

## Fire Line Basket Strainer with Flushing Drain

### Model FP-60F-D/DV

The BERMAD FP-60F-D/DV Basket Strainers are intended to be installed in fire protection pipelines primarily to prevent the clogging of fire sprinkler nozzles and other debris sensitive components in water or foam fire systems.

The BERMAD FP-60F-D/DV is designed for in-line maintenance available with a large diameter flushing outlet for easy screen cleaning and simple screen basket extraction, requiring only cover removal.

The ratio of the FP-60F-D/DV strainer's basket screen area to the inlet pipe area is more than 10:1, ensuring continued system performance, a low pressure drop and longer intervals between cleaning.

NFPA 11, 13, 15 and 16 standards state that listed strainers shall be provided in the main pipeline of all systems using nozzles where the water is likely to contain obstructive material.



Model FP-60F-D



Model FP-60F-DV



Model FP-60F-D  
(14 & 16")



Model FP-60F-DV  
(14 & 16")

### Features and Benefits

- **UL-Listed and ULC size** for Fire systems
- **Low pressure drop** – Safety and reliability, ensures firewater availability
- **Easy in-line maintenance** – Large diameter flushing valve for fast and easy interim cleaning
- **Suitable to prevent clogging** – Nozzles, sprinklers or other types of fire system discharge outlets. Designed to trap foreign material of 3.2mm (1/8") diameter or larger
- **Large screen basket** – Large basket area, Increasing system reliability and safety
- **Suitable for installation in varied orientations** - Refer to installation and maintenance section
- **Compatible for use with corrosive fluids and harsh environments** – High Build Epoxy coated body/cover and stainless steel 316 screen
- **Suitable for Foam Systems** – For use with foam proportioners or foam generators in compliance with NFPA 11 requirements.

### Approvals

**UL-Listed 3" through to 16" Strainers, Pipeline (HLCV)**

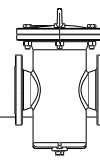
**ULC Certified for Canada 3" through to 16" Strainers, Pipeline (HLCV7)**

### Typical Applications

- Water spray systems
- Deluge systems
- Fire monitors
- Automatic sprinkler systems
- Foam proportioner/generator provided in the water line
- Upstream of Pressure Control valves
- Upstream of a Sensitive System Devices

### Options

Consult BERMAD for other Materials of Construction or other available specifications.



## Design Engineer Guide

The BERMAD FP-60F-D/DV Basket strainers are for use in firewater supply and are capable of preventing the entrance of solids that might block or clog fire protection nozzles or other sensitive devices.

Install the FP-60F-D/DV strainer upstream of the sprinkler valve, deluge valve, pressure control valve or any other debris sensitive system device.

The Strainer must be located where there is adequate clearance for removal of the basket screen assembly to enable easy extraction and inspection of the strainer basket.

Install the strainer such that there will be adequate drainage for the release of water when opening the strainer for service and for the dirty water exhausted during the cleaning of the strainer screen using the flushing valve.

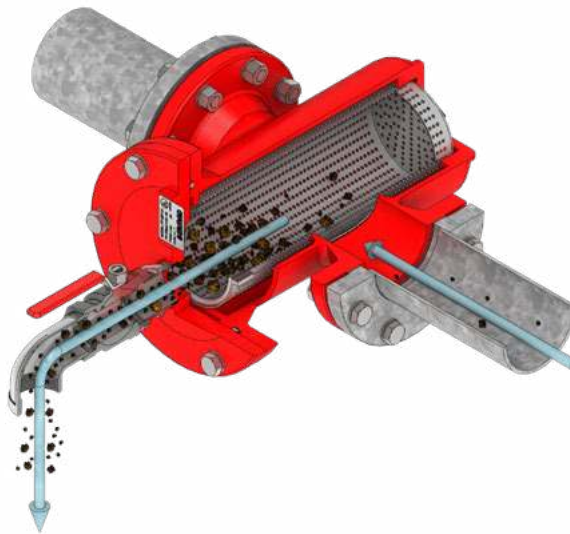
The flushing drain connection should be typically fitted with an appropriately sized normally closed valve and drain piping. Where a flushing valve is to be employed, the FP-60F-D/DV Basket Strainer sizes 3" to 12" are recommended to be installed in a horizontal position with the strainer cover and flushing valve to the side. To facilitate flushing for 14" and 16" sizes installation is recommended to be vertical.

