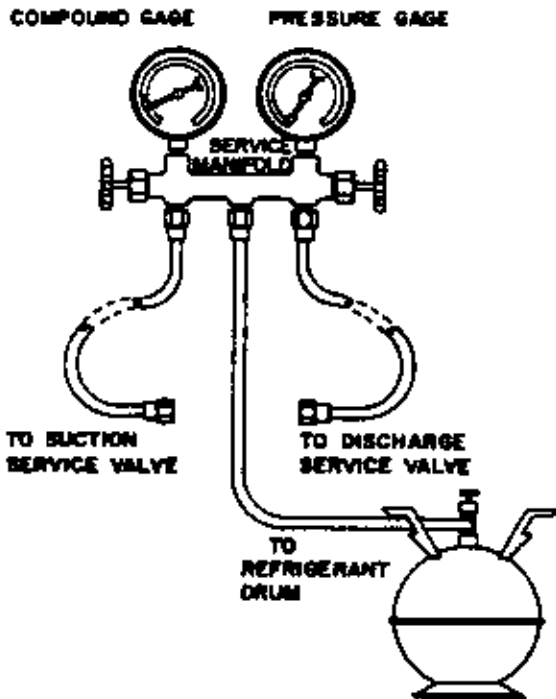


PROCEDURE FOR  
LEAK TEST-EVACUATION-CHARGING

GAUGE MANIFOLD

A necessary instrument in checking and servicing air conditioning and heat pump equipment is the gauge manifold. Its purpose is to determine the operating refrigerant pressures in order for the serviceman to analyze the condition of the system.

The valving on the manifold is so arranged that when the valves are closed (front-seated) the center port on the manifold is closed to the gauges and gauge ports. With the valves in the closed position, the gauge ports are still open to the gauges, permitting the gauges to register system pressures. Opening either valve opens the center port to that side of the manifold and system.

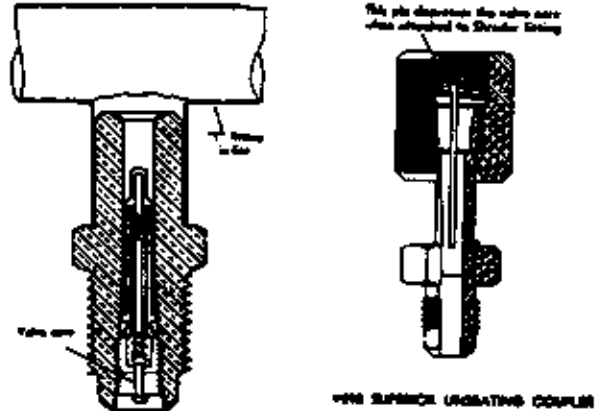


ATTACHING GAUGE MANIFOLD

For leak testing, purging, checking charge, charging liquid or evacuating, connect high pressure side of gauge manifold to Shrader valve on liquid line. Connect suction side of gauge manifold to Shrader valve on vapor line.

ATTACHING MANIFOLD NOSE TO SHRADER VALVE

1. Remove cap from valve.
2. Make sure gauge manifold valves are closed.



3. If hose does not have an unseating pin, a number 895 Superior or equivalent unseating coupler must be used.
4. Make sure coupler is lined up straight with Shrader valve. Screw coupler onto valve.
5. Open gauge manifold valve slightly and purge air from hose with refrigerant.
6. To remove, unscrew coupler from Shrader valve.

NOTE: If a Shrader valve is used be sure to remove the unseating coupler from the Shrader valve first. Hold coupler and hose tight to valve while loosening nut to prevent loss of charge on disconnect.

LEAK TEST

1. Remove gauge port cap from suction and liquid service valve ports and attach Manifold Gauge Hoses. Connect an upright R22 drum to center port of gauge manifold. Open refrigerant drum valve and manifold high pressure gauge valve to pressurize system. Pressurize the complete system with R22 until the pressure reaches 100 psig. Do not exceed 150 psig.
2. Close manifold high pressure gauge valve. Check all soldered joints, including those on the evaporator coil with an Electronic Leak Detector or Halide Torch. If a leak is found which requires soldering, pressure in the system must be bled off since it is impossible to solder with unit pressurized. Be sure all leaks are located and marked before bleeding pressure from system.
3. Close drum valve and disconnect from center port. Release refrigerant into the atmosphere through suction line of gauge manifold.
4. Correct any leaks and recheck. When leaks, if any have been repaired, system is ready to be evacuated and charged. Relieve all pressure from the system down to 0 psig.



