Grant County
Central Services
P O Box 37
Ephrata WA 98823
(509) 754-2011 Ext-3276

REQUEST FOR BIDS PACKET (Page 1 of 14)
GRANT COUNTY WATER SOFTENER REPLACEMENT
Project Number CSD1704

June 22 2017

Grant County, Washington, by and through the Board of County Commissioners, is seeking to enter into a contractual agreement with the qualifying contractor for the demolition and replacement of a water softening system located at the Grant County Law & Justice Building at the Grant County Courthouse at 37 C street NW, Ephrata WA.

Each bid shall specify each and every item as set forth in this Request for Bid (RFB) Packet. Any and all exceptions must be clearly stated in the bid submittal. Sections within this RFB Packet are categorized as follows:

(1) General RFB Information;
(2) Preparation and Submission;
(3) Vendor Information;
(4) Project Requirements and Scope of Work;
(5) Price and Payment Instructions;
(6) Post opening Submittals; and
(7) Vendor Checklist.
Appendix A – *Grant County Bid Form*
Appendix B – Current Soft water piping diagram
Appendix C – Prevailing wage rates at the time of this posting

Failure to set forth any item in the RFB Packet without taking exception may be grounds for rejection. Grant County reserves the right to reject all bids and to waive any informality.

If your company is interested and qualified, please submit one original and one (1) copy of your bid in a sealed envelope clearly marked with the project title "Grant County Courthouse Water Softener Replacement Project "CSD1704" by 2:30 p.m. (PST) on July 20th, 2017 to:

Tom Gaines, Director of Central Services
PO Box 37 / 35 C Street NW
Ephrata, WA 98823

Late bids and/or bids submitted *via* e-mail or facsimile will not be accepted.

Tom Gaines
Director of Central Services
tgaines@grantcountywa.gov

REQUEST FOR BIDS PACKET (page 2 of 14)
GRANT COUNTY WATER SOFTENER REPLACEMENT
Project Number CSD1704

Bids will be opened at 2:30 p.m. (PST) on July 20th 2017 in the Grant County Commissioners' offices, located on the 2nd floor of the Grant County Courthouse Annex located at 35 C Street NW in Ephrata, Washington.

Grant County is an equal opportunity employer and this invitation extends to all qualifying individuals/companies, including those that are minority and woman-owned.

Should you have any questions about this process and/or instructions, please contact The Director of Central Services directly at 509-754-2011 ext. 3276. Thank you in advance for your courtesies.

Sincerely,

Tom Gaines
Director of Central Services

cc: Board of County Commissioners

Important dates / requirements	Date	Yes	RCW / Notes
RFB Published	June 22 2017		MRSC roster members
Technical Questions Deadline	July 12 2017		by 5 p.m.
Response Deadline	July 13 2017		by 5 p.m.
Submission Deadline / opening	July 20 2017		No Later Than 2:30 p.m. BOCC offices
Notification	July 25th 2017		By 5pm
Bonds Required		XX	Section 5.1b / RCW 39.08.010
Insurance Required		XX	Section 5.1c
Prevailing Wage		XX	Section 5.3b / RCW 39.04.010 / WAC 296-127-010(5)(b)
Retainage Required		XX	Section 3.3/ RCW 60.28.011
Bid Guarantee		XX	Section 1.6b / RCW 36.32.250

Work shall commence as soon as possible after contracts, bonds, and insurance are provided.

REQUEST FOR BIDS PACKET (page 3 of 14)
GRANT COUNTY WATER SOFTENER REPLACEMENT
Project Number CSD1704

1. GENERAL RFB INFORMATION

1.1 RFB Notices and Posting Location

This project is advertised to members of the MRSC roster. The RFB and the opening results will be posted as indicated below AFTER the bid opening. All questions, addendums or information pertinent to the RFB will be emailed directly to those on the roster. It is the responsibility of the MRSC roster members to ensure their email addresses are up to date.

1.2 Objective of this RFB

The purpose of this request is to secure the demolition and replacement of a water softener serving the Grant County Jail in the Law and Justice Building. Water Softener is capable of 300gpm, is a duplex system with a 4" water supply. Interested parties may contact the Central Services Director to schedule a walkthrough or to answer any questions.

1.3 RFB Organization

The RFB is composed of six (6) sections, organized as follows:

Section 1 – GENERAL RFB INFORMATION
RFB Notices, Posting Location
Objective of this RFB
RFB Organization
RFB Official Contact(s)
Questions Regarding the RFB
Bidder Responsibility Criteria (RCW 39.04.350)

Section 2 – PREPARATION AND SUBMISSION
2.1 General Information
2.2 Bid Submittal, Format, Misc.
2.3 Bid Evaluations
2.4 Bid Preparation Instructions
2.5 Selection by County

Section 3 – VENDOR INFORMATION
3.1 Signature and Representations
3.2 Company Information
3.3 Subcontractor(s)
3.4 Warranties

Section 4 – PROJECT REQUIREMENTS AND SCOPE OF WORK
4.1 General Overview
4.2 Advanced Coordination/Timeliness
4.3 Drug, Alcohol, and Weapons-Free Worksite
4.4 Completion of Work

Section 5 – PRICE AND PAYMENT INSTRUCTIONS

1.4 RFB Official Contact(s)

Upon release of this RFB, all vendor communications must be directed to the RFB Official Contacts listed below. Unauthorized contact regarding this RFB with other County employees may result in disqualification. Any oral communications are discouraged and will be considered unofficial and non-binding on the County. Vendors may only rely upon written statements issued by the appropriate RFB Official Contact:

Tom Gaines
Director of Central Services
509-754-2011 ex. 3276
tgaines@grantcountywa.gov

1.5 Questions Regarding the RFB

Vendors who request a clarification of the RFB requirements may submit written questions to the appropriate RFB Official Contact by mail, or e-mail. The deadline for receipt of technical questions is July 12th, 2017 at 5:00 p.m. (PST). Questions received and answers to those questions will be emailed directly to all members initially emailed with this RFB by July 13th, 2017 by 5:00 p.m.

1.6 **Bidder Responsibility Criteria (RCW 39.04.350)**

A responsive bidder must meet the bidder responsibility criteria as set out in RCW 39.04.350, *Bidder responsibility criteria – Supplemental criteria*:

1.6a Bidder Eligibility, Small Public Works Projects

Any company or individual that intends to bid, quote, or submit a bid on a Grant County small works project advertised through MRSC Rosters must be an active member in good standing of MRSC Rosters for Grant County prior to the deadline for submittals.

Should a company or individual not be an active member of MRSC Rosters in good standing and submit to the County a bid, quote, or proposal for the listed small works project, said bid, quote, or proposal must and will be rejected.

1.6 b Before award of a public works contract, a bidder must meet the following responsibility criteria to be considered a responsible bidder and qualified to be awarded a public works project. The bidder must:

1.6c A bid bond at five (5%) of the proposed bid price as required by RCW 36.32.235 shall accompany the bid.

1. At the time of bid submittal, have a certificate of registration in compliance with chapter 18.27 RCW;
2. Have a current state unified business identifier number;
3. If applicable, have industrial insurance coverage for the bidder's employees working in Washington as required in Title 51 RCW; an employment security department number as required in Title 50 RCW; and a state excise tax registration number as required in Title 82 RCW;
4. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3);

2. BID PREPARATION AND SUBMISSION

2.1 General Information

2.1a All respondents should read the entire RFB Packet carefully. Failure to comply with instructions may result in a bid being disqualified from consideration by the County.

2.2 Bid Submittal, Format, Misc.

2.2a All bid submittals, consisting of one original and one (1) copy, must be received by the County *via* mail, recognized carrier, or hand delivery **no later than 2:30 p.m. (PST) on July 20th, 2017**, as displayed on Grant County's official time/date stamp located in the Office of the Board of County Commissioners. Late bid submittals and/or bid submittals submitted *via* e-mail or facsimile will not be considered.

2.2b All bids must be received by the County in a sealed envelope clearly marked with the project title "Grant County Water Softener Replacement Project "CSD1704" and be directed to:

Tom Gaines, Central Services Director
Grant County Commissioners' Office
PO Box 37 / 35 C Street NW
Ephrata, WA 98823

2.2c Costs of preparation and presentation of the bid will be borne by the vendor.

2.2d Bids must be typed/computer generated or written in such a manner as to be clearly legible; any bid that contains illegible information and/or dollar amounts subject to interpretation will render the entire bid to be designated "Non-responsive" as it will not allow the County to confidently compare bid prices.

2.2e A cover letter is required, as set forth in Section 3.1 below.

2.2f Bids should contain straightforward and concise descriptions of the vendor's capabilities to satisfy the requirements of this RFB Packet. Emphasis should be concentrated on accuracy, completeness, and clarity of content.

2.2g Grant County requires a signed, completed Grant County bid form with each qualifying bid submittal packet. The Grant County *Bid* form is located in Appendix A.

2.2h Bids must include itemized breakdowns of all costs and include all fees as directed.

