

# MASTER FILTER SERVICE GUIDE



The introduction of new models in the Master Filter line has vastly broadened the applicational range of Roosa Master diesel filtration equipment. The following pages incorporate the application, cross reference, installation and servicing information for our Roosa Master filters. Please file in the application section of your Roosa Master Service Catalog.

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# APPLICATION LIST

MAKE, MODEL & ENGINE	ROOSA MASTER REPLACEMENT ELEMENT	MAKE, MODEL & ENGINE	ROOSA MASTER REPLACEMENT ELEMENT
<b>ALLIS CHALMERS</b>		<b>Hydrocrane</b> (2900 Eng.)	
<b>Agricultural Tractor</b>			18786*
D-19 (2800 Eng.)	18786*		
180 (2800 Eng.) Fuel	18786*		
Water separator	19797		
200 (2900 Eng.)	18786*		
7000 (2900 Eng.)		<b>Industrial</b> (2800, 3500, 3700 Eng.) Fuel	19797
7020 (649I Eng.)		Water separator	18786*
7030, 7040 (3500 Eng.)		(2900 Eng.)	
7045 (670T Eng.)			
7050 (3700 Eng.)		<b>Allis Chalmers Engine Equipped</b>	
7060 (3700 or 670I Eng.)		<b>Avco (New Idea)</b>	
7080 (3750 or 670HI Eng.)		709 Unisystem (670T Eng.)	
7580 (670HI Eng.)		801 Unisystem (670T Eng.)	
<b>Combines</b>		<b>Thiokol Snow Groomer</b>	
F (2800 Eng.)		2150 (649I Eng.)	
F (2800 Eng.) Fuel		Water separator	19797
Water separator	19797	3700 (670I Eng.)	18786*
L, M (2900 Eng.)	18786*	Water separator	19797
(670T Eng.)			
Water separator	19797		
L (3500 Eng.)	18786*	<b>Klauer</b>	
(670T Eng.)		MP-30 Sno-Go (670T Eng.)	18786*
Water separator	19797	Water separator	19797
L (3500 Eng.)	18786*	MP-30 Sno-Go (670I Eng.)	18786*
(670T Eng.)		Water separator	19797
Water separator	19797		
		<b>Omark Industries</b>	
<b>Power Units</b>		610 Prentice	
DES45 (2800 Eng.) Fuel	18786*	Hydraulic Log	
Water separator	19797	Loader (610 Eng.)	18786*
DES60 (2900 Eng.)	18786*	Water separator	19797
<b>Loaders</b>		<b>Onan Generator Drive</b>	
345 (649 Eng.)	18786*	45 DYJ (649 Eng.)	18786*
Water separator	19797	60 DYA (670T Eng.)	
Log (2800 Eng.)	18786*	100 DYC (670I Eng.)	
840B (2800 Eng.) Fuel	18786*(2)	125 DYD (685T Eng.)	18786*
Water separator	19797		
940 (2900 Eng.)	18786*		
940B (2900 Eng.)			
		<b>CATERPILLAR</b>	
<b>Cotton Stripper</b>		<b>Power Units</b>	
(2800 and 649 Eng.)		Industrial (3208 Eng.)	
		Water separator	19797
<b>Crop Duster</b>		Marine (3208 Eng.)	
185 (2800 Eng.)		Massey Ferguson 1800	
		1505 (3208 Eng.)	
<b>Fork Lift</b>		Steiger Cat II	
ACT-165/200 (649T Eng.)		(3208 Eng.)	
(2900 Eng.) Fuel		Truck: Ford, I.H.C.	
Water separator	19797	(3208 Eng.)	

\*NOTE: Model 200 Square Metal Element No. 22177 can be used optionally wherever No. 18786 is listed.

