

## Filtration Media Systems – CLINO-X Sediment



### Features

- Fully automatic operation
- Choice of control valves, timer or volumetric types
- Unfiltered water bypass or no-unfiltered water bypass
- Optional non-electric automatic controller
- FRP media vessel pressure rated to 1050kPa
- Longer filtration runs, less frequent backwashing
- Filtration efficiency in 3-5 micron size range
- Service flow 610lpm/m<sup>2</sup> (15gpm/ft<sup>2</sup>) in pressure systems
- Combined physical filtration, surface adsorption and chemical capture processes

Clino-X filters use a processed and graded mineral zeolite media for removal of sediment particles above 5 microns diameter. Clino-X tri-phase media has a high suspended solids loading capacity (up to 1.5 times conventional multi-media and 2.8 times that of conventional sand filters) to extend periods between backwash cycles and reduce water consumption. Clino-X has an additional capacity for ion-exchange to remove ammonia, iron, manganese, copper, nitrate, arsenic, arsenic and free chlorine.

Trapped particles are removed from the media bed by periodically reversing the water flow through the system. This periodic backwash is initiated by the control valve and frequency is selected by the user to suit the feedwater type and volume of water being used. Optional Magnum, Fleck Clack flow control valves are available for control of backwash cycle initiation based on elapsed time, total volume, differential pressure or external contact closure triggers.

Model	Media Volume (l)	Service Flow Rate Range (lpm)	Backwash Flow Rate Range (lpm)	Standard Controller	In/Out Thread (mm)	Dimensions (mm)
CNX-1054	35.5	24-41	31-41	WS1-EI	20	250 x 1400
CNX-1354	63.5	41-69	52-69	WS1-EI	20-25	330 x 1370
CNX-1465	85	48-80	60-80	WS1-EI	25	360 x 1650
CNX-1665	99	63-105	78-105	263/742: 150/742	25-40	410 x 1650
CNX-1865	150	80	81	2850FT/NE	40	460 x 1650
CNX-2162	170	108-180	135-180	2850FT/NE	40	530 x 1580
CNX-2472	226.5	141-236	176-236	2850FT/NE	40	610 x 1850
CNX-3672	523.5	318-530	396-530	170/NE	50	920 x 1830
CNX-4272	764	433-721	539-721	170/NE	80	1219 x 1830

Pressure drop through the filter will occur according to pipe diameters used on installation, typical flow rate and sediment loading on the media through use. An integrated three-valve bypass assembly is recommended for all installations to allow the system to be isolated should this be necessary. Inlet and outlet pressure gauges will also assist with system performance monitoring.

## Filtration Media – CLINO-X

Clino-X is a unique tri-phase media based on a rare naturally occurring mineral that has been extensively refined and graded. The unique properties of Clino-X allow it to radically alter the performance and operational costs of media filtration by combining physical filtration, surface adsorption and chemical capture processes. The hardness, stability and micro-porous character of Clino-X make it a perfect filtration media for applications in the water and wastewater treatment industry. Unique ion-exchange capabilities extend applications beyond sediment removal to provide additional capability to existing water treatment infrastructure.

### Filtration Performance

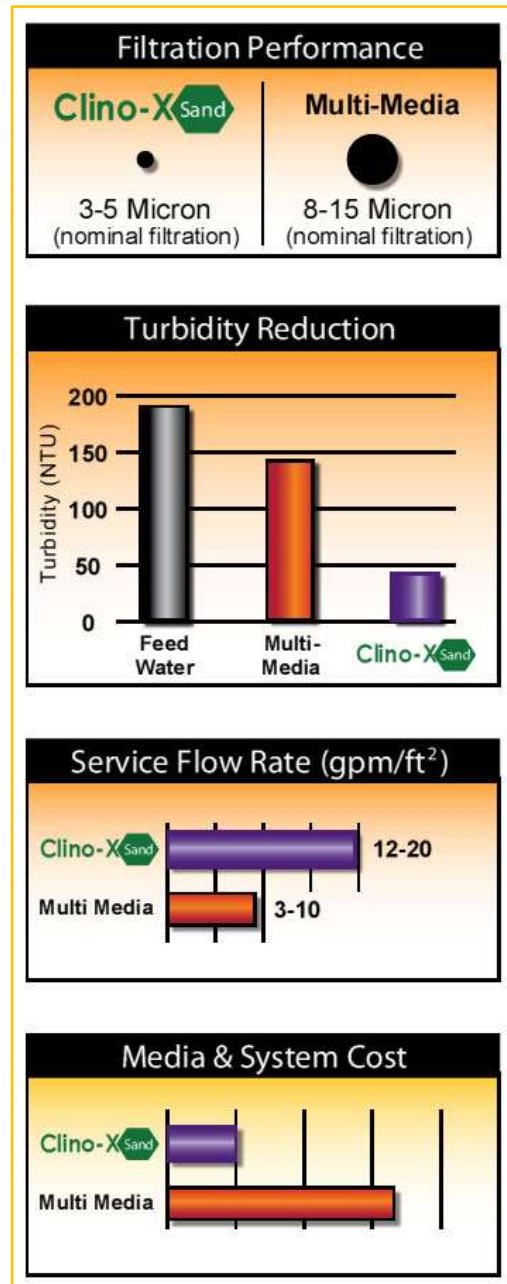
There is an increasing demand for media with higher efficiency in the removal of suspended solids and colloids from feedwaters. The ability of filtration media to remove other contaminants including heavy metals and other toxic substances, bacteria and parasites is also advantageous. Conventional sand filter systems do not remove such contaminants.