2.2i Bids must show numerical dollar amounts with decimal and commas (as appropriate). Any required pricing breakdown that indicates "No Bid" or similar wording or is left blank will render the entire bid to be designated "Non-responsive" as it will not allow the County to confidently compare bid prices.

2.2j Mathematical calculations/totals on all bids will be checked by Grant County, and the County has the authority to correct any mathematical errors it identifies. For this reason, bids that appear to be higher or lower than others immediately upon bid opening may not be accurate. Grant County will not post the bid results until after the mathematical verification and totals check has been completed on each bid. Should any mathematical errors in submittals be identified, the County will notify the affected responders and the bid posting will reflect any necessary changes to the bid total(s).

2.2k In the event of a low bid tie between qualifying vendors after verification of mathematical calculations/totals, a random method – such as a coin toss – to determine the low bid will be utilized.

2.2l A request for awarding a contract/agreement to be signed by the qualifying low bidder will be made by the Grant County Central Services Director to the Board of County Commissioners as set forth in Section 2.3a below.

2.2m This request does not constitute an offer of employment or to contract for services.

2.2n The County reserves the option to reject any or all bids, wholly or in part, received by reason of this request.

2.2o The County reserves the option to retain all bids, whether selected or rejected. Once submitted, the bids and any supplemental documents become the property of the County.

2.2p All bids shall remain firm for ninety (90) days following the closing date for receipt of bids.

2.3 Bid Evaluations

2.3a The County will evaluate bids and determine responsiveness as follows:
Grant County Central Services will perform an initial screening of each bid to determine responsiveness. A bid deemed responsive is one that materially conforms to the

instructions/requirements of this RFB Packet, including the bidder meeting the requirements of a responsible bidder pursuant to RCW 39.04.3560

The County reserves the right to reject or accept any bid with immaterial irregularities.

Once Grant County Facilities & Maintenance has determined that a bid is responsive and mathematical calculations on the bid have been checked and/or corrected pursuant to paragraph 2.2j above, it will be compared to other responsive bid(s).

2.3b The responsible individual/company (pursuant to RCW 39.04.350) with the lowest responsive bid as set forth in this section will be named as the apparent successful bidder and recommended to the Board of County Commissioners for award of the contract.

2.4 Bid Preparation Instructions
Bids must conform to all the requirements of this RFB Packet.

3. VENDOR INFORMATION

Submittals shall contain the following information and conform to the following requirements:

3.1 Signature and Representations

All bids must include a cover letter signed by an official of the company authorized to bind the company to the bid and pricing.

3.1a The signed cover letter must contain the following statements, without alteration:

The bids pricing shall be valid and binding for Ninety (90) days following the RFB response due date and will become part of any contract with the County unless revisions, additions and/or deletions are expressly negotiated.

It is acknowledged that this bid is subject to public disclosure under the Public Records Act and may be released in total as public information in accordance with Washington law. Any and all information believed to be proprietary and exempt from public disclosure has been plainly and clearly marked or otherwise identified.

3.2 Company Information

Provide the company name, address, telephone number, federal employer tax number and Washington state UBI number. Provide the name, title, address and telephone number of the contact person authorized to represent the company and to whom correspondence should be directed.

3.3 Subcontractors

Indicate and specify whether or not subcontractor(s) will be used for any reason.

Contractor assumes liability that, in accordance with Washington law, all subcontractors are required to file intents and affidavits for prevailing wage work just as the prime contractor shall do. Furthermore it is understood that five percent (5%) retainage is withheld until a Notice of Completion is accepted by the following agencies with notification given to Grant County: the Washington State Department of Labor & Industries, Employment Securities, and the Department of Revenue. Only after Grant County is notified of this acceptance by all three agencies will the retainage be released.

3.4 Warranties
Provide all warranty and exclusion of warranty language for the product(s).

4. PROJECT REQUIREMENTS AND SCOPE OF WORK

4.1 Grant County has a need to replace a nonfunctioning water softening system serving the Grant County Jail. Contractor will be responsible for demolition and removal of all parts of the system and responsible for all design, equipment, piping, installation, testing and cleaning of the new system. System shall conform to any current UPC guidelines.

The contractor shall provide all material, labor, equipment, supervision, and whatsoever else is necessary to accomplish the following:

Demolish and dispose all existing tanks, piping, and appurtenances including electrical and controls currently installed in the mechanical room.

Provide new water softener system capable of delivering a minimum of 140 gpm of continuous service flow with a peak service flow of 190 gpm or better.
An exchange capacity max gr. 450,000 / min gr. 300,000
Bid should include all controls for either single or duplex systems
All electrical components, controls, and/or timers
Provide ball valves for bypass and isolation & for maintenance requirements (no gate valves)
Provide design and engineering services if required
Provide training to Grant County Maintenance staff.
County does not have a specified softener but would prefer leading industry brands, easily identifiable, with the ability to easily receive parts and or service. Nothing obscure (please).
Current piping configuration is in appendix B, (current piping is galvanized steel pipe)
OEM for original equipment is attached as a part of this RFB for clarity to perspective bidders.

4.2 Advanced Coordination/Timeliness - This project is safety and facility access sensitive and will require advanced coordination with the Central Services Director to complete the project in a timely manner while ensuring the safety of operations and continuation of access to the facility by the public.

4.3 Drug, Alcohol, and Weapons-Free Worksite – Due to the safety and security requirements of the Courthouse facility, each contractor/subcontractor must take reasonable action to ensure that its owners/employees maintain a presence at the worksite that is free from substance abuse and the carrying of weapons.

4.4 Completion of Work – Prior to the County's acceptance of the work, the prime contractor must complete and/or ensure that all subcontractor work is completed to finish quality and that all surplus and/or rejected materials and unsightly objects such as stones, stumps, limbs, roots, concrete, etc. have been removed from the site, properly disposed of, and that all cleanup has been accomplished and the site is of a neat appearance.

5. PRICE AND PAYMENT INSTRUCTIONS

5.1 Fees and Insurance

5.1a Propose all fixed fees and/or hourly rates of pay, as appropriate, for implementation of services as described within the RFB.

5.1b On the forms included in the Contract Provisions, the Contractor shall furnish both performance and payment bonds as required by RCW. Each bond shall have a penal sum in the full amount of the Contract price, including sales tax. The labor and material payment bond shall remain in force until the Contract Completion Date, and for such period of time thereafter during which the law allows claims to be filed and finally resolved by litigation. In addition to securing the faithful performance of all Contractors obligations under the Contract, the performance bond shall remain in force for a period of at least two years after the Substantial Completion Date, with respect to defective workmanship, equipment, and materials, and shall otherwise secure all other obligations of the Contractor throughout all periods of limitation and repose. The Contractor shall be required to provide extended warranties for specific materials or equipment as indicated further in the Contract Provisions. The required performance bond and labor and material payment bond shall each be issued by a corporate surety company acceptable to the Owner and authorized to do business in the state in which the work is located.

5.1c Within five (5) business days after final signatures are obtained on the contract, the individual/agency shall provide the County with a certificate of liability insurance naming Grant County and its employees and officers as additionally named insured. Said insurance shall be maintained in full force and effect for the duration of the contract and must be in an amount and format satisfactory to the County. Proof of insurance should be included with bond documents required in contract

5.2 Indemnification

The individual/agency shall defend, indemnify and hold harmless the County, its officers and employees from all claims, demands, damages, costs, expenses, judgments, attorney fees, liabilities or other losses that may be asserted by any person or entity, and that arise out of or are made in connection with the acts or omissions relating to the performance of any duty, obligation, or work hereunder. The obligation to indemnify shall be effective and shall extend to all such claims and losses, in their entirety, even when such claims or losses arise from the comparative negligence of the County, its officers and employees. However, this indemnity will not extend to any claims or losses arising out of the sole negligence or willful misconduct of the County, its officers and employees.

The preceding paragraph applies to any theory of recovery relating to said act or omission, by the individual/agency, or its agents, employees, or other independent contractors directly responsible to individual/agency including, but not limited to the following:

5.2a Violation of statute, ordinance, or regulation;

5.2b Willful, intentional or other wrongful acts, or failures to act;

5.2c Negligence or recklessness;

5.2d Furnishing of defective or dangerous products;

5.2e Premises liability;

5.2f Strict Liability;

5.2g Violation of civil rights; and/or

5.2h Violation of any federal or state statute, regulation, or ruling resulting in a determination by the Internal Revenue Service, Washington State Board of Tax Appeals or any other Washington public entity responsible for collecting payroll taxes, when the agency/firm is not an independent contractor.

It is the intent of the parties to provide the County the fullest indemnification, defense, and "hold harmless" rights allowed under the law. If any word(s) contained within the contract are deemed by a court to be in contravention of applicable law, said word(s) shall be severed from the contract and the remaining language shall be given full force and effect.

5.3 Price Proposal

5.3a Payment will be made for all items complete and accepted on the unit or lump sum prices as stated in the bid and measured and previously stated. The sum of each payment shall be full compensation for all materials, labor, and other costs to the Contractor.

