



HH STYLE FOR WAX REMOVAL



Small amounts of wax are often a problem on low temperature systems. Even well engineered systems frequently contain minute quantities of wax that are sufficient to clog expansion valve screens or cause sticking of the valve. Sporlan has developed a special blend of desiccants, including activated charcoal, that removes small amounts of wax in the liquid line before the wax can cause trouble at the expansion valve. These Catch-All Filter-Driers have been very successful in correcting trouble jobs in the field.

Select an HH Style Catch-All Filter-Drier if wax problems occur on low temperature systems. In addition to their wax removal ability, these filter-driers will remove all of the other harmful contaminants that the standard filter-driers remove. Listed in the table are various Catch-All models that incorporate the HH style core.

SPECIFICATIONS

TYPE	CONNECTION SIZE Inches	VOLUME OF DESSICANT Cubic Inches	LENGTH Inches	SOLDER SOCKET DEPTH Inches	DIAMETER OF BODY Inches	SHIPPING WEIGHT Lbs.
C-052-HH	1/4 SAE Flare	5	4.75	--	2.44	3/4
C-052-S-HH	1/4 ODF Solder		4.19	0.38		
C-082-HH	1/4 SAE Flare	9	5.62	--	2.62	1-1/4
C-083-HH	3/8 SAE Flare		6.06	--		
C-083-S-HH	3/8 ODF Solder		5.25	0.44		
C-162-HH	1/4 SAE Flare	16	6.25	--	3.00	1-3/4
C-163-HH	3/8 SAE Flare		6.75	--		
C-163-S-HH	3/8 ODF Solder		5.88	0.44		
C-164-HH	1/2 SAE Flare		6.94	--		
C-164-S-HH	1/2 ODF Solder		6.00	0.50		
C-165-HH	5/8 SAE Flare		7.25	--		
C-165-S-HH	5/8 ODF Solder		6.31	0.62		
C-303-HH	3/8 SAE Flare	30	9.69	--	3.00	3-1/2
C-304-HH	1/2 SAE Flare		9.88	--		
C-304-S-HH	1/2 ODF Solder		9.00	0.50		
C-305-HH	5/8 SAE Flare		10.19	--		
C-305-S-HH	5/8 ODF Solder		9.25	0.62		
C-414-HH	1/2 SAE Flare	41	9.94	--	3.50	4-1/2
C-415-HH	5/8 SAE Flare		10.25	--		
C-417-S-HH	7/8 ODF Solder		9.81	0.75t		
RC-4864-HH	Replaceable Core	See Page 18 for Replaceable Core Type Catch-All Specifications				
RC-10098-HH						



SUCTION LINE FILTER-DRIERS

SPORLAN
SUCTION LINE
Filter-Driers
DESIGNED SPECIFICALLY for
CLEAN-UP after BURNOUT
using the HH Type
CHARCOAL CORE

PROVEN BENEFITS:

- Positive protection for the compressor
- Most economical method of clean-up
- Minimum down time — system operates during clean-up
- Method is applicable to almost any size system
- Removes all contaminants — moisture, acid, sludges, dirt...
- Recommended by the leading equipment manufacturers

THE SUCTION LINE FILTER-DRIER METHOD of cleaning up a system after a hermetic motor burnout is favored by service technicians and recommended by manufacturers throughout our industry. This method gives the most practical and positive protection of the new compressor, since the refrigerant-lubricant mixture is filtered and purified just before it returns to the compressor. It is important that all contaminants remaining in the system be removed to prevent a repeat burnout of the new compressor.

THE CONSTRUCTION OF THE SUCTION LINE FILTER-DRIER is not significantly different from the standard liquid line filter-drier. Both driers remove the important contaminants such as moisture, dirt, acid, and the products of lubricant decomposition. The suction line filter-driers utilizes the HH style charcoal core to obtain the maximum ability for lubricant clean-up and removing all types of contaminants. The sealed models have an access valve (-T) at the inlet end to permit measuring the pressure drop during the first several hours of operation. RSF shells have an access valve to measure pressure drop (see Bulletin 80-10). Also, replaceable core Catch-Alls have a 1/4" female pipe connection (-G) in the endplate to permit the installation of an access valve to measure pressure drop. If the proper style drier is not available, then a suction line filter-drier can be used in the suction or liquid line; and a liquid line filter-drier can be used in the suction line. The pressure drop characteristics of the two types of driers are essentially the same for a given line size.

