OBSOLETE

2100-003
Form CRP776

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. Blow the system charge, preferably in the liquid state, to a well ventilated outdoor location. 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 —

Systems 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, 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.

LIQUID LINE FILTER-DRIER			
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

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.

STEP 5 (Cont)

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 several hours and then allow the system to stand for several additional hours to be sure the vacuum is maintained.
An alternate method of removing moisture and non-condensables from the system is:

A. Evacuate system to 29 inches vacuum. Break vacuum with refrigerant to be used for final charging of system and vapor charge to 35-50 lbs. gauge pressure. Leave vapor charge in system for a minimum of five minutes. Reduce pressure to zero gauge pressure.
B. Repeat step A.
C. Evacuate system to 29 inches vacuum. 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. below.
B. Split-system units, the unit serial plate refers you to a system charge table located elsewhere on the unit. Using specific model numbers for indoor and outdoor units, and the length of the interconnecting 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. below.
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.

Part No.	Model No.	Oz. of R-22
5201-001	C-083S	8
5201-002	C-163S	10

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 subsequant 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 CONDITIONING FILTER-DRIER LOCATIONS

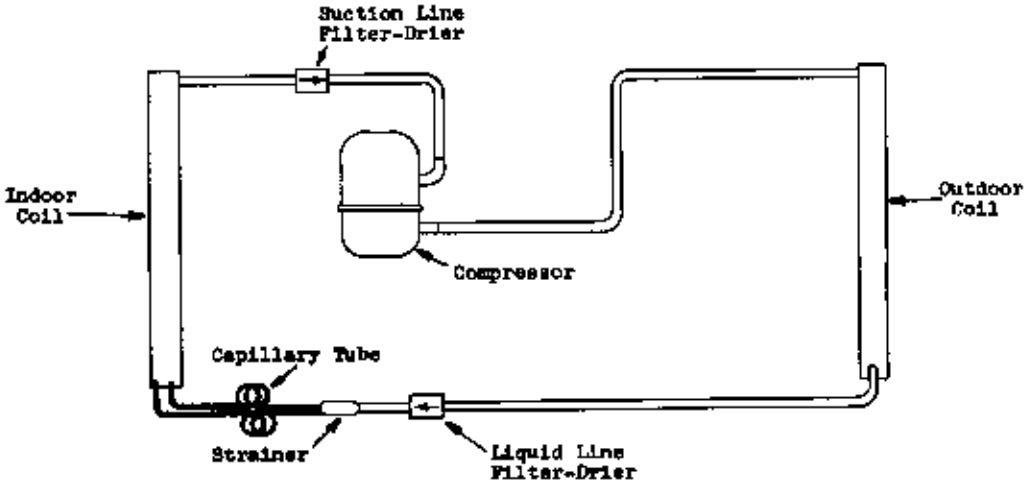


Figure A

TYPICAL SELF-CONTAINED HEAT PUMP FILTER-DRIER LOCATIONS

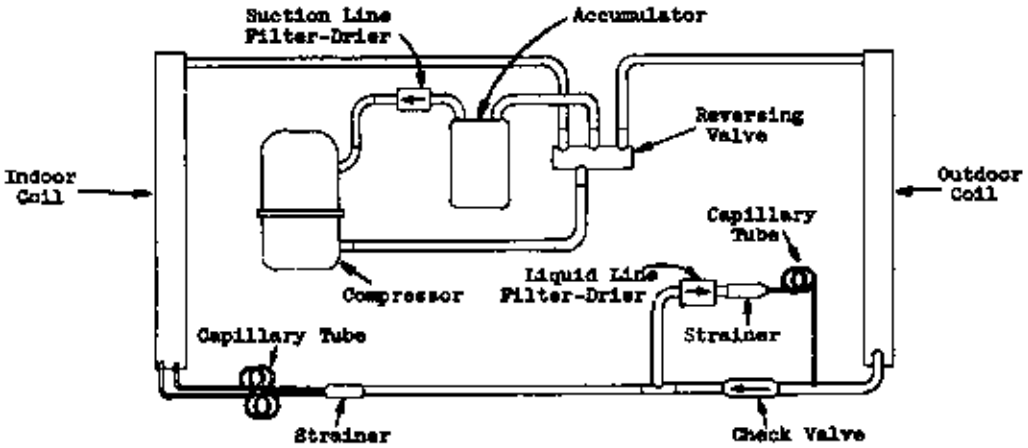


Figure B

TYPICAL SPLIT SYSTEM HEAT PUMP FILTER-DRIER LOCATIONS

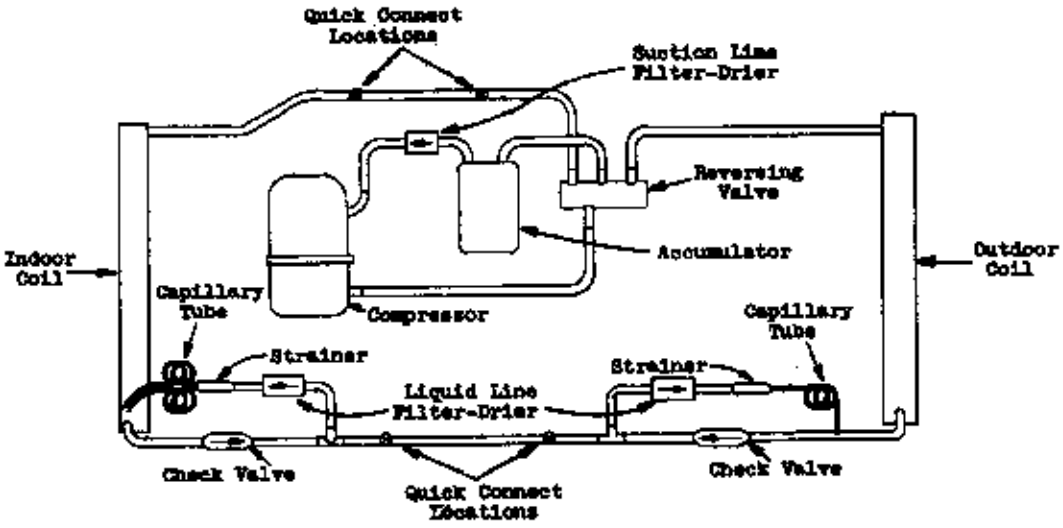
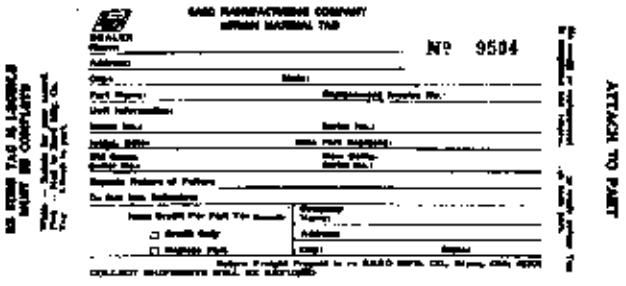


Figure C

IMPORTANT- PLEASE READ



RETURN MATERIAL TAG

1. Cardboard Copy - Attach firmly to the defective part being returned.
