

Service Facts

Split System Cooling

4TWA3036B3000A, 4TWA3042B3000A,
4TWA3048B3000B, 4TWA3060B3000A

⚠ CAUTION

UNIT CONTAINS R-410A REFRIGERANT!
R-410A OPERATING PRESSURE EXCEEDS THE LIMIT OF R-22. PROPER SERVICE EQUIPMENT IS REQUIRED. FAILURE TO USE PROPER SERVICE

SERVICE
USE ONLY R-410A REFRIGERANT AND APPROVED POE COMPRESSOR OIL.

IMPORTANT — This document contains a wiring diagram, a parts list, and service information. This is customer property and is to remain with this unit. Please return to service information pack upon completion of work.

⚠ WARNING: HAZARDOUS VOLTAGE - DISCONNECT POWER and DISCHARGE CAPACITORS BEFORE SERVICING

PRODUCT SPECIFICATIONS

OUTDOOR UNIT ①②	4TWA3036B3000A	4TWA3042B3000A	4TWA3048B3000B	4TWA3060B3000A
POWER CONNS. — V/PH/Hz ③	208/230/3/60	208/230/3/60	208/230/3/60	208/230/3/60
MIN. BRCH. CIR. AMPACITY	14	18	18	20
BR CIR PROT RTG - MAX. (AMPS)	20	30	30	35
COMPRESSOR	SCROLL	SCROLL	SCROLL	SCROLL
NO. USED - NO. SPEEDS	1 - 1	1 - 1	1 - 1	1 - 1
VOLTS/PH/Hz	208/230/3/60	208/230/3/60	208/230/3/60	208/230/3/60
R.L. AMPS ⑦ - L.R. AMPS	10.4 - 73	13.6 - 83	13.7 - 83	15.6 - 110
FACTORY INSTALLED				
START COMPONENTS ⑧	NO	NO	NO	NO
INSUL/SOUND BLANKET	NO	NO	NO	NO
COMPRESSOR HEAT	YES	YES	YES	YES
OUTDOOR FAN	PROPELLER	PROPELLER	PROPELLER	PROPELLER
DIA. (IN.) - NO. USED	27.6 - 1	27.6 - 1	27.6 - 1	27.6 - 1
TYPE DRIVE - NO. SPEEDS	DIRECT - 1	DIRECT - 1	DIRECT - 1	DIRECT - 1
CFM @ 0.0 IN. W.G. ④	4385	4395	4400	4760
NO. MOTORS - HP	1 - 1/5	1 - 1/5	1 - 1/6	1 - 1/5
MOTOR SPEED R.P.M.	850	850	835	850
VOLTS/PH/Hz	200/230/1/60	200/230/1/60	200/230/1/60	200/230/1/60
F.L. AMPS	.93	.93	1.30	.93
OUTDOOR COIL — TYPE	SPINE FIN™	SPINE FIN™	SPINE FIN™	SPINE FIN™
ROWS - F.P.I.	1 - 24	1 - 24	1 - 24	1 - 24
FACE AREA (SQ. FT.)	21.99	21.99	27.86	27.86
TUBE SIZE (IN.)	3/8	3/8	3/8	3/8
REFRIGERANT				
LBS — R-410A (O.D. UNIT) ⑤	7 LBS., 14 OZ.	7 LBS., 7 OZ.	8 LBS., 10 OZ.	8 LBS., 14 OZ.
FACTORY SUPPLIED	YES	YES	YES	YES
LINE SIZE - IN. O.D. GAS ⑥	3/4	3/4	7/8	7/8
LINE SIZE - IN. O.D. LIQ. ⑥	3/8	3/8	3/8	3/8
CHARGING SPECIFICATION				
SUBCOOLING	10°F	8°F	10°F	8°F
DIMENSIONS	H X W X D	H X W X D	H X W X D	H X W X D
CRATED (IN.)	38.4 x 35.1 x 38.7	38.4 x 35.1 x 38.7	46.4 x 35.1 x 38.7	46.4 x 35.1 x 38.7
WEIGHT				
SHIPPING (LBS.)	228	248	279	280
NET (LBS.)	197	214	243	244

TUBING INFORMATION

LINE TYPE		REFRIGERANT TO ADD AT SPECIFIED ADDITIONAL LENGTH				
Suction	Liquid	20 ft	30 ft	40 ft	50 ft	60 ft
3/4"	3/8"	3 oz	9 oz	15 oz	21 oz	27 oz
7/8"	3/8"	3 oz	9 oz	16 oz	22 oz	28 oz

- ① Certified in accordance with the Air-Source Unitary Air-conditioner Equipment certification program, which is based on AHRI standard 210/240.
- ② Rated in accordance with AHRI standard 270.
- ③ Calculated in accordance with Natl. Elec. Codes. Use only HACR circuit breakers or fuses.
- ④ Standard Air — Dry Coil — Outdoor
- ⑤ This value approximate. For more precise value see unit nameplate.
- ⑥ Max. linear length 60 ft.; Max. lift - Suction 60 ft.; Max lift - Liquid 60 ft. For greater length consult refrigerant piping software Pub. No. 32-3312-0* (* denotes latest revision).
- ⑦ This value shown for compressor RLA on the unit nameplate and on this specification sheet is used to compute minimum branch circuit ampacity and max. fuse size. The value shown is the branch circuit selection current.
- ⑧ No means no start components. Yes means quick start kit components. PTC means positive temperature coefficient starter.

