



NORTH STAR[™]
WATER TREATMENT SYSTEMS



COMMERCIAL WATER TREATMENT **GUIDE**



PROBLEM WATER SHOULDN'T HURT YOUR BUSINESS

When you run a business that uses water, it's important to have the hard facts: contaminants, minerals, metals, acidic or alkaline water costs industry millions of dollars annually in additional maintenance and equipment replacement. Over time, untreated water can build up in pipes and equipment, restrict water flow, and clog valves and vents. In addition, particles in the water can cause excessive wear on valve seals, which leads to dripping faucets and fixture staining. No matter what kind of business you are running, quality water is indispensable for your operations and bottom line.



OUR SOFTENING & FILTRATION SYSTEMS ARE PERFECT FOR:



Hospitals



Hotels



Restaurants

&

OTHER COMMERCIAL AND INDUSTRIAL APPLICATIONS

TREATING YOUR WATER IS A SMART BUSINESS SOLUTION



REDUCE PLUMBING REPAIRS

Eliminate sediment, hard water and particulate matter from your plumbing system that causes flow restrictions and pipe damage.



REDUCE FIXTURE WEAR

Prevent damage-causing buildup on faucets, sinks and tubs. Eliminate additional scrubbing that can cause premature wear.



PROLONG APPLIANCE LIFE

Commercial warewashers and other machines last longer without harmful scale buildup that can damage parts and restrict operation.



PROLONG LINEN & TEXTILE LIFE

Prolong the life of commercial linens and textiles without the staining caused by iron and problem water.



MAKE CLEANING EASIER

Spend less time cleaning without the scale, stains and scum associated with problem water.



PROVIDE A BETTER CUSTOMER EXPERIENCE

Customers can enjoy better tasting beverages, softer skin & hair, and a more hospitable experience.

ECONOMICAL, HEAVY-DUTY COMMERCIAL SOFTENING SYSTEMS

COUNTERCURRENT FLOW

During the regeneration process, the resin bed is cleaned in the opposite direction of the service flow, lifting the hardness minerals up and out of the tank while minimizing salt and water use.

ADJUSTABLE BACKWASH

Features high flow backwash hardware to ensure proper bed cleaning. Customizable backwash duration based on an initial water analysis.

INDUSTRIAL GRADE VALVE

Our valves have fewer than 25 moving parts, so they require less service than competitive valves.

HEAVY-DUTY TANKS

Durable, high-pressure resin tanks and rugged, long-lasting salt storage tanks withstand impact and environmental abuse.

HIGH PERFORMANCE SOFTENING MEDIA

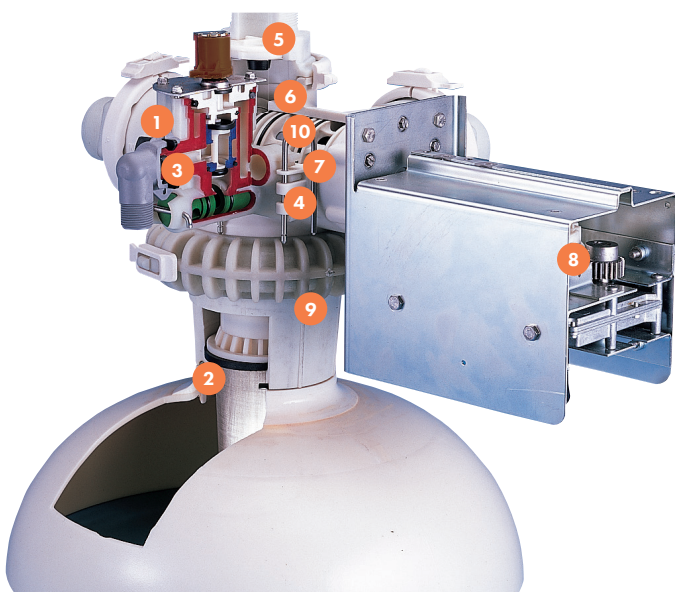
North Star uses only FDA-approved long-lasting softening resin in every commercial softener to condition your water more effectively.