The strainers shall be installed and maintained in compliance with the NFPA-25 standard in the addition to the instructions given by the authorities having jurisdiction.

The NFPA-11 standard requires that a listed strainer with a screen area to pipe cross section area ratio of 10:1 shall be used with foam proportioners or foam generators, and should be installed in the water pipeline upstream of the water control valve.

The NFPA 13, 15 and 16 standards stipulate that a Listed Strainer shall be provided in the main pipeline of all systems utilizing nozzles with waterways less than  $\frac{3}{8}$ " (9.5 mm) and for any system where the water is likely to contain obstructive material. Strainers shall be capable of removing from the water all solids of sufficient size to obstruct the nozzles.

## Cross Section Showing Inline Fushing of the Filter Screen



## Engineer Specifications

The Fire Line Strainer shall be a basket type strainer UL listed.

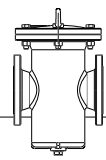
The strainer shall be with high flow capacity and low pressure loss.

The strainer shall include a flushing valve capable of quickly and efficiently cleaning the strainer screen without removing the strainer cover, or closing system pressure.

The strainer body and cover shall be ductile iron ASTM A536 65-45-12 with anti-corrosion Fusion Bonded High Build Epoxy RAL 3002 coating internally and externally, all other wetted parts shall be stainless steel 316.

The screen shall be inline removable basket type, made of stainless steel 316 with screen holes diameter of 3.2 mm ( $\frac{1}{8}$ "), meeting the requirements of the NFPA codes and standards. The Strainer basket screen area shall be at least 10:1 compared to the cross-sectional area of the pipeline.

Strainer maintenance, inspection or service shall be carried out in-line and without disassembly of the strainer body from the pipeline. The Strainer shall be supplied pre-assembled with stainless steel bolting and hydraulically tested by a factory certified by the ISO-9001 standard.



### Installation

Provide basket removal clearances and strainer installation provisions in accordance with the requirements given in the Design Engineer Guide section above. Install the strainer with the flow arrow on the body pointing in the desired flow direction.

The strainer should be installed such that the flushing valve Drain Flange is at the lowest point of the strainer, 3" to 12" strainers have the flushing valve port on the cover that can be rotated to be at the lowest point, this is to facilitate efficient cleaning of the screen while flushing.

The strainer shall be installed on the pipeline upstream of the sprinklers, pressure control valve, deluge valve or any other sensitive system device. Install a listed isolating valve upstream of the strainer. An adequate support shall be provided to carry the system installation as well as the dynamic loads.

It is recommended to install a differential pressure gauge rooted to upstream and downstream of the FP-60F-D/DV strainer, in order to show the degree of strainer blockage. The maximum allowable differential pressure across the strainer is 7 psi or 0.5 bar at maximum system flow.

### Placing In Service

Verify that all strainer cover bolts are well tightened, close the drain plug and/or drain valve, slowly open the supply-isolating valve and check that there are no leakages. Observe the system pressure gauge: it should indicate that the normal supply of water pressure is maintained.