**R-22 TOTAL SYSTEM CHARGE FOR  
SPLIT AIR CONDITIONING AND HEAT PUMP SYSTEMS**

The following tables are used to determine the operating charge for split air conditioning and heat pump systems. The values shown are the total amount of refrigerant received in the precharged system components, which include the outdoor unit, indoor unit, and inter-connecting tubing. This is also the amount of refrigerant required for a system recharge following any refrigeration system repairs.

Find the outdoor section (Table A) matching indoor section (Table B) and connecting tubing set (Table C) for system being used. Add the ounces of charge for each of the system components together. This value is the TOTAL SYSTEM CHARGE.

<u>          </u> OZs	+	<u>          </u> OZs	+	<u>          </u> OZs	=	<u>          </u> OZs
OUTDOOR UNIT (Table A)		INDOOR UNIT (Table B)		TUBING SET (Table C)		TOTAL SYSTEM CHARGE

To change total charge to lbs. and OZs, divide by 16.

EXAMPLE: 24BQ1 with 24QS coil and MN35 tubing set.

<u>  33  </u> OZs	+	<u>    5    </u> OZs	+	<u>    7    </u> OZs	=	<u>   45   </u> OZs
OUTDOOR UNIT		INDOOR UNIT		TUBING SET		TOTAL SYSTEM CHARGE

or  $\frac{45 \text{ OZs}}{16} = 2 \text{ lbs. } 13 \text{ oz.}$

In the event that the installer is running his own tubing by using a CTO kit or is modifying a precharged tubing set by adding or subtracting a few feet of tubing length, the tubing set should be evacuated and charged before being connected to the outdoor and indoor sections. To determine TUBING SET ONLY charges, use the following table:

TABLE D (SHOWS CHARGE IN OZS)											
TUBING SET LENGTH IN FT.	10	15	20	25	30	35	40	45	50	55	60
1/4" O.D. LIQUID LINE	2	2	3	3	5	7	9	11	--	--	--
3/8" O.D. LIQUID LINE	2	2	5	8	11	14	17	20	23	26	29

To determine a TOTAL SYSTEM CHARGE for a system that is connected with a non-standard tubing length, the outdoor unit basic charge (from Table A) plus the indoor unit basic charge (from Table B), is added to the tube set based on liquid line O.D. size (Table D). This value is the TOTAL SYSTEM CHARGE.

NOTE: If your tubing length is between the sizes shown in the table, use a charge value appropriately between the values shown for the tubing length shorter and longer than actual length.

TABLE A SPLIT SYSTEM AIR CONDITIONERS	
MODEL	OUTDOOR UNIT FACTORY CHARGE
18ECQ2	26 oz.
24ECQ2	39 oz.
30ECQ2	44 oz.
31ECQ	50 oz.
36ECQ4	49 oz.
37ECQ	54 oz.
42ECQ1	84 oz.
48ECQ2	86.5 oz.
60ECQ1	101 oz.
SPLIT HEAT PUMPS	
MODEL	OUTDOOR UNIT FACTORY CHARGE
18HPQ1	56 oz.
18HPQ2	41 oz.
24HPQ1	47 oz.
24HPQ2	47 oz.
30HPQ3	67 oz.
30HPQ4	73 oz.
36HPQ3	84 oz.
36HPQ4	83 oz.
42HPQ	86 oz.
48HPQ2	95 oz.
60HPQ4	112 oz.
WQSD30	50 oz.
WQSD30	52 oz.
WQSD36	59.5 oz.
WQSD36	61.5 oz.

NOTE: IF MODEL NUMBER IS NOT SHOWN ON TABLES, CHECK UNIT DATA PLATE FOR CORRECT CHARGE.

