FILE FOLDER

DESCRIPTION ON TAB:

N62470-85-C-6444

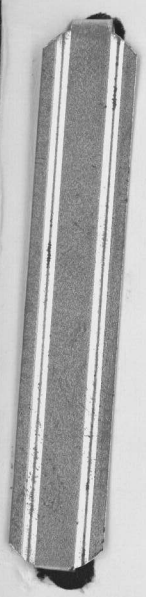
Shop Drawings - Index 4132779

☐ **Outside/inside of actual folder did not contain hand written information**

☑ **Outside/inside of actual folder did contain hand written information**
***Scanned as next image**

Confidential Records Management, Inc.
New Bern, NC
1-888-622-4425
9/08

4132779



SHOP DRAWING INDEX

N62470-85-C-6444, Replace Water Softeners, Bldg. G-650, MCB, CLNC & Bldg. AS-4151, MCAS(H), NR

Trans #	Date	Sec	Description	
6	4/2/86	15	Shp dwgs & Catalog data: Water Softeners Bldg. G-650 & AS-4151	A
10	4/7/86	15	Cert. of Compl: Copper pipe & fittings; CPVC pipe & fittings	A
11	4/24/86	15	Cert. of Compl. & Mfr's Data - Gate Valves and Pipe Hangers	Var
13	5/8/86	15	Cert. & Mfr's Data - Painting of Water Softeners	A
15	9/10/86	15	Cert. test reports	A

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
N62470-85-C-6444	15	9-10-86

FROM CONTRACTOR: Sneeden, Inc.
P. O. Box 3548, Wilmington, NC

TO: Officer in Charge of Construction
Bldg. 1005, MCB, Camp Lejeune, NC 28542

PROJECT TITLE AND LOCATION: Replace Water Softeners, Building G-650, MCB, Camp Lejeune, & Bldg. AS-4151, MCAS, New River

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☒ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged
C-Comments
R-Resubmit

ITEM NO	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
1.	01401-1.4.8	Tabulation of Tests	3	A	BA 9/16/86
2.	15011-1.3.4	Certified Test Report (5-14-86)	3	A	BA 9/16/86
3.	15011-1.3.4	Certified Test Report (5-7-86)	3	A	BA 9/16/86
4.		Affidavit	3		
5.		Invoice	3		

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC

CONTRACTOR REPRESENTATIVE (Signature)

DATE RECEIVED BY REVIEWER | FROM (Reviewer) | TO

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Copy to field & Contractor 9-18-86

12 SEP 1986 08 58

COPIES TO ROICC (2) LANTDIV (1) A-E (1)

DATE 9/18/86

SIGNATURE [signature], LT ROICC

☆ U.S. GPO:1984-537-003/11170 Region 3-11

OICC-ROICC
JACKSONVILLE, NORTH CAROLINA AREA
MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

ROUTING SLIP
MCBCL 11000/14 (REV. 04-85)

NO.	DATE
946	12 Sep 86 sel

FROM

Sneeden, Inc.

CONTRACT

85-C-6444, Repl. Water Softeners, Bldg. G-650

SUBJECT

Sub TL #15, Tabulation of tests; Cert. test reports

5-14-86 & 5-7-86

COMMENTS

1. X
2. Sandy

ROUTING	SEQUENCE	INITIAL	DATE	COMMENTS
JAX/10				
02	2/4	To 04	9-15-86	
04	3			
05				
05A				
05B				
Z				
Y				
X	X	DEJ	9/12/86	
W				
V				
U				
T				
S				
R				
H				

Return Buck Tag to Contract Branch with correspondence unless otherwise indicated.

TABULATION OF TESTS

DESCRIPTION	DATE	SERIAL NO.	CONFORMING	NON-CONFORMING	RETEST
ASME Code for Pressure Vessels, Section VIII, Division 1	5-14-86	15812 & 15813	X		
ASME Code for Pressure Vessels, Section VIII, Division 1	5-7-86	18457 & 18458	X		

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternate Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

Certified &
1. Manufactured by Buckeye Fabricating Co., 2045 Dryden Rd., Dayton, Ohio 45439
2. Manufactured for Monarch Water Systems, Xenia, OH
3. Location of Installation Unknown
4. Type Vert. (Horiz or vert tank) 18512 & 18513 (Mfgr's Serial No.) - (CRN) -- (Drawing No.) 18512 & 18513 (Nat'l Brd No.) (Year Built) 1986

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 1983 (Year) and Addenda to S-85 (Date) and Code Case Nos. - . Special Service per UG-120(d) -
Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: N/A
(Name of part, item number, Mfgr's name and identifying stamp)

6. Shell: Matl. SA-515-70 (Spec No., Grade) Nom. Thk. 1/4 in. Corr. Allow. - in. Diam. 3 ft. 6 in. Length 8 ft. 2 in. (overall)

7. Seams: Long. Dbl. (Welded, Dbl., Sngl., Lap, Butt) R.T. No (Spot or Full) Eff. 70 % H.T. Temp. - F Time - hr. Girth Dbl. (Welded, Dbl., Sngl., Lap, Butt) R.T. No (Spot, Partial, or Full) No. of Courses One

8. Heads: (a) Material SA-516-70 (Spec. No., Grade) (b) Material SA-516-70 (Spec. No., Grade)

	Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	Top	1/4"	-	33.6"	2.52"	-	-	-	-	Concave
(b)	Bottom	1/4"	-	33.6"	2.52"	-	-	-	-	Concave

If removable, bolts used (describe other fastenings) -- (Material, Spec. No., Gr., Size, No.)

9. Const. for max. AWP 100 psi at max. temp. 500 F. Min. temp. (when less than -20F) - F. Hydro [redacted]. test pressure 150 psi.
10. Safety Valve Outlets: Number Supplied Size In piping Location by user
11. Nozzles and Inspection Openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl	Nom. Thk.	Reinforcement Matl.	How Attached	Location
Insp.	1	12"x 16"	M.H.	SA675-70	3/4"ring	Inherent	welded	top
Inlet	1	2"	N.P.T.	SA-105	.250"	Inherent	welded	shell
Outlet	1	3/4"	N.P.T.	SA-105	.193"	Inherent	welded	top
Drain	1	2"	N.P.T.	SA-105	.250"	Inherent	welded	shell
						Inherent	welded	
						Inherent	welded	

12. Supports: Skirt No (Yes or no) Lugs 2 (No.) Legs 4 (No.) Other - (Description) Attached Welded on heads (Where and how)
13. Remarks: Fabricated per UW-12-C

REC'D. ACC'T. DEPT.
MAY 24 1986

Add.l. openings: -- Welded by: (K) (L)

CERTIFICATE OF COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

Date May 9, 86 Signed Buckeye Fabricating Co. (Manufacturer) by C B Sowers (Representative)

"U" Certificate of Authorization No. 17014 expires September 14, 1988

CERTIFICATE OF SHOP INSPECTION

Vessel made by Buckeye Fabricating Co. at Dayton, Ohio

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Ohio and employed by H.S.B.I.& I. Co.

have inspected the pressure vessel described in this Manufacturers' Data Report on May 14, 1986, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Signed Merritt K Best (Inspector) Date 5/14/86 Commissions N.B.# 8839 Pa.# 2721 (Nat'l Board, State, Province and No.)

This form may be obtained from the National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Ave., Colls., O. 43229

...IA MANUFACTURERS DATA REPORT FOR PRESSURE VESSELS

S/O 17591

(Alternate Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the ...ovisions of the ASME Code Rules, Se...on VIII, Division 1

Certified &
1. Manufactured by Buckeye Fabricating Co., 2045 Dryden Rd., Dayton, Ohio 45439
2. Manufactured for Monarch Water Systems, Xenia, OH
3. Location of Installation Unknown
4. Type Vert. (Horiz or vert tank) 18457 & 18458 (Mfgr's Serial No.) - (CRN) - (Drawing No.) 18457 & 18458 (Nat'l Brd. No.) (Year Built) 1986

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 1983 (Year) and Addenda to S-85 (Date) and Code Case Nos. - . Special Service per UG-120(d) - Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: N/A
(Name of part, item number, Mfgr's name and identifying stamp)

6. Shell: Matl. SA-515-70 (Spec. No., Grade) Nom. Thk. 1/4 in. Corr. Allow. - in. Diam. 3 ft. 0 in. Length 8 ft. 5 in. (overall)

7. Seams: Long. Dbl. (Welded, Dbl., Sngl., Lap, Butt) R.T. No (Spot or Full) Eff. 70 % H.T. Temp. - F Time - hr. Girth Sgl. (Welded, Dbl., Sngl., Lap, Butt) R.T. No (Spot, Partial, or Full) No. of Courses One

8. Heads: (a) Material SA-414-F (Spec. No., Grade) (b) Material SA-414-F (Spec. No., Grade)

	Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	Top	3/16"	-	-	-	2:1	-	-	-	Concave
(b)	Bottom	3/16"	-	-	-	2:1	-	-	-	Concave

If removable, bolts used (describe other fastenings) -- (Material, Spec. No., Gr., Size, No.)

9. Const. for max. AWP 100 psi at max. temp. 500 F. Min. temp. (when less than -20F) - F. Hydro [redacted] test pressure 160 psi.

10. Safety Valve Outlets: Number Supplied Size In piping Location by user

11. Nozzles and Inspection Openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
Insp.	1	12"x 16"	M.H.	SA675-70	3/4"ring	Inherent	welded	top
Inlet	1	3/4"	N.P.T.	SA-105	.193"	Inherent	welded	top
Outlet	1	2"	N.P.T.	SA-105	.250"	Inherent	welded	shell
Drain	1	2"	N.P.T.	SA-105	.250"	Inherent	welded	shell
						Inherent	welded	
						Inherent	welded	

12. Supports: Skirt No (Yes or no) Lugs 2 (No.) Legs 4 (No.) Other - (Describe) Attached Welded on heads (Where and how)

13. Remarks: Fabricated per UW-12-C

Add.l. openings: -

Welded by: (K) (H) (J)

CERTIFICATE OF COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

Date May 6, 86 Signed Buckeye Fabricating Co. (Manufacturer) by C B Sowry (Representative)

"U" Certificate of Authorization No. 17014 expires September 14, 1988

CERTIFICATE OF SHOP INSPECTION

Vessel made by Buckeye Fabricating Co. at Dayton, Ohio

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of Ohio and employed by H.S.B.I.& I. Co.

have inspected the pressure vessel described in this Manufacturers' Data Report on May 7, 19 86, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Signed [illegible] (Inspector) Date 5/7/86 Commissions N.B.# 8839 Ps.# 2721 (Nat'l Board, State, Province and No.)

NB-16 This form may be obtained from the National Board of Boiler and Pressure Vessel Inspectors

File

CONTRACTOR'S SUBMITTAL TRANSMITTAL
LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
N62470-85-C-6444	11	4-24-86

FROM CONTRACTOR: Sneeden, Inc.
P. O. Box 3548, Wilmington, NC

TO: Officer in Charge of Construction
Bldg. 1005, MCB, Camp Lejeune, NC 28542

PROJECT TITLE AND LOCATION: Replace Water Softeners, Bldg. G-650, MCB, Camp Lejeune, and Bldg. AS-4151, New River

CONTRACTOR USE ONLY

List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☒ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
1.	15400-2.2	Certificate of Compliance and Manufacturer's Data - Gate Valves	7	A	BA 4/86
2.	15400-3.1.2	Manufacturer's Data - Pipe Hangers	7	AN	BA 4/86

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): James E. Sneeden III

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Pipe Hangers to be galvanized w/ PVC. saddle for copper pipe.

COPY TO: CONTRACTOR AND FIELD

DATE: 5-15-86

COPIES TO	DATE	SIGNATURE
- ROICC (2) LANTDIV (1) A-E (1)	5/13/86	R. A. King, LT ROICC

★ U.S. GOP: 1983 - 739-003/2122 Region 3-11

OICC-ROICC
JACKSONVILLE, NORTH CAROLINA AREA
MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

ROUTING SLIP
MCBCL 11000/14 (REV. 04-85)

NO.	DATE
810	25 Apr 86 sel

FROM

Sneeden, Inc.

CONTRACT

85-C-6444, Replace Water Softeners

SUBJECT

Sub TL #11, Cert. of Compl. & Mfr's Data -

Gate Valves; Mfr's Data: Pipe Hangers

COMMENTS

1. X

2. Sandy

ROUTING	SEQUENCE	INITIAL	DATE	COMMENTS
JAX/10				
02	2/4	To 04	4-28	DS
04	3	MFR	4-28	
05				
05A				
05B				
Z				
Y				
X	1	RAK	4/25/86	dash valves are Brought?
W				
V				
U				
T				
S				
R				
H				

Return Buck Tag to Contract Branch with correspondence unless otherwise indicated.

15400-2.2

HAMMOND

mark of quality in valves

HAMMOND VALVE CORP. * 1844 SUMMER STREET * HAMMOND, INDIANA 46320 * (219)931-3200

Noland Company
410 N. Heritage Street
Kinston, NC 28501

CERTIFICATE

JOB: Replace Water Softener
Camp Le Jeune

This is to certify that the following Hammond Bronze and Iron Valves comply with Federal Specifications and/or Manufacturers' Standardization Society Standard Practices as indicated.

FIGURE NO.	PRESSURE CLASS	DESCRIPTION	*FEDERAL SPECIFICATION	MSS STANDARD PRACTICE
IB 412	300	Bronze Globe	---	SP-80, Type 1
IB 413	150	Bronze Globe	WW-V-51,Type I,Class B	SP-80, Type 2
IB 423	150	Bronze Globe (Solder Ends)	WW-V-51,Type I,Class B	SP-80, Type 2
IB 433	150	Bronze Globe	---	SP-80, Type 3
IB 440	125	Bronze Globe	WW-V-51,Type I,Class A	SP-80, Type 1
IB 444	300	Bronze Globe	---	SP-80, Type 3
IB 454	150	Bronze Angle	WW-V-51,Type II,Class B	SP-80, Type 2
IB 471	300	Bronze Angle	---	SP-80, Type 3
IB 619	150	Bronze Gate	WW-V-54,Type II,Class B	SP-80, Type 2
IB 620	150	Bronze Gate	WW-V-54,Type II,Class B	SP-80, Type 2
IB 621	150	Bronze Gate	WW-V-54,Type I,Class B	SP-80, Type 1
IB 629	150	Bronze Gate	WW-V-54,Type II,Class B	SP-80, Type 2
IB 631	150	Bronze Gate	WW-V-54,Type III,Class B	SP-80, Type 3
IB 635	125	Bronze Gate (Solder Ends)	WW-V-54,Type II,Class A	SP-80, Type 2
IB 640	125	Bronze Gate	WW-V-54,Type II,Class A	SP-80, Type 2
IB 641	150	Bronze Gate	WW-V-54,Type II,Class B	SP-80, Type 2
IB 643	125	Bronze Gate	WW-V-54,Type III,Class A	SP-80, Type 3
IB 645	125	Bronze Gate	WW-V-54,Type I,Class A	SP-80, Type 1
IB 646	150	Bronze Gate	WW-V-54,Type I,Class B	SP-80, Type 1
IB 647	125	Bronze Gate (Solder Ends)	WW-V-54,Type I,Class A	SP-80, Type 1
IB 648	150	Bronze Gate (Solder Ends)	WW-V-54,Type II,Class B	SP-80, Type 2
IB 652	300	Bronze Gate	---	SP-80, Type 2
IB 654	300	Bronze Gate	---	SP-80, Type 2
IB 656	300	Bronze Gate	---	SP-80, Type 1
IB 904	125	Bronze Swing Check	WW-V-51,Type IV,Class A	SP-80, Type 3
IB 912	125	Bronze Swing Check (Solder Ends)	WW-V-51,Type IV,Class A	SP-80, Type 3
IB 940	125	Bronze Swing Check	WW-V-51,Type IV,Class A	SP-80, Type 3
IB 944	150	Bronze Swing Check	---	SP-80, Type 3
IB 945	150	Bronze Swing Check (Solder Ends)	---	SP-80, Type 3
IB 946	150	Bronze Swing Check	WW-V-51,Type IV,Class B	SP-80, Type 4
IB 949	300	Bronze Swing Check	---	SP-80, Type 3
IB 948	150	Bronze Lift Check	---	SP-80, Type 2
IR 116	125	Iron Globe, Bronze Trim	---	SP-85, Type I
IR 117	125	Iron Globe, All Iron Trim	---	SP-85, Type I
IR 313	250	Iron Globe, Bronze Trim	---	SP-85, Type I
IR 1138	125	Iron Gate, Bronze Trim	WW-V-58,Type I,Class 1	SP-70, Type I
IR 1140	125	Iron Gate, Bronze Trim	WW-V-58,Type I,Class 1	SP-70, Type I
IR 1144	125	Iron Gate, All Iron Trim	---	SP-70, Type I
IR 1146	125	Iron Gate, All Iron Trim	---	SP-70, Type I
IR 330	250	Iron Gate, Bronze Trim	WW-V-58,Type I,Class 2	SP-70, Type I
IR 1913	125	3% Nickel Iron Gate	---	SP-70, Type I
IR 1124	125	Iron Swing Check, Bronze Trim	---	SP-71, Type I
IR 1126	125	Iron Swing Check, All Iron Trim	---	SP-71, Type I
IR 322	250	Iron Swing Check, Bronze Trim	---	SP-71, Type I
IR 1937	125	3% Nickel Iron Swing Check	---	SP-71, Type I

* Federal Specifications WW-V-51, WW-V-54, & WW-V-58 have been cancelled by the United States Government.
MSS-SP-80 supercedes WW-V-51 and WW-V-54. MSS-SP-70 supercedes WW-V-58.

I hereby declare that all statements made and all information contained herein are true and correct.

HAMMOND VALVE CORP.

By W.C. Clark

W.C. Clark, Chief Engineer

STATE OF INDIANA)
) SS:
COUNTY OF LAKE)

Subscribed and sworn to before me on April 17 1986

Betty Lou Petro

Betty Lou Petro, Notary Public

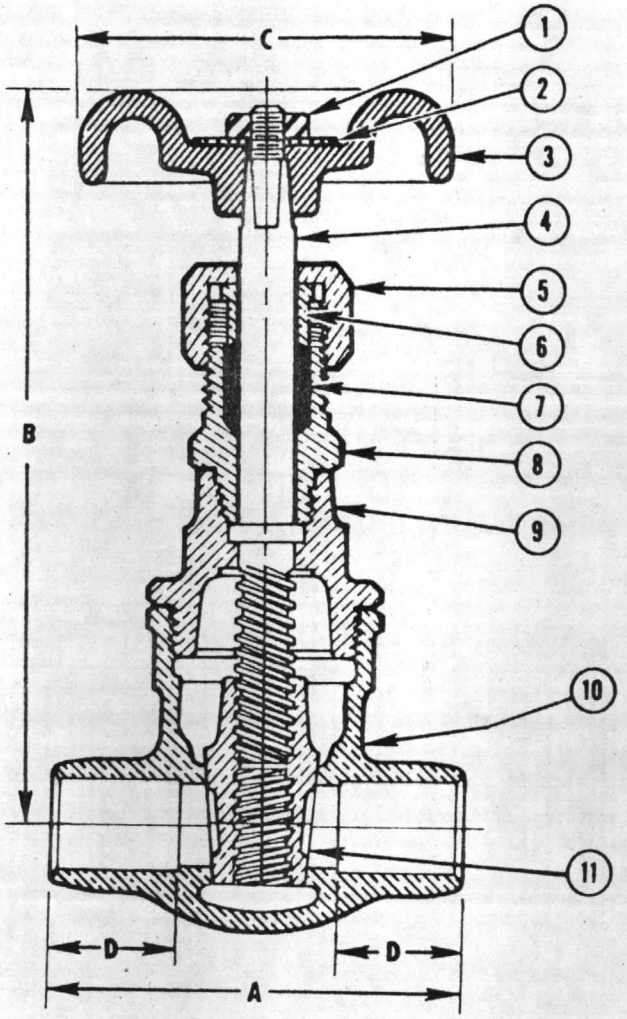
IB647

125 Lb. Bronze Gate Valve
Screwed Bonnet Non-Rising Stem
Solid Wedge Disc
Solder Ends

10-7-81

RATING

125 Lbs. Working Steam Pressure.
200 Lbs. Water, Oil or Gas
Non-Shock
Federal Specification
WW-V-54 Type I, Class A



DIMENSIONS IN INCHES

SIZE	A	B	C	D
3/8	2-1/4	3-29/32	2	11/16
1/2	2-5/8	4-5/16	2-3/8	13/16
3/4	3-1/8	4-15/16	2-3/4	1
1	3-3/8	5-5/8	3	1-1/16
1-1/4	3-11/16	6-23/32	3-1/2	1-1/8

SIZE	A	B	C	D
1-1/2	4	7-1/2	4	1-3/16
2	4-9/16	8-15/32	4-3/4	1-3/8
2-1/2	5-1/4	10-1/32	5-1/4	1-5/8
3	6-1/16	11-3/8	6	1-7/8

MATERIAL SPECIFICATIONS

1	Handwheel Nut	Steel	
2	Identification Plate	Aluminum	
3	Handwheel	Malleable Iron	ASTM A-47 (32510)
4	Stem	Silicon Brass Rod	ASTM B-371 Alloy 697
5	Packing Nut 3/8"-1" 1¼"-3"	Brass Rod Cast Bronze	ASTM B-16 ASTM B-584 Alloy 844
6	Gland Follower	Sintered Brass	ASTM B-282, Type I

7	Packing	Teflon - Asbestos	
8	Stuffing Box 3/8"-1¼" 1½"-3"	Brass Rod Cast Bronze	ASTM B-16 ASTM B-62
9	Bonnet	Cast Bronze	ASTM B-62
10	Body	Cast Bronze	ASTM B-62
11	Disc	Cast Bronze	ASTM B-62

CONDEC **Hammond Flow Control**

Hammond Valve Corporation
A Condec Company
1844 Summer Street
Hammond, IN 46320

It is hereby certified that the equipment and material shown and marked in this submittal is that proposed to be incorporated into Contract Number N62470-85-C-6444, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Goverment approval

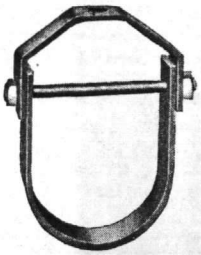
Sneeden Inc.

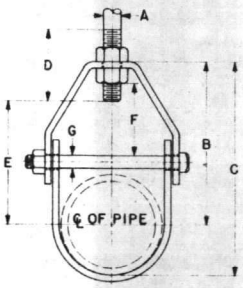
Certified by J.E. Sneeden III Date 4/24/86

15400-3.1.2

clevis

adjustable clevis
fig. 260





SIZE RANGE: ½ through 30 inch.

MATERIAL: Carbon steel.

FINISH: Black or galvanized; furnished black unless otherwise ordered.

SERVICE: Recommended for the suspension of non-insulated, stationary pipe lines.

MAXIMUM TEMPERATURE: 650°F.

APPROVALS: Underwriters' Laboratories listed and Factory Mutual approved for ¾ through 8 inch pipe. Complies with Federal Specification WW-H-171E (Type 1) and Manufacturers Standardization Society SP-69 (Type 1).

INSTALLATION: Hanger load nut *above* clevis must be tightened securely to assure proper hanger performance. When an oversized clevis is used, a nipple should be placed over the clevis bolt as a spacer to assure that the lower U-strap will not move in on the bolt.

ADJUSTMENT: Vertical adjustment without removing pipe may be made from 1⅛ to 5 inches, varying with the size of clevis. Tighten upper nut after adjustment.

FEATURES:

- New design has yoke on outside of lower U-strap so yoke cannot slide toward center of bolt, thus bending of bolt is minimized.
- New design provides increased strength even with lighter stock size.
- Sizes 5-inch and up have rod and two nuts instead of bolt and nut; thread length on clevis rod is such that the thread locks the nuts in place.

