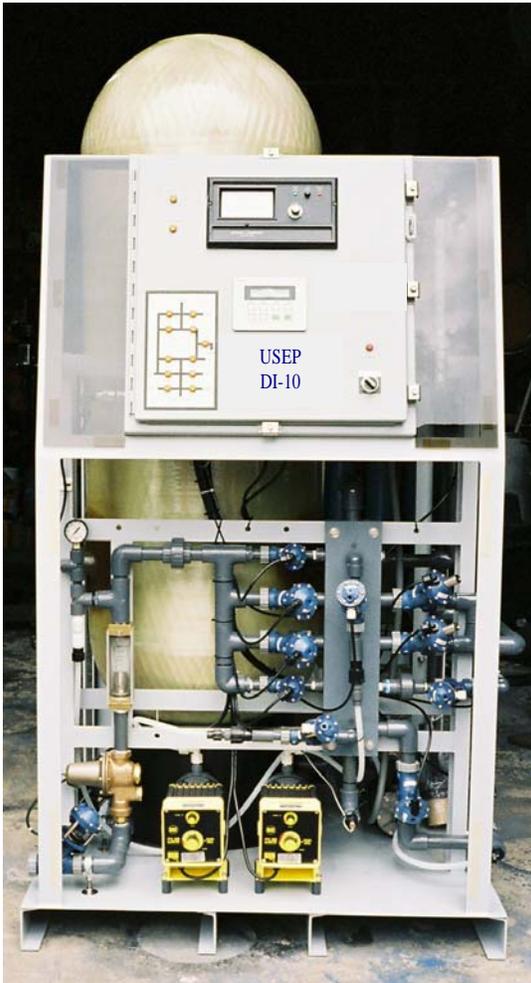


US Engineered Products

Advanced DI-10 Mixed Bed



US Engineered Products DI System Advanced Deionization Equipment for Water Purification.

The US Engineered Products Advanced DI-10 Mixed Bed Deionizer is a completely automatic ion-exchange system designed to remove soluble ionized impurities from water. It produces up to 900 gallons of pure water per hour or, with intermediate storage, up to 18,000 gallons per day, and regenerates its ion-exchange resins when necessary. Product water quality is guaranteed by a highly accurate controlling purity meter which is factory pre-set to divert all outlet water below one megohm-cm resistivity (at 25°C). The purity meter may be adjusted to a higher or lower set point, if required, to meet special requirements.

US Engineered Products Advanced DI-10 is shipped completely assembled on a welded steel skid, ready for installation. As with all US Engineered Products equipment, the system is fully warranted against defects in materials or workmanship for a period of one year. US Engineered Products provides, as an option, full start-up service, including a system check-out, resin activation and operational instruction for installations in continental United States and most parts of Canada.

Products and Services for the Water Treatment Industry

DI-10 Mixed-Bed Deionizer Specifications:

General

The Advanced DI-10 Mixed Bed deionizer consists of one deionization column with mixed cation and anion exchange resins, a purity monitoring system, a regeneration cycle timer, a recirculation pump, a regeneration system with two chemical pumps, and a pressure regulator to maintain a constant inlet water pressure to the deionizer. Included is a control panel with purity meter and indicator lights to show operational status and each regeneration step. The unit is self-contained in corrosion-resistant welded steel, epoxy powder coated frame.

Fully Automatic Solid State Controls

Automatic operation is controlled by the in-line purity meter, regeneration cycle timer, and solenoid valves. As long as outlet water resistance is above the adjustable set-point value on the purity meter, the deionizer will remain on line. Should outlet resistance drop below the set-point, the controlling purity meter will cause outlet water to be diverted to waste. This also activates the divert timer, which is adjustable between 0 and 60 minutes. If the resistance of outlet water does not rise above the purity meter set-point before the divert timer has elapsed, the deionizer will automatically begin the resin regeneration cycle.

Ion-Exchange System

The deionizer is equipped with one 21" diameter by 62" high fiberglass reinforced plastic column with upper, center, and lower distributor assemblies. The column contains 2.5 cubic feet of strong acid cation resin and 4.0 cubic feet of strong base anion resin.

Purity Monitoring System

Consisting of a purity meter with in-line conductivity cell, automatic relays to initiate the regeneration cycle timer and automatic control valves, the purity monitoring system guarantees delivery of water above the selected minimum purity set point. The system is preset to divert substandard outlet water to waste at less than one megohm-cm, but may be adjusted to a higher or lower set-point to meet specific requirements.

Regeneration Cycle

The Advance DI-10 regeneration cycle is controlled by a programmable solid state controller. Activated by the purity meter, the program automatically sequences the various backwashing and rinsing steps to insure a thorough and effective regeneration of ion-exchange resins.

