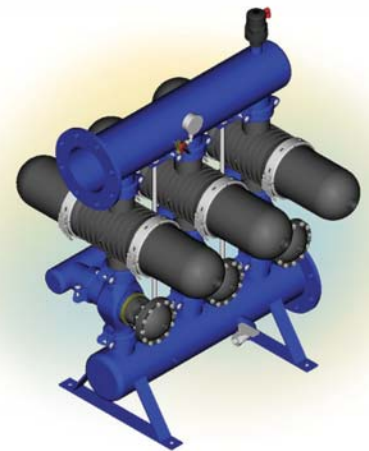


Crystal

Filtration Batteries



Features

- Precise filtration with Spin Klin technology
- Automatic filtration for medium flow rates
- Continuous flow during backwash
- Plastic parts - corrosion free
- Highly durable filter element
- Easy installation and operation
- Lightweight, compact design
- Simple and reliable operation

Technical Data

| | METRIC | US |
|----------------------------------|----------------------|-----------------------|
| Max. pressure | bar 10 | psi 145 |
| Min. backwash pressure | bar 2.8 | psi 40.6 |
| Filtration surface area per unit | cm ² 1760 | in ² 272.8 |
| Filtration volume per unit | cm ³ 2640 | in ³ 161 |
| Backwash water volume per unit | lit 66 | gal 17.4 |

Maximum Filtration Flow Rate / Water Quality

| No. of units | | 3 | 4 | 5 | 6 | 7 | 8 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------------|---------------|-------------------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| Filtration Grade | Water Quality | m ³ /h | gpm | | | | | | | | | | |
| 400-130 μ | Good | 110 | 148 | 185 | 222 | 259 | 296 | 484 | 652 | 814 | 977 | 1140 | 1302 |
| | Average | 90 | 120 | 150 | 180 | 210 | 240 | 396 | 528 | 660 | 792 | 924 | 1056 |
| | Poor | 66 | 88 | 110 | 132 | 154 | 176 | 290 | 387 | 484 | 581 | 678 | 774 |
| | Very Poor | 45* | 60 | 75 | 90 | 105 | 120 | 198* | 264 | 330 | 396 | 462 | 528 |
| 100 μ | Good | 90 | 120 | 150 | 180 | 210 | 240 | 396 | 528 | 660 | 792 | 924 | 1056 |
| | Average | 66 | 88 | 110 | 132 | 154 | 176 | 290 | 387 | 484 | 581 | 678 | 774 |
| | Poor | 48* | 64 | 80 | 96 | 112 | 128 | 211* | 282 | 352 | 422 | 493 | 563 |
| | Very Poor | 33* | 44* | 55 | 66 | 77 | 88 | 145* | 194* | 242 | 290 | 339 | 387 |
| 55 μ | Good | 60 | 80 | 100 | 120 | 140 | 160 | 264 | 352 | 440 | 528 | 616 | 704 |
| | Average | 48* | 64 | 80 | 96 | 112 | 128 | 211* | 282 | 352 | 422 | 493 | 563 |
| | Poor | 36* | 48* | 60 | 72 | 84 | 96 | 158* | 211* | 264 | 317 | 370 | 422 |
| | Very Poor | 27*** | 36** | 45* | 54 | 63 | 72 | 119*** | 158** | 198* | 238 | 277 | 317 |
| 20 μ | Good | 30*** | 40** | 50 | 60 | 70 | 80 | 132*** | 176** | 220 | 264 | 308 | 352 |
| | Average | 24*** | 32*** | 40** | 48* | 56 | 64 | 106*** | 141*** | 176** | 211* | 246 | 282 |
| | Poor | 18*** | 24*** | 30*** | 36*** | 42* | 48* | 79*** | 106*** | 132*** | 158*** | 185* | 211* |
| | Very Poor | 12*** | 16*** | 20*** | 24*** | 28*** | 32*** | 53*** | 70*** | 88*** | 106*** | 123*** | 141*** |