ORDERING: Specify pipe size, figure number, name.

loads • weights • packaging • dimensions (inches)

pipe size	maximum recommended load, lb▪	weight (approx) lb per 100	pieces per carton	size of steel		A	B	C	D	E	adjustment F	G
				upper	lower							
½	610	34	100	⅛ x 1	⅛ x 1	⅜	1 11/16	2⅛	2½	⅞	7/16	¼
¾	610	39	100	⅛ x 1	⅛ x 1	⅜	1⅞	2 7/16	2½	1	½	¼
1	610	44	100	⅛ x 1	⅛ x 1	⅜	2⅛	2 13/16	2½	1¼	⅝	¼
1¼	610	45	100	⅛ x 1	⅛ x 1	⅜	2 9/16	3 7/16	2½	1¾	⅞	¼
1½	610	55	100	#9 U.S.Ga. x1	⅛ x 1	⅜	3	4	2½	2⅛	1 1/16	¼
2	610	61	100	#9 U.S.Ga. x1	⅛ x 1	⅜	3 11/16	4⅞	2½	2 15/16	1⅝	¼
2½	1130	140	50	3/16 x 1¼	3/16 x 1¼	½	4 11/16	6⅛	3	3 13/16	2	⅜
3	1130	152	50	3/16 x 1¼	3/16 x 1¼	½	4¾	6 9/16	3	3⅞	1¾	⅜
3½	1130	170	25	3/16 x 1¼	3/16 x 1¼	½	4 15/16	6 15/16	3	4 1/16	1¾	⅜
4	1430	213	25	¼ x 1¼	3/16 x 1¼	⅝	5 9/16	7 13/16	3½	4½	1 15/16	⅜
5	1430	244	...	¼ x 1¼	3/16 x 1¼	⅝	6 3/16	9	3½	5⅛	1¾	½
6	1940	357	...	¼ x 1½	3/16 x 1½	¾	6 15/16	10⅛	4	5⅝	1⅞	½
8	2000	496	...	¼ x 1¾	3/16 x 1¾	⅞	8⅜	12⅝	4¼	7	2⅛	⅝
10	3600	878	...	⅜ x 1¾	¼ x 1¾	⅞	9⅞	15¼	4½	8⅜	2¼	¾
12	3800	1140	...	⅜ x 2	¼ x 2	⅞	11 3/16	17 9/16	4¾	9¾	2⅝	¾
14	4200	1481	...	½ x 2	¼ x 2	1	12 7/16	19 7/16	5¼	10 13/16	2 15/16	⅞
16	4600	2100	...	½ x 2½	¼ x 2½	1	14 1/16	22 1/16	6	12 7/16	2⅝	1
18	4800	2437	...	½ x 2½	¼ x 2½	1⅛	15½	24¾	6½	13 15/16	3¾	1⅛
20	4800	4256	...	⅝ x 3	⅜ x 3	1¼	17¼	27⅜	7	14 7/16	4	1¼
24	4800	4843	...	⅝ x 3	⅜ x 3	1¼	19⅝	31⅝	7½	17½	4¼	1¼
30	6000	6950	...	¾ x 3	⅜ x 3	1¼	24⅛	39⅛	8¼	21⅞	5	1¼

▪With minimum safety factor of 5.

It is hereby certified that the equipment and material shown and marked in this submittal is that proposed to be incorporated into Contract Number N62470-85-C-6444, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Goverment approval

Sneeden Inc.

Certified by J E Sneeden III Date 4/24/86 ".

File

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
N62470-85-C-6444	13	5-8-86

FROM CONTRACTOR: Sneeden, Inc.
P. O. Box 3548, Wilmington, NC

TO: Officer in Charge of Construction
Bldg. 1005, MCB, Camp Lejeune, NC

PROJECT TITLE AND LOCATION: Replace Water Softeners, Building G-650, MCB, Camp Lejeune, & Bldg. AS-4151, MCAS, New River

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☒ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
1.	15011-2.1.1	Certification and Manufacturer's Data -			
		Painting of Water Softeners	7	A	BA 5/86

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): James E. Sneeden III

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

COPY TO: CONTRACTOR AND FIELD

DATE: 5-15-86

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	5/15/86	

☆ U.S. GOP: 1983 - 739-003/2122 Region 3-11

OICC-ROICC
JACKSONVILLE, NORTH CAROLINA AREA
MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

ROUTING SLIP
MCBCL 11000/14 (REV. 04-85)

NO.	DATE
817	9 May 86 sel

FROM

Sneeden, Inc.

CONTRACT

85-C-6444, Replace Water Softeners, Bldg. G-650

SUBJECT

Sub TL #13, Cert. & Mfr's data: Painting of water softeners

COMMENTS

1. X
2. Sandy

ROUTING	SEQUENCE	INITIAL	DATE	COMMENTS
JAX/10				
02	2/4	To 04	5-13-86	DJ
04	3	CAB	5-14-86	
05				
05A				
05B				
Z				
Y				
X	1	RAK	5/12/86	
W				
V				
U				
T				
S				
R				
H				

Return Buck Tag to Contract Branch with correspondence unless otherwise indicated.

15011-2.1.1

MONARCH WATER SYSTEMS

A Division of Systech Corporation

Since 1918

May 5, 1986

Sneeden, Inc.
301 Eastwood Road
P.O. Box 3548
Wilmington, NC 28406

Attention: Mr. Jimmy Sneeden

SUBJECT: Replace Camp Lejeune Water Softeners
Monarch Project 7006

Dear Mr. Sneeden:

Thank you for taking the time to write us a letter regarding the exterior painting of the water softeners. I have enclosed the technical data sheets for the paint that we are proposing to use. Our proposed surface preparation is Near White Sandblasting (SSPC-SP 10-82) which is suitable for corrosive environments while a salt-spray fog test would be a moderate environment. On sheet three you will note that the paint is resistent to sea water. We certify that the paint systems for our water softeners meets the 125 hour salt-spray fog test of ASTM B117.

I hope that this letter will meet your current needs. If you have any additional questions please contact me.

Sincerely,

MONARCH WATER SYSTEMS

John E. Glaser, Sr.
Sales Engineer

JEG/djm

Enclosure

It is hereby certified that the equipment and material shown and marked in this submittal is that proposed to be incorporated into Contract Number N62470-85-C-6444, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Goverment approval

Sneeden Inc.
Certified by J E Sneeden IV Date 5-8-86 ".

Glidden

PROTECTIVE MAINTENANCE COATINGS DATA

Converted Epoxy Coating System
For Industrial Use and Professional Application Only

GLID-GUARD® Epoxy Chemical Resistant Finish High-Build Gray, No. 5555/5556

For Interior-Exterior Metal & Masonry

WARNING! FLAMMABLE. VAPOR HARMFUL. MAY IGNITE EXPLOSIVELY. CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT. WHEN MIXED, CONTAINS TOLUENE, METHYL ETHYL KETONE, ISOPROPYL ALCOHOL, PROPYLENE GLYCOL MONOETHYL ETHER, EPOXY RESIN, TITANIUM DIOXIDE AND SILICA.
See additional cautions on last page.

PRODUCT DESCRIPTION

An epoxy-polyamide low gloss high-build coating designed for use as an intermediate coat in GLID-GUARD Epoxy Chemical Resistant Finish and other high performance systems. May also be used as a topcoat where low gloss and gray color are acceptable. Resistant to chemicals, moisture, abrasion and thermal shock. Offers exceptional and long-lasting protection in interior and exterior industrial applications on metal and masonry. Displaces reasonable amounts of moisture on the surface being painted, allowing application in damp environments. Can be applied by brush, roller or spray.

Like most epoxy coatings, GLID-GUARD Chemical Resistant Finish, High-Build Gray, characteristically loses gloss and chalks on exposure to direct sunlight but maintains excellent film integrity.

TYPICAL USES

For use on walls, storage tanks, machinery and floors in food processing and chemical plants, petroleum refineries, paper mills and marine structures both onshore and offshore and general industrial buildings.

SPECIFICATIONS

GLID-GUARD Epoxy Chemical Resistant Finish, High-Build Gray, is accepted by USDA Meat and Poultry Inspection Program for incidental food contact.

PRODUCT ADVANTAGES

- High-build—6 dry mils per coat
- Free of toxic amine converters
- Can be applied to moist surfaces
- Excellent alkali and solvent resistance
- Long term flexibility
- Will withstand fresh or salt water immersion
- 1 to 1 mixing ratio

SERVICE CONDITIONS

Will withstand up to 250°F. continuous and 300°F. intermittent maximum dry heat. The color may change as temperature limits are approached. Do not use for potable water or direct food contact service.

MATERIAL PREPARATION

Thoroughly mix equal parts by volume of No. 5555 GLID-GUARD Epoxy Chemical Resistant Finish High-Build Gray, and No. 5556 GLID-GUARD Epoxy Chemical Resistant Finish High-Build Curing Agent. Use no other curing agent. Before application, allow mixed material to stand 30 minutes if ambient temperature is 75°F. or higher or 60 minutes if ambient temperature is below 75°F.

Mixed material is of proper consistency for brush or roller application. For spray application, may be reduced slightly with No. 5568 GLID-GUARD Epoxy Solvent to obtain proper atomization. Do not add unspecified solvents or mix with other paints. Pot life is 16 hours at 80°F. or 5 hours at 100°F.

SURFACE PREPARATION

All surfaces to be painted must be clean and free of all contaminants. Dirt and dust are best removed by a stiff bristle brush and by compressed air. Oil and grease should be removed by cleaning with appropriate solvents such as mineral spirits or xylene. Depending upon concentration and type, chemical contaminants should be removed by washing with water or other suitable cleaners.

TECHNICAL DATA

All data shown is for a mixed (converted) gallon of Y-5555/5556—1:1 by volume unless otherwise noted.

Product Number—Y-5555/5556

Generic Type—Epoxy Polyamide

Color—Light Gray (Matches No. 5243)

Sheen or Gloss—Approx. 30 @ 60°

Percent Solids by Weight—70.6%

Percent Solids by Volume—53.7%

Theoretical Coverage Per One Dry Mil (1.9 Mils Wet)— 861 sq. ft./gal.

Per Coat Coverage (Calculated)—
Minimum 4.5 Mils Dry (8.0 Mils Wet)—200 sq. ft./gal.
Recommended 6.0-6.5 Mils Dry (11.0 -12.0 Mils Wet)—134-146 sq. ft./gal.
Maximum 8.5 Mils Dry (16 Mils Wet)—100 sq. ft./gal.
(Dry mil figures rounded to nearest 0.5 mil.)

Percent Vehicle (Solids) By Weight—26.2%

Percent Pigment By Weight—44.4%

Percent Solvent By Weight—29.4%

Viscosity—84-90 KU

Weight Per Gallon—11.1 lbs.

Flash Point—
No. 5555—51°F. Closed Cup
No. 5556—46°F. Closed Cup

Drying Time—(Normal 77°F., 50% R.H.)
Touch—4 Hrs.
Handle—5 Hrs.
Recoat—5 Hrs.
Full Cure—7 Days

Reduction Solvent (If Needed)—GLID-GUARD Epoxy Solvent No. 5568

Clean-up Solvent—No. 5568

Type of Cure—Converted

Mixing Ratio—Base/Curing Agent—1:1

Induction Before Use—
30 Min. at 75°F. or above
60 Min. below 75°F.

Pot Life— 80°F.—16 Hrs.
100°F.—5 Hrs.

GLID-GUARD® Epoxy Chemical Resistant Finish (Continued)

SURFACE PREPARATION (Continued)

Metal Surfaces

Ferrous

ENVIRONMENTAL CLASSIFICATIONS

TYPE A—AGGRESSIVELY CORROSIVE
This exposure is an area characterized by aggressive chemical fumes, mists or dusts, or other chemical contaminants that combine with high humidity and condensed moisture to corrode carbon steel at rates greater than six mils per year and that corrode zinc at rates greater than one mil per year. Need to limit air pollution and protect personnel generally confines chemical concentrations of such aggressive nature to within a radius of about 50 yards from the source of contamination. For Type A environments and all immersion exposures White Metal Sandblasting is recommended (SSPC-SP5-82). For splash and spillage Near White (SSPC-SP10-82) is satisfactory.

TYPE C—CORROSIVE
This exposure is less destructive than Type A exposure and is characterized by moderately aggressive chemical fumes, mists or dusts that combine with moisture and high humidity to corrode carbon steel at rates from three to six mils per year and to corrode zinc at rates less than one mil per year. Type A exposures may, in many instances, become Type C exposures outside a radius of about 50 yards from the source of contamination for a limited further distance. For Type C, corrosive environments, Near White Sandblasting is recommended (SSPC-SP10-82).

TYPE M—MODERATE
This exposure is generally outdoors and is characterized by normal weathering and/or light or moderate concentrations of chemical fumes that combine with humidity and condensed moisture to corrode carbon steel at rates less than three mils per year. Zinc in this exposure is virtually free of corrosion. Light to moderate chemical fume concentrations in indoor areas without excessive humidity may produce similar conditions. For Type M, moderate environments, Commercial Sandblasting is recommended (SSPC-SP6-82). Where exposure is normal weathering only, Brush Sandblasting (SSPC-SP7-82), Power Tool Cleaning (SSPC-SP3-82) or Hand Tool Cleaning (SSPC-SP2-82) will provide excellent service.

TYPE P—PROTECTED (ARCHITECTURAL)
In this category, surfaces generally are indoors in the normal humidity range and are not subjected to chemical contaminants that will attack paint or steel. For Type P, protected environments, Brush Sandblasting (SSPC-SP7-82), Power Tool Cleaning (SSPC-SP3-82) or Hand Tool Cleaning (SSPC-SP2-82) will provide the sound substrate needed for proper adhesion.

Galvanized & Aluminum

Sandblasting unnecessary. See "Surface Preparation" above.

Remove oil, grease, dirt, dust and chemical contaminants by the prescribed cleaning methods.

Masonry Surfaces

Poured Concrete, Brick, Concrete Block

Level any surface projections and mortar spatter by grinding, stoning or scraping. Rake mortar joints clean. Remove all oil, grease, dirt, dust and chemicals with the prescribed cleaning methods.

Remove weak or powdery surface on concrete by mechanical means such as scraping, grinding or sandblasting. Very smooth concrete may be dulled by similar means. The first coat applied to very smooth concrete should be reduced 2 to 1 with GLID-GUARD Epoxy Solvent No. 5568 to gain penetration and adhesion.

Wood Surfaces

Sand smooth with the grain. All wood should be aged and fully cured. Application to large expanses of wood not normally recommended—consult your Glidden representative.

Previously Painted Surfaces

The performance of GLID-GUARD Epoxy Chemical Resistant Finishes applied over previously painted surfaces is directly influenced by the type, age and condition of the old coating.

Hard or glossy paints should be dulled by sanding, sandblasting or other abrasive methods to assure maximum adhesion. Apply to test area to check for lifting of old coating.

Primers, Fillers, Sealers

For Ferrous, Galvanized and Aluminum Metals

GLID-GUARD Epoxy Chromate Metal Primer No. 5251/5252, Green or GLID-GUARD Double Build Epoxy Chemical Resistant Primer No. 5461/5452, Red.

GLID-GUARD Epoxy Self-Priming Mastic, Gray No. 5256/5257.

For Poured Concrete, Brick

GLID-GUARD Epoxy Chemical Resistant Finish High-Build, Gray, No. 5555/5556 reduced 50% with GLID-GUARD Epoxy Solvent No. 5568.

For Concrete Block

GLID-GUARD GLID-TILE® Basecoat No. 5512, White or ULTRA-HIDE® Acrylic Latex Block Filler No. 5317, White.

For Wood Surfaces

GLID-GUARD Epoxy Chemical Resistant Finish High-Build Gray, No. 5555/5556.

For Gypsum Wallboard and Plaster

SPRED SATIN® Latex Primer-Sealer No. 3416, White or INSUL-AID™ Primer-Sealer No. 5116, White.

FOR BEST RESULTS AND SAFEST USAGE, USER IS SPECIFICALLY DIRECTED TO CONSULT THE CURRENT MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT.

LIMITATION OF LIABILITY

To the best of our knowledge the technical data contained herein are true and accurate at the date of issuance but are subject to change without prior notice. We guarantee our product to conform to Glidden's specifications. **WE MAKE NO OTHER WARRANTY OR GUARANTEE OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE.** Liability, if any, is limited to replacement of the product or refund of the purchase price. **LABOR OR COST OF LABOR AND OTHER CONSEQUENTIAL DAMAGES ARE HEREBY EXCLUDED.**

WARNING! FLAMMABLE. VAPOR HARMFUL. MAY IGNITE EXPLOSIVELY. CAN CAUSE IRRITATION OF EYES, SKIN AND RESPIRATORY TRACT. NO. 5555 CONTAINS TOLUENE, METHYL ETHYL KETONE, PROPYLENE GLYCOL MONOETHYL ETHER, EPOXY RESIN AND TITANIUM DIOXIDE. NO. 5556 CONTAINS TOLUENE, ISOPROPYL ALCOHOL AND SILICA.

Keep away from heat, sparks and flame. **Do not** smoke. Vapors may ignite explosively. Extinguish all flames, burners, stoves, heaters and pilot lights and disconnect all electrical motors and appliances before use and until all vapors are gone. Use portable explosion-proof lighting and ventilating equipment connected to exterior self-contained power source. Non explosion-proof equipment must be placed well away from areas where vapors may collect. Use non-ferrous tools and wear conductive and non-sparking shoes in areas where explosion hazards exist. Vapors may spread long distances.

Keep closures tight and upright to prevent leakage. Keep container closed when not in use. Store below 100°F. **Do not** incinerate closed containers as they may explode when exposed to extreme heat or fire. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Avoid contact with eyes and skin. Impervious clothing, footwear and equipment including gloves and splash-proof goggles should be worn, especially when spray applying. **Do not** take internally.

Avoid breathing of vapor or spray mist. Control environmental concentrations below applicable standards. Where respiratory protection is required, use only NIOSH/MSHA approved respirators in accordance with OSHA Standard 29CFR 1910.134.

FIRST AID: In case of skin contact, flush from skin with water and then wash thoroughly with soap and water. For eye contact, flush **immediately** with large amounts of water for at least 15 minutes and **get emergency medical attention.** If swallowed, **get emergency medical attention.** If inhaled, move to well ventilated area and **get emergency medical attention.** Administer oxygen or artificial respiration if necessary.

NOTICE: This product contains solvents. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

USE ONLY WITH ADEQUATE VENTILATION. KEEP OUT OF THE REACH OF CHILDREN.

For emergency information call (216) 826-5566.

PF1-585

SCM® GLIDDEN COATINGS & RESINS
ARCHITECTURAL & MAINTENANCE
DIVISION OF SCM CORPORATION, CLEVELAND, OHIO 44115

No. 04786

Litho in U.S.A.

GLID-GUARD® Epoxy Chemical Resistant Finish (Continued)

APPLICATION

May be applied by brush, roll, conventional or airless spray. Do not apply when substrate temperature is below 50°F.

NOTE: The use of two finish coats will greatly increase the life of the system and extend time before repainting is necessary.

SPRAY APPLICATION

Airless Spray

Glidden equipment is specified.
Gun: Glidden Super G Fluid Tip: 517
Pump: Glidden "Sprint," Glidden "500," Glidden "750," or "750GE," Glidden "Formula One"
Pressure: 1600-1700 psi

COVERAGE

Recommended coverage (calculated)—134-146 sq. ft./gal. at 6.0-6.5 mils dry, 11.0-12.0 mils wet (dry mil figures rounded to nearest 0.5 mil). When computing working coverage, allow for application losses, surface irregularities, etc.

DRYING

Dries to touch in 4 hours, recoat in 5 hours, full cure in 7 days under normal conditions (77°F., 50% R.H.). Cooler, more moist conditions require longer drying.

CLEAN-UP

Clean equipment with GLID-GUARD Epoxy Solvent No. 5568 immediately after use.

TOPCOATS

If desired, topcoat with GLID-GUARD Epoxy Chemical Resistant Finishes or GLID-THANE™ ONE Moisture Cured Urethane coatings, allowing a minimum of 5 hours dry time under normal conditions (77°F., 50% R.H.). Topcoat with GLID-THANE ONE coatings within 48 hours.

CHEMICAL RESISTANCE TESTS

Spot resistance after 48 hours of contact. R = Resistant NR = Not Resistant

Organic Acids—Acetic (36% and 99.5%) NR, Citric (17%) R, Lactic (85%) NR. Mineral Acids—Hydrochloric (5% and 37%) NR, Phosphoric (5% and 85%) NR. Oxidizing Agents—Nitric Acid (5% and 70%) NR, Household Bleach (6% Hypochlorite Solution) R, Chromic Acid (30%) R. Alkali Solutions—Ammonium Hydroxide (5% and 29%) R, Sodium Hydroxide (5% and 50%) R. Solvents—Acetone R, Methyl Isobutyl Ketone R, Toluene R, Mineral Spirits R, Methanol R, Butanol R, Denatured Alcohol R, Perchloroethylene R, Carbon Tetrachloride R. Oils—Sour Crude Petroleum R, Vegetable Oil R, Motor Oil R, Skydrol 500 R. Water—Fresh Water R, Sea Water R, Deionized Water R. Misc.—Phenol (8%) R, Styrene R, Sugar Solution (50%) R, Triethylene Tetramine R, JP-4 Jet Fuel R, Gasoline R, Laundry Detergent (5%) R.

File

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

FROM CONTRACTOR	CONTRACT NO	TRANSMITTAL NO	DATE
Sneeden, Inc. P. O. Box 3548, Wilmington, NC	N62470-85-C-6444	10	4-7-86
TO Officer in Charge of Construction Bldg. 1005, MCB, Camp Lejeune, NC 28542	PROJECT TITLE AND LOCATION Replace Water Softeners, Bldg. G-650, MCB, Camp Lejeune, & Bldg. AS-4151, New River		

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☒ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
1.	15400-2.1.1	Certificates of Compliance - Copper Pipe and Fittings	7	A	BA 4/14/86
2.	15400-2.1.2	Certificate of Compliance - CPVC Pipe and Fittings	7	A	BA 4/14/86

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC

CONTRACTOR REPRESENTATIVE (Signature) James E. Sneeden III

DATE RECEIVED BY REVIEWER | FROM (Reviewer) | TO

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Copy to file & Contractor 4-17-86

COPIES TO
ROICC (2)
LANTDIV (1)
A-E (1)

DATE 4/15/86

SIGNATURE B.F. King, LT ROICC

☆ U.S. GOP: 1983 - 739-003/2122 Region 3-11

OICC-ROICC
JACKSONVILLE, NORTH CAROLINA AREA
MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

ROUTING SLIP
MCBCL 11000/14 (REV. 04-85)

NO.	DATE
795	9 Apr 86 sel

FROM

Sneeden, Inc.

CONTRACT

85-C-6444, Replace Water Softeners

SUBJECT

Sub TL #10, Cert. of Compl. Copper Pipe & Fittings,

CPVC Pipe and Fittings

COMMENTS

1. X
2. Sandy

ROUTING	SEQUENCE	INITIAL	DATE	COMMENTS
JAX/10				
02	2/4	To 04	4-10	SS
04	3	MSR	4-18	
05				
05A				
05B				
Z				
Y				
X	1	RK	4/9/86	
W				
V				
U				
T				
S				
R				
H				

Return Buck Tag to Contract Branch with correspondence unless otherwise indicated.

15400-2:1.1

HOWELL METAL COMPANY

P. O. BOX 218 · NEW MARKET, VIRGINIA 22844 · TELEPHONE (703) 740-3111

March 24, 1986

TO WHOM IT MAY CONCERN:

This is to certify that 1/2", 3/4", and 2" L hard copper water tube manufactured by HOWELL METAL COMPANY, and sold to NOLAND COMPANY, Kinston, North Carolina, for

Job: Replace Water Softners
Camp LeJeune
North Carolina

will conform to ASTM B88 specifications.

HOWELL METAL COMPANY

Thomas F. Constable, Jr.
Production Manager

rfp

Sworn to and subscribed before me this 24th day of March 1986
Witness my hand and official seal.
Notary Public
MY COMMISSION EXPIRES FEB. 2, 1987

It is hereby certified that the equipment and material shown and marked in this submittal is that proposed to be incorporated into Contract Number N62470-85-C-6444, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Goverment approval

Sneeden Inc.
Certified by J. E. Sneeden III Date 4/7/86 ".

MUELLER BRASS CO. PORT HURON, MICHIGAN 48060

Date April 2, 1986

Customer Noland Co.
Street No. P. O. Box 3069
City & State Kinston, N. C. 28501
Order No.
Attention

Contractor Sneeden, Inc.
Address P. O. Box 3548
Contract No. N62470-85-C - 6444
Job Description Replace Water Softeners
Location Camp Lejeune, N. C.

PRODUCT SPECIFICATIONS
CERTIFICATION OF CONFORMANCE

Mueller Brass products are manufactured in conformance to the latest revisions of the following recognized industry standards.