A timed pre-regeneration divert-to-waste feature is included to prevent the unit from prematurely regenerating due to a sudden low purity surge in the raw water supply. Should outlet water regain purity before the adjustable divert timer elapses, the system will return to on-line service.

A post-regeneration purity rinse lock-out is also included to prevent the unit from needlessly re-stepping back into regeneration after completion of a regeneration cycle. If purity is not achieved following regeneration, the system will continue the rinse cycle. This lock-out provision can be connected to an ancillary alarm device.

The Advanced DI-10 is designed to use concentrated acid and caustic solutions from optional storage tanks. There is no need to mix or dilute chemicals. Two self-priming chemical pumps with adjustable stroke are provided to proportion the exact volume of chemicals for regeneration.

A low pressure cut-off is included to shut down the unit should inlet water pressure drop below 15 psi during the regeneration cycle. A remote alarm device can be wired into the indicator circuit.

Products and Services for the Water Treatment Industry

Recirculation Pump

During non-use periods, outlet water is continuously recirculated through the system by a 1/3hp stainless steel centrifugal pump. Recirculation of pure water inhibits channeling of the resin beds and eliminates the need for a purity rinse-up before use. The recirculating pump is equipped with flow controlled and check valve.

Control Valves

Fail-safe operation of the equipment and flow control during the various steps of operation are the functions of the diaphragm valves and the three-way pilot solenoid valves. The pilot solenoid valves are activated by the purity meter and regeneration timer. The diaphragm valves are automatically operated by applying or removing line air pressure. The solenoid valves are configured to shut down the equipment in the event of an electrical failure. The diaphragm valves are made of chemically resistant plastic.

Plumbing and Plumbing Accessories

Piping and plumbing accessories are constructed of PVC and polypropylene; threaded, cemented, and compression fitted. Plumbing accessories included with the equipment are an in line shut off valve, a 0-15 GPM flow meter, two 0-160 psig pressure gauges, and a regenerate pumping system. An effluent throttling valve is also provided to reduce product water flows if necessary.

Service Line Connections

Water Inlet—1"NPTF 30-100 psi (2.8-7.0kg/cm²) @ 15 gpm (56.7 lpm).

Deionized Water Outlet—1"NPTF

Drain Connection—1"NPTF. Connect to atmospherically-vented, acid-resistant waste line.

Power Cord—3-prong grounded plug for 115v, 60Hz, single phase.

Air Inlet—1/2" NPTF, 6 CFM at 20 psi.

Operation Specifications¹

Flow Rate	Nominal 600 gallons/hour (2220 liters/hour) Maximum 900 gallons/hour (3330 liters/hour)
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Ion Exchange Capacity	48,000 grains as CaCo ₃
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Operation Requirements

