COMMERCIAL

JUST ADD WATER BULLETIN; ISSUE 1

Welcome to the premiere issue of the **Just Add Water bulletin**, an Osmonics publication designed to communicate important product and application information regarding our newly released Magnum Cv™ commercial and industrial control valve.

The market reaction to this new product introduction has been outstanding. With backwash rates sufficient to meet the most demanding filtration and softening applications, the Magnum Cv promises to be the valve of choice for the commerical and industrial market segment. Just Add Water bulletins will be published on a regular basis to ensure your complete understanding of the Magnum Cv control valve and its application to the water treatment challenges facing your organization. The following topics will be addressed in the initial series of bulletins to be published in the forthcoming months:

TOPICS

- System Performance Curves
- Cv Testing
- Backwash Flow Performance
- Part Numbers and Ordering Information
- Magnum Cv Accessories - Drain Line Flow Controls
- Magnum Cv Accessories - Top Stack Distributor
- Magnum Cv Accessories - Side Mount Adapter
- Manufacturing and Test Capabilities
- Magnum Cv Application Notes
- Support and Service Personnel/Resources

If you have any topics that you would like to see addressed in a **Just Add Water bulletin**, please call us at (800) 279-9404, Extension 4323, or send your recommendations to the Magnum Cv Marketing Team at the address listed below.

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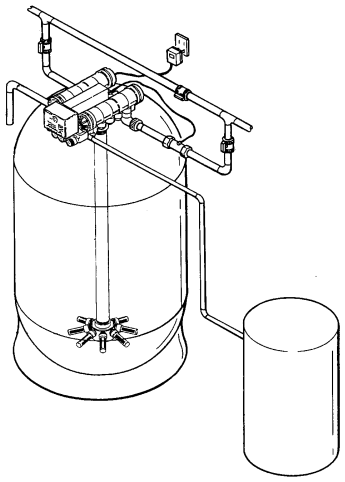
JUST ADD WATER BULLETIN; ISSUE 2

MAGNUM Cv™ SINGLE TANK SYSTEMS

Just Add Water is an Osmonics publication designed to communicate important product and application information regarding our newly released Autotrol® Magnum Cv commercial and industrial control valve.

The Magnum Cv is available in both cost-effective SINGLE TANK and TWIN ALTERNATING configurations.

The SINGLE TANK configuration is available with mechanical impulse, or electronic controls.



Magnum Cv Single Tank system Includes:

- Magnum Cv control valve with injector and refill control. Please specify tank size when ordering.
- 942 mechanical, 952 impulse, or 962 electronic control for softener or filter application.
- 1-inch or 2-inch flow meter with CPVC, metric CPVC, NPT brass, or BSPT brass turbine connector with 962 electronic control.
- Time-proven pilot flapper technology.
- Time-proven cartridge diaphragm technology.
- Auxiliary Hydraulic Output Signal.

Optional Accessories:

- CPVC, metric CPVC, NPT brass, or BSPT brass adapters for inlet, outlet, and drain sold separately.
- Optional battery backup provides 72 hours of reserve power to 962 control in case of power failure.
- 12V transformers available in a variety of plug types for worldwide applications.
- Upper Distributor.
- Flanged Tank Adapter.
- Drain Line Flow Control (up to 40 gpm).
- Auxiliary Electrical Switch Output Signal.

If you have any topics that you would like to see addressed in a **Just Add Water bulletin**, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv marketing team at Osmonics Autotrol.

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JUST ADD WATER BULLETIN; ISSUE 3

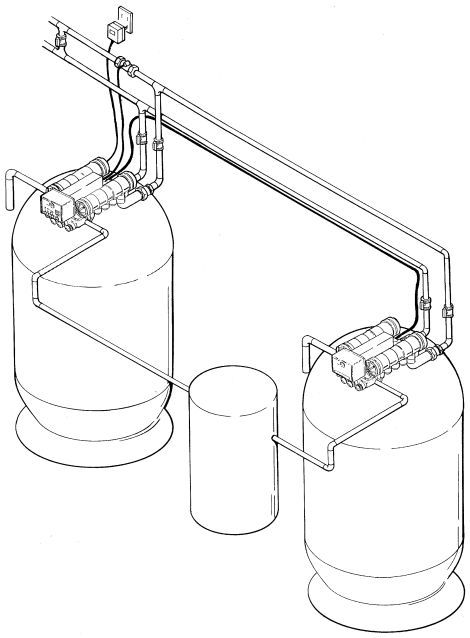
Just Add Water is an Osmonics publication designed to communicate important product and application information on design modifications, Magnum Cv™ control valve applications, sales and marketing announcements, and any other pertinent information affecting the Autotrol® Magnum Cv control valve.

MAGNUM CV TWIN CONTROLS:

The Magnum Cv system assures one unit is providing service water while the second unit is in standby or regeneration. The Magnum Cv configuration utilizes a 962M (Main) and 962S (Secondary) electronic control system which eliminates the high cost associated with providing an external controller.
The electronic controls are simple to install. The only field connection between the 962M and 962S is a PRE-WIRED four conductor cable.

MAGNUM Cv TWIN ALTERNATING SYSTEM INCLUDES:

- 2 Magnum Cv twin alternating softener valves with injectors and refill controls. Specify tank size when ordering.
- 1-inch or 2-inch Autotrol turbine flow meter with CPVC, metric CPVC, BSPT brass, or NPT brass connectors.
- 962M and 962S electronic controls.
- Factory installed feedback switch kit assembly.
- Auxiliary hydraulic output signal.



OPTIONAL ACCESSORIES

- CPVC, BSPT brass, or NPT brass adapters for inlet, outlet, and drain sold separately.
- Optional battery backup provides 72 hours of reserve power to 962 series controls in case of power failure.
- 12V transformers available in a variety of plug types for worldwide applications.
- Drain line flow controls (up to 40 gpm [151 L/m]).
- Flanged tank adapter.
- Upper distributor.

Either valve can be selected for manual regeneration, if desired. A large, easy-to-read LED display on the 962M control provides current information on tank in service, capacity remaining (gallons), flow rate, and regeneration time remaining. The 962M control also keeps accurate historical data in its non-volatile random access memory (NOVRAM).

If you have any topics that you would like to see addressed in a *Just Add Water* bulletin, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv marketing team at Osmonics.

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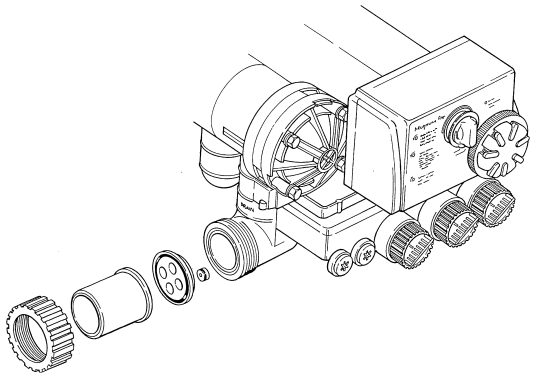
JUST ADD WATER BULLETIN; ISSUE 4

Just Add Water is an Osmonics publication designed to communicate important product and application information on design modifications, Magnum Cv™ control valve applications, sales and marketing announcements, and any other pertinent information affecting the Autotrol® Magnum Cv control valve.

DRAIN LINE FLOW CONTROL

In response to your requests, and consistent with the design philosophy of the Magnum Cv, we have just made the installation of your Magnum Cv even EASIER! You no longer have to plumb an *external* backwash flow control into the drain line when installing a Magnum Cv valve. Our easily installed DRAIN LINE FLOW CONTROL is now available in sizes from 5 gpm to 40 gpm. Simply place it in the drain prior to installing the adapter. No additional plumbing or special tools required.



Osmonics engineers recommend the following backwash controls. These are standard recommendations and are provided for your convenience. Backwash flow requirements may vary with temperature or other changing conditions.

Media	Tank Size						
	14"	16"	18"	21"	24"	30"	36"
Std. Softening Resin (4.5 gpm/ft^2)	5 gpm	6 gpm	8 gpm	10 gpm	15 gpm	20 gpm	30 gpm
Fine Mesh Softening Resin (3.4 gpm/ft^2)	4 gpm	5 gpm	6 gpm	8 gpm	10 gpm	15 gpm	25 gpm
Birm, Carbon, Green-sand (10 gpm/ft^2)	10 gpm	15 gpm	17 gpm	25 gpm	30 gpm	50 gpm	N/A
Neutralizer Multi-Layer (15gpm/ft^2)	16 gpm	20 gpm	25 gpm	35 gpm	50 gpm	75 gpm	N/A

Non-standard drain line flow controls not listed above are also available upon request.

If you have any topics that you would like to see addressed in a *Just Add Water* bulletin, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv marketing team at Osmonics.