- [X] WROT COPPER AND COPPER ALLOY SOLDER JOINT PRESSURE FITTINGS — To ANSI B16.22.
- [ ] CAST COPPER ALLOY SOLDER JOINT PRESSURE FITTINGS — To ANSI B16.18.
- [ ] CAST COPPER ALLOY FITTINGS FOR FLARED COPPER TUBES — To ANSI B16.26.
- [ ] STREAMLINE COPPER WATER TUBE — TYPES K, L & M — To ASTM B88 and WWT-799.
- [ ] REFRIGERATION FLARE-TYPE FITTINGS — To SAEJ513, and Military Standards MS-16993, MS-35867 thru MS-35873 inclusive, MS-35919 and MS-35926.
- [ ] STREAMLINE COPPER REFRIGERATION SERVICE TUBE — To ASTM B280, and WWT-775.
- [ ] STREAMLINE NITROGENIZED ACR HARD DRAWN COPPER TUBE — To ASTM B88 - Type L, in accordance with ASTM B280.
- [ ] OXYGEN SERVICE TUBE — To ASTM B88, Types K and L — hard drawn lengths only — in accordance to CDA cleanliness specifications and NFPA 56F, Seamless Copper Tube cleaned for Oxygen Gas Service.
- [ ] WROT COPPER AND COPPER ALLOY SOLDER JOINT DRAINAGE FITTINGS - DWV — To ANSI B16.29.
- [ ] CAST COPPER ALLOY SOLDER JOINT DRAINAGE FITTINGS - DWV — To ANSI B16.23.
- [ ] STREAMLINE COPPER DRAINAGE TUBE - DWV — To ASTM B306.
- [ ] COPPER PIPE — To ASTM B42.
- [ ] RED BRASS PIPE — To ASTM B43 — Can be supplied in hard temper.

Yours truly,
MUELLER BRASS CO.

Sworn to and subscribed before me this
2 day of April, 19 86
June I. Moore
(Notary Public)

JUNE I. MOORE
Notary Public, St. Clair Co., Mich.
My commission expires May 26, 1986

By Richard C. Haenke
RICHARD C. HAENKE
Product Manager
Plumbing and Heating Division

S1076 Rev. 11/82

15400-2.1.2

CG INDUSTRIES, INC.
P.O. BOX 339
ARDMORE, AL 35739
TELEPHONE (205) 423-2196

Manufacturers of CPVC Hot and Cold Water Systems

March 24, 1986

Mr. Bill Waters
Noland Company
P.O. Box 3069
Kinston, NC 28501

Dear Sir:

This letter certifies the CPVC pipe and fittings which is scheduled to replace piping in water softeners at Camp LeJeune is made in strict accordance with American Society of Testing and Materials Specification D-2846, Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot and Cold Water Distribution Systems.

Quality control procedures are in accordance with this specification (D2846) and National Sanitation Foundation Standard 14.

Very truly yours,

Will A. Lewis
President

js

It is hereby certified that the equipment and material shown and marked in this submittal is that proposed to be incorporated into Contract Number N62470-85-C-6444, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Goverment approval

Sneeden Inc.
Certified by J. Sneeden III Date 4/7/86 ".

Martha Ann Shelton
Notary Public

MY COMMISSION EXPIRES
APRIL 21, 1987

OFFICE OF THE
OFFICER IN CHARGE OF CONSTRUCTION
CAMP LEJEUNE, NORTH CAROLINA
APPROVED
SUBJECT TO CONTRACT REQUIREMENTS
CONTRACT 6444
DATE 4/86
Officer in Charge
of Construction

PPFA
Plastic Pipe and Fitters Association

NSF

INDUSTRIES, INC.
P.O. BOX 339
ARDMORE, AL 35739
TELEPHONE (205) 423-2196

Specialists in CPVC for Hot & Cold Water Systems

A COMPLETE SYSTEM OF CTS* PIPE AND FITTINGS ½ THRU 2 INCH

Chlorinated Polyvinyl Chloride (CPVC) is a thermoplastic material which has been used for *hot and cold water distribution* since 1960 in the United States. This product offers superior performance, competitive prices and substantial labor savings over metal piping systems. A full line of products is available which allows CPVC pipe and fittings to replace copper tubing or galvanized iron in hot and cold potable water distribution applications in the ½" thru 2" sizes. The solvent cemented joint between fitting and pipe provides a joint which is proven to be highly reliable and far superior to many mechanical joints. As a system CPVC in copper tube size is superior in performance and reliability and is the most economic system available today.

IDEAL FOR
APARTMENTS,
MOTELS,
COMDOMINIUMS,
COMMERCIAL

WHY SPECIFY CPVC?

- Proven Performance since 1960
- Corrosion and Scale Resistant
- Reliable Joints
- Designed for Continuous Use at
  400 PSI at 73° F
  100 PSI at 180° F.
- Accepted by all major Model Codes
  SBCC, IAPMO, BOCA, CABO
- Meets HUD Requirements
- Rigidity For a Professional Appearance

WHY DEMAND CGF CPVC?

- The Only Manufacturer of a Complete Line of CTS CPVC in ½ thru 2-Inch Sizes
- CGF Manufactures Only CPVC
  - Quality
  - Service
  - Competitive Pricing
- Engineering Support

CGF-CPVC — Made with FLOW GUARD℠ from B F Goodrich

* Copper Tube Size

CGF-CPVC

CGF-CPVC pipe and fittings are made with FLOWGUARD™ Temprite CPVC, a superior material for the manufacture of Hot and Cold pressure plumbing systems. FLOWGUARD CPVC has been specifically developed for use in multiple residential construction and is ideally suited for apartments, motels, condominiums, and commercial applications.

Call the CGF Engineering Department for technical information.

APPLICABLE SPECIFICATIONS

American Society for Testing and Materials
- ASTM D-2846 - Pipe and Fittings
- ASTM F-493 - Solvent Cements
- ASTM D-883 - Terms Relating to Plastics
- ASTM F-402 - Handling of Cements and Primer

National Sanitation Foundation
- Standard Number 14 - Plastic Piping Components

American National Standards
- ANSI B 2.1 Pipe Threads

Dept. of Army - Office of the Chief of Engineers
- CEGS - 15400 Guide Specification Military Construction

HYDROSTATIC STRENGTHS AND SUGGESTED PRESSURE RATINGS FOR CPV C 4120 AT VARIOUS TEMPERATURES

TEMPERATURE	LONG-TERM HYDROSTATIC STRENGTHS
Degree F	psi
73	4250-4900
140	2050-2250
180	1200-1600
210	740

TEMPERATURE	DE-RATING FACTOR	PRESSURE RATING FOR SDR 11 CPVC 4120 PIPE
Degree F		psi
73	1.00	400
80	1.00	400
90	0.91	360
100	0.82	325
120	0.65	260
140	0.50	200
160	0.40	160
180	0.25	100
200	0.20	80

De-rating factors and pressure ratings were obtained using a 0.5 design factor.

CGF Industries Inc.
P.O. Box 339
Ardmore, AL 35739
(205) 423-2196

THERMAL EXPANSION AND COMPENSATION

CPVC pipe, like most materials, expands when heated and contracts when cooled. Piping systems should allow for this movement. Piping should not be anchored tightly to the supports but rather secured with smooth straps that provide for a degree of movement caused by thermal expansion. Bends, offsets or expansion joints should be provided to allow the movement caused by the thermal expansion and contraction. Thermal expansion can be calculated as follows:

FORMULA Thermal Expansion $= \delta = L \propto \Delta T$ (inches)

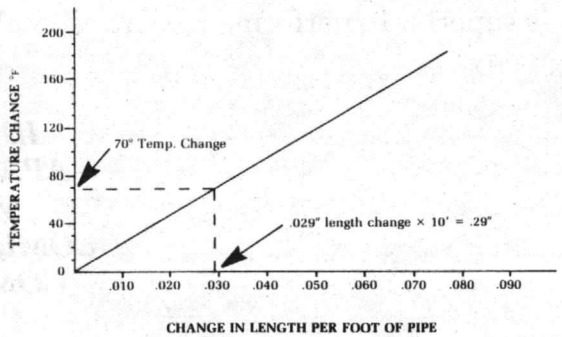
Where L = length of pipe
ΔT = change in temperature
$\propto$ = Co-efficient of thermal expansion

For CPVC $\propto = 3.4 \times 10^{-5}$ in/in°F

Example:
Calculate the change in length in a 10 ft. section of CPVC pipe when it is heated from 70°F to 140°F

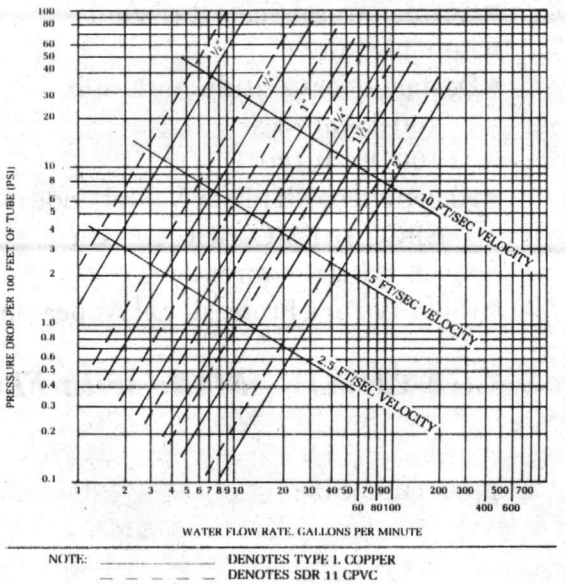
Thermal expansion $\delta = L \propto \Delta T$
$= 10$ ft. $\times 12$ in/ft $\times 3.4 \times 10^{-5}$ in/in °F $\times (140-70)$ °F
$= .29$ inches

The graph below can also be used to find the expansion in a section of pipe. It is simply a plot of the above equation.



Call for CGF Engineering Memorandum 201.

PRESSURE LOSS AND VELOCITY RELATIONSHIPS FOR WATER CPVC VS. "L" COPPER



Call for CGF Engineering Memorandum 203.

File

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
N62470-85-C-6444	6	4-2-86

FROM CONTRACTOR: Sneeden, Inc.
P. O. Box 3548, Wilmington, NC

TO: Officer in Charge of Construction
Bldg. 1005, MCB, Camp Lejeune, NC 28542

PROJECT TITLE AND LOCATION: Replace Water Softeners, Building G-650, MCB, Camp Lejeune, & Bldg. AS-4151, MCAS, New River

CONTRACTOR USE ONLY

*List only one specification division per form.

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☒ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

**ACTION CODES
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
1.	15651-2.1	Shop Drawings and Catalog Data - Water Softeners - Building G-650	7	A	BA 9/4/86
2.	15651-2.1	Shop Drawings and Catalog Data - Water Softeners - Building AS-4151	7	A	BA 9/4/86

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): James Earl Sneeden III

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO

☒ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

Two meters per installation shall be Provided

Copy to field & Contractor 4-11-86

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	4/11/86	P. A. King, LT ROICC

☆ U.S. GOP: 1983 - 739-003/2122 Region 3-11

OICC-ROICC
JACKSONVILLE, NORTH CAROLINA AREA
MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

ROUTING SLIP
MCBCL 11000/14 (REV. 04-85)

NO.	DATE
790	3 April 1986 sel

FROM
Sneeden, Inc.

CONTRACT
85-C-6444 Replace Water Softeners

SUBJECT
Sub TL # 6, dated 4/2/88

COMMENTS

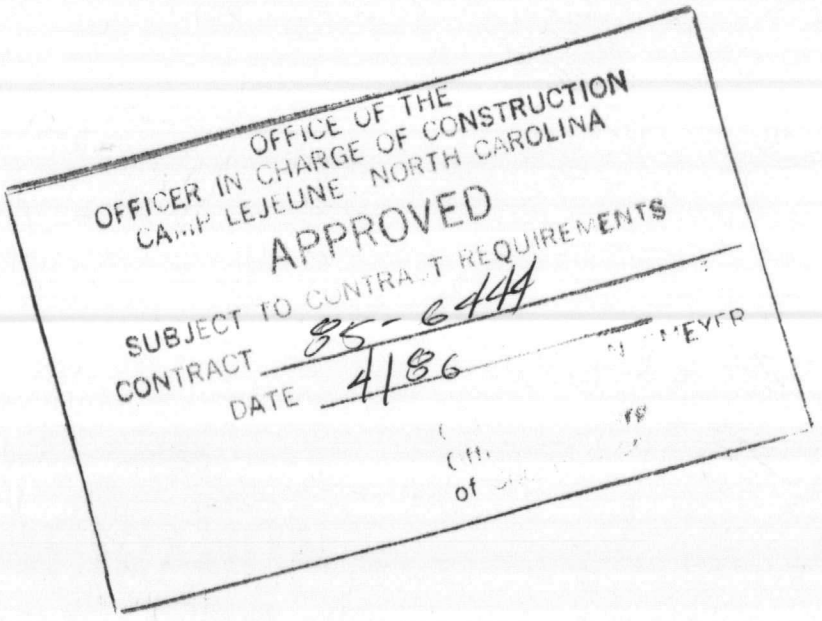
1. X
2. Sandy

ROUTING	SEQUENCE	INITIAL	DATE	COMMENTS
JAX/10				
02	2/4			
04	3	MS	4/9	
05				
05A				
05B				
Z				
Y				
X	1	M	4/3/86	
W				
V				
U				
T				
S				
R				
H				

Return Buck Tag to Contract Branch with correspondence unless otherwise indicated.

water
MONARCH
systems

[redacted]


OFFICE OF THE
OFFICER IN CHARGE OF CONSTRUCTION
CAMP LEJEUNE, NORTH CAROLINA
APPROVED
SUBJECT TO CONTRACT REQUIREMENTS
CONTRACT 85-6444
DATE 4/86

15651 -2.1

MONARCH SUBMITTAL 7006-00-70

March 28, 1986

REPLACE WATER SOFTENERS
Building AS-4151 at MCAS
New River
Jacksonville, North Carolina
Contract No. N62470-85-C-6444

Prepared for:

Sneeden, Inc.
301 Eastwood Road
Wilmington, North Carolina 28406
Submittal I

Submitted by:

John E. Glaser, Sr.
Sales Engineer

It is hereby certified that the equipment and material shown and marked in this submittal is that proposed to be incorporated into Contract Number N62470-85-C-6444, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Goverment approval

Sneeden Inc.
Certified by J. E. Glaser, III Date 4/2/86 ".

TABLE OF CONTENTS

water MONARCH systems
Since 1918

WATER SOFTENER SYSTEM
SECTION 15651
BUILDING AS-4151
MARINE CORPS AIR STATION
JACKSONVILLE, NORTH CAROLINA

1.0 General

1.1 **WATER SOFTENER SYSTEM** will consist of two softener tanks.

1.2 **TYPE AND CAPACITY:** Each softener will be an automatic downflow pressure type, having the capacity of maximum 1,110,000 grains removal between regenerations and a flow rate of 190 GPM.

1.3 **SOFTENER TANKS** will be 42 inches diameter by 78 inches straight shell exclusive of heads. Each tank will be of welded steel construction conforming to the American Society of Mechnical Engineer Code for pressure vessels and so stamped. The tank will be designed for a maximum working pressure of 100 psi. Inlet and outlet connections will be installed thru the side shell to permit lower installation height. The upper head of each tank will be provided with a 12" x 16" manhole. The tanks will have means of support made of steel, constructed to hold it in operating position. The interior of the pressure vessel will be lined with a minimum of 8 mils of corrosive resistant epoxy. The tank will have one coat of factory applied primer to the exterior, including all valving and piping connected to the softener tank.

1.4 **CONTROL SYSTEM** will provide for a five-cycle regeneration process. The regeneration will be initiated by an automatic reset register connected to a 2" Badger meter located on the outlet of each softener tank. The meter will be equipped with a automatic reset register that will measure the quanity of water passing thru the softener. When a pre determined amount passes thru the softener the register will signal the control panel to regenerate the softener tank.

The control panel will have means of adjusting the time of each cycle of the regeneration process. A electricial interlock will be provided to prevent both softener from regenerating simultaneously. The control panel will be mounted in a NEMA 4 enclosure.

See Catalog Cut Section 2.1 Badger

1.5 **CONTROL VALVE** will be 1-1/4" hydraulic power, multi-valve. The valve will have one moving part and control all functions necessary to regenerate the water softener, including backwash, brine, slow and fast rinse. The valve will have incorporated means of adjustable brine injection rate.

See Catalog Cut Section 2.2 Solomatic

The control valve will be furnished with a fixed rate flow control device, properly sized for the softener system.

There will be a means of manually regenerating the control valve in the event of a power failure.

The softener piping will include two 2" ips automatic diaphragm valves. The diaphragm valves will be hydraulic type. They will permit higher flows at lower pressure drop across the softener during the service cycle.

See Catalog Cut Section 2.3 Diaphragm Valve

1.6 **EXCHANGE MATERIAL** will be of the stryene-resinous type with an exchange capacity of not less than 1.9 meg/ml per cubic foot. The effective size will be not less than 0.45 mm and the uniformity coefficient will not exceed 2.00. Not more than 1/2% by weight will pass through a 5 mesh U.S. Standard Screen. The exchange material bed in the softener tank will be 40 inches deep.

See Catalog Cut Section 2.4 Resin C-100

1.7 **SILICA QUARTZ SUPPORTING BED** will be placed immediately above the lower distributor system. The silica quartz will be 98% silica, free from clay, or other foreign materials. The silica quartz bed will have a minimum depth of 8 inches and will be properly graded to prevent loss of the exchange materials during normal operation backwashing. A minimum of three layers (grades) of silica will be furnished.

1.8 **LOWER DISTRIBUTOR SYSTEM** will consist of a central hub, machined from PVC bar stock. The hub will have no cement or welded joints. The laterals will consist of rigid PVC SDR tubing with slots no larger than .020 inches in width. The hub and laterals provide distribution through uniformly spaced laterals, covering more area from the center outward to prevent side wall channeling. Laterals will be mounted as closed to the bottom head as possible. The total area of the slots in the laterals will be a minimum of two

times the inlet of the softener. All other components of the lower distributor will be schedule 80 PVC.

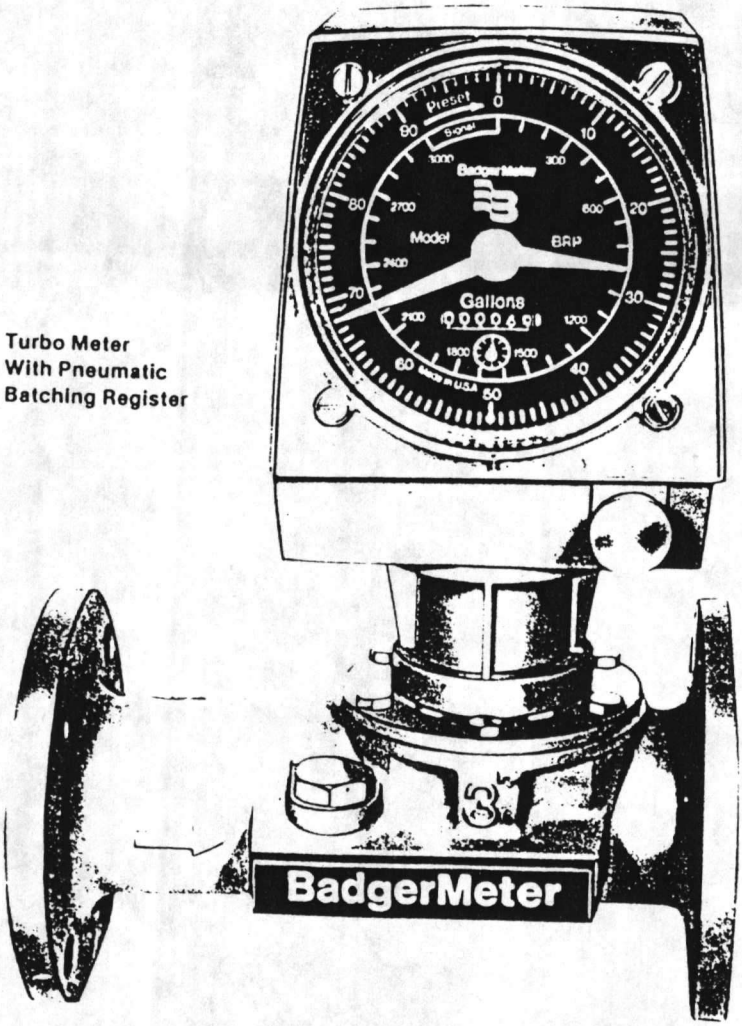
1.9 **HEADER SYSTEM** will be constructed of PVC and designed to disperse incomeing water in such a way to prevent channelling and distribution of water evenly throughout the area of the bed.

1.10 **OPERATING INSTRUCTIONS:** Three sets of instructions covering the care and operation of each softener will be
provided. These instructions will be printed in the form of a bound booklet.

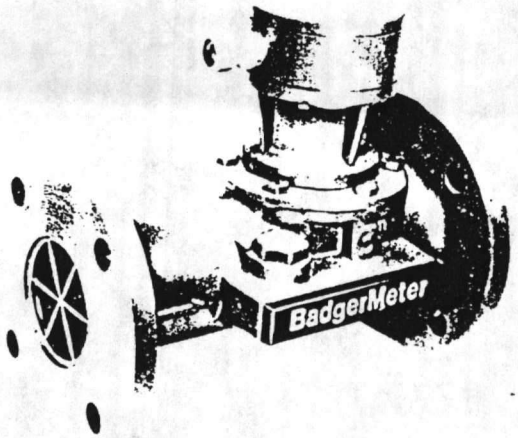
BADGER

BADGER INDUSTRIAL TURBO METERS

SIZES 2″ TO 6″



Turbo Meter
With Pneumatic
Batching Register



Meter With
Pulse Transmitter

HIGH ACCURACY OVER BROAD FLOW RANGE

COMPACT

LIGHTWEIGHT

Badger Meter, Inc. Industrial Products Division
4545 W Brown Deer Road, P O Box 23099, Milwaukee WI 53223

(414) 355-0400 Telex 26757

MAGNETIC DRIVE TURBO METERS... HIGH ACCURACY OVER BROAD FLOW RANGE

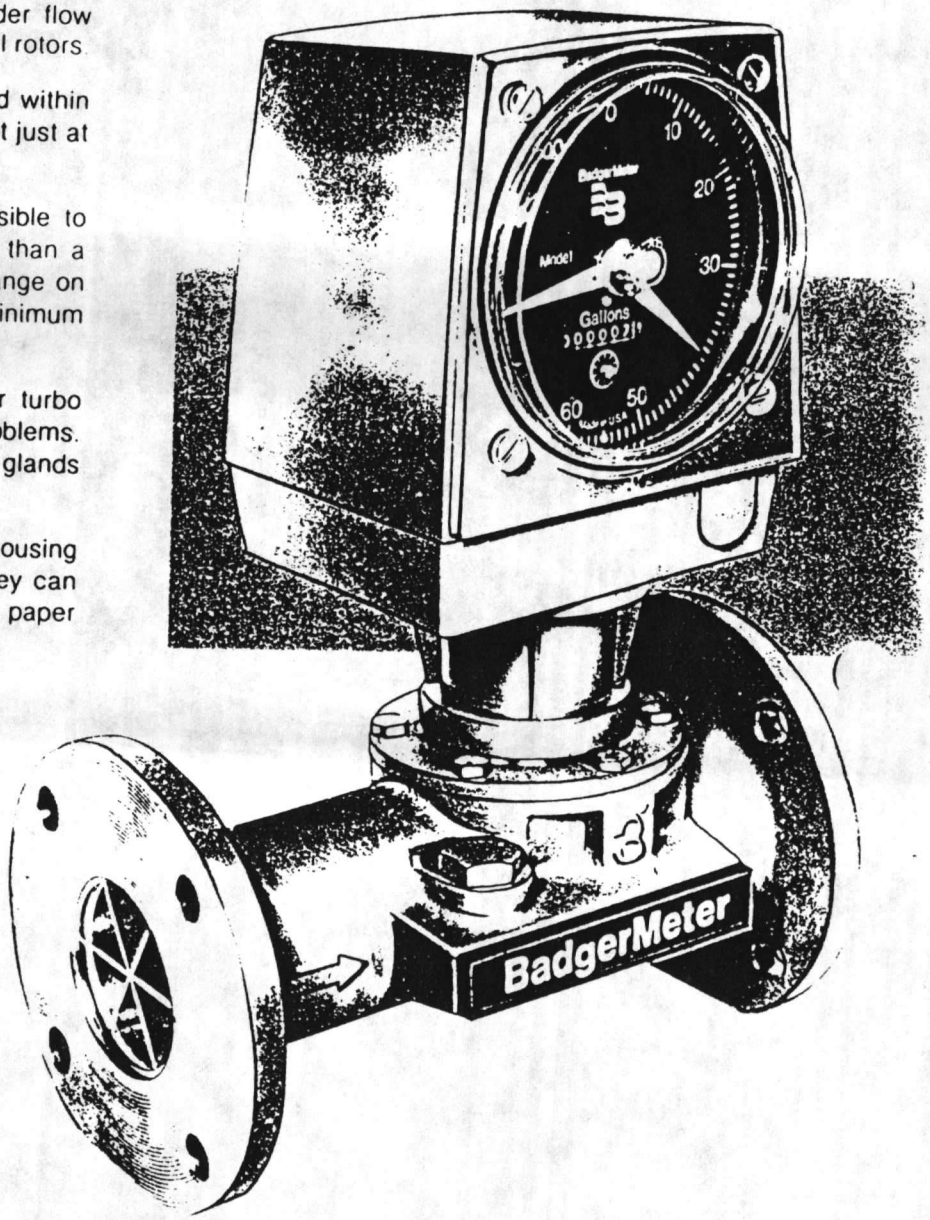
Badger's magnetic drive turbo meters provide industrial processors with higher accuracy over a broader flow range than traditional turbine meters with vertical rotors.

