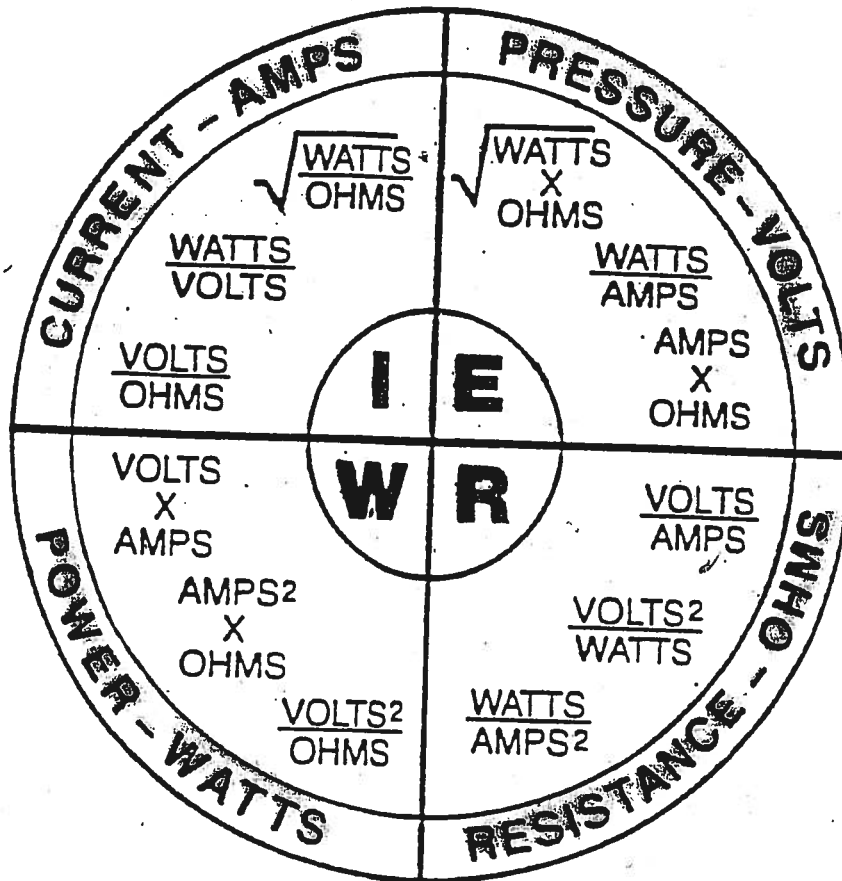


OHM'S LAW WHEEL



Other Formulas and equations

1 horse power = 746 Watts.

1 Watt = 3.41 British Thermal Units (B.T.U.)

Calculating Voltage Drop

$$E=IR.$$

Find Ampicity of wire from AWG chart.

Calculate Ohms per 1000 feet.

Subtract calculated voltage drop from Voltage supplied.

Capacitors

Capacitors in Parallel. Sum of capacitors is total capacitance.

Capacitors in Series. $C = \frac{C_1 \times C_2}{C_1 + C_2}$

Exact Capacitance. Read amperage after voltage applied. Microfarads = $\frac{2650 \times \text{Amperes}}{\text{Volts}}$

What is Ohm's Law?

17. _____

What is a Watts Law?

18. _____

What resistance would a new 1.5 KW/240 VAC electric strip duct heater have? (3 pts)

19. _____

How many amps can be safely drawn from the secondary windings of a 120 VAC to a 24 VAC transformer, if it has a rating of 50 VA? (3pts)

20. _____

If a 120 volt x 24 volt transformer is rated for 73 watts, how many amps can be safely drawn on the secondary windings? (3pts)

21. _____

How much current should a 600 watt / 240 volt chiller barrel heater draw? (3pts)