Chemicals ²	Commercially-available 20° Baume HCL (30% Hydrochloric acid) for cation regeneration, 50% liquid sodium hydroxide, rayon grade, for anion regeneration.
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Acid Per Regeneration	5.0 gallons (18.9 liters).
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Caustic Per Regeneration	4.0 gallons (15.1 liters).
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Water Per Regeneration	Approx. 700 gallons (2646liters)
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Time Per Regeneration	Approx. 3 hours.
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Inlet Water Pressure	30 to 100 psi (2.8 to 7.0kg/cm ²) @ 15 gpm 56.7 lpm).
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Pressure Drop	25psi (1.75 kg/cm ²) @15 gpm (56.7 lmp).
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Inlet Water Temperature	50 to 120°F (10to 49°C).
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Drain ³	Atmospherically vented, acid resistant drain line, 1" or larger NPT.
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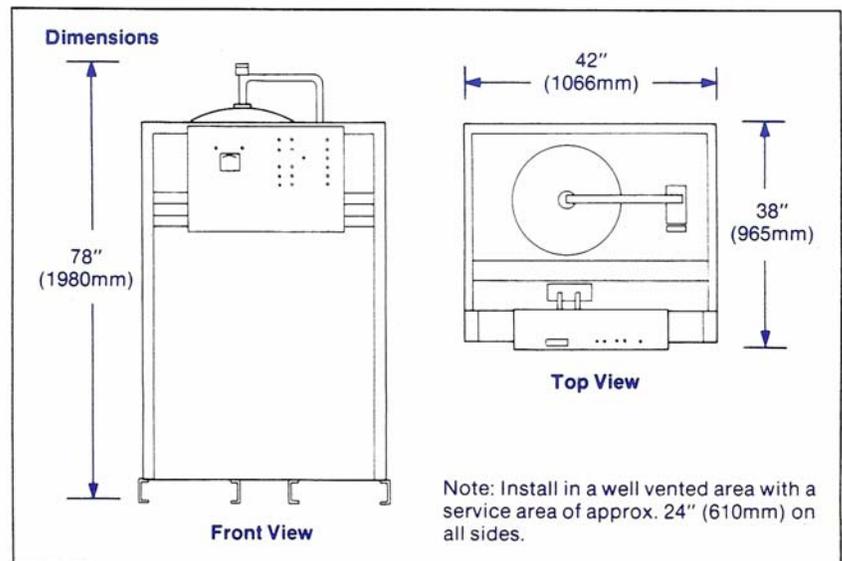
Electrical	115 VAC, 60Hz, single-phase 5amp fuse, 3-prong grounded plug. One internal outlet is provided for automatic control of ancillary equipment, such as a still.
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Shipping Weight	1000 lbs. (454 kg).
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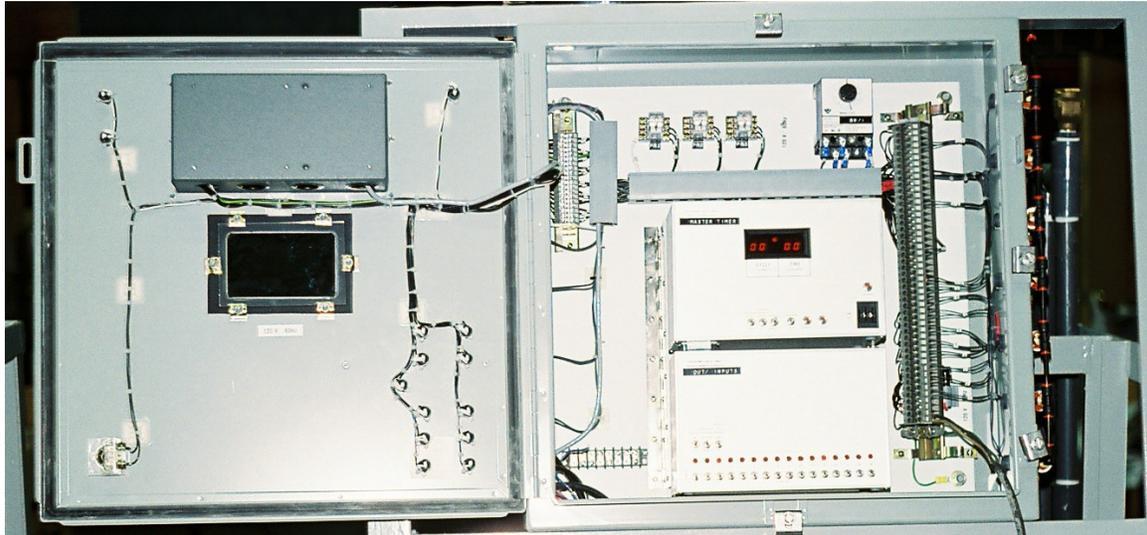
¹ On certain raw water supplies, pretreated feed water may be required to insure desired output purity and proper Advanced DI-10 operation. U.S. Engineered Products provides, at no cost, a complete raw water analysis and recommendation prior to the purchase of an Advanced DI-10 deionizer.

² The customer must comply with OSHA requirements regarding safe handling and storage of regenerant chemicals, if applicable.

³ Should local regulations prohibit the pH level of Advance DI-10 chemical effluent, U.S. Engineered Products can provide a batch waste neutralization system to comply with waste regulations. Contact U.S. Engineered Products for complete details.



PROGRAMMABEL SOLID STATE CONTROLS



Warranty

US Engineered Products

US Engineered Products warrants equipment of its manufacture to be free from defects in material and workmanship for a period of 18 months from original shipment or 12 months from installation, whichever occurs first. There are no other warranties expressed or implied. Unless otherwise specified, service labor required to repair or replace equipment shall be provided by US Engineered Products or its authorized agents or distributors for a period of ninety (90) days from the start of the warranty. Defective parts shall be replaced for the full warranty year; however labor to repair or replace such parts shall be at the purchaser's expense after the first ninety days.

This warranty applies only to equipment operated and maintained in strict accordance with the instruction literature supplied and does not apply to equipment damaged in transit. Although US Engineered Products does not warrant equipment which has been manufactured by others, it will assist the purchaser to assert guarantees or warranties on equipment furnished US Engineered Products by such manufacturers.

CAUTIONS

The feed water is considered part of and the basis for the accompanying proposal. Should the feed water or operating conditions differ significantly from that which the indicated in the above reference, statements in the proposal relative to expected operating conditions and water purity are not valid. US Engineered Products shall under no circumstances be liable for special, indirect, or consequential damages, nor from losses and expenses rendered concerning installation or use of the equipment.

US Engineered Products
Stowe, PA 19464
(610) 327-1965