

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

<b>SEPTIC TANK EFFLUENT FILTER APPROVAL</b> <b>SEPTIC TANK EFFLUENT FILTER NO: EF-13-R3</b>
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<b>ISSUED TO:</b>	Kenneth E. Zoeller Zoeller Pump Co. P. O. Box 16347 Louisville, Kentucky 40256-0347 (502) 778-2731; (800) 928-pump; Fax: (502) 774-3624; <a href="http://www.zoeller.com">http://www.zoeller.com</a>
<b>FOR:</b>	Septic Tank Effluent Filter Models: 170-0023; 170-0058; 170-0078; 170-0016; 170-0017 5000-0007; 5000-0007 w/5000-0010 Filter Sock
<b>DATE:</b>	December 30, 1998 (models -0023. -0058) February 8, 1999 (add models -0016, -0017) June 14, 2000 (add model -0078) October 20, 2003 (add 5000 models)

In accordance with North Carolina General Statute 130A-335, 130A-335.1, and 15A NCAC 18A .1954, an application by Kenneth E. Zoeller of Zoeller Pump Co. for revised approval of septic tank effluent filters has been reviewed and the above referenced filter models 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. Filters shall meet the following specifications (see Table 1):

<b>Table 1. Approved Filter Model Specifications (Zoeller)</b>						
Filter Models	Size	Support Case <sup>1</sup>	Case Dimensions		Min. Tank Liquid Depth Required <sup>3</sup>	Min. Access Opening Size <sup>4</sup>
			Above Liquid Level	Below Liquid Level		
170-0023	2? dia. x 24? (36? total)	4? PVC Tee	6"	Extend down 25%-40% of liquid depth	48"	15 x 15 in. or 17 in. dia. or equal
170-0058	3? dia. x 19? (27?? total)	4? PVC Tee	6"	Extend down 25%-40% of liquid depth	36"	15 x 15 in. or 17 in. dia. or equal
170-0078	"ww" shape x 15" (23" total)	4? PVC Tee	6"	Extend down 25%-40% of liquid depth	36"	15 x 15 in. or 17 in. dia. or equal
Dual 170-0023	2 filters, each 2" dia. x 24" (36? total)	2 cases, 4? PVC Cross, + 4? PVC Tee	6"	Extend down 25%-40% of liquid depth	48"	17 x 17 in. or 17 in. dia. or equal
Dual 170-0058	2 filters, each 3" dia. x 19" (27-1/?" total)	2 cases, 4? PVC Cross, + 4? PVC Tee	6"	Extend down 25%-40% of liquid depth	36"	17 x 17 in. or 17 in. dia. or equal
Dual 170-0078	"ww" shape x 15" (23" total)	2 cases, 4? PVC Cross, + 4? PVC Tee	6"	Extend down 25%-40% of liquid depth	36"	15 x 15 in. or 17 in. dia. or equal
170-0016 170-0017	11.5" dia. X 11.5" height	11" housing <sup>2</sup>	8"	14"	36"	18 x 18 in. or 18 in. dia. or equal
5000-0007	4- "ww" shape x 15" (23" total)	9-3/4x11-3/4" housing <sup>2</sup>	6"	Extend down 25%-40% of liquid depth	36"	18 x 18 in. or 18 in. dia. or equal
5000-0007 w/sock	4- "ww" shape x 15" (23" total)	9-3/4x11-3/4" housing <sup>2</sup>	6"	Extend down 25%-40% of liquid depth	36"	18 x 18 in. or 18 in. dia. or equal

Notes:

1. Support case provided by Zoeller with Models 170-0016, 170-0017, and 5000-0007. Septic tank manufacturer shall provide support case for Models 170-0023 and 170-0058.

2. Models 170-0016 and 170-0017 to be provided with supplemental support by the septic tank manufacturer, using four-inch Sch. 40 PVC extending from filter bottom to tank bottom. 5000-0007 models to be provided with supplemental support by septic tank manufacturer using two pieces of 1-1/4 or 1-1/2 inch Sch. 40 PVC extending from filter bottom to tank bottom.
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 by 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.

- c. 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:

<b>Table 2. Filter Sizing Criteria (Zoeller)</b>			
Filter Model	Maximum Design Flow (gpd, residential <sup>1</sup> )	For Higher Strength Wastewater, Max. Design Flow <sup>3</sup>	
		BOD 300-600 mg/l	BOD 600-1000 mg/l <sup>4</sup>
170-023 and 170-058	850		
170-0078	1000		
Dual 170-023 and Dual 170-058	1700		
Dual 170-0078	2000		
170-0016 and 170-0017	3000 <sup>2</sup>	1620	1080
5000-0007	3000 <sup>2</sup>	2000	1300
5000-0007 w/sock	3000 <sup>2</sup>	2000	1300

Notes:

1. For residential flows with or without garbage disposals. Design Flows based upon primary sewage effluent from

septic tank (without filter installed) with contaminant concentrations or quantities which do not exceed those normally found in residential sewage, including:

BOD<sub>5</sub> = 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. For commercial food handling establishments, such as restaurants, properly sized grease traps, pretreatment devices, or kitchen practices must be present to limit the fats, oil and grease (FOG) level at the discharge end of the septic tank to below 25 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.

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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.

#### 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).

This Conditional Approval supersedes previous approvals EF-13, EF-13-R, and EF-13-R2.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_