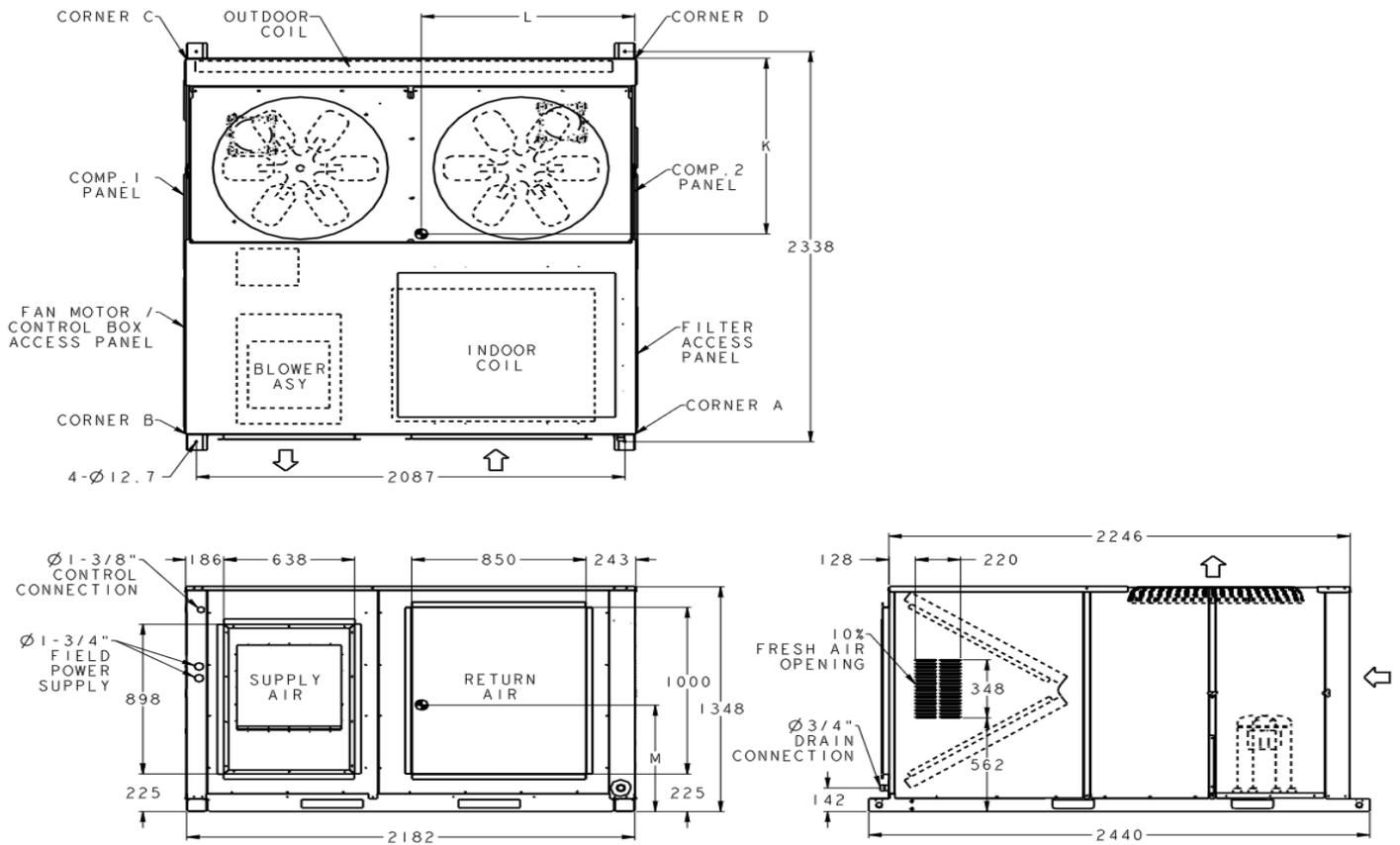
50TJM Unit Physical Data (60Hz) (English)				
Unit 50TJM Model	18	24	28	34
Unit Size (Tons)	15	20	25	30
Refrigeration System				
Compressor No. / Type	2 / Scroll			
Refrigerant type	Puron® R410A			
Circuits No.#	2			
Charge per Circuit (1-Down / 2-Up) - LBS	16.31 / 15.65	18.74 / 18.74	32.63 / 30.53	28.22 / 30.10
Metering Device	TXV- Adjustable			
Filter Drier Qty/ size	2 / 85		2 / 165	
High Pressure Switch (Trip/ Reset)- PSIG	630 / 480			
Low Pressure Switch (Trip/ Reset)- PSIG	54 / 70			
Freeze Protection Thermostat (Open / Close) ±1.8 °F	-18 / -14			
Condenser Coil				
Coil Type	3/8" Helical Grooved Copper Tube, 0.866" Aluminum Double Wavy Fins			
Standard Coil Material (Pipes/Fins) *	Cu/Al			
Qty x Rows x FPI*	1 x 3 x 16	1 x 4 x 16	2 x 3 x 17	
Qty x Face Area (ft ²)	1 x 26.7		2 x 28.8	
Coil test Pressure (PSIG)	450			
Condenser Fan & Motor				
Approx. Air Flow Rate (CFM)	16000		20000	
Quantity	2			
Diameter (in) / No. of Blades	30 / 3		30 / 4	
Motor Type	Induction Motor- Totally Enclosed			
Motor HP/ RPM	1 / 1140			
Evaporator Coil				
Coil Type	3/8" Helical Grooved Copper Tube, 0.75" Aluminum LSW Fins			
Standard Coil Material (Pipes/Fins) *	Cu/Al			
Qty x Rows x FPI*	2 x 3 x 17	2 x 4 x 17		
Qty x Face Area (ft ²)	2 x 9.75		2 x 10.3	
Coil test Pressure	350			
Drain Pan connection Size (in)	3/4			
Return Air Filter Qty / Size (in)	4 / 33.8 x 21.7		4 / 35.4 x 21.7	
Evaporator FAN & Motor Section				
Fan Quantity / Fan Size (in)	1 / 15.75 x 15.75		1 / 17.7 x 17.7	
Fan Type	Centrifugal - Forward Blade			
Drive Type	Belt			
Motor Type	Induction Motor - TEFC			
Standard Static Application				
Motor BHP (230v /400v)	4.0	5.4	7.4	
Motor BHP (460v)	4.8	6.0	8.8	
Motor Frame Size/ Motor Shaft Diameter (mm)	100 / 28	112 / 28		132 / 38
Motor Pulley Pitch Diameter (Min/Max) (in)	3.1 / 4.1			4.3 / 5.6
Fan RPM Range(RPM)*	1020 - 725	1042 - 732		1002 - 722
Fan Pulley Pitch Diameter (in)	6.9			10.4
Belt, Quantity..Type..Length(mm)	1 ... BX66			1 ... BX74
Pulley Center to Center Distance(in)	24.4 - 27.5			
Movable Pulley Maximum full turns from closed position	6			
Aprox.Speed Change per full turn of movable pulley flange(rpm)	49	52		47
Factory Speed Setting	3.5			2.5
Approx. Factory Belt Standard Deflection (in) @ Force (Lb)	0.4 @ 7.09 Lb	0.4 @ 8.73 Lb		0.39 @ 8.96 Lb
High Static Application				
Motor BHP (230v /400v)	5.4	7.4	10.1	
Motor BHP (460v)	6	8.8	11.5	
Motor Frame Size/ Motor Shaft Diameter (mm)	112 / 28	132 / 38		
Motor Pulley Pitch Diameter (Min/Max) (in)	3.1 / 4.1	4.3 / 5.6		5.4 / 6.6
Fan RPM Range(RPM)*	1042 - 732		1002 - 722	1007 - 763
Fan Pulley Pitch Diameter (in)	6.9	10.4		12.4
Belt, Quantity..Type..Length(mm)	1 ... BX66		1 ... BX74	1 ... BX79
Pulley Center to Center Distance(in)	620 - 699			
Movable Pulley Maximum full turns from closed position	6			
Aprox.Speed Change per full turn of movable pulley flange(rpm)	51.6		46.7	40.6
Factory Speed Setting	3.5	2.5		
Approx. Factory Belt Standard Deflection (in) @ Force (Lb)	0.4 @ 8.73 Lb		0.39 @ 8.96 Lb	0.39 @ 10.25 Lb

* Coils with Copper Fins are available in :

Evaporator Copper Coils : 16 FPI

Condenser Copper Coils : 15 FPI for 50TJM18/24 and 16FPI for 50TJM28/34

Unit Dimensional Drawing: 50TJM - Size 18 and 24 (Design Series A and B)

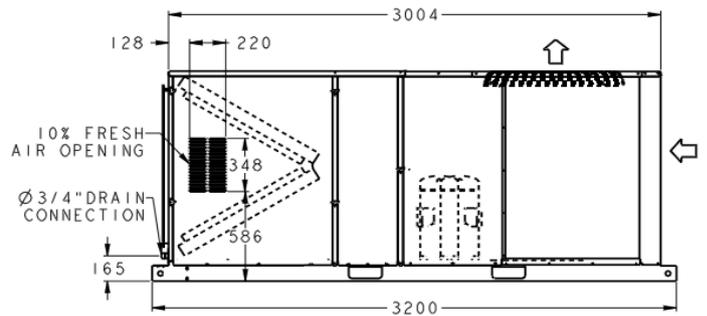
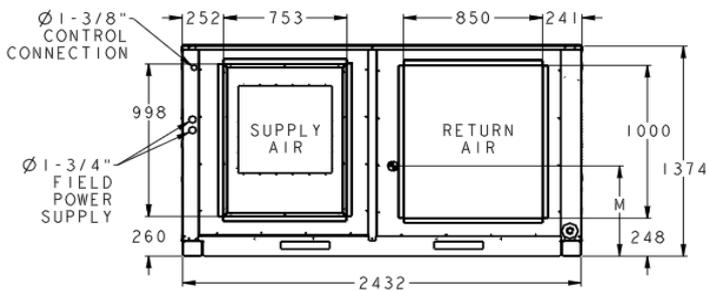
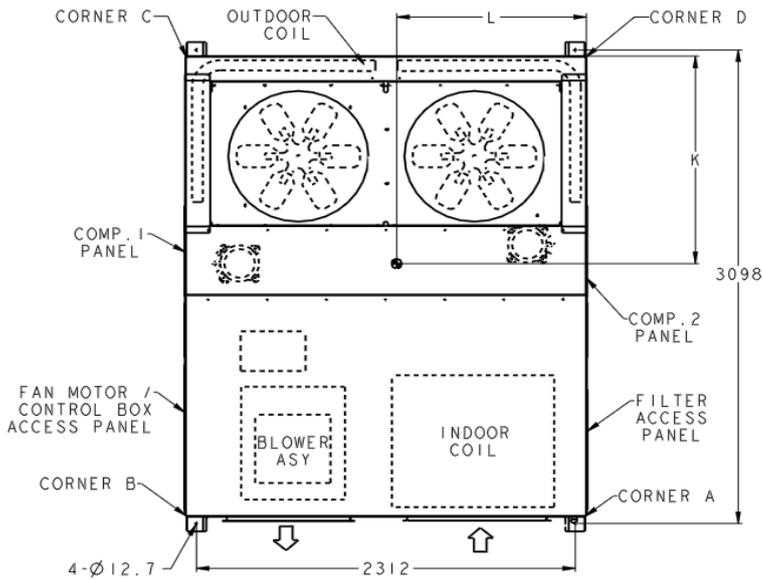


UNIT	SHIPPING DIMENSIONS (mm)			CORNER WEIGHT (Kg)					CENTER OF GRAVITY (mm)		
	LENGTH	WIDTH	DEPTH	A	B	C	D	TOTAL	K	L	M
50TJM - 18	2440	2235	1375	192	178	236	254	860	1050	1050	450
50TJM - 24				197	182	241	260	880			

NOTES:

- Dimensions are in millimeters.
- Center of Gravity.
- ↔ Direction of Airflow
- Minimum clearance:
 - REAR: 2134mm for coil removal. This dimension can be reduced to 1219mm if conditions permit coil removal from the top.
 - TOP: 1829mm to assure proper condenser fan operation.
 - SIDE: 1219mm for Compressor, Filter and Control boxes access.
 - Local codes or jurisdiction may prevail.
- With the exception of clearance for the condenser coil and the damper / power exhaust as stated in Note no. 6, a removal fence or barricade requires no clearance.
- Dimensions are from outside of corner post. Allow 8mm on each side for top cover drip edge.
- Weights are Given for aluminum evaporator and condenser coil plate fins.

Unit Dimensional Drawing: 50TJM - Size 28 and 34 (Design Series A)

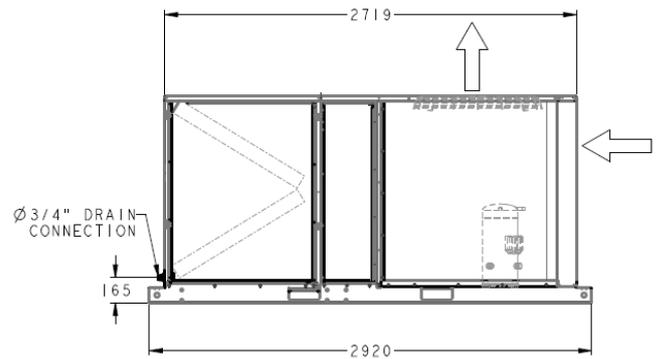
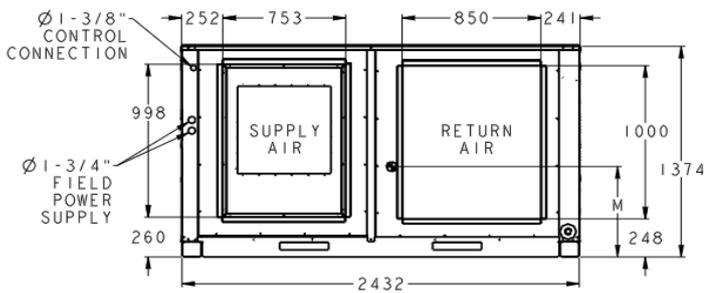
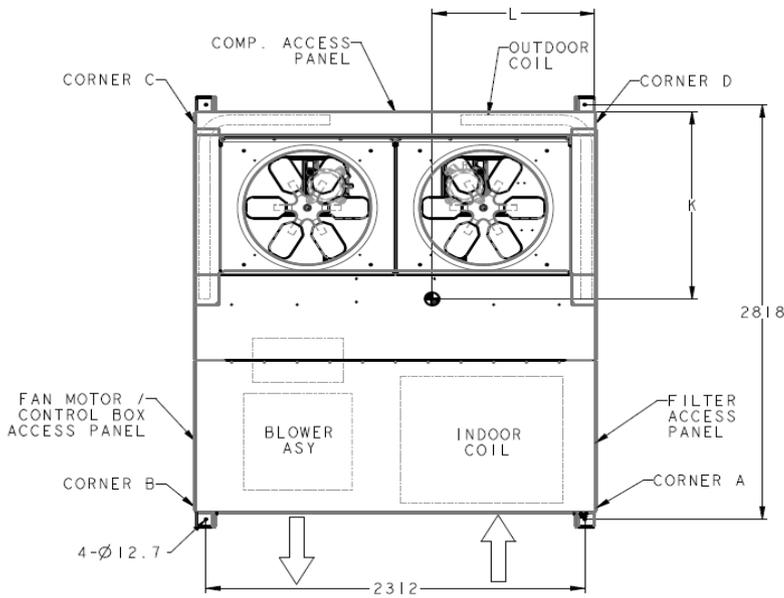


UNIT	SHIPPING DIMENSIONS (mm)			CORNER WEIGHT (Kg)					CENTER OF GRAVITY (mm)		
	LENGTH	WIDTH	DEPTH	A	B	C	D	TOTAL	K	L	M
50TJM - 28	3200	2485	1400	248	226	310	340	1125	1350	1160	450
50TJM - 34				254	231	317	348	1150			

NOTES:

- Dimensions are in millimeters.
- ⦿ Center of Gravity.
- ⇨ Direction of Airflow
- Minimum clearance:
 - REAR: 2134mm for coil removal. This dimension can be reduced to 1219mm if conditions permit coil removal from the top.
 - TOP: 1829mm to assure proper condenser fan operation.
 - SIDE: 1219mm for Compressor, Filter and Control boxes access.
 - Local codes or jurisdiction may prevail.
- With the exception of clearance for the condenser coil and the damper / power exhaust as stated in Note no. 6, a removal fence or barricade requires no clearance.
- Dimensions are from outside of corner post. Allow 8mm on each side for top cover drip edge.
- Weights are Given for aluminum evaporator and condenser coil plate fins.