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JUST ADD WATER BULLETIN; ISSUE 5

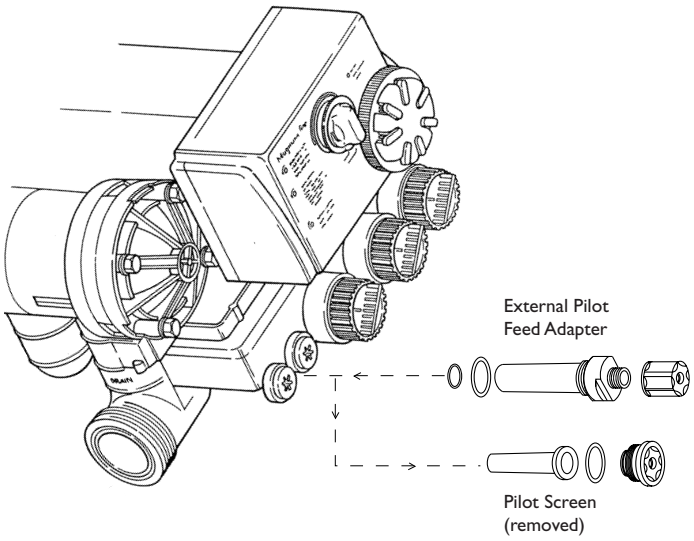
PRODUCT/APPLICATION – EXTERNAL PILOT FEED ADAPTER

Just Add Water is an Osmonics publication designed to communicate important product and application information on design modifications, Magnum Cv™ control valve applications, sales and marketing announcements, and any other pertinent information affecting the Autotrol® Magnum Cv control valve.

The versatility of the Magnum Cv series product line will inherently place it in applications that provide challenging conditions for reliable and trouble-free operation. Low-system water pressure is a condition that can cause operational problems for any water treatment control valve. The Magnum Cv series valves are also challenged by low pressure conditions. Adequate system pressure is required by the brine injector for proper brine draw, as well as by the diaphragm valve cartridges for proper activation and positioning. Another challenge is supply water that contains high turbidity, such as ferric iron or sand. This particulate matter can foul the pilot screen, reducing pilot pressure, thereby rendering the diaphragm valve cartridges inoperable. Both of these application challenges can result in above-average service calls.

WE HAVE THE SOLUTION! - External Pilot Feed Adapter Part No. 1040668

The external pilot feed adapter has been designed to provide the Magnum Cv pilot assembly and diaphragm valve cartridges with a separate source of water. The adapter replaces the pilot screen, sealing off the internal supply of water from the inlet and provides a convenient 1/4-inch tubing connection for the external supply. Use of the pilot feed adapter is typically dictated by the application. A low or varying inlet water pressure situation can be solved by feeding the pilot assembly from a separate city supply or a constant high pressure water source, regulated by a booster pump. Turbidity or particulate matter in the source water is a problem that is easily solved by feeding the pilot water through a 30-micron sediment cartridge filter and utilizing the external pilot feed adapter. This way, a clean supply of water is fed to the pilot assembly and diaphragm valve cartridges, eliminating the potential for premature servicing.



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Use and Installation Recommendations:

1.0 Install an external pilot feed adapter on each Magnum Cv valve in the system.

2.0 Install a shut-off valve and a screen/filter in the separate source feed line, if possible. Multi-tank systems should have a shut-off valve in the feed line to each unit in the system to facilitate servicing.

3.0 Systems with a separate water source located greater than 10 feet from the system should have a water line of at least 1/2 to 3/4-inch in size, installed to within 6 - 8 feet of the system; then the 1/4-inch tubing can be fed to each Magnum Cv in the system from that point. Again, each feed line should be provided with a shut-off valve to facilitate servicing.

The pilot feed adapter has been designed to allow the use of the Magnum Cv Series in a multitude of varying commercial and industrial water treatment applications. Need help with an applications problem? Call Osmonics – we have the **SOLUTION**!

COMMERCIAL

JUST ADD WATER BULLETIN; ISSUE 6

SALES AND MARKETING - PARTS LISTS

Just Add Water is an Osmonics publication designed to communicate important product and application information on design modifications, Magnum Cv™ control valve applications, sales and marketing announcements, and any other pertinent information affecting the Autotrol® Magnum Cv control valve.

In response to your requests and consistent with our goal to provide the information and documentation necessary for your Magnum Cv program to be successful, this issue of Just Add Water addresses recommended spare parts for the Magnum Cv water treatment systems. You will find two separate and distinct lists attached, directed at specific audiences, that you can use as sales tools.

The first list is "Magnum Cv and Magnum Cv PLUS - Recommended Spare Parts." This list defines the minimum spare parts an end user should have on the shelf to maintain an installed system, whether it be a single, twin, or triple. This list is intended to be used as an end user piece and can be included in a proposal or as part of a submittal to meet specification requirements.

The second list is "Magnum Cv - Spare Parts Kits". This extensive parts list defines what you or your dealers should have in stock to provide rapid service to the end user. This list contains all of the major Magnum Cv series assemblies for any size filter or softener, thereby providing the ability for immediate response in reacting to and solving a customer problem.

If you have any topics that you would like to see addressed in Just Add Water, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv Marketing Team at Osmonics Autotrol.

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Magnum Cv - Spare Parts Kits Part No. 1040922

Quantity	Part Number	Description
1	1000356	1 1/2-inch Noryl* Adapter Nut
1	1000360	1 1/2-inch Brass Adapter - NPT
1	1000358	1 1/2-inch CPVC Adapter
1	1030664	2-inch Steel Adapter Nut
1	1030663	2-inch Brass Adapter - NPT
1	1030666	2-inch PVC Adapter
1	1000317	Cartridge Assembly - Inlet
1	1000365	Cartridge Assembly - Rinse
1	1000366	Cartridge Assembly - Drain or No Hard Water Bypass (NHWB)
1	1000336	Hard Water Bypass Cap
1	1000342	Auxiliary Switch - 0.1 AMP (Feedback)
6	1013501	Silicone Lubricant Packet
1	1013600	Steel Wrench - Pilot Screen
1	1040691	Valve O-Ring Kit - Inlet, Outlet, Drain, Valve, Dist.
1	1040692	Pilot/Brine Flapper Disc Kit
1	1040669	Injector Kit - Blank (Filter)
1	1040670	Injector Kit - 14-inch Tank
1	1040671	Injector Kit - 16-inch Tank
1	1040672	Injector Kit - 18-inch Tank
1	1040673	Injector Kit - 21-inch Tank
1	1040674	Injector Kit - 24-inch Tank
1	1040675	Injector Kit - 30-inch Tank
1	1040676	Injector Kit - 36-inch Tank
1	1040677	Injector Group Kit - Cap, Cage, and Screen
1	1040679	Flow Control Washer Kit - 14-inch Tank - 3 Pack
1	1040680	Flow Control Washer Kit - 16-inch Tank - 3 Pack
1	1040681	Flow Control Washer Kit - 18-inch Tank - 3 Pack
1	1040682	Flow Control Washer Kit - 21-inch Tank - 3 Pack
1	1040683	Flow Control Washer Kit - 24-inch Tank - 3 Pack
1	1040684	Flow Control Washer Kit - 30-inch Tank - 3 Pack
1	1040685	Flow Control Washer Kit - 36-inch Tank - 3 Pack
1	1040687	Flow Control Group - Cap, Spacer, Holder
1	1040720	Drain Line Flow Control Complete - 5 GPM
1	1040731	Drain Line Flow Control Complete - 26 GPM

**Noryl is a trademark of General Electric Company.*

Magnum Cv and Magnum Cv Plus - Recommended Spare Parts*

Quantity	Part Number	Description
15	1006095	Top Plate Screws
5	10006093	Top Plate Screws
2	1000589	Pillow Block Cap
1	1000226	Pilot Screen Assembly
1	1040678	Injector Screen (3-Pack)
1	A (see below)	Injector (Includes O-Rings)
1	A (see below)	Refill Flow Control (3-Pack)
1	1040692	Pilot Flapper Kit w/Springs
1	1040957	Valve O-Ring Kit - Magnum Cv PLUS
1	1040691	Valve O-Ring Kit - Magnum Cv
1	B (see below)	Controller

* Recommended spare parts are sufficient for one to three units.

A - Part number determined by system tank size. (Reference Installation and Service Manual).
B - One spare controller is recommended for multi-tank systems. Order the Main control for twin alternating system. Consult original invoice or control faceplate for control model.

Note: The addition to the recommended spare parts list of the cartridge assemblies listed below provides in total the items necessary for a complete control valve rebuild.

Quantity	Part Number	Description
1	1000366	#1 Drain Cartridge
1	1000365	#2 Rinse Cartridge
1	1000366	#3 No Hard Water Bypass Cartridge (if applicable)
1	1000317	#4 Inlet Cartridge

COMMERCIAL

JUST ADD WATER BULLETIN; ISSUE 7

SALES AND MARKETING - MAGNUM Cv SERIES SPECIFICATIONS

Just Add Water is an Osmonics publication designed to communicate important product and application information on design modifications, Magnum Cv™ control valve applications, sales and marketing announcements, and any other pertinent information affecting the Autotrol® Magnum Cv control valve.

Sales efforts in the commercial/industrial water treatment market are typically directed at four or five channels of distribution. One of these channels is the "bid and spec" market, which focuses on new construction and encompasses institutional (hospital, schools, prisons), manufacturing, office, and housing projects that are designed by consulting engineering firms. These firms specify the materials to be used on the project that they know will meet the requirements of both the project and the owner. To ensure that everyone involved in the project understands what the engineer is requesting each item used in the project carries a specification which is a detailed list of what the item is, materials of construction, how it will be applied, and how it will operate.

Attached is a sample engineering specification for the Magnum Cv series control valve which can be applied to either a filter or softener application. The Magnum Cv control valve specification can be adapted into the system specification, which typically includes the pressure vessels, resin or media, brine tank if applicable, and performance.