MAKE, MODEL & ENGINE	ROOSA MASTER REPLACEMENT ELEMENT	MAKE, MODEL & ENGINE	ROOSA MASTER REPLACEMENT ELEMENT
<b>GENERAL MOTORS</b>		<b>JOHN DEERE</b>	
Autos - 1978-79 Diesel Engine Equipped Oldsmobile, Cadillac Engine Models V8-350, V8-260	21631	<b>Tractors</b>	22122
Trucks - V8-350 Diesel Engine Equipped Chevrolet and GMC	21631	1010D, 2010D (after ser. No. 42001	
<b>HERCULES ENGINE EQUIPPED</b>		1020, 1520	
<b>Buffalo-Springfield</b> Road Roller (D-2000 Eng.)	22122	2020, 2030	18786*
<b>Chicago Pneumatic</b> Air Compressor (D-2000, D-3400 Eng.)	22122	2440	22122
<b>Consolidated Diesel</b> Generator Set (D-3000) D-3400 Eng.)	22122	2510 (JDAH1984T Eng.)	18786*
<b>Davey Compressor</b> Air Compressor (D-2000) Eng.) (D-3000, D-3000T Eng.)	22122	2520	
<b>Fairbanks Morse</b> Generator Set (D-1700, D-2300, D-3400 Eng.)	22122	2640	
<b>John Reiner</b> Generator Set (D-3000T Eng.) (D-3000T, D-3400 Eng.)	22122	4020	
<b>Katolight</b> Generator Set (D-1700, D-2300 Eng.)	22122	4020D (JDAR5504 Eng.)	
<b>Universal Motor</b> Generator Set (D-1700) D-2300 Eng.) (D-3000T Eng.)	22122	4030 (Diesel only)	
<b>Winpower</b> Generator Sets (D-3400, D-1700 Eng.)	22122	4230, 4235 (362 Gas or 404 Diesel Eng.)	
<b>Worthington Corp.</b> Air Compressor (D-2300 Eng.)	22122	4320, 4430	
		4620 (JDAR46976)	
		4630 (JDAR51432, JDAR51431, AR61988, or 404 Diesel Eng.)	
		5010, 5020, 6030, 7020, 7520	
		8430, 8630	
		<b>Combines &amp; Cottonpickers</b> 105 (Gas or Diesel Eng.) 1963-on	22122
		299 Cottonpicker	
		3300 (219 Diesel Eng.)	18786*
		4400 (6329 D/T Eng.)	22122
		6600 (329 Diesel Eng.)	18786*
		7700 (6404 Diesel Eng.)	
		9900 Cotton Picker (6329 D/T Eng.)	
		<b>Hy Cycle</b>	
		4000 (4219 D/T Eng.)	
		6000 (4219 D/T Eng.)	
		<b>Wind Rower</b>	
		2270 (4219 D/T Eng.)	
		W2400 (4219 D/T Eng.)	
		<b>Power Units</b>	22122
		(165, 248 Eng.) 1963-on	18786*
		Generator (3164 D Eng.)	
		Generator (4219 D/T Eng.)	
		(4270 Diesel Eng.)	
		(6531 Diesel Eng.)	
		(6404 Diesel Eng.)	

\*NOTE: Model 200 Square Metal Element No. 22177 can be used optionally wherever No. 18786 is listed.

MAKE, MODEL & ENGINE	ROOSA MASTER REPLACEMENT ELEMENT	MAKE, MODEL & ENGINE	ROOSA MASTER REPLACEMENT ELEMENT
<b>Tractors</b> 300B (3152 Diesel Eng.) 301A (3152 Diesel Eng.) 302A (3164 Diesel Eng.) 401B (4219 D/T Eng.) 401C (4219 D/T Eng.) JD300, JD350, JD400 JD440 Series A, JD480 (all except JD440) JD450, JD500 A&B, JD540 JD500C (JDAR 46481 Eng.) JD500C, JD510 (Ser. No. 28000 up) JD540 JD544, JD570 JD544A, JD570A JD600 (Diesel Eng.) JD690 (Ser. No. 28001 & up) JD700, JD700A, JD760	18786*   22122   18786* 22122 18786* 22122   18786* 18786* or 22122	<b>Skidder</b> 440B (4219 D/T Eng.) JD540A (6329 D/T Eng.) JD540B (4276 D/T Eng.) JD5406 (4276 D/T Eng.) 640 (6414 D/T Eng.)  <b>Marine</b> CCW, CW (6404 Diesel Eng.)  <b>Industrial</b> (3164 D. Eng.) (4219 D Eng.) (4276 D, 4276 T Eng.) (6329 D, 6414 D Eng.) (6414 T, 6404 D Eng.) (6404 T, 6531 D Eng.) (6531 T, 6531 A Eng.)	18786*   18786*   22122 (2) 22122 (2)
<b>Bulldozer</b> JD550 (4276 D/T Eng.) <b>Compactor</b> JD646B (6531T Eng.) <b>Crawler</b> JD350C (3152 Diesel Eng.) 450C (4219 D/T Eng.) 750 (6414T Eng.) <b>Elgin Sweeper</b> (4276 D/T Eng.) <b>Fork Lift</b> 380 (3152 Diesel Eng.) <b>Grader</b> JD570A (6329 D/T Eng.) 670 (6414T Eng.) JD770 (6531T Eng.) <b>Loader/Skidder</b> JD24 (3152 Diesel Eng.) <b>Loader/Backhoe</b> 410 (4219 D/T Eng.) <b>Loader</b> JD544B (6414 D/T Eng.) JD555 (4276 D/T Eng.) JD644B (6531T Eng.) <b>Scraper</b> JD760A (6531 Diesel Eng.)	18786*	<b>MINNEAPOLIS MOLINE</b> <b>Tractors</b> M-670D G1000 Diesel  <b>WAUKESHA</b> <b>Industrial</b> VRD155 VRD232, VRD283 VRD310 <b>Clark Forklift</b> C500 (D155D Eng.)	18786*   22122
		<b>WHITE ENGINES</b> <b>Industrial</b> D4800, D4800T	18786*
		<b>WHITE FARM EQUIPMENT</b> <b>Tractors</b> 4-150 (3208 Eng.) Water separator 2-161 (3208 Eng.) 4-180 (3208 Eng.) 550 (180 DLB Eng.) 1555 (F-232 Eng.) 1650 (F-283 Eng.) 1755, 1855, 1955, (F-310 Eng.) 2050, 2150 (D-5000 Eng.)	19797   18786*









\* NOTE: Model 200 Square Metal Element No. 22177 can be used optionally wherever No. 18786 is listed.