Unit Dimensional Drawing: 50TJM - Size 28 and 34 (Design Series B)



UNIT	SHIPPING DIMENSIONS (mm)			CORNER WEIGHT (Kg)					CENTER OF GRAVITY (mm)		
	LENGTH	WIDTH	DEPTH	A	B	C	D	TOTAL	K	L	M
50TJM - 28	2920	2485	1400	248	226	310	340	1125	1275	990	450
50TJM - 34				254	231	317	348	1150			

NOTES:

- Dimensions are in millimeters.
- ☉ Center of Gravity.
- ⇨ Direction of Airflow
- Minimum clearance:
 - REAR: 2134mm for coil removal. This dimension can be reduced to 1219mm if conditions permit coil removal from the top.
 - TOP: 1829mm to assure proper condenser fan operation.
 - SIDE: 1219mm for access.
 - Local codes or jurisdiction may prevail.
- With the exception of clearance for the condenser coil and the damper / power exhaust as stated in Note no. 6, a removal fence or barricade requires no clearance.
- Dimensions are from outside of corner post. Allow 8mm on each side for top cover drip edge.
- Weights are Given for aluminum evaporator and condenser coil plate fins.

2 – Installation

2.1 – Jobsite Survey

Complete the following checks before installation.

1. Consult local building codes or the U.S.A. National Electrical Code (Ref: ANSI/NFPA 70, [American National Standards Institute/National Fire Protection Association], latest revision) for special installation requirements.
2. Determine unit location (from project plans) or select unit location.
3. Check for possible overhead obstructions which may interfere with unit lifting or rigging.

2.2 – Plan for Unit Location

Select a location for the unit and its support system (curb or other) that provides for the minimum clearances required for safety. This includes the clearance to combustible surfaces, unit performance and service access below, around and above unit as specified in Fig - 3. For the centre of gravity coordinates, the position of the unit mounting holes, and the weight distribution points, refer to the unit dimensional drawing Fig - 1 and Fig - 2.

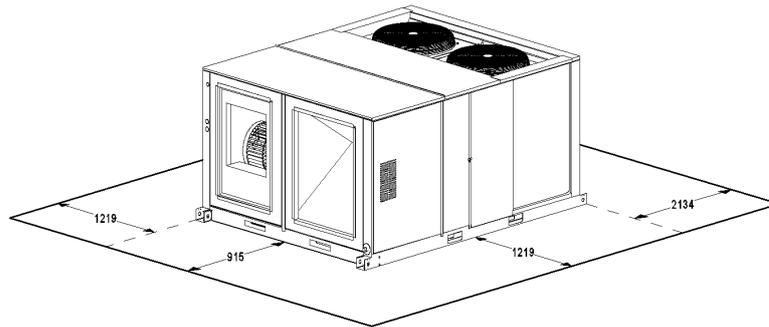


Fig. 3 Unit Clearance Diagram

NOTES:

1. Minimum clearance:

REAR: 2134mm for coil removal. This dimension can be reduced to 1219mm if conditions permit coil removal from the top.

TOP: 1829mm to assure proper condenser fan operation.

SIDE: 1219mm for Compressor, Filter and Control boxes access.

- Local codes or jurisdiction may prevail.

2. With the exception of clearance for the condenser coil and the damper / power exhaust as stated in Note no. 3, a removal fence or barricade requires no clearance.
3. Dimensions are from outside of corner post. Allow 8mm on each side for top cover drip edge.

2.3 – Rig and Place Unit

Keep unit upright and do not drop. Spreader bars are not required if top crating is left on unit.

Rollers may be used to move unit across a roof Level by using unit frame as a reference; leveling tolerance is $\pm 1/16$ in. per linear ft in any direction.

Four lifting holes are provided in ends of unit base rails as shown in Fig – 4 Refer to rigging instructions on unit.

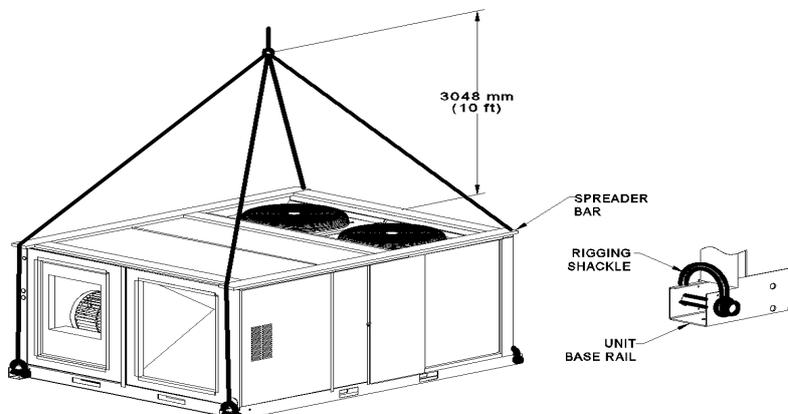


Fig. 4 Rigging Diagram

Roof mount - Check building codes for weight distribution requirements. Unit weight and dimensions is shown in unit dimensional drawing Fig 1 and Fig 2 on page 6 & 7 and table 2.

NOTE: Consider also the effect of adjacent units.

UNIT	SHIPPING DIMENSIONS (mm)			SHIPPING WEIGHT	UNIT DIMENSIONS (mm)			UNIT WEIGHT
	LENGTH	WIDTH	DEPTH	GROSS (Kg)	LENGTH	WIDTH	DEPTH	NET(Kg)
50TJM-18	2440	2235	1375	925	2440	2182	1348	860
50TJM-24	2440	2235	1375	945	2440	2182	1348	880
50TJM-28A	3200	2485	1400	1190	3200	2432	1374	1125
50TJM-34A	3200	2485	1400	1215	3200	2432	1374	1150
50TJM-28B	2920	2485	1400	1125	2920	2485	1400	1125
50TJM-34B	2920	2485	1400	1150	2920	2485	1400	1150

Table – 2 Unit Weights and Dimensions

NOTES:

1. Remove boards at ends of unit and runners prior to rigging.
2. Rig by inserting hooks into unit base rails as shown. Use bumper boards for spreader bars.

NOTE

IMPORTANT

All units are internally isolated against vibration. If extra isolation required, please see “Unit Dimensional Drawing” Fig - 1 and Fig - 2 for corner weights.

CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage. All panels must be in place when rigging.

2.4 – Positioning and Clearance.

Before positioning the unit, check the following:

- The permitted loading at the site is adequate or that appropriate strengthening measures have been taken.
- The unit is installed level on an even surface (maximum tolerance is 5 mm in both axes).
- Ensure access to the components (see “Unit Dimensional Drawings” Fig 1 & 2 & “Clearance Diagram” Fig 3).
- The number of support points is adequate and that they are in the right places.
- Although the unit is weatherproof guard against water from higher level runoff and overhangs.

Unit may be installed directly on wood flooring or on approved roof - covering material when roof curb is used. Do not install unit in an indoor location. Do not locate air inlets near exhaust vents or sources of contaminated air.

2.5 – Field Fabricate Ductwork

Secure all ducts to building structure. Use flexible duct connectors between unit and ducts as required (*a space for 2.5 to 3ft is required in case of repairing or replacing the blower wheel*). Insulate and weatherproof all external ductwork, joints, and roof openings with counter flashing and mastic in accordance with applicable codes. Ducts passing through an unconditioned space must be insulated and covered with a vapor barrier.

The 50TJM units with electric heat require a 2-in. clearance for the first 24-in. of ductwork. Outlet grilles must not lie directly below unit discharge.

NOTE

IMPORTANT

A 90-degree elbow must be provided in drain hole and must be removed in ductwork to comply with UL (Underwriters’ Laboratories) codes for use with electric heat.

2.6 – Make Unit Duct Connections

Unit is shipped for side duct connections. Ductwork openings are shown in Fig. 1 and Fig. 2.

2.7 – Trap Condensate Drain

See Fig. 5, Fig.1 and Fig. 2 for drain pipe location. Trap should be deep enough to offset the maximum unit static difference. Fig. 5 shows the recommended trap sizing.

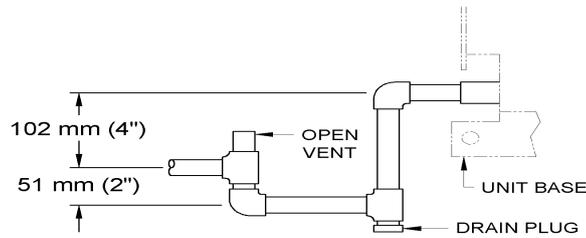


Fig. 5 Condensate Drain Details

2.8 – Outdoor Air-Vent

All units have a manual outdoor side vent to provide ventilation air. Side vents can admit up to 10% outdoor air into indoor air section return-air compartment.

2.9 – Make Electrical Connections

FIELD POWER SUPPLY – Unit is factory wired for voltage shown on nameplate.

When installing units, provide disconnect as per NEC (National Electrical Code) requirements, of adequate size. All field wiring must comply with NEC and local requirements. Route power lines through the corner post openings as shown in Fig. 1 and Fig. 2.

Operating voltage to compressor must be within voltage range indicated on unit nameplate. On 3-phase units, voltages between phases must be balanced within 2% and the current must be balanced within 10%.



CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage.

The correct power phasing is critical in the operation of the scroll compressors. An incorrect phasing will cause the compressor to rotate in the wrong direction. This may lead to premature compressors failure.



WARNING

ELECTRIC SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Do not use gas piping as an electrical ground. Unit cabinet must have an uninterrupted, unbroken electrical ground to minimize the possibility of personal injury if an electrical fault should occur. This ground may consist of electrical wire connected to unit ground lug in control compartment, or conduit approved for electrical ground when installed in accordance with local electrical codes or in absence of local codes, it is recommended that U.S.A standard ANSI/NFPA 70, National Electrical Code be followed.

FIELD CONTROL WIRING – Install a Carrier approved accessory thermostat assembly according to the installation instructions included with the accessory. Locate thermostat assembly on a solid wall in the conditioned space to sense average temperature. Route thermostat cable or equivalent single leads of no. 18 AWG (American Wire Gage) colored wire from sub-base terminals through conduit in unit to low-voltage connection. Settings may be changed slightly to provide a greater degree of comfort for a particular installation.



NOTE

IMPORTANT

For wire runs up to 50 ft, use no. 18 AWG insulated wire. For 50 to 75 ft, use no. 16 AWG insulated wire. For over 75 ft, use no. 14 AWG insulated wire. All wire larger than no. 18 AWG cannot be directly connected to the thermostat and will require a junction box and splice at the thermostat.

Electrical Data Table - 3

Unit Size	50TJM			Compressor				OFM			IFM Type	IFM		Electric Heater		MCA	MOCP	
	Min Voltage	Max Voltage	Power Supply V / Ph / Hz	No.1		No.2		Qty	HP	FLA		HP	FLA	Appl. kW	FLA			
				RLA	LRA	RLA	LRA											
18	207	253	230 / 3 / 60	23.2	164	23.2	164	2	1	6.6	Std. Static	4.0	11.3	-	-	76.7	100	
	207	253	230 / 3 / 60	23.2	164	23.2	164	2	1	6.6		4.0	11.3	28	69.0	100.4	100	
	342	420	400 / 3 / 60	12.2	73	12.2	73	2	1	3.9		4.0	6.7	-	-	42.0	50	
	342	420	400 / 3 / 60	12.2	73	12.2	73	2	1	3.9		4.0	6.7	21	30.3	46.3	50	
	414	506	460 / 3 / 60	11.2	75	11.2	75	2	1	3.3		4.8	6.6	-	-	38.4	50	
	414	506	460 / 3 / 60	11.2	75	11.2	75	2	1	3.3		4.8	6.6	28	34.5	51.3	60	
	207	253	230 / 3 / 60	23.2	164	23.2	164	2	1	6.6		High Static	5.5	15.0	-	-	80.4	100
	207	253	230 / 3 / 60	23.2	164	23.2	164	2	1	6.6			5.5	15.0	28	69.0	105.0	110
	342	420	400 / 3 / 60	12.2	73	12.2	73	2	1	3.9			5.5	8.7	-	-	44.0	50
	342	420	400 / 3 / 60	12.2	73	12.2	73	2	1	3.9			5.5	8.7	21	30.3	46.3	50
414	506	460 / 3 / 60	11.2	75	11.2	75	2	1	3.3	6.2	8.6		-	-	40.1	50		
414	506	460 / 3 / 60	11.2	75	11.2	75	2	1	3.3	6.2	8.6		28	34.5	53.9	60		
24	207	253	230 / 3 / 60	25.0	164	25.0	164	2	1	6.6	Std. Static		5.5	15.0	-	-	84.5	110
	207	253	230 / 3 / 60	25.0	164	25.0	164	2	1	6.6			5.5	15.0	37	92.9	134.9	140
	342	420	400 / 3 / 60	13.9	94	13.9	94.3	2	1	3.9			5.5	8.3	-	-	47.4	60
	342	420	400 / 3 / 60	13.9	94	13.9	94.3	2	1	3.9			5.5	8.3	28	39.7	60.0	60
	414	506	460 / 3 / 60	12.2	100	12.2	100	2	1	3.3		6.1	8.6	-	-	42.7	50	
	414	506	460 / 3 / 60	12.2	100	12.2	100	2	1	3.3		6.1	8.6	37	46.4	68.8	70	
	207	253	230 / 3 / 60	25.0	164	25.0	164	2	1	6.6		High Static	7.5	20.0	-	-	89.0	110
	207	253	230 / 3 / 60	25.0	164	25.0	164	2	1	6.6			7.5	20.0	37	92.9	150.0	150
	342	420	400 / 3 / 60	13.9	94	13.9	94.3	2	1	3.9			7.5	11.5	-	-	50.5	60
	342	420	400 / 3 / 60	13.9	94	13.9	94.3	2	1	3.9			7.5	11.5	28	39.7	64.0	70
414	506	460 / 3 / 60	12.2	100	12.2	100	2	1	3.3	8.5	10.3		-	-	44.5	50		
414	506	460 / 3 / 60	12.2	100	12.2	100	2	1	3.3	8.5	10.3		37	46.4	71.0	80		
28	207	253	230 / 3 / 60	30.1	225	30.1	225	2	1	6.6	Std. Static		5.5	14.0	-	-	94.9	125
	207	253	230 / 3 / 60	30.1	225	30.1	225	2	1	6.6			5.5	14.0	37	92.9	133.6	140
	342	420	400 / 3 / 60	19.2	140	19.2	140	2	1	3.9			5.5	8.5	-	-	59.5	70
	342	420	400 / 3 / 60	19.2	140	19.2	140	2	1	3.9			5.5	8.5	28	39.7	60.2	70
	414	506	460 / 3 / 60	16.7	114	16.7	114	2	1	3.3		6.6	8.6	-	-	52.7	70	
	414	506	460 / 3 / 60	16.7	114	16.7	114	2	1	3.3		6.6	8.6	37	46.4	68.7	70	
	207	253	230 / 3 / 60	30.1	225	30.1	225	2	1	6.6		High Static	7.5	20.0	-	-	100.9	130
	207	253	230 / 3 / 60	30.1	225	30.1	225	2	1	6.6			7.5	20.0	37	92.9	141.1	150
	342	420	400 / 3 / 60	19.2	140	19.2	140	2	1	3.9			7.5	11.5	-	-	62.5	80
	342	420	400 / 3 / 60	19.2	140	19.2	140	2	1	3.9			7.5	11.5	28	39.7	64.0	80
414	506	460 / 3 / 60	16.7	114	16.7	114	2	1	3.3	8.4	10.3		-	-	54.5	70		
414	506	460 / 3 / 60	16.7	114	16.7	114	2	1	3.3	8.4	10.3		37	46.4	71.0	80		
34	207	253	230 / 3 / 60	48.1	245	48.1	245	2	1	6.6	Std. Static		7.5	20.0	-	-	140.4	175
	207	253	230 / 3 / 60	48.1	245	48.1	245	2	1	6.6			7.5	20.0	37	92.9	140.4	175
	342	420	400 / 3 / 60	23.7	145	23.7	145	2	1	3.9			7.5	11.5	-	-	72.6	90
	342	420	400 / 3 / 60	23.7	145	23.7	145	2	1	3.9			7.5	11.5	28	39.7	72.6	90
	414	506	460 / 3 / 60	18.6	125	18.6	125	2	1	3.3		8.4	10.3	-	-	60.0	70	
	414	506	460 / 3 / 60	18.6	125	18.6	125	2	1	3.3		8.4	10.3	37	46.4	72.4	80	
	207	253	230 / 3 / 60	48.1	245	48.1	245	2	1	6.6		High Static	10.0	27.2	-	-	148.6	175
	207	253	230 / 3 / 60	48.1	245	48.1	245	2	1	6.6			10.0	27.2	37	92.9	150.1	175
	342	420	400 / 3 / 60	23.7	145	23.7	145	2	1	3.9			10.0	16.0	-	-	77.1	100
	342	420	400 / 3 / 60	23.7	145	23.7	145	2	1	3.9			10.0	16.0	28	39.7	77.1	100
414	506	460 / 3 / 60	18.6	125	18.6	125	2	1	3.3	11.5	15.7		-	-	64.2	80		
414	506	460 / 3 / 60	18.6	125	18.6	125	2	1	3.3	11.5	15.7		37	46.4	77.6	80		

