2TWB0024-SF-1A

Library	Service Literature
Product Section	Unitary
Product	Split System Heat Pump
Model	2TWB
Literature Type	Service Facts
Sequence	2
Date	November 2005
File No.	SSP-SVF01A-EN 11/05
Supersedes	SV-UN-S/SP-2TWB0024-SF-1 11/02

Service Facts

Split System Heat Pump
2TWB0024A1000B

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	2TWB0024A1000B
POWER CONNS. — V/PH/HZ ③	200/230/1/60
MIN. BRCH. CIR. AMPACITY	15
BR. CIR. } MAX. (AMPS)	25
PROT. RTG. } MIN. (AMPS)	20
COMPRESSOR	CLIMATUFF®
NO. USED - NO. SPEEDS	1 - 1
VOLTS/PH/HZ	200/230/1/60
R.L. AMPS ⑦ - L.R. AMPS	10.9 - 60
FACTORY INSTALLED	
START COMPONENTS ⑧	NO
INSULATION/SOUND BLANKET	NO
COMPRESSOR HEAT	YES
OUTDOOR FAN	PROPELLER
DIA. (IN.) - NO. USED	19 - 1
TYPE DRIVE - NO. SPEEDS	DIRECT - 1
CFM @ 0.0 IN. W.G. ④	2175
NO. MOTORS - HP	1 - 1/8
MOTOR SPEED R.P.M.	1075
VOLTS/PH/HZ	200/230/1/60
F.L. AMPS	.90
OUTDOOR COIL — TYPE	SPINE FIN™
ROWS - F.P.I.	1 - 24
FACE AREA (SQ. FT.)	9.72
TUBE SIZE (IN.)	3/8
REFRIGERANT CONTROL	EXPANSION VALVE
REFRIGERANT	
LBS. — HCFC-22 (O.D. UNIT) ⑤	4 LBS. - 8 OZ.
FACTORY SUPPLIED	YES
LINE SIZE - IN. O.D. GAS ⑥	3/4
LINE SIZE - IN. O.D. LIQ. ⑥	5/16
FCCV	
RESTRICTOR ORIFICE SIZE	.057
DIMENSIONS	H X W X D
CRATED (IN.)	30.1 x 26.7 x 30.2
WEIGHT	
SHIPPING (LBS.)	177
NET (LBS.)	158

TUBING INFORMATION

Tubing Sizes Suction	Tubing Sizes Liquid	Tubing Length	Additional Refrigerant
3/4"	5/16"	20'	2 oz.
3/4"	5/16"	30'	7 oz.
3/4"	5/16"	40'	11 oz.
3/4"	5/16"	50'	16 oz.
3/4"	5/16"	60'	20 oz.

Tubing lengths in excess of eighty (80) feet see application software.

① Certified in accordance with the Air-Source Unitary Heat Pump Equipment certification program, which is based on ARI standard 210/240.
② Rated in accordance with ARI 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 80 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

CONTAINS REFRIGERANT!

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

Failure to follow proper procedures can result in personal illness or injury or severe equipment damage.