⚠ CAUTION

**HOT SURFACE!
DO NOT TOUCH TOP OF**

⚠ CAUTION

**CONTAINS REFRIGERANT!
SYSTEM CONTAINS OIL AND REFRIGERANT UNDER HIGH PRESSURE. RECOVER REFRIGERANT TO RELIEVE PRESSURE BEFORE OPENING SYSTEM.**

⚠ WARNING

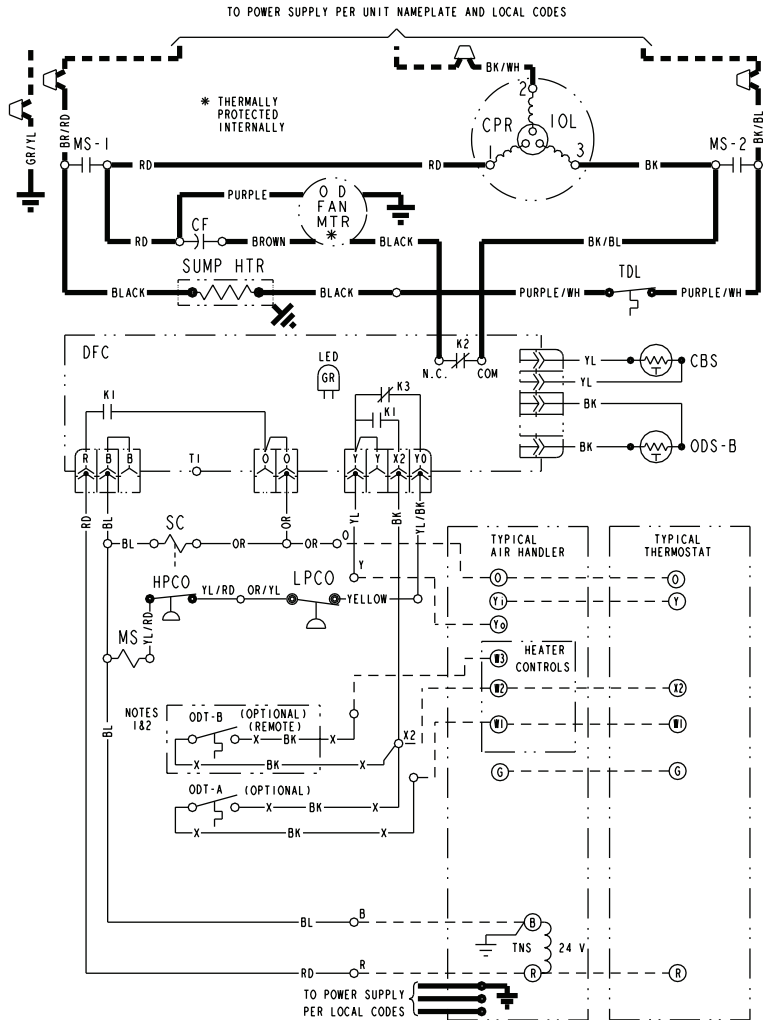
THIS INFORMATION IS INTENDED FOR USE BY INDIVIDUALS POSSESSING ADEQUATE BACKGROUNDS OF ELECTRICAL AND MECHANICAL EXPERIENCE. ANY ATTEMPT TO REPAIR A CENTRAL AIR CONDITIONING PRODUCT MAY RESULT IN PERSONAL INJURY AND OR PROPERTY DAMAGE. THE MANUFACTURER OR SELLER CANNOT BE RESPONSIBLE FOR THE INTERPRETATION OF THIS INFORMATION, NOR CAN IT ASSUME ANY LIABILITY IN CONNECTION WITH ITS USE.

⚠ CAUTION

RECONNECT ALL GROUNDING DEVICES. ALL PARTS OF THIS PRODUCT CAPABLE OF CONDUCTING ELECTRICAL CURRENT ARE GROUNDED. IF GROUNDING WIRES, SCREWS, STRAPS, CLIPS, NUTS OR WASHERS USED TO COMPLETE A PATH TO GROUND ARE REMOVED FOR SERVICE, THEY MUST BE RETURNED TO THEIR ORIGINAL POSITION AND PROPERLY FASTENED.

NOTICE: The manufacturer has a policy of continuous product and product data improvement and it reserves the right to change design and specifications without notice.

SCHEMATIC DIAGRAM



- | | |
|---------------------------------|--------------------------------|
| CA COOLING ANTICIPATOR | LPCO LOW PRESSURE CUTOFF SW. |
| CBS COIL BOTTOM SENSOR | MS COMPRESSOR MOTOR CONTACTOR |
| CF FAN CAPACITOR | ODA OUTDOOR ANTICIPATOR |
| CN WIRE CONNECTOR | OFT OUTDOOR FAN THERMOSTAT |
| CPR COMPRESSOR | ODS OUTDOOR TEMPERATURE SENSOR |
| CR RUN CAPACITOR | ODT OUTDOOR THERMOSTAT |
| CS STARTING CAPACITOR | RHS RESISTANCE HEAT SWITCH |
| CSR CAPACITOR SWITCHING RELAY | SC SWITCHOVER VALVE SOLENOID |
| DFC DEFROST CONTROL | SM SYSTEM "ON-OFF" SWITCH |
| F INDOOR FAN RELAY | TDL DISCHARGE LINE THERMOSTAT |
| HA HEATING ANTICIPATOR | TNS TRANSFORMER |
| HPCO HIGH PRESSURE CUTOFF SW. | TS HEATING-COOLING THERMOSTAT |
| IOL INTERNAL OVERLOAD PROTECTOR | TSH HEATING THERMOSTAT |

<p>⚠ WARNING HAZARDOUS VOLTAGE! DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING. FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH!</p>	<p>⚠ CAUTION USE COPPER CONDUCTORS ONLY! UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS. FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT!</p>
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- COLOR OF WIRE**
BK/BL BLACK WIRE WITH BLUE MARKER
COLOR OF MARKER
- | | | |
|----------|-----------|-----------|
| BK BLACK | OR ORANGE | YL YELLOW |
| BL BLUE | RD RED | GR GREEN |
| BR BROWN | WH WHITE | PR PURPLE |

NOTES:

1. IF ODT-B IS NOT USED, ADD JUMPER BETWEEN W2 & W3 AT AIR HANDLER.
IF USED, ODT-B MUST BE MOUNTED REMOTE OF CONTROL BOX IN AN APPROVED WEATHER PROOF ENCLOSURE.
2. IF ODT-A IS NOT USED, ADD JUMPER BETWEEN W1 & W2 AT AIR HANDLER.
3. LOW VOLTAGE (24 V.) FIELD WIRING MUST BE 18 AWG MIN.

NOTE
THREE PHASE MOTOR (S) FACTORY SUPPLIED IN THIS EQUIPMENT PROTECTED UNDER PRIMARY SINGLE-PHASE CONDITIONS.

SUBCOOLING CHARGING IN COOLING ABOVE 55°F OD AMBIENT

The manufacturer recommends installing approved matched indoor and outdoor systems.

