



## SAND MEDIA FILTERS

### X series



The X series filters are used mainly in applications where the contaminated water has increased organic contaminance (algae, seaweeds etc) or even inorganic contaminants

(argilic-clay soils).

Due to their three-dimensional nature they have the ability to withhold large quantities of particles. The filtration media which accomplishes the filtering is silica sand, in different available grain size depending on the required filtration needs.

The sand media filters are cleaned by means of a backwash procedure. The water flow direction is reversed, the sand volume increases and the withheld particles are drained outwards.

The double chambered sand media filters have the same characteristics with those of the single chamber, the only difference is that they are effectively two filters in one array and hence they have the capability to perform self cleaning without interruptions to the clean water flow rate.

### General Characteristics

Their anti corrosive protection includes surface treatment using phosphoric acids followed by electrostatic polyesteric paint, while other available paint and material options are also available pending request.

The product is supplied with multiple couplings and flanges options availability (DIN, ASA, etc) conforming to all required international standars.

The maximum operating pressure is 8 bars (116 psi).

They are available in other specifications, such as self cleaning version.



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## Characteristics

| Product Key / Type       | Inlet / Outlet | Tank Diameter | Filtration Surface |                  | Flow Rate         |       | River             |       | Canal             |       | Maximum Pressure |     |
|--------------------------|----------------|---------------|--------------------|------------------|-------------------|-------|-------------------|-------|-------------------|-------|------------------|-----|
|                          |                |               | m <sup>2</sup>     | in. <sup>2</sup> | m <sup>3</sup> /h | gpm   | m <sup>3</sup> /h | gpm   | m <sup>3</sup> /h | gpm   | bar              | psi |
| 05-08-152                | 1 1/2"         | 18"           | 0.16               | 248              | 12                | 52.8  | 6                 | 26.4  | 5                 | 22    | 8                | 116 |
| 05-08-202                | 2"             | 20"           | 0.20               | 310              | 17                | 74.8  | 8                 | 35.2  | 6                 | 26.4  | 8                | 116 |
| 05-08-302                | 3"             | 24"           | 0.28               | 434              | 23                | 101.2 | 11                | 48.4  | 8                 | 35.2  | 8                | 116 |
| 05-08-338                | 3"             | 36"           | 0.65               | 1007.5           | 50                | 220.1 | 26                | 114.4 | 20                | 88    | 8                | 116 |
| 05-08-450                | 4"             | 48"           | 1.15               | 1782.5           | 75                | 330.2 | 46                | 202.5 | 35                | 154.1 | 8                | 116 |
| 05-08-305 horizontal     | 3"             | 24"           | 0.75               | 1162.5           | 60                | 264.1 | 30                | 132   | 23                | 101.2 | 8                | 116 |
| 05-08-156 double chamber | 1 1/2"         | 20"           | 0.40               | 620              | 16                | 70.4  | 15                | 66    | 11                | 48.4  | 8                | 116 |
| 05-08-206 double chamber | 2"             | 24"           | 0.75               | 1162.5           | 33                | 145.3 | 30                | 132   | 23                | 101.2 | 8                | 116 |
| 05-08-307 double chamber | 3"             | 36"           | 1.00               | 1550             | 60                | 264.1 | 40                | 176.1 | 30                | 132   | 8                | 116 |
| 05-08-451 double chamber | 4"             | 36"           | 1.35               | 2092.5           | 80                | 352.2 | 54                | 237.7 | 41                | 180.5 | 8                | 116 |

