

# Series C/CN Filter Chambers

Installation & Maintenance

## SERIES C/CN FILTER CHAMBERS

### Models

6C (A or B)  
8C (A, B, or C)  
12C (A, B, or C)  
6CN (A)

### Materials

A - CPVC  
B - Polypropylene  
C - PVDF



### Introduction

Penguin corrosion resistant filter chambers are recommended for a wide range of acidic or alkaline solutions. Three standard materials of construction where in direct solution contact are offered: A = CPVC/viton, B = polypropylene/EPR, and C = PVDF/viton. There is no metal to liquid contact, no springs to lose or break, no crushed tubes, no liquid bypass, and no external frame rods employed. Models 6C, 8C, and 12C chambers incorporate ribbed interchangeable tops and bottoms, double labyrinth o-ring sealing, and ribbed, long-sleeved flanges attached to the chamber shell, allowing for proper operation at elevated temperatures and pressures. The model 6CN in-tank chambers incorporate our standard features at the top of the chamber with a schedule 80, 6" half coupling securing everything at the bottom.

# Installation, Operation & Maintenance Instructions

## Plumbing

Model 6C/8C/12C filter chambers should be mounted vertically on their legs with their outlet port on the bottom, facing downward. Do not mount these chamber models in the solution inside the reservoir unless the chamber is specifically designed for in-tank installation. If this is the case, then employ a B-mount bracket. An "N" will be designated in the part number as follows: 6CN-6A or 6CN-9A. The inlet/outlet ports are as follows: 6C = 1" NPT and 8C/12C = 1 1/2" NPT. Whether purchased as a separate unit or a complete filter system, 6C/8C/12C filter chambers can be singularly or base-mounted with the pump on the floor outside the solution reservoir, or

inside the tank for models: 6CN-6A and 6-CN-9A only. In-tank mounting will provide a compact unit while having all of the solution flow confined to inside the tank, thus preventing possible loss of solution. All base mounted chambers are hoses or rigid piped and valved on a common baseplate, in conjunction with pressure gauge and guard/air vent valve ass'y, and an initial set of cartridge filters. Model 2-6C/2-8C/2-12C indicates two (2) chambers rigid piped and valved on a common baseplate in parallel, having single inlet and dual outlets, in conjunction with gauge and guard/air vent valve ass'y and an initial set of cartridge filters.

## Tube Exchange

Each 6C/8C/12C filter chamber is equipped with one initial set of 15 micron filter tubes. The following are filter chamber models with their respective tube numbers and lengths.

Models	No. of DOE tubes	Length of tubes
6C - 6C-3	3	10"
6C-6/6CN-6	3	20"
6C-9/6CN-9	3	30"
C - 8C-5	5	10"
8C-10	5	20"
8C-15	5	30"
8C-20	5	40"
12C - 12C-12	12	10"
12C-24	12	20"
12C-36	12	30"
12C-48	12	40"

Refer to Bulletin 101 for details regarding the Penguin 6C/8C/12C chamber designed for SOE cartridge filter configurations.

There is no set timetable for spent filter tube replacement. Cartridge filter change-out varies with each application. No two are ever completely identical, only similar. Change-out is based on the following: a) solution type; b) continuous or non-continuous operation; c) single-pass or recirculation; d) particle type, size, and distribution; e) micron porosity; and f) flow rates. As a helpful guide, a pressure gauge and guard ass'y is supplied to help determine differential pressure ( $\Delta P$ ) between clean tubes and those in need of replacement. (See Maintenance for replacement instructions, immediately following).