⚠ WARNING

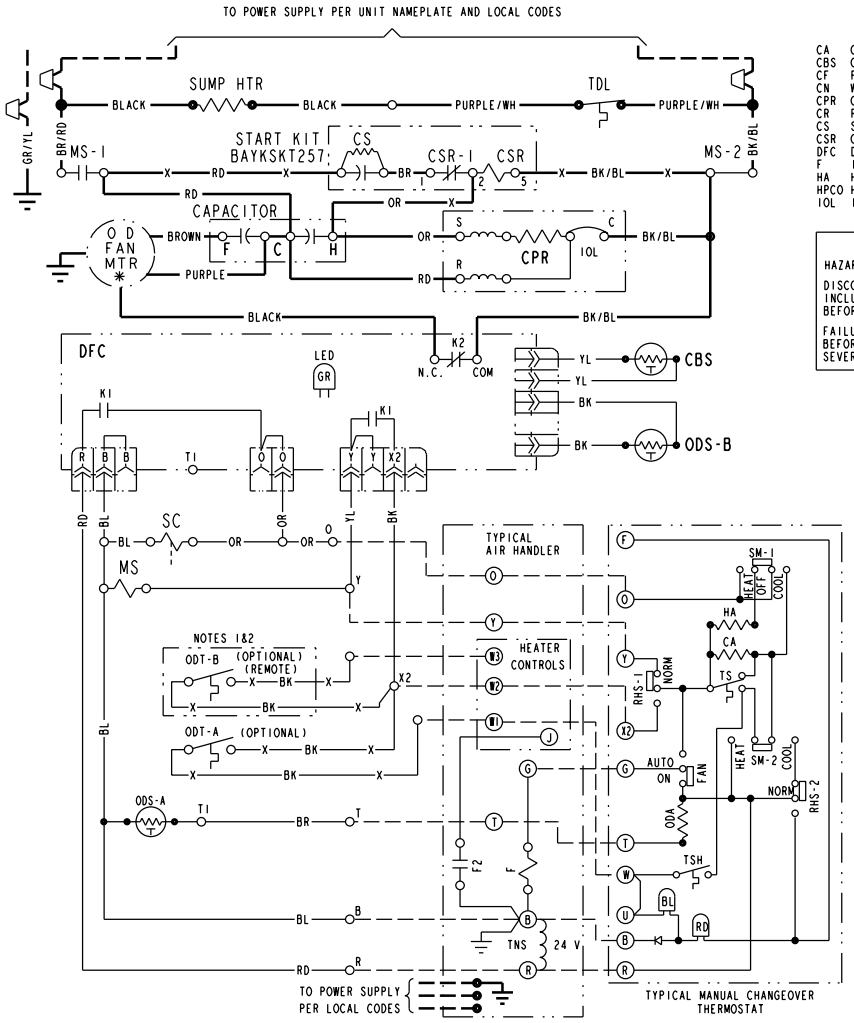
THIS INFORMATION IS INTENDED FOR USE BY INDIVIDUALS POSSESSING ADEQUATE BACKGROUNDS OF ELECTRICAL AND MECHANICAL EXPERIENCE. ANY ATTEMPT TO REPAIR A CENTRAL AIR CONDITIONING PRODUCT MAY RESULT IN PERSONAL INJURY AND OR PROPERTY DAMAGE. THE MANUFACTURER OR SELLER CANNOT BE RESPONSIBLE FOR THE INTERPRETATION 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.

SCHEMATIC DIAGRAM

2TWB0024A1000B



CA	COOLING ANTICIPATOR	LPCO	LOW PRESSURE CUTOUT 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 CUTOUT SW.	TS	HEATING-COOLING THERMOSTAT
IOL	INTERNAL OVERLOAD PROTECTOR	TSH	HEATING THERMOSTAT

⚠ WARNING	⚠ CAUTION
HAZARDOUS VOLTAGE! DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING. FAILURE TO DISCONNECT POWER BEFORE SERVICING CAN CAUSE SEVERE PERSONAL INJURY OR DEATH!	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!

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:

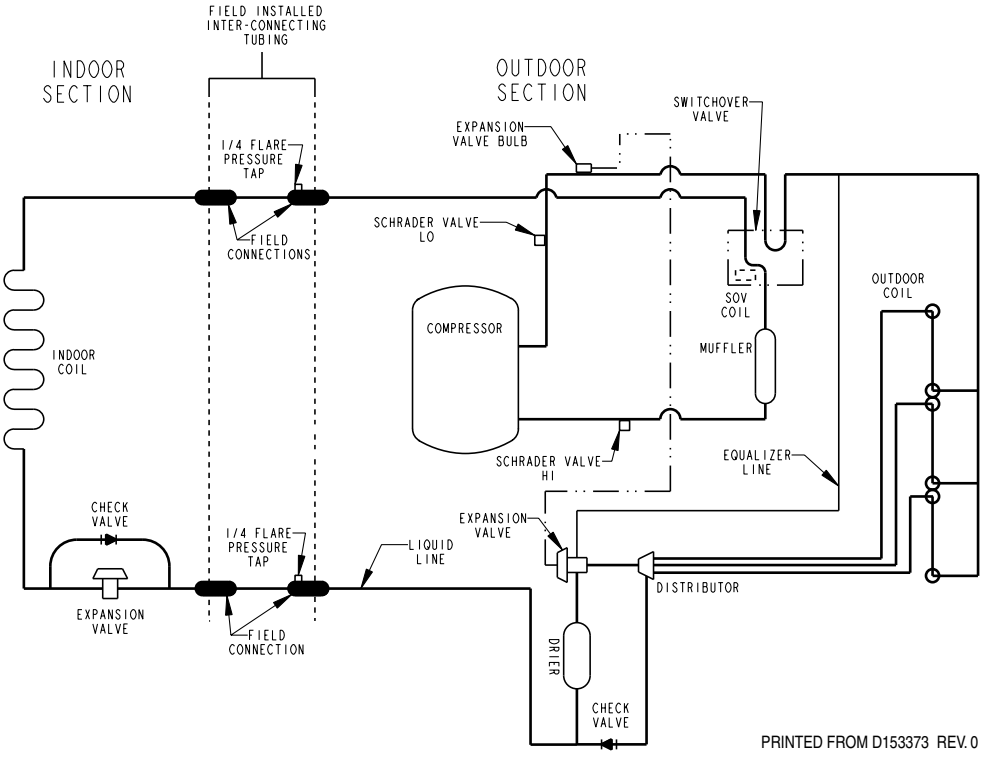
1. IF ODT-B IS NOT USED, ADD JUMPER BETWEEN W2 & W3 AT AIR HANDLER.
   IF USED, ODT-B MUST BE MOUNTED REMOTE OF CONTROL BOX IN AN APPROVED WEATHER PROOF ENCLOSURE.
2. IF ODT-A IS NOT USED, ADD JUMPER BETWEEN W1 & W2 AT AIR HANDLER.
3. LOW VOLTAGE (24 V.) FIELD WIRING MUST BE 18 AWG MIN.

FOR CANADIAN INSTALLATIONS
POUR INSTALLATIONS CANADIENNES

CAUTION: NOT SUITABLE FOR USE ON SYSTEMS EXCEEDING 150V-TO-GROUND.
ATTENTION: NE CONVIENT PAS AUX INSTALLATIONS DE PLUS DE 150 V A LA TERRE.

LEGE

REFRIGERANT CIRCUIT



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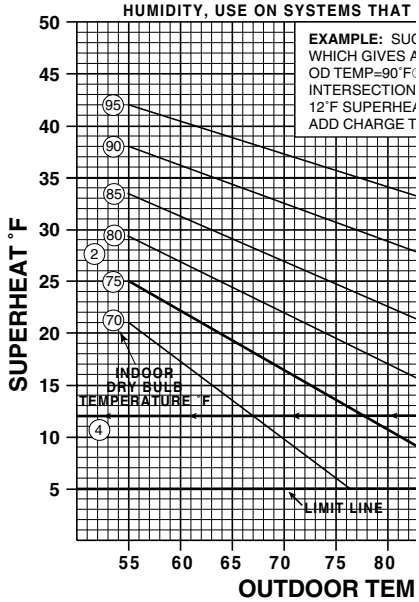
SUPERHEAT CHA

