COMPRESSOR REPLACEMENT PROCEDURE

GENERAL

Before replacing any compressor, make absolutely sure that it is the compressor that is at fault. Problems with the external electrical components are many times diagnosed as a faulty compressor.

STEP 1

If the compressor tries to start and cycles on overload:

A. Measure line voltage at the unit terminals at the moment of start. It must be within the operating voltage range as shown on the unit serial plate. If it is less than the minimum voltage shown, check all electrical connections and branch wire size.

B. Check to determine whether the run capacitor is good and of the correct rating. Replace the capacitor if in doubt.

C. If a start capacitor and start relay are employed, check out these components.

D. If there are no starting components used on the system, connect a start kit of the correct size temporarily to the compressor circuit. If the compressor motor now starts and runs okay, install start kit permanently.

If the compressor does not try to start and blows fuses:

A. Remove the wiring from the compressor terminals and check for ground between each terminal and the compressor housing.

B. Check for continuity between the common terminal (C) and run terminal (R) and between the common terminal (C) and start terminal (S). If either one of these checks show continuity and the other does not, one of the motor windings is open. If neither show continuity and a check between terminal (R) and terminal (S) show continuity, both motor windings are intact and the internal overload is open. (Normally, any time the compressor housing is cool enough to hold your hand tight against, the overload should be closed.)

STEP 2

It is essential to establish the type of compressor failure that has occurred before any further work can take place.

A. If there was a mechanical failure such as broken valves or a broken rod that would cause a no pump condition (any situation where the motor starts and runs okay but little or no refrigerant is pumped), the system cleanup procedure can be bypassed. Replace the compressor and proceed to Step 6.

If the compressor failure resulted from some form of an electrical failure, the compressor has undergone a burnout condition of some degree of magnitude. It is essential to determine the type and extent of the burnout before the new compressor is installed.

A. Through the service ports, sample the refrigerant for the characteristic acrid odor of a burnout.

WARNING
Smell cautiously, the gas could be toxic and highly acrid.

B. Recover the system refrigerant charge using correct recovery procedures and send the refrigerant to an authorized reclaim facility.

CAUTION
Avoid getting the refrigerant in the eyes or on the skin.

C. Remove the burned compressor. Use rubber gloves when handling contaminated parts if there is any likelihood of contacting the oil or sludge.

D. If the discharge line shows no evidence of sludge and the suction stub is likewise clean, or perhaps has some light carbon deposits, the burnout occurred while the compressor was not rotating. Contaminants are, therefore, largely confined to the compressor housing and a single installation of liquid and suction line filter-driers will probably suffice to clean up the system.

E. If the sludge is evident in the discharge line (and very likely also found in the suction line) the compressor motor burned while running. Sludge and acid has been pumped throughout the system and several changes of the liquid and suction filter-driers will probably be necessary to cleanse the system.

STEP 3

System suffering running burnouts will also require additional cleansing of various piping and components, and even this may not rule out the possibility of having to replace these components.

A. An extensive burnout condition may clog the screen and/or the capillary tubing, orifice or TXV requiring replacement.

B. The reversing valve may become inoperative or sluggish due to sludge and acid action attacking the moving parts and their bearing surfaces.

C. It is highly probable that the accumulator bleed orifice would be plugged on a severe burnout, and is recommended that the accumulator be replaced as it is practically impossible to assure the reliability and performance of the accumulator even though it has been flushed out.

STEP 4

An evaluation should be made to determine what the system fault that caused the burnout was and take the necessary steps to correct that situation.

STEP 5

A. Check all electrical components (capacitors, relays, overload, etc. where applicable). Check the contacts of the compressor contactor.

B. Install the new compressor. Make sure that the replacement compressor is exactly the same as the defective one, or a substitute authorized by the factory.

C. Install liquid line and suction line filter-driers as selected from the following table based upon Line Size and Unit Btu Size.

