

# Harmsco® Filtration Products



INSTALLATION  
AND  
OPERATION  
MANUAL

## UP-FLOW CARTRIDGE FILTRATION...

### A Design So Superior It's Patented!

To understand how *up-flow* filters work, follow the diagram shown at right..

Fluid enters the filter under pressure and flows *upward*, forcing all air and the liquid through the filtration media, the holes in the center tubes and perforations in the rods that hold the cartridges in place. As the fluid continues its path, it flows past the top seal into the clean fluid chamber where it exits the filter through the standpipe. Notice the top of the standpipe is at the high point of the filter. Note the filter cartridges are sealed at the bottom and held in place with straight thread pipe caps on the Harmsco model shown in this diagram.

U.S. Patent No's 3,720,322 and 4,187,179. Existing foreign patents in effect and others pending.



## TWO TYPES

Harmsco Industrial Filters are constructed using two basic designs as shown below.



**Cartridge Cluster Filters**  
Models HIF-7, 14, 16, 21, 24



**High Capacity Filters**  
Models HIF-42, 75, 100, 150-FL, 200-FL

## SPECIFICATIONS

**Construction:** Electro-polished stainless steel  
**Pressure Rating:** Rated to 150 psi  
**Temperature Ratings:** \*Rate to 140°F (60°C) with CPVC rods, caps and standpipes. To 200° (93°C) with stainless steel internal components and high temperature cartridges

**Cartridge holding rods, lifters, & pipe caps:** Made of CPVC or stainless steel

**O-rings, seals and gaskets:** Standard filters have Buna-n o-rings; EPDM rim gaskets and top seals; bottom seals are natural gum rubber. Optional materials available.

**Flow Rates:** Typically 4-6 GPM per 9-3/4" Harmsco cartridge, depending on fluid being filtered, viscosity, suspended solids and length of filter run desired. See recommended flow charts above to be used for general guidelines only

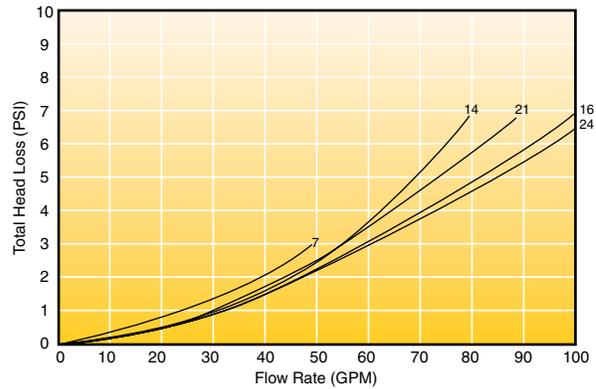
**\*NOTE:** Actual limits may vary depending upon material used, temperature conditions, pressure and time under load.

Model	Flow Rate (GPM)	Model	Flow Rate (GPM)
HIF-7	Up to 30 GPM	HIF-42	Up to 175 GPM
HIF-14	Up to 60 GPM	HIF-75	Up to 300 GPM
HIF-16	Up to 75 GPM	HIF-100	Up to 400 GPM
HIF-21	Up to 90 GPM	HIF-150-FL	Up to 600 GPM
HIF-24	Up to 100 GPM	HIF-200-FL	Up to 800 GPM

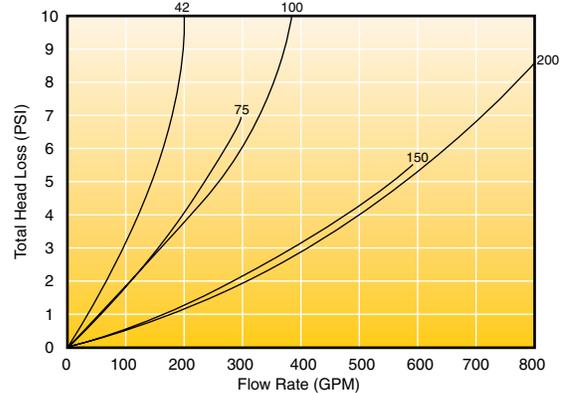
## PRESSURE DROP

Pressure drop data for Harmsco Industrial Filters and 20 micron cartridges with clean water are shown below:

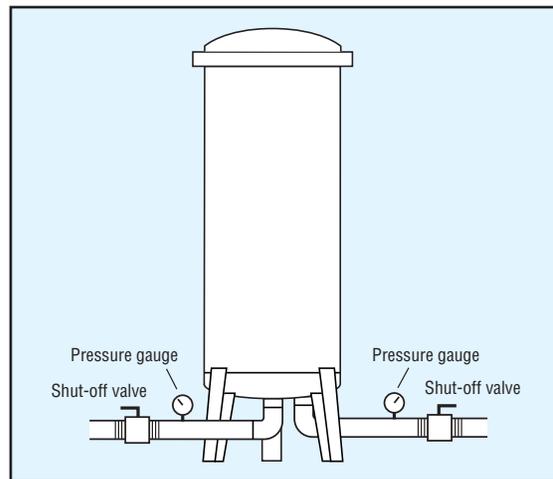
### Pressure Drop - Harmsco Cluster Filters (HIF-7, 14, 16, 21, 24)



### Pressure Drop - Harmsco High Capacity Filters (HIF-42, 75, 100, 150, 200)



## INSTALLATION GUIDELINES



1. Install filter housing on the pressure side of pump.
2. Install 90° elbow on inlet and outlet pipe fittings.
3. Install 90° elbow on drain (or cap if drain is not needed).
4. Connect pipe from discharge of pump to inlet fitting.
5. Connect discharge pipe to outlet fitting.
6. Ground filter housing using grounding lug provided.
7. Connection plumbing must be square, true and supported.

### Note:

Pressure gauges to indicate cartridge change-out and shut off valves are recommended, as shown above.

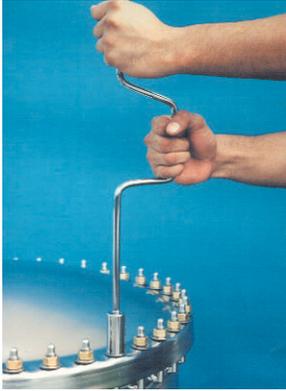
## LID REMOVAL WITH WING-NUT CLOSURE

Drain filter housing, remove wing-nuts and lid for easy access to filter cartridges.



## LID REMOVAL WITH HEX NUT CLOSURE

If hex nuts are used for lid closure, a speed wrench may be used for fast lid removal.



## CARTRIDGE INSTALLATION



### Cluster Filters

Install cartridges on holding rods and secure with straight thread pipe cap.



### High Capacity Filters

Install cartridges on cartridge lifters, one stack at a time.

## LID REPLACEMENT

Replace wing or hex nuts systematically, working opposite to one another. With wing-nuts, "hand-tight" is normally sufficient. However, in extreme duty applications it may be necessary to tighten to 75 inch lbs.\* of torque. Over-tightening can cause damage to rim gaskets and top seals; do not use pry bars.

\* It is imperative to use inch pounds. NOT foot pounds.



## HARMSCO® REPLACEMENT FILTER CARTRIDGES

A full line of Harmsco replacement cartridges are available for a wide range of applications, featuring pleated design for low pressure drop, increased filter areas, long filter runs and lower filtration costs.

## CARTRIDGE CLEANING

Harmsco filter cartridges are cleanable and reusable in most applications and most micron ratings. For best results, clean cartridges when pressure differential is 12-15 psi above start-up differential. If cartridges are to be replaced allow pressure differential to climb to 25-30 psi above start-up differential or when flow has diminished to an unacceptable level, indicating cartridge is at capacity.

### Cartridge Cleaning in Aqueous Applications:

Clean cartridges with pressure nozzle using standard hose. Direct spray at an angle to remove particulate. Follow these directions for best results:

**Oils in aqueous solution:** Soak cartridges in a solution of tri-sodium phosphate or similar strong detergent (2 lbs. to ten gallons of water). Soak up to twelve hours. Rinse after soaking.

**Organic matter and algae in aqueous solutions:** Use tri-sodium phosphate or similar strong detergent as described above, plus one pint of liquid chlorine to kill organic matter and algae. Soak cartridges one hour or longer until surface is no longer *slippery*. Rinse after soaking.