# FILTER ELEMENT CROSS REFERENCE LIST

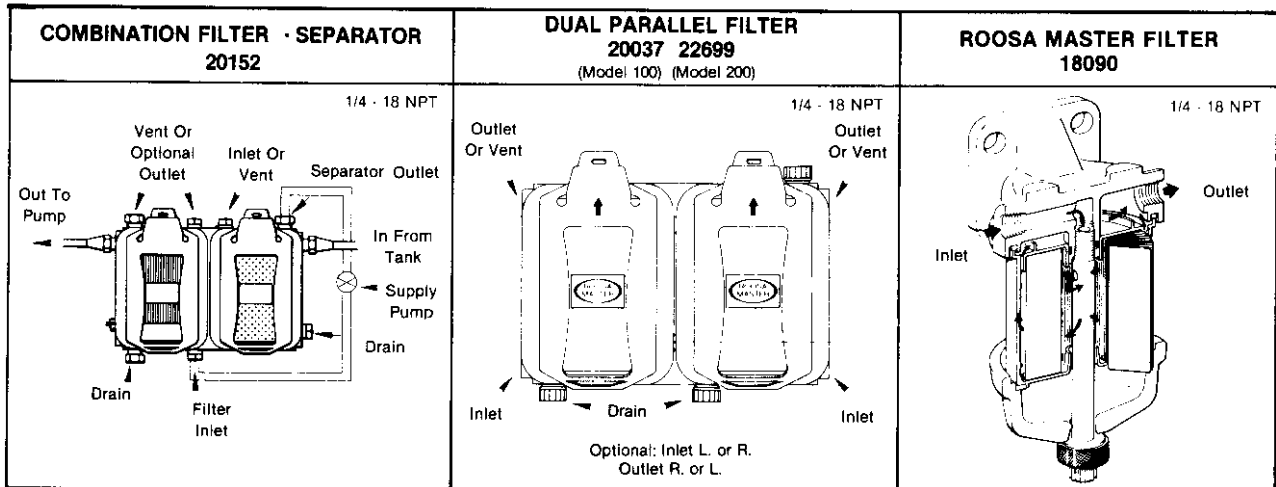
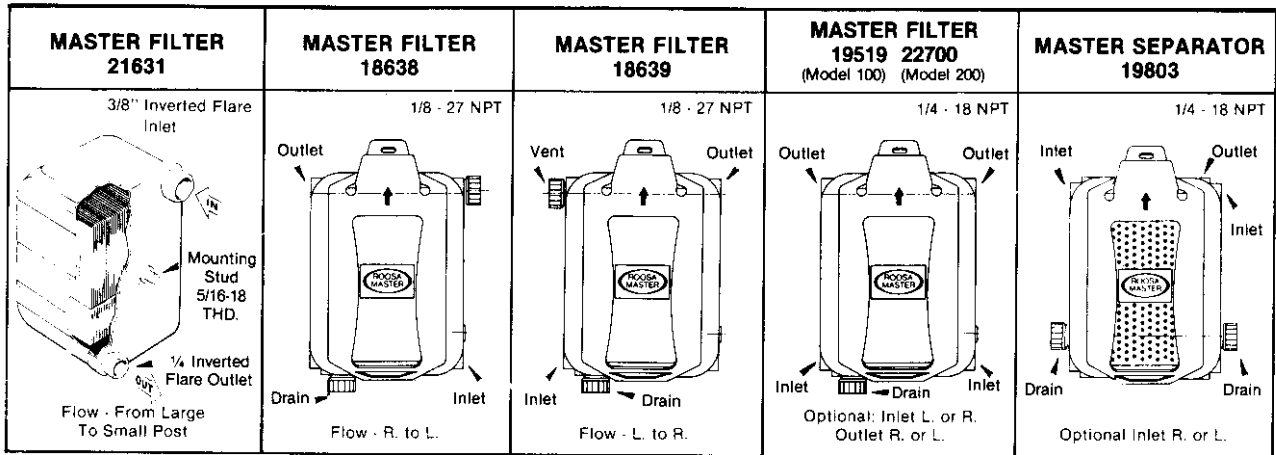
Equipment Maker or Filter Makers	Replace with Model 100 Master Filter Square Glass Element 18786	Model S Master Separators Square Glass Element 19797	Model 200 Master Filters Square Metal Element 22177	Model 50 Square Metal Automotive Element 21631	Roosa Master Round Canister 22122
A/C Division					
A/C Sparkplugs	TP876			TP888	
Allis Chalmers	4024232	4024223	4036432		4060050
Avco (New Idea)	707226				
Baldwin	BF909	BF912			
Caterpillar		6N7617			
Clark	6511550				
Deluxe	WD391				
Fleet Guard	FF203				
Fram	P-1130		P-3500	P-3550	
Gould	FF541				
Hastings	996				
Hercules					266537*
John Deere	AR50041	AR86754	AR86745		AT17387
Kralinator	F759				
Minneapolis Moline					10P2832
N.A.P.A.	3370				
Oldsmobile				560355	
Oliver					163953
Purolator	P-147				
Schramm	CDU-2299				
Waukesha	177429				499193
White Farm	20000-6803				
Wix	33370				

