



**UNITED
TECHNOLOGIES
CARRIER**

Commercial Division
Carrier Corporation

BULLETIN: CA-SB-17-69-9
DATE: 9/26/69
PAGE: 1 OF 4

SERVICE BULLETIN

SUPERSEDE
BULLETIN:

DATE:
PAGE: OF:

SUBJECT: 17 SERIES (H.P.) THERMAL PURGE

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PURPOSE

To provide information concerning the causes and recommended corrections for inadvertent discharging of refrigerant from the thermal purge unit and to change the present 1/4 inch size filter drier to a larger 1/2 inch size which will prevent plugging up of the line.

MACHINES AFFECTED

17 series machines using R-12 provided with a thermal purge.

BACKGROUND

The causes for inadvertent discharging of refrigerant from the thermal purge unit used on 17 series R-12 machines are as follows:

- A) Plugged strainer on inlet to thermal expansion valve, which results in insufficient refrigerant available to cool the purge pot coil. In which case, the shell side of the purge pot approaches condenser pressure. The purge operating switch senses an equalizing of pressure between purge condensing pressure and the purge liquid refrigerant supply pressure and closes, thus energizing (opening) the solenoid valve and discharges to the atmosphere.
- B) Insufficient pressure differential between the purge operating switch and the purge safety switch, which results in the purge safety switch not opening to break the circuit to the solenoid valve in the following cases:
 - 1) Condensing temperature below approximately 65 degrees F, which results in both switches being closed and the solenoid valve will open and be unable to close.
 - 2) During shutdown there is the possibility that again both switches will close and the solenoid open until the condenser pressure drops to 48 psig which will open the purge safety switch.

SERVICE BULLETIN

SUPERSEDE
BULLETIN:
DATE:
PAGE: OF:

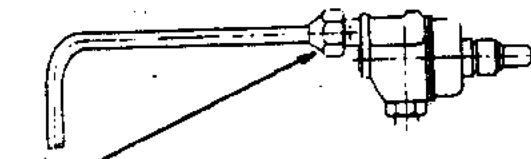
PROCEDURE

To prevent the above mentioned occurrences, the following recommended corrections are deemed advisable.

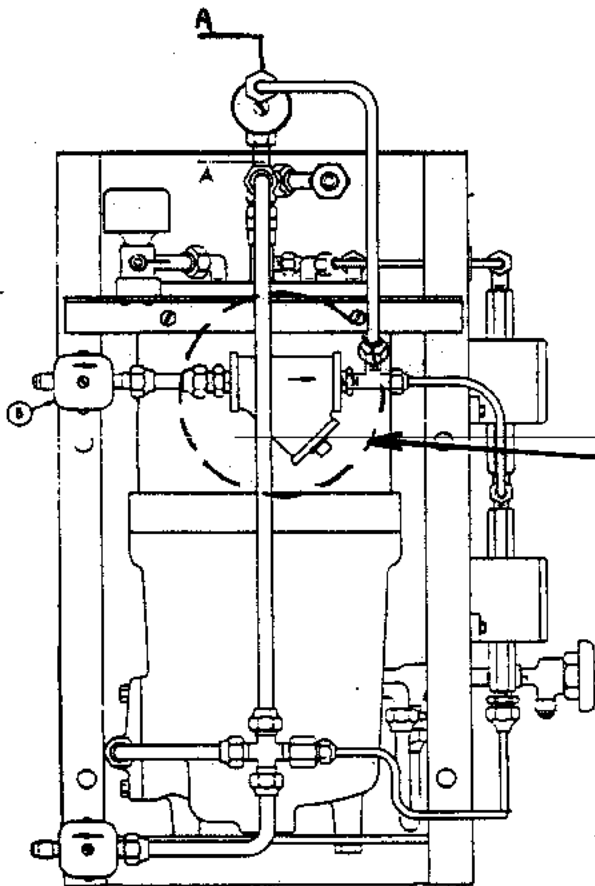
- A) Replace strainer (Item 11) with a filter drier, Carrier Part No. KH43LE101 (1/2 inch connections). This filter is available from the Replacement Components Division and it can be installed where the strainer is located with very little difficulty. Figure 1 shows the filter and its location. This change will reduce the possibility of the strainer in the thermal expansion valve becoming plugged up.

FIGURE 1

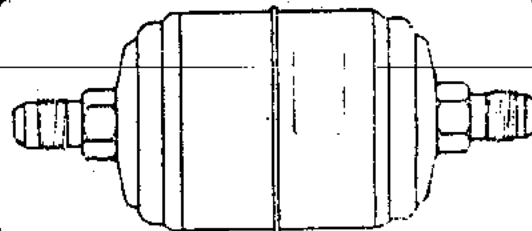
SECTION A-A



Remove flare fitting, remove detachable strainer from inlet to valve, clean the strainer, replace.



