IWS
Industrial Water Solutions

# NI Series

# INDUSTRIAL PACKAGED WATER SOFTENERS

(Triple System with Skid Mount, Prepipe and Prewire Option Shown)

NANCREDE ENGINEERING CO
EST. 1932

# NI Series

## SYSTEM DESIGN

Nancrede Engineering NI water softeners utilize a system of integrated components selected for optimum performance and reliability. Ease of field service and availability of parts are also important criteria in the selection of components.

### High Capacity Resin

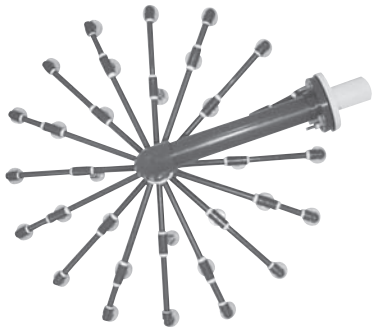
High capacity resin is of uniform bead size possessing high exchange capacity and low pressure loss combined with excellent stability over a wide range of operating conditions.

### Regeneration Module

Individually sized diaphragm valves arranged in a galvanized steel piping module according to the flow pattern of each mode of regeneration ensure reliable and efficient operation. Flexibility of design is possible without the use of auxiliary service valves associated with multiport control valves. Automatic by-pass during regeneration is provided on single units.

### Regeneration Control

The regeneration modes are automatically controlled by a staging pilot coupled to a programmable time clock. The staging pilot can be supplied with hydraulic or pneumatic pressure for flexibility of operation. Pushbutton start and means for manual operation are provided as standard.



## APPLICATION DATA

### Pressure Range

30 psi minimum pressure required to ensure proper brining. 100 psi maximum pressure with standard units. Equipment available for higher pressures.

### Temperature

Standard equipment is suitable for water up to 120° F. Custom fitted equipment is available for higher temperatures and special applications.

### Electrical

110 volt, 60 hertz, 1 phase AC power is standard. Controls are available for other electric requirements. Electrical enclosures are NEMA 12 rated as standard. Other NEMA ratings are available on request.

## RESIN TANK

### Standard Construction

The resin tank is fabricated of heavy gauge carbon steel and electrically welded. Tank Supports are angle iron welded to the sideshell and fitted with pad feet. An 11”x15” manway in the upper head is provided on 48”–72” diameter tanks. Larger tanks are supplied with 12”x16” manways. All tanks are equipped with a 4”x6” handhole or blind flange connection in the lower tank sideshell.

### Linings / Exterior Finish Coatings

The standard tank interior lining is an NSF approved, cold-set epoxy coating applied at a 10-12 mil DFT to a sandblasted surface. The standard tank exterior finish is a self-priming epoxy based paint in Safety Blue color and applied at a 4-6 mil DFT to a sandblasted surface. Alternative tank lining and finish paint systems are available upon request.

### ASME Code Option

The resin tank is available fabricated in accordance with ASME code, certified, and stamped with standard pressure rating 100 psi working pressure - 150 psi test, with other pressure ratings available.

## UNDERDRAIN

The hub-radial distribution system ensures utilization of the entire bed area during all flow rates and also minimizes channeling during periods of low flow.

The hub-radial design features non-clogging stainers arranged in a radial network. The strainers are molded from ABS and the radial pipes are fabricated from heavy duty PVC pipe. This construction provides the ultimate in corrosion resistance and long trouble-free service. The system uses a single layer of fine washed gravel to avoid intrusion of resin fines and eliminate wasted capacity in the bottom area of the resin bed.

### Upper Distributor

An inlet baffle type distributor is provided to properly distribute the inlet water and collect the backwash water.

# . . . DESIGNED FOR PERFORMANCE

## OPTIONS

### Water Meters / Control Systems
A water meter increases the efficiency of operation where demand is variable. Often times capital costs can be reduced by installing smaller multiple tank meter controlled softeners capable of regenerating several times daily.

**MX-II Control Package**
- Electronic programmable with digital volume, flow rate display, and totalizer.
- Operates up to 4 softeners in single, alternating, or additive flow configurations.
- Utilizes either turbine or paddlewheel flowmeters.

**PLC Control Package**
- Allen Bradley Micrologix Series processor standard (other models available).
- Allen Bradley Panelview 300 digital operator terminal (other models available).
- Operates up to 4 softeners in single, alternating, or additive flow configurations.
- Remote communication to Building Management System (BMS) is available.

### SRS Salt Recovery Option
Provides a significant improvement to water softener regeneration efficiency by reducing the amount of salt usage by 25% with no loss in treated water quality. Usable brine is recovered during regeneration and diverted back to the brine maker.

### Pumped Brine System
For use with existing bulk brine makers.

### Skid Mount Option
Resin tanks mounted on a common structural steel base. Prewired with single power connections. Prepiped interconnecting piping supplied with inlet, outlet and drain single point customer connections.

### Alternative Piping & Valve Material
Softener piping and control valves are available in several alternative materials of construction such as Sch 80 PVC, copper, and stainless steel for more corrosion resistance and compatibility with the users existing piping system.

