VQ Matic

AQ Matic

Finding Solutions
Building Partnerships

AquaMatic Control Valves have worldwide recognition for high-quality and value in the water treatment and air movement markets. A low initial purchase price and lower cost of operation during the life of the product increases the real value of the product.

The AquaMatic products are industry-proven and AQ Matic is committed to supplying the same genuine product provided by its predecessors. The AquaMatic product line has the reputation for durability and low life-cycle costs. AQ Matic's dedicated team of professionals provide after-market service and support, which is unparalleled in the industry. Additionally, our valves are simple to maintain, and easily serviced by your maintenance staff.

AquaMatic products are effective in a diverse array of applications. For instance, AQ Matic manufactures the valves, stagers, and controls that comprise water softener equipment, which is used to protect industrial boilers from scale build-up. Similarly, AQ Matic valves are used in Heatless Regenerative Air Driers to protect manufacturing facilities around the world from corrosion in pneumatic equipment.

Our deep-rooted commitment to customer satisfaction has resulted in numerous long-term relationships. We take pride in helping our customers succeed as their operations expand and diversify. We are continuously improving quality systems and procedures to ensure that AquaMatic valves and controllers are manufactured to the highest of quality standards.

AQ MATIC CAST IRON VALVES

V42 & VAV Series

AQ Matic V42 Series valves are constructed of cast iron or brass and designed for water applications. VAV Series valves are constructed of cast iron and designed for air applications. A separate control chamber protects the diaphragm from line fluid and extends cycle life. Reinforced diaphragm of Buna N or Viton* materials are pre-formed and stress relieved to maximize responsiveness and product life. The valve is highly serviceable even while in line. A variety of options are available such as spring-assist open, spring-assist closed, flow control limit stop, normally closed, poppet position indicator, and high temperature ethylene propylene or Viton* seals.

Operating Specifications

Pipe Size Inches	Pipe Size Millimeter	End Connectors (Female Thread)	Water Valve Model	Air Valve Model	Cv[1]	Kv[2]
3/4	20	NPT, BSPT	V42B	VAVB	11.4	9.8
1	25	NPT, BSPT	V42C	VAVC	12.8	11.1
1-1/4	32	NPT, BSPT	V42D	VAVD	26.5	22.9
1-1/2	40	NPT, BSPT	V42E	VAVE	32.5	28.1
2	50	NPT, BSPT	V42F	VAVF	56.0	48.4
2	50	NPT, BSPT	V42G	VAVG	68.0	58.8
2-1/2	65	NPT, BSPT	V42H	VAVH	84.0	72.7
3	80	NPT, BSPT	V42J	VAVJ	134	116
3	80	Flanged	V42J	VAVJ	134	116
4	100	Flanged	V42K	VAVK	275	238
6	150	Flanged	V42L	N/A	680	588

AQ MATIC STAINLESS STEEL VALVES

V46 Series

AQ Matic V46 Valves have the same operational characteristics and are constructed of 316 Stainless Steel material. These valves are available from 1 to 2-inch sizes, with either threaded or flanged ends. Flanged valves are rated for 150 psi (10 bar) and threaded valves are rated for 250 psi (17 bar). With all stainless steel internals and no internal threads, this series is ideal for corrosion resistant applications.

Operating Specifications

Pipe Size Inches	Pipe Size Millimeter, DN	Valve Model	Cv[1]	Kv[2]
1	25	V46C	14	12.1
1-1/2	40	V42E	33	28.5
2	50	V46F	54	47

*Viton® is a registered trademark of E.I. du Pont de Nemours and Company.

Cv[1] - Flowrate (Gal./Min.) of water at 60^0 F. at 1 P.S.I. pressure drop
Kv[2] - Flowrate (CU. $M.^3$/HR) of water at 15.5^0 C. at 1 BAR pressure drop

AQ MATIC STAGERS & EJECTORS

AQ Matic Stager Valves

AQ Matic Stager Valves are rotary valves with multiple ports for directing fluid flows to operate various diaphragm valves installed in a process system. AQ Matic stager internal parts are constructed of durable, non-corroding, self-lubricating materials for long, maintenance-free life.

Operating Specifications

Model Number	Body Material	Number of Ports	Typical Applications
48	Brass	6	Filters and Softners
51	Brass	8	Complex softner systems and sequential filter systems
58	PVC	16	Twin alternating systems and de-ionizers

AQ Matic Fluid Handling Products

AQ Matic 540 Series PVC Ejectors are available in 1/2 through 2-inch sizes with female NPT threads or female socket ends for US pipe. Specific applications are brine draw, acid draw, or caustic draw. This economical ejector is engineered to draw two parts of regenerant fluid for each three parts of water

Operating Specifications

Pipe Size Inches	Model Number
1/2	540
3/4	541
1	542
1-1/2	544
2	546

K53 Series

AQ Matic K53 Series Valves are designed for controlling the flow of most fluids including deionized water, salt solutions, and corrosive fluids such as acids and caustics. The rugged construction employs strong corrosion-resistant, glass-filled thermoplastic components. The Y-pattern design permits high flow with low pressure drop. Separate flow and control chambers provide positive closing without springs. Dual O-ring design and the cap is easily removed for maintenance purposes. True union end design with female socket weld connections provides easy installation and servicing.

Operating Specifications

Pipe Size Inches	Pipe Size Millimeter, DN	Valve Model	Cv[1]	Kv[2]
1	25	K531	18.0	15.6
1-1/2	40	K534	46.0	39.8
2	50	K535	84.0	72.6
3	80	K537	200.0	173.0

AQ MATIC COMPOSITE VALVES

K52 & K55 Series

AQ Matic K52 and K55 Series Valves provide the time proven advantages of the Y-pattern design for pipe sizes from 1/2 through 3-inches. The body and cap are molded in strong, glass-filled thermoplastic and the diaphragm is made of durable Buna N or Viton* materials. Various pipe end connections are available for your system design. Other AQ Matic Composite valve options include spring-assist open, spring-assist close, flow control limit stop, poppet position indicator, Viton* seals, butyl seals, and normally closed. K55 Series include an isolated bonnet feature which physically seperates the flow and control chambers. The K55 Series Valves also offer a fail-safe spring closed option.

Operating Specifications

Pipe Size Inches	Pipe Size Millimeter, DN	K52 Valve Model	K55 Valve Model	Cv[1]	Kv[2]
1/2	15	K520	K550	4.0	3.5
1	25	K521	K551	15.0	13.0
1-1/2 – 2	40 – 50	K524	K554	38.0	32.8
2-1/2 – 3	65 – 80	K526	N/A	100.0	86.5

K52

K55

962 Stager Controls

AQ Matic 962 Stager Controls combine an AQ Matic stager with an electronic control, mounted and pre-wired in a NEMA-rated enclosure

962 Series Controls provide sophisticated, demand-based water conditioning. Time-based and/or external signal initiation is also available as a standard feature. This fully programmable series of controls provide the ability to fine-tune operations to meet the application requirements.

Operating Specifications

Controls	Model Number	Description
Single Unit Controls Typical Softners and Filters	E948	962 Control w/model 48, 6-port stager
More Complex Softners and Filters	E951	962 Control w/model 51, 8-port stager
Multiple Unit Controls Twin-Alternating Softners and Filters (w/Timed Brine Switch Output)	E958-TB	962 Control w/model 58-TB, 16-port stager
Twin-Alternating Softners	E958-TA	962 Control w/model 58-TA 16-port stager
Sequential Filters (Backwash Only)	E948	962 Control w/model 48, 6-port stager
2-Unit Sequential Filters (Backwash & Rinse)	E951	962 Control w/model 51, 8-port stager
3- or 4-Unit Sequential Filters	E958	962 Control w/model 58, 16-port stager

NXT Stager Controls

AQ Matic NXT Stager Controls feature full function programming with the capability to link multiple stagers. Options include 3-way universal solenoid valve pre-installed and auxiliary micro switch cam with signal in service or backwash.

Operating Specifications

System #	System Description	Stagers	Type
4	Single Unit	1	Time Clock: No Meter, Immediate: One Meter, Delayed: One Meter, Remote: No Meter
5	Interlocked	2,3,4	Immediate: All Meters, Remote: No Meter
6	Series	2,3,4	Immediate: One Meter, Delayed: One Meter, Remote: No Meter,
7	Alternating	2	Immediate: One Meter, Remote: No Meter
9	Alternating	2,3,4	Immediate: All Meters, Remote: No Meter
14	Demand Flow	2,3,4	Immediate: All Meters

Easy Nest Kits

The AQ Matic Easy Nest Kit outperforms large multiport valves in many ways: greater application flexibility, improved flow rate performance, and significant cost savings. AQ Matic makes it easy to specify, quote, and build a superior system. Our Easy Nest Kits simplify a valve nest down to only two part numbers (valving and stager controller). Now all you need to do is determine the tank size, flowrate, and piping size. At the heart of the system is the industry-proven AquaMatic Diaphragm Valve, first introduced over 45 years ago.

Open the door to a whole new spectrum of tank sizes you may have never tried before. AQ Matic Valves and Easy Nest Kits give you opportunity to seek new business that will result in a new level of success.

Performance Range (Single Tank Systems)

Service Flow Rates	80 to 1300 gpm (18 to 295 m^3/h) per tank
Backwash Flow Rates (Softners)	35 to 392 gpm (8 to 89 m^3/h)
Backwash Flow Rates Filters	35 to 1200 gpm (18 to 272 m^3/h)
Sytem Sizes	36" to 120" Diameter Tanks

AQ MATIC Easy Nest Kits

Configurations

Systems

Single Tank Softners	4 Position
Multi-Tank Softners	2, 3, and 4 Tank, Parallel; 2 Tank Alternating Softners
SIngle Tank Filters	3 Positions
Multi-Tank Filters	2, 3, and 4 Tank, Sequential

Controls

Electronic	Demand and TIme Clock (Battery Back-up)
Programmable Regeneration Range	0 - 255 Minutes Regeneration (Each Cycle)
Stager Valves	6, 8, and 16 ports

Piping

Valve Body (Cast Iron)	3/4"- 3" Female Thread NPT, BSP, JIS; 3"- 6" Flanged
Valve Body (Noryl - Plastic)	1"-3" Union, Female Solvent Weld; 2"-3" Female Solvent Weld or Flange
Injectors	1/2"-2" Female NPT Thread, Solvent Weld
Stager Tubing	1/4" Poly Tubing

Operating Specifications

Valve Body	Cast Iron or Glass-filled Noryl
Diaphragm	Buna N/Polyamide
Injector	PVC
Control Enclosures (Electronic)	NEMA 4X Fiberglass
Operating Pressure	20 to 120 psi (1.38 to 8.27 bar)
Operating Temperature	35^0 to 120^0F (2^0 to 38^0C)
Operating Voltages	115v, 50/60 Hz 220v 50/60 Hz

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Metal Valves

V42

VAV

V46

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Composite Valves

K52

Description	Series	Drawing Number
Diaphragm Valve Configurations	K52	42983
2” & 2-1/2” End Connector parts	K520, K521, K524	1081309
1/2” & 1” & 1-1/2” End Connector parts	K524, K526	1078150
1/2” Diaphragm Valves	K520	1078139
1” Diaphragm Valves	K521	1077654
1-1/2” Diaphragm Valves	K524	1077655
2-1/2” Diaphragm Valves	K526	1077656
Solenoid-Operated Valves	K520 - K526	1081312

K55

Description	Series	Drawing Number
Diaphragm Valve Configuration	K55	42985
K520 Diaphragm Valve	5520	1077692
K521 Diaphragm Valve	5521	1077693
K524 Diaphragm Valve	5524	1077694

K53

Description	Series	Drawing Number
Diaphragm Valve Configuration	K53	42984
1” Diaphragm Valve	K531	1077688
1-1/2” Diaphragm Valve	K534	1077689
2” Diaphragm Valve	K535	1077690
3” Diaphragm Valve	K537	1077691
1” Failsafe Closed	K531	1084008
1-1/2” Failsafe Closed	K534	1084008
2” Failsafe Closed	K535	1084011
3” Failsafe Closed	K537	1084011
Solenoid-Operated Valves	K53	1078170

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Stagers

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Controllers

Description	Series	Drawing Number
962 Series Specs Sheet	962	1221446
962 Manual	962	1076301
NXT Series Specs Sheet	NXT	43163
NXT Manual	NXT	43037
NXT Master	NXT	N/A

Fluid Injectors

Description	Series	Drawing Number
Fluid Injector Specs	540	3026818

Easy Nest Kits

Description	Series	Drawing Number
Easy Nest Kits Spec Sheet	N/A	1230817
Easy Nest Kits Manual	N/A	1084369

AQUAMATIC®
METAL DIAPHRAGM VALVES

VERSATILE DESIGN FOR A WIDE VARIETY OF APPLICATIONS

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

FEATURES/BENEFITS

The unique Y-pattern design with large seat opening and high lift disc permits higher flow rates at lower pressure loss than other comparable valves

Larger diaphragm area compared to seat area permits drip-tight closing without any springs

All components can be serviced while the valve is in-line

Separate flow and control chambers permit positive closing without springs

Adaptable to a wide variety of control devices

Pre-formed, stress-relieved diaphragm minimizes fatigue, maximizes valve responsiveness and diaphragm lifetime

Cast iron, brass, stainless steel and nitrile elastomer components, for an unparalleled service

Diaphragm acts as an actuator, eliminating the need for electric or pneumatic actuators, which minimizes initial investment and maintenance costs

3/4"- 3" threaded [NPT or BSP]

3"- 4" flange drilled in accordance with ASA16.1 class 125, or BSP4504

Handles liquid and gases

OPTIONS

Spring-assist closed

Spring-assist open

Position indicator

Seal and diaphragm materials for special applications

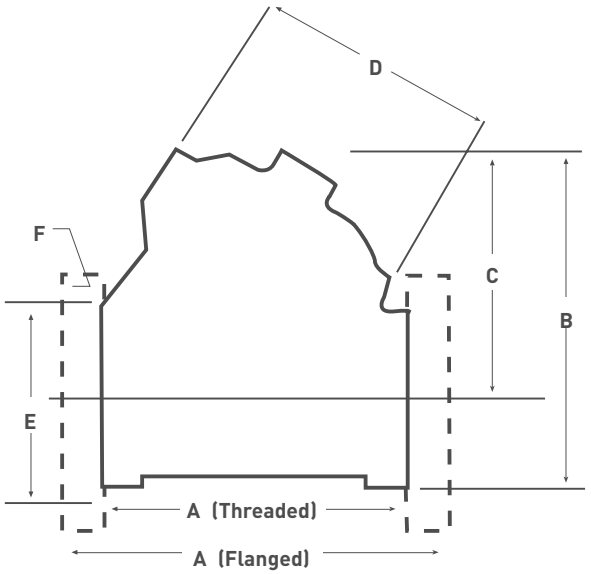
TYPICAL APPLICATIONS

Agricultural Irrigation
Air Control Systems
Air Dryers
Car Wash Systems
Centrifugal Separators
Conveyor Systems
Cooling Control
Cooling Towers
Dust Suppression
Fuel Handling
HVAC Systems
Laundry Equipment
Level Control Systems
Machine Hydraulic
Machinery
Nitrogen Handling
Plastic Molding
Process Water Systems
Pump Controls
Sand Blasting
Street Cleaning Vehicles
Turf Irrigation
Vacuum Control Systems

DIMENSIONS

MODEL #		ENDS	PIPE SIZE	Cv*	DIMENSIONS (APPROXIMATE)					
420 SERIES	VAV SERIES				A	B	C	D	E[2]	F[3]
V42B	VAVB	Threaded	3/4"	11.4	3.69" (94 mm)	4.25" (108 mm)	3.75" (95 mm)	2.75" (70 mm)	–	–
V42C	VAVC	Threaded	1"	12.8	3.69" (94 mm)	4.25" (108 mm)	3.75" (95 mm)	2.75" (70 mm)	–	–
V42D	N/A	Threaded	1-1/4"	26.5	4.75" (121 mm)	5.37" (137 mm)	4.00" (102 mm)	3.50" (89 mm)	–	–
V42E	VAVE	Threaded	1-1/2"	32.5	4.75" (121 mm)	5.37" (137 mm)	4.00" (102 mm)	3.50" (89 mm)	–	–
V42F	VAVF	Threaded	2"	56	6.62" (168 mm)	7.25" (184 mm)	5.37" (137 mm)	4.87" (124 mm)	–	–
V42G	VAVG	Threaded	2"	68	7.37" (187 mm)	8.00" (203 mm)	5.75" (146 mm)	5.50" (140 mm)	–	–
V42H	VAVH	Threaded	2-1/2"	84	7.37" (187 mm)	8.00" (203 mm)	5.75" (146 mm)	5.50" (140 mm)	–	–
V42J	VAVJ	Threaded	3"	134	9.00" (229 mm)	9.75" (248 mm)	6.75" (171 mm)	7.25" (184 mm)	–	–
V42J	VAVJ	Flanged	3"	134	10.62" (270 mm)	10.75" (273 mm)	7.00" (178 mm)	7.25" (184 mm)	6.00" (152 mm)	0.75" (19 mm)
V42K	VAVK	Flanged	4"	275	11.75" (298 mm)	14.75" (375 mm)	10.00" (254 mm)	8.75" (222 mm)	7.50" (191 mm)	0.75" (19 mm)
V42L	N/A	Flanged	6"	680	17.00" (432 mm)	19.00" (483 mm)	13.50" (343 mm)	15.75" (402 mm)	9.50" (241 mm)	0.87" (22 mm)

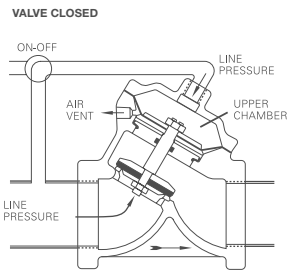
*Cv = Flow rate in gpm of water at 60°F @ 1psi pressure drop



PRINCIPLES OF OPERATION

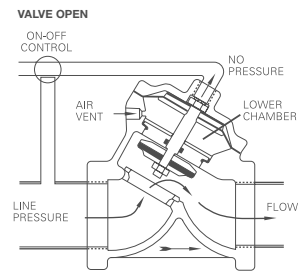
DRIP-TIGHT CLOSING

Closure is obtained by directing line pressure or equivalent independent pressure into the upper chamber. This pressure on the large diaphragm area causes the valve disc to seal against the seat.



FULL OPEN OPERATION

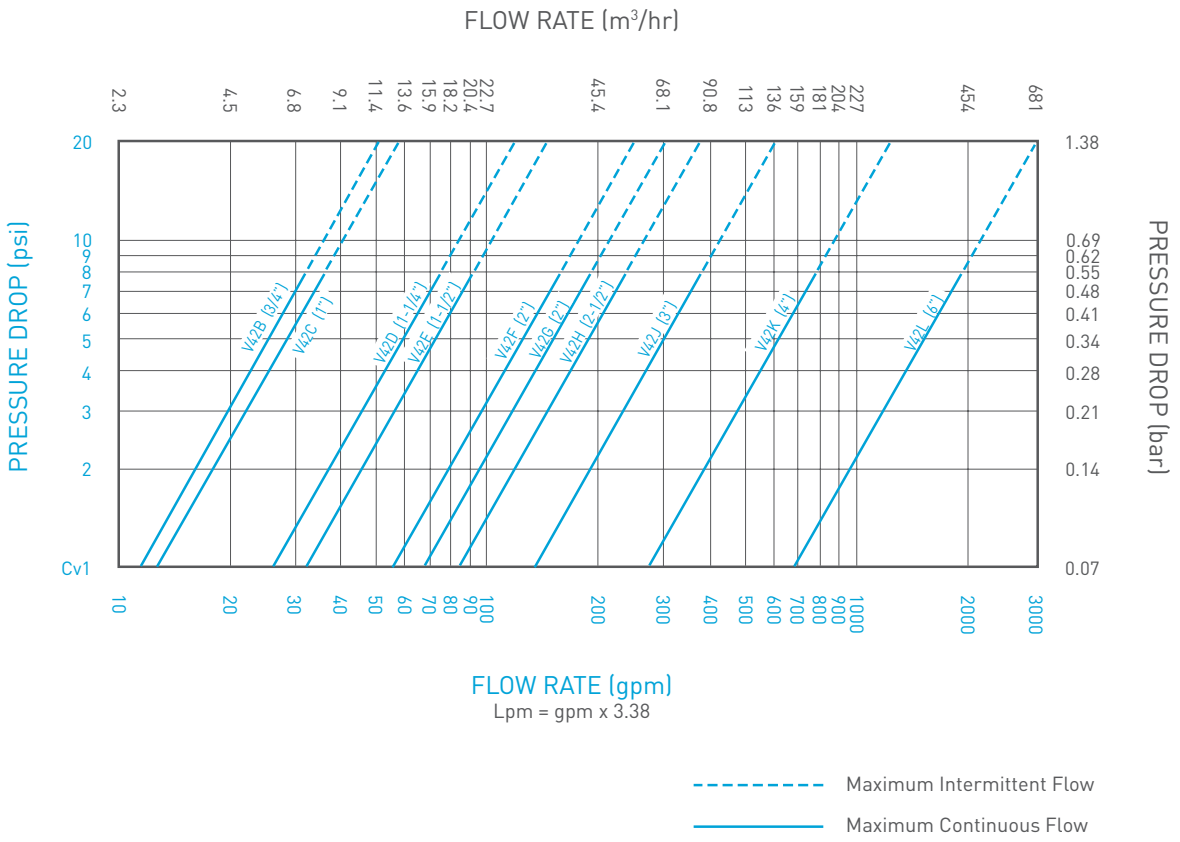
When the closing pressure in the upper chamber is relieved by venting the pilot line, the valve opens positively, by line pressure on the disc.



OPERATING SPECIFICATIONS

Max Pressure	125 psi (8.6 bar)
Max Temperature	140°F (60°C)
	250°F (120°C) (optional)

PERFORMANCE DATA



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V42 SERIES DIAPHRAGM VALVE MASTER CHART

*** FILL IN PROPER DESIGNATIONS TO DETERMINE PRODUCT NUMBER:** V 4 2 - _ _ _ - _ _ _ _ _ _

PIPE SIZE (B thru L std)

B = 3/4" (20mm)	G = 2" (50mm - V426)
C = 1" (25mm)	H = 2-1/2" (63mm)
D = 1-1/4" (32mm)	J = 3" (75 or 80mm)
E = 1-1/2" (40mm)	K = 4" (100mm)
F = 2" (50mm - V425)	L = 6" (150mm)

BODY SIZE (ref only)

1 = 1"	7 = 3"
4 = 1-1/2"	8 = 4"
5 = 2"	9 = 6"
6 = 2-1/2"	

END CONNECTIONS (0 std for V421, V424, V425, V426 & V427; 3 std for V428 & V429

0 = Female N.P.T.	3 = Flanged, A.S.T.M.
1 = Female B.S.P.T.	4 = Flanged, I.S.O. (Not valid on V429 valves)

BODY & CAP MATERIAL (0 std [opt 1 not available with flanged bodies])

0 = Cast Iron - RED primer	C = Cast Iron - painted ASH
1 = Cast Brass	D = Cast Iron - painted BLUE

VALVE OPTIONS (00 std [SAO not available on V429]; [NC not valid with solenoid or float configurations])

00 = NO	11 = NO, LS, SAO	30 = NC
01 = NO, SAO	20 = NO, PI	32 = NC, SAC
02 = NO, SAC	21 = NO, PI, SAO	40 = NC, LS
10 = NO, LS		SX = Special Valve **

SEAL MATERIALS (0 std) (Option 5 not valid for NC valves or solenoid EO or EC valves)

OPT.	OPERATING DIAPHRAGM	SEALING DISK	DYNAMIC SEALS	STATIC SEALS	KIT SERIES	Max Temp
0	Buna-N	Buna-N	Buna-N	Buna-N	RA	150° (65°C)
1	Buna-N	EP	EP	EP	RAE	200° (93°C)
2	Fluoroelast.	Fluoroelast.	Fluoroelast.	Fluoroelast.	RAV	250° (121°C)
4	Fluoroelast.	EP	EP	EP	RAEFV	200° (93°C)
5	Buna-N	Fluoroelast.	Fluoroelast.	Fluoroelast.	RAVFB	200° (93°C)
7	Buna-N	Hycar	Buna-N	Buna-N	RAJH	150° (65°C)

INTERNAL PARTS

0 = Brass and Stainless Steel

DRILL & TAP BOSSES (0 std [1/4" NPT std for all sizes]) (See notes 1 & 2)

0 = None	4 = Boss #4	8 = Bosses #2,4
1 = Boss #1	5 = Bosses #1,2,3,4	A = Bosses #2,3
2 = Boss #2	6 = Bosses #1,2	
3 = Boss #3	7 = Bosses #1,3	

SOLENOID or FLOAT OPTIONS (0 std) (Options 1 thru 5 and A thru X are not valid with NC valves)

0 = None — See valve options # -3

Solenoid Options
1 = Energize to Open (EO)
2 = Energize to Close (EC)
3 = Independent Pressure (IP)
4 = EO w/ Dry Drain
5 = EC w/ Dry Drain

Float Options	Closed If	Close By	Open By
A = 3000 Float	High	Pilot Press.	Vent
B = 3010 Float	High	Pilot Press.	Pilot Press.
C = 3011 Float	Low	Pilot Press.	Vent
D = 3012 Float	Low	Pilot Press.	Pilot Press.
E = 3010B Brine Float	High	Pilot Press.	Pilot Press.
X = Replacement Valve Only (Includes Shaft Spacer)			

SOLENOID or FLOAT FEATURES (0 std [Polystyrene Float & 36" Brass Rod are std Float features])

0 = None — See valve options # -3

Solenoid Option Features
1 = 115V/60 HZ, NEMA 1
2 = 220V/50 HZ, NEMA 1
3 = 24V/60 HZ, NEMA 1
4 = 115V/60 HZ, NEMA 3, 3S, 4, 4X, 6, 6P, 7, 9
5 = Not available
6 = Not Used
A = 24VDC, NEMA 1
B = Not available

Float Option Features
L = Not available
M = Not available
N = 54" Brass Float Rod
P = Not available
X = Less Float & Rod

* To create a valve number replace each "_" with the proper number or letter for the feature you desire. For example, a 3/4" NPT Cast Iron Valve Model V421 with Normally Closed and Spring Assist Closed Options is designated as a V42B-0032-00000.

** A special valve will have a custom drawing number (_ _ _ _ _ _ _)
and the item number format is (V42?-??SX-_ _ _ _ _)
where the last 5 numbers (Far Right) are the last five digits of the drawing number.

v

Valve Option Notes:

1. Bosses #1, 2, 3, & 4, are always drilled and tapped on V429 and does not need to be specified in part no.
2. Bosses needing to be drilled and tapped for solenoid or floats do not need to be specified in part no.
3. Float Options not available for Valve size 425 thru 429.

REV.	ECO. NO.	DESCRIPTION	BY/DATE	
G	22032	Added: seal material temperatures	JJJ	30-Nov-10
H	101762	REMOVED SS OPTION FOR INTERNAL PARTS	NBE	3/21/2013
J	102769	Updated bosses 1-4 tapped on 429 valves. (note-1)	TJM	14-Nov-13
K	103189	REM'D SOLENOID OPTION 6	TJM	27-Mar-14
L	103342	REM'D FLOAT OPTIONS FOR 424 THRU 429, REM'D OPTIONS FOR L,M,&P FLOATS, REM'D OPTION 5 & B FOR SOLENOIDS	TJM	22-Jul-14

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REPAIR PARTS KITS

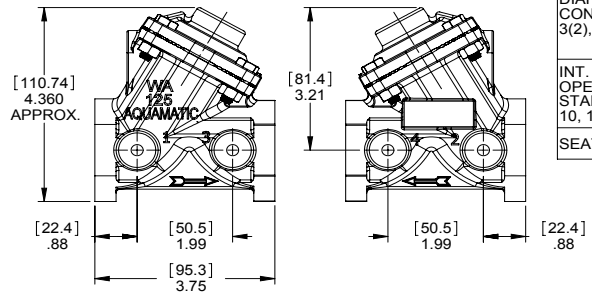
DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSIST OF ITEM NO'S 3(2), 5, 6, 8 (2), 9, 14, 16	1070068 (421-RA) BUNA N INCLUDES DIAPHGRAM 1074119 (421-FB)	1070081 (421-RAE) E.P.D.M. INCLUDES DIAPHGRAM 1074119 (421-FB)	1070093 (421-RAV) FKM INCLUDES DIAPHGRAM 1074120 (421-FV)
INT. PARTS KIT (NORM. OPEN) CONSIST OF STANDARD ITEM NO'S 4, 7, 10, 11(2), 17	1070118 (421-RF)		
SEAT (ITEM NO. 2)	1074158 (421-MO)		

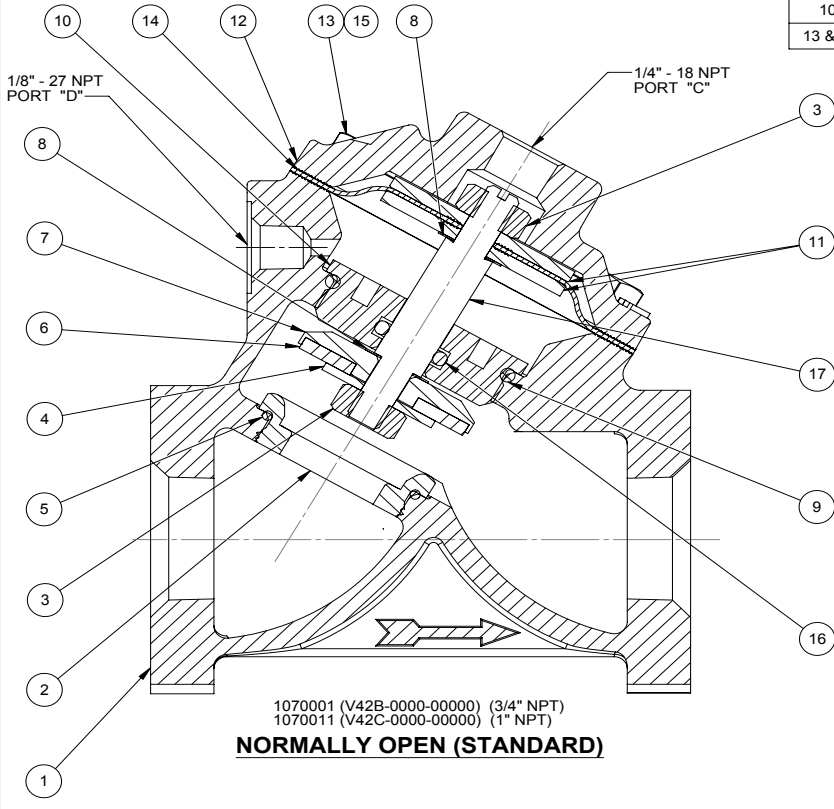
ASSEMBLY TOOLS

DESCRIPTION	PART NO.
FOR INSTALLATION AND REMOVAL OF SEAT (ITEM #2) (TOOL NOT SHOWN)	1074161 (421-MT)
FOR INSTALLATION AND REMOVAL OF SHAFT GUIDE (ITEM #10) (TOOL NOT SHOWN)	1074124 (421-GT)

TORQUE TABLE

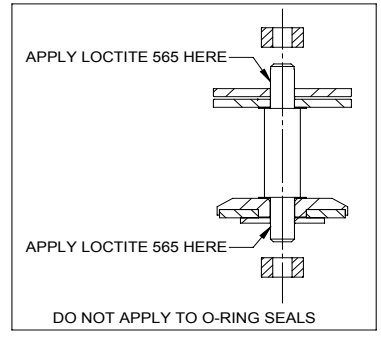
ITEM #	DESCRIPTION	TORQUED TO (+/- 10%)
2	SEAT	120 IN/LBS
3	UPPER NUT	90 IN/LBS
3	LOWER NUT	90 IN/LBS
10	GUIDE, SHAFT	120 IN/LBS
13 &15	NUT, & CAP SCREW	140 IN/LBS





1070001 (V42B-0000-00000) (3/4" NPT)
1070011 (V42C-0000-00000) (1" NPT)

NORMALLY OPEN (STANDARD)



REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	30204	L	REDAWN IN SOLIDWORKS. 1078608 WAS 1074175; RENAMED DRAWING TO 1077613	30AUG10	MHM
	32614	M	UPDATED FOR NEW CAP DESIGN	10-03-11	TMS
	102895	N	1-1074149 WAS-1074147, 2-1074128 WAS-1074126, 3-1074122 WAS-1074123, 4-1074117 WAS-1074118, 5-43032 WAS-43727	18DEC13	TJM
	104393	P	1-ITEM#11 WAS: 1074118	19MAR15	TJM
	104665	R	1-ADD'D: TORQUE TABLES, 2-UPDATED TITLE BLOCK	29MAY15	TJM

NO.	DESCRIPTION			STD	PART NO.	QTY.
1	BODY	CAST IRON	3/4" NPT	*	1074085 (421-A3)	1
			1" NPT	*	1074088 (421-A4)	
		CAST BRASS	3/4" NPT		1074077 (421-AB3)	
			1" NPT		1074080 (421-AB4)	
2	SEAT - BRASS (REQ'S ASSY TOOL)			*	1074158 (421-M0)	1
3	HEX NUT (1/4-28)			*	1263852	2
4	DISC PLATE - SS			*	1074149	1
5	O-RING		BUNA N	*	1071676 (ORB-024)	1
			E.P.D.M.		1071721 (ORE-024)	
			FKM	*	1071791 (ORV-024)	
6	DISC		BUNA	*	1074140 (421-J)	1
			E.P.D.M.		1074143 (421-JE)	
			FKM		1074146 (421-JV)	
			HYCAR		1074144 (421-JH)	
7	DISC HOLDER - SS			*	1074128	1
8	GASKET - COPPER			*	1073948 (200-GG)	2
9	O-RING		BUNA N	*	1071693 (ORB-125)	1
			E.P.D.M.		1071732 (ORE-125)	
			FKM		1071803 (ORV-125)	
10	SHAFT GUIDE - SS (REQ'S ASSY TOOL)			*	1074123	1
11	DIAPHRAGM PLATE - SS			*	43942	2
12	CAP		CAST IRON	*	1074093 (421-C)	1
			CAST BRASS		1074096 (421-CB)	
13	HEX SCREW		PLATED STEEL	*	1072398 (SCZ-0004)	4
14	DIAPHRAGM		BUNA N	*	1074119	1
			FKM		1074120	
15	HEX NUT		PLATED STEEL	*	1071656 (NUZ-0008)	4
16	O-RING		BUNA N	*	1071689 (ORB-110TC)	1
			E.P.D.M.		1071726 (ORE-110TC)	
			FKM		1239021 (ORV-110)	
17	SHAFT (NORMALLY OPEN)			*	1074150 (421-L)	1

NOTES:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS.

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES: ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION

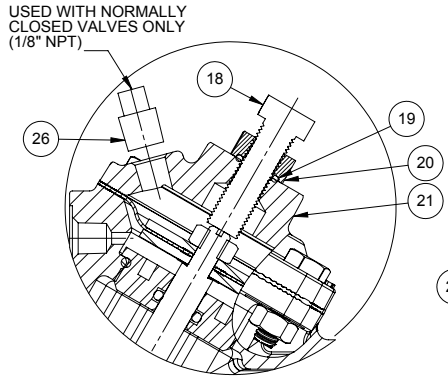
APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

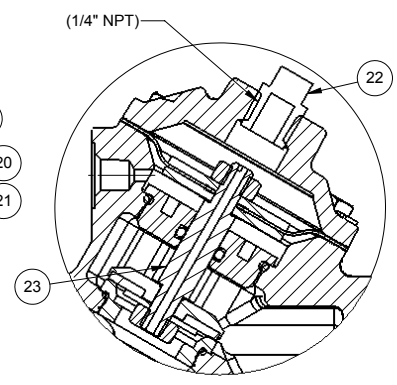
TITLE
CATALOG SHEET, 421
DIAPHRAGM VALVE STANDARD MODEL

SIZE B | DWG NO. BR1077613 | REV S

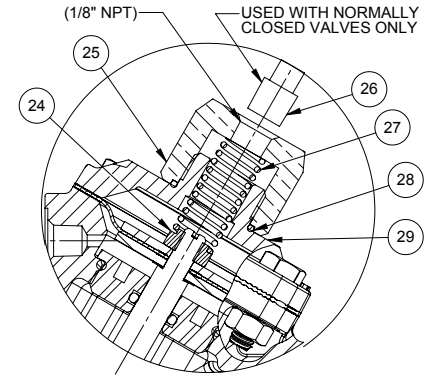
SCALE 1:1 | SHEET 1 OF 2



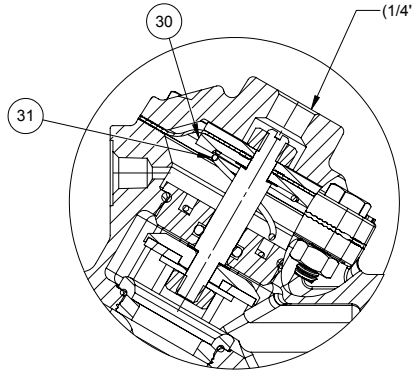
1072563 (V42B-0010-00000) (3/4" NPT)
1070015 (V42C-0010-00000) (1" NPT)
LIMIT STOP



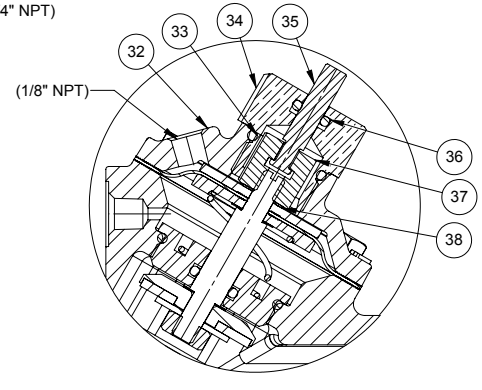
1070002 (V42B-0030-00000) (3/4" NPT)
1070012 (V42C-0030-00000) (1" NPT)
NORMALLY CLOSED



1070003 (V42B-0002-00000) (3/4" NPT)
1070013 (V42C-0002-00000) (1" NPT)
SPRING ASSIST CLOSED



1070004 (V42B-0001-00000) (3/4" NPT)
1070014 (V42C-0001-00000) (1" NPT)
SPRING ASSIST OPEN



1077144 (V42B-0021-00000) (3/4" NPT)
1072648 (V42C-0021-00000) (1" NPT)
POSITION INDICATOR

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	1001	S	AQ Matic update & verified part numbers	17JAN17	MGS

NO	DESCRIPTION		STD	PART NO.	QTY.
LIMIT STOP MODEL					
18	SCREW		*	1072361 (SCS-0030)	1
19	O-RING		*	1071668 (ORB-012)	1
20	HEX NUT		*	1077534 (400-H)	1
21	CAP	CAST IRON	*	1074101 (421-CCC)	1
		CAST BRASS		1074104 (421-CCCB)	
NORMALLY CLOSED MODEL					
22	PIPE PLUG (1/4" NPT)	PLATED STEEL	*	1071918 (PLZ-0008)	1
		BRASS		1071904 (PLB-0009)	
23	SHAFT (NORMALLY CLOSED		*	1074153 (421-LL)	1
SPRING ASSIST CLOSED MODEL					
24	CENTERING NUT		*	1074185 (421-X)	1
25	RETAINER NUT - BRASS		*	1074183 (421-TT)	1
26	PIPE PLUG (1/8" NPT)	PLATED STEEL	*	1071917 (PLZ-0005)	1
		BRASS		1071903 (PLB-0007)	
27	SPRING		*	1078602	1
28	O-RING		*	1071674 (ORB-020)	1
29	CAP	CAST IRON	*	1074099 (421-CC)	1
		CAST BRASS		1074100 (421-CCB)	
SPRING ASSIST OPEN MODEL					
30	DIAPHRAGM PLATE, 421, SAO		*	43727	1
31	SPRING		*	1078608	1
POSITION INDICATOR MODEL					
32	CAP	CAST IRON	*	1074107 (421-CF)	1
		CAST BRASS	*	1074110 (421-CFB)	1
33	O-RING		*	1071692 (ORB-116)	1
34	SHAFT GUIDE BUSHING		*	1074121 (421-GF)	1
35	INDICATOR SHAFT		*	1074164 (421-PM)	1
36	O-RING		*	1071688 (ORB-108TC)	1
37	TOP NUT		*	1074182 (421-TB)	1
38	LOCKWASHER		*	1073589 (WAS-0006)	1

REPAIR PARTS KITS

DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 18, 19, 20	1074154 (421-LS)
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 11(2), 23	1070129 (421-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 24, 27, 28	1074176 (421-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 8, 31	1074178 (421-SO)
INT. PARTS KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 33 THRU 38	1074162 (421-PI)

CONVERSION KITS

DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 18 THRU 21	1074155 (421-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 24 THRU 29	1074177 (421-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 8, 10, 31	1074179 (421-SOC)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 32 THRU 38	1074163 (421-PIC)

TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUED TO (+/- 10%)
20	NUT, LIMIT STOP	90 IN/LBS
24	CENTERING NUT	90 IN/LBS
25	NUT, SPRG RETAINER	120 IN/LBS
34	PI ROD GUIDE	120 IN/LBS
37	NUT, TOP, 428, PI	90 IN/LBS

NOTES:
1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMIT STOP MODEL.
2. VALVES AVAILABLE WITH B.S.P.T END CONNECTIONS.

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 421
DIAPHRAGM VALVE STANDARD MODEL

SIZE B | DWG NO. BR1077613 | REV S

SCALE 1:1 | SHEET 2 OF 2

ASSEMBLY TOOLS

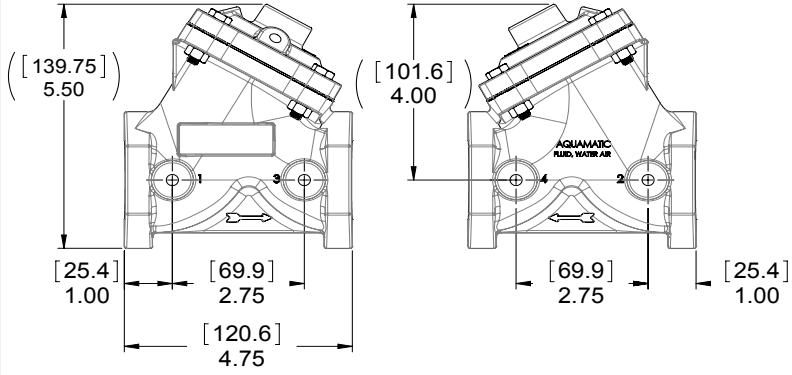
DESCRIPTION	PART NO.
FOR INSTALLATION AND REMOVAL OF SEAT (ITEM #2) (TOOL NOT SHOWN)	1074247 (424-MT)
FOR INSTALLATION AND REMOVAL OF SHAFT GUIDE (ITEM #10) (TOOL NOT SHOWN)	1074227 (424-GT)

REPAIR PARTS KITS

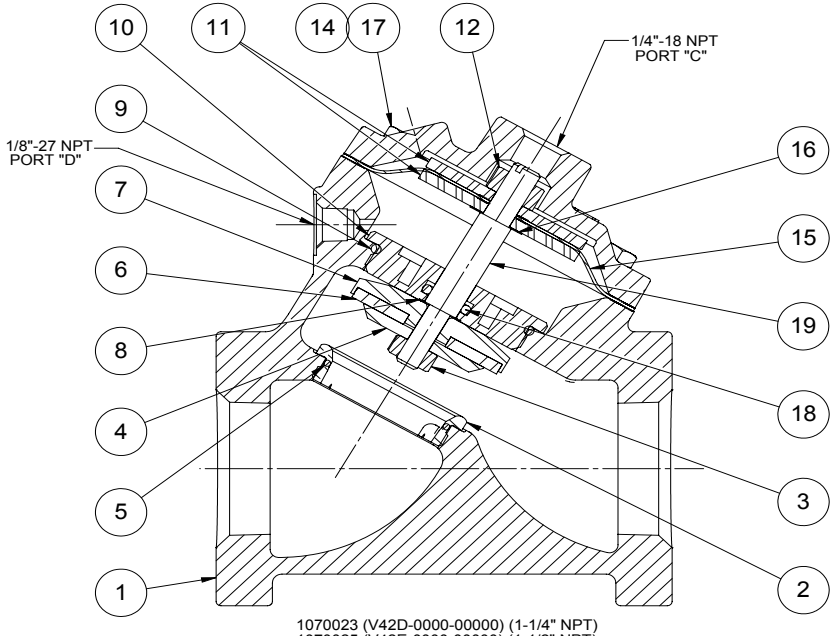
DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3,5,6,8,9,12,15,16,18	1070069 (424-RA)	1070082 (424-RAE)	1070094 (424-RAV)
	BUNA N INCLUDES DIAPHGRAM 1074222 (424-FB)	E.P.D.M. INCLUDES DIAPHGRAM 1074222 (424-FB)	FKM INCLUDES DIAPHGRAM 1074224 (424-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11(2),19	1070119 (424-RF)		
SEAT (ITEM NO. 2)	1074245 (424-MO)		

REVISIONS

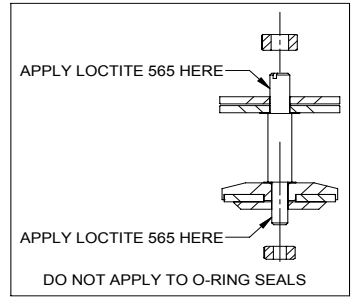
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102411	M	ITEM#10-1074225 (424-GGO) WAS 1074122 (421-GGO)	9/6/13	ANH
	103541	N	ITEM#4-WAS:1074237,ITEM#10-WAS:1074225,ITEM#11-WAS:1074220 ITEM#33-WAS:43033	23NOV14	TJM
	104233	P	ITEM 7 WAS 107229, UPDATED TITLE BLOCK, REMOVED NOTE 3	2/4/15	ANH
	104479	R	1- ITEM #11 WAS: 1074221	07APR15	TJM
	104665	T	1-ADD'D: TORQUE TABLES	01JUN15	TJM



TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUED TO (+/- 10%)
2	SEAT	120 IN/LBS
3	LOWER NUT	90 IN/LBS
10	SHAFT GUIDE	120 IN/LBS
12	UPPER NUT	90 IN/LBS
14 & 17	NUT & CAP SCREW	90 IN/LBS



1070023 (V42D-0000-00000) (1-1/4" NPT)
1070025 (V42E-0000-00000) (1-1/2" NPT)
NORMALLY OPEN (STANDARD)



NO.	DESCRIPTION			STD	PART NO.	QTY.
1	BODY	CAST IRON	1-1/4" NPT	*	1074196 (424-A5)	1
			1-1/2" NPT	*	1074199 (424-A6)	
		CAST BRASS	1-1/4" NPT		1074190 (424-AB5)	
			1-1/2" NPT		1074193 (424-AB6)	
2	SEAT - BRASS (REQ'S ASSY TOOL)			*	1074245 (424-MO)	1
3	HEX NUT (1/4-28)			*	1263852	1
4	DISC PLATE - BRASS			*	1074238	1
5	O-RING		BUNA N	*	1071678 (ORB-028)	1
			E.P.D.M.		15243	
			FKM	*	1071793 (ORV-028)	
6	DISC		BUNA	*	1074232 (424-J)	1
			E.P.D.M.		1074233 (424-JE)	
			FKM		1074236 (424-JV)	
			HYCAR		1074234 (424-JH)	
7	DISC HOLDER - SS			*	1074231 (424-H)	1
8	GASKET - COPPER			*	1073948 (200-GG)	1
9	O-RING		BUNA N	*	1071695 (ORB-132)	1
			E.P.D.M.		1071734 (ORE-132)	
			FKM		1071806 (ORV-132)	
10	SHAFT GUIDE - SS (REQ'S ASSY TOOL)			*	1074226	1
11	DIAPHRAGM PLATE - SS			*	43943	2
12	HEX NUT (5/16-24)		PLATED STEEL	*	1263853	1
13	CAP		CAST IRON	*	1074202 (424-C)	1
			CAST BRASS		1074206 (424-CB)	
14	HEX SCREW		PLATED STEEL	*	1072399 (SCZ-0007)	4
15	DIAPHRAGM		BUNA N	*	1074222 (424-FB)	1
			FKM		1074224 (424-FV)	
16	GASKET - COPPER		COPPER	*	1074252 (424-R)	1
17	HEX NUT		PLATED STEEL	*	1071656 (NUZ-0008)	4
18	O-RING		BUNA N	*	1071689 (ORB-110TC)	1
			E.P.D.M.		1071726 (ORE-110TC)	
			FKM		1239021 (ORV-110)	
19	SHAFT (NORMALLY OPEN)			*	1074239 (424-L)	1

NOTES:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS.

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN TJM	12DEC12
APPROVED	
CHECKED	

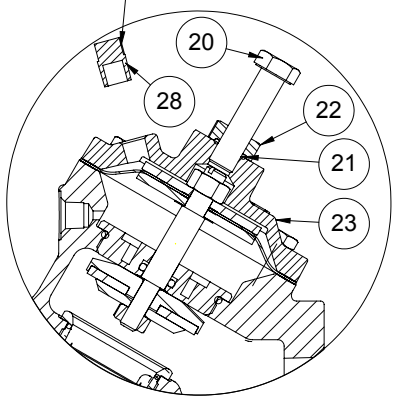
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 424
DIAPHRAGM VALVE STANDARD MODEL

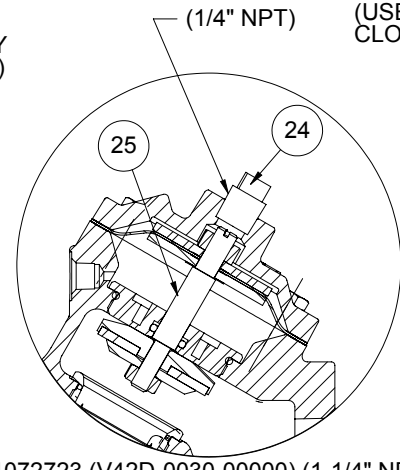
SIZE	DWG NO.	REV
B	BR1077614	U

SCALE 1:1 SHEET 1 OF 2

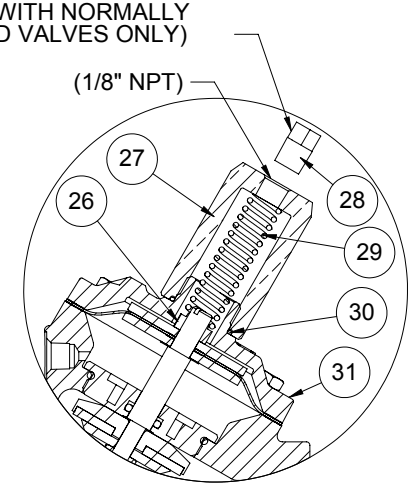
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	1001	U	AQ Matic update & verified part numbers	17JAN17	MGS



1072720 (V42D-0010-00000) (1-1/4" NPT)
1070028 (V42E-0010-00000) (1-1/2" NPT)
LIMIT STOP

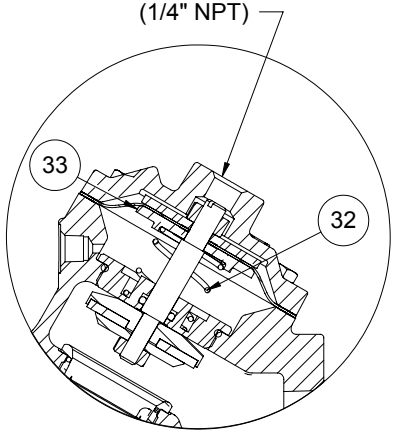


1072723 (V42D-0030-00000) (1-1/4" NPT)
1070026 (V42E-0030-00000) (1-1/2" NPT)
NORMALLY CLOSED

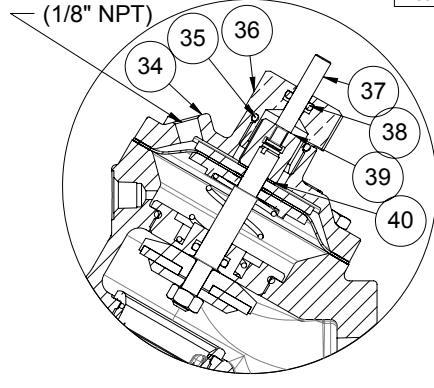


1072716 (V42D-0002-00000) (1-1/4" NPT)
1072792 (V42E-0002-00000) (1-1/2" NPT)
SPRING ASSIST CLOSED

TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUED TO (+/- 10%)
22	NUT, STOP	90 IN/LBS
26	CENTERING NUT	90 IN/LBS
27	RETAINER NUT	120 IN/LBS
36	SHAFT GUIDE BUSHING	120 IN/LBS
39	TOP NUT	90 IN/LBS



1072715 (V42D-0001-00000) (1-1/4" NPT)
1070027 (V42E-0001-00000) (1-1/2" NPT)
SPRING ASSIST OPEN



1072722 (V42D-0021-00000) (1-1/4" NPT)
1072804 (V42E-0021-00000) (1-1/2" NPT)
POSITION INDICATOR

NO	DESCRIPTION		STD	PART NO.	QTY.
LIMIT STOP MODEL					
20	SCREW		*	1072362 (SCS-0031)	1
21	O-RING		*	1071668 (ORB-012)	1
22	NUT,STOP,3/8-24		*	1077534 (400-H)	1
23	CAP	CAST IRON	*	1074210 (424-CCC)	1
		CAST BRASS		1074213 (424-CCCB)	
NORMALLY CLOSED MODEL					
24	PIPE PLUG (1/4" NPT)	PLATED STEEL	*	1071918 (PLZ-0008)	1
		BRASS		1071904 (PLB-0009)	
25	SHAFT (NORMALLY CLOSED		*	1074241 (424-LL)	1
SPRING ASSIST CLOSED MODEL					
26	CENTERING NUT		*	1074276 (424-X)	1
27	RETAINER NUT - BRASS		*	1074274 (424-TT)	1
28	PIPE PLUG (1/8" NPT)	PLATED STEEL	*	1071917 (PLZ-0005)	1
		BRASS		1071903 (PLB-0007)	
29	SPRING		*	1074270 (424-SS)	1
30	O-RING		*	1071674 (ORB-020)	1
31	CAP	CAST IRON	*	1074208 (424-CC)	1
		CAST BRASS		1074209 (424-CCB)	
SPRING ASSIST OPEN MODEL					
32	SPRING		*	1236766	1
33	DIAPHRAGM PLATE, 424		*	43728	1
POSITION INDICATOR MODEL					
34	CAP	CAST IRON	*	1074217 (424-CF)	1
		CAST BRASS	*	1074218 (424-CFB)	1
35	O-RING		*	1071692 (ORB-116)	1
36	SHAFT GUIDE BUSHING		*	1074121 (421-GF)	1
37	INDICATOR SHAFT		*	1074251 (424-PM)	1
38	O-RING		*	1071688 (ORB-108TC)	1
39	TOP NUT		*	1074272 (424-TB)	1
40	LOCKWASHER		*	1073590 (WAS-0007)	1

NOTES:
1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMIT STOP MODEL.
2. VALVES AVAILABLE WITH B.S.P.T END CONNECTIONS.

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 20,21,22,23	1074243 (424-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 26 THRU 31	1074266 (424-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 10,16,32,33	1074269 (424-SOC)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 34 THRU 40	1074250 (424-PIC)

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 20,21,22	1074242 (424-LS)
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11(2),25	1070130 (424-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 26,29,30	1074265 (424-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 16,32,33	1074268 (424-SO)
INT. PARTS KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 35 THRU 40	1074249 (424-PI)

SEE REVERSE SIDE FOR
STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN TJM	12DEC12
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

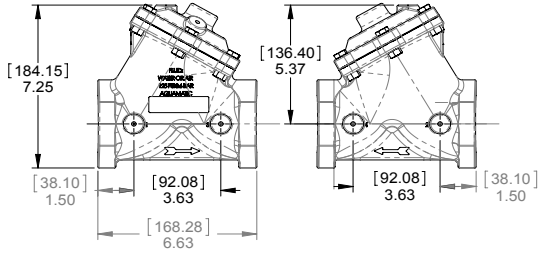
TITLE
CATALOG SHEET, 424
DIAPHRAGM VALVE STANDARD MODEL

SIZE B | DWG NO. BR1077614 | REV U
SCALE 1:1 | SHEET 2 OF 2

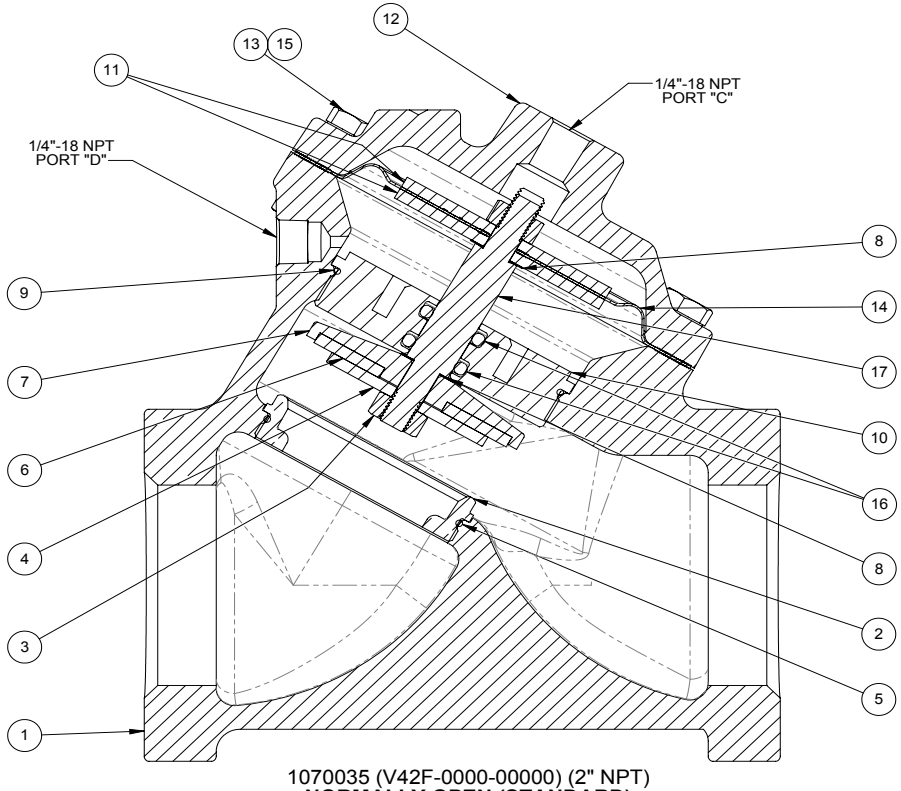
ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SEAT (ITEM #2) (TOOL NOT SHOWN)	1074411 (426-MT)
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #10) (TOOL NOT SHOWN)	1074299 (425-GAT)

REPAIR PARTS KITS			
DESCRIPTION	PART NO.		
	1070070 (425-RA)	1070083 (425-RAE)	1070095 (425-RAV)
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3(2),5,6,8(2),9,14,16	BUNA N INCLUDES DIAPHRAGM 1074296 (425-FB)	E.P.D.M. INCLUDES DIAPHRAGM 1074296 (425-FB)	FKM INCLUDES DIAPHRAGM 1074297 (425-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11(2),17	1070120 (425-RF)		
SEAT (ITEM NO.2)	1074321 (425-MO)		

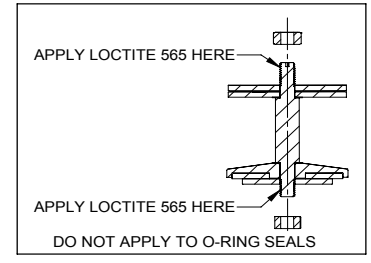
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	103805	N	1-ITEM#2- WAS: BRASS, 2-ITEM#4- WAS:1074220, 3- WAS:1" HEX SOCKET, 4-ITEM#32- WAS: BRASS, 5-UPDATED TITLE BLOCK	18SEP14	TJM
	103881	P	ITEM 19- WAS: 1078476	16OCT14	TJM
	104429	R	1-ITEM#11-WAS: 43761	25MAR15	TJM
	104479	T	1-ITEM# 4- WAS: 1074221	07APR15	TJM
	104732	U	1-ADD'D: TORQUE TABLES	01JUN15	TJM



TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUED TO(+/- 10%)
2	SEAT	120 IN/LBS
3	UPPER NUT	140 IN/LBS
3	LOWER NUT	140 IN/LBS
10	SHAFT GUIDE	120 IN/LBS
13 & 15	NUT, HEX SCREW	140 IN/LBS



1070035 (V42F-0000-00000) (2" NPT)
NORMALLY OPEN (STANDARD)



NO.	DESCRIPTION			STD	PART NO.	QTY.
1	BODY	CAST IRON	2" NPT	•	1074277 (425-A)	1
2	SEAT (REQ'S ASSY TOOL)		SS	•	1074321 (425-M0)	1
3	HEX NUT (5/16-24)			•	1263853	2
4	DISC PLATE		SS	•	43943	1
5	O-RING		BUNA N	•	1071682 (ORB-035)	1
			E.P.D.M.		1071724 (ORE-035)	
			VITON		1071794 (ORV-035)	
6	DISC		BUNA	•	1074307 (425-J)	1
			E.P.D.M.		1074309 (425-JE)	
			FKM		1074312 (425-JV)	
			HYCAR		1074310 (425-JH	
7	DISC HOLDER		SS	•	43731	1
8	GASKET		COPPER	•	1074252 (424-R)	2
9	O-RING		BUNA N	•	1071684 (ORB-038)	1
			E.P.D.M.		1071725 (ORE-038)	
			FKM		1071795 (ORV-038)	
10	SHAFT GUIDE (REQ'S ASSY TOOL)		SS	•	43775	1
11	DIAPHRAGM PLATE		SS	•	43730	2
12	CAP		CAST IRON	•	1074281 (425-C)	1
13	HEX SCREW		PLATED STEEL	•	1072400 (SCZ-0013)	6
14	DIAPHRAGM		BUNA N	•	1074296 (425-FB)	1
			FKM		1074297 (425-FV)	
15	HEX NUT		PLATED STEEL	•	1071657 (NUZ-0011)	1
16	O-RING		BUNA N	•	1071699 (ORB-205TC)	2
			E.P.D.M.		1239009	
			FKM		1239008 (ORV-206)	
17	SHAFT (NORMALLY OPEN)			•	1074314 (425-L)	1

NOTE:

1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968.
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS.

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION

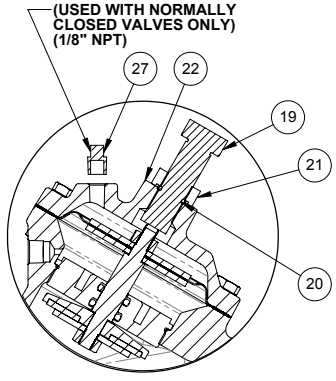
APPROVALS	DATE
DRAWN TMS	06-03-10
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

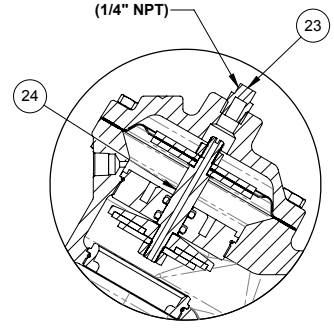
TITLE
CATALOG SHEET, 425
DIAPHRAGM VALVE

SIZE	DWG NO.	REV
B	BR1077615	V

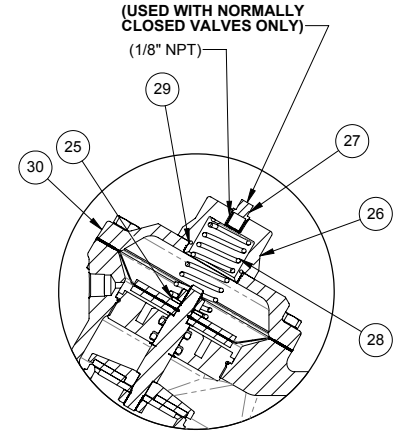
SCALE 1:2 SHEET 1 OF 2



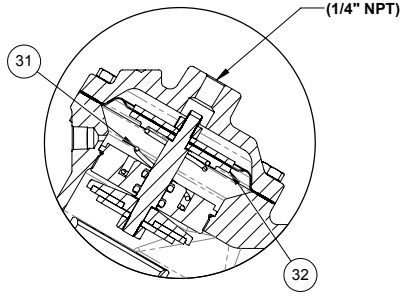
1070037 (V42F-0010-00000) (2" NPT)
LIMIT STOP



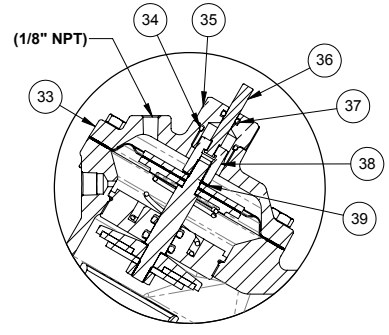
1072894 (V42F-0030-00000) (2" NPT)
NORMALLY CLOSED



1072885 (V42F-0002-00000) (2" NPT)
SPRING ASSIST CLOSED



1070036 (V42F-0001-00000) (2" NPT)
SPRING ASSIST OPEN



1072893 (V42F-0021-00000) (2" NPT)
POSITION INDICATOR

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	1001	V	AQ Matic update & verified part numbers	17JAN17	MGS

NO.	DESCRIPTION		STD	PART NO.	QTY.
LIMIT STOP MODEL					
19	SCREW		•	1078676	1
20	O-RING		•	1071690 (ORB-112)	1
21	NUT, LIMIT STOP		•	1074434 (426-U)	1
22	CAP, 425, NPT, LS		•	1074285 (425-CCC)	1
NORMALLY CLOSED MODEL					
23	PIPE PLUG (1/4" N.P.T.)	PLATED STEEL	•	1071918 (PLZ0008)	1
		BRASS		1071904 (PLB-0009)	
24	SHAFT (NORMALLY CLOSED)		•	1074317 (425-LL)	1
SPRING ASSIST CLOSED MODEL					
25	CENTERING WASHER	BRASS	•	1074083 (421-AH)	1
26	NUT, SPRG RETAINER	BRASS	•	1074433 (428-IT)	1
27	PIPE PLUG (1/8" N.P.T.)	PLATED STEEL	•	1071917 (PLZ-0005)	1
		BRASS		1071903 (PLB-0007)	
28	SPRING		•	1078688	1
29	O-RING		•	1071677 (ORB-025)	1
30	CAP	CAST IRON	•	1074284 (425-CA)	1
SPRING ASSIST OPEN MODEL					
31	SPRING		•	1078692	1
32	DIAPHRAGM PLATE	SS	•	43729	1
POSITION INDICATOR MODEL					
33	CAP	CAST IRON	•	1074288 (425-CF)	1
34	O-RING		•	1071692 (ORB-115)	1
35	SHAFT GUIDE BRUSHING		•	1074121 (421-GF)	1
36	INDICATOR SHAFT		•	1074325 (425-PM)	1
37	O-RING		•	1071688 (ORB-108-TC)	1
38	TOP NUT		•	1074332 (425-TB)	1
39	LOCKWASHER		•	1073590 (TRS-0007)	1

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 19,20,21	1074319 (425-LS)
INT. PARTS KIT (NORM CLOSED) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11(2),24	1070131 (425-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 25,28,29	1074329 (425-SC)
INT PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 8,31,32	1074331 (425-SO)
INT PARTS KIT (POSITION INDICATOR) CONSISTS OF STD ITEM NO'S 34 THRU39	1074323 (425-PI)

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 19,20,21,22	1074320 (425-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 25 THRU 30	1074330 (425-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STADARD ITEM NO'S 8,31,32	1074331 (425-SO)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 33 THRU 39	1074324 (425-PIC)

TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUED TO (+/- 10%)
21	NUT, LIMIT STOP	120 IN/LBS
26	NUT, SPRING RETAINER	120 IN/LBS
35	SHAFT GUIDE BUSHING	120 IN/LBS
38	TOP NUT	120 IN/LBS

NOTE:

1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMIT STOP MODEL.
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS.

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL.

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN TMS	06-03-10
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 425
DIAPHRAGM VALVE

SIZE	DWG NO.	REV
B	BR1077615	V

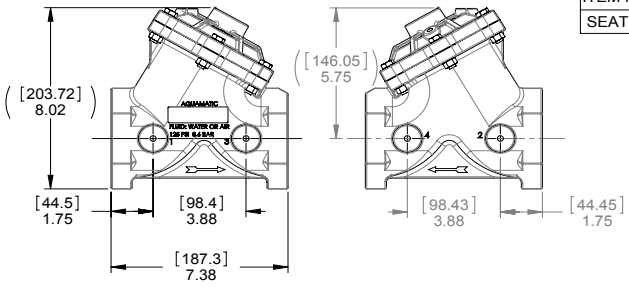
SCALE 1:2 SHEET 2 OF 2

ASSEMBLY TOOLS

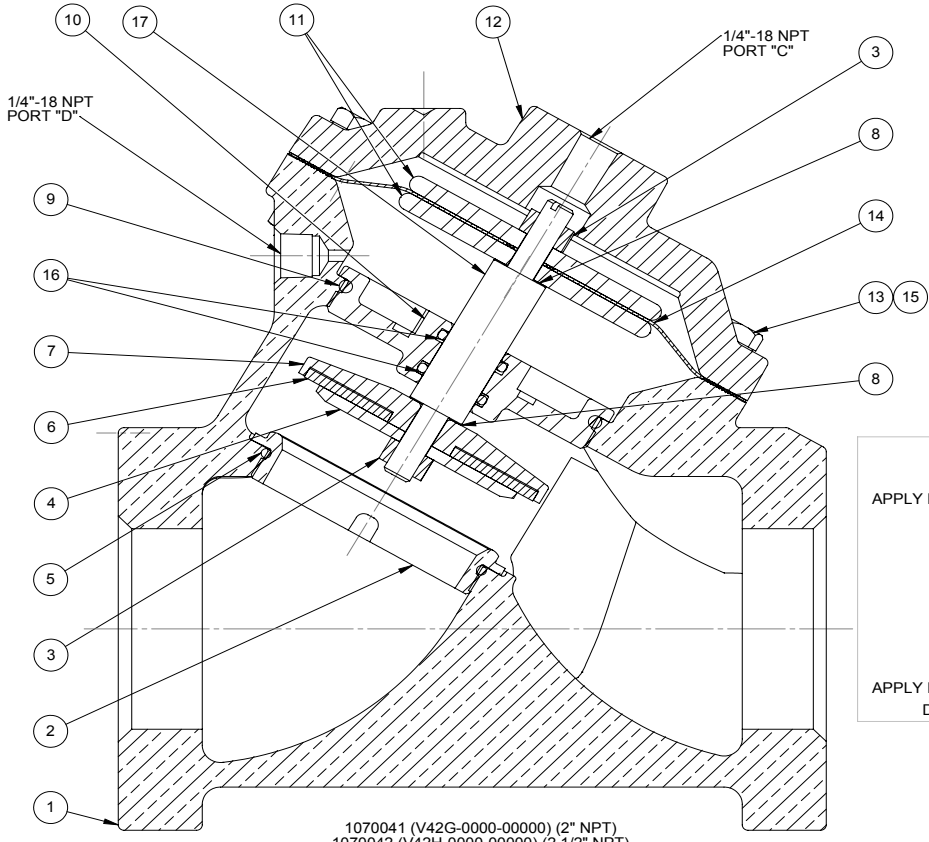
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SEAT (ITEM #2) (TOOL NOT SHOWN)	1074411 (426-MT)
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #10) (TOOL NOT SHOWN)	1-1/4" HEX SOCKET

REPAIR PARTS KITS

DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3(2),5,6,8(2),9,14,16	1070071 (426-RA)	1070084 (426-RAE)	1070096 (426-RAV)
	BUNA N INCLUDES DIAPHRAGM 1074374 (426-FB)	EPDM INCLUDES DIAPHRAM 1074374 (426-FB)	FKM INCLUDES DIAPHRAM 1074376 (426-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11(2),17	1070121(426-RF)		
SEAT (ITEM NO. 2)	1074409 (426-MO)		

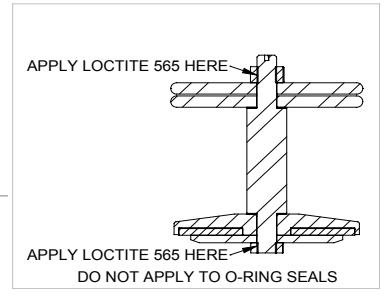


TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUED T0 (+/- 10%)
2	SEAT	200 IN/LBS
3	UPPER NUT	140 IN/LBS
3	LOWER NUT	140 IN/LBS
10	SHAFT GUIDE	200 IN/LBS
13 & 15	NUT, HEX SCREW	140 IN/LBS



1070041 (V42G-0000-00000) (2" NPT)
1070042 (V42H-0000-00000) (2 1/2" NPT)

NORMALLY OPEN (STANDARD)



REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	32173	N	CORRECTED ROTATION OF CAPS	17FEB11	MHM
	32879	P	1-WAS: 1074411 (426-MT); 2-ADD'D: 1074127; 3-ADD'D: 42998;	06-06-11	TMS
	102034	R	ITEM #10-WAS 1074379, ITEM# 16-ADDED O-RING 1071691	5-31-13	NBE
	103562	T	ITEM# 4-WAS:1074395, ITEM# 7-WAS:1074381, ITEM# 10-WAS:43244, ITEM# 11-WAS:1074370, ITEM# 26-WAS:1074430, ITEM# 32-WAS: 43047	26JUN14	TJM
	104754	U	1-ADD'D: TORQUE CHARTS (PG-1 & 2)	23JUN15	TJM

NO.	DESCRIPTION			STD	PART NO.	QTY
1	BODY	CAST IRON	2" NPT	*	1074343 (426-A8)	1
			2 1/2" NPT	*	1081559 (426-A10)	
		CAST BRASS	2" NPT		1074338 (426-AB8)	
			2 1/2" NPT		1074335 (426-AB10)	
2	SEAT; BRASS (REQ'S ASSY TOOL)			*	1074409 (426-M0)	1
3	HEX NUT (5/16-24)			*	1263853	2
4	DISC PLATE, SS				1074398	1
5	O-RING		BUNA N	*	1071696 (ORB-144)	1
			EPDM		1071737 (ORE-144)	
			FKM		1071809 (ORV-144)	
6	DISC		BUNA	*	1074389 (426-J)	1
			EPDM		1074391 (426-JE)	
			FKM		1074394 (426-JV)	
			HYCAR		1074392 (426-JH)	
7	DISC HOLDER, SS			*	1074386	1
8	GASKET, COPPER			*	1074252 (424-R)	2
9	O-RING		BUNA N	*	1071706 (ORB-233)	1
			EPDM		1071754 (ORE-233)	
			FKM		1071826 (ORV-233)	
10	SHAFT GUIDE (REQ'S ASSY TOOL)			*	1074378	1
11	DIAPHRAGM PLATE; SS			*	1074371	2
12	CAP		CAST IRON	*	1081560 (426-C)	1
			CAST BRASS		1074348 (426-CB)	
13	HEX SCREW		PLATED STEEL	*	1072401 (SCZ-0015)	6
14	DIAPHRAGM		BUNA N	*	1074374 (426-FB)	1
			FKM		1074376 (426-FV)	
15	HEX NUT		PLATED STEEL	*	1071657 (NUZ-0011)	6
16	O-RING		BUNA N	*	1071691 (ORB-114TC)	2
			EPDM		1071729 (ORE-114TC)	
			FKM		1242391 (ORV-114TC)	
17	SHAFT (NORMALLY OPEN)			*	1074401 (426-L)	1
18	TAG			*	1074129	1
19	RING,TAG ATTACHING			*	42998	1

NOTE:

1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968.
2. VALVES AVAILABLE WITH BSPT END CONNECTIONS.

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2002/95/EEC (RoHS) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION

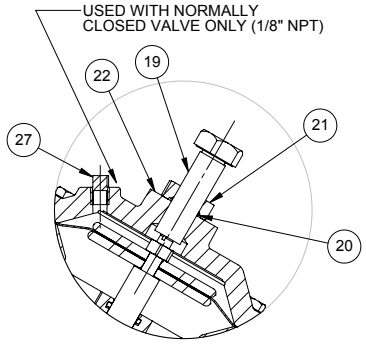
APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

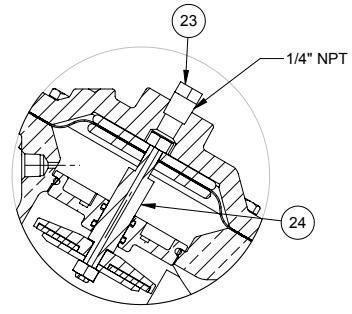
TITLE
CATALOG SHEET, 426
DIAPHRAGM VALVE STANDARD MODEL

SIZE	DWG NO.	REV
B	BR1077616	V

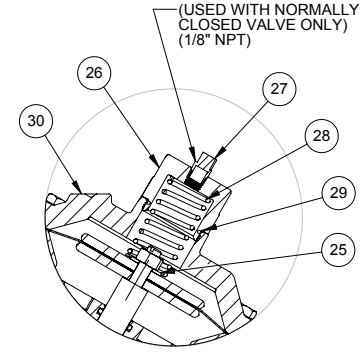
SCALE 1:2 SHEET 1 OF 2



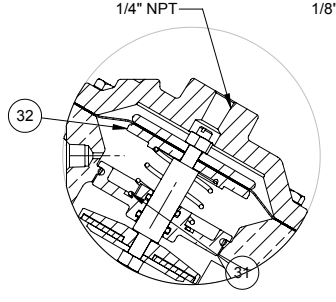
1072939 (V42G-0010-00000) (2"NPT)
1072998 (V42H-0010-00000) (2 1/2" NPT)
LIMIT STOP



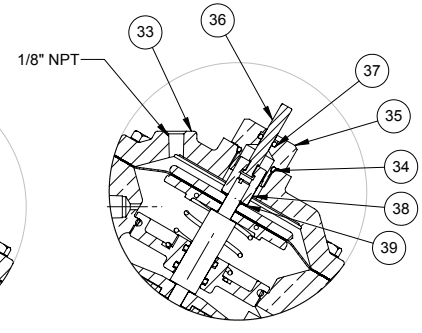
1072945 (V42G-0030-00000) (2"NPT)
1073002 (V42H-0030-00000) (2 1/2" NPT)
NORMALLY CLOSED



1072935 (V42G-0002-00000) (2"NPT)
1072996 (V42H-0002-00000) (2 1/2" NPT)
SPRING ASSIST CLOSED



1072932 (V42G-0001-00000) (2"NPT)
1072994 (V42H-0001-00000) (2 1/2" NPT)
SPRING ASSIST OPEN



1072943 (V42G-0021-00000) (2"NPT)
1073001 (V42H-0021-00000) (2 1/2" NPT)
POSITION INDICATOR

TORQUE TABLE		
ITEM#	DESCRIPTION	TORQUED TO (+/- 10%)
21	NUT	120 IN/LBS
26	RETAINER NUT	140 IN/LBS
35	SHAFT GUIDE BUSHING	140 IN/LBS
38	TOP NUT	120 IN/LBS

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	1001	V	AQ Matic update & verified part numbers	17JAN17	MGS

NO.	DESCRIPTION		STD	PART NO.	QTY
LIMIT STOP MODEL					
19	SCREW		*	1078676	1
20	O-RING		*	1071690 (ORB-112)	1
21	NUT		*	1074434 (426-U)	1
22	CAP	CAST IRON	*	1074354 (426-CCC)	1
		BRASS		1074357 (426-CCCB)	
NORMALLY CLOSED MODEL					
23	PIPE PLUG (1/4" NPT)	PLATED STEEL	*	1071918 (PLZ-0008)	1
		BRASS		1071904 (PLB-0009)	
24	SHAFT (NORMALLY CLOSED		*	43169 (426-LL)	1
SPRING ASSIST CLOSED MODEL					
25	CENTERING WASHER	BRASS	*	1074083 (421-AH)	1
26	RETAINER NUT	SS	*	1074433	1
27	PIPE PLUG (1/8" NPT)	PLATED STEEL	*	1071917 (PLZ-0005)	1
		BRASS		1071903 (PLB-0007)	
28	SPRING		*	1078688	1
29	O-RING		*	1071677 (ORB-025)	1
30	CAP	CAST IRON	*	1074352 (426-CC)	1
		CAST BRASS		1074353 (426-CCB)	
SPRING ASSIST OPEN MODEL					
31	SPRING			1078692	1
32	PLATE, DIAPHRAGM,426 SAO			43732	1
POSITION INDICATOR MODEL					
33	CAP	CAST IRON		1074360 (426-CF)	1
		CAST BRASS		1074364 (426-CFB)	
34	O-RING			1071692 (ORB-116)	1
35	SHAFT GUIDE BUSHING			1074121 (421-GF)	1
36	INDICATOR SHAFT			1074325 (425-PM)	1
37	O-RING			1071688 (ORB-108TC)	1
38	TOP NUT			1074332 (425-TB)	1
39	LOCKWASHER			1073590 (WAS-0007)	1

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 19,20,21	1074405 (426-LS)
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11(2),24	1070132 (426-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 25,28,29	1074425 (426-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 8,31,32	1074427 (426-SO)
INT. PARTS KIT (POSITION INDICATOR) CONSISTS OF STD ITEM NO'S 34 THRU 39	1074413 (426-PI)

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 19,20,21,22	1074406 (426-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 25 THRU 30	1074426 (426-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 8,31,32	1074427 (426-SO)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 33 THRU 39	1074414 (426-PIC)

NOTE:

1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMIT STOP OR POSITION INDICATOR MODELS.
2. VALVES AVAILABLE WITH B.S.P. OR J.I.S. END CONNECTIONS.

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL

THIRD ANGLE PROJECTION

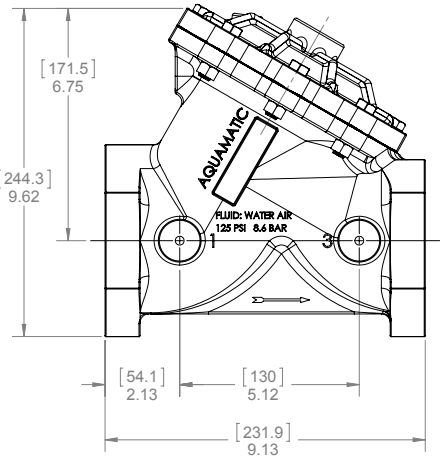
APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

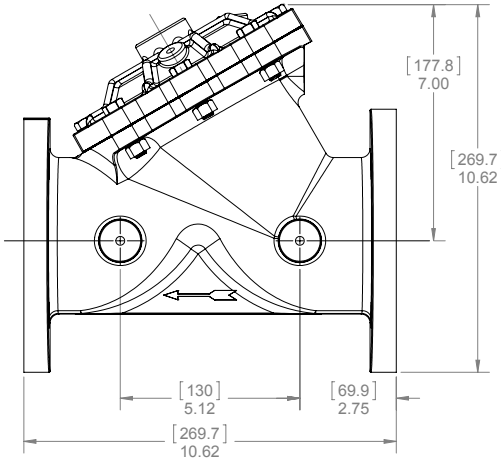
TITLE
CATALOG SHEET, 426
DIAPHRAGM VALVE STANDARD MODEL

SIZE B | DWG NO. BR1077616 | REV V

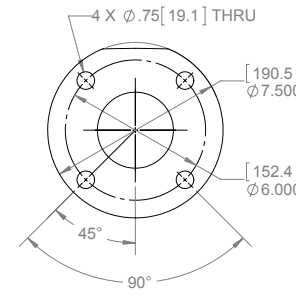
SCALE 1:2 | SHEET 2 OF 2



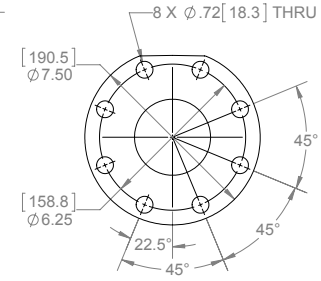
1070043 (V42J-0000-00000)
3" NPT ENDS



1070044 (V42J-3000-00000)
FLANGED ENDS

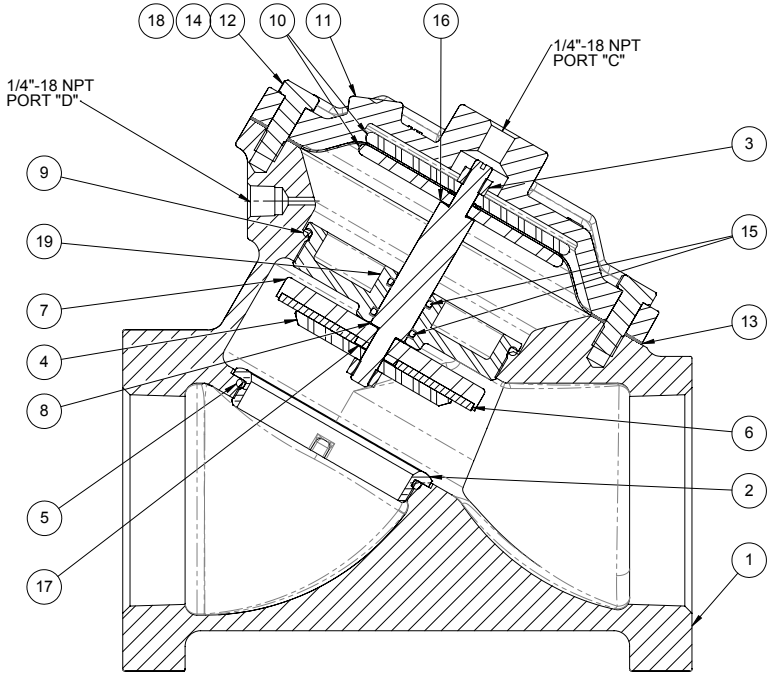


AMERICAN FLANGE PER
A.S.A. 16.1 CLASS 125



METRIC FLANGE PER
BS4504. DIN 10 & ISO R 2084

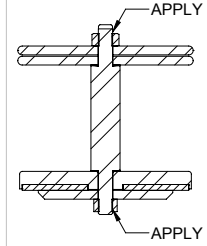
NOTE:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968
2. VALVES AVAILABLE WITH B.S.P. OR J.I.S. END CONNECTIONS



NORMALLY OPEN (STANDARD)

SEE REVERSE SIDE FOR
CONFIGURATION OPTIONS

TORQUE CHART		
ITEM #	DESCRIPTION	TORQUED TO (+/- 10%)
2	SEAT	500 IN/LBS (41.6 FT/LBS)
3	UPPER NUT	140 IN/LBS
3	LOWER NUT	140 IN/LBS
12,14,&18	NUT, HEX SCREW	140 IN/LBS
19	SHAFT GUIDE	500 IN/LBS (41.6 FT/LBS)



DO NOT APPLY TO O-RING SEALS

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	1101517	L	REDRAWN IN SOLIDWORKS	1-21-13	NE
	102041	M	1-WAS 1074481, 2-ADDED O-RING	6-3-13	NBE
	103682	N	1-ITEM#10-WAS:1074471, 2-ITEM#19-WAS:43245, 3-ITEM#33-WAS:43048, 4-ITEM#4- WAS:1074493	20AUG14	TJM
	104231	P	1- ITEM# 28-1071917, 1071903, 1071916, 2- CHG'D: 1/8 NPT ON LS & PI VERSIONS	04FEB15	TJM
	104754	R	1- ADD'D: TORQUE CHARTS (PG-1 & 2)	25JUN15	TJM

ITEM NO.	DESCRIPTION		STD	PART NUMBER	QTY.
1	BODY, 427, 3" NPT THREAD	CI	*	1074446	1
	VALVE BODY, 427,FLGD,ASTM	CI	*	1074438	
	BODY, 427, 3" NPT THREAD	BRASS		1074449	
2	SEAT, 427, MACHINING	BRASS	*	1074505	1
3	NUT,HEX, 5/16"-24	SS	*	1263853	2
4	DISC PLATE, 427	SS	*	1074495	1
5	O-RING , 2-233	BUNA	*	1071706	1
	O-RING, -233	EPDM		1071754	
	O-RING,ORV-233	FKM		1071826	
6	DISC, 427	BUNA	*	1074487	1
	DISC, 427	EPDM		1074489	
	DISC, 427	FKM		1074492	
	DISC, 427	HYCAR		1074490	
7	DISC HOLDER	BRASS	*	1074485	1
8	GASKET,.62" ODX.317"ID	COPPER	*	1074252	2
9	O-RING (NITRILE), 2-237	BUNA	*	1071708	1
	O-RING, EPDM -237	EPDM		1071755	
	O-RING, FKM	FKM		1071828	
10	PLATE, UPPER DIAPHRAGM	SS		1074472	2
11	CAP, 427, MACHINING	CI	*	1074454	1
	CAP, 427, MACHINING	BRASS		1074457	
12	SCREW, 3/8-16 X 1 1/2", HX HD	PLTD STL	*	1072405	6
13	DIAPHRAGM SERIES 427	FKM		1074477	1
	DIAPHRAGM SERIES 427	BUNA		1074475	
14	HEX NUT, 3/8-16	PLTD STL	*	1071658	6
15	O-RING,2-114,TFLN CTD	BUNA	*	1071691	2
	O-RING, 2-114, TFLN CTD	EPDM		1071729	
	O-RINGS, 2-114	FKM		1242391	
16	SHAFT, 427, NO	SS		1074496	1
17	SPACER	BRASS	*	1074382	1
18	SCREW,HEX HD,3/8-16X1,	SS	*	19768	2
19	SHAFT GUIDE, MACHINING	SS	*	1074479	1

REPAIR PARTS KITS

DESCRIPTION	PART NO.		
	1070072 (427-RA)	1070085 (427-RAE)	1070097 (427-RAV)
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3(2), 5, 6, 8(2), 9, 14, 16	BUNA N INCLUDES DIAPHRAGM 1074475 (427-FB)	E.P.D.M. INCLUDES DIAPHRAGM 1074475 (427-FB)	FKM INCLUDES DIAPHAGM 1074477 (427-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 11(2), 17, 18	1070122 (427-RF)		
SEAT (ITEM NO. 2)	1074505 (427-MO)		

ASSEMBLY TOOLS

DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #10) (NOT SHOWN)	1-1/8" HEX SOCKET

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

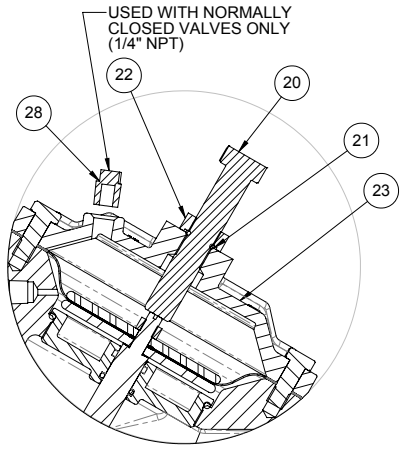
APPROVALS	DATE
DRAWN SM	05/10/11
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 427
DIAPHRAGM VALVE STANDARD MODEL

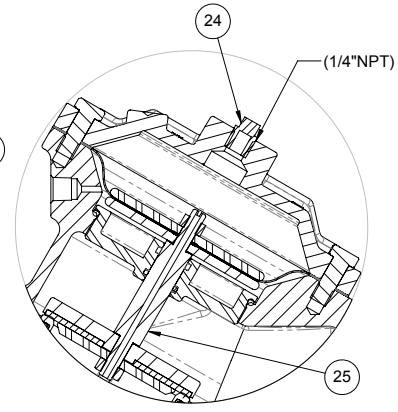
SIZE	DWG NO.	REV
B	BR1077617	S

SCALE 1:2 SHEET 1 OF 2



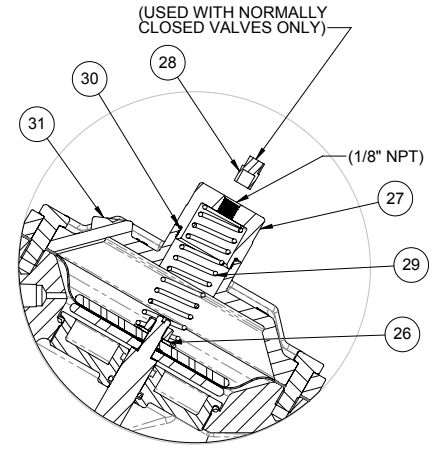
1073045 (V42J-0010-00000) (THREADED)
1073103 (V42J-3010-00000) (FLANGED)

LIMIT STOP



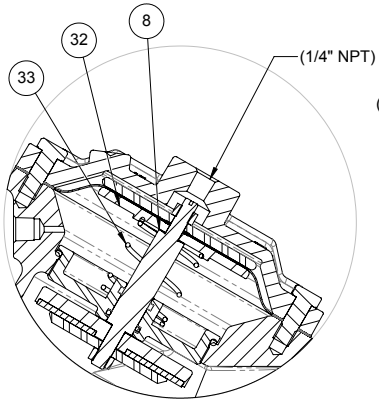
1073055 (V42J-0030-00000) (THREADED)
1073113 (V42J-3030-00000) (FLANGED)

NORMALLY CLOSED



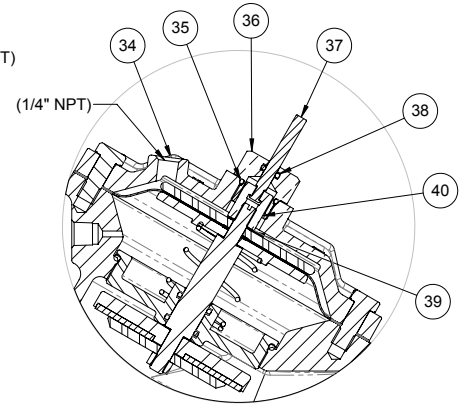
1073047 (V42J-0002-00000) (THREADED)
1073100 (V42J-3002-00000) (FLANGED)

SPRING ASSIST CLOSED



1073045 (V42J-0001-00000) (THREADED)
1073097 (V42J-3001-00000) (FLANGED)

SPRING ASSIST OPEN



1073054 (V42J-0021-00000) (THREADED)
1077374 (V42J-3021-00000) (FLANGED)

POSITION INDICATOR

NOTE:
1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMIT STOP OR POSITION INDICATOR MODELS.
2. VALVES AVAILABLE WITH B.S.P. OR J.I.S. END CONNECTIONS.

TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUED TO (+/-10%)
22	NUT, LIMIT STOP	120 IN/LBS
27	NUT, RETAINER	140 IN/LBS
36	SHAFT GUIDE	140 IN/LBS
40	TOP NUT	120 IN /LBS

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	1001	S	AQ Matic update & verified part numbers	17JAN17	MGS

ITEM NO.	DESCRIPTION	STD		PART NUMBER	QTY.
	LIMIT STOP MODEL				
20	SCREW, 5/8-18X3.50 HEX HD,	SS	*	1072365	1
21	O-RING,2-112	BUNA	*	1071690	1
22	NUT, LIMIT STOP	PLTD STL	*	1074434	1
23	CAP, 427, LS	BRASS		1074465	1
	CAP, 427,LS	CI		1074462	
	NORMALLY CLOSED MODEL				
24	MALE PIPE PLUGS	PLTD STL	*	1071918	1
	MALE PIPE PLUGS	BRASS		1071904	
	MALE PIPE PLUGS	SS		1071915	
25	SHAFT, 427, NC	SS	*	1074499	1
	SPRING ASSIST CLOSED MODEL				
26	WASHER	BRASS	*	1074083	1
27	NUT, SPRG RTNR,425 & 465	SS		1074433	1
28	MALE PIPE PLUGS	PLTD STL	*	1071918	1
	MALE PIPE PLUGS	BRASS		1071904	
	MALE PIPE PLUGS	SS		1071915	
29	SPRING,COMPRESSION	SS	*	1078688	1
30	O-RING,2-025	BUNA	*	1071677	1
31	CAP, 427, SPRING ASSIST	CI	*	1074460	1
	CAP, 427,SPRING ASSIST	BRASS		1074461	
	SPRING ASSIST OPEN MODEL				
32	PLATE, DIAPHRAGM,427,SAO	SS		43733	1
33	SPRING, COMPRESSION	SS		1078692	1
	POSITION INDICATOR MODEL				
34	CAP, 427,CI,NPT,PI	CI	*	1074468	1
	CAP, 427, NPT, PI	BRASS		1074469	
35	O-RING,2-116	BUNA	*	1071692	1
36	PI ROD GDE, V42	BRASS	*	1074121	1
37	SHAFT,427,MACH	SS	*	1074510	1
38	O-RING,2-106,TFLN CTD	BUNA	*	1071688	1
39	LOCKWASHER,5/16",INTRNL TOOTH	SS	*	1073590	1
40	TOP NUT	BRASS	*	1074332	1

CONVERSION KITS

DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 20, 21, 22, 23	1074502 (427-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 26 THRU 31	1074519 (427-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 8 ,32, 33	1074521 (427-SO)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 34 THRU 40	1074509 (427-PIC)

REPAIR PARTS KITS

DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSIST OF STANDARD ITEM NO'S 20, 21,22	1074501 (427-LS)
INT. PARTS KIT (NORM. CLOSED) CONSIST OF STANDARD ITEM NO'S 4,7,10,11(2),18,25	1070133 (427-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSIST OF STANDARD ITEM NO'S 26, 29, 30	1081565 (427-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSIST OF STANDARD ITEM NO'S 8, 32, 33	1074521 (427-SO)
INT. PARTS KIT (POSITION INDICATOR) CONSIST OF STANDARD ITEM NO'S 35 THRU 40	1074508 (427-PI)

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN SM	05/10/11
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 427
DIAPHRAGM VALVE STANDARD MODEL

SIZE B | DWG NO. BR1077617 | REV S

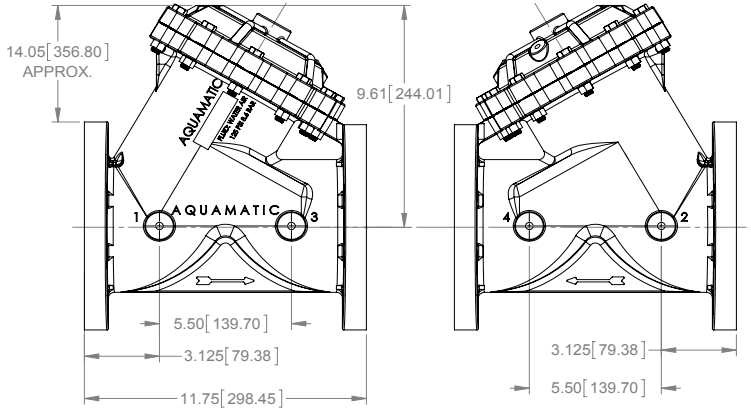
SCALE 1:2 | SHEET 2 OF 2

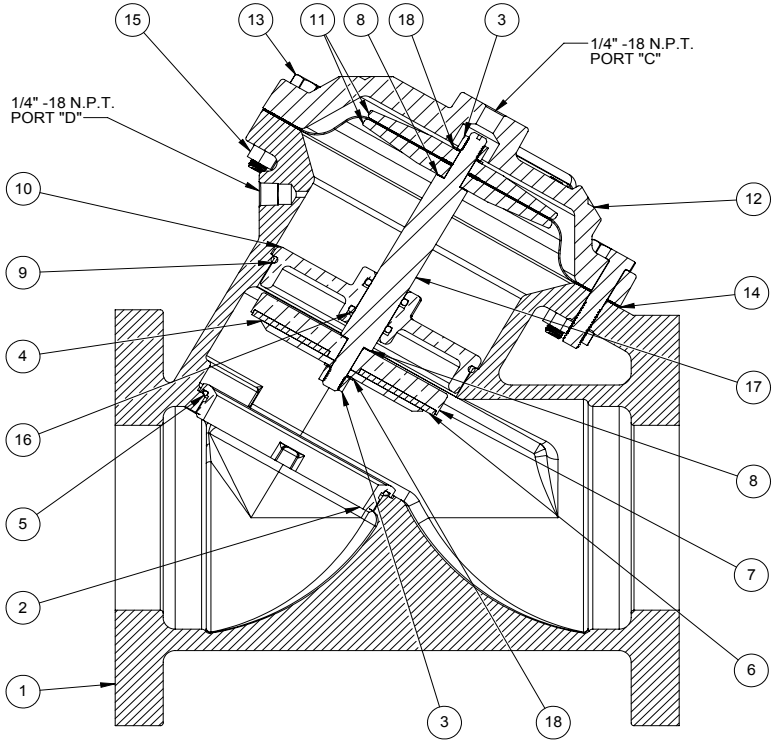
NOTE:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968
2. VALVES AVAILABLE WITH B.S.P. END CONNECTIONS.

ASSEBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #10) (NOT SHOWN)	1-1/4" HEX SOCKET

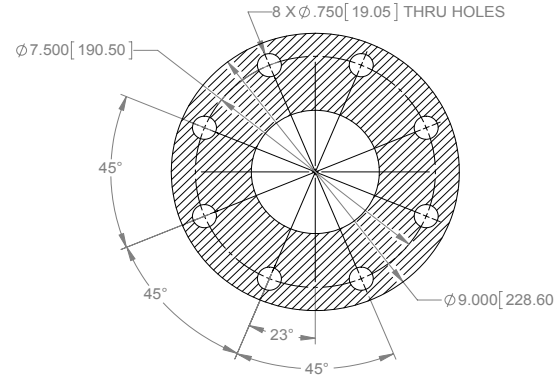
TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUED TO (+/- 10%)
2	SEAT	400 IN/LBS (33 FT/LBS)
3	UPPER NUT	140 IN/LBS
3	LOWER NUT	215 IN/LBS
10	GUIDE, SHAFT	500 IN/LBS (41.6 FT/LBS)
13 &15	NUT, & CAP SCREW	140 IN/LBS

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	101085	K	REDRAWN IN SOILDWORKS, FORM NO. NOW DWG NUMBER 1-WAS DWG #1084023	04MAR14	TJM
	101085	L	1-ITEM #17 WAS: 1074578, 2-ITEM #25 WAS: 1074581	27AUG14	TJM
	104610	M	1-ADD'D: ITEM#18-1073591, 2-#27 WAS: 1074430, 3-ADD'D: TORQUE TABLES	11MAY15	TJM
	105687	N	1-ITEM#17 WAS: QTY 1	25FEB16	TJM
	1001	O	AQ Matic update & verified part numbers	17JAN17	MGS



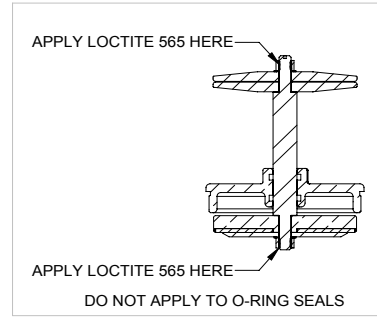


1070045 (V42K-3000-00000) (4" PIPE SIZE)
NORMALLY OPEN (STANDARD)



AMERICAN FLANGE PER A.S.A. 16.1 CLASS 125
METRIC FLANGE PER BS 4504, DIN 10 & ISO R 2054

FLANGE STYLE	A	B	C
AMERICAN	9.000	7.500	.750
METRIC	229 MM	180 MM	18 MM



DO NOT APPLY TO O-RING SEALS

ITEM NO.	DESCRIPTION	STD	PART NUMBER	QTY.
1	BODY,428,CI,4.00,ISO	*	1074522	1
2	SEAT, 428, BRASS	*	1074585	1
3	NUT,HEX, 3/8-24, SS	*	3001990	2
4	PLATE, DISC,428, SS	*	43734	1
5	O-RING (NITRILE), 2-156	*	1071697	1
	O-RING, EPDM -156		1071739	1
	O-RING, -156, FKM		1071811	1
6	DISC,	*	1074568	1
	DISC, E.P.D.M.		1074570	1
	DISC, FKM		1074573	1
	DISC, HYCAR		1074571	1
7	DISC HOLDER, ALUM-BRNZE	*	1074587	1
8	GASKET, CDA 110 COPPER	*	103950	2
9	O-RING (NITRILE), 2-245	*	1071711	1
	O-RING, EPDM -245		1071759	1
	O-RING, -245, FKM		1071832	1
10	GUIDE,SHAFT,428,BRASS,MCHD	*	1074563	1
11	PLATE, DIAPHRAGM,428,SS,MACH	*	43759	2
12	CAP, 428, NPT, CI	*	1074532	1
13	HEX HEAD CAP SCREW,	*	1072406	11
14	DIAPHRAGM SERIES 428,	*	1074557	1
	DIAPHRAGM SERIES 428,		1074559	1
15	HEX NUT, 3/8-16	*	1071658	11
16	O-RING (NITRILE),	*	1071702	2
	O-RING, 2-210		1242718	2
	O-RING, 2-210		1242394	2
17	SHAFT, 428	*	1074579	1
18	LOCKWASHER, 3/8", INTERNAL	*	1073591	2

REPAIR PARTS KITS			
DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3(2), 5, 6, 8(2), 9, 14, 16	1070073 (428-RA)	1070086 (428-RAE)	1070098 (428-RAV)
	BUNA N INCLUDES DIAPHRAGM 1074557 (428-FB)	E.P.D.M. INCLUDES DIAPHRAGM 1074557 (428-FB)	FKM INCLUDES DIAPHRAGM 1074559 (428-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 11(2), 17, 18	1070123 (428-RF)		
SEAT (ITEM NO. 2)	1074585 (428-MAO)		

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

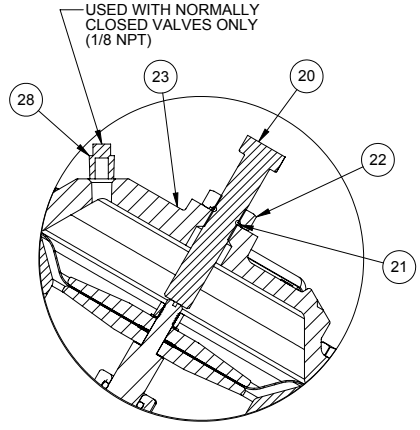
APPROVALS	DATE
DRAWN SM	05/11
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

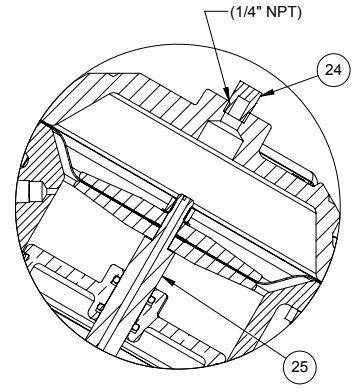
TITLE
CATALOG SHEET, 428
DIAPHRAGM VALVE STANDARD MODEL

SIZE B | DWG NO. BR1077618 | REV O

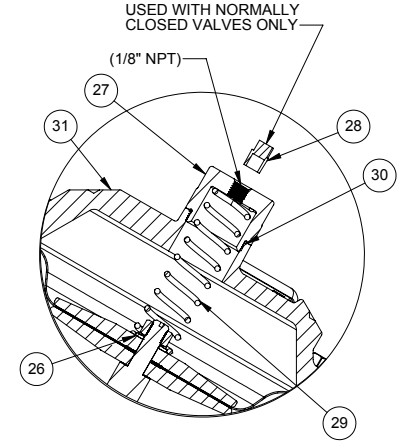
SCALE 1:4 | SHEET 1 OF 2



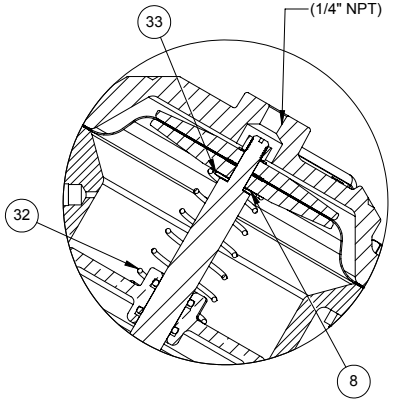
1073151 (V42K-3010-00000)
LIMIT STOP



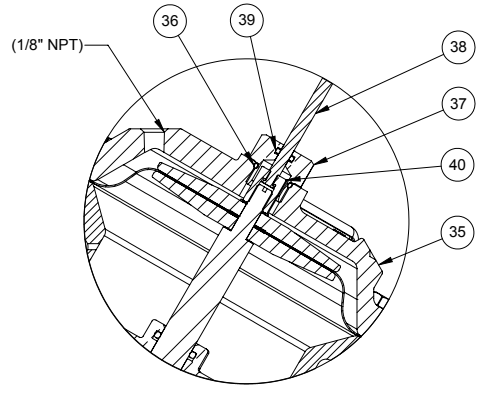
1073158 (V42K-3030-00000)
NORMALLY CLOSED



1073148 (V42K-3002-00000)
SPRING ASSIST CLOSED



1073146 (V42K-3001-00000)
SPRING ASSIST OPEN



1073156 (V42K-3021-00000)
POSITION INDICATOR

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR NOTES		

ITEM NO.	DESCRIPTION	STD	PART NUMBER	QTY.
	LIMIT STOP MODEL			
20	SCREW, 5/8-18X3.50 HEX HD,	*	1072365	1
21	O-RING,2-112,NITRILE	*	1071690	1
22	NUT, LIMIT STOP	*	1074434	1
23	CAP, 428,LS, NPT, CI	*	1074542	1
	NORMALLY CLOSED MODEL			
24	MALE PIPE PLUGS, PLATED STEEL	*	1071918	1
	MALE PIPE PLUGS, BRASS		1071904	1
25	SHAFT, 428 NORMALLY CLOSED	*	1074582	1
	SPRING ASSIST CLOSED MODEL			
26	WASHER, CENTERING		1074530	1
27	NUT, SPRG RTNR,425 & 465,SS	*	1074433	1
28	MALE PIPE PLUGS, PLATED STEEL	*	1071903	1
	MALE PIPE PLUGS, BRASS		1071917	1
29	SPRING, COMPRESSION	*	1074607	1
30	O-RING,2-025,NITRILE	*	1071677	1
31	CAP, 428, NPT, CI		1074540	1
	SPRING ASSIST OPEN			
8	GASKET, CDA 110 COPPER	*	1073950	1
32	SPRING, COMPRESSION, 428,SAO	*	1074600	1
33	WASHER, BRASS		1074610	1
	POSITION INDICATOR MODEL			
35	CAP, 428,CI,NPT,PI		1074549	1
36	O-RING,2-116,NITRILE		1071692	1
37	PI ROD GDE, V42, BRASS		1074121	1
38	SHAFT,428,SS,MACH		1074593	1
39	O-RING,2-106,NITRILE,TFLN CTD		1071688	1
40	NUT,TOP,428,PI		1074608	1

TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUED TO (+/- 10%)
22	NUT, LIMIT STOP	140 IN/LBS
27	NUT, SPRG RETAINER	140 IN/LBS
37	PI ROD GUIDE	140 IN/LBS
40	NUT, TOP, 428, PI	140 IN/LBS

NOTE:
1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMITED STOP OR POSITION INDICATOR MODELS.
2. VALVES AVAILABLE WITH B.S.P. END CONNECTIONS.

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMITED STOP) CONSISTS OF STANDARD ITEM NO'S 20, 21, 22,	1074583 (428-LS)
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 11(2), 18, 25	1070134 (428-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 28, 29, 30	1074602 (428-SC)
INT. PARTS KIT (SPING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 8, 32, 33	1074604 (428-SO)
INT. PARTS KIT (POSTION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 35 THRU39	1074591 (428-PI)

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMITED STOP) CONSISTS OF STANDARD ITEM NO'S 20, 21, 22, 23	1074584 (428-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 26 THRU 31	1074603 (428-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 8, 32, 33	1074606 (428-SOC)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 34 THRU 39	1074592 (428-PIC)

SEE REVERSE SIDE FOR
STANDARD NORMALLY OPEN MODEL

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN SM	05/11
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

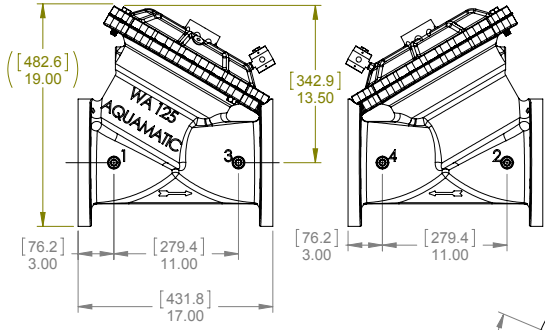
TITLE
CATALOG SHEET, 428
DIAPHRAGM VALVE STANDARD MODEL

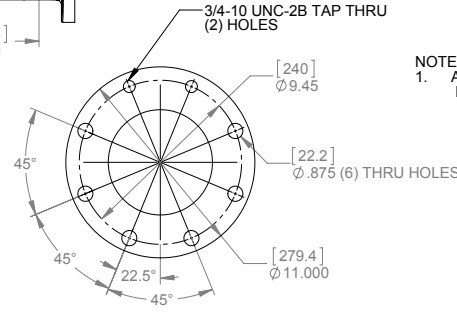
SIZE	DWG NO.	REV
B	BR1077618	O

SCALE 1:4 SHEET 2 OF 2

REPAIR PARTS KITS		
DESCRIPTION	PART NO.	
	1070074 (429-RA)	1070099 (429-RAV)
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 2, 5(2), 8, 10(2), 11, 14, 19, 23	BUNA N INCLUDES DIAPHRAGM 1074622 (429-FB)	FKM INCLUDES DIAPHRAGM 1074623 (429-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4, (12)6, 7 9, 12, 16(2), 18, 22	1074653 (429-RF)	
SEAT ITEM NO. 3, 4(8)	1074640 (429-MO)	

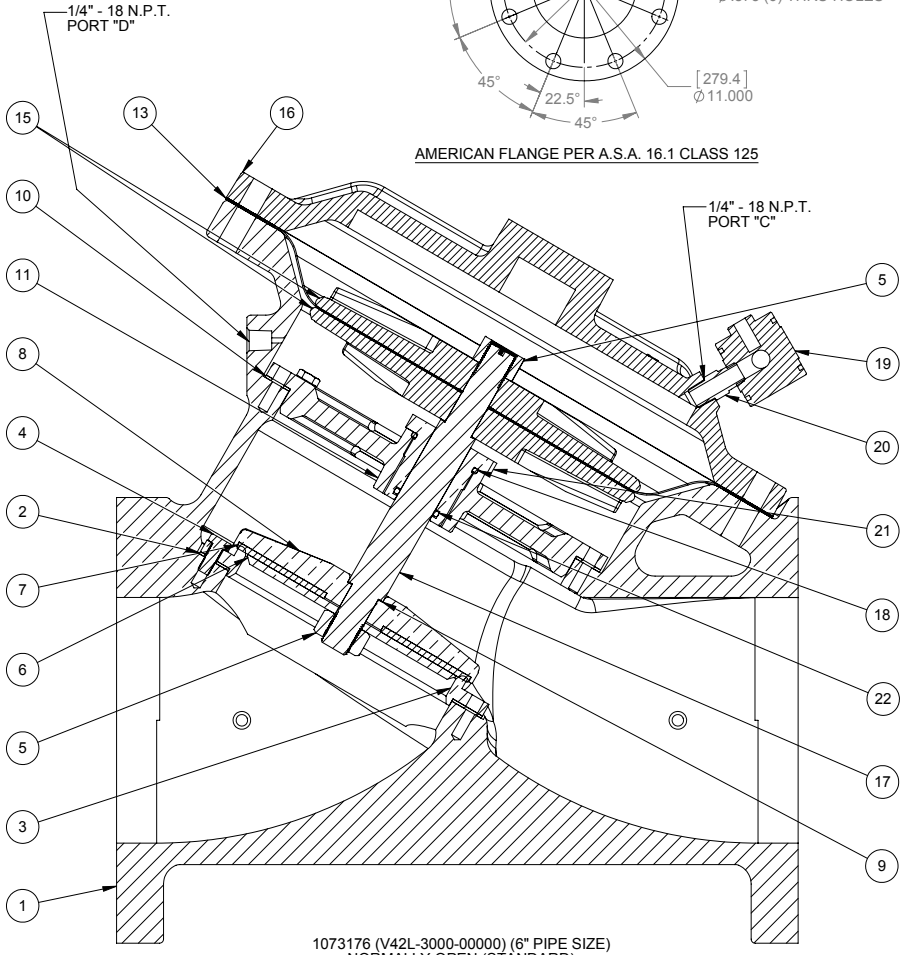
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	101517	M	REDRAWN IN SOLID WORKS, FORM # IS NOW DWG #	1-29-13	NE
CHG-1 (PG-1) CHG-2 (PG-2)	102769	N	1-ADD'D: ITEM#23, 2-WAS: 1/8 NPT	15NOV13	TJM
CHG-1 (PG-1)	104638	P	1-WAS: ITEM#12- 1071659, 2-UPDATED TITEL BLOCKS	20MAY15	TJM
	1001	Q	AQ Matic update & verified part numbers	17JAN17	MGS





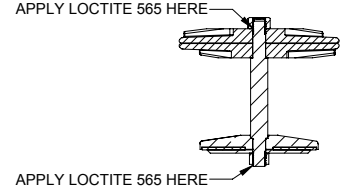
NOTE:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1 - 1968

AMERICAN FLANGE PER A.S.A. 16.1 CLASS 125



1073176 (V42L-3000-00000) (6" PIPE SIZE)
NORMALLY OPEN (STANDARD)

ITEM NO.	DESCRIPTION	STD	PART NUMBER	QTY.
1	VALVE BODY, 429, CI	*	1074613	1
2	GASKET, 429, SEAT, BUNA	*	1074642	1
	GASKET, 429, SEAT, VITON		1074643	1
3	LOWER, SEAT, BRASS	*	1074640	1
4	SCREW, HEX HD, CAP, 5/16-18,SS	*	1072355	20
5	NUT, 3/4-16, SS	*	3001991	2
6	PLATE,DISC,429,BRASS,MACH	*	1074634	1
7	DISC, 429, VITON		1074633	1
	DISC, 429, HYCAR	*	1074632	1
8	RETAINER, DISC	*	1074627	1
9	GASKET, COPPER, 110-CDA	*	1073952	2
10	GASKET, CENTERING PLATE,BUNA	*	1074644	1
	GASKET, CENTERING PLATE,VITON		1074645	1
11	SHAFT GUIDE,429,CI,MCHD	*	1074625	1
12	NUT, 1/2-13, PLATED	*	16568-02	16
13	DIAPHAGM, 429, BUNA	*	1074622	1
	DIAPHAGM, 429, FKM		1074623	1
14	SCREW, HEX HD, CAP,	*	1072410	16
15	PLATE,DIAPHRAGM,429,BRASS,MCHD	*	1074620	2
16	CAP, 429	*	1074615	1
17	SHAFT, 429 MACHINING DRAWING	*	1074636	1
18	O-RING (NITRILE), 2-223	*	1071703	1
	O-RING, -223, FKM		1071820	1
19	HUMPHREY VALVE N.C. BRASS,	*	1074661	1
20	FITTING, NIPPLE 1/4MNPTX1.38	*	1081648	1
21	GUIDE, SHAFT, 429, BRS	*	1074646	1
22	O-RING (NITRILE),	*	1242721	1
23	MALE PIPE PLUG, 1/4 NPT	*	1071918	4



DO NOT APPLY TO O-RING SEALS

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	1-21-13
APPROVED	
CHECKED	

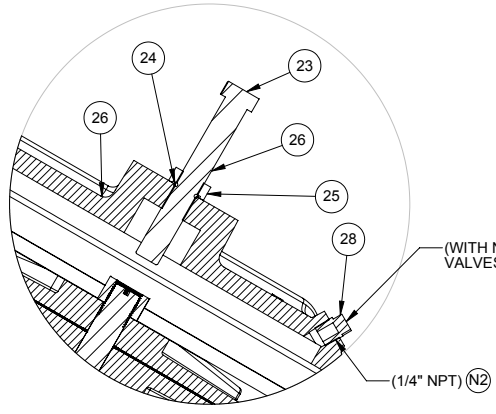
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 429
DIAPHRAGM VALVE STANDARD MODEL

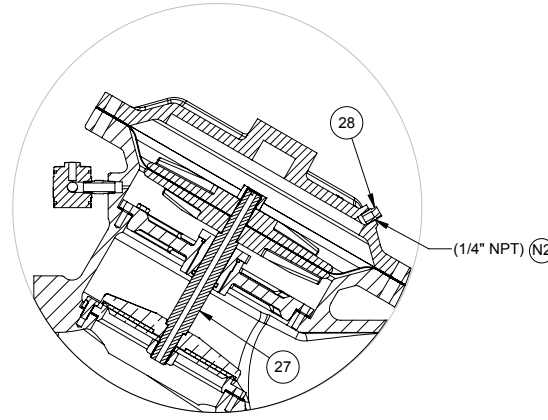
SIZE B | DWG NO. BR1077619 | REV Q

SCALE 1:4 | SHEET 1 OF 2

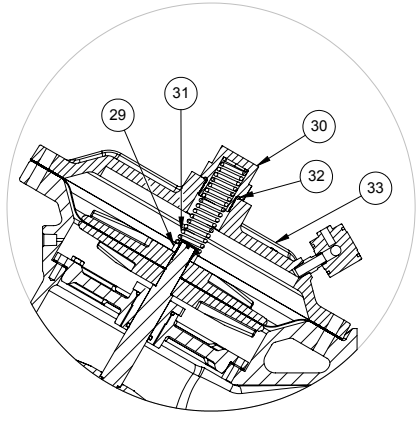
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



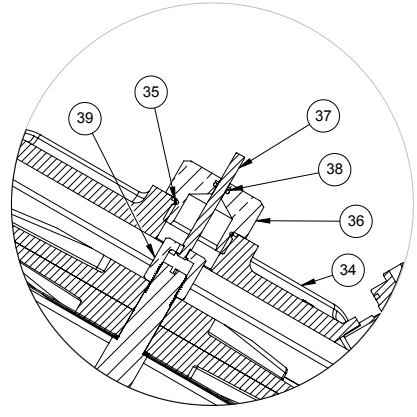
1073184 (V42L-3010-00000)
LIMIT STOP



1073187 (V42L-3030-00000)
NORMALLY CLOSED



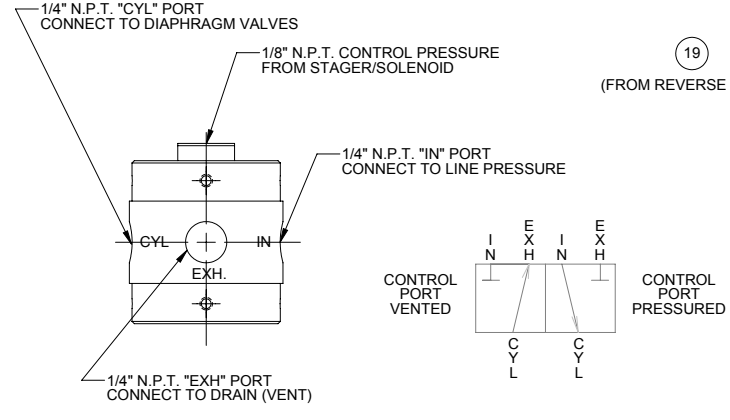
4500139 (V42L-3002-00000)
SPRING ASSIST CLOSED



1082048 (V42L-3020-00000)
POSITION INDICATOR

ITEM NO.	DESCRIPTION	STD	PART NUMBER	QTY.
	LIMIT STOP MODEL			
23	SCREW, HEX HD CAP,5/8-18X4.5"	*	1074660	1
24	O-RING,2-112,NITRILE	*	1071690	1
25	NUT, LIMIT STOP	*	1074434	1
26	CAP, 429	*	1074617	1
	NORMALLY CLOSED MODEL			
27	SHAFT, 429, NC	*	1074637	1
28	MALE PIPE PLUG, 1/4 NPT	*	1071918	1
	SPRING ASSIST CLOSED MODEL			
29	NUT, SPRING RETAINER		1074663	1
30	NUT,SPRING RETAINER,429,BRASS	*	1074659	1
31	SPRING, COMPRESSION	*	1074657	1
32	O-RING (NITRILE), 2-222	*	1079839	1
33	CAP, 429	*	1074616	1
	POSITION INDICATOR MODEL			
34	CAP, 429	*	1074618	1
35	O-RING,2-128,NITRILE	*	1071694	1
36	GUIDE, SHAFT, 429, BRASS	*	1074624	1
37	SHAFT,429,SS,MACH	*	1074649	1
38	O-RING,2-106,NITRILE,TFLN CTD	*	1071688	1
39	NUT, 429, BRASS	*	1074658	1

REPAIR PARTS KITS	
DESCRIPTION	PARTS NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 23, 24, 25	1074638 (429-LS)
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4(12), 6, 7, 9, 12, 15(2), 21, 27	1074654 (429-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 29, 31, 32	1074655 (429-SC)
INT. PARTS KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 35 THRU 39	1074647 (429-PI)



THIS 3-WAY "NORMALLY CLOSED" AUXILIARY PILOT VALVE (PART NO. 429-VP) IS FURNISHED WITH ALL V42L DIAPHRAGM VALVES. IT ACCELERATES THE CLOSING AND OPENING SPEED OF THE VALVE.

NOTE
1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMIT STOP OR POSITION INDICATOR.
2. SPRING ASSIST OPEN MODEL AVAILABLE.

SEE REVERSE SIDE FOR STANDARD MODEL NORMALLY OPEN MODEL

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 23 THRU 26	1074639 (429-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 29 THRU 33	1074656 (429-SCC)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF STANDARD ITEM NO'S 34 THRU 39	1074648 (429-PIC)

THIRD ANGLE PROJECTION		
APPROVALS	DATE	
DRAWN	NE	1-21-13
APPROVED		
CHECKED		

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 429
DIAPHRAGM VALVE STANDARD MODEL

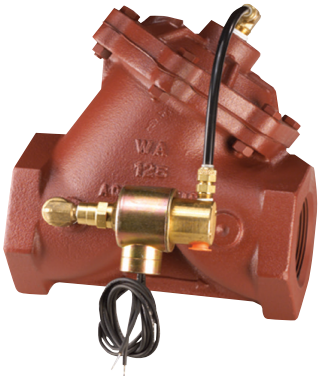
SIZE	DWG NO.	REV
B	BR1077619	Q

SCALE 1:4 SHEET 2 OF 2

AQUAMATIC® V42 SOLENOID-OPERATED SERIES
DIAPHRAGM VALVES

GREAT FIT FOR WATER TREATMENT AUTOMATED PROCESS SYSTEMS

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS



FEATURES/BENEFITS

Unique Y-pattern design with large seat opening and high lift disc permits higher flow rates at lower pressure loss than other comparable valves

All components can be serviced while the valve is in-line

Pre-formed, stress-relieved diaphragm minimizes fatigue, maximizes valve responsiveness and diaphragm lifetime

Cast iron, brass, stainless steel, and nitrile elastomer components for unparalleled service

3/4"-3" threaded [NPT or BSP]

3"-4" flange drilled in accordance with ASA16.1 class 125, or BSP4504

Adaptable to a wide variety of control devices

OPTIONS

Spring-assist closed

Spring-assist open

Limit stop for flow control

Seal and diaphragm materials for special applications

TYPICAL APPLICATIONS

Agricultural Irrigation

Air Control Systems

Car Wash Systems

Concrete Additive

Control Systems

Conveyor Systems

Cooling Towers

Dust Suppression

Fuel Handling

Laundry Equipment

Process Water Systems

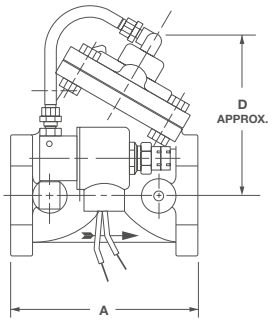
Pump Controls

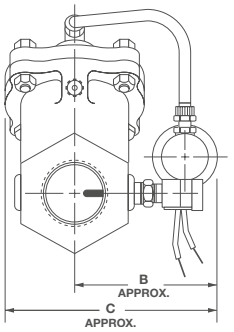
Turf Irrigation

DIMENSIONS

MODEL #	PIPE SIZE	Cv*	DIMENSIONS (APPROXIMATE)			
			A	B	C	D
V42B	3/4"	11.4	3.69" (94 mm)	3.25" (82.5 mm)	4.63" (117.5 mm)	3.81" (96.8 mm)
V42C	1"	12.8	3.69" (94 mm)	3.25" (82.5 mm)	4.63" (117.5 mm)	3.81" (96.8 mm)
V42D	1-1/4"	26.5	4.75" (121 mm)	3.56" (90.5 mm)	5.31" (134.9 mm)	4.56" (115.9 mm)
V42E	1-1/2"	32.5	4.75" (121 mm)	3.56" (90.5 mm)	5.31" (134.9 mm)	4.56" (115.9 mm)
V42F	2"	56	6.62" (168 mm)	3.94" (100.0 mm)	6.63" (168.3 mm)	5.94" (150.8 mm)
V42G	2"	68	7.37" (187 mm)	4.19" (106.4 mm)	7.25" (184.2 mm)	6.25" (158.8 mm)
V42H	2-1/2"	84	7.37" (187 mm)	4.19" (106.4 mm)	7.25" (184.2 mm)	6.25" (158.8 mm)
V42J	3" (threaded)	134	9.00" (229 mm)	4.63" (117.6 mm)	8.25" (209.5 mm)	7.00" (117.8 mm)
V42J	3" (flanged)	134	10.62" (298 mm)	4.63" (117.6 mm)	8.25 (209.5 mm)	7.00" (117.8 mm)
V42K	4"	275	11.75" (432 mm)	5.13" (130.3 mm)	9.50" (241.3 mm)	8.75" (222.3 mm)

*Cv = Flowrate (gal/minute) of water at 60°F (15.5°C) at a 1 psi pressure drop.Liters/minute = gal/minute x 3.78





CURRENT DRAIN (AMPERES)

Voltage	Inrush	Holding
24V 60 Hz	1.1	0.65
120V 60 Hz	0.2	0.1
220V 50 Hz	0.1	0.07
12 VDC	–	0.6
24 VDC	–	0.3

OPERATING SPECIFICATIONS

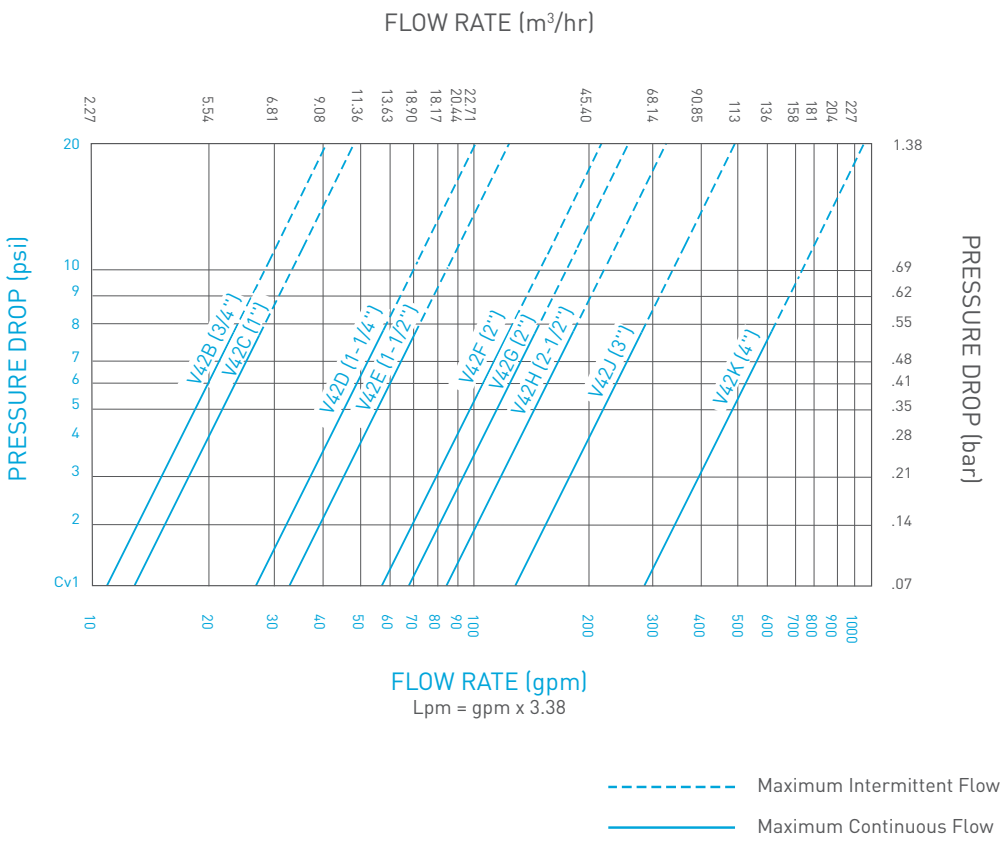
Working Pressure	125 psi (8.6 bar)
Max Temperature	150°F (65°C)

Energized to open:
Line pressure is directed through the solenoid to the upper diaphragm chamber, closing the valve. Activating the solenoid vents the upper diaphragm chamber, allowing the valve to open.

Energized to close:
The upper diaphragm chamber is vented, allowing the valve to open. Activating the solenoid pressurizes the upper diaphragm chamber, closing the valve.

Independent control pressure:
An independent source of pressure is used through the solenoid to control the diaphragm valve.

PERFORMANCE DATA



16605 West Victor Rd. New Berlin, WI 53151

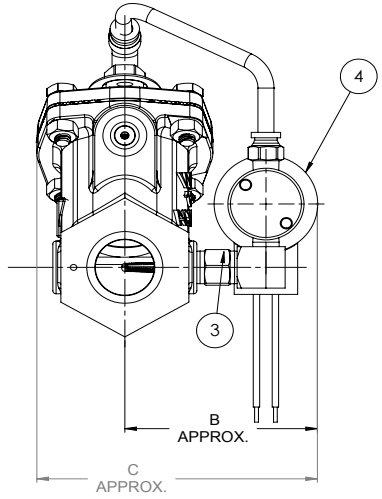
P: 262–326–0100 | www.aq–matic.com | techsupport@aq–matic.com

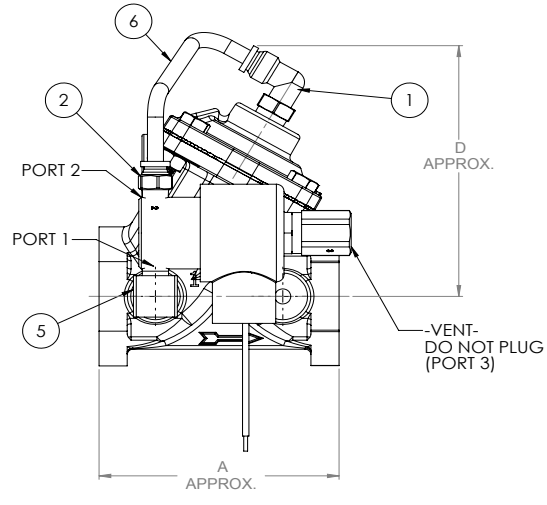
1229847 REV L MA2016

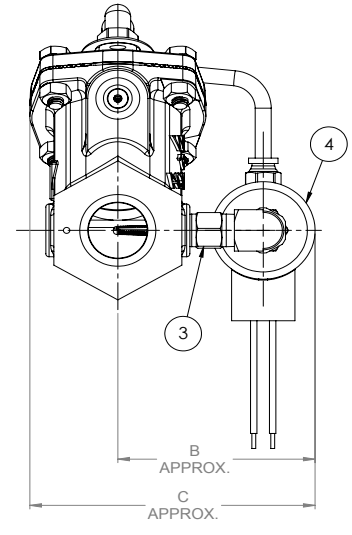
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	100876	E	REDRAWN IN SOLID WORKS ADDED DRY DRAIN VIEW PG2 (WAS: DWG #1078114)	07/23/12	TJM
	101838	F	ADDED SOLENOIDS; 1075634, 1075635, 1077611, ADDED PG 4 TO SHOW NEMA 3 SOLENOID LAYOUT	04/09/13	TJM
	104368	G	1-ADD'D: NOTE-6 PG-1, 2-ADD'D: NOTE-5 PG-2	13MAR15	TJM
	1001	H	AQ Matic update & verified part numbers	20JAN17	MGS

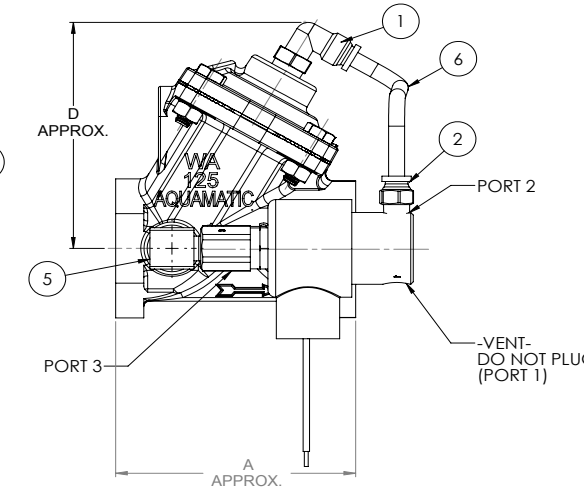
NOTE:
1. LENGTH OF TUBING VARIES WITH EACH SIZE OF DIAPHRAGM VALVE.
2. B.S.P.T. AVAILABLE UPON REQUEST.
3. DIAPHRAGM VALVE IS NORMALLY OPEN, PRESSURE TO CLOSE.
4. BOSS NO. 1 ON VALVE TAPPED 1/4" N.P.T.
5. SEE PAGE 2 FOR DRY DRAIN OPTION & PAGE 3 FOR INDEPENDENT PRESSURE.
6. ALL V42J, V42K, & V42L FLANGED VALVES HAVE (1) 43947 FITTING THAT IS NOT SHOWN. FITTING GOES BETWEEN ITEM #3, & THE SOLENOID.

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	1078766	FITTING, ELBOW,TUBE,1/4MNPT X
2	1	1078763	FITTING, CONNECTOR,1/8MNPT X
3	1	1074004	STRAINER ASSY,
4	1	1070652	SOLENOID, 3 WAY, 120/60
		1070651	SOLENOID, 3 WAY, 24VDC
		1070650	SOLENOID, 3 WAY, 12VDC
		1070649	SOLENOID, N1, 24/60 AC
		1070648	SOLENOID, 3 WAY, 220/60
		1075634	SOLENOID, 120/60, 11/50
		1075635	SOLENOID, 240/60, 220/50
5	1	1074040	FITTING, ELBOW,REDUCER,BRS
6	N/A	1071936	TUBING, POLY 1/4" O.D. X .035



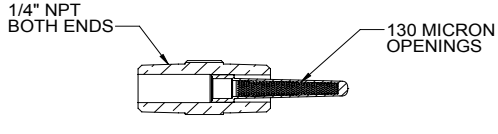






ENERGIZED TO CLOSE

SOLENOID ENERGIZED.
UPSTREAM PRESSURE, FROM SOLENOID PORT 1 TO PORT 2, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.
SOLENOID DE-ENERGIZED
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.



STRAINER ASSEMBLY

VALVE SERIES	PIPE SIZE	A	B	C	D
V42B	3/4"	3.69 / 93.7	3.25 / 82.5	4.63 / 117.5	3.81 / 96.8
V42C	1"	3.69 / 93.7	3.25 / 82.5	4.63 / 117.5	3.81 / 96.8
V42D	1-1/4"	4.75 / 120.6	3.56 / 90.5	5.31 / 134.9	4.56 / 115.9
V42E	1-1/2"	4.75 / 120.6	3.56 / 90.5	5.31 / 134.9	4.56 / 115.9
V42F	2"	6.62 / 168.3	3.94 / 100	6.63 / 168.3	5.94 / 150.8
V42G	2"	7.38 / 187.3	4.19 / 106.4	7.25 / 184.3	6.25 / 158.8
V42H	2-1/2"	7.38 / 187.3	4.19 / 106.4	7.25 / 184.3	6.25 / 158.8
V42J	3" THREADED	9.00 / 228.6	4.63 / 117.5	8.25 / 209.5	7.00 / 177.8
V42J	3" FLANGED	10.62 / 269.9	4.63 / 117.5	8.25 / 209.5	7.00 / 177.8
V42K	4"	11.75 / 298.5	5.13 / 130.3	9.50 / 241.3	8.75 / 222.3

ENERGIZED TO OPEN

SOLENOID DE-ENERGIZED
UPSTREAM PRESSURE, FROM SOLENOID PORT 3 TO PORT 2, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.
SOLENOID ENERGIZED.
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.

****SOLENOID DE-ENERGIZED (FOR 1075634, 1075645, & 1075611 SOLENOIDS)**
UPSTREAM PRESSURE, FROM SOLENOID PORT 3 TO PORT 1, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
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UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	07/10/12
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, V420,SOLENOIDS

SIZE	DWG NO.	REV
B	1078113	H

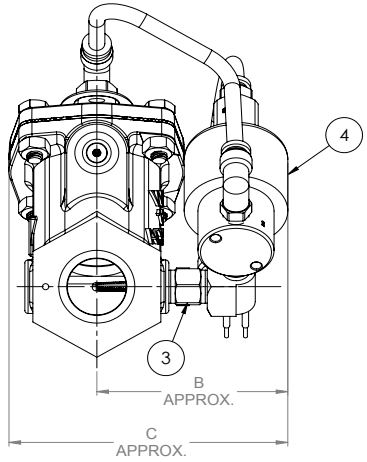
SCALE 2:3 SHEET 1 OF 4

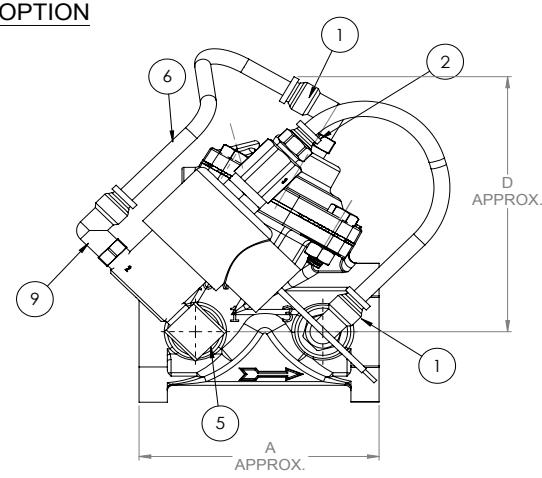
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR LIST OF CHANGES		

NOTE:
1. LENGTH OF TUBING VARIES WITH EACH SIZE OF DIAPHRAGM VALVE.
2. B.S.P.T. AVAILABLE UPON REQUEST.
3. DIAPHRAGM VALVE IS NORMALLY OPEN, PRESSURE TO CLOSE.
4. BOSS NO. 1 AND NO. 3 ON VALVE TAPPED 1/4" N.P.T.
5. ALL V42J, V42K, & V42L FLANGED VALVES HAVE (1) 43947 FITTING THAT IS NOT SHOWN. FITTING GOES BETWEEN ITEM #3, & THE SOLENOID.

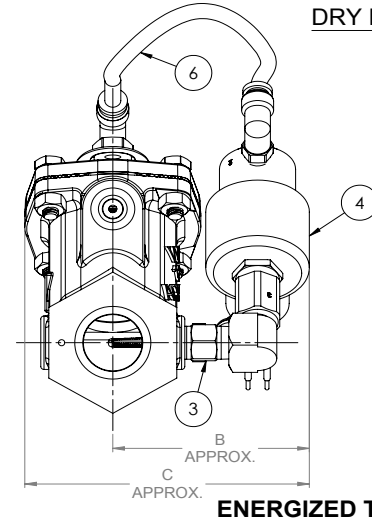
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	2	1078766	FITTING, ELBOW,TUBE,1/4MNPT X
2	1	1078763	FITTING, CONNECTOR,1/8MNPT X
3	1	1074004	STRAINER ASSY,
4	1	1070652	SOLENOID, 3 WAY, 120/60
		1070651	SOLENOID, 3 WAY, 24VDC
		1070650	SOLENOID, 3 WAY, 12VDC
		1070649	SOLENOID, N1, 24/60 AC
		1070648	SOLENOID, 3 WAY, 220/60
		1075635	SOLENOID, 240/60, 220/50
		1075634	SOLENOID, 120/60, 11/50
5	1	1074040	FITTING, ELBOW,REDUCER,BRS
6	N/A	1071936	TUBING, POLY 1/4" O.D. X .035
		BR1078765	FITTING, ELBOW,TUBE,1/8MNPT X

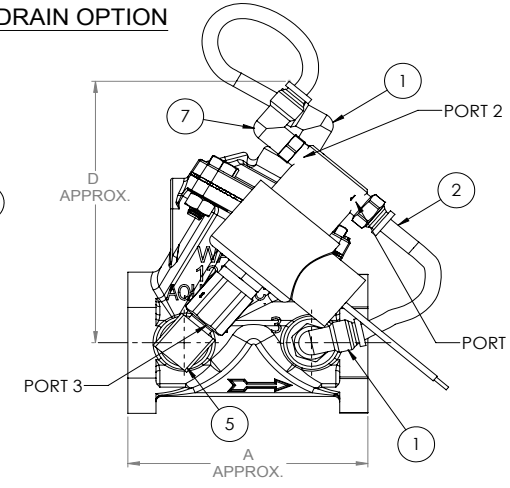
DRY DRAIN OPTION





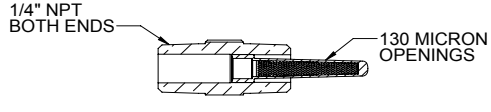
DRY DRAIN OPTION





ENERGIZED TO CLOSE

SOLENOID ENERGIZED.
UPSTREAM PRESSURE, FROM SOLENOID PORT 1 TO PORT 2, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.
SOLENOID DE-ENERGIZED
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED, THROUGH SOLENOID PORT 2 TO PORT 3 TO DRAIN. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.



STRAINER ASSEMBLY

VALVE SERIES	PIPE SIZE	A	B	C	D
V42B	3/4"	3.69 / 93.7	3.25 / 82.5	4.63 / 117.5	3.81 / 96.8
V42C	1"	3.69 / 93.7	3.25 / 82.5	4.63 / 117.5	3.81 / 96.8
V42D	1-1/4"	4.75 / 120.6	3.56 / 90.5	5.31 / 134.9	4.56 / 115.9
V42E	1-1/2"	4.75 / 120.6	3.56 / 90.5	5.31 / 134.9	4.56 / 115.9
V42F	2"	6.62 / 168.3	3.94 / 100	6.63 / 168.3	5.94 / 150.8
V42G	2"	7.38 / 187.3	4.19 / 106.4	7.25 / 184.3	6.25 / 158.8
V42H	2-1/2"	7.38 / 187.3	4.19 / 106.4	7.25 / 184.3	6.25 / 158.8
V42J	3" THREADED	9.00 / 228.6	4.63 / 117.5	8.25 / 209.5	7.00 / 177.8
V42J	3" FLANGED	10.62 / 269.9	4.63 / 117.5	8.25 / 209.5	7.00 / 177.8
V42K	4"	11.75 / 298.5	5.13 / 130.3	9.50 / 241.3	8.75 / 222.3

ENERGIZED TO OPEN

SOLENOID DE-ENERGIZED
UPSTREAM PRESSURE, FROM SOLENOID PORT 3 TO PORT 2, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.
SOLENOID ENERGIZED.
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED, THROUGH SOLENOID PORT 2 TO PORT 1 TO DRAIN. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.

****SOLENOID DE-ENERGIZED (FOR 1075634, 1075645, & 1075611 SOLENOIDS)**
UPSTREAM PRESSURE, FROM SOLENOID PORT 3 TO PORT 1, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.

DRY DRAIN OPTION

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	07/10/12
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, V420,SOLENOIDS

SIZE B | DWG NO. 1078113 | REV H

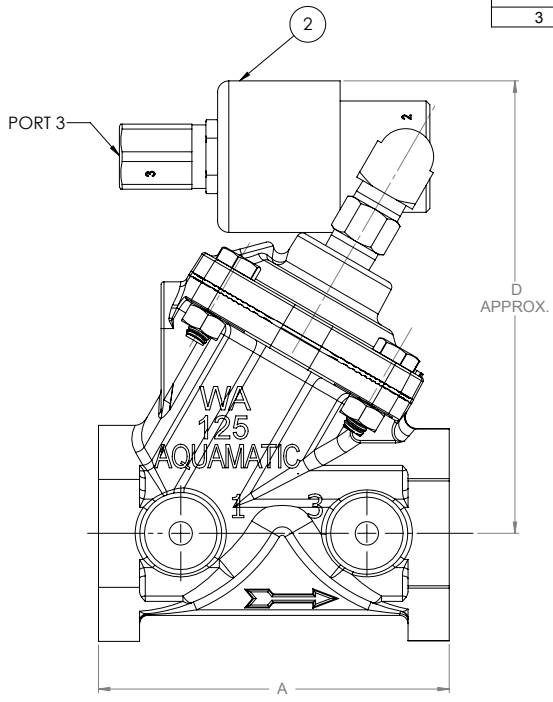
SCALE 2:3 | SHEET 2 OF 4

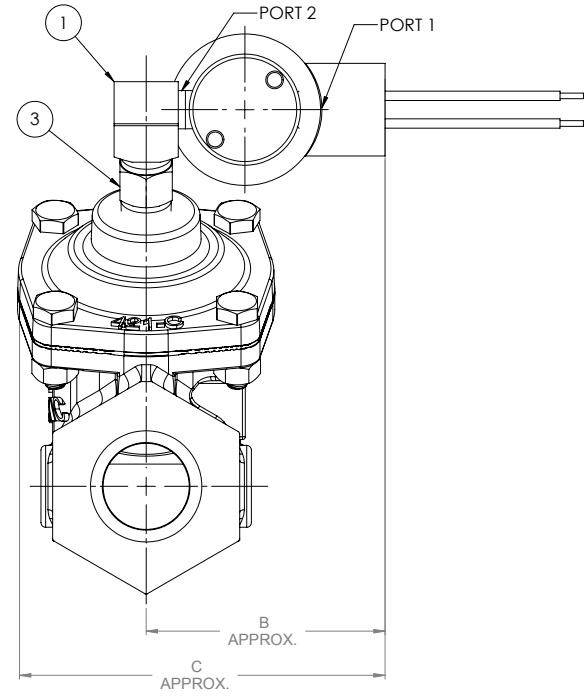
NOTE:
1. B.S.P.T. AVAILABLE UPON REQUEST.
2. DIAPHRAGM VALVE IS NORMALLY OPEN.

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	1074040	FITTING, ELBOW,REDUCER,BRS
2	1	1070652	SOLENOID, 3 WAY, 120/60
		1070651	SOLENOID, 3 WAY, 24VDC
		1070650	SOLENOID, 3 WAY, 12VDC
		1070649	SOLENOID, N1, 24/60 AC
		1070648	SOLENOID, 3 WAY, 220/60
		1075634	SOLENOID, 120/60, 11/50
		1075635	SOLENOID, 240/60, 220/50
3	1	1081648	FITTING, NIPPLE 1/4MNPTX1.38

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR LIST OF CHANGES		





INDEPENDENT CONTROL PRESSURE

ENERGIZE TO OPEN
APPLY CONTROL PRESSURE AT SOLENOID PORT NO. 3 (PORT NO. 1 VENTED)

ENERGIZE TO CLOSE
APPLY CONTROL PRESSURE AT SOLENOID PORT NO. 1 (PORT NO. 3 VENTED)

CONTROL PRESSURE MUST BE EQUAL TO OR GREATER THAN LINE PRESSURE.

VALVE SERIES	PIPE SIZE	A	B	C	D
V42B	3/4"	3.69 / 93.7	2.44 / 91.9	3.81 / 96.8	4.63 / 117.5
V42C	1"	3.69 / 93.7	2.44 / 91.9	3.81 / 96.8	4.63 / 117.5
V42D	1-1/4"	4.75 / 120.6	2.44 / 91.9	4.19 / 106.4	5.38 / 136.5
V42E	1-1/2"	4.75 / 120.6	2.44 / 91.9	4.19 / 106.4	5.38 / 136.5
V42F	2"	6.63 / 168.3	2.69 / 68.3	5.38 / 136.5	6.75 / 171.5
V42G	2"	7.38 / 187.3	3.06 / 77.7	6.13 / 155.6	7.06 / 179.4
V42H	2-1/2"	7.38 / 187.3	3.06 / 77.7	6.13 / 155.6	7.06 / 179.4
V42J	3" THREADED	9.00 / 228.6	3.63 / 92.1	7.25 / 184.1	7.81 / 198.4
V42J	3" FLANGED	10.63 / 269.9	3.63 / 92.1	7.25 / 184.1	7.81 / 198.4
V42K	4"	11.75 / 298.5	4.44 / 111.1	8.75 / 222.3	9.56 / 242.9

**INDEPENDENT CONTROL PRESSURE
FOR (1075634, 1075635, & 1075611 SOLENOIDS)

ENERGIZE TO OPEN
APPLY CONTROL PRESSURE AT SOLENOID PORT NO. 3 (PORT NO. 2 VENTED)

ENERGIZE TO CLOSE
APPLY CONTROL PRESSURE AT SOLENOID PORT NO. 2 (PORT NO. 3 VENTED)

CONTROL PRESSURE MUST BE EQUAL TO OR GREATER THAN LINE PRESSURE.

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TOLERANCES:
ANGLES: ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	07/10/12
APPROVED	
CHECKED	

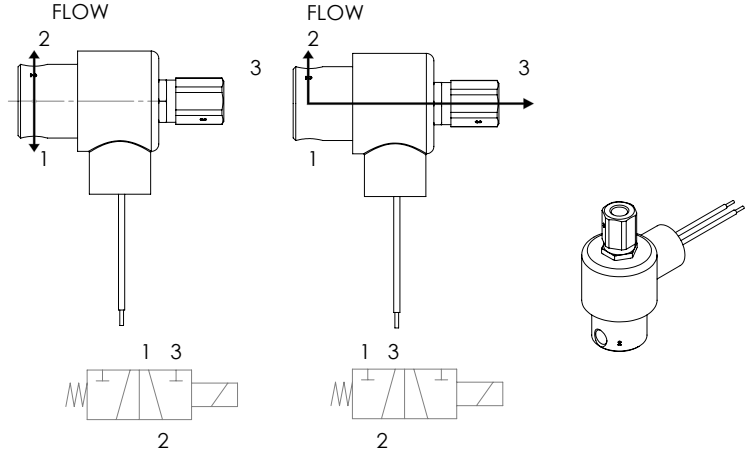
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, V420,SOLENOIDS

SIZE	DWG NO.	REV
B	1078113	H

SCALE 2:3 SHEET 3 OF 4

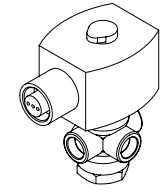
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		

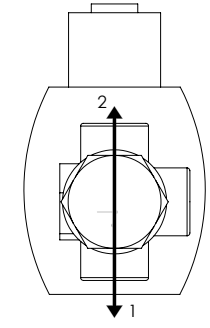


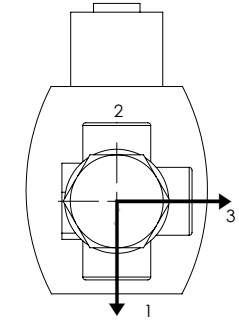
SOLENOID ENERGIZED

SOLENOID DE-ENERGIZED

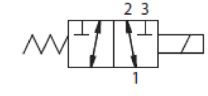
NEMA; 3, 3S, 4, 4X, 6, 6P, 7 & 9



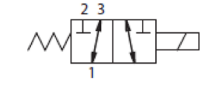




POWER SUPPLY
120/60-110/50
220/50-240/60
24/60



SOLENOID ENERGIZED



SOLENOID DE- ENERGIZED

CURRENT DRAIN (AMPERES)		
VOLTAGE	INRUSH	HOLDING
24V 60Hz	1.1	0.65
120V 60Hz	0.2	0.1
220V 50Hz	0.1	0.07
12 VDC	-	0.6
24 VDC	-	0.3

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	07/10/12
APPROVED	
CHECKED	

AQ Matic Valve & Controls Company Inc.

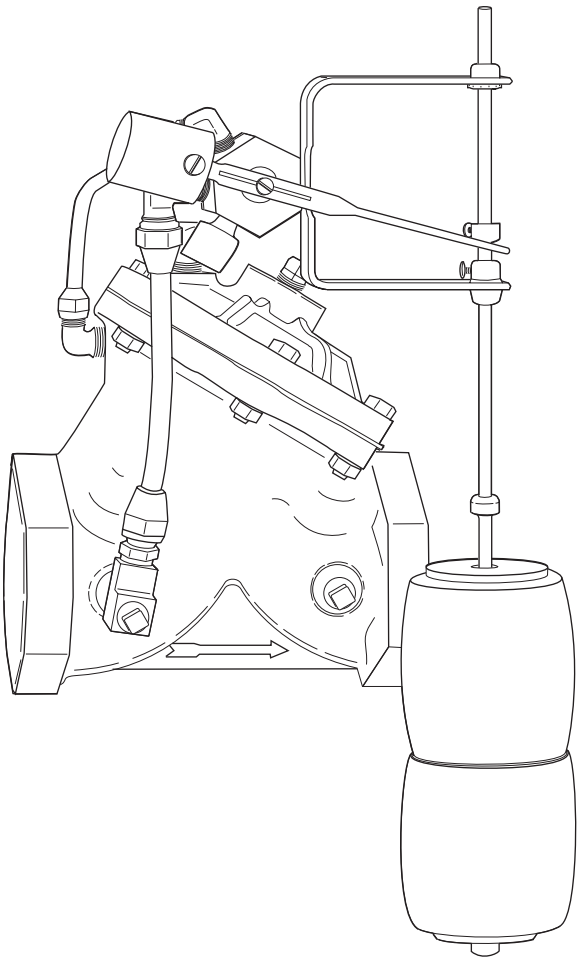
TITLE: CATALOG SHEET, V420,SOLENOIDS

SIZE	DWG NO.	REV
B	1078113	H

SCALE 2:3 SHEET 4 OF 4

AQUAMATIC FLOAT OPERATED BRINE VALVE

INSTALLATION INSTRUCTIONS



DESCRIPTION

The AquaMatic Brine Control Valve is a pilot-controlled, hydraulically-operated Y-pattern diaphragm valve. It is controlled by pressure and vacuum which determines the upper and lower brine levels in the tank.

The valve will allow a predetermined amount of brine to be withdrawn and automatically refill with fresh water through a common line. Refilling is achieved while the softener is in fast rinse and service.

FEATURES

- Positive opening and closing of valve by combining vacuum and pressure.
- Pilot uses fresh water and vacuum for control pressures.
- Air and drip-tight closure after brining and also refilling.
- Completely automatic in the opening and closing operation of the brine and refill cycles.

OPERATION

With the softener in service position and brine tank at the predetermined upper level, line pressure is directed to the upper chamber of the diaphragm valve. This closes the valve. The lower chamber of the valve is vented to atmosphere through the pilot control.

With the softener in brine position, the vacuum created by the action of the ejector is transferred through the pilot control to the upper chamber of the diaphragm valve. The valve opens to allow brine to be withdrawn from the brine tank.

When the predetermined amount of brine has been withdrawn, the float contacts the lower float stop. The weight of the float will cause the lever arm to rotate to the down position. The vacuum is transferred to the lower chamber. This closes the valve and stops the flow of brine. The valve remains closed until the fast rinse cycle occurs.

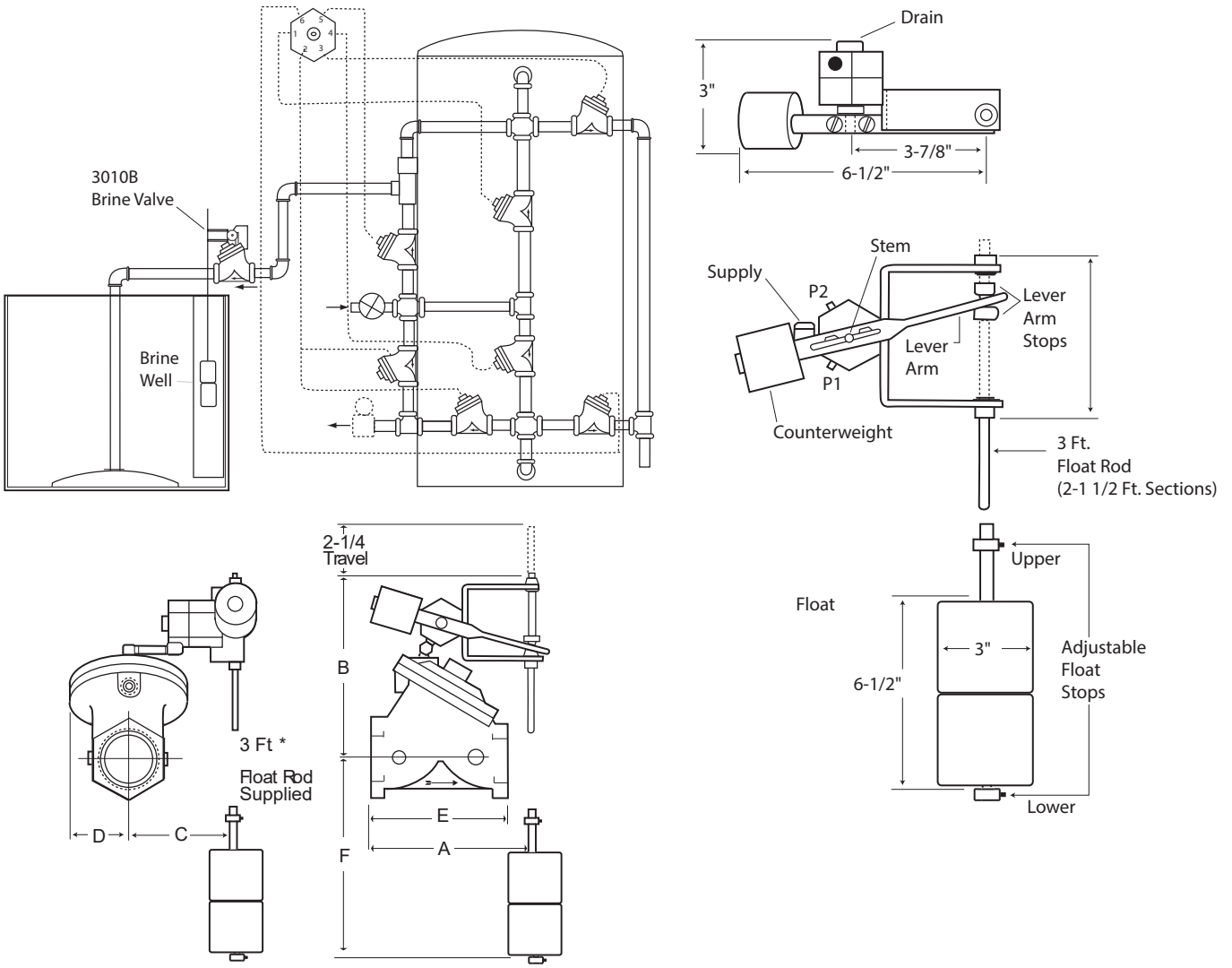
With the softener in the fast rinse position, line pressure replaces the vacuum in the lower chamber. This will force the valve to the open position and allow the fresh water to refill the brine tank. At the predetermined upper level the float contacts the upper float stop. The lever arm rotates to the up position and pressure is directed to the upper chamber of the diaphragm valve. This will close the valve (drip-tight) until the next brine cycle.

SPECIFICATIONS

Size:	3/4" through 1.5" NPT or BSP
Pressure:	125 psi maximum recommended
Vacuum:	2 - 28 inHg
Temperature:	32 to 140°F (0 to 60°C)
Fluid:	Water and salt brine
Materials:	
	Body and cover - cast iron
	Valve trim - brass and stainless steel
	Seals - Buna-N
Diaphragm:	Buna-N on nylon
Pilot Control:	Brass
	Stainless steel
	Neoprene gasket
	Buna-N O-ring
	PTFE template
Float Rod:	Brass
Float:	Close-celled Spongex

CALIFORNIA PROPOSITION 65 WARNING

⚠ WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.



Size	Dim.	A	B	C	D	E	F*
3/4" to 1"	in	7.31	6.50	1.50	2.12	3.68	29
	mm	186	165	38	54	93	735
1-1/4" to 1-1/2"	in	6.31	7.81	3.31	1.75	4.75	28
	mm	160	198	84	44	120	711

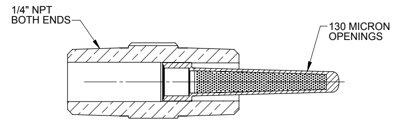
INSTALLATION

1. Before installation, the pipe lines should be flushed thoroughly to remove all chips, scale, and other foreign matter
2. Valve should be installed with refill flow in the direction as shown by the arrow on the body of the valve.
3. The float rod should be installed as shown above.
4. The counterweight should be adjusted to balance the weight of the float rod.
5. Float is now installed on the float rod. The spacing between the float stops determines the travel or range of the float. This travel controls the amount of brine to be transferred to the softener tank.
6. Calculate the amount of brine required for a regeneration cycle. Convert gallons of brine to number of inches of draw down in the brine tank. Adjust distance between "Adjustable float stops" on float rod to achieve proper brine draw down.
7. Once the correct draw down has been established, the upper liquid level in the brine tank can be controlled by adjusting "lever arm stops". This action does not affect the brine draw down controlled by the float.

16605 West Victor Rd. New Berlin, WI 53151
P: 262–326–0100 | www.aq–matic.com | techsupport@aq–matic.com

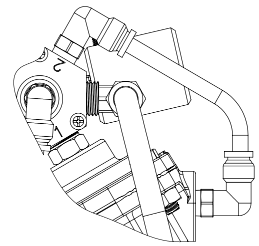
1204627 REV D AU2016

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	101724	E	1-UPDATED TITLE BLOCKS, 2-WAS: 1079857, 3-ADD'D: 1071940, 4-ADD'D:FOR 425 THRU 428 THIS FITTING IS REPLACED WITH 1078766 (1/4 NPT)	12MAR13	TJM
	104648	F	1-UPDATED TITLE BLOCKS, 2-ADD'D: PG-3 & 6 FOR STD FLOAT VERSIONS, 3-ADD'D: 421 SAC VIEW ON PG'S 3 & 4.	22MAY15	TJM
1&2-PG2, 2&3-PG3, 4-PG4, 5&6-PG5, 7&8-PG6	104648	G	1-IT#14-WAS:1074001, 2-ROTATED IT#22 180°, 3-IT#14-WAS:1074001,4-ADDED SIDE VIEWS, 5-IT#15-WAS:1074001,6-IT#18-REM'D:1074002,7-IT#15-WAS:1074001,8-IT#18-REM'D:1074002	19AUG15	TJM
1-PG2,3,5&6 2-PG 5&6, 3-PG-7	105334	H	1-WAS:3029346 NOW:16586-8, 2-IT# 18 WAS IT# 26, 3-ADD'D: PG-7 (CLOSED IF- LOW)	25NOV15	TJM
	1001	J	AQ Matic update & verified part numbers	20JAN17	MGS

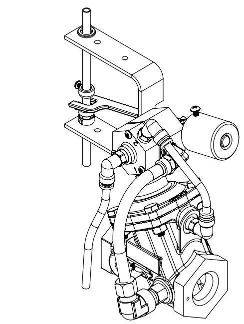


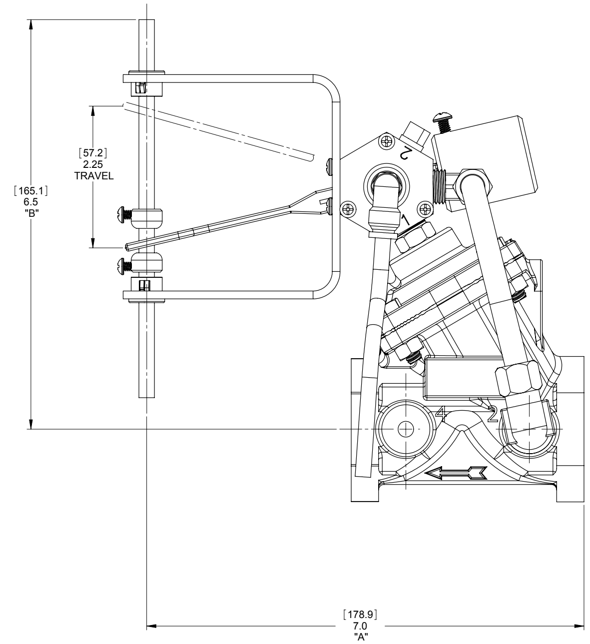
SECTION A-A
SCALE 2 : 1

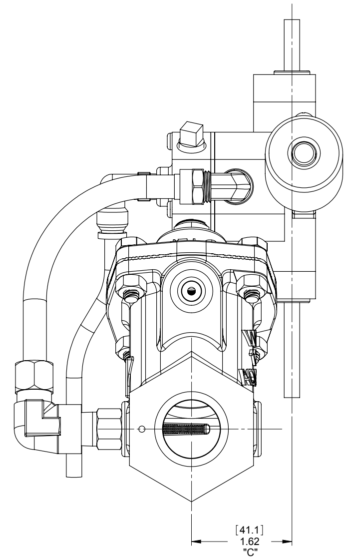
STAINER ASSEMBLY

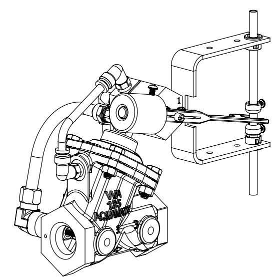


POWERED OPEN OPTION
FOR DETAILED ASSEMBLY SEE PG'S - 2 & 5









VALVE SERIES	421	424	425	426	427	428
PIPE SIZE	1"	1-1/4", 1-1/2"	2"	2"	3"	4"
A	7.20 / 182.9	8.29 / 210.6	9.29 / 132.1	9.87 / 236.0	10.80 / 274.3	12.80 / 325.1
B	6.50 / 165.1	7.81 / 198.4	8.37 / 212.6	9.56 / 242.8	10.56 / 268.2	13.81 / 350.8
C	1.70 / 43.2	4.20 / 106.7	5.20 / 132.1	5.20 / 132.1	6.20 / 157.5	6.20 / 157.5

421-428
FLOAT VALVES
ON THIS PAGE

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

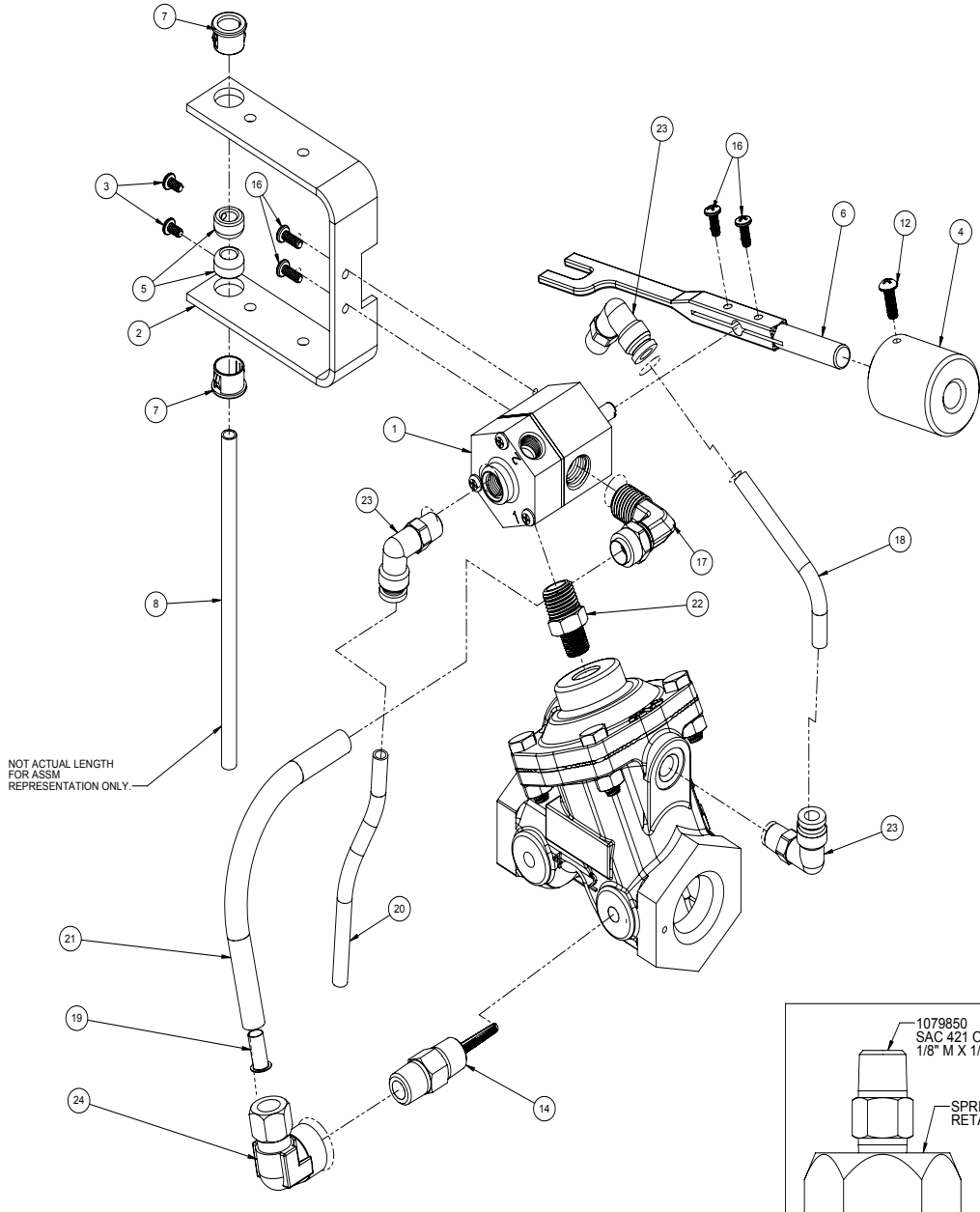
APPROVALS		DATE
DRAWN	SM	04/18/11
APPROVED		
CHECKED		

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 420 DAIPHRAGM FLOAT OPERATED VALVES

SIZE B | DWG NO. BR1078190 | REV J
SCALE 1:1 | SHEET 1 OF 7

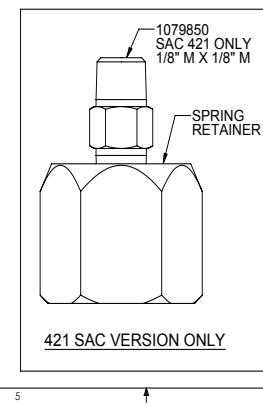
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR NOTES		



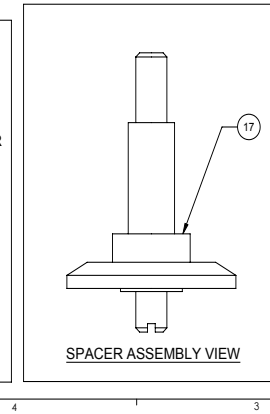
ITEM NO.	QTY. (421)	PART NUMBER	DESCRIPTION
1	1	1073992	PILOT CNTL ASSY, 348, -AE
2	1	1074012	BRACKET, 348,
3	2	1072370	RD. HD. MACH. SCREW, (6-32 X 1/4)
4	1	1074014	COUNTERWEIGHT, STD
5	2	1074017	CENTERING COLLAR, BRASS
6	1	1074034	LEVER, 348
7	2	1074016	BUSHING,
8	1	1074023	FLOAT ROD,
9	1	1074022	STUD, THRD, #12-24 UNC-2A, SS
10	1	16856-8	GREASE, LUBRIPLATE, FGL-2
11	1	1073996	FLOAT,SAND,5"
12	1	1072375	RD. HD. MACH SCREW, (8-32 X 1/2)
13	1	1074002	STRAINER,
14	1	1074004	STRAINER ASSY
15	1	1074127	SPACER, BRASS
16	4	1072371	SCREW, PHLP, PN HD
17	1	1074037	FITTING, ELBOW, BRASS
18	1	1071936	TUBING, POLY 1/4" O.D. X .035
19	1	10332	FITTING,INSERT,3/8
20	1	1071936	TUBING, POLY 1/4" O.D. X .035
21	1	1071940	FITTING,TUBE,.37 OD
22	1	1074038	FITTING, NIPPLE,1/4X1/8 REDUCR
23	3	1078765	FITTING, ELBOW,TUBE,1/8MNPT X
24	1	1074007	FITTING, ELBOW,TUBE 1/4FNPTX3/

SEE NOTE 2

PAINT OPTIONS	
PART #	COLOR
42805	RED
43198	BLUE
42807	BLACK
42808	ASH



421 SAC VERSION ONLY



SPACER ASSEMBLY VIEW

NOTES:

1. DRILL AND TAP PORT #2 WITH 1/4" NPT. [421 VALVE]
2. SEE DRAWING 1078193 FOR ROD LENGTH/MATERIAL OPTIONS.
3. 421 MODEL IS SHOWN ON THIS DRAWING SHEET. SEE SHEET 4, 5, & 6 FOR 424-428 MODELS.
4. STANDARD 421 MODEL SHOWN.

POWERED OPEN VERSION

421 FLOAT VALVES ONLY ON THIS PAGE

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EC (ROHS2) & REGULATION (EC) 1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm] INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M - 2009 UNLESS OTHERWISE SPECIFIED.
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES: ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN SM	04/18/11
APPROVED	
CHECKED	

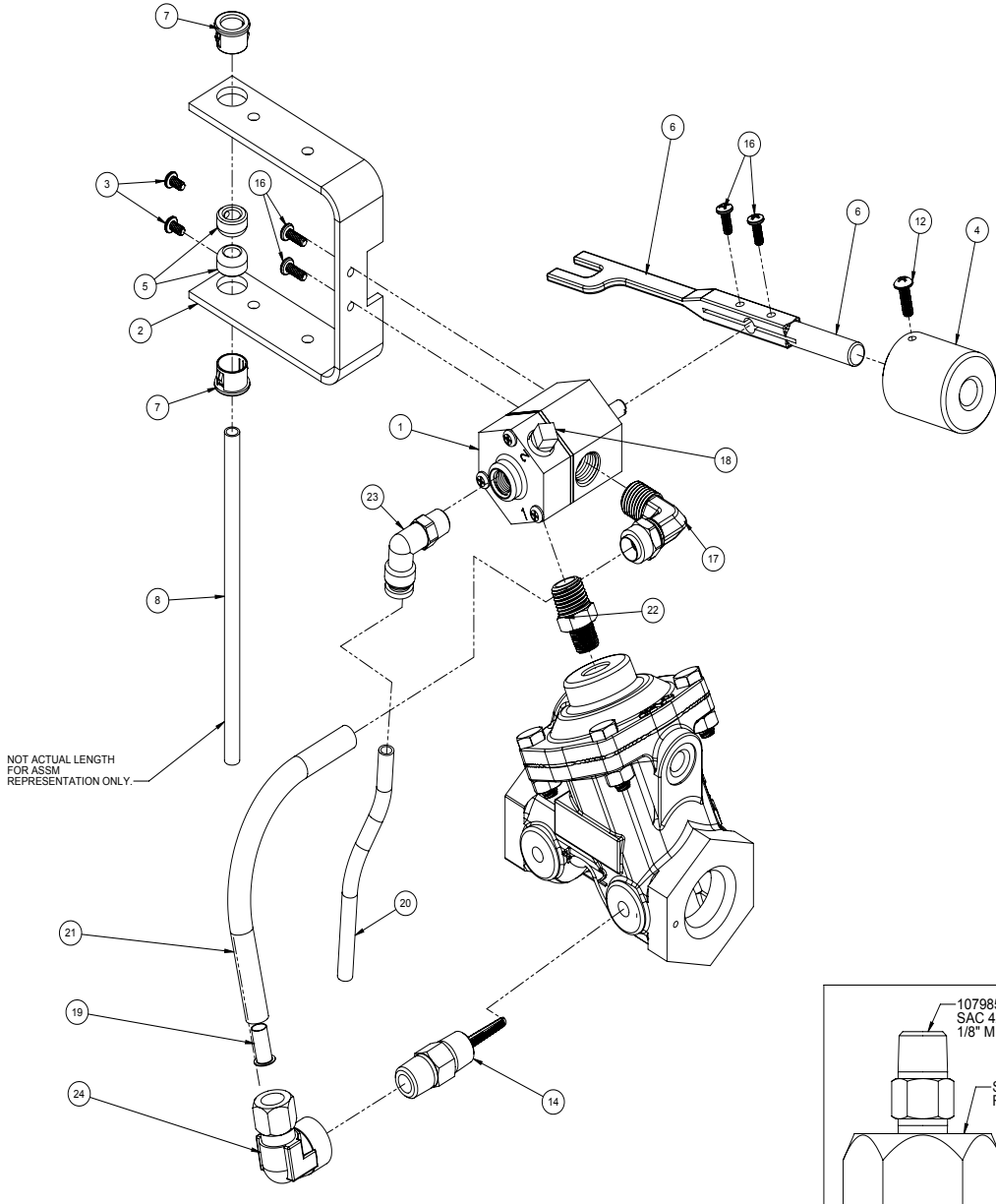
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 420 DAIPHRAGM FLOAT OPERATED VALVES

SIZE B | DWG NO. BR1078190 | REV J

SCALE 1:1 | SHEET 2 OF 7

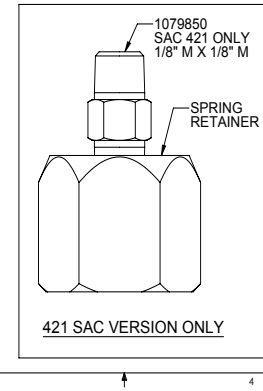
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR NOTES		



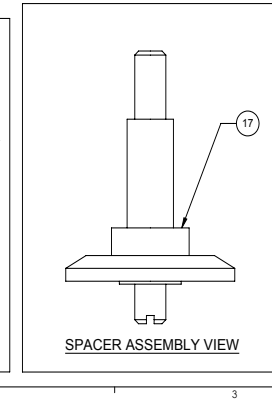
SEE NOTE-2

ITEM NO.	QTY. (421)	PART NUMBER	DESCRIPTION
1	1	1073992	PILOT CNTL ASSY, 348, -AE
2	1	1074012	BRACKET, 348
3	2	1072370	RD. HD. MACH. SCREW, (6-32 X 1/4)
4	1	1074014	COUNTERWEIGHT, STD
5	2	1074017	CENTERING COLLAR, BRASS
6	1	1074034	LEVER, 348
7	2	1074016	BUSHING
8	1	1074023	FLOAT ROD
9	1	1074022	STUD, THRD, #12-24 UNC-2A, SS
10	1	16856-8	GREASE, LUBRIPLATE, FGL-2
11	1	1073996	FLOAT,SAND,5"
12	1	1072375	RD. HD. MACH SCREW, (8-32 X 1/2)
13	1	1074002	STRAINER
14	1	1074004	STRAINER ASSY
15	1	1074127	SPACER, BRASS
16	4	1072371	SCREW, PHLP, PN HD
17	1	1074037	FITTING, ELBOW, BRASS
18	1	1071903	PLUG, PIPE
19	1	10332	FITTING,INSERT,3/8
20	1	1071936	TUBING, POLY 1/4" O.D. X .035
21	1	1071940	FITTING,TUBE,.37 OD
22	1	1074038	FITTING, NIPPLE,1/4X1/8 REDUCR
23	1	1078765	FITTING, ELBOW,TUBE,1/8MNPT X
24	1	1074007	FITTING, ELBOW,TUBE 1/4FNPTX3/

PAINT OPTIONS	
PART #	COLOR
42805	RED
43198	BLUE
42807	BLACK
42808	ASH



421 SAC VERSION ONLY



SPACER ASSEMBLY VIEW

NOTES:

1. DRILL AND TAP PORT #2 WITH 1/4" NPT. [421 VALVE]
2. SEE DRAWING 1078193 FOR ROD LENGTH/MATERIAL OPTIONS.
3. 421 MODEL IS SHOWN ON THIS DRAWING SHEET. SEE SHEET 4, 5, & 6 FOR 424-428 MODELS.
4. STANDARD 421 MODEL SHOWN.

STANDARD VERSION
421 FLOAT VALVES ONLY ON THIS PAGE

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009 UNLESS OTHERWISE SPECIFIED.
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES: ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION		
APPROVALS	DATE	
DRAWN	SM	04/18/11
APPROVED		
CHECKED		

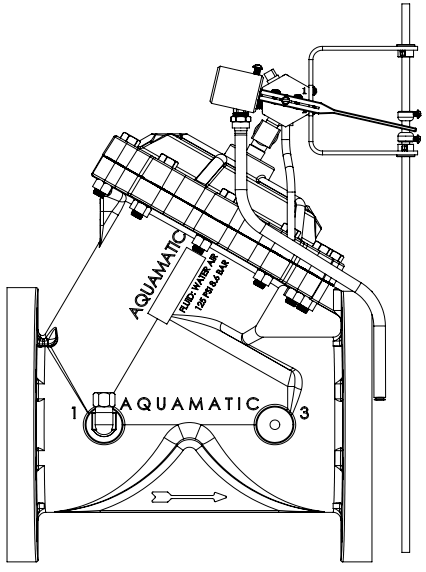
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 420 DAIPHRAGM FLOAT OPERATED VALVES

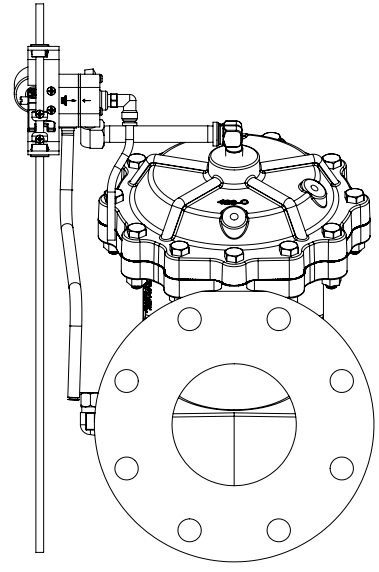
SIZE	DWG NO.	REV
B	BR1078190	J

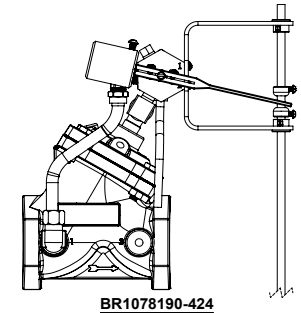
SCALE 1:1 | SHEET 3 OF 7

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR NOTES		

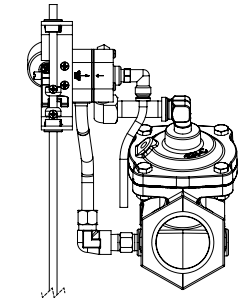


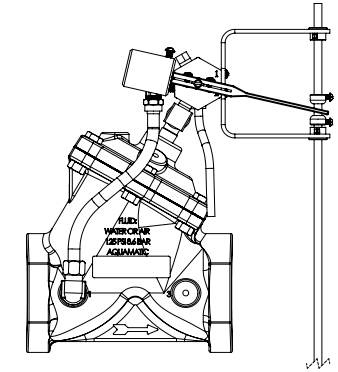
BR1078190-428

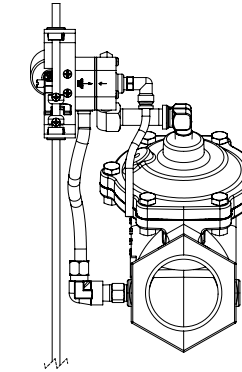




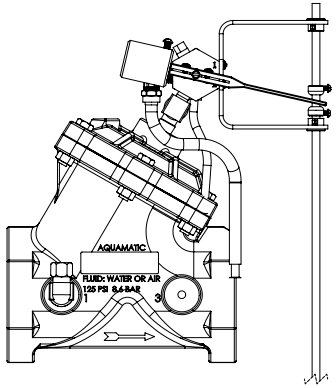
BR1078190-424



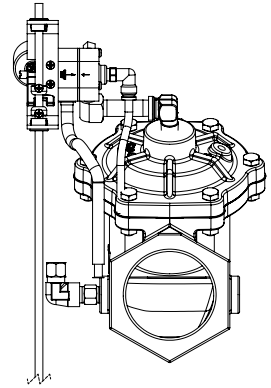


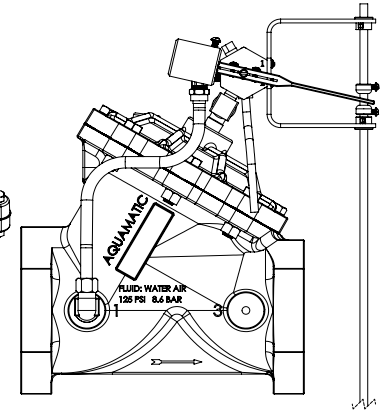


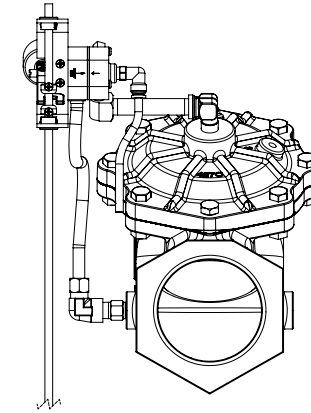
BR1078190-425



BR1078190-426







BR1078190-427

424 - 428 SRANDARD VERSIONS SHOWN

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]. INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009 UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
UNLESS NOTED ±"
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION

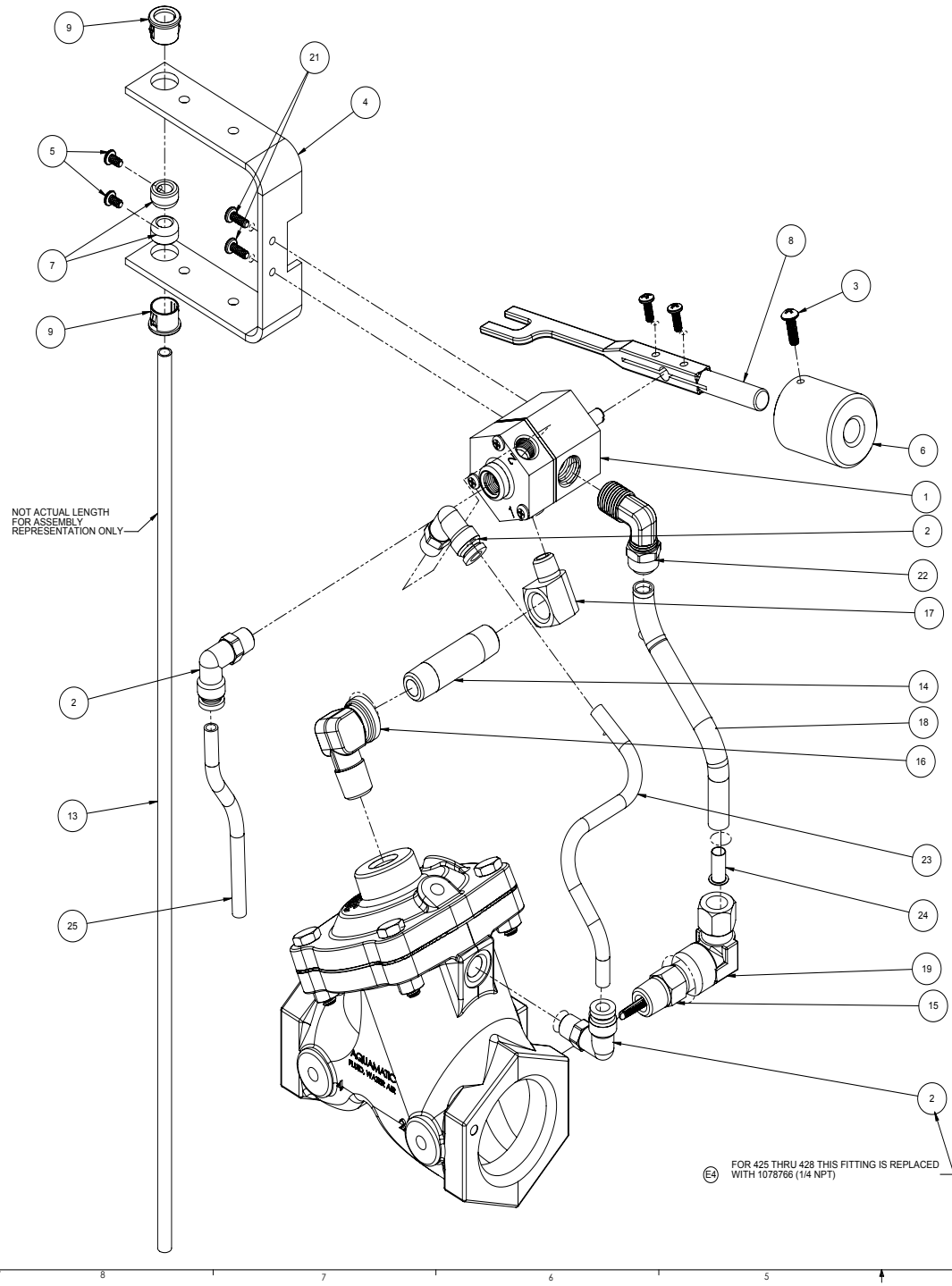
	APPROVALS	DATE
DRAWN	SM	04/18/11
APPROVED		
CHECKED		

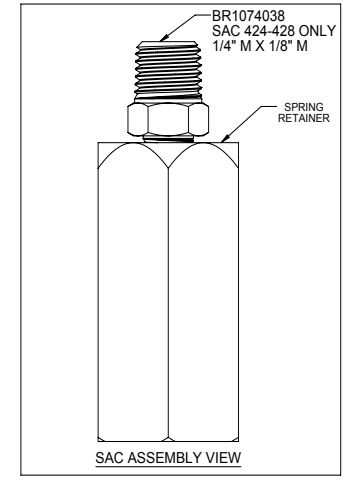
AQ Matic Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 420 DAIPHRAGM FLOAT OPERATED VALVES

SIZE	DWG NO.	REV
B	BR1078190	J

SCALE 1:1 SHEET 4 OF 7





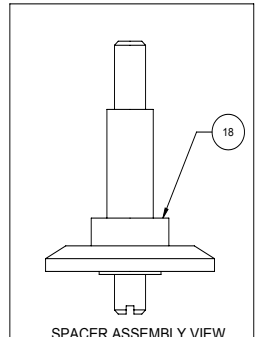
SAC ASSEMBLY VIEW

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR NOTES		

ITEM NO.	QTY. (424-428) POWERED OPEN	PART NUMBER	DESCRIPTION	
1	1	1073992	PILOT CNTL ASSY, 348, -AE	
2	3	1078765	FITTING, ELBOW,TUBE,1/8MNPT X	
3	1	1072375	RD. HD. MACH SCREW, (8-32 X 1/2)	
4	1	1074012	BRACKET, 348,	
5	2	1072370	RD. HD. MACH. SCREW, (6-32 X 1/4)	
6	1	1074014	COUNTERWEIGHT, STD	
7	2	1074017	CENTERING COLLAR, BRASS	
8	1	1074034	LEVER, 348	
9	2	1074016	BUSHING,	
10	1	1074022	STUD, THRD, #12-24 UNC-2A, SS	
11	1	16856-8	GREASE, LUBRIPLATE, FGL-2	
12	1	1073996	FLOAT,SAND,5"	
13	1	1074023	FLOAT ROD,	
14	1	1071905	FITTING, NIPPLE 1/4NPTX2,BRASS	424
		1071906	PIPE NIPPLE 1/4" X 3"	425,426
		1071907	PIPE NIPPLE 1/4" X 4"	427,428
15	1	1074004	STRAINER ASSY	
16	1	1074041	FITTING, ELBOW,1/4 MNPT X 1/4F	
17	1	1074040	FITTING, ELBOW,REDUCER,BRS	
18	1	BR1074002	STRAINER,	
19	1	1074007	FITTING, ELBOW,TUBE 1/4FNPTX3/	
20	1	1074230	SPACER, BRASS	424
		1074305		425
		1074385		426
		1074484		427
		1074567		428
21	4	1072371	SCREW, PHLP, PN HD	
22	1	1074037	FITTING, ELBOW, BRASS	
23	1	1071936	TUBING, POLY 1/4" O.D. X .035	
24	1	10332	FITTING,INSERT,3/8	
25	1	1071936	TUBING, POLY 1/4" O.D. X .035	

SEE NOTE-2

PAINT OPTIONS	
PART #	COLOR
42805	RED
43198	BLUE
42807	BLACK
42808	ASH



SPACER ASSEMBLY VIEW

NOTES:

1. DRILL AND TAP PORT #1 WITH 1/4" NPT. [424-428 VALVES]
2. SEE DRAWING 1078193 FOR ROD LENGTH / MATERIAL OPTIONS.
3. POWERED OPEN 424 MODEL SHOWN.