Legend and Notes for Electrical Data Table

- FLA - Full Load Amps
- IFM - Indoor (Evaporator) Fan Motor
- LRA - Locked Rotor Amps
- MCA - Minimum Circuit Amps
- Application heater kW (Using multiplication factor table in Electric Resistance Heater Data Table)
- OFM - Outdoor (Condenser) Fan Motor
- RLA - Rated Load Amps
- APP - Application power at rated power supply voltage
- MOCP - Maximum Overcurrent Protection

Unbalanced 3-Phase Supply Voltage

Never operate a motor where phase imbalance in supply voltage is greater than 2%.

Use the following formula to determine the percentage of voltage imbalance

$$= 100 \times \frac{\text{Maximum Deviation From Average Voltage}}{\text{Average Voltage}}$$

Determine maximum deviation from average voltage.

(AB) 397 - 392 = 5v

(BC) 404 - 397 = 7v

(AC) 457 - 397 = 2v

Maximum Deviation is 7v.

Determine Percentage Voltage Imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{397} = 1.76\%$$

Example: Supply Voltage is 400V - 3ph

AB = 392v	Average Voltage =	392 + 404 + 395	
BC = 404v		3	
AC = 395v	=	$\frac{1191}{3}$	= 397V

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%

IMPORTANT: If the supply voltage phase imbalance is more than 2% contact your local electric utility company

Electrical Resistance Heater Data Table - 4

Accessory Heater Part Number

UNIT 50TJM	230V			400V		
	Complete Kit P.N.	Casing P.N.	Heater Element P.N.	Complete Kit P.N.	Casing P.N.	Heater Element P. N.
		(1 Per Kit)	(2 Per Kit)		(1 Per Kit)	(2 Per Kit)
18	50TJ600201	50TJ600289	CPHEATER030A00	50TJ600287	50TJ600289	CPHEATER036A00
24	50TJ601161			50TJ601162		
28	50TJ600729	50TJ600727	CPHEATER031A00	50TJ600730	50TJ600727	CPHEATER037A00
34						

Electric Heater Kits

Kit Ordering No	Description	Stages	Size (KW)
50TJ600201	Duct heater assembly, 50TJM 18, @240 V	2	30
50TJ600287	Duct heater assembly, 50TJM 18, @480 V	2	30
50TJ601161	Duct heater assembly, 50TJM 24, @240 V	2	40
50TJ601162	Duct heater assembly, 50TJM 24, @480 V	2	40
50TJ600729	Duct heater assembly, 50TJM 28 - 34, @240 V	2	40
50TJ600730	Duct heater assembly, 50TJM 28 - 34, @480 V	2	40

NOTE: Heaters are rated at 240 and 480 V. Use the Multiplication Factors table below to determine heater capacity for your particular voltage.

Multiplication Factors

Heater Rating Voltage	Actual Heater Voltage							
	200	208	230	240	380	400	460	480
240	0.694	0.751	0.918	1	—	—	—	—
480	—	—	—	—	0.62	0.7	0.92	1

NOTE: The following equation converts kW of heat energy to Btuh: kW x 3.413 = Btuh.

EXAMPLE: 30 kW (at 480 v) heater on 400 v

= 30.0 (0.7 multiplication factor)

= 21kW

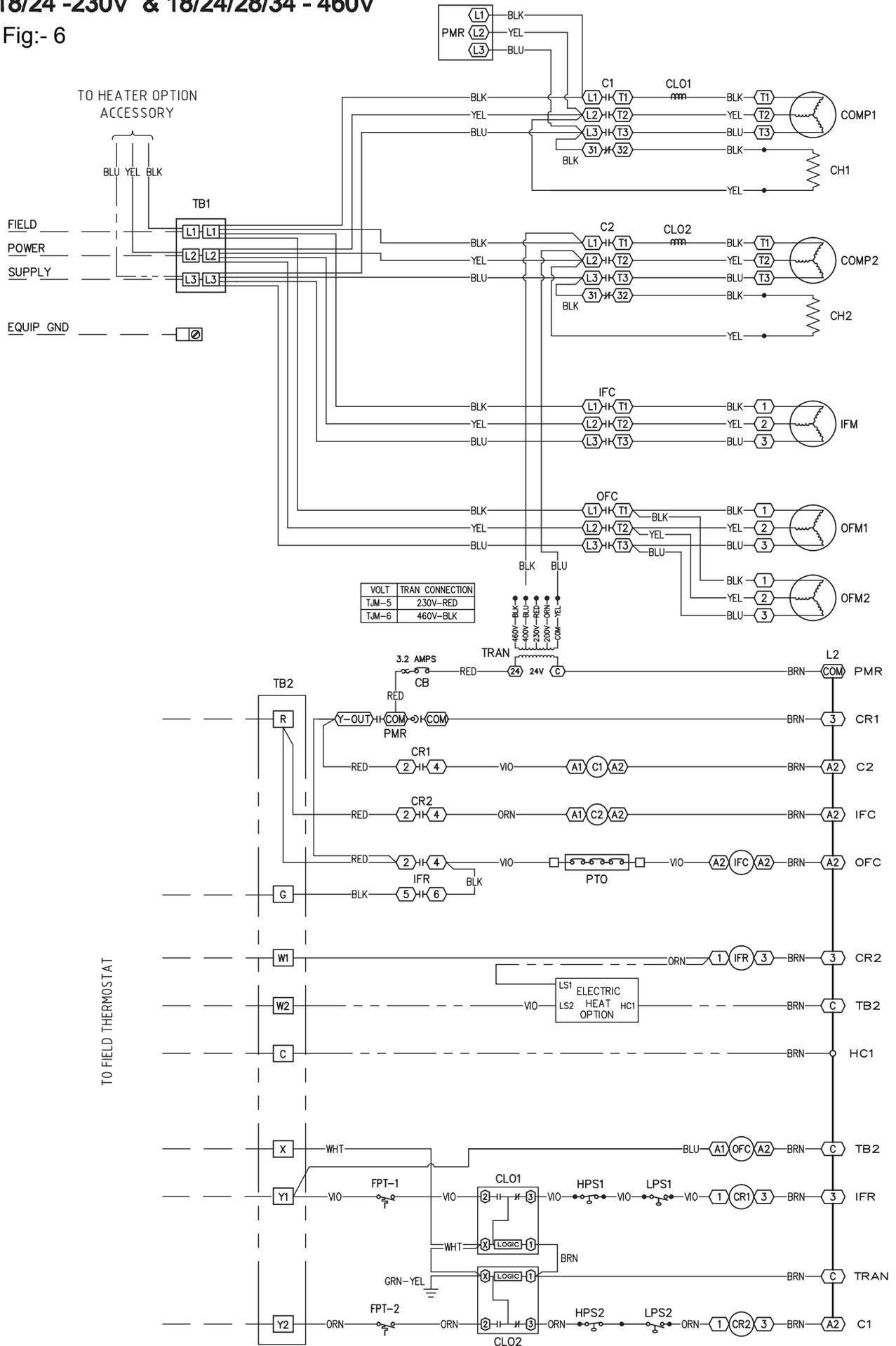
Heater capacity(kW) is based on heater voltage of 240v or 480v. If power distribution voltage to unit varies from heater voltage, heater kW will vary accordingly. To Determine heater capacity at actual unit voltage, multiply 480v capacity by multipliers found in table " Multiplication Factors" above.

MCA calculation for 50TJM 18 - 34 size units with electric heaters over 50 kW = (1.25 x IFM amps) + (1.00 x heater FLA).

Typical Wiring Schematic

18/24 -230V & 18/24/28/34 - 460V

Fig- 6

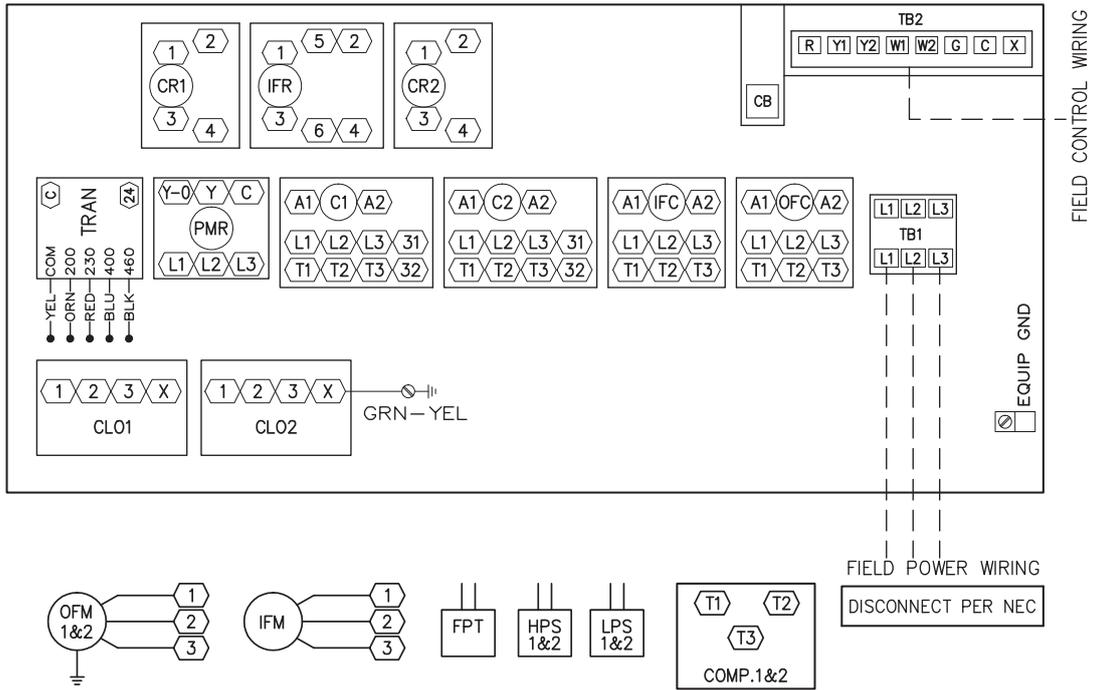


Typical Wiring Schematic (Continued)

18/24 -230V & 18/24/28/34 - 460V

Fig:- 7

CONTROL BOX COMPONENT ARRANGEMENT



LEGEND:

- ◻ TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- ◻ TERMINAL BLOCK
- SPLICE
- FACTORY WIRING
- - - - - FIELD WIRING
- OPTION / ACCESSORY WIRING
- TO INDICATE COMMON POTENTIAL ONLY:
NOT TO REPRESENT WIRING

C	CONTACTOR	IFC	INDOOR FAN CONTACTOR
CB	CIRCUIT BREAKER	IFM	INDOOR FAN MOTOR
CH	CRANKCASE HEATER	IFR	INDOOR FAN RELAY
CLO	COMPRESSOR LOCKOUT	L	INDICATOR LAMP
COMP	COMPRESSOR MOTOR	LPS	LOW PRESSURE SWITCH
CR	COMPRESSOR RELAY	OFC	OUTDOOR FAN CONTACTOR
FPT	FREEZE PROTECTION THERMOSTAT	OFM	OUTDOOR FAN MOTOR
FU	FUSE	PMR	PHASE MONITOR RELAY
GND	GROUND	PTO	MOTOR THERMOSTAT (NC)
HC	HEATER CONTACTOR	TB	TERMINAL BLOCK
HPS	HIGH PRESSURE SWITCH	TRAN	TRANSFORMER