CHART BASED ON 400 CFM/TON IND
HUMIDITY, USE ON SYSTEMS THAT



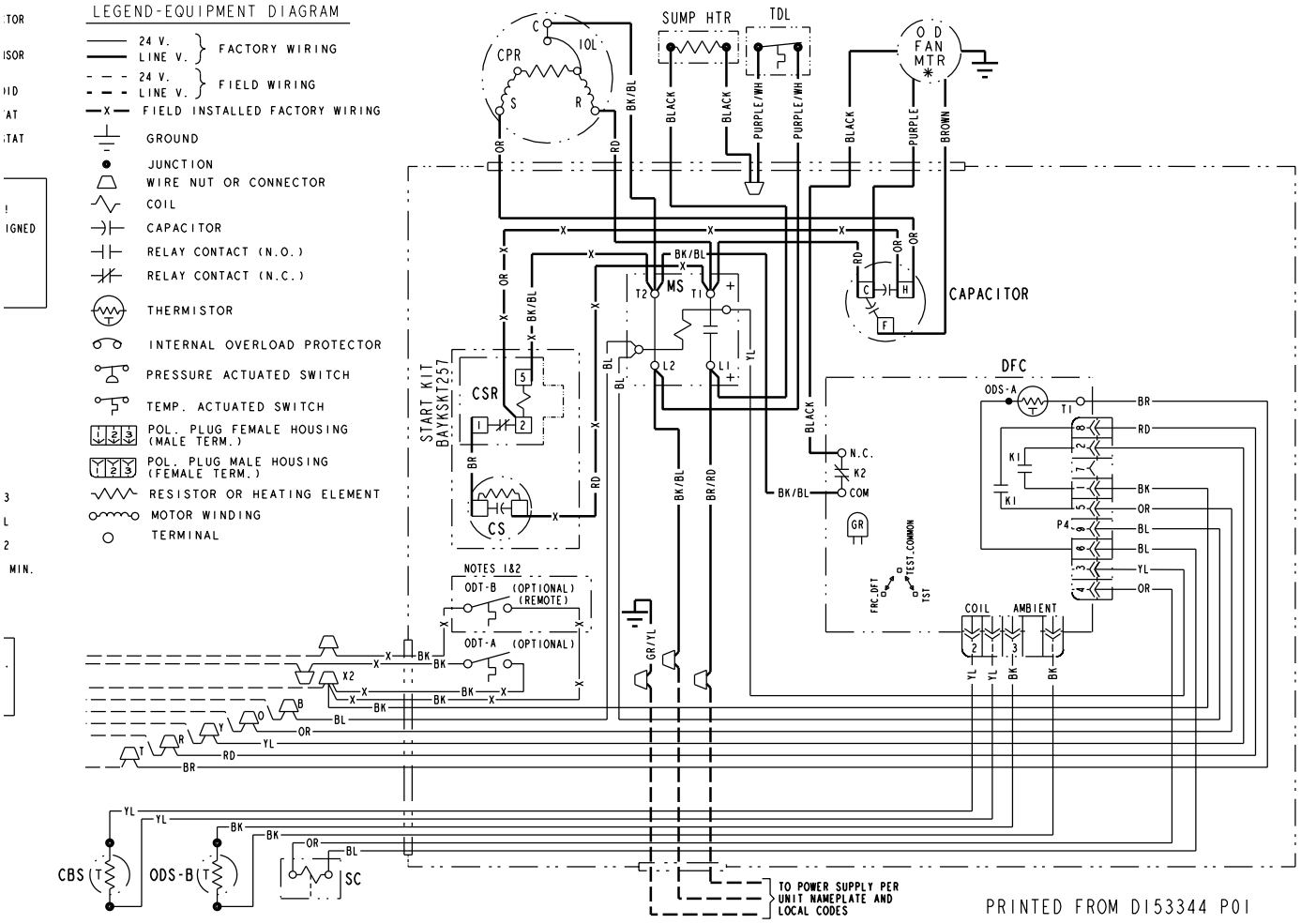
EXAMPLE: SUC
WHICH GIVES A
OD TEMP=90°F
INTERSECTION
12°F SUPERHEA
ADD CHARGE T

OUTDOOR TEM

Measure suction pressure, suction temperature at
table what superheat should be for the ID & OD ter
operating superheat with stabilized running conditio
If operating superheat is:

- within 5˚ chart value charge is OK
- more that 5˚ above chart value add refrigerant