(E4) FOR 425 THRU 428 THIS FITTING IS REPLACED WITH 1078766 (1/4 NPT)

POWERED OPEN VERSION
FOR 424 THRU 428
VALVES W/FLOAT

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED.
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3 PLACE .XXX: ± .005 [0.13]

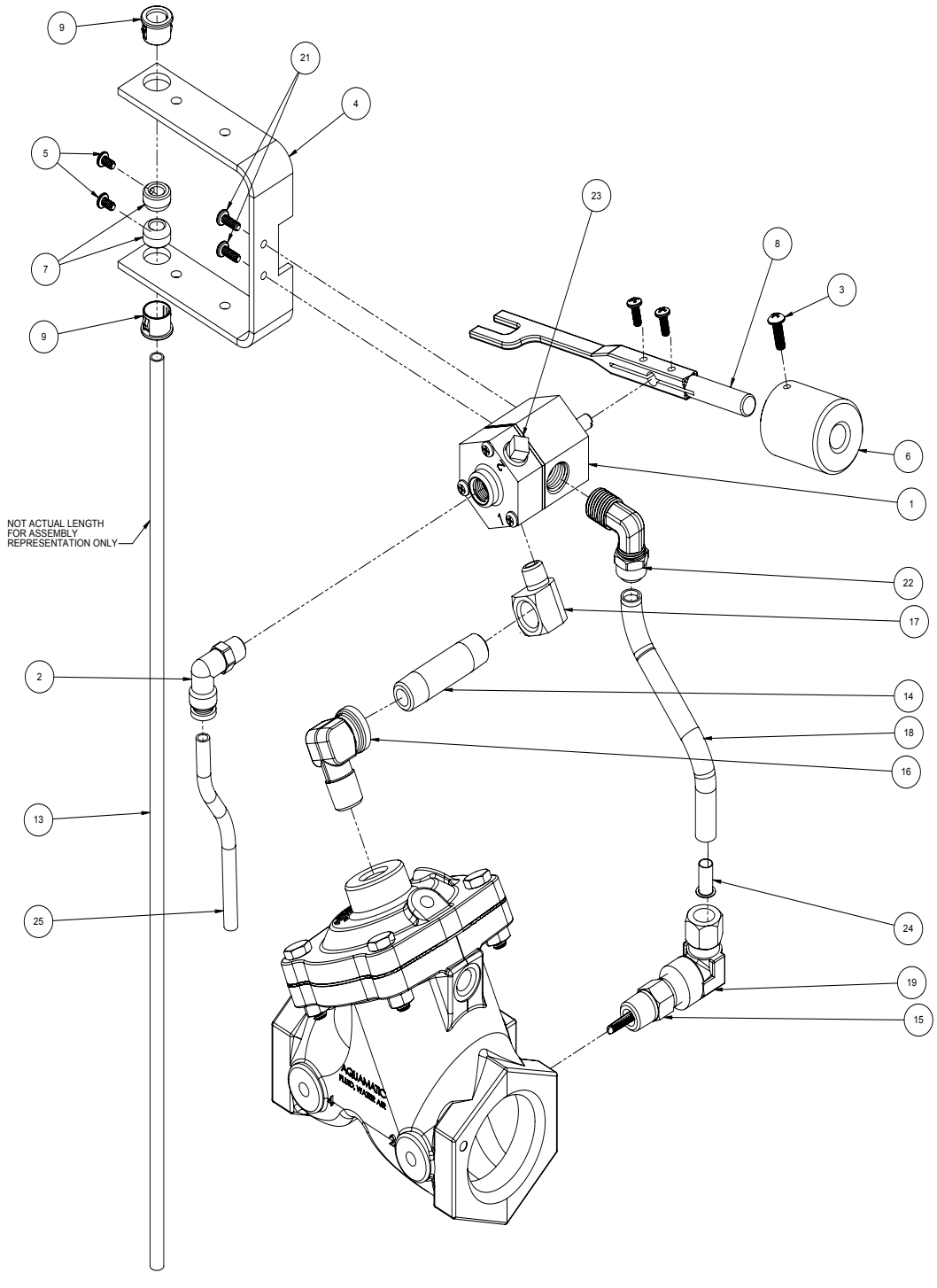
THIRD ANGLE PROJECTION		
APPROVALS	DATE	
DRAWN SM	04/18/11	
APPROVED		
CHECKED		

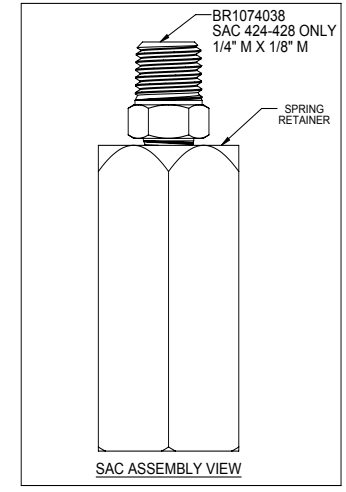
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 420 DAIPHRAGM
FLOAT OPERATED VALVES

SIZE	DWG NO.	REV
B	BR1078190	J

SCALE 1:1 SHEET 5 OF 7

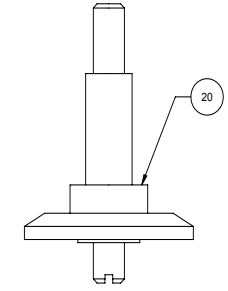




SAC ASSEMBLY VIEW

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR NOTES		

ITEM NO.	QTY. (424-428)	PART NUMBER	DESCRIPTION	
1	1	1073992	PILOT CNTL ASSY, 348, -AE	
2	1	1078765	FITTING, ELBOW,TUBE,1/8MNPT X	
3	1	1072375	RD. HD. MACH SCREW, (8-32 X 1/2)	
4	1	1074012	BRACKET, 348	
5	2	1072370	RD. HD. MACH. SCREW, (6-32 X 1/4)	
6	1	1074014	COUNTERWEIGHT, STD	
7	2	1074017	CENTERING COLLAR, BRASS	
8	1	1074034	LEVER, 348	
9	2	1074016	BUSHING	
10	1	1074022	STUD, THRD, #12-24 UNC-2A, SS	
11	1	16856-8	GREASE, LUBRIPLATE, FGL-2	
12	1	1073996	FLOAT,SAND,5"	
SEE NOTE-2 → 13	1	1074023	FLOAT ROD	
14	1	1071905	FITTING, NIPPLE, 1/4NPTX2,BRASS	424
		1071906	PIPE NIPPLE 1/4" X 3"	425,426
		1071907	PIPE NIPPLE 1/4" X 4"	427,428
15	1	1074004	STRAINER ASSY	
16	1	1074041	FITTING, ELBOW,1/4 MNPT X 1/4F	
17	1	1074040	FITTING, ELBOW,REDUCER,BRS	
18	1	1071940	FITTING,TUBE,.37 OD	
19	1	1074007	FITTING, ELBOW,TUBE 1/4FNPTX3/	
20	1	1074230	SPACER, BRASS	424
		1074305		425
		1074385		426
		1074484		427
		1074567		428
21	4	1072371	SCREW, PHLP, PN HD	
22	1	1074037	FITTING, ELBOW, BRASS	
23	1	1071903	PLUG,PIPE,1/8" MNPT,BRS,SQ HD	
24	1	10332	FITTING,INSERT,3/8	
25	1	1071936	TUBING, POLY 1/4" O.D. X .035	



SPACER ASSEMBLY VIEW

PAINT OPTIONS	
PART #	COLOR
42805	RED
43198	BLUE
42807	BLACK
42808	ASH

NOTES:

1. DRILL AND TAP PORT #1 WITH 1/4" NPT. [424-428 VALVES]
2. SEE DRAWING 1078193 FOR ROD LENGTH/MATERIAL OPTIONS.
3. STANDARD VERSION 424 MODEL SHOWN.

STANDARD VERSION
FOR 424 THRU 428
VALVES W/FLOAT

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm] INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009 UNLESS OTHERWISE SPECIFIED.
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION

	APPROVALS	DATE
DRAWN	SM	04/18/11
APPROVED		
CHECKED		

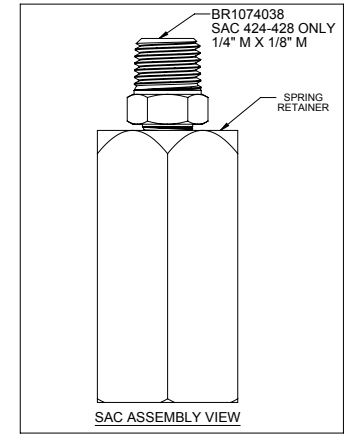
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 420 DAIPHRAGM
FLOAT OPERATED VALVES

SIZE	DWG NO.	REV
B	BR1078190	J

SCALE 1:1 SHEET 6 OF 7

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR NOTES		



SAC ASSEMBLY VIEW

ITEM NO.	QTY. (424-428) CLOSED IF LOW	PART NUMBER	DESCRIPTION	
1	1	1073992	PILOT CNTL ASSY, 348, -AE	
2	1	1078765	FITTING, ELBOW,TUBE,1/8MNPT X	
3	1	1072375	RD. HD. MACH SCREW, (8-32 X 1/2)	
4	1	1074012	BRACKET, 348	
5	2	1072370	RD. HD. MACH. SCREW, (6-32 X 1/4)	
6	1	1074014	COUNTERWEIGHT, STD	
7	2	1074017	CENTERING COLLAR, BRASS	
8	1	1074034	LEVER, 348	
9	2	1074016	BUSHING	
10	1	1074022	STUD, THRD, #12-24 UNC-2A, SS	
11	1	16856-8	GREASE, LUBRIPLATE, FGL-2	
12	1	1073996	FLOAT,SAND,5"	
SEE NOTE-2 → 13	1	1074023	FLOAT ROD	
14	1	1071905	FITTING, NIPPLE, 1/4NPTX2,BRASS	424
		1071906	PIPE NIPPLE 1/4" X 3"	425,426
		1071907	PIPE NIPPLE 1/4" X 4"	427,428
15	1	1074004	STRAINER ASSY	
16	1	1074041	FITTING, ELBOW,1/4 MNPT X 1/4F	
17	1	1074040	FITTING, ELBOW,REDUCER,BRS	
18	1	1071940	FITTING,TUBE,.37 OD	
19	1	1074007	FITTING, ELBOW,TUBE 1/4FNPTX3/	
20	1	1074230	SPACER, BRASS	424
		1074305		425
		1074385		426
		1074484		427
		1074567		428
21	4	1072371	SCREW, PHLP, PN HD	
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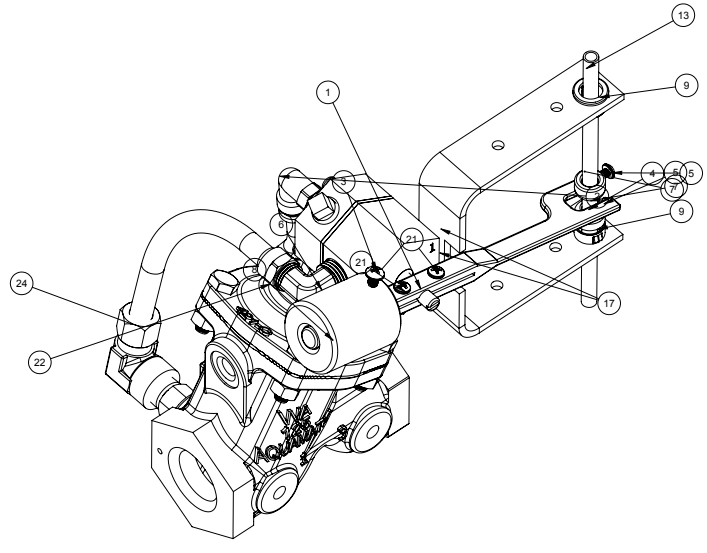
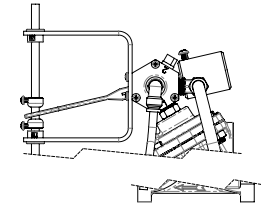
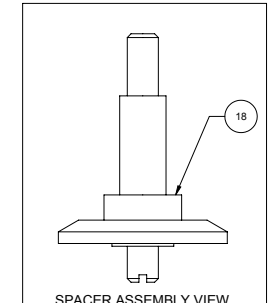
23	1	1071903	PLUG,PIPE,1/8" MNPT,BRS,SQ HD	
24	1	10332	FITTING,INSERT,3/8	
25	1	1071936	TUBING, POLY 1/4" O.D. X .035	




SIDE VIEW
SCALE- 1:2



SPACER ASSEMBLY VIEW

NOTES:

1. DRILL AND TAP PORT #2 WITH 1/4" NPT. [424-428 VALVES]
2. SEE DRAWING 1078193 FOR ROD LENGTH/MATERIAL OPTIONS.
3. STANDARD VERSION 425 MODEL SHOWN.

PAINT OPTIONS	
PART #	COLOR
42805	RED
43198	BLUE
42807	BLACK
42808	ASH

STANDARD VERSION
CLOSED IF- LOW,
CLOSED BY-PILOT PRESSURE,
OPEN BY- VENT

FOR 424 THRU 428
VALVES W/FLOAT

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION		
APPROVALS	DATE	
DRAWN SM	04/18/11	
APPROVED		
CHECKED		

PENTAIR Pentair Residential Filtration, LLC

TITLE: CATALOG SHEET, 420 DAIPHRAGM FLOAT OPERATED VALVES

SIZE D | DWG NO. BR1078190 | REV H

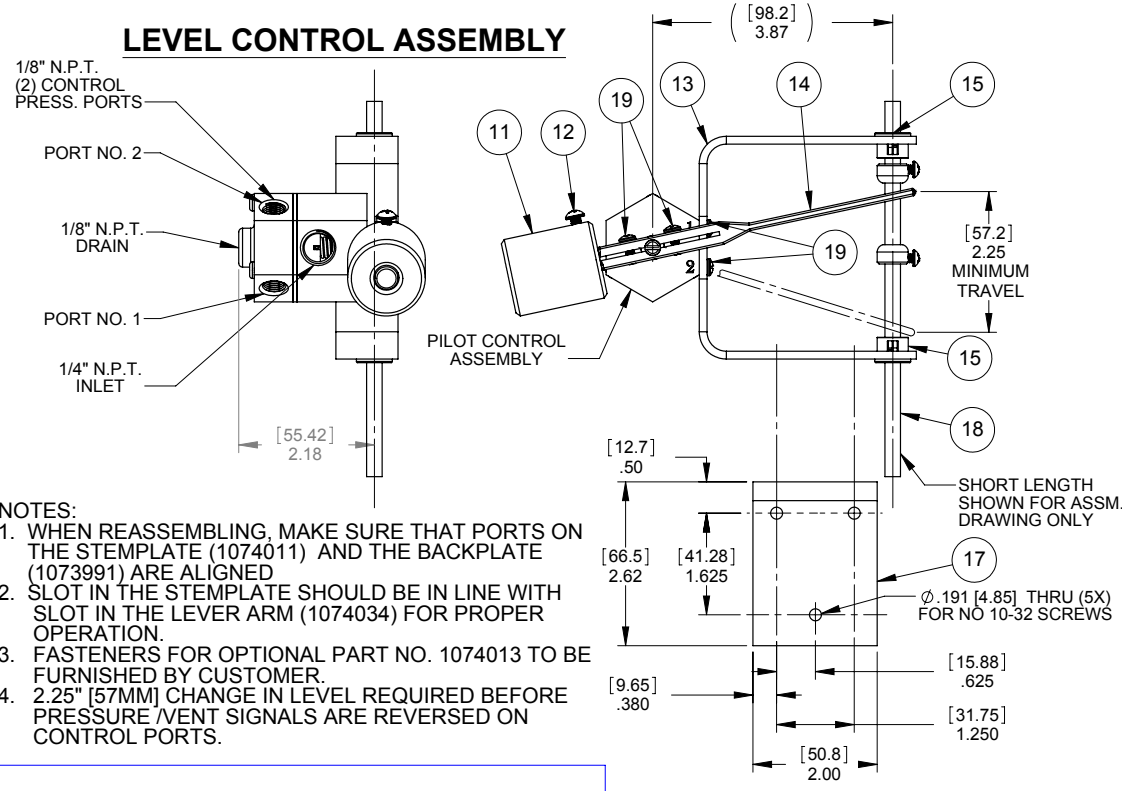
SCALE 1:1 | SHEET 7 OF 7

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
PILOT CONTROL REPAIR PARTS INCLUDES ITEM NO. 3 THRU 9	1074019 (348-IAB)

	PORT 1	PORT 2
FLOAT UP	PRESSURED	VENTED
FLOAT DOWN	VENTED	PRESSURED

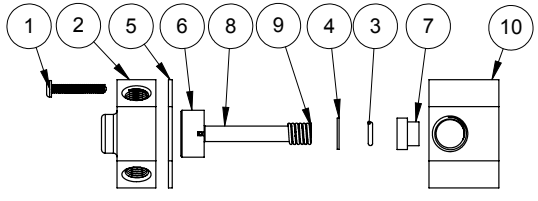
	LEVEL CONTROL ASSEMBLY	FLOAT ROD ASSEMBLY
F1 G1	1074042 (348LC)	1074020 (348-K) (BRASS - 36")
	1074044 (348LCK)	1074026 (348-KK) (BRASS - 54")
	1074043 (348LCB)	1074028 (348-KL) (BR WELL - 36")
	1074047 (348LCX)	NO FLOAT OR ROD INCL.

LEVEL CONTROL ASSEMBLY



NOTES:
1. WHEN REASSEMBLING, MAKE SURE THAT PORTS ON THE STEMPLATE (1074011) AND THE BACKPLATE (1073991) ARE ALIGNED
2. SLOT IN THE STEMPLATE SHOULD BE IN LINE WITH SLOT IN THE LEVER ARM (1074034) FOR PROPER OPERATION.
3. FASTENERS FOR OPTIONAL PART NO. 1074013 TO BE FURNISHED BY CUSTOMER.
4. 2.25" [57MM] CHANGE IN LEVEL REQUIRED BEFORE PRESSURE /VENT SIGNALS ARE REVERSED ON CONTROL PORTS.

PILOT CONTROL ASSEMBLY - (1073992)



REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	100843	E	REDRAWN IN SOLIDWORKS - WAS: DWG #1078194 (FORM # IS NOW THE DWG NUMBER)	7-3-12	TJM
	103972	F	1-REM'D: 1074046, 2-REM'D: ITEM# 18-1074030, 3-REM'D: ITEM# 18-1074027, 4-REM'D: PG-3,(OPTIONAL) 36" & 54" SS FLOAT ROD ASSY, 5-UPDATED TITLE BLOCK	7-3-12	TJM
	104611	G	1-REM'D: 1074045, 2-REM'D: ITEM# 18-BR1074029, 3-REM'D: PG-3 (OPTIONAL) 36" PVC FLOAT ROD ASS'Y	12MAY15	TJM
	1001	H	AQ Matic update & verified part numbers	27JAN17	MGS

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	3	1075759	SCREW, PAN HEAD, 6-32 X .88"
2	1	1073991	BACKPLATE, 348, BRASS
3	1	1071667	O-RING,2-010,NITRILE
4	1	1074074	WASHER, 302,SS
5	1	1084171	GASKET, BACKPLATE,48,NITRILE
6	1	1074845	STEMPLATE, 48,ALPHA,TEFLON
7	1	1073994	BONNET SLEEVE,
8	1	1074010	STEM SHAFT, ASSY, SERIES 348
9	1	1074822	SPRING, COMPRESSION
10	1	1074009	BONNET, 348, BRASS

LEVEL CONTROL ASSEMBLY

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	
11	1	SEE FLOAT ASSY'S	COUNTERWEIGHT, STD	
12	1	1072375	RD. HD. MACH SCREW, (8-32 X 1/2)	
13	1	1074012	BRACKET, 348,	
14	1	1074034	LEVER, 348	
15	2	1074016	BUSHING,	
17	1	1074013	MT'G BRACKET, (OPTIONAL)	
18	1	1074020	FLOAT ROD ASS'Y (SEE PAGES 2-4 FOR PARTS LIST)	BRASS (36")
		1074026		BRASS (54")
		1074028		BRASS (36" - BR WELL)
		1239443		BRASS (54" - BR WELL)
19	4	1072371	SCREW, PHLP, PN HD	

FOR FLOAT ROD ASSEMBLY OPTIONS, SEE ATTACHED SHEETS

SEIRES 348 LEVEL CONTROL FLOAT OPERATED VALVE

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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UNLESS OTHERWISE SPECIFIED:
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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

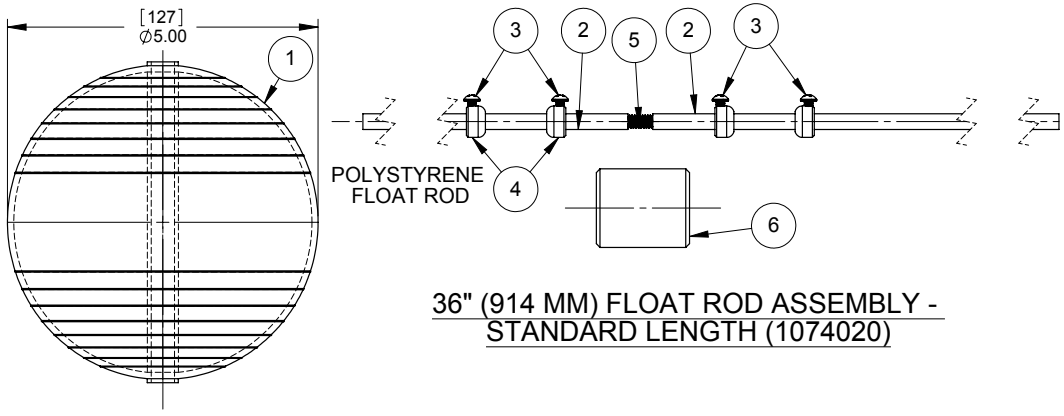
APPROVALS	DATE
DRAWN NE	07-02-12
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
FLOAT OPERATED LEVEL CONTROL, V420 FLOAT ROD ASSEMBLIES

SIZE	DWG NO.	REV
B	BR1078193	H

SCALE 1:2 SHEET 1 OF 3



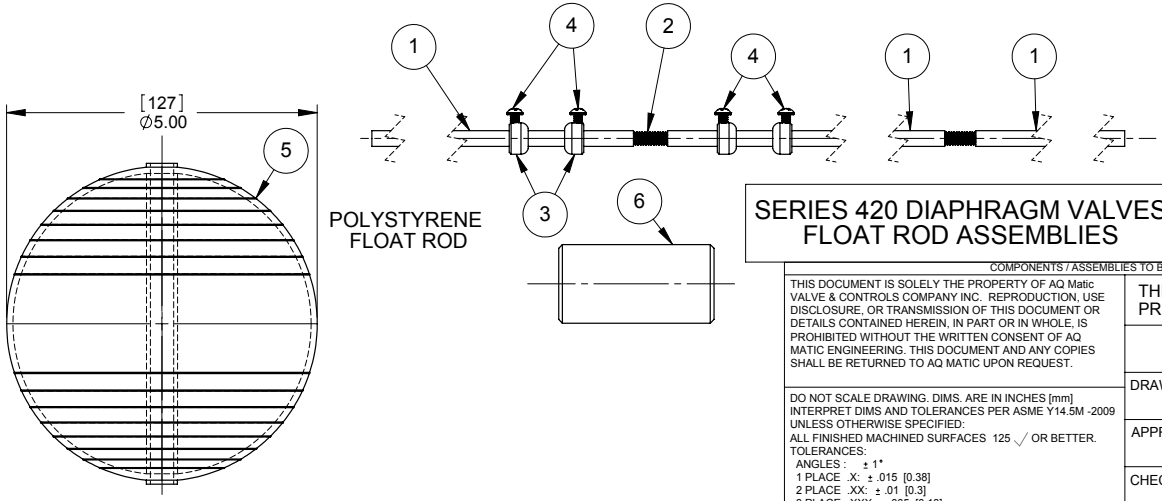
36" (914 MM) FLOAT ROD ASSEMBLY - STANDARD LENGTH (1074020)

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES.		

STANDARD 36" FLOAT ROD ASSEMBLY 1074020

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	1073996	FLOAT,SAND,5"
2	2	1074023	TUBE, FLOAT ROD,BRASS 18" LG
3	4	1072370	RD. HD. MACH. SCREW, (6-32 X 1/4)
4	4	1074017	CENTERING COLLAR, BRASS
5	1	1074022	STUD, THRD, #12-24 UNC-2A, SS
6	1	1074014	COUNTERWEIGHT, STD

G3



SERIES 420 DIAPHRAGM VALVES
FLOAT ROD ASSEMBLIES

OPTIONAL 54" FLOAT ROD ASSEMBLY 1074026

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	3	1074023	TUBE, FLOAT ROD,BRASS 18" LG
2	2	1074022	STUD, THRD, #12-24 UNC-2A, SS
3	4	1074017	CENTERING COLLAR, BRASS
4	4	1072370	RD. HD. MACH. SCREW, (6-32 X 1/4)
5	1	1073996	FLOAT,SAND,5"
6	1	1074015	COUNTERWEIGHT, SPECIAL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	07-02-12
APPROVED	
CHECKED	

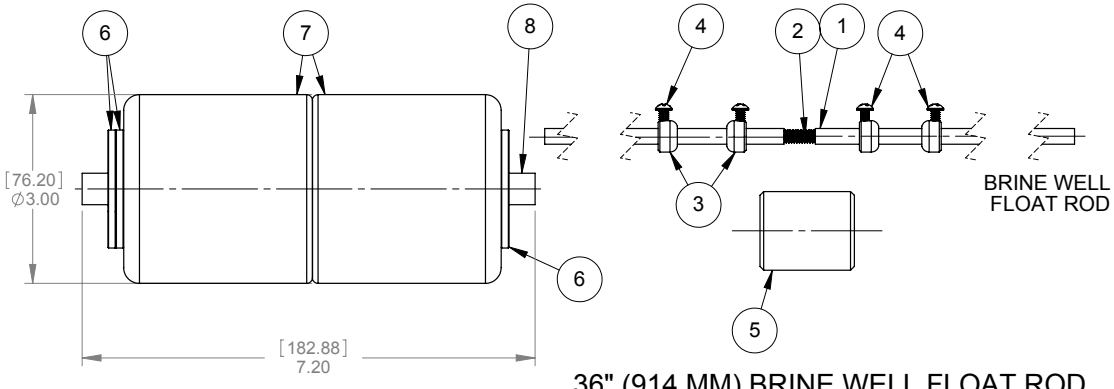
AQ Matic
Valve & Controls Company Inc.

TITLE
FLOAT OPERATED LEVEL CONTROL,
V420 FLOAT ROD ASSEMBLIES

SIZE	DWG NO.	REV
B	BR1078193	H

SCALE 1:2 SHEET 2 OF 3

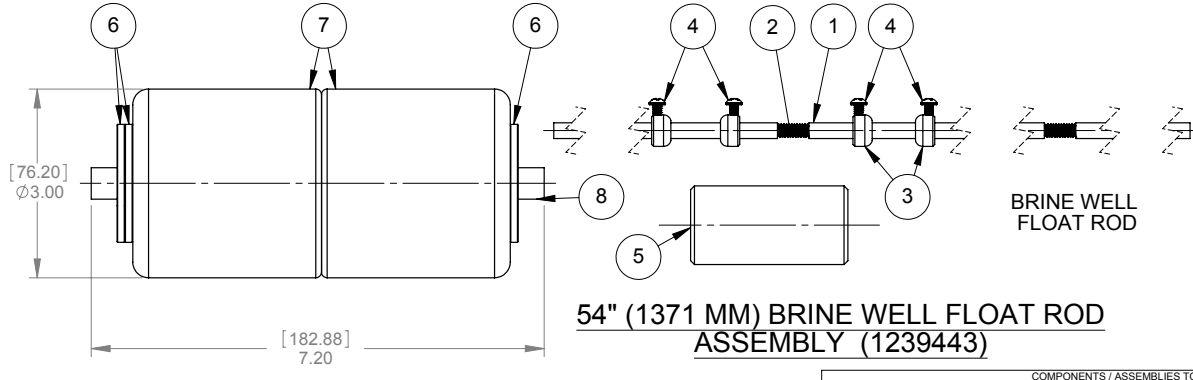
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES.		



36" (914 MM) BRINE WELL FLOAT ROD ASSEMBLY - STANDARD LENGTH (1074028)

OPTIONAL 36" BRINE WELL FLOAT ROD ASSEMBLY 1074028

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	2	1074023	TUBE, FLOAT ROD,BRASS 18" LG
2	1	1074022	STUD, THRD, #12-24 UNC-2A, SS
3	4	1074017	CENTERING COLLAR, BRASS
4	4	1072370	RD. HD. MACH. SCREW, (6-32 X 1/4)
5	1	1074014	COUNTERWEIGHT, STD
6	3	1074032	WIEGHT, FLOAT, BRASS
7	2	1074033	FLOAT,BRINE WELL
8	1	1074036	TUBE,.50,BRASS



54" (1371 MM) BRINE WELL FLOAT ROD ASSEMBLY (1239443)

OPTIONAL 54" BRINE WELL FLOAT ROD ASSEMBLY 1239443

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	3	1074023	TUBE, FLOAT ROD,BRASS 18" LG
2	2	1074022	STUD, THRD, #12-24 UNC-2A, SS
3	4	1074017	CENTERING COLLAR, BRASS
4	4	1072370	RD. HD. MACH. SCREW, (6-32 X 1/4)
5	1	1074015	COUNTERWEIGHT, SPECIAL
6	3	1074032	WIEGHT, FLOAT, BRASS
7	2	1074033	FLOAT,BRINE WELL
8	1	1074036	TUBE,.50,BRASS

SERIES 420 DIAPHRAGM VALVES
FLOAT ROD ASSEMBLIES

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	07-02-12
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
FLOAT OPERATED LEVEL CONTROL,
V420 FLOAT ROD ASSEMBLIES

SIZE	DWG NO.	REV
B	BR1078193	H

SCALE 1:2 SHEET 3 OF 3

VAV SERIES HIGH CYCLE VALVE MASTER CHART

*** FILL IN PROPER DESIGNATIONS TO DETERMINE PRODUCT NUMBER:** **V A V _ - 0 _ _ - 0 _ 0 0**

PIPE SIZE (B thru K std)

B = 3/4" (20mm)	G = 2" (50mm - VAV6)
C = 1" (25mm)	H = 2-1/2" (63mm)
D = 1-1/4" (32mm)	J = 3" (75 or 80mm)
E = 1-1/2" (40mm)	K = 4" (100mm)
F = 2" (50mm - V425)	

BODY SIZE (ref only)

1 = 1"	7 = 3"
4 = 1-1/2"	8 = 4"
5 = 2"	
6 = 2-1/2"	

END CONNECTIONS (0 std [Connections also apply to body & cap bosses that are drilled & tapped])

0 = Female N.P.T.	3 = Flanged, A.S.T.M.
1 = Female B.S.P.T. (Tapered)	4 = Flanged, B.S.P.T.

BODY & CAP MATERIAL (0 std)

0 = Cast Iron

VALVE OPTIONS (00 std)

00 = NO	02 = NO, SAC	32 = NC, SAC
01 = NO, SAO	30 = NC	SX = Special Valve **

SEAL MATERIALS (9 std)

OPT.	OPERATING DIAPHRAGM	SEALING DISK	DYNAMIC SEALS	STATIC SEALS	KIT SERIES	MAX TEMP
9	Buna-N	Hycar	Aflas	Fluoroelast.	RA	150°F
C	Fluoroelast	Hycar	Aflas	Fluoroelast.	RAHT	250°F

INTERNAL PARTS (0 std)

0 = Brass and Stainless Steel

DRILL & TAP BOSSES (0 std [1/4" NPT std for all sizes])

0 = None	3 = Boss #3	6 = Bosses #1,2
1 = Boss #1	4 = Boss #4	7 = Bosses #1,3
2 = Boss #2	5 = Bosses #1,2,3,4	8 = Bosses #2,4

00 (unless Special Drawing number is assigned)

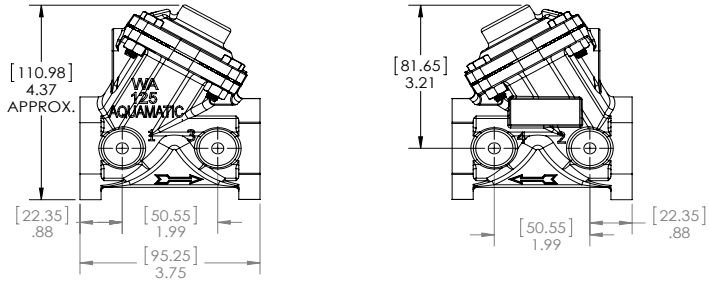
* To create a valve number replace each "_" with the proper number or letter for the feature you desire. For example, a 3/4" NPT Cast Iron Valve Model VAV1 with Normally Closed and Spring Assist Closed Options is designated as a VAVB-0032-90000.

** A special valve will have a custom drawing number (_ _ _ _ _ _ _)
and the item number format is (VAV?-??SX-_ _ _ _ _)
where the last 5 numbers (Far Right) are the last five digits of the drawing number.

REV.	ECO. NO.	DESCRIPTION	BY/DATE
G	32935	**Added seal option "C"** **Removed seal option "8"**	TMS 15-Jun-11

16605 West Victor Rd. New Berlin, WI 53151
P: 262-326-0100 | www.aq-matic.com | techsupport@aq-matic.com

42989 REV F MAY17

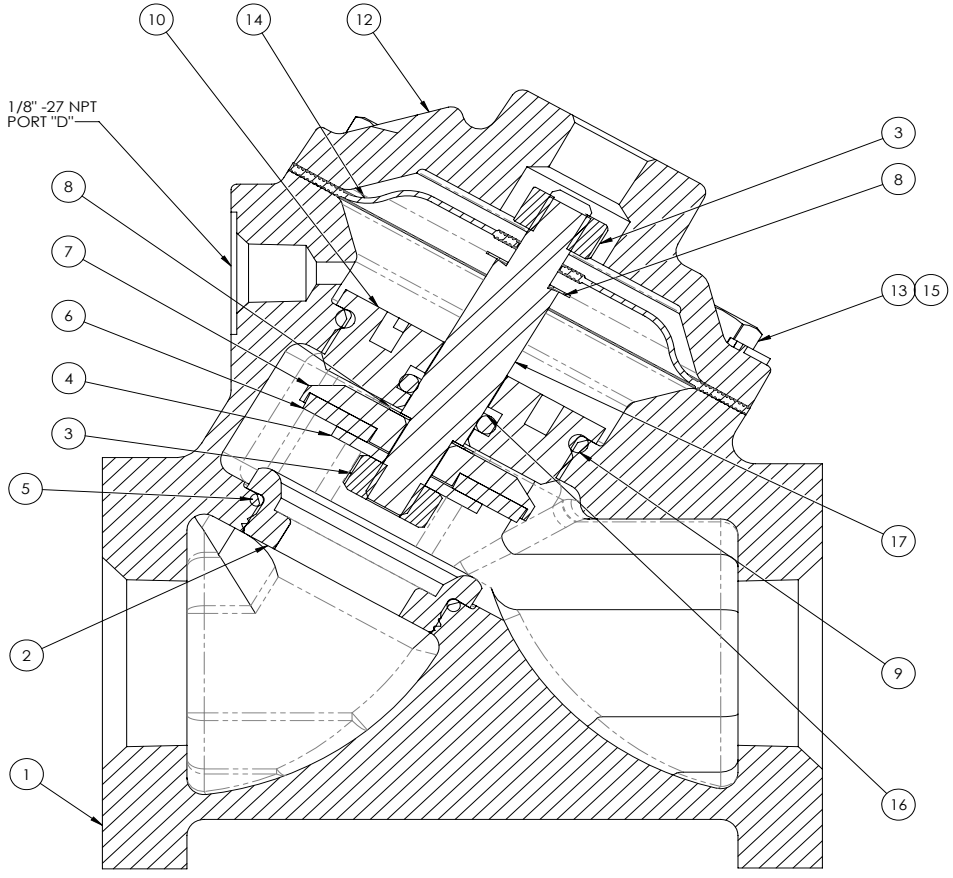


REPAIR PARTS KITS		
DESCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3(2), 5, 6, 8(2), 9, 14, 16	1070106 (AV1-RA) INCLUDES DISC 1074144 (421-JH) DIAPHRAGM 1074119	1070498 (AV-RAHT) INCLUDES DISC 1074145 (421-JT) DIAPHRAGM 1074120
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 11(2), 17	1070118 (421-RF)	
SEAT (ITEM NO. 2)	1074158 (421-MO)	

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SEAT (ITEM #2) (TOOL NOT SHOWN)	1074161 (421-MT)
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #10) (TOOL NOT SHOWN)	1074124 (421-GT)

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	104236	K	REDRAWN IN SOLIDWORKS	2/6/15	ANH
	1001	M	AQ Matic update & verifed part numbers	20JAN17	MGS

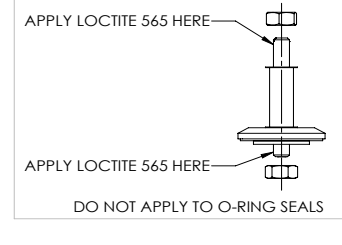
NO.	DESCRIPTION			STD	PART NO.	QTY.
1	BODY	CAST IRON	3/4" NPT	*	1074085 (421-A3)	1
			1" NPT	*	1074088 (421-A4)	
2	SEAT (REQ'S ASSY TOOL)		BRASS	*	1074158 (421-M0)	1
3	HEX NUT (1/4-28)		SS	*	1263852	2
4	DISC PLATE		SS	*	1074149	1
5	O-RING		FKM	*	1071791 (ORV-024)	1
6	DISC	HYCAR		*	1074144 (421-JH)	1
7	DISC HOLDER		SS	*	1074128	1
8	GASKET		COPPER	*	1073948 (200-GG)	2
9	O-RING		FKM	*	1071803 (ORV-125)	1
10	SHAFT GUIDE (REQ'S ASSY TOOL)		SS	*	1074123	1
11	DIAPHRAGM PLATE		SS	*	43942	2
12	CAP		CAST IRON	*	1074093 (421-C)	1
13	HEX SCREW 1/4"-20		PLATED STEEL	*	1072398 (SCZ-0004)	4
14	DIAPHRAGM		BUNA N	*	1074119	1
			FKM		1074120	
15	HEX NUT 1/4"-20		PLATED STEEL	*	1071656 (NUZ-0008)	4
16	O-RING		AFLAS	*	1071661 (ORA-110)	1
17	SHAFT (NORMALLY OPEN)		SS	*	1074150 (421-L)	1



1072459 (VAVB-0000-90000) (3/4" NPT)
1072464 (VAVC-0000-90000) (1" NPT)
NORMALLY OPEN (STANDARD)

NOTE:

1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS



SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

	APPROVALS	DATE
DRAWN	ANH	2/5/15
APPROVED		
CHECKED		

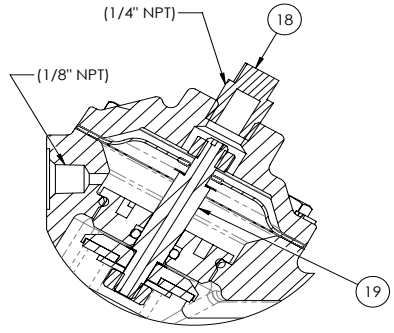
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, VAV1, 3/4" & 1" NPT OR BSPT

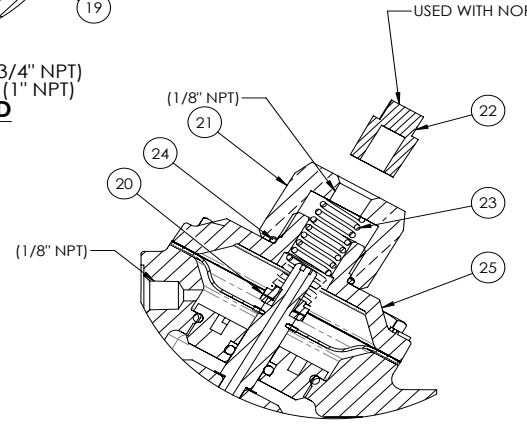
SIZE	DWG NO.	REV
B	1077635	M

SCALE 1:1 SHEET 1 OF 2

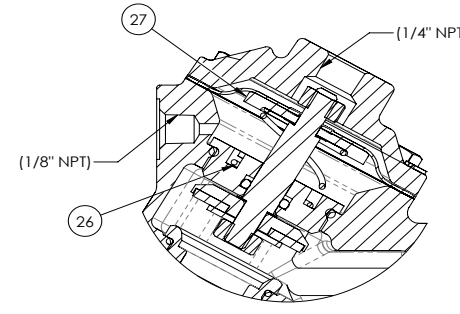
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR REVISIONS		



1072462 (VAVB-0030-90000) (3/4" NPT)
1072469 (VAVC-0030-90000) (1" NPT)
NORMALLY CLOSED



1072461 (VAVB-0002-90000) (3/4" NPT)
1072467 (VAVC-0002-90000) (1" NPT)
SPRING ASSIST CLOSED



1072456 (VAVB-0001-90000) (3/4" NPT)
1072460 (VAVC-0001-90000) (1" NPT)
SPRING ASSIST OPEN

NO.	DESCRIPTION		STD	PART NO.	QTY.
NORMALLY CLOSED MODEL					
18	PIPE PLUG (1/4" N.P.T.)	PLATED STEEL	*	1071918 (PLZ-0008)	1
19	SHAFT (NORMALLY CLOSED)		*	1074153 (421-LL)	1
SPRING ASSIST CLOSED MODEL					
20	CENTERING NUT		*	1074185 (421-X)	1
21	RETAINER NUT	BRASS	*	1074183 (421-TT)	1
22	PIPE PLUG (1/8" N.P.T.)	BRASS	*	1071903 (PLB-0007)	1
23	SPRING		*	1078602	1
24	O-RING		*	1071674 (ORB-020)	1
25	CAP	CAST IRON	*	1074099 (421-CC)	1
SPRING ASSIST OPEN MODEL					
26	SPRING		*	1078608	1
27	DIAPHRAGM PLATE, SAO	SS	*	43727	1

REPAIR PARTS KITS	
DESCRIPTION	**PART NO.**
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 11(2), 19	1070129 (421-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 20, 23, 24	1074176 (421-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 8, 26	1074178 (421-SO)

CONVERSION KITS	
DESCRIPTION	**PART NO.**
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 20 THRU 25	1074177 (421-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 8, 10, 26	1074179 (421-SOC)

SEE REVERSE SIDE FOR
NORMALLY OPEN MODEL

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

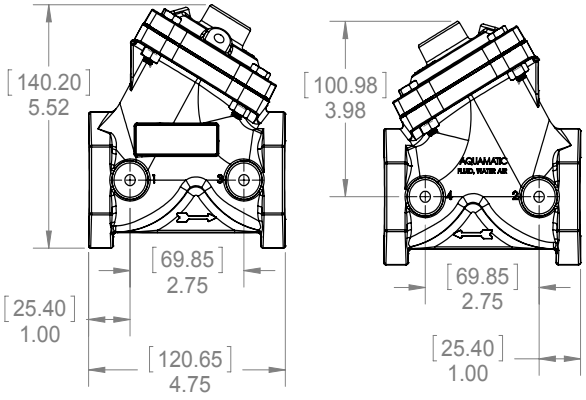
APPROVALS	DATE
DRAWN ANH	2/5/15
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, VAV1, 3/4" & 1"
NPT OR BSPT

SIZE	DWG NO.	REV
B	1077635	M

SCALE 1:1 SHEET 2 OF 2

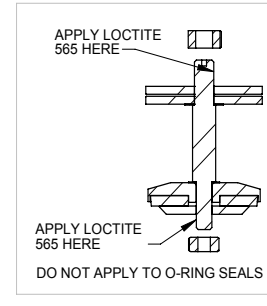


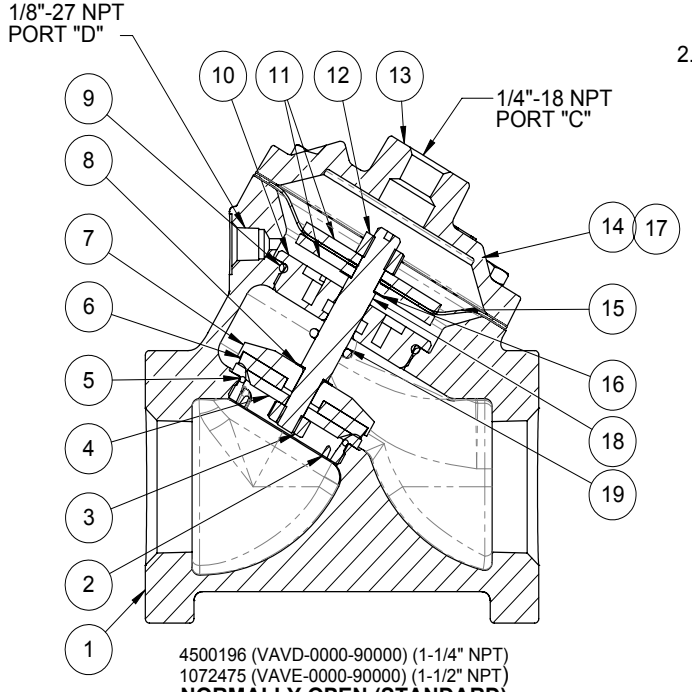
REPAIR PARTS KITS		
DISCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3, 5, 6, 8, 9, 12, 15, 16, 18	1070107 (AV4-RA)	1070502 (AV4-RAHT)
	INCLUDES DISC 1074234 (424-JH) DIAPHRAGM 1074222 (424-FB)	INCLUDES DISC 1074235 (424-JT) DIAPHRAGM 1074224 (424-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 11(2), 19	1070119 (424-RF)	
SEAT (ITEM NO 2)	1074245 (424-MO)	

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SEAT (ITEM NO. 2) (TOOL NOT SHOWN)	1074247 (424-MT)
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM NO. 10) (TOOL NOT SHOWN)	1074227 (424-GT)

NOTE:

1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS.





4500196 (VAVD-0000-90000) (1-1/4" NPT)
1072475 (VAVE-0000-90000) (1-1/2" NPT)
NORMALLY OPEN (STANDARD)

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	104291	G	REDRAWN IN SOLIDWORKS-1-ITEM# 4- WAS:1074237, 2-ITEM#7-WAS:1074229, 3-ITEM #10-WAS: 1074225, 4-ITEM#11-WAS: 1074220- FORM# NOW DWG NUMBER	3/3/15	ANH
	104479	H	1- ITEM #11 WAS: 1074221	07APR15	TJM
	1001	J	AQ Matic update & verified part numbers	17JAN17	MGS

NO.	DESCRIPTION			STD	PART NO.	QTY.
1	BODY	CAST IRON	1-1/4" NPT	*	1074196 (424-A5)	1
			1-1/2" NPT	*	1074199 (424-A6)	1
2	SEAT (REQ'S ASSY TOOL)		BRASS	*	1074245 (424-MO)	1
3	HEX NUT (1/4-28)			*	1263852	1
4	DISC PLATE		STAINLESS STEEL	*	1074238	1
5	O-RING		FKM	*	1071793 (ORV-028)	1
6	DISC	HYCAR		*	1074234 (424-JH)	1
		GLASS FILLED TEFLON			1074235 (424-JT)	1
7	DISC HOLDER		STAINLESS STEEL	*	1074231	1
8	GASKET		COPPER	*	1073948 (200-GG)	1
9	O-RING		FKM	*	1071806 (ORV-132)	1
10	SHAFT GUIDE		STAINLESS STEEL	*	1074226	1
11	DIAPHRAGM PLATE		STAINLESS STEEL	*	43943	2
12	HEX NUT (5/6-24)			*	1263853	1
13	CAP		CAST IRON	*	1074202 (424-C)	1
14	HEX SCREW 1/4"-20		PLATED STEEL	*	1072399 (SCZ-0007)	4
15	DIAPHRAGM		BUNA N	*	1074222 (424-FB)	1
			FKM		1074224 (424-FV)	1
16	GASKET		COPPER	*	1074252 (424-R)	1
17	HEX NUT 1/4"-20		PLATED STEEL		1071656 (NUZ-0008)	4
18	O-RING		AFLAS	*	1071661 (ORA-110)	1
19	SHAFT (NORMALLY OPEN)			*	1074239 (424-L)	1

SEE SHEET 2 FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN ANH	2/20/15
APPROVED	
CHECKED	

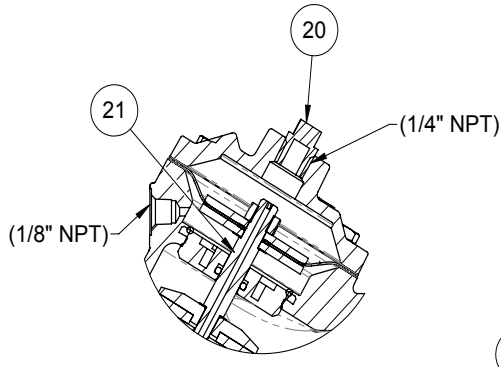
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, AV4,DIAPHRAGM VALVE

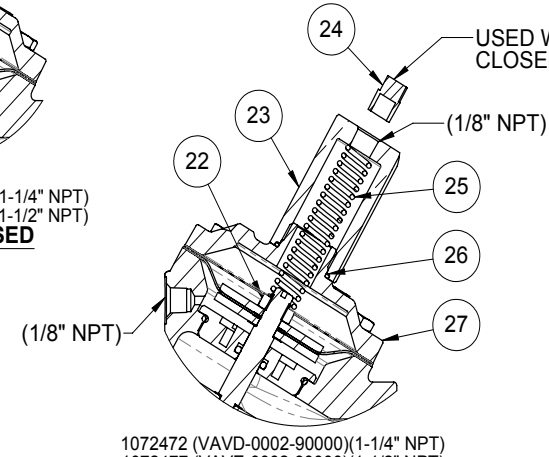
SIZE	DWG NO.	REV
B	1077636	J

SCALE 1:2 SHEET 1 OF 2

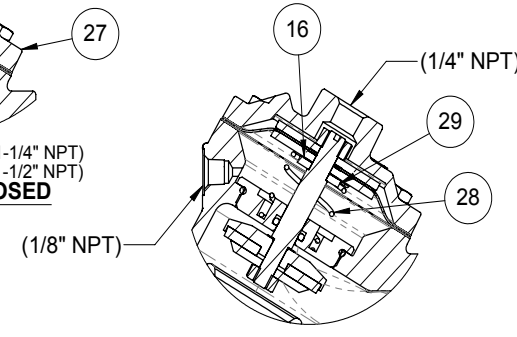
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR REVISIONS		



4500197 (VAVD-0030-90000)(1-1/4" NPT)
1072479 (VAVE-0030-90000)(1-1/2" NPT)
NORMALLY CLOSED



1072472 (VAVD-0002-90000)(1-1/4" NPT)
1072477 (VAVE-0002-90000)(1-1/2" NPT)
SPRING ASSIST CLOSED



1072471 (VAVD-0001-90000)(1-1/4" NPT)
1070064 (VAVE-0001-90000)(1-1/2" NPT)
SPRING ASSIST OPEN

NO.	DESCRIPTION		STD	PART NO.	QTY.
	NORMALLY CLOSED MODEL				
20	PIPE PLUG (1/4" N.P.T.)	PLATED STEEL	*	1071918 (PLZ-0008)	1
21	SHAFT (NORMALLLY CLOSED)		*	1074241 (424-LL)	1
	SPRING ASSIST CLOSED MODEL				
22	CENTERING NUT		*	1074276 (424-X)	1
23	RETAINER NUT	BRASS	*	1074274 (424-TT)	1
24	PIPE PLUG (1/8" N.P.T.)	BRASS	*	1071903 (PLB-0007)	1
25	SPRING		*	1074270 (424-SS)	1
26	O-RING		*	1071674 (ORB-020)	1
27	CAP	CAST IRON	*	1074208 (424-CC)	1
	SPRING ASSIST OPEN MODEL				
16	GASKET	COPPER	*	1074252 (424-R)	1
28	SPRING		*	1236766	1
29	CENTERING WASHER	BRASS	*	1074382 (426-HA)	1

REPAIR PARTS KIT	
DESCRIPTION	PART NO.
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 11(2), 21	1070130 (424-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22, 25, 26	1074265 (424-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 16,28,29	1074268 (424-SO)

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22 THRU 27	1074266 (424-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 10, 16, 28, 29	1074269 (424-SOC)

SEE SHEET 1 FOR STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

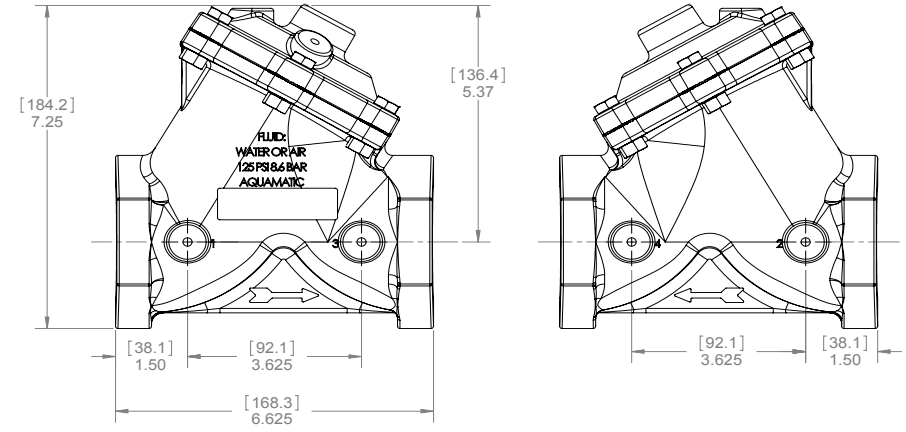
APPROVALS	DATE
DRAWN ANH	2/20/15
APPROVED	
CHECKED	

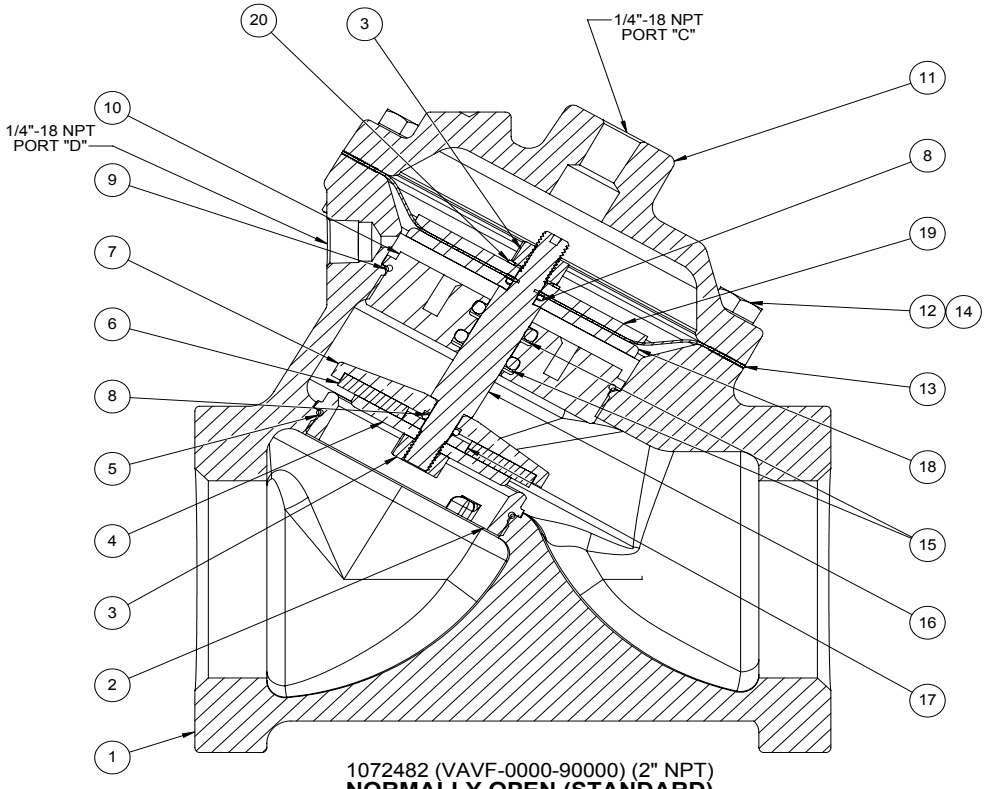
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, AV4,DIAPHRAGM VALVE

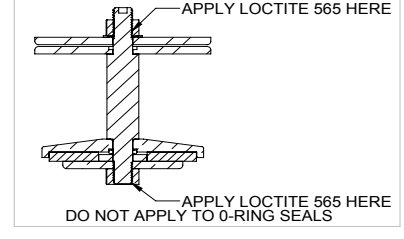
SIZE	DWG NO.	REV
B	1077636	J

SCALE 1:2 SHEET 2 OF 2





1072482 (VAVF-0000-90000) (2" NPT)
NORMALLY OPEN (STANDARD)



REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102029	H	REDRAWN IN SOLIDWORKS, 1-WAS BR1074296	5-30-13	NBE
	103665	J	1-ITEM#10-WAS:BR43243, 2-ADD'D: ITEM#20	19AUG14	TJM
	103821	K	1- FIXED BOM/BALLOON NUMBERING, 2- UPDATED TITLE BLOCK	24SEP14	MCP
	103964	L	1-ITEM #20 WAS: 1073594	07NOV14	TJM
	1001	M	AQ Matic update & verified part numbers	16JAN17	MGS

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	1074277	BODY 425, 2" NPT
2	1	1074321	SEAT, 425, BRASS
3	2	1263853	NUT,HEX, 5/16"-24 ,SS
4	1	1074313	PLATE,DISC,AV5,BRASS,MCHD
5	1	1071794	O-RING, -035, FKM
6	1	1074310	DISC,425, HYCAR
		1074311	DISC,425, TEFLON
7	1	1074304	DISC HOLDER, AV5
8	2	1071786	O-RING, -011, FKM
9	1	1071795	O-RING, -038, FKM
10	1	1074378	GUIDE,SHAFT, AV5, SS
11	1	1074281	CAP, 425,NPT TAP TOP,CI
12	6	1072400	SCREW, 5/16-18X1 1/8", HX HD,
13	1	1074296	DIAPHRAGM, SERIES 425
		1074297	DIAPHRAGM, DOUBLE COATED
14	6	1071657	HEX NUT, 5/16"-18,ZINC PLATED
15	2	1071664	O-RING, AFLAS, -206
16	1	1074314	SHAFT,425,NO
17	1	1074382	SPACER, BRASS
18	1	1074295	PLATE, LOWER DIAPHRAGM
19	1	1074294	PLATE, UPPER DIAPHRAGM
20	1	1073590	LOCKWASHER, 5/16", INTERNAL TOOTH

REPAIR PARTS KITS

DESCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSIST OF ITEM NO'S 3(2),5,6,8(2),9,14,16(2)	1070108 (AV5-RA)	1070503 (AV5-RAHT)
	INCLUDES DISC 1074310 (425-JH) DIAPHRAGM 1074296 (425-FB)	INCLUDES DISC 1074311 (425-JT) DIAPHRAGM 1074297 (425-FV)
INT. PARTS KIT (NORM. OPEN) CONSIST OF STANDARD ITEM NO'S 4,7,10,17,18,19,20	1070504 (AV5-RF)	
SEAT (ITEM NO. 2)	1074321 (425-MO)	

ASSEMBLY TOOLS

DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SEAT (ITEM #2) (TOOL NOT SHOWN)	1074411 (426-MT)
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #10) (TOOL NOT SHOWN)	1074299 (425-GAT)

NOTE:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS.

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	08-25-12
APPROVED	
CHECKED	

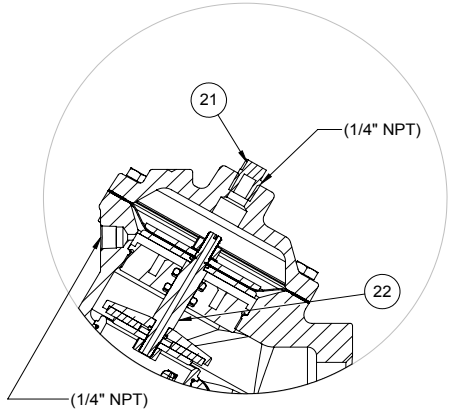
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, AV5

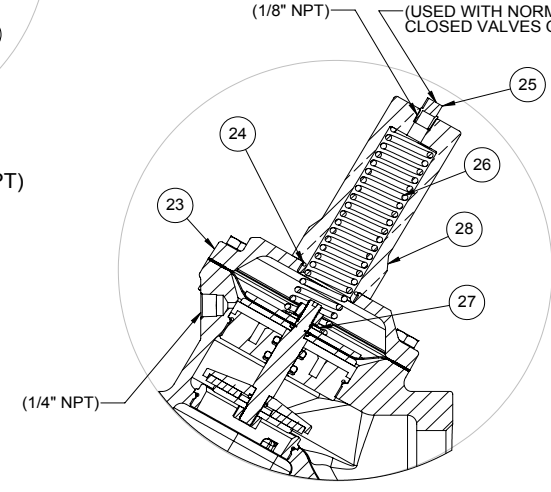
SIZE B | DWG NO. BR1077637 | REV M

SCALE 1:2 | SHEET 1 OF 2

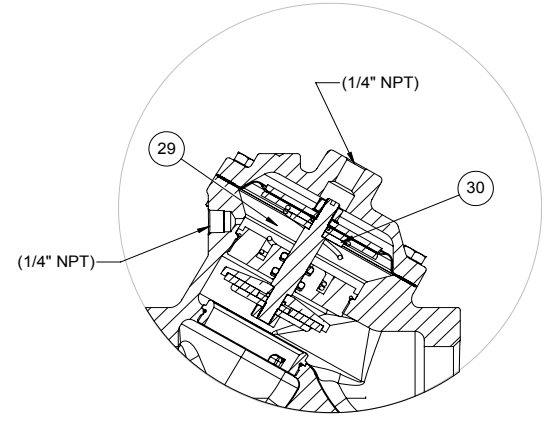
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR LIST OF CHANGES		



1072486 (VAVF-0030-90000) (2" NPT)
NORMALLY CLOSED



1072485 (VAVF-0002-90000) (2" NPT)
SPRING ASSIST CLOSED



1072484 (VAVF-0001-90000) (2" NPT)
SPRING ASSIST OPEN

NORMALLY CLOSED MODEL

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
21	1	1071918	MALE PIPE PLUGS,
22	1	1074317	VALVE SHAFT, STANDARD, NC

SPRING ASSIST CLOSED MODEL

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
23	1	1074284	CAP, 425,SPRING ASSIST CLOSED, CI
24	1	1071677	O-RING,2-025,NITRILE
25	1	1071903	MALE PIPE PLUGS,
26	1	1074429	COMPRESSION SPRING, SERIES
27	1	1074083	WASHER,
28	1	1074431	NUT, SPRING RETAINER, AV6,BRS

SPRING ASSIST OPEN MODEL

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
29	1	1078692	SPRING, COMPRESSION
30	1	1074436	WASHER, CENTERING,BRASS

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22 THRU 37	1070507 (AV5-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28, 29	1070508 (AV5-SO)

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 18, 19, 20, 24	1070505 (AV-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22, 25, 26	1070506 (AV5-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28, 29	1070508 (AV5-SO)

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 $\surd$ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	08-25-12
APPROVED	
CHECKED	

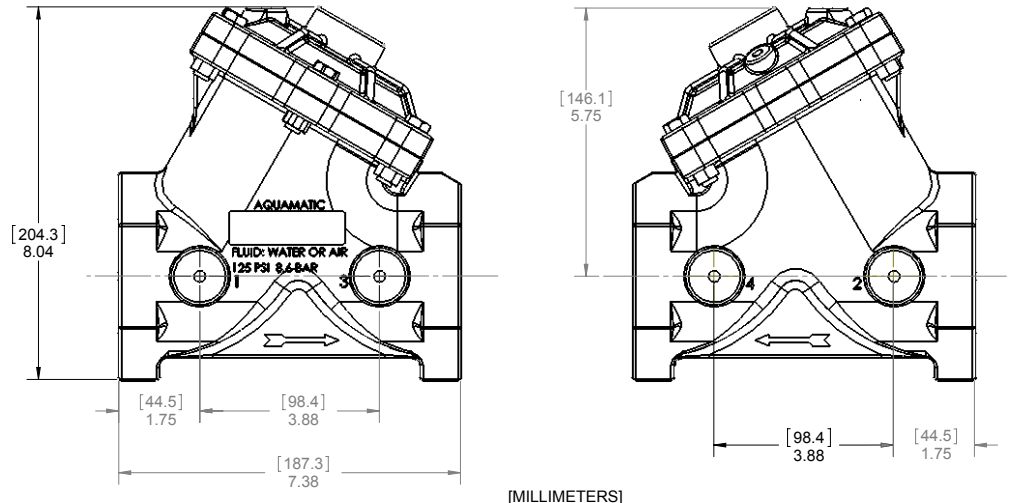
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, AV5

SIZE B | DWG NO. BR1077637 | REV M

SCALE 1:2 | SHEET 2 OF 2

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102071	K	REDRAWN IN SOLID WORKS 1-WAS 1074377	06-07-13	NBE
	102740	L	1-WAS: 1074377, NOW: 43244	28APR14	TJM
	103665	M	1-MOVED ITEM 20 FROM BOTTOM OF SHAFT TO TOP.	19AUG14	TJM
	103882	N	1- ROTATED CAP SO PORT IS AT INLET SIDE IN ALL VIEWS, 2- UPDATED TITLE BLOCK	16OCT14	TJM
	103964	P	1-ITEM #20 WAS: 1073594	07NOV14	TJM

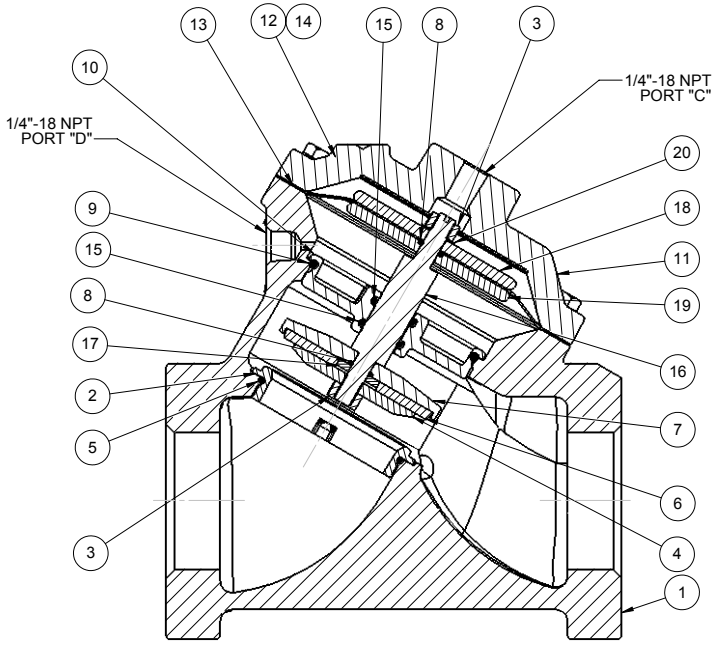


[MILLIMETERS]
INCHES

NOTE:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968.
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS.

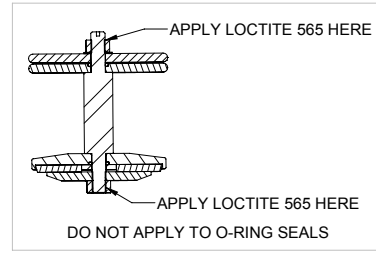
ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
1	BODY, 426 (CAST IRON)	2" NPT	1074343	1
		2 1/2" NPT	1081559	
2	SEAT, 426, BRASS*		1074409	1
3	NUT,HEX, 5/16"-24 ,SS		1263853	2
4	DISC PLATE, BRASS		1074396	1
5	O-RING, -144	FKM	1071809	1
6	DISC, 426	HYCAR	1074392	1
		FKM	1074393	
7	HOLDER,DISC, AV6, BRASS		1074383	1
8	O-RING, -011	FKM	1071786	2
9	O-RING, -233	FKM	1071826	1
10	GUIDE, 426 SHAFT*		1074378	1
11	CAP, 426, NPT, (CAST IRON)		1081560	1
12	SCREW,HEX HD CAP,5/16-18X1-3/8		1072401	6
13	DIAPHRAGM, 426	BUNA	1074374	1
		FKM	1074376	
14	HEX NUT, 5/16"-18, PLATED		1071657	6
15	O-RING, -114	ALFAS	1071662	2
16	SHAFT,426,NO		1074401	1
17	SPACER, BRASS		1074382	1
18	PLATE, DIAPHRAGM, UPPER,SS		1074371	1
19	PLATE, DIAPHRAGM, LOWER,SS		1074372	1
20	LOCKWASHER, 5/16", INTERNAL TOOTH		1073590	1

*REQUIRES ASSEMBLY TOOL



1072489 (VAVG-0000-90000) (2"NPT)
1072495 (VAVH-0000-90000) (2-1/2"NPT)

NORMALLY OPEN (STANDARD)



DO NOT APPLY TO O-RING SEALS

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SEAT (ITEM #2) (TOOL NOT SHOWN)	1074411 (426-MT)
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #10) (TOOL NOT SHOWN)	1-3/16" HEX SOCKET

REPAIR PARTS KITS		
DESCRIPTION	PART NO.	
	1070109 (AV6-RA)	1070510 (AV6-RAHT)
DIAPHRAGM & SEAL KIT CONSISTS OF ITEM NO'S 3(2), 5, 6, 8(2), 9, 13, & 15(2)	INCLUDES DISC P/N 1074392 (HYCAR) AND DIAPHRAGM P/N 1074374 (BUNA N)	INCLUDES DISC P/N 1074393 (TEFLON) AND DIAPHRAGM P/N 1074376 (FKM)
INT. PARTS KIT (NORM. OPEN) CONSIST OF STANDARD ITEM NO'S 4, 7, 10, 16, 17, 18. 19	10705011 (AV6-RF)	
SEAT (ITEM NO. 2)	1074407	

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

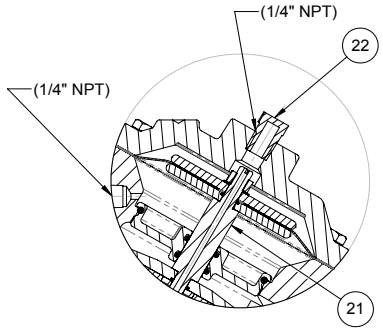
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, AV6
DIAPHRAGM VALVE STANDARD MODEL

SIZE	DWG NO.	REV
B	BR1077638	Q

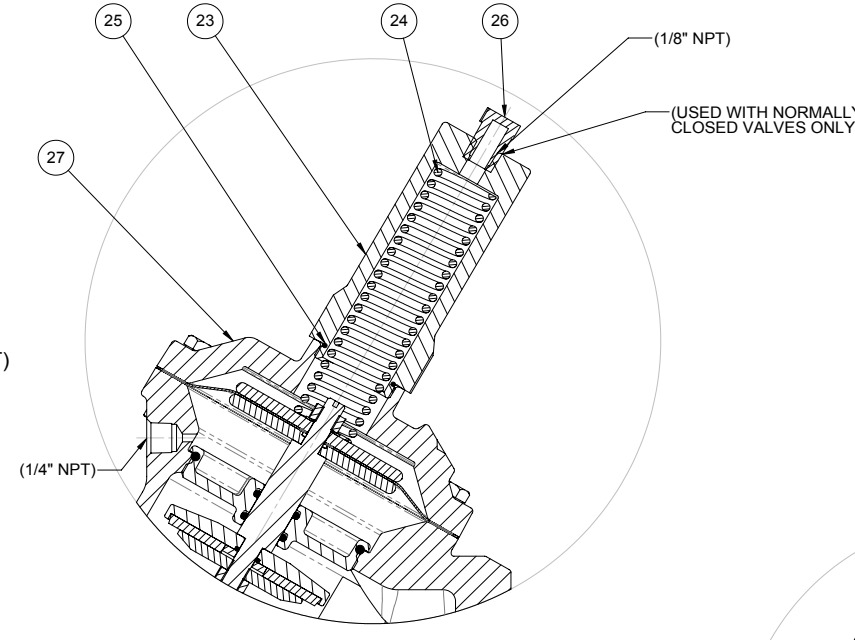
SCALE 1:2 SHEET 1 OF 2

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	1001	Q	AQ Matic update & verified part numbers	17JAN17	MGS



3026107 (VAVG-0030-90000) (2" NPT)
1080794 (VAVH-0030-90000) (2-1/2" NPT)

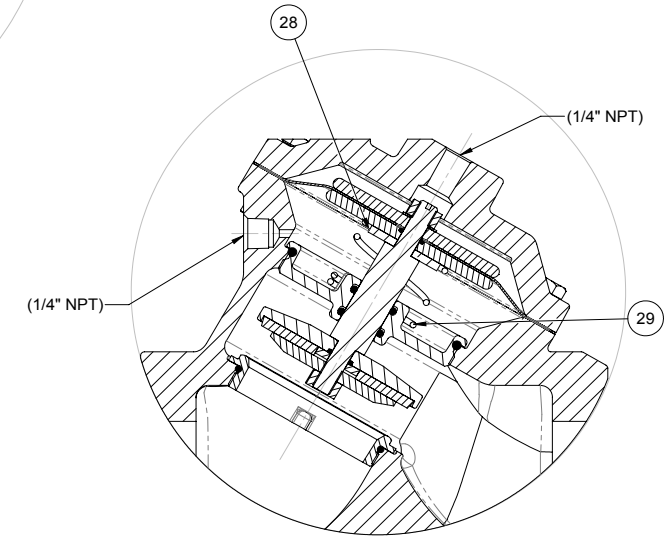
NORMALLY CLOSED



1077120 (VAVG-0002-90000) (2" NPT)
1072498 (VAVH-0002-90000) (2-1/2" NPT)

SPRING ASSIST CLOSED

NORMALLY CLOSED MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
21	1	43169	SHAFT,426,NC
22	1	1071918	PLUG,PIPE,1/4" MNPT
SPRING ASSIST CLOSED MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
23	1	1074431	SPRING RETAINER NUT, 425 & 426
24	1	1074429	COMPRESSION SPRING
25	1	1071677	O-RING,2-025, BUNA
26	1	1071903	PLUG,PIPE,1/8" MNPT
27	1	1074352	CAP - SAC (CAST IRON)
SPRING ASSIST OPEN MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
28	1	1074436	WASHER, CENTERING,BRASS
29	1	1078692	SPRING, COMPRESSION



1072491 (VAVG-0001-90000) (2" NPT)
1072497 (VAVH-0001-90000) (2-1/2" NPT)

SPRING ASSIST OPEN

SEE REVERSE SIDE FOR
STANDARD NORMALLY OPEN MODEL

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4, 7, 10, 17, 18, 19, 21	1070512 (AV6-RG)
INT. PARTS KIT(SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 23 & 24	1070513 (AV6-SC)
INT. PARTS KIT(SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28 & 29	1070515 (AV6-SO)

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT(SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 23 THRU 27	1070514 (AV6-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28 & 29	1070515 (AV6-SO)

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

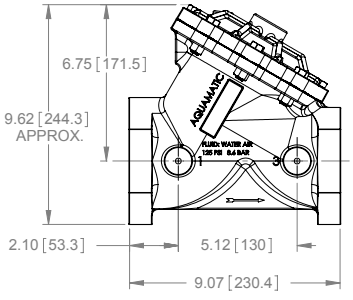
APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

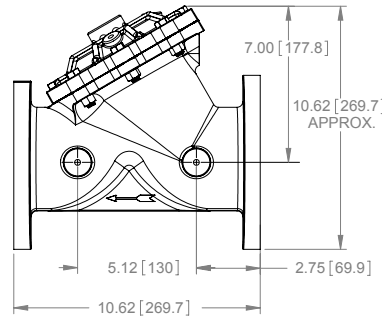
TITLE
CATALOG SHEET, AV6
DIAPHRAGM VALVE STANDARD MODEL

SIZE	DWG NO.	REV
B	BR1077638	Q

SCALE 1:2 SHEET 2 OF 2

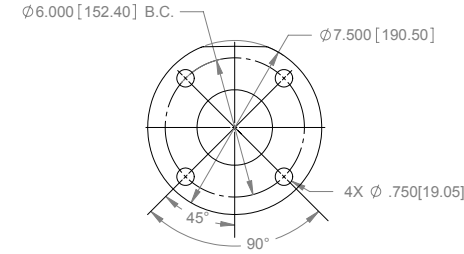


1235690 (VAVJ-0000-900000)
3" NPT ENDS

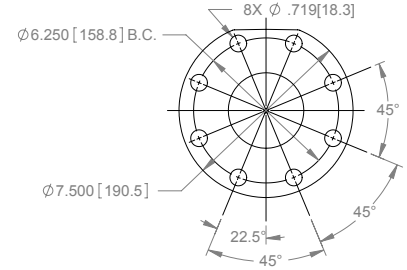


11077128 (VAVJ-3000-900000)
FLANGED ENDS

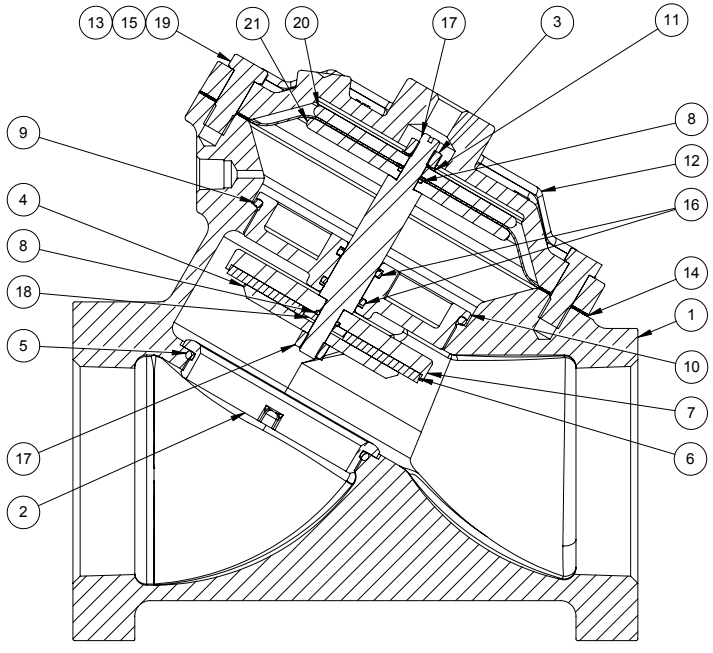
NOTE:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS.



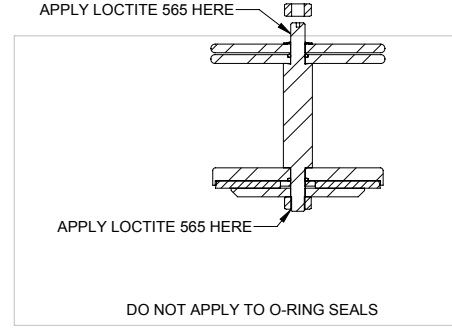
AMERICAN FLANGE PER
A.S.A. 16.1 CLASS 125



METRIC FLANGE PER
BS4504. DIN 10 & ISO R 2084



NORMALLY OPEN (STANDARD)



REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102056	K	REDRAWN - FORM # NOW DWG # (WAS 1084043), 1-1074495-WAS:1074493, 2-1074479-WAS: 1074478	6-4-13	NBE
	103665	L	ITEM #-11 WAS: QTY -2 .	19AUG14	TJM
	103964	M	1-ITEM #-11 WAS: 1073594, 2-UPDATED TITLE BLOCKS	10NOV4	TJM
	1001	N	AQ Matic update & verified part numbers	17JAN17	MGS

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
1	BODY, 427, CAST IRON	THREADED	1074446	1
		FLANGED	1083918	
2	SEAT, 427, MACHINING	BRASS	1074505	1
3	NUT,HEX, 5/16"-24	SS	1263853	2
4	PLATE, DISC	(303 SS)	1074495	1
5	O-RING, ORV-233	FKM	1071826	1
6	DISC, 427	HYCAR	1074490	1
		TELFON	1074491	1
7	DISC HOLDER, ALUM/BRONZE		1074483	1
8	O-RING, -011	FKM	1071786	2
9	O-RING, -237	FKM	1071828	1
10	SHAFT GUIDE, MACHINING		1074479	1
11	LOCKWASHER, 5/16", INTERNAL TOOTH		1073590	1
12	CAP, 427, MACHINING	CAST IRON	1074454	1
13	SCREW, 3/8-16 X 1 1/2", HX HD	PLATED STEEL	1072405	6
14	DIAPHRAGM SERIES 427,	BUNA-N	1074475	1
	DIAPHRAGM SERIES 427,	FKM	1074477	1
15	HEX NUT, 3/8-16	PLATED STEEL	1071658	6
16	O-RING, -114	ALFAS	1071662	2
17	SHAFT, 427, NO		1074496	1
18	SPACER, BRASS		1074382	1
19	HEX HEAD CAP SCREW, 3/8-16X 1.00	STAINLESS STEEL	19768	2
20	PLATE, UPPER DIAPHRAGM		1074472	1
21	DIAPH PLT, 427,LWR, MACH	SS	1074473	1

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #10) (NOT SHOWN)	1-3/16" HEX SOCKET

REPAIR PARTS KITS		
DESCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3(2),5,6,8(2),9,14,16(2)	1070110 (AV7-RA) INCLUDES DISC 1074490 (427-JH), DIAPHRAGM 1074475 (427-FB)	1070516(AV7-RAHT) INCLUDES DISC 1074491 (427-JT), DIAPHRAGM 1074477 (427-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11,17,18,20,21	1070517 (AV7-RF)	
SEAT (ITEM NO. 2)	1074505	

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

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TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	10-20-11
APPROVED	
CHECKED	

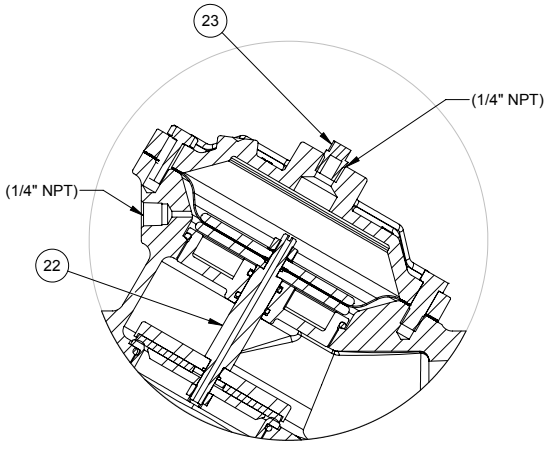
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, AV7
DIAPHRAGM VALVE STANDARD MODEL

SIZE	DWG NO.	REV
B	BR1077639	N

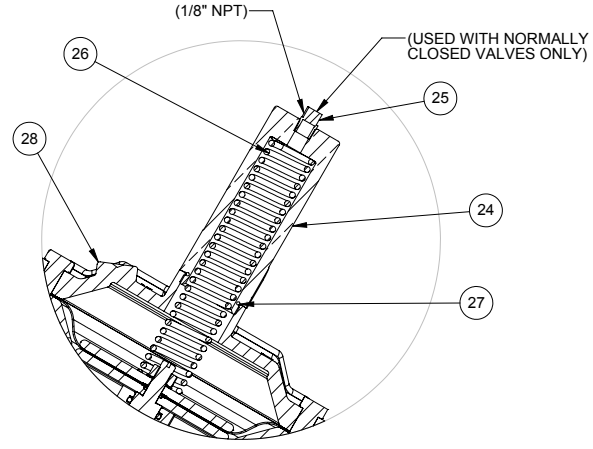
SCALE 1:2 SHEET 1 OF 2

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



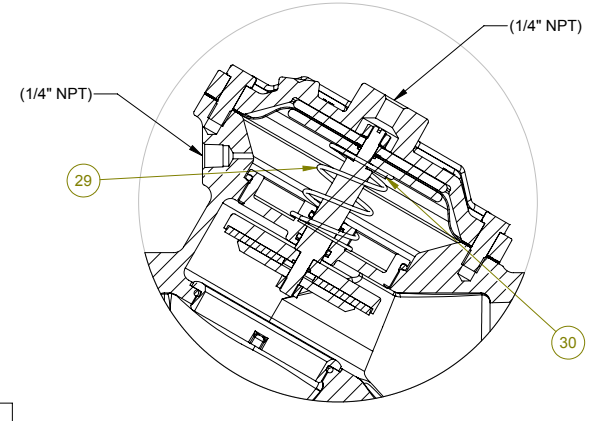
1269740 (VAVJ-0030-90000) (THREADED)
1242257 (VAVJ-3030-90000) (FLANGED)

NORMALLY CLOSED



3018900 (VAVJ-0002-90000) (THREADED)
1080797 (VAVJ-3002-90000) (FLANGED)

SPRING ASSIST CLOSED



1072502 (VAVJ-0001-90000) (THREADED)
1072509 (VAVJ-3001-90000) (FLANGED)

SPRING ASSIST OPEN

NORMALLY CLOSED MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
22	SHAFT, 427, NC		1074499	1
23	MALE PIPE PLUG	PLATED STEEL	1071918	1

SPRING ASSIST CLOSED MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
24	NUT, SPRING RETAINER	BRASS	1074431	1
25	MALE PIPE PLUGS (1/8" NPT)	BRASS	1071903	1
26	COMPRESSION SPRING		1074429	1
27	O-RING,2-025	BUNA	1071677	1
28	CAP, 427, SPRING ASSIST	CAST IRON	1074460	1

SPRING ASSIST OPEN MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
29	SPRING, COMPRESSION		1078692	1
30	WASHER, CENTERING	BRASS	1074436	1

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11,18,20,21,23	BR1070518 (AV7-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 26,27	BR1070513 (AVG-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 29, 30	BR1070520 (AV7-SO)

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 24 THRU 28	BR1070519 (AV-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 29, 30	BR1070520 (AV7-SO)

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, AV7
DIAPHRAGM VALVE STANDARD MODEL

SIZE	DWG NO.	REV
B	BR1077639	N

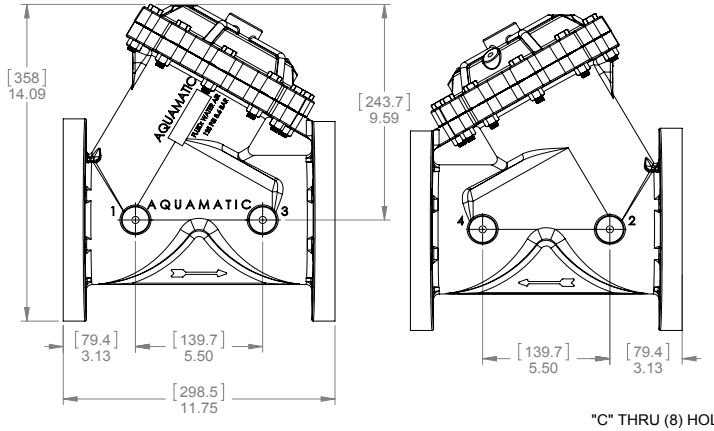
SCALE 1:1 SHEET 2 OF 2

REPAIR PARTS KIT

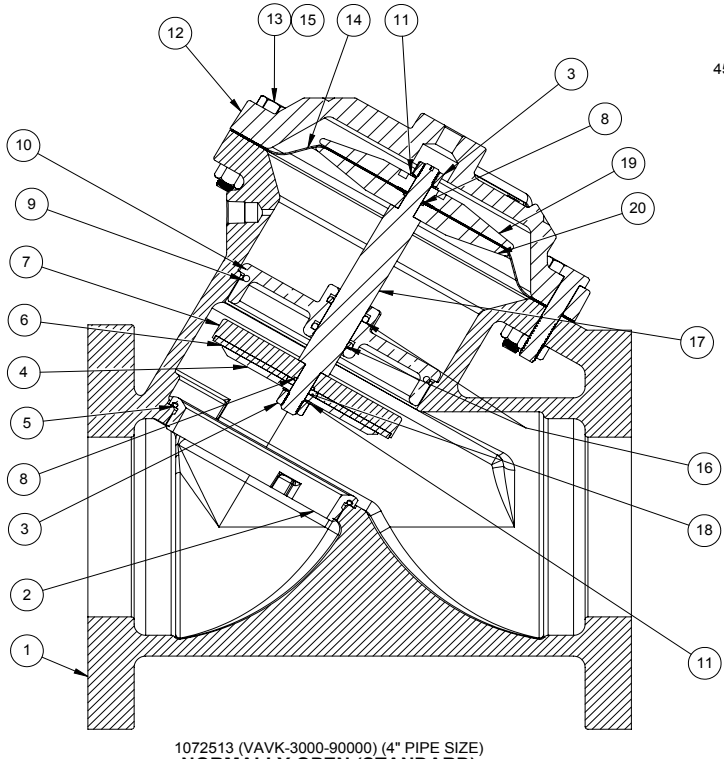
DESCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3(2), 5, 6, 8(2), 9, 14, 16(2)	1070111 (AV8-RA)	1070521 (AV8-RAHT)
	INCLUDES DISC 1074571 (428-JH) DIAPHRAGM 1074557 (428-FB)	INCLUDES DISC 1074572 (428-JT) DIAPHRAGM 1074559 (428-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11,17,18,19,20	1070522 (AV8-RF)	
SEAT (ITEM NO. 2)	1074585 (428-MAO)	

REVISIONS

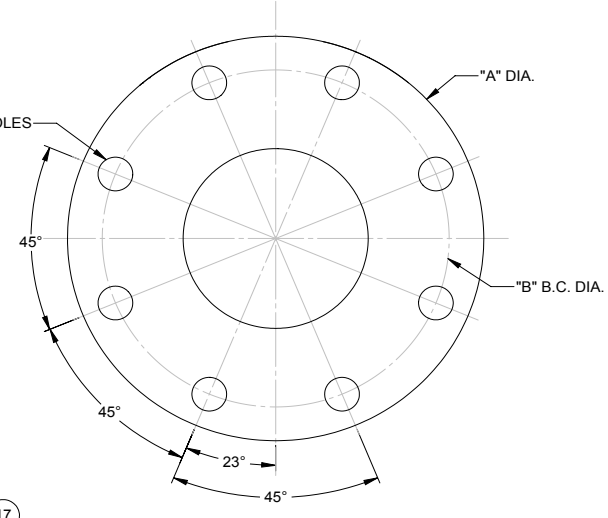
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	103684	J	REDRAWN IN SOLIDWORKS, FORM # NOW DWG #, ITEM# 4 WAS:1074575 ,ADD'D: ITEM#11, DWG # WAS:1084044	8/20/14	ANH
	103964	K	ITEM #11 WAS: 1073594	10NOV14	TJM
	105687	L	1-ITEM #10 WAS: 1074560	02MAR16	TJM
	1001	M	AQ Matic update & verified part numbers	17JAN17	MGS



NO.	DESCRIPTION		STD	PART NO.	QTY
1	BODY	CAST IRON	*	1074522 (428-A)	1
2	SEAT	BRASS	*	1074585 (428-MAO)	1
3	HEX NUT(3/8-24)		*	3001990	2
4	DISC PLATE	SS	*	43734 (428-KA)	1
5	O-RING	FKM	*	1071811 (ORV-156)	1
6	DISC	HYCAR	*	1074571 (428-JH)	1
		GLASS FILLED TEFLON		1074572 (428-JT)	
7	DISC HOLDER	BRASS	*	1074588 (428-NA)	1
8	O-RING	FKM	*	1071787 (ORV-012)	2
9	O-RING	FKM	*	1071832 (ORV-245)	1
10	SHAFT GUIDE	BRASS	*	1074563	1
11	LOCKWASHER, 3/8", INTERNAL TOOTH		*	1073591	2
12	CAP	CAST IRON	*	1074532 (428-C)	1
13	HEX SCREW 3/8"-16	PLATED STEEL	*	1072406 (SCZ-0027)	11
14	DIAPHRAGM	BUNA N	*	1074557 (428-FB)	1
		FKM		1074559 (428-FV)	
15	HEX NUT 3/8"-16	PLATED STEEL	*	1071658 (NUZ-0014)	11
16	O-RING	AFLAS	*	1071665 (ORA-210)	2
17	SHAFT (NORMALLY OPEN)		*	1074579 (428-LAA)	1
18	DISC SPACER	BRASS	*	1074565 (428-HA)	1
19	UPPER DIAPHRAGM PLATE		*	1074554 (428-DA)	1
20	LOWER DIAPHRAGM PLATE		*	1074555 (428-DAA)	1



1072513 (VAVK-3000-90000) (4" PIPE SIZE)
NORMALLY OPEN (STANDARD)

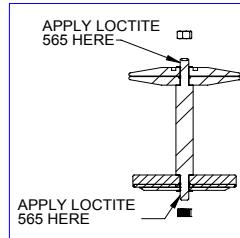


AMERICAN FLANGE PER A.S.A. 16.1 CLASS 125
METRIC FLANGE PER BS 4504, DIN 10 & ISO R 2084

NOTE:

1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B2.1-1968
2. VALVES AVAILABLE WITH B.S.P.T. END CONNECTIONS.