The Magnum Cv control valve specification is not meant to be used in its entirety. It is divided into the main description (ex. 1.0 main operating valve); standard configuration (ex. 1.1 [standard]); and optional configuration (ex. 1.1.1 [optional]). Using the main description along with the configuration that best describes the system being provided, will tailor the specification to the application. Another variation would be to use either specific sections or phrases of the specification to construct a personalized shortened form.

If you have any questions on using the Magnum Cv control valve specifications or have any topics that you would like to see addressed in a Just Add Water bulletin, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv control valve Marketing Team at Osmonics Autotrol.

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1.0 MAIN OPERATING VALVE

The main operating valve shall be a multiport valve, manufactured of Noryl*, and utilizing integral diaphragm cartridge assemblies. The cartridge assemblies shall be slow opening and closing, free of water hammer. There shall be no contact of dissimilar metals within the valve and no special tools shall be required to service either the valve or the cartridge assemblies. The valve shall be operated hydraulically. The valve shall be provided with an internal injector to draw brine at a constant rate within a water pressure range of 30 to 100 pounds per square inch (psi) (2.1 to 6.9 bar). An internal, pressure compensating, refill flow control shall be provided to ensure a consistent refill of fresh water into the brine tank after regeneration.

The valve tank adapter shall have 4-inch to 8 UN threads of compatible Noryl material that will minimize a cross thread potential when installed on fiberglass vessels. Commonly serviced components such as pilot screen, brine injector, and refill control shall be located in the front of the valve for ease of access and to facilitate servicing.

(standard)

1.1 Single units shall have an automatic bypass of untreated water during regeneration. Conversion to NO bypass of untreated water during regeneration, after installation, shall be easily accomplished without the removal or changing of the installed plumbing.

(optional)

1.1.1 The main operating valve shall be provided with an external orifice that allows the pilot assembly and diaphragm cartridge assemblies to function using a separate source of operating medium other than the valve inlet water. The external orifice assembly shall be of such design as to permit field retrofit and to allow the pilot assembly and diaphragm cartridge assemblies to operate equally using either a hydraulic or pneumatic motive force.

1.2 Valve Connection

Connections to the main operating valve for inlet, outlet, and drain shall be by union nut, adapter, and O-ring for ease of assembly and installation. The union connection shall be an integral part of the valve.

1.3 Flow Control

A pressure compensating flow control shall be provided in the drain line as close to the main operating valve as possible to maintain proper backwash and purge rates over wide variations in operating pressure. The flow control shall require no field adjustment.

1.4 Pilot Control

A multiport pilot control assembly shall be used to position the diaphragm cartridge assemblies as required by the individual cycles of operation during regeneration and shall be an integral part of the main operating valve. The pilot control shall operate either hydraulically or pneumatically. The pilot shall be of flapper disc design with a multiple lobe camshaft assembly to open and close the flapper discs at the proper time to accomplish the cycles of regeneration. Water to operate the pilot control shall be supplied by the main operating valve internally.

(optional)

1.4.1 The pilot control assembly shall provide an external hydraulic signal, capable of operating service diaphragm valves or other hydraulically controlled devices during the regeneration cycle. by adding an auxiliary cam to the multiple lobe camshaft assembly.

(optional)

1.4.2 The pilot control assembly shall provide an electrical signal, capable of operating a pump circuit, or other electrically controlled devices during the regeneration cycle by adding a switch cam to the multiple lobe camshaft assembly and a microswitch to the main operating valve.

2.0 CONTROL

A factory-mounted controller shall initiate a regeneration, move the multiple lobe camshaft assembly through an automatic regeneration, and return the operating valve to the service position. The control shall indicate the cycle of operation at all times. Provision for a manually initiated regeneration shall be provided. In the event of a power failure, a complete regeneration may be performed by manual operation of the controller or pilot assembly/multiple lobe camshaft assembly. Variations of the controller/camshaft assembly shall determine whether the function of the system is a filter (service, backwash, purge cycles) or a softener (service, backwash, draw/rinse, fast rinse, refill cycles).

(standard)

2.1 An electric time clock controller shall initiate regeneration at any hour of the day and any day of the week. A dial on the front of the timer clock shall provide for the adjustment of the fresh water refill into the brine tank which allows for variable salting levels between 6 pounds of salt per cubic foot of resin through 15 pounds of salt per cubic foot of resin. The electric time clock can operate on either 120 vac or 12 vac.

(optional)

2.2 The controller shall be a manual, non-electric type. Initiation of regeneration and length of the regeneration cycles shall be at the discretion of the water treatment system operator.

(optional)

2.3 The electric controller shall require an electric signal from an external device to initiate a regeneration. After initiation, the electric controller shall move the multiple lobe camshaft assembly through an automatic regeneration and return the operating valve to the service position. A dial on the front of the electric controller shall provide for the adjustment of the fresh water refill into the brine tank which allows for variable salting levels between 6 pounds of salt per cubic foot of resin through 15 pounds of salt per cubic foot of resin. The electric controller can operate on either 120 vac or 24 vac.

(optional)

2.4 The electronic controller shall initiate a regeneration based on the volume of water used. In addition, it will have the capability for a time-bound regeneration initiation, as well as a remote signal input regeneration initiation. After initiation, the electronic controller shall move the multiple lobe camshaft assembly through an automatic regeneration and return the operating valve to the service position. An external turbine meter, installed in the outlet plumbing lines, provides water flow information to the electronic controller. Push buttons on the front of the electronic controller provide for the programming of 18 controller parameters that maximize system efficiency. An LED display allows for monitoring of the following parameters: time of day, time of regeneration, hardness, salt amount, capacity, regeneration time remaining, unit status, flow, and capacity remaining. The electronic controller shall operate on 12 vac.

The electronic controller shall provide 15 accessible memory locations to assist in troubleshooting the water treatment system. The contents of the controller memory locations can be examined to determine the status of the control and the history of water usage. The information can be viewed utilizing the programming keys on the front of the controller. The electronic controller shall also provide four system error indicators. These indicators shall be both visual - an ERR message in the LED display on the front of the control and audible - a BEEP every three seconds. Both alarm indicators shall continue until the error is corrected.

(optional)

2.5 The electronic control systems shall operate in a twin parallel - triple parallel (choose one) configuration. All units in the system shall be "on-line," delivering treated water. When the capacity of a unit within the system is exhausted, the controller shall automatically take that unit "off-line," initiate a regeneration cycle, then place that unit back "on-line" when regeneration is complete. A system interconnect cable between electronic controllers shall provide an electrical interlock, eliminating the possibility of more than one unit being in regeneration at a time. All controllers within the system, shall be capable of independent programming and maintaining the individual water usage history to provide system versatility and serviceability.

(optional)

2.6 The electronic control system shall operate in a twin alternating configuration with one unit "on-line" while the other unit is in either "standby" or regeneration. When the capacity of the "on-line" unit is exhausted, the controller will automatically put the "stand-by" unit "on-line." The controller then initiates a regeneration of the unit just taken "off-line" and places that unit in "standby" when the regeneration is complete. A single electronic control, in conjunction with a remote control, shall provide for the functions of both the lead and lag units in the system. Programming of both units in the system shall be through the single electronic control with a factory-provided interconnect cable providing power to and feedback information from the lag unit to the lead unit. A synchronization program shall be provided as part of the electronic control software to automatically realign the lead and lag unit, should they become out-of-phase for any reason.

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JUST ADD WATER BULLETIN; ISSUE 8

942 MANUAL CONTROLS

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PRODUCT DESIGN MODIFICATIONS

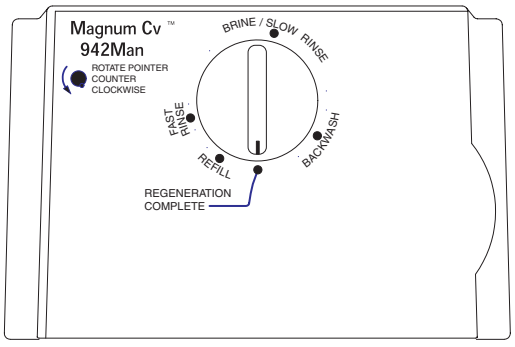
We are proud to announce the introduction of another quality control series for the Magnum Cv commercial and industrial valve. Our new 942 Manual Control series offers both the 942Man 5-cycle softening and 942FMan 3-cycle filter controls.

The 942 Manual Controls provide many advantages:

- Adapts to all Magnum Cv Series control valves
- Low cost alternative to automatic electrical controls
- All components are noncorrosive
- Clean, sleek, professional appearance
- Minimal installation and service time
- No need to turn off inlet water during cycle changes
- Easily upgrades to automatic control should system requirements change

The 942Man and 942FMan faceplates reflect their ease of operation. With clear cycle designations, softener regeneration or filter backwashing cycles can be initiated through a counterclockwise, manual indexing of the indicator knob. The application and the operator determine cycle times. Please request our price sheet to aid you in ordering your 942 Manual Controls.

If you have any topics that you would like see addressed in *Just Add Water*, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv Marketing Team at Autotrol.



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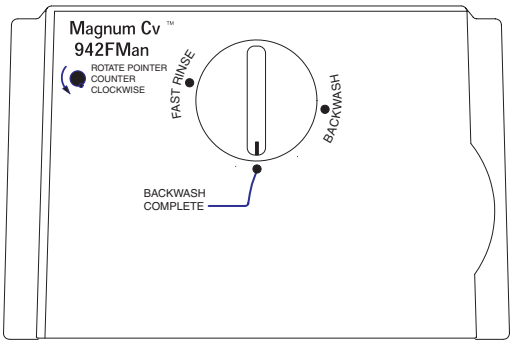

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MAGNUM Cv 1-1/2 INCH VALVE WITH 942 MANUAL CONTROLS

Manual Control Valve – Softener Configurations

Magnum Cv 1-1/2 Inch 942 Softener Manual Control With Hard Water Bypass.