WARRANTY PROTECTION

Resin tanks/Salt Tanks - 10 years | Electronics - 3 years | Parts - 1 year



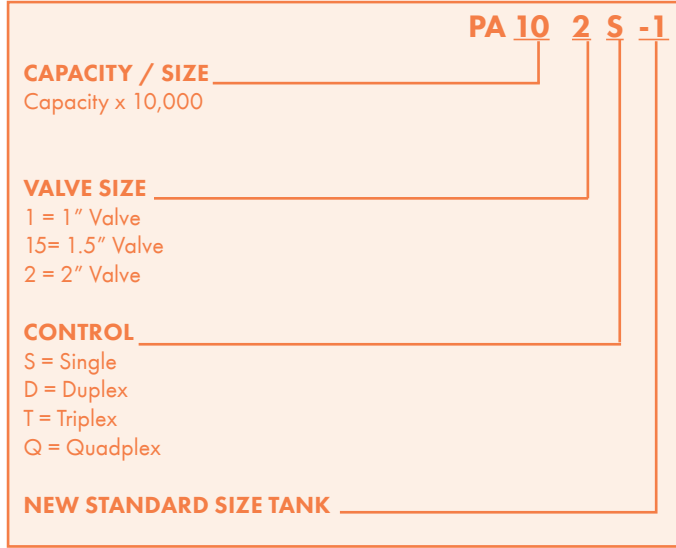
ADDITIONAL FEATURES THAT MAKE OUR COMMERCIAL SOFTENER SERIES **BEST-IN-CLASS**



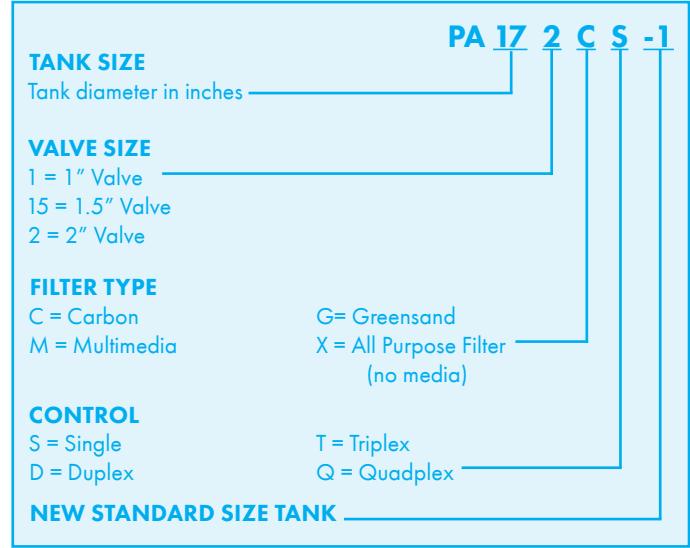
- 1 Snap Clamp Rings for Ease of Connecting
- 2 Top Distributor Basket
- 3 Brine Make-Up Flow Control
- 4 Removable Aspirator
- 5 Up to 2" NPT Union Connections
- 6 Adjustable Backwash Flow Control
- 7 Up to 2" Ported Flow Passage in Plastic Valve Housing
- 8 High Torque 24 V-DC Motor
- 9 Valve Tank Adaptor Allows Easy Access into Tank with Clamp Ring Connector
- 10 High-1 length, Corrosion Resistant Piston

MODEL NUMBER DESIGNATIONS

Example (Softener)



Example (Filter)



HEAVY DUTY WATER SOFTENERS WITH 1" VALVE

SPECIFICATIONS

| Model Number | PA071 | PA101 (PA101-1) | PA131 (PA131-1) | PA191 (PA191-1) ⁴ | PA251 (PA251-1) ⁴ | PA321 (PA321-1) ⁴ |
|----------------------------------------------------------|----------------------|--------------------------|--------------------------|---------------------------------|---------------------------------|---------------------------------|
| Grains Capacity ² At Salt Dosage ¹ | 4 lbs./cu. ft. | 37,000 Grains | 54,000 Grains | 72,000 Grains | 108,000 Grains | 180,000 Grains |
| | 6 lbs./cu. ft. | 50,000 Grains | 72,000 Grains | 96,000 Grains | 144,000 Grains | 240,000 Grains |
| | 8 lbs./cu. ft. | 61,000 Grains | 84,000 Grains | 112,000 Grains | 168,000 Grains | 280,000 Grains |
| | 10 lbs./cu. ft. | 67,000 Grains | 93,000 Grains | 124,000 Grains | 186,000 Grains | 310,000 Grains |
| | 12 lbs./cu. ft. | 71,000 Grains | 99,000 Grains | 132,000 Grains | 198,000 Grains | 330,000 Grains |
| Resin Tank Size (in.) | 12" x 54" | 17" x 58" (16" x 65") | 17" x 58" (16" x 65") | 24" x 72" | 24" x 72" | 24" x 72" |
| Resin Quantity (cu. ft.) | 2 | 3 | 4 | 6 | 8 | 10 |
| Connecting Pipe Size | 1" NPT | 1" NPT | 1" NPT | 1" NPT | 1" NPT | 1" NPT |
| Drain Line Connection Size (in.) | 5/8" I.D. Hose | 5/8" I.D. Hose | 5/8" I.D. Hose | 5/8" I.D. Hose | 5/8" I.D. Hose | 5/8" I.D. Hose |
| Salt Tank Size (in.) | 17" x 38.5" | 24" x 50.5" | 24" x 50.5" | 31" x 51" | 31" x 51" | 31" x 51" |
| Salt Tank Capacity (lbs.) | 340 | 1,000 | 1,000 | 1,500 | 1,500 | 1,500 |
| Operating Pressure | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi |
| Operating Temperature | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F |
| Max. Drain Flow (gpm) | 5 | 7 | 7 | 10 | 10 | 10 |
| Recharge Water Used (gal.) | 108 | 166 | 180 | 286 | 293 | 302 |
| Max. Clear Water Iron ³ | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm |
| Electrical Rating | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts |

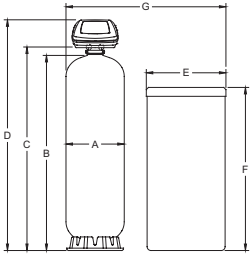
Flow rates and capacities shown are per tank. All systems are available in single, duplex, triplex and quadplex configurations. ¹ Salt dosages can be set to maintain desired efficiencies or changed to auto adjusting, salt-efficiency or boiler option. See manual for details. ² Grains capacity is for counter-current regeneration sizing purposes. The actual capacity could be 5% - 10% greater than shown for each salt dosage. ³ Increased amount of clear water iron (ferrous) can reduce softening efficiency and capacity. Periodic use of resin bed cleaner may be necessary. Iron removal will depend on water conditions (i.e. pH, hardness, content and type of iron). ⁴ Install height is 2 1/2" taller