IMPORTANT NOTE: Heat pump units require a different liquid line filter-drier than air conditioners. The 5201-009 or 5201-010 bi-directional liquid line filter-drier must be used on heat pumps, and if desired, could also be used on A/C. Under no circumstances should the 5201-001 or 5201-002 directional filter-driers be used on heat pumps as shown by Figures B or C.

TABLE I

A/C LIQUID LINE FILTER-DRIER (DIRECTIONAL)			
Unit Size	Line Size	Part No.	Model No.
0 - 36,000 BTU	3/8"	5201-001	C-083S
37 - 60,000 BTU	3/8"	5201-002	C-163S
H/P LIQUID LINE FILTER-DRIER (BI-DIRECTIONAL)			
Unit Size	Line Size	Part No.	Model No.
0 - 36,000 BTU	3/8"	5201-009	BFK-083S
37 - 60,000 BTU	3/8"	5201-010	BFK-163S
SUCTION LINE FILTER-DRIER			
Unit Size	Line Size	Part No.	Model No.
0 - 24,000 BTU	1/2"	5201-003	C-164-ST-HH
25 - 31,000 BTU	5/8"	5201-004	C-165-ST-HH
32 - 37,000 BTU	3/4"	5201-005	C-166-ST-HH
38 - 60,000 BTU	3/4"	5201-007	C-306-ST-HH
38 - 60,000 BTU	7/8"	5201-008	C-307-ST-HH
CAUTION: Suction line filters are not acceptable substitutes for filter-driers.			

D. Figures A, B, and C illustrate the recommended locations for both the liquid line and suction line filter-driers on both air conditioning and heat pump systems. It is imperative that the filter-driers be installed as shown for the heat pumps to assure adequate protection and so that there is no reverse flow of refrigerant through the filter-driers.

STEP 6

Evacuate the system to less than 1000 microns, using a good vacuum pump and an accurate high vacuum gauge. Operate the pump at 1000 microns, or less, for one hour and then allow the system to stand for 30 minutes to be sure the vacuum is maintained.

A. Charge system with the specified quantity of refrigerant. See Step 7.

NOTE: At no time use the compressor to evacuate the system or any part of it.

STEP 7

Charge the system and place in operation.

A. Self-contained units, the unit serial plate lists the total amount of refrigerant required for recharge. Also see C.

B. Split-system units, the unit serial plate refers you to a system charge table located elsewhere in the unit. Using specific model numbers for indoor and outdoor units, and the length of the interconnection tubing, determine the total system charge. There is a blank on the serial plate for this to be marked and is supposed to be done by the original installer. Also see C.

C. The addition of liquid line filter-driers to any system requires additional refrigerant. This is shown in the following table and applies to each liquid line filter-drier used.

TABLE 2

Part No.	Model No.	Oz. of R-22
5201-001	C-083S	8
5201-002	C-163S	10
5201-009	BFK-083S	7
5201-010	BFK-163S	13

STEP 8

After the system is charged and placed in operation, immediately check the pressure drop across the suction line filter-drier. This will serve two purposes:

1. Verify that the drier selection was correct; that is, large enough.

2. Serve as a base point to which subsequent pressure checks can be compared.

Because the permissible pressure drop across the drier is relatively small, it is suggested that a differential pressure gauge be used for the measurement.

After the system has been operating for an hour or so, measure the pressure drop across the suction line filter-drier.

The maximum pressure drop for a permanent installation is 3 psig. In the case of a cleanup of a standing burnout, little change should be noted and, in most cases, the pressure drop will be less than the maximum allowable 3 psig.