* External source for backwash is necessary

** When pressure is low, it is necessary to close downstream valve during backwash

*** The 2" Spin Klin Battery is recommended

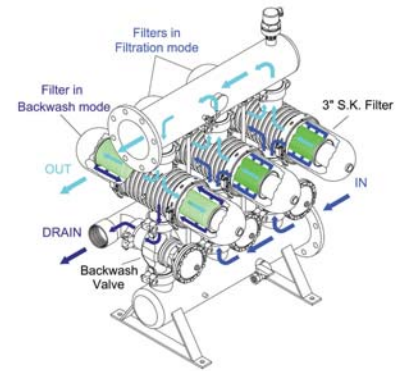
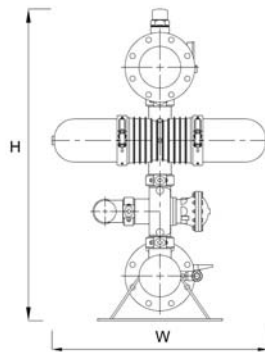
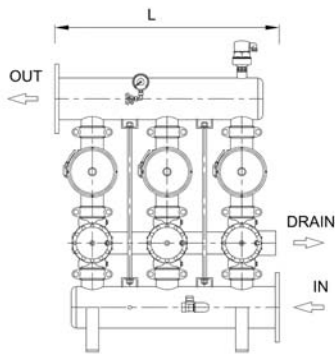
Crystal

F i l t r a t i o n B a t t e r i e s

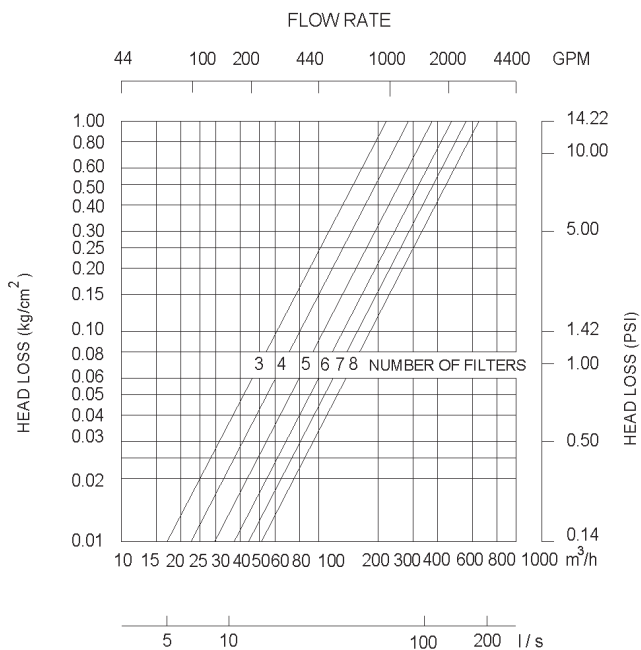
Dimensions and Weights

| No. of units | | 3 | 4 | 5 | 6 | 7 | 8 | | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------------|----|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|
| D Inlet/Outlet diameter | mm | 90 | 110 | 160 | 160 | 225 | 225 | inch | 3 | 4 | 6 | 6 | 8 | 8 |
| L Length | mm | 900 | 1200 | 1500 | 1800 | 2100 | 2400 | inch | 35 | 47 | 59 | 71 | 83 | 94 |
| H Height | mm | 1220 | 1220 | 1220 | 1220 | 1488 | 1488 | inch | 48 | 48 | 48 | 47 | 59 | 59 |
| W Width | mm | 900 | 900 | 900 | 900 | 900 | 900 | inch | 35 | 35 | 35 | 35 | 35 | 35 |
| Shipping weight (approx.) | kg | 150 | 170 | 190 | 210 | 260 | 300 | lbs | 331 | 375 | 419 | 463 | 573 | 661 |

NOTE: Above dimensions are for standard models only: Polyester coated steel flanged inlet/outlet and drainage manifolds.