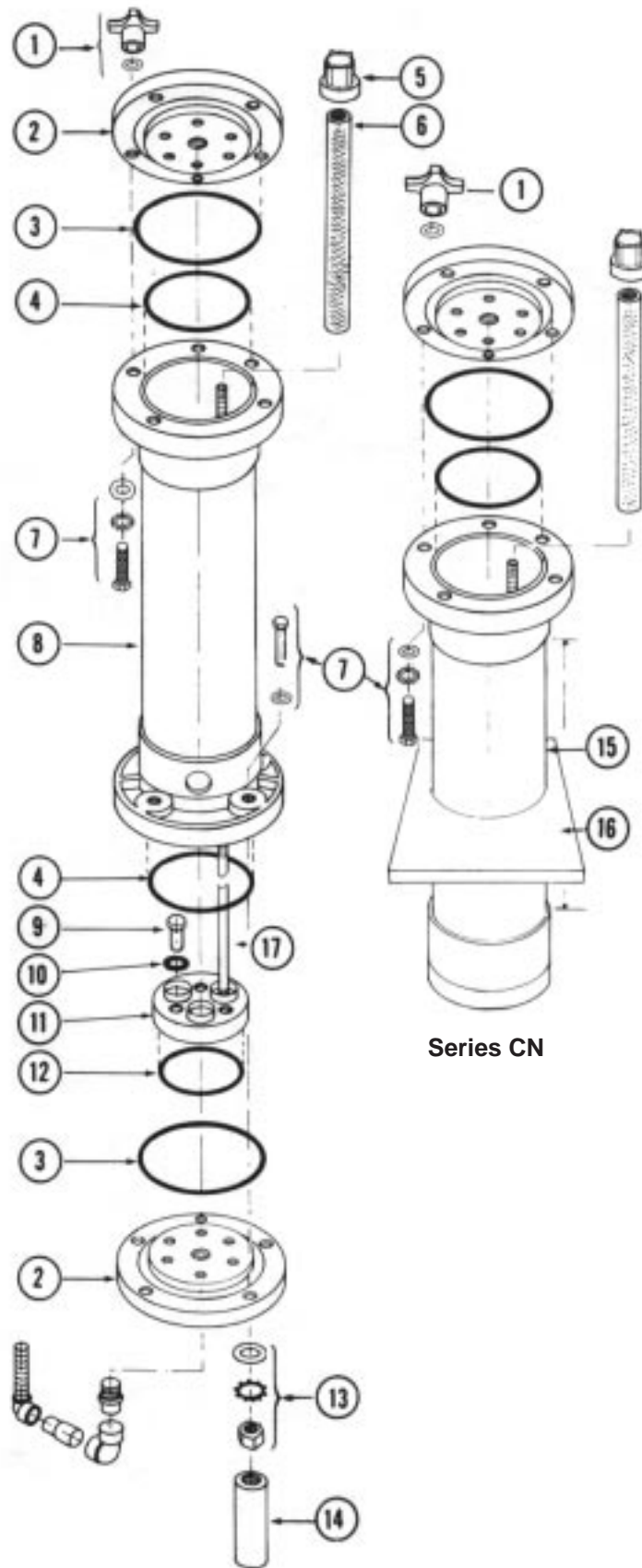
## Assembly 6C/8C/12C

- 1) Screw the (10/10/18) 1/2x13x3" hex head bolts with larger washers into both shell flanges, where the metal inserts are exposed. Tighten the bolts using a 3/4" wrench. Do not over-tighten.
- 2) Press two (2) of the #4 o-rings evenly into the grooves located on the flanges. Press one (1) #3 o-ring evenly into the groove of the bottom flange. Press the #12 o-ring into the groove of the #11 manifold. The o-ring is undersized and must be stretched while pressing into the groove. Moistening this o-ring with water will ease this operation.
- 3) Place (3/5/3) #10 o-rings underneath the 3/4" manifold bolt. Align the timing mark on the manifold with the timing mark on the bottom flange. Remember that the knife-edges of the manifold must face upwards.
- 4) Align the timing mark on the side of the bottom head

containing the manifold with the timing mark on the shell flange. Be sure the 1"/1 1/2"/1 1/2" threaded side hole is at the bottom. Using a 3/4" wrench, secure the bottom head onto the shell by tightening the (5/5/9) nuts. Make sure that you use the flat and lock washers and that you alternate diagonally until all nuts are tight. The chamber legs have a recessed cavity on one side. Screw the (5/5/9) chamber legs with the cavity over the (5/5/9) nuts, hand tightening only. Do not use any tools to tighten these legs.

- 5) Press the second #3 o-ring into the head groove. Position the chamber with the remaining (5/5/9) bolts at the top. Place the head over the bolts. Tighten the head down by hand using the (5/5/9) #1 washer and knobs. Alignment of the timing marks is not necessary.