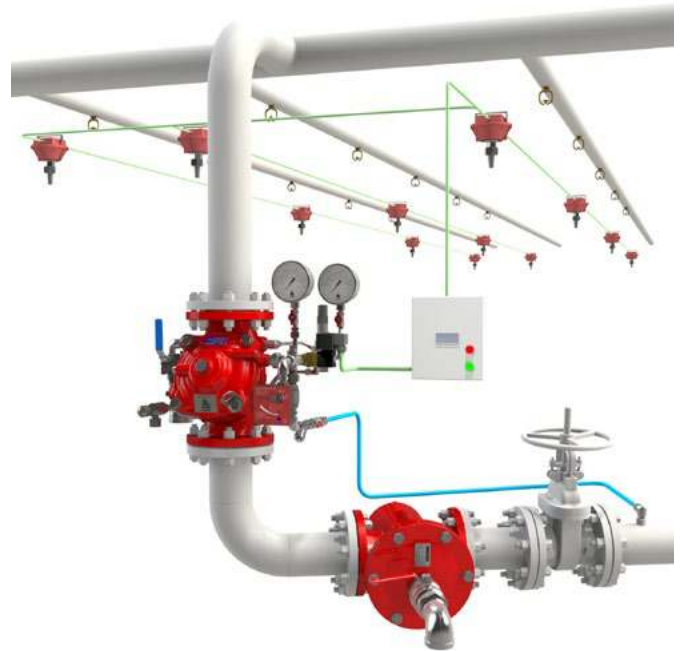
### Typical Installations

#### Deluge / Sprinkler System

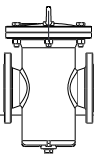


The BERMAD FP-60F-D/DV strainer is ideal to be installed upstream of the BERMAD Pressure Control Valve, preventing the fouling of valve sealing surfaces and keeping the waterways clear from obstructions.

#### Automatic Pressure Control System



The BERMAD FP-60F-D/DV strainer should be installed upstream of the Deluge, Foam system or Automatic Sprinkler system, preventing debris particles from clogging the nozzles and other sensitive devices.



Maintenance

The following inspection procedure must be performed as indicated, in addition to specific requirements of any applicable standards. Any damage or performance deficiency must be immediately corrected.  
The fire system shall be inspected, tested, and maintained by qualified service personnel in accordance with local requirements and/or national codes.

Preventive Maintenance

The frequency of inspection is dependant on the quality of the firewater, even so it is recommended that the strainer's basket screen be removed and cleaned at least annually in addition to flushing after each operation or system flow test.  
For the model FP-60F-DV that includes a flushing drainvalve, strainer cover removal for cleaning may be avoided when a differential pressure gauge / transmitter across the strainer is provided. This device will indicate if the pressure differential is satisfactorily below the maximum allowable 7 psi (0.5 bar) across the strainer screen at the maximum system flow rate. If so, this shows that the screen is not dangerously blocked and a flush cleaning with the drain valve should prove sufficient. However it is recommended to remove the strainer cover at least annually for inspection.

Inspection and Cleaning

Verify that the strainer is depressurized and drained before the disassembly of any strainer component.  
The strainer basket screen should be cleaned after each system operation or flow test and during routine inspections, as follows:

For strainers fitted with a flushing valve:

- 1. Fully open the flushing drain valve for at least 5 seconds or until the flushed water becomes visibly clear.
- 2. Close the flushing valve tight.

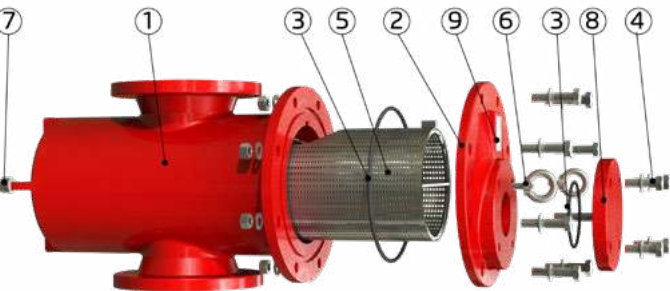
For periodic inspection and cleaning of screens for strainers without a flushing valve:

- 1. The system must be shut down and completely drained.
- 2. Remove the strainer cover and the basket screen.
- 3. Clean out the basket screen, as well as the interior of the strainer body.
- 4. Reinstall the basket screen, make sure that the basket is fully inserted into the strainer body and is correctly orientated.
- 5. Inspect the gasket O-ring and replace if needed.
- 6. Reinstall the strainer cover, gradually cross tighten diametrically and sequentially all bolts so as to apply uniform load for the cover seal.