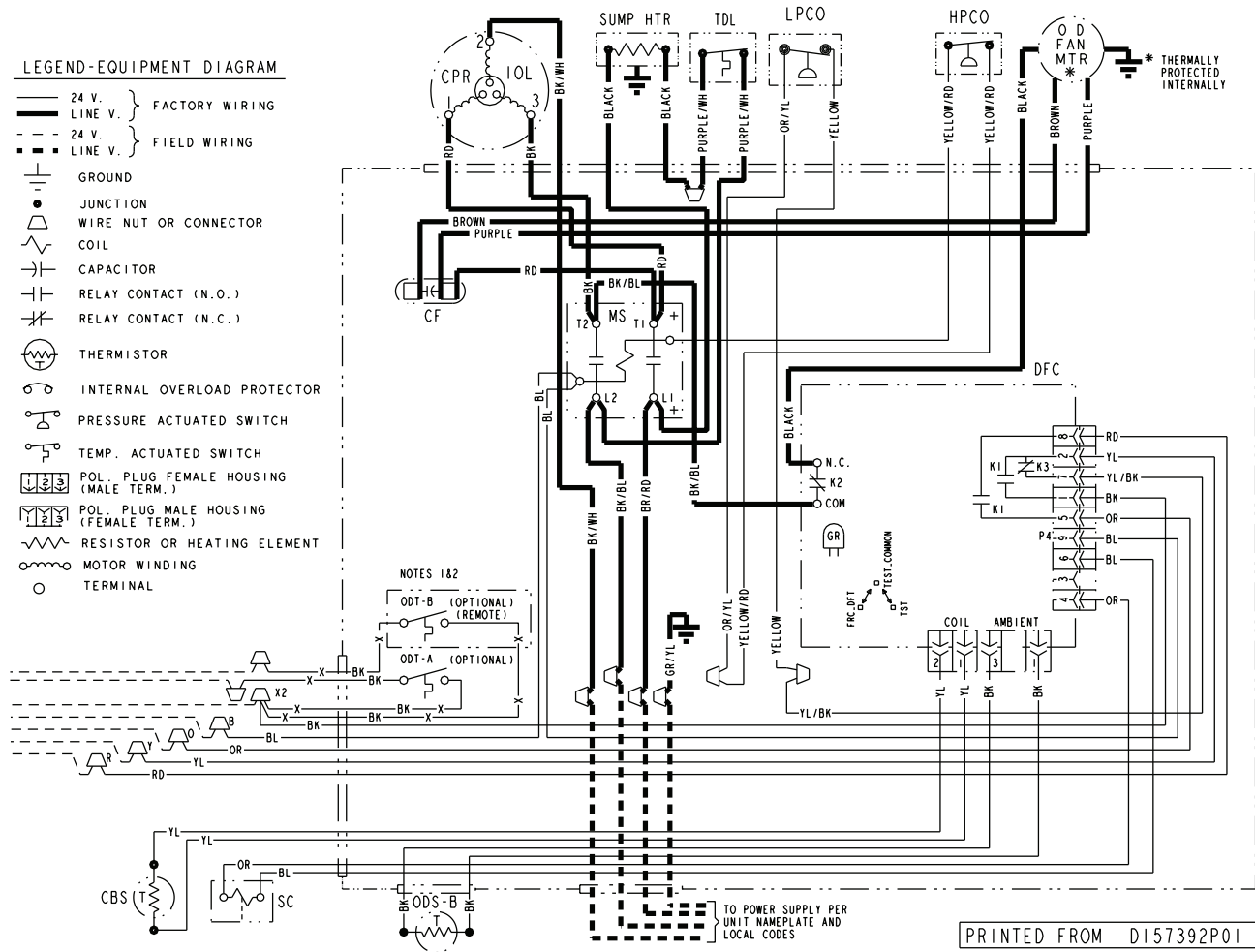
All split systems are AHRI rated with only EEV/TXV indoor systems.

The benefits of installing approved indoor and outdoor split systems are maximum efficiency, optimum performance and the best overall system reliability.

The following charging methods are therefore prescribed for systems with indoor EEV/TXVs.

1. Subcooling (in the cooling mode) is the only recommended method of charging above 55°F ambient temperatures.
2. For best results - the indoor temperature should be kept between 70°F to 80°F. Add system heat if needed.
3. At start-up, or whenever charge is removed or added, the system must be operated for a minimum twenty (20) minutes to stabilize before accurate measurements can be made.
4. Measure Liquid Line Temperature and Refrigerant Pressure at service valves.
5. Determine total refrigerant line length, and height (lift) if indoor section is above the condenser. Use the **Subcool Charging Chart Corrections Table** to calculate any additional subcooling required for your specific application.
6. Determine the Design Subcooling from the unit nameplate or Service Facts. Add any additional amount of subcooling calculated in Step 5 to the Design Subcooling to arrive at the final subcooling value.
7. Locate this value in the appropriate column of the **R-410-A Refrigerant Charging Chart**. Locate your liquid line temperature in the left column of the chart, and the intersecting liquid line pressure under your calculated subcooling value column. Add refrigerant to raise the pressure to match the chart, or remove refrigerant to lower the pressure. Again, wait twenty (20) minutes for the system conditions to stabilize before adjusting charge again.
8. When system is correctly charged, you can refer to System Pressure Tables to verify typical performance.

WIRING DIAGRAM



SUBCOOLING CHARGING BELOW 55°F OD AMBIENT – IN HEATING ONLY

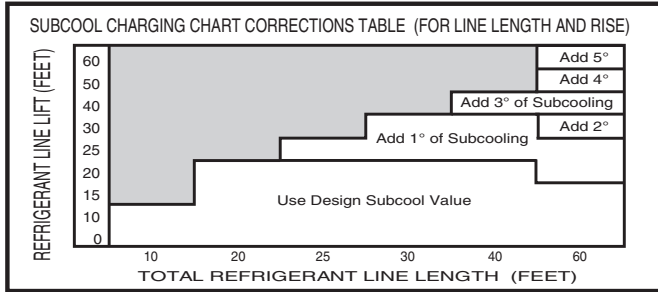
1. The Subcool Charging Method in cooling is not recommended below 55°F outdoor ambient.
2. The only recommended method of charging at outdoor ambients below 55°F, is to weigh in the charge in the heating mode.
3. Use Nameplate charge plus standard charge adders for line length.
4. Check liquid line temperature and pressure (at the OD valves) to obtain a minimum of 10°F subcooling.
5. Add charge if a minimum of 10°F subcooling is not obtained with the nameplate charge plus line length correction.
6. It is important to return in the spring or summer to accurately charge the system in the cooling mode at outdoor ambients above 55°F.