The filtration abilities of Clino-X offer a versatile and eco-sensitive option to remove such contaminants found in water systems. Clino-X media can perform these functions due to their high ion exchange capacity, adsorption-desorption energies and ability to modification.

Clino-X can remove ammonium ( $\text{NH}_4^+$ ) and metal cations  $\text{Pb}^{+2}$ ,  $\text{Cu}^{+2}$ ,  $\text{Cd}^{+2}$ ,  $\text{Zn}^{+2}$ ,  $\text{Co}^{+2}$ ,  $\text{Cr}^{+2}$ ,  $\text{Mn}^{+2}$  and  $\text{Fe}^{+2/+3}$  from solutions with the recovery of ammonium and some metals as high as 97%.

### Applications include:

- Reverse Osmosis pre-treatment
- Cooling tower supply and recirculation filtration
- Municipal feedwater treatment
- Wastewater and car wash water recycling
- Metal finishing
- Irrigation, horticulture, and hydroponics water filtration
- Aquarium and Aquaculture supply & recirculation systems
- Bore-water treatment



## Filtration Media – CLINO-X

### Features and Benefits

- High suspended solids loading capacity
- Superior filtration performance
- Reduced backwash frequency
- Removal of solids to 5 microns
- Reduced pressure drop
- Higher flow rates
- Light weight media, lower shipping costs
- Easy to handle

### CLINO-X Superior Filtration Media

#### Physical Characteristics

Colour	Dark Green
Bulk Density	55lbs per cubic ft.
Specific Gravity	2.2gm/cc
Granular Size	0.5-1. mm
Uniform Coefficient	1.9
Hardness (MOHS Scale)	4

#### Operational Requirements

Minimum Bed Depth	20"
Recommended Freeboard	50% of bed depth
Service Flow Rate	12-20gpm/sq. ft.
Backwash Flow Rate	12-16gpm/sq. ft.
Backwash Bed Expansion	40-50%
Allow bed to soak overnight before initial backwash	

#### CLINO-X vs Conventional Filter Media

Media	Nominal Micron Rating	Loading Capacity
Sand	20	1.0 x
Sand and Anthracite	15	1.4 x
Multimedia	12	1.6 x
CLINO-X	<5	2.8 x

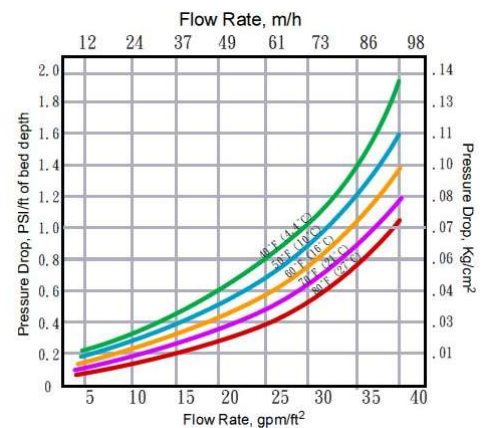
#### CLINO-X Ion Exchange Performance Chart

Exchange Capacity: 30,000mg/l for every 1kg of media			
Contaminant Removal – tested at water hardness of 200mg/l			
Colour: 58%	Turbidity: 95%	Total Hardness: 62%	Fluorine: 32%
Zinc: 88%	Ammonia: 99%	Iron: 99%	Manganese: 92%
Copper: 70%	Phosphorus: 55%	Cyanide: 62%	Nitrate: 14%
Haloforms: 55%	Chloride: 11%	Arsenic: 30%	Lead: 98%
Mercury: 28%	Cadmium: 92%	Molybdenum : 70%	Nickel: 25%
Free Chlorine: 96%	Volatile Phenols: 85%		