## Silica sand required quantity

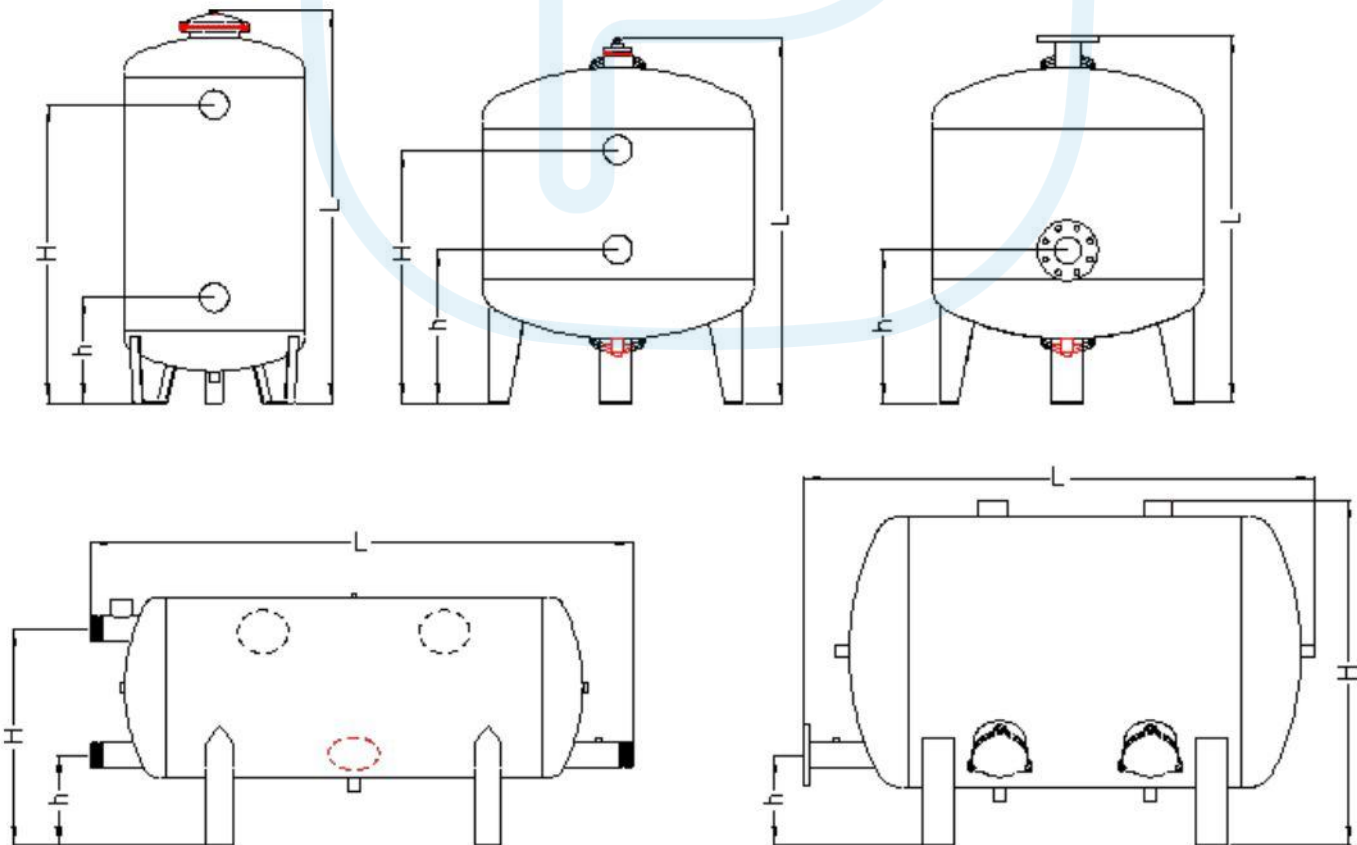
| Type              | Silica Sand quantity |        |
|-------------------|----------------------|--------|
|                   | kg                   | lbs.   |
| 1 1/2" (18")      | 78                   | 172    |
| 2" (20")          | 130                  | 286.6  |
| 3" (24")          | 234                  | 515.8  |
| 3" (36")          | 468                  | 1031.7 |
| 4" (48")          | 858                  | 1891.5 |
| 3" horizontal     | 364                  | 802.5  |
| 2" double chamber | 364                  | 802.5  |
| 3" double chamber | 650                  | 1433   |
| 4" double chamber | 988                  | 2178.1 |