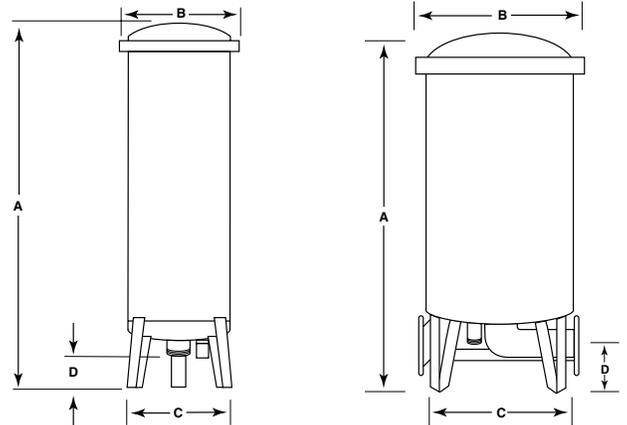
**Calcium & mineral deposits:** Follow the directions for *oils* described above. Rinse cartridges thoroughly for approximately ten minutes in a solution of one part of muriatic acid to twenty parts of water. Rinse cartridges thoroughly with water.

### Caution:

Do not rinse cartridges with acid until oils and organic matter are removed. Use detergent first and follow with acid soak for mineral removal. Flush cartridges with water after muriatic or tri-sodium phosphate baths.

It is not advisable to clean Harmsco cartridges when filtering petroleum-base liquids, toxic substances and when using one micron and sub-micron cartridges.

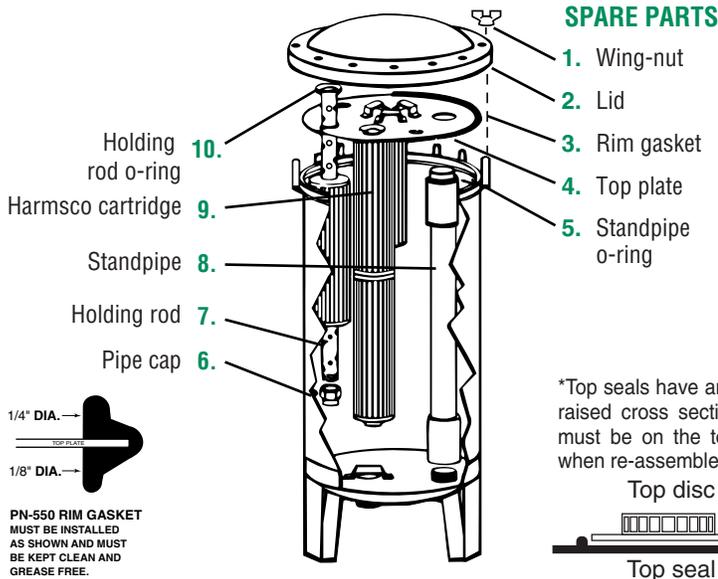
## DIMENSIONS



HIF-150-FL, HIF-200-FL

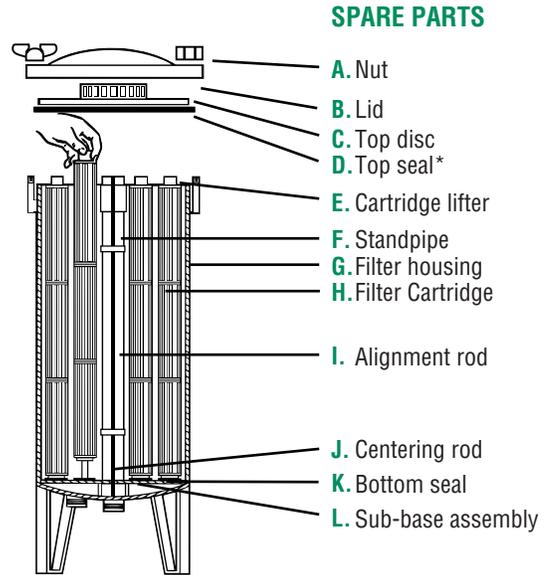
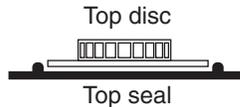
Model	A	B	C	D	Service Ht. Clear	Inlet/Outlet	Drain
HIF-7	19-1/2"	13"	13"	3-1/2"	35"	1-1/2" NPT	1" NPT
HIF-14	28"	13"	13"	3-5/16"	48"	1-1/2" NPT	1" NPT
HIF-16	28"	13"	13"	3-7/8"	48"	2" NPT	1" NPT
HIF-21	37"	13"	13"	3-1/2"	68"	1-1/2" NPT	1" NPT
HIF-24	37"	13"	13"	4"	68"	2" NPT	1" NPT
HIF-42	40"	18"	18"	5-3/8"	68"	2" NPT	1" NPT
HIF-75	42"	20"	20"	6-3/8"	70"	3" NPT	1-1/2" NPT
HIF-100	52"	20"	20"	5-7/8"	87"	3" NPT	1-1/2" NPT
HIF-150-FL	48"	28"	28"	5-3/16"*	76"	4" flange	1-1/2" NPT
HIF-200-FL	58"	28"	28"	5-3/16"*	93"	4" flange	1-1/2" NPT

\* To center of flanged fitting.