Accuracy of the turbo meter can be maintained within ± 1½% over the meter's entire flow range—not just at one point. Repeatability is within ½ of 1%.

The straight-through flow design makes it possible to operate the turbo at a higher continuous flow than a comparable turbine. In addition, the low flow range on most models is extended about 50% below the minimum for vertical-rotor turbines.

Because of the magnetic drive design, Badger turbo meters also help to reduce maintenance problems. There are no gears in the flow stream, no packing glands to cause leaks.

Badger turbo meters are offered in four different housing materials for measuring liquids up to 250°F. They can handle a wide variety of chemical solutions, paper coating materials, oils, water and food ingredients.



WIDE FLOW RANGE METERING CAPABILITY

METER SIZE	FLOW RANGE—G.P.M.*		MAXIMUM CONTINUOUS FLOW
	MINIMUM	MAXIMUM	
2"	8	160	160
3"	10	350	350
4"	25	1000	1000
6"	40	2000	2000

*Consult your Badger representative about accuracy performance above and below flow rates shown.

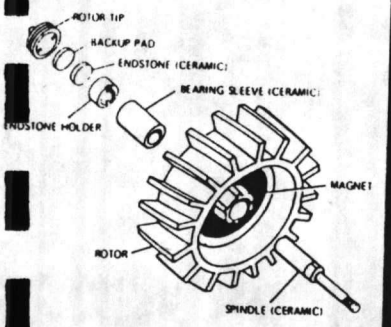
OPERATING PRINCIPLE

Badger's turbo meter, with straight-through flow design, is equipped with straightening vanes and a nose cone at the inlet side. These minimize the swirling effect of upstream piping.

Liquid flowing through the meter tube strikes the blades of a rotor, causing the rotor to turn. By means of a magnetic coupling, this motion is transferred to a vertical spindle and then to gears in the meter's register.

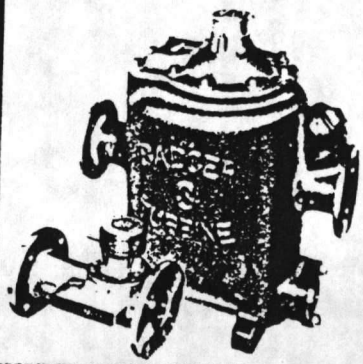
LONG-WEARING CERAMIC BEARINGS

The rotor, bearing, rotor spindle and endstone in the Badger turbo meter are made of a ceramic material developed especially for this application. Because of their hardness, the ceramic parts provide long-life service, even if the meter is run continously at maximum flow.



COMPACT, LIGHTWEIGHT, EASY TO INSTALL

Badger turbo meters are easy to install and service because of their compact size and light weight. A 3" turbo meter, for example, weighs just 40 pounds compared with more than 300 pounds for a vertical propeller meter. The laying length is only 12".



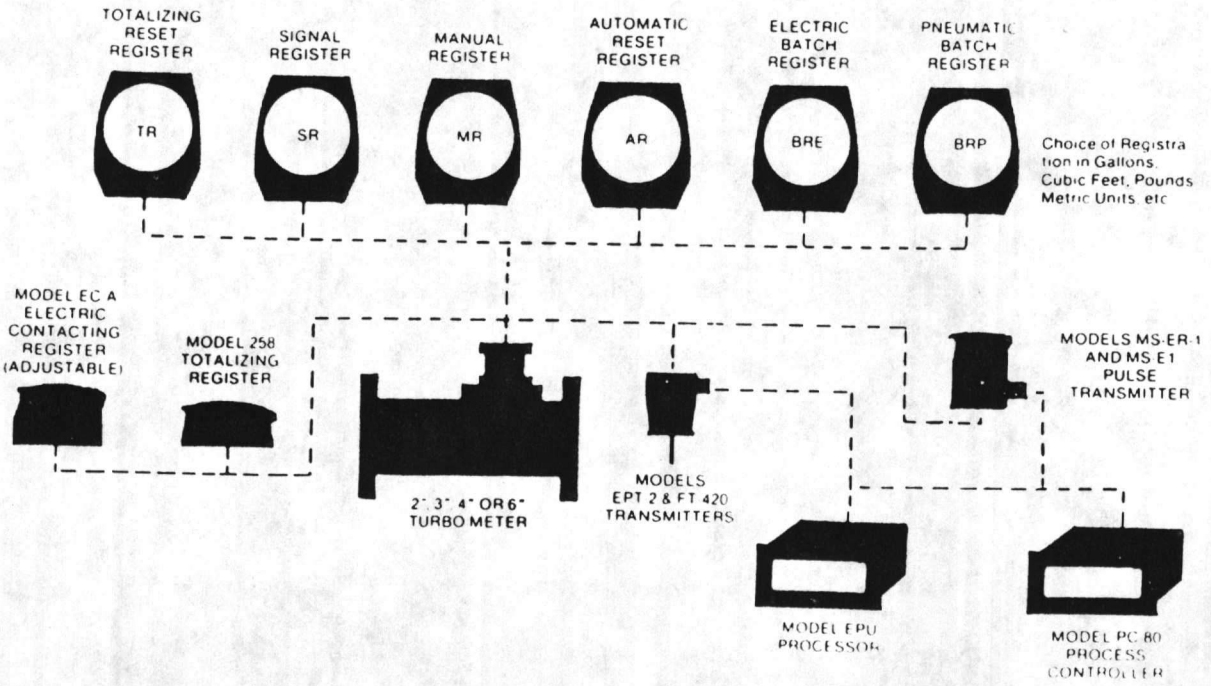
SERVICE WITHOUT REMOVAL FROM LINE

For easy servicing, the rotor and head assembly in the turbo meter can be removed without disconnecting the meter from the line. Just loosen the head bolts or cap on the housing and lift out the entire assembly.

ON-SITE CALIBRATION

A convenient bypass valve for precise calibration is built into the bronze and cast iron housings of 2" and 3" meters. Simply remove the locknut and turn the valve with a screwdriver to adjust flow.

WIDE CHOICE OF REGISTERS AND ACCESSORIES



MATERIALS

Housing	316 Stainless
	Cast Iron
	Cast Steel
	Cast Bronze
Rotor and Nose Cone 2" through 6"	Ryton
	Kynar
Rotor Bearing, Spindle and Endstone	Ceramic
Magnet	Ceramic
Straightening Vanes	316 Stainless
Register Base	Aluminum
Bypass Valve	316 Stainless—2" and 3" Meters
Head Gasket	Nonasbestos/Nitrile Binder
	Nonasbestos/Chloroprene Binder
	Asbestos/Special Binder
"O" Ring and Tetraseal	EPR, Buna N or Viton A

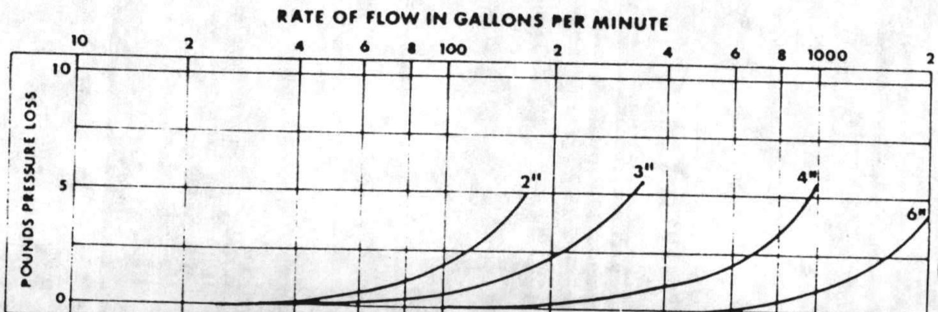
ADDITIONAL ACCESSORY INFORMATION

MODEL	DESCRIPTION	BULLETIN NO.
BRE	Batch Register, Electric	IBR-3010
BRP	Batch Register, Pneumatic	IBR-3010
MR	Batch Register, Manual	IBR-3010
AR	Automatic Reset Register	IAR-3011
SR	Signal Register	IAR-3011
TR	Totalizing Reset Register	ITR-3012
EC-A	Electric Contacting Register	REC-5009
RBC	Remote Batch Controller	IRC-3009
MS-ER1	Pulse Transmitter	XP-6011
MS-E1	Pulse Transmitter	XP-6008
EPT & EPU	Electronic Transmission System	IEP-3013

LOW PRESSURE LOSS

Badger turbo meters operate with less pressure loss than turbines with vertical rotors. The pressure loss curves on adjoining chart were calibrated without a strainer ahead of the meter. Since many different strainers can be applied, industrial processors should be aware that system pressure drop could result.

INDUSTRIAL TURBO METER PRESSURE LOSS CHART



WHEN ORDERING

Specify turbo meter size (flow range) and type of housing material (for compatibility with liquid)

When ordering meter with register, specify model of register and unit of measure. If BRE or BRP batch register is required, specify dial capacity.

When ordering meter with pulse transmitter, specify pulse/unit of measure. Please also list RBC-210 remote batch controller, electric contacting or totalizing/reset register or electronic transmission system if required.

SPECIFICATIONS	2"	3"	4"	6"
Accuracy — Entire Flow Range	± 1.5%	± 1.5%	± 1.5%	± 1.5%
Repeatability — Constant Flow and Temperature	± 0.5%	± 0.5%	± 0.5%	± 0.5%
Head Loss — Maximum Flow (PSI)	4.5	6	5.5	5.5
Maximum Operating Temperature (°F)	250	250	250	250
Maximum Operating Pressure (PSI)	150 Std 300 Opt	150 Std. 300 Opt	150 Std. 300 Opt	150 Std. 300 Opt
Approx. Weight (Lbs.) with 150 PSI Conn (Depends on Meter Material Selected)	30-40	40-50	60-75	100-125
Laying Length (Inches)	10	12	14	18
Height — w/o Register (Inches)	8	9	10	12
Connection Flanges	Round	Round	Round	Round

WARRANTY

Badger warrants meters and parts manufactured by it and supplied hereunder to be free from defects in materials and workmanship for a period of 18 months from date of shipment [illegible]

NUCLEAR DISCLAIMER

[illegible]

BADGER
SERIES 76 METER REGISTERS
For Water Conditioning

MODEL AR
Automatic Reset Register

MODEL SR
Signal Register

Register Models AR and SR are used to measure predetermined quantities of liquid and then transmit a signal which activates other equipment. Their widest application is in water conditioning systems.

The principal difference between the two registers is that Model AR resets itself automatically for each water conditioning cycle, whereas the SR is reset with a register knob.

The AR register is equipped with a nickel-plated reset pointer and a red sweep pointer which moves counterclockwise from the preset position. When the red pointer reaches zero, a trip cam closes a signal switch and a motor switch. The signal is used to start tank regeneration, while the motor resets the pointers at their original position.

With the SR register, the red pointer is used to preset small quantities and the nickel pointer for larger amounts. When both pointers reach zero, a double-throw switch is actuated. This switch can be connected to an electrical circuit to operate a warning bell or alarm, a pump, valve or other equipment.

Models AR and SR are part of the Series 76 line of interchangeable meter registers for use on Badger's industrial-type meters. Three other Series 76 registers, used primarily for liquid batching, are described in Bulletin IBR-3010.

AR AND SR REGISTER SPECIFICATIONS

PHYSICAL

Housing: Glass-filled polycarbonate— NEMA 4
Internal Plates: Brass
Gears: Brass or Thermoplastic
Shafts: 303 Stainless Steel
Register Size: 7½" width, 8⅛" height, 6¾" depth
Dial Size: 5¾"
Totalizer: Six-digit, non-reset

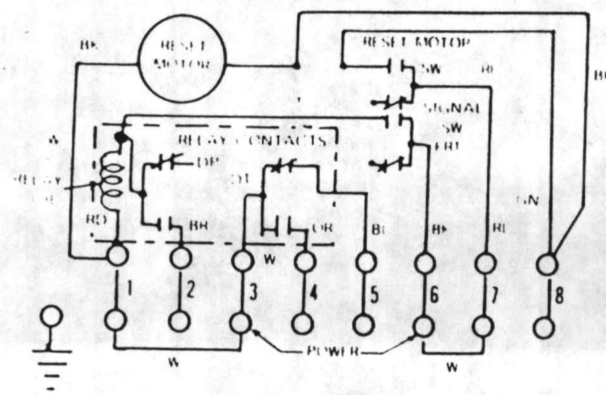
ELECTRICAL

Contact Rating: 7 amps at 115 VAC
AR register available for 24 VAC, 115 VAC, and 230 VAC

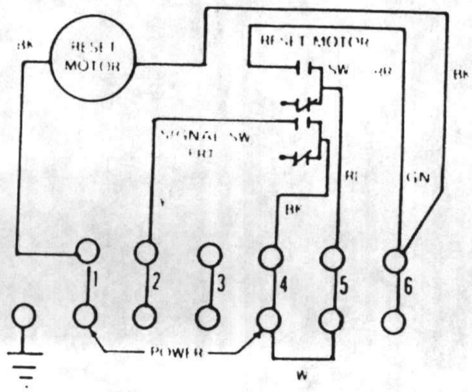
Badger Meter, Inc. Industrial Products Division
4545 W. Brown Deer Road, P.O. Box 23098, Milwaukee, WI

MODEL AR WIRING DIAGRAMS

Switches shown in reset (ready) position



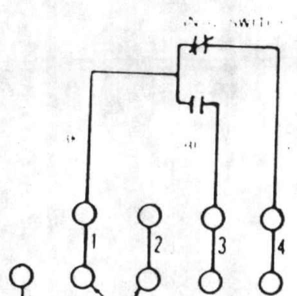
AR With Relay



AR Less Relay

MODEL SR WIRING DIAGRAM

Switch shown with pointers in zero position



WARRANTY

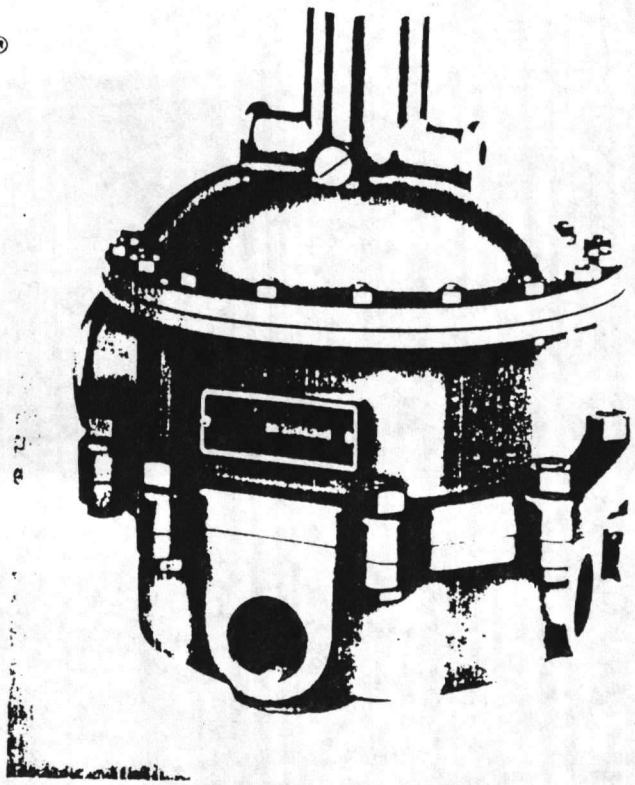
Badger warrants meters and parts manufactured by it and supplied hereunder to be free from defects in material and workmanship for a period of 18 months from date of shipment or [illegible] months from date of installation, whichever period shall [illegible] [illegible]

[illegible] discovery and at Seller's option return of such meters or parts to Seller f.o.b. its factory. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES WHATSOEVER, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES [illegible] MERCHANTABILITY AND FITNESS [illegible]

SOLOMATIC

SOLOMATIC®

A low maintenance, high dependability, automatic valve for softeners and filters

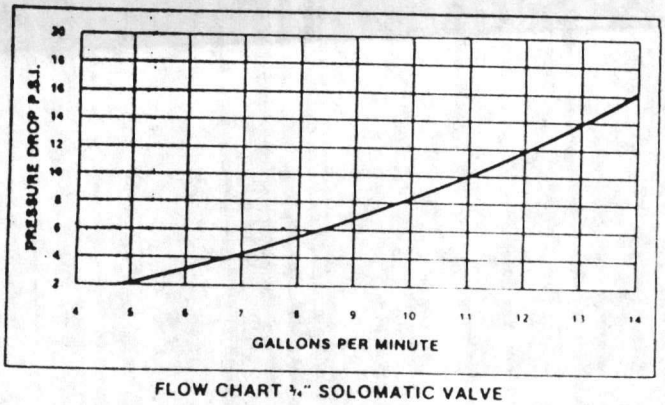


The Aqua Matic Solomatic® Valve is hydraulically operated utilizing a multiport design to automatically control the regeneration and service flow through softeners, filters and ion exchange systems. The Solomatic Valve is patterned after the "time-proven" Solo® valve design with a built-in ejector for brine introduction and a flow control device for the backwash and fast rinse cycles. The solomatic valve has only one moving part, the stemplate assembly, which is completely enclosed in the valve body eliminating the necessity for packing glands. The cam and cam followers are water lubricated, thereby eliminating the necessity for oiling or greasing. Seating surfaces are kept clean by periodic flushing during indexing. The stemplate seats on a resilient rubber gasket attached to the backplate for a tight seal to ensure against leakage. The valve body and bonnet are constructed of cast, grey iron. The stemplate assembly is a brass casting with a stainless steel shaft and a nylon reinforced diaphragm for maximum dependability.

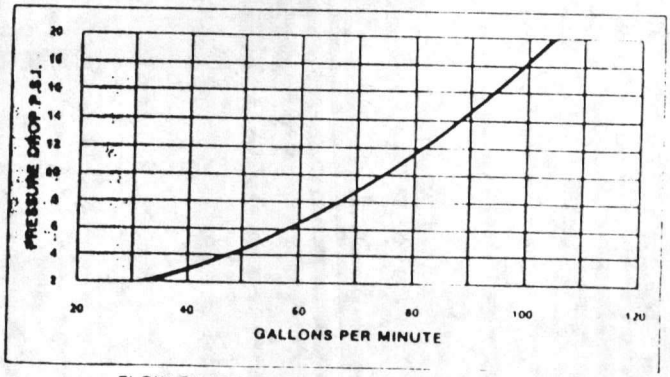
OPERATION

The operation of the Solomatic valve is accomplished by utilizing water pressure to control the raising and lowering of the diaphragm. Upon a signal from a control device, a solenoid actuated pilot valve opens, reducing the pressure above the diaphragm. As the diaphragm rises, the stemplate cam indexes and rotates the stemplate to the next position. The pilot valve closes, increasing the pressure, forcing the diaphragm down and seating the stemplate in position. The water enters the bonnet and is directed to the proper ports for backwash, brine injection and slow rinse, fast rinse or service flow. The timed regeneration sequence can be initiated manually by push button or fully automatically by the use of an additional timer or measuring device such as an automatic reset meter. The service flow rates and corresponding pressure drops for Solomatic Valves are given in Charts A and B. To obtain operating flow rates higher than the rated capacity of the Solomatic Valve, Diaphragm Valves may be installed on the inlet and service outlet of the unit. A separate connection on the backplate of the Solomatic valve supplies pressure for closing the diaphragm valves upon initiation of the regeneration cycle. For a more detailed description see the reverse side.

FLOW RATE VERSUS PRESSURE



FLOW CHART ¾" SOLOMATIC VALVE



FLOW CHART 1¼" — 1½" SOLOMATIC VALVE

AquaMatic INC. 241 CRAN AVE.
ROCKFORD ILLINOIS

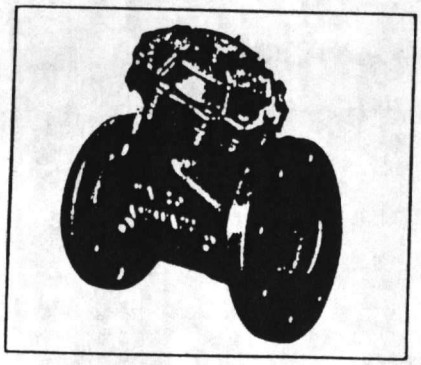
DIAPHRAGM VALVES

DIAPHRAGM VALVES

FOR FLUID TREATMENT & HANDLING SYSTEMS

Diaphragm Valves

- Lowest pressure loss.
  Y pattern permits higher flows at lower pressure loss than any comparable valve.
- Positive control.
  Separate flow and control chambers permit positive closing without springs; and only nominal cost for spring assist opening for low pressure and self draining considerations.
- Cost effective.
  Both initially and in lifetime maintenance.
- Extended diaphragm life.
  Separate chamber protects diaphragm from flow stream; allows replacement without disrupting service. Pre-formed, stress relieved diaphragm minimizes fatigue, maximizes valve responsiveness and diaphragm lifetime.
- Durable.
  Cast iron, brass, bronze, stainless steel, and engineering thermoplastic components. Average maintenance free life of 5 years.
- Design/Application engineering service.
- Optional seal and diaphragm materials for special applications.
- Handles liquids or gases.
- Adaptable to a variety of control devices.
- Optional adjustable flow rate control.
- Optional spring assist.
- Optional position indication.



Metal Body Valves
Series 421 through 429

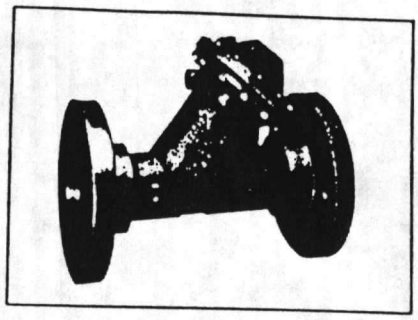
Body and cap of cast iron or brass. Pre-formed, stress relieved diaphragm of Buna N on Nylon for long life. Stainless steel and brass internal parts.

Pipe sizes of 3/4" through 3" threaded (N.P.T. or B.S.P.); 3" through 6" flange drilled in accordance with ASA 16.1, Class 125, or B.S. 4504 (ISO/R 2084).

Operating specifications:

Pressure—Standard 125 psi (8.5 Atm.) rating. (300 psi available).

Temperature—Maximum 150°F (65°C); optional 250°F (120°C).



Plastic Body Valves
Series 520 through 526

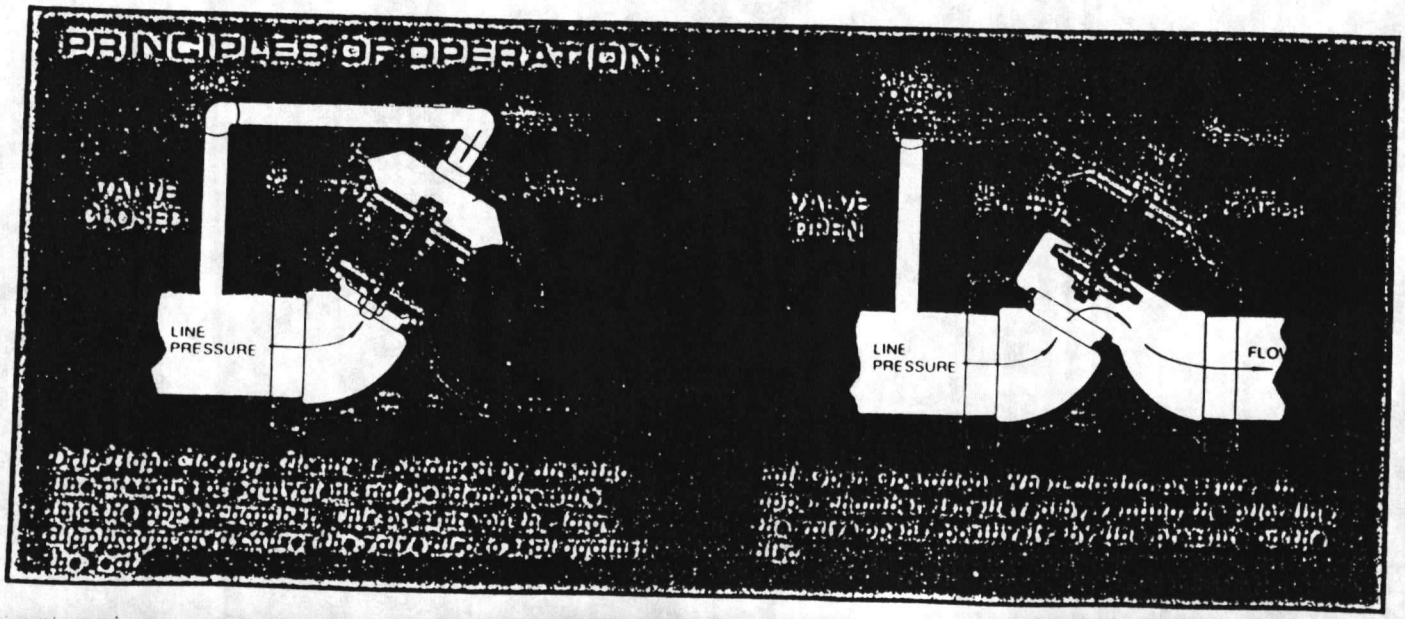
Designed for de-ionized water, corrosive liquids or gases, caustics and acids. (Not applicable for aromatic hydrocarbons). Body and cap molded of 30% glass reinforced engineering thermoplastic resin. Diaphragm is Buna N on Nylon and static seals are ethylene/propylene. Viton and Butyl seal options available. Line fluid never contacts a corrodable surface.