**Dimensions**

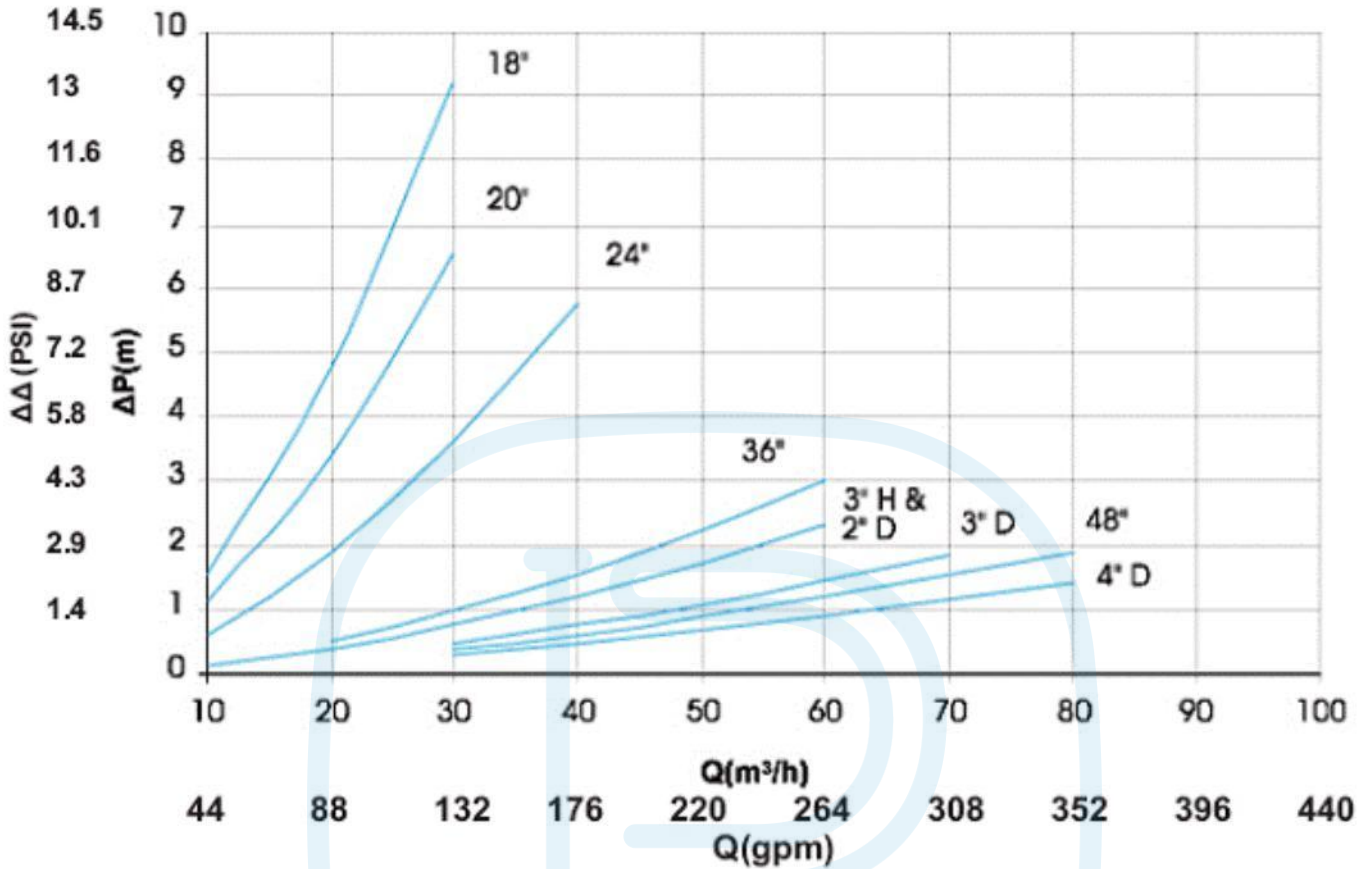
| Type                  | L    |      | H*   |      | h   |      | Weight |       | Tank Volume |        |
|-----------------------|------|------|------|------|-----|------|--------|-------|-------------|--------|
|                       | mm   | in.  | mm   | in.  | mm  | in.  | kg     | lbs.  | lt.         | gallon |
| 1 1/2" (18")          | 1040 | 41   | 810  | 31.9 | 330 | 13   | 48     | 105.8 | 119         | 31.4   |
| 2" (20")              | 1230 | 48.4 | 930  | 36.6 | 370 | 14.5 | 62     | 136.7 | 175         | 46.2   |
| 3" (24")              | 1305 | 51.4 | 990  | 39   | 350 | 13.7 | 74     | 163.1 | 284         | 75     |
| 3" (36")              | 1220 | 48   | 840  | 33   | 510 | 20.1 | 108    | 238   | 505         | 133.4  |
| 4" (48")              | 1360 | 53.5 | 900  | 35.4 | 600 | 23.6 | 192    | 423.3 | 971         | 256.5  |
| 3" horizontal         | 1800 | 70.8 | 1291 | 50.8 | 300 | 11.8 | 125    | 275.6 | 398         | 105.1  |
| 1 1/2" double chamber | 1130 | 44.5 | 745  | 29.3 | 200 | 7.8  | 89     | 196.2 | 175         | 46.2   |
| 2" double chamber     | 1640 | 64.5 | 1140 | 44.8 | 360 | 14.2 | 122    | 269   | 398         | 105.1  |
| 3" double chamber     | 1690 | 66.5 | 1278 | 50.3 | 300 | 11.8 | 198    | 436.5 | 879         | 232.2  |
| 4" double chamber     | 2020 | 79.5 | 1278 | 50.3 | 300 | 11.8 | 240    | 529.1 | 1128        | 298    |