FLANGE STYLE	A	B	C
AMERICAN	9.000	7.500	.750
METRIC	229MM	180MM	18MM



DO NOT APPLY TO O-RINGS

SEE SHEET 2 FOR
CONFIGURATION OPTIONS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES;
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2002/95/EEC (RoHS) REQUIREMENTS

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN ANH	8/19/14
APPROVED	
CHECKED	

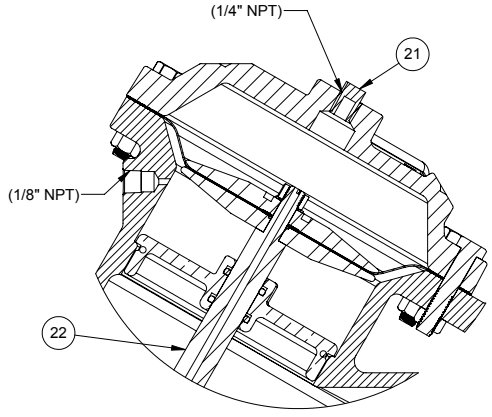
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, AV8,
STANDARD MODEL

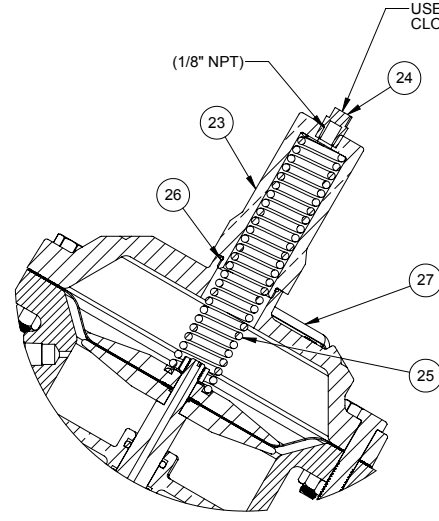
SIZE B | DWG NO. 1077640 | REV M

SCALE 1:4 | SHEET 1 OF 2

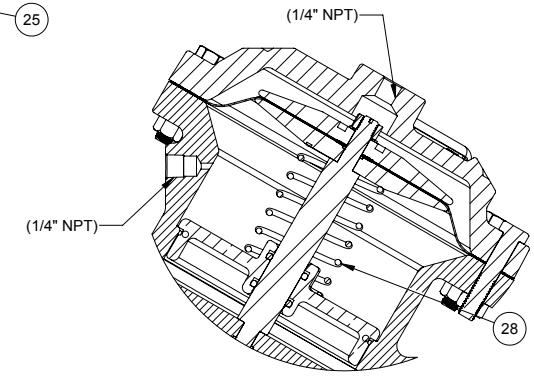
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



VAVK-3030-90000
NORMALLY CLOSED



1072516 (VAVK-3002-90000)
SPRING ASSIST CLOSED



1072514 (VAVK-3001-90000)
SPRING ASSIST OPEN

NORMALLY CLOSED					
NO.	DESCRIPTION		STD	PART NO.	QTY
21	PIPE PLUG (1/4" N.P.T.)	CAST IRON	*	1071918 (PLZ-0008)	1
22	SHAFT (NORMALLY CLOSED)		*	1074582 (458-LLA)	1
SPRING ASSIST CLOSED					
NO.	DESCRIPTION		STD	PART NO.	QTY
23	RETAINER NUT	BRASS	*	1074609 (428-TT)	1
24	PIPE PLUG (1/8" N.P.T.)	BRASS	*	1071903 (PLB-0007)	1
25	SPRING		*	1074601 (428-SB)	1
26	O-RING		*	1071677 (ORB-025)	1
27	CAP	CAST IRON	*	1074540 (428-CC)	1
SPRING ASSIST OPEN MODEL					
NO.	DESCRIPTION		STD	PART NO.	QTY
28	SPRING		*	1074605 (428-SOA)	1

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF STANDARD ITEM NO'S 4,7,10,11,18,19,20,25	1070523 (AV8-SCC)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 29,30	1070524 (AV8-SC)
IN. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO. 32	1070526 (AV8-SO)
CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 27-31	1070525 (AV-SCC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO. 32	1070526 (AV8-SO)

SEE SHEET 1 FOR STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2002/95/EEC (RoHS) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN ANH	8/19/14
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, AV8,
STANDARD MODEL

SIZE	DWG NO.	REV
B	1077640	M

SCALE 1:4 SHEET 2 OF 2

AQUAMATIC® V46 SERIES
STAINLESS STEEL VALVES

HIGH-FLOW VALVES FOR CORROSION-RESISTANT APPLICATIONS

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

FEATURES/BENEFITS

Unique Y-pattern design with large seat opening and high lift disc permits higher flow rates at lower pressure loss than other comparable valves

All components can be serviced while the valve is in-line

Separate flow and control chambers permit positive closing without springs

Pre-formed, stress-relieved diaphragm minimizes fatigue, maximizes valve responsiveness and diaphragm lifetime

Durable stainless steel [CF8M] corrosion-resistant alloy, all metal internal parts machined from 316 stainless steel alloy

Diaphragm acts as an actuator, eliminating the need for electric or pneumatic actuators

Adaptable to a wide variety of control devices

OPTIONS

Spring-assist closed

Spring-assist open

Limit stop for flow control

Position indicator

Seal and diaphragm materials for special applications

Available in threaded or flanged end configurations

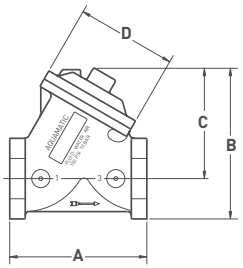
TYPICAL APPLICATIONS

Bottling Plants
Chemical Injection
Condensate Polishers
Corrosive Liquid Handling
Deionizers
Laundry Equipment
Ozone Generators
Paper and Pulp
Process Water Systems
Reverse Osmosis Equipment
Steam Sterilization

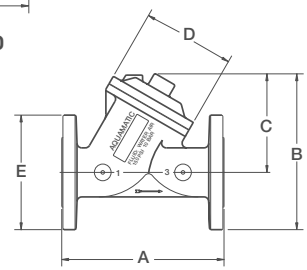
DIMENSIONS

MODEL #	ENDS	PIPE SIZE	Cv*	DIMENSIONS (APPROXIMATE)				
				A	B	C	D	E
V46C	Threaded	1"	14	3.75" (95 mm)	4.45" (113 mm)	3.21" (82 mm)	2.75" (70 mm)	–
V46E	Threaded	1-1/2"	33	4.75" (121 mm)	5.00" (127 mm)	3.50" (89 mm)	3.50" (89 mm)	–
V46F	Threaded	2"	54	6.62" (168 mm)	7.28" (185 mm)	5.34" (136 mm)	4.84" (123 mm)	–
V46C	Flanged	1"	14	5.50" (140 mm)	5.49" (139 mm)	3.36" (85 mm)	2.75" (70 mm)	4.25" (108 mm)
V46E	Flanged	1-1/2"	33	6.50" (165 mm)	6.45" (164 mm)	3.95" (100 mm)	3.50" (89 mm)	5.00" (127 mm)
V46F	Flanged	2"	54	8.50" (216 mm)	8.16" (207 mm)	5.16" (131 mm)	4.84" (123 mm)	6.00" (152 mm)

*Cv is the flow rate in gallons per minute of water at 60°F at 1 pound pressure drop. Liters per minute = Gal/Min x 3.78



THREADED



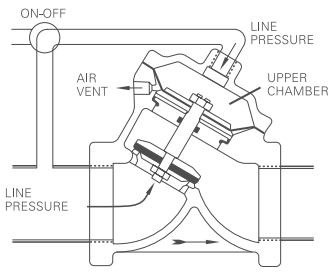
FLANGED

PRINCIPLES OF OPERATION

DRIP-TIGHT CLOSING

Closure is obtained by directing line pressure or equivalent independent pressure into the upper chamber. This pressure on the large diaphragm area causes the valve disc to seal against the seat.

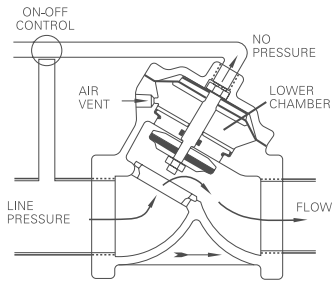
VALVE CLOSED



FULL OPEN OPERATION

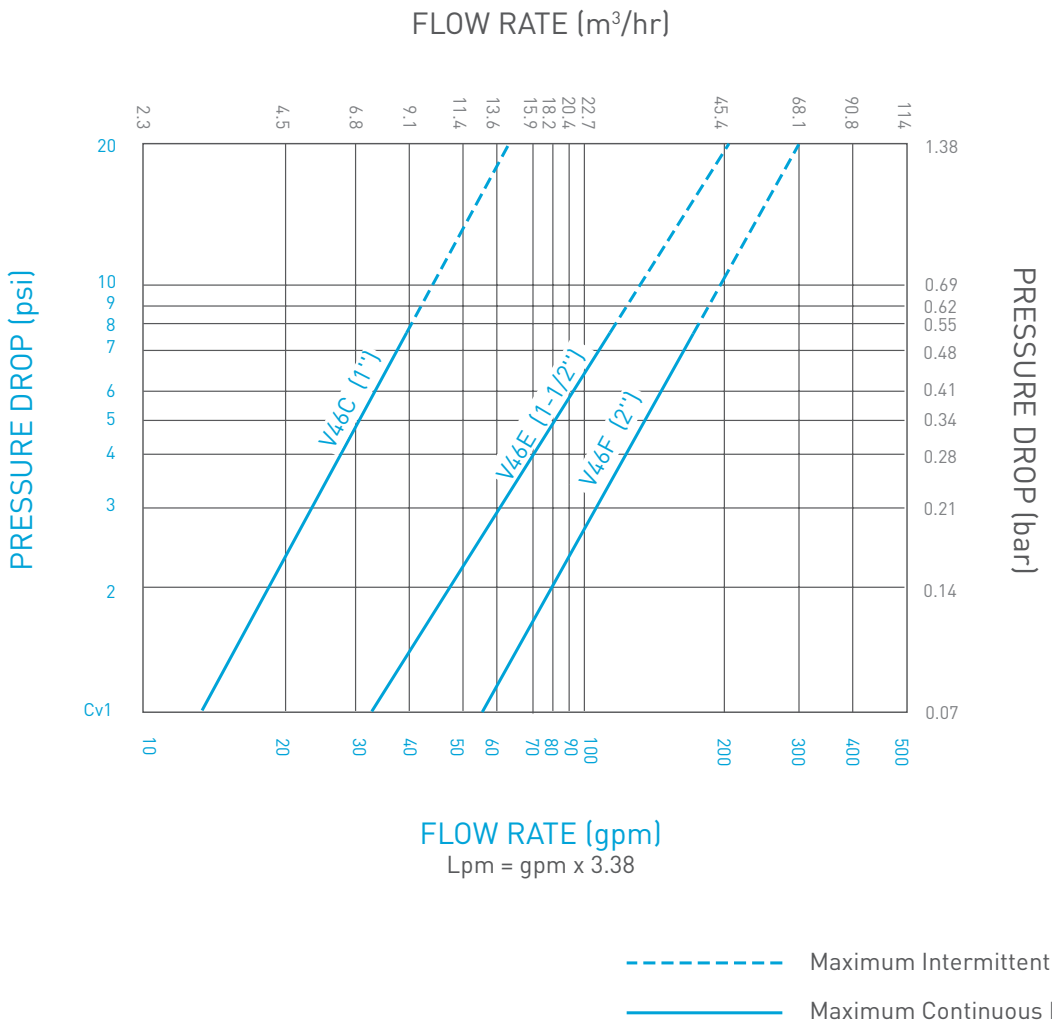
When the closing pressure in the upper chamber is relieved by venting the pilot line, the valve opens positively, by line pressure on the disc.

VALVE OPEN



OPERATING SPECIFICATIONS	THREADED VALVE	FLANGED VALVES
Maximum Working Pressure	250 psi (17 bar)	150 psi (10.3 bar)
Temperature	Standard: 150°F (65°C) Maximum: 250°F (120°C)	Standard: 150°F (65°C) Maximum: 250°F (120°C)
Pipe Sizes	1", 1½", and 2" threaded (NPT, BSPP, JIS)	1", 1½", and 2" flanged (U.S. or ISO)

PERFORMANCE DATA



16605 West Victor Rd. New Berlin, WI 53151

P: 262-326-0100 | www.aq-matic.com | techsupport@aq-matic.com

1235600 REV H MA2016

V46 SERIES DIAPHRAGM VALVE MASTER CHART

*** FILL IN PROPER DESIGNATIONS TO DETERMINE PRODUCT NUMBER:** V 4 6 _ - _ 2 _ _ - _ 3 0 0 0

PIPE SIZE
C = 1" (25mm)
E = 1-1/2" (40mm)
F = 2" (50mm)

BODY SIZE (Reference only)
1 = 1"
4 = 1-1/2"
5 = 2"

END CONNECTIONS

0 = Female N.P.T.
3 = Flanged / Female N.P.T. Boss Taps

BODY & CAP MATERIAL
2 = 316 Stainless Steel (Cast CF8M)

VALVE OPTIONS (00 = Standard)

00 = NO	11 = NO, LS, SAO
01 = NO, SAO	30 = NC
02 = NO, SAC	32 = NC, SAC
10 = NO, LS	40 = NC, LS

SEAL MATERIALS (0 = Standard) (Option 5 not valid for NC valves)

OPT.	OPERATING DIAPHRAGM	SEALING DISK	DYNAMIC SEAL	STATIC SEALS
0	Buna-N	Buna-N	Buna-N	Buna-N
1	Buna-N	EPDM	EPDM	EPDM
2	FKM	FKM	FKM	FKM
4	FKM	EP	EP	EP
5	Buna-N	FKM	FKM	FKM
6	Buna-N	FDA Buna-N	FDA Buna-N	FDA Buna-N

INTERNAL PARTS
3 = 316 Stainless Steel

* To create a valve number replace each "_" with the proper number or letter for the feature you desire. For example, a 1" NPT Stainless Steel Valve Model V461 with Normally Closed and Spring Assist Closed Options is designated as a V46C-0232-03000.

REV.	ECO NO.	DESCRIPTION	BY/DATE	
C	21190	Reviewed for AQ Matic ECN release	JJJ	17-Nov-09
D	103533	REM'D:FEMALE BSPT (TAPERED) THD OPTION	TJM	20-Jun-14

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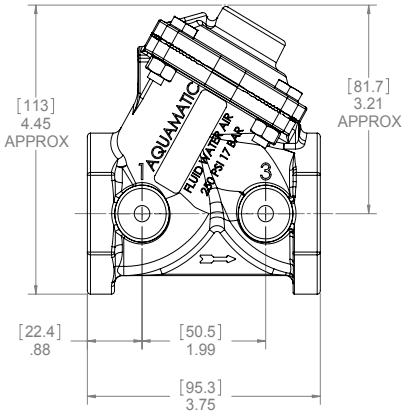
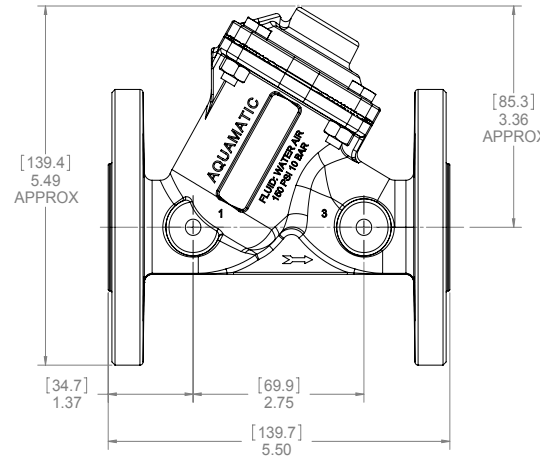
42988 REV F MAY17

THREADED

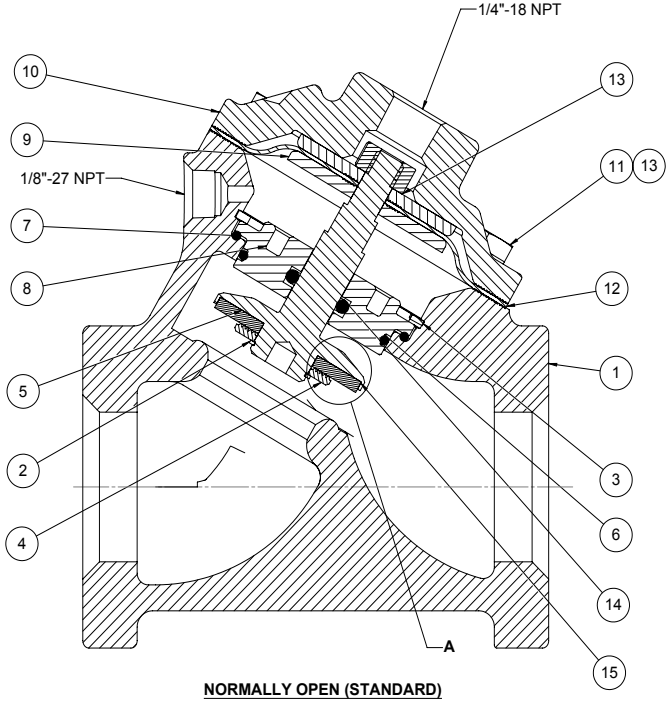


MODEL: V46C-0200-03000 (THREADED)

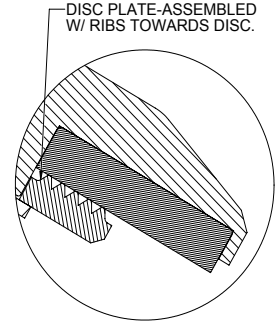
FLANGED



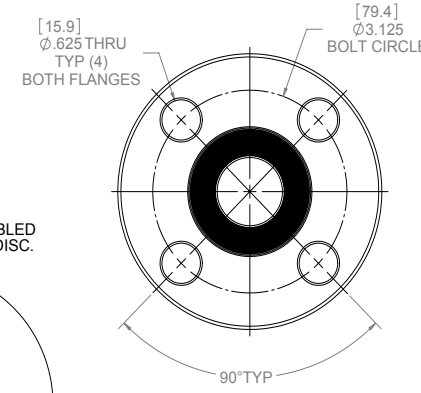
MODEL: V46C-3200-03000 (FLANGED)



NORMALLY OPEN (STANDARD)



F1 **DETAIL A**
SCALE 8 : 1



FLANGES PER ASTM B16.5
CLASS 150 AND ISO 7005-1 PN20

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	100100	E	REDRAWN IN SOLIDWORKS	1-4-12	NBE
	100886	F	1: ADD DETAIL VIEW OF DISC PLATE ASSEMBLY	7-12-12	TJM
	1001	H	AQ Matic update & verified part numbers	17Jan17	MGS

ITEM NO.	DESCRIPTION			STD	PART NUMBER	QTY.
1	BODY, 461 THREADED	NPT	CAST CF8M (316 SS)	*	1079053	1
		BSPT			1079055	
	BODY,FLANGE,461,SS,1.00,ASTM	NPT		*	1078568	
2	RING, RETAINING, SPIRAL		316 SS	*	1078562	1
3	RING, RETAINING, SPIRAL		316 SS	*	1075695	1
4	PLATE, DISC, 461,SS		316 SS	*	1075690	1
5	DISC,		BUNA N	*	1074140	1
	DISC,		E.P.D.M.		1074143	
	DISC,		FKM		1074146	
6	O-RING (NITRILE), 2-026		BUNA N	*	1079834	1
	O-RING,EP,ORE-026		E.P.D.M.		1081944	
	O-RING, -026, FKM,		FKM		1081946	
7	O-RING (NITRILE), 2-029		BUNA N	*	1079835	1
	O-RING,EP,ORE-029		E.P.D.M.		1081945	
	O-RING, -029, FKM		FKM		1081947	
8	SHAFT GUIDE, SS		316 SS	*	1078579	1
9	PLATE, DIAPHRAGM, 461		316 SS	*	1075684	2
10	CAP, NPT TAP TOP, CSS	NPT	CAST CF8M	*	1078572	1
11	SCREW, HEX, 1/4-20 UNC 2-A		316 SS	*	1075692	4
12	DIAPHRAGM, 421, NBR		BUNA N	*	1074119	1
	DIAPHRAGM, 421, FKM		FKM		1074120	
13	NUT, HEX, 1/4"-20,SS		316 SS	*	1075693	5
14	O-RING,2-110,NITRILE,TFLN CTD		BUNA N	*	1071689	1
	O-RING, EPDM,TEFLON COATED,		E.P.D.M.		1071726	
	O-RING, -110TC, FKM		FKM		1239021	
15	SHAFT, 461 NORMALLY OPEN		CAST CF8M	*	1078584	1

NOTES:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B1.20.1.
2. VALVES AVAILABLE IN BSPT CONFIGURATION. (SEE ITEM 1)

SEE SHEET 2 FOR CONFIGURATION OPTIONS

REPAIR PARTS KITS			
DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 2, 3, 5, 6, 7, 12, 13, 14, 17 & 26 & SILICONE PACK PART NO. BR1071485	BR1078620 BUNA N INCLUDES DIAPHRAGM BR1074119	BR1078621 E.P.D.M. INCLUDES DIAPHRAGM BR1074119	BR1078622 FKM INCLUDES DIAPHRAGM BR1074120
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 8, 9(2), 15	BR1078623		

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION		
APPROVALS	DATE	
DRAWN	NE	12-27-11
APPROVED		
CHECKED		

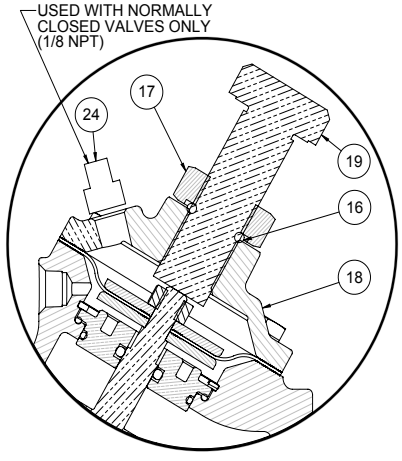
AQ Matic Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 461, 316SS STANDARD MODEL

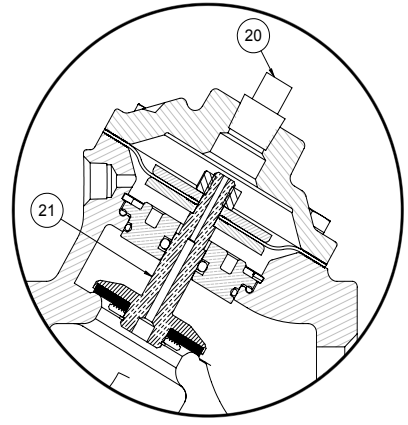
SIZE B | DWG NO. BR1078633 | REV H

SCALE 1:1 | SHEET 1 OF 2

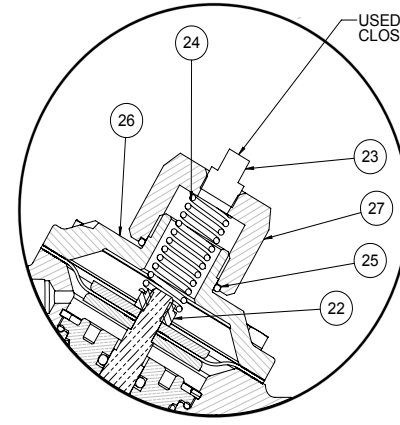
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



LIMIT STOP
MODEL:V46C-3210-03000 (FLANGED)
MODEL:V46C-0210-03000 (THREADED)



NORMALLY CLOSED
MODEL:V46C-3230-03000 (FLANGED)
MODEL:V46C-0230-03000 (THREADED)



SPRING ASSIST CLOSED
MODEL:V46C-3202-03000 (FLANGED)
MODEL:V46C-0202-03000 (THREADED)

LIMIT STOP MODEL

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
16	O-RING,2-112,NITRILE	1071690	1
17	NUT,LIMITED STOP,461-465	1078678	1
18	CAP, LIMIT STOP W/NPT PORT, CS	1078590	1
19	BOLT,HEX HD,FLL THRD,5/8-18X2	1078676	1

NORMALLY CLOSED MODEL

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
20	PLUG, 1/4 IN. NPT SQUARE HEAD	1078592	1
21	SHAFT, 461 NORMALLY CLOSED	1078594	1

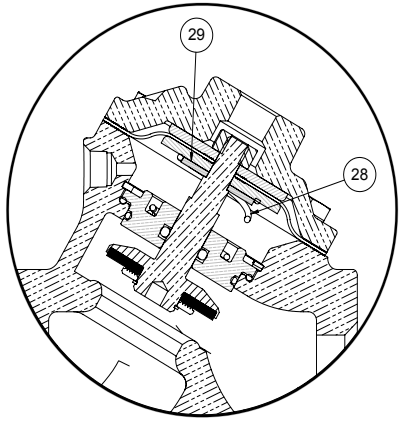
SPRING ASSIST CLOSED MODEL

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
22	NUT, SPRING CENTERING, SS	1078596	1
23	PLUG,1/8",SQ HD,316SS	1078600	1
24	COMPRESSION SPRING,	1078602	1
25	O-RING,2-020,NITRILE	1071674	1
26	CAP, SPRING ASSIST CLSD, CSS	1078604	1
27	SPRING RETAINER NUT, SS	1078598	1

SPRING ASSIST OPEN MODEL

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
28	SPRING,316SS,COMPRESSION	1078608	1
29	WASHER, CENTERING,SS	1236665	1

NOTE:
1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMITED STOP MODEL.



SPRING ASSIST OPEN
MODEL:V46C-3201-03000 (FLANGED)
MODEL:V46C-0201-03000 (THREADED)

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 16, 17, 18	1078624
INT. PARTS KIT (NORMALLY CLOSED) CONSISTS OF STANDARD ITEM NO'S 4, 8, 9(2), 21	1078625
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22, 25, 26	1078626
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28, 29	1078627

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 16, 17, 18, 19	1078629
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22, 23, 24, 25, 26, 27	1078630
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28, 29	1078627

SEE SHEET 1 FOR STANDARD NORMALLY OPEN MODEL

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES: ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	12-27-11
APPROVED	
CHECKED	

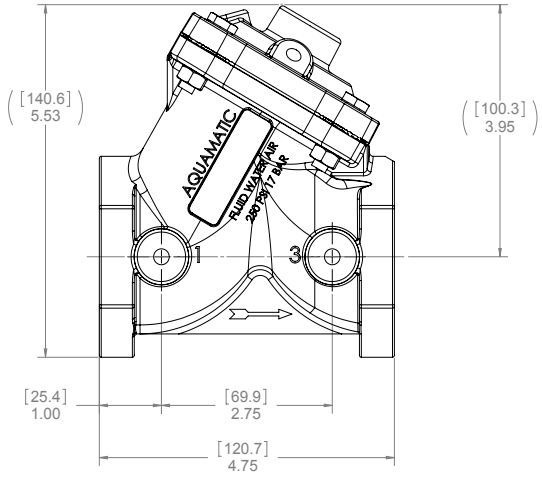
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 461, 316SS STANDARD MODEL

SIZE B | DWG NO. BR1078633 | REV H

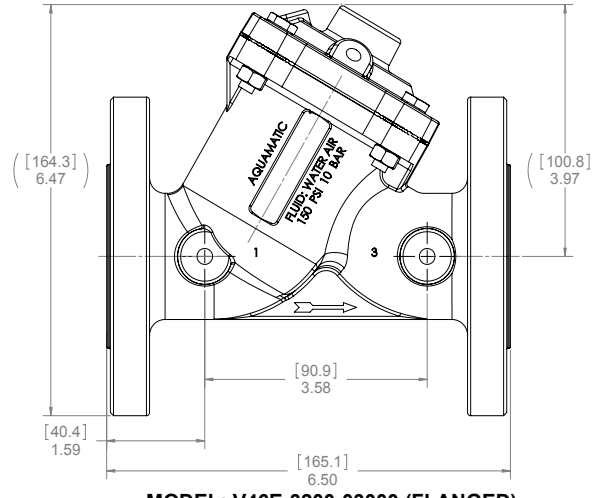
SCALE 1:1 | SHEET 2 OF 2

THREADED

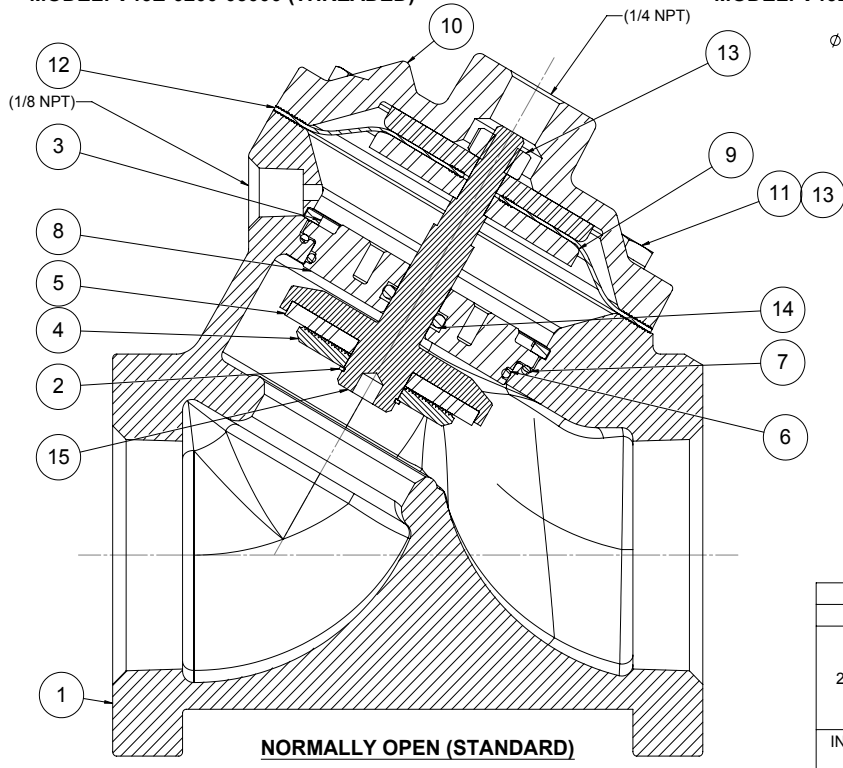


MODEL: V46E-0200-03000 (THREADED)

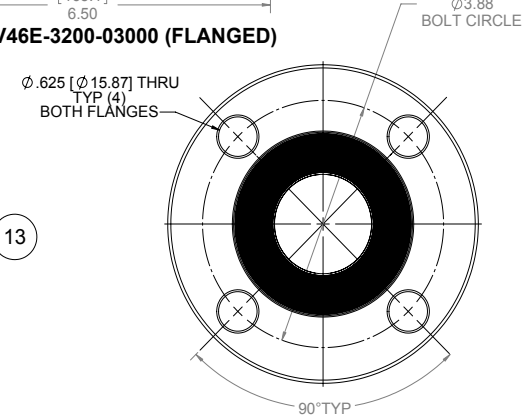
FLANGED



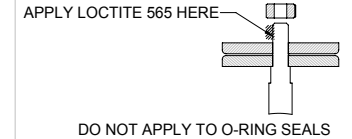
MODEL: V46E-3200-03000 (FLANGED)



NORMALLY OPEN (STANDARD)



FLANGES PER ASTM B16.5
CLASS 150 AND ISO 7005-1 PN20



REPAIR PARTS KITS			
DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 2, 3, 5, 6, 7, 12, 13, 14, 17 & 26 & SILICONE PACK PART NO. BR1071485	1236768 BUNA N INCLUDES DIAPHRAGM 1074222	1236769 E.P.D.M. INCLUDES DIAPHRAGM 1074222	1236775 FKM INCLUDES DIAPHRAGM 1236800
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 8, 9(2), 15	1236780		

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	100100	G	REDRAWN IN SOLIDWORKS	1-4-12	NBE
	103445	H	MODIFIED DIMENSIONS TO SHOW AS REF ON PAGE ONE.	18JUN14	TJM
	1001	J	AQ Matic update & verified part numbers	17JAN17	MGS

ITEM NO.	DESCRIPTION		STD	PART NUMBER	QTY.
1	BODY, 464 1.5" NPT THREADED	CAST CF8M (316 SS)	*	1084204	1
	BODY, 464 1.5" BSPT THREADS			1236792	
	BODY, 464, FLANGED,			1084208	
2	RING, RETAINING, SPRIAL	316 SS	*	1078562	1
3	RING,RETAINING,2.255X.078,SS	316 SS	*	1236749	1
4	PLATE,DISC,464,MCHD	316 SS	*	1236752	1
5	DISC, 424, BUNA	BUNA N	*	1074232	1
	DISC, 424, EP	E.P.D.M.		1074233	
	DISC, 424, VITON	FKM		1074236	
6	O-RING,2-031,NITRILE	BUNA N	*	1071680	1
	O-RING,EP,ORE-031	E.P.D.M.		1236771	
	O-RING, -031, FKM	FKM		1236777	
7	O-RING (NITRILE), 2-033	BUNA N	*	1236751	1
	O-RING,EP,ORE-033	E.P.D.M.		1236772	
	O-RING, -033, FKM	FKM		1236778	
8	SHAFT GUIDE, 464,SS	316 SS	*	1236755	1
9	PLATE, DIAPHRAGM, 464,SS	316 SS	*	1236754	2
10	CAP, NPT TAP TOP, CSS	CAST CF8M	*	1236753	1
11	SCREW,HEX HD,1/4-20X 1 1/8,SS	316 SS	*	1236794	4
12	DIAPHRAGM, 424, NBR	BUNA N	*	1074222	1
	DIAPHRAGM, 424, FKM	FKM		1074224	
13	NUT, HEX, 1/4"-20,SS	316 SS	*	1075693	5
14	O-RING,2-110,NITRILE,TFLN CTD	BUNA N	*	1071689	1
	O-RING, EPDM,TEFLON COATED,	E.P.D.M.		1071726	
	O-RING, -110TC, FKM	FKM		1239021	
15	SHAFT, 464 NORMALLY OPEN	CAST CF8M	*	1084212	1

NOTES:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B1.20.1.
2. VALVES AVAILABLE IN BSPT CONFIGURATION. (SEE ITEM 1)

SEE SHEET 2 FOR CONFIGURATION OPTIONS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.2]
3 PLACE .XXX ± .005 [0.12]

THIRD ANGLE PROJECTION		
APPROVALS	DATE	
DRAWN NE	12-27-11	
APPROVED		
CHECKED		

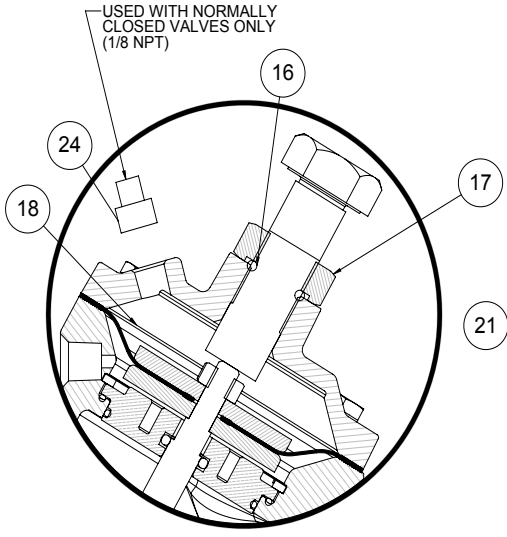
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 464,DIA VALVE STANDARD MODEL

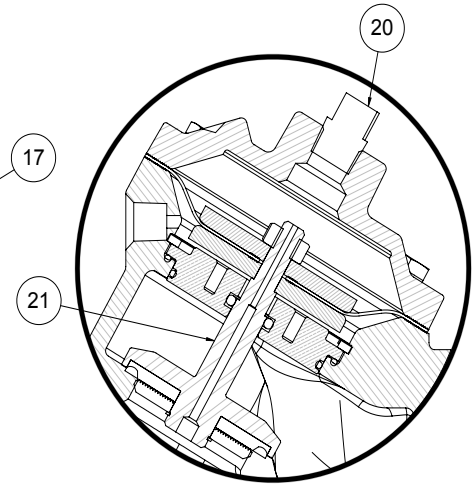
SIZE B | DWG NO. BR1236757 | REV J

SCALE 1:1 | SHEET 1 OF 2

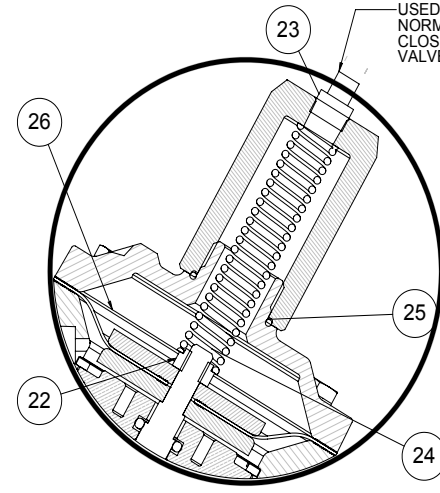
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES.		



LIMIT STOP
MODEL:V46E-3210-03000 (FLANGED)
MODEL:V46E-0210-03000 (THREADED)



NORMALLY CLOSED
MODEL:V46E-3230-03000 (FLANGED)
MODEL:V46E-0230-03000 (THREADED)



SPRING ASSIST CLOSED
MODEL:V46E-3202-03000 (FLANGED)
MODEL:V46E-0202-03000 (THREADED)

LIMIT STOP MODEL

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
16	O-RING,2-112,NITRILE	1071690	1
17	NUT,LIMITED STOP,461-465	1078678	1
18	CAP, LIMIT STOP W/NPT PORT,	1236759	1
45	BOLT,HEX HD,FLL THRD,5/8-18X2	1078676	1

NORMALLY CLOSED MODEL

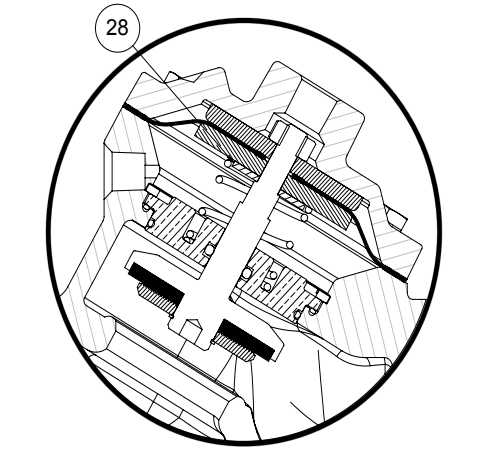
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
20	PLUG, 1/4 IN. NPT SQUARE HEAD	1078592	1
21	SHAFT, 464, NORMALLY CLOSED	1236762	1
46	DIAPHRAGM, 424	1083706	1

SPRING ASSIST CLOSED MODEL

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
22	NUT, SPRING CENTERING, SS	1078596	1
23	PLUG,1/8",SQ HD,316SS	1078600	1
24	SPRING,SS,COMPRESSION,464	1236764	1
25	O-RING,2-020,NITRILE	1071674	1
26	CAP, SPRING ASSIST CLOSED,CSS	1236765	1
52	SPRING RETAINER NUT, 316 SS	1236763	1

SPRING ASSIST OPEN MODEL

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
28	WASHER, CENTERING,SS	1236665	1
55	SPRING, COMPRESSION	1236766	1



SPRING ASSIST OPEN
MODEL:V46E-3201-03000 (FLANGED)
MODEL:V46E-0201-03000 (THREADED)

NOTE:
1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMITED STOP MODEL.

SEE SHEET 1 FOR STANDARD NORMALLY OPEN MODEL

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 16, 17, 18	1236781
INT. PARTS KIT (NORMALLY CLOSED) CONSISTS OF STANDARD ITEM NO'S 4, 8, 9(2), 21	1236782
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22, 25, 26	1236783
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28, 29	1236784

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 16, 17, 18, 19	1236785
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22, 23, 24, 25, 26, 27	1236786
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28, 29	1236784

THIRD ANGLE PROJECTION

	APPROVALS	DATE
DRAWN	NE	12-27-11
APPROVED		
CHECKED		

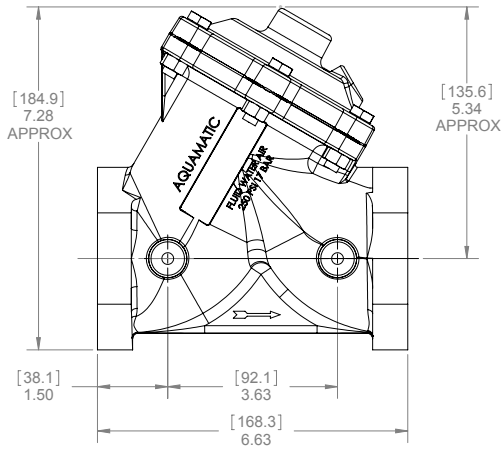
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 464,DIA VALVE STANDARD MODEL

SIZE B | DWG NO. BR1236757 | REV J

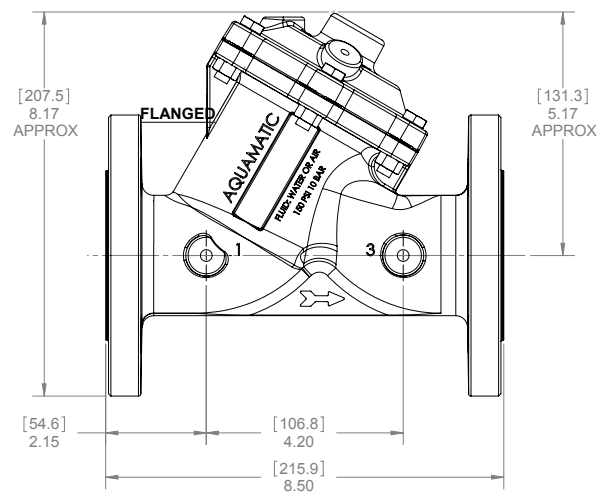
SCALE 1:1 | SHEET 2 OF 2

THREADED



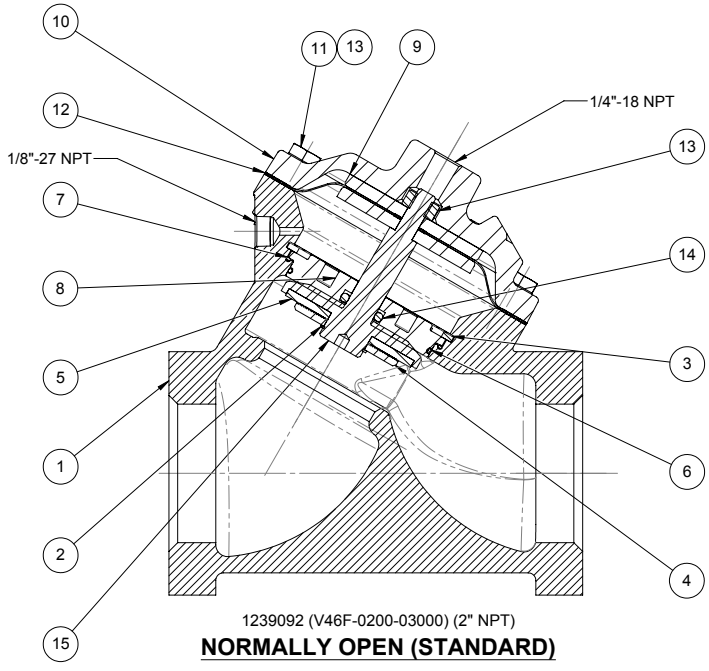
MODEL: V46F-0200-03000 (THREADED)
(1239092)

FLANGED



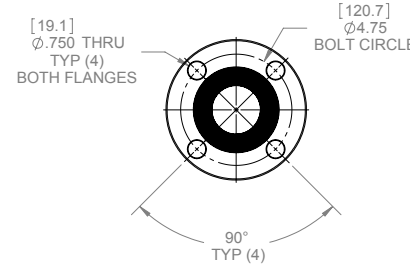
MODEL: V46F-3200-03000 (FLANGED)
(1081116)

TORQUE TABLE		
ITEM #	DESCRIPTION	TORQUE TO (+/- 10%)
11 &13	NUT, SCREW, HEX HEAD	140 IN/LBS
13	NUT UPPER	140 IN/LBS



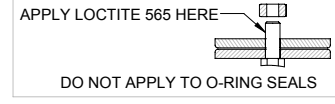
1239092 (V46F-0200-03000) (2" NPT)

NORMALLY OPEN (STANDARD)



FLANGES PER ASTM B16.5
CLASS 150 AND ISO 7005-1 PN20

SEE SHEET 2 FOR
CONFIGURATION OPTIONS



REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	100100	G	REDRAWN IN SOLIDWORKS	1-4-12	NBE
	1001	H	AQ Matic update & verified part numbers	17JAN17	MGS

ITEM NO.	DESCRIPTION			STD	PART NUMBER	QTY.
1	BODY, 465, 2.00, NPT	NPT	CAST CF8M (316 SS)	*	1079059	1
	BODY, 465, 2.00, BSPT	BSPT			1079060	1
	BODY 465, FLANGED	NPT			1078656	1
2	RING,RETAINING,.710X.031		316 SS	*	1078566	1
3	RING,RETAINING,3.053X.093		316 SS	*	1078648	1
4	DISC PLATE, 465		316 SS	*	1078654	1
5	DISC, PURCHASED		BUNA	*	1074307	1
	DISC, PURCHASED		E.P.D.M.		1074309	1
	DISC, PURCHASED		FKM		1074312	1
6	O-RING, 2-037		BUNA N	*	1079836	1
	O-RING,ORE-037		E.P.D.M.		1081948	1
	O-RING, -037		FKM		1081950	1
7	O-RING, 2-039		BUNA N	*	1071685	1
	O-RING,ORE-039		E.P.D.M.		1081949	1
	O-RING, -039		FKM		1071796	1
8	SHAFT GUIDE,465		316 SS	*	1078666	1
9	DIAPHRAGM PLATE, 465		316 SS	*	1078664	2
10	CAP, 465, NPT TAP TOP		CAST CF8M	*	1078660	1
11	SCREW,HX HD CAP,5/16-18X1 1/4		316 SS	*	1078652	6
12	DIAPHRAGM, SERIES 425		BUNA N	*	1074296	1
	DIAPHRAGM, DOUBLE COATED		FKM		1074297	1
13	HEX NUT, 5/16"-18		316 SS	*	1078650	7
14	O-RING, -206		BUNA N	*	1071699	1
	O-RING, -206TC		FKM		1239009	1
15	SHAFT, 465, NORMALLY OPEN		CAST CF8M	*	1078670	1

NOTES:
1. AMERICAN NATIONAL STANDARD TAPER PIPE THREADS (NPT) PER ANSI B1.20.1.
2. VALVES AVAILABLE IN BSPT CONFIGURATION. (SEE ITEM 1)

REPAIR PARTS KITS			
DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 2, 3, 5, 6, 7, 12, 13, 14, 17 & 26 & SILICONE PACK PART NO. 1071485	BR1078704	BR1078705	BR1078706
	BUNA N INCLUDES DIAPHRAGM 1074296	E.P.D.M. INCLUDES DIAPHRAGM 1074296	FKM INCLUDES DIAPHRAGM 1074297
INT. PARTS KIT (NORM. OPEN) CONSISTS OF STANDARD ITEM NO'S 4, 8, 9(2), 15	1078707		

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009 UNLESS OTHERWISE SPECIFIED
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	12-27-11
APPROVED	
CHECKED	

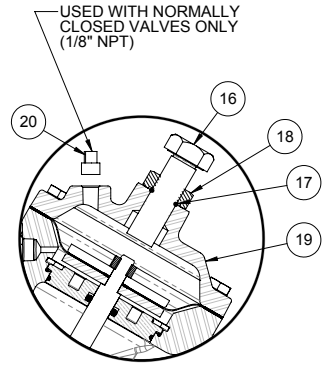
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 465
DIAPHRAGM VALVE STANDARD MODEL

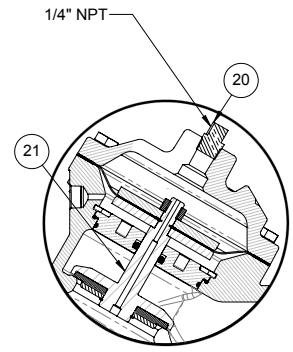
SIZE B | DWG NO. BR1078717 | REV H

SCALE 1:2 | SHEET 1 OF 2

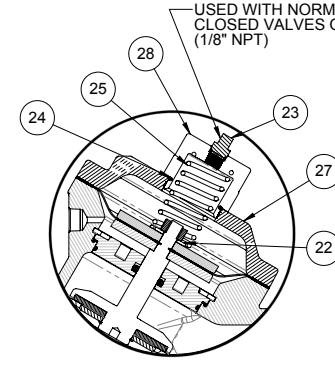
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



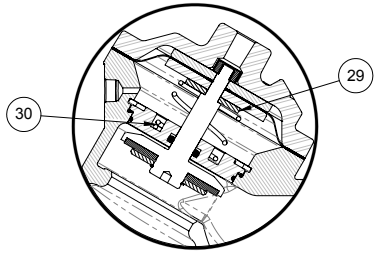
LIMIT STOP
MODEL:V46F-3210-03000 (FLANGED)
MODEL:V46F-0210-03000 (THREADED)



NORMALLY CLOSED
MODEL:V46F-3230-03000 (FLANGED)
MODEL:V46F-0230-03000 (THREADED)



SPRING ASSIST CLOSED
MODEL:V46F-3202-03000 (FLANGED)
MODEL:V46F-0202-03000 (THREADED)



SPRING ASSIST OPEN
MODEL:V46F-3201-03000 (FLANGED)
MODEL:V46F-0201-03000 (THREADED)

NOTE:
1. SPRING ASSIST CLOSED MODEL CANNOT BE COMBINED WITH LIMITED STOP MODEL.

LIMIT STOP MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
16	BOLT,HEX HD,FLL THRD,5/8-18X2	SS	1078676	1
17	O-RING,2-112,NITRILE	BUNA	1071690	1
18	NUT,LIMITED STOP,461-465	SS	1078678	1
19	CAP, 465, NPT, LIMIT STOP	SS	1078680	1

NORMALLY CLOSED MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
20	PLUG, 1/4 IN. NPT SQUARE HEAD	SS	1078592	1
21	SHAFT, 465 NORMALLY CLOSED	SS	1078682	1

SPRING ASSIST CLOSED MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
22	WASHER,CENTERING,465/426/427	SS	1078684	1
23	PLUG,1/8",SQ HD	SS	1078600	1
24	O-RING,2-025,NITRILE	BUNA	1071677	2
25	SPRING,COMPRESSION	SS	1078688	1
27	CAP, 465, SPRING ASST CLSD	SS	1078690	1
28	NUT, SPRG RTNR,425 & 465	SS	BR1078686	1

SPRING ASSIST OPEN MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
29	SPRING, COMPRESSION	SS	1078692	1
30	SPACER,CENTERING	SS	1078694	1

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 16, 17, 18	1078708
INT. PARTS KIT (NORMALLY CLOSED) CONSISTS OF STANDARD ITEM NO'S 4, 8, 9(2), 21	1078709
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22, 25, 26	1078710
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28, 29	1078711

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF STANDARD ITEM NO'S 16, 17, 18, 19	1078713
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF STANDARD ITEM NO'S 22, 23, 24, 25, 26, 27	1078714
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF STANDARD ITEM NO'S 28, 29	1078711

SEE SHEET 1 FOR STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	12-27-11
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 465
DIAPHRAGM VALVE STANDARD MODEL

SIZE	DWG NO.	REV
B	BR1078717	H

SCALE 1:2 SHEET 2 OF 2

AQUAMATIC® K52 SERIES
COMPOSITE CONTROL VALVES

CONSTRUCTED OF CORROSION-RESISTANT MATERIALS

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

FEATURES/BENEFITS

The unique Y-pattern design with large seat opening and high lift disc permits higher flow rates at lower pressure loss than other comparable valves

All components can be serviced while the valve is in-line

Separate flow and control chambers permit positive closing without springs

Pre-formed, stress-relieved diaphragm minimizes fatigue, maximizes valve responsiveness and diaphragm lifetime

Diaphragm acts as an actuator, eliminating the need for electric or pneumatic actuators

All internal parts in contact with media are made of composite materials*

Seals are ethylene propylene for better chemical resistance**

K52 Series Valves are available in sizes from 1/2"- 2"

A variety of available end connectors make the valve compatible for 3/8"-3" pipe sizes

Adaptable to a wide variety of control devices

OPTIONS

Normally open [standard]

Normally closed*

Spring-assist closed

Spring-assist open

Limit stop for flow control

Position indicator

Seal and diaphragm materials for special applications

Union End Connectors - Female socket weld connectors for easy installation and the ability to remove the valve without disrupting the service piping

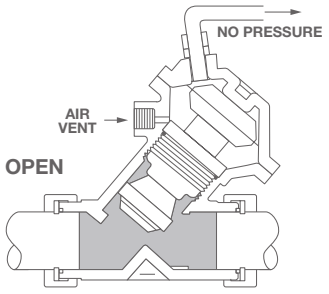
TYPICAL APPLICATIONS

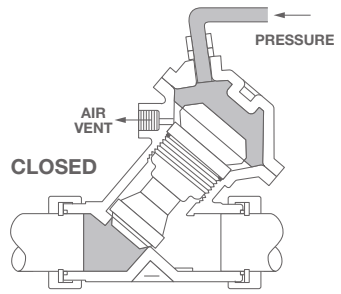
Chemical Injection
Deionizers
Desalinization
Detergent and Bleach Handling
Electronic Industry
Evaporation
Fertilizer Spray Equipment
Level Control Systems
Metal Recovery Systems
Mining Wastes
Process Water Systems
Water Treatment Systems

*Normally closed valve configurations are NOT recommended when used with corrosive fluids.
** Valves are NOT recommended for use with any aromatic, hydrocarbon-based media.

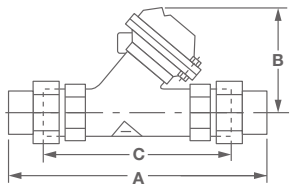
DIMENSIONS

MODEL #	PIPE SIZE	DIMENSIONS (APPROXIMATE)					
		A	B	C	D	E	F
K520	1/2"	7" (177.8 mm)	2.62" (66.5 mm)	4.87" (123.7 mm)	–	–	–
K521	1"	9" (228.6 mm)	4.06" (103.1 mm)	6.31" (160.3 mm)	–	–	–
K524	1-1/2"	12.5" (317.5 mm)	5.06" (128.5 mm)	9.31" (135.0 mm)	–	–	–
K524	2"	10.50" (266.7 mm)	5.06" (128.5 mm)	–	–	–	–
K526	2-1/2"	15" (381.0 mm)	7.31" (185.7 mm)	–	–	–	–
K524	2"	10.5" (266.7 mm)	5.06" (128.5 mm)	–	–	–	–
K526	2-1/2"	15" (381.0 mm)	7.31" (185.7 mm)	–	–	–	–
K520	1/2"	7" (177.8 mm)	2.62" (66.5 mm)	3.93" (99.8 mm)	–	–	–
K521	1"	9" (228.6 mm)	4.06" (103.1 mm)	4.50" (114.3 mm)	–	–	–
K524	1-1/2"	12.5" (336.5 mm)	5.06" (128.5 mm)	7.75" (196.8 mm)	–	–	–
K524	2"	9" (226.6 mm)	5.06" (128.5 mm)	6.00" (152.4 mm)	.75" (19.05 mm)	4.75" (120.85 mm)	.688" (174.8 mm)
K525	2-1/2"	11.37" (288.8 mm)	7.31" (185.7 mm)	6.94" (176.3 mm)	.94" (23.9 mm)	5.50" (139.7 mm)	6.88" (174.8 mm)
K526	3"	12.37" (314.2 mm)	7.31" (185.7 mm)	7.38" (187.5 mm)	1.81" (45.9 mm)	6.000" (152.4 mm)	.750" (19.05 mm)

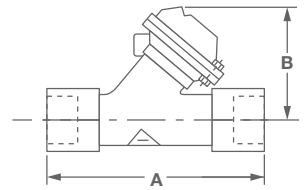




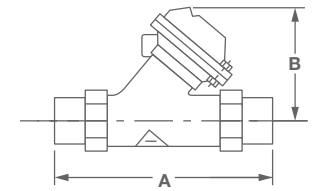
Union End Connectors



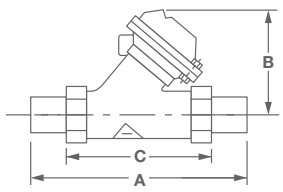
Female Socket Weld End Connectors



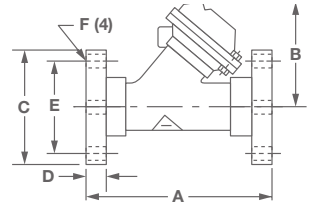
Male Socket Weld End Connectors



Grooved Adaptor Connectors



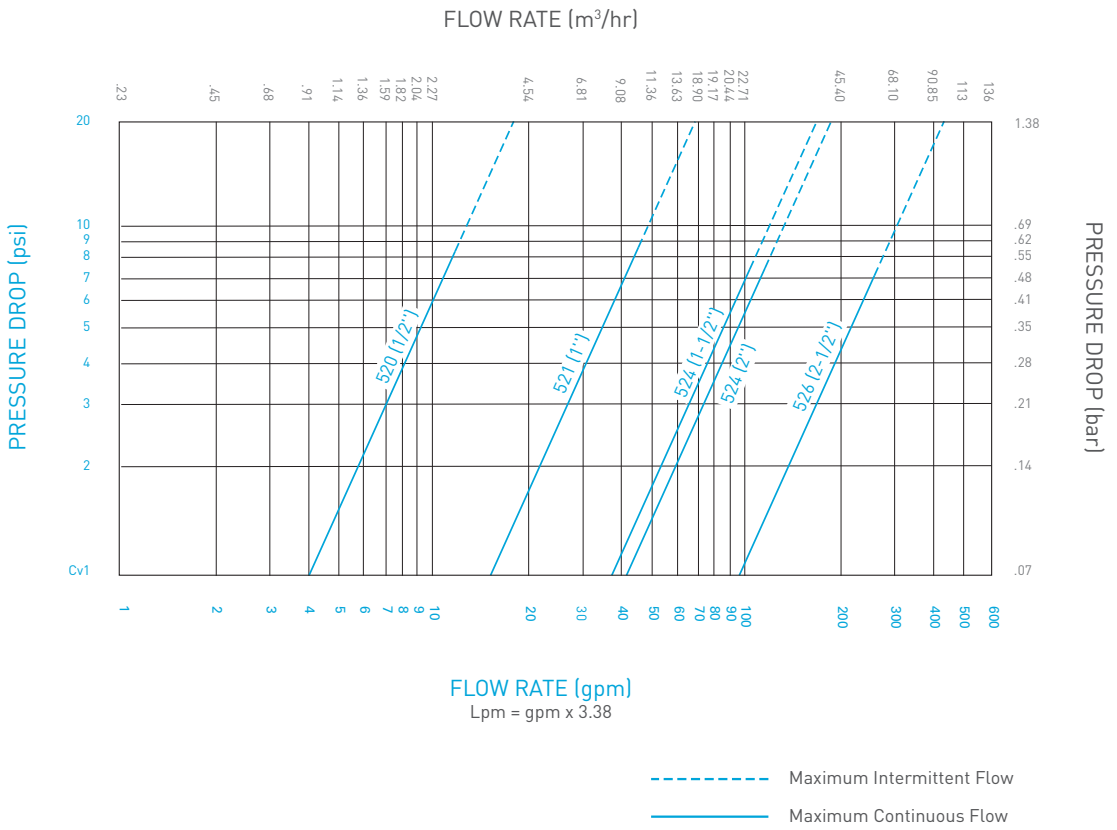
Flanged Socket Weld End Connectors



OPERATING SPECIFICATIONS

Max Pressure	125 psi (8.6 bar)
Max Temperature	140°F (60°C)

PERFORMANCE DATA



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1229846 REV H MA2017

K52 SERIES DIAPHRAGM VALVE MASTER CHART

*** FILL IN PROPER DESIGNATIONS TO DETERMINE PRODUCT NUMBER:** K 5 2 _ _ - X 2 _ _ - 4 _ _ _

BODY SIZE
0 = 1/2"
1 = 1"
4 = 1-1/2"
6 = 2-1/2"

END CONNECTIONS (X std)
X = None

BODY & CAP MATERIAL (2 std)
2 = Noryl

VALVE OPTIONS (00 std for K521, K524, K526; 01 std for K520) [opt 00, 12, 32, & 42 not valid on K520]
[NC & XNC not valid with solenoid options]

00 = NO	12 = NO, LS, SAC	42 = NC, LS, SAC
01 = NO, SAO	21 = NO, PI, SAO	B2 = XNC, SAC
02 = NO, SAC	30 = NC	SX = Special Valve **
10 = NO, LS	31 = NC, SAO	
11 = NO, LS, SAO	32 = NC, SAC (See note 1)	

SEAL MATERIALS (1 std) (Option no. 2 not available on series 526 valves)

OPT.	OPERATING DIAPHRAGM	SEALING DISK	DYNAMIC SEALS	STATIC SEALS	KIT SERIES
1	Buna-N	EP	EP	EP	RA
2	Fluoroelast.	Fluoroelast.	Fluoroelast.	Fluoroelast.	RAVFV
5	Buna-N	Fluoroelast.	Fluoroelast.	Fluoroelast.	RAV
6	Buna-N	Butyl	Butyl	Butyl	RAJ

INTERNAL PARTS (4 std)
4 = Noryl/PVC (140℉ (60℃) Valve Rating)

DRILL & TAP BOSSES (0 std [1/8" NPT std for K520/K521/K524; 1/4" NPT std for K526])

0 = None	3 = Boss #3	6 = Bosses #1,2
1 = Boss #1	4 = Boss #4	~~7 = Bosses #1,3~~
2 = Boss #2	~~5 = Bosses #1,2,3,4~~	

SOLENOID OPTIONS (0 std) [Solenoid option not available with NC or XNC valves]

0 = None	2 = Energize to Close (EC)	4 = EO w/ Dry Drain
1 = Energize to Open (EO)	3 = Independent pressure (IP)	5 = EC w/ Dry Drain

SOLENOID FEATURES (0 std)

0 = None	E = 220V/50HZ, NEMA 4
D = 115V/60HZ, NEMA 4	F = 24V/60HZ, NEMA 4

* To create a valve number replace each "_" with the proper number or letter for the feature you desire.
For example, a 2" Plastic Valve Model K524 with Normally Closed and Spring Assist Closed Options is designated as a K524-X232-14000.

** A special valve will have a custom drawing number (_ _ _ _ _ _ _)
and the item number format is (K52?-?2SX-_ _ _ _ _)
where the last 5 numbers (Far Right) are the last five digits of the drawing number.

Valve Option Notes:

1. **Option 32 (NC, SAC) not possible on K520, use option B2 (XNC, SAC).**

REV.	ECO NO.	DESCRIPTION	BY/DATE
E	21190	Revised for AQ Matic ECN release	JJJ 17-Nov-09

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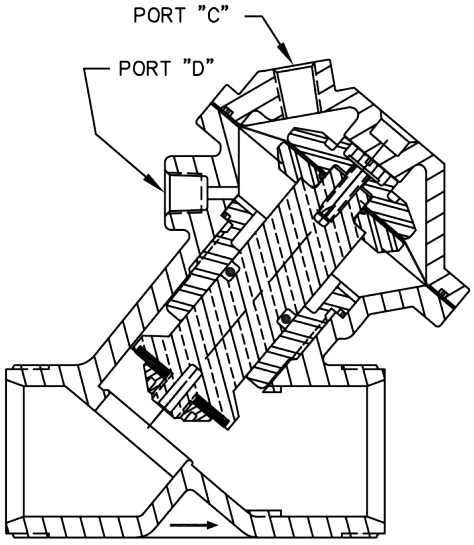
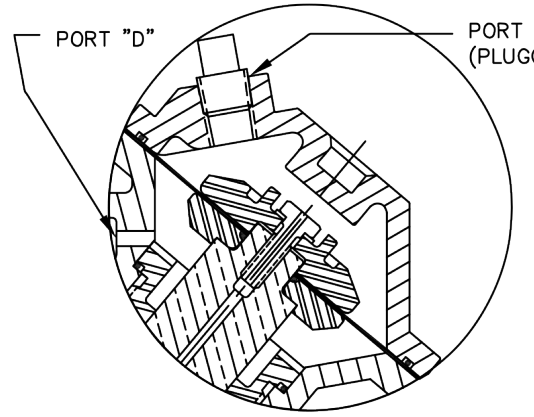
42983 REV F MAY17

DIAPHRAGM VALVE CONFIGURATIONS - STANDARD MODEL



NORMALLY OPEN

LINE PRESSURE/FLOW AGAINST THE VALVE SEATING DISC WILL OPEN THE VALVE. CONTROL PRESSURE APPLIED TO THE TOP OF THE DIAPHRAGM (PORT "C") WILL CLOSE THE VALVE.

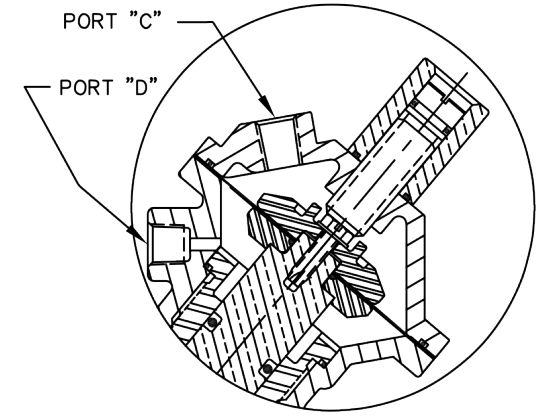


NORMALLY CLOSED

LINE PRESSURE AGAINST THE DISC, TRANSFERRED THRU THE VALVE'S HOLLOW SHAFT TO THE TOP OF THE DIAPHRAGM, WILL CLOSE THE VALVE. CONTROL PRESSURE AT PORT "D" WILL OPEN THE VALVE. ADDITION OF "SPRING ASSIST CLOSED" FEATURE IS RECOMMENDED FOR THE FOLLOWING CONDITIONS:

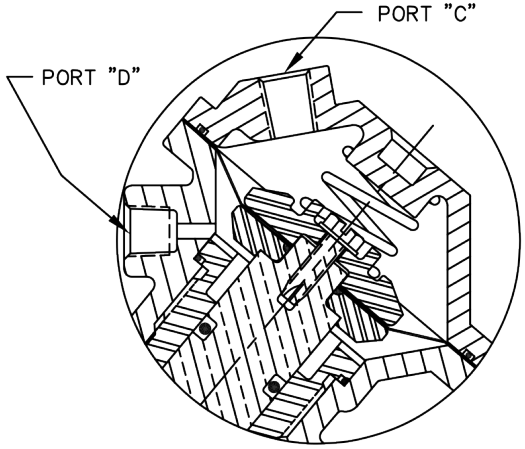
1. LOW PRESSURE AND/OR FLOW.
2. VALVE DISCHARGES TO ATMOSPHERE.

NORMALLY CLOSED FEATURE NOT RECOMMENDED FOR LINE MEDIA CONTAINING SOLIDS, HIGH TEMPERATURES OR OTHER MEDIA CONDITIONS WHICH MAY DAMAGE THE DIAPHRAGM.



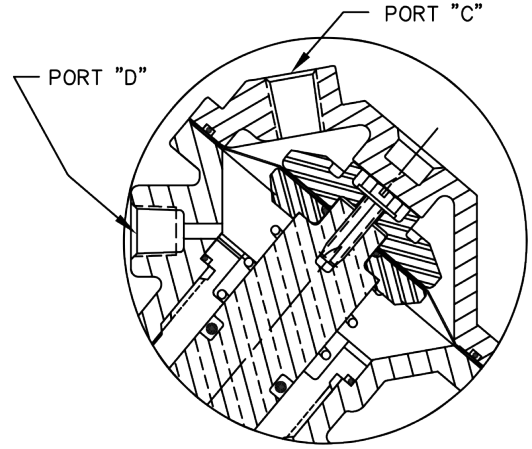
LIMIT STOP

INCLUDES AN ADJUSTMENT SCREW WHICH LIMITS THE VALVE STROKE. MAY BE USED TO CONTROL FLOW RATE, HOWEVER, FLOW RATE WILL VARY WITH CHANGES IN PRESSURE.



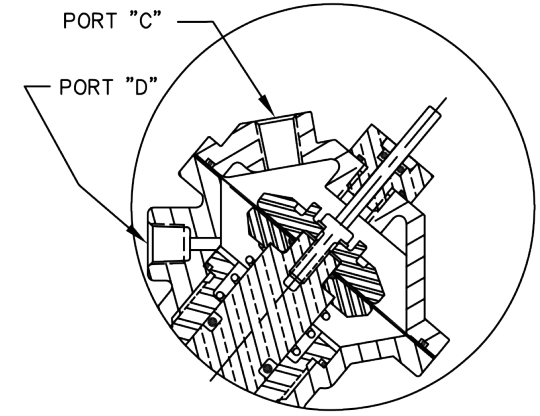
SPRING ASSIST CLOSED

SPRING SERVES AS AN ASSIST TO ASSURE FULL VALVE CLOSURE IN THE ABSENCE OF LINE AND CONTROL PRESSURES.



SPRING ASSIST OPEN

SPRING SERVES AS AN ASSIST TO ASSURE FULL VALVE OPENING IN THE ABSENCE OF LINE AND CONTROL PRESSURES. (STANDARD ON SERIES 520 VALVES.)



POSITION INDICATOR

INDICATOR ROD IS ATTACHED TO MAIN VALVE STEM TO SHOW POSITION OF VALVE. ONLY AVAILABLE WITH SPRING ASSIST OPEN OPTION.

FORM NO. 1081310

AQ Matic
Valve & Controls Company Inc.

SERIES 520 DIAPHRAGM VALVES

REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	RELEASE NEW DESIGN	1416	JWB	25JUL01	VP

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	25JUL01	1078147

PRINTED IN U.S.A.

PLASTIC DIAPHRAGM VALVES (520 THRU 526)

SERIES	PIPE SIZE	SEAT DIAMETER IN. / CM.	SEAT AREA SQ. IN. / SQ. CM.	DIAPHRAGM AREA SQ. IN. / SQ. CM.	TOTAL STROKE IN. / CM.	DIAPHRAGM CHAMBER (VOLUME) CUBIC IN. / CUBIC CM.	* Cv	** Kv	FLOW RATE @ 10 FT./SEC. (3 M./SEC.) NOTE 1 GAL./MIN. / CU.M/HR	FLOW RATE @ 20 FT./SEC. (6 M./SEC.) NOTE 2 GAL./MIN. / CU.M/HR	PRESSURE DROP @ 10 FT./SEC. (3 M./SEC.) NOTE 1 P.S.I. / bar	PRESSURE DROP @ 20 FT./SEC. (6 M./SEC.) NOTE 2 P.S.I. / bar
520	1/2"	.507 / 1.28	.20 / 1.30	.52 / 3.35	.28 / .71	.55 / 9.00	4.0	3.4	6.2 / 1.4	12.4 / 2.8	2.4 / 0.16	9.6 / 0.66
521	1"	.996 / 2.52	.77 / 4.96	2.07 / 13.35	.56 / 1.42	3.05 / 49.90	15.0	13.0	24 / 5.4	48 / 10.8	2.5 / 0.17	10.2 / 0.7
524	1 1/2"	1.62 / 4.11	2.06 / 13.28	3.86 / 24.89	1.00 / 2.54	7.32 / 119	38.0	32.7	64 / 14.4	128 / 28.8	2.8 / 0.19	11.3 / 0.78
526	2 1/2"	2.37 / 6.01	4.40 / 28.38	8.32 / 53.66	1.62 / 4.11	12.20 / 200	100.0	86.0	136 / 31.0	272 / 62.0	1.8 / 0.12	7.4 / 0.51

* Cv – FLOWRATE (GAL./MIN.) OF WATER AT 60° F. AT 1 P.S.I. PRESSURE DROP

** Kv – FLOWRATE (CU. M./HR) OF WATER AT 15.5° C. AT 1 BAR PRESSURE DROP

NOTE 1: MAXIMUM CONTINUOUS VELOCITY THROUGH THE VALVE.

NOTE 2: MAXIMUM CONTINUOUS VELOCITY. EXTENDED SERVICE AT THIS VELOCITY MAY CAUSE CAVITATION.

TO DETERMINE FLOWRATE AT ANY GIVEN PRESSURE DROP, THE FOLLOWING FORMULAS CAN BE USED.

FOR WATER AND LIQUIDS:

$$Q = \frac{Cv\sqrt{\Delta P}}{\sqrt{e}}$$

FOR AIR AND GAS:

WHEN P2 < .5P1

$$Cv = \frac{CFM\sqrt{e}}{.5P1}$$

WHEN P2 > .5P1

$$Cv = \frac{CFM\sqrt{e}}{\sqrt{\Delta P\ P2}}$$

Q – FLOWRATE IN GAL./MIN.
ΔP – PRESSURE DROP (LB./SQ. IN.)
e – SPECIFIC GRAVITY (WATER = 1.00)

CFM – CU. FT./MIN. FLOW
e – SPECIFIC GRAVITY (AIR = 1.00)
P1 – INLET PRESSURE (LB./SQ. IN.)
P2 – OUTLET PRESSURE (LB./SQ. IN.)

THE DATA PRESENTED HERE IS BELIEVED TO BE RELIABLE AND OFFERED AS SUGGESTION ONLY. ACTUAL RESULTS MAY VARY DEPENDING UPON APPLICATION.

FORM NO. 1081310

PRINTED IN U.S.A.

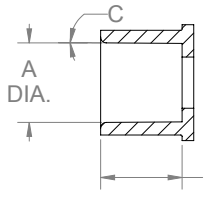
REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	RELEASE NEW DESIGN	1416	JWB	25JUL01	VP

AQ Matic
Valve & Controls Company Inc.

SERIES 520 DIAPHRAGM VALVES

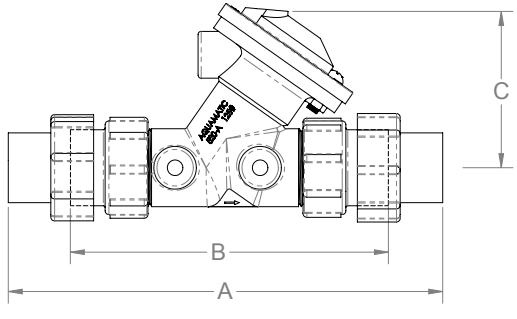
SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	25JUL01	1078147

DIAPHRAGM VALVE INFORMATION - STANDARD MODEL

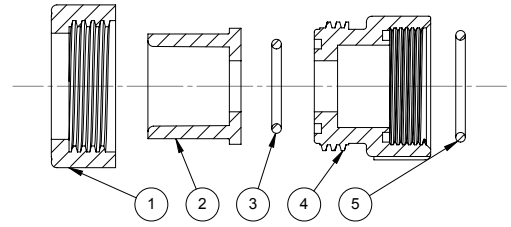


FEMALE SOCKET WELD END CONNECTOR

VALVE SERIES	STANDARD	DIAMETER A	DEPTH B	TAPER C
520	A.S.T.M. 1/2"	.848/.856"	.875"	0°, 24'
	I.S.O. NS-15	20.1/20.3 MM	22.2 MM	0°, 15'
	J.I.S 16	21.9/22.3 MM	22.2 MM	0°, 19'
521	A.S.T.M. 1"	1.325/1.335"	1.125"	0°, 23'
	I.S.O. NS-25	32.1/32.3 MM	28.6 MM	0°, 15'
	J.I.S 25	31.9/32.4 MM	28.6 MM	0°, 16'
524	A.S.T.M. 1-1/2"	1.912/1.924"	1.375"	0°, 23'
	I.S.O. NS-40	50.1/50.3 MM	34.9 MM	0°, 15'
	J.I.S 40	47.9/48.5 MM	34.9 MM	0°, 16'



VALVE SERIES	UNITS	LENGTH A	LENGTH B	HEIGHT C
520	INCHES	7.00	4.87	2.62
	MM	177.8	123.7	66.5
521	INCHES	9.00	6.31	4.06
	MM	228.6	160.3	103.1
524	INCHES	12.50	9.31 (B6)	5.06
	MM	317.5	236.5	128.5



UNION END ADAPTOR

SERIES 520 UNION END ADAPTOR KITS

A.S.T.M. 1/2" INCLUDES ITEMS 1,2,3,4,5	E.P.D.M O-RING	1070184
	BUTYL O-RING	1070185
	FKM O-RING	1070186
I.S.O NW-15 INCLUDES ITEMS 1,2,3,4,5	E.P.D.M O-RING	1070190
	BUTYL O-RING	1070191
	FKM O-RING	1070192
J.I.S - 16 INCLUDES ITEMS 1,2,3,4,5	E.P.D.M O-RING	1070193
	BUTYL O-RING	1070194
	FKM O-RING	1070195

SERIES 521 UNION END ADAPTOR KITS

A.S.T.M. 1" INCLUDES ITEMS 1,2,3,4,5	E.P.D.M O-RING	1070202	
	BUTYL O-RING	1071153	(B3)
	FKM O-RING	1071154	(B3)
I.S.O NW-25 INCLUDES ITEMS 1,2,3,4,5	E.P.D.M O-RING	1070204	
	BUTYL O-RING	1071155	
	FKM O-RING	1071156	
J.I.S - 25 INCLUDES ITEMS 1,2,3,4,5	E.P.D.M O-RING	1070205	
	BUTYL O-RING	1071157	
	FKM O-RING	1071158	

SERIES 524 UNION END ADAPTOR KITS

A.S.T.M. 1-1/2" INCLUDES ITEMS 1,2,3,4,5	E.P.D.M O-RING	1070208
	BUTYL O-RING	1071220
	FKM O-RING	1070209
I.S.O NW-40 INCLUDES ITEMS 1,2,3,4,5	E.P.D.M O-RING	1070212
	BUTYL O-RING	1071221
	FKM O-RING	1070213
J.I.S - 40 INCLUDES ITEMS 1,2,3,4,5	E.P.D.M O-RING	1070214
	BUTYL O-RING	1071222
	FKM O-RING	1070215

NOTE: ALL ADAPTOR KITS CONTAIN (2) ADAPTORS, (ONE KIT REQ'D PER VALVE)

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	1416	A	RELEASE NEW DESIGN	25JUL01	VP
	103861	B	1- REDRAWN IN SOLIDWORKS, 2- WAS 1074991, 3- WAS 1070153, 4- WAS 1070154, 5- WAS 57.2 MM, 6- WAS 23.5 MM	06OCT14	TJM
	1001	C	AQ Matic update & verified part numbers	20JAN17	MGS

SERIES 520 UNION END ADAPTOR

1	TAILPIECE NUT		1074995
2	FEMALE SOCKET WELD END CONNECTOR	A.S.T.M. 1/2"	3020727 (B2)
		I.S.O. NW-15	1074992
		J.I.S. 16	1074993
3	O-RING	E.P.D.M	1071730
		BUTYL	1071766
		FKM	1071801
4	TAILPIECE		1074996
5	O-RING	E.P.D.M	1071731
		BUTYL	1071767
		FKM	1071802

SERIES 521 UNION END ADAPTOR

1	TAILPIECE NUT		1075067
2	FEMALE SOCKET WELD END CONNECTOR	A.S.T.M. 1"	1075061
		I.S.O. NW-25	1075063
		J.I.S. 25	1075065
3	O-RING	E.P.D.M	1071732
		BUTYL	1071768
		FKM	1071803
4	TAILPIECE		1075068
5	O-RING	E.P.D.M	1071733
		BUTYL	1071769
		FKM	1071804

SERIES 524 UNION END ADAPTOR

1	TAILPIECE NUT		1075150
2	FEMALE SOCKET WELD END CONNECTOR	A.S.T.M. 1-1/2"	1075144
		I.S.O. NW-40	1075146
		J.I.S. 40	1075148
3	O-RING	E.P.D.M	1071735
		BUTYL	1071771
		FKM	1071807
4	TAILPIECE		1075151
5	O-RING	E.P.D.M	1071736
		BUTYL	1071772
		FKM	1071808

SEE FORM 1078152 FOR SOCKET WELD & FLANGED ADAPTORS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

	APPROVALS	DATE
DRAWN	MCP	7OCT14
APPROVED		
CHECKED		

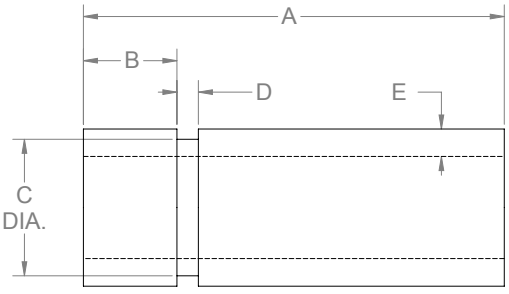
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 520/521/524 PARTS KITS

SIZE B | DWG NO. 1081309 | REV C

SCALE 1:2 | SHEET 1 OF 2

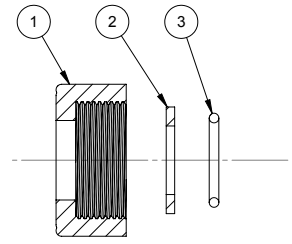
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR A LIST OF CHANGES		



RING GROOVE DIMENSIONS

VALVE SERIES	UNITS	LENGTH A	LOCATION B	DIA. C	WIDTH D	WALL THK E
520	INCHES	2.25	0.500	0.730	0.115	0.147
	MM	57.2	12.7	18.5	2.9	3.7
521	INCHES	3.00	0.500	1.200	0.115	0.179
	MM	76.2	12.7	30.5	2.9	4.55
524	INCHES	4.00	0.875	1.800	0.115	0.200
	MM	101.6	22.2	45.7	2.9	5.1

(B5)



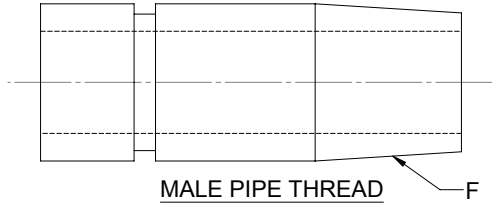
RETAINER NUT/SPLIT RING CONNECTOR

VALVE SERIES			520	521	524
1	RETAINER NUT		1074974	1075041	1075112
2	SPLIT RING		1074975	1075042	1075113
3	O-RING	E.P.D.M	1071730	1071732	1071734
		BUTYL	1071766	1071768	1071770
		FKM	1071801	1071803	1071806

RETAINER NUT/SPLIT RING CONNECTOR KITS

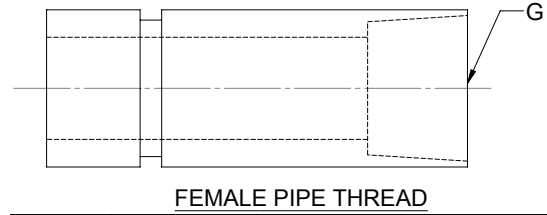
SERIES 520 INCLUDES ITEMS 1,2,3	E.P.D.M O-RING	1070238
	BUTYL O-RING	1070239
	FKM O-RING	1070240
SERIES 521 INCLUDES ITEMS 1,2,3	E.P.D.M O-RING	1070244
	BUTYL O-RING	1071159
	FKM O-RING	1071160
SERIES 524 INCLUDES ITEMS 1,2,3	E.P.D.M O-RING	1070246
	BUTYL O-RING	1071223
	FKM O-RING	1070247

GROOVED ADAPTOR KITS



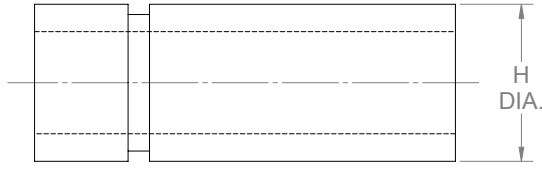
MALE PIPE THREAD

VALVE SERIES	520	521	524
PART NO.	1070221	1070227	1070233
DIM. F	1/2" NPT	1" NPT	1-1/2" NPT



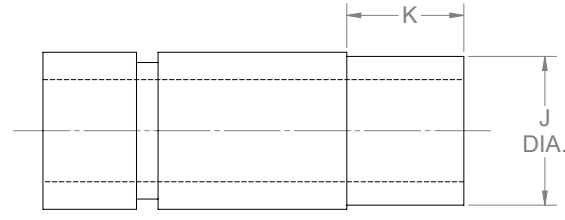
FEMALE PIPE THREAD

VALVE SERIES	520	521	524
PART NO.	1070222	1070228	1070234
DIM. G	3/8" NPT	3/4" NPT	1-1/4" NPT



MALE SOCKET WELD

VALVE SERIES	520	521	524
PART NO.	1070220	1070226	1070232
DIM. H	0.840 IN. 21.3 MM	1.315 IN. 33.4 MM	1.900 IN. 48.3 MM

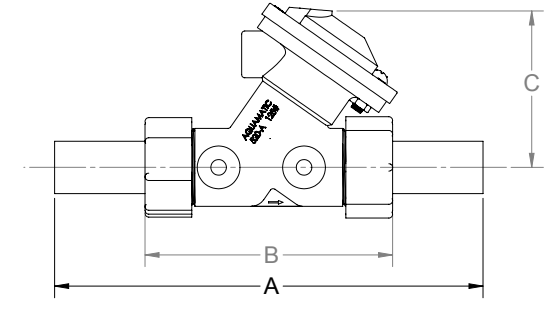


MALE SOCKET WELD (METRIC)

VALVE SERIES	520	521	524
PART NO.	1071057	1071091	1071162
DIM. J	20.2 MM	32.2 MM	50.2 MM
DIM. K	15.9 MM	25.4 MM	30.0 MM

NOTE: ALL ADAPTOR KITS CONTAIN (2) ADAPTORS, (ONE KIT REQ'D PER VALVE)

NOTE: ALL CONNECTOR KITS CONTAIN (2) CONNECTORS, (ONE KIT REQ'D PER VALVE)



VALVE SERIES	UNITS	LENGTH A	LENGTH B	HEIGHT C
520	INCHES	7.00	3.93	2.62
	MM	177.8	99.8	66.5
521	INCHES	9.00	4.50	4.06
	MM	228.6	114.3	103.1
524	INCHES	13.25	7.75	5.06
	MM	336.5	196.9	128.5

SEE FORM 1081311 FOR SOCKET WELD & FLANGED ADAPTORS

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UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN MCP	7OCT14
APPROVED	
CHECKED	

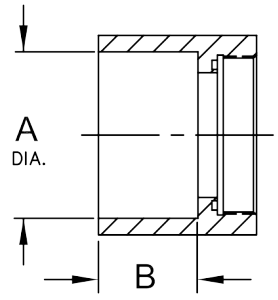
AQ Matic
Valve & Controls Company Inc.

TITLE
ADAPTOR KIT, UNION END
PARTS KITS

SIZE	DWG NO.	REV
B	1081309-2	B

SCALE 1:2 SHEET 2 OF 2

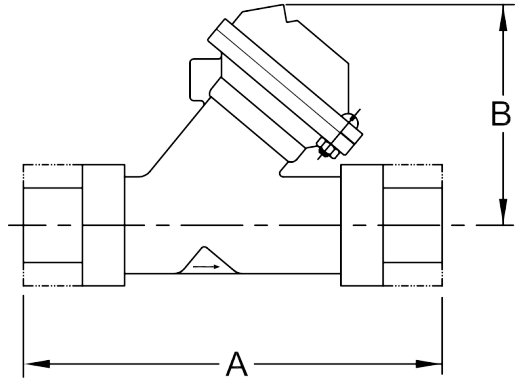
2" & 2-1/2" END CONNECTOR PARTS & KITS



FEMALE SOCKET WELD END CONNECTOR KITS

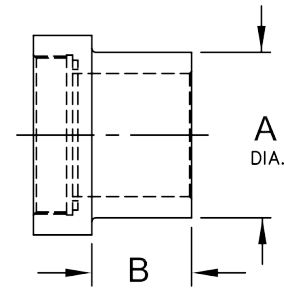
VALVE SERIES	STANDARD	PART NO. *	DIAMETER A	DEPTH B
524	A.S.T.M. 2"	K524–UF08U_P	2.376/2.384"	1.50"
	I.S.O. NW–50	K524–UF50M_P	2.484/2.492"	1.50"
	J.I.S. 50	K524–UF50J_P	2.359/2.383"	1.50"
526	A.S.T.M. 2–1/2"	K526–UF10U_P	2.875"	1.81"
	I.S.O. NW–65	K526–UF65M_P	2.956/2.964"	1.81"
	J.I.S. 65	K526–UF65J_P	3.008"	1.81"

NOTE: ALL CONNECTOR KITS CONTAIN (2) CONNECTORS AND (2) O–RINGS* (ONE KIT REQ'D. PER VALVE)



VALVE SERIES	PIPE SIZE	UNITS	LENGTH A	HEIGHT B
524	2"	INCHES	10.50	5.06
		MM	266.7	128.5
526	2-1/2"	INCHES	15.00	7.31
		MM	381.0	185.7

SEE FORM 1078142 FOR SOCKET WELD & PIPE ADAPTORS



MALE SOCKET WELD END CONNECTOR KITS

VALVE SERIES	STANDARD	PART NO. *	DIAMETER A	LENGTH B
524	A.S.T.M. 2"	K524–UM08U_P	2.375/2.370"	1.50"
	I.S.O. NW–50	K524–UM50M_P	2.490/2.486"	1.50"
	J.I.S. 50	K524–UM50J_P	2.384/2.364"	1.00"
526	A.S.T.M. 2–1/2"	K526–UM10U_P	2.882/2.868"	1.69"
	I.S.O. NW–65	K526–UM65M_P	2.965/2.953"	1.69"
	J.I.S. 65	K526–UM65J_P	3.017/2.997"	1.38"

O-RING FOR SOCKET WELD END CONNECTORS

VALVE SERIES	MATERIAL	PART NO.	O-RING IDENTIFIER
524	E.P.D.M.	1071750 ~~ORE–226~~	E
	BUTYL	1079844 ~~ORJ–226~~	J
	FKM	1071821 ~~ORV–226~~	V
526	E.P.D.M.	1071753 ~~ORE–232~~	E
	BUTYL	1071783 ~~ORJ–232~~	J
	FKM	1071825 ~~ORV–232~~	V

*WHEN ORDERING KITS, INSERT O–RING IDENTIFIER INTO PART NUMBER AS SHOWN BELOW

EXAMPLE: K524–UF08UEP (2" FEMALE SOCKET WELD WITH E.P.D.M. O–RING)

O–RING IDENTIFIER

FORM NO. 1081311

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE NEW DESIGN	1416	JWB	25JUL01	VP

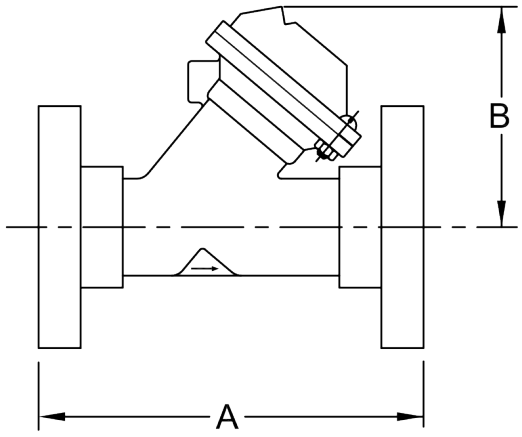
AQ Matic
Valve & Controls Company Inc.

SERIES 524, & 526 DIAPHRAGM VALVE END CONNECTOR PARTS & KITS

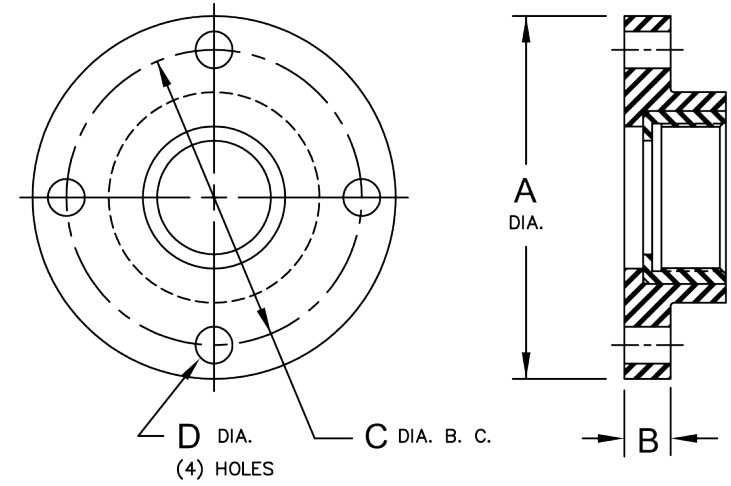
SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	25JUL01	1078150

PRINTED IN U.S.A.

2", 2-1/2" & 3" END CONNECTOR PARTS & KITS



VALVE SERIES	PIPE SIZE	UNITS	LENGTH A	HEIGHT B
524	2"	INCHES	9.00	5.06
		MM	228.6	128.5
526	2-1/2"	INCHES	11.37	7.31
		MM	288.8	185.7
526	3"	INCHES	12.37	7.31
		MM	314.2	185.7



FLANGED END CONNECTOR KITS

VALVE SERIES	STANDARD	PART NO.	DIAMETER A	THICKNESS B	DIAMETER C	DIAMETER D
524	A.S.T.M. 2"	1070250 ~~K524-V~~	6.00"	.75"	4.750"	.688"
526	A.S.T.M. 2-1/2"	1070251 ~~K526-L~~	6.94"	.94"	5.500"	.688"
	A.S.T.M. 3"	1070252 ~~K526-T~~	7.38	1.81"	6.000"	.750"

NOTE: ALL CONNECTOR KITS CONTAIN (2) CONNECTORS, (ONE KIT REQ'D PER VALVE)

O-RING FOR SOCKET WELD END CONNECTORS

VALVE SERIES	MATERIAL	PART NO.
524	E.P.D.M.	1071750 ~~ORE-226~~
	BUTYL	1079844 ~~ORJ-226~~
	FKM	1071821 ~~ORV-226~~
526	E.P.D.M.	1071753 ~~ORE-232~~
	BUTYL	1071783 ~~ORJ-232~~
	FKM	1071825 ~~ORV-232~~

SEE FORM 1078142 FOR SOCKET WELD & PIPE ADAPTORS

FORM NO. 1081311

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	RELEASE NEW DESIGN	1416	JWB	25JUL01	VP

AQ Matic
Valve & Controls Company Inc.

SERIES 524, & 526 DIAPHRAGM VALVE END CONNECTOR PARTS & KITS

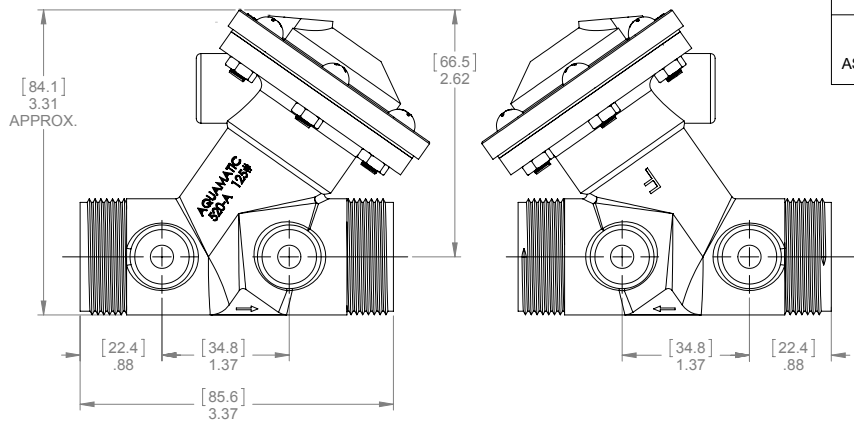
SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	25JUL01	1078150

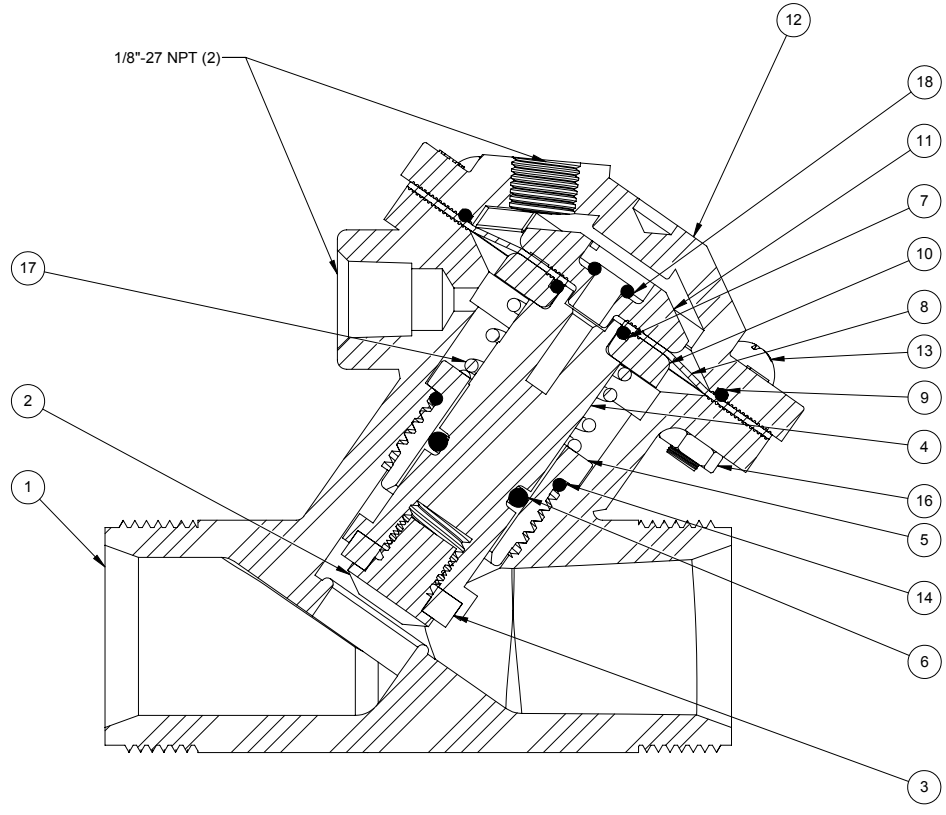
PRINTED IN U.S.A.