Head Loss Chart - for 130-400μ, Clean State



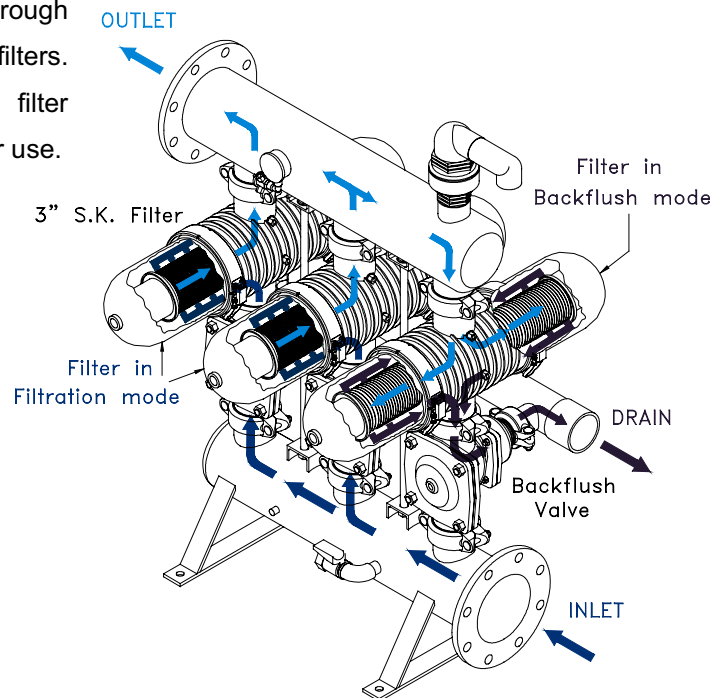
CRYSTAL filtration batteries are available with:
Polyester coated steel,
Stainless steel or
Polypropylene manifolds.

3" Spin Klin[®] Battery

Operation and Maintenance Manual

Operation

During the filtration stage, water flows through the INLET manifold and is distributed through the 3" x 2" backwash valves into the S.K. filters. The water then passes through the filter elements to the outlet manifold for consumer use.



Description of the Backwashing Process

1. The controller transmits an electrical command to the first solenoid according to either differential pressure or time.
2. The solenoid then sends a pressure command to the backwash valve, moving it from the filtration mode to the backwash mode.
3. Filter #1 is then backwashed with water from the outlet manifold that has been filtered by the other filters in the system. Contaminated water and impurities flow out through the drain manifold.
4. On completion of the allotted backwashing time, the controller releases the backwash command, and filter #1 returns to the filtration mode.
5. Filter #2 then enters the backwash mode, and the process is repeated until all the filters in the system have been backwashed.
6. After all the filters have been backwashed the system returns to the filtration mode, until the next backwash cycle.

Spin Klin Technology- Spin Klin Spine Model 2

General:

The Spin Klin discs are stacked on the Spin Klin spine.

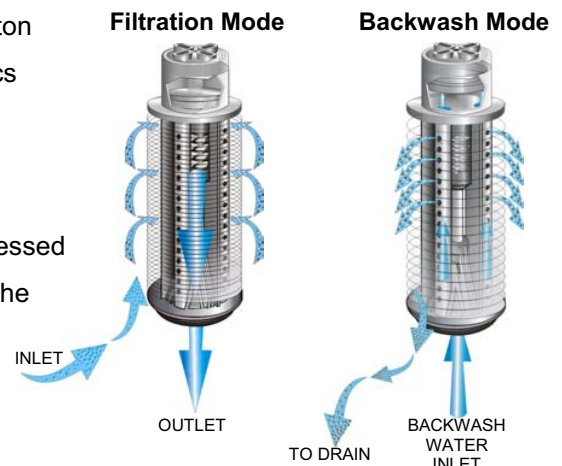
The discs are color-coded by micron **size**, and are assembled according to your water filtration requirements. The spine assembly has a spring compression unit and an internal piston which are used to alternately compress and release the discs during filtration and backwash cycles.

Filtration Mode:

During the filtration process the filter discs are tightly compressed together by the spring and the differential pressure, forcing the water to flow through the grooves and traps of the discs.

Backwash Mode:

During backwash the discs are released by releasing the inlet hydraulic pressure. Multi-jet nozzles provide tangential spray on the loosened discs, causing them to spin, and release the retained solids, which are flushed out to the drain.



3" x 2" Backwash Valve

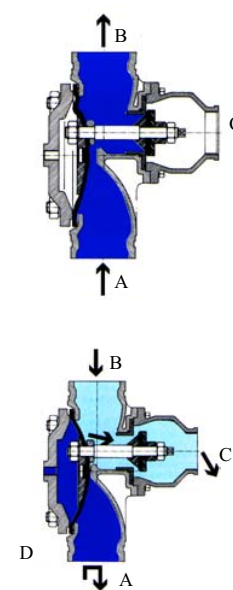
Filtration Position:

Water flows from port A (main supply) to port B (filter connection). Port C (drain water outlet) is closed by the seal.