\* H = Minimum recommended installation height

**Dimension Diagram**



### X series pressure loss diagram



Note: All measurements have been taken under clean water conditions.

### Media data - Silica sand selection matrix

| Silica sand designation no | Silica sand grain size range   | Mean effective size (mm) | Coefficient of Uniformity | Filtration quality (mesh) |
|----------------------------|--------------------------------|--------------------------|---------------------------|---------------------------|
| 12                         | Silicon Dioxide (1.2 - 2.4 mm) | 1.2                      | 1.5                       | 130-140                   |
| 20                         | Silicon Dioxide (0.4 - 0.8 mm) | 0.5                      | 1.43                      | 200-230                   |

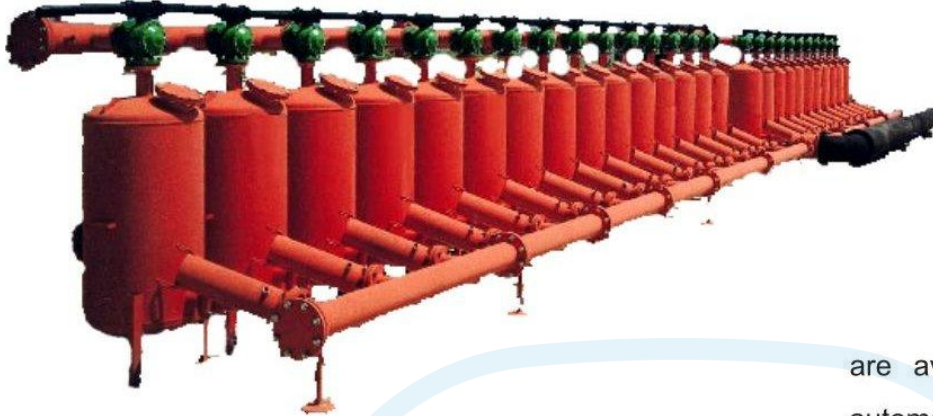
Two factors describe the attributes of the filtration media used in sand media filters:

The **Coefficient of Uniformity** is an indicator which expresses the variance of the grain size particles in a sample. For better filtration control the silica sand must be as uniform in size as possible. Large variations of silica sand grain sizes will result in decreasing the time interval required for cleaning the filter, since even the tiniest particles that are capable of flowing through the water jets, will be withheld from the un-uniform pores of the silica sand. The Coefficient of Uniformity can be expressed as the rate of: (mesh size that is required for 60% of the silica sand to flow through) / (mesh size that is required for 10% of the silica sand to flow through).