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #5)	1074989 (520-Z)
TO HOLD SHAFT (ITEM #4) DURRING ASSEMBLY/DISASSEMBLY	1077834

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	30212	M	REDRAWN IN SOLIDWORKS	11OCT11	TS
	103915	N	1-UNION END CONNECTOR WAS:1078140(BOTH PGS), 2- ADD'D ITEM 18. 3- UPDATED TITLE BLOCK	28OCT14	TJM
	1001	O	Update to AQ Matic & verified part numbers	16JAN17	MGS





1070140 (K520-X201-14000)
NORMALLY OPEN W/ SPRING ASSIST OPEN (STANDARD)

ITEM NO.	DESCRIPTION		PART NUMBER	Default/QTY
1	BODY, K520		1074943	1
2	SCREW,DISC,PLATE,520,NORYL		1077903	1
3	DISC	EPDM	1074966	1
		BUTYL	1074967	
		FKM	1074968	
4	SHAFT, 520		1077854	1
5	GUIDE,SHAFT,520,NORYL		1074964	1
6	O-RING	EPDM	1071727	1
		BUTYL	1071764	
		FKM	1242390	
7	O-RING	EPDM	1071717	1
		FKM	1071787	
8	DIAPHRAM	NBR	1078035	1
		FKM	1078047	
9	O-RING	EPDM	3015801	1
10	PLATE,DIAPHRAGM,520,LWR,NORYL		1077858	1
11	PLATE, DIAPHRAGM, UPPER, 520		1077856	1
12	CAP, 520		1074948	1
13	SCREW, 10-32X 5/8",RND HD, SS		1072379	6
14	O-RING, -018, EPDM	EPDM	1071720	1
		BUTYL	1071762	
		FKM	1071790	
15	SCREW, CUTTING 1/4" TYPE BT		1077781	1
16	HEX NUT, 10-32, SS		1071647	6
17	SPRING, COMPRESSION		1074982	1
18	O-RING	NBR	41122	1
		FKM	41122-01	

REPAIR PARTS KIT		
DESCRIPTION	PART NO.	
DIAPHRAGM & SEAL KIT	1081784 (520-RAN) E.P.D.M. INCLUDES DIAPHRAGM BR1078035	1081783 (520-RAJN) BUTYL INCLUDES DIAPHRAGM BR1078035
CONSISTS OF ITEM NO'S 3,6,7,8,9,14	1081787 (520-RAVN) FKM INCLUDES DIAPHRAGM BR1078035	1081786 (520-RAVFVN) FKM INCLUDES DIAPHRAGM BR1078047
INT. PART KIT (NORM. OPEN) CONSISTS OF ITEMNO'S 2,4,5,10,11,15	1079600 (K520-RFN)	

SEE SHEET 1081309 FOR UNION END CONNECTORS
SEE SHEET 1078141 FOR GROOVED ADAPTERS
SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1 °
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	
APPROVED	
CHECKED	

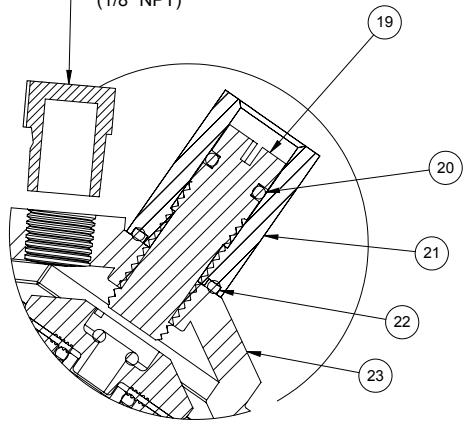
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 520, VALVE
STANDARD MODEL

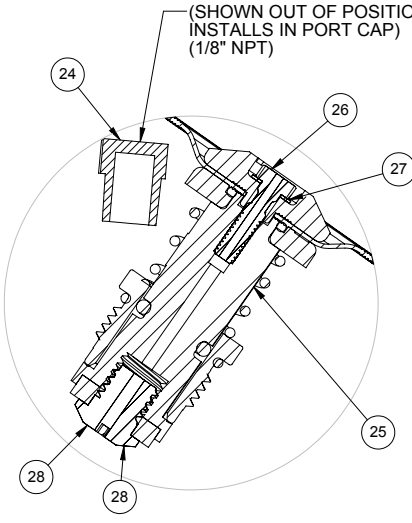
SIZE	DWG NO.	REV
B	BR1078139	O

SCALE 1:2 SHEET 1 OF 2

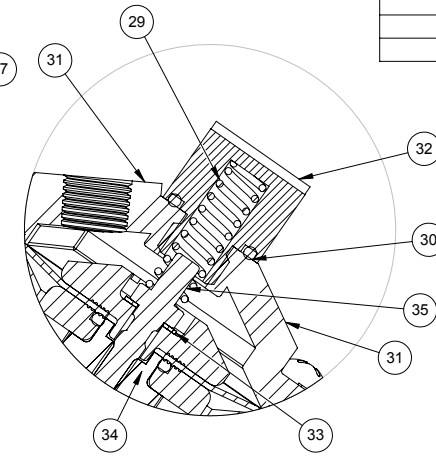
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR A LIST OF CHANGES		



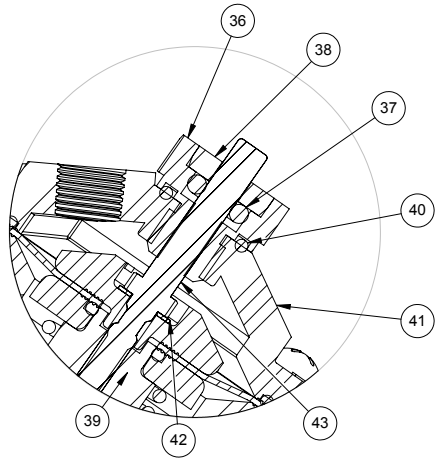
1070141 (K520-X211-14000)
LIMIT STOP



1071064 (K520-X231-14000)
NORMALLY CLOSED



1070143 (K520-X202-14000)
SPRING ASSIST CLOSED



1071079 (K520-X221-14000)
POSITION INDICATOR

LIMITED STOP MODEL

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
19	1	1074988	LIMIT STOP SCREW, SERIES 520
20	1	1071667	O-RING,2-010,NITRILE
21	1	1074987	LIMIT STOP NUT,
22	1	1071669	O-RING,2-013,NITRILE
23	1	1074946	CAP, LIMIT STOP, 520

NORMALLY CLOSED MODEL

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
24	1	1071912	MALE PIPE PLUGS,
25	1	1077905	SHAFT, 520
26	1	1077818	SCREW, 520, DIA PLT, NC
27	1	1006351	WASHER, LOCK, INTERNAL, #8
28	1	1078324	DISC PLATE, 520, NC

SPRING ASSIST, CLOSED MODEL

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
29	1	1074981	SPRING, COMPRESSION
30	1	1071669	O-RING,2-013,NITRILE
31	1	1074946	CAP, LIMIT STOP, 520
32	1	1074986	SPRING RETAINER, 520
33	1	1006351	WASHER, LOCK, INTERNAL, #8
34	1	1077907	SHAFT, 520, NRYL, PI & SAC
35	1	1077828	SCREW, 520, DIA PLT,SAC

POSITION INDICATOR MODEL

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
36	1	1074970	GUIDE HOUSING,
37	1	1071687	O-RING,2-106,NITRILE
38	1	1074971	PLUG, GUIDE HOUSING, 520
39	1	1077854	SHAFT, 520
40	1	1071669	O-RING,2-013,NITRILE
41	1	1074946	CAP, LIMIT STOP, 520
42	1	1006351	WASHER, LOCK, INTERNAL, #8
43	1	1077826	SCREW, 520, DIA PLT, PI

NOTE:
1. NORMALLY CLOSED CANNOT BE COMBINED WITH SPRING ASSIST CLOSED.
2. LIMITED STOP MODEL CANNOT BE COMBINED WITH SPRING ASSIST CLOSED OPTION.
3. POSITION INDICATOR MODEL FURNISHED WITH NORMALLY OPEN, SPRING ASSIST OPEN OPTION ONLY.

SEE SHEET 1081309 FOR UNION END CONNECTORS,
SEE SHEET 1078141 FOR GROVED ADAPTERS,

SEE REVERSE SIDE FOR
STANDARD NORMALLY OPEN MODEL

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 18 THRU 22	1071056 (K520-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO'S 28 THRU 34	1079602 (K520-SCCN)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF ITEM NO'S 35 THRU 42	1079599 (K520-PICN)

REPAIR PARTS KIST	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMITED STOP) CONSIST OF ITEM NO'S 18 THRU 21	1074973 (520-LS)
INT. PARTS KIT (NORM. CLOSED) CONSIST OF ITEM NO'S 5,10,11,24,25,26,27	1079601 (520-RGN)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSIST OF ITEM NO'S 29 THRU 33	1061789 (520-SCN)
INT. PARTS KIT (POSITION INDICATOR) CONSIST OF ITEM NO'S 35 THRU 39	1081782 (520-PIN)

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

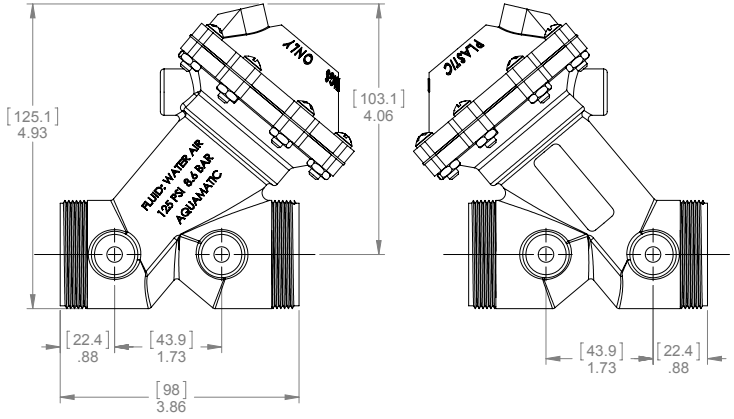
APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 520, VALVE
STANDARD MODEL

SIZE	DWG NO.	REV
B	BR1078139	O

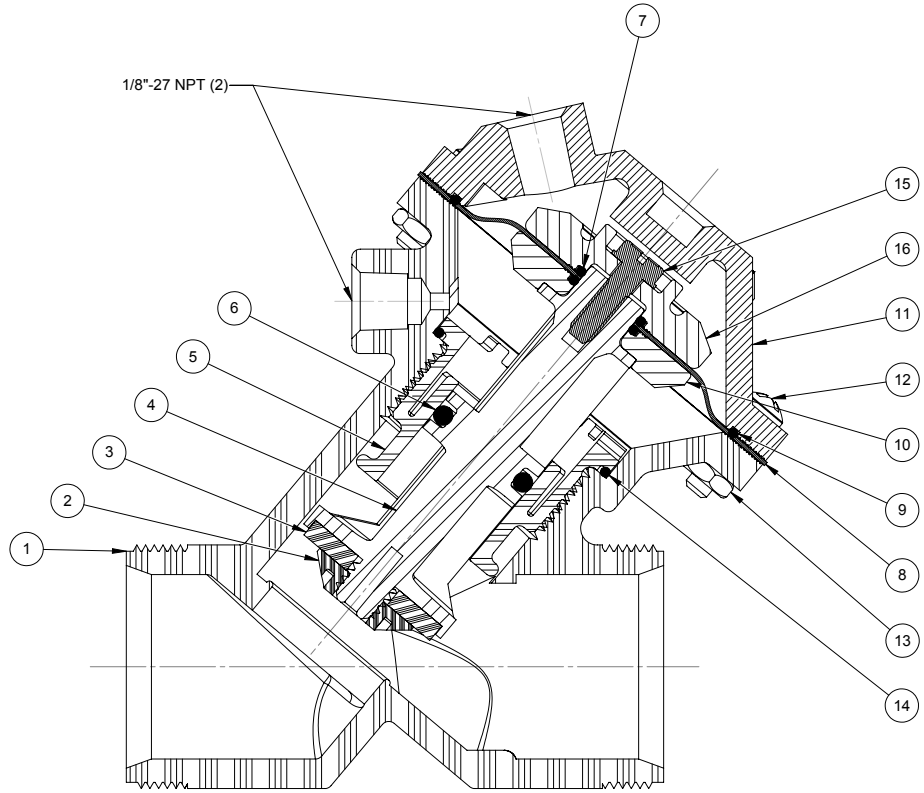
SCALE 1:1 SHEET 2 OF 2



ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #5)	1075059 (521-Z)
TO HOLD SHAFT (ITEM #4) DURING ASSEMBLY/ DISSEMBLY	1077837

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102568	J	REDRAWN IN SOLIDWORKS:ITEM #1: WAS 1075007, ITEM #11: WAS 1075012 ITEM #37: WAS 1075010, 4- FORM # NOW DWG #	31OCT13	TJM
	103697	K	ITEM #14- WAS: 1071942, 1071943, 1071944	12DEC14	TJM
	1001	L	AQ Matic update & verified part numbers	17JAN17	MGS



1070154 (K521-X200-14000)
NORMALLY OPEN (STANDARD)

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	43476	BODY, VALVE 521
2	1	1075845	PLATE, DISC, 521
3	1	1077814	DISC, 521
		1077815	DISC, 521
		1077816	DISC, 521
4	1	1075842	SHAFT, 521
5	1	1075030	GUIDE,SHAFT,521,NORYL
6	1	1242717	O-RING, 2-208
		1071775	O-RING, -208, BUTYL
		1242393	O-RING, 2-208
7	2	1071718	O-RING, -014, EPDM
8	1	1075028	DIAPHRAGM, 521, NBR
		1075029	DIAPHRAGM, 521, FKM
9	1	1071715	O-RING (NITRILE), 2-805
10	1	43043	PLATE,DIAPHRAGM,521,LOWER
11	1	43477	CAP, 521 VALVE
12	8	1072380	SCREW, RHMS 10-32,SS
13	8	1071648	HEX NUT, 10-32, SS
14	1	1081945	O-RING, 2-029, EPDM
		43893	O-RING,BUTYL,2-029
		1081947	O-RING,VITON, 2-029
15	1	1077783	SCREW, CUTTING #10-16 TYPE BT
16	1	43042	PLATE,DIAPHRAGM,521,UPPER

REPAIR PARTS		
DESCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3,6,7,8,9,15	1081792 (521-RAN) E.P.D.M. INCLUDES DIAPHRAGM 1075028 (521-FB)	1081791(521-RAJN) BUTYL INCLUDES DIAPHRAGM 1075028 (521-FB)
	1081796 (521-RAVN) FKM INCLUDES DIAPHRAGM 1075028 (521-FB)	1081795 (521-RAVFN) E.P.D.M. INCLUDES DIAPHRAGM 1075029 (521-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF ITEM NO'S 2,4,5,10,11,16	1079621 (K521-RFN)	

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

SEE FORM 1078142 FOR UNION END CONNECTORS AND GROOVED ADAPTERS

COMPONENTS/ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2002/95/EEC (RoHS) REQUIREMENTS.

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN ANH	8/29/13
APPROVED	
CHECKED	

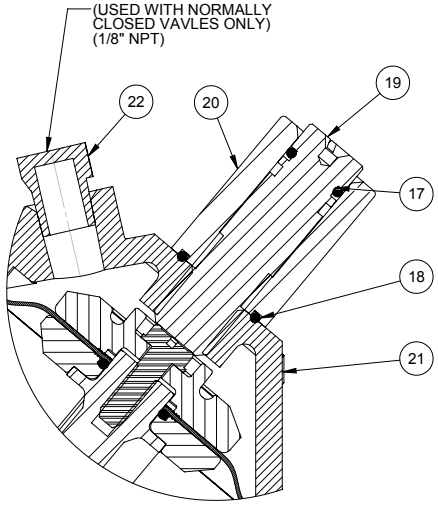
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 521
DIAPHRAGM VALVE STANDARD MODEL

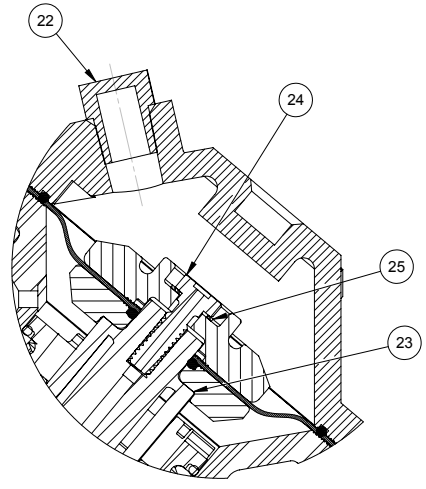
SIZE	DWG NO.	REV
B	BR1077654	L

SCALE 1:1 SHEET 1 OF 2

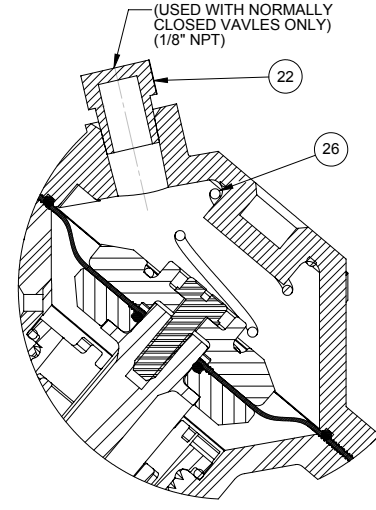
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



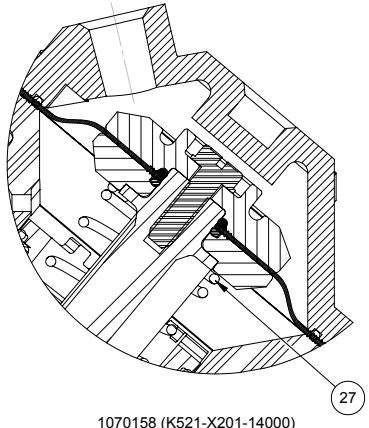
1070155 (K521-X210-14000)
LIMIT STOP



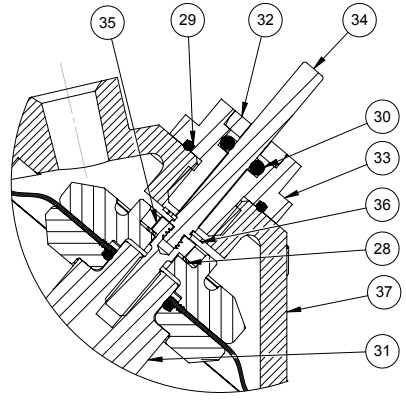
1070159 (K521-X230-14000)
NORMALLY CLOSED



1070157 (K521-X202-14000)
SPRING ASSIST CLOSED



1070158 (K521-X201-14000)
SPRING ASSIST OPEN



1071143 (K521-X221-14000)
POSITION INDICATOR

NOTE:
1. POSITION INDICATOR MODEL CANNOT BE COMBINED WITH NORMALLY CLOSED OR LIMIT STOP OPTIONS.
2. POSITION INDICATOR MODEL FURNISHED WITH SPRING ASSIST OPEN OPTION.

LIMIT STOP			
ITEM NO.	**QTY.**	**PART NUMBER**	**DESCRIPTION**
17	1	1071668	O-RING,2-012,NITRILE
18	1	1071671	O-RING,2-016,NITRILE
19	1	1075058	LIMIT STOP SCREW, SS
20	1	1075057	LIMIT STOP NUT, SS
21	1	43724	CAP, 521, LIMIT STOP
NORMALLY CLOSED MODEL			
22	1	1071912	MALE PIPE PLUGS,
23	1	1077909	SHAFT, 521
24	1	1077830	SCREW, 521, DIA PLT, NC
25	1	1078992	WASHER, LOCK,INTERNAL,#10,SS
SPRING ASSIST CLOSED MODEL			
26	1	1075051	SPRING, COMPRESSION
SPRING ASSIST OPEN MODEL			
27	1	1236766	SPRING, COMPRESSION
POSITION INDICATOR MODEL			
28	1	1078992	WASHER, LOCK,INTERNAL,#10,SS
29	1	1071671	O-RING,2-016,NITRILE
30	1	1071687	O-RING,2-106,NITRILE
31	1	1077911	SHAFT, POSITION INDICATOR, 521
32	1	1074971	PLUG, GUIDE HOUSING, 520
33	1	1075038	GUIDE HOUSING,
34	1	1078062	ROD, POS. INDICATOR, (521)
35	1	1077832	SCREW, 521, DIA PLT, PI
36	1	1070660	E-RING,
37	1	43724	CAP, 521, PI

SEE FORM 1078142 FOR UNION END CONNECTORS AND GROOVED ADAPTORS

SEE SHEET 1 FOR STANDARD NORMALLY OPEN MODEL

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 17 THRU 21	1071090 (K521-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO. 26	1075054 (521-SC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO. 27	1075055 (521-SO)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF ITEM NO'S 28 THRU 37	1079620 (K521-PICN)

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 17 THRU 21	1075040 (521-LS)
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF ITEM NO'S 2,5,10,11,23,24,25	1079622 (K521-RGN)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO. 26	1075054 (521-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO. 27	1075055 (521-SO)
INT. PARTS KIT (POSITION INDICATOR) CONSISTS OF ITEM NO'S 28 THRU 37	1081790 (521-PIN)

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INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	02-22-13
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 521
DIAPHRAGM VALVE STANDARD MODEL

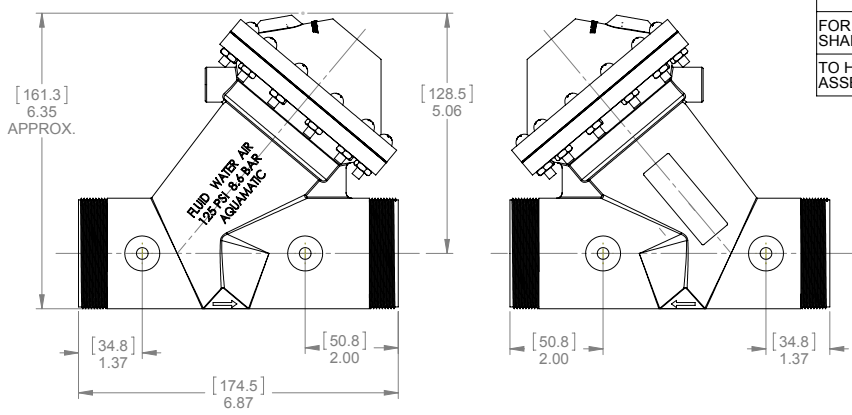
SIZE	DWG NO.	REV
B	BR1077654	L

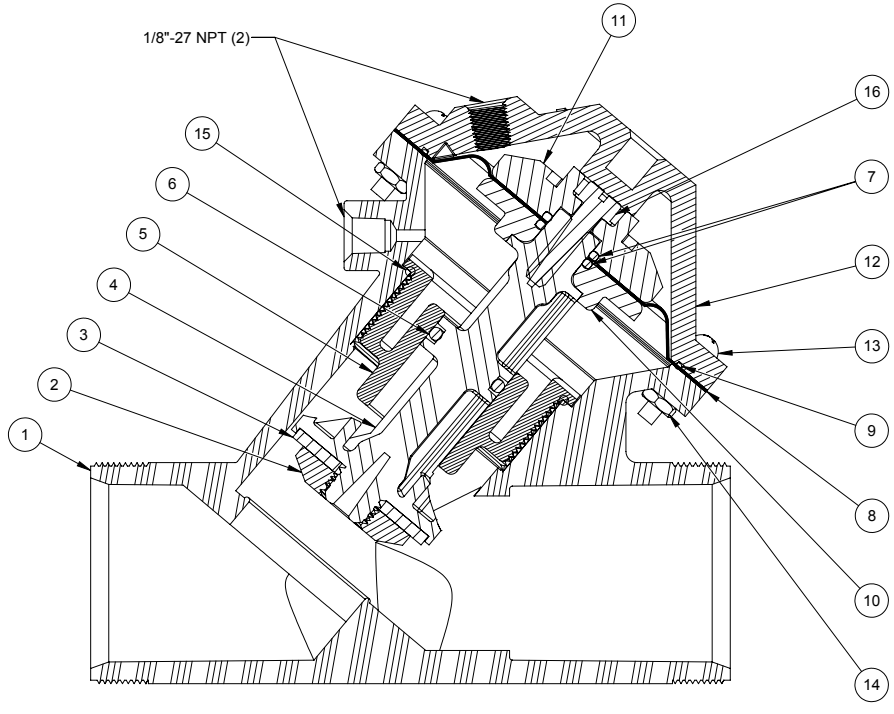
SCALE 1:2 | SHEET 2 OF 2

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SHAFT GUIDE (ITEM #5)	1075143 (524-Z)
TO HOLD SHAFT (ITEM #4) DURING ASSEMBLY/ DISASSEMBLY	1077837

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	101699	J	REDRAWN IN SOLIDWORKS, DWG # NOW SAME AS FORM #	14MAR14	TJM
	1001	K	AQ Matic update & verified part numbers	17JAN17	MGS





1070168 (K524-X200-14000)
NORMALLY OPEN (STANDARD)

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	1075079	BODY, VALVE 524
2	1	1076198	PLATE, DISC, 524
3	1	1075107	DISC, (EPDM)
		1075108	DISC, (BUTYL)
		1075109	DISC, (VITON)
4	1	1076205	SHAFT, 524
5	1	1075106	GUIDE,SHAFT,524,BLACK
6	1	1242718	O-RING, 2-210
		1071776	O-RING, -210, BUTYL
		1242394	O-RING, 2-210
7	2	1071728	O-RING, (EPDM) 2-113
8	1	1078393	DIAPHRAGM, 524, NITRILE
		1075105	DIAPHRAGM, 524, FKM
9	1	1071686	O-RING, 2-043 NITRILE
10	1	1076197	PLATE, DIAPHRAGM, LOWER, 524
11	1	43041	PLATE, DIAPHRAGM 524,UPPER
12	1	1075086	CAP,524, VALVE
13	12	1072381	SCREW, ROUND HEAD 10-32
14	12	1071648	HEX NUT, 10-32, SS
15	1	1071735	O-RING, 2-137 EPDM
		1071771	O-RING, -137, BUTYL
		1071807	O-RING, -137, FKM
16	1	1077101	SCREW, CUTTING 1/4" TYPE BT

REPAIR PARTS KITS		
DESCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3,6,7,8,9,15	1070274 (524-RAN) E.P.D.M. INCLUDES DIAPHRAGM 1075104 (524-FB)	1077592 (524-RAJN) BUTYL INCLUDES DIAPHRAGM 1075104 (524-FB)
	1070290 (524-RAVN) VITON INCLUDES DIAPHRAGM 1075104 (524-FB)	1077593 (524-RAVFVN) VITON INCLUDES DIAPHRAGM 1075105 (524-FV)
INT. PARTS KIT (NORM. OPEN) CONSISTS OF ITEM NO'S 2,4,5,10,11,16	1070298 (K524-RFN)	

SEE FORM 1078142 FOR UNION END CONNECTORS AND GROOVED ADAPTORS

SEE FORM 1078152 FOR SOCKET WELD ENDS AND FLANGED ADAPTORS

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	02-28-13
APPROVED	
CHECKED	

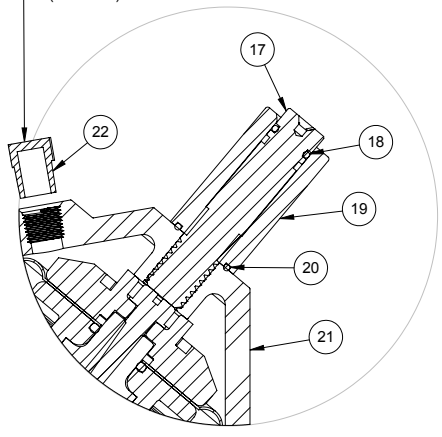
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 524
DIAPHRAGM VALVE STANDARD MODEL

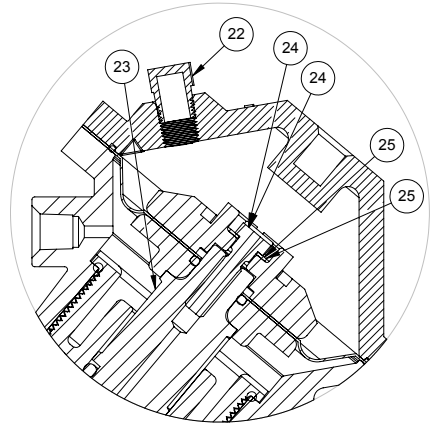
SIZE	DWG NO.	REV
B	BR1077655	K

SCALE 1:2 SHEET 1 OF 2

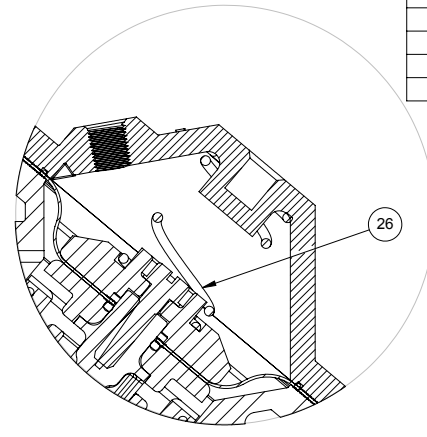
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR LIST OF CHANGES		



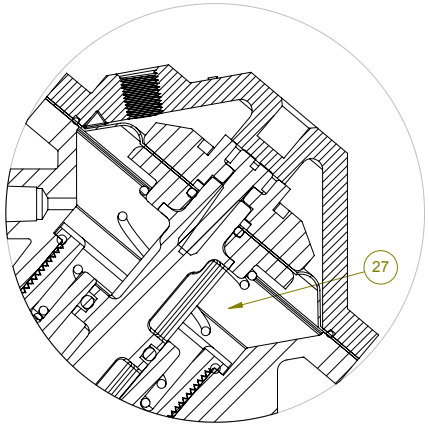
1070170 (K524-X210-14000)
LIMIT STOP



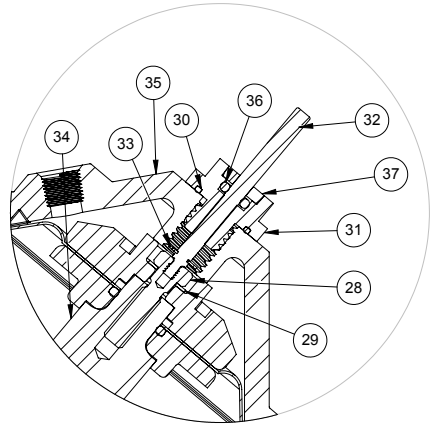
1070172 (K524-X230-14000)
NORMALLY CLOSED



1070171 (K524-X202-14000)
SPRING ASSIST CLOSED



1070169 (K524-X201-14000)
SPRING ASSIST OPEN



1071209 (K524-X221-14000)
POSITION INDICATOR

NOTE:
1. POSITION INDICATOR MODEL CANNOT BE COMBINED WITH NORMALLY CLOSED OR LIMIT STOP OPTIONS.
2. POSITION INDICATOR MODEL FURNISHED WITH SPRING ASSIST OPEN OPTION.

LIMIT STOP MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
17	1	1075142	LIMIT STOP SCREW, SS
18	1	1071668	O-RING,2-012,NITRILE
19	1	1075141	LIMIT STOP NUT, SS
20	1	1071671	O-RING,2-016,NITRILE
21	1	1075083	CAP, LIMIT STOP,524
NORMALLY CLOSED MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
22	1	1071912	MALE PIPE PLUGS,
23	1	1076238	SHAFT, 524, 1/4 THD
24	1	1076204	SHAFT, SCREW,
25	1	1076201	WASHER,
SPRING ASSIST CLOSED MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
26	1	BR1267398	COMPRESSION SPRING,
SPRING ASSIST OPEN MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
27	1	1078692	SPRING, COMPRESSION
POSITION INDICATOR MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
28	1	1076203	SHAFT, SCREW,
29	1	1076201	WASHER,
30	1	1071671	O-RING,2-016,NITRILE
31	1	1075038	GUIDE HOUSING,
32	1	1076199	ROD, POS. INDICATOR, (SRS 524)
33	1	1076200	E-RING,
34	1	1076239	SHAFT, POS INDICATOR, 524
35	1	1075083	CAP, LIMIT STOP,524
36	1	1071687	O-RING,2-106,NITRILE
37	1	1074971	PLUG, GUIDE HOUSING, 520

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 17 THRU 21	1071161 (524-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO. 26	1075125 (524-SO)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO. 27	1075125 (524-SO)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF ITEM NO'S 28 THRU 37	1071161 (524-PICN)

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 17 THRU 20	1075111 (524-LS)
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF ITEM NO'S 2,5,10,11,23,24,25	1076307 (524-RGN)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO. 26	1075124 (524-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO. 27	1075125 (524-SO)
INT. PARTS KIT (POSITION INDICATOR) CONSISTS OF ITEM NO'S 28 THRU 37	1077591 (524-PIN)

SEE FORM 1078142 FOR UNION END CONNECTORS AND GROOVED ADAPTERS

SEE FORM 1078152 FOR SOCKET WELD ENDS AND FLANGED ADAPTORS

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION	
APPROVALS	DATE
DRAWN NE	02-28-13
APPROVED	
CHECKED	

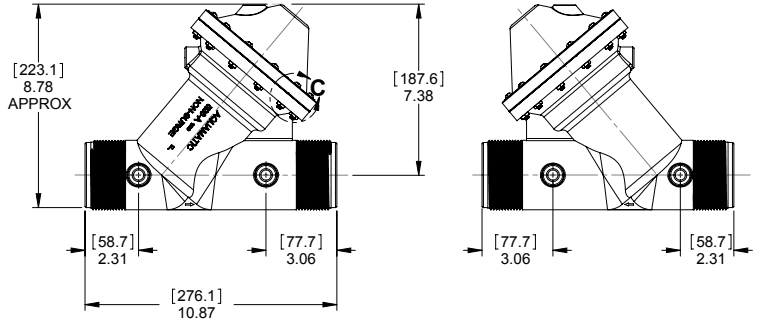
AQ Matic
Valve & Controls Company Inc.

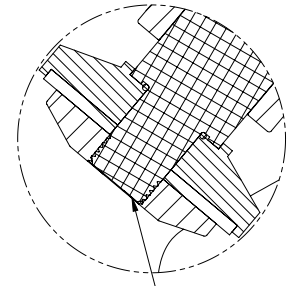
TITLE
CATALOG SHEET, 524
DIAPHRAGM VALVE STANDARD MODEL

SIZE	DWG NO.	REV
B	BR1077655	K

SCALE 1:2 SHEET 2 OF 2

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	30243	K	REDRAWN IN SOLIDWORKS WITHOUT ANY CHANGES	8/13/10	MHM
	100401	L	1- WAS: 1075174,-NOW:43051 2-REM'D:1075172 NORYL SHAFT	30MAR12	TJM
	101856	M	1-WAS 1071746- NOW: 1010140	03-19-13	TJM
	103884	N	ITEM # 31- WAS 1074970, 2- UPDATED TITLE BLOCK	16OCT14	TJM
	1001	O	AQ Matic update & verified part numbers	17JAN17	MGS



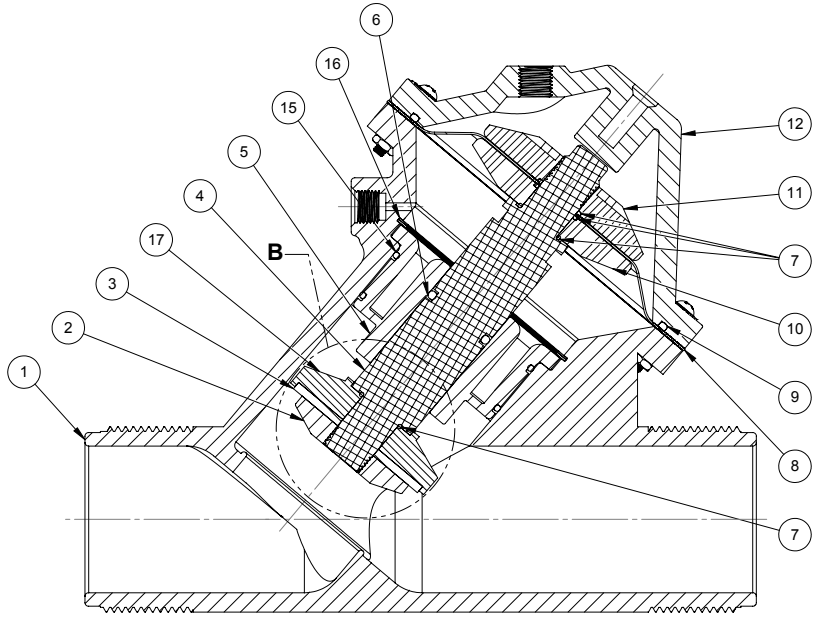


DISC NUT/SHAFT TO BE FLUSH AFTER COMPNENTS ARE TIGHTENED TO 20-25 IN-LB [2.3-2.8 Nm]

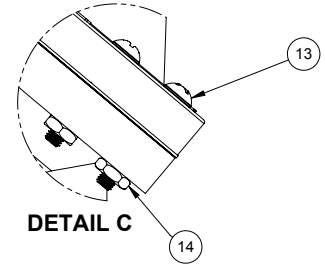
DETAIL B

NO.	DESCRIPTION		PART NO.	QTY.
1	BODY		1075162 (526-AK)	1
2	DISC PLATE		1075176 (526-EK)	1
3	DISC	E.P.D.M.	1075181 (526-J)	1
		BUTYL	1075182 (526-JJ)	
		FKM	1075183 (526-JV)	
4	SHAFT	PVC	43119	1
5	SHAFT GUIDE		1075178 (526-GK)	1
6	O-RING	E.P.D.M.	1010140	1
		BUTYL	1071778 (ORJ-214)	
		FKM	1071817 (ORV-214)	
7	O-RING	E.P.D.M.	1071673 (ORE-018)	4
		BUTYL	1071762 (ORJ-018)	
		FKM	1071790 (ORV-018)	
8	DIAPHRAGM	BUNA N	1075177 (526-FB)	1
9	O-RING	BUNA N	1071713 (ORB-251)	1
10	LWR DIA. PLATE		43051	1
11	UPR DIA. PLATE		43050	1
12	CAP		1075167 (526-BOK)	1
13	RD. HD. MACH. SCR.		1072382 (SCS-0098)	12
14	HEX NUT		1071648 (NUS-0006)	12
15	O-RING	ETH. PROP.	1071738 (ORE-148)	2
		BUTYL	1071773 (ORJ-148)	
		FKM	1071810 (ORV-148)	
16	RATANING RING		1075180 (526-HA)	1
17	DISC HOLDER	PVC	1075197 (526-RP)	1
		NORYL	1075196 (526-RN)	

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION & REMOVAL OF SHAFT (ITEM #4) (TOOL NOT SHOWN)	1077837
FOR INSTALLATION & REMOVAL OF UPPER DIAPHRAGM PALTE (ITEM #11) (TOOL NOT SHOWN)	1075224 (526-Z)



1070180 (K526-X200-14000)
NORMALLY OPEN (STANDARD)



DETAIL C

REPAIR PARTS KITS		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3,6,7(4),8,9,15(2)	1070275 (526-RA) EPDM INCLUDES DIAPHRAGM 1075177 (526-FB)	1070283 (526-RAJ) BUTYL INCLUDES DIAPHRAGM 1075177 (526-FB)
	1070291 (526-RAV) FKM INCLUDES DIAPHRAGM 1075177 (526-FB)	
INT. PARTS KIT (NORM. OPEN) CONSISTS OF ITEM NO'S 2,4,5,10,11,17	1070299 (K526-RF)	

SEE FORM 1078152 FOR SOCKET WELD ENDS AND FLANGED ADAPTORS

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS.

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009 UNLESS OTHERWISE SPECIFIED.
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

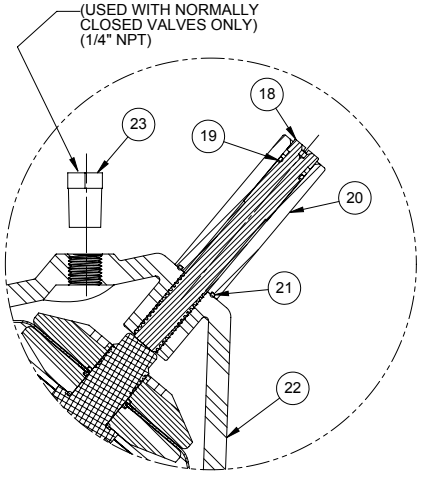
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 526
DIAPHRAGM VALVE

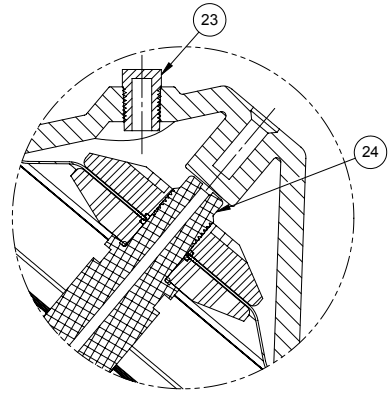
SIZE	DWG NO.	REV
B	BR1077656	O

SCALE 1:1 SHEET 1 OF 2

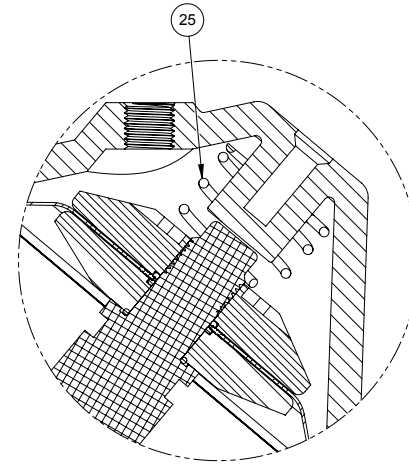
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



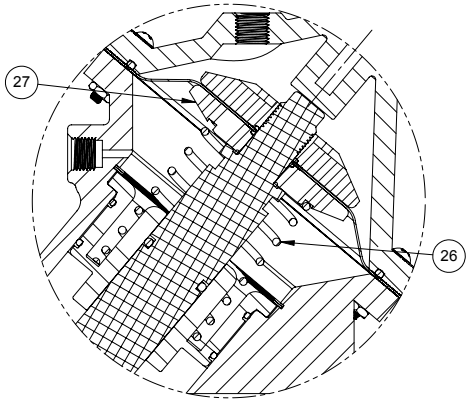
1070181 (K526-X210-14000)
LIMIT STOP



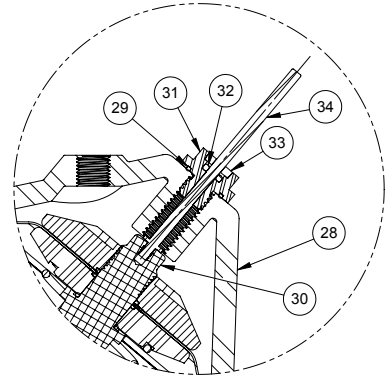
1071256 (K526-X230-14000)
NORMALLY CLOSED



1071246 (K526-X202-14000)
SPRING ASSIST CLOSED



1071242 (K526-X201-14000)
SPRING ASSIST OPEN



1071255 (K526-X221-14000)
POSITION INDICATOR

LIMIT STOP MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
18	1	1075223	LIMIT STOP SCREW, SS
19	1	1071668	O-RING,2-012,NITRILE
20	1	1075222	LIMIT STOP NUT, SS
21	1	1071671	O-RING,2-016,NITRILE
22	1	1075165	CAP, LIMIT STOP
NORMALLY CLOSED MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
23	1	1071913	MALE PIPE PLUGS,
24	1	43143	SHAFT,VALVE,526,NORMALLY CLSD
SPRING ASSIST CLOSED MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
25	1	1075202	SPRING, CONICAL
SPRING ASSIST OPEN MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
26	1	1267399	SPRING, COMPRESSION
27	1	1075175	PLATE,DIAPHRAGM,526,SA,LOWER
POSITION INDICATOR MODEL			
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
28	1	1075165	CAP, LIMIT STOP
29	1	1071671	O-RING,2-016,NITRILE
30	1	43142	SHAFT,VALVE,526,POSITION INDCT
31	1	1075038	GUIDE HOUSING,
32	1	1071687	O-RING,2-106,NITRILE
33	1	1074971	PLUG, GUIDE HOUSING, 520
34	1	1075184	ROD, POSITION INDICATOR, 526

NOTE:

1. POSITION INDICATOR MODEL CANNOT BE COMBINED WITH NORMALLY CLOSED OR LIMIT STOP OPTIONS.
2. POSITION INDICATOR MODEL FURNISHED WITH SPRING ASSIST OPEN OPTION.

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF NO'S 18 THRU 21	1075191 (526-LS)
INT. PARTS KIT (NORM. CLOSED) CONSISTS OF ITEM NO'S 2,5,10,11,17, 24	1071226 (K526-RG)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO. 25	1075200 (526-SC)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO'S 26 & 27	1071227 (526-SO)
INT. PARTS KIT (POSITION INDICATOR) CONSISTS OF ITEM NO'S 29 THRU 34	1081804 (526-PI)

CONVERSION KITS	
DESCRIPTION	**PART NO.**
CONVERSION KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 18 THRU 22	1071225 (526-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO 25	1075200 (526-SC)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO'S 26 & 27	1071227 (526-SO)
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF ITEM NO'S 28 THRU 34	1079674 (K526-PIC)

SEE FORM 1078152 FOR SOCKET WELD ENDS ANDFLANGED ADAPTORS.

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL.

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 526
DIAPHRAGM VALVE

SIZE	DWG NO.	REV
B	BR1077656	O

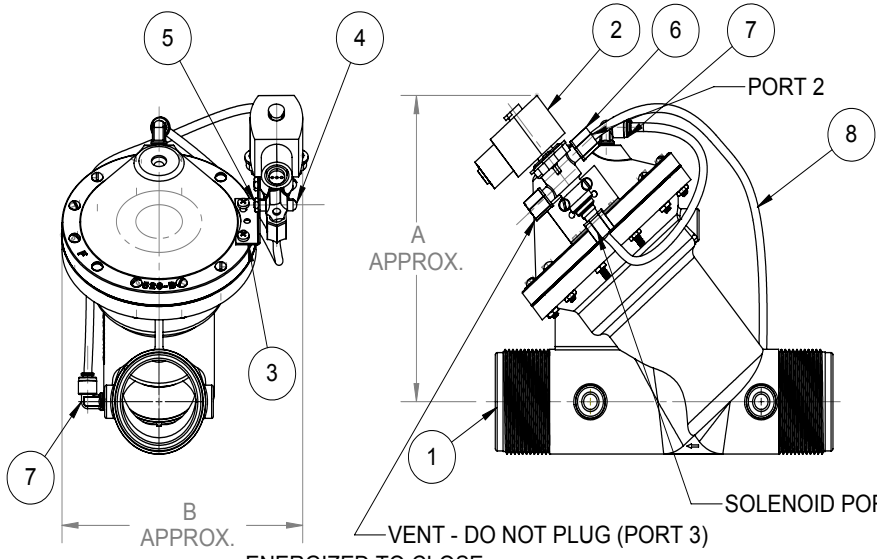
SCALE 1:1 SHEET 2 OF 2

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	
1	1	-	DIAPHRAGM VALVE- NORMALLY OPEN	
2	1	1075637	SOLENOID, ASCO	110V.60Hz.
		1075638		220V.50Hz.
		1075639		24V.60Hz.
3	1	1074783	BRACKET, SOLENOID MOUNTING	
4	2	1072377	RD HD MACH SCREW, (8-32 X1.25)	
5	3	1071939	PLASTIC , GRIPPER NUT	
6	2	1078769	90° ELBOW	520-524
		1078770		526
7	N/A	1071936	TUBING, POLY 1/4" O.D. X .035	
8	2	3003551	SCREW, 10-32 X 1 1/2" SS	
9	2	BR1071646	NUT, HEX, 8-32	

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	100876	C	REDAWN IN SOLIDWORKS ADD DRY DRAIN VIEW	07-09-12	TJM
	1001	D	AQ Matic update and verified part numbers	20JAN17	MGS

NOTE:
1. LENGTH OF TUBING VARIES WITH EACH SIZE OF DIAPHRAGM VALVE.
2. DIAPHRAGM VALVE IS NORMALLY OPEN, PRESSURE TO CLOSE.
3. BOSS NO. 1 ON VALVE TAPPED 1/8" N.P.T. (520,521, 524) 1/4" N.P.T.(526)
4. SEE PAGE 2 FOR DRY DRAIN OPTION.

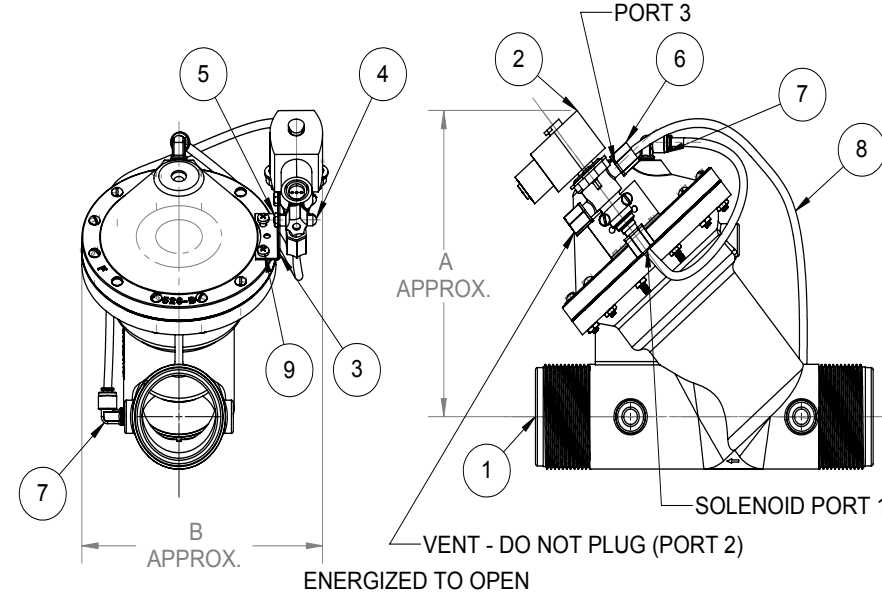


ENERGIZED TO CLOSE

SOLENOID ENERGIZED.
UPSTREAM PRESSURE, FROM SOLENOID PORT 2 TO PORT 1, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.

SOLENOID DE-ENERGIZED.
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.

VALVE SERIES	PIPE SIZE	A	B
520	3/8",1/2"	5.87 / 149.1	4.12 / 104.6
521	3/4",1"	6.52 / 165.6	5.12 / 130.0
524	1-1/2",2"	7.62 / 193.5	6.25 / 158.75
526	2-1/2", 3"	9.62 / 244.3	7.87 / 200.0



ENERGIZED TO OPEN

SOLENOID DE-ENERGIZED.
UPSTREAM PRESSURE, FROM SOLENOID PORT 3 TO PORT 1, IS APPLIED TO UPPER DIAPHRAGM

SOLENOID ENERGIZED.
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, K520 - K526
SOLENOID OPERATED VALVES

SIZE	DWG NO.	REV
B	1081312	D

SCALE 1:4 | SHEET 1 OF 3

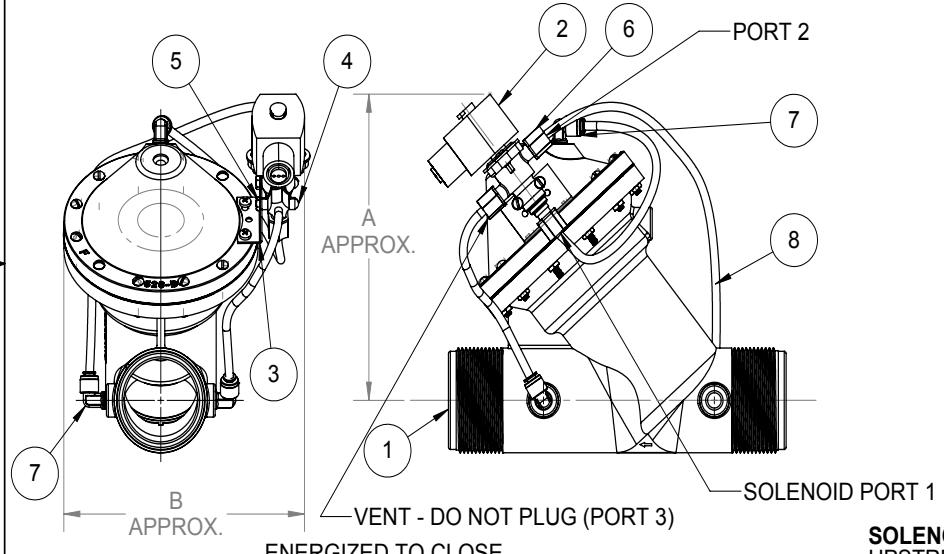
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	
1	1	-	DIAPHRAGM VALVE - NORMALLY OPEN	
2	1	1075637	SOLENOID, ASCO	110V.60Hz.
		1075639		220V.50Hz.
		1075638		24V.60Hz.
3	1	1074783	BRACKET, SOLENOID MOUNTING	
4	2	1072377	RD HD MACH SCREW, (8-32 X1.25)	
5	2	BR1071646	NUT, HEX, 8-32	
6	3	1071939	PLASTIC , GRIPPER NUT	
7	3	1078769	90° ELBOW	520-524
		1078770		526
8	N/A	1071936	TUBING, POLY 1/4" O.D. X .035	
9	2	3003551	SCREW, 10-32 X 1 1/2" SS	

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		

NOTE:
1. LENGTH OF TUBING VARIES WITH EACH SIZE OF DIAPHRAGM VALVE.
2. DIAPHRAGM VALVE IS NORMALLY OPEN, PRESSURE TO CLOSE.
3. BOSS NO. 1 AND NO. 4 ON VALVE TAPPED 1/8" N.P.T. (520,521, 524) 1/4" N.P.T.(526)

DRY DRAIN VIEW



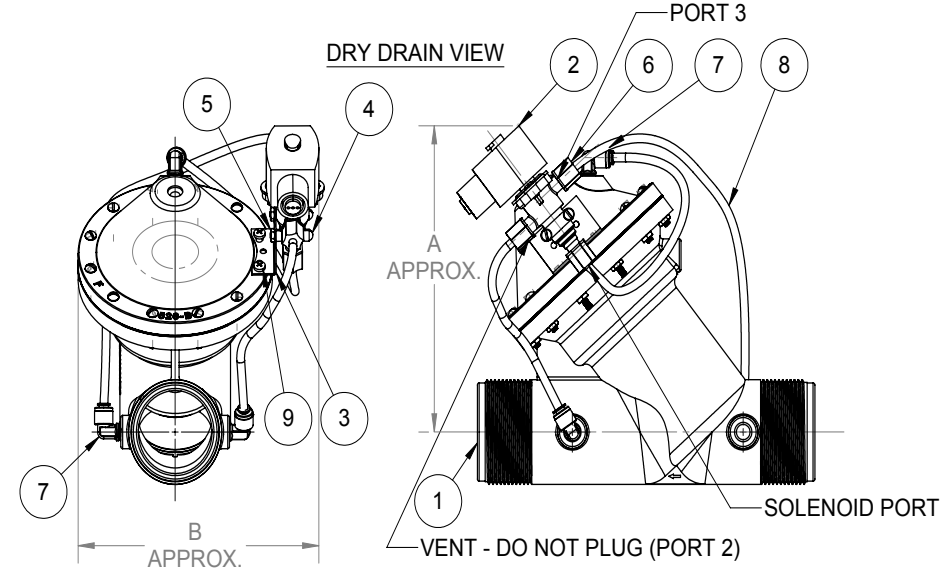
ENERGIZED TO CLOSE

SOLENOID ENERGIZED.
UPSTREAM PRESSURE, FROM SOLENOID PORT 2 TO PORT 1, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.

SOLENOID DE-ENERGIZED.
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED, THROUGH SOLENOID PORT 1 TO PORT 3 TO DRAIN. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.

VALVE SERIES	PIPE SIZE	A	B
520	3/8",1/2"	5.87 / 149.1	4.12 / 104.6
521	3/4",1"	6.52 / 165.6	5.12 / 130.0
524	1-1/2",2"	7.62 / 193.5	6.25 / 158.75
526	2-1/2", 3"	9.62 / 244.3	7.87 / 200.0

DRY DRAIN VIEW



ENERGIZED TO OPEN

SOLENOID DE-ENERGIZED.
UPSTREAM PRESSURE, FROM SOLENOID PORT 3 TO PORT 1, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.

SOLENOID ENERGIZED.
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED, THROUGH SOLENOID PORT 1 TO PORT 2 TO DRAIN. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.

DRY DRAIN OPTION

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, K520 - K526
SOLENOID OPERATED VALVES

SIZE	DWG NO.	REV
B	1081312	D

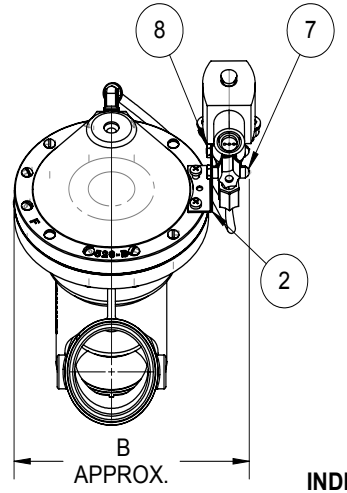
SCALE 1:4 | SHEET 2 OF 3

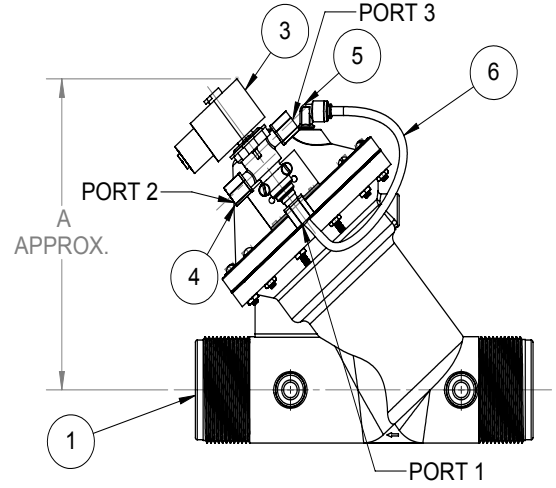
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	
1	1	-	DIAPHRAGM VALVE-NORM OPEN	
2	1	1074783	BRACKET, SOLENOID MOUNTING	
3	1	1075637	SOLENOID, ASCO NO. 8360G071	110V 60HZ
		1075638		220V 50HZ
		1075639		24V 60 HZ
4	3	1071939	PLASTIC , GRIPPER NUT	
5	1	1078769	TUBING, ELBOW,1/8"NPTX1/4T,PLS	
	1	1078770	TUBING, ELBOW,1/4"NPTX1/4T,PLS	
6	N/A	1071936	TUBING, POLY 1/4" O.D. X .035	
7	2	1072377	RD HD MACH SCREW, (8-32 X1.25)	
8	2	BR1071646	NUT, HEX, 8-32	
9	1	BR1075167	CAP, 526	

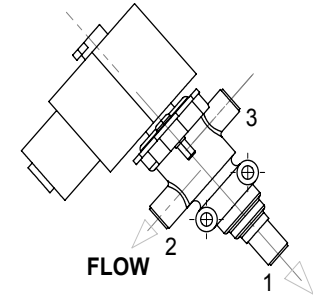
REVISIONS

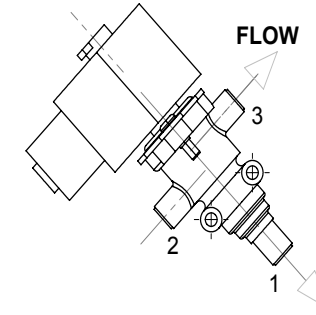
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		

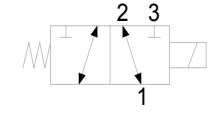
NOTE:
1. LENGTH OF TUBING VARIES WITH EACH SIZE OF DIAPHRAGM VALVE.
2. DIAPHRAGM VALVE IS NORMALLY OPEN.



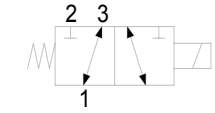








SOLENOID ENERGIZED



SOLENOID DE-ENERGIZED

INDEPENTDENT CONTROL PRESSURE

ENERGIZE TO OPEN
APPLY CONTROL PRESSURE AT SOLENOID PORT NO. 3
(PORT NO. 2 VENTED)

ENERGIZE TO CLOSE
APPLY CONTROL PRESSURE AT SOLENOID PORT NO. 2
(PORT NO. 3 VENTED)

CONTROL PRESSURE MUST BE EQUAL TO OR GREATER THAN LINE PRESSURE.

CURRENT DRAIN (AMPERES)		
VOLTAGE	INRUSH	HOLDING
24V 60Hz	1.66	1.04
120V 60Hz	0.33	0.21
220V 50Hz	0.18	0.11

VALVE SERIES	PIPE SIZE	A	B
520	3/8",1/2"	5.87 / 149.1	4.12 / 104.6
521	3/4", 1"	6.52 / 165.6	5.12 / 130.0
524	1-1/2", 2"	7.62 / 193.5	6.25 / 158.75
526	2-1/2", 3"	9.62 / 244.3	7.87 / 200.00

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UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, K520 - K526
SOLENOID OPERATED VALVES

SIZE	DWG NO.	REV
B	1081312	D

SCALE 1:4 | SHEET 3 OF 3

AQUAMATIC® K55 SERIES
COMPOSITE CONTROL VALVES

CONSTRUCTED OF CORROSION-RESISTANT MATERIALS

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

FEATURES/BENEFITS

The unique Y-pattern design with large seat opening and high lift disc permits higher flow rates at lower pressure loss than other comparable valves

All components can be serviced while the valve is in-line

Separate flow and control chambers permit positive closing without springs

Pre-formed, stress-relieved diaphragm minimizes fatigue, maximizes valve responsiveness and diaphragm lifetime

Diaphragm acts as an actuator, eliminating the need for electric or pneumatic actuators

All internal parts in contact with media are made of composite materials

Seals are ethylene propylene for better chemical resistance*

K55 Series Valves are available in sizes from 1/2"- 2"

A variety of available end connectors make the valve compatible for 3/8"-3" pipe sizes

Adaptable to a wide variety of control devices

Isolated bonnet

Assures no cross connection between line & control fluid

OPTIONS

Normally open [standard]

Limit stop for flow control

Seal and diaphragm materials for special applications

Union End Connectors - Female socket weld connectors for easy installation and the ability to remove the valve without disrupting the service piping

Failsafe spring closed 30, 60, and 100 PSI

TYPICAL APPLICATIONS

Chemical Injection

Deionizers

Fertilizer Spray Equipment

Metal Recovery Systems

Mining Wastes

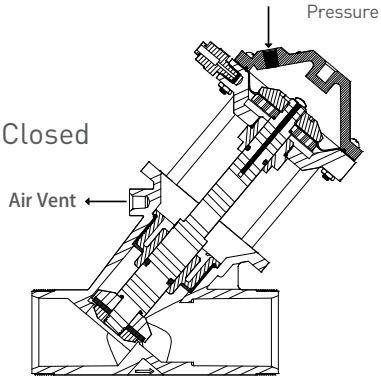
Process Water Systems

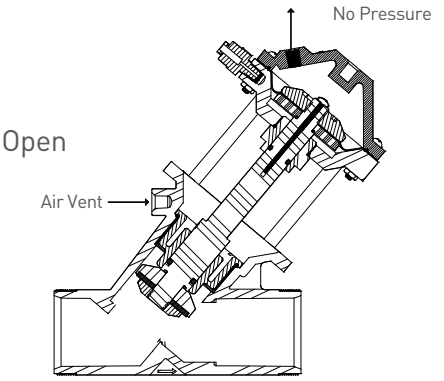
Water Treatment Systems

* Valves are NOT recommended for use with any aromatic, hydrocarbon-based media.

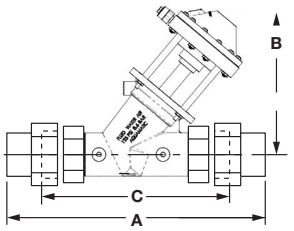
DIMENSIONS

MODEL #	PIPE SIZE	DIMENSIONS (APPROXIMATE)					
		A	B	C	D	E	F
K5520	1/2"	7" (177.8 mm)	3.94" (100.1 mm)	4.87" (123.7 mm)	–	–	–
K5521	1"	9" (228.6 mm)	5.58" (141.7 mm)	6.31" (160.3 mm)	–	–	–
K5524	1-1/2"	12.5" (317.5 mm)	7.94" (201.7 mm)	9.31" (135.0 mm)	–	–	–
K5524	2"	10.50" (266.7 mm)	7.94" (201.7 mm)	–	–	–	–
K5524	2"	10.5" (266.7 mm)	7.94" (201.7 mm)	–	–	–	–
K5520	1/2"	7" (177.8 mm)	3.94" (100.1 mm)	3.93" (99.8 mm)	–	–	–
K5521	1"	9" (228.6 mm)	5.58" (141.7 mm)	4.50" (114.3 mm)	–	–	–
K5524	1-1/2"	12.5" (336.5 mm)	7.94" (201.7 mm)	7.75" (196.8 mm)	–	–	–
K5524	2"	9" (226.6 mm)	7.94" (201.7 mm)	6.00" (152.4 mm)	.75" (19.05 mm)	4.75" (120.85 mm)	.688" (17.48 mm)

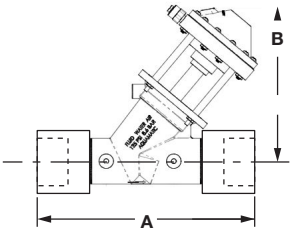




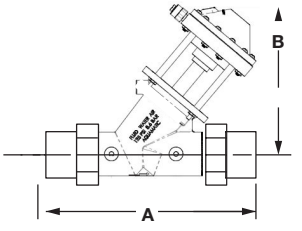
Union End Connectors



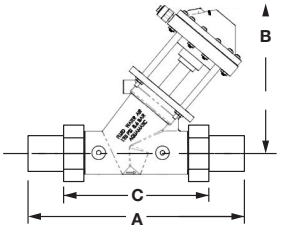
Female Socket Weld End Connectors



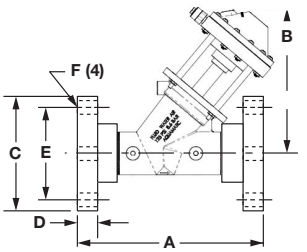
Male Socket Weld End Connectors



Grooved Adaptor Connectors



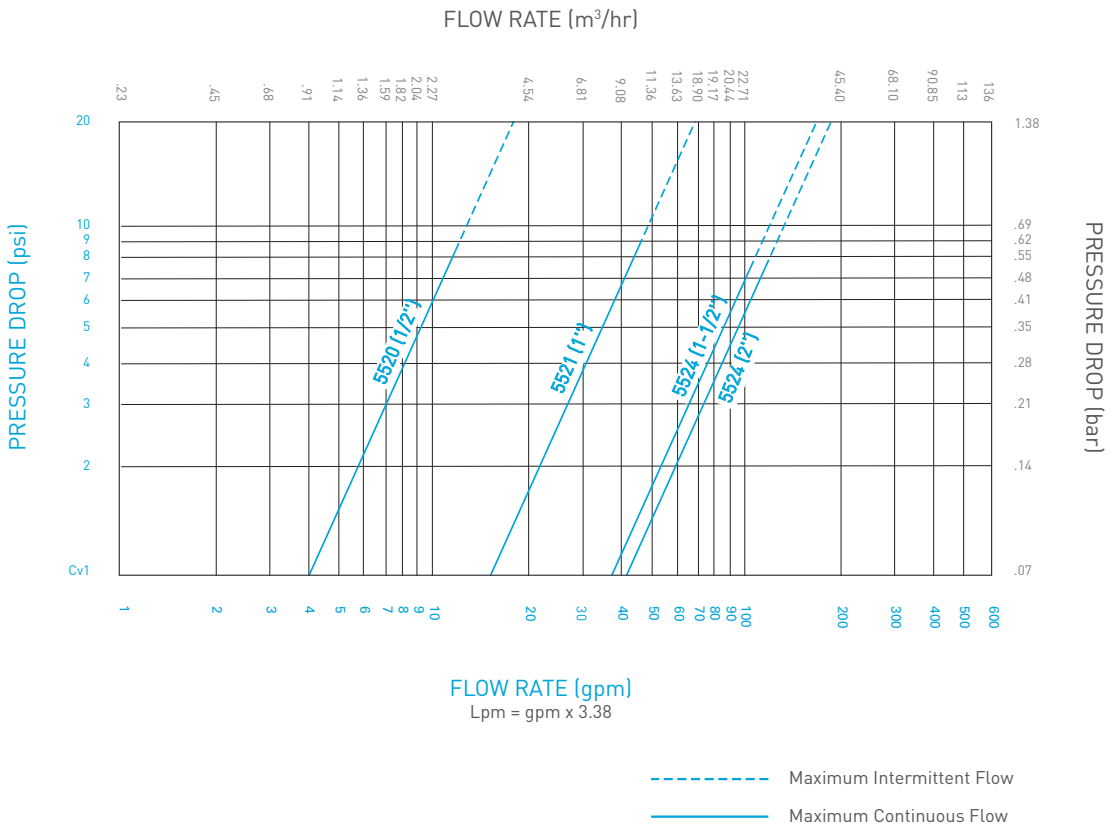
Flanged Socket Weld End Connectors



OPERATING SPECIFICATIONS

Max Pressure	125 psi (8.6 bar)
Max Temperature	140°F (60°C)

PERFORMANCE DATA



16605 West Victor Rd. New Berlin, WI 53151

P: 262–326–0100 | www.aq–matic.com | techsupport@aq–matic.com

20160916 REV A SE2016

K55 SERIES ISOLATED BONNET DIAPHRAGM VALVE MASTER CHART

*** FILL IN PROPER DESIGNATIONS TO DETERMINE PRODUCT NUMBER:** K 5 5 _ - X 2 _ _ - 4 0 0 0

BODY SIZE (std)
0 = 1/2"
1 = 1"
4 = 1-1/2"

END CONNECTIONS (X std)
X = None

BODY & CAP MATERIAL (2 std)
2 = Noryl

VALVE OPTIONS (00 std)
00 = NO
03 = Spring Closed 30#
04 = Spring Closed 60#
05 = Spring Closed 100#
10 = NO, LS
14 = LS, Spring Closed 60#
15 = LS, Spring Closed 100#
SX = Special Valve **

SEAL MATERIALS (1 std)

OPT.	OPERATING DIAPHRAGM	SEALING DISK	DYNAMIC SEALS	STATIC SEALS	KIT SERIES
1	Buna-N	EP	EP	EP	RAE
5	Buna-N	Fluoroelast.	Fluoroelast.	Fluoroelast.	RAV
6	Buna-N	Butyl	Butyl	Butyl	RAJ

INTERNAL PARTS (4 std)
4 = Noryl/PVC (140°F (60°C) Valve Rating)

DRILL & TAP BOSSES (0 std)
0 = None

SOLENOID OPTIONS (0 std)
0 = None

SOLENOID FEATURES (0 std)
0 = None

* To create a valve number replace each "_" with the proper number or letter for the feature you desire. For example, a Normally Open 2" Plastic Valve Model K5524 with a Spring Assist Closed Option is designated as a K554-X202-14000.

** A special valve will have a custom drawing number (_ _ _ _ _ _ _)
and the item number format is (K55?-X2SX-_ _ _ _ _)
where the last 5 numbers (Far Right) are the last five digits of the drawing number.

REV.	ECO NO.	DESCRIPTION	BY/DATE
E	100997	Removed -02 & -12 valve options	TJM 8-Aug-12

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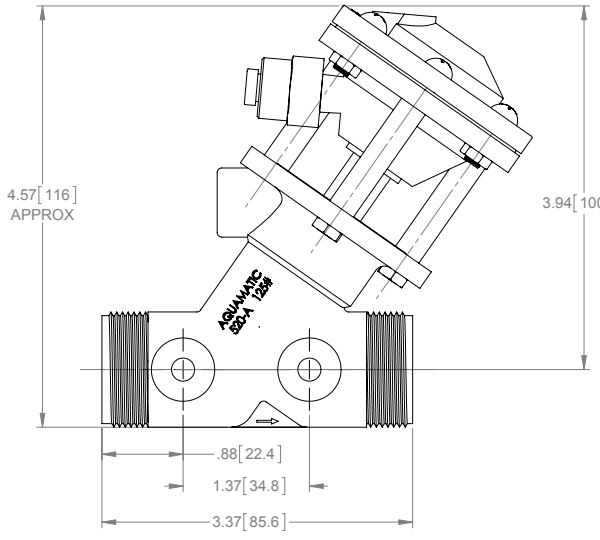
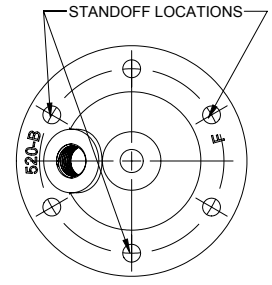
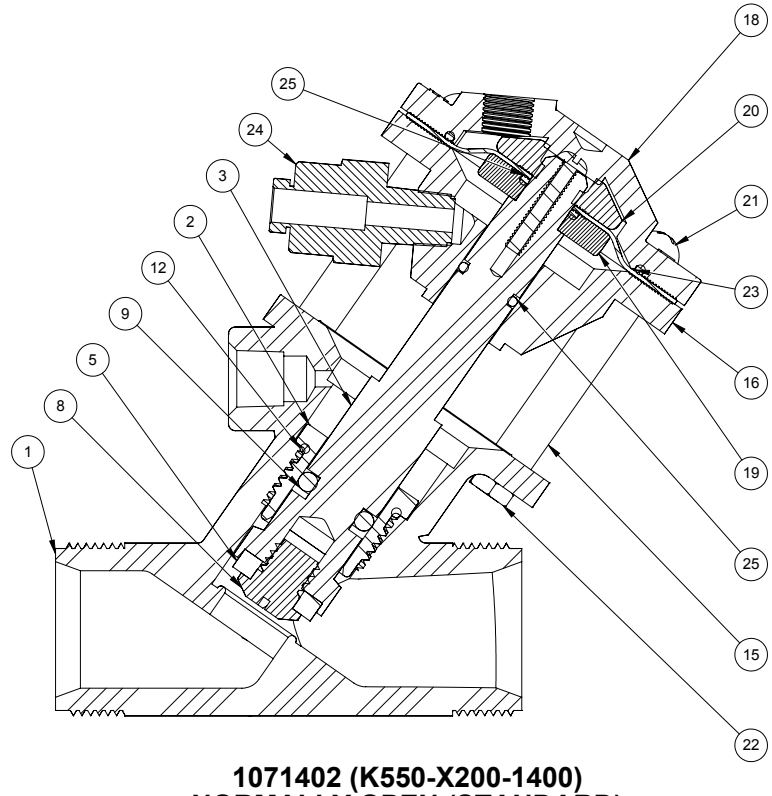
42985 REV F MAY17





ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALLATION AND REMOVAL OF SHAFT GUIDE & DIAPHRAGM PLATE (TOOL NOT SHOWN)	1074989



1071402 (K550-X200-1400)
NORMALLY OPEN (STANDARD)

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102124	J	REDRAWN IN SOLIDWORKS,FORM # NOW DWG #, WAS-1084013	06-25-13	TJM
	1001	K	AQ Matic update & verified part numbers	17JAN17	MGS

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
1	BODY, K520		1074943	1
2	SCREW,DISC,PLATE,520,NORYL		1077903	1
3	DISC,	E.P.D.M.	1074966	1
		BUTYL	1074967	1
		FKM	1074968	1
4	SHAFT, K5520		1075335	1
5	GUIDE,SHAFT,520,NORYL		1074964	1
6	O-RING, -204	E.P.D.M.	1071740	1
		BUTYL	1071774	1
		FKM	1071812	1
7	O-RING,2-012,NITRILE		1071668	2
8	DIAPHRAGM, 520 (NBR)		1074962	1
9	O-RING, (EPDM) -030		3015801	1
10	BOTTOM DIAPHRAGM PLATE,		1075339	1
11	PLATE, DIAPHRAGM, UPPER, 520		1074958	1
12	CAP, 520		1074948	1
13	BOTTOM CAP,		1075334	1
14	SCREW, 10-32X 5/8",RND HD, SS		1072379	6
15	STANDOFF,		1075338	3
16	HEX NUT, 10-32, SS		1071647	6
17	O-RING, -018	E.P.D.M.	1071720	1
		BUTYL	1071762	1
		FKM	1071790	1
18	CONNECTOR, 1/8 MNPT X 1/4T,PLS		1078767	1

REPAIR PARTS KITS			
DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3, 6, 7, 8, 9, 17	1075341 EPDM INCLUDES DIAPHRAGM 1074962	1075342 BUTYL INCLUDES DIAPHRAGM 1074962	1075343 FKM INCLUDES DIAPHRAGM 1074962
INTERNAL PARTS KIT (NORMALLY OPEN) CONSISTS OF ITEM NO'S 2, 4, 5, 10, 11, 18	1071432		

SEE SHEET 1078140 FOR UNION END CONNECTORS,
SEE SHEET 1078141 FOR GROOVED ADAPTORS

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN MWL	06-25-13
APPROVED	
CHECKED	

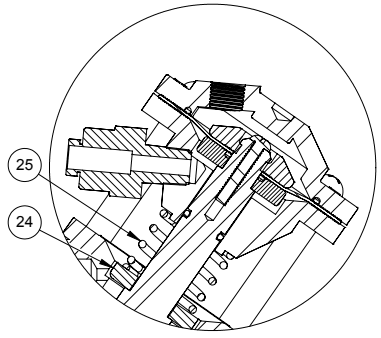
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 5520

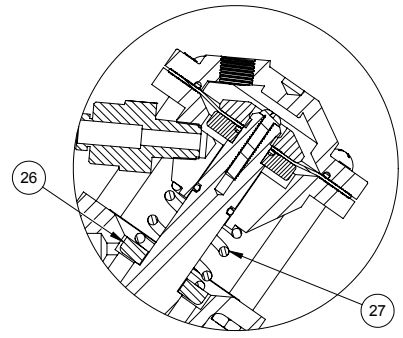
SIZE B | DWG NO. BR1077692 | REV K

SCALE 1:1 | SHEET 1 OF 2

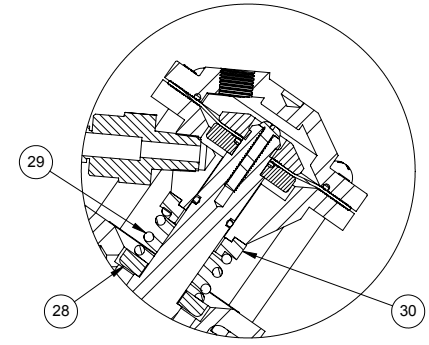
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D



1071406 (K550-X203-14000)
FAILSAFE SPRING CLOSED 30 PSI

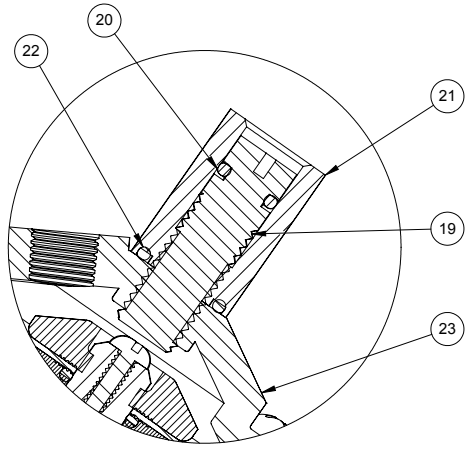


1071409 (K550-X204-14000)
FAILSAFE SPRING CLOSED 60 PSI



1071412 (K550-X205-14000)
FAILSAFE SPRING CLOSED 100 PSI

LIMIT STOP MODEL			
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
19	LIMIT STOP SCREW, SERIES 520	1074988	1
20	O-RING,2-010,NITRILE	1071667	1
21	LIMIT STOP NUT,	1074987	1
22	O-RING,2-013,NITRILE	1071669	1
23	CAP, LIMIT STOP, 520	1074946	1
FAILSAFE SPRING CLOSED - 30 PSI			
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
24	SPRING,RETAINER,BLACK	1075344	1
25	SPRING, COMPRESSION	3007473	1
FAILSAFE SPRING CLOSED - 60 PSI			
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
26	SPRING,RETAINER,BLACK	1075344	1
27	SPRING,	1075053	1
FAILSAFE SPRING CLOSED - 100 PSI			
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
28	SPRING,RETAINER,BLACK	1075344	1
29	SPRING,	1075053	1
30	CENTERING COLLAR,	1075337	1



1071414 (K550-X214-14000)
LIMIT STOP

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INTERNAL PARTS KIT (LIMIT STOP) CONTAINS ITEM NO'S 19 THRU 22	1074973

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION PARTS KIT (LIMIT STOP) CONTAINS ITEM NO'S 19 THRU 23	1071056

NOTE:

1. LIMIT STOP OPTION ONLY OFFERED ON FAIR SAFE SPRING CLOSE MODELS.
2. FAILSAFE OPTION NOT OFFERED IN CONVERSION KIT FORM DUE TO SPECIAL ASSEMBLY REQUIREMENTS.

SEE SHEET 1078140 FOR UNION END CONNECTORS,
SEE SHEET 1078141 FOR GROOVED ADAPTORS,

SEE REVERSE SIDE FOR
STANDARD NORMALLY OPEN CONFIGURATION

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

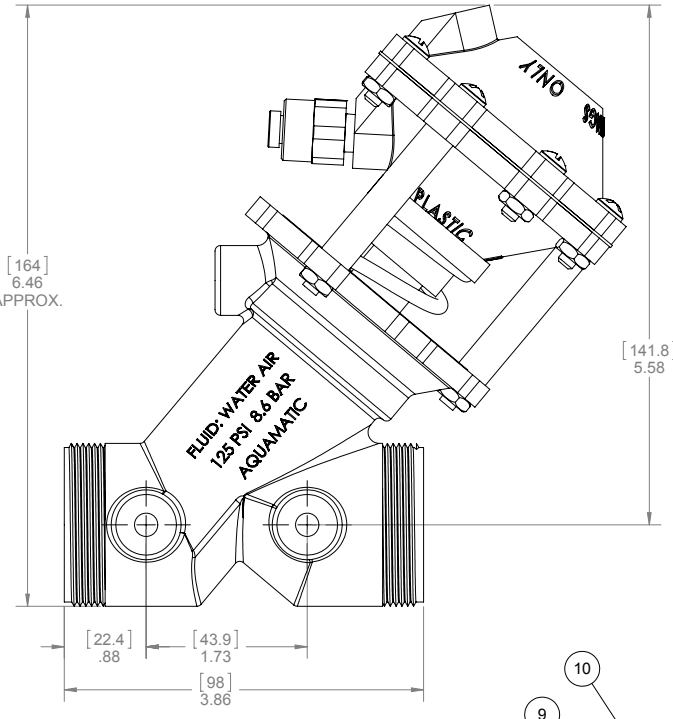
APPROVALS	DATE
DRAWN MWL	06-25-13
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

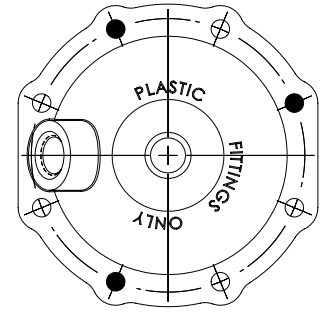
TITLE: CATALOG SHEET, 5520

SIZE B | DWG NO. BR1077692 | REV K

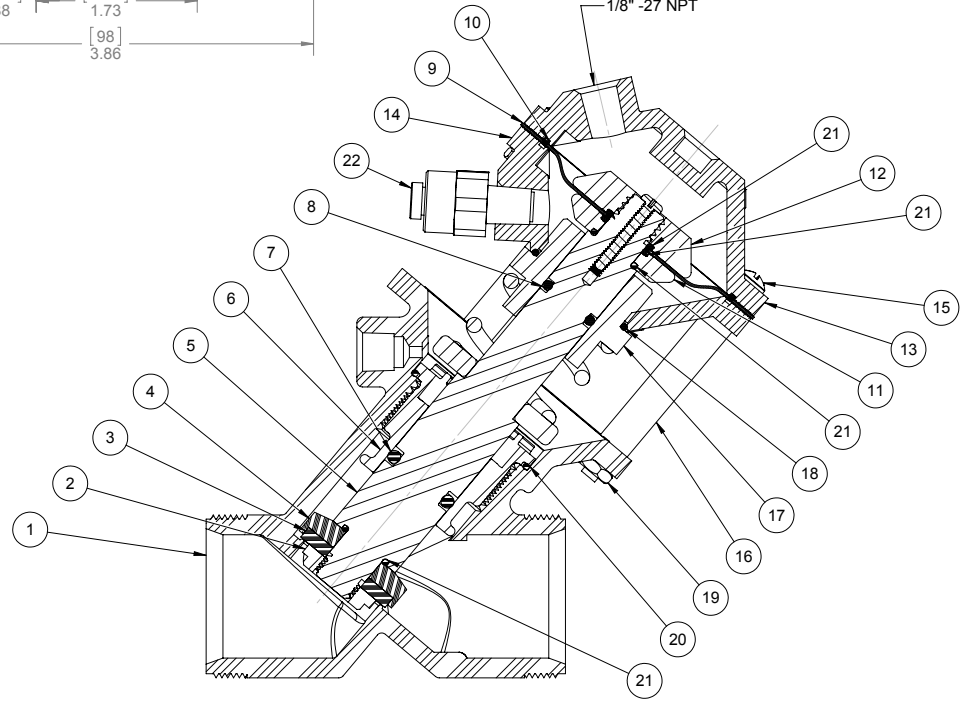
SCALE 1:1 | SHEET 2 OF 2



● - STANDOFF LOCATIONS



SEE SHEET 1078142 FOR UNION END CONNECTORS,
SEE SHEET 1078142 FOR GROOVED ADAPTORS,



1071421 (K551-X200-14000)

NORMALLY OPEN

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102658	H	REDRAWN IN SOLID WORKS: ITEM #1: WAS 1075007, ITEM #13: WAS 1075012 ITEM #14: WAS 1075348, ITEM #27: WAS 1075010, 5-FORM # NOW DWG #	31OCT13	TJM
	103697	J	ITEM #20: WAS: 1071942, 1071943, 1071944	12DEC14	TJM
	1001	K	AQ Matic update & Verified part numbers	16JAN17	MGS

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	
1	1	43476	BODY, VALVE 521	
2	1	1075358	NUT, DISC PLATE	
3	1	1075033	EPDM	DISC
		1075034	BUTYL	
		1075036	FKM	
4	1	1075360	RETAINER,DISC	
5	1	1075349	SHAFT, 5521	
6	1	1075030	GUIDE,SHAFT,521,NORYL	
7	1	1071743	EPDM	O-RING, 2-208
		1071775	BUTYL	O-RING, 2-208
		1071814	FKM	O-RING, -208, BUTYL
8	1	1071690	O-RING,2-112,NITRILE	
9	1	1075028	DIAPHRAGM, 521, NBR	
10	1	1071715	O-RING (NITRILE), 2-805	
11	1	43080	PLATE,DIAPHRAGM,5521,LWR	
12	1	43081	PLATE,DIAPHRAGM,5521,UPR	
13	1	43477	CAP, 521 VALVE	
14	1	43725	CAP, 5521,LWR,NORYL	
15	8	1072380	SCREW, RHMS 10-32,SS	
16	3	1075354	STAND OFF,	
17	1	1075357	SHAFT GUIDE,	
18	1	1071677	O-RING,2-025,NITRILE	
19	8	1071648	HEX NUT, 10-32, SS	
20	1	1081945	EPDM	QUAD RING, 2-029, EPDM
		43893	BUTYL	QUAD RING,BUTYL,2-029
		1081947	FKM	QUAD RING,FKM
21	4	1071718	EPDM	O-RING, -014, EPDM
		1071760	BUTYL	O-RING, -014, BUTYL
		1071788	FKM	O-RING, -014, FKM
22	1	1078767	CONNECTOR,1/8 MNPT X 1/4 T,PLS	

REPAIR PARTS KITS

DESCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3,7,8,9,10,18,20,21	1075361 (5521-RAE) E.P.D.M. INCLUDES DIAMPHRAGM 1075028 (521-FB)	1075362 (5521-RAJ) BUTYL INCLUDES DIAPHRAGM 1075028 (521-FB)
	1075363 (5521-RAV) FKM INCLUDES DIAPHRAGM 1075028 (521-FB)	
INT. PART KIT (NORM. OPEN) CONSISTS OF ITEM NO'S 2,4,5,611,12,17	1071433 (K5521-RF)	

ASSEMBLY TOOLS

DESCRIPTION	PART NO.
FOR INSTALL & REMOVAL OF SHAFT GUIDE & DIAPHRAGM PLATE (TOOL NOT SHOWN)	1075059 (521-Z)
FOR SHAFT WHEN INSTALL, OR REMOVING DIAPHRAGM PLATE (TOOL NOT SHOWN)	1075060 (521-ZA)

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm] INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009 UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN NE	08/29/12
APPROVED	
CHECKED	

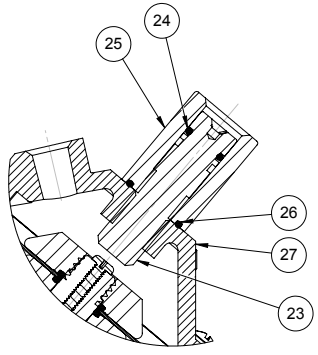
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 5521 DIAPHAGM VALVE, STANDARD MODEL

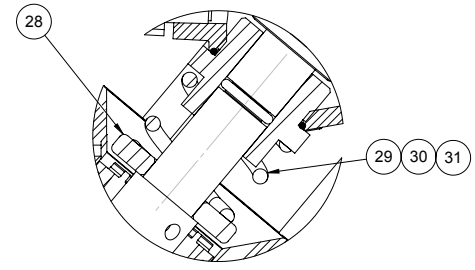
SIZE	DWG NO.	REV
B	BR1077693	K

SCALE 1:1 SHEET 1 OF 2

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



1076708 (K551-X214-14000)
LIMIT STOP



1071423 (K551-X203-14000) 30 PSI
1071424 (K551-X204-14000) 60 PSI
1071427 (K551-X205-14000) 100 PSI
FAILSAFE SPRING CLOSED

LIMIT STOP MODEL

ITEM NO	QTY	PART NUMBER	DESCRIPTION
23	1	1075058	LIMIT STOP SCREW, SS
24	1	1071668	O-RING,2-012,NITRILE
25	1	1075057	LIMIT STOP NUT, SS
26	1	1071671	O-RING,2-016,NITRILE
27	1	43724	CAP, 521, LIMIT STOP

FAILSAFE SPRING CLOSED - 30 PSI

ITEM NO	QTY	PART NUMBER	DESCRIPTION
28	1	1075351	RETAINER, SPRING
29	1	1075366	SPRING, COMPRESSION

FAILSAFE SPRING CLOSED - 60 PSI

ITEM NO	QTY	PART NUMBER	DESCRIPTION
28	1	1075353	RETAINER, SPRING
30	1	1075370	SPRING, COMPRESSION

FAILSAFE SPRING CLOSED - 100 PSI

ITEM NO	QTY	PART NUMBER	DESCRIPTION
28	1	1075351	RETAINER, SPRING
31	1	1075365	SPRING, COMPRESSION

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSIST OF ITEM NO'S 23 THRU 26	1075040 (521-LS)

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION PARTS KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 23 THRU 27	1071090 (K521-LSC)

NOTE:
1. LIMIT STOP OPTION ONLY OFFERED ON FAIL SAFE SPRING CLOSED MODELS.
2. FAILSAFE OPTION NOT OFFERED IN CONVERSION KIT FORM DUE TO SPECIAL ASSEMBLY REQIREMENTS.
3. COMPONENTS/ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2002/95/EEC (RoHS) REQUIREMENTS.