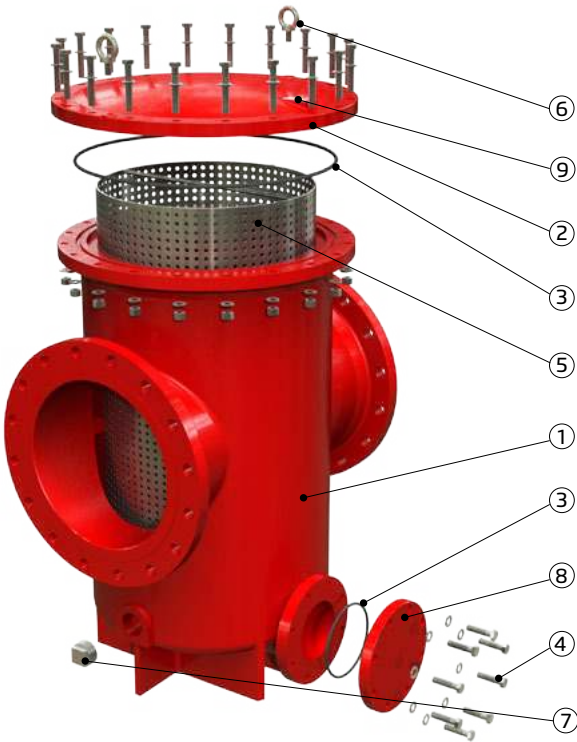
Construction Materials

Item	Description	Material
1	Body	Ductile Iron ASTM A536 65-45-12, Coated*
2	Cover	Ductile Iron ASTM A536 65-45-12, Coated*
3	O ring	EPDM, Asbestos Free
4	Bolting	Stainless steel 304
5	Screen	Stainless steel 316L
6	Lifting Eye	Stainless steel 304
7	Drain Plug	Stainless steel 316
8	Drain Flange (6" - 16")	Ductile Iron ASTM A536 65-45-12, Coated*
9	Drain Plug (3 & 4")	2" ISO-7-Rp Stainless steel 316
10	Data Plate	Stainless Steel 304

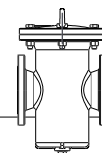
\* Coating: High Build Fusion Bonded Epoxy RAL 3002, internal and external.



