

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT,
HEALTH AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

SEPTIC TANK EFFLUENT FILTER APPROVAL

SEPTIC TANK EFFLUENT FILTER NO: EF-11-R3

ISSUED TO: Patrick Mulhall

Zabel Environmental Technology
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FOR:

Septic Tank Effluent Filter Models:
A1800-4x18, A1800-4x22, A1801-4x18, A1801-4x22
A100-8x16, A100-8x26, A100-8x32
A100-12x16, A100-12x30
A300-8x16, A300-8x26, A300-8x32
A300-12x20, A300-12x30

DATES:

May 2006
January 19, 2001 (EF-11-R2) Supercedes past approvals of:
November 18, 1999 (EF-11-R)
December 8, 1998 (EF-11)
May 16, 2006

In accordance with North Carolina General Statute 130A-335, 130A-335.1, and 15A NCAC 18A .1954, an application by Patrick Mulhall of Polylok, Inc. for modification of their approval for septic tank effluent filters has been reviewed and the above referenced changes have been found to meet the requirements established by statute and rule for approved effluent filters, when the following conditions for use, installation, operation and maintenance are met:

I. Description:

- a. Filters shall be designed and manufactured in accordance with plans, specifications and supporting documents provided by the manufacturer in their application for approval submitted to the On-Site Wastewater Section. The On-Site Wastewater Section shall be notified in writing of any modification to the approved filter models prior to use in septic tank systems.

- b. Proposed filter modifications from the designs originally approved December 9, 1998 (EF-11) and November 18, 1999 (EF-11-R) include:
- i. Relabeling of Models to include case dimensions, and eliminate “HIP” designation for the larger filters.
 - ii. Addition of 8-inch diameter filter models.
- c. Filters shall also meet the following specifications (see Table 1):

Table 1. Approved Filter Model Specifications (Zabel)						
Filter Models	Size	Support Case ¹	Case Dimensions		Min. Tank Liquid Depth Required ³	Min. Access Opening Size ⁴
			Above Liquid Level	Below Liquid Level		
A1800-4x18, A1801-4x18	4” dia. x 18”	4” PVC Tee	6”	15”	38”	15 x 15 in. or 17 in. dia. or equal
A1800-4x22 A1801-4x22	4” dia. x 22”					
Dual A1800-4x18, A1801-4x18	2 filters, each 4” dia. x 18”	2 cases, 4” PVC Cross, + 4” PVC Tee	6”	15”	38”	17 x 17 in. or 17 in. dia. or equal
Dual A1800-4x22 A1801-4x22	2 filters, each 4” dia. x 22”					
A100-8x18	8” dia. x 18.5”	8” Housing	5½”	13”	(52” max)	15 x 15 in. or 17 in. dia. or equal
A100-8x26	8” dia. x 25.5”	8” Housing	5½”	20”	36”	
A100-8x32	8” dia. x 32.5”	8” Housing ²	5½”	27”	36”	
A100-12x16	12” dia. x 15”	12” Housing	6”	10”	(40” max)	18 x 18 in. or 18 in. dia. or equal
A100-12x16, with A100/300 ADA	12” dia. x 15”	12” Housing with reducer	6”	14½”	36”	
A100-12x30	12” dia. x 25”	12” Housing ²	6”	24½”	65”	
A300-8x18	8” dia. x 18.5”	8” Housing	5½”	13”	(52” max)	15 x 15 in. or 17 in. dia. or equal
A300-8x26	8” dia. x 25.5”	8” Housing	5½”	20”	36”	
A300-8x32	8” dia. x 32.5”	8” Housing ²	5½”	27”	36”	
A300-12x20	12” dia. x 15”	12” Housing with reducer	6”	14½”	36”	18 x 18 in. or 18 in. dia. or equal
A300-12x30	12” dia. x 15”	12” Housing ²	6”	24½”	36”	

Notes:

1. Support case provided by Zabel with Models A1800-4x18 and A1800-4x22. Septic tank manufacturer shall provide support case for Models A1801-4x18 and A1801-4x22.
2. Models (A100-8x32, A300-8x32, A100-12x30, and A300-12x30) require supplemental support to be provided by septic tank manufacturer, using four-inch Sch. 40 PVC extending from filter bottom to tank bottom. Providing similar support for other A100 and A300 models is optional.
3. Minimum septic tank liquid depth required to meet 25% to 40% inlet intake requirement for filter support case. Note that when supplemental support is provided, all openings in the support pipe must be located so that this requirement shall be met.
4. Other minimum opening sizes or configurations proposed both the septic tank manufacturer shall be approved by

the State on a case-by-case basis if documentation is provided showing both adequate access is provided for filter maintenance and for pumping the tank outlet compartment.