SEE SHEET 1078142 FOR UNION END CONECTORS,
SEE SHEET 1078142 FOR GROOVED ADAPTORS,

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

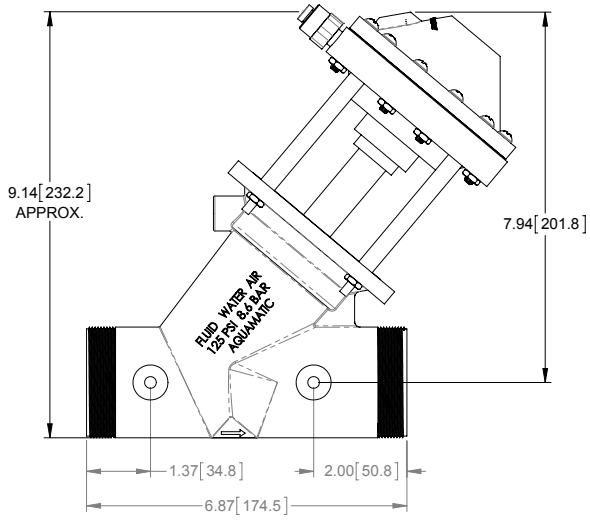
APPROVALS	DATE
DRAWN NE	08/29/12
APPROVED	
CHECKED	

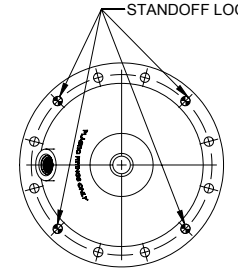
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, 5521 DIAPHAGM VALVE, STANDARD MODEL

SIZE	DWG NO.	REV
B	BR1077693	K

SCALE 1:1 | SHEET 2 OF 2

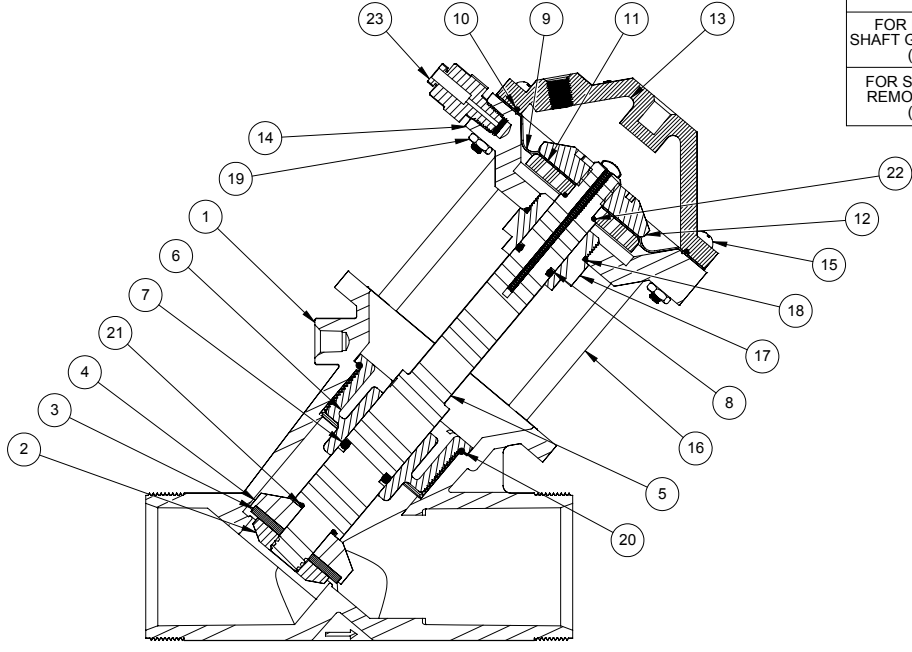




REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102135	H	REDRAWN IN SOLIDWORKS, FORM # NOW DWG # (WAS-1084015)	06-27-13	TJM
	1001	J	AQ Matic update & verified part numbers	17JAN17	MGS

REPAIR PARTS KITS		
DESCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3,7,8,9, 10,18, 20, 21, 22	1075377	1075378
	EPDM INCLUDES DIAPHRAGM 1075377	BUTYL INCLUDES DIAPHRAGM 1075104
	1075379 FKM INCLUDES DIAPHRAGM 1075104	
INT. PARTS KIT (NORM. OPEN) CONSISTS OF ITEM NO'S 2,4,5,6,11,12,17	1071434	

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
FOR INSTALL & REMOVAL OF SHAFT GUIDE & DIAPHRAGM PLATE (TOOL NOT SHOWN)	1075143
FOR SHAFT WHEN INSTALL. OR REMOVING DIAPHRAGM PLATE (TOOL NOT SHOWN)	1075060



1071435 (K554-X200-14000)
NORMALLY OPEN

ITEM NO.	DESCRIPTION		PART NUMBER	QTY
1	BODY, VALVE 524		1075079	1
2	PLATE, DISC, 524		1076198	1
3	DISC	EPDM	1075107	1
		BUTYL	1075108	1
		FKM	1075109	1
4	HOLDER, DISC, 5524		1075121	1
5	SHAFT (SERIES 5524),		1075372	1
6	GUIDE,SHAFT,524,BLACK		1075106	1
7	O-RING, 2-210	EPDM	1071744	1
		BUTYL	1071776	1
		FKM	1071815	1
8	O-RING, (EPDM) 2-113		1071728	1
9	DIAPHRAGM, 524, PURCHASED		1078393	1
10	O-RING, 2-043 NITRILE		1071686	1
11	PLATE,DIAPHRAGM,5524,LOWER		1075375	1
12	PLATE,DIAPHRAGM,5524,UPPER,BLK		1075101	1
13	CAP,524, VALVE		1075086	1
14	CAP, STANDARD BOTTOM		1075371	1
15	SCREW, RND HD, #10-32X1 1/4"LG		1072382	12
16	STANDOFF, 5524, SS		1075374	4
17	BUSHING, GUIDE		1075376	1
18	O-RING,2-025,NITRILE		1071677	1
19	HEX NUT, 10-32, SS		1071648	12
20	O-RING, 2-137	EPDM	1071735	1
		BUTYL	1071771	1
		FKM	1071807	1
21	O-RING, -016	EPDM	1071719	1
		BUTYL	1071761	1
		FKM	1071789	1
22	O-RING,2-015,NITRILE		1071670	1
23	CONNECTOR, 1/8 MNPT X 1/4T,PLS		1078767	1

REPAIR PARTS KITS			
DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3,7, 8, 9, 10, 19, 20, 21, 22	1075377 EPDM INCLUDES DIAPHRAGM 1075377	1075378 BUTYL INCLUDES DIAPHRAGM 1075104	1075379 FKM INCLUDES DIAPHRAGM 1075104
INTERNAL PARTS KIT CONSISTS OF ITEM NO'S 2, 4, 5, 6, 11, 12, 18	1071434		

SEE SHEET 1078150 FOR SOCKET WELD & FLANGED ADAPTORS
SEE SHEET 1078140 FOR SOCKET WELD & PIPE ADAPTORS

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (ROHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009 UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN MWL	06-27-13
APPROVED	
CHECKED	

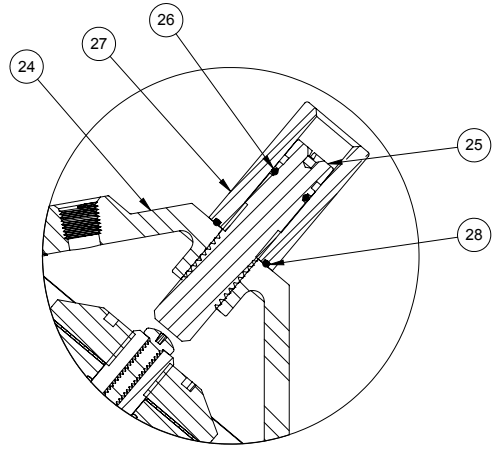
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 5524

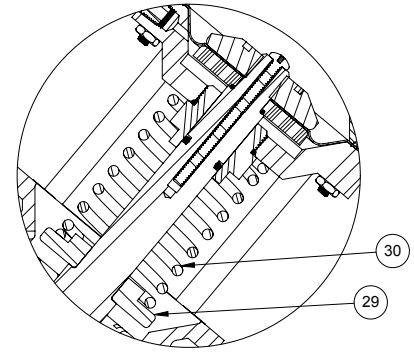
SIZE B | DWG NO. BR1077694 | REV J

SCALE 1:2 | SHEET 1 OF 2

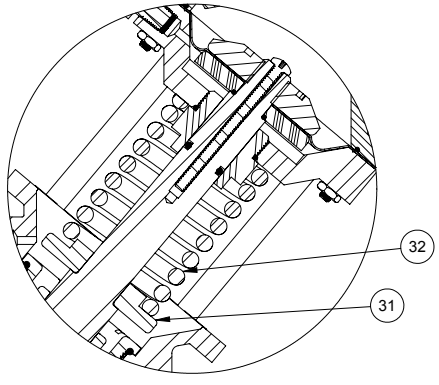
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



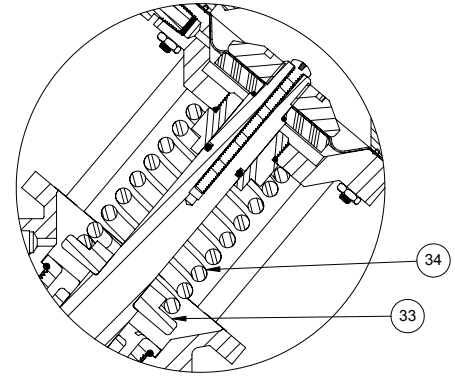
1079768 (K554-X210-14000)
LIMIT STOP



1071438 (K554-X203-14000)
FAILSAFE SPRING CLOSED 30 PSI



1071439 (K554-X204-14000)
FAILSAFE SPRING CLOSED 60 PSI



1071442 (K554-X205-14000)
FAILSAFE SPRING CLOSED 100 PSI

LIMIT STOP MODEL			
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
24	CAP, LIMIT STOP,524	1075083	1
25	LIMIT STOP SCREW, SS	1075142	1
26	O-RING,2-012,NITRILE	1071668	1
27	LIMIT STOP NUT, SS	1075141	1
28	O-RING,2-016,NITRILE	1071671	1
FAILSAFE SPRING CLOSED - 30 PSI			
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
29	RETAINER, SPRING, PVC	1075373	1
30	SPRING, COMPRESSION	1077981	1
FAILSAFE SPRING CLOSED - 60 PSI			
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
31	RETAINER, SPRING, PVC	1075373	1
32	SPRING, CMPRSN SERIES 4424	1267397	1
FAILSAFE SPRING CLOSED - 100 PSI			
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
33	RETAINER, SPRING, PVC	1075373	1
34	SPRING, COMPRESSION	1077983	1

NOTE:
1. LIMIT STOP OPTION ONLY OFFERED ON FAIL SAFE SPRING CLOSED MODELS.
2. FAILSAFE OPTION NOT OFFERED IN CONVERSION KIT FORM DUE TO SPECIAL ASSEMBLY REQUIREMENTS.
3. LIMIT STOP CONVERSION KITS NOT OFFERED DUE TO FAIL SAFE OPTION ASSEMBLY REQUIREMENTS.

SEE SHEET 1078150 FOR SOCKET WELD & FLANGED ADAPTORS
SEE SHEET 1078140 FOR SOCKET WELD & PIPE ADAPTORS

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED.
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN	
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 5524

SIZE B | DWG NO. BR1077694 | REV J

SCALE 1:2 | SHEET 2 OF 2

AQUAMATIC® K53 SERIES
CONTROL VALVES

CORROSION-RESISTANT CONSTRUCTION WITHSTANDS HARSH MEDIA

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

FEATURES/BENEFITS

Unique Y-pattern design with large seat opening and high lift disc permits higher flow rates at lower pressure loss than other comparable valves

All components can be serviced while the valve is in-line

Separate flow and control chambers permit positive closing without springs; and only normal cost for spring assist opening for low-pressure and self-draining applications

Pre-formed, stress-relieved diaphragm minimizes fatigue, maximizes valve responsiveness and diaphragm lifetime

Diaphragm acts as an actuator, eliminating the need for electric or pneumatic actuators

All internal parts in contact with media are made of composite materials*

Seals are ethylene propylene for better chemical resistance**

Two dynamic O-rings on the shaft, with a vent in between the O-rings, to prevent damage to the diaphragm

Female socket weld connectors for easy installation and the ability to remove the valve without disrupting the service piping

Valve bodies provided with molded pads that can be used to support the piping manifold

Cap held by a retaining ring, eliminating screws and nuts; no external metal parts to corrode in aggressive environment

Available in sizes from 1"-3"

A variety of end connectors are available to make the valve compatible in pipe sizes from 3/4"-3"

Adaptable to a wide variety of control devices

OPTIONS

Normally open [standard]

Externally normally closed

Spring-assist closed

Spring-assist open

Fully adjustable limit stop from full-open to full-closed, with a position indicator to show the valve position

Seal and diaphragm materials for special applications

TYPICAL APPLICATIONS

Chemical Injection

Deionizers

Desalinization

Detergent and Bleach Handling

Electronic Industry

Evaporation

Fertilizer Spray Equipment

Level Control Systems

Metal Recovery Systems

Mining Wastes

Process Water Systems

Water Treatment Systems

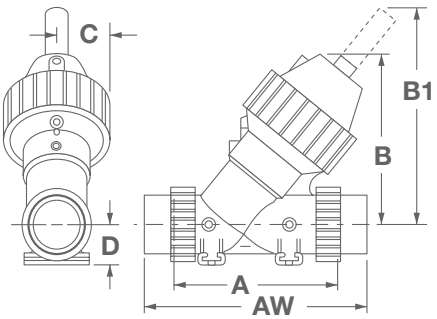
* Normally closed valve configurations are NOT recommended when used with corrosive fluids.
** Valves are NOT recommended for use with any aromatic, hydrocarbon-based media.

DIMENSIONS

MODEL #	PIPE SIZE	Cv*	WEIGHT (STANDARD VALVE)	WEIGHT (FAIL SAFE VALVE)	DIMENSIONS (APPROXIMATE)					
					A**	AW	B	B1	C	D
K531	0.75", 1.00" (20, 25 mm)	18.0 (15.6 Kv)	1.7 lbs (0.8 kg)	3.0 lbs (1.4 kg)	5.75" (146 mm)	8.12" (206 mm)	6.00" (152 mm)	8.62" (220 mm)	2.04" (52 mm)	1.38" (35 mm)
K534	1.5" (40 mm)	46.0 (39.8 Kv)	4.0 lbs (1.8 kg)	7.5 lbs (3.4 kg)	8.38" (213 mm)	11.00" (279 mm)	8.07" (205 mm)	13.46" (342 mm)	2.62" (67 mm)	1.96" (50 mm)
K535	2.0" (50 mm)	84.0 (72.6 Kv)	8.0 lbs (3.6 kg)	15.0 lbs (6.8 kg)	9.88" (251 mm)	12.88" (333 mm)	9.12" (232 mm)	14.28" (363 mm)	3.18" (81 mm)	2.18" (51 mm)
K537	3.0" (75 mm)	2000 (173.0 Kv)	11.5 lbs (5.2 kg)	27.0 lbs (12.3 kg)	11.13" (283 mm)	15.25" (387 mm)	11.41" (290 mm)	17.06" (433 mm)	3.79" (96 mm)	2.68" (68 mm)

*Cv is the flowrate in gallons per minute of water at 60°F at 1 pound pressure drop or (Kv) (flowrate in cubic meters per hour of water at (15.5°C) at 1 bar pressure drop).
**The "A" dimension is the distance between face to face seal surfaces.

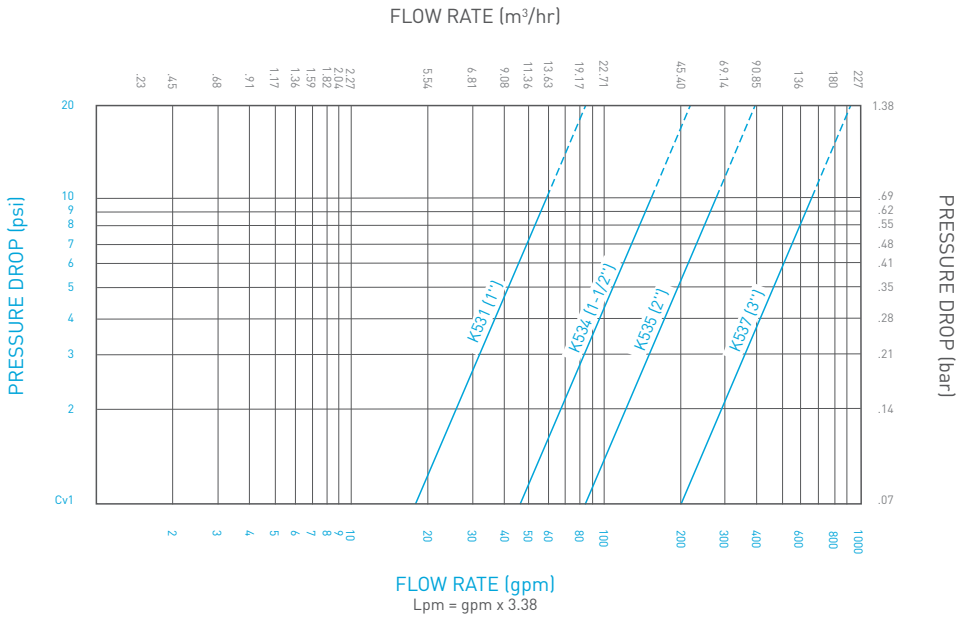
(Models K531 - K537)



OPERATING SPECIFICATIONS

Max Pressure	125 psi (8.6 bar)
Max Temperature	140°F (60°C)

PERFORMANCE DATA



16605 West Victor Rd. New Berlin, WI 53151
P: 262–326–0100 | www.aq–matic.com | techsupport@aq–matic.com

1163571 REV K MA2016

K53 SERIES DIAPHRAGM VALVE MASTER CHART

*** FILL IN PROPER DESIGNATIONS TO DETERMINE PRODUCT NUMBER:** K 5 3 _ - X 2 _ _ - _ 4 _ _ _

BODY SIZE (std)
1 = 1"
4 = 1-1/2"
5 = 2"
7 = 3"

END CONNECTIONS (X std)
X = None

BODY & CAP MATERIAL (2 std)
2 = Noryl

VALVE OPTIONS (00 std) [XNC not valid with solenoid configurations]

00 = NO	05 = Spring Closed 100#	A2 = LS, PI, SAC
01 = NO, SAO	10 = NO, LS	B2 = XNC, SAC
02 = NO, SAC	11 = NO, LS, SAO	C2 = XNC, LS, SAC
03 = Spring Closed 30#	12 = NO, LS, SAC	D2 = XNC, LS, PI, SAC
04 = Spring Closed 60#	A1 = LS, PI, SAO	SX = Special Valve **

SEAL MATERIALS (1 std) (Option 6 not available on series 535 & 537 valves)
(Options 2 & 4 no longer available after March 2009)
(Option 5 not available on XNC or solenoid EO or EC valves)

OPT.	OPERATING DIAPHRAGM	SEALING DISK	DYNAMIC SEALS	STATIC SEALS	KIT SERIES
1	Buna-N	EP	EP	EP	RAE
~~2~~	~~Fluoroelast.~~	~~Fluoroelast.~~	~~Fluoroelast.~~	~~Fluoroelast.~~	~~RAV~~
~~4~~	~~Fluoroelast.~~	~~EP~~	~~EP~~	~~EP~~	~~RAEFV~~
5	Buna-N	Fluoroelast.	Fluoroelast.	Fluoroelast.	RAVFB (Not Std)
6	Buna-N	Butyl	Butyl	Butyl	RAJ

INTERNAL PARTS (4 std)
4 = Noryl/PVC (140℉ (60℃) Valve Rating)

DRILL & TAP BOSSES (0 std [1/8" NPT std for K531/K534; 1/4" NPT std for K535/K537])

0 = None	3 = Boss #3	6 = Bosses #1,2
1 = Boss #1	4 = Boss #4	~~7 = Bosses #1,3~~
2 = Boss #2	~~5 = Bosses #1,2,3,4~~	

SOLENOID OPTIONS (0 std)

0 = None	2 = Energize to Close (EC)	4 = EO w/ Dry Drain
1 = Energize to Open (EO)	3 = Independent pressure (IP)	5 = EC w/ Dry Drain

SOLENOID FEATURES (0 std)

0 = None	E = 220V/50HZ, NEMA 4
D = 115V/60HZ, NEMA 4	F = 24V/60HZ, NEMA 4

* To create a valve number replace each "_" with the proper number or letter for the feature you desire. For example, a 2" Plastic Valve Model K535 with Externally Normally Closed and Spring Assist Closed Options is designated as a K535-X2B2-14000.

** A special valve will have a custom drawing number (_ _ _ _ _ _ _)
and the item number format is (K53?-X2SX-_ _ _ _ _)
where the last 5 numbers (Far Right) are the last five digits of the drawing number.

Valve Option Notes:

1. **Limit Stop &/or Position Indicator options can not be combined with 30#, 60#, or 100# Spring Closed Options.**
2. **Solenoid Option cannot be combined with NC valves.**

REV.	ECO NO.	DESCRIPTION	BY/DATE	
H	21190	Revised for Pentair ECN release	JJJ	17-Nov-09
J	21813	Revised line 27.	JJJ	5-Jan-10

16605 West Victor Rd. New Berlin, WI 53151
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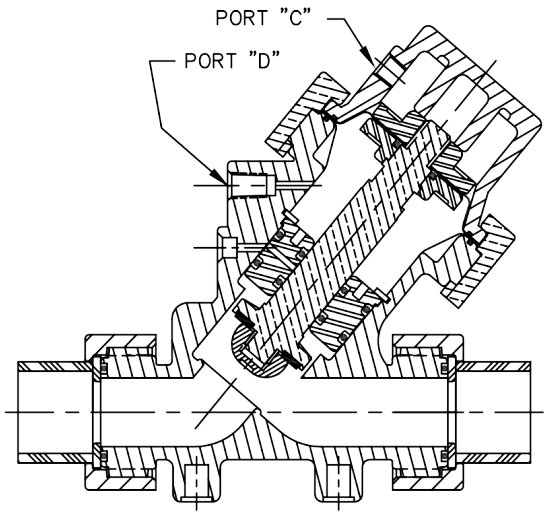
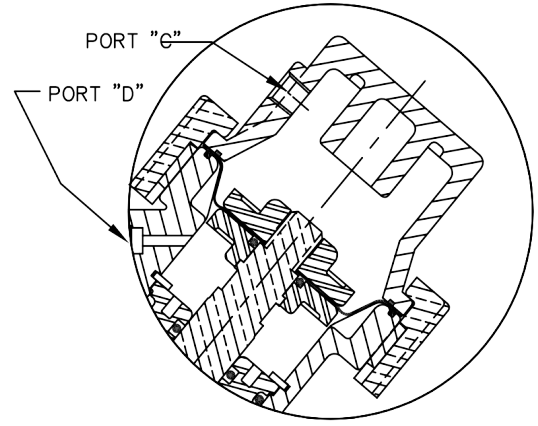
42984 REV F MAY17

DIAPHRAGM VALVE CONFIGURATIONS - STANDARD MODEL



NORMALLY OPEN

LINE PRESSURE/FLOW AGAINST THE VALVE SEATING DISC WILL OPEN THE VALVE. CONTROL PRESSURE APPLIED TO THE TOP OF THE DIAPHRAGM (PORT "C") WILL CLOSE THE VALVE.

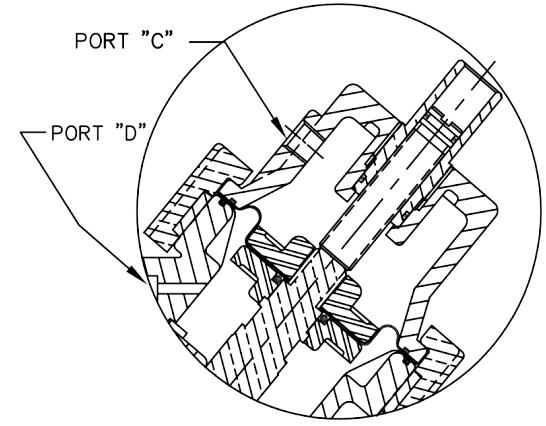


NORMALLY CLOSED

LINE PRESSURE AGAINST THE DISC, TRANSFERRED THRU AN EXTERNAL LINE TO PORT "C" AT THE TOP OF THE DIAPHRAGM, WILL CLOSE THE VALVE. CONTROL PRESSURE AT PORT "D" WILL OPEN THE VALVE. ADDITION OF "SPRING ASSIST CLOSED" FEATURE IS RECOMMENDED FOR THE FOLLOWING CONDITIONS:

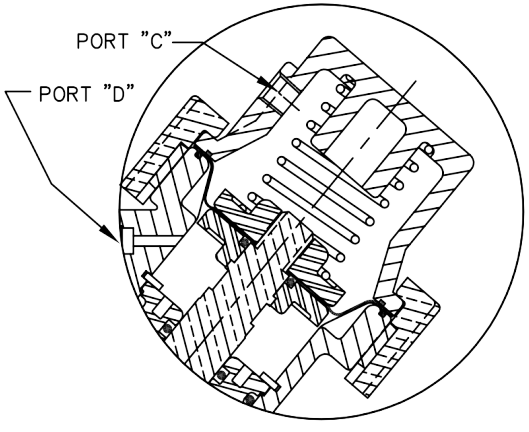
1. LOW PRESSURE AND/OR FLOW.
2. VALVE DISCHARGES TO ATMOSPHERE.

NORMALLY CLOSED FEATURE NOT RECOMMENDED FOR LINE MEDIA CONTAINING SOLIDS, HIGH TEMPERATURES OR OTHER MEDIA CONDITIONS WHICH MAY DAMAGE THE DIAPHRAGM.



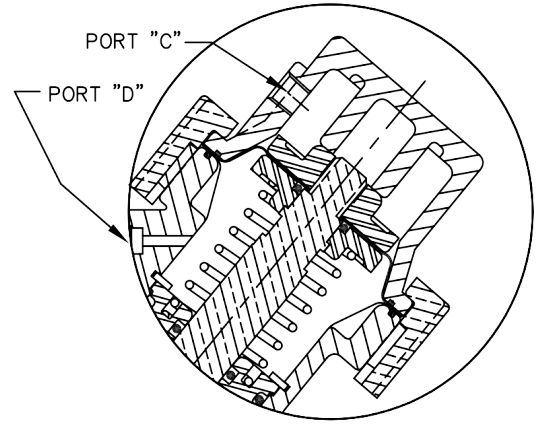
LIMIT STOP

INCLUDES AN ADJUSTMENT SCREW WHICH LIMITS THE VALVE STROKE. MAY BE USED TO CONTROL FLOW RATE, HOWEVER, FLOW RATE WILL VARY WITH CHANGES IN PRESSURE.



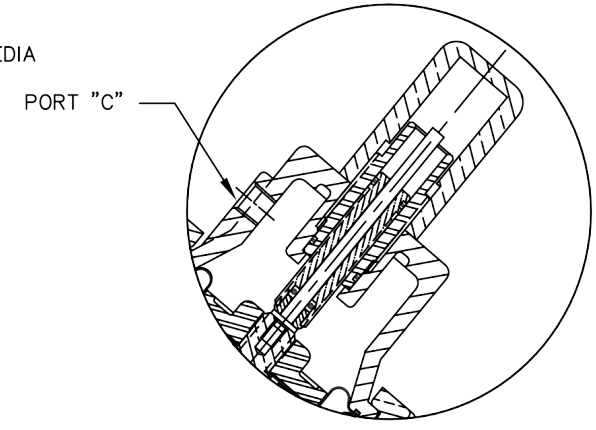
SPRING ASSIST CLOSED

SPRING SERVES AS AN ASSIST TO ASSURE FULL VALVE CLOSURE IN THE ABSENCE OF LINE AND CONTROL PRESSURES.



SPRING ASSIST OPEN

SPRING SERVES AS AN ASSIST TO ASSURE FULL VALVE OPENING IN THE ABSENCE OF LINE AND CONTROL PRESSURES.



POSITION INDICATOR

INDICATOR ROD IS ATTACHED TO MAIN VALVE STEM TO SHOW POSITION OF VALVE. ONLY AVAILABLE WITH COMBINATION OF SPRING ASSIST AND LIMIT STOP OPTIONS.

FORM NO. 1078165

REV	DESCRIPTION	ECO	DWN	DATE	APVD
C	NUMBER CONVERSION	1588	MSM	27NOV02	

AQ Matic
Valve & Controls Company Inc.

SERIES 530 DIAPHRAGM VALVES

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	15JUN01	1084006

PRINTED IN U.S.A.

PLASTIC DIAPHRAGM VALVES (531 THRU 537)

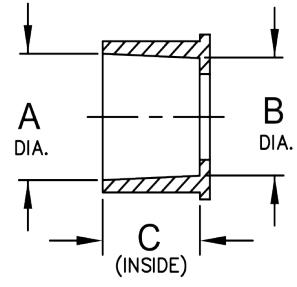
SERIES	PIPE SIZE	SEAT DIAMETER IN. / CM.	SEAT AREA SQ. IN. / SQ. CM.	DIAPHRAGM AREA SQ. IN. / SQ. CM.	TOTAL STROKE IN. / CM.	DIAPHRAGM CHAMBER (VOLUME) CUBIC IN. / CUBIC CM.	* Cv	** Kv	FLOW RATE @ 10 FT./SEC. (3 M./SEC.) NOTE 1 GAL./MIN. / CU.M/HR	FLOW RATE @ 20 FT./SEC. (6 M./SEC.) NOTE 2 GAL./MIN. / CU.M/HR	PRESSURE DROP @ 10 FT./SEC. (3 M./SEC.) NOTE 1 P.S.I. / bar	PRESSURE DROP @ 20 FT./SEC. (6 M./SEC.) NOTE 2 P.S.I. / bar
531	3/4",1"	1.062 / 2.70	.89 / 5.73	3.43 / 22.1	.86 / 2.18	6.21 / 102.0	18.0	16.0	27.7 / 6.3	55.3 / 12.6	2.3 / 0.16	9.4 / 0.65
534	1-1/2"	1.562 / 3.97	1.92 / 12.4	6.06 / 39.1	1.33 / 3.38	10.4 / 170.0	42.0	36.0	60 / 13.6	120 / 27.2	2.04 / 0.14	8.16 / 0.56
535	2"	2.062 / 5.24	3.34 / 21.5	8.82 / 56.9	1.75 / 4.45	25.3 / 414.0	84.0	72.0	104 / 23.4	208 / 46.8	1.53 / 0.11	6.13 / 0.42
537	3"	3.062 / 7.78	7.36 / 47.5	15.6 / 101.0	2.50 / 6.35	65.3 / 1070	200.0	172.0	230 / 52.2	460 / 104.4	1.32 / 0.09	5.3 / 0.36

* Cv – FLOWRATE (GAL./MIN.) OF WATER AT 60° F. AT 1 P.S.I. PRESSURE DROP

** Kv – FLOWRATE (CU. M./HR) OF WATER AT 15.5° C. AT 1 BAR PRESSURE DROP

NOTE 1: MAXIMUM CONTINUOUS VELOCITY THROUGH THE VALVE.

NOTE 2: MAXIMUM CONTINUOUS VELOCITY. EXTENDED SERVICE AT THIS VELOCITY MAY CAUSE CAVITATION.



TO DETERMINE FLOWRATE AT ANY GIVEN PRESSURE DROP, THE FOLLOWING FORMULAS CAN BE USED.

FOR WATER AND LIQUIDS:

$$Q = \frac{Cv\sqrt{\Delta P}}{\sqrt{e}}$$

FOR AIR AND GAS:

WHEN P2 < .5P1

$$Cv = \frac{CFM\sqrt{e}}{.5P1}$$

WHEN P2 > .5P1

$$Cv = \frac{CFM\sqrt{e}}{\sqrt{\Delta P\ P2}}$$

Q – FLOWRATE IN GAL./MIN.
ΔP – PRESSURE DROP (LB./SQ. IN.)
e – SPECIFIC GRAVITY (WATER = 1.00)

CFM – CU. FT./MIN. FLOW
e – SPECIFIC GRAVITY (AIR = 1.00)
P1 – INLET PRESSURE (LB./SQ. IN.)
P2 – OUTLET PRESSURE (LB./SQ. IN.)

FEMALE SOCKET WELD END CONNECTOR KITS

VALVE SERIES	STANDARD	PART NO.	DIAMETER A	DIAMETER B	DEPTH C
531	A.S.T.M. 3/4"	1070411 (K531-577)	1.062"	1.050"	1.18"
	A.S.T.M. 1"	1070412 (K531-060)	1.330"	1.312"	1.18"
	J.I.S. 25MM	1070413 (K531-061)	1.282"	1.234"	1.18"
	I.S.O. 25MM	1070414 (K531-062)	1.269"	1.269"	1.18"
534	A.S.T.M. 1-1/2"	1070419 (K534-060)	1.920"	1.81"	1.37"
	J.I.S. 40MM	1070420 (K534-061)	1.895"	1.829"	1.36"
	I.S.O. 40MM	1070421 (K534-062)	1.978"	1.955"	1.36"
535	A.S.T.M. 2"	1070425 (K535-060)	2.393"	2.341"	1.50"
	J.I.S. 50MM	1070426 (K535-061)	2.392"	2.274"	1.50"
	I.S.O. 50MM	1070427 (K535-062)	2.493"	1.931"	1.50"
537	A.S.T.M. 3"	1070431 (K537-060)	3.522"	3.492"	1.95"
	J.I.S. 80MM	1070432 (K537-061)	3.537"	3.470"	1.95"
	I.S.O. 75MM	1070433 (K537-062)	3.557"	3.535"	1.95"

NOTE: ALL CONNECTOR KITS CONTAIN (2) CONNECTORS, (ONE KIT REQ'D PER VALVE)

THE DATA PRESENTED HERE IS BELIEVED TO BE RELIABLE AND OFFERED AS SUGGESTION ONLY. ACTUAL RESULTS MAY VARY DEPENDING UPON APPLICATION.

AQ Matic
Valve & Controls Company Inc.

SERIES 530 DIAPHRAGM VALVES

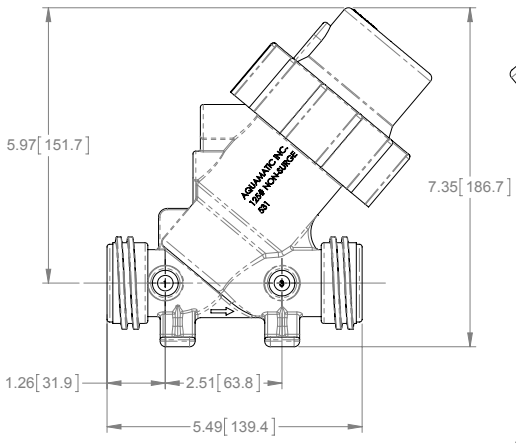
FORM NO. 1078165

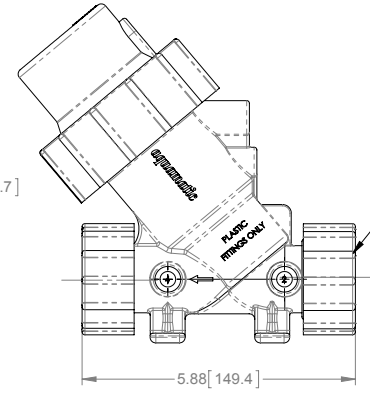
REV	DESCRIPTION	ECO	DWN	DATE	APVD
C	NUMBER CONVERSION	1588	MSM	27NOV02	

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	14JUN01	1084006

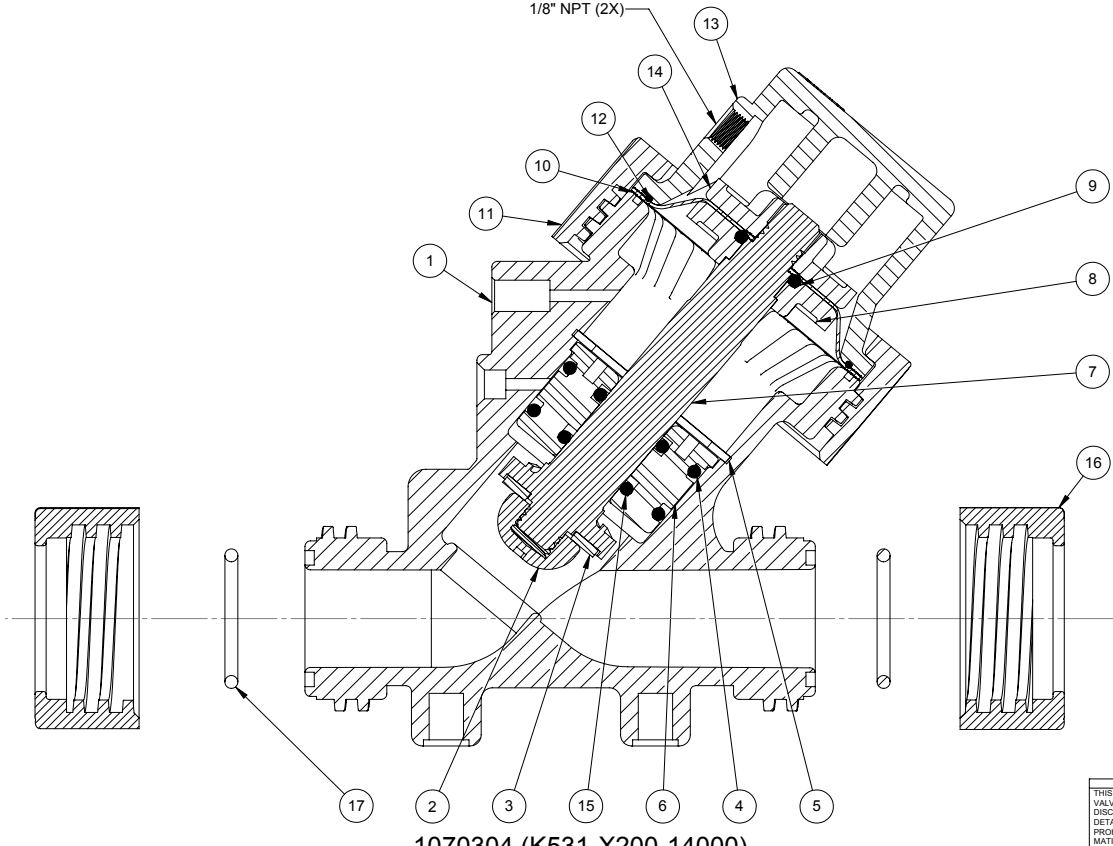
DIAPHRAGM VALVE INFORMATION - STANDARD MODEL

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102142	G	REDRAWN IN SOLIDWORKS, FORM # NOW DWG #(WAS 1084007)	06-28-13	TJM
	105094	H	1-ITEM#10 REM'D: 1073278, 2-KIT FKM WAS: 1073278	11NOV15	TJM
	1001	K	AQ Matic update & verified part numbers	16JAN17	MGS





NOTE:
CONNECTORS NOT FURNISHED WITH VALVE. SEE DWG. NO. 1078165 FOR FEMALE SOCKET WELD CONNECTORS.



1070304 (K531-X200-14000)
NORMALLY OPEN (STANDARD)

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
F	VALVE BODY, 531		1073287	1
2	NUT, DISC RETAINING, 531		1073274	1
3	DISC	E.P.D.M.	1073279	1
		BUTYL	1073280	
		FKM	1073281	
4	O-RING, -223	E.P.D.M.	1071749	2
		BUTYL	1071780	
		FKM	1071820	
5	RING, RETAINING, SERIES 531		1073312	1
6	GUIDE, SHAFT, 531		1073292	1
7	SHAFT, 531		1073294	1
8	PLATE, DIAPHRAGM, 531, LOWER		1073265	1
9	O-RING, -208	BUNA N	1071700	1
	O-RING, -208, FKM	FKM	1071814	1
10	DIAPHRAGM, K531	BUNA N	1073277	1
11	NUT, SOCKET RETAINING, 535		1073395	1
12	O-RING, -039	E.P.D.M.	1071685	1
	O-RING, -039, FKM	BUTYL	1071796	1
13	CAP, NORYL, 531		1073263	1
14	PLATE, DIAPHRAGM, 531, UPPER		1073264	1
15	O-RING, 2-210	E.P.D.M.	1242718	2
	O-RING, -210, BUTYL	BUTYL	1071776	2
	O-RING, 2-210	FKM	1242394	2
16	NUT, INLET/OUTLET, 531		1073273	2
17	O-RING, -218	E.P.D.M.	1071748	2
		BUTYL	1071779	
		FKM	1071819	

REPAIR PARTS KITS			
DESCRIPTION	PART NO.		
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3, 4(2), 9, 10, 12, 15(2)	1070318 EPDM INCLUDES DIAPHRAGM 1073277	1070326 BUTYL INCLUDES DIAPHRAGM 1073277	1070334 FKM INCLUDES DIAPHRAGM 1073277
INTERNAL PARTS KIT CONSISTS OF ITEM NO'S 2, 5, 6, 7, 8, 14	1070342		

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
LIMIT STOP TOOL (TOOL NOT SHOWN)	1073556
STRAP WRENCH TOOL (TOOL NOT SHOWN)	1073557

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS.

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN MWL	06-28-13
APPROVED	
CHECKED	

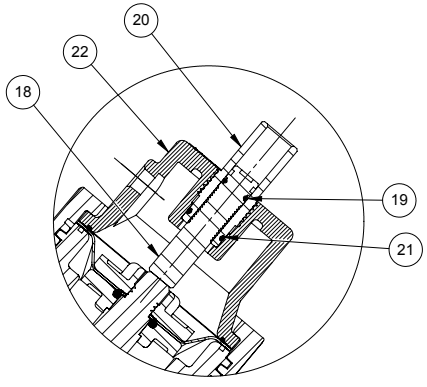
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 531

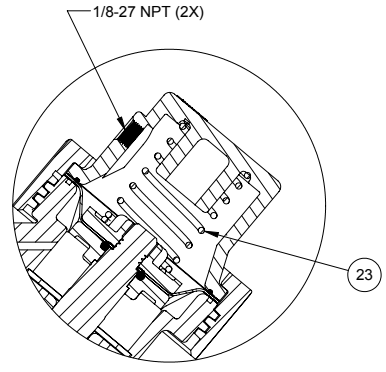
SIZE B | DWG NO. BR1077688 | REV K

SCALE 1:2 | SHEET 1 OF 2

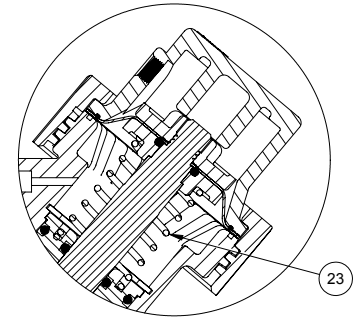
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



1070305 (K531-X210-14000)
LIMIT STOP



1071286 (K531-X202-14000)
SPRING ASSIST CLOSED



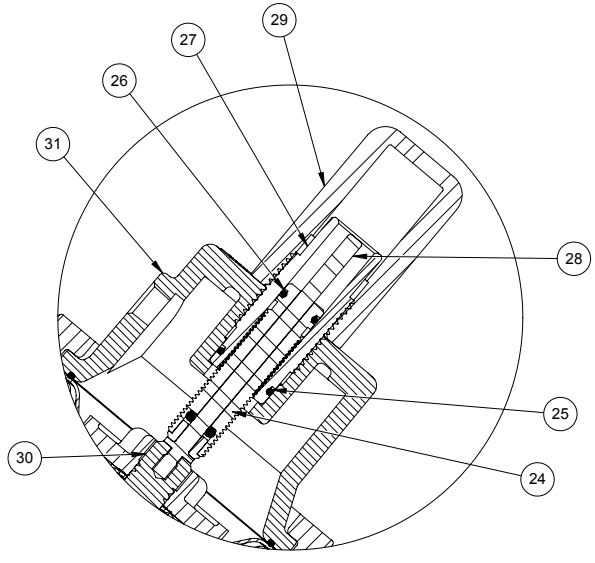
1071282 (K531-X201-14000)
SPRING ASSIST OPEN

LIMIT STOP MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
18	SCREW, LIMIT STOP		1073308	1
19	O-RING,2-012	BUNA N	1071668	1
		FKM	1071787	
20	GUIDE, LIMIT STOP , K531		1073304	1
21	O-RING,2-016	BUNA N	1071671	1
		FKM	1071789	
22	CAP, LIMIT STOP / POS. IND.		1073288	1

SPRING ASSIST CLOSED & SPRING ASSIST OPEN MODELS

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
23	SPRING,COMPRESSION	1073283	1



K531-X221-14000
LIMIT STOP/POSITION INDICATOR

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 18 THRU 21	1075226
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO. 23	1075229
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO. 23	1075229
INT. PARTS KIT (LIMIT STOP/POS INDICATOR) CONSISTS OF ITEM NO'S 24 THRU 30	1075227

CONVERSION KITS	
DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 18 THRU 22	1071265
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO. 23	1075229
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO. 23	1075229
CONVERSION KIT (LIMIT STOP/POS INDICATOR) CONSISTS OF ITEM NO'S 24 THRU 31	1071266

LIMIT STOP/POSITION INDICATOR MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
24	SCREW, LIMIT STOP, ASSY.		1073315	1
25	O-RING, -016	FKM	1071789	1
		BUNA N	1071671	
26	O-RING2-012	BUNA N	1071668	1
		FKM	1071787	
27	GUIDE, LIMIT STOP/POS IND,K531, PVC		1073303	1
28	ROD, POS INDICATOR,K531,SS		1073298	1
29	POSITION INDICATOR,SIGHT GLASS		1073297	1
30	SHAFT,531,NORYL,PI,MCHD		1073295	1
31	CAP, LIMIT STOP / POS. IND.		1073288	1

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

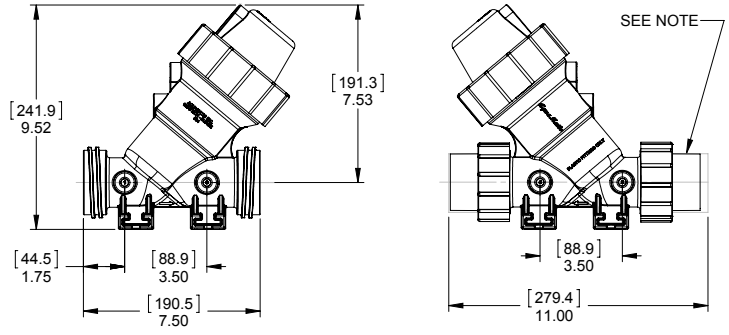
APPROVALS	DATE
DRAWN MWL	06-28-13
APPROVED	
CHECKED	

AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 531

SIZE B | DWG NO. BR1077688 | REV K

SCALE 1:2 | SHEET 2 OF 2

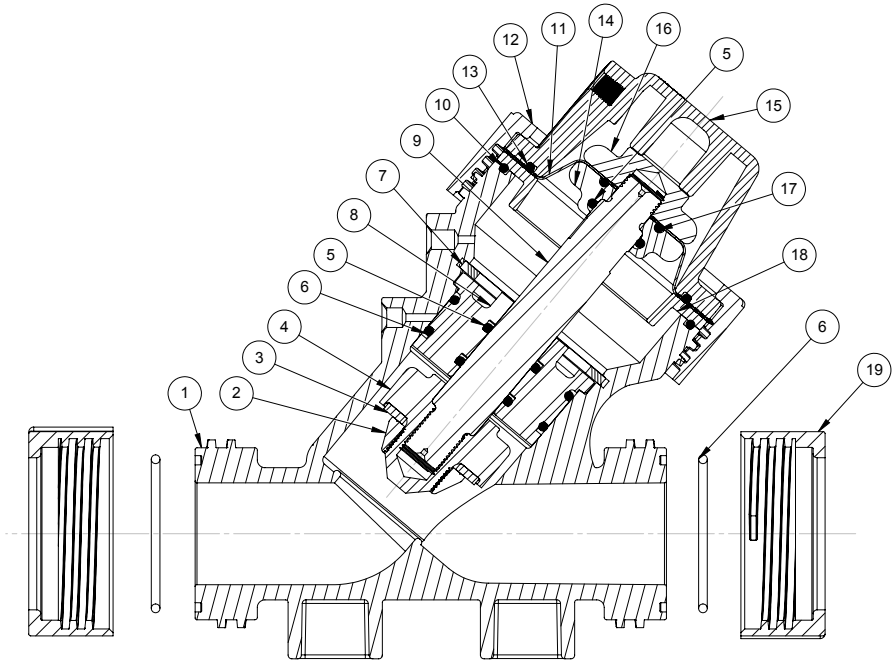


REPAIR PARTS KITS		
DESCRIPTION	PART NO.	
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3,5(3),6(2),10,11,13,17	1070319 (534-RAF) E.P.D.M. INCLUDES DIAPHRAGM 1073333 (V534-100)	1070327 (534-RAJ) BUTYL INCLUDES DIAPHRAGM 1073333 (V534-100)
	1070335 (534-RAV) FKM INCLUDES DIAPHRAGM 1073333	
INT. PARTS KIT CONSISTS OF ITEM NO'S 3,4,7,8,9,14,16,18	1070343 (K534-RF)	

ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
LIMIT STOP TOOL (TOOL NOT SHOWN)	1073556 (V560-579)
STRAP WRENCH (TOOL NOT SHOWN)	1073557 (V560-581)

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	20969	F	REDRAWN IN SOLID WORKS; 1-REM'D:BR1242719, 2-REM'D: BR1076765, 3-ADD'D: BR10711745, 4-REM'D:BR1073331,5-REM'D:BR1073354,6-REM'D:BR1071830,7-REM'D:BR1073321,8-REM'D:BR1073319, 9-REM'D:BR1071817, 10-REM'D:1071816, 11-WAS:BUTYL NOW:BUNA N, 12-REM'D:BR1073351	04/05/10	TJM
	33909	G	1-NEW CAP DESIGN, PART NUMBER STAYS THE SAME	11-9-11	TMS
	102742	H	REPLACED DRAWING NUMBER WITH FORM NUMBER, UPDATED TABLES, SEE ECN FOR LIST OF WHAT CHG'D.	11/15/13	TJM
	130461	J	UPDATED POSITION INDICATOR VIEW TO SHOW CORRECT PARTS, NO BOM CHANGES MADE	04JUN14	TJM
	105094	K	1-ITEM#11- REM'D: 1073334, 2-KIT#1070335 WAS: 1073334 DIAPHRAGM.	11NOV15	TJM

ITEM NO.	DESCRIPTION	MATERIAL	PART NUMBER	QTY.
1	BODY		1073344 (V534-410K)	1
2	DISC PLATE	PVC	1073330 (V534-093)	1
3	DISC	EPDM	1073337 (V534-110)	1
		BUTYL	1073338 (V534-111)	
		FKM	1073339 (V534-112)	
4	DISC HOLDER	PVC	1073353 (V534-500)	1
5	O-RING	EPDM	1071745 (ORE-212)	3
		BUTYL	1071777 (ORJ-212)	
		FKM	1071816 (ORV-212)	
6	O-RING	EPDM	1071751 (ORE-228)	4
		BUTYL	1071781 (ORJ-228)	
		FKM	1071822 (ORV-228)	
7	RETAINING RING		1073375 (V534-593)	1
8	SHAFT GUIDE	PVC	1073350 (V534-491)	1
9	SHAFT	PVC	1073360 (V534-533)	1
10	O-RING	BUNA N	1071709 (ORB-240)	1
11	DIAPHRAGM	BUNA N	1073333 (V534-100)	1
12	CAP RETAINER NUT		1073458 (V537-080K)	1
13	O-RING	BUNA N	1071707 (ORB-235)	1
		FKM	1071827 (ORV-235)	
14	LOWER DIA. PLATE	PVC	1073320 (V534-045)	1
15	CAP		1073317 (V534-020K)	1
16	UPPER DIA. PLATE	PVC	1073318 (V534-040)	1
17	O-RING	BUNA N	1076766 (ORB-214)	1
18	DIAPH. SUPPORT		1073366 (V534-551K)	1
19	SOCKET RTNG NUT		1073329 (V534-080K)	2



1070308 (K534-X200-14000)
NORMALLY OPEN (STANDARD)

SEE PAGE-2 FOR CONFIGURATION OPTIONS

NOTE:
CONNECTORS NOT FURNISHED WITH VALVE.
SEE FORM. NO.BR1078165 (DWG.1084006) FOR FEMALE SOCKET WELD CONNECTORS.

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

	APPROVALS	DATE
DRAWN	ANH	11/13/13
APPROVED		
CHECKED		

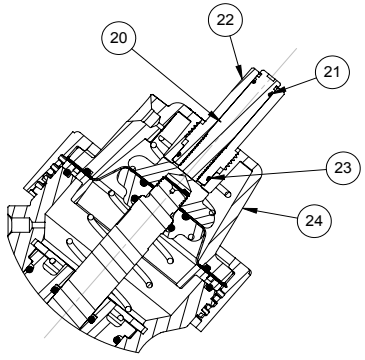
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 534

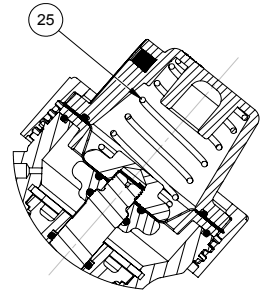
SIZE: B | DWG NO.: 1077689 | REV: M

SCALE: 1:2 | SHEET 1 OF 2

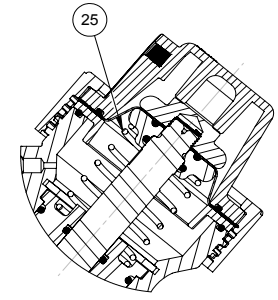
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	1001	M	AQ Matic update & verified part numbers	20JAN17	MGS



1070309 (K534-X210-14000)
LIMIT STOP



1071332 (K534-X202-14000)
SPRING ASSIST CLOSED



1071329 (K534-X201-14000)
SPRING ASSIST OPEN

LIMIT STOP MODEL

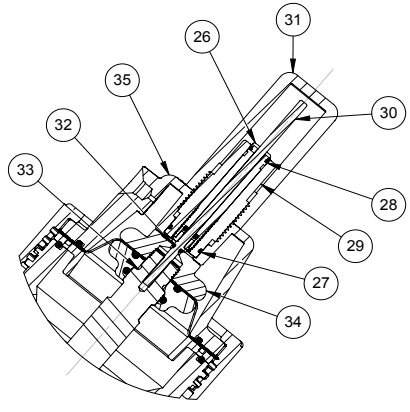
ITEM NUMBER	DESCRIPTION	MATERIAL	PART NUMBER	QTY.
20	ADJUSTING SCREW		1073373 (V534-576)	1
21	O-RING	BUNA N	1071668 (ORB-012)	1
		FKM	1071787 (ORV-012)	
22	LS GUIDE	PVC	1073369 (V535-571)	1
		CPVC	1073371 (V534-573)	
23	O-RING	BUNA N	1071673 (ORB-018)	1
		FKM	1071790 (ORV-018)	
24	CAP		1073345 (V534-420K)	1

SPRING ASSIST CLOSED MODEL & SPRING ASSIST OPEN MODEL

ITEM NUMBER	DESCRIPTION	MATERIAL	PART NUMBER	QTY.
25	SPRING		1073340 (V534-170)	1

LIMIT STOP/ POSITION INDICATOR MODEL

ITEM NUMBER	DESCRIPTION	MATERIAL	PART NUMBER	QTY.
26	SCREW ASSY		1081128 (V534-700)	1
27	O-RING	BUNA N	1071673 (ORB-018)	1
		FKM	1071790 (ORV-018)	
28	O-RING	BUNA N	1071668 (ORB-012)	1
		FKM	1071787 (ORV-012)	
29	LS/PI GUIDE	PVC	1073368 (V534-570)	1
		CPVC	1073370 (V534-572)	
30	INDICATOR SHAFT		1073367 (V534-555)	1
31	PI CLEAR CAP		1073365 (V534-550	1
32	O-RING		1071666 (ORB-006)	1
33	SHAFT	PVC	1073362 (V534-535)	1
		NORYL	1073363 (V534-536)	
34	UPPER DIA. PLATE	PVC	1073346 (V534-442)	1
		NORYL	1073347 (V534-443)	
35	CAP		1073345 (V534-420K)	1



1071313 (K534-X2A1-14000)
LIMIT STOP/
POSITION INDICATOR

REPAIR PARTS KITS

DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 20 THRU 23	1075230 (534-LS)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO. 25	1075233 (534-S)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO.25	1075233 (534-S)
INT. PARTS KIT (LIMIT STOP/POS INDICATOR) CONSISTS OF ITEM NO'S 26 THRU 34	1075231 (534-PI)

CONVERSION KITS

DESCRIPTION	PART NO.
CONVERSION KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 20 THRU 24	1071308 (K54-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO.25	1075233 (534-S)
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO.25	1075233 (534-S)
CONVERSION KIT (POSITION INDECATOR) CONSISTS OF ITEM NO'S 26 THRU 35	1071309 (K534-PIC)

SEE SHEET 1 FOR
STANDARD NORMALLY OPEN MODEL

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION

	APPROVALS	DATE
DRAWN	ANH	11/13/13
APPROVED		
CHECKED		

AQ Matic
Valve & Controls Company Inc.

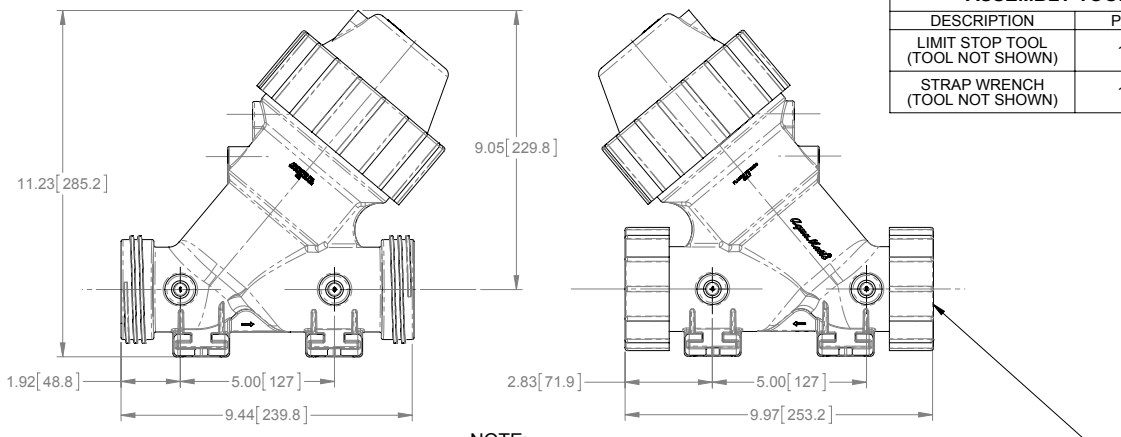
TITLE: CATALOG SHEET, 534

SIZE B | DWG NO. 1077689 | REV M

SCALE 1:2 | SHEET 2 OF 2

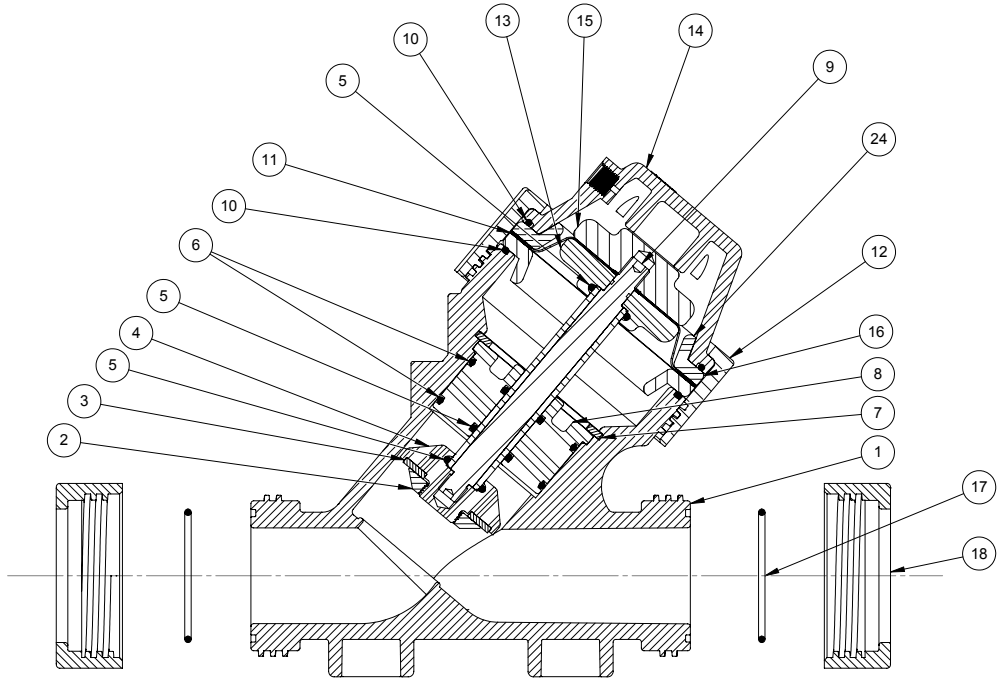
ASSEMBLY TOOLS	
DESCRIPTION	PART NO.
LIMIT STOP TOOL (TOOL NOT SHOWN)	1073556
STRAP WRENCH (TOOL NOT SHOWN)	1073557

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	102159	H	REDRAWN IN SOLIDWORKS, 1-REM'D: BUTYL O-RINGS, 2-REM'D: TEFON COATED O-RINGS	17APR14	TJM
	105094	J	1-ITEM #11- REM'D: FKM-1073400	12NOV15	TJM
	1001	K	AQ Matic update & verified part numbers	16JAN17	MGS



NOTE:
CONNECTORS NOT FURNISHED WITH VALVE.
SEE DWG. NO. 1078165 FOR FEMALE SOCKET WELD CONNECTORS.

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
1	VALVE BODY, SERIES 535		1073407	1
2	NUT, DISC RETAINING	PVC	1073396	1
3	DISC, V535	EPDM	1073401	1
		BUTYL	1073402	
		FKM	1073403	
4	HOLDER, DISC, 535	PVC	1073416	1
5	O-RING,-212	EPDM	1071745	4
		FKM	1071816	
6	O-RING, -232	EPDM	1071753	2
		BUTYL	1071783	
		FKM	1071825	
7	RING, RETAINING, SERIES 535		1073434	1
8	GUIDE, SHAFT, V535	PVC	1073413	1
9	ASSEMBLY, SHAFT, V535 / 2" VLV		1073439	1
10	O-RING, 2-248	BUNA	1071712	2
		FKM	1071833	
11	DIAPHRAGM, SERIES 535	BUNA	1073399	1
12	NUT, RETAINING, 535, NORYL		1073383	1
13	PLATE, LOWER DIAPHRAGM	PVC	1073386	1
14	CAP, K535		1073382	1
15	PLATE, DIAPHRAGM,535,UPR,PI	PVC	1073384	1
16	DIAPHRAGM, SUPPORT, K535		1073425	2
17	O-RING, -231	EPDM	1071752	2
		FKM	1071824	
18	NUT, SOCKET RETAINING, 535		1073395	2



1070312 (K535-X200-14000)
NORMALLY OPEN (STANDARD)

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3, 5, 6, 10, 11, 17	1070320 E.P.D.M. INCLUDES DIAPHRAGM 1073399
	1082191 FKM INCLUDES DIAPHRAGM 1073399
INT. PARTS KIT CONSISTS OF ITEM NO'S 2, 4, 7, 8, 9, 13, 15, 16	1070344

SEE REVERSE SIDE FOR CONFIGURATION OPTIONS

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ⁄ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN MWL	07-01-13
APPROVED	
CHECKED	

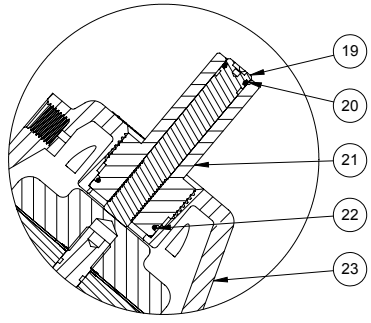
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 535

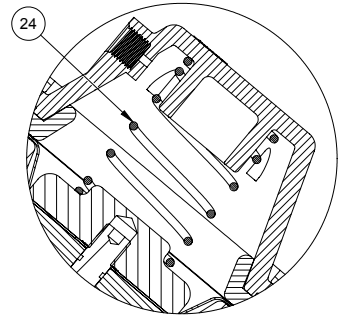
SIZE B | DWG NO. BR1077690 | REV K

SCALE 1:4 | SHEET 1 OF 2

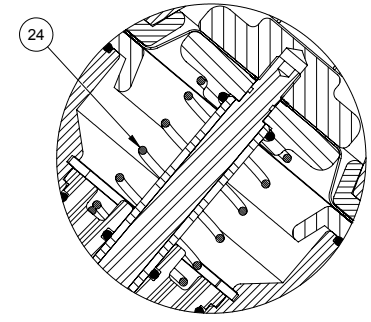
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET 1 FOR LIST OF CHANGES		



1070313 (K535-X210-14000)
LIMIT STOP



1071367 (K535-X202-14000)
SPRING ASSIST CLOSED



1071365 (K535-X201-14000)
SPRING ASSIST OPEN

LIMIT STOP MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
19	SCREW, LIMIT STOP		1073432	1
20	O-RING,2-012,	BUNA	1071668	1
		FKM	1071787	1
21	GUIDE, LIMIT STOP , K535	PVC	1073428	1
22	O-RING,2-024,	BUNA	1071676	1
		FKM	1071791	1
23	CAP, 2" VALVE, LS/PI,V535		1073408	1

SPRING ASSIST CLOSED & SPRING ASSIST OPEN MODELS

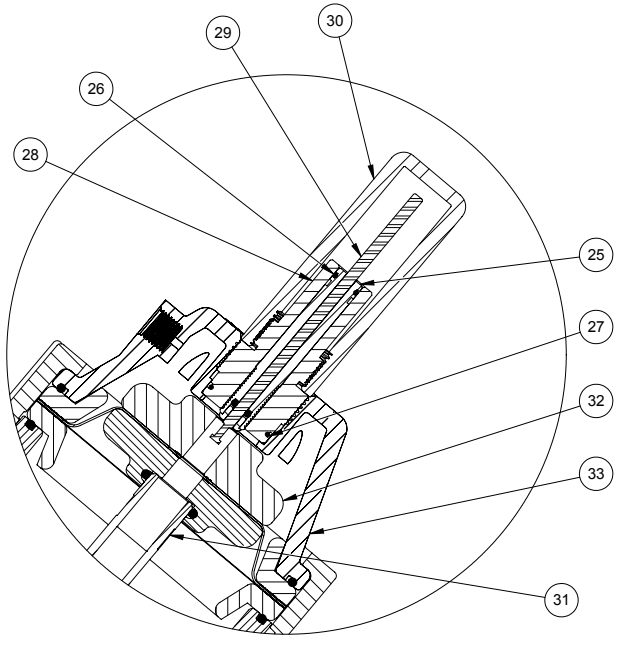
ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
24	SPRING, COMPRESSION	1073404	1

REPAIR PARTS KITS	
DESCRIPTION	PART NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 19 THRU 22	1075234
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO 24	1075236
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO 24	1075236
INT. PARTS KIT (POSITION INDICATOR) CONSISTS OF ITEM NO'S 25 THRU 32	1075235

CONVERSION KITS	
DESCRIPTION	PART NO
CONVERSION KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 19 THRU 23	1071343
CONVERSION KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO 24	1075236
CONVERSION KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO 24	1075236
CONVERSION KIT (POSITION INDICATOR) CONSISTS OF ITEM NO'S 25 THRU 33	1071344

LIMIT STOP/POSITION INDICATOR MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
25	LS/PI SCREW, ASSY		1073437	1
26	O-RING,2-012,	BUNA	1071668	1
		FKM	1071787	
27	O-RING,2-024,	BUNA	1071676	1
		FKM	1071791	
28	GUIDE, LIMIT STOP , K535	PVC	1073427	1
29	INDICATOR, POSITION, K535		1073426	1
30	SIGHT GLASS, POS INDICATOR 535		1073424	1
31	SUB-ASSY, SHAFT, 535, PI / LS		1073438	1
32	PLATE,DIAPHRAGM,535,UPR,PI	PVC	1073409	1
33	CAP, 2" VALVE, LS/PI,V535		1073408	1



1071347 (K535-X221-14000)
LIMIT STOP/POSITION INDICATOR

SEE REVERSE SIDE FOR STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EEC (RoHS2) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES: ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

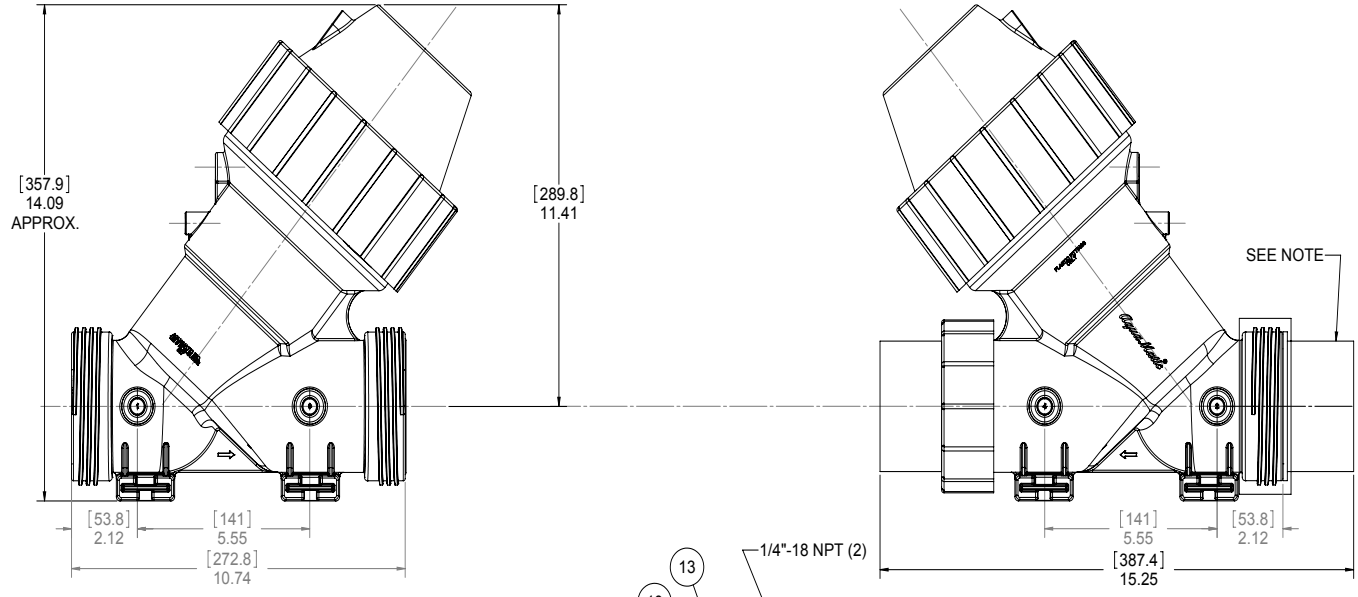
APPROVALS	DATE
DRAWN MWL	07-01-13
APPROVED	
CHECKED	

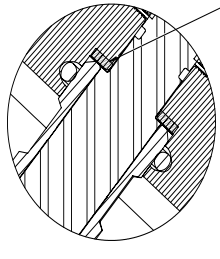
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 535

SIZE B | DWG NO. BR1077690 | REV K

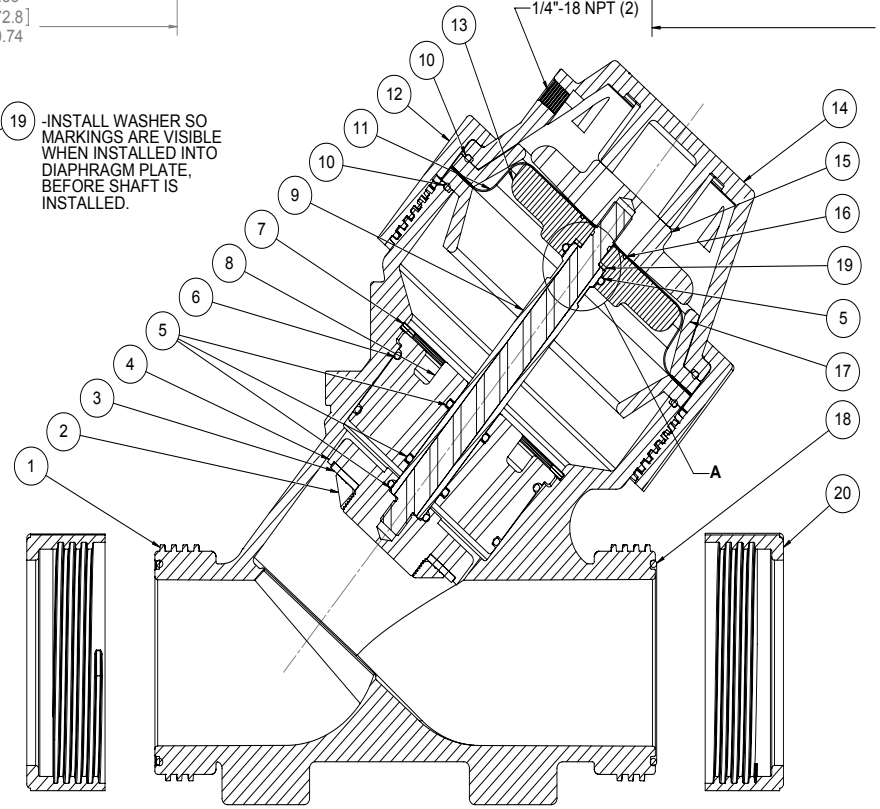
SCALE 1:4 | SHEET 2 OF 2





-INSTALL WASHER SO MARKINGS ARE VISIBLE WHEN INSTALLED INTO DIAPHRAGM PLATE, BEFORE SHAFT IS INSTALLED.

DETAIL A
SCALE 2 : 1



BR1070316 (K537-X200-14000)
NORMALLY OPEN (STANDARD)

REVISIONS

ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	101344	J	1-REDRAWN IN SOLIDWORKS. 2-UPDATES MADE TO MATCH CURRENT PRODUCTION. 3-THE OLD FORM NUMBER IS NOW THE DRAWING NUMBER.	10-29-12	TMS
	102141	K	1-WAS: INSTALL WASHER SO THAT MARKINGS ARE SEATED FACE DOWN ON THE SHAFT FLANGE AND MARKS ARE NOT VISIBLE WHEN SEATED.	06-28-13	TJM
	104852	L	1-ITEM #4- WAS:1073482, 2-REM'D: BR FROM PART #'S, 3-UPDATED TITLE BLOCK	11AUG15	TJM
	1001	M	AQ Matic update & verified part numbers	17JAN17	MGS

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
1	VALVE BODY, SERIES 537	NORYL	1073472	1
2	NUT,DISC PLATE,537,MCHD	PVC	1073459	1
3	DISC, 537	EPDM	1073463	1
	DISC, 537	FKM	1073465	1
4	DISC HOLDER, K537	ULTEM	43361	1
5	O-RING, -212	EPDM	1071745	4
	O-RING, 2-212	FKM	1242719	1
6	O-RING, -240	EPDM	1071757	2
	O-RING, -240	FKM	1071830	1
7	RING, RETAINING		1073505	1
8	V537 - SHAFT GUIDE (MACHINED	PVC	1073478	1
9	SHAFT, ASSY,V537/ 3" PLSTC VLV		1073508	1
10	O-RING, 2-259	BUNA	1071714	2
	O-RING, -259	FKM	1071834	2
11	DIAPHRAGM, 537	BUNA	1073462	1
12	NUT, CAP RETAINING, V537	NORYL	1073446	1
13	PLATE, LOWER DIAPHRAGM, K537	NORYL	61886	1
14	CAP, 537 MOLDED	NORYL	1073445	1
15	PLATE, DIAPHRAGM,UPPER,K537	NORYL	1073448	1
16	O-RING,2-024	BUNA	1071676	1
17	DIAPHRAGM, SUPPORT, K537	NORYL	1073491	2
18	O-RING, -239	EPDM	1071756	2
	O-RING, -239	FKM	1071829	2
19	WASHER, .867 CUSTOM		43328	1
20	NUT, RETAINING, 537	NORYL	1073458	2

NOTE:
CONNECTORS NOT FURNISHED WITH VALVE. SEE DWG. NO. 1078165 FOR FEMALE SOCKET WELD CONNECTORS.

REPAIR PARTS KITS

DESCRIPTION	PART NO.
DIAPHRAGM & SEALS KIT CONSISTS OF ITEM NO'S 3, 4, 5, 6, 10, 11, 16, 18	BR1070321 (537-RAE) E.P.D.M. INCLUDES DIAPHRAGM BR1073462 (V537-100)
	BR1070337 (537-RAVFB) FKM INCLUDES DIAPHRAGM BR1073462 (V537-100)
INT. PARTS KIT CONSISTS OF ITEM NO'S 2, 4, 7, 8, 9, 13, 15, 17, 20	BR1070345 (K537-RF)

ASSEMBLY TOOLS

DESCRIPTION	PART NO.
LIMITED STOP TOOL (TOOL NOT SHOWN)	BR1013556 (V560-579)
STRAP WRENCH (TOOL NOT SHOWN)	BR1073557 (V560-581)

SEE PAGE 2 FOR CONFIGURATION OPTIONS

THIRD ANGLE PROJECTION

	APPROVALS	DATE
DRAWN	NE	12-1-11
APPROVED		
CHECKED		

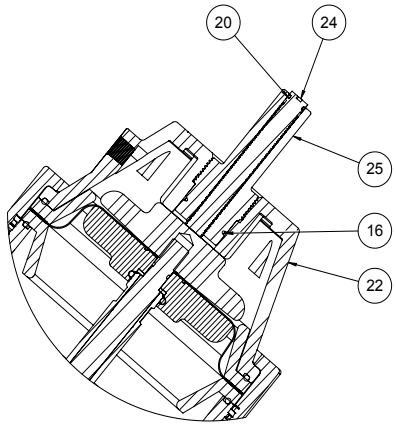
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 537 DIAPHRAGM VALVE

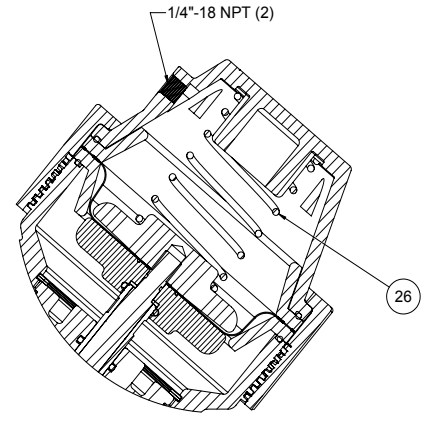
SIZE B | DWG NO. BR1077691 | REV H

SCALE 1:4 | SHEET 1 OF 2

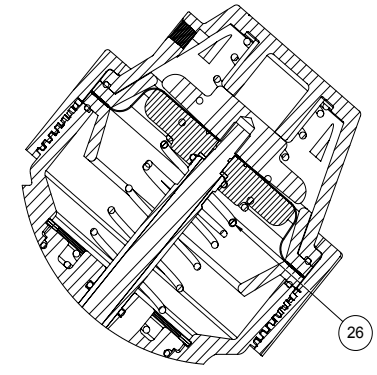
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR NOTES		



BR1070317 (K537-X210-14000)
LIMIT STOP



BR1071391 (K537-X202-14000)
SPRING ASSIST CLOSED



BR1071390 (K537-X201-14000)
SPRING ASSIST OPEN

LIMITED STOP MODEL

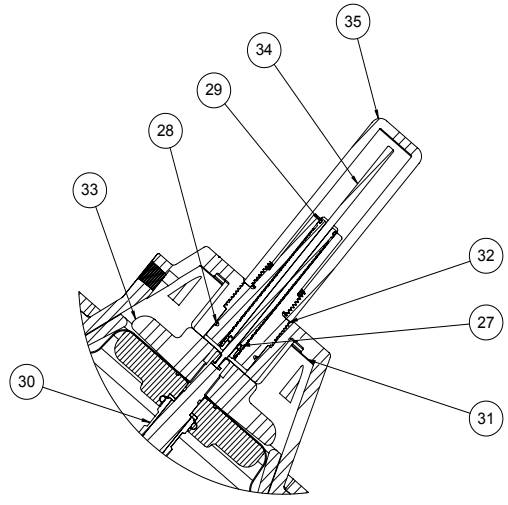
ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
21	O-RING,2-012,NITRILE	BUNA	1071668 (ORB-012)	1
	O-RING,FKM,ORV-012	FKM	1071787 (ORV-012)	
22	O-RING,2-024,NITRILE	BUNA	1071676 (ORB-024)	1
	O-RING,FKM,ORV-024	FKM	1071791 (ORV-024)	
23	CAP, 3" VALVE, LS/PI,V537	NORYL	1073473 (V537-420K)	1
24	SCREW, LIMIT STOP		1073498	1
25	GUIDE, LIMIT STOP , K537	PVC	1073494	1

SPRING ASSIST CLOSED MODEL & SPRING ASSIST OPEN MODEL

ITEM NO.	DESCRIPTION	PART NUMBER	QTY.
26	SPRING, COMPRESSION	1073467	1

LIMIT STOP/ POSITION INDICATOR MODEL

ITEM NO.	DESCRIPTION		PART NUMBER	QTY.
27	LIMIT STOP SCREW, POS. IND.		1073506 (V537-700)	1
28	O-RING,2-024	BUNA	1071676 (ORB-024)	1
	O-RING, -024	FKM	1071691 (ORV-024)	
29	O-RING,2-012	BUNA	1071668 (ORB-012)	1
	O-RING, -012	FKM	1071787 (ORV-012)	
30	SHAFT,537,PVC,PI		1073507 (V537-701)	1
31	CAP, 3" VALVE, LS/PI,V537	NORYL	1073473 (V537-420K)	1
32	GUIDE, LIMIT STOP,PI, K537	PVC	1073493	1
33	PLATE,DIAPHRAGM,537,UPR	NORYL	1073475	1
34	ROD,POSITION INDICATOR,537		1073492	1
35	SIGHT GLASS, POS INDICATOR 537		1073489	1



K537-X221-14000
LIMIT STOP/
POSITION INDICATOR

REPAIR PARTS KITS

DESCRIPTION	PARTS NO.
INT. PARTS KIT (LIMIT STOP) CONSISTS OF ITEM NO'S 21 THRU 24	BR1075237 (537-LS)
INT. PARTS KIT (SPRING ASSIST CLOSED) CONSISTS OF ITEM NO. 26	BR1075239 (537-S)
INT. PARTS KIT (SPRING ASSIST OPEN) CONSISTS OF ITEM NO. 26	BR1075239 (537-S)
INT. PARTS KIT (LIMIT STOP/POS INDICATOR) CONSISTS OF ITEM NO'S 27 THRU 35	BR1081805 (537-PI)

CONVERSION KITS

DECSRIPTION	PART NO.
CONVERSION KIT (LIMITED STOP) CONISTS OF ITEM NO'S 10, 21 THRU 25	BR1071377 (537-LSC)
CONVERSION KIT (SPRING ASSIST CLOSED) CONISTS OF ITEM NO. 26	BR1075239 (537-S)
CONVERSION KIT (SPRING ASSIST OPEN) CONISTS OF ITEM NO. 26	BR1075239 (537-S)
CONVERSION KIT (POSITION INDICATOR) CONISTS OF ITEM NO'S 10, 27 THRU 35	BR1071378 (537-PIC)

SEE PAGE 1 FOR
STANDARD NORMALLY OPEN MODEL

COMPONENTS / ASSEMBLIES TO BE COMPLIANT AND COMPATIBLE WITH EUROPEAN UNION DIRECTIVE 2011/65/EC (ROHS) & REGULATION (EC)1907/2006 (REACH) REQUIREMENTS

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TOLERANCES:
ANGLES ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION		
APPROVALS	DATE	
DRAWN	NE	12-1-11
APPROVED		
CHECKED		

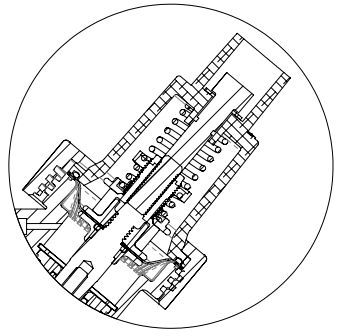
AQ Matic
Valve & Controls Company Inc.

TITLE: CATALOG SHEET, 537 DIAPHRAGM VALVE

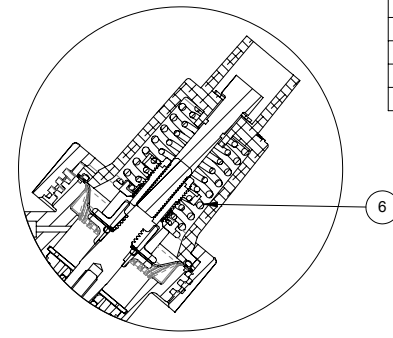
SIZE	DWG NO.	REV
B	BR1077691	H

SCALE 2:3 SHEET 2 OF 2

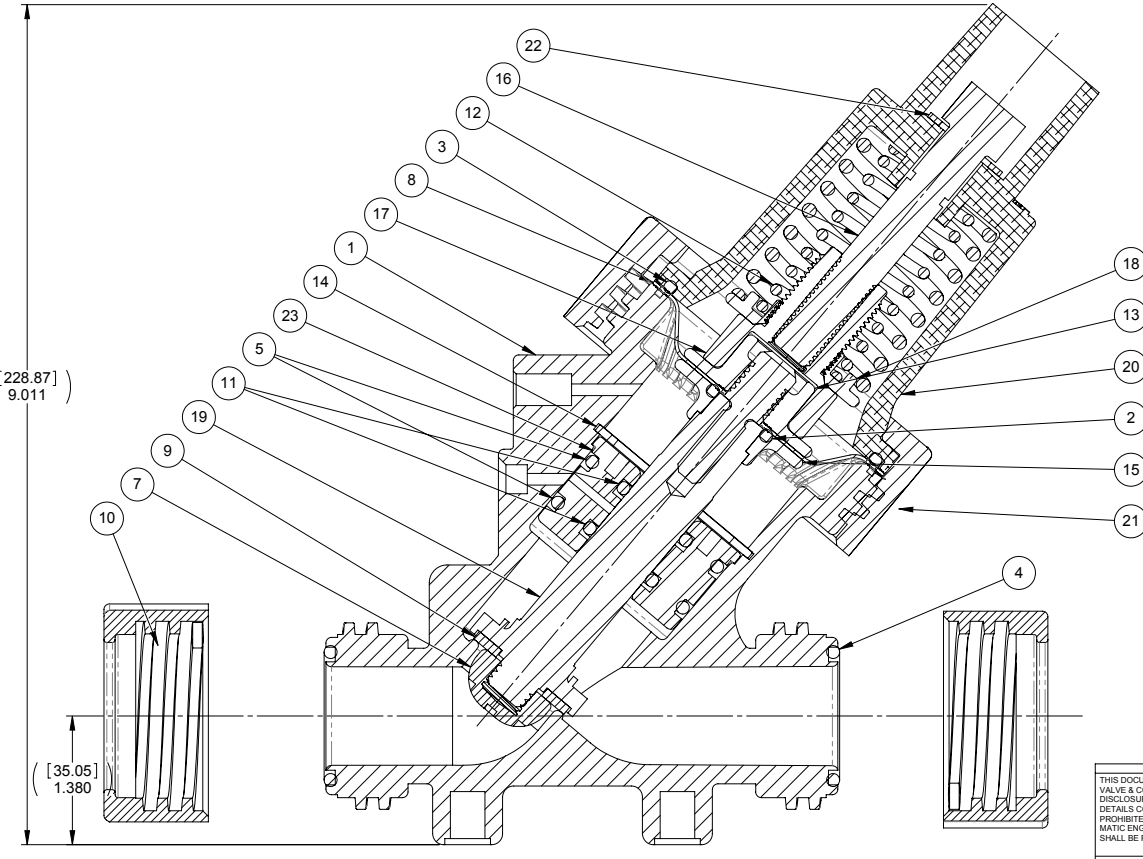
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	22262	H	RELEASE INTO THE SYSTEM; REDRAWN IN SOLIDWORKS WITH NEW FORMAT.	05-21-10	MHM
	33763	J	CORRECTED ERROR WHERE #60 HAD ONLY 1 SPRING (BOTH SHEETS)	10-11-11	TMS
	100024	K	1-NEEDED UPDATE FOR COMPONENTS THAT HAVE BEEN CHANGED	11-28-11	TMS
	1001	M	AQ Matic update & verified part numbers	27JAN17	MGS



BR1079700 (K531-X203-14000) (30 PSI - 2 BAR)
FAILSAFE CLOSED



BR1071294 (K531-X205-14000) (100 PSI - 7 BAR)
FAILSAFE CLOSED



BR1071291 (K531-X204-14000) (60 PSI - 4 BAR)
FAILSAFE CLOSED

NOTE:
REPLACEMENT COMPONENTS UNIQUE TO FAILSAFE DESIGN ARE AVAILABLE AS A REPAIR KIT ONLY. SEE SHEET 2 FOR KIT DETAILS.

ITEM NO.	PART NUMBER	DESCRIPTION	BR1079700 /QTY.	BR1071291 /QTY.	BR1071294 /QTY.
1	1073287	VALVE BODY, 531	1	1	1
2	1071700	O-RING (NITRILE), 2-208	1	1	1
3	1071705	O-RING (NITRILE), 2-232	1	1	1
4	1071748	O-RING, EPDM -218	2	2	2
5	1071749	O-RING, EPDM -223	2	2	2
6	1073284	SPRING,COMPRESSION	-	-	1
7	1073274	NUT, DISC RETAINING, 531	1	1	1
8	1073277	DIAPHRAGM, K531	1	1	1
9	1073279	DISC,531,EP,RA	1	1	1
10	1073273	NUT, INLET/OUTLET, 531	2	2	2
11	1242718	O-RING, 2-210	2	2	2
12	1073285	COMPRESSION SPRING,	1	1	1
13	1073289	PLATE, UPPR DPHRGM (FAIL SAFE)	1	1	1
14	1073312	RING, RETAINING, SERIES 531	1	1	1
15	1073290	PLATE, LWR DPHRGM (FAIL SAFE)	1	1	1
16	1073311	SCREW, FAILSAFE,531	1	1	1
17	1073313	BASE, SPRING SUPPORT	1	1	1
18	1073314	RING, RETAINER (FOR ADJUST FS)	1	1	1
19	BR1083426	SHAFT, 531, FAIL SAFE ASSY	1	1	1
20	1073293	VALVE CAP, 531 FAILSAFE	1	1	1
21	1073395	NUT, SOCKET RETAINING, 535	1	1	1
22	1073596	WASHER, (1.00X.686X.060)	1	1	1
23	1073292	GUIDE, SHAFT, 531	1	1	1

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES: ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN TMS	05-21-10
APPROVED	
CHECKED	

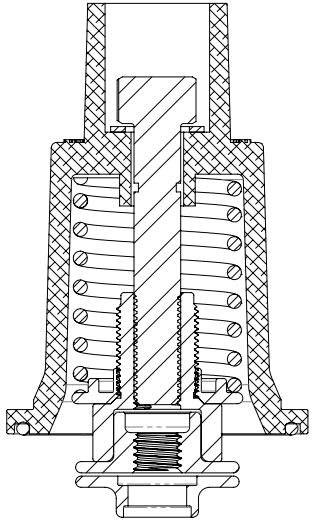
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, K531 FAILSAFE
30 PSI

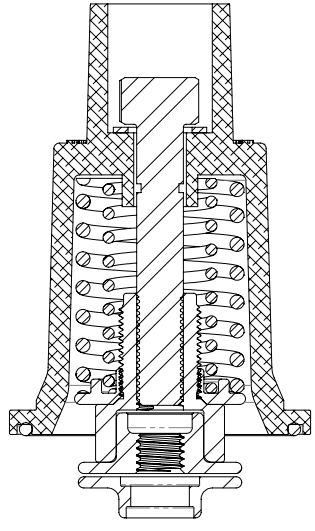
SIZE	DWG NO.	REV
B	BR1084008	M

SCALE 1:2 SHEET 1 OF 2

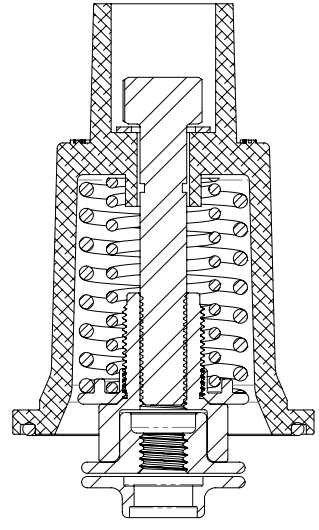
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
			SEE SHEET ONE FOR NOTES		



BR1071263 (K531-FS3)
REPAIR KIT - 30#



BR1071264 (K531-FS6)
REPAIR KIT - 60#



BR1071262 (K531-FS1)
REPAIR KIT - 60#

REPAIR KITS	
REPAIR KIT NO.	PART NUMBERS INCLUDED
BR1071263 (K531-FS6)	3,6,13,15,16,17,18,20,22
BR1071264 (K531-FS6)	3,6,13,15,16,17,18,20,22
BR1071262 (K531-FS1)	3,6,12,13,15,16,17,18,20,22

VALVE SERIES	30# FAILSAFE #TURNS UP FROM BOTTOM	60# FAILSAFE #TURNS UP FROM BOTTOM	100# FAILSAFE #TURNS UP FROM BOTTOM
531	7	0	9

DO NOT SCALE DRAWING. DIMS. ARE IN INCHES [mm]
INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 ✓ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN TMS	05-21-10
APPROVED	
CHECKED	

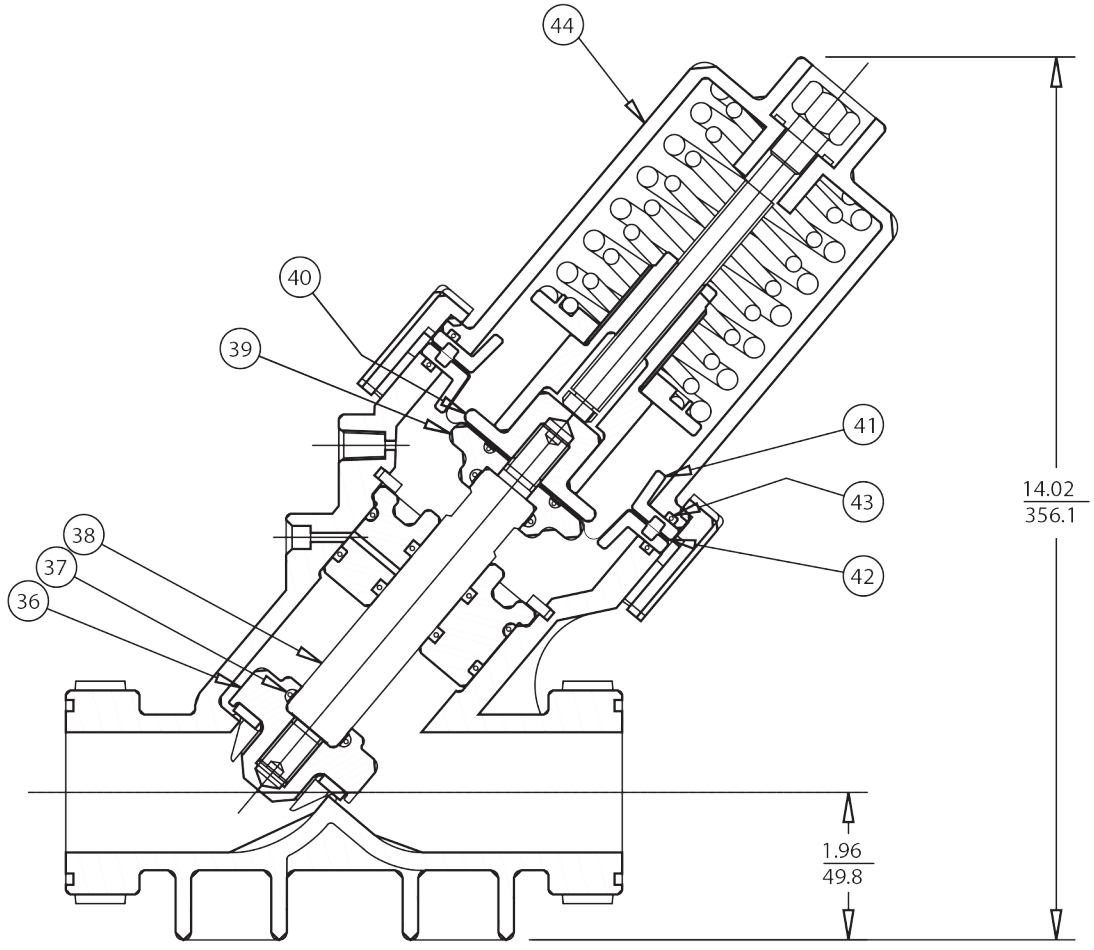
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, K531 FAILSAFE
30 PSI

SIZE	DWG NO.	REV
B	BR1084008	M

SCALE 1:2 SHEET 2 OF 2

K534 DIAPHRAGM VALVE - FAILSAFE MODEL



1079718 (K534-X203-14000) (30 PSI - 2 BAR)
1071334 (K534-X204-14000) (60 PSI - 4 BAR)
1071335 (K534-X205-14000) (100 PSI - 7 BAR)

FAILSAFE CLOSED

INCHES
MILLIMETERS

NO.	DESCRIPTION		PART NO.	QTY.
36	DISC HOLDER	PVC	1073355 (V534-502)	1
37	O-RING	E.P.D.M.	1071745 (ORE-212)	1
		FKM	1071816 (ORV-212)	
		BUTYL	1071777 (ORJ-212)	
38	SHAFT			1
		NORYL	1073379 (V534-702)	
39	LOWER DIAPHRAGM PLATE		1073349 (V534-448)	1
40	UPPER DIAPHRAGM PLATE		1073348 (V534-444)	1
41	DIAPHRAGM SUPPORT		1073366 (V534-551K)	1
42	DIAPHRAGM (BUNA)		1073335 (V534-102)	1
43	O-RING	BUNA	1071709 (ORB-240)	1
		FKM	1071830 (ORV-240)	
44	CAP ASSEMBLY - 30#		1071306 (K534-FS3)	1
	CAP ASSEMBLY - 60#		1071307 (K534-FS6)	
	CAP ASSEMBLY - 100#		1071305 (K534-FS1)	

NOTE:
DUE TO SPRING ASSEMBLY REQUIREMENTS, CAP ASSEMBLY SOLD AS ASSEMBLY ONLY.

SEE DWG. NO. 1084009 FOR STANDARD MODEL

FORM NO. 1078167

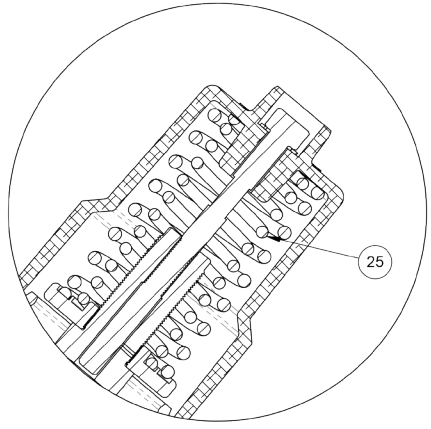
REV	DESCRIPTION	ECO	DWN	DATE	APVD
G	OBSOLETED VITON DIAPHRAGM	1715	MSM	24JUL07	SMN

AQ Matic
Valve & Controls Company Inc.