# GENERAL INFORMATION

## FILTER ASSEMBLIES

MASTER FILTER MODEL 50	SINGLE MASTER FILTER MODEL 100	SINGLE MASTER FILTER MODEL 200	SINGLE MASTER SEPARATOR MODEL "S"	ROUND METAL CANISTER	COMBINATION FILTER SEPARATOR MODEL 100S	DUAL PARALLEL FILTER MODEL 100D	DUAL PARALLEL FILTER MODEL 200D
Assembly Number 21631	Assembly Number 18638 18639 19519	Assembly Number 22700	Assembly Number 19803	Assembly Number 18090	Assembly Number 20152	Assembly Number 20037	Assembly Number 22699
							
Element Number SAME AS Above	Element Number 18786	Element Number 22177	Element Number 19797	Element Number 22122	Element Number 18786 Separator Element Number 19797	Element Number 18786 (2 Elements)	Element Number 22177 (2 Elements)

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# INSTALLATION AND TECHNICAL DATA

## THE MASTER FILTER

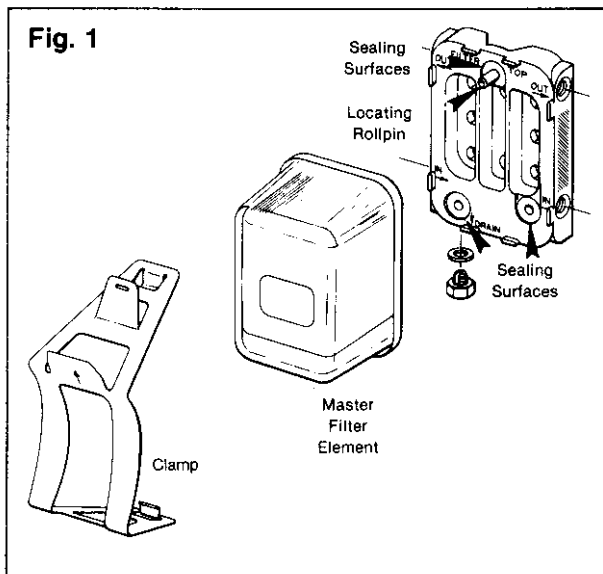
### Model 50

The Model 50 is a headerless unit. The element and Base are one and the whole unit is removed for element replacement. The rectangular metal case contains two stages of bonded pleated paper sealed within the unit. It is fastened to the filter bracket with a stud and wing nut. The inlet connection is a 3/8" inverted flare and the outlet is a 1/4" inverted flare. When planning aftermarket, the filter can be in a horizontal or vertical plane but the outlet connector must always be on the bottom.

## THE MASTER FILTER

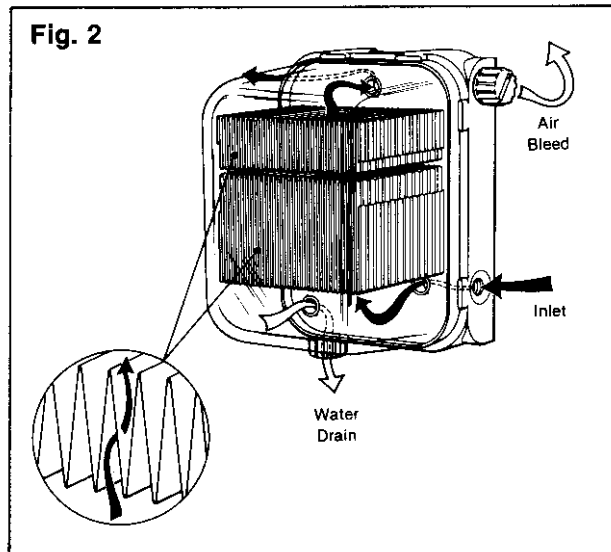
### Model 100 - Glass Model 200 Metal

The Master filter consists of three main parts: an aluminum mounting base, the element and the spring clamp that holds the element to the base (See Fig. 1). The filter element contains two stages of pleated paper bonded and sealed into a heat resistant glass (Model 100) or metal (Model 200) container with a metal backing. Grommets, in the inlet, outlet and drain ports, in the metal backing serve as gaskets and seal the element on the base. The Model 100 filter is recommended for applications up to 100 B.H.P., while the Model 200 filter is recommended for higher applications up to 200 B.H.P.