PN-550 RIM GASKET  
MUST BE INSTALLED  
AS SHOWN AND MUST  
BE KEPT CLEAN AND  
GREASE FREE.

\*Top seals have an o-ring  
raised cross section that  
must be on the top side  
when re-assembled



### Replacement Part Numbers for Cluster Filters

Item	HIF-7		HIF-14		HIF-16		HIF-21		HIF-24	
	Part	Qty.								
1	202-B	12								
2	530-A	1								
3	550-E	1								
4	519-SS	1	519-SS	1	901-SS	1	519-SS	1	901-SS	1
5	551-B	1	551-B	1	930-B	1	551-B	1	930-B	1
6	513-C	7	513-C	7	513-C	8	513-C	7	513-C	8
7	555-C	7	512-C	7	512-C	8	534-C	7	534-C	8
8	560-C	1	531-C	1	965-C	1	532-C	1	1445-C	1
9	Cart.	7	Cart.	14	Cart.	16	Cart.	21	Cart.	24
10	552-B	7	552-B	7	552-B	8	552-B	7	552-B	8

\*\* And 20, 202-BT wing nuts; or 40, 202-H hex nuts with 40, 203 flat washers.

### Replacement Part Numbers for High Capacity Filters

Item	HIF-42		HIF-75		HIF-100		HIF-150-FL		HIF-200-FL	
	Part	Qty.	Part	Qty.	Part	Qty.	Part	Qty.	Part	Qty.
A	202-B	16	202-B	20	202-B	20	202-B	20**	202-B	20**
B	611-A	1	669-A	1	669-A	1	613-A	1	613-A	1
C	633-SS	1	670-SS	1	670-SS	1	651-SS	1	651-SS	1
D*	635-E	1	671-E	1	671-E	1	653-E	1	653-E	1
E	622-C	14	622-C	25	623-C	25	622-C	50	623-C	50
F	630-C	1	672-C	1	673-C	1	646-C	1	647-C	1
G	601-A	1	674-A	1	675-A	1	606-A	1	607-A	1
H	Cart.	42	Cart.	75	Cart.	100	Cart.	150	Cart.	200
I	None		678-3	1	679-3	1	678-4	1	679-4	1
J	625-P	14	625-P	25	625-P	25	625-P	50	625-P	50
K	639-N	14	639-N	25	639-N	25	639-N	50	639-N	50
L	637-SS	1	677-SS	1	677-SS	1	638-SS	1	638-SS	1

### Harmsco Inc. Industrial Filters Limited Warranty

- Harmsco, Inc. warrants its line of Industrial Filters to be free of defects in material and workmanship for a period of one year from the date of installation.
- The warranty for Industrial Filters ordered with special coatings is limited only to the recoating of the defective parts due to failure in materials or workmanship for one year from date of installation.
- This warranty does not cover any equipment purchased for use in applications in which the product is not suited. It is the responsibility of the buyer to determine if a product is suitable for a particular application.
- THIS WARRANTY EXCLUDES THE FOLLOWING:**
  - Any fresh water unit installed for salt water use.
  - Damage caused by improper installation, operation or care.
  - Chemical attack.
  - Modification or alteration by other than Harmsco employees.
  - Rubber type parts and normal wear items i.e. "O" rings, rim gaskets, wing-nuts, pipe caps, holding rods.
  - Any costs of labor or expenses expended in the removal and/or installation of unit, or any surrounding device.
  - Damage caused by galvanic or electrolytic attack.
  - Altering or removing the Harmsco, Inc. information label.
  - Any unit not grounded.
- Service under this warranty is to be provided by the distributor who sold the unit to the user. If the distributor is unable to provide warranty service, contact:  
Harmsco, Inc., P.O. Box 14066  
North Palm Beach, Florida, 33408, U.S.A.  
Phone: (561) 848-9628 • Fax: (561) 845-2474

A Returned Goods Authorization (RGA) number must be received from the above office and placed on all shipments to and correspondence with Harmsco, Inc. Please be prepared with the following information: 1. Model number and serial number. 2. Date of installation. 3. Name of installer 4. Nature of problem. 5. Your address and telephone number.

Available from:

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