### Alternative Exchange Resin
The standard cation resin can be substituted for a variety of different types including 10% cross-linked resin for high chlorine and higher temperature applications and higher efficiency resins for increased flow rates or lower hardness leakage.

## DIAPHRAGM VALVES
The diaphragm valves used are of the “Y” pattern design allowing for higher flow rates at lower pressure drops. The valves use a guided stem design and are operated hydraulically with the system water pressure, or pneumatically with plant air pressure. Double acting service butterfly valves are supplied on 6" and 8" systems.

### Backwash Controller
An automatic flow controller maintains the proper backwash flow rate over wide variations in operating pressure, utilizing a variable orifice concept requiring no field adjustments.

## BRINE MAKER
The combination salt storage and brine measuring system allows for maximum salt storage. The system, in essence, provides two tanks in one. The NECO brine maker tanks are constructed of rotationally cast rigid polyethylene. 90"-diameter tanks and larger are of FRP construction. Both contain a separate well for housing the brine valve.

### Injector
A PVC pressure compensating hydraulic injector is used to convey brine to the softener at the correct brine rate and concentration.

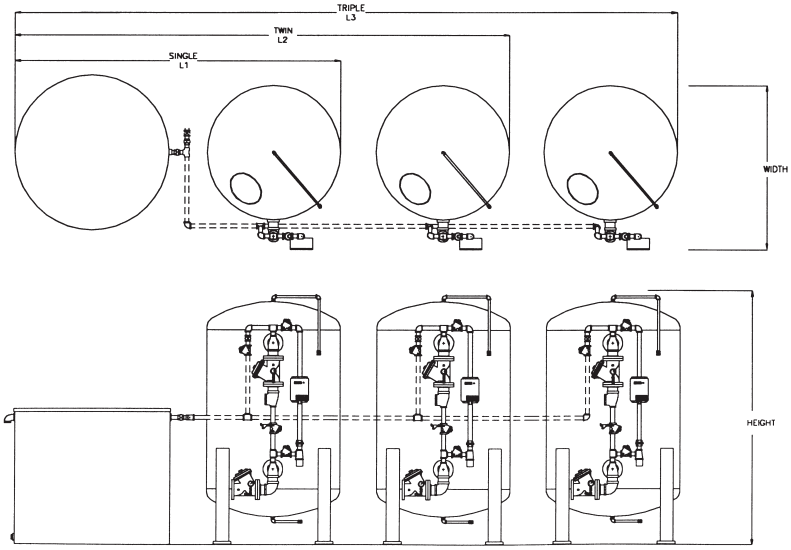
## BRINE VALVE
Precise volumetric control of both refill and brine draw is provided by a single float operated brine valve. An integral air check assures positive brine shutoff. On site adjustment of salt dosage without disassembly of the brine maker is easily accomplished by adjusting the brine valve float setting.

# SPECIFICATIONS NI SERIES

| CATALOG NUMBER | EXCHANGE CAPACITY/(Grains) SALT DOSAGE/(Pounds) SALT USAGE/(Pounds) ❶ | | FLOW RATES | | | PIPE SIZE | | RESIN | TANK SIZES (Dia. x SS) | | SALT STORAGE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SERVICE | | BACKWASH | SERVICE | DRAIN | | SOFTENER | BRINE ❹ | |
| | MAX. | MIN. | CONT. GPM ❷ | PEAK GPM ❸ | GPM | IN. | IN. | CU. FT. | IN. | IN. | LBS |
| NI-40-2-1/2 | 1,200,000/ | 800,000/ | 160 | 186 | 60 | 2-1/2 | 2 | 40 | 48 x 60 | 52 x 60 | 2600 |
| NI-40-3 | 600/ | 240/ | 215 | 300 | | 3 | 2 | | | | |
| NI-40-4 | 600 | 240 | 310 | 410 | | 4 | 2 | | | | |
| NI-50-2-1/2 | 1,500,000/ | 1,000,000/ | 165 | 191 | 80 | 2-1/2 | 2 | 50 | 54 x 60 | 66 x 46 | 3300 |
| NI-50-3 | 750/ | 300/ | 225 | 308 | | 3 | 2 | | | | |
| NI-50-4 | 750 | 300 | 405 | 600 | | 4 | 2 | | | | |
| NI-65-2-1/2 | 1,950,000/ | 1,300,000/ | 168 | 193 | 100 | 2-1/2 | 2-1/2 | 65 | 60 x 60 | 60 x 66 | 4000 |
| NI-65-3 | 975/ | 390/ | 235 | 325 | | 3 | 2-1/2 | | | | |
| NI-65-4 | 975 | 390 | 445 | 650 | | 4 | 2-1/2 | | | | |
| NI-80-3 | 2,400,000/ | 1,600,000/ | 245 | 340 | 120 | 3 | 3 | 80 | 66 x 72 | 66 x 72 | 5800 |
| NI-80-4 | 1,200/ | 480/ | 480 | 690 | | 4 | 3 | | | | |
| NI-80-6 | 1,200 | 480 | 650 | 940 | | 6 | 3 | | | | |
| NI-100-3 | 3,000,000/ | 2,000,000/ | 255 | 355 | 140 | 3 | 3 | 100 | 72 x 72 | 82 x 60 | 7300 |
| NI-100-4 | 1,500/ | 600/ | 500 | 720 | | 4 | 3 | | | | |
| NI-100-6 | 1,500 | 600 | 700 | 1050 | | 6 | 3 | | | | |
| NI-120-4 | 3,600,000 | 2,400,000/ | 520 | 730 | 165 | 4 | 3 | 120 | 78 x 72 | 82 x 60 | 6000 |
| NI-120-6 | 1,800/ | 720/ | 750 | 1100 | | 6 | 3 | | | | |
| NI-120-8 | 1,800 | 720 | 950 | 1430 | | 8 | 3 | | | | |
| NI-140-4 | 4,200,000 | 2,800,000/ | 540 | 760 | 190 | 4 | 3 | 140 | 84 x 72 | 90 x 60 | 7500 |
| NI-140-6 | 2,100/ | 840/ | 780 | 1130 | | 6 | 3 | | | | |
| NI-140-8 | 2,100 | 840 | 1000 | 1450 | | 8 | 3 | | | | |
| NI-160-4 | 4,800,000/ | 3,200,000/ | 600 | 753 | 220 | 4 | 4 | 160 | 90 x 72 | 90 x 60 | 6500 |
| NI-160-6 | 2,400/ | 960/ | 800 | 1005 | | 6 | 4 | | | | |
| NI-160-8 | 2,400 | 960 | 1060 | 1670 | | 8 | 4 | | | | |
| NI-180-4 | 5,400,000/ | 3,600,000/ | 675 | 820 | 250 | 4 | 4 | 180 | 96 x 72 | 96 x 60 | 7700 |
| NI-180-6 | 2,700/ | 1,080/ | 880 | 1250 | | 6 | 4 | | | | |
| NI-180-8 | 2,700 | 1,080 | 1150 | 1700 | | 8 | 4 | | | | |