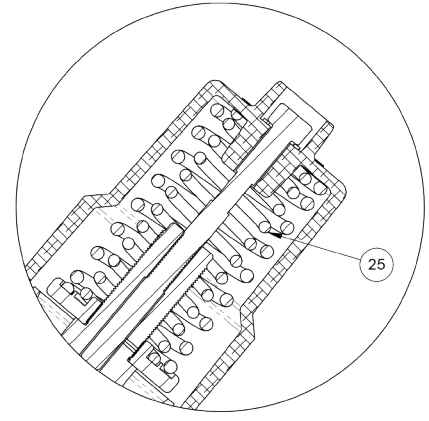
SERIES 534 DIAPHRAGM VALVE
FAILSAFE MODEL

DRAWN	DATE	DRAWING NO.
JWB	26JUN01	1084008

REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D
	22262	E	REDRAWN IN SOLIDWORKS; 1-ADD'D: BR1071745; 2-REM'D: BR1071483	05-18-10	MHM
	33913	F	1-ADD'D:43307	10-21-11	TMS
	1001	G	AQ Matic update & verified part numbers	27JAN17	MGS

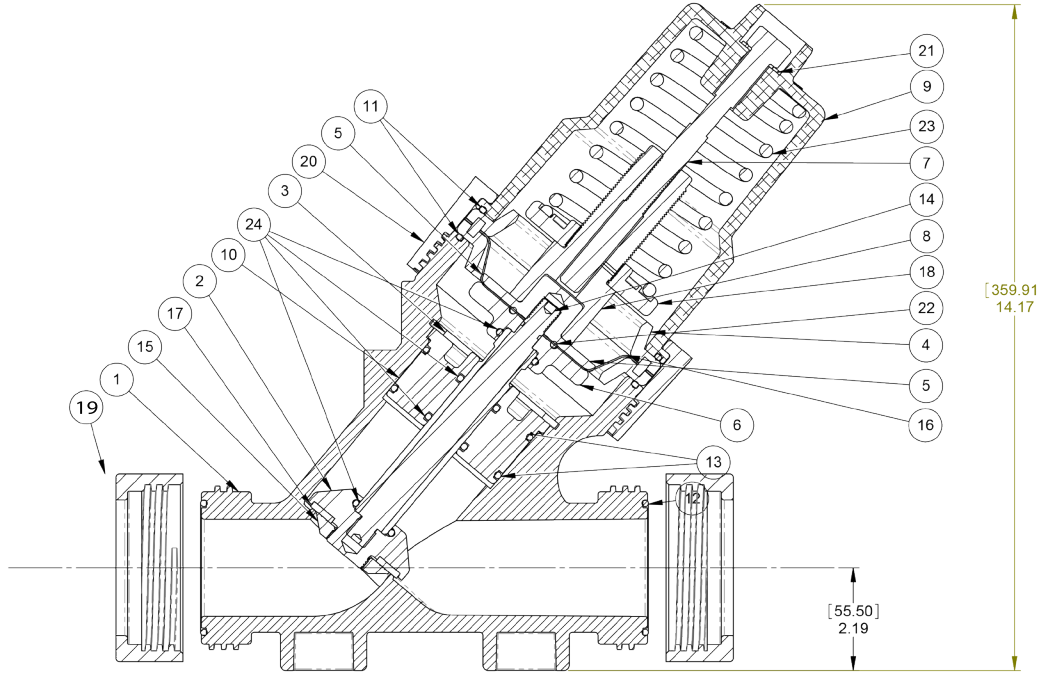


BR1071368 (K535-X204-14000) (60 PSI - 4BAR)
FAILSAFE CLOSED



BR1071371 (K535-X205-14000) (60 PSI - 7BAR)
FAILSAFE CLOSED

NOTE:
REPLACEMENT COMPONENTS UNIQUE TO FAILSAFE DESIGN ARE AVAILABLE AS A REPAIR KIT ONLY. SEE SHEET 2 FOR KIT DETAILS.



BR1076665 (K535-X203-14000) (30 PSI - 2BAR)
FAILSAFE CLOSED

	ITEM NO.	BR1076665 /QTY.	BR1071368 /QTY.	BR1071371 /QTY.	PART NUMBER	DESCRIPTION
	1	1	1	1	1073407	VALVE BODY, SERIES 535
	2	1	1	1	1073416	HOLDER, DISC, 535
	3	1	1	1	1073434	RING, RETAINING, SERIES 535
	4	2	2	2	1073425	DIAPHRAGM, SUPPORT, K535
	5	1	1	1	1073411	PLATE, UPPR DPHRGM (FAIL SAFE)
	6	1	1	1	1073412	PLATE, LWR DPHRGM, (FS).V535 D
	7	1	1	1	1073433	SCREW, FAILSAFE,535
	8	1	1	1	1073435	BASE, SPRING RETAINER
	9	1	1	1	1073415	CAP, K535 FAILSAFE,MCHD
	10	1	1	1	1073413	GUIDE, SHAFT, V535
	11	2	2	2	1071712	O-RING (NITRILE), 2-248
	12	2	2	2	1071752	O-RING, EPDM -231
	13	2	2	2	1071753	O-RING, EPDM -232
	14	1	1	1	1073439	ASSEMBLY, SHAFT, V535 / 2" VLV
	15	1	1	1	1073396	NUT, DISC RETAINING
	16	1	1	1	1073399	DIAPHRAGM, SERIES 535
	17	1	1	1	1073401	DISC, V535
	18	1	1	1	1073436	RING, SPRING RETAINER
	19	2	2	2	1073395	NUT, SOCKET RETAINING, 535
F1	20	1	1	1	43307	NUT,FAILSAFE, 535
	21	1	1	1	1073596	WASHER, (1.00X.686X.060)
	22	1	1	1	1076766	O-RING (NITRILE), 2-214
	23	1	1	1	1073405	SPRING, COMPRESSION
E1	24	4	4	4	1071745	O-RING, EPDM, -212
	25	-	1	1	1073406	SPRING, COMPRESSION

THE COMPONENT, PART, OR ASSEMBLY DESCRIBED IN THIS DOCUMENT MUST COMPLY WITH THE EU (EUROPEAN UNION) DIRECTIVES: RoHS DIRECTIVE 2002/95/EC

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ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES ± 1°
1 PLACE .X ± .015 [0.38]
2 PLACE .XX ± .01 [0.3]
3 PLACE .XXX ± .005 [0.13]

THIRD ANGLE PROJECTION

APPROVALS	DATE
DRAWN MSM	05/15/06
APPROVED	
CHECKED	

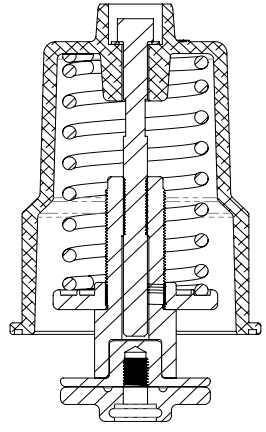
AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, K535 FAILSAFE
60 PSI

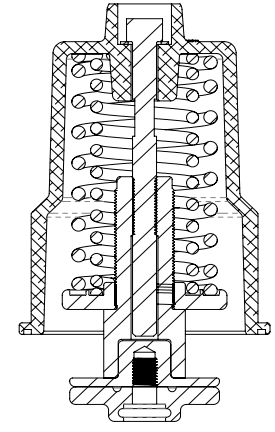
SIZE	DWG NO.	REV
B	BR1084011	G

SCALE 2:1 SHEET 1 OF 2

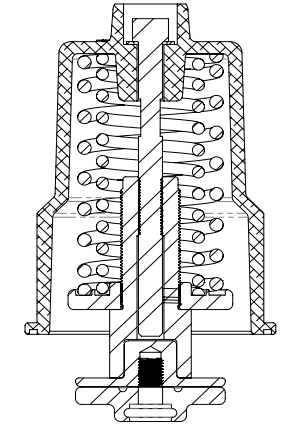
REVISIONS					
ZONE	ECN	REV.	DESCRIPTION	DATE	APP'D



BR1071341 (K535-FS3)
REPAIR KIT - 30#



BR1071342 (K535-FS6)
REPAIR KIT - 60#



BR1071340 (K535-FS1)
REPAIR KIT - 100#

REPAIR KIT	
REPAIR KIT NO.	PART NUMBERS INCLUDED
BR1071341 (K535-FS3)	INCLUDES ITEM #S: 5,6,7,8,9,11,18,20,21,23
BR1071342 (K535-FS6)	INCLUDES ITEM #S: 5,6,7,8,9,11,18,20,21,23,25
BR1071340 (K535-FS1)	INCLUDES ITEM #S: 5,6,7,8,9,11,18,20,21,23,25

VALVE SERIES	30# FAILSAFE #TURNS UP FROM BOTTOM	60# FAILSAFE #TURNS UP FROM BOTTOM	100# FAILSAFE #TURNS UP FROM BOTTOM
535	6	0	12

THE COMPONENT, PART, OR ASSEMBLY DESCRIBED IN THIS DOCUMENT MUST COMPLY WITH THE EU (EUROPEAN UNION) DIRECTIVES: RoHS DIRECTIVE 2002/95/EC

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INTERPRET DIMS AND TOLERANCES PER ASME Y14.5M -2009
UNLESS OTHERWISE SPECIFIED:
ALL FINISHED MACHINED SURFACES 125 √ OR BETTER.
TOLERANCES:
ANGLES : ± 1°
1 PLACE .X: ± .015 [0.38]
2 PLACE .XX: ± .01 [0.3]
3 PLACE .XXX: ± .005 [0.13]

THIRD ANGLE PROJECTION

	APPROVALS	DATE
DRAWN	MSM	05/15/06
APPROVED		
CHECKED		

AQ Matic
Valve & Controls Company Inc.

TITLE
CATALOG SHEET, K535 FAILSAFE
60 PSI

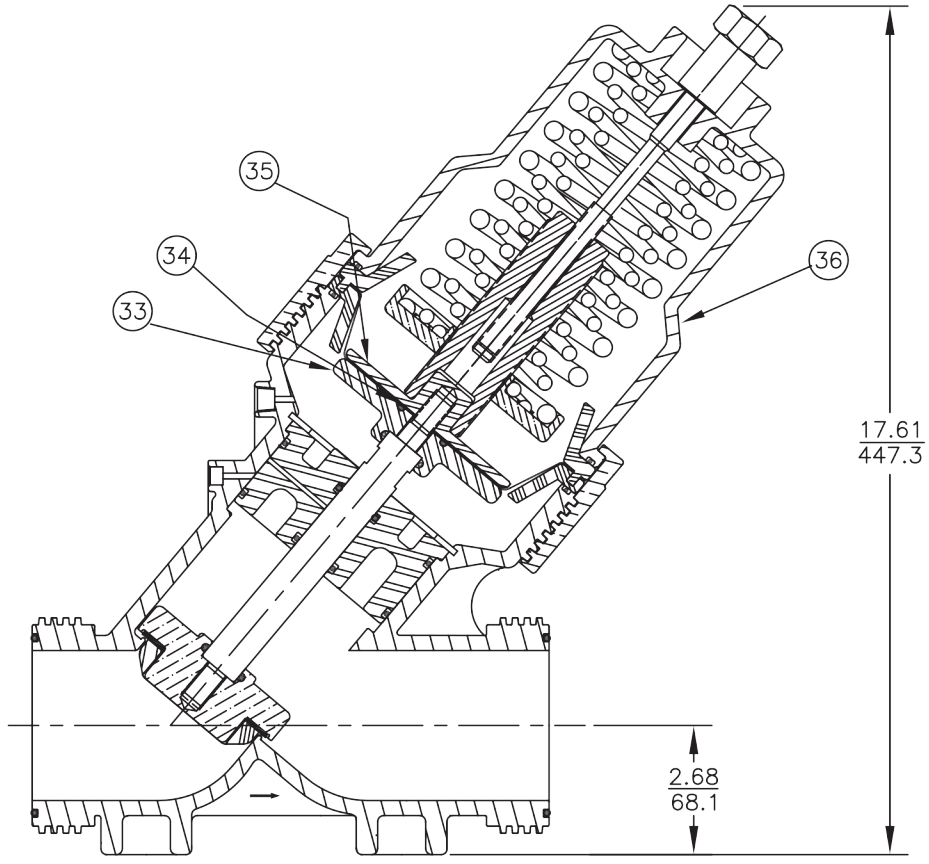
SIZE	DWG NO.	REV
B	BR1084011	G

SCALE 1:4 SHEET 2 OF 2

K537 DIAPHRAGM VALVE - FAILSAFE MODEL

NO.	DESCRIPTION		PART NO.	QTY.
33	LOWER DIAPHRAGM PLATE		1073477 (V537-447)	1
34	O-RING	BUNA	1076766 (ORB-214)	1
		FKM	1071817 (ORV-214)	
35	UPPER DIAPHRAGM PLATE		1073476 (V537-444)	1
36	CAP ASSEMBLY - 30#		1071375 (K537-FS3)	1
	CAP ASSEMBLY - 60#		1071376 (K537-FS6)	
	CAP ASSEMBLY - 100#		1071374 (K537-FS1)	

NOTE:
DUE TO SPRING ASSEMBLY REQUIREMENTS, CAP ASSEMBLY SOLD AS ASSEMBLY ONLY.



1071392 (K537-X203-14000) (30 PSI - 2 BAR)
1071393 (K537-X204-14000) (60 PSI - 4 BAR)
1071396 (K537-X205-14000) (100 PSI - 7 BAR)

FAILSAFE CLOSED

INCHES
MILLIMETERS

SEE DWG. NO. 1084012 FOR STANDARD MODEL

FORM NO. 1078168

REV	DESCRIPTION	ECO	DWN	DATE	APVD
H	CORRECTED P/N TYPO	NONE	MSM	15May06	SMN

AQ Matic
Valve & Controls Company Inc.

SERIES 537 DIAPHRAGM VALVE
FAILSAFE SPRING CLOSED MODEL

DRAWN	DATE	DRAWING NO.
JWB	26Jun01	1084011

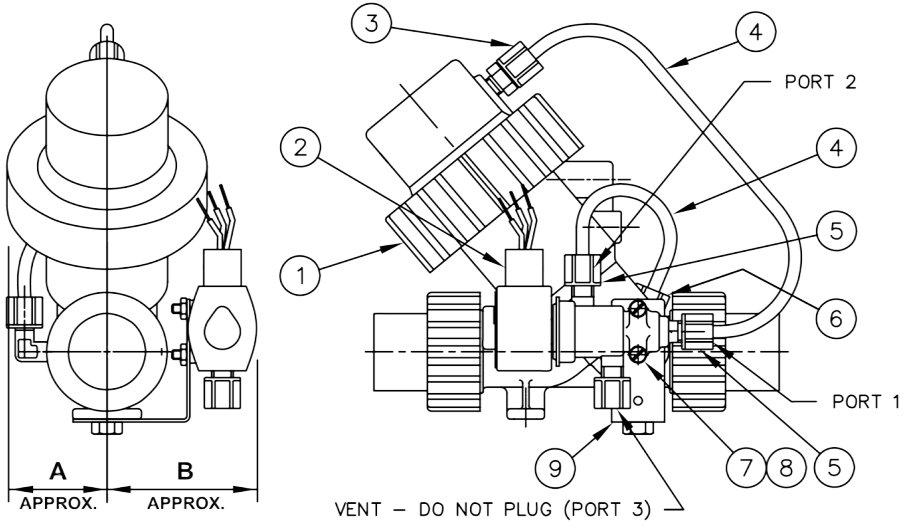
PRINTED IN U.S.A.

SOLENOID OPERATED DIAPHRAGM VALVES

NOTE:

1. LENGTH OF TUBING VARIES WITH EACH SIZE OF DIAPHRAGM VALVE.
2. DIAPHRAGM VALVE IS NORMALLY OPEN, PRESSURE TO CLOSE
3. BOSS NO. 1 ON VALVE TAPPED 1/8" N.P.T. (531,534) 1/4" N.P.T. (535,537)
4. DRY DRAIN OPTION – VENT PORT OF SOLENOID IS CONNECTED TO DOWNSTREAM SIDE OF VALVE.

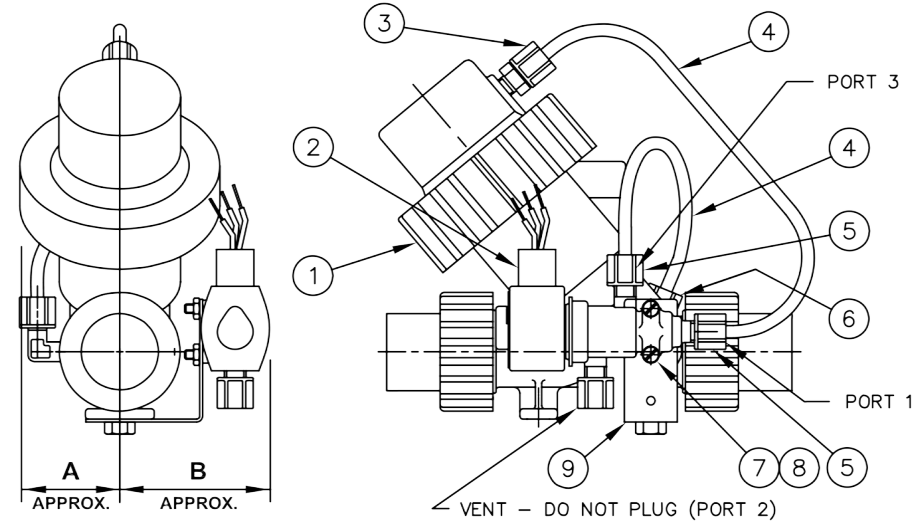
NO.	DESCRIPTION			PART NO.	QTY.
1	DIAPHRAGM VALVE – NORMALLY OPEN				1
2	3 WAY SOLENOID VALVE (NEMA 4 ONLY)	120V.60Hz. & 110V.50Hz.		1075637 (8360A71)	1
		220 V. 50 HZ.		1075638 (8360A71V)	
		24 V. 60 HZ.		1075639 (8360A71VV)	
3	COUPLING	1/4" M. X 1/4" TUBE	535,537	1071941 (PTP–0019)	1
4	NYLON TUBING – BLACK (1/4" O.D.) (NOTE 1)			1071936 (PTP–0005)	N/A
5	NUT AND SLEEVE ASSEMBLY (1/4" TUBE)			1071939 (PTP–0009)	3
6	90° ELBOW	1/8" M. X 1/4" TUBE	531,534	1071937 (PTP–0006)	1
7	RD. HD. MACH. SCREW (8–32 X 11/2")			1072377 (SCS–0086)	2
8	HEX NUT (8–32)			1071646 (NUS–0004)	2
9	SOLENOID MOUNTING BRACKET			1073272 (V531–070)	1



ENERGIZED TO CLOSE

SOLENOID ENERGIZED.
UPSTREAM PRESSURE, FROM SOLENOID PORT 2 TO PORT 1, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.

SOLENOID DE-ENERGIZED.
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED, THROUGH SOLENOID PORT 1 TO PORT 3 TO DRAIN. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.



ENERGIZED TO OPEN

SOLENOID DE-ENERGIZED.
UPSTREAM PRESSURE, FROM SOLENOID PORT 3 TO PORT 1, IS APPLIED TO UPPER DIAPHRAGM CHAMBER TO CLOSE THE DIAPHRAGM VALVE.

SOLENOID ENERGIZED.
PRESSURE FROM UPPER DIAPHRAGM CHAMBER IS VENTED, THROUGH SOLENOID PORT 1 TO PORT 2 TO DRAIN. UPSTREAM PRESSURE OPENS THE DIAPHRAGM VALVE.

VALVE SERIES	PIPE SIZE	A	B
531	3/4", 1"	2.04 / 51.8	3.00 / 76.2
534	1-1/2"	2.62 / 66.5	4.00 / 101.6
535	2"	3.18 / 80.8	4.12 / 104.6
537	3"	3.79 / 96.3	4.12 / 104.6

INCHES
MILLIMETERS

REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	NUMBER CONVERSION	1588	MSM	19DEC02	

AQ MATIC
Valve & Controls Company Inc.

SERIES 530 DIAPHRAGM VALVES
SOLENOID OPERATED VALVES

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	29JUN01	1078170

PRINTED IN U.S.A.

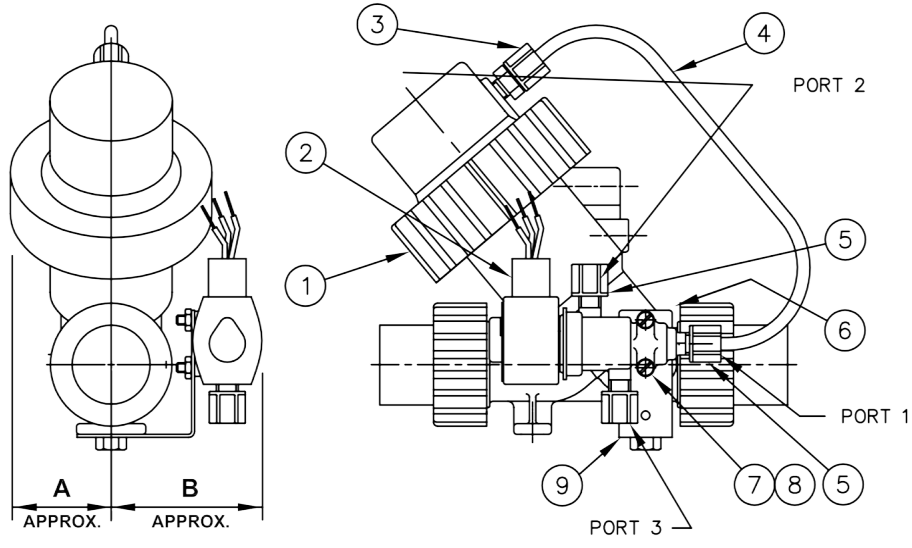
FORM NO. 1078172

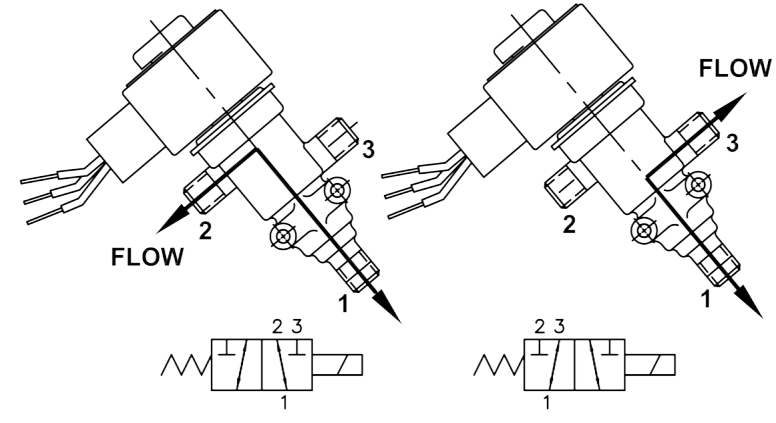
SOLENOID OPERATED DIAPHRAGM VALVES

NOTE:

1. LENGTH OF TUBING VARIES WITH EACH SIZE OF DIAPHRAGM VALVE.
2. DIAPHRAGM VALVE IS NORMALLY OPEN

NO.	DESCRIPTION			PART NO.	QTY.
1	DIAPHRAGM VALVE – NORMALLY OPEN				1
2	3 WAY SOLENOID VALVE (NEMA 4 ONLY)	120V.60Hz. & 110V.50Hz.		1075637 (8360A71)	1
		220 V. 50 HZ.		1075638 (8360A71V)	
		24 V. 60 HZ.		1075639 (8360A71VV)	
3	COUPLING	1/4" M. X 1/4" TUBE	535,537	1071941 (PTP–0019)	1
4	NYLON TUBING – BLACK (1/4" O.D.) (NOTE 1)			1071936 (PTP–0005)	N/A
5	NUT AND SLEEVE ASSEMBLY (1/4" TUBE)			1071939 (PTP–0009)	3
6	90° ELBOW	1/8" M. X 1/4" TUBE	531,534	1071937 (PTP–0006)	1
7	RD. HD. MACH. SCREW (8–32 X 11/2")			1072377 (SCS–0086)	2
8	HEX NUT (8–32)			1071646 (NUS–0004)	2
9	SOLENOID MOUNTING BRACKET			1073272 (V531–070)	1





INDEPENDENT CONTROL PRESSURE

ENERGIZE TO OPEN
APPLY CONTROL PRESSURE AT SOLENOID PORT NO. 3 (PORT NO. 2 VENTED)

ENERGIZE TO CLOSE
APPLY CONTROL PRESSURE AT SOLENOID PORT NO. 2 (PORT NO. 3 VENTED)

CONTROL PRESSURE MUST BE EQUAL TO OR GREATER THAN LINE PRESSURE.

VALVE SERIES	PIPE SIZE	A	B
531	3/4", 1"	2.04 / 51.8	3.00 / 76.2
534	1-1/2"	2.62 / 66.5	4.00 / 101.6
535	2"	3.18 / 80.8	4.12 / 104.6
537	3"	3.79 / 96.3	4.12 / 104.6

INCHES
MILLIMETERS

CURRENT DRAIN (AMPERES)		
VOLTAGE	INRUSH	HOLDING
24V 60Hz	1.66	1.04
120V 60Hz	0.33	0.21
220V 50Hz	0.18	0.11

FORM NO. 1078172

REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	NUMBER CONVERSION	1588	MSM	19DEC02	

AQ MATIC Valve & Controls Company Inc.

SERIES 530 DIAPHRAGM VALVES
SOLENOID OPERATED VALVES

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	29JUN01	1078170

PRINTED IN U.S.A.

AQUAMATIC® STAGER
PILOT VALVES

IDEAL FOR CONTROL OF DIAPHRAGM VALVES

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

FEATURES/BENEFITS

Stagers are motor-driven rotary multiport pilot valves, which are used to control a set of diaphragm valves in a predefined sequence

Constructed of durable, noncorroding, self-lubricating material for long and trouble-free operation

Control pressure to the stager, either hydraulic or pneumatic, must be constant and equal to or greater than the line pressure in the system

Electrical stagers are available for use in 120 VAC, 220 VAC, 12 VAC and 24 VAC configurations

All stagers can be manually operated if power is not available

OPTIONS

Supplied with a maximum of two extra auxiliary cams and switches [SPDT] for electrical outputs in any position

Supplied in a NEMA-rated enclosure or without enclosure

TYPICAL APPLICATIONS

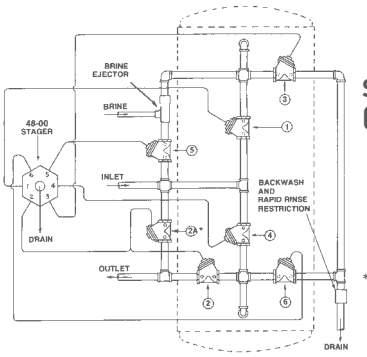
Condensate Polishers

Deionizers

Water Treatment Systems

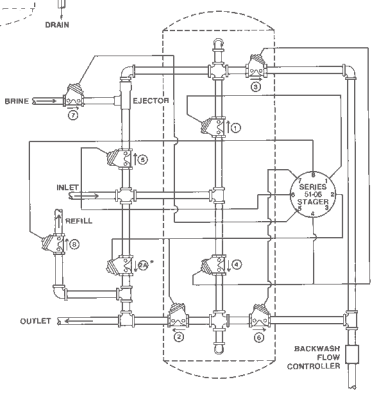
OPERATING SPECIFICATIONS

Max Pressure	125 psi (8.6 bar)	
Max Temperature	150°F (65°C)	
Body Material	Model 48 & 51: Model 58:	Brass PVC
Internal Gasket	Neoprene	
Stem Plate	PTFE	
Control Ports	Model 48: Model 51: Model 58:	6 8 16
Inlet Port Size NPT	Model 48 & 51: Model 58:	1/8" 1/4"
Drain Port Size NPT	Model 48 & 51: Model 58:	1/8" 1/4"
Control Port Size NPT	Model 48, 51, 58:	1/8"
Power Usage in Watts	Model 48 & 51: Model 58:	4.0 max 3.5 max



Stager (Model 48-00)

*Valve 2A required for raw water bypass only.



Stager (Model 51-06)

STANDARD STAGER PROGRAMS

STAGER DESIGNATION	NUMBER OF POSITION	APPLICATION	SUGGESTED PIPING DWG
48-00	4	4 Position Softener	1078271
48-01	3	3 Position Filter	1078272
48-83	4	3 Tank Sequential Filter, Backwash Only	1078276
48-84	5	4 Tank Sequential Filter, Backwash Only	1078277
48-85	6	5 Tank Sequential Filter, Backwash Only	1078278
51-06	6	6 Position Softener, Timed Brine and Refill	1078279
51-07	5	5 Position Softener, Timed Brine	1078280
51-09	5	5 Position Softener, Timed Brine Refill	1078281
51-10	5	2 Tank Sequential Filter, Backwash and Rinse	1078282
51-86	7	6 Tank Sequential Filter, Backwash Only	1078286
51-87	8	7 Tank Sequential Filter, Backwash Only	1078287
58-00	9	2 Bed Deionization	1078290
58-02	9	2 Bed Deionization with De-Gasifier	1078291
58-03	7	3 Tank Sequential Filter, Backwash and Rinse	1078288
58-04	8	4 Tank Sequential Filter, Backwash and Rinse	1078289
58-10	10	Mixed Bed Deionization	1078292
58-TA	8	2 Tank Alternating Softeners	1078293
58-TB	10	2 Tank Alternating Softeners, with Timed Brine	1078294

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1164142 REV D MA2016

STAGER MASTER CHART

FILL IN PROPER DESIGNATIONS TO DETERMINE PRODUCT NUMBER: R - -

USAGE
- 0 Stager **not used in controller** (Wire harness included)
- C Stager **is used in controller** (Wire harness not included) [Not for individual Sale]

STAGER Rotary Pilot Stager Series to be Provided
- 48 6 Port (Brass)
- 51 8 Port (Brass)
- 58 16 Port (PVC)

PROGRAM Stager Program to be Provided
- *00 - 99 STANDARD
- **SS SPECIAL Program per Drawing Indicated
- TA Twin Alternating Softener (Model 48, and 58 Only)
- ^TB Twin Alternating Softener (w/ Timed Brine Pos. & switch output)
- ^TR Twin Alternating Softener (w/ Timed Refill Pos. & switch output)

* Two character designation from standard stager drawing.
** Special Drawing number placed in last 5 digits of product number.
(Special Drawing number also used for Aux. Sw. notched in more than 1 position)
^ For model 58 stagers ONLY

ENCLOSURE N.E.M.A. Rating of Panel & Enclosure to be Provided
- 7 NEMA 4 Mounting Plate w/Gasket on Stagers
- F NEMA 4X Fiberglass Panel & Enclosure

ELECTRICAL Power Required to Operate Device
- 1 115 Volts / **60 Hertz** for 48 & 51 Stagers
  115 Volts **50 or 60 Hertz** for 58B Stagers
- 2 220 Volts / **50 or 60 Hertz** for ALL STAGERS
- 5 24 Volts / 50 or 60 Hertz (**for 48 & 51 Stagers Only)**
- 9 12 Volts / 50 or 60 Hertz for ALL STAGERS
- N 24 Volts / 50 or 60 Hertz **(for 48 & 51 Stagers Only) NXT Cam & Wire Harness**

1st AUX. SWITCH First Extra Switch to be provided on Rotary Pilot Stager (Unless Special Drawing Number is Assigned)
- 0 NONE (Not valid for use with AQ Matic controllers)
- *^A to R CAM POSITION Switch is to be active (I & O not used)
- S SERVICE Return (**Homing**) (For AQ Matic Controllers, MUST be "S") W Status Lights Cam (48, & 58 Stagers w/TA Program only)
- Z BLANK CAM (no notches)

* Use a Letter to indicate Cam position Not a Number.
^ Use SPECIAL DRAWING number if active in more than 1 position.

2nd AUX. SWITCH Second Extra Switch to be provided on Rotary Pilot Stager (Unless Special Drawing Number is Assigned)
- 0 NONE
- *^A to R CAM POSITION Switch is to be active (I & O not used)
- S SERVICE Return (Homing) **(Not for 48-TA)**
- T TIMED SWITCH OUTPUT (58-TB, signal in Pos. 2 & 7)
  TIMED SWITCH OUTPUT (58-TR, signal in Pos. 4 & 9)
- Z BLANK CAM (no notches)

* Use a Letter to indicate Cam position Not a Number.
^ Use SPECIAL DRAWING number if active in more than 1 position.

PRESSURE Program of Stager (Unless Special Drawing Number is Assigned)
- 0 STANDARD (Vent to open)
- 1 INVERTED (Pressure to open)

- 0 (unless Special Drawing number is assigned)

REVISION Stager Revision Level (Unless Special Drawing Number is Assigned)
- **B** 48 and 51 Series Rotary Pilot Stagers
- **C** 58 Series Rotary Pilot Stagers

Rev.	DESCRIPTION	BY	DATE	ECN NO.
G	Added NXT Motor & Cam Option	TLE	25-Nov-14	103975

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42986 MA 2016

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42986 REV F MAY17

STAGER MODEL NUMBER SELECTION

PROGRAM (SEE STAGER PROGRAM CHARTS)

*00 - 99 = STANDARD
**SS = SPECIAL Program per Drawing Indicated
TA = Twin Alternating Softener (Model 48, 58 and 59 Only)
^TB = Twin Alternating Softener (w/ Timed Brine Pos. & switch output, **962 only**)

* Two character designation for standard stager program.
** Special Drawing number placed in last 5 digits of model number.
(Special Drawing number also used for Aux. Sw. notched in more than 1 position)
^ For models 58 and 59 stagers used in 962 Stager Controller ONLY

ELECTRICAL Power Required to Operate Device

1 = 115 Volts / **60 Hertz** for 48 & 51 Stagers
115 Volts **50 or 60 Hertz** for 58, 59 & 96 Stagers
2 = 220 Volts / **50 or 60 Hertz** for ALL STAGERS
5 = 24 Volts / 50 or 60 Hertz for ALL STAGERS
* 9 = 12 Volts / 50 or 60 Hertz for ALL STAGERS

* ***(Option 9 is ONLY valid if used with a 962 stager controller)***

2nd AUX. SWITCH (SEE STAGER PROGRAM CHARTS) Second Extra Switch to be provided on Stager (Unless Special Drawing Number is Assigned)

0 = NONE
*^A to R=CAM POSITION Switch is to be active (I & O not used)
S = SERVICE Return (Homing)
T = TIMED BRINE OUTPUT (58-TB & 59-TB Only, signal in Pos. 2 & 7)
Z = BLANK CAM (no notches)

* Use a Letter to indicate Cam position Not a Number.
^ Use SPECIAL DRAWING number if active in more than 1 position.

R 0 ? ? -- ? ? ? ? -- ? ? ? ? ?

STAGER Rotary Pilot Stager Series to be Provided

48 = 6 Port (Brass)
51 = 8 Port (Brass)
58 = 16 Port (PVC)
59 = 16 Port (Brass)
96 = 8 Port High Pressure (Brass) (250 PSI)

ENCLOSURE N.E.M.A. Rating of Enclosure to be Provided

1 = NEMA 1 Std. Enclosure
4 = NEMA 4 Std. Enclosure
7 = NONE (NEMA 4 Mounting Plate w/Gasket Provided)
F = NEMA 4X Fiberglass Panel & Enclosure

1st AUX. SWITCH (SEE STAGER PROGRAM CHARTS) First Extra Switch to be provided on Stager (Unless Special Drawing Number is Assigned)

0 = NONE (Not valid for use with 962 controller)
*^A to R = CAM POSITION Switch is to be active (I & O not used)
S = SERVICE Return (**Homing**) (For 962 Controller, MUST be "S")
W = Status Lights Cam (48, 58 & 59 Stagers w/TA Program only)
Z = BLANK CAM (no notches)

* Use a Letter to indicate Cam position Not a Number.
^ Use SPECIAL DRAWING number if active in more than 1 position.

0 (Unless Special Drawing Number is Assigned)

PRESSURE Program of Stager (Unless Special Drawing Number is Assigned)

0 = STANDARD (Vent to open)
1 = INVERTED (Pressure to open)

REVISION Stager Revision Level (Unless Special Drawing Number is Assigned)

B = 48 and 51 Stagers
C = 58, 59, and 96 Series Stagers

SERIES 48 STANDARD STAGER PROGRAMS

			PORTS VENTED IN POSITION							
			0	1	2	3	4	5		
STAGER PROGRAM	# POS.		A	B	C	D	E	F	REF. DWG NO.	FUNCTION
00	4	POSITION	SVC	----	BW	----	BSR	FR	4800PRGM	4 POS. SOFTENER
		PORTS VENTED	1, 2	----	3, 4	----	5, 6	1, 6		
01	3	POSITION	SVC	----	BW	----	----	FR	4801PRGM	3 POS. FILTER
		PORTS VENTED	1, 2	----	3, 4	----	----	1, 6		
03	4	POSITION	SVC	----	BW	----	BSR	FR	4803PRGM	4 POS. SOFTENER (BUTTERFLY CAM)
		PORTS VENTED	1, 2	----	3, 4	----	5, 6	1, 6		
04	2	POSITION	SVC	----	BW	----	----	----	4804PRGM	2 POS. FILTER
		PORTS VENTED	1, 2	----	3, 4	----	----	----		
12	4	POSITION	SVC	----	BW -or- ASC	BSR -or- BW	----	FR	4812PRGM	4 POS. FILTER W/ AIR SCOUR -OR- 4 POS. UPFLOW SOFTENER
		PORTS VENTED	1, 2	----	3, 4	4, 5	----	1, 6		
83	4	POSITION	BW2	BW3	----	----	SVC	BW1	4883PRGM	3 TANK SEQUENTIAL FILTER
		PORTS VENTED	2	3	----	----	6	1		
84	5	POSITION	BW2	BW3	BW4	----	SVC	BW1	4884PRGM	4 TANK SEQUENTIAL FILTER
		PORTS VENTED	2	3	4	----	6	1		
85	6	POSITION	BW2	BW3	BW4	BW5	SVC	BW1	4885PRGM	5 TANK SEQUENTIAL FILTER
		PORTS VENTED	2	3	4	5	6	1		
TA	2	POSITION	SVCA	----	SVCB	----	----	----	48TAPRGM	2 TANK ALTERNATOR
		PORTS VENTED	1	----	2	----	----	----		
TB	2	POSITION	SVCA	SVCB	SVCA	SVCB	SVCA	SVCB	48TAPRGM	2 TANK ALTERNATOR
		PORTS VENTED	1	2	1	2	1	2		

ASC = AIR SCOUR

BSR = BRINE / SLOW RINSE

BW = BACKWASH

FR = FAST RINSE

SVC = SERVICE

SVCA = SERVICE UNIT A

SVCB = SERVICE UNIT B

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SERIES 48, 51, 58, 59 & 96 STAGERS
MODEL SELECTION & PROGRAMS

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	10MAY01	1078031

STAGER MODEL NUMBER SELECTION

SERIES 58 STANDARD STAGER PROGRAMS

STAGER PROGRAM	# POS.		PORTS VENTED IN POSITION 0 A	1 B	2 C	3 D	4 E	5 F	6 G	7 H	8 J	9 K	10 L	11 M	12 N	13 P	14 Q	15 R	REF. DWG NO.	FUNCTION
00	9	POSITION	SVC	----	----	CBW	----	----	INJ	CSR	CFR	ABW	----	----	ADR	ASR	AFR	----	5800PRGM	2 BED DI UNIT
		PORTS VENTED	1,15,16	----	----	2,3	----	----	5,6,7	6,7	1,7	1,10	----	----	1,11,12,13	1,12,13	1,13,15	----		
01	5	POSITION	SVC	----	----	----	----	----	----	----	----	----	DRD	ASC	----	BW	----	FR	5801PRGM	5 POSTION FILTER, DOUBLE ACTING VALVES
		PORTS VENTED	3,4,5,6,7,8, 9,10	----	----	----	----	----	----	----	----	----	7,8,9,10,11, 12,13,14	5,8,9,10,11, 12,14,15	----	1,5,6,7,10, 11,12,16	----	2,3,5,6,7,8, 9,12		
02	9	POSITION	SVC	----	----	CBW	----	----	CDR	CSR	CFR	ABW	----	----	ADR	ASR	AFR	----	5802PRGM	2 BED DI UNIT, OUTLET VALVE ON CATION UNIT
		PORTS VENTED	1,2,3,16	----	----	4	----	----	6,7,8	7,8	1,8	1,3,11	----	----	1,3,12,13,14	1,3,13,14	1,3,14,16	----		
03	7	POSITION	SVC	----	BW1	FR1	----	----	BW2	FR2	----	----	BW3	FR3	----	----	----	----	5803PRGM	3 TANK SEQUENTIAL FILTER, BW & FAST RINSE
		PORTS VENTED	2,4,6,7, 9,11	----	1,6,7,9,11	2,6,7,9, 11,12	----	----	2,4,5,9,11	2,4,6,9, 11,16	----	----	2,3,4,6,7	2,4,6,7,9,10	----	----	----	----		
04	9	POSITION	SVC	----	BW1	FR1	----	----	BW2	FR2	----	----	BW3	FR3	----	----	BW4	FR4	5804PRGM	4 TANK SEQUENTIAL FILTER, BW & FAST RINSE
		PORTS VENTED	2,4,6,7,9,11, 14,15	----	1,6,7,9,11, 14,15	2,6,7,9, 11,12,14,15	----	----	2,4,5,9,11, 14,15	2,4,6,9, 11,14,15,16	----	----	2,3,4,6,7, 14,15	2,4,6,7,9,10, 14,15	----	----	2,4,6,7,9, 11,13	2,4,6,7,8,9, 11,14		
07	10	POSITION	SVC	----	BW	----	INJ	DISP	FR	DRN	----	AM	AMD	----	REF	----	----	FNR	5807PRGM	MIXED BED DI, SIMULTANEOUS REGENERATION
		PORTS VENTED	11,12	----	1,13	----	1,3,15,16	1,3,16	1,3,11	3,7	----	5,7	3,5,7	----	7,11	----	----	10,11		
10	11	POSITION	SVC	----	BW	SET	----	CDR	CSR	----	ADR	ASR	AFR	----	DRD	AM	----	FNR	5810PRGM	MIXED BED DI UNIT
		PORTS VENTED	15,16	----	1	(NONE)	----	4,5,9	5,9	----	7,8,9	8,9	9,10	----	9,12	12,13	----	14,15		
TA	8	POSITION	SVCA	----	----	BWA	BSRA	----	----	FRA	SBA	----	----	----	----	BWB	BSRB	FRB	58TAPRGM	TWO UNIT ALTERNATING SOFTENER
		PORTS VENTED	1,2,8,16	----	----	6,8,11	5,7,8,11	----	----	7,8,11,16	8,11,16	----	----	----	----	2,13,16	1,2,15,16	2,8,15,16		
TB *	10	POSITION	SVCA	----	----	BWA	----	BRD	SR	FRA	SBA	----	----	BWB	----	BRD	SR	FRA	58TBPRGM	TWO TANK ALTERNATOR W/ TIMED BRINE
		PORTS VENTED	6,14,16	----	----	1,2,6,8	----	4,5,6,8	4,5,6,8	5,6,8,14	6,8,14	----	----	9,10,14,16	----	12,13,14,16	12,13,14,16	**6,13,14,16**		

* TB PROGRAM FOR USE WITH SERIES 962 CONTROLLER ONLY.

SERIES 51 STANDARD STAGER PROGRAMS

STAGER PROGRAM	# POS.		PORTS VENTED IN POSITION 0 A	1 B	2 C	3 D	4 E	5 F	6 G	7 H	REF. DWG NO.	FUNCTION
06	6	POSITION	SVC	----	BW	----	BRD	SR	FR	REF	5106PRGM -or- 9606PRGM	6 POSITION SOFTENER (TIMED DRAW & REFILL)
		PORTS VENTED	1, 2	----	4	----	5, 6, 7	6, 7	1, 7	1, 2, 8		
07	5	POSITION	SVC	----	BW	----	BRD	SR	FR	----	5107PRGM -or- 9607PRGM	5 POSITION SOFTENER (TIMED DRAW)
		PORTS VENTED	1, 2	----	4	----	5, 6, 7	6, 7	1, 7	----		
09	5	POSITION	SVC	----	----	BW	BSR	----	FR	REF	5109PRGM -or- 9609PRGM	5 POSITION SOFTENER (TIMED REFILL)
		PORTS VENTED	1, 3	----	----	4	5, 7	----	1, 7	1, 8		
10	5	POSITION	SVC	----	BW	FRA	----	----	BW2	FRB	5110PRGM -or- 9610PRGM	2 TANK SEQUENTIAL FILTER (BW & FR)
		PORTS VENTED	1, 2, 5, 6	----	5, 6, 7	1, 5, 6, 8	----	----	1, 2, 3	1, 2, 4, 5		
11	7	POSITION	SVC	----	DRD	----	ASC	BW	----	FR	5111PRGM -or- 9611PRGM	FILTER WITH AIR SCOUR
		PORTS VENTED	2,3	----	1,4	----	4,6,7	4,7,8	----	1,2		
12	6	POSITION	SVC	BW	----	BRD	DISP	RECL	FR	----	5112PRGM -or- 9612PRGM	BRINE RECYCLE SOFTENER
		PORTS VENTED	1,8	2	----	4,5	4,5	5,6	4,8	----		
86	7	POSITION	SVC	BW1	BW2	BW3	BW4	BW5	BW6	----	5186PRGM -or- 9686PRGM	6 TANK SEQUENTIAL FILTER
		PORTS VENTED	8	1	2	3	4	5	6	----		
87	8	POSITION	BW1	BW2	BW3	BW4	BW5	BW6	BW7	SVC	5187PRGM -or- 9687PRGM	7 TANK SEQUENTIAL FILTER
		PORTS VENTED	1	2	3	4	5	6	7	8		

ABW = ANION BACKWASH
ADR = ANION DRAW
AM = AIR MIX
AMD = AIR MIX & DRAIN DOWN
ASC = AIR SCOUR
ASR = ANION SLOW RINSE
AFR = ANION FAST RINSE
BW = BACKWASH
BWA = BACKWASH UNIT A
BWB = BACKWASH UNIT B
BRD = BRINE DRAW
BSR = BRINE / SLOW RINSE
BSRA = BRINE / SLOW RINSE UNIT A
BSRB = BRINE / SLOW RINSE UNIT B
CBW = CATION BACKWASH
CDR = CATION DRAW
CFR = CATION FAST RINSE
CSR = CATION SLOW RINSE
DRD = DRAIN DOWN
DISP = DISPLACE
FR = FAST RINSE
FRA = FAST RINSE UNIT A
FRB = FAST RINSE UNIT B
FNR = FINAL RINSE
INJ = INJECT
RECL = RECLAIM
REF = REFILL
SBA = STANDBY UNIT A
SBB = STANDBY UNIT B
SET = SETTLE
SR = SLOW RINSE
SVC = SERVICE
SVCA = SERVICE UNIT A
SVCB = SERVICE UNIT B

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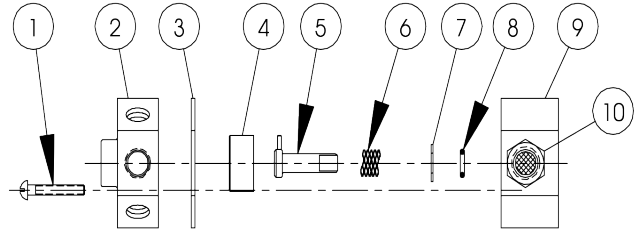
SERIES 48, 51, & 58 STAGERS
MODEL SELECTION & PROGRAMS

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	10MAY01	1078031

SERIES 51 & 58 STAGER PROGRAMS

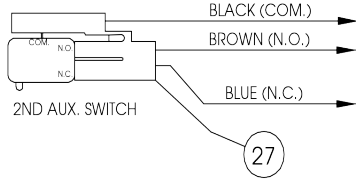
SERIES 48 STAGER ASSEMBLY

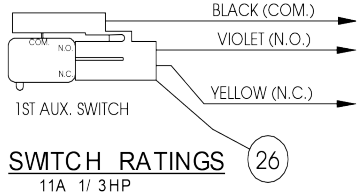
PILOT CONTROL ASSEMBLY



OPTIONAL AUX. SWITCHES

MAXIMUM OF TWO (2)

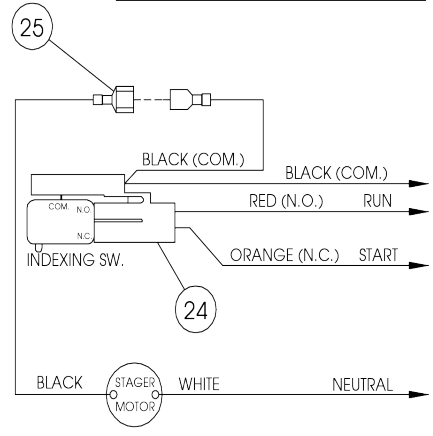




SWITCH RATINGS

11A 1/ 3HP
125, 250, 277 VAC
1/ 2A 125 VDC
1/ 4A 250 VDC
4A 125 VAC L

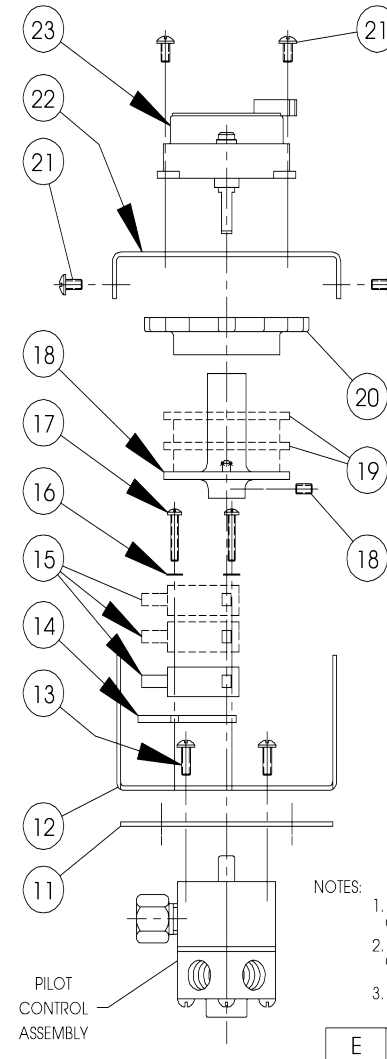
STANDARD WIRING



INTERNAL PARTS KITS

STAGER PROGRAM	INTERNAL PARTS KITS STD. PROGRAMS	INTERNAL PARTS KITS INVERTED PROGRAMS
48-00	1074817 (48-IAB)	1077585 (E) (48-IABI)
48-01		
48-03		
48-04		
48-11		
48-12		
48-TA		
48-83	1081593 (48-IA-83)	1081594 (48-IA-83I)
48-84		
48-85		
48-TB	1077584 (48-IA-TB)	
48-SP	1084816 (48-IA-SP)	SPECIFY DWG. NO. WHEN ORDERING THESE PARTS

* INTERNAL PARTS KITS INCLUDE ITEM NOS. 3, 4, 6, 7 & 8 ALONG WITH A SMALL PACKET OF SILICON COMPOUND



NO.	DESCRIPTION		PART NO.	QTY.
1	RD HD. MACH. SCR. (6-32 X 7/8")		1075759 (SCS-0075)	3
2	BACKPLATE		PER PROGRAM	1
3	GASKET (SEE NOTE 3)		1084171	1
4	STEMPLATE (SEE NOTE 3)		PER PROGRAM	1
5	STEMSHAFT		1070448	1
6	SPRING (SEE NOTE 3)		1076234	1
7	WASHER (SEE NOTE 3)		1074074 (41-F)	1
8	O-RING (SEE NOTE 3)		1071667 (ORB-010)	1
9	BONNET		1074793 (48-B)	1
10	FILTERED INLET (1/8" N.P.T.)		1074825 (48-Q)	1
11	MOUNTING PLATE GASKET		1075737	1
12	BOTTOM MOUNTING BRACKET		1070437	1
13	PAN HD. MACH. SCR. (6-32 X 3/8")		1072371 (SCS-0070)	4
14	INSULATOR		1075455 (58B019)	1
15	SWITCH		1075499 (58013)	1-3
16	LOCKWASHER (NO. 4)		1073593 (WAS-0015)	2
17	PAN HD. MACH. SCREW (4-40 THREAD)	1 SWITCH	1072369 (SCS-0064)	2
		2 SWITCHES	1075757 (SCS-0065)	
		3 SWITCHES	1072389 (SCS-0151)	
18	48-00 INDEXING CAM 48-01 INDEXING CAM 48-03 INDEXING CAM 48-TA INDEXING CAM ALL OTHERS (SEE NOTE 1) *CAMS INCLUDE 6-32 SET SCREW		1076245 1076244 1076246 1077932 1076243	1
19	AUXILIARY CAM (SEE NOTE 2)		1075451 (58B017)	0-2
20	THUMB WHEEL		1075454 (58B018)	1
21	TAPTITE SCREW (6-32 X 1/4")		1075746	6
22	MOTOR MOUNTING BRACKET		1070436	1
23	MOTOR (4 WATTS MAX.)	115VAC 60HZ	1075748	1
		230VAC 50/60HZ	1075749	
		24VAC 50/60HZ	1075750	
		12VAC 50/60HZ	1075753	
24	WIRE HARNESS (STANDARD)		1075464 (58B030)	1
25	MALE CONNECTOR		1075498 (58012)	1
26	WIRE HARNESS (1ST AUX. SWITCH)		1075501 (58015)	1
27	WIRE HARNESS (2ND AUX. SWITCH)		1075502 (58016)	1

NOTES:

1. STAGER PROGRAM MUST BE SPECIFIED WHEN ORDERING THIS PART.
2. MUST SPECIFY IN WHICH POSITION(S) SWITCH OUTPUT(S) ARE REQUIRED.
3. SUPPLIED AS A KIT ONLY.

REV.	DESCRIPTION	ECO	DATE	APVD
E	1-WAS: 1081595	22341	12APR10	TLE
D	ITEM NO. 3 WAS P/N 1074842	NONE	15SEP03	

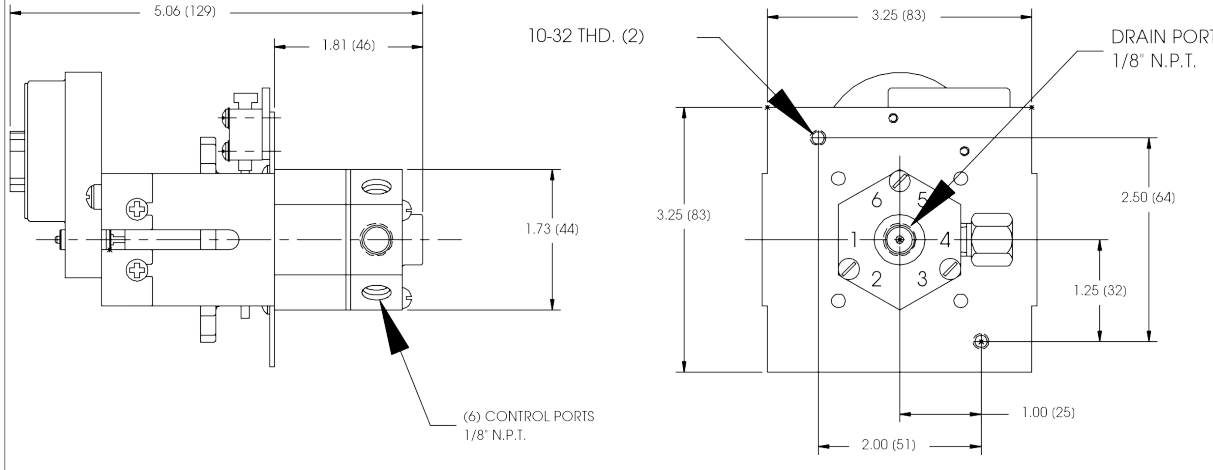
AQ Matic
Valve & Controls Company Inc.

SERIES 48 STAGER ASSEMBLY
ASSEMBLY DRAWING

SCALE	DRAWN	DATE	DWG. NO.
3/8	MSM	11APR01	1077882

Form No. 1077881

SERIES 48 PROGRAMS AND MOUNTING INFORMATION



NO.	DESCRIPTION		PART NO.	QTY.
1	STAGER ASSEMBLY		R048-___-___B	1
2	ENCLOSURE			1
		NEMA 4XFG	1077969	
3	PAN HEAD MACHINE SCREW 10-32 x 1/2" LONG		1075758 (510-BU)	2
4	LOCKWASHER (NO. 10)		1073588 (WAS-0005)	2

NOTE:

1. STAGERS CAN BE MANUALLY ADVANCED BY ROTATING THE CAM CLOCKWISE.
2. PIPING SCHEMATICS AVAILABLE UPON REQUEST.
3. ALL STAGERS EXCEPT 48-03 & 48-TA SUPPLIED WITH NOTCHED CAM FOR PULSE OUTPUT TYPE TIMERS. 48-03 & 48-TA SUPPLIED WITH BUTTERFLY CAM FOR "UP/DOWN" OUTPUT TYPE TIMERS.

INCHES (MILLIMETERS)

SERIES NO.	PORTS VENTED IN POSITION						DESCRIPTION
	A	B	C	D	E	F	
48-00	1,2 (SVC)	-	3,4 (BW)	-	5,6 (BR)	1,6 (FR)	4 POS. SOFTENER
48-01	1,2 (SVC)	-	3,4 (BW)	-	-	1,6 (FR)	3 POS. FILTER
48-03	1,2 (SVC)	-	3,4 (BW)	-	5,6 (BR)	1,6 (FR)	4 POS. SOFTENER (SEE NOTE 3)
48-04	1,2 (SVC)	-	3,4 (BW)	-	-	-	2 POS. FILTER
48-12	1,2 (SVC)	-	3,4 (BW)	4,5 (BR)	-	1,6 (FR)	4 POS. SOFTENER W/UPFLOW BRINE
48-83	2 (BW)	3 (BW)	-	-	6 (SVC)	1 (BW)	3 TANK SEQUENTIAL FILTER
48-84	2 (BW)	3 (BW)	4 (BW)	-	6 (SVC)	1 (BW)	4 TANK SEQUENTIAL FILTER
48-85	2 (BW)	3 (BW)	4 (BW)	5 (BW)	6 (SVC)	1 (BW)	5 TANK SEQUENTIAL FILTER
48-TA	1	-	2	-	-	-	2 TANK ALTERNATOR (SEE NOTE 3)
48-TB	1	2	1	2	1	2	2 TANK ALTERNATOR

REV.	DESCRIPTION	ECO	DATE	APVD
E	1-WAS: 1081585	22341	12APR10	TLE
D	ITEM NO. 3 WAS P/N 1074842	NONE	15SEP03	

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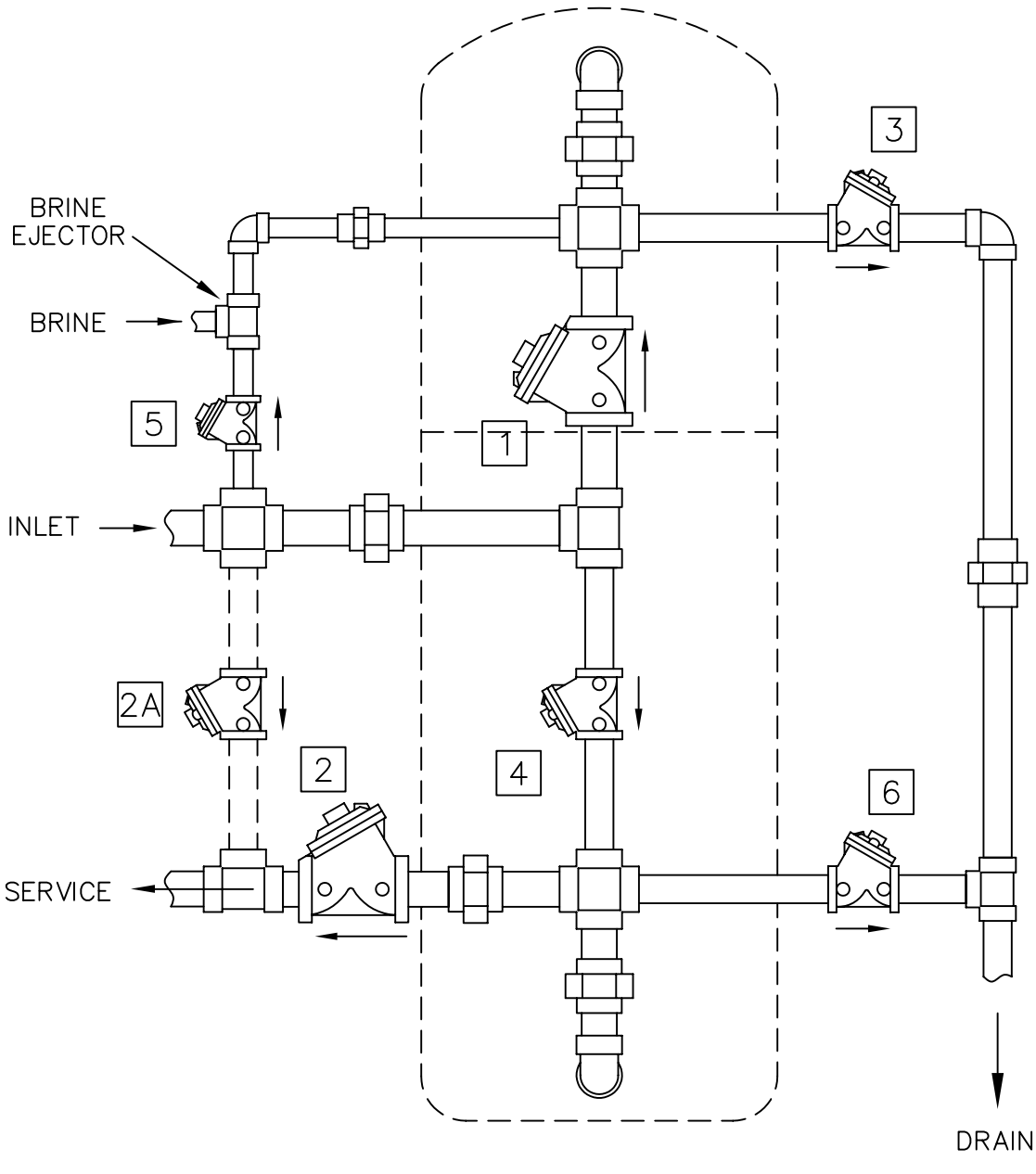
SERIES 48 STAGER
PROGRAMS AND MOUNTING DRAWING

SCALE	DRAWN	DATE	DWG. NO.
N/A	MSM	11Apr01	1077882

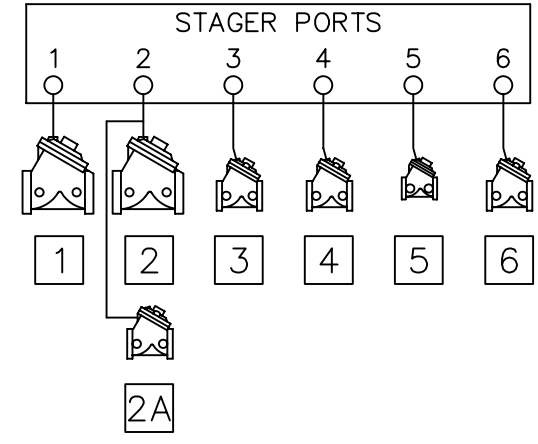
Form No. 1077881



4 POSITION SOFTENER

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	4	SERVICE	1,2	1,2
B				
C	1	BACKWASH	3,4	3,4,2A
D				
E	2	BRINE	5,6	5,6,2A
F	3	RINSE	1,6	1,6,2A

SERIES 48–00 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.

2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.

3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.

4. BRINE VALVE AND DRAIN LINE FLOW CONTROLLER NOT SHOWN.

REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	CHANGED PIPING TO VALVE 2A TO BE DOTTED	NONE	MSM	15APR03	
A	INITIAL RELEASE	NONE	JWB	31JUL01	MSM

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4 POSITION SOFTENER

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078271

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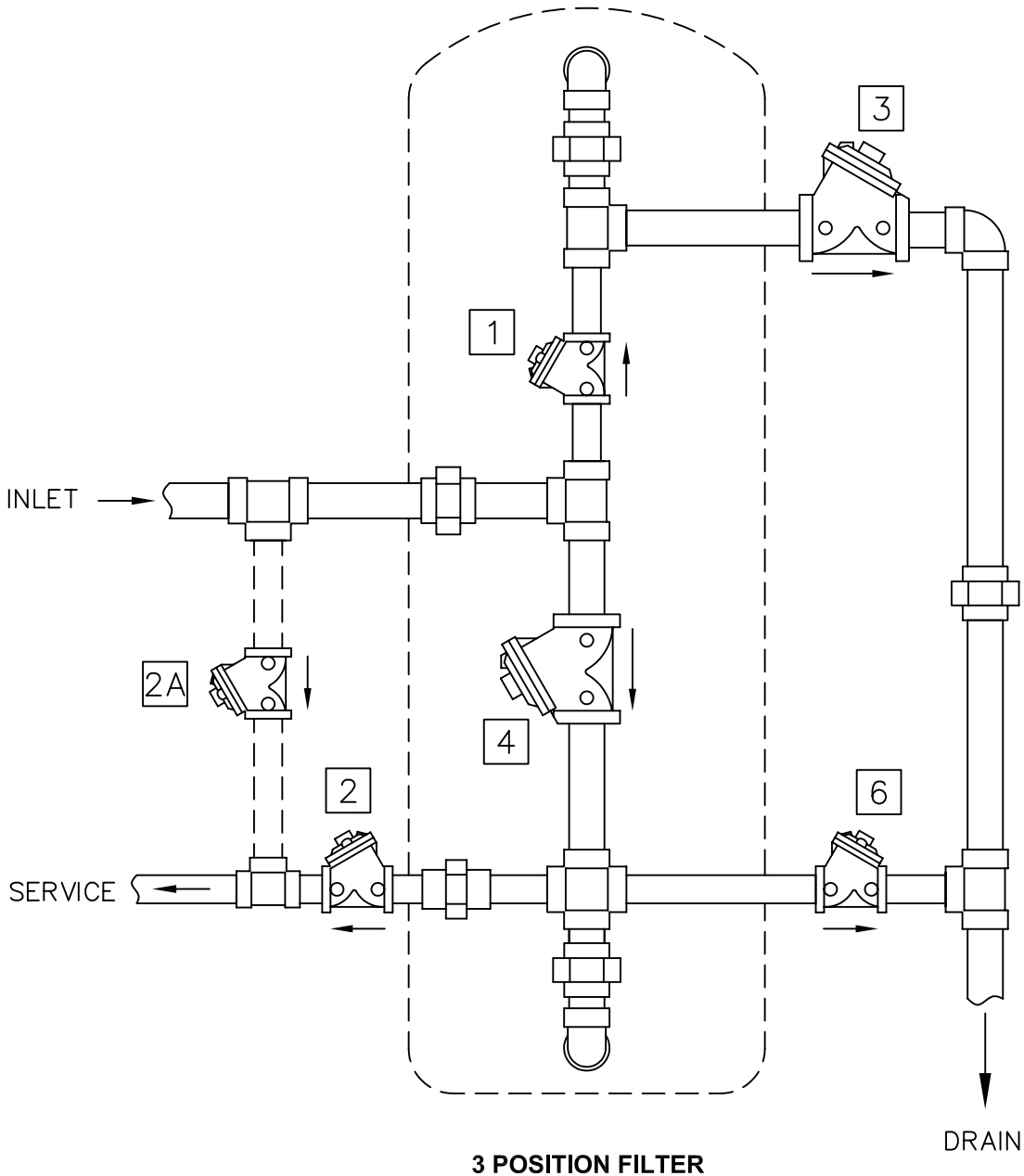
4 POSITION SOFTENER (48-00 STAGER)

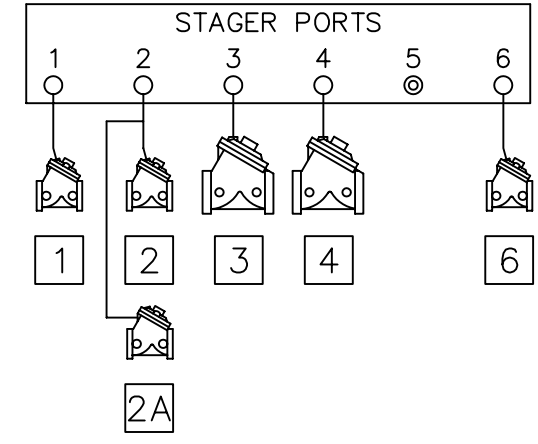
3 POSITION FILTER (48-01 STAGER)



3 POSITION FILTER

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	3	SERVICE	1,2	1,2
B				
C	1	BACKWASH	3,4	3,4,2A
D				
E				
F	2	RINSE	1,6	1,6,2A

SERIES 48-01 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.
3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.
4. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	CHANGED PIPING TO VALVE 2A TO BE DOTTED	NONE	MSM	15APR03	
A	INITIAL RELEASE	NONE	JWB	31JUL01	MSM

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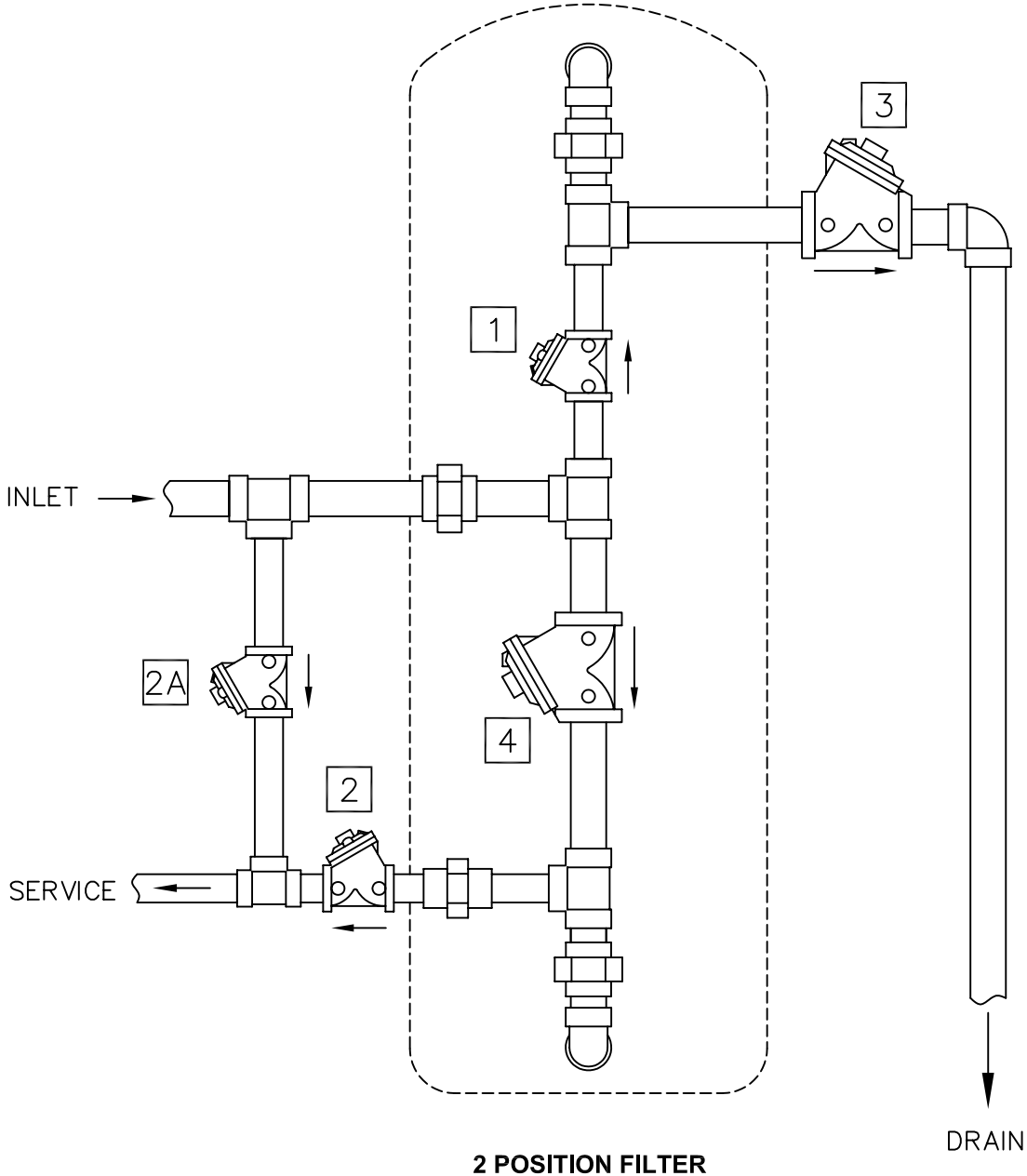
3 POSITION FILTER

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078272

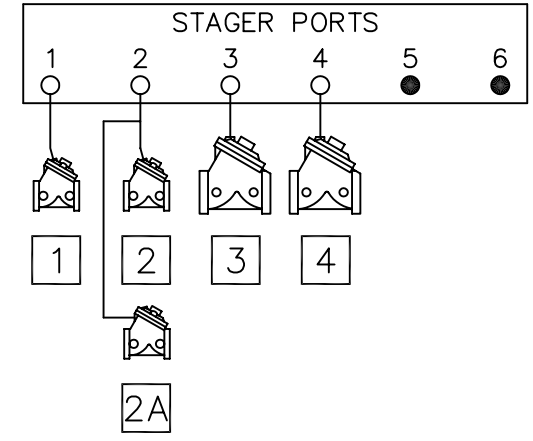
2 POSITION FILTER (48-04 STAGER)



2 POSITION FILTER

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	2	SERVICE	1,2	1,2
B				
C	1	BACKWASH	3,4	3,4,2A
D				
E				
F				

SERIES 48–04 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.

2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.

3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.

4. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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2 POSITION FILTER

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078273

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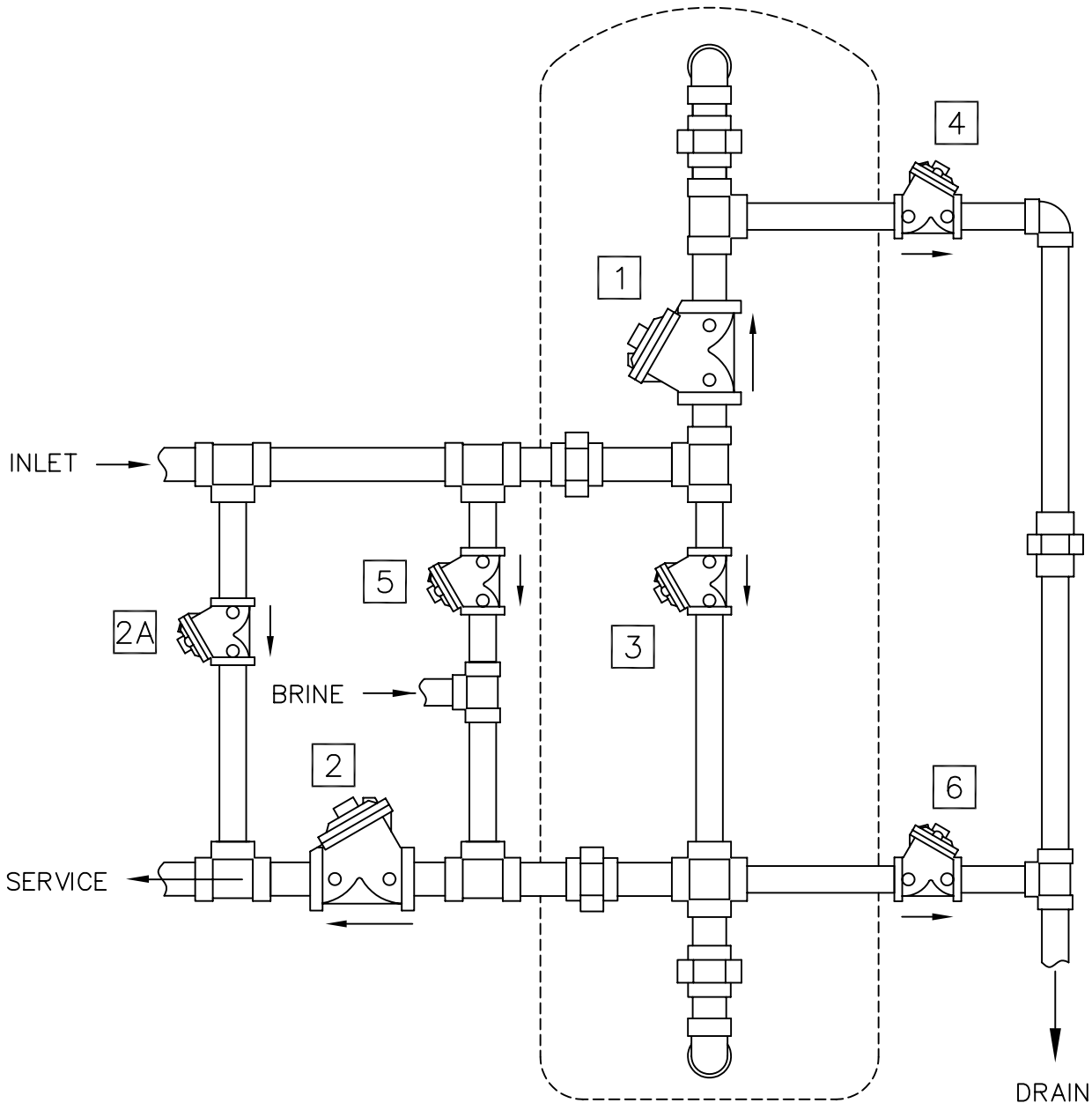
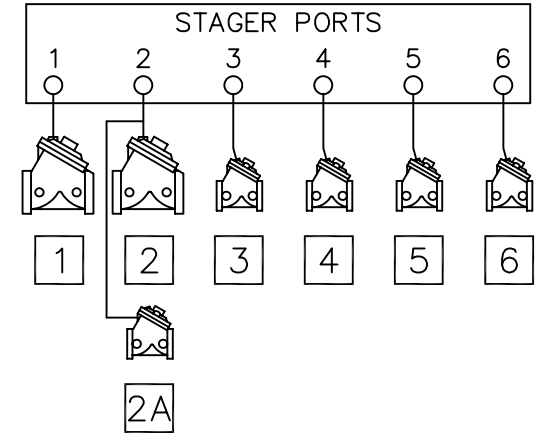
4 POS. SOFTENER COUNTER CURRENT REGEN. (48-12 STAGER)



4 POSITION SOFTENER COUNTER CURRENT REGENERATION

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	4	SERVICE	1,2	1,2
B				
C	1	BACKWASH	3,4	3,4,2A
D	2	BRINE	4,5	4,5,2A
E				
F	3	RINSE	1,6	1,6,2A

SERIES 48–12 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.
3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.
4. BRINE VALVE AND DRAIN LINE FLOW CONTROLLER NOT SHOWN.

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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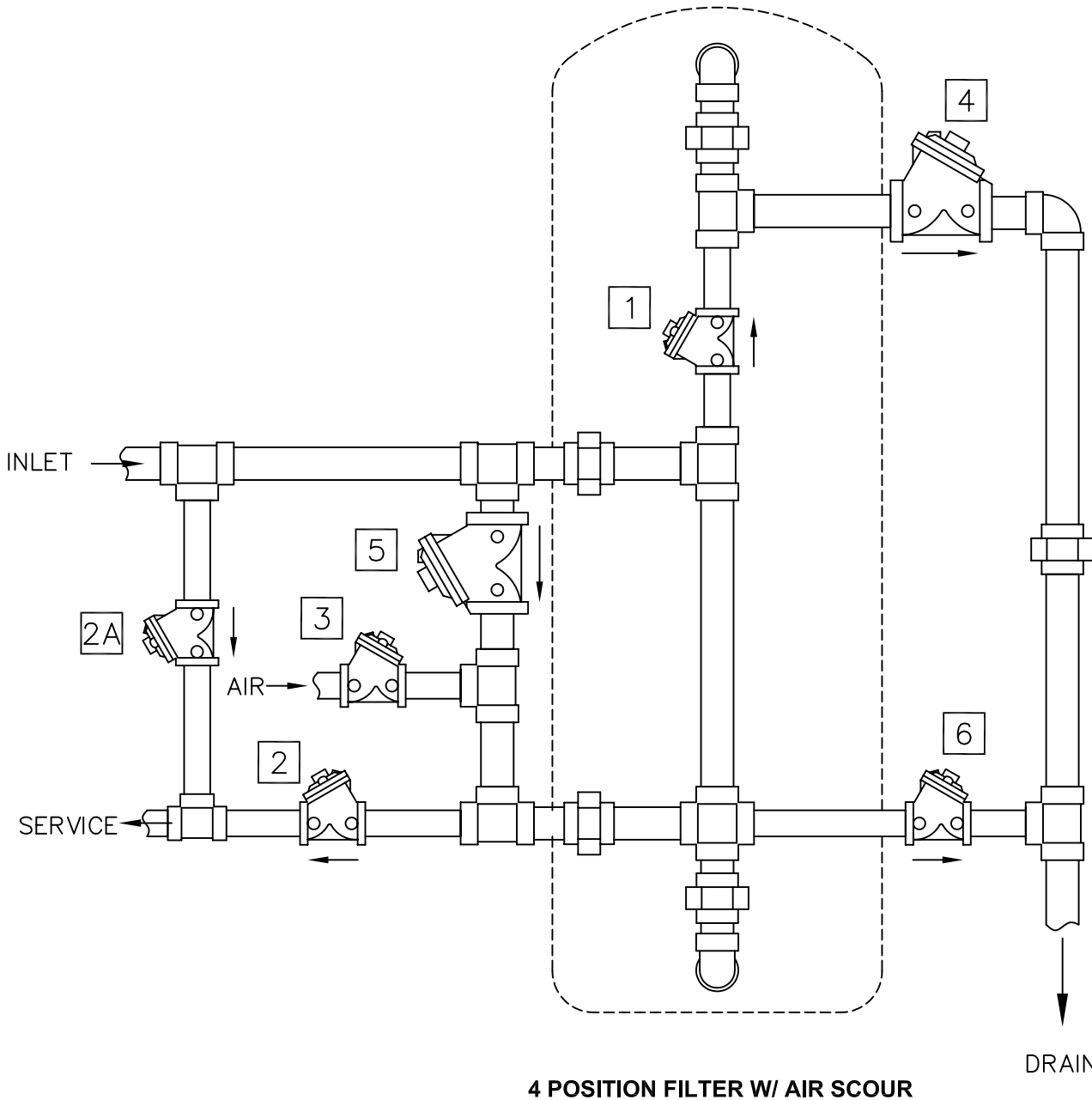
4 POSITION SOFTENER COUNTER CURRENT REGENERATION

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078274

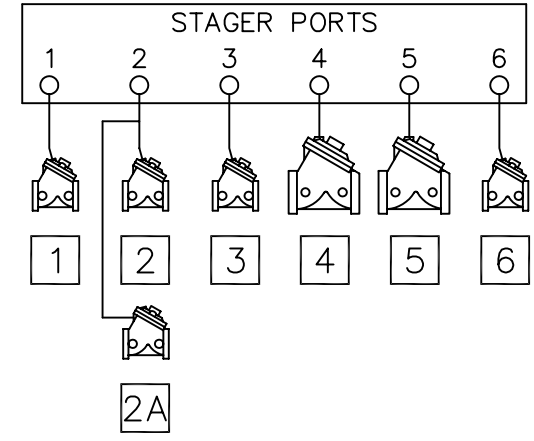
4 POSITION FILTER W/ AIR SCOUR (48-12 STAGER)

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	4	SERVICE	1,2	1,2
B				
C	1	AIR SCOUR	3,4	3,4,2A
D	2	BACKWASH	4,5	4,5,2A
E				
F	3	RINSE	1,6	1,6,2A



4 POSITION FILTER W/ AIR SCOUR

SERIES 48–12 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.
3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.
4. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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4 POSITION FILTER W/ AIR SCOUR

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078275

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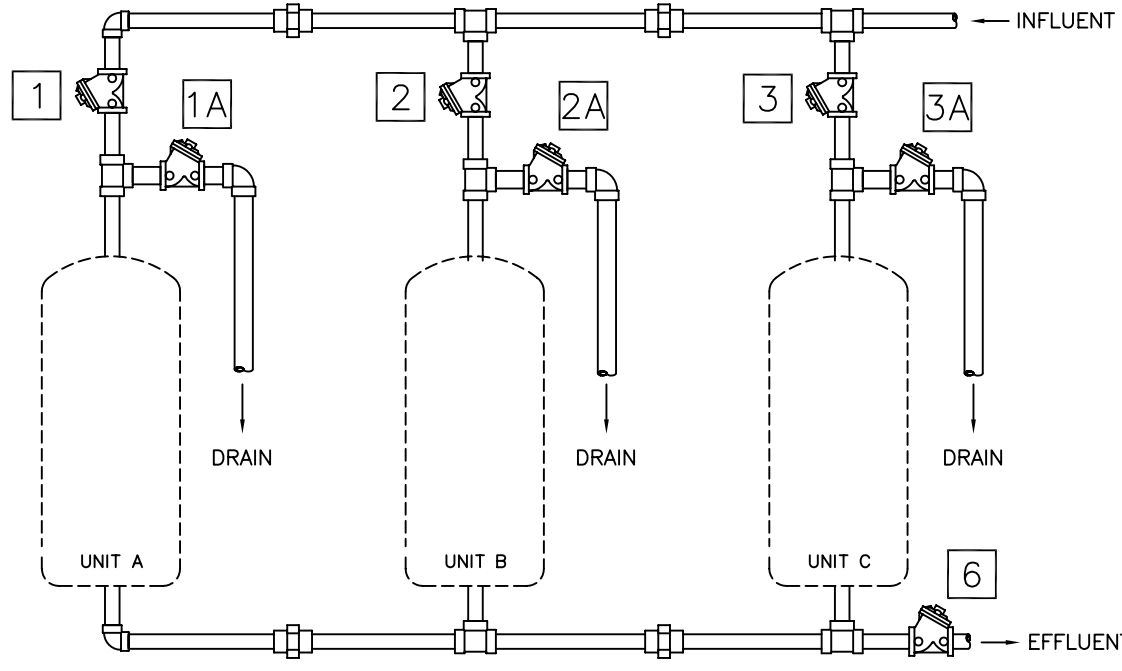
3 TANK SEQUENTIAL FILTER (48-83 STAGER)

3 TANK SEQUENTIAL FILTER BACKWASH ONLY



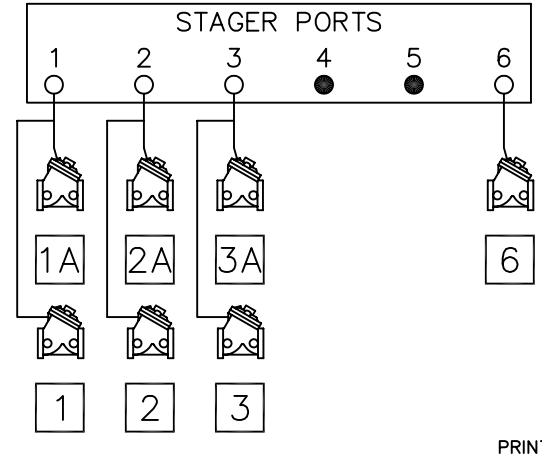
NOTE:

1. ALL OTHER PORTS PRESSURIZED.

2. VALVES 1A,2A,3A,6 ARE NORMALLY OPEN PRESSURE TO CLOSE.

3. VALVES 1,2,3 ARE NORMALLY CLOSED, PRESSURE TO OPEN.

SERIES 48–83 STAGER



NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	2	BACKWASH UNIT B	2	1,2A,3
B	3	BACKWASH UNIT C	3	1,2,3A
C				
D				
E	4	SERVICE	6	1,2,3,6
F	1	BACKWASH UNIT A	1	1A,2,3

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REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	MSM	31JUL01	

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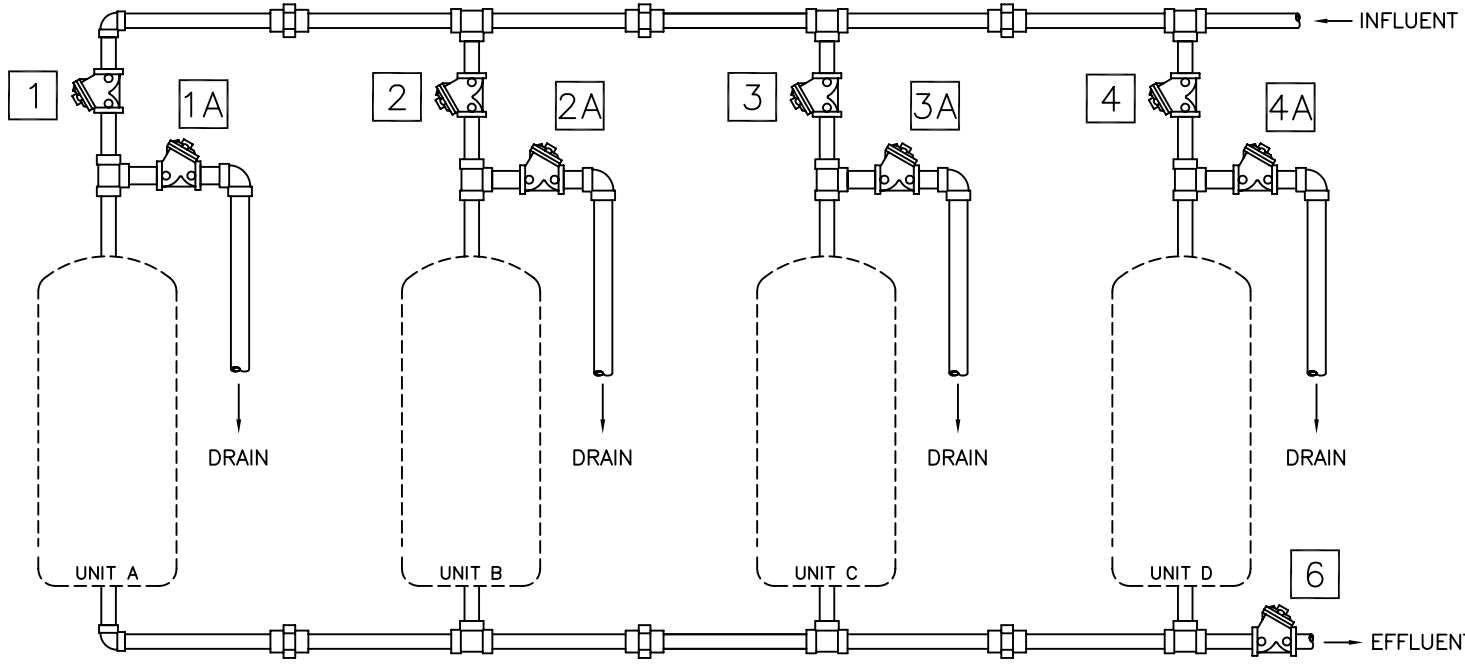
3 TANK SEQUENTIAL FILTER BACKWASH ONLY

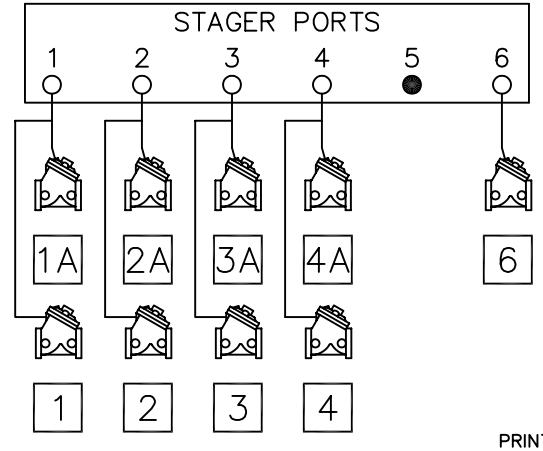
SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078276

4 TANK SEQUENTIAL FILTER (48-84 STAGER)

4 TANK SEQUENTIAL FILTER BACKWASH ONLY



SERIES 48–84 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.

2. VALVES 1A,2A,3A,4A,6 ARE NORMALLY OPEN PRESSURE TO CLOSE.

3. VALVES 1,2,3,4 ARE NORMALLY CLOSED, PRESSURE TO OPEN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	2	BACKWASH UNIT B	2	1,2A,3,4
B	3	BACKWASH UNIT C	3	1,2,3A,4
C	4	BACKWASH UNIT D	4	1,2,3,4A
D				
E	5	SERVICE	6	1,2,3,4,6
F	1	BACKWASH UNIT A	1	1A,2,3,4

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REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	MSM	31JUL01	

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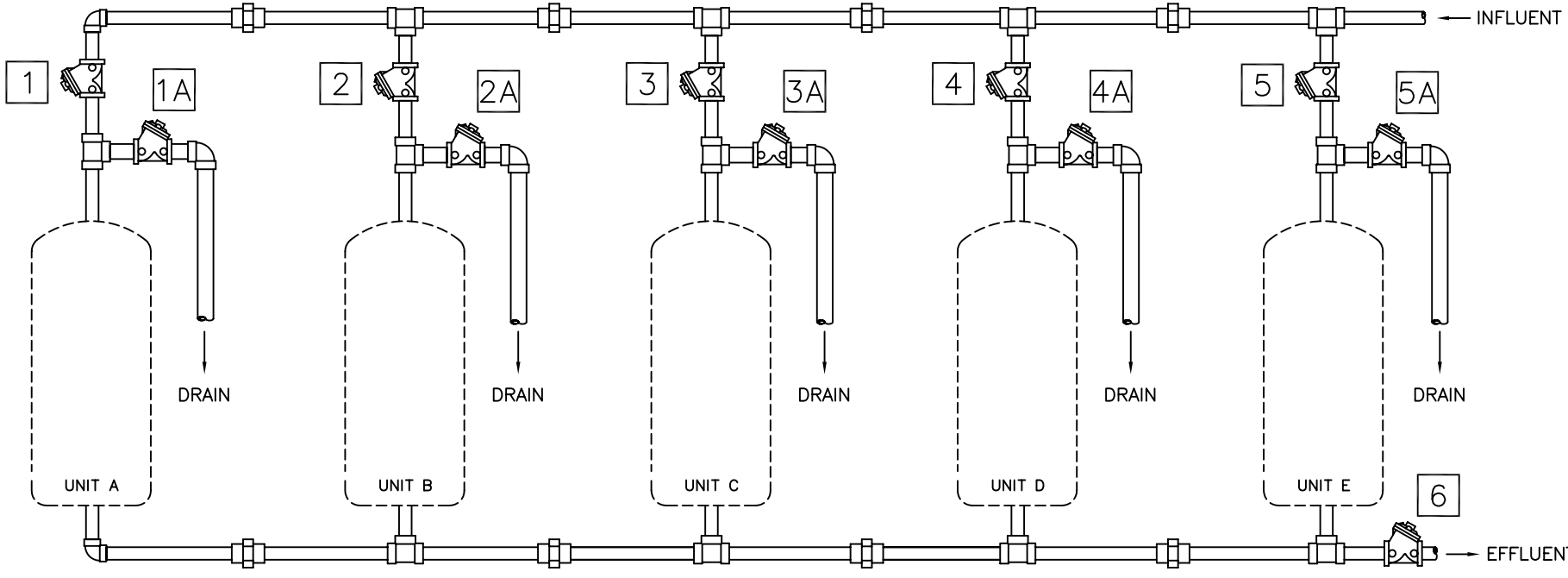
4 TANK SEQUENTIAL FILTER BACKWASH ONLY

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078277

5 TANK SEQUENTIAL FILTER (48-85 STAGER)

5 TANK SEQUENTIAL FILTER BACKWASH ONLY

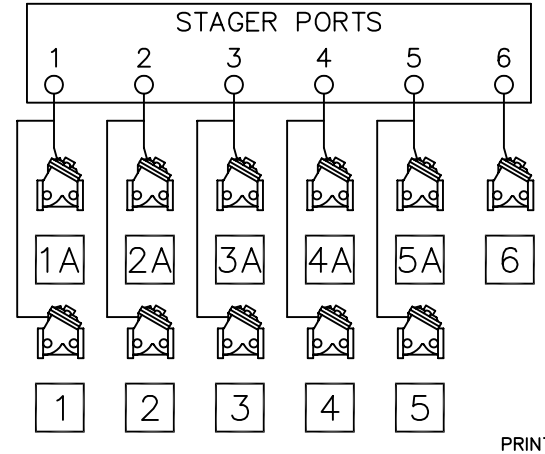


NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. VALVES 1A,2A,3A,4A,5A,6 ARE NORMALLY OPEN PRESSURE TO CLOSE.
3. VALVES 1,2,3,4,5 ARE NORMALLY CLOSED, PRESSURE TO OPEN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	2	BACKWASH UNIT B	2	1,2A,3,4,5
B	3	BACKWASH UNIT C	3	1,2,3A,4,5
C	4	BACKWASH UNIT D	4	1,2,3,4A,5
D	5	BACKWASH UNIT E	5	1,2,3,4,5A
E	6	SERVICE	6	1,2,3,4,5,6
F	1	BACKWASH UNIT A	1	1A,2,3,4,5

SERIES 48–85 STAGER



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REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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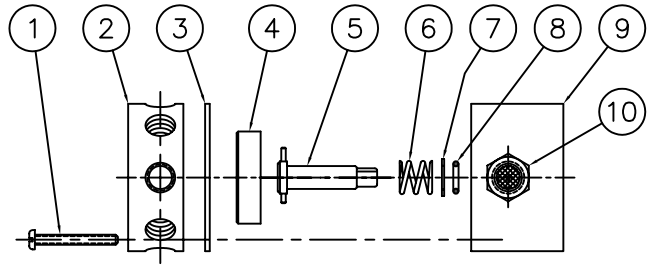
5 TANK SEQUENTIAL FILTER BACKWASH ONLY

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078278

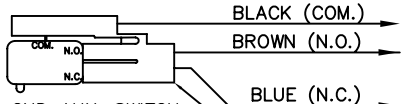
Form No. 1077803

PILOT CONTROL ASSEMBLY

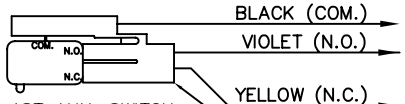


OPTIONAL AUX. SWITCHES

MAXIMUM OF TWO (2)



BLACK (COM.)
BROWN (N.O.)
BLUE (N.C.)
2ND AUX. SWITCH
27

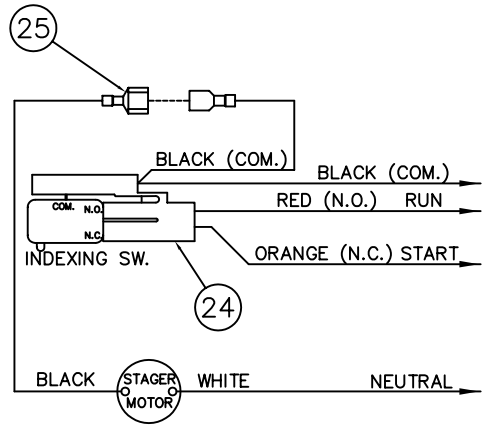


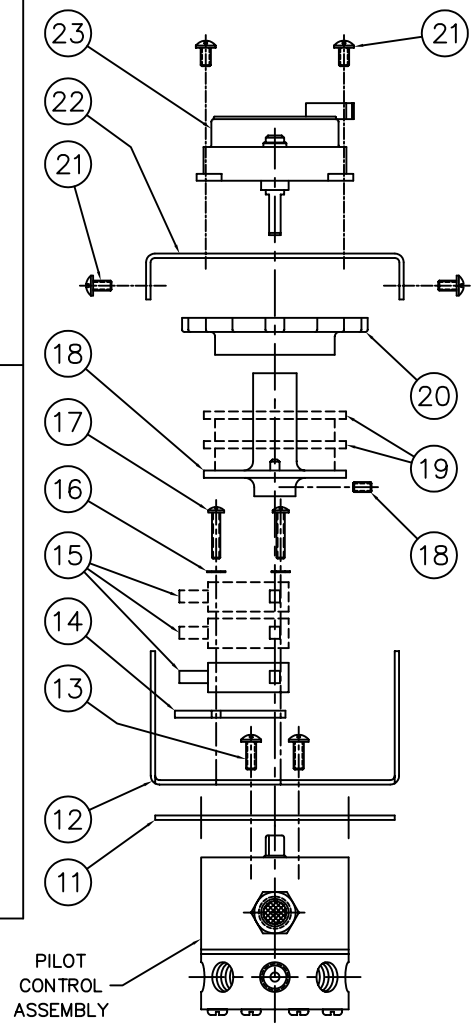
BLACK (COM.)
VIOLET (N.O.)
YELLOW (N.C.)
1ST AUX. SWITCH
26

SWITCH RATINGS

11A 1/3HP
125, 250, 277 VAC
1/2A 125 VDC
1/4A 250 VDC
4A 125 VAC L

STANDARD WIRING





NO.	DESCRIPTION		PART NO.	QTY.
1	PAN HD. MACH. SCR. (6-32 X 1 1/8")		1075760 (SCS-0076)	4
2	BACKPLATE		PER PROGRAM	1
3	GASKET (SEE NOTE 3)		1075675 (96034)	1
4	STEMPLATE (SEE NOTE 3)		PER PROGRAM	1
5	STEMSHAFT		1070438	1
6	SPRING (SEE NOTE 3)		1075242 (54-S)	1
7	WASHER (SEE NOTE 3)		1075241 (54-R)	1
8	O-RING (SEE NOTE 3)		1071716 (ORE-011)	1
9	BONNET		1074883 (51-B)	1
10	FILTERED INLET (1/8" N.P.T.)		1074825 (48-Q)	1
11	MOUNTING PLATE GASKET		1075674 (96B050)	1
12	BOTTOM MOUNTING BRACKET		1077824	1
13	PAN HD. MACH. SCR. (6-32 X 3/8")		1072371 (SCS-0070)	2
14	INSULATOR		1075455 (58B019)	1
15	SWITCH		1075499 (58013)	1-3
16	LOCK WASHER (NO. 4)		1073593 (WAS-0015)	2
17	PAN HD. MACH. SCREW (4-40 THREAD)	1 SWITCH	1072369 (SCS-0064)	2
		2 SWITCHES	1075757 (SCS-0065)	
		3 SWITCHES	1072389 (SCS-0151)	
18	INDEXING CAM (SEE NOTE 1)		1076243	1
	SET SCREW (6-32)			1
19	AUXILIARY CAM (SEE NOTE 2)		1075451 (58B017)	0-2
20	THUMB WHEEL		1075454 (58B018)	1
21	TAPTITE SCREW (6-32 X 1/4")		1075746	6
22	MOTOR MOUNTING BRACKET		1070436	1
23	MOTOR (4 WATTS MAX.)	115VAC 60HZ	1075748	1
		230VAC 50/60HZ	1075749	
		24VAC 50/60HZ	1075750	
		12VAC 50/60HZ	1075753	
24	WIRE HARNESS (STANDARD)		1075464 (58B030)	1
25	MALE CONNECTOR		1075498 (58012)	1
26	WIRE HARNESS (1ST AUX. SWITCH)		1075501 (58015)	1
27	WIRE HARNESS (2ND AUX. SWITCH)		1075502 (58016)	1

NOTES:

1. STAGER PROGRAM MUST BE SPECIFIED WHEN ORDERING THIS PART.
2. MUST SPECIFY IN WHICH POSITION(S) SWITCH OUTPUT(S) ARE REQUIRED.
3. SUPPLIED AS A KIT ONLY.