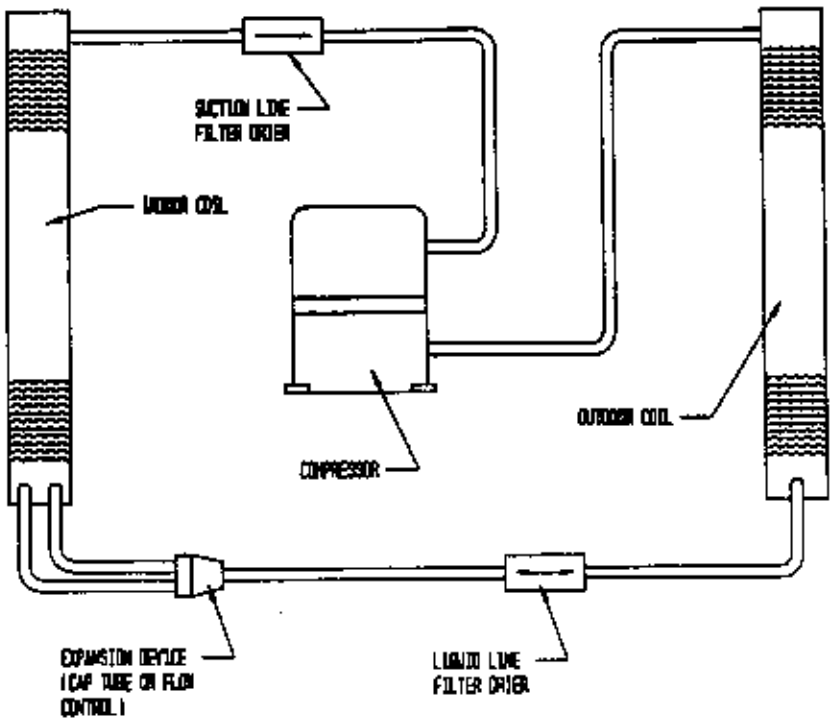
On the other hand, where a severe running burnout has occurred, an increased pressure drop will be measured. Change the suction filter-drier and the liquid line filter-drier whenever the pressure drop approaches or exceeds that allowed for temporary operation during cleanup, 15 psig. Keep changing both the suction and liquid line filter-driers until the pressure drop stabilizes at a figure equal to or below that permitted for permanent operation in a system, 3 psig. At this point, it is the serviceman's option as to whether to leave the suction drier in the system or remove it from operation.

If the system is to be opened to permit the permanent removal of the suction filter-drier, then the liquid line filter-drier should be changed once more.