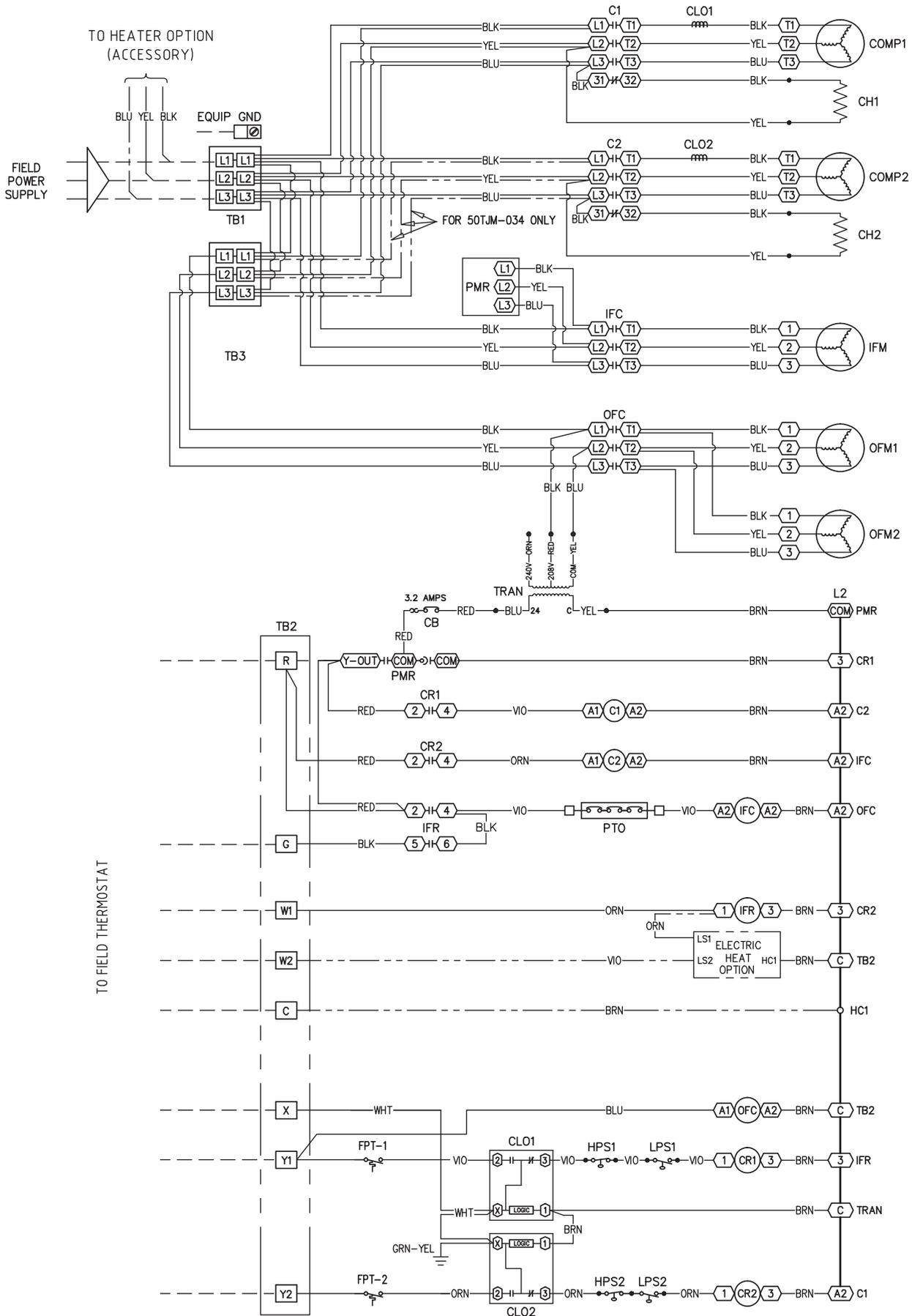
NOTES:

- 1) IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 105°C WIRE OR ITS EQUIVALENT.
- 2) USE COPPER, COPPER CLAD, OR ALUMINUM CONNECTORS.
- 3) USE COPPER CONDUCTOR ONLY.
- 4) COMPRESSORS & FAN MOTORS ARE THERMALLY PROTECTED.
THREE PHASE MOTORS ARE PROTECTED AGAINST PRIMARY SINGLE PHASING CONDITIONS.
- 5) THE CLO LOCKS OUT THE COMPRESSOR TO PREVENT SHORT CYCLING ON THE COMPRESSOR OVERLOAD AND SAFETY DEVICES. BEFORE REPLACING CLO, CHECK THESE DEVICES.

Typical Wiring Schematic (Continued)

28/34 -230V

Fig:- 8

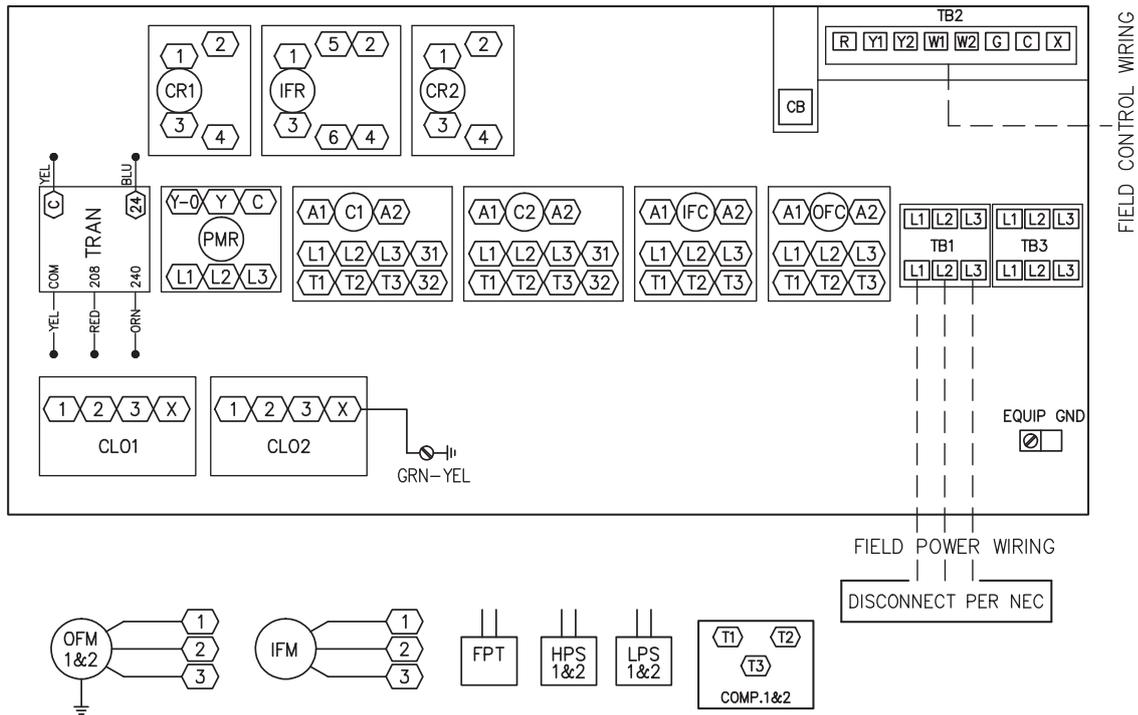


Typical Wiring Schematic (Continued)

28/34 -230V

Fig:- 9

CONTROL BOX COMPONENT ARRANGEMENT



LEGEND

- ◻ TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- ◻ TERMINAL BLOCK
- SPLICE
- FACTORY WIRING
- - - - - FIELD WIRING
- · - · - · OPTION/ACCESSORY WIRING
- TO INDICATE COMMON POTENTIAL ONLY:
NOT TO REPRESENT WIRING

C	CONTACTOR	IFC	INDOOR FAN CONTACTOR
CB	CIRCUIT BREAKER	IFM	INDOOR FAN MOTOR
CH	CRANKCASE HEATER	IFR	INDOOR FAN RELAY
CLO	COMPRESSOR LOCKOUT	L	INDICATOR LAMP
COMP	COMPRESSOR MOTOR	LPS	LOW PRESSURE SWITCH
CR	COMPRESSOR RELAY	OFC	OUTDOOR FAN CONTACTOR
FPT	FREEZE PROTECTION THERMOSTAT	OFM	OUTDOOR FAN MOTOR
FU	FUSE	PMR	PHASE MONITOR RELAY
GND	GROUND	PTO	MOTOR THERMOSTAT (NC)
HC	HEATER CONTACTOR	TB	TERMINAL BLOCK
HPS	HIGH PRESSURE SWITCH	TRAN	TRANSFORMER

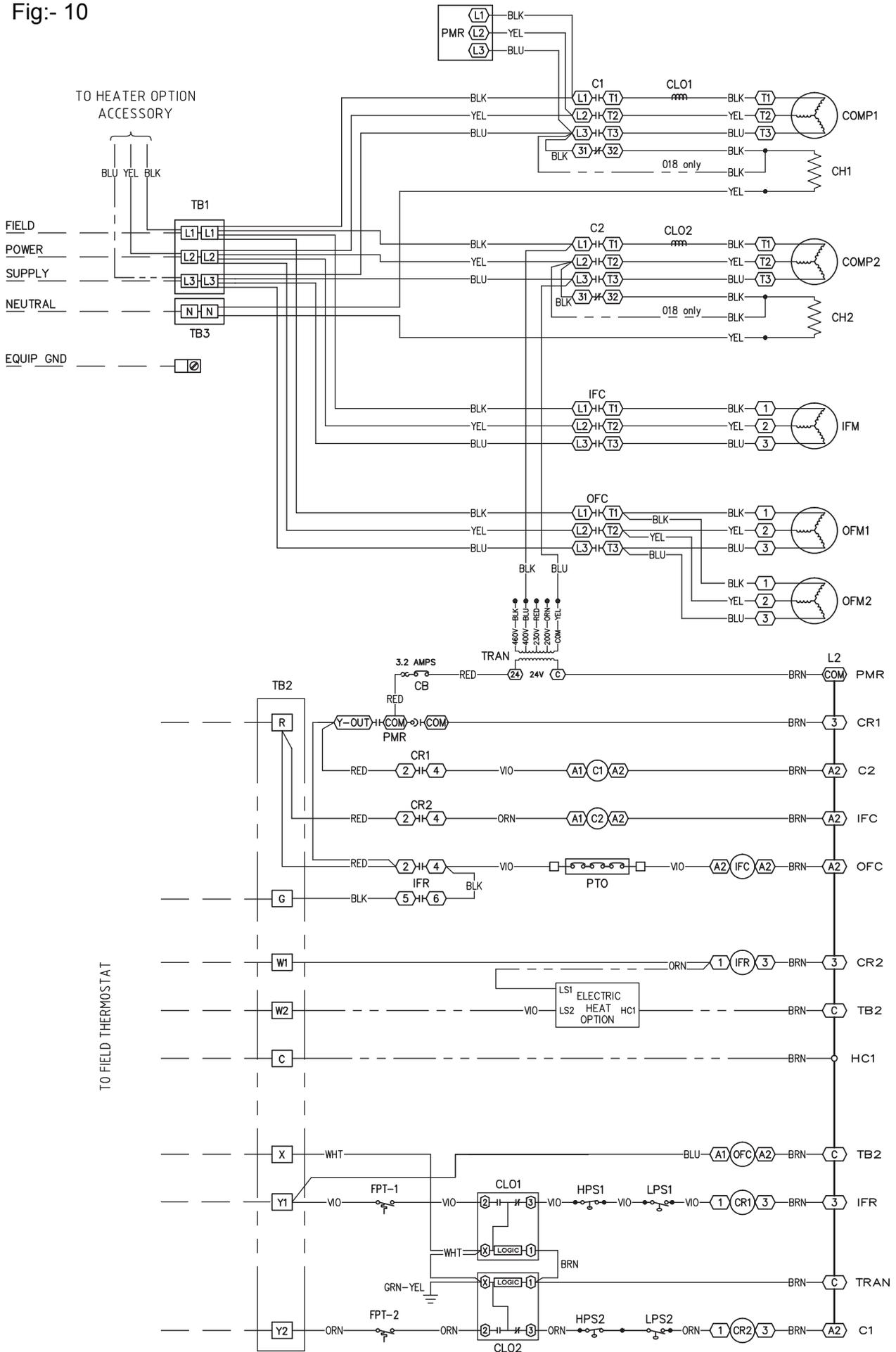
NOTES:

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- 2) USE COPPER, COPPER CLAD, OR ALUMINUM CONNECTORS.
- 3) USE COPPER CONDUCTOR ONLY.
- 4) COMPRESSORS & FAN MOTORS ARE THERMALLY PROTECTED.
THREE PHASE MOTORS ARE PROTECTED AGAINST PRIMARY SINGLE PHASING CONDITIONS.
- 5) THE CLO LOCKS OUT THE COMPRESSOR TO PREVENT SHORT CYCLING ON THE COMPRESSOR OVERLOAD AND SAFETY DEVICES. BEFORE REPLACING CLO, CHECK THESE DEVICES.

Typical Wiring Schematic(Continued)

18/24/28/34 - 400V

Fig:- 10

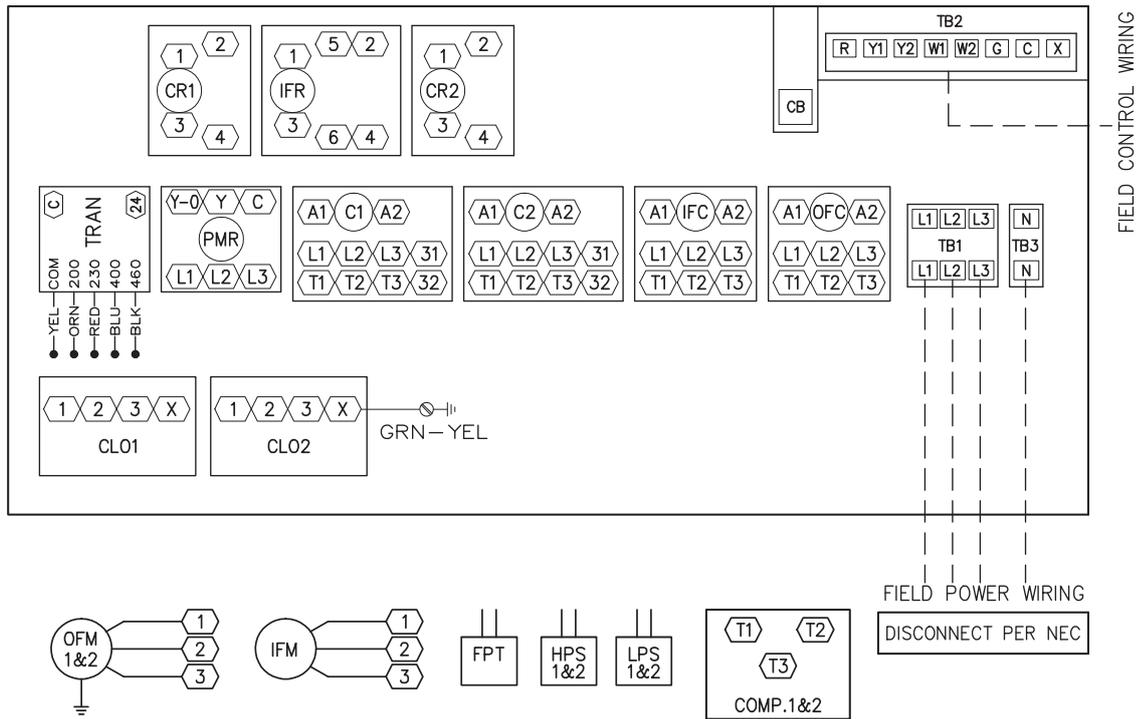


Typical Wiring Schematic (Continued)

18/24/28/34 - 400V

Fig:- 11

CONTROL BOX COMPONENT ARRANGEMENT



LEGEND:

- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE

————— FACTORY WIRING

- - - - - FIELD WIRING

————— OPTION / ACCESSORY WIRING

————— TO INDICATE COMMON POTENTIAL ONLY:
NOT TO REPRESENT WIRING

C	CONTACTOR	IFC	INDOOR FAN CONTACTOR
CB	CIRCUIT BREAKER	IFM	INDOOR FAN MOTOR
CH	CRANKCASE HEATER	IFR	INDOOR FAN RELAY
CLO	COMPRESSOR LOCKOUT	L	INDICATOR LAMP
COMP	COMPRESSOR MOTOR	LPS	LOW PRESSURE SWITCH
CR	COMPRESSOR RELAY	OFC	OUTDOOR FAN CONTACTOR
FPT	FREEZE PROTECTION THERMOSTAT	OFM	OUTDOOR FAN MOTOR
FU	FUSE	PMR	PHASE MONITOR RELAY
GND	GROUND	PTO	MOTOR THERMOSTAT (NC)
HC	HEATER CONTACTOR	TB	TERMINAL BLOCK
HPS	HIGH PRESSURE SWITCH	TRAN	TRANSFORMER

NOTES:

- 1) IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 105°C WIRE OR ITS EQUIVALENT.
- 2) USE COPPER, COPPER CLAD, OR ALUMINUM CONNECTORS.
- 3) USE COPPER CONDUCTOR ONLY.
- 4) COMPRESSORS & FAN MOTORS ARE THERMALLY PROTECTED.
THREE PHASE MOTORS ARE PROTECTED AGAINST PRIMARY SINGLE PHASING CONDITIONS.
- 5) THE CLO LOCKS OUT THE COMPRESSOR TO PREVENT SHORT CYCLING ON THE COMPRESSOR OVERLOAD AND SAFETY DEVICES. BEFORE REPLACING CLO, CHECK THESE DEVICES.