R-410A REFRIGERANT CHARGING CHART							
LIQUID TEMP (°F)	DESIGN SUBCOOLING (°F)						
	8	9	10	11	12	13	14
LIQUID GAGE PRESSURE (PSI)							
55	179	182	185	188	191	195	198
60	195	198	201	204	208	211	215
65	211	215	218	222	225	229	232
70	229	232	236	240	243	247	251
75	247	251	255	259	263	267	271
80	267	271	275	279	283	287	291
85	287	291	296	300	304	309	313
90	309	313	318	322	327	331	336
95	331	336	341	346	351	355	360
100	355	360	365	370	376	381	386
105	381	386	391	396	402	407	413
110	407	413	418	424	429	435	441
115	435	441	446	452	458	464	470
120	464	470	476	482	488	495	501
125	495	501	507	514	520	527	533

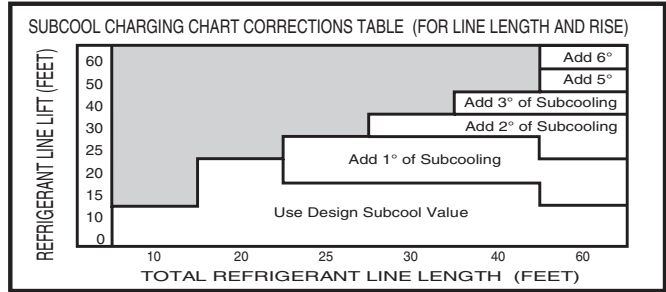
Refer to Service Facts or Installer's Guide for charging method.