# Filter Chamber Spare Parts Drawing



Series C

# 6C/8C/12C Filter Chamber Spare Parts List

Item	Description	Part Number			Quantity Required		
		6C	8C	12C	6C	8C	12C
1	Knob & Washer	C-600-01	C-600-01	C-600-01	5	5	9
2A-TOP	Head - CPVC - Top	C-600-02A	C-800-02A-TOP	C-120-02A-TOP	1	1	1
2A-BOT	Head - CPVC - Bottom	C-600-02A	C-800-02A-BOT	C-120-02A-BOT	1	1	1
2B	Head - Polypro	C-600-02B	NA	NA	1	NA	NA
2C-TOP	Head - PVDF - Bottom	N/A	C-800-02C-TOP	C-120-02C-TOP	N/A	1	1
2C-BOT	Head - PVDF - Top	N/A	C-800-02C-BOT	C-120-02C-BOT	N/A	1	1
3E	Head O-ring - EPR	C-600-03E	C-800-03E	C-120-03E	2	2	2
3V	Head O-ring - Viton	C-600-03V	C-800-03V	C-120-03V	2	2	2
4E	Shell O-ring - EPR	C-600-04E	C-800-04E	C-120-04E	2	2	2
4V	Shell O-ring - Viton	C-600-04V	C-800-04V	C-120-04V	2	2	2
5A	Tube Nut - CPVC	C-400-04A	C-400-04A	C-400-04A	3	5	12
5B	Tube Nut - Polypro	C-400-04B	NA	NA	3	NA	NA
5C	Tube Nut - PVDF	NA	C-400-04C	C-400-04C	3	5	12
6	Tube Filter	**	**	**	3	5	12
7	Flange Bolt & Washer Ass'y	C-600-07	C-600-07	C-600-07	10	10	18
7	Flange Bolt & Washer Ass'y (6CN)	C-600-07	N/A	N/A	5	N/A	N/A
8A-1	Shell - CPVC 10"	C-600-08A-1	C-800-08A-1	C-120-08A-1	1	1	1
8B-1	Shell - Polypro 10"	C-600-08B-1	NA	NA	1	NA	NA
8C-1	Shell - PVDF 10"	N/A	C-800-08C-1	C-120-08C-1	N/A	1	1
8A-2	Shell - CPVC 20"	C-600-08A-2	C-800-08A-2	C-120-08A-2	1	1	1
8B-2	Shell - Polypro 20"	C-600-08B-2	NA	NA	1	NA	NA
8C-2	Shell - PVDF 20"	N/A	C-800-08C-2	C-120-08C-2	N/A	1	1
8A-3	Shell - CPVC 30"	C-600-08A-3	C-800-08A-3	C-120-08A-3	1	1	1
8B-3	Shell - Polypro 30"	C-600-08B-3	NA	NA	1	NA	NA
8C-3	Shell - PVDF 30"	N/A	C-800-08C-3	C-120-08C-3	N/A	1	1
8A-4	Shell - CPVC 40"	C-600-08A-4	C-800-08A-4	C-120-08A-4	1	1	1
8B-4	Shell - Polypro 40"	C-600-08B-4	C-800-08B-4	C-120-08B-4	1	1	1
8C-4	Shell - PVDF 40"	N/A	C-800-08C-4	C-120-08C-4	N/A	1	1
9	Manifold Bolt - CPVC (DOE only)	C-600-09A	C-600-09A	C-600-09A	3	5	3
10E	Manifold Bolt O-ring - EPR (DOE only)	C-600-10E	C-600-10E	C-600-10E	3	5	3
10V	Manifold Bolt O-ring - Viton (DOE only)	C-600-10V	C-600-10V	C-600-10V	3	5	3
11A-DOE	Manifold - CPVC (DOE) (Bolted)	C-600-11A-DOE	C-800-11A-DOE	C-120-11A-DOE	1	1	1
11A-SOE	Manifold - CPVC (SOE) (Cemented) ***	C-600-11A-SOE	C-800-11A-SOE	C-120-11A-SOE	1	1	1
11B-DOE	Manifold - Polypro (DOE) (Bolted)	C-600-11B-DOE	NA	NA	1	NA	NA
11B-SOE	Manifold - Polypro (SOE) (Welded) ***	C-600-11B-SOE	NA	NA	1	NA	NA