3 – Start-Up Instructions

PRIOR to unit start-up use the following instructions and start-up checklist provided on the last page.

3.1– Unit Preparation

Check that unit has been installed in accordance with these installation instructions and all applicable codes.

3.2 – Internal Wiring

Check all electrical connections in unit control boxes; tighten as required.

3.3 – Compressor Mounting

Compressors are internally spring mounted. Do not loosen or remove compressor hold down bolts.

3.4 – Refrigerant Service Ports

Each refrigerant system has a total of 3 Schrader type Service gage ports. One port is located on the suction line, one on the compressor discharge line, and one on the liquid line. In addition Schrader-type valves are located underneath the pressure switches. Be sure that caps on the ports are tight.

3.5 – Compressor Rotation

It is important to be certain the compressors are rotating in the proper direction. To determine whether or not compressors are rotating in the proper direction:

1. Connect service gages to suction and discharge pressure fittings.
2. Energize the compressor.
3. The suction pressure should drop and the discharge pressure should rise, as is normal on any start-up.

If the suction pressure does not drop and the discharge pressure does not rise to normal levels:

1. Note that the evaporator fan is probably also rotating in the wrong direction.
2. Turn off power to the unit.
3. Reverse any two of the compressor lead wires.
4. Turn on power to the compressor.
5. Check also phase monitor all ok green led before proceeding.

The suction and discharge pressure levels should now move to their normal start-up levels.

 **NOTE**

IMPORTANT

When compressors are rotating in the wrong direction, the unit will have increased noise levels and will not provide heating and cooling. After a few minutes of reverse operation, the scroll compressor internal overload protection will open, which will activate the unit's lockout and requires a manual reset. Reset accomplished by turning the thermostat on and off.

3.6 - Evaporator Fan

Fan belt and variable pulleys are factory installed. Remove tape from the fan pulley. See Table 5 for Air Quantity Limits. See Table 7 for Fan Performance data. Be sure that fans rotate in the proper direction. See Table 6 for Fan RPM at various fan motor pulley settings. To alter fan performance, see Evaporator Fan Performance Adjustment section.

Unit	Cooling		Electric Heaters	
	Minimum	Maximum	Minimum	Maximum
50TJM-18	4,000	6,500	4,800	6,500
50TJM-24	5,000	8,000	6,000	8,000
50TJM-28	5,000	9,000	7,000	9,000
50TJM-34	7,000	10,000	7,000	10,000

Table 5 – Air Quantity Limits.

Freq.	50TJM	IFM HP	Motor Pulley Turns Open - English												
			0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6
60Hz	18	3.0	-	-	1020	994	969	934	904	867	841	808	780	749	725
	18 / 24	4.0	-	-	1042	1004	979	944	913	876	850	816	788	757	732
	24 / 28	5.5	-	-	1042	1004	979	944	913	876	850	816	788	757	732
	28 / 34	7.5	1002	968	933	902	876	850	823	806	789	772	756	739	722
	34	10.0	1007	978	943	915	894	871	848	834	820	805	791	777	763

Bold Fan RPM is Factory Setting

Table 6 – Fan RPM at Motor Pulley Settings.

3.7– Condenser Fans and Motors

Fans and motors are factory set. Refer to Condenser-Fan Adjustment Section as required.

3.8– Return – Air Filters

Check that correct filters are installed in filter tracks. See Table 1 “Physical data”. Do not operate unit without return air filters.

3.9 – Base Unit Operation

COOLING, UNITS — when thermostat calls for cooling, terminals G and Y1 are energized. The indoor (evaporator) fan contactor (IFC), and compressor contactor no. 1 (C1) are energized and evaporator-fan motor, compressor no. 1 and condenser fans start. The condenser-fan motors run continuously while unit is cooling. If the thermostat calls for a second stage of cooling by energizing Y2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts.

HEATING, UNITS — (If Accessory or Optional Heater is installed) — upon a call for heating through terminal W1, IFC and heater contactor no. 1 (HC1) are energized.

4.0 – Service

4.1 – Cleaning

Inspect unit interior at beginning of each heating and cooling season and as operating conditions require. Remove unit top panel and/or side panels for access to unit interior.

EVAPORATOR COIL — Clean as required with a commercial coil cleaner.

CONDENSER COIL — Clean condenser coil annually and as required by location and outdoor-air conditions. Inspect coil monthly and clean as required.

CONDENSATE DRAIN — Check and clean each year at start of cooling season.

FILTERS — Clean or replace at start of each heating and cooling season, or more often if operating conditions require. Refer to Table 1 “Physical Data” type and size.

4.2 – Lubrication

Compressors are charged with the correct amount of oil at the factory.

Replacing Compressor - In the case of a motor burnout, the majority of contaminated will be removed with the compressor. The rest of the oil is cleaned through the use of suction and liquid line filter driers. A 100% activated alumina suction line filter drier is recommended but must be removed after 72 hours.

The compressor contains POE oil. POE oil has a high affinity for moisture. Do not remove the compressor’s tube plugs until ready to insert the unit suction and discharge tube ends. The discharge connection plug should be removed first before pulling the suction connection plug to allow the dry air pressure inside the compressor to escape.

Note: This is only valid for the R410A systems.



UNIT DAMAGE HAZARD

Failure to follow this caution may result in damage to components.

1. The compressor is in a Puron® refrigerant system and uses a (POE) lubricant Emkarate RL 32 3MAF. In the field the oil level could be topped up with Mobil EAL Arctic 22 CC if 3MAF is not available. POE oil is extremely hygroscopic, meaning it absorbs water readily. POE oils can absorb 15 times as much as other oils designed for HCFC and CFC refrigerants. Avoid exposure of the oil to the atmosphere.
2. Ensure that system is not subjected to liquid abuse. Turn the crankcase heater on 12 hours before starting the compressor.

CONDENSER AND EVAPORATOR-FAN MOTOR BEARINGS – The condenser and evaporator-fan motors have permanently-sealed bearings, so no field lubrication is necessary.

4.3 – Evaporator Fan Performance Adjustment

NOTE: To remove belts only, follow Steps 1, 2 & 6. Fan motor pulleys are factory set speed shown in Table 6.

To change fan speeds:

1. Shut off unit power supply.
2. Loosen belt by loosening fan motor mounting plate nuts. Slide the Motor and remove belt.
3. Loosen movable-pulley flange setscrew (see Fig. 12).
4. Screw movable flange toward fixed flange to increase speed and away from fixed flange to decrease speed. Increasing fan speed increases load on motor. Do not exceed maximum speed specified in Table 6. See Table 7 for air flow.
5. Set movable flange at nearest keyway of pulley hub and tighten setscrew. (See Table 1 & 6 for speed change for each full turn of pulley flange.)
6. Replace and tighten belts. See Belt Tension Adjustment section on Table 1.

To align fan and motor pulleys:

1. Loosen fan pulley setscrews.
2. Slide fan pulley along fan shaft.
3. Make angular alignment by loosening motor from mounting plate.

4.4 – Evaporator Fan Service and Replacement

1. Remove supply-air section panel (The bolts holding the flexible connection to the panel should be removed).
2. Remove the Control Side panel.
3. Remove the Belt (refer to the previous section for Belt removal).
4. Remove the locking device of the hub & shaft from the both sides; it can be accessed through the fan side panel.
5. Pull the shaft gently from the control side, the blower will fall inside the blower housing.
6. Loosen the (lower) first two bolts from each side of the scroll fan housing mid-plate. This can be done from the supply panel side, now the fan can be removed easily from the supply panel side.
7. To assemble the fan, reverse the above procedure.

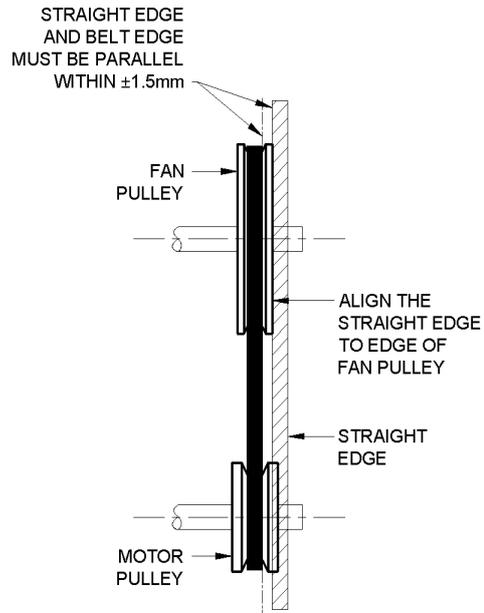


Fig. 12 Evaporator – Fan Pulley Alignment and Adjustment

4.5 – Belt Tension Adjustment

To adjust belt tension:

1. Loosen fan motor bolts.
2. Adjust belt tension by sliding the motor on the mounting base.
3. Tighten nuts.
4. Adjust bolts and nut on mounting plate to secure motor in fixed position.

4.6 – Condenser-Fan Adjustment

1. Shut off unit power supply.
2. Remove fan top-grille assembly and loosen fan hub screws.
3. Adjust fan height on unit, using a straightedge placed across the fan orifice.
4. Tighten setscrews

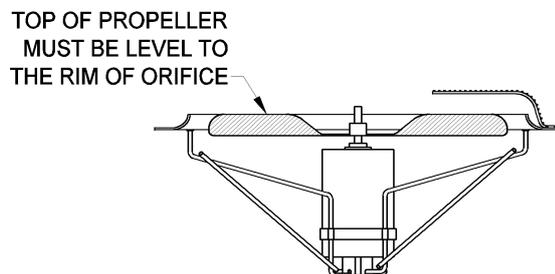


Fig. 13 Condenser - Fan Adjustment

4.7 – Refrigerant Charge

Amount of refrigerant charge is listed on unit nameplate and in Table 1. Refer to Carrier GTAC II; Module 5; Charging, Recovery, Recycling, and Reclamation section for charging methods and procedures. Unit panels must be in place when unit is operating during charging procedure.

NOTE: Do not use recycled refrigerant as it may contain contaminants.

NO CHARGE — Use standard evacuating techniques. After evacuating system, weight in the specified amount of refrigerant (refer to Table 1).

LOW CHARGE COOLING — Using cooling charging chart (see Fig. 14 to 18 according to the size of the unit) Add or remove refrigerant until conditions of the chart are met. Note that charging chart is different from those normally used. An accurate pressure gage and temperature-sensing device is required. Charging is accomplished by ensuring the proper amount of liquid sub-cooling. Measure liquid line pressure at the liquid line service valve using pressure gage.

Connect temperature sensing device to the liquid line near the liquid line service valve and insulate it so that outdoor ambient temperature does not affect reading.

TO USE THE COOLING CHARGING CHART — Use the above temperature and pressure readings, and find the intersection point on the cooling charging chart. If intersection point on chart is above line, add refrigerant. If intersection point on chart is below line, carefully recover some of the charge. Recheck suction pressure as charge is adjusted.

NOTE: Indoor-air CFM must be within normal operating range of unit. All outdoor fans must be operating.

4.8 – Protective Devices

COMPRESSOR PROTECTION – Each compressor is internally protected against over temperature.

Compressor Lockout — If any of the safeties (high-pressure, low-pressure, compressor internal thermostat, external compressor thermal overload) trip, the CLO (compressor lockout) will lock the compressors off.

To reset, manually move the thermostat setting.

EVAPORATER AND CONDENSER-FAN MOTOR PROTECTION — Each Evaporator and Condenser-fan motor is internally protected against over temperature.

HIGH- AND LOW-PRESSURE SWITCHES — If either switch trips, or if the compressor over temperature switch activates, that refrigerant circuit will be automatically locked out by the CLO. To reset, manually move the thermostat setting.

FREEZE PROTECTION THERMOSTAT (FPT) — An FPT is located on the top and bottom of the evaporator coil. It detects frost build-up and turns off the compressor, allowing the coil to clear. Once the frost has melted, the compressor can be reenergized.



NOTE

IMPORTANT

After prolonged shutdown or servicing in cold weather, energize the crankcase heaters for 12 hours before starting the compressors.

4.9 – Control Circuit, 24-V

This control circuit is protected against over-current by a 3.2-amp circuit breaker. Breaker can be reset. If it trips, determine cause of trouble before resetting.

5.0 – Replacement Parts

A complete list of replacement parts may be obtained from any Carrier distributor.

Fan Performance Table - 7

Unit 50TJM - 18 - 15 Tons - 230V and 400V - 60Hz

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
4000	526	0.94	1.04	590	1.15	1.27	650	1.37	1.52	699	1.61	1.78	754	1.86	2.06
4500	559	1.21	1.34	619	1.44	1.59	674	1.68	1.86	728	1.93	2.14	781	2.20	2.43
5000	592	1.53	1.70	647	1.77	1.96	699	2.03	2.25	749	2.30	2.54	798	2.58	2.85
5500	624	1.90	2.10	674	2.16	2.39	725	2.43	2.69	771	2.71	3.00	817	3.00	3.33
6000	659	2.31	2.56	701	2.58	2.86	747	2.87	3.18	792	3.17	3.51	836	3.48	3.85
6500	684	2.79	3.08	726	3.05	3.38	770	3.35	3.71	811	3.66	4.06	853	3.99	4.41

Unit 50TJM - 18 - 15 Tons - 230V and 400V - 60Hz (Continued)

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
4000	806	2.12	2.35	872	2.46	2.72	894	2.66	2.94	919	2.82	3.12	985	3.23	3.57
4500	830	2.47	2.74	877	2.76	3.05	916	3.01	3.34	964	3.24	3.59	<i>1007</i>	3.65	4.04
5000	845	2.82	3.12	891	3.17	3.51	935	3.48	3.85	977	3.69	4.09	<i>1018</i>	4.11	4.55
5500	862	3.31	3.67	906	3.63	4.02	947	3.94	4.36	989	4.18	4.63	1028	4.62	5.11
6000	878	3.79	4.20	919	4.12	4.57	960	4.46	4.94	<i>1000</i>	4.71	5.22	1038	5.17	5.72
6500	894	4.32	4.78	932	4.66	5.16	971	5.01	5.55	1010	5.27	5.84	1047	5.74	6.36

Unit 50TJM - 18 - 15 Tons - 460V - 60Hz

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
4000	526	0.94	1.04	590	1.15	1.27	650	1.37	1.52	699	1.61	1.78	754	1.86	2.06
4500	559	1.21	1.34	619	1.44	1.59	674	1.68	1.86	728	1.93	2.14	781	2.20	2.43
5000	592	1.53	1.70	647	1.77	1.96	699	2.03	2.25	749	2.30	2.54	798	2.58	2.85
5500	624	1.90	2.10	674	2.16	2.39	725	2.43	2.69	771	2.71	3.00	817	3.00	3.33
6000	659	2.31	2.56	701	2.58	2.86	747	2.87	3.18	792	3.17	3.51	836	3.48	3.85
6500	684	2.79	3.08	726	3.05	3.38	770	3.35	3.71	811	3.66	4.06	853	3.99	4.41

Unit 50TJM - 18 - 15 Tons - 460V - 60Hz (Continued)

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
4000	806	2.12	2.35	872	2.46	2.72	894	2.66	2.94	919	2.82	3.12	985	3.23	3.57
4500	830	2.47	2.74	877	2.76	3.05	916	3.01	3.34	964	3.24	3.59	1007	3.65	4.04
5000	845	2.82	3.12	891	3.17	3.51	935	3.48	3.85	977	3.69	4.09	1018	4.11	4.55
5500	862	3.31	3.67	906	3.63	4.02	947	3.94	4.36	989	4.18	4.63	<i>1028</i>	4.62	5.11
6000	878	3.79	4.20	919	4.12	4.57	960	4.46	4.94	<i>1000</i>	4.71	5.22	<i>1038</i>	5.17	5.72
6500	894	4.32	4.78	932	4.66	5.16	971	5.01	5.55	<i>1010</i>	5.27	5.84	<i>1047</i>	5.74	6.36

Legend and Notes:

Bold - Standard Static Motor and Drive Package.