Model Number	Tank Size	Part Number
MG94MNSN-14-HWB	14 inch	1046422
MG94MNSN-16-HWB	16 inch	1046423
MG94MNSN-18-HWB	18 inch	1046424
MG94MNSN-21-HWB	21 inch	1046425
MG94MNSN-24-HWB	24 inch	1046426
MG94MNSN-30-HWB	30 inch	1046427
MG94MNSN-36-HWB	36 inch	1046428

Magnum Cv 1-1/2 Inch 942 Softener Manual Control With No Hard Water Bypass.

Model Number	Tank Size	Part Number
MG94MNSN-14-NHB	14 inch	1046429
MG94MNSN-16-NHB	16 inch	1046430
MG94MNSN-18-NHB	18 inch	1046431
MG94MNSN-21-NHB	21 inch	1046432
MG94MNSN-24-NHB	24 inch	1046433
MG94MNSN-30-NHB	30 inch	1046434
MG94MNSN-36-NHB	36 inch	1046435

Manual Control Valve – Filter Configurations

Magnum Cv 1-1/2 Inch 942 Filter Manual Control, Unfiltered Water Bypass.

Model Number	Part Number
MG94MNFL-UWB	1046436

Magnum Cv 1-1/2 Inch 942 Filter Manual Control, No Unfiltered Water Bypass.

Model Number	Part Number
MG94MNFL-NUB	1046436

MAGNUM Cv PLUS 2-INCH VALVE WITH 942 MANUAL CONTROLS

Manual Control Valve – Softener Configurations

Magnum Cv PLUS 2-Inch 942 Softener Manual Control With Hard Water Bypass.

Model Number	Tank Size	Part Number
MP94MNSN-14-HWB	14 inch	1046406
MP94MNSN-16-HWB	16 inch	1046407
MP94MNSN-18-HWB	18 inch	1046408
MP94MNSN-21-HWB	21 inch	1046409
MP94MNSN-24-HWB	24 inch	1046410
MP94MNSN-30-HWB	30 inch	1046411
MP94MNSN-36-HWB	36 inch	1046412

Magnum Cv PLUS 2-Inch 942 Softener Manual Control With No Hard Water Bypass.

Model Number	Tank Size	Part Number
MP94MNSN-14-NHB	14 inch	1046413
MP94MNSN-16-NHB	16 inch	1046414
MP94MNSN-18-NHB	18 inch	1046415
MP94MNSN-21-NHB	21 inch	1046416
MP94MNSN-24-NHB	24 inch	1046417
MP94MNSN-30-NHB	30 inch	1046418
MP94MNSN-36-NHB	36 inch	1046419

Manual Control Valve – Filter Configurations

Magnum Cv PLUS 2-Inch 942 Filter Manual Control, Unfiltered Water Bypass.

Model Number	Part Number
MP94MNFL-UWB	1046420

Magnum Cv PLUS 2-Inch 942 Filter Manual Control, No Unfiltered Water Bypass.

Model Number	Part Number
MP94MNFL-NUB	1046421

JUST ADD WATER BULLETIN; ISSUE 9

Just Add Water is an Osmonics publication designed to communicate important product and application information on design modifications, Magnum Cv™ control valve applications, sales and marketing announcements, and any other pertinent information affecting the Autotrol® Magnum Cv control valve.

PRODUCT/APPLICATION - DRAIN LINE FLOW CONTROL

In a continuing effort to bring our customers all of the information required to operate and maintain the Magnum Cv control valve, tables have been developed which explain how to identify flow rate specifications of the drain line flow controls from the color of the inserts. Each flow control disk manufactured contains four color-coded inserts which regulate the flow through the control. Using Table 2, that lists the complete flow control offering, it is possible to determine in the field the flow rate of the control installed. If the insert configuration provided does not match any of the standard configurations, Table 1 allows calculation of the flow control "total flow rate" based on the flow through the individual inserts. For example: a drain line flow control with two brown, one red, and one green insert would have a flow rate of 28 gpm (7 + 7 + 6 + 8 = 28). The table also allows for modification of the drain line flow control flow rate by changing the insert configuration.

If you have any topics that you would like to see addressed in a Just Add Water bulletin, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv marketing team at Osmonics.

Table 1: Drain Line Flow Control Inserts

Part Number	Flow Rate gpm	Flow Rate m^3/h	Color	Quantity
1040763	0	0	Black	Pack of 25
1040756	5	1.14	Blue	Pack of 25
1040757	6	1.36	Red	Pack of 25
1040758	7	1.59	Brown	Pack of 25
1040759	8	1.82	Green	Pack of 25
1040760	9	2.04	White	Pack of 25
1040761	10	2.27	Orange	Pack of 25
1040762	PVC	Disk	-	Pack of 12, with O-ring

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Table 2: Drain Line Flow Control Identification

Part Number	Flow Control Disk		Insert 1	Insert 2	Insert 3	Insert 4
	gpm	m^3/h				
1040720	5	1.135	Blue	Black	Black	Black
1040721	6	1.362	Red	Black	Black	Black
1040722	7	1.589	Brown	Black	Black	Black
1040723	8	1.816	Green	Black	Black	Black
1040724	9	2.043	White	Black	Black	Black
1040725	10	2.27	Blue	Blue	Black	Black
1040726	11	2.497	Red	Blue	Black	Black
1040727	12	2.724	Red	Red	Black	Black
1040728	13	2.951	Brown	Red	Black	Black
1040729	14	3.178	Brown	Brown	Black	Black
1040740	15	3.405	Blue	Blue	Blue	Black
1040741	16	3.632	Green	Green	Black	Black
1040742	17	3.859	White	Green	Black	Black
1040743	18	4.086	White	White	Black	Black
1040744	19	4.313	White	Orange	Black	Black
1040745	20	4.54	Blue	Blue	Blue	Blue
1040746	21	4.767	Brown	Brown	Brown	Black
1040747	22	4.994	Green	Green	Red	Black
1040748	23	5.221	Green	Green	Brown	Black
1040749	24	5.448	Red	Red	Red	Red
1040730	25	5.675	Green	Green	White	Black
1040731	26	5.902	White	White	Green	Black
1040732	27	6.129	White	White	White	Black
1040733	28	6.356	Brown	Brown	Brown	Brown
1040734	29	6.583	Brown	Brown	Brown	Green
1040735	30	6.81	Orange	Orange	Orange	Black
1040736	31	7.037	Green	Green	Green	Brown
1040737	32	7.264	Green	Green	Green	Green
1040738	33	7.491	Green	Green	Green	White
1040739	34	7.718	Green	Green	Green	Orange
1040750	35	7.945	White	White	White	Green
1040751	36	8.172	White	White	White	White
1040752	37	8.399	White	White	White	Orange
1040753	38	8.626	Orange	Orange	Orange	Green
1040754	39	8.853	Orange	Orange	Orange	White
1040755	40	9.08	Orange	Orange	Orange	Orange

COMMERCIAL

JUST ADD WATER BULLETIN; ISSUE 10

Just Add Water is an Osmonics publication designed to communicate important product and application information on design modifications, Magnum Cv™ control valve applications, sales and marketing announcements, and any other pertinent information affecting the Autotrol® Magnum Cv control valve.

MAGNUM Cv PROGRAMMING PARAMETERS

The Magnum Cv control valve is available with several controller options, making it the most versatile on the market. Controller options include the 942 mechanical control, the 952QC quick-connect impulse control, and the 962 electronic control, which supports single, twin alternating, twin parallel and triple parallel configurations. All single tank controls are available in 5-cycle softener or 3-cycle filter configurations.

942 Mechanical Control

952 QC Impulse Control

962 Electronic Control

The 962 electronic controller can be programmed to meet your specific water treatment needs. In response to your requests, the following table explains each of the 962 programming parameters, or "P-values".

To enter the "P-value" programming mode, press and hold the up (↑) and down (↓) arrow keys simultaneously for three seconds. A "P" will appear in the display. If you do not enter a value within 30 seconds, the program will exit the P-value mode automatically. If this happens, simply press and hold down the up (↑) and down (↓) arrow keys and re-enter the programming mode.