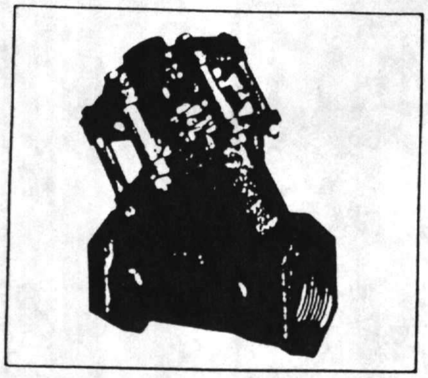
Pipe sizes range from 3/8" to 3" with optional fittings—threaded, solvent bond, or flanges.

Operating specifications:

Pressure—Maximum 125 psi (8.5 Atm.).

Temperature—32°F to 140°F (0° to 60°C).





Isolated Bonnet Valves
Series 4421 through 4429

Designed for high temperature applications that might cause accelerated deterioration of diaphragm in standard valve. Isolated bonnet prevents heat from reaching diaphragm.

Any leakage that may occur is quickly obvious around dynamic seal. Line fluid cannot contaminate pneumatic/hydraulic control because diaphragm is not accessible to fluid carrying chamber of valve.

Optional indicator on valve stem permits positive, direct reading of valve position. Also, includes all the options and features of standard "Y" pattern valves; and available in same sizes and construction as standard "Y" pattern valves.

Operating specifications:

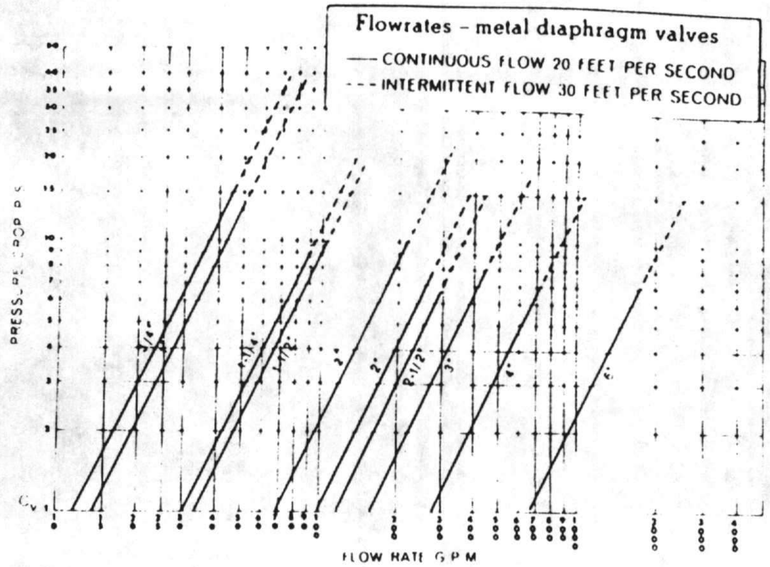
- Pressure—Standard 125 psi (8.5 Atm.) (300 psi available).
- Temperature—Maximum 300°F (148°C). (Consult factory for higher temperature applications).

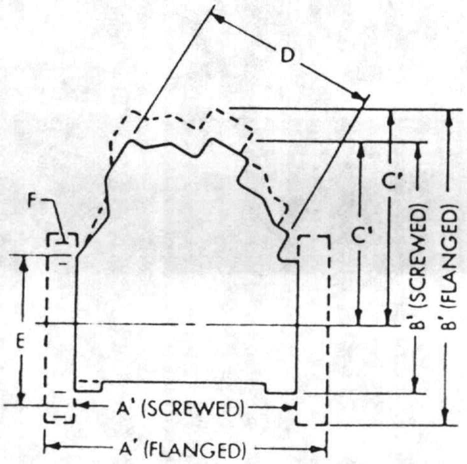
Note: Plastic Series 5500 also available. Contact factory

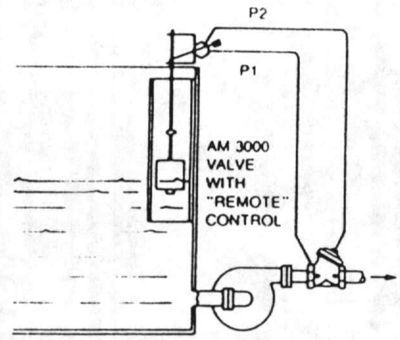
Note
Chart applies to all metal diaphragm valves illustrated in this catalog
Series 421-429, Series 4421-4429, Series 3500, and Series 3000

C_V = Flowrate (G.P.M.) of water at 60°F (15.5°C) at 1 P.S.I. pressure drop

Liters per minute = G.P.M. x 3.78







Model 348LC Level Control

For mounting float actuated pilot remote from diaphragm valve. Control fluid is delivered to and from the diaphragm chambers through ports P1 and P2 of the pilot. Up and down positions of the float determine which port is pressurized, and which port is vented. May be used with either metal or plastic valves.

DIMENSIONS										ISOLATED BONNET VALVES						
Size	Ends	Series		A^S	A^F	B^S	B^F	C^S	C^F	B^S	B^F	C^S	C^F	D	E	F
¾-1	SCRD	421	In.	3.68	[illegible]	4.25	[illegible]	3.75	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2.75	[illegible]	
		4421	mm.	94	[illegible]	108	[illegible]	82	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	70	[illegible]	
1¼-1½	SCRD	424	In.	4.75	[illegible]	5.37	[illegible]	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.60	[illegible]	
		4424	mm.	120	[illegible]	136	[illegible]	101	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	89	[illegible]	[illegible]
2	SCRD	425	In.	6.62	[illegible]	7.25	[illegible]	5.37	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.87	[illegible]	[illegible]
		4425	mm.	168	[illegible]	184	[illegible]	136	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	123	[illegible]	[illegible]
2½	SCRD	426	In.	7.37	[illegible]	8	[illegible]	5.75	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.25	[illegible]	[illegible]
		4426	mm.	187	[illegible]	203	[illegible]	146	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	155	[illegible]	[illegible]
3-S	SCRD	427-S	In.	9	[illegible]	9.75	[illegible]	6.75	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.25	[illegible]	[illegible]
		4427-S	mm.	228	[illegible]	247	[illegible]	171	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	184	[illegible]	[illegible]
3-F	FLGD	427-F	In.	[illegible]	10.62	[illegible]	10.75	[illegible]	7	[illegible]	[illegible]	[illegible]	[illegible]	7.25	6	0.75
		4427-F	mm.	[illegible]	270	[illegible]	273	[illegible]	178	[illegible]	[illegible]	[illegible]	[illegible]	184	160	18
4-F	FLGD	428-F	In.	[illegible]	11.75		14.75		10	[illegible]	[illegible]	[illegible]	[illegible]	8.75	7.5	0.75
		4428-F	mm.	[illegible]	298		375		254	[illegible]	[illegible]	[illegible]	[illegible]	222	180	18
6-F	FLGD	429-F	In.		17		19		13.50	[illegible]	[illegible]	[illegible]	[illegible]	15.75	9.5	0.87
		4429-F	mm.		431		482		343	[illegible]	[illegible]	[illegible]	[illegible]	402	240	20

B.S.P. threads optional on series 421 thru 427, and 4421 through 4427
European flanges optional on series 427 thru 429, and 4427 through 4429

RESIN

PUROLITE

Technical Data
C-100

Strong Acid Cation

PRODUCT DESCRIPTION

Purolite C-100 is a premium grade cation exchange resin that can be used either in water softening or demineralization. C-100 is crosslinked with styrene and divinylbenzene polymer and classified as an 8% crosslinked resin. Purolite C-100 has excellent bead stability by virtue of its high whole clear beads, 95% minimum, and its bead strength averaging over 300 grams. C-100 has very tight size control containing a minimum amount of fines on – 50 U.S. standard size mesh.

Purolite C-100 can be regenerated with sulfuric, hydrochloric or nitric acid to operate in the hydrogen form and sodium chloride (salt-brine) to operate in the sodium form.

Many variables effect capacity and performance, the following are some that must be checked occasionally.

- Regenerant strength
- Regenerant contact time
- Bed Depth
- Water analysis and possible changes
- Alkalinity as a percent of total anion
- Ratio of cations

Typical Chemical and Physical Characteristics

Polymer Structure	Polystyrene crosslinked with D.V.B.
Functional Group	$R-SO_3^-H^+$
Physical Form	Spherical Beads
Ionic Form (as shipped)	Sodium
Screen Size U.S. STD. Mesh (wet)	16 - 40
Particle Size Range	0.4 - 1.2 mm
Particle Size	95% between 0.3 - 1.25 mm
Water Retention	44 - 47%
Swelling	$H^+ \rightarrow Na^+$ = 5%
pH Limitations	None
Temperature Limitations	280°F Maximum
Chemical Resistance	Insoluble in all common solvents
Whole Clear Beads	95% Minimum
Shipping Weights	53 lbs/cu. ft.
Standard Packaging	7 cu. ft. double polyethylene lined fiber drums and 1 cu. ft. bags
Total Capacity	1.9 meq/ml. minimum 4.6 meq/gm.
D.V.B. Content	8%

STANDARD OPERATING CONDITIONS

Operation	Rate	Solution	Minutes	Amount
Service	1-5 gpm/ft^3	Influent Water		
Backwash	3-5 gpm/ft^2 (40-60 °F)	Influent Water	5-20	10-25 gals./ft^3
Regeneration	0.2-0.8 gpm/ft^3	0.5-5% H_2SO_4 4-10% HCL	30	4-10 lbs.
Rinse (Slow)	0.2-0.8 gpm/ft^3	Decationized	60	20 gals/ft^3
Rinse (Fast)	1-5 gpm/ft^3	Decationized	60	30 gals./ft^3

Backwash Expansion	50-75%
Design Rising Space	100%

CHEMICAL STABILITY

C-100 is insoluble in acids, alkali and all the common solvents, however exposure to free chlorine and other strong oxidizing agents over a long period of time will systematically decrosslink the resin. Exposure to oxidants may also come from the regenerant used.

BACKWASHING

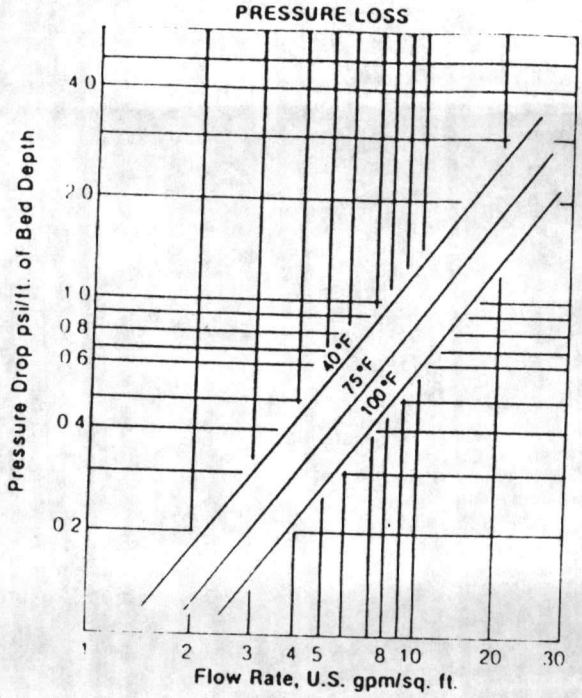
Don't underestimate the importance of backwashing, since it serves to remove particulate matters, eliminate gas pockets, reclassifies resin beads, and removes resin fines

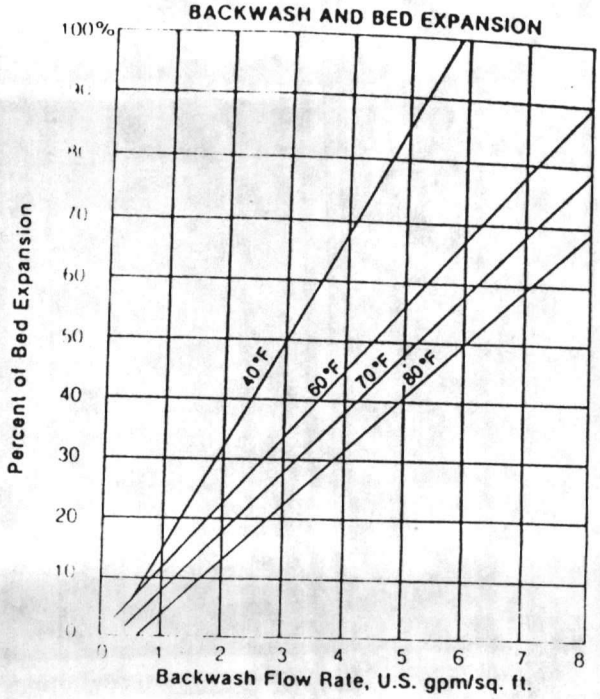
REGENERATION

When Purolite C-100 has been exhausted primarily with calcium ions, regeneration with hydrochloric acid is recommended. However, if Sulfuric Acid must be used, a step wise regeneration should be employed to prevent the precipitation of calcium sulfate. Using this type of regeneration, the resin is initially contacted with 0.5% of sulfuric acid followed by acid of increased strength. Regeneration flow rate is also important in preventing calcium sulfate precipitation. More regenerant contact time, will cause increased precipitation.
(See step wise regeneration table)

INFLUENT LIMITATION

Maximum Free Chlorine	1.0ppm
Maximum Turbidity	5 A.P.H.A. Units





STEPWISE REGENERATION LEVELS

Regeneration Level lbs. 100% H_2SO_4/cu. ft	lbs. H_2SO_4				
	at 2%	at 4%	at 6%	at 8%	at 10%
4	2	2			
5	2	3			
6	2	3	1		
7	2	3	2		
8	2	3	3		
9	2	3	3	1	
10	2	3	3	2	
12	2	3	3	3	1

Purolite carries a complete range of Gel and Macroporous Cation and Anion Exchangers These include

Purolite A-600 a strongly basic Type I Anion Exchanger
Purolite A-400 a strongly basic Type I Porous Anion Exchanger
Purolite A-300 a strongly basic Type II Anion Exchanger
Purolite A-500 a Macroporous Type I strongly basic Anion Exchanger
Purolite A-510 a Macroporous Type II Anion Exchanger
Purolite A-300E a Type II Gel Anion Exchanger with no taste or odor
Purolite A-100 a Macroporous weak base Anion Exchanger
Purolite C-100 a high capacity premium grade Gel Cation Exchanger
Purolite C-100 x 10 a high capacity premium grade 10% Cross Linked Cation Exchanger
Purolite C-150 a strong acid Cation Macroporous Anion Exchanger
Purolite NRW 37 a Nuclear Mixed Bed Resin
Purolite NRW-100 a Nuclear Cation Resin
Purolite NRW-600 a Nuclear Anion Resin
Purolite C-105 a weak Acid Cation Resin
Purolite A-850 a strongly basic Type I Acrylic Exchanger
Purolite A-110 a weak base Condensation Anion

The Technical Data given herein are based on extensive laboratory testing and field results. In applying the data on a commercial scale, allowance should be made for possible mechanical or hydraulic deficiency of the equipment in which the ion exchangers are used

PUROLITE

Purolite Company Division of Bro-Tech Corporation,
150 Monument Rd., Bala Cynwyd, Pennsylvania 19004 • 800-343-1500 • 215-668-9090
Telex 291718

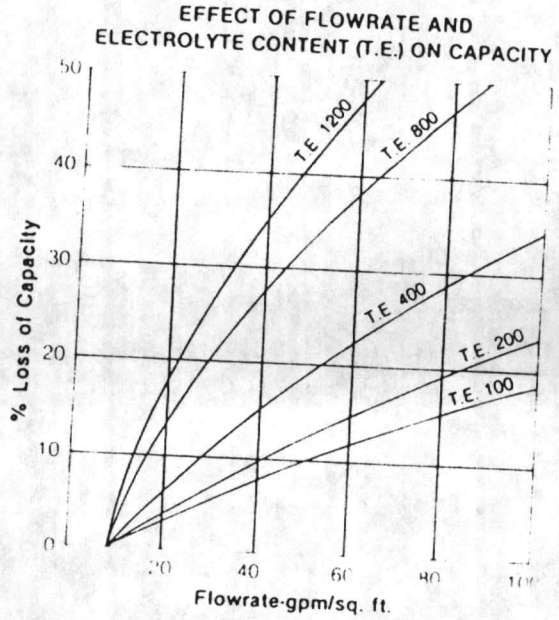
Operating Capacity—(H_2SO_4)(HCL)

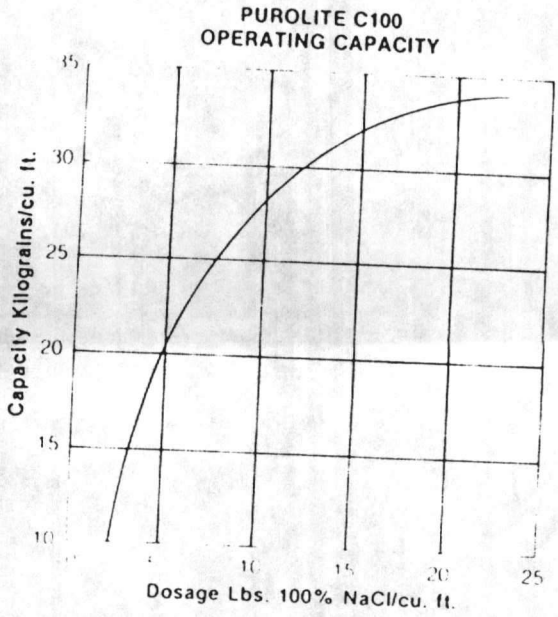
Typical capacities of C-100 regenerated with varying amounts of H_2SO_4 and HCL

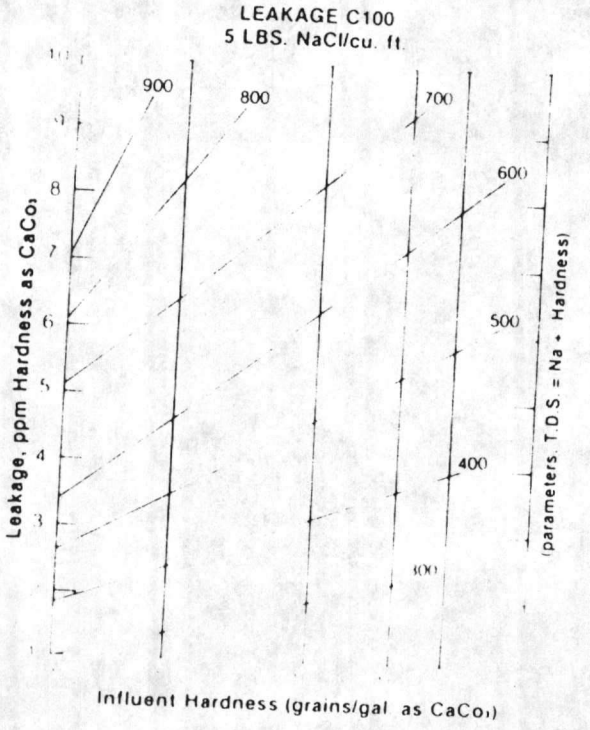
Lbs. H_2SO_4/cu. ft.	Capacity kgr./cu. ft.	% Leakage of Total Cation (ppm)*
4	15.5	
5	17	1%
6	19	
7	20	
8	20.5	0.7%
10	21.5	
15	25	0.3%

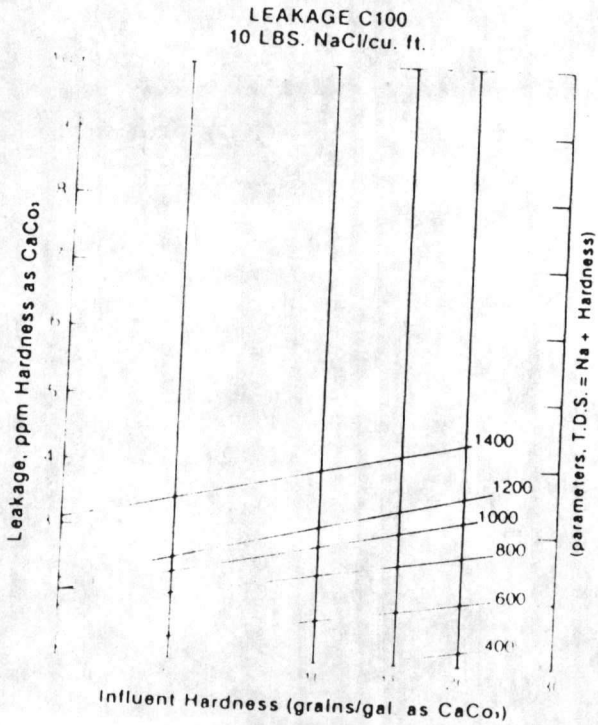
Lbs. HCL/cu. ft.	Capacity kgr./cu. ft.
4	23
8	32
10	34

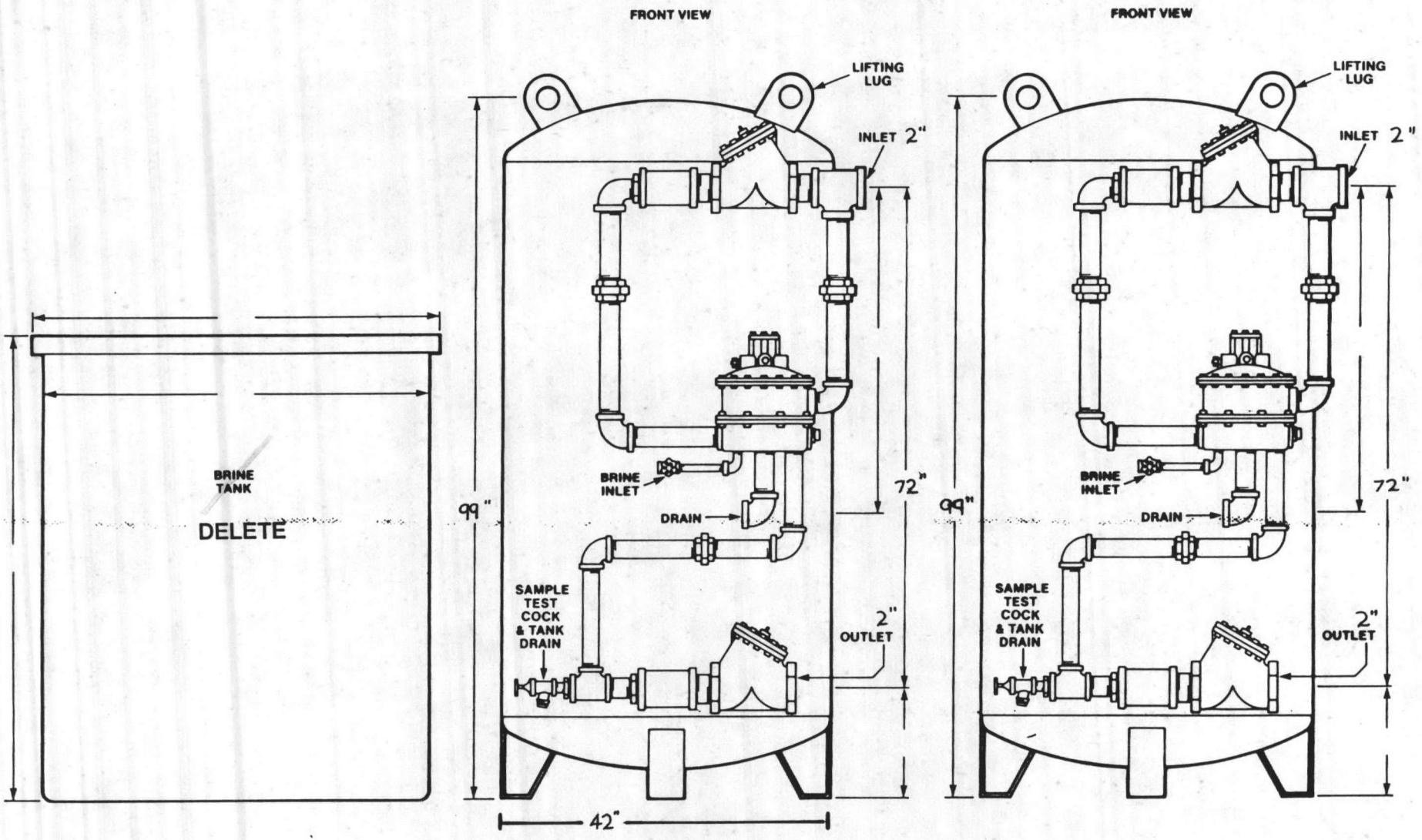
*50% Alkalinity - 50% Sodium











Monarch Water Systems

SCALE:	APPROVED BY	DRAWN BY
DATE: 3/27/86		C.EDGAR

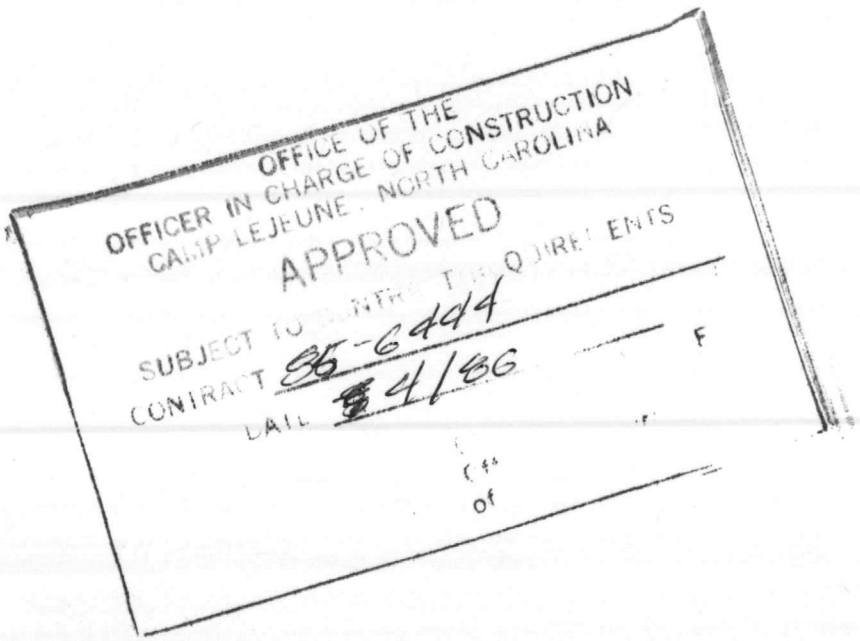
Marine Corp Air Station

DRAWING NUMBER

MONARCH WATER SYSTEMS
division of Systech Corporation
245 North Valley Road • Xenia, Ohio 45385 • (513) 426-7000

water
MONARCH
systems

[redacted]