## Fuel Flow

Fuel flows from the bottom of the element up through the lower primary filtering stage to the upper final stage and out to the injection pump inlet. Either one of the lower tapped holes at the sides of the base can be used for the inlet, the other then is sealed with the Nylon plug supplied. Either of the two tapped holes at the top of the base can be used as the outlet; the alternate becomes an air bleed. There is a water and sediment drain plug located in the bottom of the base. (Fig. 2).



## Installation

Installation should be made using a positive head system. Preferably locate the filter above the injection pump inlet and avoid areas of high heat concentration such as exhaust manifolds. See installations schematics page 11.

## Mounting

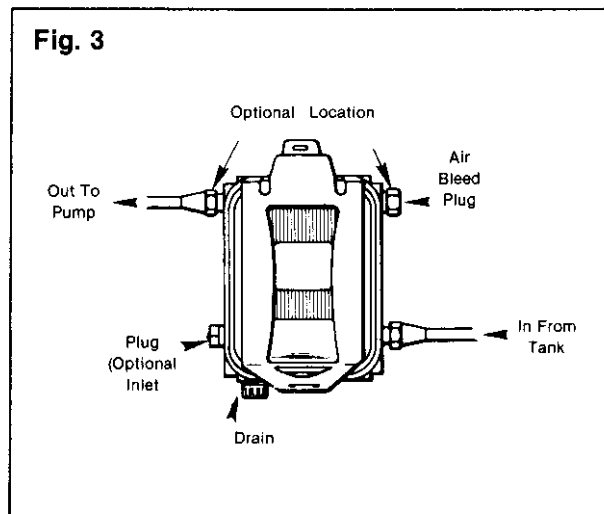
For adequate support locate the base on a flat surface having a minimum area of 1-1/4" x 3". The base must be mounted in the vertical position with the word TOP on the base up. A minimum of two cap screws are required using any combination of the eight mounting holes to secure the base. The holes may be enlarged to accommodate previous mounting screws.

## Fittings

Install the inlet and outlet pipe fittings and seal with Teflon tape or Permatex No. 2. Install a Nylon plug in the side opposite the inlet fitting and an aluminum bleed plug and gasket opposite the outlet fitting. Install the 1/8" NPT aluminum drain plug and gasket into the bottom of the base (Fig. 3).

**CAUTION: Tighten pipe fittings to  $150 \pm 50$  in. lbs. Overtightening may crack or distort base.**

*See element installation instruction for proper fuel system priming.*



## THE DUAL PARALLEL FILTER

Model 100D - Glass  
Model 200D - Metal

Larger engines can be accommodated using dual parallel filter units. The dual parallel Model 100 (glass elements) is used on engines up to 200 B.H.P. The dual parallel Model 200 (metal elements) is used on engines up to 300 B.H.P.

## Fuel Flow

Fuel enters the double base through either of the two tapped holes located on the side near the bottom. The unused side is plugged. The

fuel flows to both filters simultaneously through channels in the base and up through the filter elements and exits through a common outlet. Again, either outlet is optional and the one not used becomes the air bleed. There are drain ports for each element located on the bottom of the base.

## Mounting

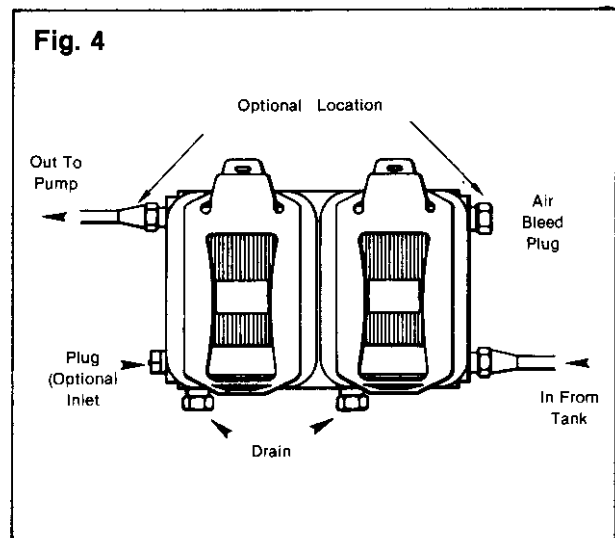
For adequate support locate the base on a flat surface having a minimum area of 1-1/4" x 3". The base is mounted in a horizontal position with the drain holes on the bottom. A minimum of two cap screws located at least 2" apart are required.