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LEVEL II P-Values for the 962 Single Tank Control

P1 *	Time of Day	Current time of day
P2 *	Time of Regeneration	If P15 is set at 0 (variable reserve), the unit will check at the P2 time to see if the variable reserve capacity has been reached. If it has, the unit WILL regenerate at the specified P2 time. If the capacity display reaches zero gallons (m^3) at any time during the day, the unit will NOT regenerate until the specified P2 time is reached. If P15 is set at 1 (fixed reserve), the unit will check at the P2 time to see if the fixed reserve capacity (P16) has been reached. If it has, the unit WILL regenerate at the specified P2 time. If the capacity display reaches zero gallons (m^3) at any time during the day, the unit will NOT regenerate until the specified P2 time is reached. If P15 is set at 2 (variable reserve with immediate regen), the unit will check at the P2 time to see if the variable capacity has been reached. If it has, the unit will regenerate at the specified P2 time. If the capacity display reaches zero gallons (m^3) at any time during the day, the unit WILL regenerate immediately. It will ALSO continue checking at the specified P2 time to see if the variable reserve capacity has been reached, initiating a regeneration at the P2 time if it has. If P15 is set at 3 (fixed reserve with immediate regen), the unit will check at the P2 time to see if the fixed reserve capacity has been reached. If it has, the unit will regenerate at the specified P2 time. If the capacity display reaches zero gallons (m^3) at any time during the day, the unit WILL regenerate immediately. It will ALSO continue checking at the specified P2 time to see if the fixed reserve capacity has been reached, initiating a regeneration at the P2 time if it has. If the fixed reserve is set to zero, the unit will ONLY regenerate when the capacity display reaches zero. If calendar override is used (P14), the unit will regenerate every 1 to 30 days at the specified P2 time. **Fixed Reserve:** Fixed percentage of capacity defined by user (gallons)(m^3). **Variable Reserve:** 120% of the daily average (gallons)(m^3) calculated from historical values stored in NOVRAM.
P3 **	Hardness of water	If the 962 controller is programmed at P12 to use U.S. units, enter hardness in grains per gallon (gpg). If the 962 controller is programmed at P12 to use metric units, enter hardness in parts per million (ppm).
P4 **	Salt amount	Enter your TOTAL salt amount per regeneration. For example, salting at 10 lb (4.5 kg) per cubic foot on a unit with 3 cubic feet of resin, enter 30. (10 lb/ft^3) x (3 ft^3)= 30 lb. salt. [(4.5 kg/ ft^3) x (3 ft^3)= 13.6 kg salt].
P5	Capacity of unit	Enter the capacity of the unit here, in kilograins (kilograms). For example, a 3 ft^3 unit with a resin capacity of 25,000 grains (1620 grams) per ft^3, enter 75 here. (25,000 grains/ ft^3) x (3 ft^3) = 75,000 grains = 75 kilograins. [(1620 grams/ ft^3) x (3 ft^3) = 4860 grams = 4.86 kilograms]. Note: 15 lb/cu ft salting yields 30,000 grains/cu ft resin 10 lb/cu ft salting yields 25, 000 grains/cu ft resin 6 lb/cu ft salting yields 20,000 grains/cu ft resin Reduced salting yields a reduced capacity 1 kilograin (1000 grains) = 0.0648 kilograms (64.8 grams)

P6	Refill control	Enter value from chart on Refill Control Performance Data page of manual. This value is the refill flow rate times 10, rounded to the next whole number. For example, on a 21-inch tank, the refill control has a flow rate of 1.5 gpm. Enter 15 (1.5 gpm x 10 = 15).
P7	Brine draw rate	Enter value from chart on Injector Performance Data page of manual. This is the injector draw rate times 10, rounded to the next whole number. For example, on a 21-inch tank, the injector has a draw rate of 0.85 gpm. Enter 9 (0.85 gpm x 10 = 8.5, rounded up to 9).
P8	Not used	P8 is reserved for future use.
P9	Backwash time	Self explanatory. Generally, 5 to 15 minutes or until water runs clear or specific water conservation needs are met.
P10	Slow rinse	Time, in minutes, to achieve adequate slow rinse volume for resin type used. Resin manufacturers recommend one to two and one half bed volumes of slow rinse water. The required amount of time is calculated using the injector performance curves provided in the back of the Magnum Cv Performance Data manual available from Osmonics. For example, assuming 9 ft^3 of resin and one bed volume of slow rinse water for a 24-inch x 72-inch tank, enter 17 minutes. (9 ft^3) x (7.48 gal/ ft^3)(0.028 m^3/ ft^3) = 67.3 gal (0.26 m^3). From injector performance curves for a 24-inch tank at 60 psi (4.14 bar), expect a 4 gallon per minute (0.9 m^3)/hr flow rate through the injector after brine draw ends. 67.3 gallons/ 4 gpm = 16.8 minutes, rounded up to 17 minutes. (0.26 m^3/0.9m^3/hr = 16.8 minutes, rounded up to 17 minutes.
P11	Fast rinse	Time, in minutes, to achieve adequate purge volume for resin type used. For example, for standard softening resin (Ionac C-249), purge at 30 gallons (0.11 m^3) per cubic foot of resin. A unit with 3 ft^3 of resin will require 90 gallons (0.34 m^3) of water to obtain the resin manufacturer's recommended purge. (30 gal/ ft^3 x 3 ft^3) = 90 gallons. (0.11 m^3/ ft^3 x 3 ft^3 = 0.34 m^3). The purge flow rate is controlled by the drain line flow control. For this example, assume a 5 gpm (1.14 m^3/hr) drain line flow control. Enter 18 minutes in P10. (90 gallons/5 gpm) = 18 minutes (0.34 m^3/1.14 m^3 /hr = 0.3 hr/ x 60 min = 18 minutes).
P12	Units of measure	Self explanatory. Enter 0 for U.S., enter 1 for metric.
P13	Clock mode	Self explanatory. Enter 0 for 12-hour clock, enter 1 for 24-hour clock.
P14	Calendar override	0 = No calendar override. 1 - 30 = Maximum number of days between regeneration/backwash.
P15	Reserve type Immediate or delay regeneration	See P2.
P16 ***	Fixed Reserve capacity	If P15 is set at 1 or 3, enter the fixed reserve capacity (in gallons) (m^3) that the unit will look for as explained in sections P2 and P15 above.
P17	Operation type	Self explanatory. 0 = single or parallel tank; 2 = twin alternating.
P18	Salt/capacity lockout	Allows for the lock out of P4 and P5 so that NO unauthorized changes to the programmed values can be made.
P19	Turbine size	Self explanatory. 1 = 1.0-inch turbine; 2 = 2.0-inch turbine; 1.5 = 1.5-inch flow sensor; 3 = 3.0-inch flow sensor.
P20	Factory use only	Factory use only. Do not attempt to enter a value. If a number is entered, other programming parameters will be changed.

* The 962 controller functions in either a 12-hour or 24-hour clock mode. Programming P13 (clock mode) before P1 or P2 will eliminate any confusion when setting these parameters.

** The 962 controller functions in either U.S. or metric units. Programming P12 (units of measure) before P3 or P4 will eliminate any confusion when setting these parameters.

*** The calculated gallon amount loaded into the daily registers (L7 through L13) at START-UP, uses this percentage of capacity. Example: 90,000 grains in P5 ñ 10 grains in P3, 90,000 / 10 = 9,000 gallon capacity. 9,000 x .3 (30% in P16) = 2700 gallons, which is loaded into L7 through L13, the daily averages. For this example, the variable reserve at START-UP, would be 2700 gallon x 1.2 (120% of the daily average) = 3240 gallon. This daily average will change as actual water usage information is gathered.

If you have any topics that you would like to see addressed in *Just Add Water*, please call us at (800) 279-9404 or send your recommendations to the Magnum Cv marketing team at Osmonics.

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JUST ADD WATER BULLETIN; ISSUE 11

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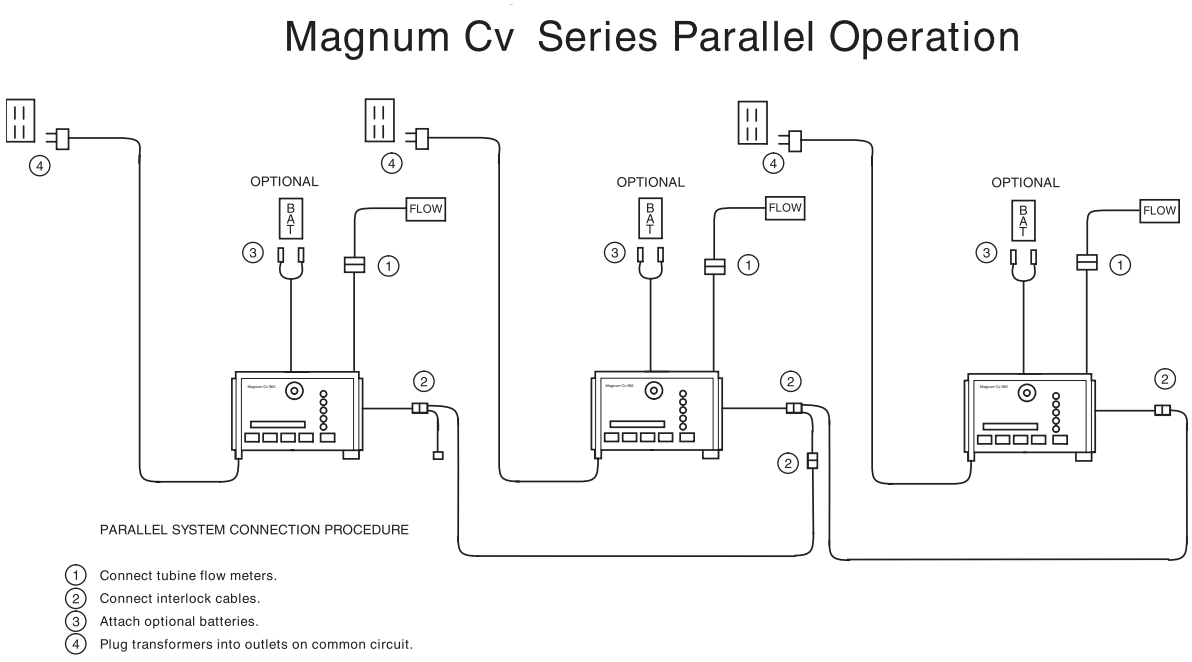
962 CONTROL PARALLEL SYSTEM CAPABILITIES

Osmonics realizes that increased system flexibility and ease of conversion are frequently required in the field. In keeping with our efforts to provide these capabilities, all 962 controllers come packaged with the internal circuitry necessary to operate in a twin- or triple- parallel mode. To take advantage of this system-expanding upgrade feature, only an interconnecting cable and minor programming changes are required. An electronic interlock, designed into the 962 controller, assures that only one unit at a time can regenerate within the parallel system. Compared to the single system, parallel systems can provide two (twin parallel) or three (triple parallel) times the service flow rate. A single system can be upgraded in the field to a twin or triple system without replacing existing equipment. Using Autotrol 962 controllers on new installations sets the stage for future system expansion.