| OPERATIONAL FLOWS | | FLOW RATE (GPM) AND PRESSURE (PSI) LOSS (ΔP) | | | | | | |
|-------------------|--------|----------------------------------------------|---------|---------|---------|---------|---------|---------|
| Model Number | 5 gpm | 10 gpm | 15 gpm | 20 gpm | 25 gpm | 30 gpm | 35 gpm | 40 gpm |
| PA071 | 2.6 ΔP | 6.6 ΔP | 11.8 ΔP | 18.3 ΔP | 26.0 ΔP | 34.8 ΔP | - | - |
| PA101/PA101-1 | 1.3 ΔP | 3.8 ΔP | 7.3 ΔP | 11.8 ΔP | 17.4 ΔP | 24.1 ΔP | 31.8 ΔP | - |
| PA131/PA131-1 | 1.4 ΔP | 4.0 ΔP | 7.8 ΔP | 12.7 ΔP | 18.6 ΔP | 25.7 ΔP | 33.7 ΔP | - |
| PA191/PA191-1 | 1.2 ΔP | 3.1 ΔP | 6.3 ΔP | 10.5 ΔP | 16.3 ΔP | 21.9 ΔP | 29.1 ΔP | 37.3 ΔP |
| PA191/PA191-1 | 1.2 ΔP | 3.3 ΔP | 6.6 ΔP | 10.9 ΔP | 16.8 ΔP | 22.6 ΔP | 30.0 ΔP | 38.4 ΔP |
| PA321/PA321-1 | 1.2 ΔP | 3.5 ΔP | 6.9 ΔP | 11.3 ΔP | 17.3 ΔP | 23.3 ΔP | 30.9 ΔP | 39.5 ΔP |

Key

- System design flow rates
- For intermittent use only
- Not for use at these flow rates

All specifications listed are for SINGLE unit operation.



DIMENSIONS

| Model Number | A (Nominal Resin Tank Diameter) | B (Nominal Resin Tank Height) | C (Inlet - Outlet Height) | D (Overall Height) | E (Brine Tank Diameter) | F (Brine Tank Height) | G (Simplex) |
|---------------------------|------------------------------------|----------------------------------|------------------------------|-----------------------|----------------------------|--------------------------|----------------|
| PA071 | 12" | 54" | 58" | 63.75" | 17" | 38.5" | 36" |
| PA101, PA131 | 17" | 58" | 61.25" | 70.5" | 24" | 50.5" | 48" |
| PA101-1, PA131-1 | 16" | 65" | 68.36" | 77.61" | | | |
| PA191, PA251, PA321 | 24" | 72" | 79.8" | 85.5" | 31" | 51" | 61" |
| PA191-1, PA251-1, PA321-1 | 24" | 72" | 78.07" | 87.32" | | | |

Duplex = 1 Brine Tank | Triplex = 2 Brine Tanks | Quadplex = 2 Brine Tanks

HEAVY DUTY WATER SOFTENERS WITH 1-1/2" VALVE

SPECIFICATIONS

| Model Number | PA1015 (PA1015-1) | PA1315 (PA1315-1) | PA1615 (PA1615-1) | PA1915 (PA1915-1) ⁴ | PA2515 (PA2515-1) ⁴ | PA3215 (PA3215-1) ⁴ | PA3615 | PA4515 |
|-------------------------------------------------------------|--------------------------|--------------------------|--------------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------------|----------------------|
| Grains Capacity ² At Salt Dosage ¹ | 4 lbs./cu. ft. | 54,000 Grains | 72,000 Grains | 90,000 Grains | 108,000 Grains | 144,000 Grains | 180,000 Grains | 270,000 Grains |
| | 6 lbs./cu. ft. | 72,000 Grains | 96,000 Grains | 120,000 Grains | 144,000 Grains | 192,000 Grains | 240,000 Grains | 360,000 Grains |
| | 8 lbs./cu. ft. | 84,000 Grains | 112,000 Grains | 140,000 Grains | 168,000 Grains | 224,000 Grains | 280,000 Grains | 420,000 Grains |
| | 10 lbs./cu. ft. | 93,000 Grains | 124,000 Grains | 155,000 Grains | 186,000 Grains | 248,000 Grains | 310,000 Grains | 465,000 Grains |
| | 12 lbs./cu. ft. | 99,000 Grains | 132,000 Grains | 165,000 Grains | 198,000 Grains | 264,000 Grains | 330,000 Grains | 495,000 Grains |
| Resin Tank Size (in.) | 17" x 58" (16" x 65") | 17" x 58" (16" x 65") | 17" x 72" (18" x 65") | 24" x 72" | 24" x 72" | 24" x 72" | 30" x 72" | 30" x 72" |
| Resin Quantity (cu. ft.) | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 |
| Connecting Pipe Size | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT |
| Drain Line Connection Size (in.) | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT | 1-1/2" NPT |
| Salt Tank Size (in.) | 24" x 50" | 24" x 50" | 24" x 50" | 31" x 51" | 31" x 51" | 31" x 51" | 41" x 51" | 41" x 51" |
| Salt Tank Capacity (lbs.) | 1,000 | 1,000 | 1,000 | 1,500 | 1,500 | 1,500 | 2,500 | 2,500 |
| Operating Pressure | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi |
| Operating Temperature | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F |
| Max. Drain Flow (gpm) | 7 | 7 | 7 | 12 | 12 | 12 | 24 | 24 |
| Recharge Water Used (gal.) | 151 | 166 | 181 | 271 | 302 | 332 | 543 | 588 |
| Max. Clear Water Iron ³ | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm |
| Electrical Rating | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts |

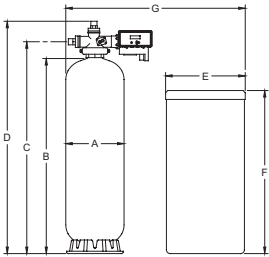
Flow rates and capacities shown are per tank. All systems are available in single, duplex, triplex and quadplex configurations. ¹ Salt dosages can be set to maintain desired efficiencies or changed to auto adjusting, salt-efficiency or boiler option. See manual for details. ² Grains capacity is for counter-current regeneration sizing purposes. The actual capacity could be 5% - 10% greater than shown for each salt dosage. ³ Increased amount of clear water iron (ferrous) can reduce softening efficiency and capacity. Periodic use of resin bed cleaner may be necessary. Iron removal will depend on water conditions (i.e. pH, hardness, content and type of iron). ⁴ Install height is 2 1/2" taller

| OPERATIONAL FLOWS | | FLOW RATE (GPM) AND PRESSURE (PSI) LOSS (ΔP) | | | | | |
|-------------------|--------|----------------------------------------------|--------|---------|---------|---------|---------|
| Model Number | 10 gpm | 20 gpm | 30 gpm | 40 gpm | 50 gpm | 60 gpm | 70 gpm |
| PA1015-1 | 1.5 ΔP | 3.5 ΔP | 7 ΔP | 10.5 ΔP | 16 ΔP | 20.4 ΔP | - |
| PA1315-1 | 2 ΔP | 4.5 ΔP | 8.5 ΔP | 12.5 ΔP | 18 ΔP | 19 ΔP | 33.9 ΔP |
| PA1615-1 | 2.5 ΔP | 5 ΔP | 10 ΔP | 14.5 ΔP | 21.4 ΔP | 26.9 ΔP | 37.9 ΔP |
| PA1915-1 | 1 ΔP | 2 ΔP | 4 ΔP | 8 ΔP | 12.4 ΔP | 15.9 ΔP | 23.9 ΔP |
| PA2515-1 | 1 ΔP | 2.5 ΔP | 5.5 ΔP | 8.5 ΔP | 12.9 ΔP | 16.4 ΔP | 24.9 ΔP |
| PA3215-1 | 1 ΔP | 3 ΔP | 6 ΔP | 9 ΔP | 13.9 ΔP | 17.9 ΔP | 26.9 ΔP |
| PA3615 | - | 2 ΔP | 4.5 ΔP | 7 ΔP | 10.9 ΔP | 13.9 ΔP | 21.9 ΔP |
| PA4515 | - | 2.5 ΔP | 5 ΔP | 6.5 ΔP | 10.5 ΔP | 14.9 ΔP | 20.9 ΔP |

Key

- System design flow rates
- For intermittent use only
- Not for use at these flow rates

All specifications listed are for SINGLE unit operation.



| DIMENSIONS | | | | | | | |
|------------------------------|------------------------------------------|----------------------------------------|---------------------------------|--------------------------|-------------------------------|-----------------------------|----------------|
| Model Number | A (Nominal Resin Tank Diameter) | B (Nominal Resin Tank Height) | C (Inlet - Outlet Height) | D (Overall Height) | E (Brine Tank Diameter) | F (Brine Tank Height) | G (Simplex) |
| PA1015, PA1315 | 17" | 58" | 63.8" | 70.5" | | | |
| PA1015-1, PA1315-1 | 16" | 65" | 70.6" | 76.95" | 24" | 50" | 44" |
| PA1615 | 17" | 72" | 77.8" | 84.15" | | | |
| PA1615-1 | 18" | 65" | 72.6" | 78.95" | 24" | 50" | 44" |
| PA1915, PA2515, PA3215 | 24" | 72" | 77.8" | 84.15" | | | |
| PA1915-1, PA2515-1, PA3215-1 | 24" | 72" | 80.31" | 86.66" | 31" | 51" | 59" |
| PA3615, PA4515 | 30" | 72" | 82.38" | 88.73" | | | |
| PA3615-1, PA4515-1 | 30" | 72" | 89.05" | 95.4" | 41" | 51" | 75" |