## Fittings

Install inlet and outlet pipe fittings and seal threads with Teflon tape or Permatex No. 2. Install Nylon plug in side opposite the inlet fitting and an aluminum bleed plug and gasket opposite the outlet fitting. Install two aluminum drain plugs and gaskets in the bottom of the base (Fig. 4).

**CAUTION: Tighten pipe fittings to  $150 \pm 50$  in. lbs. Overtightening may crack or distort base.**

*See element installation instructions for proper fuel system priming.*





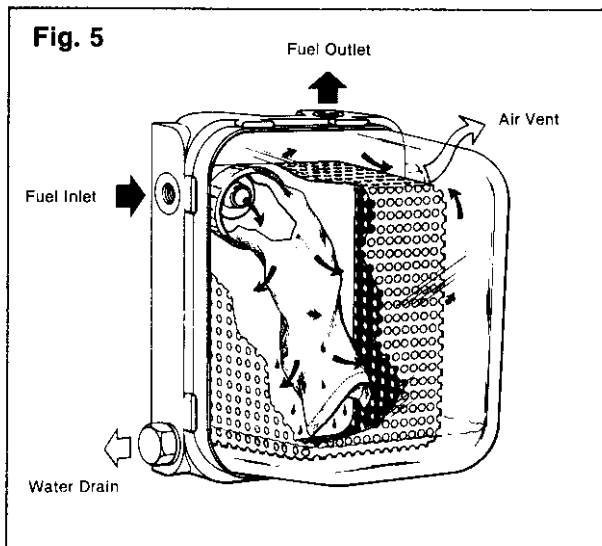
## THE MASTER WATER SEPARATOR

### Model "S"

The Master Separator is similar in construction to the Master Filter in that the assembly consists of a base, an element and a spring clamp. The base utilizes a locating hole, which will only allow a Water Separator to be mounted in that area. A special fabric knit sock and a perforated baffle are contained within the element. The Master Separator will remove more than 95% of water droplets carried by the diesel fuel stream at flow rates up to 32 G.P.H., and the collection chamber will retain 400 cc's of water before draining becomes necessary. The Master Separator also acts as a pre-filter, removing large particulate matter from the fuel stream, which will protect an auxiliary transfer pump if one is in use.

### Fuel Flow

Fuel enters through either of the two upper tapped holes, one on either side of the base. The alternate should be sealed with the special aluminum hex plug and gasket supplied (it may serve as an air vent in positive head fuel systems only). The fuel enters the element and flows through the expandable weave of the sock which slows the fuel and causes the water to form droplets which fall into the sump area. The fuel outlet is located at the top of the base.



Either of the two lower tapped holes at the sides of the base can be used to drain the water using the special aluminum hex plug and gasket supplied. The alternate hole should be sealed with the Nylon plug (Fig. 5).

### Installation

The Master Separator must be installed in the fuel line between the supply tank and any pump or hand primer, as pumps tend to homogenize the water-fuel mixture preventing separation. Avoid areas of high heat concentration.

### Mounting

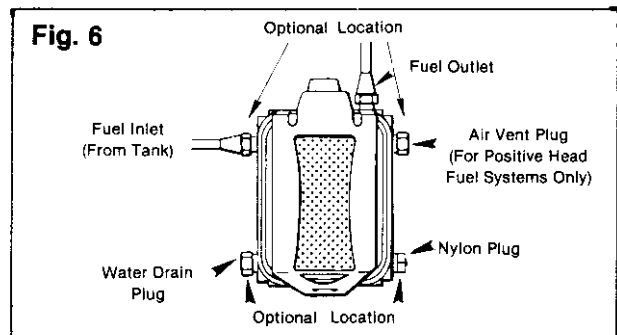
For adequate support locate the base on a flat surface having a minimum area of 1-1/4" x 3". The base must be mounted in the vertical position with the word **TOP** on the base up. A minimum of two cap screws are required using any combination of the eight mounting holes to secure the base. The holes may be enlarged to accommodate previous mounting screws.

### Fittings

Install the inlet and outlet fittings and seal threads with Teflon tape or Permatex No. 2. Install the aluminum hex plug and gasket in the side opposite the inlet and the aluminum hex drain plug and gasket on the side of the base on the bottom. Install a Nylon plug on the side opposite the drain plug (Fig. 6).