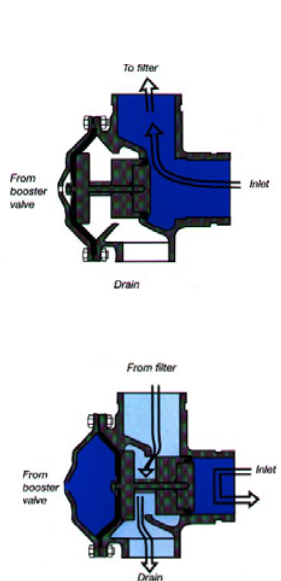
Backwash Position:

Command pressure is applied to the top side of the diaphragm through port D. The diaphragm moves down, pushing the sealed body by the shaft. Port A is closed by the seal, preventing flow to the filter. Port C is now open allowing flushing water to flow from port B (filter connection) to the drain.

Dorot 3"x 2" valve



Bermad 3"x 2" valve

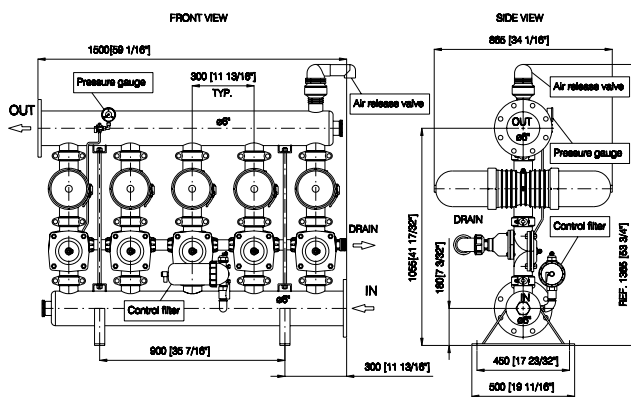


System Installation and Startup

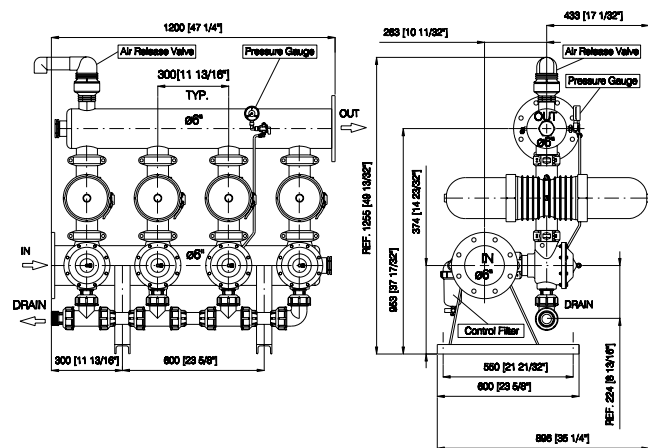
Technical Data

| | | |
|-----------------------------|-----------------------|---------|
| Maximum Pressure | 10 bar | 140 psi |
| Minimum Pressure | 2.8 bar | 38 psi |
| Backwash Flow Rate per unit | 16 m ³ /hr | 70 gpm |
| Maximum Temperature | 70°C | 158°F |
| pH | 4-11 | 4-11 |

3" Spin Klin Battery with Dorot Valve



3" Spin Klin Battery with Bermad Valve



Installation

- Make sure that the inlet and outlet orientation is correct (shown by arrows on filter).
- Prior to start-up check for any transport damage to the unit (system operates under pressure!).
- Connect backwash drainage line.
- Cover clamps need to be properly closed.