2. White Copy - Retain for your record.
3. Pink Copy - Mail to Bard Manufacturing Company.

The tag must be filled out completely, down to and including reason for failure. The words "Defective", "Failed", "Won't Work", and "In-operative" are not an acceptable reason for failure. Upon receipt of the part and the "Returned Material Tag," Bard Manufacturing Company will consult their records and if claim is valid, will issue a credit memo to the customer accepting the claim. If the part is found not to be defective, we will not allow any credit. The customer will be notified requesting disposition of part.

HERMETIC COMPRESSOR POLICY

If Bard Manufacturing Company's customer purchases compressors from us, we will allow full credit for defective compressors upon receipt at Bryan, Ohio, freight prepaid providing:

1. Compressors with solder stub tubes must be sealed with a good refrigeration seal by capping and soldering the tubes. Failure to do so voids the warranty.
2. The compressor must be tagged, with the Return Material Tag, giving full data covering the unit from which it was removed.
3. Reason for failure must be complete."Defective," "Failed" or "In-operative" are not acceptable.
4. Installation date and date repaired must be included.
5. The compressor must have failed during the warranty period.
6. The compressor must be received at Bard within 30 days after removal from unit.
7. If the compressor serial plate has been removed, the warranty will be voided and no credit will be allowed.

Our records and inspection will be final in determining the warranty status.

In the event the compressor is bought direct from the compressor manufacturer or his distributor, it will be necessary that the customer return the defective compressor to Bard and it will be subject to replacement providing the compressor is within the warranty period.

In the event that the compressor vendor finds the returned compressor not to be defective and therefore charges Bard for replacement, Bard reserves the right to invoice the customer for the replacement.