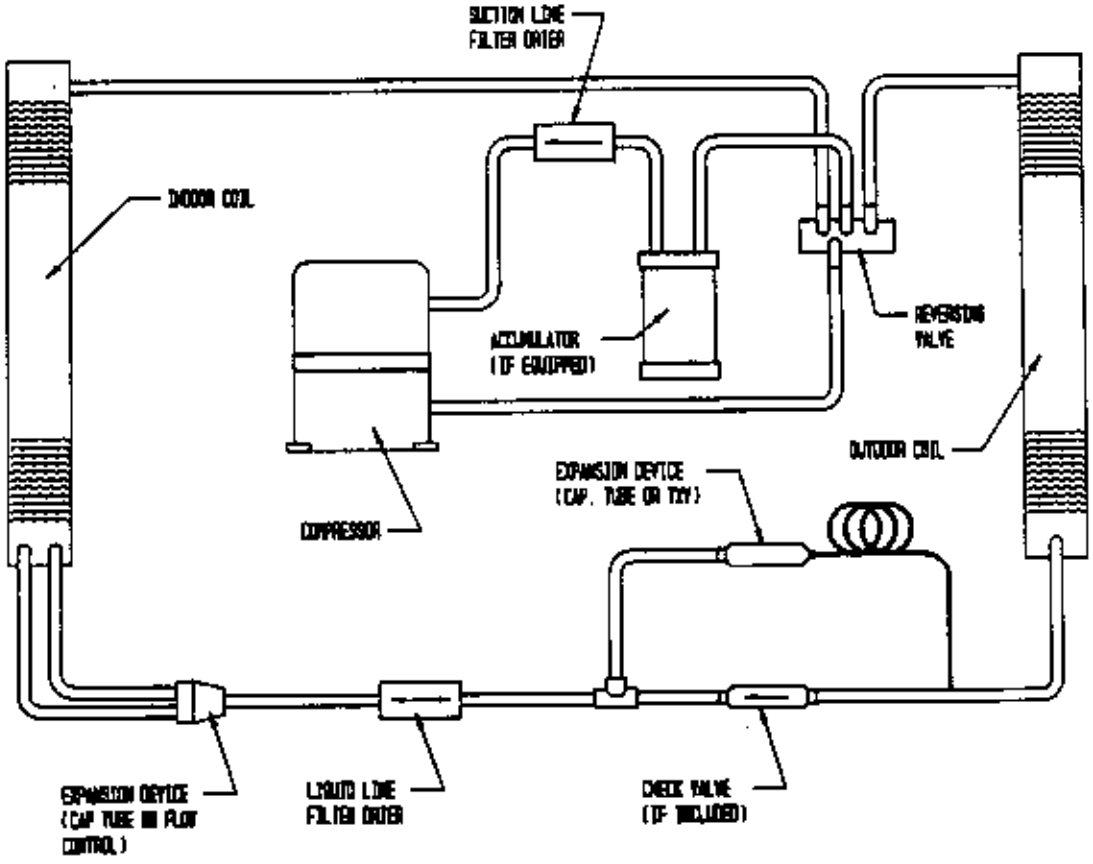
CONCLUSION

The above procedure for the cleanup of hermetic systems after burnout through the use of suction line filter-drier will prove satisfactory in most instances provided the system is monitored and kept clean by repeated drier changes, if such are needed. The failure to follow these minimum cleanup recommendations will result in an excessive risk of a repeat burnout.

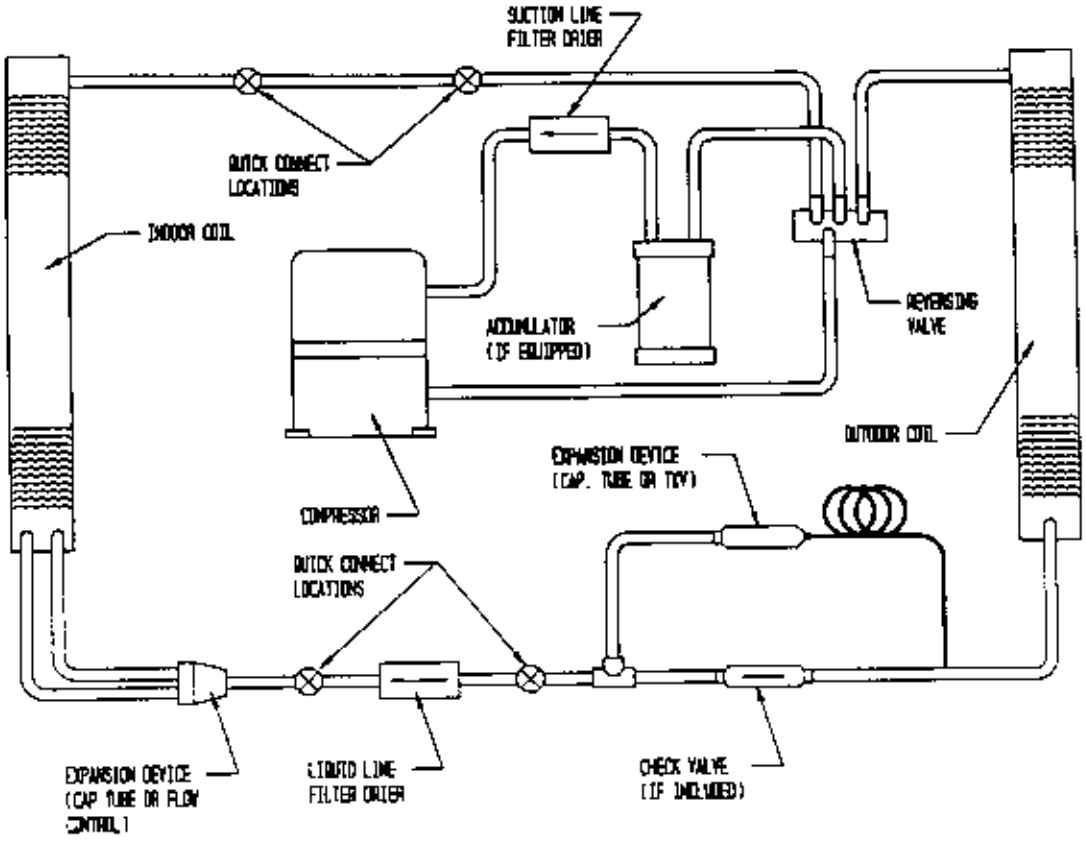
TYPICAL AIR CONDITIONER FILTER DRIER LOCATIONS