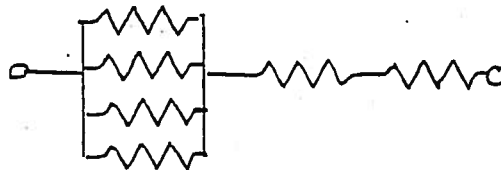
22. _____

What would the total resistance of the above heater have? (3 pts)

23. _____

What is the total resistance in a circuit with 4 - 50 ohm resistors in parallel followed by 2 - 75 ohm resistors in series? (5 pts)

24. _____



START-UP CHECKLIST

I. PRELIMINARY INFORMATION

OUTDOOR: MODEL NO. _____ SERIAL NO. _____
INDOOR: AIR HANDLER MANUFACTURER _____
MODEL NO. _____ SERIAL NO. _____
ADDITIONAL ACCESSORIES _____

II. PRE-START-UP

OUTDOOR UNIT

IS THERE ANY SHIPPING DAMAGE? _____ (Y/N) _____
IF SO, WHERE: _____
WILL THIS DAMAGE PREVENT UNIT START-UP? (Y/N) _____
CHECK POWER SUPPLY. DOES IT AGREE WITH UNIT? (Y/N) _____
HAS THE GROUND WIRE BEEN CONNECTED? (Y/N) _____
HAS THE CIRCUIT PROTECTION BEEN SIZED AND INSTALLED PROPERLY? (Y/N) _____
ARE THE POWER WIRES TO THE UNIT SIZED AND INSTALLED PROPERLY? (Y/N) _____
HAVE COMPRESSOR HOLDDOWN BOLTS BEEN LOOSENED? (Y/N) _____

CONTROLS

ARE THERMOSTAT(S) AND INDOOR FAN CONTROL WIRING
CONNECTIONS MADE AND CHECKED? (Y/N) _____
ARE ALL WIRING TERMINALS (including main power supply) TIGHT? (Y/N) _____
HAVE CRANKCASE HEATERS BEEN ENERGIZED FOR 24 HOURS? (Y/N) _____

INDOOR UNIT

HAS WATER BEEN PLACED IN DRAIN PAN TO CONFIRM PROPER DRAINAGE? (Y/N) _____
ARE PROPER AIR FILTERS IN PLACE? (Y/N) _____
HAVE FAN AND MOTOR PULLEYS BEEN CHECKED FOR PROPER ALIGNMENT? (Y/N) _____
DO THE FAN BELTS HAVE PROPER TENSION? (Y/N) _____