**CAUTION: Tighten pipe fittings to 150 ± 50 in. lbs. Overtightening may crack or distort base.**

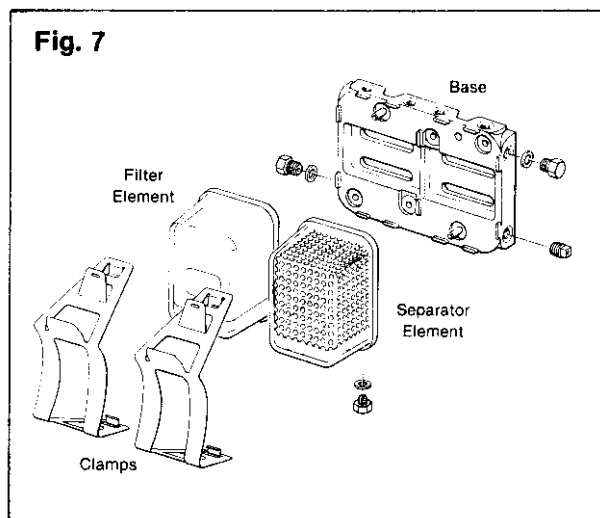
*See element installation instructions for proper fuel system priming.*



## THE COMBINATION MASTER FILTER/MASTER SEPARATOR

### Model 100S

This unit provides convenient mounting of a filter element and separator element on one double base. The base is constructed in such a way that it is impossible to mount the water separator in the wrong location on the base (Fig. 7).



### Fuel Flow

The separator element is located on the right, the filter element on the left of the base. Fuel enters the separator through a tapped hole either on the upper right hand side of the base or on the top, just right of center. The alternate inlet serves as a vent. The fuel flows in as described in the separator section and out through the tapped hole at the extreme right of the top of the base. The fuel must be piped externally from the separator outlet to the supply pump and then on to the filter inlet (Fig. 8). This external piping will allow the water separator unpressurized flow. The fuel flows up through the filter to any one of three optional outlets. The outlets are tapped holes located on the top just left of center at the extreme left on the top of the base or at the upper left side of the base. When the outlet is chosen, one of the remaining alternates is plugged and becomes the vent and the other is sealed.

The separator element is drained through the

tapped hole at the lower right hand side and the filter element is drained through the hole at the extreme left on the bottom of the base.

### Mounting

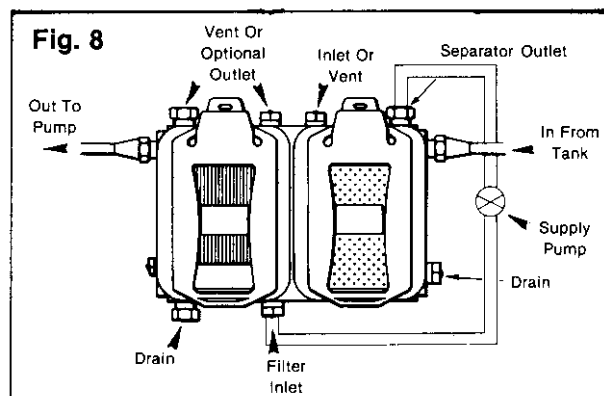
For adequate support locate the base on a flat surface having a minimum area of 1-1/4" x 3". The base is mounted in a horizontal position with the drain holes on the bottom. A minimum of two cap screws located at least 2" apart are required. The slots may be enlarged slightly to accommodate previous mounting screws.

### Installation

Install the separator inlet fitting in either inlet hole on the right of the base, and the outlet fitting on the top right of the base. Seal the threads with Teflon tape or Permatex No. 2. Install aluminum hex plug and gasket in the alternate inlet hole. Install the drain plug and gasket in the lower right hand side of the base. Install piping from the separator outlet to the filter inlet in the bottom of the base and seal with Teflon tape or Permatex No. 2. Install line connection in the chosen outlet and install Nylon plug in the alternate. Install a drain plug and gasket into the bottom of the base. Plug the remaining hole in the lower right hand side of the base (Fig. 8).

**CAUTION: Tighten pipe fittings 150 ± 50 in. lbs. Overtightening may crack or distort base.**

*See element installation instructions for proper fuel systems priming.*



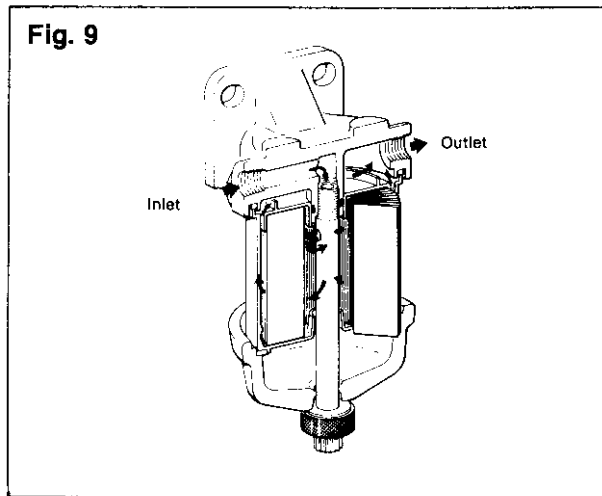
## THE ROOSA MASTER METAL CANISTER FILTER

### Assembly No. 18090

The Cylindrical diesel fuel filter assembly consists of four major parts; an element header - which serves as a mounting bracket, a metal canister element, a glass sediment bowl and a connecting center bolt. On applications using Assembly No. 18090, the black filter element No. 22122 is needed.