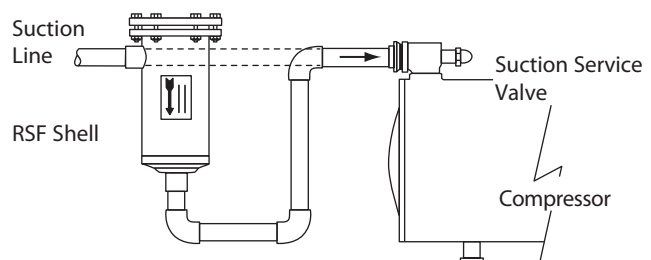
INSTALLATION — The Catch-All Filter-Drier can be installed directly in the suction line by removing a portion of the line. After clean-up, the Catch-All Filter-Drier is generally left in the line. The cores in the replaceable model or RSF shell should be replaced with filter elements (RPE-48-BD or RPE-100) to obtain the lowest possible pressure drop. A hermetic motor burnout produces large amounts of acid, moisture, sludge and all types of lubricant decomposition materials. To obtain the maximum ability to remove all these various types of contaminants, the Sporlan HH style charcoal core is preferred. If the HH style core is not available, the standard cores may be used.

IMPORTANCE OF LUBRICANT AS A SCAVENGER — OEM recommendations stress the importance of lubricant in cleaning up a system after a motor burnout. The lubricant acts as a scavenger, collecting the acid, sludges, and other contaminants. Therefore, the service technician should check the color and acid content of the lubricant. It must be clean and acid free before the job is finished. The acid content can be checked with an acid test kit.

OBTAINING A LUBRICANT SAMPLE — This is frequently a difficult task. A lubricant sample can usually be obtained from the burned out compressor. To obtain repeated samples after the system is started up, install a trap in the suction line with an access valve in the bottom of the trap. This permits collecting the small amount of lubricant required for running an acid test. Another method is to build a trap with valves, and connections for charging hoses. Then refrigerant vapor from the discharge service valve is run through this trap and put back into the suction service valve. In a short time sufficient lubricant collects in the trap for analysis. For more information request Sporlan Form 40-141.

SUCTION LINE PRESSURE DROP — Most hermetic motors rely on refrigerant vapor for cooling. Any large pressure drop in the suction line could result in reduced flow of suction gas, and thus improper cooling of the new hermetic motor. Field experience has shown that if the filter-drier is properly sized, the pressure drop across it should not exceed the values given in the table on Page 25. The pressure drop across the filter-drier should be checked during the first hour of operation to determine if the cores need to be changed.

Any pressure loss in the suction line also reduces system capacity significantly. When an RSF shell or replaceable core type Catch-All is used, it is recommended that the cores be removed and filter elements installed when the clean-up job is complete. Obtaining a low pressure drop is particularly important for energy savings on supermarket refrigeration systems. Therefore, suction line filter-driers should be sized generously on these systems.





CLEAN-UP PROCEDURE

- DIAGNOSIS** — Make certain that a motor burnout has actually occurred by running the proper electrical tests. Determine the severity of the burnout by analyzing the acid content of the lubricant from the burned out compressor. This can be done on the job with a TA-1 One Time Acid Test Kit, or AK-3 Acid Test Kit. Note the color of the lubricant, the smell of the refrigerant, and if carbon deposits are present in the suction line.
- PLAN THE PROCEDURE** — Consider the following factors: If the lubricant is not acidic and none of the other indications of severe burnout are present, then the system can be classified as a “mild burnout” and cleaned up accordingly. Under these circumstances, it is easier to save the refrigerant. If a lubricant sample is desired for checking the progress of the clean-up, then a trap should be installed in the suction line (see Form 40-141). A semi-hermetic compressor can be examined and cleaned by having the head removed. A heat pump system will frequently require replacing the 4-way valve, or other special precautions. Systems with a critical charge must have the charge adjusted due to the added volume in the oversized filter-drier that is normally installed in the liquid line.
- MILD BURN-OUT** — If the analysis of the lubricant shows no acidity, then the system can be classified as a mild burnout, and cleaned up simply by installing an oversized Catch-All Filter-Drier in the liquid line. If the lubricant is not analyzed, and the other factors indicate some doubt, then the burnout should be considered severe and cleaned up as described below.
- Recharge the system through the access valve on the suction line filter-drier. Then start the system according to the manufacturer's instructions.
- The use of a Catch-All Filter-Drier installed permanently in the suction line permits the clean-up of a small system to be completed with one service call. The pressure drop across the suction line filter-drier should be measured during the first hour's operation. If the pressure drop becomes excessive, then the suction line filter-drier should be replaced. If the equipment manufacturer's recommendations are not available, the following maximum pressure drop levels are suggested.