TYPICAL SELF CONTAINED HEAT PUMP FILTER DRIER LOCATIONS



TYPICAL SPLIT SYSTEM HEAT PUMP FILTER DRIER LOCATIONS



SAMPLE RETURN MATERIAL TAG

Bard

FUNCTIONAL COMPONENT PART WARRANTY CLAIM FORM
– NOT FOR USE ON EQUIPMENT –
– PARTS ONLY – DATE Today's Date

RETURN MATERIAL TAG Nº 12345 P

COMPLETE DATA REQUIRED TO VALIDATE CLAIM — PLEASE PRINT OR TYPE

IMPORTANT: Since many owner's registration cards are not returned initially, owner's information and base unit data are mandatory to process claim.

OWNER/USER Owner's Name
ADDRESS Owner's Address
CITY City STATE State ZIP Code

DISTRIBUTOR Distributor Name
ADDRESS Distributor Address
CITY City STATE State ZIP Code

DEALER Dealer Name
ADDRESS Dealer Address
CITY City STATE State ZIP Code

BASE UNIT DATA – MUST BE COMPLETED FOR ALL WARRANTY CLAIMS

UNIT MODEL NO.	UNIT SERIAL NO.	START UP MO. DA. YR.	FAILURE MO. DA. YR.	REPAIRED MO. DA. YR.
Equip. Model #	Equip. Serial #	Install Date	Failure Date	Repair Date

FAILED PART DATA — MUST BE COMPLETED TO RECEIVE CREDIT

BARD PART NO.	DESCRIPTION (OR PART NO. IF UNKNOWN)	SERIAL NO. (IF APPLICABLE)
9000-XXX	Model # from Compressor Tag	Compressor Serial #

EXPLANATION OF FAILURE (Be Specific)

Locked Rotor, Burnout, Etc.

DO NOT WRITE BELOW THIS LINE — BARD MFG. CO. USE ONLY

① PART VERIFIED YES NO	② DATE CODE	③ VENDOR NAME	④ PROCESSED DATE BY	⑤
⑥ WARRANTY YES NO	⑦ CREDIT YES NO	⑧ DISTRIBUTOR NO.	⑨ REVIEWED DATE BY	
⑩ CLM. NO. DATE BY	⑪ MFG. ONLY			

PLACE IN MATCHING NO. ENVELOPE AND ATTACH TO PART

IMPORTANT INSTRUCTIONS

1. ALL DATA REQUESTED MUST BE COMPLETE AND LEGIBLE. INCOMPLETE INFORMATION WILL CAUSE DELAYS IN PROCESSING WHILE WE CONTACT YOU TO OBTAIN THE INFORMATION.
2. PLEASE PRESS FIRMLY. YOUR COPY IS BOTTOM (PINK) COPY.
3. ENCLOSE TOP COPY (WHITE) IN ENVELOPE AND SEAL. MAKE SURE RETURN MATERIAL TAG NO. ON CLAIM FORM MATCHES NO. ON ENVELOPE ABOVE. ONLY 1 FORM NO. PER ENVELOPE.
4. ATTACH ENVELOPE SECURELY TO PART.
5. COMPRESSORS MUST BE SEALED. USE RUBBER PLUGS OR SOLDER.
6. MAIL YELLOW COPY TO BARD MFG. CO.
   1914 RANDOLPH DRIVE
   BRYAN, OHIO 43506