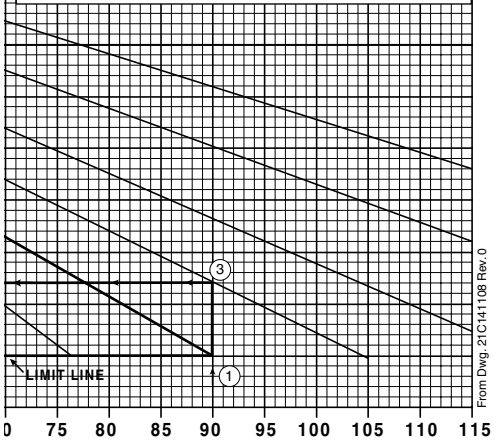
WIRING DIAGRAM



HEAT CHARGING CHART

00 CFM/TON INDOOR AIRFLOW AND 50% RELATIVE
SYSTEMS THAT COOL WITH FCCV OR CAPILLARY

EXAMPLE: SUCTION PRESSURE=65#. SUCTION TEMP=70˚F WHICH GIVES AN ACTUAL SUPERHEAT OF 32˚F.
OD TEMP=90˚F① ID TEMP=80˚F②
INTERSECTION OF ID AND OD TEMPS③ OCCUR ON THE 12˚F SUPERHEAT LINE④.
ADD CHARGE TO OBTAIN 12˚ SUPERHEAT.



˚DOOR TEMPERATURE ˚F

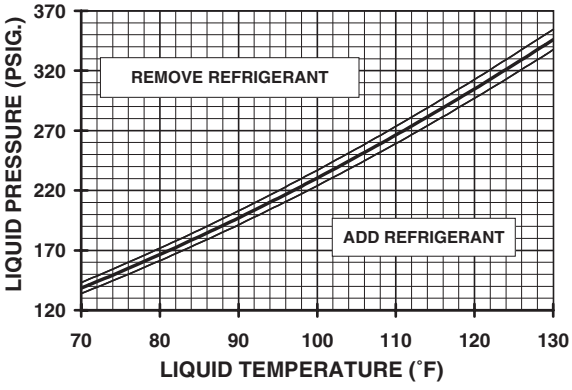
ion temperature at OD quick attach, ID & OD temps. Determine from for the ID & OD temp. Example indicates 12˚ superheat. Determine zed running conditions.

OK
e add refrigerant

- more than 5˚ below chart value remove refrigerant
- if below 5˚ limit line, **do not add refrigerant**

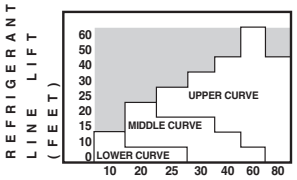
TXV REFRIGERANT CHARGING CURVE

For charging outdoor units with R-22 refrigerant at above 65˚F outdoor temperature in cooling mode and with indoor TXV.



1. Measure Liquid Line Temperature and Refrigerant Pressure at service valves.
2. Determine total refrigerant pipe length and height (lift) if indoor section is above the condenser. Plot the intersection of the two points on the Curve Selection Chart to determine which curve to use.
3. Plot the pressure and temperature on the TXV Charging Curve.
4. If the lines cross above the curve remove refrigerant, if below curve add refrigerant.
5. Whenever charge is removed or added, the system must be operated for a minimum 20 minutes to stabilize before additional measurements can be made.
6. When system is correctly charged refer to System Performance Curves to verify charge and performance.