MAXIMUM RECOMMENDED PRESSURE DROP—PSI
FOR SUCTION LINE FILTER-DRIERS

SYSTEM	PERMANENT INSTALLATION		TEMPORARY INSTALLATION	
	REFRIGERANT			
	22, 404A, 407C, 410A, 502, & 507	12 & 134a	22, 404A, 407C, 410A, 502, & 507	12 & 134a
Air Conditioning	3	2	8	6
Commercial	2	1-1/2	4	3
Low Temperature	1	1/2	2	1

- SEVERE BURNOUTS** — These systems should be cleaned using the suction line filter-drier method. The refrigerant in the system can be saved, and must be removed using refrigerant recovery/ recycling equipment. The exact method chosen depends upon the availability of shutoff valves, the amount of charge, and the other equipment available. See the section on “Saving the Refrigerant.”

CAUTION — Acid burns can result from touching the sludge in the burned out compressor. Rubber gloves should be worn when handling contaminated parts.

- Remove the burned out compressor and install the new compressor.
- Install a Catch-All Suction Line Filter-Drier or RSF shell (selected from page 27) ahead of the new compressor. The access valve on the drier permits the pressure drop to be checked by installing gauges on the access valve and at the gauge port on the suction service valve. For systems without service valves, install a line tap valve downstream of the Catch-All Filter-Drier for the second connection.
- Remove the liquid line drier and install an oversized Catch-All (one size larger than the normal selection size). Check the expansion valve and other controls to see if cleaning or replacement is required. Install a See-All Moisture and Liquid Indicator.
- Evacuate the system according to the manufacturer's recommendations. Normally this will include the use of a high vacuum pump and a low vacuum micron gauge for measuring the vacuum obtained.

- In 24 hours take a lubricant sample. Observe the color and test for acidity. If the lubricant is dirty or acidic, replace the suction line and liquid line filter-driers.

In two weeks re-check the color and acidity of the lubricant to see if another change of filter-driers is necessary. It may also be desirable to change the lubricant in the compressor. Before the job is complete, it is essential that the lubricant be clean and acid-free.

SAVING THE REFRIGERANT — The refrigerant is not damaged by the burnout, and can be reused, provided the contaminants are removed. When a mild burnout has occurred on a system with service valves, the refrigerant can be saved by closing the valves and trapping the refrigerant in the system, while changing the compressor. The system can then be pumped down with the new compressor to save the refrigerant while installing an oversized Catch-All Filter-Drier in the liquid line.

If a severe burnout has occurred, the above procedure might damage the new compressor. Therefore, it is preferred that the refrigerant be removed from the system for reclamation. If no service valves are available then the refrigerant must be removed from the system. Recovery, recycling or reclamation of the refrigerant must be performed in accordance with EPA regulations.

Sporlan recommends the use of our HH style cores for cleaning up all systems after a hermetic motor burnout. These cores contain a desiccant mix that is suitable for removing all types of system contaminants. Form 40-109 is available for selection recommendations on suction line filter-driers. Information on cleaning up centrifugal systems is given in Bulletin 240-10-3. Information on clean-up after a hermetic motor burnout is also given in Section 91 of the SAM Manual published by the Refrigeration Service Engineers Society.



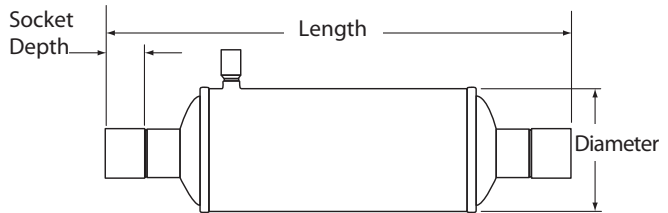
SUCTION LINE FILTER-DRIER SPECIFICATIONS