Duplex = 1 Brine Tank | Triplex = 2 Brine Tanks | Quadplex = 2 Brine Tanks

HEAVY DUTY WATER SOFTENERS WITH 2" VALVE

SPECIFICATIONS

| Model Number | PA102 (PA102-1) | PA132 (PA132-1) | PA162 (PA162-1) | PA192 (PA192-1) ⁴ | PA252 (PA252-1) ⁴ | PA322 (PA322-1) ⁴ | PA362 | PA452 | PA602 | |
|-------------------------------------------------------------|--------------------------|--------------------------|--------------------------|---------------------------------|---------------------------------|---------------------------------|----------------------|----------------------|----------------------|----------------|
| Grains Capacity ² At Salt Dosage ¹ | 4 lbs./cu. ft. | 54,000 Grains | 72,000 Grains | 90,000 Grains | 108,000 Grains | 144,000 Grains | 180,000 Grains | 216,000 Grains | 270,000 Grains | 360,000 Grains |
| | 6 lbs./cu. ft. | 72,000 Grains | 96,000 Grains | 120,000 Grains | 144,000 Grains | 192,000 Grains | 240,000 Grains | 288,000 Grains | 360,000 Grains | 480,000 Grains |
| | 8 lbs./cu. ft. | 84,000 Grains | 112,000 Grains | 140,000 Grains | 168,000 Grains | 224,000 Grains | 280,000 Grains | 336,000 Grains | 420,000 Grains | 560,000 Grains |
| | 10 lbs./cu. ft. | 93,000 Grains | 124,000 Grains | 155,000 Grains | 186,000 Grains | 248,000 Grains | 310,000 Grains | 372,000 Grains | 465,000 Grains | 620,000 Grains |
| | 12 lbs./cu. ft. | 99,000 Grains | 132,000 Grains | 165,000 Grains | 198,000 Grains | 264,000 Grains | 330,000 Grains | 396,000 Grains | 495,000 Grains | 660,000 Grains |
| Resin Tank Size (in.) | 17" x 58" (16" x 65") | 17" x 58" (16" x 65") | 17" x 58" (16" x 65") | 24" x 72" | 24" x 72" | 24" x 72" | 30" x 72" | 30" x 72" | 36" x 72" | |
| Resin Quantity (cu. ft.) | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 15 | 20 | |
| Connecting Pipe Size | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | |
| Drain Line Connection Size (in.) | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | 2" NPT | |
| Salt Tank Size (in.) | 24" x 50" | 24" x 50" | 24" x 50" | 31" x 51" | 31" x 51" | 31" x 51" | 41" x 51" | 41" x 51" | 41" x 51" | |
| Salt Tank Capacity (lbs.) | 1,000 | 1,000 | 1,000 | 1,500 | 1,500 | 1,500 | 2,500 | 2,500 | 2,500 | |
| Operating Pressure | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | 30 - 125 psi | |
| Operating Temperature | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | 35 - 100°F | |
| Max. Drain Flow (gpm) | 7 | 7 | 7 | 12 | 12 | 12 | 24 | 24 | 32 | |
| Recharge Water Used (gal.) | 151 | 166 | 181 | 271 | 302 | 332 | 543 | 588 | 784 | |
| Max. Clear Water Iron ³ | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm | 20 ppm | |
| Electrical Rating | 24 VDC - 65 Watts" | 24 VDC - 65 Watts" | 24 VDC - 65 Watts" | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | 24 VDC - 65 Watts | |

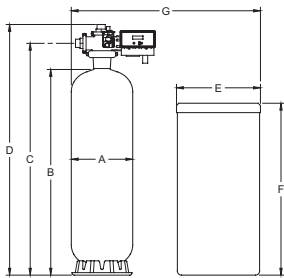
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| OPERATIONAL FLOWS | | FLOW RATE (GPM) AND PRESSURE (PSI) LOSS (ΔP) | | | | | | | | | | | |
|-------------------|----------------|--------------------------------------------------------|----------------|----------------|-----------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|--|
| Model Number | 10 gpm | 20 gpm | 30 gpm | 40 gpm | 50 gpm | 60 gpm | 70 gpm | 80 gpm | 90 gpm | 100 gpm | 110 gpm | 120 gpm | |
| PA102-1 | 1.5 ΔP | 3.5 ΔP | 6 ΔP | 9 ΔP | 12.5 ΔP | 16.5 ΔP | - | - | - | - | - | - | |
| PA132-1 | 2 ΔP | 4.5 ΔP | 7.5 ΔP | 11 ΔP | 15.5 ΔP | 20 ΔP | 25 ΔP | - | - | - | - | - | |
| PA162-1 | 2.5 ΔP | 5 ΔP | 9 ΔP | 13 ΔP | 18 ΔP | 23 ΔP | 29 ΔP | 35 ΔP | - | - | - | - | |
| PA192-1 | 1 ΔP | 2 ΔP | 4 ΔP | 6.5 ΔP | 9 ΔP | 12 ΔP | 15 ΔP | 19 ΔP | 23 ΔP | - | - | - | |
| PA252-1 | 1 ΔP | 2.5 ΔP | 4.5 ΔP | 7 ΔP | 9.5 ΔP | 12.5 ΔP | 16 ΔP | 20 ΔP | 24 ΔP | 28 ΔP | - | - | |
| PA322-1 | 1 ΔP | 3 ΔP | 5 ΔP | 7.5 ΔP | 10.5 ΔP | 14 ΔP | 18 ΔP | 22 ΔP | 26 ΔP | 31 ΔP | - | - | |
| PA362 | - | 2 ΔP | 3.5 ΔP | 5.5 ΔP | 7.5 ΔP | 10 ΔP | 13 ΔP | 16 ΔP | 20 ΔP | 23 ΔP | 27 ΔP | 31 ΔP | |
| PA452 | - | 2.5 ΔP | 4 ΔP | 6 ΔP | 8 ΔP | 11 ΔP | 14 ΔP | 17 ΔP | 21 ΔP | 25 ΔP | 29 ΔP | 33 ΔP | |
| PA602 | - | - | 3 ΔP | 5 ΔP | 7 ΔP | 9 ΔP | 12 ΔP | 15 ΔP | 18 ΔP | 21 ΔP | 25 ΔP | 29 ΔP | |

Key

- System design flow rates
- For intermittent use only
- Not for use at these flow rates

All specifications listed are for SINGLE unit operation.



DIMENSIONS

| Model Number | A (Nominal Resin Tank Diameter) | B (Nominal Resin Tank Height) | C (Inlet - Outlet Height) | D (Overall Height) | E (Brine Tank Diameter) | F (Brine Tank Height) | G (Simplex) |
|--------------------------|------------------------------------|----------------------------------|------------------------------|-----------------------|----------------------------|--------------------------|----------------|
| PA102, PA132 | 17" | 58" | 66.25" | 71.75" | 24" | 50" | 44" |
| PA102-1, PA132-1 | 16" | 65" | 73.05" | 78.55" | | | |
| PA162 | 17" | 72" | 80.25" | 85.75" | 24" | 50" | 44" |
| PA162-1 | 18" | 65" | 75.05" | 80.55" | | | |
| PA192, PA252, PA322 | 24" | 72" | 80.25" | 85.75" | 31" | 51" | 59" |
| PA192-1 PA252-1, PA322-1 | 24" | 72" | 82.76" | 88.26" | | | |
| PA362, PA452 | 30" | 72" | 82.38" | 88.73" | 41" | 51" | 75" |
| PA362-1, PA452-1 | 30" | 72" | 91.5" | 97" | | | |
| PA602 | 36" | 72" | 82.38" | 88.73" | 41" | 51" | 80" |

Duplex = 1 Brine Tank | Triplex = 2 Brine Tanks | Quadplex = 2 Brine Tanks

EFFECTIVE & EFFICIENT COMMERCIAL WATER FILTRATION SYSTEMS

ACTIVATED CARBON FILTERS

Offer an effective method to remove chlorine, taste & odor and other organic substances in a water supply. Small amounts of color and low levels of hydrogen sulfide may also be removed. In some difficult water conditions, it may be necessary to use a different grade of carbon to treat the water.

