Jellyfish Sizing Criteria

Like most filtration systems the Jellyfish® Filter is typically sized based on the amount of available filtration surface area. The pleated membrane filtration tentacles attached to each Jellyfish cartridge provide a significant amount of filtration surface area, so the Jellyfish is able to treat more flow per cartridge than other cartridge filtration systems. Additionally, the separation skirt and sedimentation sump remove a significant portion of the coarse solids, trash and debris and oil and grease before these pollutants reach the filtration cartridges. This eliminates the need for a separate pretreatment structure and extends the useful life of the Jellyfish cartridges.

A typical Jellyfish cartridge with eleven 54-inch (1372 mm) long filtration tentacles has 381 ft^2 (35.4 m2) of membrane surface area. Each 54-inch long cartridge has a treatment capacity of 80gpm. This equates to a conservative surface area specific loading rate of 0.21 gpm/ft^2 of filter surface area. Maintaining a low surface area specific loading rate improves both performance and longevity. Since the Jellyfish is available in varying cartridge lengths a treatment capacity for each inch of filtration tentacle length has been derived to ensure a consistent surface area specific loading rate for all cartridge lengths. The Jellyfish treatment capacity is 1.48gpm/inch of filtration tentacle length. This equates to 80gpm/54inch cartridge. Table 1 provides flow ratings for typical Jellyfish cartridge lengths. Note that Jellyfish filters also contain one or more draindown cartridges. Draindown cartridges are restricted to ½ of the flow capacity of a standard cartridge to ensure their long term functionality.

Table 1. Maximum Treatment Flow Rate and Maximum Inflow Drainage Area For Various Jellyfish® Cartridge Lengths

Cartridge Length (inches)	Maximum Treatment Flow Rate (gpm)	Maximum Inflow Drainage Area (impervious acres)
15	Hi-Flo 22 Draindown 11	Hi-Flo 0.18 Draindown 0.09
27	Hi-Flo 40 Draindown 20	Hi-Flo 0.32 Draindown 0.16
40	Hi-Flo 60 Draindown 30	Hi-Flo 0.48 Draindown 0.24
54	Hi-Flo 80 Draindown 40	Hi-Flo 0.65 Draindown 0.32

When the Jellyfish is utilized downstream of upstream detention systems where the water quality volume is stored and slowly released overtime the maximum inflow area guidance in Table 1 should be utilized. By limiting the maximum amount of inflow area treated by a single cartridge we are able to ensure the long term functionality of the system. Failure to consider the amount of inflow area draining to a cartridge could result in premature clogging and more frequent maintenance.

Table 2. provides the typical cartridge count and treatment capacities for standard Jellyfish model sizes. For applications in Rhode Island the Jellyfish is sized to treat either the water quality volume or the water quality flow, as defined by the 2010 Rhode Island Stormwater Design and Installation Standards Manual. Contech recommends that this sizing guidance be used for planning purposes only. Please contact Contech directly so that one of their stormwater design engineers can ensure the design has been optimized for the unique constraints of your project.

Table 2. Design Flow Capacities Standard Jellyfish Filter Configurations with 54 Inch Cartridges

Manhole Diameter (ft / m) [1]	Model No.	Hi-Flo Cartridges [2] 54 in / 1372 mm	Draindown Cartridges [2] 54 in / 1372 mm	Treatment Flow Rate (gpm / cfs)	Treatment Flow Rate (L/S)
Catch Basin		varies	varies	varies	varies
4 / 1.2	JF4-2-1	2	1	200 / 0.45	12.6
6 / 1.8	JF6-3-1	3	1	280 / 0.62	17.7
	JF6-4-1	4	1	360 / 0.80	22.7
	JF6-5-1	5	1	440 / 0.98	27.8
	JF6-6-1	6	1	520 / 1.16	32.8
8 / 2.4	JF8-6-2	6	2	560 / 1.25	35.3
	JF8-7-2	7	2	640 / 1.43	40.4
	JF8-8-2	8	2	720 / 1.60	45.4
	JF8-9-2	9	2	800 / 1.78	50.5
	JF8-10-2	10	2	880 / 1.96	55.5
10 / 3.0	JF10-11-3	11	3	1000 / 2.23	63.1
	JF10-12-3	12	3	1080 / 2.41	68.1
	JF10-12-4	12	4	1120 / 2.50	70.7
	JF10-13-4	13	4	1200 / 2.67	75.7
	JF10-14-4	14	4	1280 / 2.85	80.8
	JF10-15-4	15	4	1360 / 3.03	85.8
	JF10-16-4	16	4	1440 / 3.21	90.8
	JF10-17-4	17	4	1520 / 3.39	95.9
	JF10-18-4	18	4	1600 / 3.56	100.9
	JF10-19-4	19	4	1720 / 3.83	108.5
12 / 3.6	JF12-20-5	20	5	1800 / 4.01	113.6
	JF12-21-5	21	5	1880 / 4.19	118.6
	JF12-22-5	22	5	1960 / 4.37	123.7
	JF12-23-5	23	5	2040 / 4.54	128.7
	JF12-24-5	24	5	2120 / 4.72	133.8
	JF12-25-5	25	5	2200 / 4.90	138.8
	JF12-26-5	26	5	2280 / 5.08	143.8
	JF12-27-5	27	5	2360 / 5.26	148.9
Vault		varies	varies	varies	varies

[1] Smaller and larger systems may be custom designed
[2] Shorter length cartridge configurations are available