For New Systems And Clean-Up After Burnout

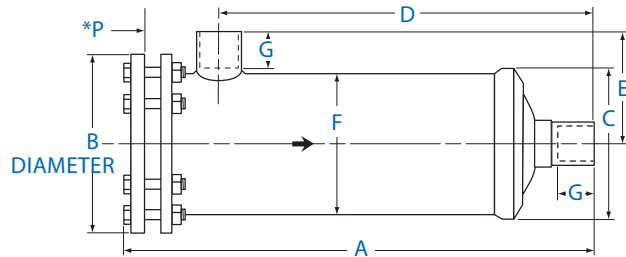
SEALED TYPE

TYPE NUMBER	CONNECTIONS Inches ODF Solder	LENGTH Inches	SOLDER SOCKET DEPTH Inches	SHELL DIAMETER Inches	SHIPPING WEIGHT Lbs.
C-083-S-T-HH	3/8	5.25	0.44	2.62	1-1/4
C-084-S-T-HH	1/2	5.44	0.50		
C-164-S-T-HH	1/2	6.00	0.50		
C-165-S-T-HH	5/8	6.31	0.62	3.00	1-3/4
C-166-S-T-HH	3/4	6.75	0.62		
C-167-S-T-HH	7/8	6.93	0.75		
C-305-S-T-HH	5/8	9.25	0.62		
C-306-S-T-HH	3/4	9.65	0.62	3.00	3-1/2
C-307-S-T-HH	7/8	9.80	0.75		
C-309-S-T-HH	1-1/8	9.75	0.96		
C-417-S-T-HH	7/8	9.81	0.75	3.50	4-1/2
C-419-S-T-HH	1-1/8	9.75	0.96		
C-437-S-T-HH	7/8	10.34	0.75		
C-439-S-T-HH	1-1/8	10.74	0.96		
C-4311-S-T-HH	1-3/8	10.94	1.00	4.75	8
C-4313-S-T-HH	1-5/8	10.94	1.06		
C-607-S-T-HH	7/8	16.00	0.75	3.00	6
C-609-S-T-HH	1-1/8	16.00	0.96		

SEALED TYPE



REPLACEABLE CORE TYPE



REPLACEABLE CORE TYPE

TYPE NUMBER	CONNECTIONS Inches ODF Solder	NUMBER OF CORES/ ELEMENTS	CORE/ELEMENT PART NUMBER	MOUNTING BRACKET	DIMENSIONS Inches								NET WEIGHT Lbs.	SHIPPING WEIGHT Lbs.
					A	B	C	D	E	F	G	*P		
RSF-487-T	7/8	1	RC-4864-HH, RC-4864 or RCW-48 Cores	A-685	9.30	6.00	5.00	6.07	3.72	4.75	0.75	7.00	10.6	12
RSF-489-T	1-1/8				9.37			6.25	3.80		0.91			
RSF-4811-T	1-3/8				9.60			6.37	4.00		0.97			
RSF-4813-T	1-5/8				9.60			6.37	4.00		1.09			
RSF-4817-T	2-1/8				9.37			5.58	4.60		1.37			
RSF-4821-T	2-5/8				9.75			5.75	5.20		1.47			
RSF-9617-T	2-1/8	2	RPE-48-BD Element	A-175-2	14.96	11.17	4.59	1.37	6.00	1.50	32.12	13.8	17	
RSF-9621-T	2-5/8				15.43	11.37	5.12	1.47						
RSF-9625-T	3-1/8				15.12	10.78	4.90	1.68						

For Systems Requiring the Maximum Amount of Dessicant

C-30013-G	1-5/8	3	RC-10098-HH, RC-10098 or RCW-100 Cores	A-175-2	27.94	7.50	6.25	23.88	5.12	6.00	1.12	25.62	36	40
C-30017-G	2-1/8				28.06			24.00	5.12		1.38			
C-40017-G	2-1/8				34.56			30.50	5.31		1.38			
C-40021-G	2-5/8	4	RPE-100 Element	A-175-2	34.75	7.50	6.25	30.56	5.38	6.00	1.50	32.12	45	47
C-40025-G	3-1/8				34.44			29.81	5.06		1.75			
C-40029-G	3-5/8				34.81			30.06	5.50		2.00			
C-40033-G	4-1/8				35.12			29.81	5.62		2.19			

NOTE: Refer to Bulletin 80-10 for additional information on RSF shells. Screen P/N: 6171-5 is recommended when cores are used in these shells.

*"P" Dimension is the pull space required to change core.

SIGNIFICANCE OF THE TYPE NUMBER...