CATALYTIC CARBON FILTERS

Compared to traditional activated carbon. Reduces chloramines from municipal water supplies as well as offer superior capacity for chlorine, taste & odor removal.

MULTI-MEDIA FILTERS

Provides an efficient means to remove sediment and particulate matter from a water supply. Multi-media filters use stratified layers of graduated-size media, which offer a depth filtration process through the filter. Larger particles are filtered out at the top of the media, and the bottom layers filter out particles down to 10 microns.

GREENSAND PLUS FILTERS

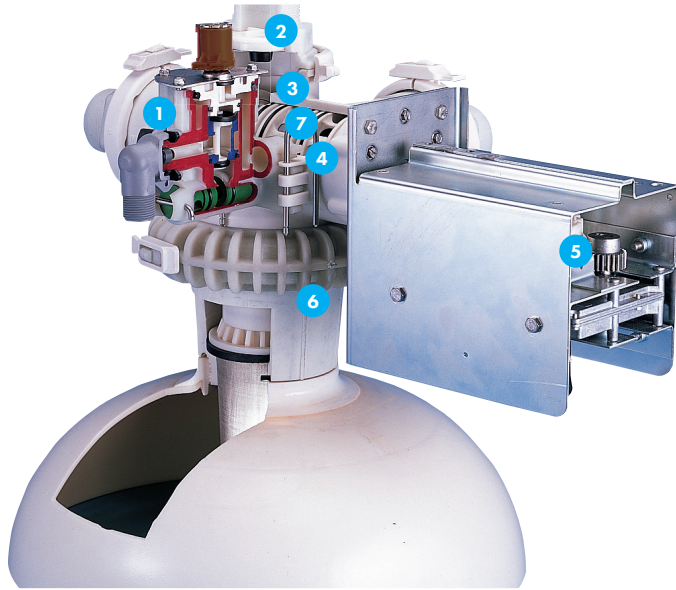
These filters employ a manganese-coated greensand as the main medium in the filter. Additional media are used to provide a depth filtration process, similar to the multi-media filter. The feed water must be treated to provide a continuous oxidation of iron, manganese and hydrogen sulfide for effective operation. This requires a chemical feed pump to inject potassium permanganate into the supply water.

WARRANTY PROTECTION

Resin tanks - 10 years | Electronics - 3 years | Parts - 1 year



ADDITIONAL FEATURES THAT MAKE OUR COMMERCIAL FILTRATION SERIES **BEST-IN-CLASS**



- 1 Snap Clamp Rings for Ease of Connecting
- 2 Up to 2" NPT Union Connections
- 3 Adjustable Backwash Flow Control
- 4 Up to 2" Ported Flow Passage in Non-corrosive Valve Housing
- 5 High Torque 24 VDC Motor
- 6 Valve Tank Adaptor Allows Easy Access into Tank with Clamp Ring Connector
- 7 High-length, Corrosion Resistant Piston

COMMERCIAL FILTRATION

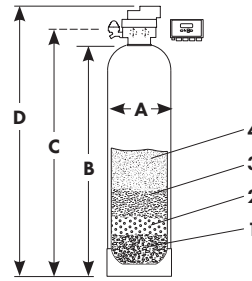
HEAVY DUTY WATER FILTERS WITH 1" VALVE

| SPECIFICATIONS | | | | | | | | | |
|------------------------|-------------------|----------------|-----------------------|-----------|--------------------|-----------------|--------------------------------|-------------------|------------------|
| FILTERS (NO MEDIA) | | | | | | 1 | 2 | | |
| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Filter Aggregate or Neutralite | | |
| PA121XS | 4 gpm | 8 gpm | 12" x 54" | 1" | 7 gpm | 17#/.17 cu. ft. | 2 cu. ft. | | |
| PA171XS (PA171XS-1) | 8 gpm | 18 gpm | 17" x 58" (16" x 65") | 1" | 15 gpm | 100#/1 cu. ft. | 4 cu. ft. | | |
| CARBON FILTERS | | | | | | 1 | 2 | | |
| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Carbon Media | | |
| PA121CS | 4 gpm | 8 gpm | 12" x 54" | 1" | 7 gpm | 17#/.17 cu. ft. | 56#/2 cu. ft. | | |
| PA171CS (PA171CS-1) | 8 gpm | 18 gpm | 17" x 58" (16" x 65") | 1" | 15 gpm | 100#/1 cu. ft. | 112#/4 cu. ft. | | |
| MULTI-MEDIA FILTERS | | | | | | 1 | 2 | 3 | 4 |
| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Garnet Media | Filter Sand Media | Anthracite Media |
| PA121MS | 4 gpm | 8 gpm | 12" x 54" | 1" | 10 gpm | 34#/.34 cu. ft. | 25#/.19 cu. ft. | 50#/.5 cu. ft. | 52#/1 cu. ft. |
| GREENSAND PLUS FILTERS | | | | | | 1 | 2 | 3 | 4 |
| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Garnet Media | Greensand Plus | Anthracite Media |
| PA121GS | 4 gpm | 8 gpm | 12" x 54" | 1" | 10 gpm | 17#/.17 cu. ft. | 25#/.19 cu. ft. | 128#/1.5 cu. ft. | 26#/.5 cu. ft. |