5.3b Contractor is aware that this project is a "public work" as defined by RCW 39.04 and WAC 296-127 and is subject to the prevailing wage laws of the State of Washington. The selected Contractor will be required to produce Certified Payroll Records to Grant County upon request. A five percent (5%) retainage will be withheld as referenced in Section 3.3.

5.3c The bid shall include the cost of all material, labor, cleaning and sterilization, engineering, permitting, performance and payment bonds, clean up, hauling, disposal of all material removed, mobilization, and all other fees and costs. If any of these items are not included, the bid will be considered non responsive.

5.3d The contractor shall provide a warranty and the bid shall describe in detail the duration, terms and conditions of the proposed warranty. The bid shall include the contractor's complete terms and payment schedule. Grant County will inspect all work.

6. POST BID SUBMITTALS

6.1 Claims of Error

6.1a Any claim of error by a respondent that occurs within twenty-four (24) hours of RFB opening must be:

1. Submitted in writing;
2. Marked "URGENT";
3. Addressed to the County's Project Manager, Tom Gaines;
4. Delivered to and in the care of the Office of the Board of County Commissioners, located on the 2nd floor of the Grant County Courthouse at 35 C Street NW in Ephrata, Washington;
5. Identify the project and date of bid opening; and
6. Request authorization for withdrawal of the bid.

6.1b Grant County will automatically approve, in writing, any such timely and properly reported error and request for withdrawal it receives. The withdrawn bid will be identified as such in the County's records and the submitted packet will remain a public record within the County's records pursuant to Washington State's Public Disclosure Act.

6.1c Grant County reserves the right to give consideration to any claim of bid error not meeting the criteria set forth in Section 6.1 paragraph 6.1a if doing so is believed by the County to be in the best interest of the County and the public it serves.

6.2 Bid Protests

6.2a The deadline for appealing a determination that a bid is not responsible as set forth in Section 1.6 above must occur within twenty-four (24) hours of the bid opening and be:

1. Submitted in writing;
2. Marked "URGENT";
3. Addressed to the County's Project Manager, Tom Gaines;
4. Delivered to and in the care of the Office of the Board of County Commissioners, located on the 2nd floor of the Grant County Courthouse at 35 C Street NW in Ephrata, Washington;
5. Identify the project bid and date of bid opening; and
6. Identify the purported non-qualifying bidder and the applicable sections of RCW .04.350 which render that bidder non-qualifying.

6.2b Grant County will have three (3) working days to make a determination as to the apparent qualifying proposers meeting or not meeting the requirements of RCW 39.04.350 and the reason(s) for the determination.

6.3 Determination of Non-Responsible Bidder

6.3a Should Grant County determine that a proposer does not meet the requirements of a responsible bidder pursuant to RCW 39.04.3560, it will provide, in writing, the reason(s) for the determination. The proposer may appeal the determination within three (3) working days by presenting additional information to Grant County. The County will consider the additional information before issuing its final determination. If the final determination affirms that the contractor is not responsible, then Grant County may not and will not execute a contract with any other bidder until two (2) business days after the contractor determined to be not responsible has received the final determination.

7. VENDOR CHECKLIST

A complete bid will include:

____ A signed cover letter containing required information;
____ The provision of all vendor/company information requested;
____ One original and one copy in a sealed envelope, properly labeled; and
____ Completed/signed Grant County *Bid* form.

APPENDIX A

(Page A-1)

Project Name: **Grant County Courthouse Water Softener Replacement** Project No.: **CSD1704**

Name of Firm: _____

GRANT COUNTY
DEPARTMENT of CENTRAL SERVICES
35 C STREET NW
EPHRATA WA, 98823
509-754-2011 EXT. 3267

B I D P R O P O S A L

In compliance with the contract documents, the following bid is submitted:

1) BASE BID for furnishing all labor, materials, equipment, and all else whatsoever necessary to demolish and remove the existing water softener system and install a new water softener as specified in this RFB (Project # CSD1704).

$_____
(Do not include Washington State Sales Tax)

Water Softener replacement complete $_____

Washington State Sales Tax @8% $_____

TOTAL **$_____**

****COMPLETE ALL FIELDS AND SIGN****

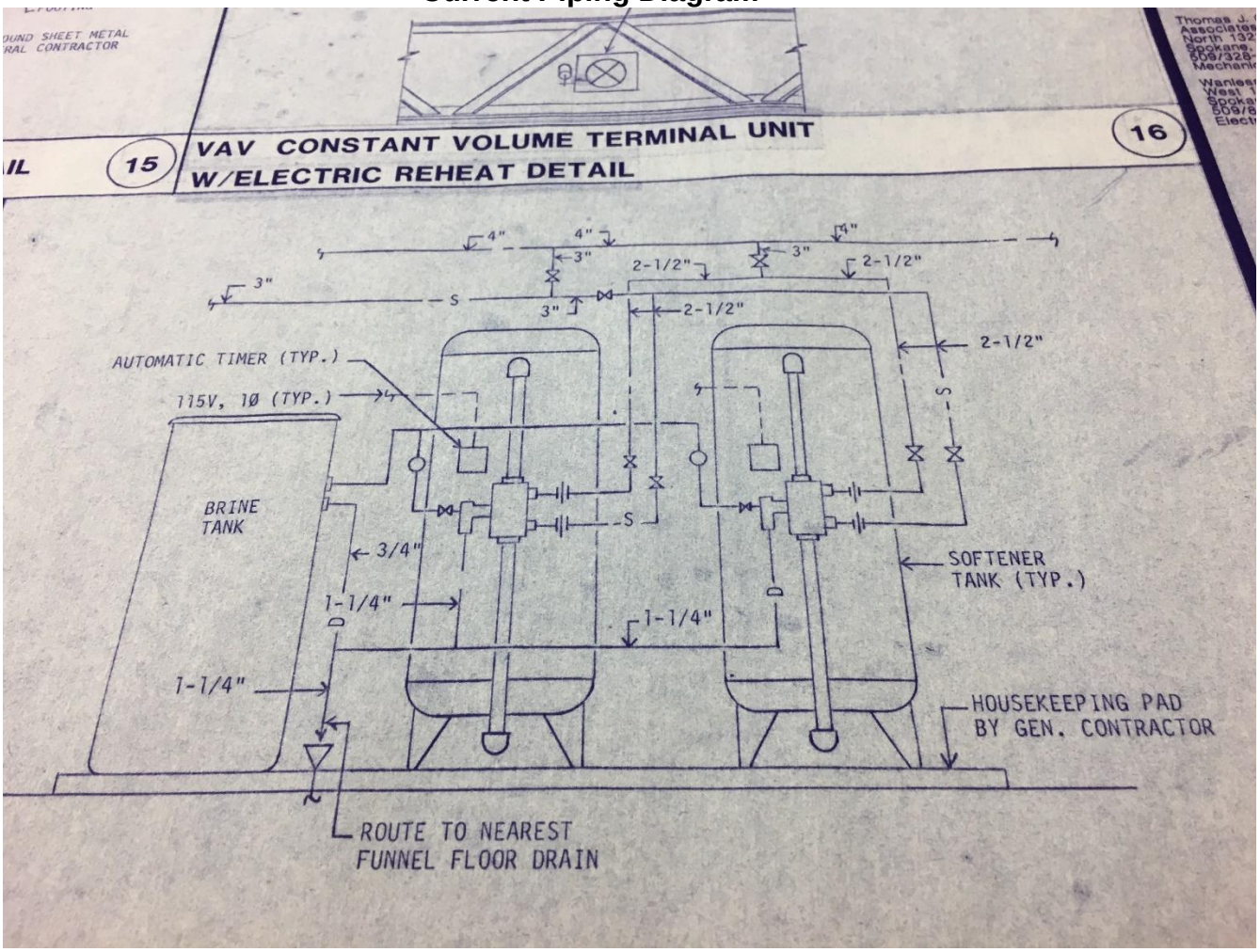
SIGNATURE OF AUTHORIZED REPRESENTATIVE: _____

Grant County reserves the right to accept or reject any or all bid prices within sixty (60) days of the bid date.

APPENDIX B

(Page B-1)

Current Piping Diagram



APPENDIX C

Effective Date: 6/22/2017 Get Wages Download Wages Apprentice Wages

Benefit Code Key for 6/22/2017

County	Trade	Job Classification	Wage	Holiday	Overtime	Note
Grant	Plumbers & Pipefitters	Journey Level	$78.33	6Z	1Q	
County	**Trade**	**Job Classification**	**Wage**	**Holiday**	**Overtime**	**Note**
Grant	Electricians - Inside	Journey Level	$58.69	7H	1E	

The following information is the original OEM for equipment currently installed. This is attached to provide clarity for understanding what is being demolished and replaced.