The letters and numerals in the Catch-All type number each have a significance.

C indicates Catch-All.

RSF indicates Replaceable Suction Filter.

FIRST TWO OR THREE DIGITS indicates the cubic inches of desiccant in the given drier size.

LAST ONE OR TWO DIGITS indicates the fitting size in eighths of an inch. For example: a "4" indicates 1/2(fitting size; a "13" indicates a 1-5/8(fitting size.

Other suffix letters indicate special qualities. Examples:

- T indicates a pressure tap consisting of a Schrader type access valve on the inlet end of the Catch-All or RSF shell.
- HH indicates a charcoal style core for wax removal and clean-up after a hermetic motor burnout.



SUCTION LINE FILTER-DRIER SPECIFICATIONS For New Systems And Clean-Up After Burnout

SUCTION LINE FLOW CAPACITY (TONS) — SEALED TYPE

REFRIGERANT	134a			22					404A				407C	410A
	40°F	20°F	0°F	40°F	20°F	0°F	-20°F	-40°F	20°F	0°F	-20°F	-40°F	40°F	40°F
EVAPORATOR TEMP.	40°F	20°F	0°F	40°F	20°F	0°F	-20°F	-40°F	20°F	0°F	-20°F	-40°F	40°F	40°F
PRESSURE DROP (psi)	2.0	1.5	1.0	3.0	2.0	1.5	1.0	0.5	2.0	1.5	1.0	0.5	3.0	3.0
C-083-S-T-HH	1.3	0.9	0.5	2.1	1.3	0.9	0.5	0.2	1.2	0.8	0.5	0.2	2.0	2.7
C-084-S-T-HH	1.4	1.0	0.6	2.1	1.4	1.0	0.6	0.3	1.3	0.9	0.5	0.3	2.1	2.8
C-164-S-T-HH	1.7	1.1	0.7	2.7	1.7	1.1	0.7	0.3	1.6	1.0	0.6	0.3	2.7	3.6
C-165-S-T-HH	2.0	1.3	0.8	3.2	2.0	1.3	0.8	0.4	1.9	1.2	0.7	0.4	3.2	4.2
C-166-S-T-HH	2.6	1.7	1.0	4.0	2.5	1.6	1.0	0.5	2.4	1.6	0.9	0.5	3.9	5.2
C-167-S-T-HH	2.8	1.8	1.1	4.5	2.8	1.8	1.1	0.5	2.7	1.7	1.0	0.5	4.4	5.9
C-305-S-T-HH	2.2	1.4	0.8	3.4	2.1	1.4	0.8	0.4	2.0	1.3	0.8	0.4	3.4	4.4
C-306-S-T-HH	2.8	1.8	1.1	4.4	2.8	1.8	1.1	0.5	2.7	1.7	1.0	0.5	4.4	5.8
C-307-S-T-HH	3.4	2.2	1.3	5.3	3.3	2.2	1.3	0.6	3.2	2.0	1.2	0.6	5.3	7.0
C-309-S-T-HH	3.8	2.4	1.5	5.9	3.7	2.4	1.5	0.7	3.6	2.3	1.4	0.7	5.8	7.7
C-417-S-T-HH	3.8	2.5	1.5	6.0	3.8	2.5	1.5	0.7	3.6	2.3	1.4	0.7	6.0	7.9
C-419-S-T-HH	4.0	2.6	1.6	6.2	3.9	2.5	1.5	0.8	3.7	2.4	1.5	0.7	6.1	8.0
C-437-S-T-HH	5.1	3.3	2.1	8.0	5.0	3.3	2.0	1.0	4.8	3.1	1.9	0.9	7.9	10.4
C-439-S-T-HH	6.4	4.2	2.5	10.0	6.3	4.1	2.5	1.2	6.0	3.9	2.4	1.2	9.9	13.1
C-4311-S-T-HH	7.1	4.6	2.8	11.1	6.9	4.6	2.7	1.4	6.7	4.3	2.6	1.3	10.9	14.4
C-4313-S-T-HH	7.8	5.1	3.1	12.2	7.6	5.0	3.0	1.5	7.3	4.7	2.9	1.4	12.0	15.9
C-607-S-T-HH	4.2	2.7	1.7	6.7	4.2	2.7	1.6	0.8	4.0	2.6	1.6	0.8	6.6	8.7
C-609-S-T-HH	4.8	3.1	1.9	7.6	4.7	3.1	1.8	0.9	4.5	2.9	1.8	0.9	7.4	9.8