### Fuel Flow

This Roosa Master Filter has a nominal flow rate of 12 G.P.H. Fuel enters the filter assembly (No. 18090) through the inlet port, flows down through the center tube, across the element and to the outlet port (Fig. 9).

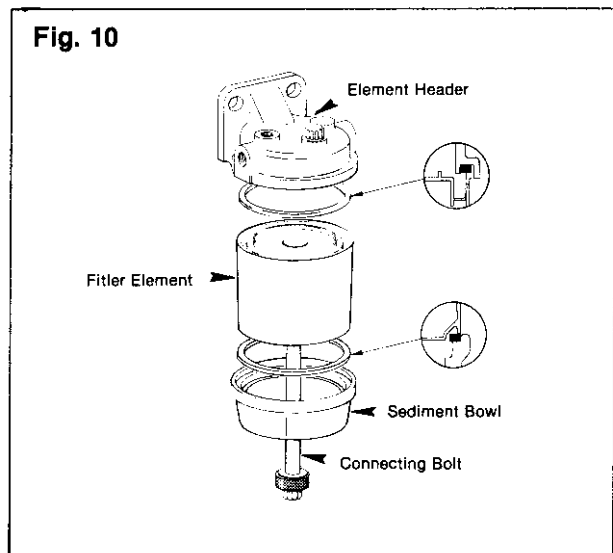


### Mounting

The top housing serves both as a mounting bracket and as an element header for the Roosa Master Filter. The filter header's elongated mounting holes on all models accept center distances from 1-31/32" to 2-1/8" using 3/8" bolts and can be fitted on most engines. Preferably locate the filter above the injection pump inlet and avoid areas of high heat concentration such as exhaust manifolds.

### Installation

After the header/mounting bracket is mounted, install the element, gaskets and bowl assembly to the filter header and handtighten the screw. When replacing the filter element always install new gaskets. Discard old gaskets and assemble new gaskets into groove in filter header and sediment bowl. Be sure that header gasket lays flat in the groove and is not twisted (Fig. 10). Bleed air only from pressurized fuel systems.

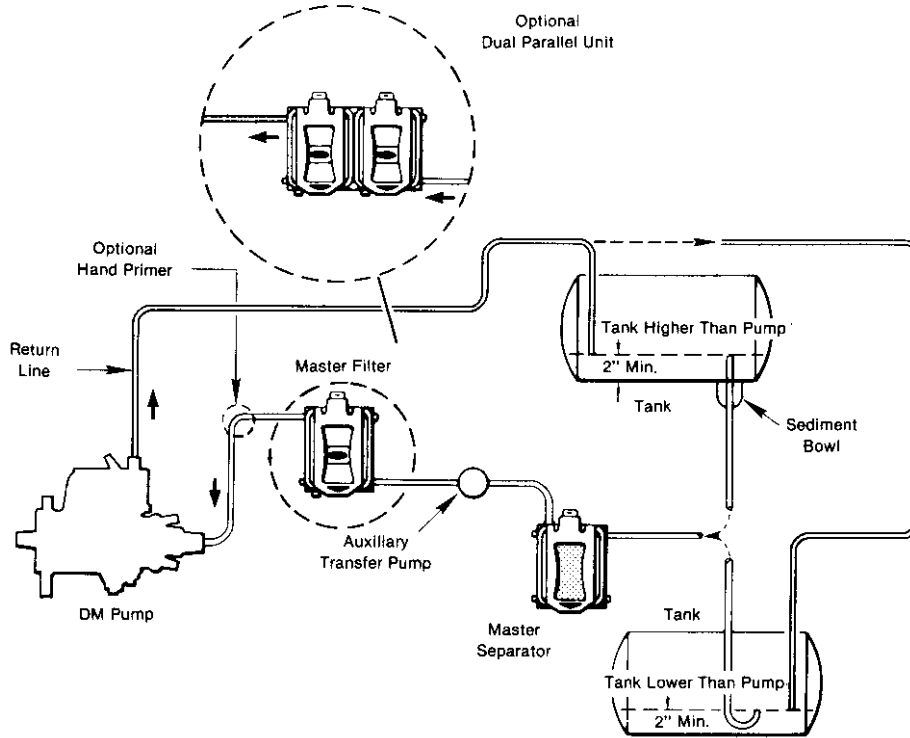


### Fitting

Determine which ports are to be used and install the inlet and outlet pipe fittings. Plug the two remaining ports with Plug No. 15882 or plastic plugs; apply a small amount of Permatex No. 2 non-hardening sealant before tightening.

# INSTALLATION SCHEMATICS

## Typical Filter Installation with Dual Parallel Option



## Typical Filter Installation with Combination Filter/Separator Option