CHARGING CURVE SELECTION CHART



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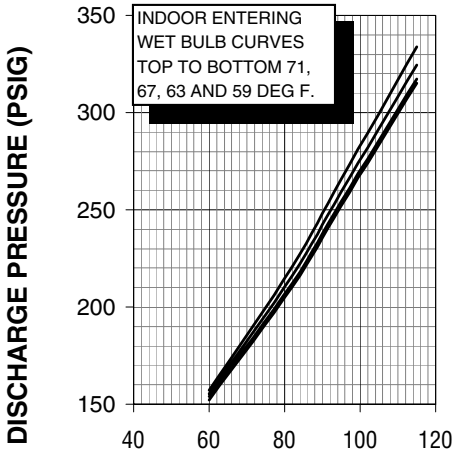
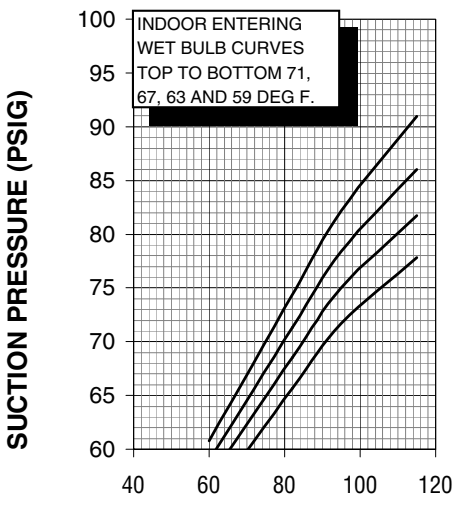
PRESSURE CURVES FOR 2TWB0024A1000B

TWE024C14

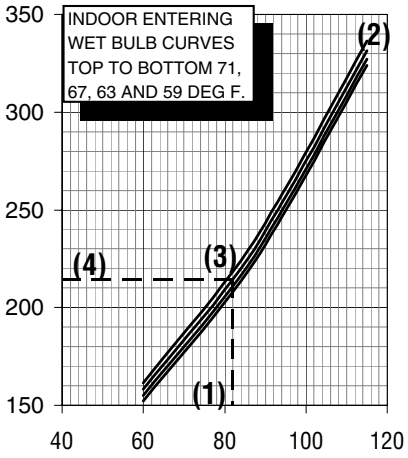
Cooling with FCCV or Capillary Tubes

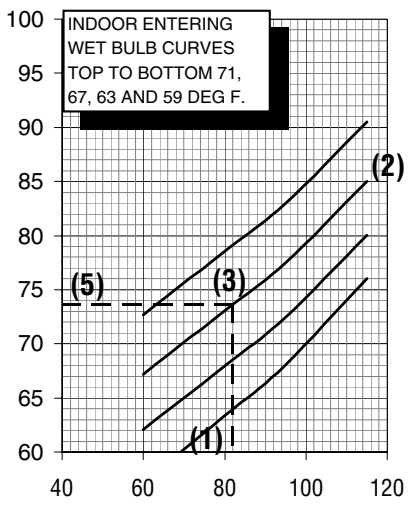




TWE024C14+TAYTXV-3

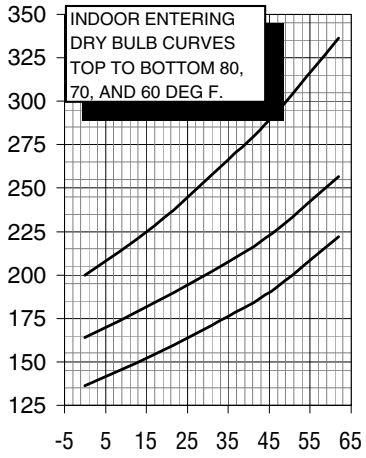
Cooling with Thermal Expansion Valve

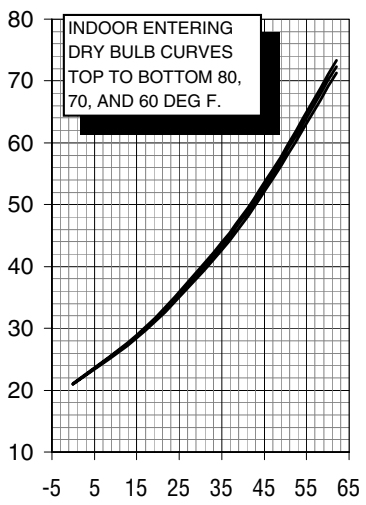




TWE024C14+TAYTXV-3

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 @ 800 CFM CFM IS 214 PSIG
(5) SUCTION PRESSURE @ 800 CFM CFM IS 74 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 - 5/16" O.D.

DWG.NO. 2TWB0024A1