11C-DOE	Manifold - PVDF (DOE) (Bolted)	NA	C-800-11C-DOE	C-120-11C-DOE	NA	1	1
11C-SOE	Manifold - PVDF (SOE) (Welded)***	NA	C-800-11C-SOE	C-120-11C-SOE	NA	1	1
12E	Manifold O-ring - EPR (DOE)	C-600-12E	C-800-12E	C-120-12E	1	1	1
12V	Manifold O-ring - Viton (DOE)	C-600-12V	C-800-12V	C-120-12V	1	1	1
13	Nut, Lock Washer & Washer Ass'y	C-600-13	C-600-13	C-600-13	5	5	9
14	Chamber Leg	C-600-14	C-600-14	C-600-14	5	5	9
15A-2	Shell - CPVC 20" (6CN)	C-600-15A-2	NA	NA	1	NA	NA
15A-3	Shell - CPVC 30" (6CN)	C-600-15A-3	NA	NA	1	NA	NA
16	B-Mount (6CN)	B-6C	NA	NA	1	NA	NA
17A-1	Tube Rod - CPVC 10"	C-400-03A-1	C-400-03A-1	C-400-03A-1	3	5	12
17B-1	Tube Rod - Polypro 10"	C-400-03B-1	C-400-03B-1	C-400-03B-1	3	5	12
17C-1	Tube Rod - PVDF 10"	C-400-03C-1	C-400-03C-1	C-400-03C-1	3	5	12
17A-2	Tube Rod - CPVC 20"	C-400-03A-2	C-400-03A-2	C-400-03A-2	3	5	12
17B-2	Tube Rod - Polypro 20"	C-400-03B-2	NA	NA	3	NA	NA
17C-2	Tube Rod - PVDF 20"	NA	C-400-03C-2	C-400-03C-2	NA	5	12
17A-3	Tube Rod - CPVC 30"	C-600-03A-3	C-600-03A-3	C-600-03A-3	3	5	12
17B-3	Tube Rod - Polypro 30"	C-600-03B-3	NA	NA	3	NA	NA
17C-3	Tube Rod - PVDF 30"	NA	C-600-03C-3	C-600-03C-3	NA	5	12
17A-4	Tube Rod - CPVC 40"	C-600-03A-4	C-600-03A-4	C-600-03A-4	3	5	12
17B-4	Tube Rod - Polypro 40"	C-600-03B-4	NA	NA	3	NA	NA
17C-4	Tube Rod - PVDF 40"	NA	C-600-03C-4	C-600-03C-4	NA	5	12
18A	Gauge/Guard - Air Vent Valve Ass'y- CPVC	C-600-18A	C-800-18A	C-800-18A	1	1	1
18B	Gauge/Guard - Air Vent Valve Ass'y- Polypro	C-600-18B	NA	NA	1	NA	NA
18C	Gauge/Guard - Air Vent Valve Ass'y- PVDF	C-600-18C	C-800-18C	C-800-18C	NA	1	1
19A	Drain Valve Ass'y- CPVC (optional)	C-600-19A	C-800-19A	C-800-19A	1	1	1
19B	Drain Valve Ass'y- Polypro (optional)	C-600-19B	NA	NA	1	NA	NA
19C	Drain Valve Ass'y- PVDF (optional)	NA	C-800-19C	C-800-19C	NA	1	1
20A	Head - SOE Manifold Ass'y - CPVC	C-600-20A-SOE	C-800-20A-SOE	C-112-20A-SOE	1	1	1
20B	Head - SOE Manifold Ass'y - Polypro	C-600-20B-SOE	NA	NA	1	NA	NA
20C	Head - SOE Manifold Ass'y - PVDF	NA	C-800-20C-SOE	C-112-20C-SOE	NA	1	1

\*\* = Consult Factory

\*\*\* = All SOE manifolds must be purchased in conjunction with a new head/flange ass'y since SOE manifolds are only cemented or heat welded to the respective head/flange ass'y. They should be ordered under item 20 as one complete bottom/manifold ass'y.



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