Italics - High Static Motor and Drive Package.

RPM - Revolutions Per Minute

KWI - Kilo Watts Input to Motor

in.wg - Inch Water Gage

BHP - Brake Horsepower Input to Fan

CFM - Cubic Feet per Minute

1. Fan performance tables for 230V and 400V are within ±5%

2. Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operatin cfm

3. Static Pressure (i.e Filters) must be added to external static pressure before entering fan performance table

4. Interpolation is permissible. Do not extrapolate

5. Fan performance is based on wet coils, clean filters and casing loses

6. Extensive motor and drive testing on these units ensures that the full brake horsepower and watts range of the motor can be utilized with confidence. Using your fan motors up to the watts or bhp rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected

7. Bold and Italic data shows the range of air flow rate for unit management system, other rpms require field-supplied drive

8. Use of field-supplied motor may affect wiring size. Contact your Carrier representative for details

9. Conversion - Bhp to KWI:

$$\text{KWI} = \frac{\text{Bhp} \times 0.746}{\text{Motor efficiency}}$$

Fan Performance Table - 7 (Continued)

Unit 50TJM - 24 - 20 Tons - 230V and 400V - 60Hz

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
5000	562	1.38	1.56	619	1.61	1.83	673	1.86	2.11	726	2.12	2.40	776	2.39	2.71
5500	595	1.73	1.96	648	1.98	2.24	698	2.24	2.54	747	2.51	2.85	795	2.80	3.17
6000	631	2.14	2.42	679	2.40	2.72	725	2.67	3.03	771	2.97	3.36	817	3.27	3.70
6500	665	2.60	2.95	709	2.88	3.26	753	3.17	3.59	796	3.48	3.94	839	3.80	4.30
7000	699	3.14	3.55	741	3.43	3.89	782	3.74	4.23	823	4.06	4.60	863	4.39	4.97
7500	734	3.74	4.24	774	4.05	4.59	812	4.37	4.95	851	4.70	5.33	888	5.05	5.72
8000	767	4.31	4.88	809	4.67	5.29	849	5.04	5.71	889	5.42	6.14	929	5.82	6.59

Unit 50TJM - 24 - 20 Tons - 230V and 400V - 60Hz (Continued)

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
5000	825	2.68	3.04	873	2.98	3.37	919	3.28	3.72	963	3.59	4.06	1005	3.91	4.43
5500	842	3.10	3.51	887	3.41	3.86	932	3.73	4.22	973	4.05	4.59	1014	4.39	4.97
6000	861	3.58	4.06	904	3.91	4.43	945	4.24	4.80	986	4.58	5.19	<i>1026</i>	<i>4.93</i>	<i>5.59</i>
6500	880	4.12	4.67	921	4.46	5.05	963	<i>4.81</i>	<i>5.44</i>	<i>1001</i>	<i>5.16</i>	<i>5.85</i>	<i>1039</i>	<i>5.53</i>	<i>6.27</i>
7000	902	4.72	5.35	<i>941</i>	<i>5.08</i>	<i>5.75</i>	979	<i>5.44</i>	<i>6.16</i>	<i>1017</i>	<i>5.81</i>	<i>6.58</i>	1055	6.19	7.01
7500	925	5.40	6.11	963	5.76	6.53	998	6.14	6.95	1035	6.52	7.39	1070	6.92	7.84
8000	967	6.22	7.05	1006	6.64	7.53	1044	7.08	8.02	1082	7.52	8.52	1118	7.98	9.03

Unit 50TJM - 24 - 20 Tons - 460V - 60Hz

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
5000	562	1.38	1.56	619	1.61	1.83	673	1.86	2.11	726	2.12	2.40	776	2.39	2.71
5500	595	1.73	1.96	648	1.98	2.24	698	2.24	2.54	747	2.51	2.85	795	2.80	3.17
6000	631	2.14	2.42	679	2.40	2.72	725	2.67	3.03	771	2.97	3.36	817	3.27	3.70
6500	665	2.60	2.95	709	2.88	3.26	753	3.17	3.59	796	3.48	3.94	839	3.80	4.30
7000	699	3.14	3.55	741	3.43	3.89	782	3.74	4.23	823	4.06	4.60	863	4.39	4.97
7500	734	3.74	4.24	774	4.05	4.59	812	4.37	4.95	851	4.70	5.33	888	5.05	5.72
8000	767	4.31	4.88	809	4.67	5.29	849	5.04	5.71	889	5.42	6.14	929	5.82	6.59

Unit 50TJM - 24 - 20 Tons - 460V - 60Hz (Continued)

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
5000	825	2.68	3.04	873	2.98	3.37	919	3.28	3.72	963	3.59	4.06	1005	3.91	4.43
5500	842	3.10	3.51	887	3.41	3.86	932	3.73	4.22	973	4.05	4.59	1014	4.39	4.97
6000	861	3.58	4.06	904	3.91	4.43	945	4.24	4.80	986	4.58	5.19	1026	4.93	5.59
6500	880	4.12	4.67	921	4.46	5.05	963	4.81	5.44	1001	5.16	5.85	<i>1039</i>	<i>5.53</i>	<i>6.27</i>
7000	902	4.72	5.35	<i>941</i>	<i>5.08</i>	<i>5.75</i>	979	<i>5.44</i>	<i>6.16</i>	<i>1017</i>	<i>5.81</i>	<i>6.58</i>	1055	6.19	7.01
7500	925	5.40	6.11	963	5.76	6.53	998	6.14	6.95	1035	6.52	7.39	1070	6.92	7.84
8000	967	6.22	7.05	1006	6.64	7.53	1044	7.08	8.02	1082	7.52	8.52	1118	7.98	9.03

Legend and Notes:

Bold - Standard Static Motor and Drive Package.

Italics - High Static Motor and Drive Package.

RPM - Revolutions Per Minute

BHP - Brake Horsepower Input to Fan

KWI - Kilo Watts Input to Motor

CFM - Cubic Feet per Minute

in.wg - Inch Water Gage

- Fan performance tables for 230V and 400V are within ±5%
- Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operatin cfm
- Static Pressure (i.e Filters) must be added to external static pressure before entering fan performance table
- Interpolation is permissible. Do not extrapolate
- Fan performance is based on wet coils, clean filters and casing loses
- Extensive motor and drive testing on these units ensures that the full brake horsepower and watts range of the motor can be utilized with confidence. Using your fan motors up to the watts or bhp rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected
- Bold and Italic data shows the range of air flow rate for unit management system, other rpms require field-supplied drive
- Use of field-supplied motor may affect wiring size. Contact your Carrier representative for details
- Conversion - Bhp to KWI:

$$KWI = \frac{Bhp \times 0.746}{\text{Motor efficiency}}$$

Fan Performance Table - 7 (Continued)

Unit 50TJM - 28 - 25 Tons - 230V and 400V - 60Hz

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
5000	501	1.10	1.25	554	1.32	1.50	606	1.56	1.77	656	1.83	2.07	704	2.11	2.39
5500	529	1.36	1.54	579	1.60	1.81	627	1.85	2.09	673	2.12	2.40	717	2.39	2.71
6000	558	1.66	1.88	603	1.90	2.15	648	2.16	2.45	692	2.45	2.77	733	2.74	3.11
6500	586	2.00	2.27	628	2.25	2.55	670	2.54	2.87	711	2.82	3.19	750	3.13	3.54
7000	614	2.38	2.70	654	2.66	3.01	693	2.94	3.33	732	3.23	3.66	769	3.55	4.02
7500	643	2.82	3.19	680	3.10	3.52	717	3.40	3.85	753	3.70	4.20	789	4.03	4.57
8000	669	3.29	3.73	706	3.58	4.06	740	3.90	4.42	775	4.22	4.78	809	4.56	5.17
8500	696	3.79	4.30	734	4.11	4.65	761	4.44	5.03	796	4.77	5.40	829	5.10	5.78
9000	737	4.37	4.95	777	4.73	5.36	806	5.11	5.79	842	5.49	6.21	877	5.88	6.66

Unit 50TJM - 28 - 25 Tons - 230V and 400V - 60Hz (Continued)

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
5000	750	2.40	2.72	796	2.72	3.08	841	3.06	3.47	885	3.42	3.87	926	3.80	4.31
5500	762	2.71	3.07	805	3.03	3.43	847	3.38	3.83	888	3.74	4.23	927	4.11	4.65
6000	775	3.06	3.47	815	3.38	3.83	855	3.73	4.22	894	4.09	4.63	933	4.47	5.06
6500	789	3.44	3.90	829	3.78	4.28	866	4.13	4.68	903	4.49	5.09	939	4.87	5.52
7000	806	3.88	4.39	843	4.23	4.79	879	4.58	5.19	914	4.95	5.61	949	5.33	6.04
7500	824	4.37	4.95	859	4.72	5.35	894	5.08	5.76	926	5.45	6.18	960	5.85	6.62
8000	842	4.90	5.55	876	5.26	5.95	908	5.63	6.38	941	6.01	6.81	973	6.42	7.27
8500	861	5.46	6.19	892	5.84	6.61	923	6.22	7.04	953	6.60	7.48	984	7.01	7.94
9000	911	6.29	7.13	944	6.72	7.61	977	7.16	8.11	1009	7.60	8.61	1042	8.07	9.14

Unit 50TJM - 28 - 25 Tons - 460V - 60Hz

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
5000	501	1.10	1.25	554	1.32	1.50	606	1.56	1.77	656	1.83	2.07	704	2.11	2.39
5500	529	1.36	1.54	579	1.60	1.81	627	1.85	2.09	673	2.12	2.40	717	2.39	2.71
6000	558	1.66	1.88	603	1.90	2.15	648	2.16	2.45	692	2.45	2.77	733	2.74	3.11
6500	586	2.00	2.27	628	2.25	2.55	670	2.54	2.87	711	2.82	3.19	750	3.13	3.54
7000	614	2.38	2.70	654	2.66	3.01	693	2.94	3.33	732	3.23	3.66	769	3.55	4.02
7500	643	2.82	3.19	680	3.10	3.52	717	3.40	3.85	753	3.70	4.20	789	4.03	4.57
8000	669	3.29	3.73	706	3.58	4.06	740	3.90	4.42	775	4.22	4.78	809	4.56	5.17
8500	696	3.79	4.30	734	4.11	4.65	761	4.44	5.03	796	4.77	5.40	829	5.10	5.78
9000	737	4.37	4.95	777	4.73	5.36	806	5.11	5.79	842	5.49	6.21	877	5.88	6.66

Unit 50TJM - 28 - 25 Tons - 460V - 60Hz (Continued)

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
5000	750	2.40	2.72	796	2.72	3.08	841	3.06	3.47	885	3.42	3.87	926	3.80	4.31
5500	762	2.71	3.07	805	3.03	3.43	847	3.38	3.83	888	3.74	4.23	927	4.11	4.65
6000	775	3.06	3.47	815	3.38	3.83	855	3.73	4.22	894	4.09	4.63	933	4.47	5.06
6500	789	3.44	3.90	829	3.78	4.28	866	4.13	4.68	903	4.49	5.09	939	4.87	5.52
7000	806	3.88	4.39	843	4.23	4.79	879	4.58	5.19	914	4.95	5.61	949	5.33	6.04
7500	824	4.37	4.95	859	4.72	5.35	894	5.08	5.76	926	5.45	6.18	960	5.85	6.62
8000	842	4.90	5.55	876	5.26	5.95	908	5.63	6.38	941	6.01	6.81	973	6.42	7.27
8500	861	5.46	6.19	892	5.84	6.61	923	6.22	7.04	953	6.60	7.48	984	7.01	7.94
9000	911	6.29	7.13	944	6.72	7.61	977	7.16	8.11	1009	7.60	8.61	1042	8.07	9.14

Legend and Notes:

Bold - Standard Static Motor and Drive Package.

Italics - High Static Motor and Drive Package.

RPM - Revolutions Per Minute

KWI - Kilo Watts Input to Motor

in.wg - Inch Water Gage

BHP - Brake Horsepower Input to Fan

CFM - Cubic Feet per Minute

1. Fan performance tables for 230V and 400V are within ±5%

2. Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operatin cfm

3. Static Pressure (i.e Filters) must be added to external static pressure before entering fan performance table

4. Interpolation is permissible. Do not extrapolate

5. Fan performance is based on wet coils, clean filters and casing losses

6. Extensive motor and drive testing on these units ensures that the full brake horsepower and watts range of the motor can be utilized with confidence. Using your fan motors up to the watts or bhp rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected

7. Bold and Italic data shows the range of air flow rate for unit management system, other rpms require field-supplied drive

8. Use of field-supplied motor may affect wiring size. Contact your Carrier representative for details

9. Conversion - Bhp to KWI:

$$\text{KWI} = \frac{\text{Bhp} \times 0.746}{\text{Motor efficiency}}$$

Fan Performance Table - 7 (Continued)

Unit 50TJM - 34 - 30 Tons - 230V and 400V - 60Hz

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
7000	602	2.72	3.13	641	3.03	3.49	679	3.35	3.86	717	3.70	4.27	753	4.05	4.67
7500	630	3.22	3.71	667	3.54	4.08	704	3.89	4.48	739	4.23	4.88	773	4.61	5.31
8000	659	3.77	4.35	693	4.11	4.74	727	4.46	5.14	761	4.83	5.57	794	5.22	6.01
8500	687	4.38	5.05	720	4.74	5.47	753	5.12	5.90	784	5.49	6.33	816	5.89	6.78
9000	715	5.05	5.83	746	5.43	6.26	777	5.81	6.70	808	6.21	7.16	838	6.49	7.49
9500	741	5.77	6.66	771	6.16	7.10	800	6.51	7.50	829	6.97	8.03	859	7.39	8.52

Unit - 50TJM - 34 - 30 Tons - 230 & 400V - 60Hz (Continued)

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
7000	790	4.43	5.11	826	4.82	5.55	861	5.23	6.03	895	5.65	6.51	929	6.08	7.01
7500	808	4.99	5.75	842	5.39	6.21	875	5.80	6.68	907	6.22	7.17	940	6.52	7.52
8000	827	5.61	6.47	860	6.02	6.94	891	6.44	7.43	922	6.88	7.93	953	7.33	8.45
8500	847	6.30	7.26	<i>878</i>	<i>6.72</i>	<i>7.74</i>	<i>908</i>	<i>7.15</i>	<i>8.25</i>	938	7.59	8.75	967	8.05	9.28
9000	<i>867</i>	<i>7.03</i>	<i>8.10</i>	<i>897</i>	<i>7.46</i>	<i>8.60</i>	<i>927</i>	<i>7.91</i>	<i>9.12</i>	955	8.37	9.65	984	8.84	10.19
9500	<i>887</i>	<i>7.82</i>	<i>9.02</i>	<i>914</i>	<i>8.26</i>	<i>9.52</i>	<i>943</i>	<i>8.72</i>	<i>10.05</i>	970	9.18	10.58	998	9.66	11.14