OFFICE OF THE
OFFICER IN CHARGE OF CONSTRUCTION
CAMP LEJEUNE, NORTH CAROLINA
APPROVED
SUBJECT TO COMPLIANCE WITH THE REQUIREMENTS
CONTRACT 85-6444
DATE 4/86
F
of

15651-2.1

MONARCH SUBMITTAL 7006-00-70

March 28, 1986

REPLACE WATER SOFTENERS
Building G 650 at MCB
Camp Lejeune, North Carolina
Contract No. N62470-85-C-6444

Prepared for:

Sneeden, Inc.
301 Eastwood Road
Wilmington, North Carolina 28406
Submittal I

Submitted by:

John E. Glaser, Sr.
Sales Engineer

It is hereby certified that the equipment and material shown and marked in this submittal is that proposed to be incorporated into Contract Number N62470-85-C-6444, is in compliance with the contract drawings and specifications, can be installed in the allocated spaces, and is submitted for Goverment approval

Sneeden Inc.
Certified by J. E. Sneeden II Date 4/2/86 ".

TABLE OF CONTENTS

water MONARCH systems
Since 1918

WATER SOFTENER SYSTEM
SECTION 15651
BUILDING G-650
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

1.0 General

1.1 WATER SOFTENER SYSTEM will consist of two softener tanks.

1.2 TYPE AND CAPACITY: Each softener will be an automatic downflow pressure type, having the capacity of maximum 707,000 grains removal between regenerations and a flow rate of 120 GPM.

1.3 SOFTENER TANK will be 36 inches diameter by 78 inches straight shell exclusive of heads. Each tank will be of welded steel construction. The tank will be designed for a maximum working pressure of 100 psi. Inlet and outlet connections will be installed thru the side shell to permit lower installation height. The upper head of each tank will be provided with a 12" x 16" manhole. The tanks will have means of support made of steel, constructed to hold it in operating position. The interior of the pressure vessel will be lined with a minimum of 8 mils of corrosive resistant epoxy. The tank will have one coat of factory applied primer to the exterior, including all valving and piping connected to the softener tank.

1.4 CONTROL SYSTEM will provide for a five-cycle regeneration process. The regeneration will be initiated by an automatic reset register connected to a 2" Badger meter located on the outlet of each softener tank. The meter will be equipped with a automatic reset register that will measure the quanity of water passing thru the softener. When a pre determined amount passes thru the softener the register will signal the control panel to regenerate the softener tank.

The control panel will have means of adjusting the time of each cycle of the regeneration process. A electrical interlock will be provided to prevent both softeners from regenerating simultaneously. The control panel will be mounted in a NEMA 4 enclosure.

See catalog cut section 2.1 Badger

1.5 **CONTROL VALVE** will be 1-1/4" hydraulic power, multi-turn valve. The valve will have one moving part and control all functions necessary to regenerate the water softener, including backwash, brine, slow and fast rinse. The valve will have incorporated means of adjustable brine injection rate. See catalog cut section 2.2 Solomatic The control valve will be furnished with a fixed rate floe control device, properly sized for the softener system.

There will be a means of manually regenerating the control valve in the event of a power failure.

The softener piping will include two 2" ips automatic diaphragm valves. The diaphragm valves will be hydraulic type. They will permit higher flows at lower pressure drop across the softener during the service cycle.

See Catalog Cut Section 2.3 Diaphragm Valve

1.6 **EXCHANGE MATERIAL** will be made of the stryene-resinous type with an exchange capacity of not less than 1.9 meg/ml per cubic foot. The effective size will be not less than 0.45 mm and the uniformity coefficient will not exceed 2.00. Not more than 1/2% by weight will pass through a 5 mesh U.S. Standard Screen. The exchange material bed in the softener tank will be 40 inches deep.

See Catalog Cut Section 2.4 Resin C-100

1.7 **SILICA QUARTZ SUPPORTING BED** will be placed immediately above the lower distributor system. The silica quartz will be 98% silica, free from clay, or other foreign materials. The silica quartz bed will have a minimum depth of 8 inches and will be properly graded to prevent loss of the exchange materials during normal operation and backwashing. A minimum of three layers (grades) of silica will be required.

1.8 **LOWER DISTRIBUTOR SYSTEM** will consist of a central hub, machined from PVC bar stock. The hub will have no cement or welded joints. The laterals will consist of rigid PVC SDR tubing with slots no larger than .020 inches in width. The hub and laterals, provide distribution through uniformly spaced laterals, covering more area from the center outward to prevent side wall channeling. Laterals will be mounted as closed to the bottom head as possible. The total area of the slots in the laterals will be a minimum of two times the inlet of the softener. All other components will be schedule 80 PVC.

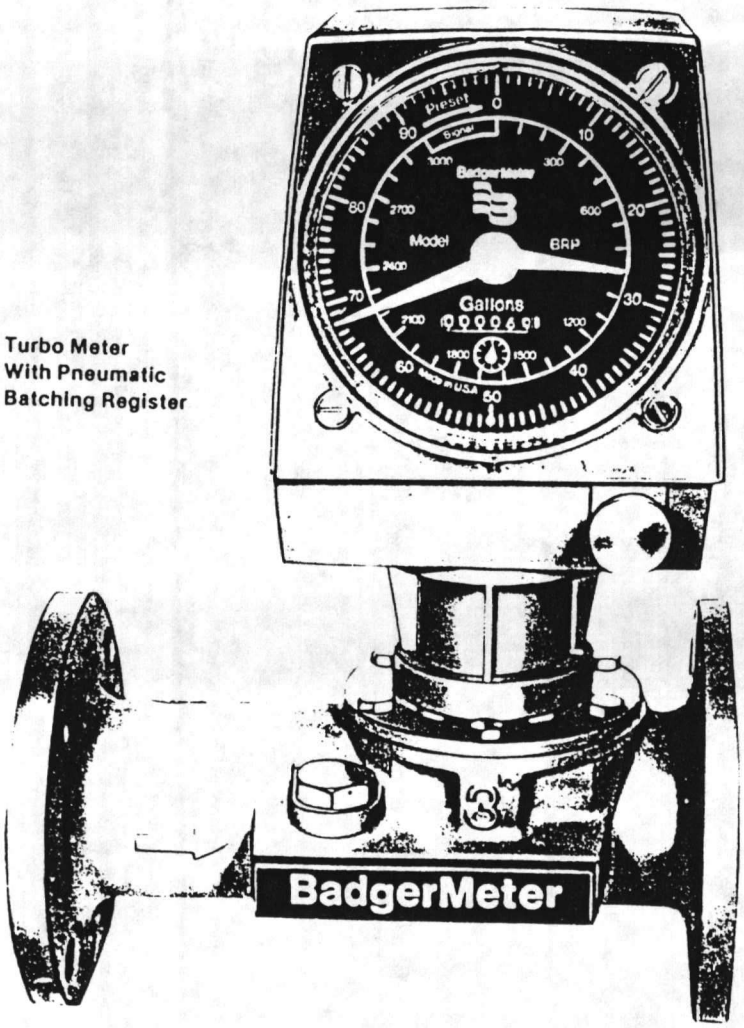
1.9 **HEADER SYSTEM** will be constructed of PVC and designed to disperse incoming water in such a way to prevent channelling and distribution of water evenly throughout the area of the bed.

1.10 **OPERATING INSTRUCTIONS:** Three sets of instructions covering the care and operation of each softener will be provided. These instructions will be printed in the form of a bound booklet.

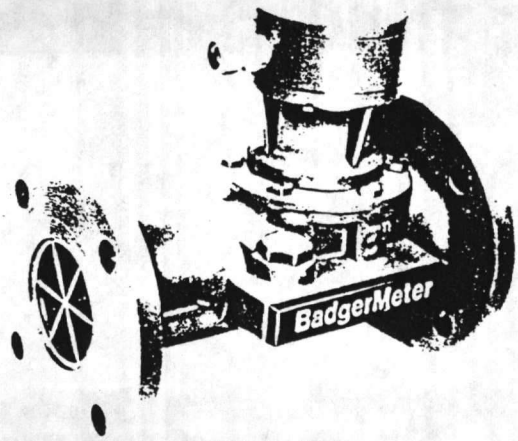
BADGER

BADGER INDUSTRIAL TURBO METERS

SIZES 2″ TO 6″



Turbo Meter
With Pneumatic
Batching Register



Meter With
Pulse Transmitter

HIGH ACCURACY OVER BROAD FLOW RANGE

COMPACT

LIGHTWEIGHT

Badger Meter, Inc. Industrial Products Division
4545 W Brown Deer Road, P O Box 23099, Milwaukee, WI 53223

(414) 355-0400 Telex 2-6757

MAGNETIC DRIVE TURBO METERS... HIGH ACCURACY OVER BROAD FLOW RANGE

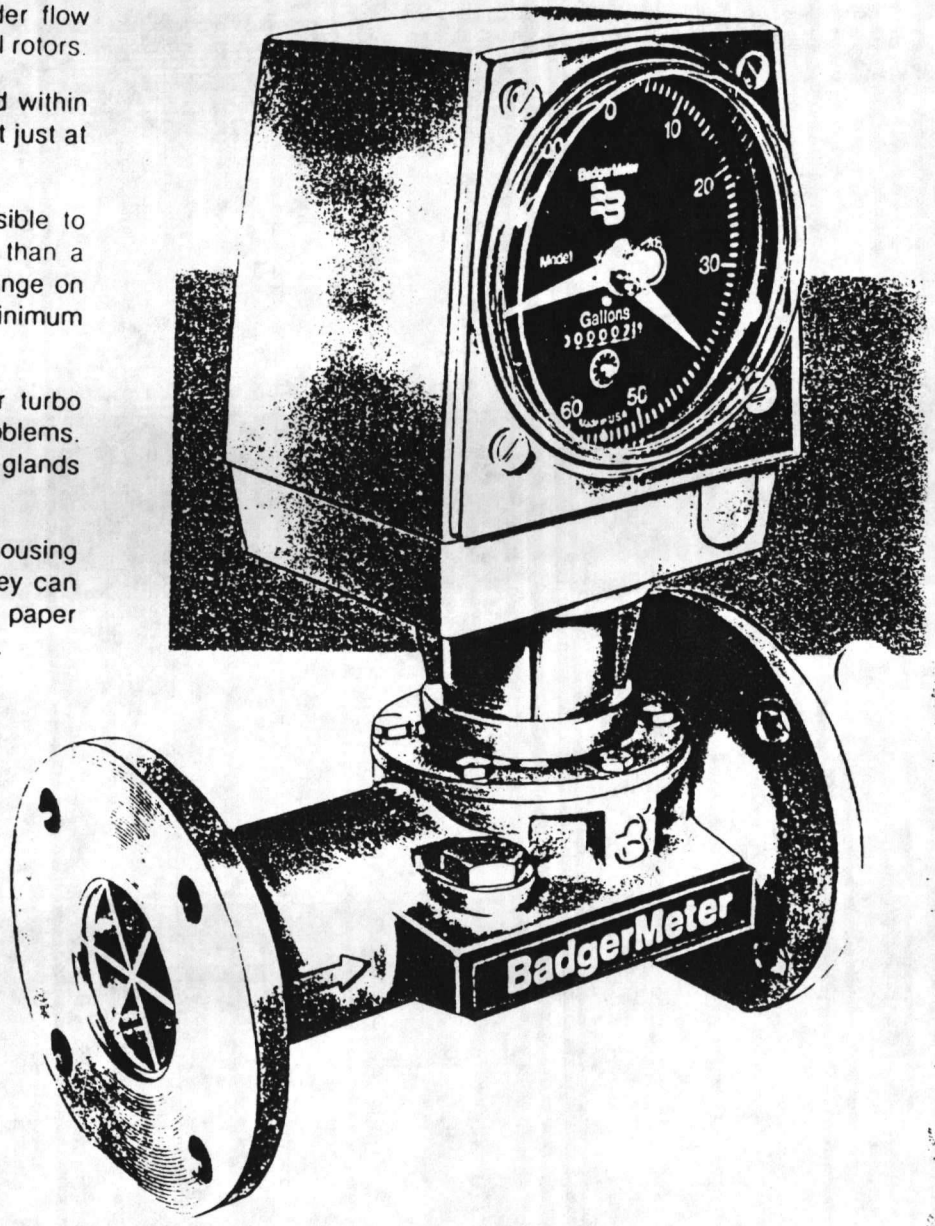
Badger's magnetic drive turbo meters provide industrial processors with higher accuracy over a broader flow range than traditional turbine meters with vertical rotors.

Accuracy of the turbo meter can be maintained within ± 1½% over the meter's entire flow range—not just at one point. Repeatability is within ½ of 1%.

The straight-through flow design makes it possible to operate the turbo at a higher continuous flow than a comparable turbine. In addition, the low flow range on most models is extended about 50% below the minimum for vertical-rotor turbines.

Because of the magnetic drive design, Badger turbo meters also help to reduce maintenance problems. There are no gears in the flow stream, no packing glands to cause leaks.

Badger turbo meters are offered in four different housing materials for measuring liquids up to 250°F. They can handle a wide variety of chemical solutions, paper coating materials, oils, water and food ingredients.



VIDE FLOW RANGE METERING CAPABILITY

METER SIZE	FLOW RANGE—G.P.M.*		MAXIMUM CONTINUOUS FLOW
	MINIMUM	MAXIMUM	
2"	8	160	160
3"	10	350	350
4"	25	1000	1000
6"	40	2000	2000

*Consult your Badger representative about accuracy performance above and below flow rates shown

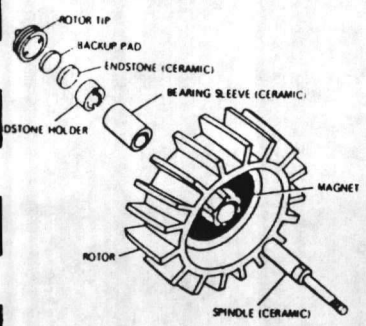
OPERATING PRINCIPLE

Badger's turbo meter, with straight-through flow design, is equipped with straightening vanes and a nose cone at the inlet side. These minimize the swirling effect of upstream piping.

Liquid flowing through the meter tube strikes the blades of a rotor, causing the rotor to turn. By means of a magnetic coupling, this motion is transferred to a vertical spindle and then to gears in the meter's register.

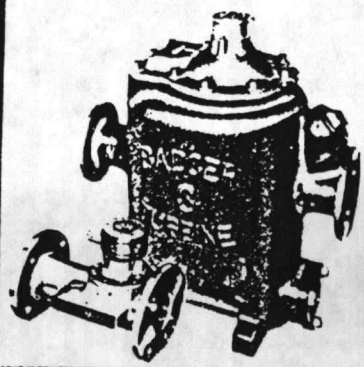
LONG-WEARING CERAMIC BEARINGS

The rotor, bearing, rotor spindle and endstone in the Badger turbo meter are made of a ceramic material developed especially for this application. Because of their hardness, the ceramic parts provide long-life service, even if the meter is run continously at maximum flow.



COMPACT, LIGHTWEIGHT, EASY TO INSTALL

Badger turbo meters are easy to install and service because of their compact size and light weight. A 2" turbo meter for example weighs just 10 pounds compared with more than 300 pounds for a vertical rotor turbine. The laying length is only 12".



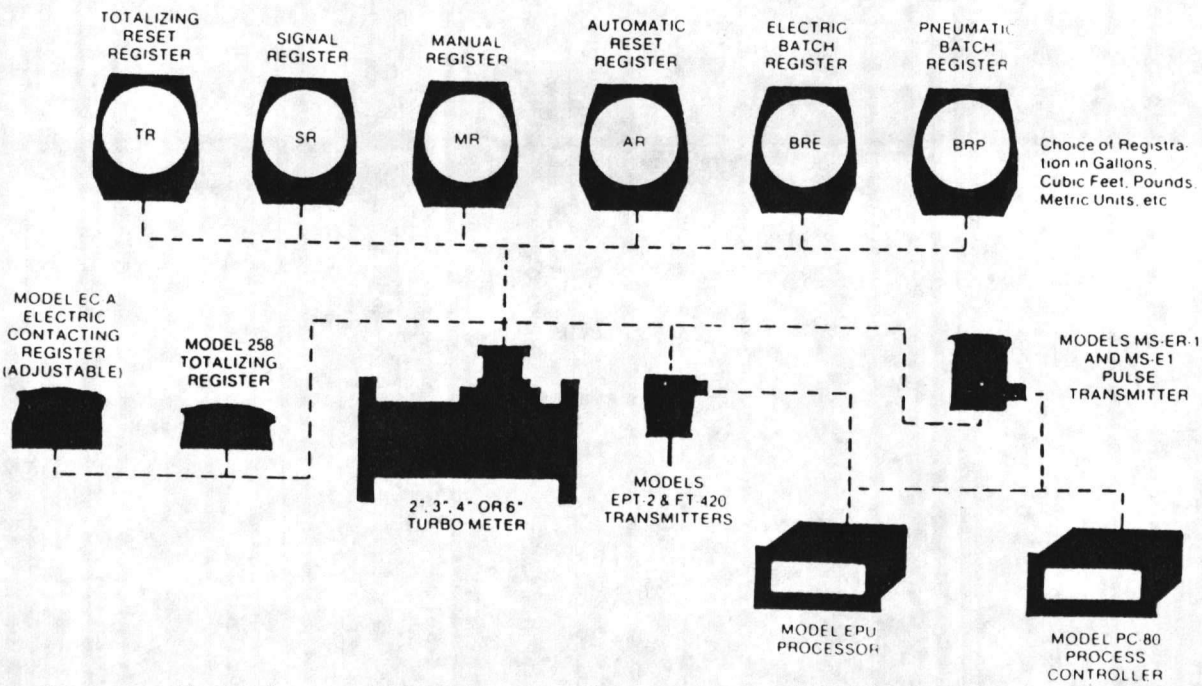
SERVICE WITHOUT REMOVAL FROM LINE

For easy servicing, the rotor and head assembly in the Badger meter can be removed without disconnecting the meter from the line. Just loosen the head bolts on top of the housing and lift out the entire assembly.

ON-SITE CALIBRATION

A convenient bypass valve for precise calibration is built into the bronze and cast iron housings of 2" and 3" meters. Simply remove the locking cap and turn the valve with a screwdriver to adjust flow.

WIDE CHOICE OF REGISTERS AND ACCESSORIES



MATERIALS

Housing	316 Stainless
	Cast Iron
	Cast Steel
	Cast Bronze
Rotor and Nose Cone 2" through 6"	Ryton
	Kynar
Rotor Bearing, Spindle and Endstone	Ceramic
Magnet	Ceramic
Straightening Vanes	316 Stainless
Register Base	Aluminum
Bypass Valve	316 Stainless—2" and 3" Meters
Head Gasket	Nonasbestos/Nitrile Binder
	Nonasbestos/Chloroprene Binder
	Asbestos/Special Binder
"O" Ring and Tetraseal	EPR, Buna N or Viton A

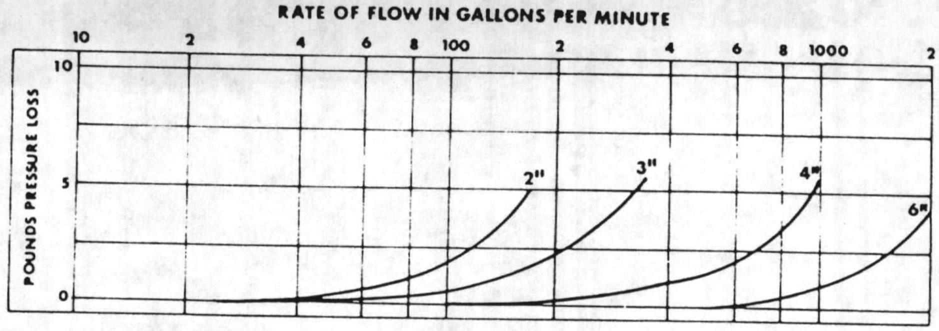
ADDITIONAL ACCESSORY INFORMATION

MODEL	DESCRIPTION	BULLETIN NO.
BRE	Batch Register, Electric	IBR-3010
BRP	Batch Register, Pneumatic	IBR-3010
MR	Batch Register, Manual	IBR-3010
AR	Automatic Reset Register	IAR-3011
SR	Signal Register	IAR-3011
TR	Totalizing Reset Register	ITR-3012
EC-A	Electric Contacting Register	REC-5009
RBC	Remote Batch Controller	IRC-3009
MS-ER1	Pulse Transmitter	XP-6011
MS-E1	Pulse Transmitter	XP-6008
EPT & EPU	Electronic Transmission System	IEP-3013

LOW PRESSURE LOSS

Badger turbo meters operate with less pressure loss than turbines with vertical rotors. The pressure loss curves on adjoining chart were calibrated without a strainer ahead of the meter. Since many different strainers can be applied, industrial processors should be aware that system pressure drop could result.

INDUSTRIAL TURBO METER PRESSURE LOSS CHART



WHEN ORDERING

Specify turbo meter size (flow range) and type of housing material (for compatibility with liquid).

When ordering meter with register, specify model of register and unit of measure. If BRE or BRP batch register is required, specify dial capacity.

When ordering meter with pulse transmitter, specify pulse/unit of measure. Please also list RBC-210 remote batch controller, electric contacting or totalizing/reset register or electronic transmission system if required.