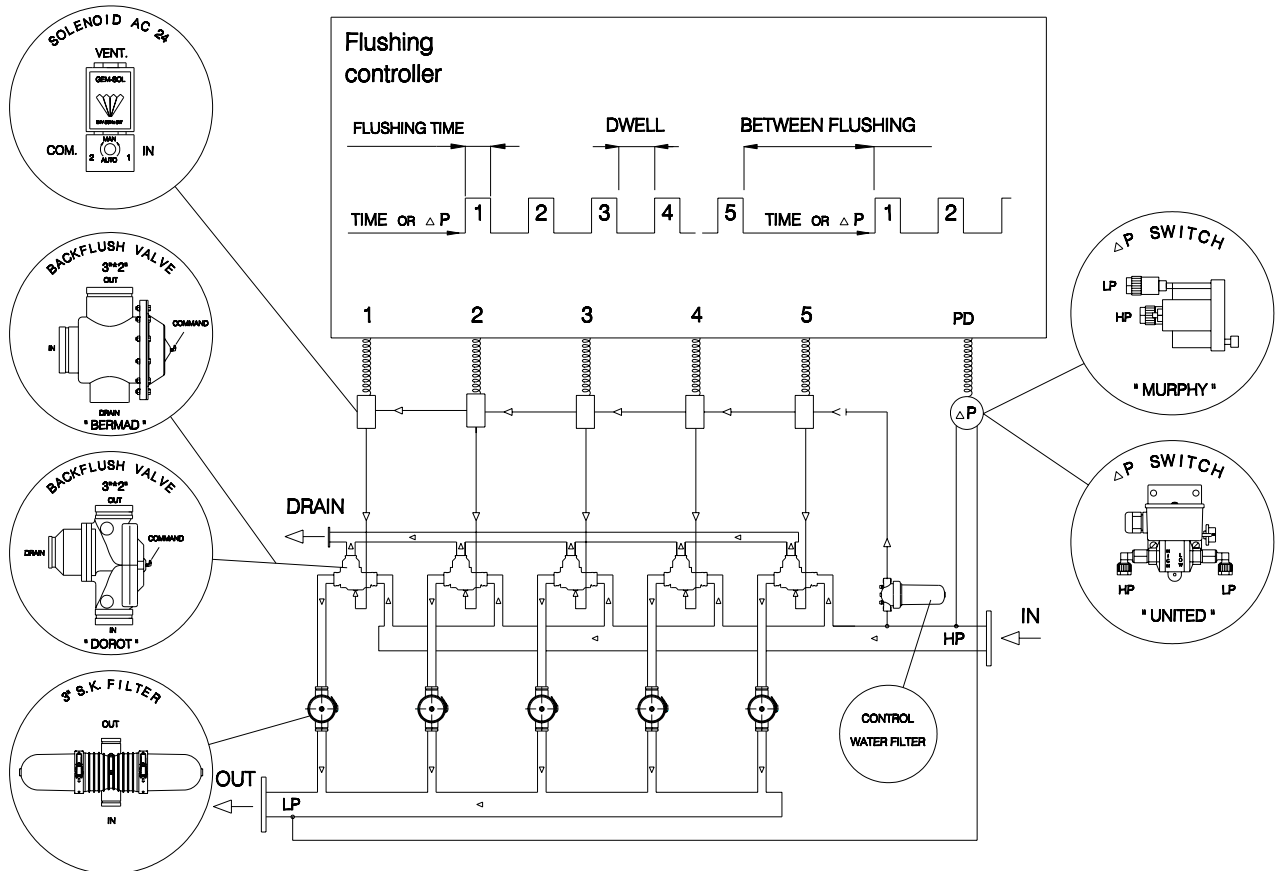
Start-up Operation

Start the backwash cycle, making sure that all system components function correctly.

Filter Load-up during Start-up

- ☐ Close the downstream (flow control) valve (if available).
- ☐ Flush until clean with repeated cycles.
- ☐ Slowly reopen the downstream valve.
- ☐ If the pressure difference remains high, check and see if the flow rate is too high.

An excessive flow rate through the filter causes excessive pressure loss.



Control

- ❑ Refer to the manufacturer's handbook before installing the controller.
- ❑ Make sure that the voltage of both the solenoid unit and controller are correct.
- ❑ Set the manual operation button to automatic.
- ❑ Check that the ΔP hydraulic switch HIGH and LOW pressure lines are correctly connected to the appropriate ports.
- ❑ Set the starting backwash switch to ΔP 5-7 meters (6 - 8p.s.i.).
- ❑ Set the controller to a flush time of 30 seconds and a dwell time of 10 seconds. These settings may require adjustment to conform to local water conditions. Typically, a 1 to 3 hour interval between backwashes is recommended.