Depending on the parallel system configuration, either a twin-parallel cable (PN 1034312, list $22.00) or a triple-parallel cable (PN 1035587, list $42.00) will be required. Conversion to the parallel configuration is accomplished by linking the four pin connectors of each 962 control in the system to the appropriate interconnect cable. The controllers then require reprogramming using the parameters listed in the Magnum Cv control valve manual.

If you have any topics that you would like to see addressed in *Just Add Water*, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv marketing team at Osmonics.



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JUST ADD WATER BULLETIN; ISSUE 12

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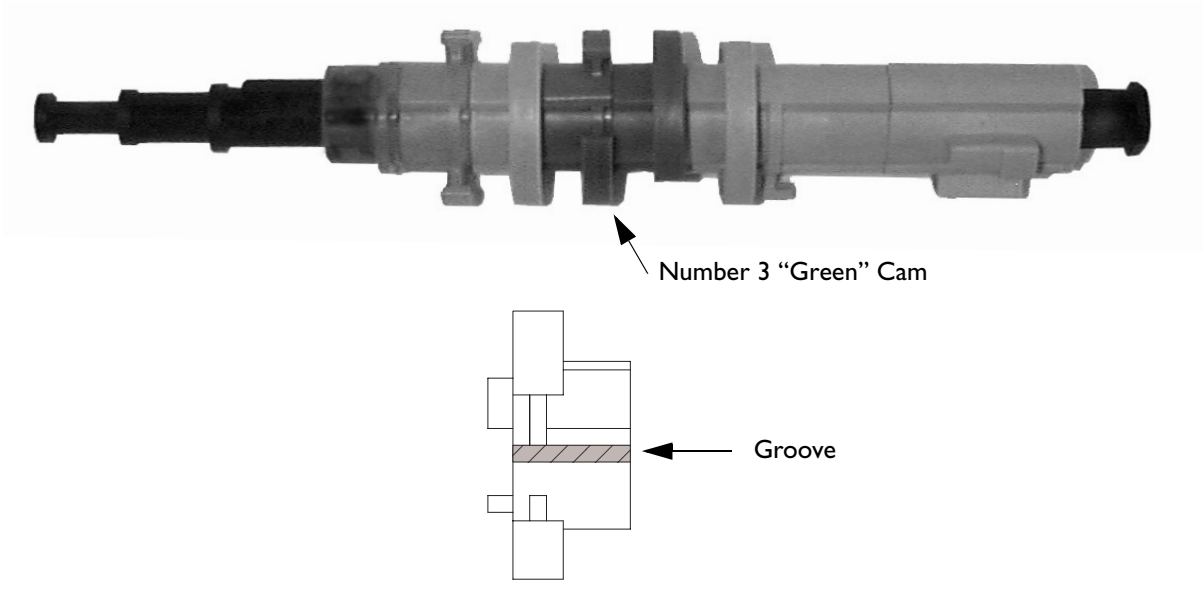
CAMSHAFT PRODUCT DESIGN MODIFICATIONS

As part of our continuing effort to provide the highest quality products, a modification has been made to the number three green cam lobe (P/N 1001622) on the Magnum Cv series camshaft. This modification was made to assure a continuous flow of conditioned water while one unit transitions from Stand-by to Service and the other unit begins a regeneration cycle. Reports from the field indicate that on rare occasions, the drive motor on the unit moving from "Stand-by" to "On-line" would stop before the number 3 pilot flapper closed. When a unit is in "Stand-by", the number 3 pilot flapper keeps the No Hard Water Bypass cartridge closed, preventing service flow. With the unit in "Service", the number 3 pilot flapper must close, which releases the No Hard Water Bypass cartridge, allowing service flow. The modification to the number three green cam lobe closes the number 3 pilot flapper early in the transition from "Stand-by" to "Service". A groove has been machined lengthwise on the keyway of the new cam lobe (see illustration below) to easily distinguish the modified cam lobe from the original.

The modified number 3 green cam lobe is in stock and available for order. All Magnum Cv series twin alternating systems manufactured after March 8, 1999 utilize the new modified cam lobe. If any installed systems have experienced a " no water to service " condition, we recommend replacing the number 3 green cam lobe on both control valves, on those and all other systems installed on critical water applications. Replacement cam lobes will be provided at no charge for all systems shipped prior to March 8, 1999.

If you have any topics that you would like to see addressed in *Just Add Water*, please call us at (800) 279-9404 or send your recommendations to the Magnum Cv Marketing Team at Osmonics.



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JUST ADD WATER BULLETIN; ISSUE 13

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Diaphragm Cartridge O-Ring Improvement

A product modification was made to the Magnum Cv Series control valve cartridge assemblies on June 15, 1999. The O-ring seal on the pressure/vent ports of ***all*** Magnum Cv diaphragm cartridges was changed from a face seal to a radial seal design. This modification provides superior sealing characteristics between the pressure/vent nipples on each diaphragm cartridge and the mating ports in the principle valve body (Figure 1).

The new O-ring seal is a direct replacement for the original O-ring seal and will function properly in ***all*** Magnum Cv Series control valves irrespective of manufacture date. To accommodate the new O-ring design, the diaphragm cartridge was slightly modified by removing the step from around the pressure/vent nipples (Figure 2). Only the cartridges need to be paired with the correct O-ring. Cartridges manufactured on or before 6/14/99 use a 1/4 x 1/16 O-ring - PN 1010103. Cartridges manufactured after 6/14/99 use a 7/32 x 3/32 O-ring - PN 1010116. See Figure 3 for size comparison. <u>All valves can use either cartridge.</u>

If there are any questions regarding this product improvement, please contact Osmonics Customer Service at (800) 837-9101, extension 4336.

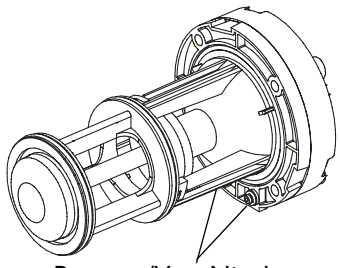
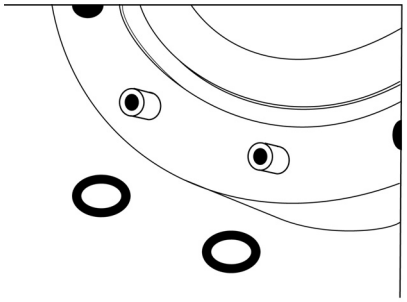


Figure 1



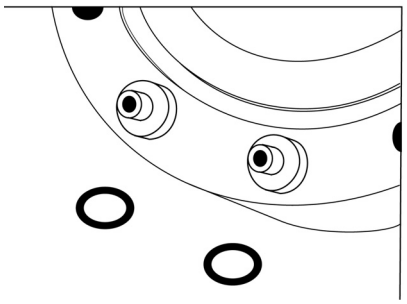


Figure 2

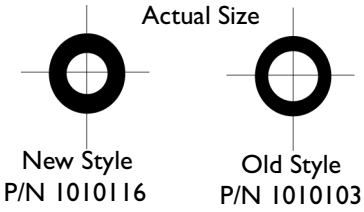


Figure 3

Note: Modification applies to all cartridges. Hard water bypass cap is illustrated as an example of the modification.

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JUST ADD WATER BULLETIN; ISSUE 14

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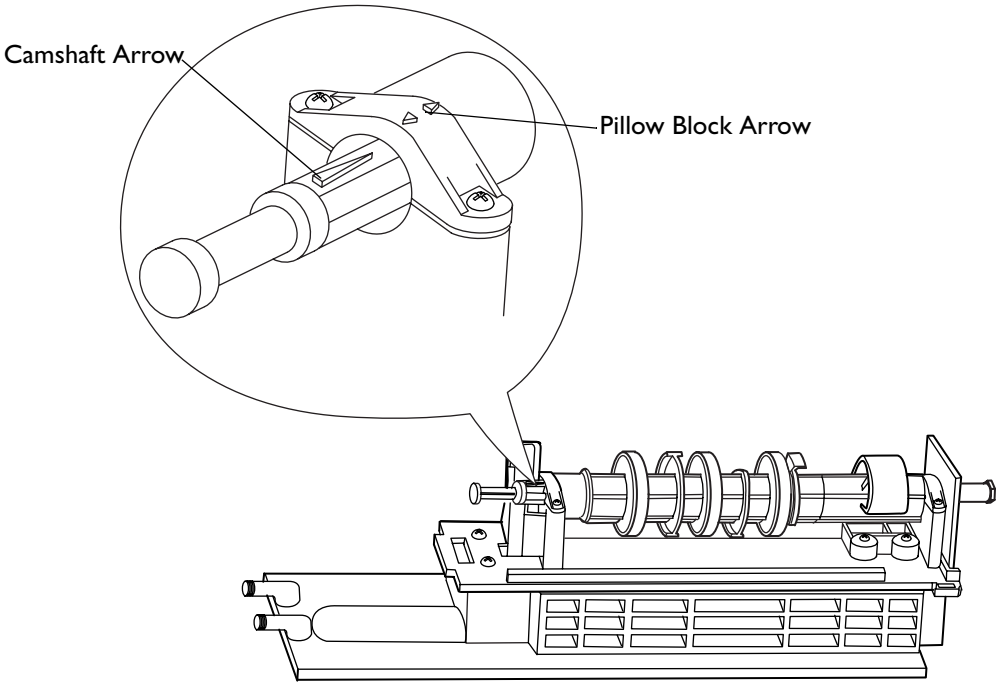
CAM SHAFT MODIFICATION FOR SIMPLE CONTROL REMOVAL

Osmonics has recently made modifications to the camshaft and pillow block caps of the Autotrol Magnum Cv valve that make it easier to engage and disengage the control assembly to the valve. Notice that on the illustration below the new alignment arrows on the camshaft and pillow block cap are in line with each other. In this position the camshaft can be engaged or disengaged from the control assembly with ease.