From Dwg. D154557P01 Rev. 2

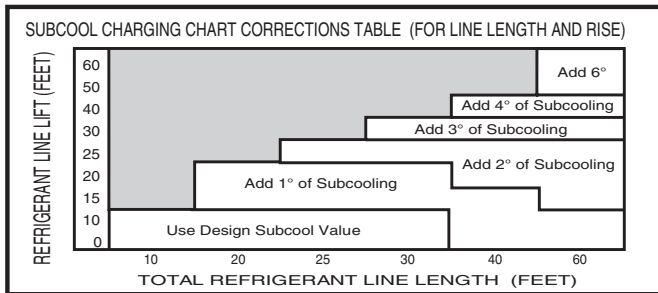
3 Ton



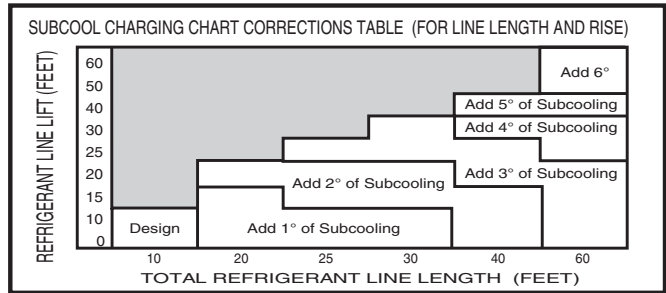
3 1/2 Ton



4 Ton



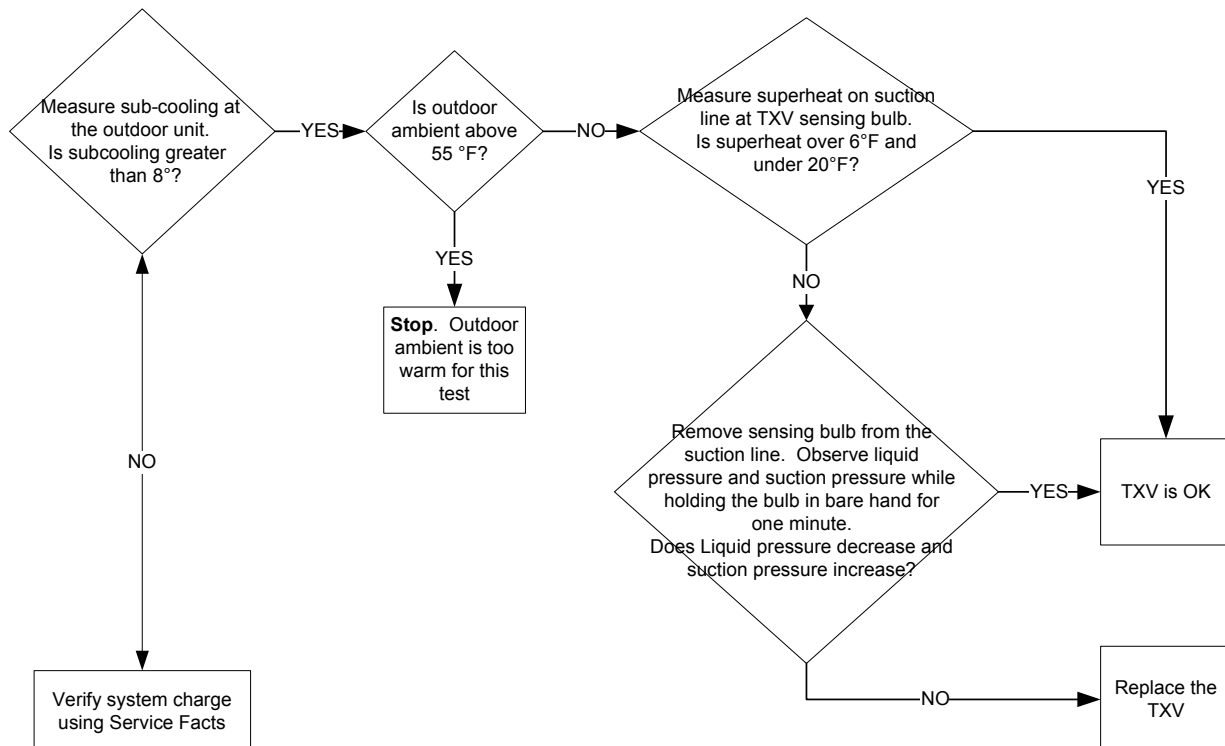
5 Ton



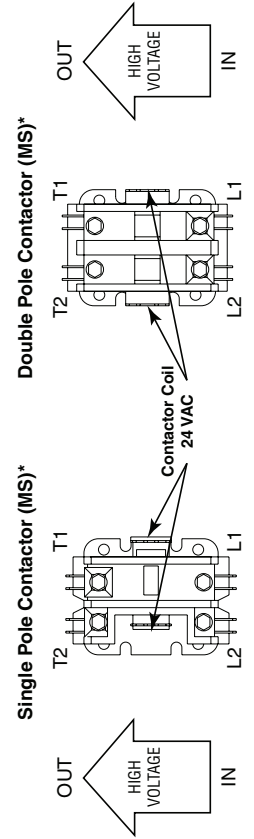
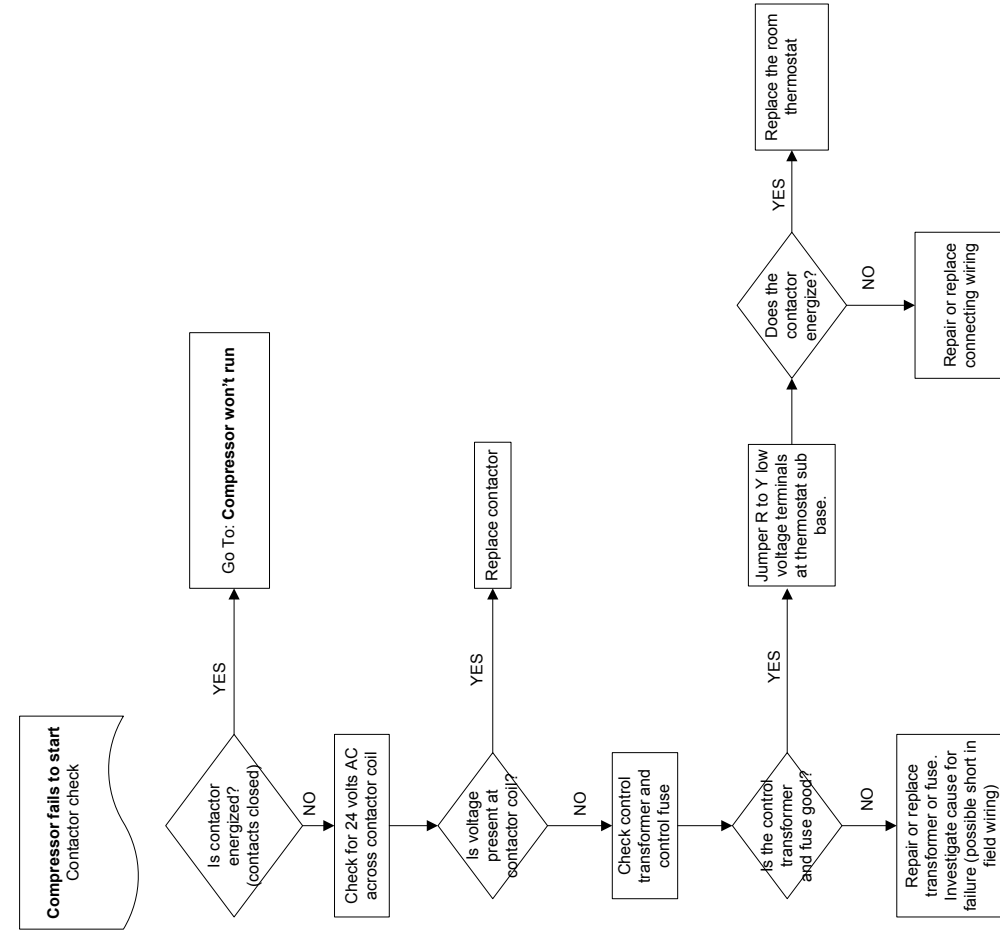
TROUBLESHOOTING

Before starting, insure proper fan motor operation and both indoor and outdoor coils are clean and clear of ice.