→ 450-HBR-3 DUPLEX

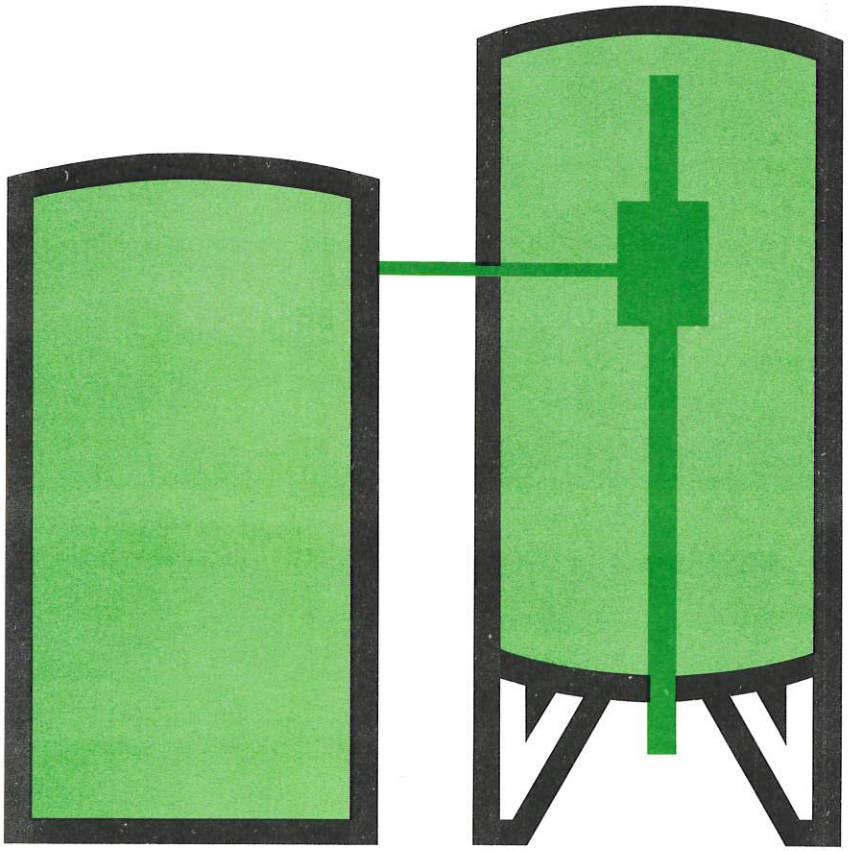
Bulletin 2-1056

HBR series

63

bruner®

water softeners

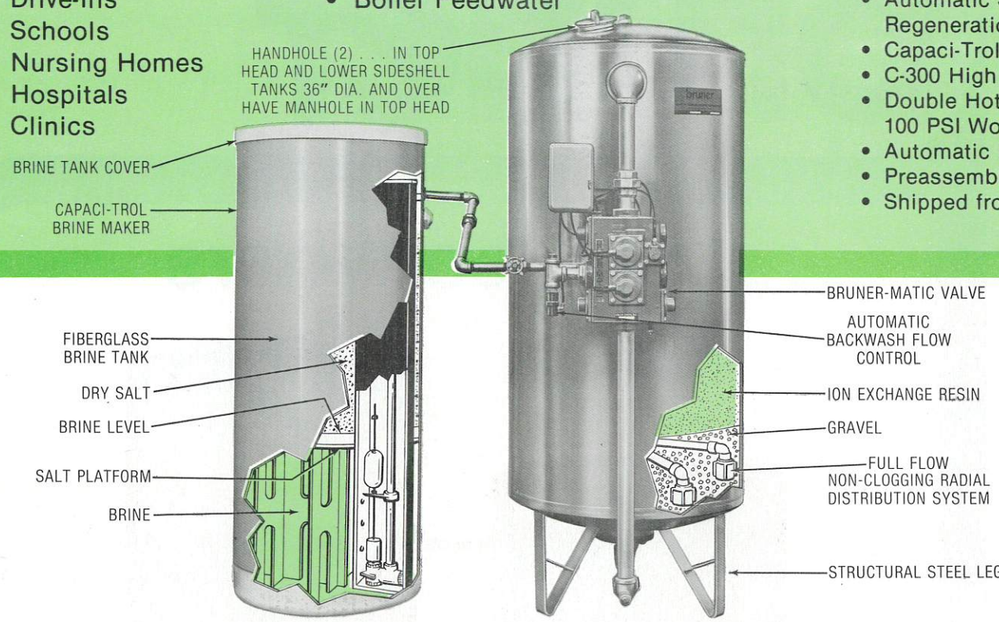


packaged commercial types

bruner® HBR Series Meets the Demand With Exclusive Features

IDEALLY SUITED FOR

- Car Washes
- Laundries
- Beauty/Barber Shops
- Restaurants
- Drive-Ins
- Schools
- Nursing Homes
- Hospitals
- Clinics
- Apartments
- Hotels/Motels
- Country/Health Clubs
- Manufacturing Plants
- Boiler Feedwater



RESIN TANK—ELECTRIC WELDED, HEAVY GAUGE, LOW-CARBON STEEL. DOUBLE HOT-DIPPED GALVANIZED, 100 P.S.I. WORKING PRESSURE—150 P.S.I. TEST PRESSURE

STANDARD FEATURES

- Heavy Gauge Fiberglass Brine Tank
- Bruner-Matic Control Center
- Automatic Self-regulating Brine Injector Insures Precise Regeneration
- Capaci-Trol Automatic Brine Maker
- C-300 High Capacity Resin
- Double Hot-dipped Galvanized Softener Tank Rated@ 100 PSI Working Pressure
- Automatic Backwash and Flush Control
- Preassembled and Ready for Installation
- Shipped from Stock

CONTINUOUS PRODUCT IMPROVEMENT PROGRAM

Bruner units are the result of over 35 years experience in designing and producing water softeners that meet the exacting demands of commercial and industrial users of soft water.

Patented engineering innovations provide greater efficiency such as more capacity, higher flow rates, lower operating costs.

Bruner water softeners incorporate an exclusive distribution system utilizing non-clogging plastic strainers arranged in a radial network of P.V.C. piping. This design allows higher flow rates with lower pressure loss and improved regeneration efficiency.

A fiberglass brine tank of rigid, sturdy one piece construction eliminates corrosion and reduces shipping cost.

Reduced overall height of units allows for installation in a limited space.

APPLICATION

Pressure range—30 to 100 psi for best performance. Temperature—standard equipment suitable for water up to 120°F.

AUTOMATIC UNIT

Electrical requirements—115 volt, 60 cycle AC is standard. 220 volt, 50 cycle AC available.

Power—6 watts each cycle controller.

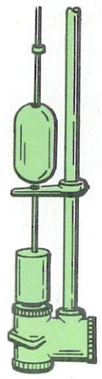
CAPACI-TROL AUTOMATIC BRINE MAKER

STANDARD ON AUTOMATIC HBR MODELS

The patented Capaci-Trol Brine Maker combines salt storage and brine making in a single compact unit. It consists of a heavy gauge fiberglass tank that is divided into two sections by a perforated platform. The area above the platform is used for salt storage while brine is produced in the space below the platform. Also, in the lower portion of the tank, an automatic brine valve is housed in a "brine well" that is sealed at the bottom. This brine valve controls brine withdrawal and regulates fresh water refill. Capaci-Trol Brine Makers, complete with brine valve, may also be purchased as a "package" for use as a replacement on existing water softeners.
U.S. Patent No. 3,190,726.

AUTOMATIC BRINE VALVE

Developed by Bruner as a positive shut-off valve, the body is constructed of galvanized cast iron. Critical parts are made of tough Delrin plastic to prevent corrosion or scaling and provide dependability.



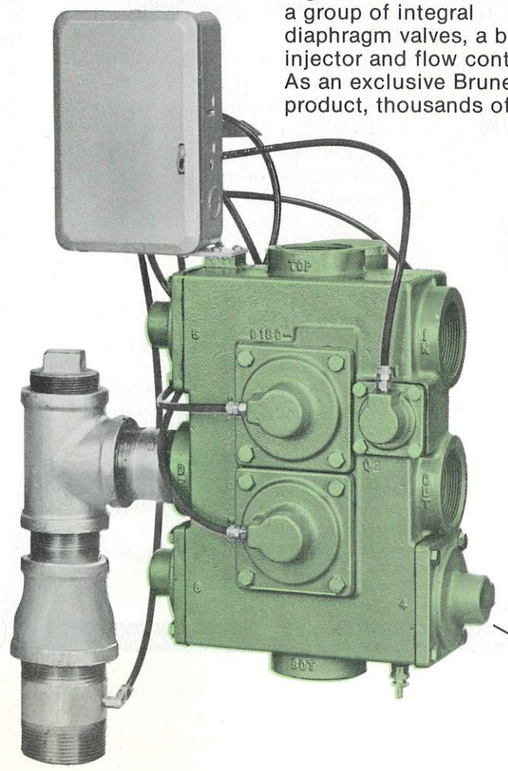
The brine maker has three adjustments, permitting the operator to select the salt dosage for most efficient and satisfactory operation for his particular water condition.