TABLE B INDOOR UNITS		
HORIZONTAL "H" EVAPORATOR COILS		
MODEL	FACTORY CHARGE	FOR USE WITH
3HCQ	7 oz.	30ECQ2, 31ECQ, 36ECQ4, 37ECQ
4HCQ	12 oz.	42ECQ1, 48ECQ2
5HCQ	7 oz.	60ECQ1
"A" EVAPORATOR COILS		
18QS3	4 oz.	18ECQ2
24QS1	2 oz.	24ECQ2
2ACQ1	2 oz.	18ECQ2, 24ECQ2
3ACQ3	5 oz.	30ECQ3, 31ECQ, 36ECQ4, 37ECQ
3ACQ4	21.5 oz.	31ECQ
3ACQ5	17.5 oz.	37ECQ
4ACQ1	7 oz.	42ECQ1, 48ECQ2
4ACQ2	2.5 oz.	48ECQ2
5ACQ1	7 oz.	48ECQ2, 60ECQ1
BLOWER COIL UNITS		
B18EQ1	7 oz.	18ECQ1
B24EQ1	4 oz.	24ECQ1
B36EHQ	8 oz.	30ECQ2, 31ECQ, 36ECQ4, 37ECQ, 30HPQ3, 36HPQ3
B36EHQ1	8 oz.	WQSD30, WQSD30, WQSD36, WQSD36, 30HPQ4, 36HPQ4
BC48A	23 oz.	42ECQ1, 48ECQ2, 60ECQ1, 42HPQ, 48HPQ2
B18FHQ1	7 oz.	18HPQ2, 24HPQ2
B18EHQ	7 oz.	18HPQ1
B24EHQ	7 oz.	24HPQ1
B24EHQ1	7 oz.	18HPQ2, 24HPQ2, 18ECQ2, 24ECQ2
B30EHQ	2 oz.	31ECQ, 30ECQ2, 30HPQ4
BC60A	43 oz.	60HPQ4, 60ECQ1
HEAT PUMP COIL		
H18QS	7 oz.	18HPQ1
H18QS1	7 oz.	18HPQ2, 24HPQ2, 18ECQ2, 24ECQ2
H24QS	7 oz.	24HPQ1
H24QS1	7 oz.	18HPQ2, 24HPQ2
H30QS	2 oz.	31ECQ, 30ECQ2, 30HPQ4
H3AQ1	10 oz.	30HPQ3, 30HPQ4, 36HPQ3, 36HPQ4, WQSD30, WQSD30, WQSD36, WQSD36
H4AQ1	23 oz.	42HPQ, 48HPQ2
H5AQ1	43 oz.	60HPQ4

TABLE C CHARGED TUBING SETS FOR USE WITH 18ECQ2, 24ECQ2, 18HPQ1, 24HPQ1, 18HPQ2, 24HPQ2				
MODEL	CHARGE	LENGTH IN FT.	LIQUID LINE	SUCTION LINE
CT15	2 oz.	15	1/4"	5/8"
RT25	3 oz.	25	1/4"	5/8"
RT35	7 oz.	35	1/4"	5/8"
RT45	11 oz.	45	1/4"	5/8"
FOR USE WITH 30ECQ2, 31ECQ, 36ECQ4, 37ECQ, 30HPQ3, 36HPQ3, 30HPQ4, 36HPQ4, WQSD30-36, WQSD30-36				
CT0	NONE*	0	3/8"	3/4"
CT15	2 oz.	15	1/4"	5/8"
CT25	3 oz.	25	1/4"	3/4"
CT35	14 oz.	35	3/8"	3/4"
CT45	20 oz.	45	3/8"	3/4"
FOR USE WITH 42ECQ1, 48ECQ2, 60ECQ1, 42HPQ, 48HPQ2 AND 60HPQ4				
CT0-12	NONE*	0	3/8"	7/8"
CT25-12	2 oz.	15	3/8"	7/8"
CT25-12	8 oz.	25	3/8"	7/8"
CT35-12	14 oz.	35	3/8"	7/8"
CT45-12	20 oz.	45	3/8"	7/8"

\*CT0 AND CT0-12 FOR FIELD INSTALLED TUBING. (SEE TABLE D FOR CHARGING)