Troubleshooting Outdoor TXV / Heating Mode

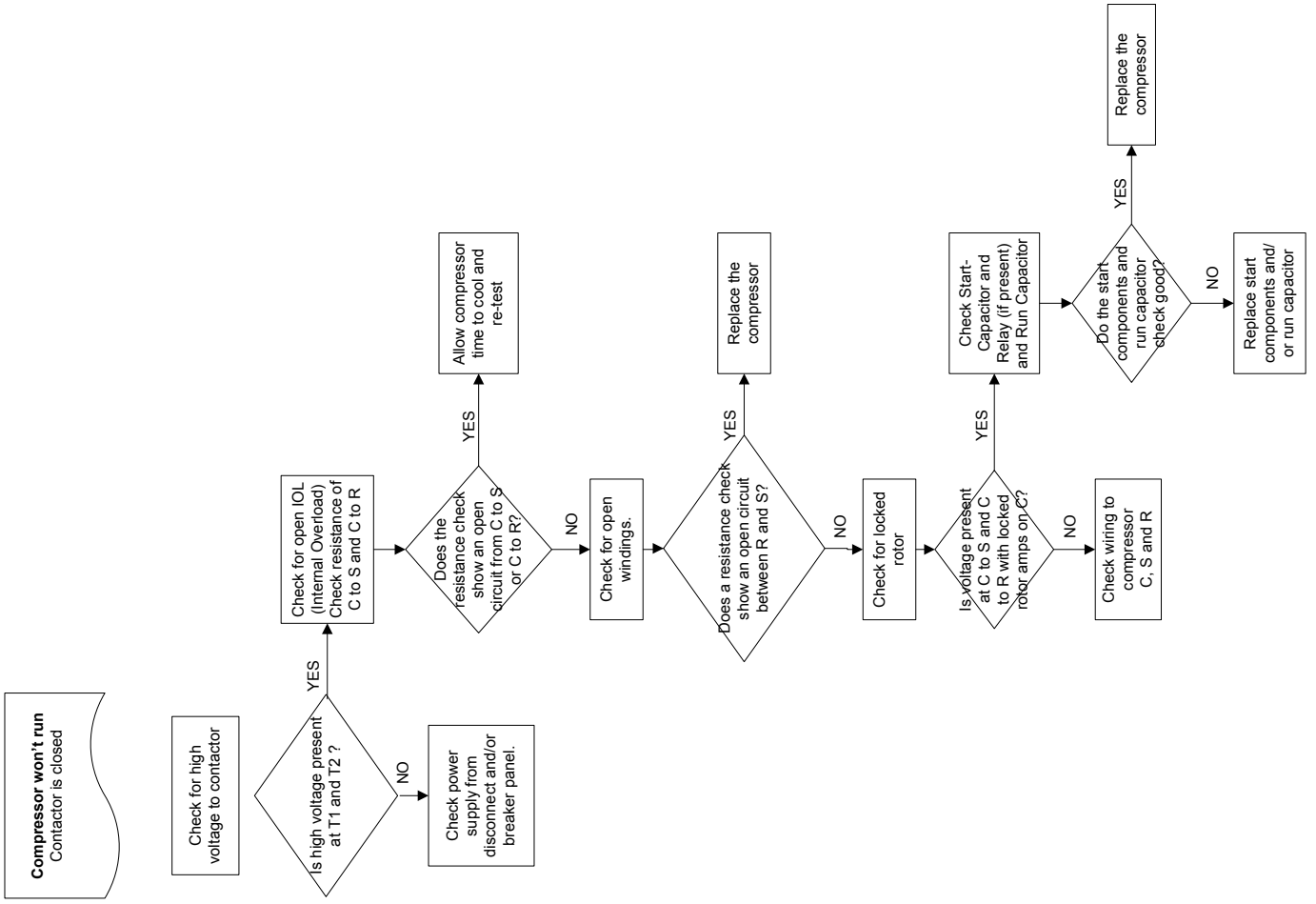


TROUBLESHOOTING



*Refer to Wiring Diagram to determine if a single pole or double pole contactor is used.

TROUBLESHOOTING



DEFROST TERMINATION TEMPERATURE

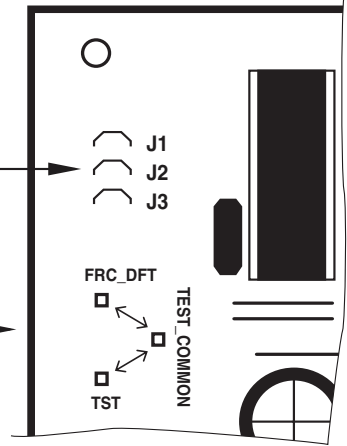
Defrost Termination Temperatures		
	Outdoor Temperature	Termination Temperature
As Shipped	>22°F	47°F
	10°F–22°F	ODT + 25°F
	6°F–10°F	35°F
Cut Jumper 2	>30°F	47°F
	6°F–30°F	70°F
All	< 6°F	12 min. or 35°F every 3 hrs.

Defrost controls have a selectable termination temperature. Cutting jumper J2 (shown below) will achieve a termination temperature of 70° when the ambient temperature is below 30° (see table at left).