The camshaft and pillow block caps will retain the same part numbers, (P/N 1000341) and (P/N 1000589) respectively. All Magnum Cv valves with a date code of 28799, October 14, 1999, or later will be equipped with the new camshaft and pillow block caps.

If you have any topics that you would like to see addressed in *Just Add Water*, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv marketing team at Osmonics.

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JUST ADD WATER BULLETIN; ISSUE 15

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MAGNUM Cv TWIN-TANK CONVERSIONS

In response to your requests we are publishing a list of parts to easily convert a Magnum single tank system to a twin-alternating system. This list is made with the assumption that two valves, tanks, etc., are in place. If the conversion is to upgrade a single to a twin-alternating system, then a single Magnum Cv valve with a 962M control should be ordered along with a 962S control, one switch kit P/N 1041049, and a twin-alternating camshaft assembly P/N 1001751.

Magnum Single System to Twin Alternating Conversion Parts List

Qty.	Part Number	Description
Twin Alternating Softener 60 Hz		
1	1046328	Electronic Control/962M Main/12 VAC/60 Hz
1	1046330	Electronic Control/962S Secondary/12 VAC/60 Hz
2	1001751	Twin Alternating Camshaft Assembly
2	1041049	Switch Kit Assembly 0.1 amp rating
Twin Alternating Softener 60 Hz with Battery Backup		
1	1046329	Electronic Control/962M Main/12 VAC/Battery Backup 60 Hz*
1	1046330	Electronic Control/962S Secondary/12 VAC/60 Hz
2	1001751	Twin Alternating Camshaft Assembly
2	1041049	Switch Kit Assembly 0.1 amp rating
Twin Alternating Softener 50 Hz		
1	1046861	Electronic Control/962M Main/12 VAC/50 Hz
1	1046863	Electronic Control/962S Secondary/12 VAC/50 Hz
2	1001751	Twin Alternating Camshaft Assembly
2	1041049	Switch Kit Assembly 0.1 amp rating
Twin Alternating Softener 50 Hz with Battery Backup		
1	1046862	Electronic Control/962M Main/12 VAC/Battery Backup 50 Hz*
1	1046863	Electronic Control/962S Secondary/12 VAC/50 Hz
2	1001751	Twin Alternating Camshaft Assembly
2	1041049	Switch Kit Assembly 0.1 amp rating
*Does not include battery		
	1007201	Battery
	1009097	Battery Cap
	1000396	Battery Bracket

If you have any topics that you would like to see addressed in Just Add Water, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv marketing team at Osmonics.

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JUST ADD WATER BULLETIN; ISSUE 16

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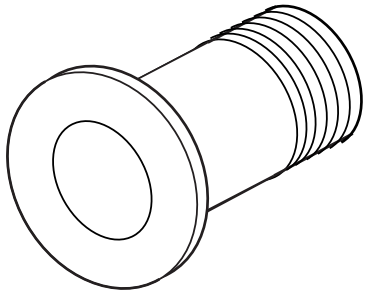
ANNOUNCING THE 1-1/2 INCH BRASS ADAPTER WITH 2 INCH FLANGE IN NPT AND BSP THREAD

The 1-1/2 inch Brass Adapter with 2-inch flange is available. This enables a quick and convenient method of reducing from a 2-inch turbine to a 1-1/2 inch pipe. This will also allow the easy adaptation of the Magnum Cv Plus 2-inch inlet and outlet connections to 1-1/2 inch plumbing. The price is the same as a standard 2-inch brass adapter. This may be ordered through Customer Service.



1-1/2 Inch Brass Adapter, P/N 1030709

	Part Numbers	
	NPT	BSP
1.5-Inch Brass Adapter with 2-Inch Flange	1030709	1031248
2-Inch Flow Meter with Adapters*	1041170	1041171
Adapters without Flow Meter*	1041168	1041169
Magnum Cv PLUS Adapter Kit - Brass NPT for Inlet, Outlet, Drain*	1041208	1041209

* Includes adapter nuts and gaskets.

If you have any topics that you would like to see addressed in Just Add Water, please call us at (800) 279-9404, or send your recommendations to the Magnum Cv marketing team at Osmonics.

OSMONICS

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JUST ADD WATER BULLETIN; ISSUE 17

Just Add Water is an Osmonics publication designed to communicate important product and application information on design modifications, Magnum Cv™ control valve applications, sales and marketing announcements, and any other pertinent information affecting the Autotrol® Magnum Cv control valve.

Osmonics is pleased to announce a major upgrade to the already versatile 962 electronic control. All 962 controls shipped after August 15, 2000 will have the latest software version.

The new features include:

- All 962 family controls are now battery back-up capable. A 9-volt rechargeable battery may be ordered from Osmonics as a separate line item, P/N 1075768. A standard 9-volt Alkaline may be used as a temporary supply.
- The capability to support a much broader array of flow sensors. This includes the standard Autotrol 1-inch and 2-inch turbines as well as Data Industrial, Signet, Badger Meter, and other contacting head flow meters. The new capability is done through the addition of user defined K-factors or pulse equivalents.
- A *remote start regeneration* input that may be programmed to qualify a dry contact start signal from a variety of devices including a differential pressure switch or a signal switch in a sequential filter bank.
- Day of Week regeneration. It is now possible to program individual days that the system will regenerate. When programmed, this feature will override the demand regeneration and will reset capacity remaining upon completion of the regeneration. This feature ensures that a regeneration will occur on programmed days. All other times the system will operate as a demand system.
- When the Time of Day is programmed the user will also program which day it is. Sunday = 1, Monday = 2, Tuesday = 3, etc. This feature makes it easier to look at the average daily water usage data in the History Data table.

These features, along with all the standard capabilities of the 962 control family, are also now available in our new AquaMatic® 962 Stager control.

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P1 - Day of Week Programming

The day of the week is now displayed with the time of day in the far left digit. It is programmed at P1 the same as the time of day. The shift key will move the flashing digit to the far left digit skipping the blank digit between time of day and day of week. The day of week will automatically increment at midnight. This change will allow customers to correlate the daily usage history stored in L7 through L13 to days of the week. Customer should use day 1 = Sunday through day 7 = Saturday. Then L7 will hold the usage history for Sunday through L13 holding the usage history for Saturday. The daily averages stored in the L-values will still be updated at the time of regeneration not midnight. This is required to keep an accurate record for reserve capacity needed at the time of regeneration. Customers should understand that the L-value displayed for the average water usage for Sunday "day one" will be the average water usage for Sunday at 2:00 AM to Monday at 2:00 AM. Assuming the time of regeneration is set for 2:00 AM. Customers can reduce this error by setting the time of regeneration to 12:01 AM.

P19 - Flow Sensor Select

P19 will not show 1.0, 1.5, 2.0, 3.0 for flow sensor sizes as before. P19 will now show "1" for Autotrol 1 inch turbine, "2" for Autotrol 2 inch turbine, "3" for user programmable K-factor, and "4" for user programmable pulse equivalent. The K-factors or Pulse equivalents for individual meters should be supplied by the respective meter manufacturer. The control is no longer preprogrammed for the Data Industrial 1.5 inch and 3.0 inch flow sensors. The default value is "2" for use with the Autotrol 2 inch turbine.

P20 - K-factor or Pulse Equivalent

P20 is now used for user defined K-factor or pulse equivalent. The range is 000.01 to 255.00 in 0.01 steps. How this number is used is defined by the values stored in P12 (units of measure) and P19 (flow sensor select). P12 is used to define gallons or liters (0 = gallons, 1 = liters). P19 is used to define K-factor or pulse equivalent (3 = K-factor, 4 = pulse equivalent). K-factor is defined as pulses per gallon or pulses per liter. Signet and Sea-Flow are two flow sensor manufactures that publish a K-factor. The control can now use any flow sensor as long as the programmed K-factor is correct. The pulse equivalent is defined as gallons or liters per pulse. The control will register 5 gallons of flow for every pulse if P12 = 0, P19 = 4 and P20 = 5.00. Badger meter is one manufacturer that uses a pulse equivalent. The control will now show flow rate if P19 = 4 (pulse equivalent). This is because pulses are accumulated over 10 seconds and flow rate is displayed in gallons per minute. The control will always alternate between time of day and capacity remaining or regeneration time remaining.