REPLACE PRESENT STRAINER WITH



Carrier Part No. KH43LE101

HAS 1/2" FLARE CONNECTIONS



SERVICE BULLETIN

SUPERSEDE
BULLETIN:

DATE:

PAGE: OF:

- B) Clean the strainer in the inlet to the automatic expansion valve. This can be accomplished by removing the flare fitting on the inlet of the valve and pulling out the detachable strainer (See Section A-A, Figure 1).
- C) Relocate the purge pot liquid supply pressure sending line so it tees off the liquid line after the filter instead of before the filter as shown in Figure 2. Now if the filter becomes clogged the expansion valve will go wide open and the differential across the purge safety switch will start equalizing thus opening the switch and opening the circuit to the solenoid valve.

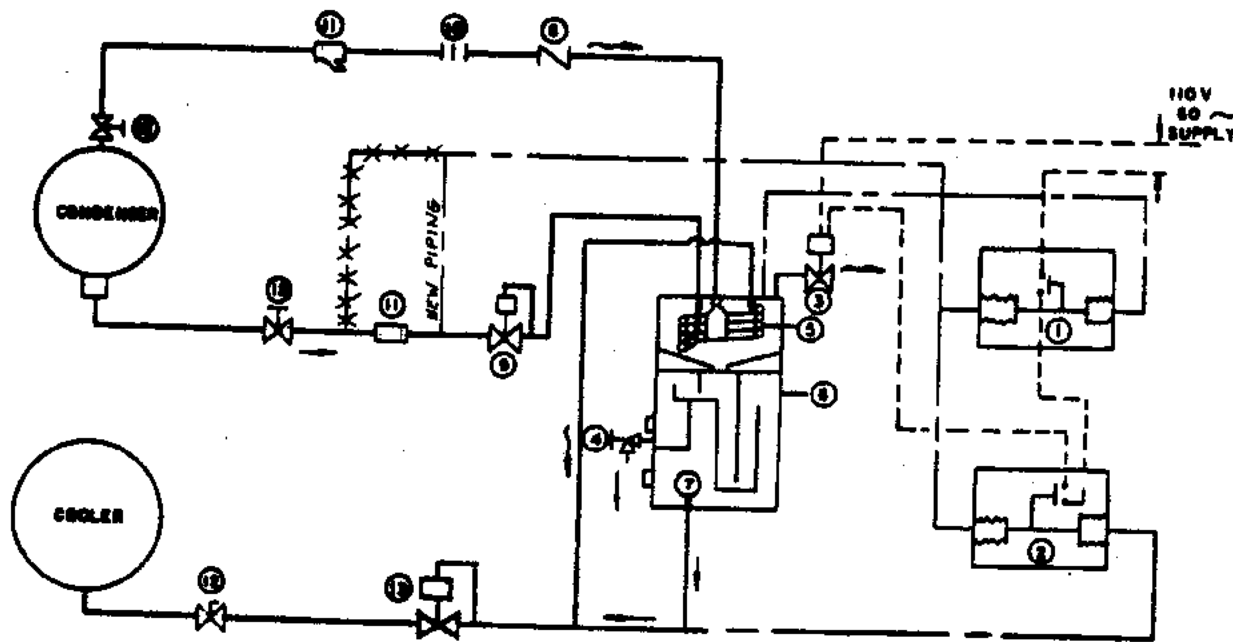


FIGURE 2

LEGEND
 LIQUID FLOW ——— GAS FLOW ———
 CONTROL PRESSURE LINE - - - - - WIRING - - - - -

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Purge Operating Switch	7	Purge Float Valve
2	Purge Safety Switch	8	Check Valve
3	Normally Closed Solenoid	9	Expansion Valve
4	Water Drain Valve	10	Orifice
5	Cooling Coil	11	Filter drier
6	Condensing Chamber	12	Shut Off Valves
		13	Back Pressure Valve



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PAGE: 4 OF: 4

SERVICE BULLETIN

SUPERSEDE
BULLETIN:
DATE:
PAGE: OF:

- D) Reset the purge safety switch to open at 24 psid and close at 32 psid. This will prevent both switches being closed due to low condensing temperature down to approximately 50 degrees F. Also, it will insure the purge safety switch opening when the condenser reaches 56 psig on shutdown. Table 1 lists the current switch settings for the thermal purges used with R-12.

TABLE 1

Switch Settings (R-12)

<u>Switch</u>	<u>Opens*</u>	<u>Closes*</u>
Purge Operating Switch	16	8
Purge Safety Switch	16**	24**
Back Pressure Valve Maintains 32 psig		

NOTES: * All settings are PSID

** Change to open at 24 and close at 32 if low condensing temperature is encountered.

- E) In an extreme case when the purge constantly blows during machine shutdown, the purge switches can be wired in parallel with the turbine solenoid trip or starter holding coil similar to the damper solenoid bleed valve. This would insure that the solenoid would not open unless the machine was in fact running.