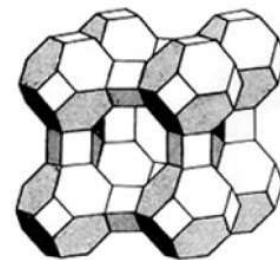
Contaminant removal efficiency may be affected if total hardness > 200ppm

When CLINO-X has reached the limit of contaminant removal, it may be regenerated with a 30% sodium chloride solution in the same way that conventional water softeners are regenerated. CLINO-X is soaked in the saturated brine solution for 2 hours before rinsing and putting back into service. Regeneration is only required when the filter is designed for ion exchange purpose. If the filter is only used for turbidity removal, periodic backwashing will restore media performance.

#### Pressure Drop vs Flow



#### CLINO-X Crystal Structure



## Automatic and Manual Filter – Valve Options

Standard media pressure vessels used for filtration systems have 2.5", 4" or 6" top openings for installation of flow control heads and pipework. Flow control valves may be manual or automatic, electrical or non-electric, and functions may be initiated through a simple timer, volume of water treated, or an external contact closure from a PLC, differential pressure monitor or contact closure. Choose the flow control valve and controller according to the application, required flow rates, mode of operation and FRP tank size. Some valve types are shown here and details on additional valves to suit particular applications are available by request.

### CLACK WS1CI Integrated Flow Control Valve and Controller



The WS1EI multi-cycle valves are simple, easy to use timer actuated 1" softener or filter flow control valves for 6" to 21" diameter FRP tanks with 2.5"-8 NPSM FRP openings. These versatile valves are primarily designed for commercial applications requiring flow rates up to 102lpm at 103kPa pressure drop. The valve uses a 1.05" riser tube and comes with an upper bayonet type screen. Standard supply includes a bypass assembly as standard to simplify service requirements.

**NOTE:** The WS1EI valve has untreated water bypass during regeneration.

### AUTOTROL 263 Performa Valve – 400 Series



The 263 Performa model is an automatic 3-cycle 1" Filter valve designed for larger residential and light commercial applications with higher service flow rates to 95 LPM at 103kpa drop and backwash flow rate of 76 LPM at 170kpa drop. The Performa valves are supplied complete with a 400 or 900 Series Control with transformer and have four external ports that allow the valves to be configured to suit most applications.

**NOTE:** The 263 valve has untreated water bypass during regeneration. Bypass valve assemblies are available to allow filter system isolation or blending operation.

### AUTOTROL 150 Series – Logix 700 Series Flow Control Valve



The 150/153-316 Stainless Steel valve is a 1.5", 3-cycle filter valve designed for commercial and industrial applications with flow rates to 216lpm @ 103kPa pressure drop. The valve is 316 grade stainless steel, piston operated and is available in top or side mount formats.

**NOTE:** The 150 valves may be ordered with filtered water bypass or no-unfiltered water bypass configurations

## Automatic and Manual Filter – Valve Options

### *AUTOTROL 293 MAGNUM Cv Series – Logix 700 Series Flow Control Valve*



The Magnum Cv is a 1.5" flow control valve is moulded from Noryl available with an external flow metering turbine. Used for commercial and industrial applications, the valve provides for flow rates up to 285lpm @ 103kPa pressure drop. All options are ordered separately. Filter application order backwash flow control separately.

**OPTIONS:** 2" PVC solvent weld or 2" BSP Stainless Steel adaptor kit  
**NOTE:** The Magnum valves can be supplied with or without untreated water bypass during regeneration.

### **AUTOTROL Valve Controller Types**

#### *Logix 742 Time Clock controller for 255/293 Series Flow Control Valves*

This simple time clock control provides the option of selected day of week regeneration or can be programmed from ½ a day up to 99-days regeneration frequency setting. The 742 has an adjustable backwash between 0 to 200 minutes and purge between 0 to 200 minutes. This control includes a remote regeneration input signal as a standard option allowing for a dry contact signal.

#### *Logix 762 Time Clock Controller for 255/293 Series Flow Control Valves*

This simple, economy electronic demand (volumetric) control initiates a regeneration cycle based on the volume of water treated. Programming is simple and incorporating a 28-day variable reserve feature with the ability to regenerate immediately once a volume of water is treated. The 762 has an adjustable backwash between 0 to 200 minutes and purge between 0 to 200 minutes. Features include a calendar override that can be set to regenerate between ½ and 99 days.

### **Manual Valve**



Economical back-washable filter. Simply turn the rotary valve handle to backwash the filter. Complete with backwash flow control and ball valve. Ideal for sites where electric power is not available or for filtering water where minimum backwash waste is required e.g. tank water.