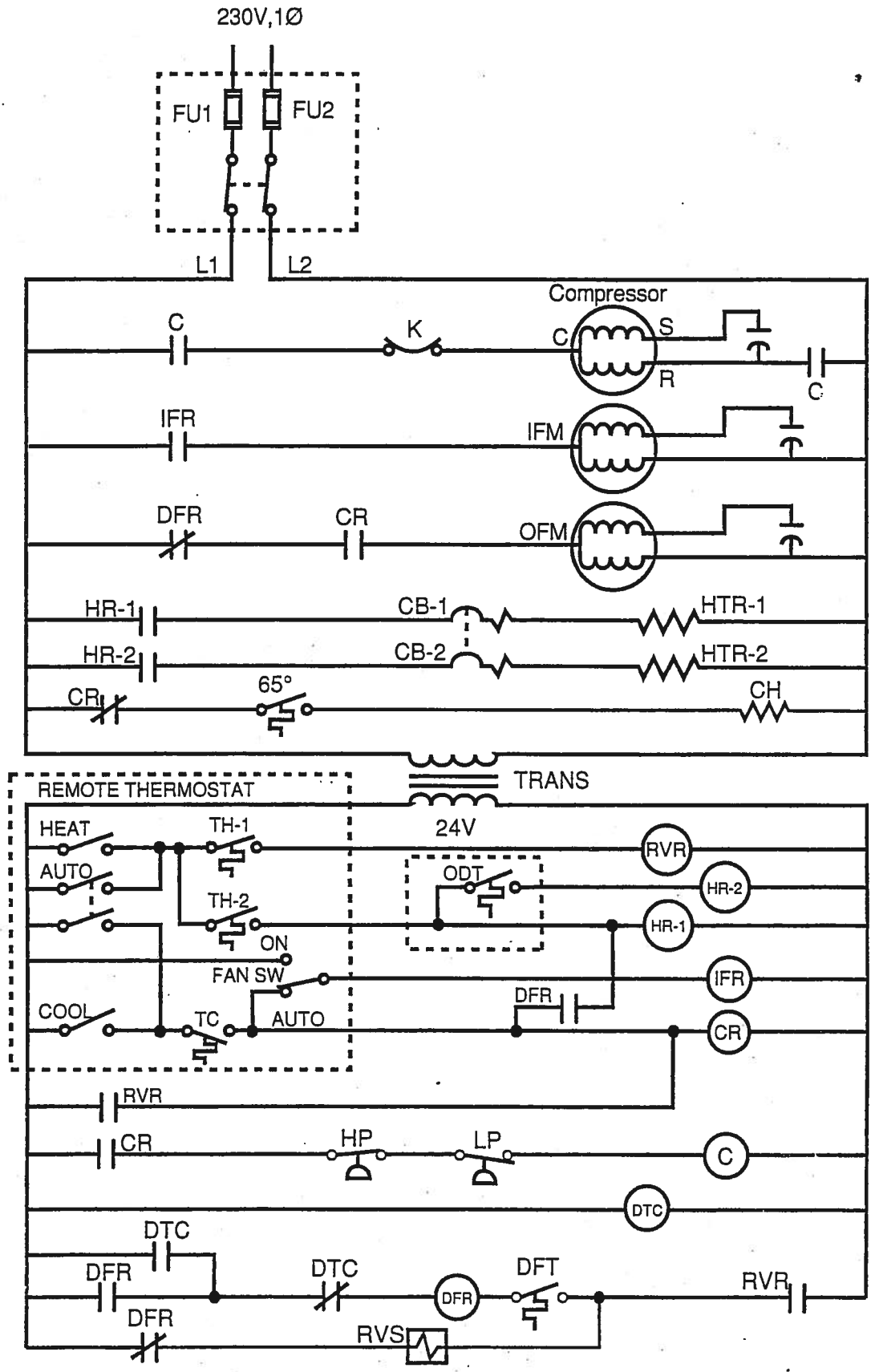
PIPING

ARE LIQUID LINE SOLENOID VALVES LOCATED AT THE EVAPORATOR COILS AS REQUIRED? (Y/N) _____
HAVE LEAK CHECKS BEEN MADE AT COMPRESSORS, CONDENSERS, EVAPORATORS,
TXVs (Thermostatic Expansion Valves), SOLENOID VALVES, FILTER DRIERS, AND FUSIBLE PLUGS
WITH A LEAK DETECTOR? (Y/N) _____
LOCATE, REPAIR, AND REPORT ANY LEAKS.
HAVE ALL COMPRESSOR SERVICE VALVES BEEN FULLY OPENED (BACKSEATED)? (Y/N) _____
ARE THE COMPRESSOR OIL SIGHT GLASSES SHOWING ABOUT 1/8 TO 1/3 FULL? (Y/N) _____

CHECK VOLTAGE IMBALANCE

LINE-TO-LINE VOLTS: AB _____ V AC _____ V BC _____ V
(AB + AC + BC)/3 = AVERAGE VOLTAGE = _____ V
MAXIMUM DEVIATION FROM AVERAGE VOLTAGE = _____ V
VOLTAGE IMBALANCE = 100 X (MAX DEVIATION)/(AVERAGE VOLTAGE) = _____ %
IF OVER 2% VOLTAGE IMBALANCE, DO NOT ATTEMPT TO START SYSTEM!
CALL LOCAL POWER COMPANY FOR ASSISTANCE.

HEAT PUMP LADDER DIAGRAM



HEAT PUMP LADDER DIAGRAM