FLOW CONTROLLER

Bruner softeners feature a patented Flow Controller without moving parts to malfunction. This controller automatically maintains proper backwash and cleansing flows over wide variations in operating pressures. Proper sizing is done at the factory, eliminating the possibility that ion exchange resin will be washed from the unit during regeneration. Operation is completely automatic — no adjustments to make — no field setting required.

BRUNER-MATIC CONTROL CENTER

The Bruner-Matic Control Center's function is regeneration. It consists of a group of integral diaphragm valves, a brine injector and flow controls. As an exclusive Bruner product, thousands of installations attest to its quiet, smooth performance, dependability, and serviceability.



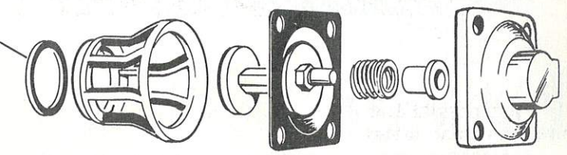
BRINE INJECTOR

The automatic self-regulating brine injector is attached to the rear of the valve. Engineered for efficient performance and accessibility of nozzle and throat. Correct brining and rinsing rates are assured regardless of pressure variations in the range of 30 to 100 psi.

CAGE DIAPHRAGM VALVES

The cage diaphragm valves are the heart of the Bruner-Matic Control Center.
These integral valves operate hydraulically inside the multiport valve housing. Cycling of the valves is smooth and free of water hammer. The diaphragm-stop assembly is fully guided on its perimeter. This affords completely reliable shut off without the sticking problem common to unguided or to shaft-guided valves. The guides, seats, and diaphragm support are a one piece molding of tough Noryl*. There is no contact between dissimilar metals within the valve, giving the ultimate in corrosion resistance.

No special tools are required for access to the interior of the valves and all parts are easily accessible for inspection.



*Registered Trademark of General Electric Company.

bruner®

BRUNER-MATIC CONTROL CENTER

AUTOMATIC TIMER REGENERATION

Standard operation of the Automatic Control Center incorporates a simple time switch for the automatic control of regeneration frequency. Bruner provides, in the same control, the option for "Push-Button" or manual operation.

The patented* Bruner Pilot Valve is programmed for the proven regeneration sequence of backwash, brine, slow rinse, downflow flush, and return to service. This sequence produces maximum capacity and low leakage for the average application. Other programs are available.

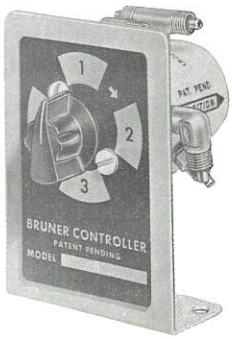
A Position Dial is provided to indicate the various steps of regeneration. This position dial may be rotated manually for system check-out, maintenance, or service purposes.

"Push-Button" operation is normally used in conjunction with a standard totalizing water meter or an electric alarm meter to determine need for regeneration based on gallons of soft water used. After the controller is started by "Push-Button", it will complete the regeneration sequence and automatically return to service. This procedure is also used to occasionally check-out the system electrically.

The standard time switch in the controller can be set for full automatic regeneration on a schedule of one up to seven times per week depending upon demand.

Automatic, meter initiated operation based on gallons thru-put is available using an optional cycle controller and an automatic reset water meter.

MANUAL REGENERATION



The control center for "Manual Only" regeneration is basically identical to the automatic control center with the exception of the pilot valve. All functions of regeneration are accomplished by the turn of the pilot control knob. All positions are marked and the operator must time each cycle according to instructions. A standard totalizing meter or electric alarm meter may be used to determine the need for regeneration.

WATER METER REGENERATION

Electric Alarm Type—
Electric alarm meters are advantageous where there is a variable soft water demand. The meter signals the need for regeneration by a light or a bell based on gallon thru-put. An operator then manually starts the regeneration cycle.

Automatic Reset Type (For Automatic Models Only)—
When automatic reset meters are used on multiple (twin or triple) installations, electrical lock-out devices are provided to prevent simultaneous regeneration. This method is completely automatic once the predetermined gallonage thru-put has been set.

*U.S. Patent No. 3,134,403

bruner®
CORPORATION: 5625 West Clinton Ave., Milwaukee, Wis. 53223 • 15707 East Valley Boulevard City of Industry, Calif. 91744

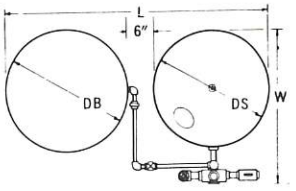
BRUNER CATALOG SOFTENERS

Bruner cataloged softeners are complete package units — factory assembled, prepiped, and shipped with manifold attached to resin tank. Handling and installation are simple and inexpensive.

HBR & HMR SPECIFICATIONS

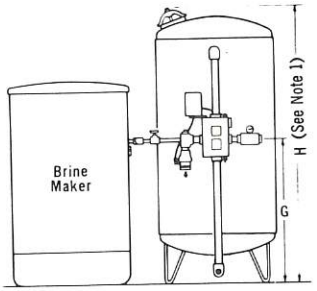
Catalog Number		Exchange Capacity		Resin	Manifold Pipe Size	Continuous Service Flow ②	Peak Service Flow ③	Backwash Flow	Tank Dimensions		Salt Capacity Brine Maker	Salt per Regeneration		Water Meter Size Recom ④
		Max.	Min.						Softener	Brine	Lbs.	Max.	Min.	
Automatic	Manual ①	Gr.	Gr.	Cu.Ft.	In.	GPM	GPM	GPM	In.	In.	HBR / HMR	Lbs.	Lbs.	In.
150 HBR-1 150 HBR-1¼ 150 HBR-1½ 150 HBR-2	150 HMR-1 150 HMR-1¼ 150 HMR-1½ 150 HMR-2	150,000	100,000	5	1 1¼ 1½ 2	33 37 58 70	43 51 82 98	10 10 10 10	20 x 54	24 x 60	700 / 630	75	30	1 1 1½ 1½
210 HBR-1¼ 210 HBR-1½ 210 HBR-2 210 HBR-2½	210 HMR-1¼ 210 HMR-1½ 210 HMR-2 210 HMR-2½	210,000	140,000	7	1¼ 1½ 2 2½	41 64 77 115	56 86 105 160	13.5 13.5 13.5 13.5	24 x 54	24 x 60	700 / 520	105	42	1½ 1½ 1½ 2
300 HBR-1½ 300 HBR-2 300 HBR-2½ 300 HBR-3	300 HMR-1½ 300 HMR-2 300 HMR-2½ 300 HMR-3	300,000	200,000	10	1½ 2 2½ 3	63 81 140 163	91 113 190 230	20 20 20 20	30 x 54	24 x 60	600 / 350	150	60	1½ 1½ 2T 2T
450 HBR-1½ 450 HBR-2 450 HBR-2½ 450 HBR-3	450 HMR-1½ 450 HMR-2 450 HMR-2½ 450 HMR-3	450,000	300,000	15	1½ 2 2½ 3	67 79 122 140	89 110 170 190	20 20 20 20	30 x 60	30 x 60	900 / 610	225	90	1½ 1½ 2T 2T
600 HBR-1½ 600 HBR-2 600 HBR-2½ 600 HBR-3	600 HMR-1½ 600 HMR-2 600 HMR-2½ 600 HMR-3	600,000	400,000	20	1½ 2 2½ 3	71 85 140 175	93 120 190 250	30 30 30 30	36 x 60	38 x 60	1500 / 1170	300	120	1½ 2T 2T 2T
750 HBR-2 750 HBR-2½ 750 HBR-3	750 HMR-2 750 HMR-2½ 750 HMR-3	750,000	500,000	25	2 2½ 3	81 140 160	110 190 230	30 30 30	36 x 72	38 x 60	1500 / 900	375	150	1½ 2T 2T
900 HBR-2 900 HBR-2½ 900 HBR-3	900 HMR-2 900 HMR-2½ 900 HMR-3	900,000	600,000	30	2 2½ 3	90 150 185	130 215 270	45 45 45	42 x 60	42 x 60	1800 / 1180	450	180	2T 2T 2T

① Manual units are manually timed and indexed through regeneration. They have a manual tank instead of the Capacitrol system. Other specifications remain the same as automatic units.
② At a pressure loss not exceeding 15 psi.
③ At a pressure loss not exceeding 25 psi.
④ T denotes Turbo type meter.