Sizes: 3" to 12" Horizontal Installation

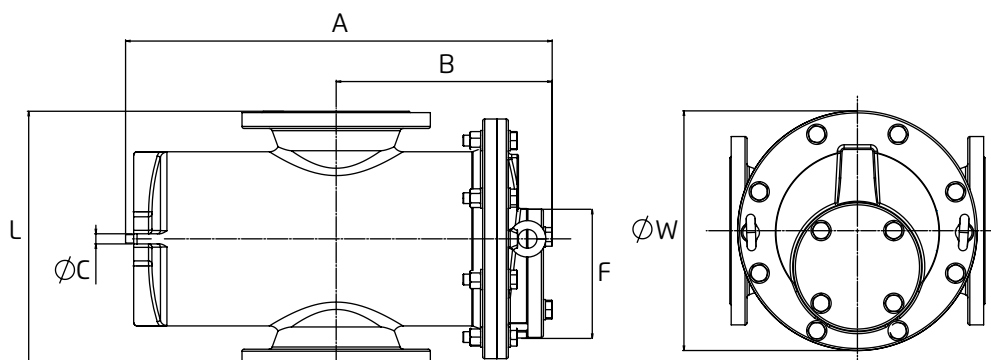


Sizes: 14 & 16" Vertical Installation

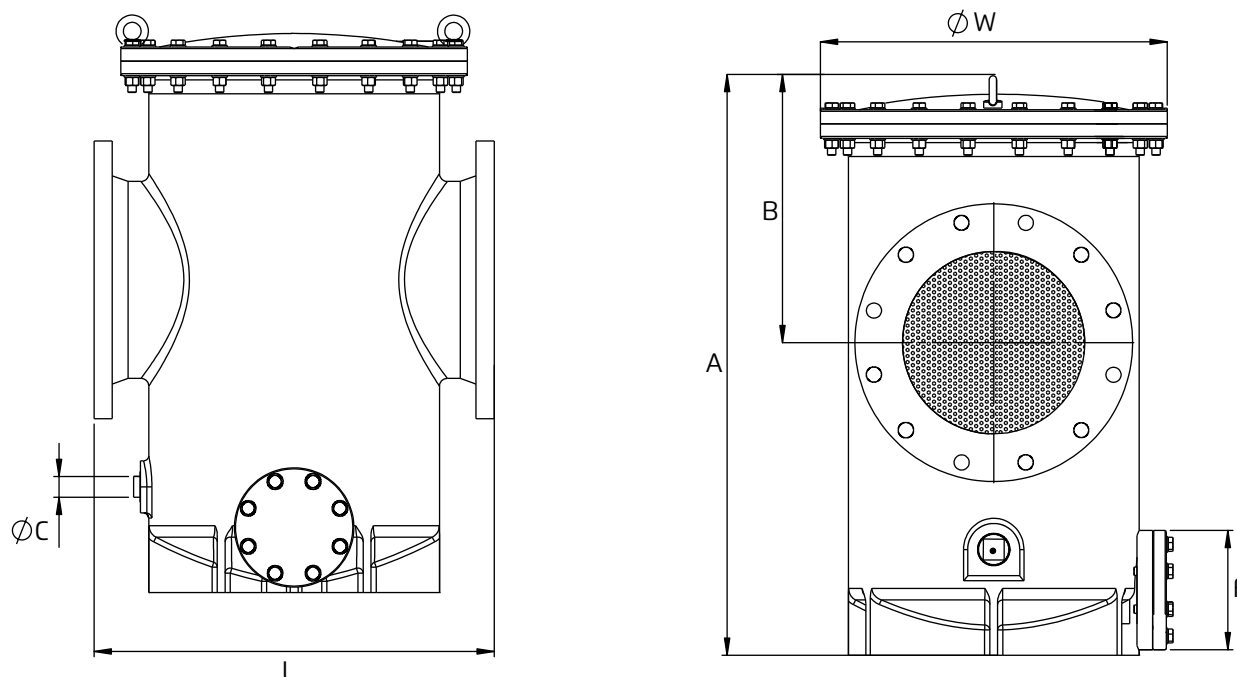


## Dimensions and Weights

Sizes : 3" through to 12"



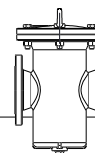
Sizes: 14" and 16" with side flushing port



Size	3"		4"		6"		8"		10"		12"		14"		16"	
DN	80		100		200		200		250		300		250		300	
Units	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
L	250	9.8	292	11.5	378	14.9	476	18.7	560	22.0	680	26.8	768	30.2	845	33.3
A	346	13.6	440	17.3	623	24.5	718	28.3	774	30.5	989	38.9	1125	44.3	1215	47.8
B	184	7.2	228	9.0	334	13.1	388	15.3	416	16.4	502	19.8	515	20.3	554	21.8
W	215	8.5	280	11.0	355	14.0	440	17.3	540	21.3	620	24.4	665	26.2	720	28.3
C	20	0.75	25	1	25	1	40	1.5	40	1.5	50	2	40	2	50	2
D	3.2	0.13	3.2	0.13	3.2	0.13	3.2	0.13	3.2	0.13	3.2	0.13	3.2	0.13	3.2	0.13
Flushing Valve Length*	226	8.9	226	8.9	203	8	203	8	203	8	203	8	229	9	254	10
F	2" ISO-7-Rp		2" ISO-7-Rp		3" #150		3" #150		3" #150		3" #150		4" #150		6" #150	
Weight kg/lbs	23 / 51		42 / 93		72 / 159		130 / 287		190 / 419		285 / 628 / 628		417 / 919		531 / 1168	