SPECIFICATIONS	2"	3"	4"	6"
Accuracy — Entire Flow Range	± 1.5%	± 1.5%	± 1.5%	± 1.5%
Repeatability — Constant Flow and Temperature	± 0.5%	± 0.5%	± 0.5%	± 0.5%
Head Loss — Maximum Flow (PSI)	4.5	6	5.5	5.5
Maximum Operating Temperature (°F)	250	250	250	250
Maximum Operating Pressure (PSI)	150 Std. 300 Opt.	150 Std. 300 Opt.	150 Std. 300 Opt.	150 Std. 300 Opt.
Approx. Weight (Lbs.) with 150 PSI Conn (Depends on Meter Material Selected)	30-40	40-50	60-75	100-125
Laying Length (Inches)	10	12	14	18
Height — w/o Register (Inches)	8	9	10	12
Connection Flanges	Round	Round	Round	Round

WARRANTY

Badger warrants meters and parts manufactured by it and supplied hereunder to be free from defects in materials and workmanship for a period of 18 months from date of shipment or 12 months from date of installation, whichever period shall be shorter. If within such period any meters or parts shall be proved to Seller's satisfaction to be defective, such meters or parts shall be repaired or replaced at Seller's option. Seller's obligation hereunder shall be limited to such repair and replacement and shall be [illegible] upon Seller's receiving written notice of any alleged defect within [illegible] days after [illegible] and at Seller's option return of such meters or parts to Seller [illegible]. THE FOREGOING WARRANTY [illegible] AND IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES [illegible] NOT LIMITED TO IMPLIED WARRANTIES [illegible] MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Badger [illegible] defects attributable to acts or omissions of others after shipment [illegible] damage whatsoever.

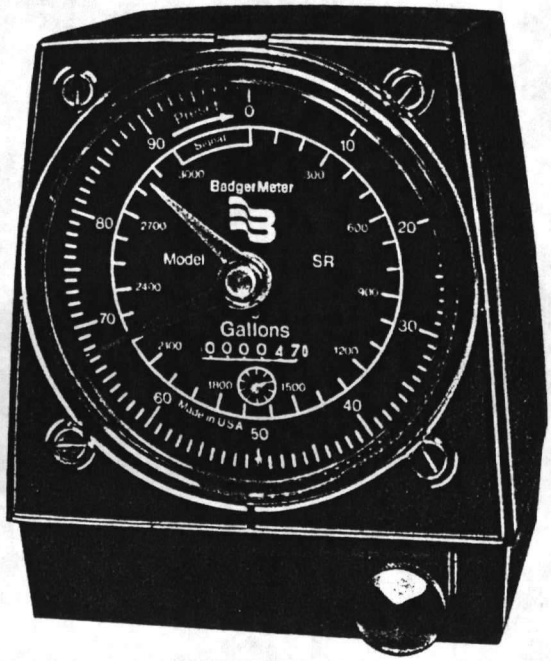
NUCLEAR DISCLAIMER

Equipment sold by Badger Meter, Inc. is not intended for use in connection with any nuclear facility or activity unless covered by a specific quotation where the conditions of such usage will be detailed. If equipment is used in a nuclear facility or activity without [illegible] Badger Meter disclaims all liability for any damage [illegible] indemnify and hold Badger Meter [illegible] whether [illegible]

BADGER SERIES 76 METER REGISTERS

For Water Conditioning

MODEL AR
Automatic Reset Register



MODEL SR
Signal Register

Register Models AR and SR are used to measure predetermined quantities of liquid and then transmit a signal which activates other equipment. Their widest application is in water conditioning systems.

The principal difference between the two registers is that Model AR resets itself automatically for each water conditioning cycle, whereas the SR is reset with a register knob.

The AR register is equipped with a nickel-plated reset pointer and a red sweep pointer which moves counterclockwise from the preset position. When the red pointer reaches zero, a trip cam closes a signal switch and a motor switch. The signal is used to start tank regeneration, while the motor resets the pointers at their original position.

With the SR register, the red pointer is used to preset small quantities and the nickel pointer for larger amounts. When both pointers reach zero, a double-throw switch is actuated. This switch can be connected to an electrical circuit to operate a warning bell or alarm, a pump, valve or other equipment.

Models AR and SR are part of the Series 76 line of interchangeable meter registers for use on Badger's industrial-type meters. Three other Series 76 registers, used primarily for liquid batching, are described in Bulletin IBR-3010.

AR AND SR REGISTER SPECIFICATIONS

PHYSICAL

Housing: Glass-filled polycarbonate— NEMA 4
Internal Plates: Brass
Gears: Brass or Thermoplastic
Shafts: 303 Stainless Steel
Register Size: 7½" width, 8⅞" height, 6¾" depth
Dial Size: 5¾"
Totalizer: Six-digit, non-reset

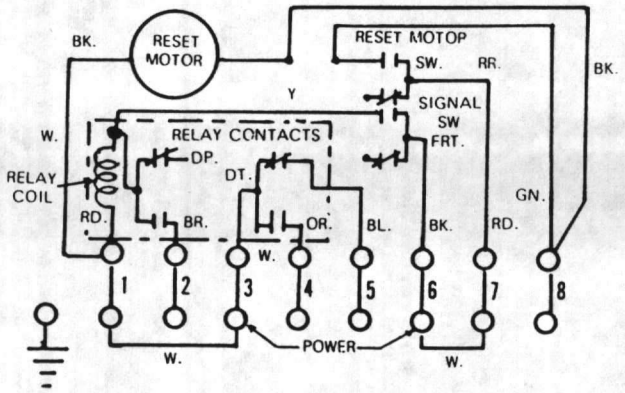
ELECTRICAL

Contact Rating: 7 amps at 115 VAC
AR register available for 24 VAC, 115 VAC, and 230 VAC

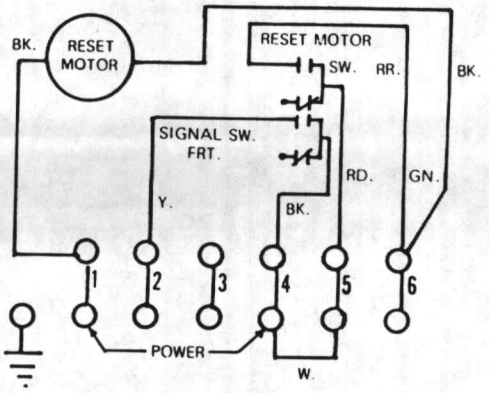
Badger Meter, Inc. Industrial Products Division
4545 W. Brown Deer Road, P.O. Box 23099, Milwaukee, WI 53223
(414) 355-0400 Telex 2-6757

MODEL AR WIRING DIAGRAMS

Switches shown in reset (ready) position



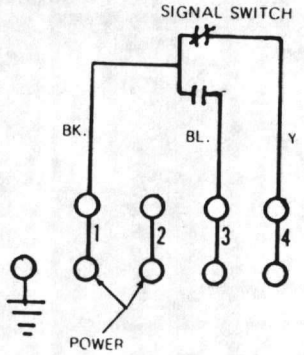
AR With Relay



AR Less Relay

MODEL SR WIRING DIAGRAM

Switch shown with pointers in zero position



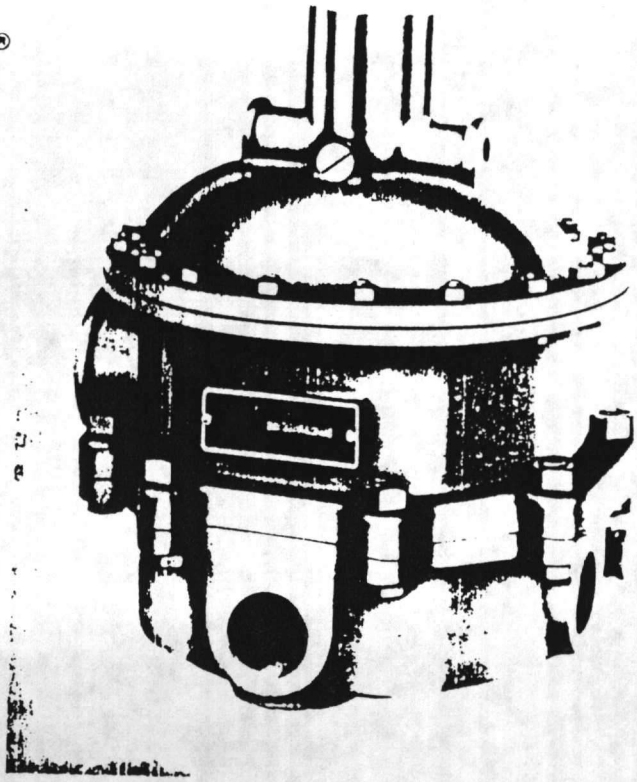
WARRANTY

Badger warrants meters and parts manufactured by it and supplied hereunder to be free from defects in materials and workmanship for a period of 18 months from date of shipment or 12 months from date of installation, whichever period shall be shorter. If within such period any meters or parts shall be proved to Seller's satisfaction to be defective, such meters or parts shall be repaired or replaced at Seller's option. Seller's obligation hereunder shall be limited to such repair and replacement and shall be conditioned upon Seller's receiving written notice of any alleged defect within 10 days after its discovery and, at Seller's option, return of such meters or parts to Seller f.o.b. its factory. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES WHATSOEVER INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES (EXCEPT OF TITLE) OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Badger shall not be liable for any defects attributable to acts or omissions of others after shipment, nor any consequential, incidental or contingent damage whatsoever.

SOLOMATIC

SOLOMATIC®

A low maintenance, high dependability, automatic valve for softeners and filters

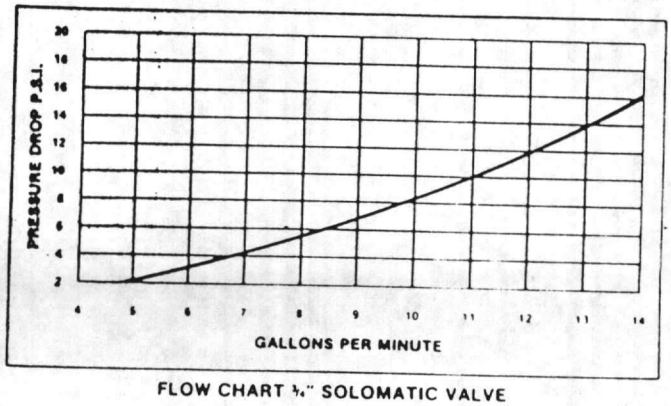


The Aqua Matic Solomatic® Valve is hydraulically operated utilizing a multiport design to automatically control the regeneration and service flow through softeners, filters and ion exchange systems. The Solomatic Valve is patterned after the "time-proven" Solo® valve design with a built-in ejector for brine introduction and a flow control device for the backwash and fast rinse cycles. The solomatic valve has only one moving part, the stemplate assembly, which is completely enclosed in the valve body eliminating the necessity for packing glands. The cam and cam followers are water lubricated, thereby eliminating the necessity for oiling or greasing. Seating surfaces are kept clean by periodic flushing during indexing. The stemplate seats on a resilient rubber gasket attached to the backplate for a tight seal to ensure against leakage. The valve body and bonnet are constructed of cast, grey iron. The stemplate assembly is a brass casting with a stainless steel shaft and a nylon reinforced diaphragm for maximum dependability.

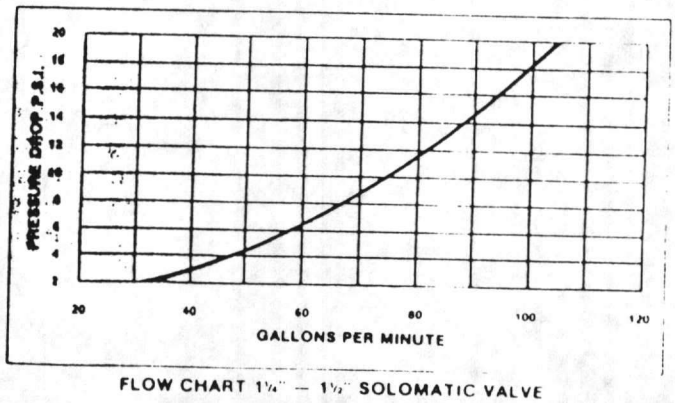
OPERATION

The operation of the Solomatic valve is accomplished by utilizing water pressure to control the raising and lowering of the diaphragm. Upon a signal from a control device, a solenoid actuated pilot valve opens, reducing the pressure above the diaphragm. As the diaphragm rises, the stemplate cam indexes and rotates the stemplate to the next position. The pilot valve closes, increasing the pressure, forcing the diaphragm down and seating the stemplate in position. The water enters the bonnet and is directed to the proper ports for backwash, brine injection and slow rinse, fast rinse or service flow. The timed regeneration sequence can be initiated manually by push button or fully automatically by the use of an additional timer or measuring device such as an automatic reset meter. The service flow rates and corresponding pressure drops for Solomatic Valves are given in Charts A and B. To obtain operating flow rates higher than the rated capacity of the Solomatic Valve, Diaphragm Valves may be installed on the inlet and service outlet of the unit. A separate connection on the backplate of the Solomatic valve supplies pressure for closing the diaphragm valves upon initiation of the regeneration cycle. For a more detailed description see the reverse side.

FLOW RATE VERSUS PRESSURE



FLOW CHART ¾" SOLOMATIC VALVE



FLOW CHART 1¼" — 1½" SOLOMATIC VALVE

AquaMatic INC. 2412 CHASE AVE.
ROCKFORD ILLINOIS

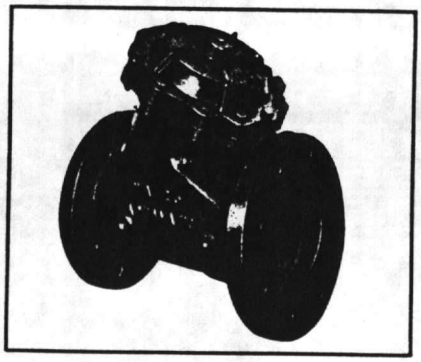
DIAPHRAGM VALVES

DIAPHRAGM VALVES

FOR FLUID TREATMENT & HANDLING SYSTEMS

Diaphragm Valves

- **Lowest pressure loss.**
  Y pattern permits higher flows at lower pressure loss than any comparable valve.
- **Positive control.**
  Separate flow and control chambers permit positive closing without springs; and only nominal cost for spring assist opening for low pressure and self draining considerations.
- **Cost effective.**
  Both initially and in lifetime maintenance.
- **Extended diaphragm life.**
  Separate chamber protects diaphragm from flow stream; allows replacement without disrupting service. Pre-formed, stress relieved diaphragm minimizes fatigue, maximizes valve responsiveness and diaphragm lifetime.
- **Durable.**
  Cast iron, brass, bronze, stainless steel, and engineering thermoplastic components. Average maintenance free life of 5 years.
- Design/Application engineering service.
- Optional seal and diaphragm materials for special applications.
- Handles liquids or gases.
- Adaptable to a variety of control devices.
- Optional adjustable flow rate control.
- Optional spring assist.
- Optional position indication.



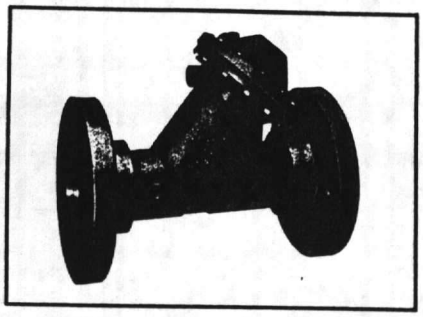
Metal Body Valves
Series 421 through 429
Body and cap of cast iron or brass. Pre-formed, stress relieved diaphragm of Buna N on Nylon for long life. Stainless steel and brass internal parts.

Pipe sizes of 3/4″ through 3″ threaded (N.P.T. or B.S.P.); 3″ through 6″ flange drilled in accordance with ASA 16.1, Class 125, or B.S. 4504 (ISO/R 2084).

Operating specifications:

Pressure—Standard 125 psi (8.5 Atm.) rating. (300 psi available).

Temperature—Maximum 150°F (65°C); optional 250°F (120°C).



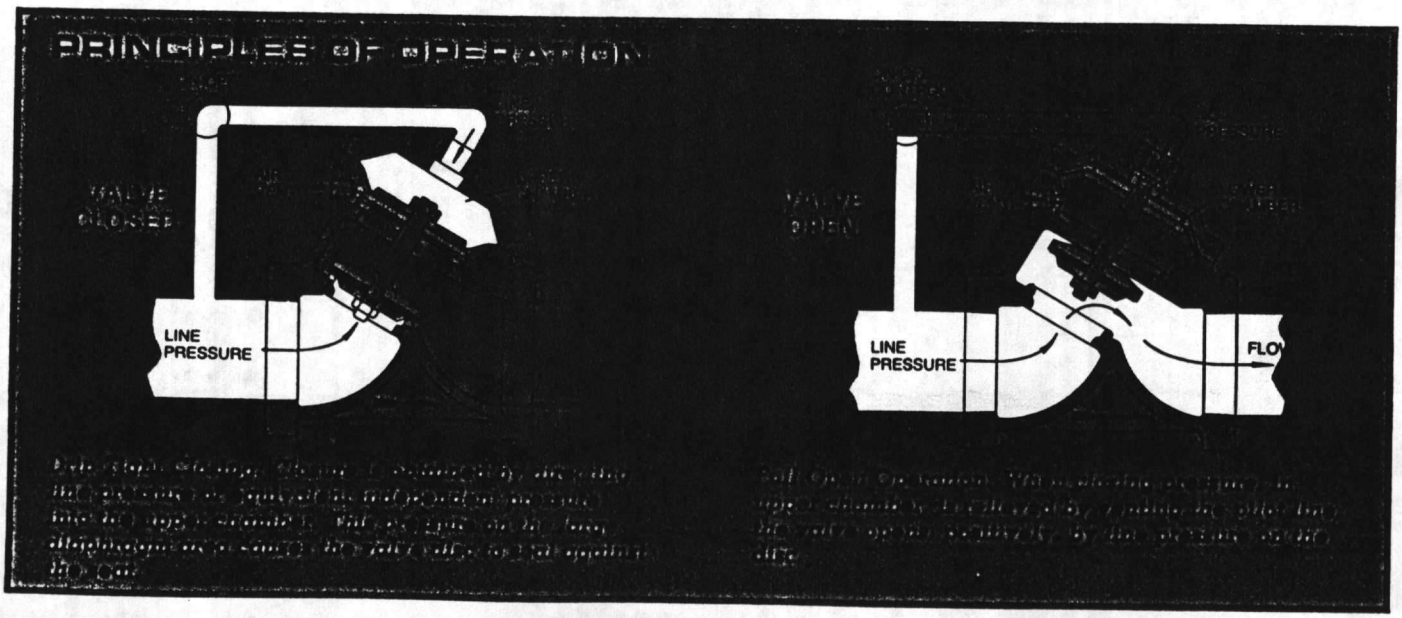
Plastic Body Valves
Series 520 through 526
Designed for de-ionized water, corrosive liquids or gases, caustics and acids. (Not applicable for aromatic hydrocarbons). Body and cap molded of 30% glass reinforced engineering thermoplastic resin. Diaphragm is Buna N on Nylon and static seals are ethylene/propylene. Viton and Butyl seal options available. Line fluid never contacts a corrodable surface.

Pipe sizes range from 3/8″ to 3″ with optional fittings—threaded, solvent bond, or flanges.

Operating specifications:

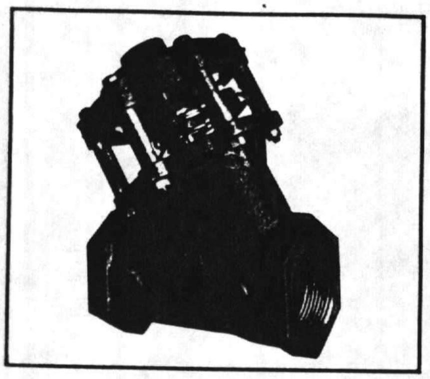
Pressure—Maximum 125 psi (8.5 Atm.).

Temperature—32°F to 140°F (0° to 60°C).



DIAPHRAGM VALVES FOR FLUID TREATMENT & HANDLING SYSTEMS

Printed in U.S.A.



Isolated Bonnet Valves
Series 4421 through 4429

Designed for high temperature applications that might cause accelerated deterioration of diaphragm in standard valve. Isolated bonnet prevents heat from reaching diaphragm.

Any leakage that may occur is quickly obvious around dynamic seal. Line fluid cannot contaminate pneumatic/hydraulic control because diaphragm is not accessible to fluid carrying chamber of valve.

Optional indicator on valve stem permits positive, direct reading of valve position. Also, includes all the options and features of standard "Y" pattern valves; and available in same sizes and construction as standard "Y" pattern valves.

Operating specifications:

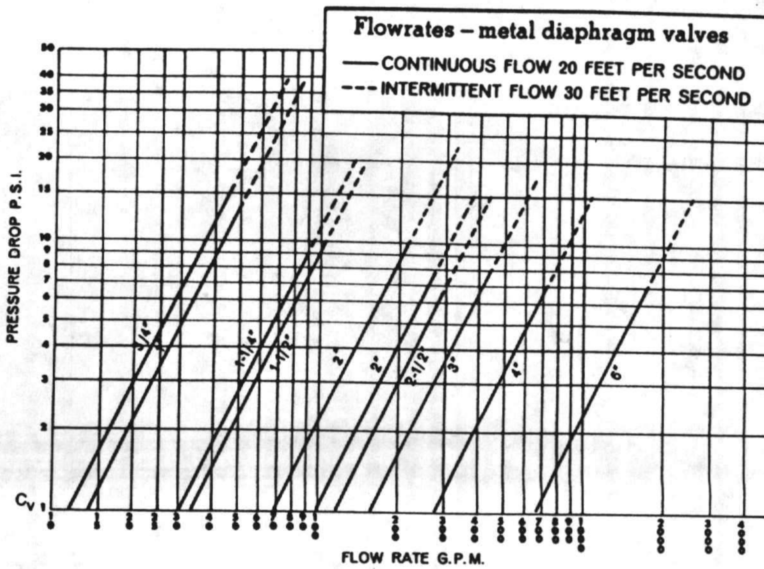
- Pressure—Standard 125 psi (8.5 Atm.) (300 psi available).
- Temperature—Maximum 300°F (148°C). (Consult factory for higher temperature applications).

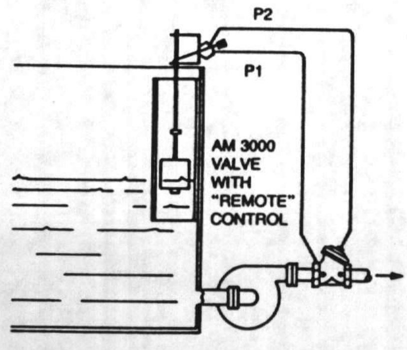
Note: Plastic Series 5500 also available. Contact factory.

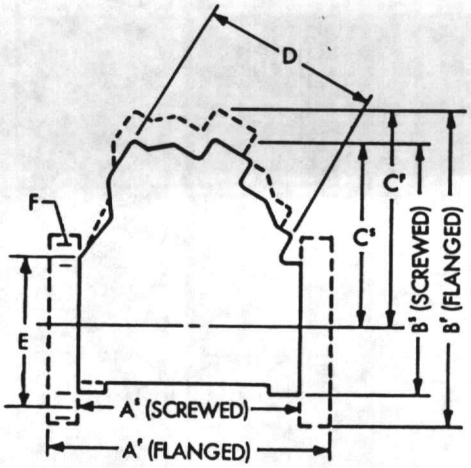
Note:
Chart applies to all metal diaphragm valves illustrated in this catalog:
Series 421-429;
Series 4421-4429;
Series 3500; and
Series 3000.

C_V = Flowrate (G.P.M.) of water at 60°F (15.5°C) at 1 P.S.I. pressure drop.

Liters per minute = G.P.M. x 3.78.







Model 348LC Level Control

For mounting float actuated pilot remote from diaphragm valve. Control fluid is delivered to and from the diaphragm chambers through ports P1 and P2 of the pilot. Up and down positions of the float determine which port is pressurized, and which port is vented. May be used with either metal or plastic valves.

DIMENSIONS

Size	Ends	Series		A S	A F	B S	B F	C S	C F	Isolated Bonnet Valves B S	B F	C S	C F	D	E	F
1/2-1	SCRD	421/4421	in.	3.68		4.25		3.75		[illegible]		[illegible]		2.75		
			mm	94		108		82		[illegible]		115		70		
1 1/4-1 1/2	SCRD	424/4424	in.	4.75		5.37		[illegible]		[illegible]		[illegible]		3.50		
			mm	120		136		101		[illegible]		150		89		
2	SCRD	425/4425	in.	6.62		7.25		5.37		[illegible]		[illegible]		4.87		
			mm	168		184		136		240		190		123		
2-2 1/2	SCRD	426/4426	in.	7.37		8		5.75		[illegible]		8.25		6.25		
			mm	187		203		146		[illegible]		210		159		
3-S	SCRD	427-S/4427-S	in.	9		9.75		6.75		[illegible]		9.25		7.25		
			mm	228		247		171		[illegible]		235		184		
3-F	FLGD	427-F/4427-F	in.		10.62		10.75		7		13.00		10.75	7.25	6	0.75
			mm		270		273		178		[illegible]		273	184	160	18
4-F	FLGD	428-F/4428-F	in.		11.75		14.75		10		18.00		13.75	8.75	7.5	0.75
			mm		298		375		254		455		350	222	180	18
6-F	FLGD	429-F/4429-F	in.		17		19		13.50		25		18.50	15.75	9.5	0.87
			mm		431		482		343		635		470	402	240	20

B.S.P. threads optional on series 421 thru 427, and 4421 through 4427.
European flanges optional on series 427 thru 429, and 4427 through 4429.