Defrost Board Detail

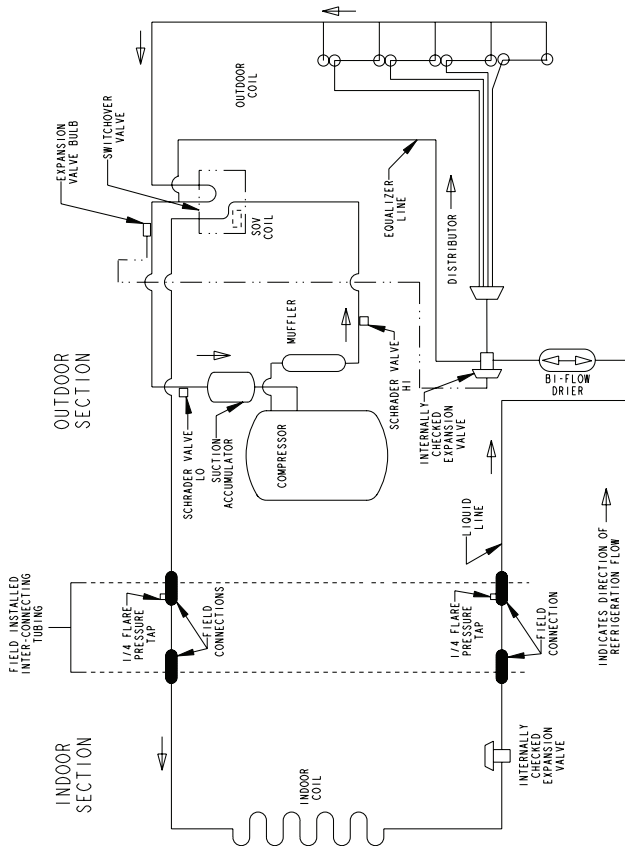
JUMPER 2

TEST PINS

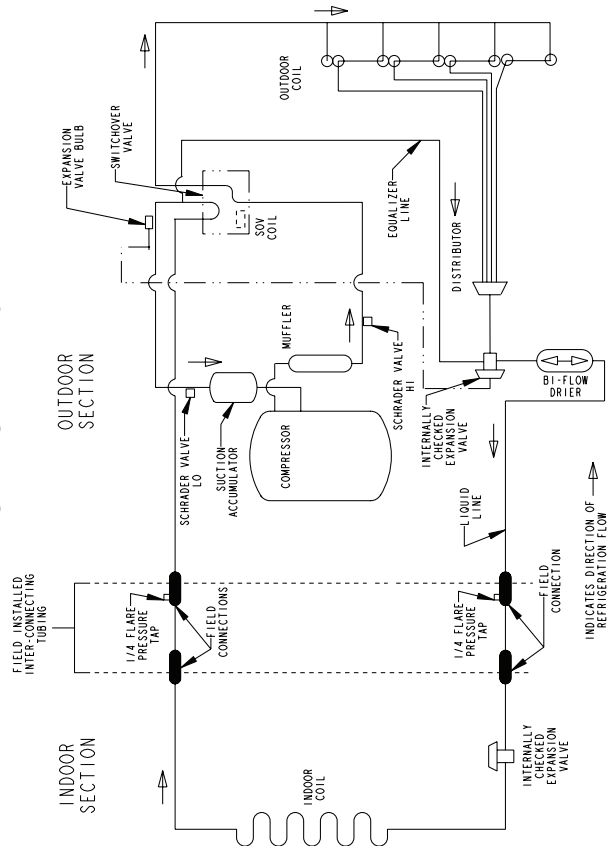


REFRIGERANT CIRCUITS

Heating Refrigeration Cycle

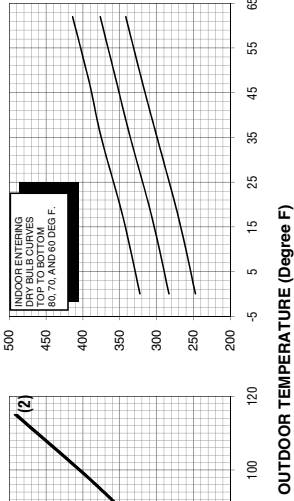


Cooling Refrigeration Cycle

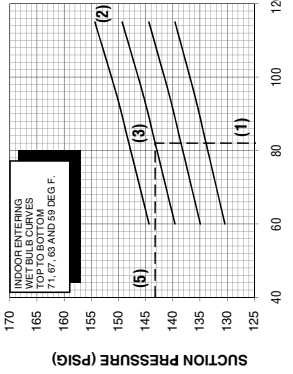
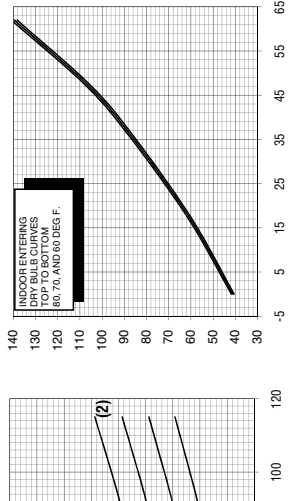
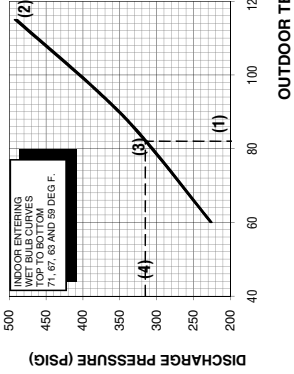


PRESSURE CURVES FOR 4TWA3036B3/4

TEM3A0C42S41+TDR
Heating @ 1350 SCFM



TEM3A0C42S41+TDR
Cooling @ 1350 SCFM



OUTDOOR TEMPERATURE (Degree F)

COOLING PERFORMANCE CAN BE CHECKED WHEN THE OUTDOOR TEMP IS ABOVE 65 DEG F.
TO CHECK COOLING PERFORMANCE, SELECT THE PROPER INDOOR CFM, ALLOW PRESSURES TO STABILIZE. MEASURE INDOOR WET BULB TEMPERATURE, OUTDOOR TEMPERATURE, DISCHARGE AND SUCTION PRESSURES. ON THE PLOTS LOCATE OUTDOOR TEMPERATURE (1); LOCATE INDOOR WET BULB (2); FIND INTERSECTION OF OD TEMP. & I.D.W.B. (3); READ DISCHARGE OR SUCTION PRESSURE IN LEFT COLUMN (4) or (5).

EXAMPLE: (1) OUTDOOR TEMP. 82 F.
(2) INDOOR WET BULB 67 F.
(3) AT INTERSECTION
(4) DISCHARGE PRESSURE @ 1350 CFM IS 315 PSIG.
(5) SUCTION PRESSURE @ 1350 CFM IS 143 PSIG.

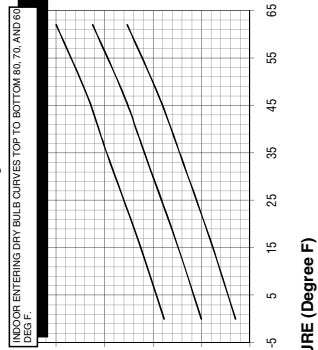
ACTUAL:
DISCHARGE PRESSURE SHOULD BE +/- 10 PSI OF CHART
SUCTION PRESSURE SHOULD BE +/- 3 PSIG OF CHART

INTERCONNECTING LINES
GAS - 3/4" O.D.
LIQUID - 3/8" O.D.

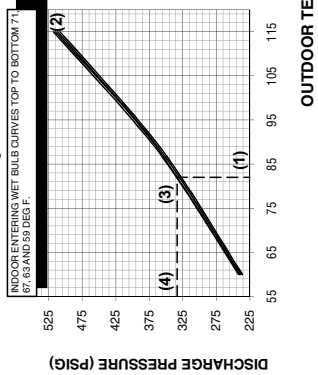
DWG. NO. 4TWA3036B3/4

PRESSURE CURVES FOR 4TWA3042B3/4

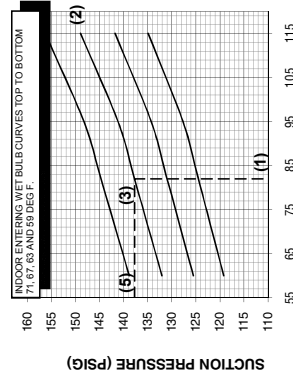
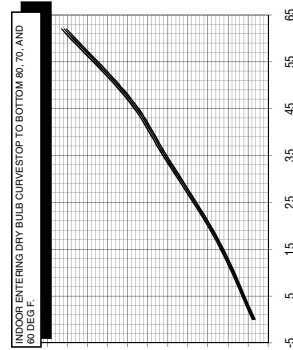
TAM4A0B42S31
Heating



TAM4A0B42S31
Cooling



OUTDOOR TEMPERATURE (Degree F)



OUTDOOR TEMPERATURE (Degree F)

COOLING PERFORMANCE CAN BE CHECKED WHEN THE OUTDOOR TEMP IS ABOVE 65 DEG F.
TO CHECK COOLING PERFORMANCE, SELECT THE PROPER INDOOR CFM, ALLOW PRESSURES TO STABILIZE. MEASURE INDOOR WET BULB TEMPERATURE, OUTDOOR TEMPERATURE, DISCHARGE AND SUCTION PRESSURES. ON THE PLOTS LOCATE OUTDOOR TEMPERATURE (1); LOCATE INDOOR WET BULB (2); FIND INTERSECTION OF OD TEMP. & I.D.W.B. (3); READ DISCHARGE OR SUCTION PRESSURE IN LEFT COLUMN (4) or (5).