\* For 3 & 4" strainers the dimension includes a 90° angle spout, for 6" to 16" the dimension is for the flushing valve only



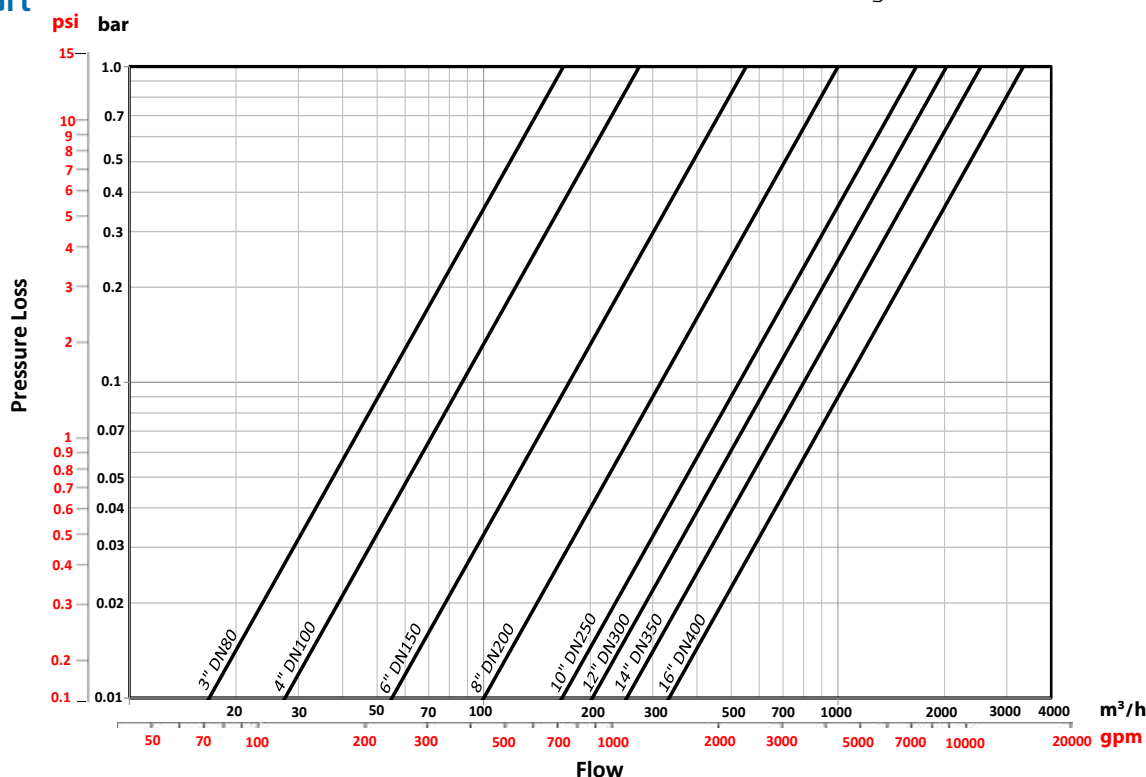


## Technical Data

- **Available sizes UL-Listed:** 3, 4, 6, 8, 10, 12, 14 and 16"
- **Other available sizes, w/o flushing port:** 18, 20 and 24"
- **End connections standard:** ANSI B16.42 #150RF
- **UL-Listed pressure rating:**
  - 3 - 12": 200 psi (14 bar)
  - 14 - 16": 250 psi (17.2 bar)
- **Design pressure:** 300 psi (20.7 bar)
- **Pressure drop:** 3 psi at 15 ft/sec (0.2 bar at 4.57 m/sec) approx, with clean screen, see also note 3
- **Temperature rating:** 90°C / 194°F