- d. This approval shall be amended to incorporate additional filter models when they are found to meet the requirements of GS 130A-335, 130A-335.1, and other applicable rules.

II. Use:

A septic tank manufacturer may use one or more of these approved effluent filters in one or more of their septic tanks. The septic tank manufacturer must notify the On-Site Wastewater Section in accordance with Rule .1953 of the tanks in which they propose to utilize any of these approved filters, showing any modifications to the approved tank plans which may be necessary to utilize the proposed filter.

III. Sizing:

Approved filter models may be used in systems that meet the capacities and wastewater characteristic limitations stated in the following table, in accordance with manufacturer's specifications:

Table 2. Filter Sizing Criteria (Zabel)					
Filter Model	Maximum Design Flow for a Single Dwelling Unit (gpd) ¹		Maximum Design Flow for Other Than A Single Dwelling Unit (gpd)		
	Without garbage disposal only	With or without garbage disposal	CBOD ₅ <300 mg/l ³	CBOD ₅ 300-600 mg/l	CBOD ₅ 600-1000 mg/l ⁴
A1800-4x18, A1801-4x18	800		500	250	167
A1800-4x22, A1801-4x22		800			
Dual A1800-4x18, A1801-4x18	1600		1000	500	333
Dual A1800-4x22, A1801-4x22		1600			
A100-8x18, A300-8x18		1200	1200	600	400
A100-8x26, A300-8x26		1800	1800	900	600
A100-8x32, A300-8x32		2400	2400	1200	800
A100-12x20, A300-12x20		3000	3000	1500	1000
A100-12x30, A300-12x30		3000 ²	3000 ²	2250	1500

Notes:

1. Sizing based on typical residential strength septic tank effluent, including influent CBOD₅ ≤ 300 mg/l; TSS ≤ 150 mg/l; TKN ≤ 150 mg/l; Oil & Grease ≤ 25 mg/l.
2. For use in systems with design flows exceeding 3000 gpd, requires engineer design and project-specific approval.

3. Sizing based on typical residential influent wastewater strength, including CBOD₅ range of 100-300 mg/l and TSS range of 100 to 350 mg/l.
4. For use in systems with higher strength wastewater, three-year minimum maintenance interval is unrealistic to expect without advanced pretreatment in addition to grease traps.

The filter sizing must be compatible with tank sizing requirements established based upon Rules .1949 and .1952(d). Both the maximum filter design flow and the maximum tank design flow must be equal to or greater than the maximum design flow rate for the system. The tank liquid depth must also be great enough for the filter case opening depths to extend down to between 25 and 40 percent of the tank liquid depth.

IV. Installation:

The effluent filters and filter support cases shall be assembled and installed in accordance with filter manufacturer's specifications and applicable rules. The filter case shall be located in such a manner that the filter can be readily accessible by the operator beneath the access manhole opening and removable by hand from above finished grade, while also providing enough room to allow for pumping of the tank outlet compartment.

V. Operation and maintenance:

The effluent filters shall be used and maintained in accordance with filter manufacturer's specifications and applicable laws and rules. Manufacturer-specified procedures shall be followed to minimize the bypass of unfiltered effluent while the filter is being serviced. Debris washed off the filter during servicing must be returned to the septic tank, or otherwise handled in accordance with an alternate approved sanitary disposal method.

VI. Literature:

The filter manufacturer shall furnish with each filter:

- Literature to be provided by the tank manufacturer to the system installer describing installation procedures.
- Literature to be provided by the installer to the system owner/user describing filter and recommended maintenance and servicing procedures.

VIII. Maintaining approval status:

The approval status is governed by Rule .1954(e).

Approved by: _____ Date: _____