EXAMPLE: (1) OUTDOOR TEMP. 82 F.
(2) INDOOR WET BULB 67 F.
(3) AT INTERSECTION
(4) DISCHARGE PRESSURE IS 333 PSIG
(5) SUCTION PRESSURE IS 138 PSIG

ACTUAL:
DISCHARGE PRESSURE SHOULD BE +/- 10 PSIG OF CHART
SUCTION PRESSURE SHOULD BE +/- 3 PSIG OF CHART

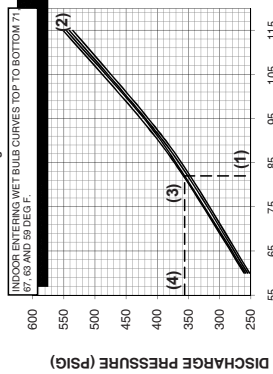
INTERCONNECTING LINES
GAS - 3/4" O.D.
LIQUID - 3/8" O.D.

DWG. NO. 4TWA3042B3/4

PRESSURE CURVES FOR 4TWA3060B3/4

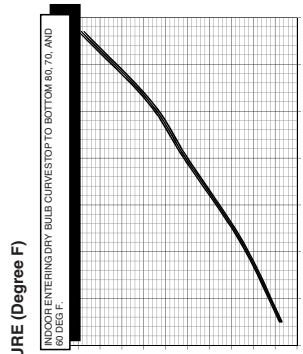
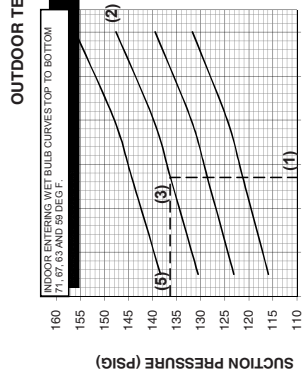
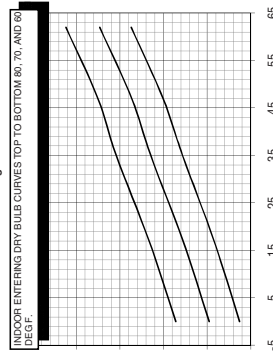
TAM4A0C60S51

Cooling



TAM4A0C60S51

Heating



OUTDOOR TEMPERATURE (Degree F)

COOLING PERFORMANCE CAN BE CHECKED WHEN THE OUTDOOR TEMP IS ABOVE 65 DEG F. TO CHECK COOLING PERFORMANCE, SELECT THE PROPER INDOOR CFM, ALLOW PRESSURES TO STABILIZE. MEASURE INDOOR WET BULB TEMPERATURE, OUTDOOR TEMPERATURE, DISCHARGE AND SUCTION PRESSURES. ON THE PLOTS LOCATE OUTDOOR TEMPERATURE (1); LOCATE INDOOR WET BULB (2); FIND INTERSECTION OF OD TEMP. & ID W.B. (3); READ DISCHARGE OR SUCTION PRESSURE IN LEFT COLUMN (4) or (5).

- EXAMPLE: (1) OUTDOOR TEMP. 82 F.
 (2) INDOOR WET BULB 67 F.
 (3) AT INTERSECTION
 (4) DISCHARGE PRESSURE IS 356 PSIG
 (5) SUCTION PRESSURE IS 136 PSIG

INTERCONNECTING LINES
 GAS - 7/8" O.D.
 LIQUID - 3/8" O.D.

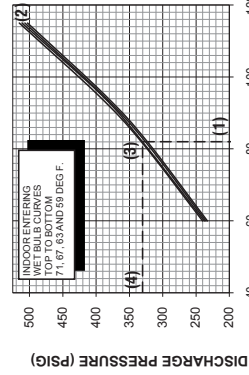
- ACTUAL:
 DISCHARGE PRESSURE SHOULD BE +/- 10 PSIG OF CHART
 SUCTION PRESSURE SHOULD BE +/- 3 PSIG OF CHART

DWG.NO. 4TWA3060B3/4

PRESSURE CURVES FOR 4TWA3048B4

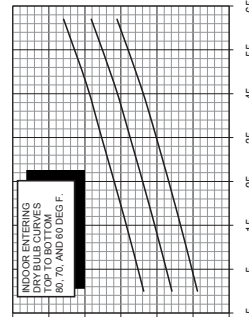
TAM4A0C48S41

Cooling with Thermal Expansion Valve

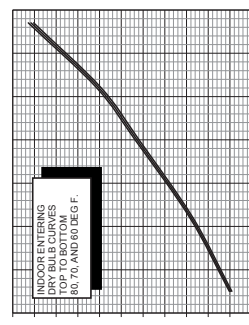
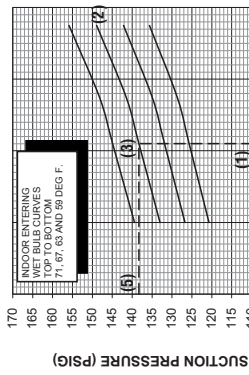


TAM4A0C48S41

Heating



OUTDOOR TEMPERATURE (Degree F)



OUTDOOR TEMPERATURE (Degree F)

COOLING PERFORMANCE CAN BE CHECKED WHEN THE OUTDOOR TEMP IS ABOVE 65 DEG F. TO CHECK COOLING PERFORMANCE, SELECT THE PROPER INDOOR CFM, ALLOW PRESSURES TO STABILIZE. MEASURE INDOOR WET BULB TEMPERATURE, OUTDOOR TEMPERATURE, DISCHARGE AND SUCTION PRESSURES. ON THE PLOTS LOCATE OUTDOOR TEMPERATURE (1); LOCATE INDOOR WET BULB (2); FIND INTERSECTION OF OD TEMP. & ID W.B. (3); READ DISCHARGE OR SUCTION PRESSURE IN LEFT COLUMN (4).

- EXAMPLE: (1) OUTDOOR TEMP. 82 F.
 (2) INDOOR WET BULB 67 F.
 (3) AT INTERSECTION
 (4) DISCHARGE PRESSURE @ 1550 CFM IS 330 PSIG.
 (5) SUCTION PRESSURE @ 1550 CFM IS 138 PSIG.

INTERCONNECTING LINES
 GAS - 7/8" O.D.
 LIQUID - 3/8" O.D.

- ACTUAL:
 DISCHARGE PRESSURE SHOULD BE +/- 10 PSIG OF CHART
 SUCTION PRESSURE SHOULD BE +/- 3 PSIG OF CHART

DWG.NO. 4TWA3048B4