The **Mean Effective Size** is an indicator that indicates the particle size that can be withheld by the silica sand. It is defined as the mesh size that is required for the 10% of the silica sand to flow through.



## SAND MEDIA FILTER SYSTEMS



For better filtration results and to accommodate demand for filtration of greater water flow rates, sand media filter combinations are assembled in filtration systems. These are available either in manual or automatic cleaning process versions.

The use of sand media filter systems enables the filtration of vastly greater water flow rates than a single filter station, as well as providing the advantage of continuous water flow rate during the cleaning process (irrigation, water supply).

The optimum system choice depends on the water flow rate as well as the water quality. According to internationally accepted practice the optimum choice of sand media filter or system requires that we will insure water flow rate speed equals with 1.3 m/min for relatively clean water, 1m/min for ordinary water and 0.5-0.8m/min for highly contaminated water.



System types and characteristics

| Product Key /Type | Sand Media/<br>Horizontal filters | Number of Units | Inlet / Outlet | Flow Rate m <sup>3</sup> /h | River m <sup>3</sup> /h | Canal m <sup>3</sup> /h |
|-------------------|-----------------------------------|-----------------|----------------|-----------------------------|-------------------------|-------------------------|
| BX20-2            | X 20"                             | 2               | 3"             | 30                          | 16                      | 12                      |
|                   | O 3"                              | 1               |                |                             |                         |                         |
| BX20-3            | X 20"                             | 3               | 4"             | 40                          | 24                      | 18                      |
|                   | O 4"                              | 1               |                |                             |                         |                         |
| BX24-2            | X 24"                             | 2               | 3"             | 45                          | 22                      | 17                      |
|                   | O 3"                              | 1               |                |                             |                         |                         |
| BX24-3            | X 24"                             | 3               | 4"             | 65                          | 34                      | 25                      |
|                   | O 4"                              | 1               |                |                             |                         |                         |
| BX36-2            | X 36"                             | 2               | 4"             | 80                          | 52                      | 39                      |
|                   | O 4"                              | 1               |                |                             |                         |                         |
| BX36-3            | X 36"                             | 3               | 6"             | 150                         | 78                      | 59                      |
|                   | O 6"                              | 1               |                |                             |                         |                         |
| BX36-4            | X 36"                             | 4               | 6"             | 200                         | 104                     | 78                      |
|                   | O 6"                              | 2               |                |                             |                         |                         |
| BX48-2            | X 48"                             | 2               | 6"             | 100                         | 92                      | 69                      |
|                   | O 6"                              | 1               |                |                             |                         |                         |
| BX48-3            | X 48"                             | 3               | 6"             | 210                         | 138                     | 104                     |
|                   | O 6"                              | 2               |                |                             |                         |                         |
| BX48-4            | X 48"                             | 4               | 8"             | 270                         | 184                     | 138                     |
|                   | O 6"                              | 2               |                |                             |                         |                         |
| BX48-5            | X 48"                             | 5               | 8"             | 330                         | 230                     | 173                     |
|                   | O 6"                              | 3               |                |                             |                         |                         |
| BX48-6            | X 48"                             | 6               | 10"            | 420                         | 276                     | 207                     |
|                   | O 6"                              | 3               |                |                             |                         |                         |
| BX48-8            | X 48"                             | 8               | 10"            | 560                         | 368                     | 276                     |
|                   | O 6"                              | 4               |                |                             |                         |                         |
| BX48-10           | X 48"                             | 10              | 12"            | 700                         | 460                     | 345                     |
|                   | O 6"                              | 6               |                |                             |                         |                         |
| BX48-12           | X 48"                             | 12              | 12"            | 840                         | 552                     | 414                     |
|                   | O 6"                              | 8               |                |                             |                         |                         |
| BX48-14           | X 48"                             | 14              | 14"            | 980                         | 644                     | 483                     |
|                   | O 6"                              | 8               |                |                             |                         |                         |
| BX48-24           | X 48"                             | 24              | 18"            | 1680                        | 1104                    | 828                     |
|                   | O 6"                              | 14              |                |                             |                         |                         |

Note: : Larger systems and in various arrays are available following demand.