DIMENSIONS

| Model Type | A | B | C | D |
|------------|-------|--------|--------|--------|
| PA121 | 12.3" | 55" | 57" | 65.75" |
| PA171 | 17.6" | 59.5" | 61.25" | 70.5" |
| PA171-1 | 16" | 66.61" | 68.36" | 77.61" |

Duplex = 2 Mineral Tank | Triplex = 3 Mineral Tanks | Quadplex = 4 Mineral Tanks



Flow rates and capacities shown are per tank. All systems are available in single, duplex, triplex and quadplex configurations.

The filters are operated on a demand basis utilizing the turbine meter and control with an override option to initiate a backwash on a more frequent basis.

The filters will operate very effectively at the optimum flow rates and should be operated at the peak flow for only short periods of time.

Duplex = 2 Mineral Tanks | Triplex = 3 Mineral Tanks | Quadplex = 4 Mineral Tanks

HEAVY DUTY WATER FILTERS WITH 1-½" VALVE

SPECIFICATIONS

FILTERS (NO MEDIA)

| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | | |
|---------------------------|-------------------|-----------------|--------------------------|-----------|--------------------|------------------|--|--|
| PA1715XS (PA1715XS-1) | Media Dependent | Media Dependent | 17" x 58" (16" x 65") | 1-½" | Media Dependent | 100#/1 cu. ft. | | |
| PA2415XS (PA2415XS-1)* | Media Dependent | Media Dependent | 24" x 72" | 1-½" | Media Dependent | 150#/1.5 cu. ft. | | |

CARBON FILTERS

| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Carbon Media | |
|---------------------------|-------------------|----------------|--------------------------|-----------|--------------------|------------------|-----------------|--|
| PA1715CS (PA1715CS-1) | 8 gpm | 16 gpm | 17" x 58" (16" x 65") | 1-½" | 15 gpm | 100#/1 cu. ft. | 112#/4 cu. ft. | |
| PA2415CS (PA2415CS-1)* | 15 gpm | 30 gpm | 24" x 72" | 1-½" | 30 gpm | 150#/1.5 cu. ft. | 280#/10 cu. ft. | |
| PA3015CS | 25 gpm | 50 gpm | 30" x 72" | 1-½" | 50 gpm | 250#/2.5 cu. ft. | 420#/15 cu. ft. | |

MULTI-MEDIA FILTERS

| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Garnet Media | Filter Sand Media | Anthracite Media |
|---------------------------|-------------------|----------------|--------------------------|-----------|--------------------|------------------|------------------|-------------------|------------------|
| PA1715MS (PA1715MS-1) | 15 gpm | 30 gpm | 17" x 58" (16" x 65") | 1-½" | 25 gpm | 100#/1 cu. ft. | 50#/1 cu. ft. | 100#/1 cu. ft. | 156#/3 cu. ft. |
| PA2415MS (PA2415MS-1)* | 30 gpm | 60 gpm | 24" x 72" | 1-½" | 50 gpm | 150#/1.5 cu. ft. | 150#/1.2 cu. ft. | 250#/2.5 cu. ft. | 312#/6 cu. ft. |

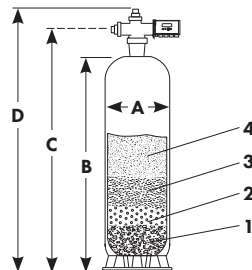
GREENSAND PLUS FILTERS

| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Garnet Media | Greensand Plus | Anthracite Media |
|---------------------------|-------------------|----------------|--------------------------|-----------|--------------------|------------------|------------------|----------------|------------------|
| PA1715GS (PA1715GS-1) | 8 gpm | 13 gpm | 17" x 58" (16" x 65") | 1-½" | 25 gpm | 100#/1 cu. ft. | 50#/.4 cu. ft. | 255#/3 cu. ft. | 78#/1.5 cu. ft. |
| PA2415GS (PA2415GS-1)* | 30 gpm | 60 gpm | 24" x 72" | 1-½" | 50 gpm | 150#/1.5 cu. ft. | 150#/1.5 cu. ft. | 510#/6 cu. ft. | 156#/3 cu. ft. |

DIMENSIONS

| Model Type | A | B | C | D |
|------------|-----|-----|--------|--------|
| PA1715 | 17" | 58" | 63.8" | 70.5" |
| PA1715-1 | 16" | 65" | 70.6" | 76.95" |
| PA2415 | 24" | 72" | 77.8" | 84.15" |
| PA2415-1 | | | 80.31" | 86.66" |
| PA3015 | 30" | 72" | 82.38" | 88.73" |
| PA3015-1 | | | 89.05" | 95.4" |

Duplex = 2 Mineral Tank | Triplex = 3 Mineral Tanks | Quadplex = 4 Mineral Tanks



Flow rates and capacities shown are per tank. All systems are available in single, duplex, triplex and quadplex configurations. The filters are operated on a demand basis utilizing the turbine meter and control with an override option to initiate a backwash on a more frequent basis. The filters will operate very effectively at the optimum flow rates and should be operated at the peak flow for only short periods of time. Duplex = 2 Mineral Tanks | Triplex = 3 Mineral Tanks | Quadplex = 4 Mineral Tanks