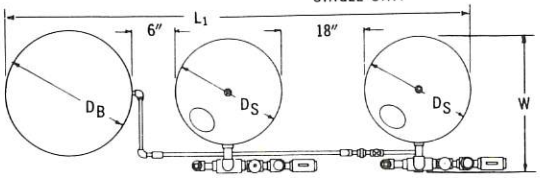


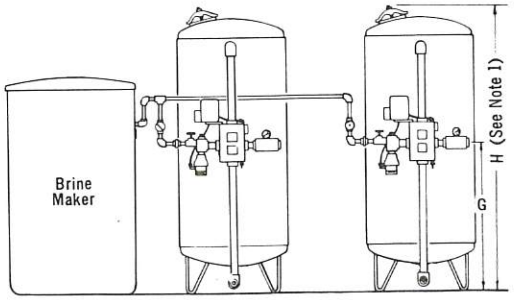
DIMENSION TABLE

Catalog Prefix	D_S	D_B	G	H	W	L	L_1
	In.	In.	In.	In.	In.	In.	In.
150	20	24	43	74	30	50	88
210	24	24	43	76	34	54	96
300	30	24	43	79	41	60	108
450	30	30	43	85	41	66	114
600	36	38	43	91	45	80	134
750	36	38	43	103	45	80	134
900	42	42	43	94	53	90	150



SINGLE UNIT





TWIN UNIT

NOTES

1. Allow a minimum of 24 inches above softener for access into tank.
2. When less than 6 hours is expected between regenerations of a twin softener, two Capacitrol Brine Makers are required.

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CORPORATION

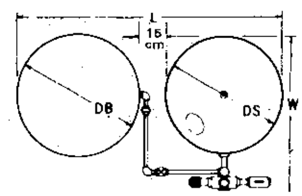
BRUNER CATALOG SOFTENERS

Bruner cataloged softeners are complete package units – factory assembled, prepiped, and shipped with manifold attached to resin tank. Handling and installation are simple and inexpensive.

HBR & HMR SPECIFICATIONS

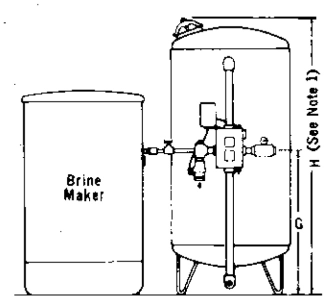
Catalog Number		Exchange Capacity		Resin	Manifold Pipe Size	[redacted]	[redacted]	Back-wash Flow	Tank Dimensions		Salt Capacity Brine Maker	Salt per Regeneration		Water Meter Size Recom ④
		Max.	Min.						Softener	Brine	Kg.	Max.	Min.	
Automatic	Manual ①	Gm.	Gm.	Liters	In.	[redacted]	[redacted]	M^3/hr	Cm.	Cm.	HBR / HMR	Kg.	Kg.	In.
150 HBR-1 150 HBR-1¼ 150 HBR-1½ 150 HBR-2	150 HMR-1 150 HMR-1¼ 150 HMR-1½ 150 HMR-2	9720	6480	142	1 1¼ 1½ 2	[redacted]	[redacted]	2.3	51x137	61x152	317 / 285	34	13	1 1 1½ 1½
210 HBR-1¼ 210 HBR-1½ 210 HBR-2 210 HBR-2½	210 HMR-1¼ 210 HMR-1½ 210 HMR-2 210 HMR-2½	13608	9072	198	1¼ 1½ 2 2½	[redacted]	[redacted]	3.1	61x137	61x152	317 / 235	47	19	1½ 1½ 1½ 2
300 HBR-1½ 300 HBR-2 300 HBR-2½ 300 HBR-3	300 HMR-1½ 300 HMR-2 300 HMR-2½ 300 HMR-3	19440	12960	283	1½ 2 2½ 3	[redacted]	[redacted]	4.5	76x137	61x152	272 / 158	68	27	1½ 1½ 2T 2T
450 HBR-1½ 450 HBR-2 450 HBR-2½ 450 HBR-3	450 HMR-1½ 450 HMR-2 450 HMR-2½ 450 HMR-3	29160	19440	425	1½ 2 2½ 3	[redacted]	[redacted]	4.5	76x152	76x152	408 / 276	102	40	1½ 1½ 2T 2T
600 HBR-1½ 600 HBR-2 600 HBR-2½ 600 HBR-3	600 HMR-1½ 600 HMR-2 600 HMR-2½ 600 HMR-3	38880	25920	566	1½ 2 2½ 3	[redacted]	[redacted]	6.8	91x152	97x152	680 / 530	136	54	1½ 2T 2T 2T
750 HBR-2 750 HBR-2½ 750 HBR-3	750 HMR-2 750 HMR-2½ 750 HMR-3	48600	32400	708	2 2½ 3	[redacted]	[redacted]	6.8	91x183	97x152	680 / 408	170	68	1½ 2T 2T
900 HBR-2 900 HBR-2½ 900 HBR-3	900 HMR-2 900 HMR-2½ 900 HMR-3	58320	38880	850	2 2½ 3	[redacted]	[redacted]	10.2	107x152	107x152	816 / 535	204	81	2T 2T 2T

① Manual units are manually timed and indexed through regeneration. They have a manual wet-salt brine tank instead of the Capacitrol system. Other specifications remain the same as automatic units.
② At a pressure loss not exceeding 1.0 Bar
③ At a pressure loss not exceeding 1.7 Bar
} 1 Bar = 1.02 Kg/sq cm
④ T denotes Turbo type meter.

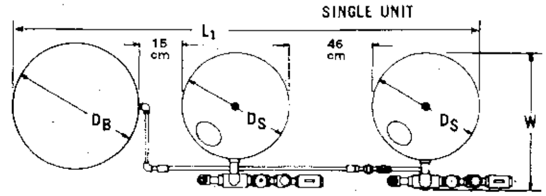


DIMENSION TABLE

Catalog Prefix	D_S	D_B	G	[redacted]	[redacted]	[redacted]	L_1
	Cm.	Cm.	Cm.				Cm.
150	61	61	109				224
210	61	61	109				245
300	61	76	109				274
450	76	76	109				290
600	91	91	109				340
750	91	91	109				340
900	107	107	109				381

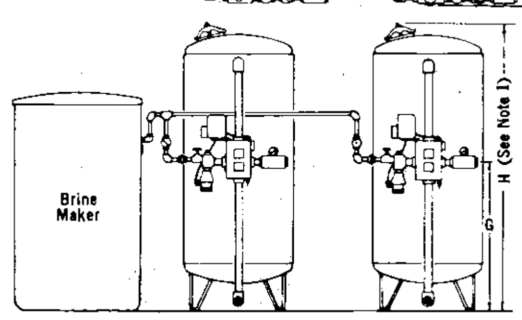


SINGLE UNIT



NOTES

1. Allow a minimum of 61 centimeters above softener for access into tank
2. When less than 6 hours is expected between regenerations of a twin softener, two Capacitrol Brine Makers are required.



TWIN UNIT

bruner® CORPORATION
5625 WEST CLINTON AVE.
MILWAUKEE,WI 53223
(414) 355-7100

ALTWINATOR®

FOR BRUNER-MATIC VALVE SYSTEMS

PROVIDES ALTERNATE OPERATION OF TWIN WATER SOFTENERS

(One Unit In Service And The Other On Stand-By)

EXCLUSIVE WITH BRUNER

FEATURING

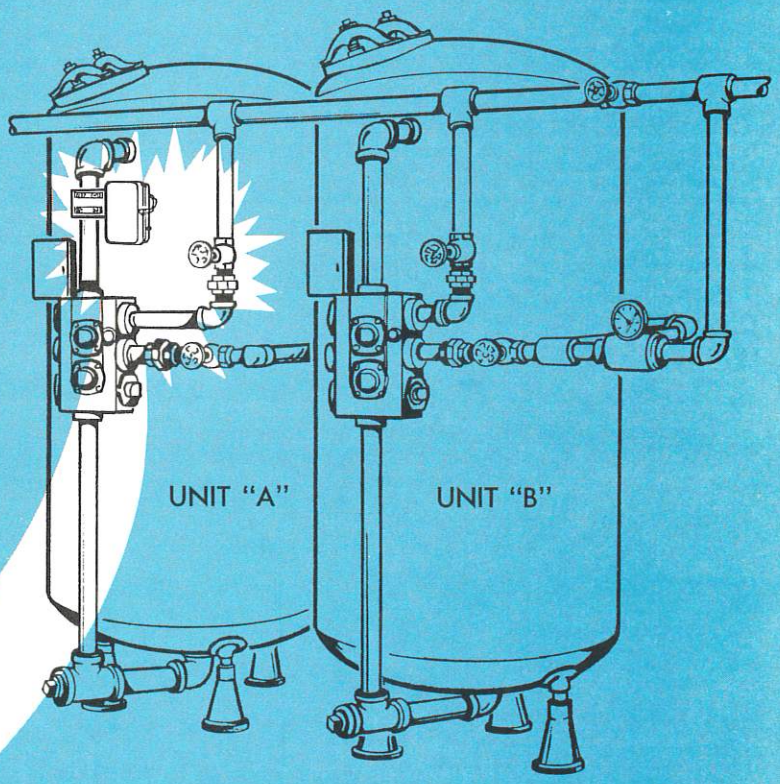
- Fully Automatic operation of twin softeners with the need of only one water meter.
- Eliminates the possibility of two softeners demanding regeneration at the same time.
- Guarantees soft water at all times.
- Reduces the normal equipment cost.