RESIN

PUROLITE

Technical Data
C-100

Strong Acid Cation

PRODUCT DESCRIPTION

Purolite C-100 is a premium grade cation exchange resin that can be used either in water softening or demineralization. C-100 is crosslinked with styrene and divinylbenzene polymer and classified as an 8% crosslinked resin. Purolite C-100 has excellent bead stability by virtue of its high whole clear beads, 95% minimum, and its bead strength averaging over 300 grams. C-100 has very tight size control containing a minimum amount of fines on – 50 U.S. standard size mesh.

Purolite C-100 can be regenerated with sulfuric, hydrochloric or nitric acid to operate in the hydrogen form and sodium chloride (salt-brine) to operate in the sodium form.

Many variables effect capacity and performance, the following are some that must be checked occasionally:

- Regenerant strength
- Regenerant contact time
- Bed Depth
- Water analysis and possible changes
- Alkalinity as a percent of total anion
- Ratio of cations

Typical Chemical and Physical Characteristics

Polymer Structure	Polystyrene crosslinked with D V B
Functional Groups	R — SO_3 — H
Physical Form	Spherical Beads
Ionic Form (as shipped)	Sodium
Screen Size, U.S. STD Mesh (wet)	16 - 40
Particle Size Range	0.4 - 1.2 mm
Particle Size	95% between 0.3 - 1.25 mm
Water Retention	44 - 47%
Swelling	H→Na + = 5%
pH Limitations	None
Temperature Limitations	280°F Maximum
Chemical Resistance	insoluble in all common solvents
Whole Clear Beads	95% Minimum
Shipping Weights	53 lbs/cu. ft.
Standard Packaging	7 cu. ft. double polyethylene lined fiber drums and 1 cu ft. bags
Total Capacity	1.9 meq/ml. minimum 4.6 meq/gm.
D.V.B. Content	8%

PUROLITE The Purolite Company
Division of Bro-tech Corporation 150 Monument Road, Bala Cynwyd, PA 19004

STANDARD OPERATING CONDITIONS

Operation	Rate	Solution	Minutes	Amount
Service	1-5 gpm/ft^3	Influent Water		
Backwash	3-5 gpm/ft^2 (40-60 °F)	Influent Water	5-20	10-25 gals./ft^3
Regeneration	0.2-0.8 gpm/ft^3	0.5-5% H_2SO_4 4-10% HCL	30	4-10 lbs.
Rinse (Slow)	0.2-0.8 gpm/ft^3	Decationized	60	20 gals/ft^3
Rinse (Fast)	1-5 gpm/ft^3	Decationized	60	30 gals./ft^3

Backwash Expansion	50-75%
Design Rising Space	100%

CHEMICAL STABILITY

C-100 is insoluble in acids, alkali and all the common solvents, however exposure to free chlorine and other strong oxidizing agents over a long period of time will systematically decrosslink the resin. Exposure to oxidants may also come from the regenerant used.

BACKWASHING

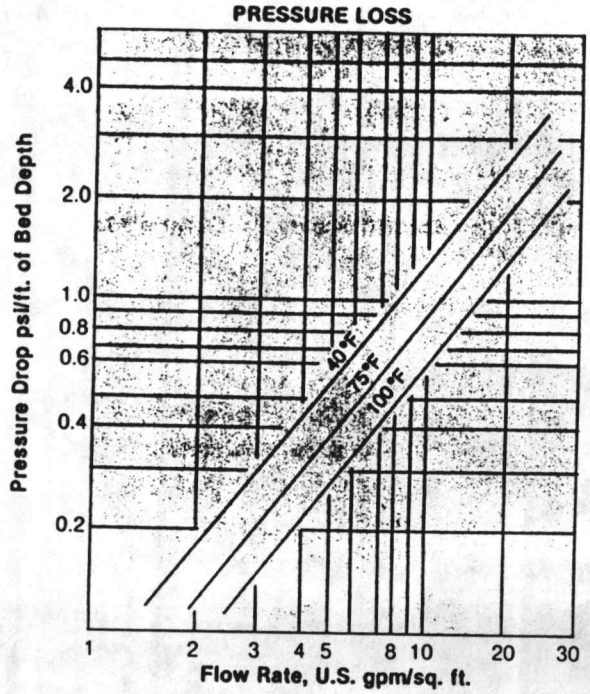
Don't underestimate the importance of backwashing, since it serves to remove particulate matters, eliminate gas pockets, reclassifies resin beads, and removes resin fines.

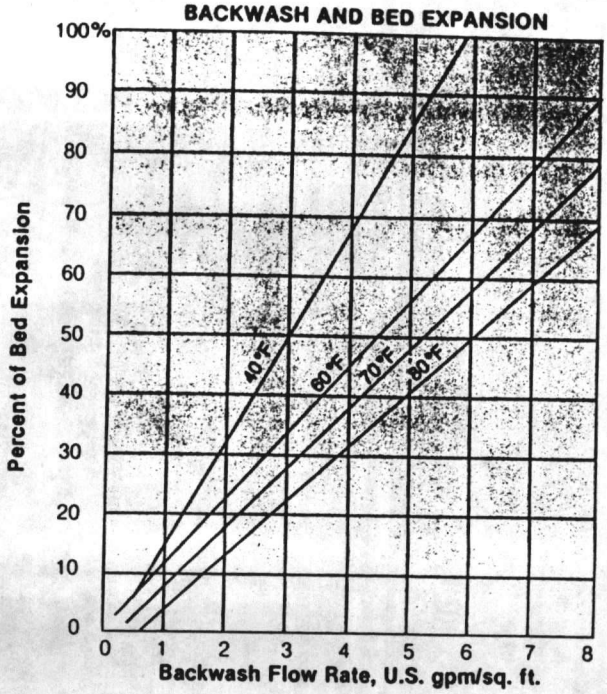
REGENERATION

When Purolite C-100 has been exhausted primarily with calcium ions, regeneration with hydrochloric acid is recommended. However, if Sulfuric Acid must be used, a step wise regeneration should be employed to prevent the precipitation of calcium sulfate. Using this type of regeneration, the resin is initially contacted with 0.5% of sulfuric acid followed by acid of increased strength. Regeneration flow rate is also important in preventing calcium sulfate precipitation. More regenerant contact time, will cause increased precipitation.
(See step wise regeneration table)

INFLUENT LIMITATION

Maximum Free Chlorine 1.0ppm
Maximum Turbidity . . . . . 5 A.P.H.A. Units





STEPWISE REGENERATION LEVELS

Regeneration Level lbs. 100% H_2SO_4/cu. ft	lbs. H_2SO_4				
	at 2%	at 4%	at 6%	at 8%	at 10%
4	2	2			
5	2	3			
6	2	3	1		
7	2	3	2		
8	2	3	3		
9	2	3	3	1	
10	2	3	3	2	
12	2	3	3	3	1

Purolite carries a complete range of Gel and Macroporous Cation and Anion Exchangers. These include:

Purolite A-600 a strongly basic Type I Anion Exchanger
Purolite A-400 a strongly basic Type I Porous Anion Exchanger
Purolite A-300 a strongly basic Type II Anion Exchanger
Purolite A-500 a Macroporous Type I strongly basic Anion Exchanger
Purolite A-510 a Macroporous Type II Anion Exchanger
Purolite A-300E a Type II Gel Anion Exchanger with no taste or odor
Purolite A-100 a Macroporous weak base Anion Exchanger
Purolite C-100 a high capacity premium grade Gel Cation Exchanger
Purolite C-100 x 10 a high capacity premium grade 10% Cross Linked Cation Exchanger
Purolite C-150 a strong acid Cation Macroporous Anion Exchanger
Purolite NRW 37 a Nuclear Mixed Bed Resin
Purolite NRW-100 a Nuclear Cation Resin
Purolite NRW-600 a Nuclear Anion Resin
Purolite C-105 a weak Acid Cation Resin
Purolite A-850 a strongly basic Type I Acrylic Exchanger
Purolite A-110 a weak base Condensation Anion

The Technical Data given herein are based on extensive laboratory testing and field results. In applying the data on a commercial scale, allowance should be made for possible mechanical or hydraulic deficiency of the equipment in which the ion exchangers are used.

PUROLITE

Purolite Company Division of Bro-Tech Corporation,
150 Monument Rd., Bala Cynwyd, Pennsylvania 19004 • 800-343-1500 • 215-668-9090
Telex 291718

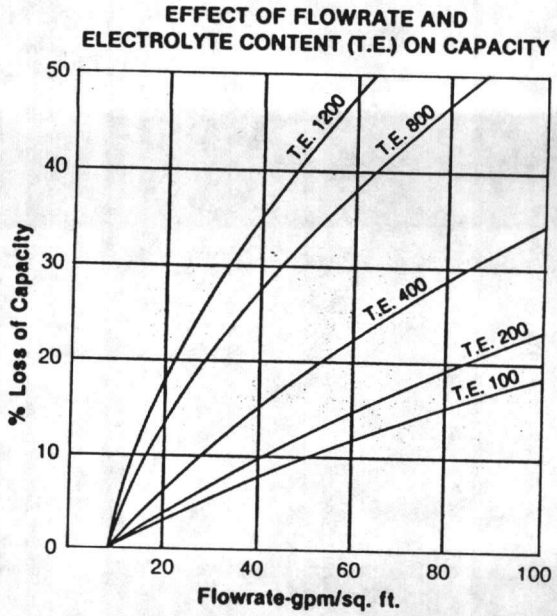
Operating Capacity—(H_2SO_4)(HCL)

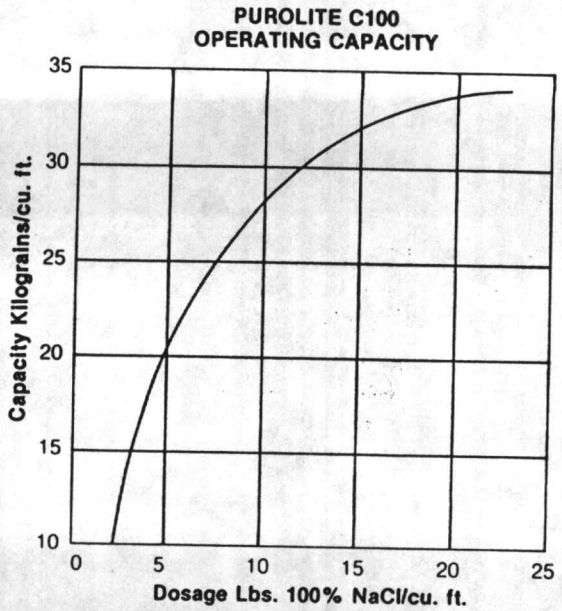
Typical capacities of C-100 regenerated with varying amounts of H_2SO_4 and HCL

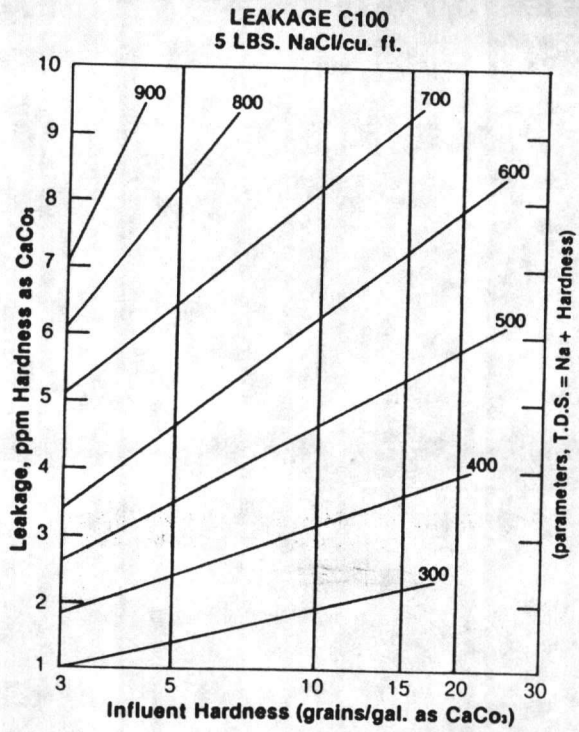
Lbs. H_2SO_4/cu. ft.	Capacity kgr./cu. ft.	% Leakage of Total Cation (ppm)*
4	15.5	
5	17	1%
6	19	
7	20	0.7%
8	20.5	
10	21.5	0.3%
15	25	

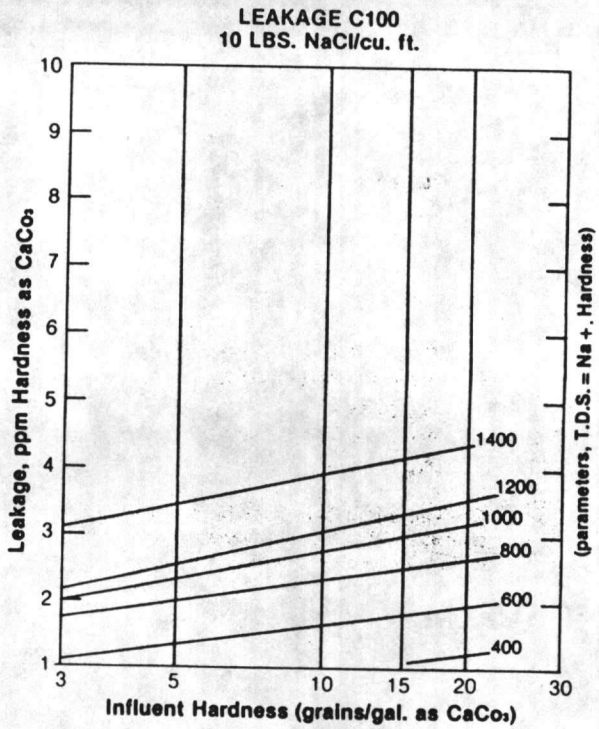
Lbs. HCL/cu. ft.	Capacity kgr./cu. ft.
4	23
8	32
10	34

*50% Alkalinity - 50% Sodium

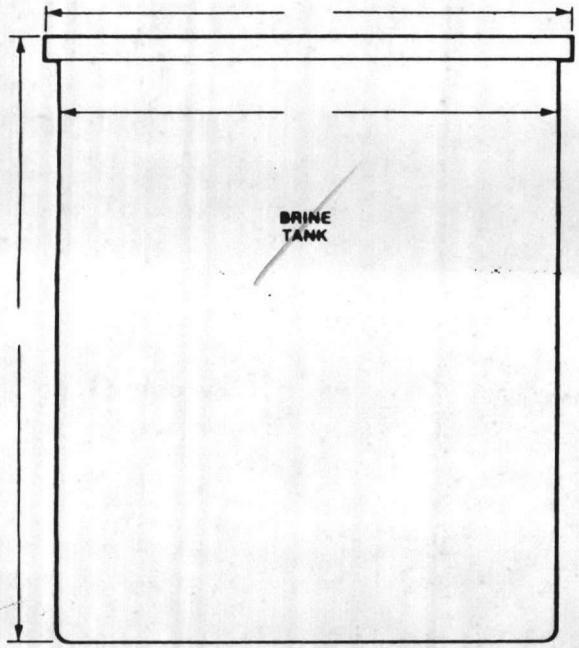


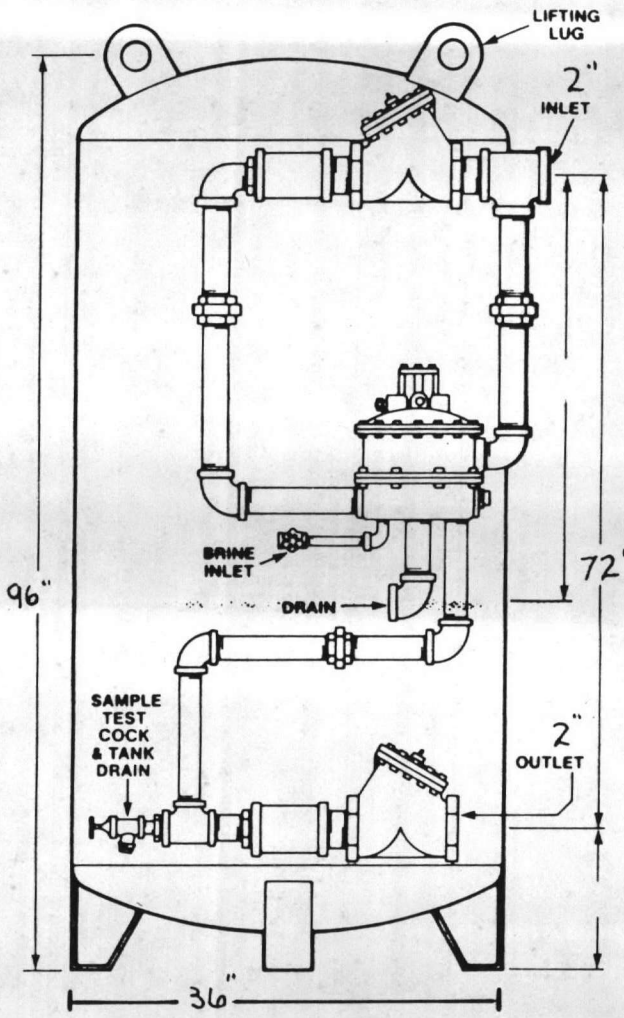




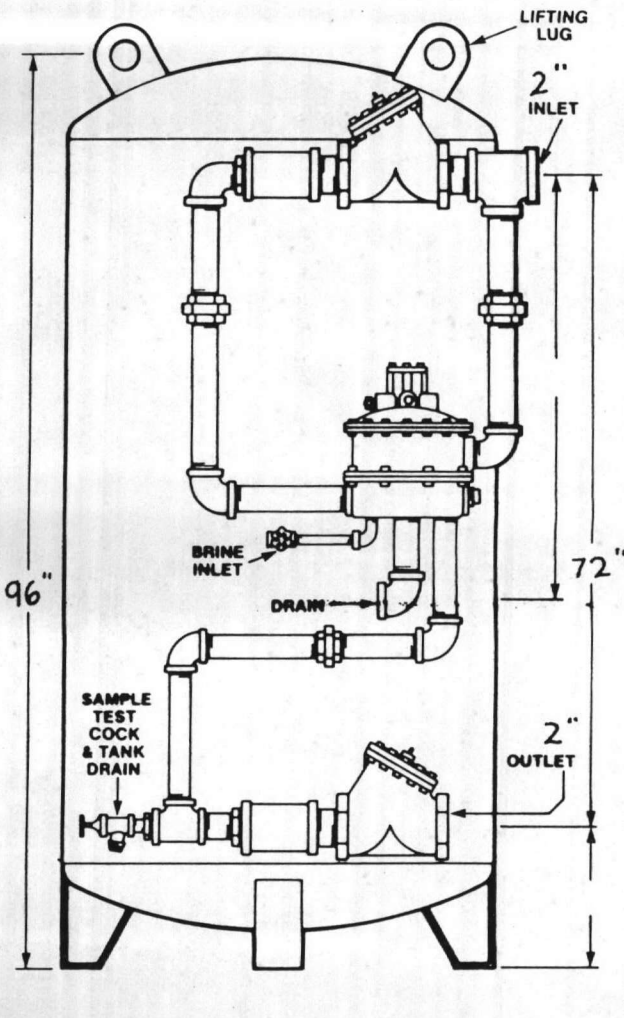


FRONT VIEW





FRONT VIEW



Monarch Water Systems		
SCALE:	APPROVED BY	DRAWN BY
DATE: 3/27/86		C. Edgar
Camp Lejeune N.C.		
		DRAWING NUMBER

MONARCH WATER SYSTEMS
division of Systech Corporation
245 North Valley Road • Xenia, Ohio 45385 • (513) 426-7000

1/02 Pendin

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE
N62470-85-C-6444	7	4-2-86

FROM CONTRACTOR: Sneeden, Inc.
P. O. Box 3548, Wilmington, NC

TO: Officer in Charge of Construction
Bldg. 1005, MCB, Camp Lejeune, NC 28542

PROJECT TITLE AND LOCATION: Replace Water Softeners, Building G-650, MCB, Camp Lejeune, & Bldg. AS-4151, MCAS, New River

CONTRACTOR USE ONLY

**List only one specification division per form.*

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☒ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

***ACTION CODES*
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged.
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
1.	01011-12.1	Schedule of Work	3	D	PHK 4/4/86

CONTRACTOR'S COMMENTS

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC

CONTRACTOR REPRESENTATIVE (Signature): James E. Sneeden III

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

No times shown for your schedule — need to submit a schedule with dates.

Returned 4-7-86

COPIES TO	DATE	SIGNATURE
ROICC (2) LANTDIV (1) A-E (1)	4/4/86	PHKing, Lt ROICC

SCHEDULE OF WORK

1. Receive the pipe, fittings, valves, and water softeners for Building G-650.

2. Schedule a shutdown of the existing water softening system for Building G-650 with the Contracting Officer during the Summer to minimize downtime. Give at least 15 days notice prior to the shutdown.

3. Shut down the existing water softening system for Building G-650.

4. Demolish and remove the existing water softening system for Building G-650 including the pipe, fittings, valves, and electrical connections as indicated on the contract drawings.

5. Install the new water softening system for Building G-650.

6. Start up the new water softening syste[illegible] Building G-650.

7. Receive the pipe, fittings, valves, a[illegible] for Building AS-4151.

8. Schedule a shutdown of the exist[illegible]stem for Building AS-4151 with the Contractin[illegible]mmer to minimize downtime. Give at least 15 days notice prior to the [illegible]down.

9. Shut down the existing water softening system for Building AS-4151.

10. Demolish and remove the existing water softening system for Building AS-4151 including the pipe, fittings, valves, and electrical connections as indicated on the contract drawings.

11. Install the new water softening system for Building AS-4151.

12. Start up the new water softening system for Building AS-4151.

SCHEDULE OF WORK

1. Receive the pipe, fittings, valves, and water softeners for Building G-650.

2. Schedule a shutdown of the existing water softening system for Building G-650 with the Contracting Officer during the Summer to minimize downtime. Give at least 15 days notice prior to the shutdown.

3. Shut down the existing water softening system for Building G-650.

4. Demolish and remove the existing water softening system for Building G-650 including the pipe, fittings, valves, and electrical connections as indicated on the contract drawings.

5. Install the new water softening system for Building G-650.

6. Start up the new water softening system for Building G-650.

7. Receive the pipe, fittings, valves, and water softeners for Building AS-4151.

8. Schedule a shutdown of the existing water softening system for Building AS-4151 with the Contracting Officer during the Summer to minimize downtime. Give at least 15 days notice prior to the shutdown.

9. Shut down the existing water softening system for Building AS-4151.

10. Demolish and remove the existing water softening system for Building AS-4151 including the pipe, fittings, valves, and electrical connections as indicated on the contract drawings.

11. Install the new water softening system for Building AS-4151.

12. Start up the new water softening system for Building AS-4151.

SUBMITTAL STATUS LOG

CONTRACT NUMBER: N62470-85-C-6444

TITLE: Replace Water Softeners, Building G-650, Marine Corps Base, Camp Lejeune, NC
" " " Building AS-4151, MCAS, New River, Jacksonville, NC

LOCATION

CONTRACTOR: Sneeden, Inc.

TRANSMITTAL NUMBER	Description of Items	Specification Section Requiring Submittal	Submittal Requires					Contractor Approved	Government Approved	Contractor Action		Date Forwarded From ROICC	ROICC Action		Date			Remarks
			Shop Drawings	Catalog Data	Sample	Certification	Test Data			Insert Action Code	Date of Action		Insert Action Code	Date of Action	Received from ROICC	Mat'l/ Equip Received on Site	Approved by Contractor	
	b	c			d			e		h		g			i	j	k	m
1.	Schedule of Prices	01010-8							X									
2.	Safety Program	01011-10							X									
3.	Schedule of Work	01011-12.1							X									
4.	List of Subcontractors	01011-15							X									
5.	List of Contractors Personnel	01011-15							X									
6.	Submittal Status Log	01401-1.4.1							X									
7.	Enviromental Protection Plan	01560-1.1							X									
8.	Pipe	15400-2.1.1		X		X			X									
9.	Pipe	15400-2.1.2		X		X			X									
10.	Fittings	15400-2.1.1		X		X			X									
11.	Fittings	15400-2.1.2		X		X			X									
12.	Valves	15400-2.2		X		X			X									
13.	Pipe Supports (Hangers)	15400-3.1.2		X					X									
14.	Water Softeners	15651-1.3	X	X					X									