Unit - 50TJM - 34 - 30 Tons - 460V - 60Hz

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
7000	602	2.72	3.13	641	3.03	3.49	679	3.35	3.86	717	3.70	4.27	753	4.05	4.67
7500	630	3.22	3.71	667	3.54	4.08	704	3.89	4.48	739	4.23	4.88	773	4.61	5.31
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9000	715	5.05	5.83	746	5.43	6.26	777	5.81	6.70	808	6.21	7.16	838	6.62	7.63
9500	741	5.77	6.66	771	6.16	7.10	800	6.56	7.56	829	6.97	8.03	859	7.39	8.52

Unit - 50TJM - 34 - 30 Tons - 460V - 60Hz (Continued)

Air flow Rate (CFM)	Available External Static Pressure (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP	RPM	KWI	BHP
7000	790	4.43	5.11	826	4.82	5.55	861	5.23	6.03	895	5.65	6.51	929	6.08	7.01
7500	808	4.99	5.75	842	5.39	6.21	875	5.80	6.68	907	6.22	7.17	940	6.67	7.69
8000	827	5.61	6.47	860	6.02	6.94	891	6.44	7.43	922	6.88	7.93	953	7.33	8.45
8500	847	6.30	7.26	878	6.72	7.74	908	7.15	8.25	938	7.59	8.75	<i>967</i>	<i>8.05</i>	<i>9.28</i>
9000	867	7.03	8.10	897	7.46	8.60	<i>927</i>	<i>7.91</i>	<i>9.12</i>	<i>955</i>	<i>8.37</i>	<i>9.65</i>	<i>984</i>	<i>8.84</i>	<i>10.19</i>
9500	<i>887</i>	<i>7.82</i>	<i>9.02</i>	<i>914</i>	<i>8.26</i>	<i>9.52</i>	<i>943</i>	<i>8.72</i>	<i>10.05</i>	<i>970</i>	<i>9.18</i>	<i>10.58</i>	<i>998</i>	<i>9.66</i>	<i>11.14</i>

Legend and Notes:

Bold - Standard Static Motor and Drive Package.

Italics - High Static Motor and Drive Package.

RPM - Revolutions Per Minute

BHP - Brake Horsepower Input to Fan

KWI - Kilo Watts Input to Motor

CFM - Cubic Feet per Minute

in.wg - Inch Water Gage

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5. Fan performance is based on wet coils, clean filters and casing loses

6. Extensive motor and drive testing on these units ensures that the full brake horsepower and watts range of the motor can be utilized with confidence. Using your fan motors up to the watts or bhp rating shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected

7. Bold and Italic data shows the range of air flow rate for unit management system, other rpms require field-supplied drive

8. Use of field-supplied motor may affect wiring size. Contact your Carrier representative for details

9. Conversion - Bhp to KWI:

$$KWI = \frac{Bhp \times 0.746}{\text{Motor efficiency}}$$

Charging Chart

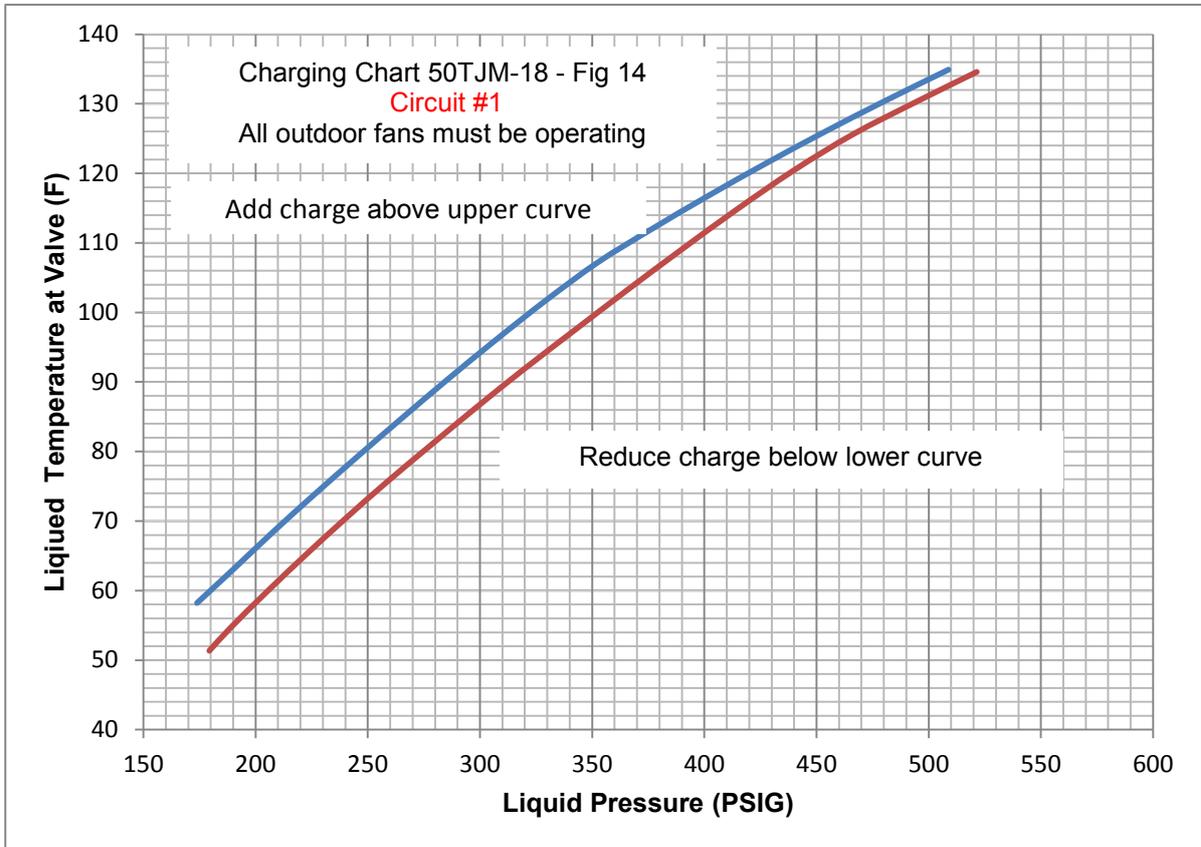


Fig - 14 Charging Chart for 50TJM - 18 (Circuit #1)

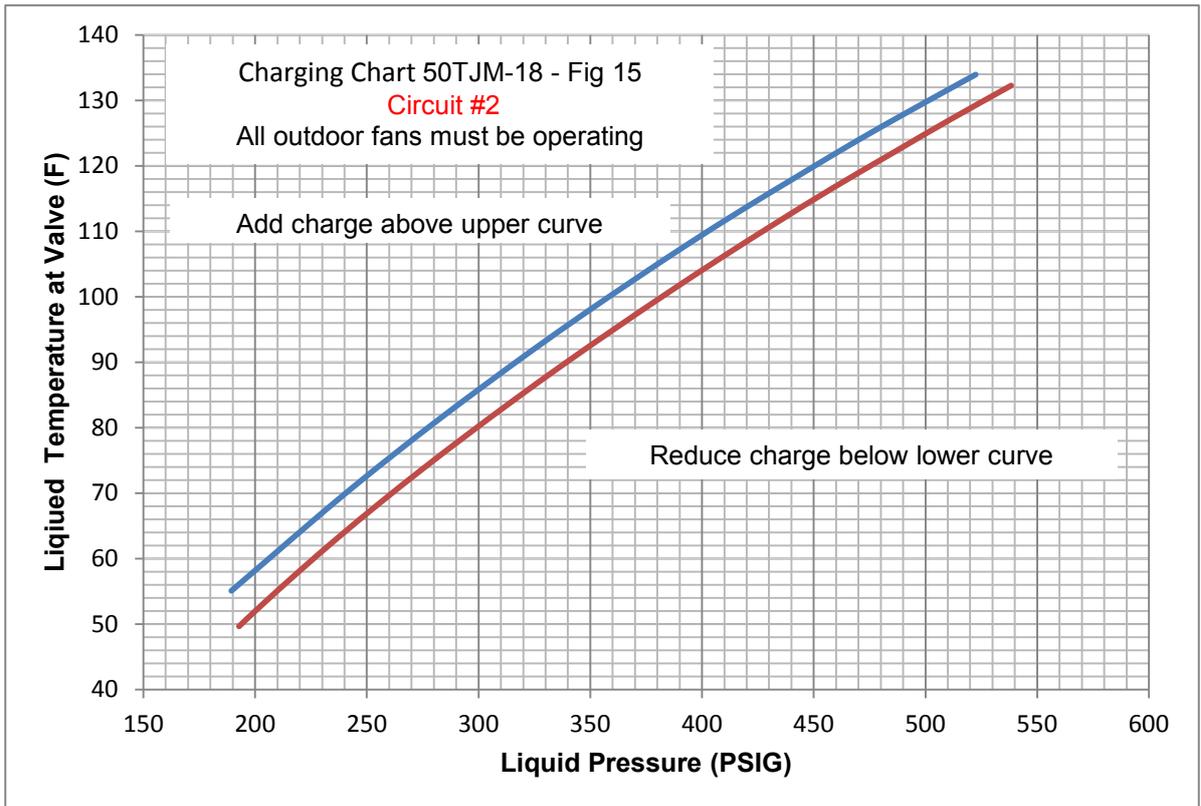


Fig - 15 Charging Chart for 50TJM - 18 (Circuit #2)

Charging Chart (Continued)

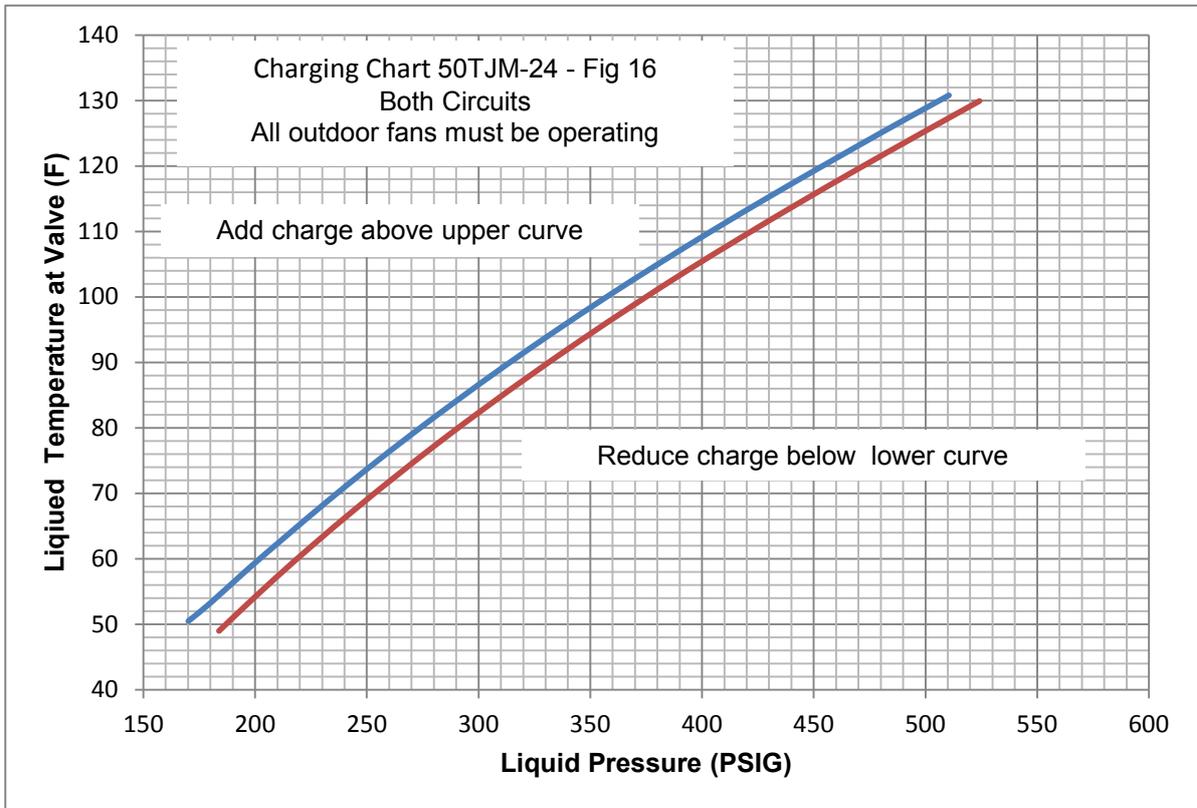


Fig - 16 Charging Chart for 50TJM - 24

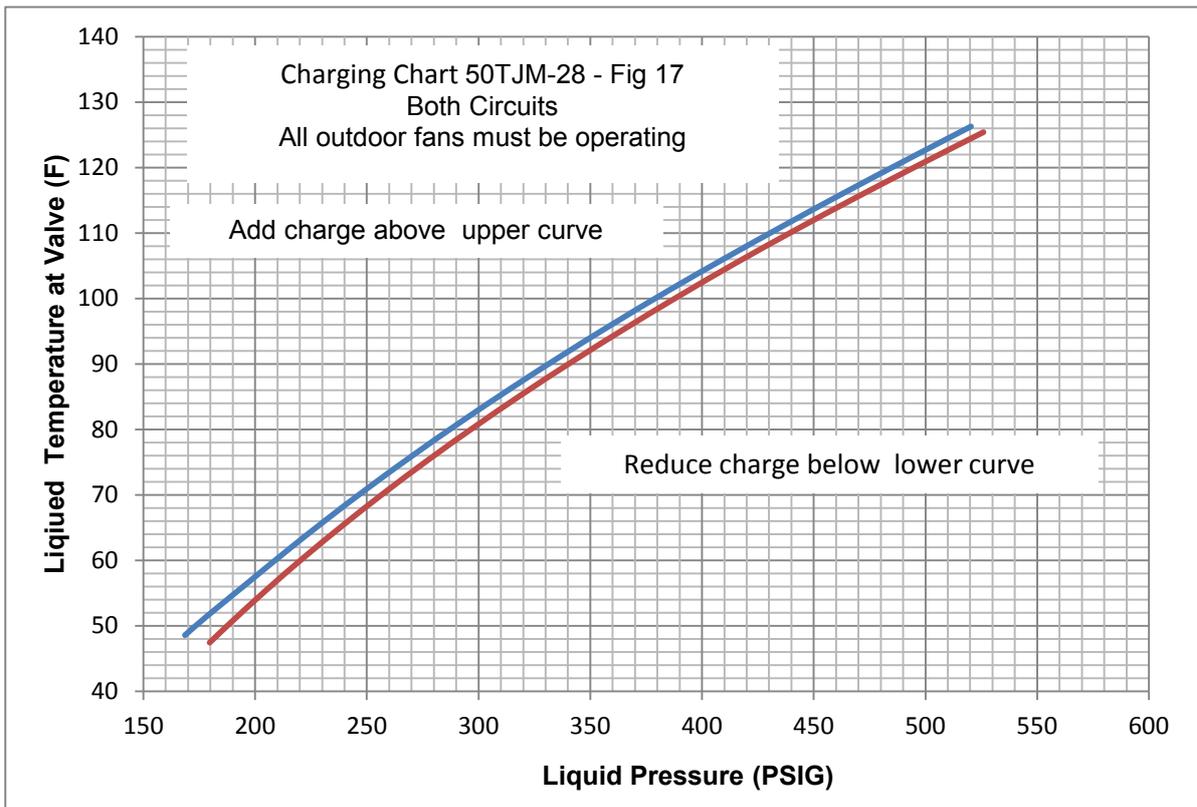


Fig - 17 Charging Chart for 50TJM - 28

Charging Chart (Continued)