# DIMENSIONS

| CATALOG NUMBER | DIMENSIONS | | | | |
|---|---|---|---|---|---|
| | HEIGHT ❻ | WIDTH | LENGTH ❺ | | |
| | | | SINGLE/L1 | TWIN/L2 | TRIPLE/L3 |
| NI-40-2-1/2 | 8'-3" | 5'-2" | 10'-0" | 15'-8" | 21'-3" |
| NI-40-3 | | 5'-4" | | | |
| NI-40-4 | | 5'-8" | | | |
| NI-50-2-1/2 | 8'-5" | 5'-8" | 11'-8" | 17'-10" | 24'-0" |
| NI-50-3 | | 5'-10" | | | |
| NI-50-4 | | 6'-2" | | | |
| NI-65-2-1/2 | 8'-6" | 6'-2" | 11'-8" | 18'-4" | 25'-0" |
| NI-65-3 | | 6'-4" | | | |
| NI-65-4 | | 6'-8" | | | |
| NI-80-3 | 9'-9" | 6'-10" | 12'-8" | 19'-10" | 27'-0" |
| NI-80-4 | | 7'-2" | | | |
| NI-80-6 | | 7'-8" | | | |
| NI-100-3 | 9'-11" | 7'-4" | 13'-8" | 21'-4" | 29'-0" |
| NI-100-4 | | 7'-8" | | | |
| NI-1000-6 | | 8'-2" | | | |
| NI-120-4 | 9'-4" | 8'-2" | 15'-0" | 23'-6" | 32'-0" |
| NI-120-6 | | 8'-8" | | | |
| NI-120-8 | | 9'-4" | | | |
| NI-140-4 | 9'-6" | 8'-8" | 16'-0" | 25'-0" | 34'-0" |
| NI-140-6 | | 9'-2" | | | |
| NI-140-8 | | 9'-10" | | | |
| NI-160-4 | 9'-10" | 9'-2" | 17'-0" | 26'-6" | 36'-0" |
| NI-160-6 | | 9'-8" | | | |
| NI-160-8 | | 10'-6" | | | |
| NI-180-4 | 10'-2" | 9'-8" | 18'-0" | 28'-0" | 38'-0" |
| NI-180-6 | | 10'-2" | | | |
| NI-180-8 | | 10'-10" | | | |




❶ **Salt Dosage** – the total quantity of salt required per regeneration to achieve the published Exchange Capacity.
**Salt Usage** – the quantity of new salt required to obtain the published Salt Dosage.
@ Max. – provides 2,000 Grains removal per pound of salt used.
@ Min. – provides 3,330 Grains removal per pound of salt used.
Both Salt Dosage and Salt Usage values are equal for NI series softeners not equipped with Salt Recycler System. Adding the SRS option will reduce the salt usage amount by 25%.

❷ At pressure loss not exceeding 15 psi.
❸ At pressure loss not exceeding 25 psi.
❹ When less than 4 hours is expected between regenerations of a twin softener, two brine tanks are required. Overall length to increase by brine tank diameter.
❺ Includes one Salt Dosage as liquid brine.
❻ Allow a minimum of 24 inches above softener tank for loading. ASME tanks will add 10" to height.



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