The ALTWINATOR consists of a sequencing pilot and pressure switch intergrated with a Bruner-Matic multiport valve water softener system to allow for automatic alternate operation. An electric impulse, i.e. from an automatic reset water meter, is all that is required for a complete fully automatic alternating twin softener installation.

ELECTRICAL REQUIREMENTS

115 volt, 60 cycle, AC standard
220 volt, 50 cycle, AC available
Power — 6 watts

TYPICAL TWIN SOFTENER HOOK-UP



HOW IT WORKS

1. Unit A in service and Unit B on stand-by.
2. Unit A receives impulse from water meter to regenerate and thus ALTWINATOR is put in an off the line position.
3. Unit B through ALTWINATOR is put on the line or in service.
4. Unit A regenerates fully and stays in a stand-by status awaiting the next impulse.

bruner
CORPORATION
WATER CONDITIONING EQUIPMENT

EXAMPLES OF ADVANTAGES USING THE ALTWINATOR

1. CONTINUOUS DUTY APPLICATION

For a large steel mill a twin unit water softener was sized each capable of handling the demand flow for a 24 hour boiler feedwater installation. The softeners were provided with the ALTWINATOR and one automatic reset water meter on the total effluent header. Each unit operated alternately with the single meter initiating the regeneration and the ALTWINATOR sequencing the alternate operation of the softeners. Thus an uninterrupted flow of soft water was insured with a net saving in equipment cost.

2. HYDRAULIC BALANCING OF TWIN SOFTENER INSTALLATION

At a food processing plant a twin softener system was installed to provide an uninterrupted flow at all times. Each softener was capable of handling total demand flows. With the ALTWINATOR the units were operated alternately eliminating the possibility of both units demanding regeneration together. Under normal practices, with a meter provided for each softener unit and both units on the line except during the regeneration of one, the softeners would balance out hydraulically. Thus both units would demand regeneration at the same time.

3. ACCIDENTAL INTRODUCTION OF UNTREATED WATER

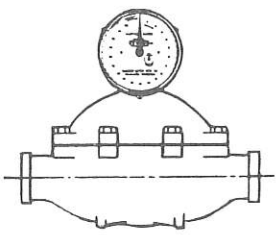
In a large automobile manufacturing plant the boiler feedwater treatment required a twin zeolite softener and chloride-anion dealkalizer system on a 24 hour continuous service. The dealkalizer could not be supplied with the raw or unsoftened water at any time. With the ALTWINATOR system accidental introduction of hard water to the dealkalizer was eliminated. A continuous uninterrupted supply of dealkalized water to the boiler was also accomplished with the ALTWINATOR system. Further, a cost savings was affected by using only one meter on each system.

4. EXPANSION OF EXISTING SOFTENER INSTALLATION

At a highly busy automatic car wash installation the existing single unit water softener could not provide adequate softening capacity. Since soft water is essential in car washing the operator had to make provision for sufficient soft water. Because of space limitations a duplicate softener-brine tank system could not be added. With the ALTWINATOR, however, another softener tank only and one automatic reset water meter was added, thereby doubling the softening capacity and guaranteeing soft water at all times.

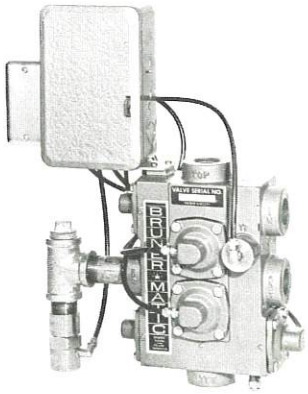
5. HIGH HARDNESS VERSUS LOW FLOW

An industrial plant using water 24 hours daily at relatively low flow rates required a softener because of their very hard water. To provide continuous soft water and still stay within budget a twin installation with an ALTWINATOR was selected. This allowed the selection to give the largest sized softener tank, providing the hardness capacity needed, and yet small enough to meet the low flow rates involved. A single unit softener selection, to provide the hardness capacity, would have been too large in diameter to provide soft water because of the channeling affect of too low flow rates, as well as by-passing hard water during the regeneration period.



OPERATION OPTIONS

Normally an automatic reset type water meter is used to send an impulse to the ALTWINATOR. Other systems, such as automatic hardness analyzers, can be used effectively to send the impulse to the ALTWINATOR to initiate the regeneration and alternate operations.



BRUNER-MATIC MULTIPORT

With the unique built-in features of the Bruner-Matic multiport valve the ALTWINATOR can alternate the operation of twin softeners without the need of additional valving and complicated electrical circuitry.

SUGGESTED SPECIFICATIONS

(To provide alternate operation of a twin unit water softener system, add the following to the specifications of the Bruner softeners selected).

Provide a means for automatic alternate operation of the softeners equivalent to the Bruner ALTWINATOR. Softeners shall operate one on the line (the other off) alternately and regeneration of each shall be accomplished, all automatically.

bruner CORPORATION

5625 West Clinton Ave. • Milwaukee, WI 53223
15707 East Valley Blvd. • City of Industry, CA 91744

FORM NO. 2-786R2

Printed in U.S.A.

450-HBR-3 DUPLEX

Bulletin 2-1058

HBR series

☐ NO EXCEPTION TAKEN ☐ REVISE AND RESUBMIT

☐ REJECTED ☑ FURNISH AS CORRECTED

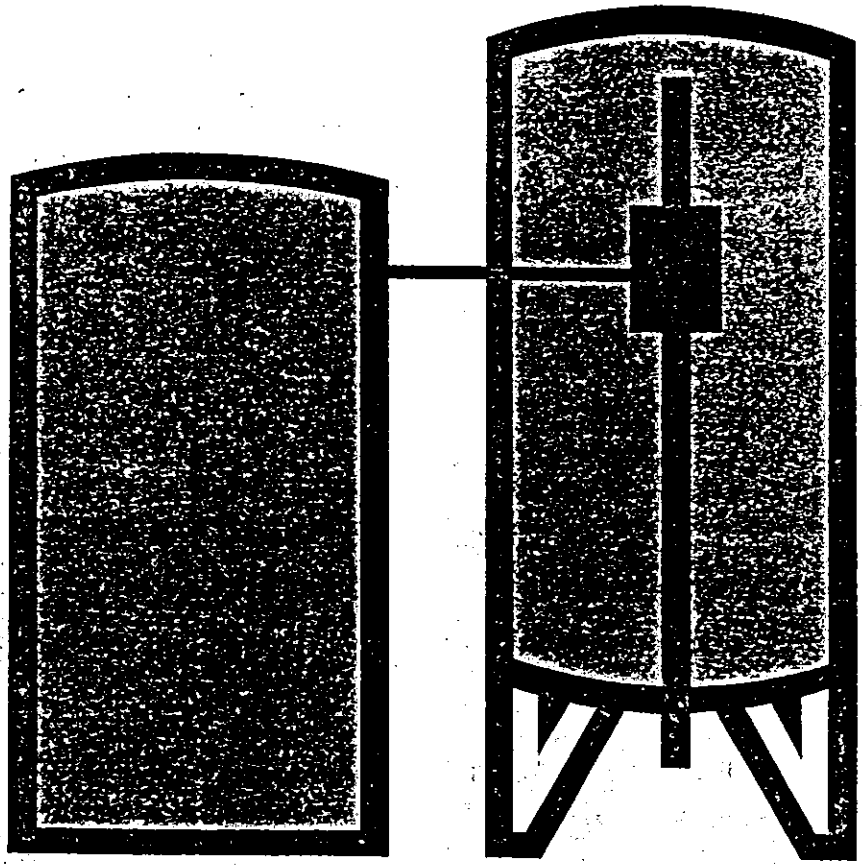
Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in

Date _____ By _____

1. PROVIDE 175 PSI ASME CODE TANKS (2), (63)
2. PROVIDE BAKED PHENOLIC LINING INTERIOR OF TANKS.
3. PROVIDE FACTORY AUTHORIZED TRAINED WATER CONDITIONING ENGINEER FOR START UP AND OPERATIONAL INSTRUCTION PERIOD PER SPECIFICATIONS.

bruner®

water softeners



packaged commercial types

OPERATING INSTRUCTIONS

BRUNER 450-HBR-3 DUPLEX

Automatic

WATER SOFTENER

HOW TO ESTABLISH A REGENERATION SCHEDULE

To establish an efficient regeneration schedule, it is necessary to know the softener capacity, the water hardness and the amount of water used. At time of installation, rated capacity and water hardness (determined by chemical analysis) are known. It is necessary, however, to estimate the water usage since accurate data is usually not available. After the unit is in operation, a daily check for soft water with a soap test kit will indicate if the original settings are adequate. The softener can then be adjusted accordingly to provide an efficient schedule.

The softener controls are easily adjusted. Softening capacity per regeneration can be increased or decreased by merely changing the Hole Setting in the Capaci-trol brine well. The frequency of regeneration can be changed by repositioning the Frequency Levers in the Cycle Controller.