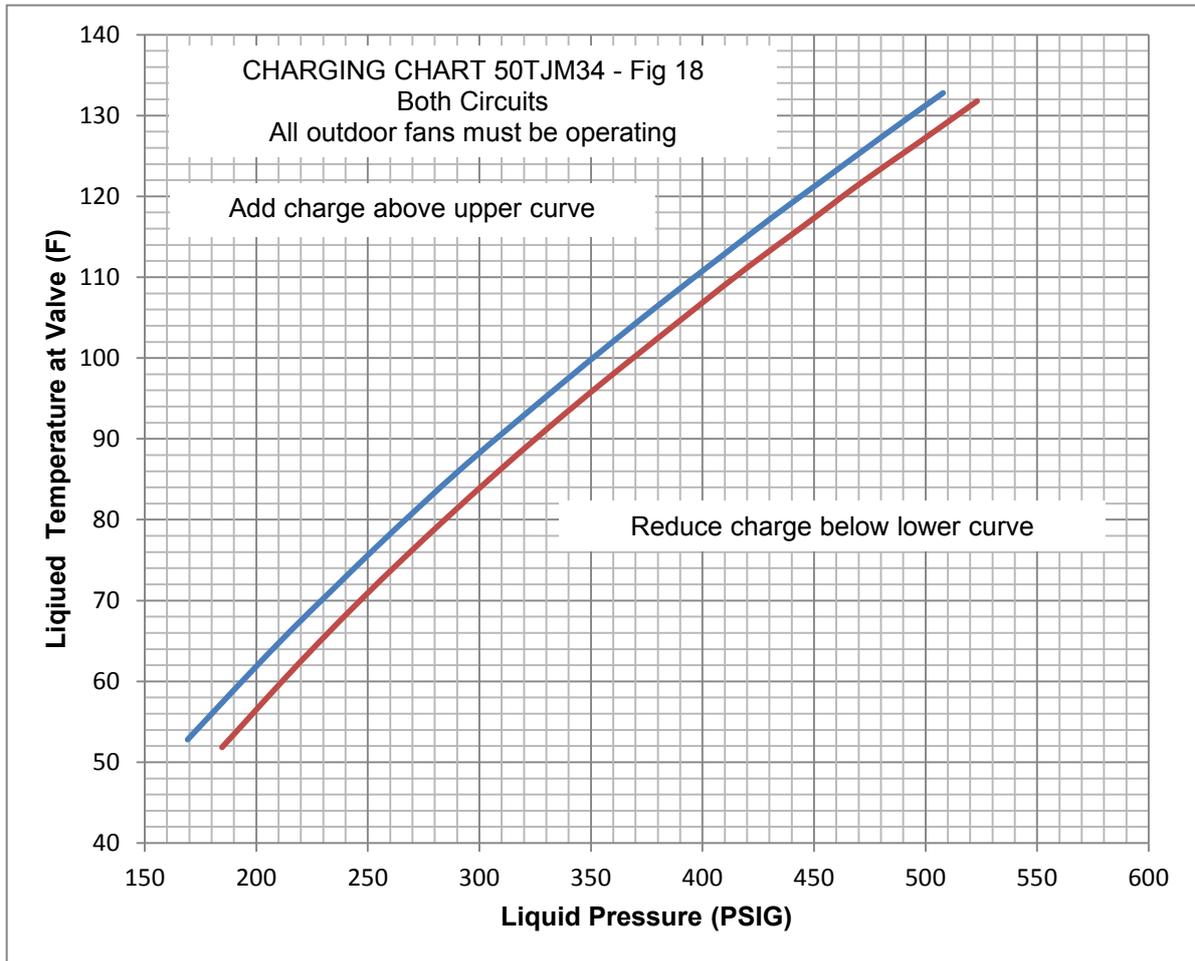


Fig - 18 Charging Chart for 50TJM - 34

ATTENTION INSTALLERS AND SERVICE TECHNICIANS!

R-410A Refrigerant Quick Reference Guide

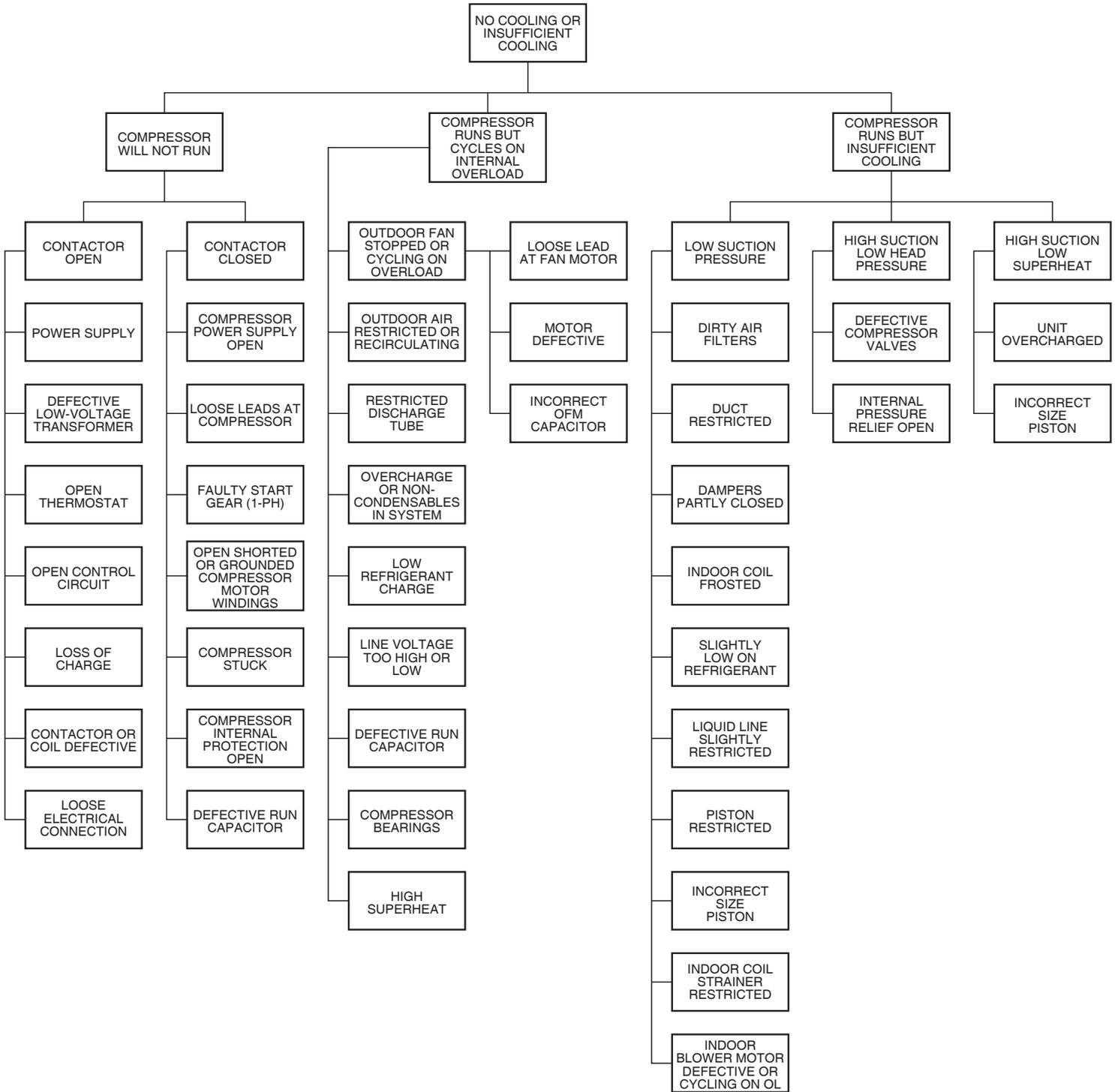
- R-410A refrigerant operates at 50-70 percent higher pressures than R-22. Be sure that servicing equipment and replacement components are designed to operate with R-410A refrigerant.
- R-410A refrigerant cylinders are rose colored.
- Recovery cylinder service pressure rating must be 400 psig, DOT 4BA400 or DOT BW400.
- R-410A refrigerant systems should be charged with liquid refrigerant. Use a commercial type metering device in the manifold hose when charging into suction line with compressor operating.
- Manifold sets should be 700 psig high side and 180 psig low side with 550 psig low-side retard.
- Use hoses with 700 psig service pressure rating.
- Leak detectors should be designed to detect HFC refrigerant.
- R-410A refrigerant, as with other HFCs, is only compatible with POE oils.
- Vacuum pumps will not remove moisture from oil.
- Do not use liquid-line filter driers with rated working pressures less than 600 psig.
- Do not leave R-410A refrigerant suction line filter driers in line longer than 72 hours.
- Do not install a suction-line filter drier in liquid-line.
- POE oils absorb moisture rapidly. Do not expose oil to atmosphere.
- POE oils may cause damage to certain plastics and roofing materials.
- Wrap all filter driers and service valves with wet cloth when brazing.
- A factory-approved liquid-line filter drier is required on every unit.
- Do NOT use an R-22 expansion device.
- If indoor unit is equipped with an R-22 expansion device, it must be changed to a hard-shutoff R-410A refrigerant expansion device.
- Never open system to atmosphere while it is under a vacuum.
- When system must be opened for service, recover refrigerant, evacuate then break vacuum with dry nitrogen and replace filter driers. Evacuate to 500 microns prior to recharging.
- All indoor coils must be installed with a hard-shutoff R-410A refrigerant expansion metering device.
- Do not vent R-410A refrigerant into the atmosphere.
- Do not use capillary tube coils.
- Observe all **warnings**, **cautions**, and **bold text**.

Troubleshooting Guide

Table 8 — Cooling Service Analysis

PROBLEM	CAUSE	REMEDY
Compressor and condenser fan will not start.	Power failure.	Call power company.
	Fuse blown or circuit breaker tripped.	Replace fuse or reset circuit breaker.
	Defective thermostat, contactor, transformer, or control relay.	Replace component.
	Insufficient line voltage.	Determine cause and correct.
	Incorrect or faulty wiring.	Check wiring diagram and rewire correctly.
	Thermostat setting too high.	Lower thermostat setting below room temperature.
Compressor will not start but condenser fan runs.	Faulty wiring or loose connections in compressor circuit.	Check wiring and repair or replace.
	Compressor motor burned out, seized, or internal overload open.	Determine cause. Replace compressor.
	Defective overload.	Determine cause and replace.
	Compressor locked out	Determine cause for safety trip and reset lockout.
	One leg of 3-phase power dead.	Replace fuse or reset circuit breaker. Determine cause.
Compressor cycles (other than normally satisfying thermostat).	Refrigerant overcharge or undercharge.	Recover refrigerant, evacuate system, and recharge to nameplate.
	Defective compressor.	Replace and determine cause.
	Insufficient line voltage.	Determine cause and correct.
	Blocked condenser.	Determine cause and correct.
	Defective overload.	Determine cause and replace.
	Defective thermostat.	Replace thermostat.
	Faulty condenser-fan motor.	Replace.
	Restriction in refrigerant system.	Locate restriction and remove.
Compressor operates continuously.	Dirty air filter.	Replace filter.
	Unit undersized for load.	Decrease load or increase unit size.
	Thermostat set too low.	Reset thermostat.
	Low refrigerant charge.	Locate leak, repair, and recharge.
	Air in system.	Recover refrigerant, evacuate system, and recharge.
	Condenser coil dirty or restricted.	Clean coil or remove restriction.
Excessive head pressure.	Dirty drier filter.	Replace filter.
	Dirty condenser coil.	Clean coil.
	Refrigerant overcharged.	Recover excess refrigerant.
	Faulty TXV.	1. Check TXV bulb mounting and secure tightly to suction line. 2. Replace TXV if stuck open or closed.
	Air in system.	Recover refrigerant, evacuate system, and recharge.
	Condenser air restricted or air short-cycling.	Determine cause and correct.
Head pressure too low.	Low refrigerant charge.	Check for leaks, repair, and recharge.
	Restriction in liquid tube.	Remove restriction.
Excessive suction pressure.	High heat load.	Check for source and eliminate.
	Faulty TXV.	1. Check TXV bulb mounting and secure tightly to suction line. 2. Replace TXV if stuck open or closed.
	Refrigerant overcharged.	Recover excess refrigerant.
Suction pressure too low.	Dirty air filter.	Replace filter.
	Low refrigerant charge.	Check for leaks, repair, and recharge.
	Metering device or low side restricted.	Remove source of restriction.
	Faulty TXV.	1. Check TXV bulb mounting and secure tightly to suction line. 2. Replace TXV if stuck open or closed.
	Insufficient evaporator airflow.	Increase air quantity. Check filter and replace if necessary.
	Temperature too low in conditioned area.	Reset thermostat.
Field-installed filter drier restricted.	Replace.	

Air Conditioner Troubleshooting Chart



START-UP CHECKLIST

(Remove and Store in Job File)

I. PRELIMINARY INFORMATION

MODEL NO: _____

DATE: _____

SERIAL NO: _____

TECHNICIAN: _____

II. PRE-START-UP (Insert checkmark in box as each item is completed)

- 1) ALL PACKING MATERIALS HAVE BEEN REMOVED FROM THE UNIT.
- 2) VERIFY THAT UNIT INSTALLATION IS LEVEL.
- 3) CONDENSATE CONNECTION IS INSTALLED PER INSTALLATION INSTRUCTION.
- 4) UNIT GROUNDING WIRE HAS BEEN CONNECTED.
- 5) POWER WIRES HAVE BEEN SIZED AND INSTALLED PROPERLY TO THE UNIT.
- 6) CONTROL WIRING CONNECTIONS HAVE BEEN INSTALLED PROPERLY.
- 7) CHECK ALL WIRING TERMINALS HAVE BEEN TIGHTENED PROPERLY.
- 8) ENERGIZE CRANKCASE HEATERS FOR 12 HOURS.
- 9) CORRECT FAN ROTATION HAS BEEN CONFIRMED.
- 10) SEALED ALL POWER AND CONTROL WIRES ENTRY INTO THE UNIT AND INSIDE THE BOX

III. START - UP

ELECTRICAL:

SUPPLY VOLTAGE: (L1 - L2): _____ (L2 - L3): _____ (L3 - L1): _____

COMPRESSOR - 1 AMPS: (L1): _____ (L2): _____ (L3): _____

COMPRESSOR - 2 AMPS: (L1): _____ (L2): _____ (L3): _____

INDOOR FAN AMPS: (L1): _____ (L2): _____ (L3): _____

TEMPERATURES: (BOTH CIRCUITS OPERATING)

OUTDOOR AIR: _____ : DB

INDOOR SECTION ENTERING AIR: _____ : DB _____ : WB

INDOOR SECTION LEAVING AIR: _____ : DB _____ : WB

PRESSURES:

CIRCUIT - 1

REFRIGERANT SUCTION _____ :PSIG REFRIGERANT DISCHARGE _____ :PSIG

CIRCUIT - 2

REFRIGERANT SUCTION _____ :PSIG REFRIGERANT DISCHARGE _____ :PSIG

VERIFY REFRIGERANT CHARGE USING CHARGING CHART PROVIDED IN THIS DOCUMENT.

Notes:

(Tear Along This Line)

NOTES