*Install height is 2 1/2" taller

HEAVY DUTY WATER FILTERS WITH 2" VALVE

SPECIFICATIONS

FILTERS (NO MEDIA)

| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz |
|-------------------------|-------------------|-----------------|--------------------------|-----------|--------------------|----------------|
| PA172XS (PA172XS-1) | MEDIA DEPENDENT | Media Dependent | 17" x 58" (16" x 65") | 2" | Media Dependent | 100#/1 cu. ft. |
| PA242XS (PA242XS-1)* | Media Dependent | Media Dependent | 24" x 72" | 2" | Media Dependent | 150#/1 cu. ft. |

CARBON FILTERS

| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Carbon Media |
|-------------------------|-------------------|----------------|--------------------------|-----------|--------------------|------------------|-----------------|
| PA172CS (PA172CS-1) | 8 gpm | 16 gpm | 17" x 58" (16" x 65") | 2" | 15 gpm | 100#/1 cu. ft. | 112#/4 cu. ft. |
| PA242CS (PA242CS-1)* | 15 gpm | 30 gpm | 24" x 72" | 2" | 30 gpm | 150#/1.5 cu. ft. | 280#/10 cu. ft. |
| PA302CS | 25 gpm | 50 gpm | 30" x 72" | 2" | 50 gpm | 250#/2.5 cu. ft. | 420#/15 cu. ft. |
| PA362CS | 35 gpm | 70 gpm | 36" x 72" | 2" | 70 gpm | 300#/3 cu. ft. | 560#/20 cu. ft. |

MULTI-MEDIA FILTERS

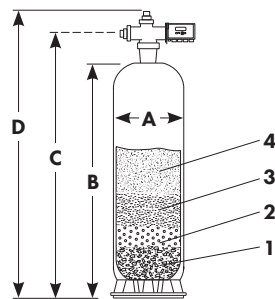
| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Garnet Media | Filter Sand Media | Anthracite Media |
|-------------------------|-------------------|----------------|--------------------------|-----------|--------------------|------------------|------------------|-------------------|------------------|
| PA172MS (PA172MS-1) | 15 gpm | 30 gpm | 17" x 58" (16" x 65") | 2" | 25 gpm | 100#/1 cu. ft. | 50#/.4 cu. ft. | 100#/1 cu. ft. | 156#/3 cu. ft. |
| PA242MS (PA242MS-1)* | 30 gpm | 60 gpm | 24" x 72" | 2" | 50 gpm | 150#/1.5 cu. ft. | 150#/1.2 cu. ft. | 250#/2.5 cu. ft. | 312#/6 cu. ft. |
| PA302MS | 50 gpm | 100 gpm | 30" x 72" | 2" | 70 gpm | 250#/2.5 cu. ft. | 200#/1.6 cu. ft. | 350#/3.5 cu. ft. | 520#/10 cu. ft. |

GREENSAND PLUS FILTERS

| Model Number | Optimum Flow Rate | Peak Flow Rate | Nominal Tank Size | Pipe Size | Backwash Flow Rate | Washed Quartz | Garnet Media | Greensand Plus | Anthracite Media |
|-------------------------|-------------------|----------------|--------------------------|-----------|--------------------|------------------|------------------|----------------|------------------|
| PA172GS (PA172GS-1) | 8 gpm | 13 gpm | 17" x 58" (16" x 65") | 2" | 25 gpm | 100#/1 cu. ft. | 50#/.4 cu. ft. | 255#/3 cu. ft. | 78#/1.5 cu. ft. |
| PA242GS (PA242GS-1)* | 15 gpm | 24 gpm | 24" x 72" | 2" | 50 gpm | 150#/1.5 cu. ft. | 150#/1.2 cu. ft. | 510#/6 cu. ft. | 156#/3 cu. ft. |
| PA302GS | 25 gpm | 38 gpm | 30" x 72" | 2" | 70 gpm | 250#/2.5 cu. ft. | 200#/1.6 cu. ft. | 765#/9 cu. ft. | 260#/5 cu. ft. |

DIMENSIONS

| Model Type | A | B | C | D |
|------------|-----|-----|--------|--------|
| EWS172 | 17" | 58" | 66.25" | 71.75" |
| EWS172-1 | 16" | 65" | 73.05" | 78.55" |
| EWS242 | 24" | 72" | 80.25" | 85.75" |
| EWS242-1 | | | 82.76" | 88.26" |
| EWS302 | 30" | 72" | 82.38" | 88.73" |
| EWS302-1 | | | 91.5" | 97" |
| EWS362 | 36" | 72" | 82.38" | 88.73" |
| EWS362-1 | | | 91.9" | 97.4" |



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Duplex = 2 Mineral Tanks | Triplex = 3 Mineral Tanks | Quadplex = 4 Mineral Tanks

*Install height is 2 1/2" taller

NORTH STAR QUALITY



EASY TO INSTALL

North Star systems come with fittings needed for a simple installation.



LOW MAINTENANCE

We incorporate high-efficiency technology and pro-grade materials into our North Star systems, delivering an easy-to-use solution you can count on.



WARRANTY PROTECTION

North Star Water Treatment Systems boast the most comprehensive warranties in plumbing wholesale, proof of our commitment to quality.



HIGH QUALITY MANUFACTURING

Our U.S. based manufacturing facilities ensure each North Star system exceeds the strictest quality standards. Once our products leave our doors, you can expect a reliable, long-lasting solution.



PRODUCT INNOVATION

Our commitment to research and development provides a constant stream of both products and technology, allowing us to continually push the boundaries within the water treatment industry.

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