SUCTION LINE FLOW CAPACITY (TONS) — SHELLS WITH REPLACEABLE CORES

REFRIGERANT	134a			22					404A & 507				407C		410A		
	40°F	20°F	0°F	40°F	20°F	0°F	-20°F	-40°F	20°F	0°F	-20°F	-40°F	40°F	40°F			
EVAPORATOR TEMP.	40°F	20°F	0°F	40°F	20°F	0°F	-20°F	-40°F	20°F	0°F	-20°F	-40°F	40°F	40°F			
PRESSURE DROP (psi)	2.0	1.5	1.0	3.0	8.0*	2.0	1.5	1.0	0.5	2.0	1.5	1.0	0.5	3.0	8.0*	3.0	8.0*
RSF-487-T	6.4	4.2	2.5	10.1	17.5	6.3	4.1	2.5	1.2	6.1	4.0	2.3	1.2	10.0	17.3	12.6	21.9
RSF-489-T	7.8	5.1	3.1	12.2	21.1	7.6	5.0	3.0	1.5	7.3	4.8	2.8	1.4	12.0	20.7	15.3	26.4
RSF-4811-T	9.4	6.2	3.7	14.8	25.6	9.3	6.1	3.6	1.8	8.9	5.8	3.4	1.7	14.6	25.3	18.5	32.0
RSF-4813-T	10.1	6.7	4.0	15.9	27.5	10.0	6.5	3.9	1.9	9.6	6.2	3.6	1.8	15.7	27.2	19.9	34.4
RSF-4817-T	11.0	7.2	4.4	17.2	29.8	10.8	7.1	4.2	2.1	10.4	6.8	3.9	2.0	17.0	29.4	21.5	37.3
RSF-4821-T	11.9	7.8	4.7	18.6	32.2	11.6	7.6	4.6	2.3	11.2	7.3	4.3	2.2	18.4	31.6	23.3	40.3
RSF-9617-T	16.1	13.0	8.1	29.7	49.0	19.8	13.7	8.7	4.7	17.9	12.2	7.6	4.0	28.6	47.2	37.1	61.3
RSF-9621-T	18.7	13.0	8.1	29.7	50.7	19.8	13.7	8.7	4.7	17.9	12.2	7.6	4.0	28.9	49.8	37.1	61.3
RSF-9625-T	19.2	13.0	8.1	30.0	51.9	20.0	13.7	8.7	4.7	17.9	12.2	7.6	4.0	29.7	51.0	37.5	63.4
C-30013-G	16.9	11.0	6.7	26.6	46.0	16.7	10.9	6.5	3.2	16.0	10.3	6.2	3.1	26.3	42.8	33.3	64.9
C-30017-G	17.2	11.1	6.8	27.0	46.7	16.9	11.1	6.6	3.3	16.2	10.4	6.3	3.1	26.7	43.3	33.8	58.4
C-40017-G	21.0	13.6	8.3	32.9	56.9	20.6	13.5	8.1	4.0	19.8	12.8	7.2	3.8	32.4	52.8	41.1	71.1
C-40021-G thru C-40033-G	21.0	13.6	8.3	32.9	56.9	20.6	13.5	8.1	4.0	19.8	12.8	7.2	3.8	32.4	52.8	41.1	71.1

*Denotes TEMPORARY INSTALLATION. Cores for system clean-up; RPE-48-BD or RPE-100 Filter Elements are to be installed after clean-up. Rated in accordance with ARI Standard 730.

• SELECTION INSTRUCTIONS

Except for the values in bold (R-22/R-407C/410A at 40°F; 8 psi pressure drop), the flow capacities are rated at the maximum recommended pressure drop for permanent installation.

To ensure the suction line filter-drier has ample contaminant removal ability, selection must be based on flow capacity and the amount of desiccant required for system clean-up. The suction line filter-drier must be large enough to adequately remove acid, moisture and solid contaminants without causing nuisance plug-

ups. Sizing is especially important for sealed type suction line filter-driers since they should be sized to clean a small system with one service call.

To reduce the pressure drop through replaceable core shells, substitute cores with filter elements (see page 19) after the system has been cleaned up. The 6171-5 screen should be discarded when cores are replaced with RPE-48-BD elements in RSF shells.