- **Max allowable differential pressure:** 7 psi / 0.5 bar (note 3)
- **Screen hole diameter:** 1/8 inch (3.2 mm)
- **Basket screen area to pipe cross-sectional area ratio:** 10:1 (min)
- **Basket screen free flow area to basket screen area:** 40% (min)
- **Flushing/Blow-Off port diameter:**
  - 3" & 4" strainers 2" Threaded,
  - 6" to 12" strainers 3" #150 Flange,
  - 14" strainer 4" #150 Flange
  - 16" strainer 6" #150 Flange

## Flow Chart



## Flow Properties

Size	3"		4"		6"		8"		10"		12"		14"		16"	
Units	metric	US	metric	US	metric	US	metric	US	metric	US	metric	US	metric	US	metric	US
Kv <sup>(1)</sup> / Cv <sup>(1)</sup>	168	194	275	317	551	636	1001	1156	1665	1923	2027	2341	2534	2927	3339	3857
Leq <sup>(2)</sup> m / ft	9	30	14	46	28	93	36	118	43	140	70	228	73	240	85	279

**Notes:** <sup>(1)</sup> Flow coefficient Kv: flow in m³/h at 1 bar differential pressure, Cv: flow in gpm at 1 psi differential pressure; The pressure loss calculation formula:  $\Delta p = SG (Q / Cv \text{ or } Kv)^2$

<sup>(2)</sup> Leq: Equivalent pipe length for turbulent flow in clean commercial steel pipe (SCH 40)

<sup>(3)</sup> Max allowable pressure drop: 7 psi (0.5 bar) across the strainer, basket screen shall be cleaned when pressure drop exceeds this value at maximum flow

## Ordering Information

Size in/DN	FP-60F-D Strainer Code	Part Number
3"/80	FP-3"-60F-01-H-C-A5-ER-D	60F03HCA5N00001-D-ER
4"/100	FP-4"-60F-01-H-C-A5-ER-D	60F04HCA5N00001-D-ER
6"/150	FP-6"-60F-01-H-C-A5-ER-D	60F06HCA5N00001-D-ER
8"/200	FP-8"-60F-01-H-C-A5-ER-D	60F08HCA5N00001-D-ER
10"/250	FP-10"-60F-01-H-C-A5-ER-D	60F10HCA5N00001-D-ER
12"/300	FP-12"-60F-01-H-C-A5-ER-D	60F12HCA5N00001-D-ER
14"/350	FP-14"-60F-01-H-C-A5-ER-D	60F14HCA5N00001-D-ER
16"/400	FP-16"-60F-01-H-C-A5-ER-D	60F16HCA5N00001-D-ER

Size in/DN	FP-60F-DV Strainer w/Flushing Valve Code	Part Number
3"/80	FP-3"-60F-01-H-C-A5-ER-DV	60F03HCA5N00001-DV-ER
4"/100	FP-4"-60F-01-H-C-A5-ER-DV	60F04HCA5N00001-DV-ER
6"/150	FP-6"-60F-01-H-C-A5-ER-DV	60F06HCA5N00001-DV-ER
8"/200	FP-8"-60F-01-H-C-A5-ER-DV	60F08HCA5N00001-DV-ER
10"/250	FP-10"-60F-01-H-C-A5-ER-DV	60F10HCA5N00001-DV-ER
12"/300	FP-12"-60F-01-H-C-A5-ER-DV	60F12HCA5N00001-DV-ER
14"/350	FP-14"-60F-01-H-C-A5-ER-DV	60F14HCA5N00001-DV-ER
16"/400	FP-16"-60F-01-H-C-A5-ER-DV	60F16HCA5N00001-DV-ER