P21 - Remote Regeneration Delay

P21 is used to program the delay time for the remote regeneration start. The range is 1 to 254 seconds in 1 second steps. The default is 60 seconds. This function was added because customers are connecting differential pressure switches to this input. A counter starts when the conductors of this input are connected with a dry contact closure. A regeneration will start when the conductors remain connected for the programmed time. The counter will reset to zero when the connection is broken for at least 0.02 seconds. The remote regeneration input cannot be used to perform a double manual regeneration. The remote regeneration input will be ignored when the control is doing a regeneration.

Regeneration Cycle Advance

A function was added to advance the control to the next stop position during a regeneration. Pressing and holding the left arrow key will cause the control to advance to the next stop position of the regeneration. The regeneration time remaining will decrease by the amount of stop time that was skipped. This function will not work when the motor is on. The control will beep if the left arrow key is held for 2.5 seconds and the motor output is on. The control would not stop in the correct position if time was skipped during a motor on time of the regeneration.

Battery Backup Option

All 962 family controls are now battery backup capable. There is a door in the backplate that allows access to the battery harness. A 9 volt rechargeable battery is available from Osmonics PN 1075768. The battery is a VARTA, TYPE V7/8H (AccuPlus Nickel Hydride Ni-mh 9v 150 mAH, No. 5522). A standard non-rechargeable battery is an option for backup but needs to be replaced periodically.

LEVEL IV - Day of Week Regeneration

It is now possible to program individual days that the system will regenerate regardless of water usage. When programmed, this feature will override the demand regeneration and will reset capacity remaining upon completion of the regeneration. This feature insures that a regeneration will occur on programmed days. All other times the system will operate as a demand system. Level IV must be accessed to program Day of Regeneration. Simultaneously press the LEFT and DOWN arrow buttons for 3 seconds to gain access and then press the UP or DOWN arrow buttons until the desired Day location (1-7) is displayed. Press the LEFT arrow button to display value in the location, 0 = no Regeneration - 1 = Regeneration. To program a regeneration for a specific day, go to that day and change the 0 to1. A regeneration will occur at the time that is programmed into P2. A regeneration will occur every week on the day(s) that is (are) programmed with a 1.

Level II Program Values - 962 Twin Tank Alternating Softeners (P17 = 2) with Controls Manufactured After 09 Aug 2000

Parameter	Description	Range of Values	Minimum Increment	Factory Value	Units of Measure	Notes
P1	Day of Week and Time of Day	(1-7) 1:00-12:59 AM or PM Metric (1-7) 0:00 - 23:59	(1 day) 1 minute	None	Hour Minute	Range depends on value selected for P13 For day of week SUN=1, MON=2, TUE=3, WED=4, THU=5, FRI=6, SAT=7.
P2	Time of day to start regeneration	1:00-12:59 AM or PM 00:00-23:59	1	None	Hour Minute	Range depends on value selected for P13. Use only if P15 = 0 or 1
P3	Hardness of water	3-250 30-2500	1 10	0 0	Grains per Gallon ppm	Unit of measure depends on value selected for P12
P4	Salt amount	5-1250 2-500	5 2	10 4	Pounds Kilograms	Unit of measure and default depends on value selected for P12
P5	Capacity of unit	1-2600 0.1-260.0	1 0.1	0	Kilograins Kilograms	Total capacity for each tank. Unit of measure depends on value selected for P12
P6	Refill controller	2-99	1	0		Selected from chart in Performance Data Sections
P7	Brine draw rate	2-99	1	0		Selected from chart in Performance Data Sections
P9	Backwash time	4-30	1	14	Minutes	
P10	Rinse time	7-125	1	40	Minutes	
P11	Purge time	2-19	1	4	Minutes	
P12	Units of measure	0-1	1	0		0 = US 1 = Metric
P13	Clock mode	0-1	1	0		0 = 12 hour clock 1 = 24 hour clock
P14	Calendar override	0-30	1	0	Days	0 = No calendar override
P15	Regeneration delay	0-1	1	0		0 = Immediate regeneration 1 = Regeneration delayed until time programmed in P2 is reached
P16	Capacity that must be left on 2nd tank to permit delayed regeneration of 1st tank	0-70	1	30	Percent of Total Capacity	Used only if P is set to 1
P17	Operation type	0-2	1	2		0 = Single or Parallel 2 = Twin Alternating
P18	Salt/Capacity Change Lock Out	0-1	1	0		0 = None 1 = Salt/Capacity Change Locked Out
P19	Flow Sensor Select			1		1 = 1.0" Autotrol 2 = 2.0" Autotrol 3 = User defined K-factor 4 = User defined pulse equivalent
P20	K-factor or Pulse Equivalent	0.00-255.00	.01	0.01		Number used for Meter K-factor or Pulse equivalent
P21	Remote Regeneration Switch Delay	0-254	1	60	Seconds	Time remote switch must be active to start a regeneration
P22	**Factory Use Only** - DO NOT CHANGE			9		

Level II Program Values - 962 Single Tank Softeners or Dealkalizers (P17 = 0) with Controls Manufactured After 09 Aug 2000

Parameter	Description	Range of Values	Minimum Increment	Factory Value	Units of Measure	Notes
P1	Day of Week and Time of day	(1-7) 1:00-12:59 AM or PM Metric (1-7) 0:00-23:59	(1 day) 1 minute	None	Hour Minute	Range depends on value selected for P13 For day of week SUN=1, MON=2, TUE=3, WED=4, THU=5, FRI=6, SAT=7
P2	Time of day to start regeneration	1:00-12:59 AM or PM 00:00-23:59	1	None	Hour Minute	Range depends on value selected for P13 Use only if P15 = 0 or 1
P3	Hardness of water	3-250 30-2500	1 10	0 0	Grains per gallon ppm	Unit of measure depends on value selected for P12
P4	Salt amount	5-1250 2-500	5 2	10 4	Pounds Kilograms	Unit of measure and default depends on value selected for P12
P5	Capacity of unit	1-2600 0.1-260.0	1 0.1	0	Kilograins Kilograms	Unit of measure depends on value selected for P12
P6	Refill controller	2-99	1	0		Selected from chart in Performance Data Sections
P7	Brine draw rate	2-99	1	0		Selected from chart in Performance Data Sections
P9	Backwash time	4-30	1	14	Minutes	
P10	Rinse time	7-125	1	40	Minutes	
P11	Purge time	2-19	1	4	Minutes	
P12	Units of measure	0-1	1	0		0 = US 1 = Metric
P13	Clock mode	0-1	1	0		0 = 12 hour clock 1 = 24 hour clock
P14	Calendar override	0-30	1	0	Days	0 = No calendar override
P15	Reserve Type	0-3	1	0		See Selectable Reserve Options page 29 in Manual
P16	Initial average usage or fixed reserve	0-70	1	30	Percent of Total capacity	
P17	Operation type	0-2	1	0		0 = Single or Parallel 2 = Twin Alternating
P18	Salt/Capacity Change Lock Out	0-1	1	0		0 = None 1 = Salt/Capacity Change Locked Out
P19	Flow Sensor select					1 = 1.0" Autotrol 2 = 2.0" Autotrol 3 = User defined K-factor 4 = User defined pulse equivalent
P20	K-factor or Pulse equivalent	0.00-255.00	.01	0.01		Number used for Meter K-factor or Pulse equivalent
P21	Remote Regeneration Switch Delay	0-254	1	60	Seconds	Time remote switch must be active to start a regeneration
P22	**Factory Use Only** - DO NOT CHANGE			9		

COMMERCIAL

JUST ADD WATER BULLETIN; ISSUE 18

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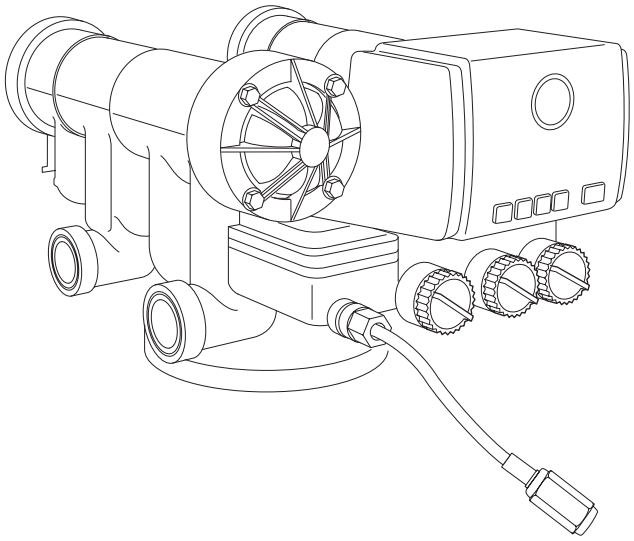
NOW AVAILABLE!!
Magnum Cv series Pilot System Check Valve P/N xxxxxxx

The Pilot System Check Valve is now available from Osmonics.
This valve is capable of maintaining pressure to the pilot system when the inlet pressure is lost. Applications for this check valve:

- A filter / softener train. When the filter is backwashing and the water source to the softener is interrupted.
- Application sites where the water to the system is turned off for a period of time..
- Locations where temporary losses of pressure to below 25 psi occur.

The Pilot System Check Valve is used along with the External Pilot Feed Adapter P/N 1040668. A drilled and tapped brass adapter may be used on the inlet to provide a convenient pilot source where applicable.

- Maximum operating pressures 125 psi.
- ¼ M.N.P.T.Male pipe x Male pipe



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