The Specification Table lists the capacity of your softener for each Hole Setting and the corresponding salt usage. The Upper settings provide the most efficient operation (i.e., the most soft water for the least amount of salt). However, the Upper and Middle should not be used if the hardness or the total mineral content of the water is extremely high. Maximum hardness for the Upper Hole is 40 gpg; for the Middle, 60 gpg. Hardness leakage will result if these limitations are not observed.

TO ESTABLISH NUMBER OF REGENERATIONS PER WEEK AND HOLE SETTING AT START-UP.

1. Estimate daily water usage (gallons).
2. Multiply daily usage by water hardness (gpg – grains per gallon) and by 7 to determine total hardness removed per week.
3. Divide total hardness to be removed by the softener capacity (from Table) to find the estimated number of regenerations required.

Example: Softener rated at 300,000 grains max. setting. Water hardness = 32 gpg

1. Daily water usage is estimated to be 1500 gallons.
2. Total hardness removed per week = 1500 gal x 32 gpg x 7 = 336,000 grains
3. Number of regenerations per week =

$$\text{Upper Hole } \frac{336{,}000 \text{ grains}}{200{,}000 \text{ grains per reg'n.}} = 1.7$$

$$\text{Middle Hole } \frac{336{,}000 \text{ grains}}{250{,}000 \text{ grains per reg'n.}} = 1.3$$

$$\text{Lower Hole } \frac{336{,}000 \text{ grains}}{300{,}000 \text{ grains per reg'n.}} = 1.1$$

Two regenerations would be required regardless of the Hole Setting. Since the hardness is less than 40 gpg, the Lower is the most economical and should be used.

READJUSTMENT OF SETTINGS FOR MAXIMUM ECONOMY:

1. Test for soft water regularly to determine if estimated schedule is adequate.
2. Determine actual gallons of water used per week.
   For municipal systems - Read water meter daily for one week.
   For Private Wells - Wire a self-starting electric clock so that it runs every time the well pump operates. Set hands at 12 o'clock and observe the elapsed time after 24 hours. This will indicate the total time the pump operated in one day. Multiply the number of hours by the pump capacity (gallons per hour) to find the gallons used each day. Repeat this procedure for at least a week to establish the average usage.
3. Repeat the "start-up calculations" for revised settings.

Example: The softener in the example above is located on a private system with a pump which delivers 1200 GPH.

1. Soft water tests show that estimated settings are adequate.
2. A clock wired in parallel with the well pump shows that the pump operated 6 hours 30 minutes over a one week period.
   Water used: 6½ hours x 1200 gal/hr. = 7,800 gal/week
3. Total hardness removed per week = 7,800 x 32 gpg = 250,000 grains
4. Number of regenerations per week =

$$\text{Upper Hole } \frac{250{,}000 \text{ grains}}{200{,}000 \text{ grains per reg'n.}} = 1.3$$

$$\text{Middle Hole } \frac{250{,}000 \text{ grains}}{250{,}000 \text{ grains per reg'n.}} = 1$$

The Start-up settings could remain the same (and provide some reserve capacity in the event of an unusually high demand) or the brine Hole setting could be increased to the Middle Hole and the number of regenerations reduced to one. Readjusting the settings would save approximately 20 lbs. of salt per week.

OPERATING INSTRUCTIONS

Automatic Multiport Valve Water Softeners

HOW YOUR SOFTENER WORKS

Hard water passes thru the Multi - port valve into the top of the softener tank. It flows down thru the bed of softening mineral where hardness is removed by a process called "ion exchange". At the same time sediment in the water is filtered and retained by the mineral bed. Clear, soft water leaves the bottom of the tank, passes thru the valve and goes into the service lines.

The softening mineral can eventually become saturated with hardness and no longer soften the water. Regeneration of the softener is required before this occurs. This process consists of three steps.

1. BACKWASH.

   The flow through the mineral bed is reversed. Accumulated sediment and iron are loosened and washed to the drain by a vigorous upward flow of the water. An automatic backwash controller maintains the proper flow rate to prevent loss of softening mineral.

2. BRINE-RINSE.

   Ordinary salt has the ability to fully restore the softening capacity of the mineral. A given amount of salt-brine is drawn from the brine maker and is rinsed slowly down thru the mineral bed. Hardness is removed from the mineral and rinsed to drain.

3. FLUSH.

   The flow is again reversed to repack the mineral bed. Any trace of sediment not removed by backwash is flushed to the drain.

The softener is returned to service and water flows into the brine maker to form brine for the next regeneration. Total regeneration time is approximately 72 minutes.

BRINE MAKER

The BrineMaker is an automatic brining system which is easily adjusted to provide maximum operating efficiency of your water softener. The system consists of:

1. An open brine tank with a platform dividing it into two sections – the upper section is used for dry salt storage, the lower for brine storage.
2. An automatic brine valve which is housed in a closed tube or "well".

After each regeneration, water flows from the brine valve, and into the brine tank. When the water level rises slightly above the platform, a float closes the automatic brine valve. Salt, stored on the platform, slowly dissolves to form concentrated brine.

As brine is formed, the liquid volume increases and the level rises in the salt. The resulting level may be 2 to 10 inches above the platform depending on the amount of salt used for regeneration.

During regeneration, the Brine Injector on the multi - port valve creates suction which opens the brine valve and draws brine into the softener tank. When the desired volume is withdrawn, the brine valve float seats and prevents air from entering the system.

Refer to Brine Maker instructions for more information

VALVE AND CONTROLS

The Multi-port valve of your softener provides the means for automatic regeneration. It consists of six internal valves and a Brine Injector (mounted on the rear). Five of the valves control the direction of flow for regeneration; one provides a hard water by-pass. All valves operate by water pressure in a sequence regulated by a pilot in the Cycle Controller. When activated, the controller mechanism turns the pilot thru the regeneration cycle, correctly timing each step. Position of the valve is indicated by a Position Dial on the pilot.

The Cycle Controller is designed for fully automatic or "push-button" operation. An electric time switch in the controller can be set to actuate the regeneration cycle on any desired schedule ranging from one to seven times a week. If weekly automatic regeneration is too frequent, then operate by "push-button".

TYPE OF SALT

Only purified salt should be used in the Capaci-trol brining system. Pelletized salt ("Button", "Nugget", "Pellet") or block salt (free of binders) is recommended. Do not use granulated salt as it will fall through the platform screen.

Rock salt is not normally recommended. Most rock salts contain sludge-forming insolubles that collect on the platform and prevent proper salt-water contact.

Only salt containing 0.5% or less of insolubles will provide continued satisfactory operation. If salt with more insolubles is used, the brine maker will require periodic cleaning.

NORMAL ATTENTION BY OWNER

1. Maintain an adequate supply of high purity salt in the brine maker. (See section on Type of Salt). Do not use granulated salt.
2. Regularly test for soft water using a soap test kit to determine if the Hole Setting and regeneration schedule are satisfactory. A daily check is recommended. Repeated "over-exhausting" of the softening mineral will reduce its efficiency.
3. Set the Cycle Controller Time Dial to the correct time after every power failure. A weekly time check is recommended.
4. Maintain a log of the softener operation to indicate if adjustment of either Hole Setting or regeneration schedule is required and to remind when the salt supply needs replenishing.

SERVICE SUGGESTIONS

Failure of the softener to operate properly is often caused by minor problems that can be easily corrected by the owner. To save time and expense, check the following list before requesting service.

HARD WATER PROBLEM

Test for soft water at sampling cock.

1. If water tests soft,
   a. By-pass valve may be open.
   b. Softener may have been exhausted, filling the hot water storage tank with hard water. Either change the Hole Setting to use more salt or increase the number of regenerations.
2. If water tests hard,
   a. Softener may be regenerating at the wrong hour. Check Time Dial and reset to correct time.
   b. Electrical connection may be faulty or a fuse may be blown.
   c. Brine maker may not contain salt.
   d. Manual brine valve may be closed. It should be open.
   e. If rock salt is used, sludge may be preventing the salt from dissolving. Clean tank. See section on Type of Salt.
   f. Water level in brine maker may be low. Level must be above the platform. Disconnect the brine valve and move the float stop up, if necessary.

HARD WATER PROBLEM (Cont.)

   g. Brine injector may be plugged. Turn Position Dial to Brine-Rinse and observe if brine is drawn in. If not, relieve the tank pressure, remove the lower cap from the injector body and clean the injector.

BRINE TANK OVERFLOWS

1. Check that brine valve float rod guide is not cocked to one side. Float rod must be vertical so float seats properly.
2. Check that no foreign materials have fallen into the brine well. Always keep the brine well cover in place.

RED WATER

1. Iron may be accumulating in the softening mineral. Change the Hole Setting to use more salt. If this does not correct the problem, use a Mineral Cleaner.
2. The hot water storage tank may be corroding. Install a polyphosphate feeder.