INTERNAL PARTS KITS

STAGER PROGRAM	INTERNAL PARTS KITS STD. PROGRAMS	INTERNAL PARTS KITS INVERTED PROGRAMS
51-06	1074888 (51-IA-00)	
51-07		
51-09		
51-10	1074890 (51-IA-10)	
51-11	1074891 (51-IA-11)	
51-12	1074892 (51-IA-12)	
51-86	1074893 (51-IA-86)	1077587 (51-IA-86I)
51-87		
51-SP	1074887 (51-IA-SP)	SPECIFY DWG. NO. WHEN ORDERING THESE PARTS

* INTERNAL PARTS KITS INCLUDE ITEM NOS. 3, 4, 6, 7 & 8 ALONG WITH A SMALL PACKET OF SILICON COMPOUND

REV.	DESCRIPTION	ECO	DATE	APVD
C	NUMBER CONVERSION	1588	13DEC02	

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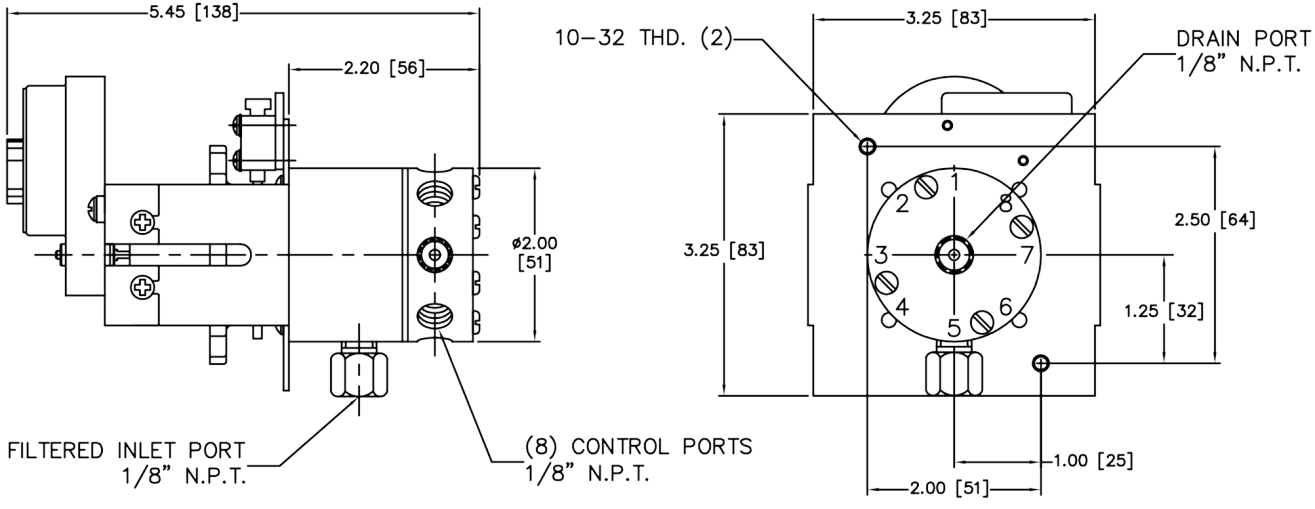
SERIES 51 STAGER ASSEMBLY

ASSEMBLY DRAWING

SCALE	DRAWN	DATE	DWG. NO.
3/8	MSM	19Feb01	1077770



NO.	DESCRIPTION		PART NO.	QTY.
1	STAGER ASSEMBLY		R051-___-___B	1
2	ENCLOSURE			1
		NEMA 4XFG	1077970	
3	PAN HEAD MACHINE SCREW 10–32 x 1/2" LONG		1075758 (510–BU)	2
4	LOCKWASHER (NO. 10)		1073588 (WAS–0005)	2

NOTE:

1. STAGERS CAN BE MANUALLY ADVANCED BY ROTATING THE CAM CLOCKWISE.
2. PIPING SCHEMATICS AVAILABLE UPON REQUEST.

INCHES [MILLIMETERS]

SERIES NO.	PORTS VENTED IN POSITION								DESCRIPTION
	A	B	C	D	E	F	G	H	
51–06	1,2(SVC)	–	4(BW)	–	5,6,7(BR)	6,7(SR)	1,7(FR)	1,2,8(BR REF)	TIMED BR. & REFILL SOFT.
51–07	1,2(SVC)	–	4(BW)	–	5,6,7(BR)	6,7(SR)	1,7(FR)	–	TIMED BRINE SOFTENER
51–09	1,3(SVC)	–	–	4(BW)	5,7(BR/SR)	–	1,7(FR)	1,8(REF)	TIMED REFILL SOFTENER
51–10	1,2,5,6(SVC)	–	5,6,7(BW1)	1,5,6,8(FR1)	–	–	1,2,3(BW2)	1,2,4,5(FR2)	2 TANK SEQ. FILTER
51–11	2,3(SVC)	–	1,4(DR)	–	4,6,7(AS)	4,7,8(BW)	–	1,2(FR)	FILTER WITH AIR SCOUR
51–12	1,8(SVC)	2(BW)	–	4,5(BR)	4,5(DSP)	5,6(REC)	4,8(FR)	–	BRINE RECYCLE SOFT.
51–86	1(BW)	2(BW)	3(BW)	4(BW)	5(BW)	6(BW)	7(SVC)	–	6 TANK SEQ. FILTER
51–87	1(BW)	2(BW)	3(BW)	4(BW)	5(BW)	6(BW)	7(BW)	8(SVC)	7 TANK SEQ. FILTER

REV.	DESCRIPTION	ECO	DATE	APVD
D	NUMBER CONVERSION	1588	13DEC02	

AQ Matic
Valve & Controls Company Inc.

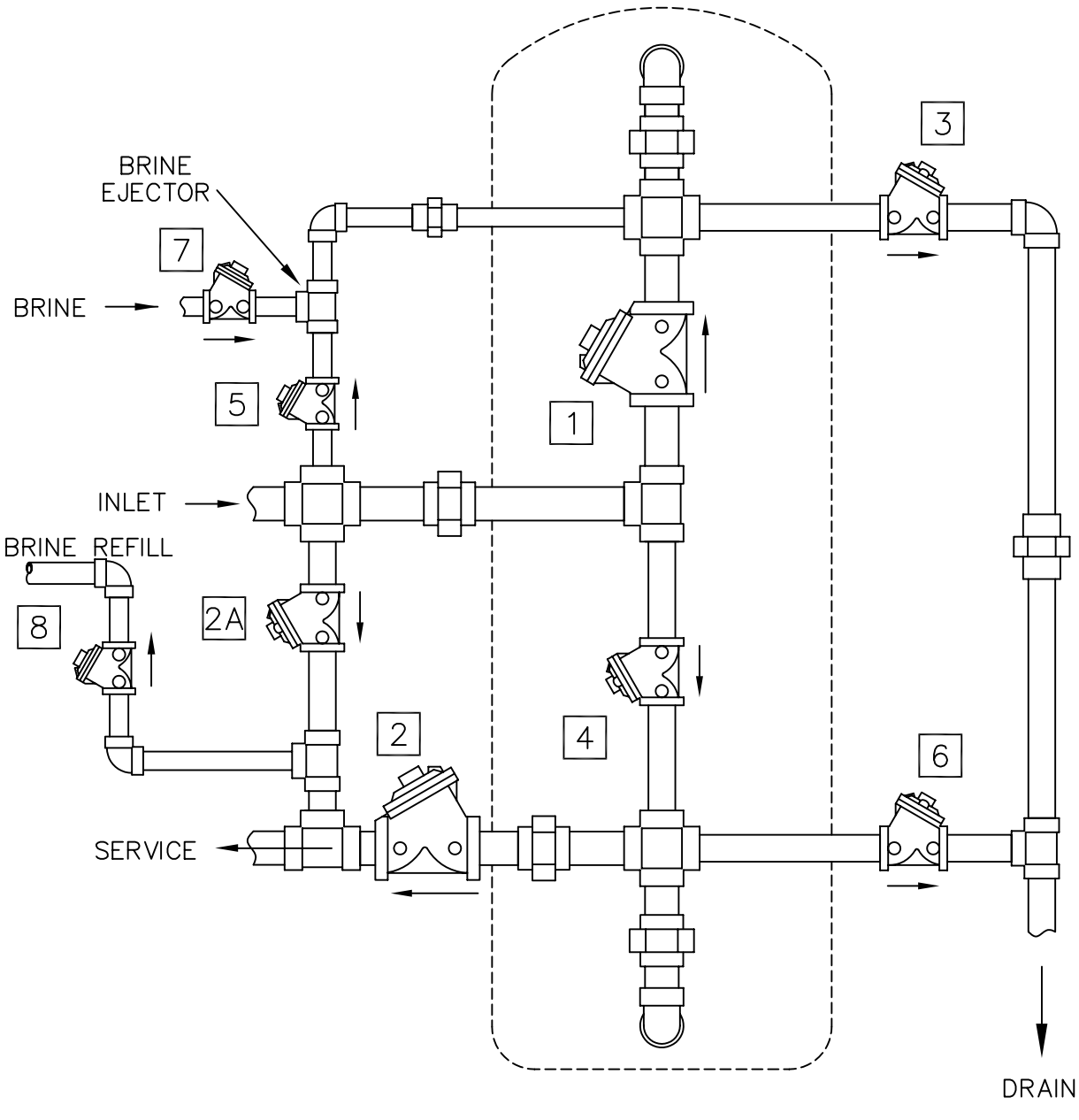
SERIES 51 STAGER
PROGRAMS AND MOUNTING DRAWING

SCALE	DRAWN	DATE	DWG. NO.
N/A	MSM	19Feb01	1077770

Form No. 1077803

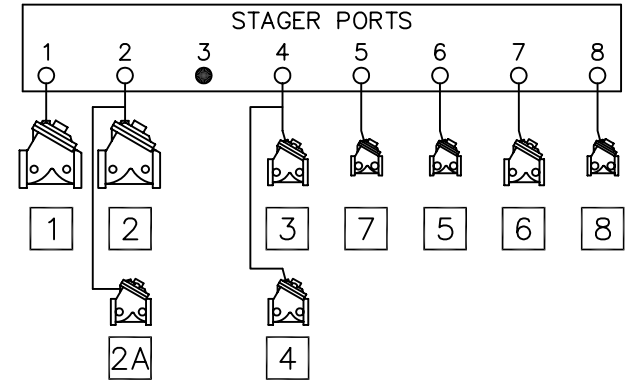
SERIES 51 PROGRAMS AND MOUNTING INFORMATION

6 POS. SOFTENER W/ TIMED BRINE & REFILL (51-06 STAGER)



NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,2	1,2
B				
C	1	BACKWASH	4	3,4,2A
D				
E	2	BRINE	5,6,7	5,6,7,2A
F	3	SLOW RINSE	6,7	5,6,2A
G	4	FAST RINSE	1,7	1,6,2A
H	5	BRINE REFILL	1,2,8	1,2,8

SERIES 51-06 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.
3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.
4. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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6 POSITION SOFTENER W/ TIMED BRINE & REFILL

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078279

6 POSITION SOFTENER W/ TIMED BRINE & REFILL

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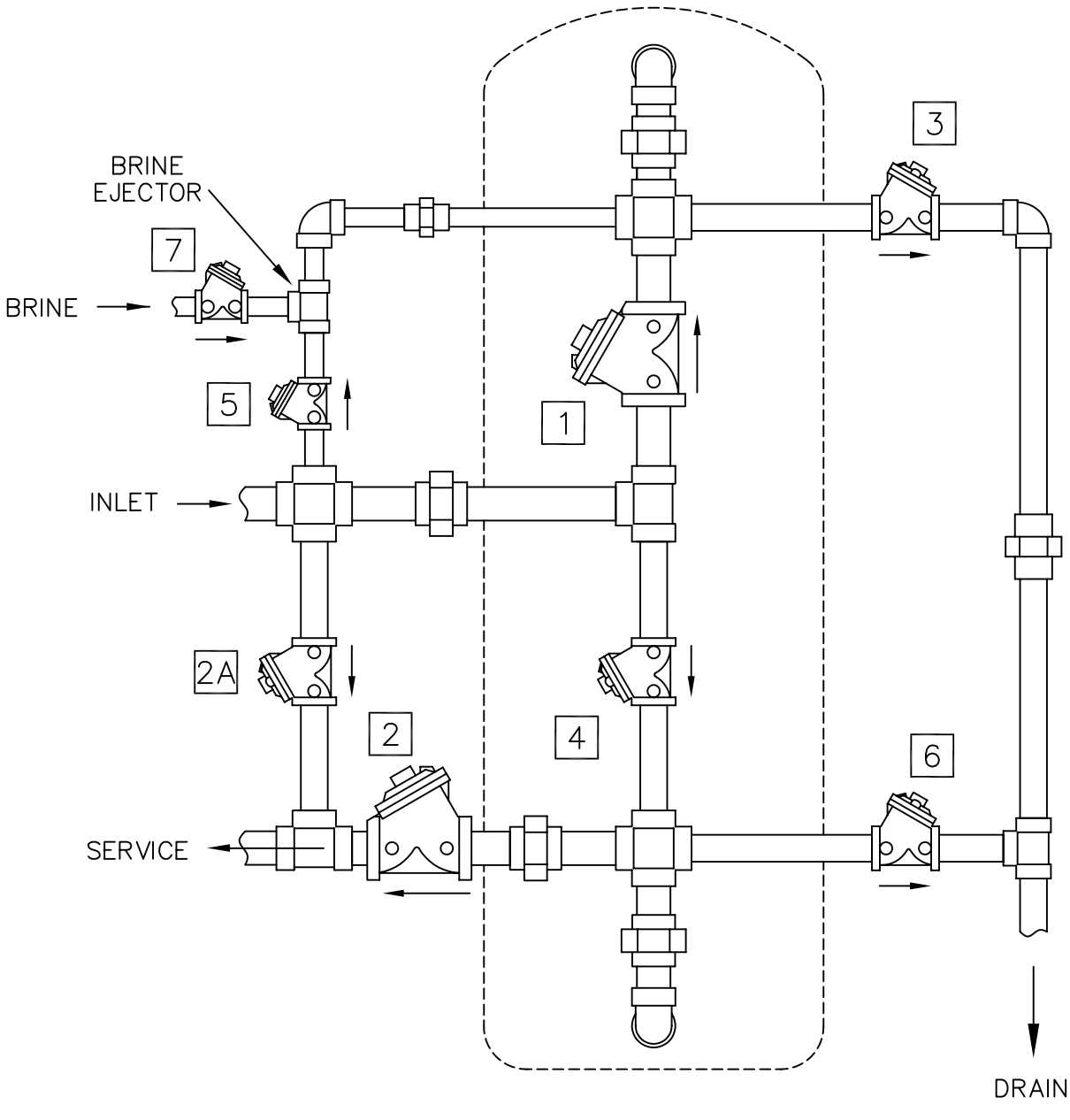
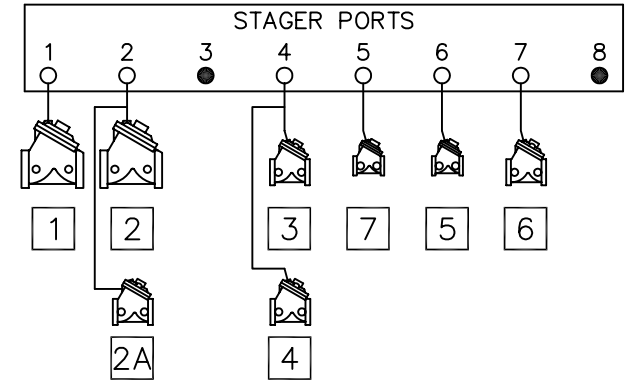
5 POS. SOFTENER W/ TIMED BRINE DRAW (51-07 STAGER)



5 POSITION SOFTENER W/ TIMED BRINE DRAW

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,2	1,2
B				
C	1	BACKWASH	4	3,4,2A
D				
E	2	BRINE	5,6,7	5,6,7,2A
F	3	SLOW RINSE	6,7	5,6,2A
G	4	FAST RINSE	1,7	1,6,2A
H				

SERIES 51-07 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.
3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.
4. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	MSM	31JUL01	

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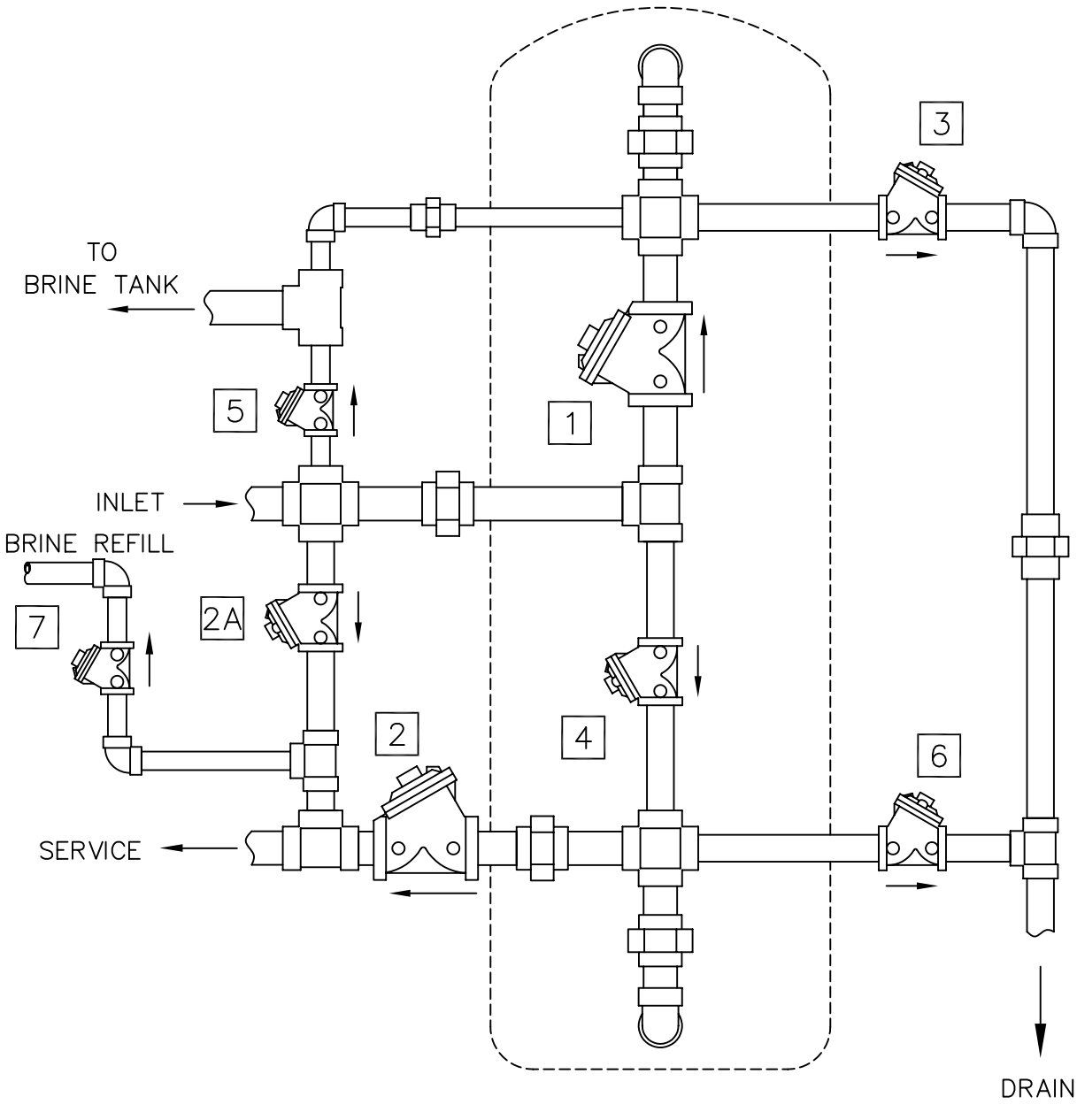
5 POSITION SOFTENER W/ TIMED BRINE DRAW

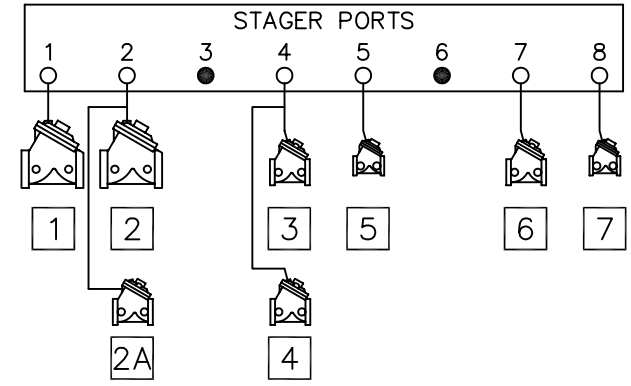
SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078280

5 POS. SOFTENER W/ TIMED BRINE REFILL (51-09 STAGER)



NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,2	1,2
B				
C				
D	1	BACKWASH	4	3,4,2A
E	2	BRINE/SLOW RINSE	5,7	5,6,2A
F				
G	3	FAST RINSE	1,7	1,6,2A
H	4	BRINE REFILL	1,2,8	1,2,7

SERIES 51-09 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.
3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.
4. BRINE VALVE AND DRAIN LINE FLOW CONTROLLER NOT SHOWN.

REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	CORRECTED STAGER	NONE	MSM	17JAN03	

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5 POSITION SOFTENER W/ TIMED BRINE REFILL

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	06JAN03	1078281

5 POSITION SOFTENER W/ TIMED BRINE REFILL

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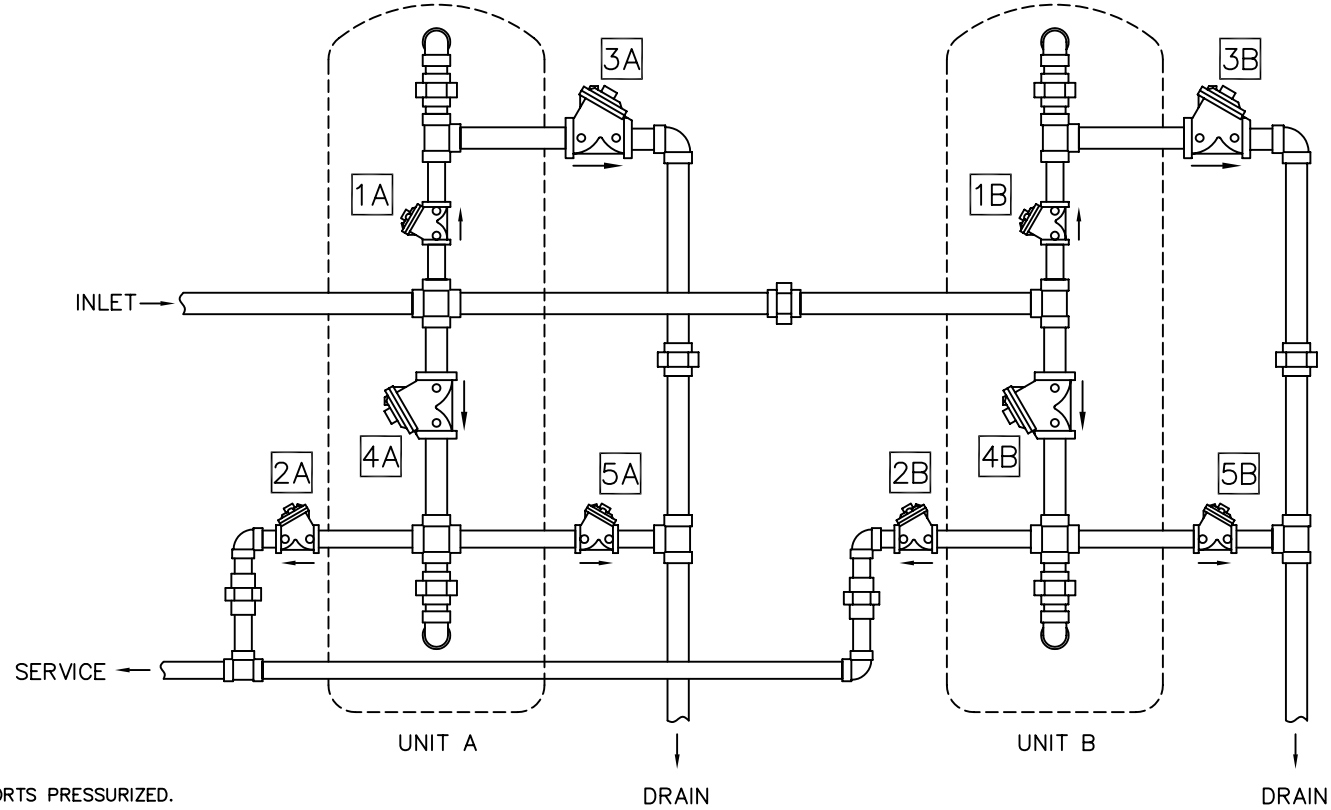
2 TANK SEQUENTIAL FILTER

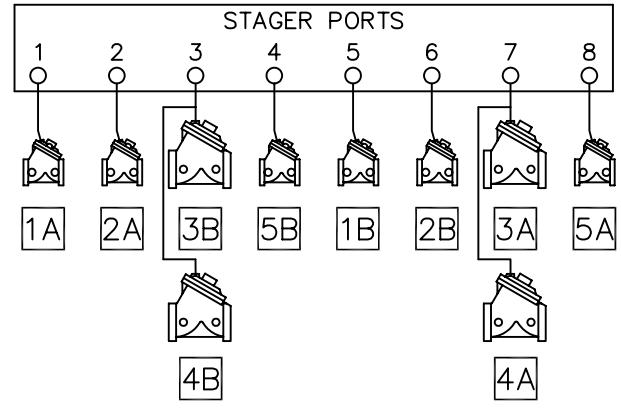


NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,2,5,6	1A,2A,1B,2B
B				
C	1	BACKWASH UNIT A	5,6,7	1B,2B,3A,4A
D	2	RINSE UNIT A	1,5,6,8	1A,1B,2B,5A
E				
F				
G	3	BACKWASH UNIT B	1,2,3	1A,2A,3B,4B
H	4	RINSE UNIT B	1,2,4,5	1A,2A,5B,1B

SERIES 51-10 STAGER



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REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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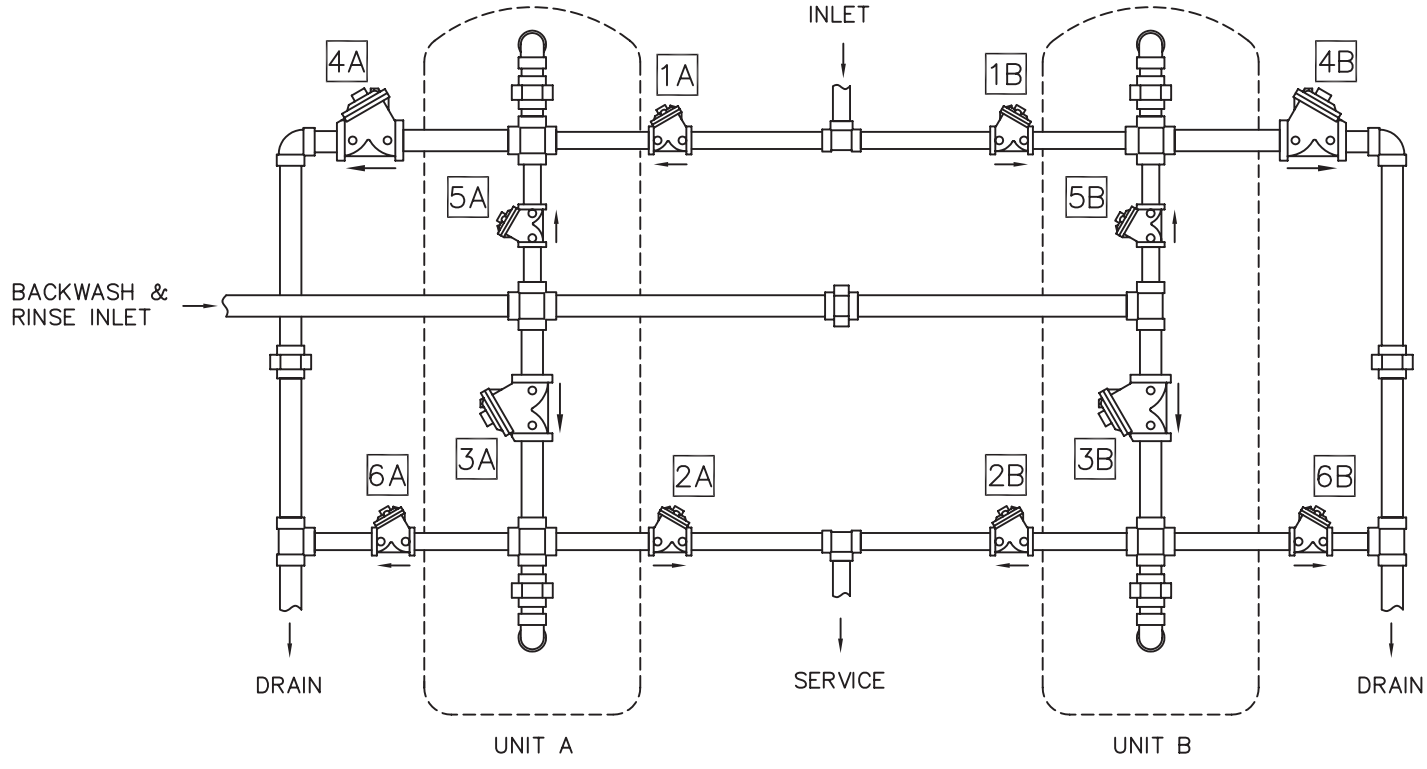
2 TANK SEQUENTIAL FILTER

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078282

2 TANK SEQUENTIAL FILTER (51-10 STAGER)

2 TANK SEQUENTIAL FILTER
SEPARATE SOURCE FOR BACKWASH & RINSE SUPPLY

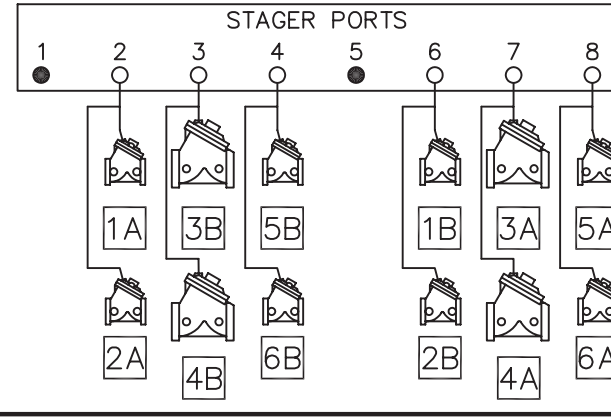


NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	2,6	1A,2A,1B,2B
B				
C	1	BACKWASH UNIT A	6,7	1B,2B,3A,4A
D	2	RINSE UNIT A	6,8	1B,2B,5A,6A
E				
F				
G	3	BACKWASH UNIT B	2,3	1A,2A,3B,4B
H	4	RINSE UNIT B	2,4	1A,2A,5B,6B

SERIES 51-10 STAGER



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REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	VALVE 5B WAS CALLED 1B	NONE	MSM	23NOV04	

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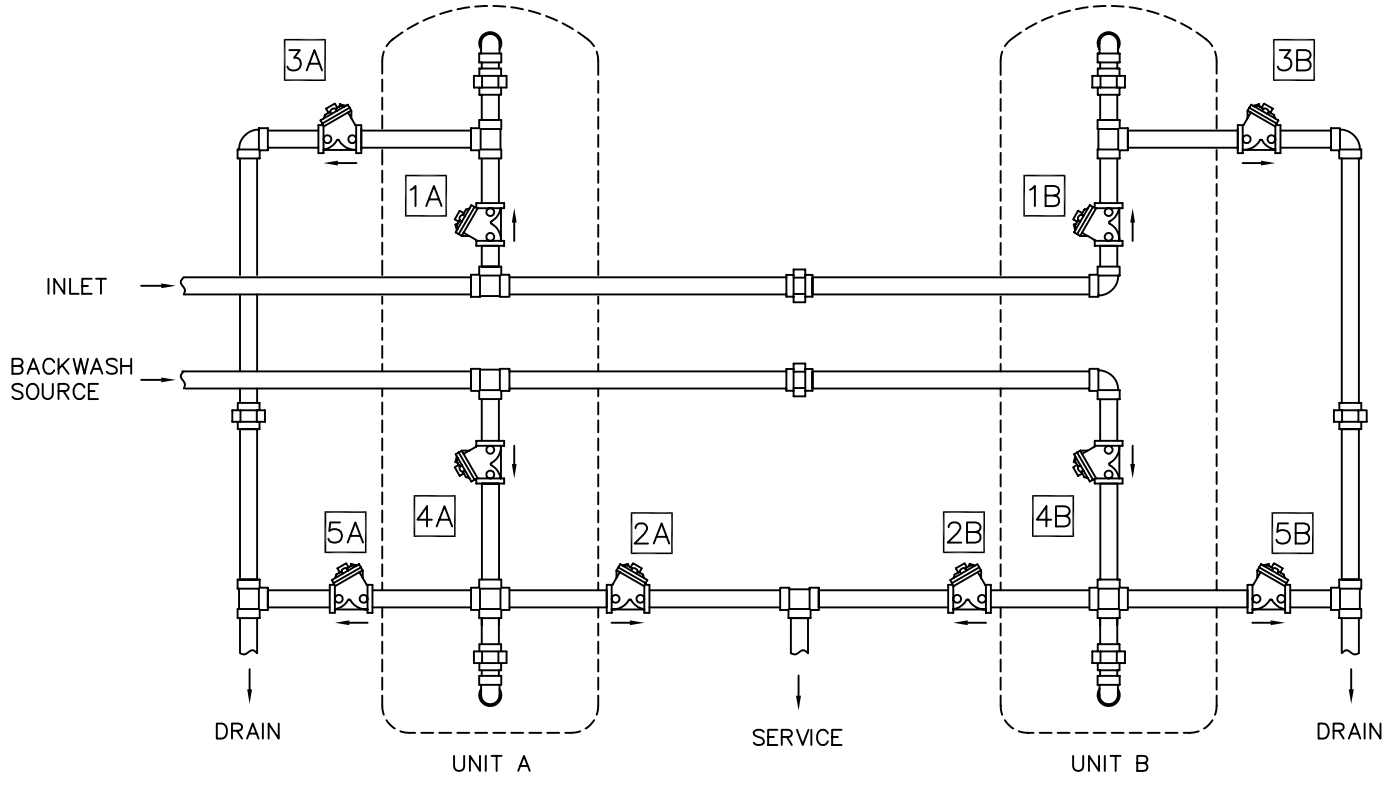
2 TANK SEQUENTIAL FILTER WITH SEPARATE SOURCE FOR BACKWASH & RINSE

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078283

2 TANK SEQUENTIAL FILTER W/ SEPARATE SOURCE FOR BACKWASH & RINSE (51-10 STAGER)

2 TANK SEQUENTIAL FILTER
SEPERATE BACKWASH SOURCE

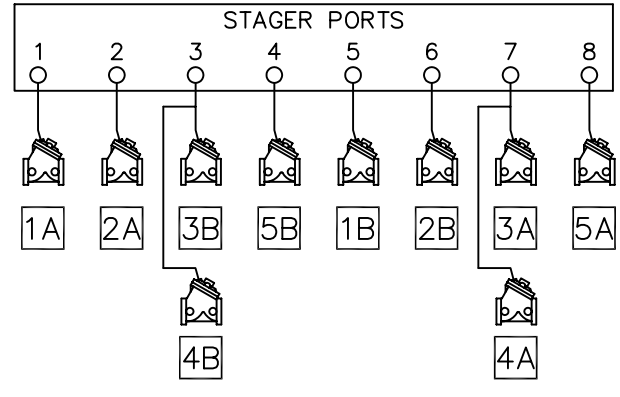


NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,2,5,6	1A,2A,1B,2B
B				
C	1	BACKWASH UNIT A	5,6,7	1B,2B,3A,4A
D	2	RINSE UNIT A	1,5,6,8	1A,1B,2B,5A
E				
F				
G	3	BACKWASH UNIT B	1,2,3	1A,2A,3B,4B
H	4	RINSE UNIT B	1,2,4,5	1A,2A,5B,1B

SERIES 51-10 STAGER



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REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	ON PIPING DRAWING, VALVE 1A WAS SHOWN AS VALVE 5A	NONE	MSM	04JUN03	
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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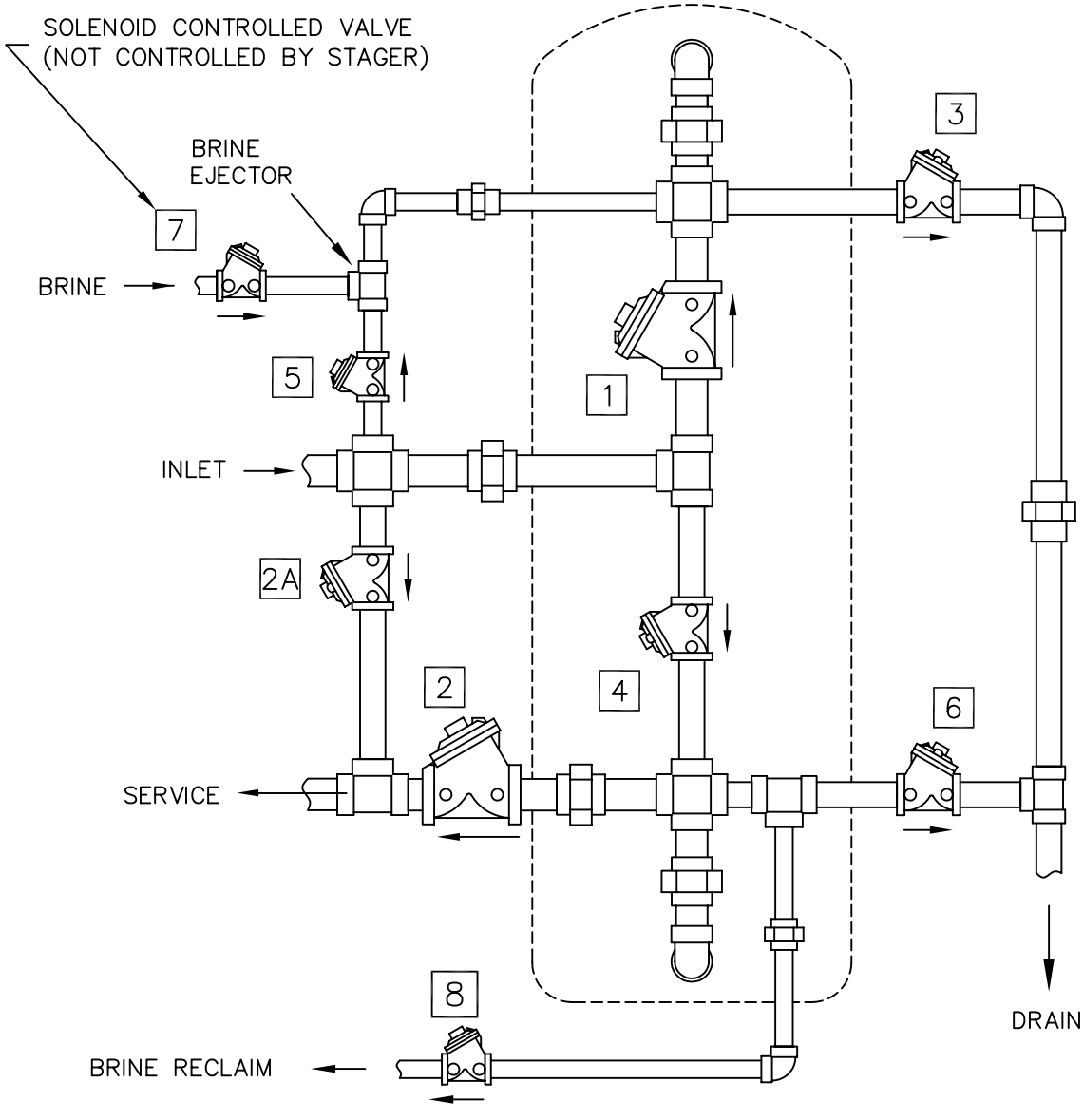
2 TANK SEQUENTIAL FILTER W/ SEPARATE BACKWASH SOURCE

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078284

2 TANK SEQ. FILTER W/SEP. BACKWASH SOURCE (51-10 STAGER)

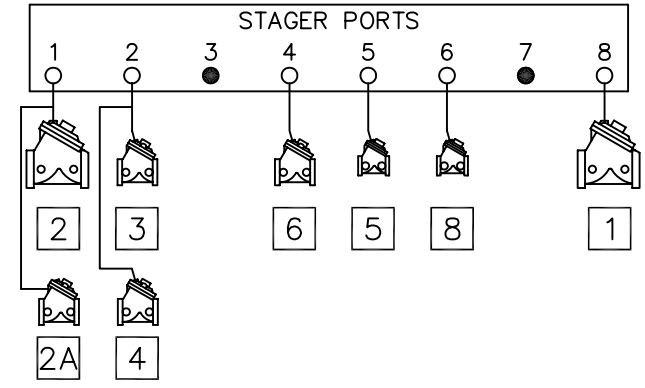
SOFTENER W/ BRINE RECLAIM (51-12 STAGER)



SOFTENER W/ BRINE RECLAIM

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,8	1,2
B	1	BACKWASH	2	3,4,2A
C				
D	2	BRINE	4,5	5,6,2A,(7)
E	3	DISPLACE	4,5	5,6,2A
F	4	RECLAIM BRINE	5,6	5,8,2A
G	5	FAST RINSE	4,8	1,6,2A
H				

SERIES 51-12 STAGER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.
3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.
4. DRAIN LINE FLOW CONTROLLER NOT SHOWN.
5. VALVE NO. 7 SOLENOID CONTROLLED (NOT CONTROLLED BY STAGER).

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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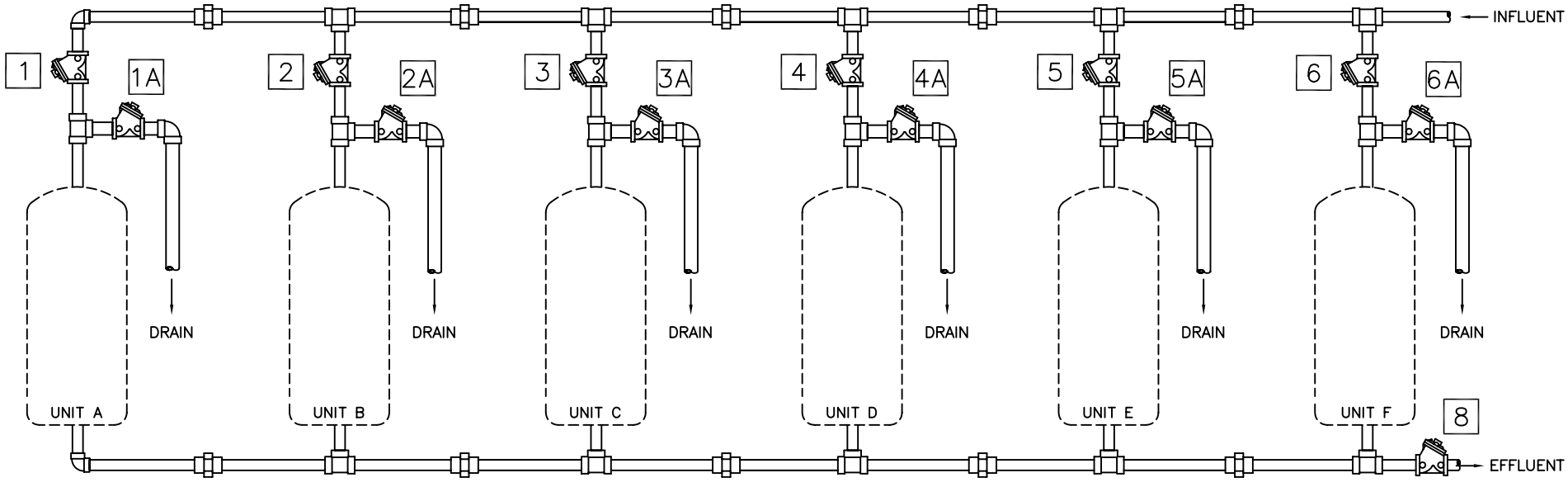
SOFTENER W/ BRINE RECLAIM

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078285

6 TANK SEQUENTIAL FILTER (51-86 STAGER)

6 TANK SEQUENTIAL FILTER BACKWASH ONLY



NOTE:

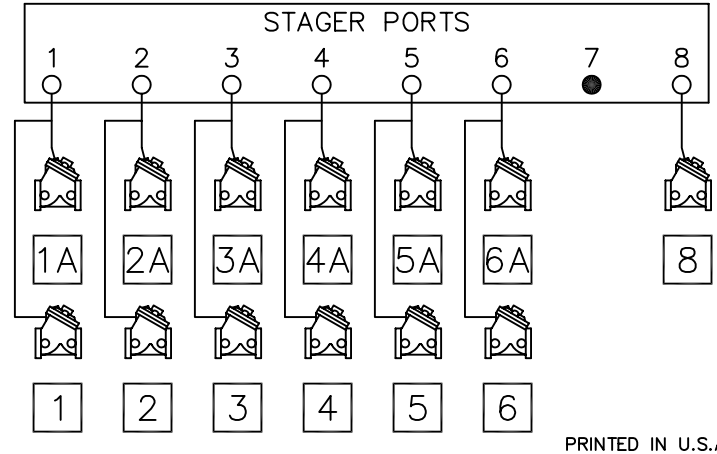
1. ALL OTHER PORTS PRESSURIZED.

2. VALVES 1A,2A,3A,4A,5A,6A,8 ARE NORMALLY OPEN PRESSURE TO CLOSE.

3. VALVES 1,2,3,4,5,6 ARE NORMALLY CLOSED, PRESSURE TO OPEN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	8	SERVICE	8	1,2,3,4,5,6,8
B	1	BACKWASH UNIT A	1	1A,2,3,4,5,6
C	2	BACKWASH UNIT B	2	1,2A,3,4,5,6
D	3	BACKWASH UNIT C	3	1,2,3A,4,5,6
E	4	BACKWASH UNIT D	4	1,2,3,4A,5,6
F	5	BACKWASH UNIT E	5	1,2,3,4,5A,6
G	6	BACKWASH UNIT F	6	1,2,3,4,5,6A
H				

SERIES 51–86 STAGER



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REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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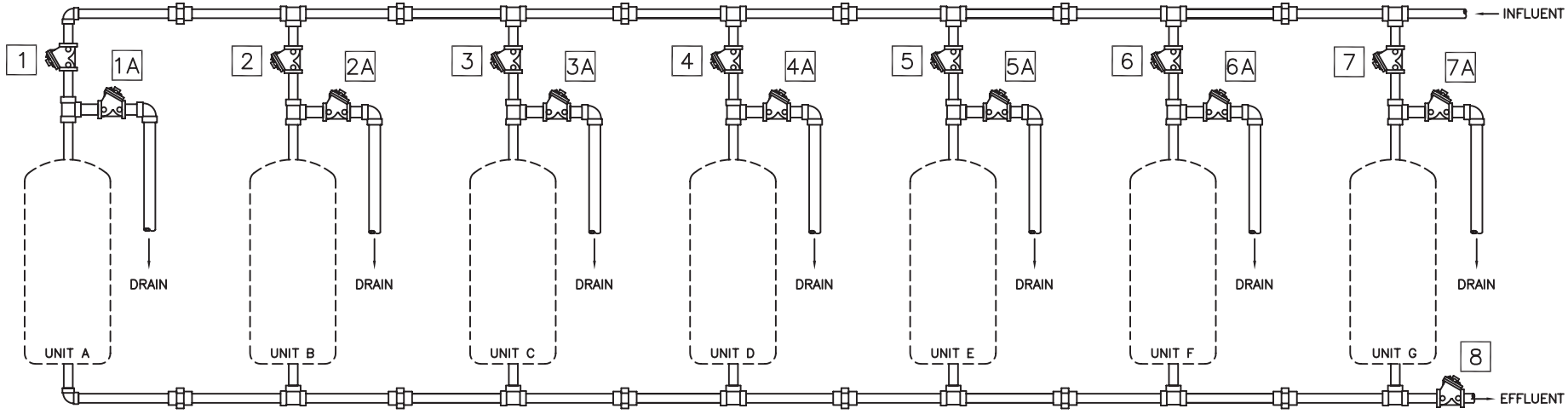
6 TANK SEQUENTIAL FILTER BACKWASH ONLY

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078286

7 TANK SEQUENTIAL FILTER BACKWASH ONLY



NOTE:

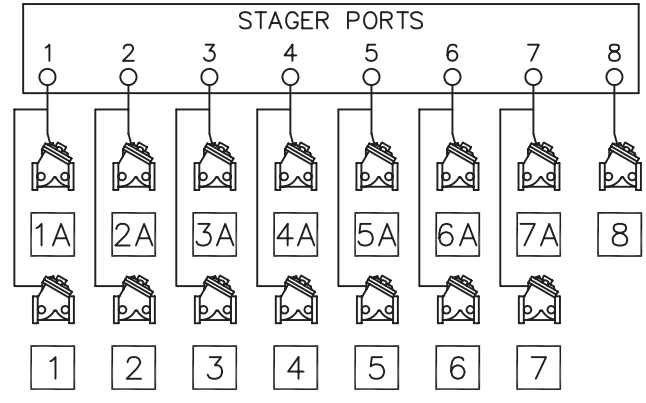
1. ALL OTHER PORTS PRESSURIZED.

2. VALVES 1A,2A,3A,4A,5A,6A,7A,8 ARE NORMALLY OPEN PRESSURE TO CLOSE.

3. VALVES 1,2,3,4,5,6,7 ARE NORMALLY CLOSED, PRESSURE TO OPEN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	8	SERVICE	8	1,2,3,4,5,6,7,8
B	1	BACKWASH UNIT A	1	1A,2,3,4,5,6,7
C	2	BACKWASH UNIT B	2	1,2A,3,4,5,6,7
D	3	BACKWASH UNIT C	3	1,2,3A,4,5,6,7
E	4	BACKWASH UNIT D	4	1,2,3,4A,5,6,7
F	5	BACKWASH UNIT E	5	1,2,3,4,5A,6,7
G	6	BACKWASH UNIT F	6	1,2,3,4,5,6A,7
H	7	BACKWASH UNIT G	7	1,2,3,4,5,6,7A

SERIES 51-87 STAGER



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REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	MOVED SVC POS. TO NOTCH "A"	NONE	MSM	07SEP04	
A	INITIAL RELEASE	NONE	JWB	31JUL01	VKP

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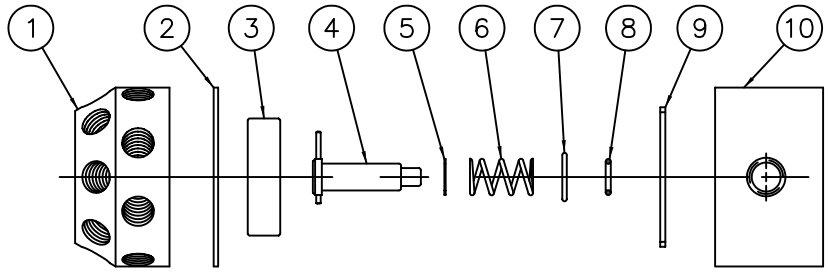
7 TANK SEQUENTIAL FILTER BACKWASH ONLY

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078287

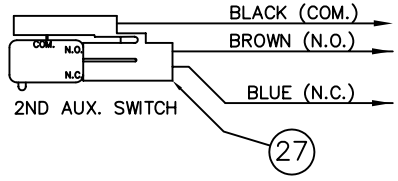
7 TANK SEQUENTIAL FILTER (51-87 STAGER)

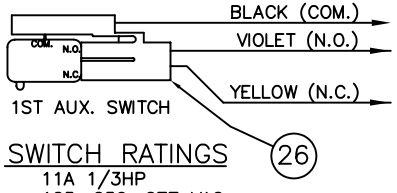
PILOT CONTROL ASSEMBLY



OPTIONAL AUX. SWITCHES

MAXIMUM OF TWO (2)

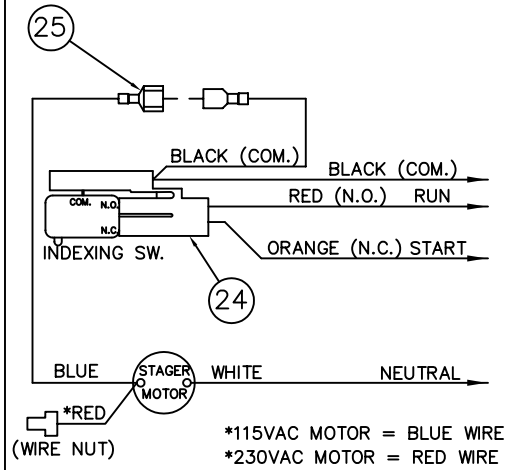




SWITCH RATINGS

11A 1/3HP
125, 250, 277 VAC
1/2A 125 VDC
1/4A 250 VDC
4A 125 VAC L

STANDARD WIRING

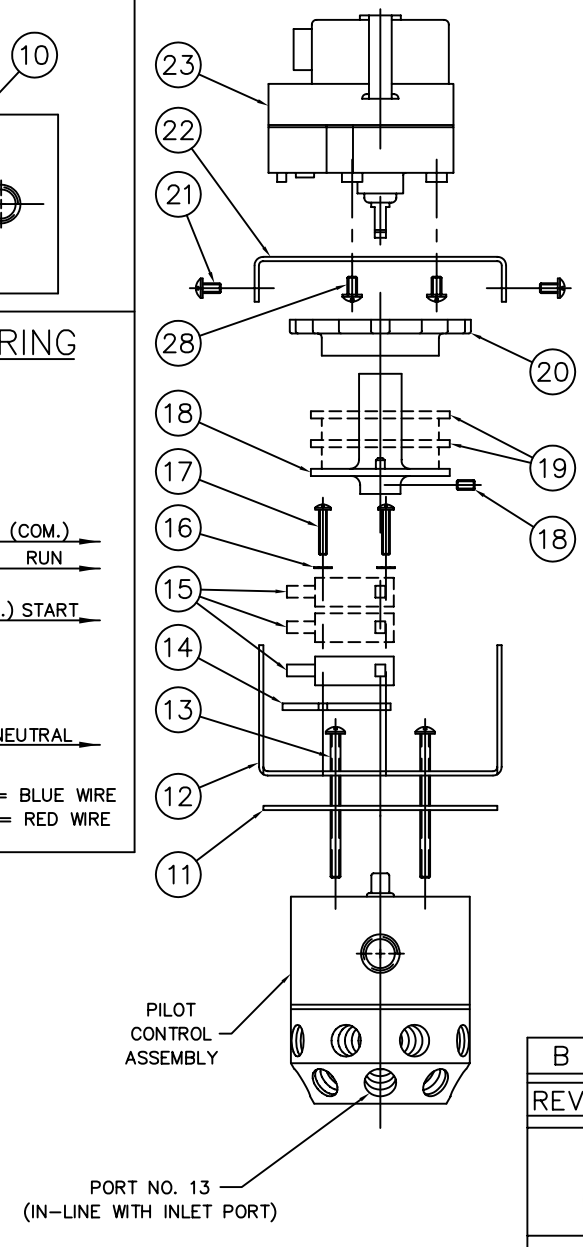


*115VAC MOTOR = BLUE WIRE
*230VAC MOTOR = RED WIRE

INTERNAL PARTS KITS

STAGER PROGRAM	INTERNAL PARTS KITS STD. PROGRAMS	INTERNAL PARTS KITS INVERTED PROGRAMS
58–00	1075411 (58–IA–00)	
58–01	1075412 (58–IA–01)	
58–02	1075413 (58–IA–02)	
58–03	1075414 (58–IA–03)	
58–07	1075415 (58–IA–07)	
58–10	1075416 (58–IA–10)	
58–TA	1075409 (58–IA–TA)	1075410 (58–IA–TAI)
58–TB	1081806 (58–IA–TB)	
58–SP	1075408 (58–IA–SP)	SPECIFY DWG. NO. WHEN ORDERING THESE PARTS

* INTERNAL PARTS KITS INCLUDE ITEM NOS. 2, 3, 5, 6, 7, 8 & 9 ALONG WITH A SMALL PACKET OF SILICON COMPOUND



NO.	DESCRIPTION		PART NO.	QTY.
1	BACKPLATE		PER PROGRAM	1
2	BACKPLATE GASKET (SEE NOTE 3)		1084170 (58–KZ)	1
3	STEMPLATE (SEE NOTE 3)		PER PROGRAM	1
4	STEMSHAFT		1070439	1
5	WASHER (SEE NOTE 3)		1075395 (58–AH)	1
6	SPRING (SEE NOTE 3)		1075424 (58–S)	1
7	INSERT (SEE NOTE 3)		1075406 (58–DA)	1
8	O–RING (SEE NOTE 3)		1071668 (ORB–012)	1
9	O–RING (SEE NOTE 3)		1075425 (58–T)	1
10	BONNET		1075404 (58–B)	1
11	MOUNTING PLATE GASKET		1075407 (58–DC)	1
12	BOTTOM MOUNTING BRACKET		1070437	1
13	PAN HD. MACH. SCR. (8–32 X 2")		1072378 (SCS–0087)	4
14	INSULATOR		1075455 (58B019)	1
15	SWITCH		1075499 (58013)	1–3
16	LOCKWASHER (NO. 4)		1073593 (WAS–0015)	2
17	PAN HD. MACH. SCREW (4–40 THREAD)	1 SWITCH	1072369 (SCS–0064)	2
		2 SWITCHES	1075757 (SCS–0065)	
		3 SWITCHES	1072389 (SCS–0151)	
18	INDEXING CAM (SEE NOTE 1) (CAM INCLUDES 6–32 SET SCREW)		1076243	1
19	AUXILIARY CAM (SEE NOTE 2)		1075451 (58B017)	0–2
20	THUMB WHEEL		1075454 (58B018)	1
21	TAPTITE SCREW (6–32 X 1/4")		1075746	4
22	MOTOR MOUNTING BRACKET		1070436	1
23	MOTOR	115VAC 60HZ	1075434 (58B000)	1
		230VAC 50/60HZ		
		24VAC 50/60HZ	1075438 (58B004)	
		12VAC 50/60HZ	1075779	
24	WIRE HARNESS (STANDARD)		1075464 (58B030)	1
25	MALE CONNECTOR		1075498 (58012)	1
26	WIRE HARNESS (1ST AUX. SWITCH)		1075501 (58015)	1
27	WIRE HARNESS (2ND AUX. SWITCH)		1075502 (58016)	1
28	SCREW (M3 X 0.5 X 6)		1072396 (SCS–0167)	3

NOTES:
1. STAGER PROGRAM MUST BE SPECIFIED WHEN ORDERING THIS PART.
2. MUST SPECIFY IN WHICH POSITION(S) SWITCH OUTPUT(S) ARE REQUIRED.
3. SUPPLIED AS A KIT ONLY.

REV.	DESCRIPTION	ECO	DATE	APVD
B	NUMBER CONVERSION	1588	20DEC02	

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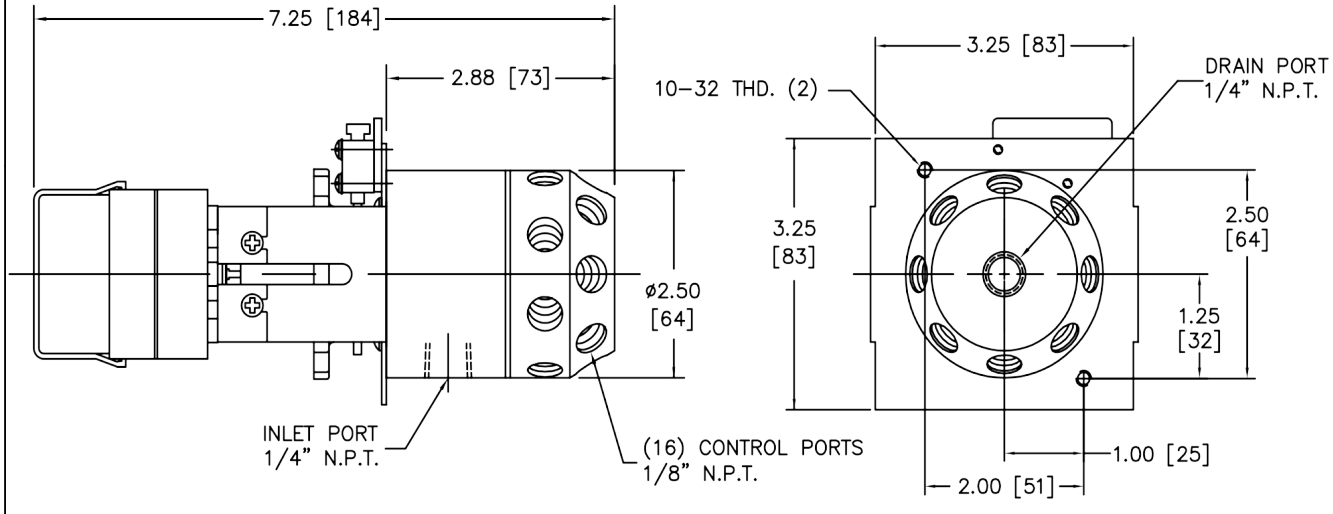
SERIES 58 STAGER ASSEMBLY DRAWING

SCALE	DRAWN	DATE	DWG. NO.
3/8	MSM	03May01	1077898

Form No. 1077897

SERIES 58 STAGER ASSEMBLY



NO.	DESCRIPTION		PART NO.	QTY.
1	STAGER ASSEMBLY		R058-___-___C	1
2	ENCLOSURE	NEMA 1	1075422 (58-R)	1
		NEMA 4	1075423 (58-RA)	
		NEMA 4XFG	1073665 (ZENC0409)	
3	PAN HEAD MACHINE SCREW 10–32 x 1/2" LONG		1075758 (510-BU)	2
4	LOCKWASHER (NO. 10)		1073588 (WAS-0005)	2

NOTE:

1. STAGERS CAN BE MANUALLY ADVANCED BY ROTATING THE CAM CLOCKWISE.
2. PIPING SCHEMATICS AVAILABLE UPON REQUEST.

INCHES [MILLIMETERS]

SERIES NO.	DESCRIPTION
58–00	2 COLUMN DEIONIZER
58–01	FILTER (DOUBLE ACTING VALVES)
58–02	2 COLUMN DEIONIZER (CATION OUTLET VALVE)
58–03	3 TANK SEQUENTIAL FILTER
58–04	4 TANK SEQUENTIAL FILTER
58–07	MIXED BED DEIONIZER (SIMULTANEOUS REGEN.)
58–10	MIXED BED DEIONIZER
58–TA	2 TANK ALTERNATOR
58–TB	2 TANK ALTERNATOR WITH TIMED BRINE
58–SP	CUSTOM PROGRAM

Form No. 1077897

REV.	DESCRIPTION	ECO	DATE	APVD
D	NUMBER CONVERSION	1588	20DEC02	

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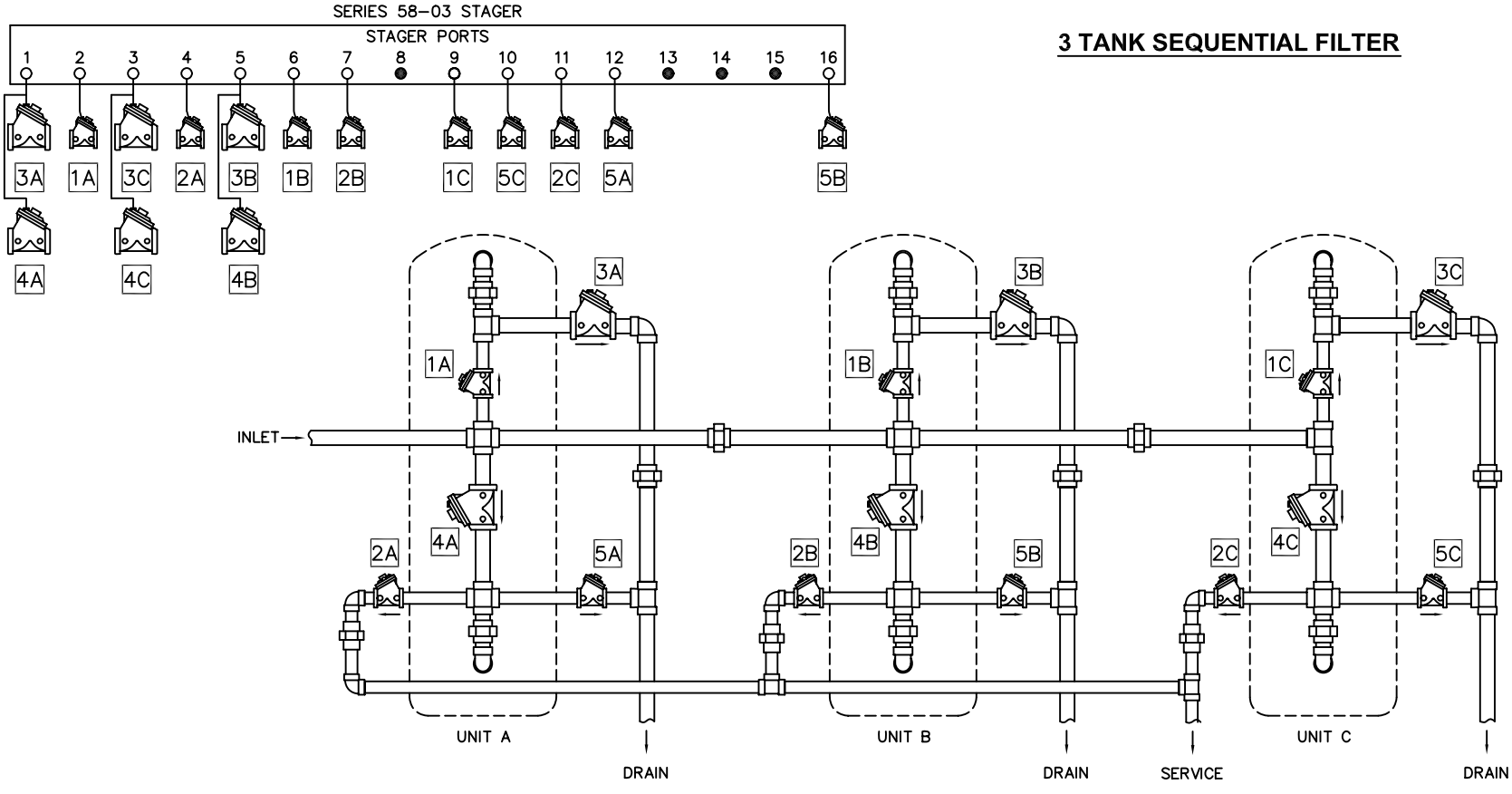
SERIES 58 STAGER
PROGRAMS AND MOUNTING DRAWING

SCALE	DRAWN	DATE	DWG. NO.
N/A	MSM	04May01	1077898

SERIES 58 PROGRAMS AND MOUNTING INFORMATION

3 TANK SEQUENTIAL FILTER (58-03)

3 TANK SEQUENTIAL FILTER



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

PRINTED IN U.S.A.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	2,4,6,7,9,11	1A,2A,1B,2B,1C,2C	J				
B					K				
C	1	BACKWASH UNIT A	1,6,7,9,11	3A,4A,1B,2B,1C,2C	L	5	BACKWASH UNIT C	2,3,4,6,7	1A,2A,1B,2B,3C,4C
D	2	RINSE UNIT A	2,6,7,9,11,12	1A,5A,1B,2B,1C,2C	M	6	RINSE UNIT C	2,4,6,7,9,10	1A,2A,1B,2B,1C,5C
E					N				
F					P				
G	3	BACKWASH UNIT B	2,4,5,9,11	1A,2A,3B,4B,1C,2C	Q				
H	4	RINSE UNIT B	2,4,6,9,11,16	1A,2A,1B,5B,1C,2C	R				

REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	MOVED SVC OUTLET	NONE	MSM	17JAN03	

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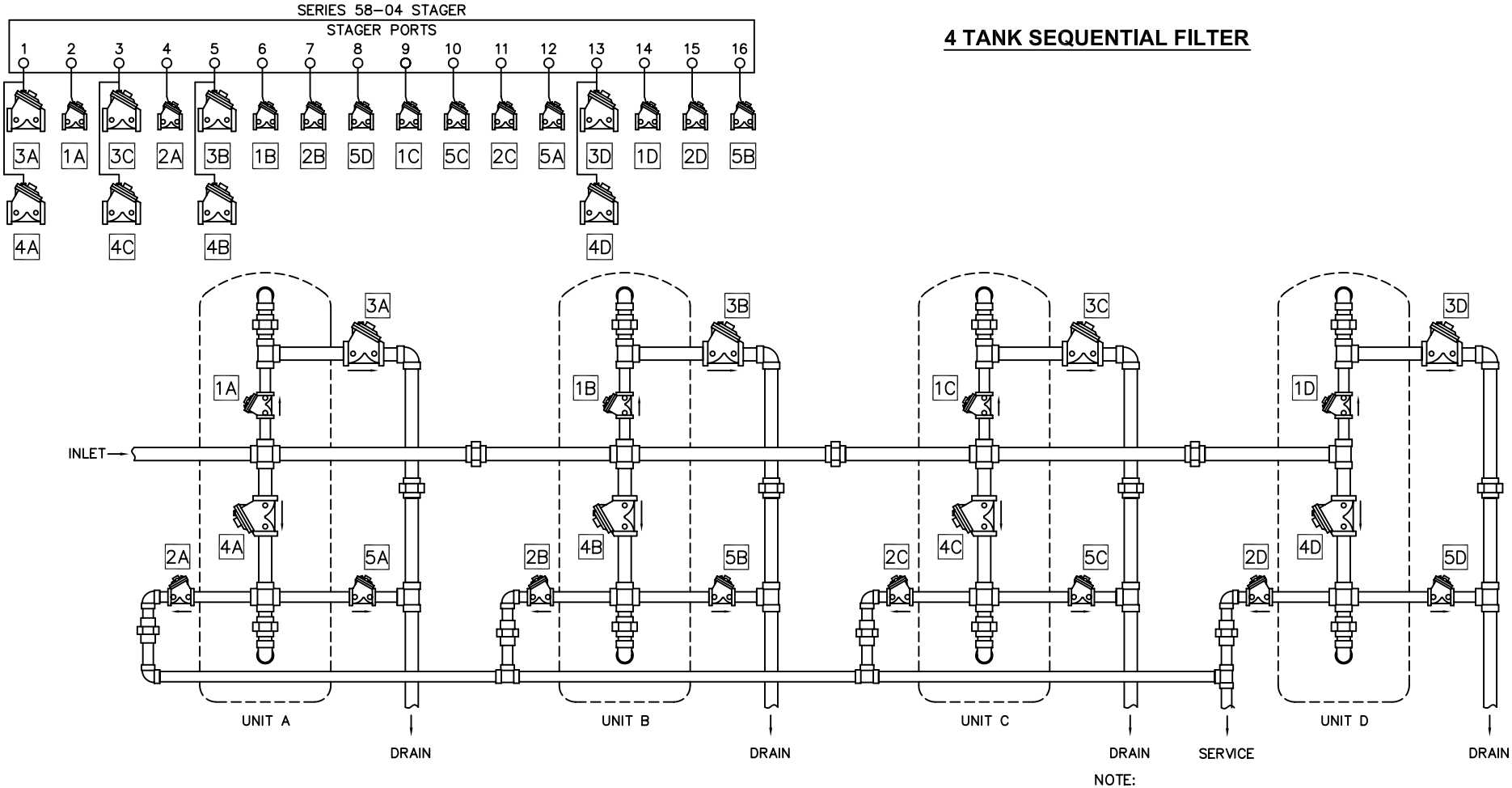
3 TANK SEQUENTIAL FILTER

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078288

4 TANK SEQUENTIAL FILTER (58-04 STAGER)

4 TANK SEQUENTIAL FILTER



NOTE:
1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

PRINTED IN U.S.A.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	2,4,6,7,9,11	1A,2A,1B,2B,1C,2C,1D,2D	J				
B					K				
C	1	BACKWASH UNIT A	1,6,7,9,11	3A,4A,1B,2B,1C,2C,1D,2D	L	5	BACKWASH UNIT C	2,3,4,6,7	1A,3C,4C,2A,1B,2B,1D,2D
D	2	RINSE UNIT A	2,6,7,9,11,12	1A,1B,2B,1C,2C,5A,1D,2D	M	6	RINSE UNIT C	2,4,6,7,9,10	1A,2A,1B,2B,1C,5C,1D,2D
E					N				
F					P				
G	3	BACKWASH UNIT B	2,4,5,9,11	1A,2A,3B,4B,1C,2C,1D,2D	Q	7	BACKWASH UNIT D	2,4,6,7,9,11,13	1A,2A,1B,2B,1C,2C,(3D,4D)
H	4	RINSE UNIT B	2,4,6,9,11,16	1A,2A,1B,1C,2C,1D,2D,5B	R	8	RINSE UNIT D	2,4,6,7,8,9,11,14	1A,2A,1B,2B,5D,1C,2C,1D

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	MSM	31JUL01	

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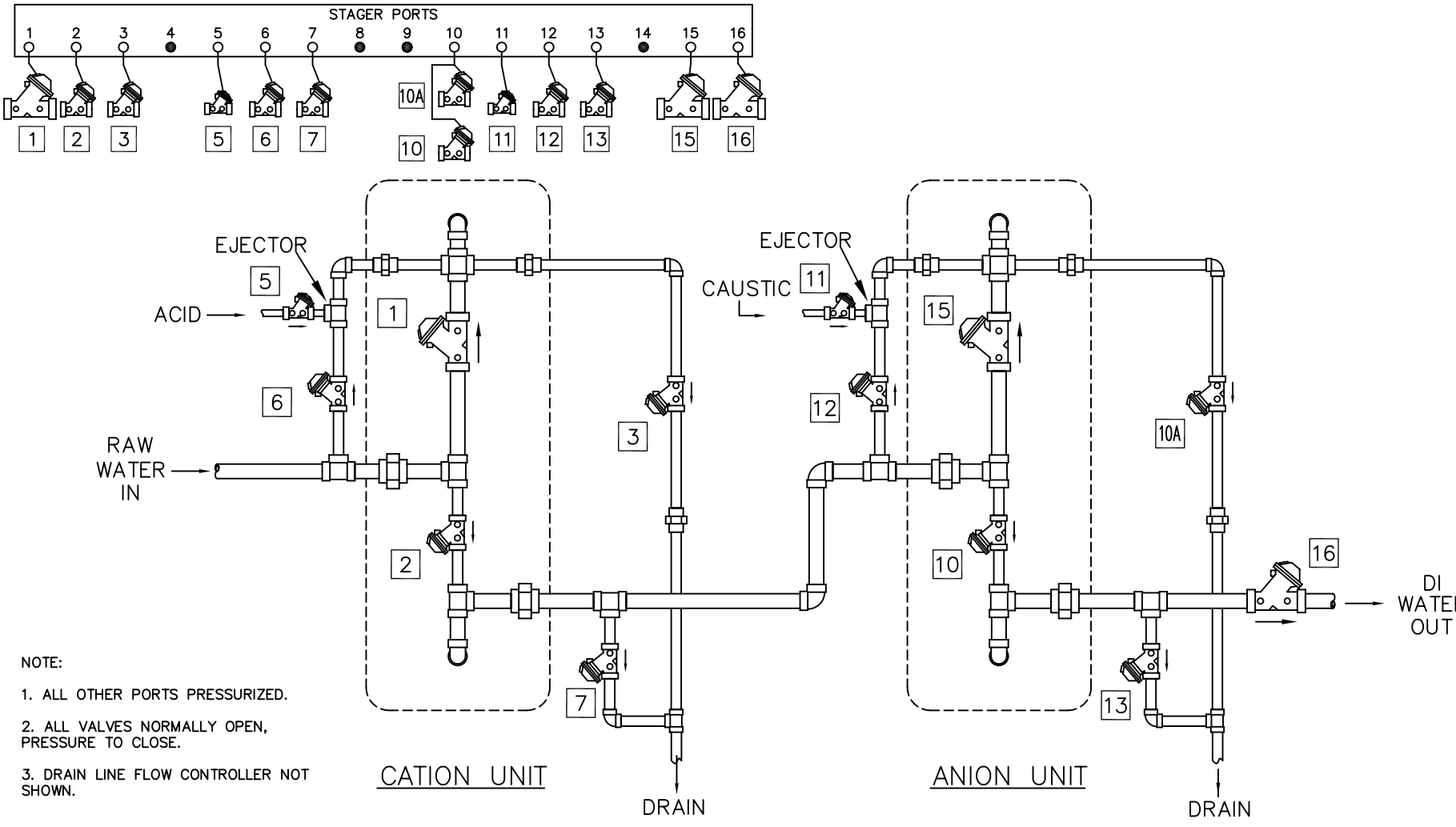
4 TANK SEQUENTIAL FILTER

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078289

TWO BED DE-IONIZER SYSTEM (58-00 STAGER)



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

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SERIES 58B-00 STAGER PROGRAM

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,15,16	1,15,16	J	4	FAST RINSE	1,7	1,7
B					K	5	ANION BACKWASH	1,10	1,10,10A
C					L				
D	1	CATION BACKWASH	2,3	2,3	M				
E					N	6	CAUSTIC INJECT	1,11,12,13	1,11,12,13
F					P	7	SLOW RINSE	1,12,13	1,12,13
G	2	ACID INJECT	5,6,7	5,6,7	Q	8	FAST RINSE	1,13,15	1,13,15
H	3	SLOW RINSE	6,7	6,7	R				

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	MSM	31JUL01	

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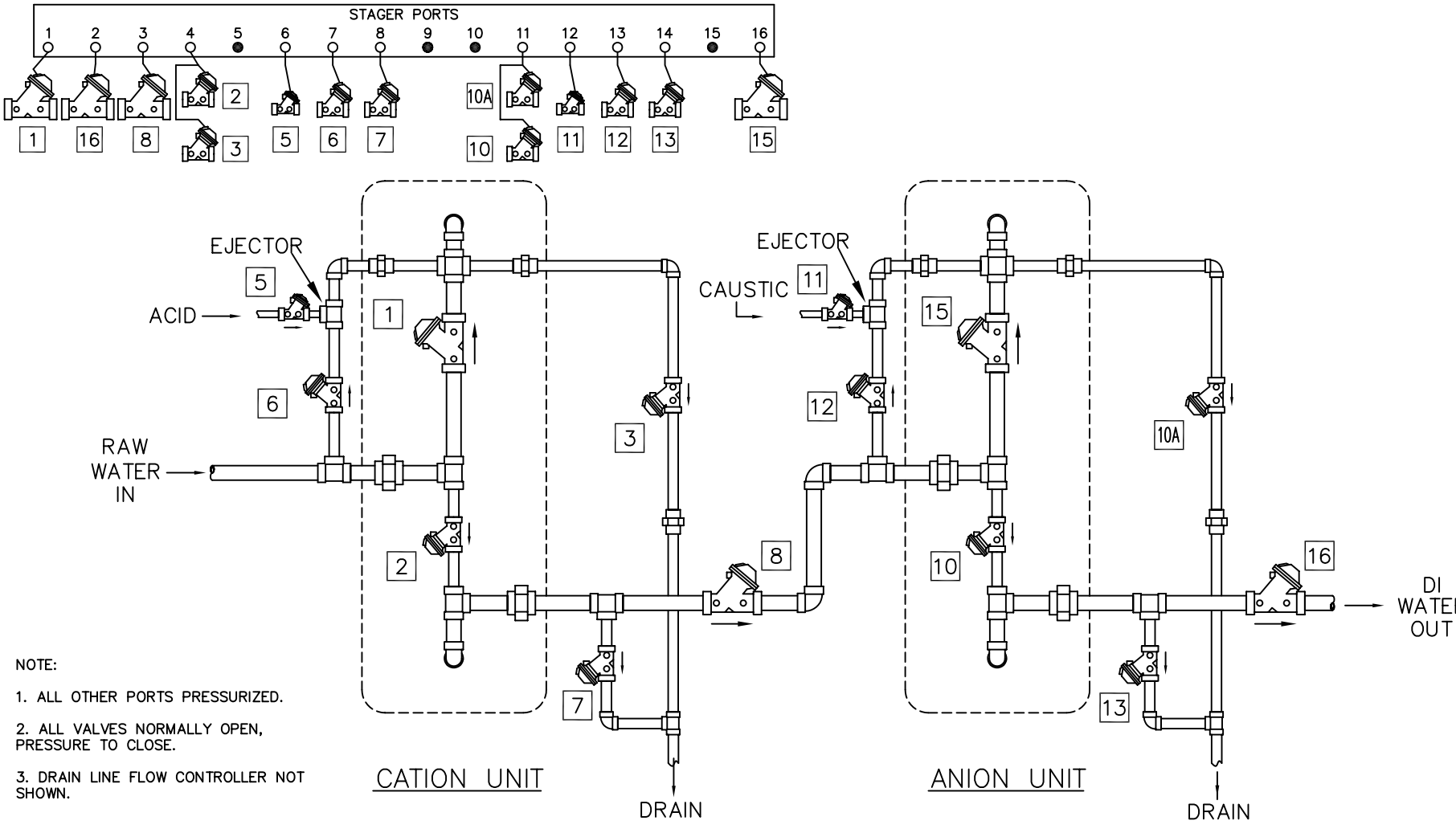
TWO BED DE-IONIZER SYSTEM

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078290

TWO BED DE-IONIZER W/ DE-GASIFIER (58-02 STAGER)



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

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SERIES 58–02 STAGER PROGRAM

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,2,3,16	1,8,15,16	J	4	FAST RINSE	1,8	1,7
B					K	5	ANION BACKWASH	1,3,11	1,8,10,10A
C					L				
D	1	CATION BACKWASH	4	2,3	M				
E					N	6	CAUSTIC INJECT	1,3,12,13,14	1,8,11,12,13
F					P	7	SLOW RINSE	1,3,13,14	1,8,12,13
G	2	ACID INJECT	6,7,8	5,6,7	Q	8	FAST RINSE	1,3,14,16	1,8,13,15
H	3	SLOW RINSE	7,8	6,7	R				

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	MSM	31JUL01	

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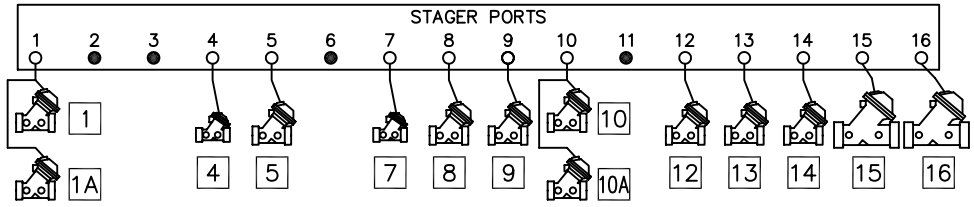
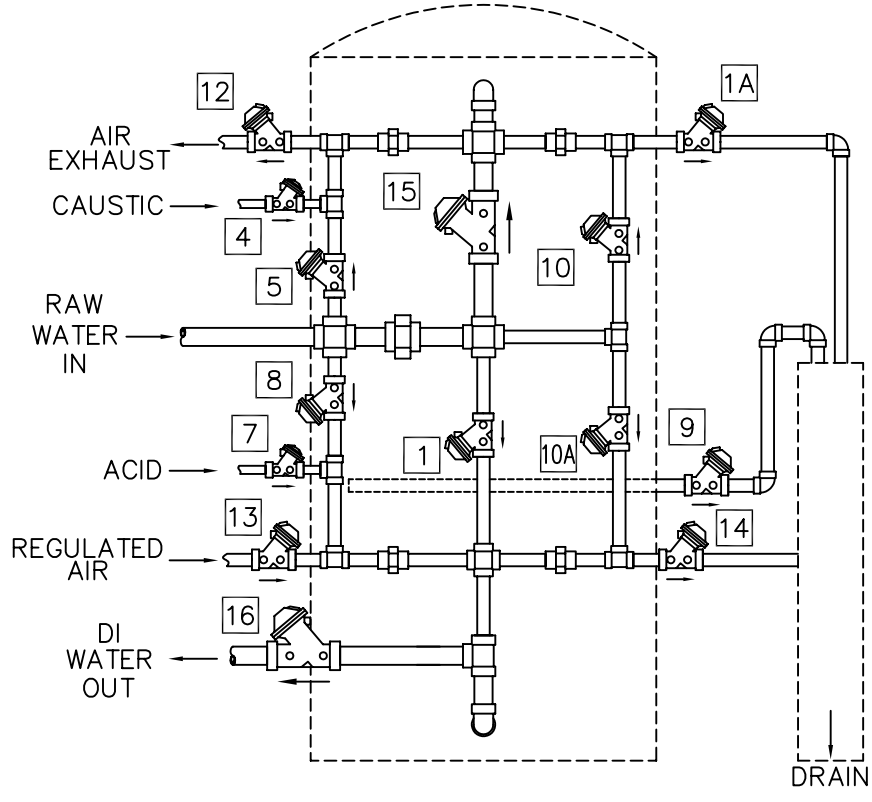
TWO BED DE-IONIZER W/ DE-GASIFIER

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078291

MIXED BED DE-IONIZER (58-10 STAGER)





NOTE:

1. ALL OTHER PORTS PRESSURIZED.

2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.

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SERIES 58B–10 STAGER PROGRAM

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	15,16	15,16	J	5	ACID INJECT	7,8,9	7,8,9
B					K	6	SLOW RINSE	8,9	8,9
C	1	BACKWASH	1	1,1A	L	7	RINSE	9,10	9,10,10A
D	2	SETTLE	NONE	NONE	M				
E					N	8	DRAIN DOWN	9,12	9,12
F	3	CAUSTIC INJECT	4,5,9	4,5,9	P	9	AIR INJECT	12,13	12,13
G	4	SLOW RINSE	5,9	5,9	Q				
H					R	10	FINAL RINSE	14,15	14,15

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	MSM	31JUL01	

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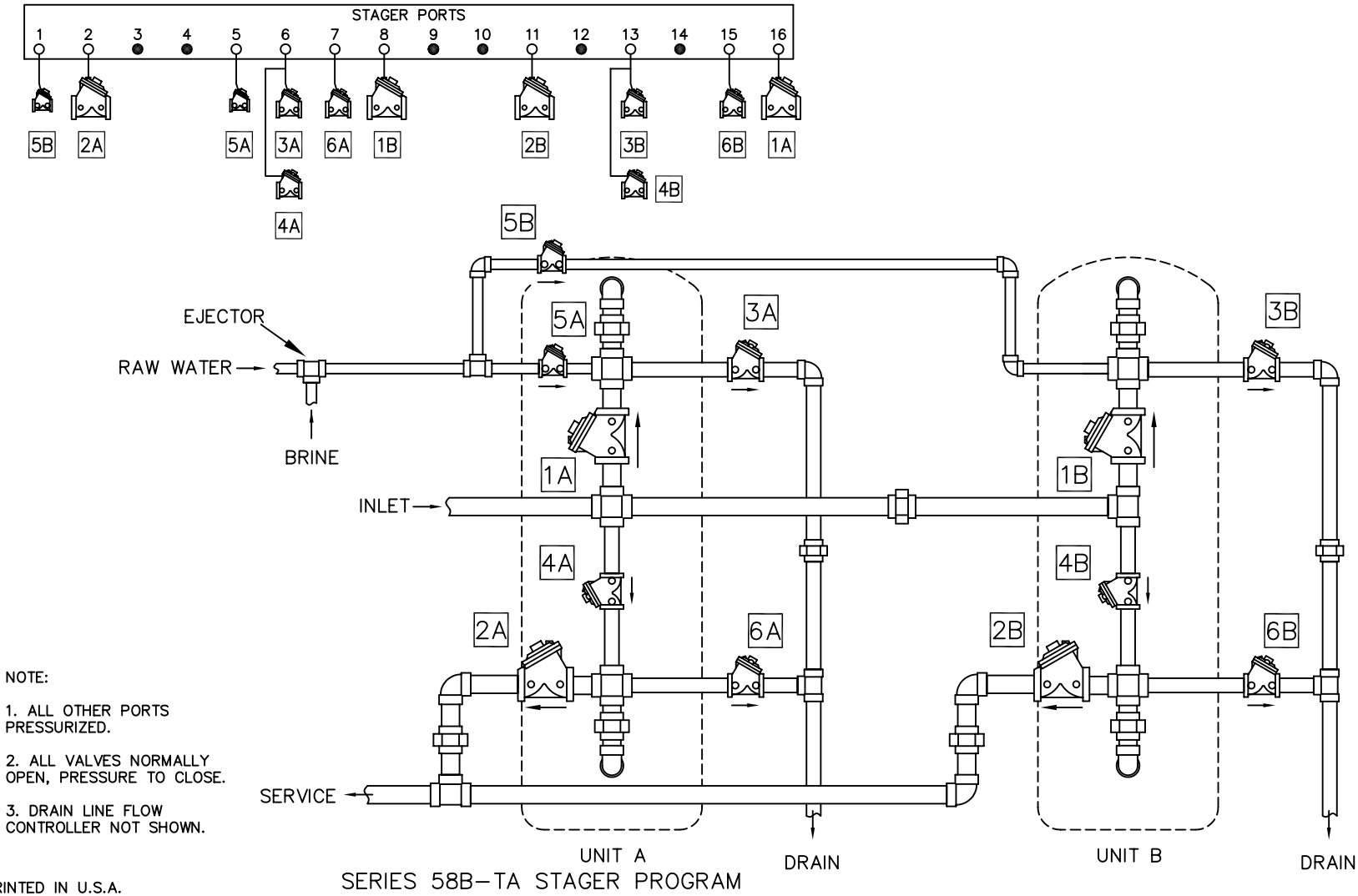
MIXED BED DE-IONIZER

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078292

TWO TANK ALTERNATING SOFTENER (58-TA STAGER)



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

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SERIES 58B-TA STAGER PROGRAM

NOTCH	POS.	FUNCTION UNIT A	FUNCTION UNIT B	PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION UNIT A	FUNCTION UNIT B	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	STANDBY	1,2,8,16	5B,2A,1B,1A	J	4	STANDBY	SERVICE	8,11,16	1B,2B,1A
B						K					
C						L					
D	1	BACKWASH	SERVICE	6,8,11	3A,4A,2B,1B	M					
E	2	BRINE/SLOW RINSE	SERVICE	5,7,8,11	5A,6A,2B,1B	N					
F						P	5	SERVICE	BACKWASH	2,13,16	2A,3B,4B,1A
G						Q	6	SERVICE	BRINE/SLOW RINSE	1,2,15,16	5B,2A,6B,1A
H	3	FAST RINSE	SERVICE	7,8,11,16	6A,1B,2B,1A	R	7	SERVICE	FAST RINSE	2,8,15,16	2A,1B,6B,1A

REV	DESCRIPTION	ECO	DWN	DATE	APVD
B	CORRECTED ERROR IN STAGER POS. NOS.	NONE	MSM	21MAR03	

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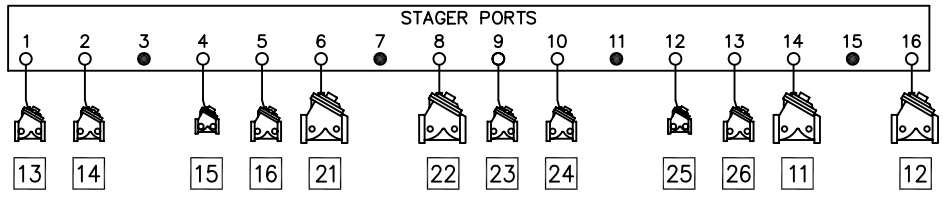
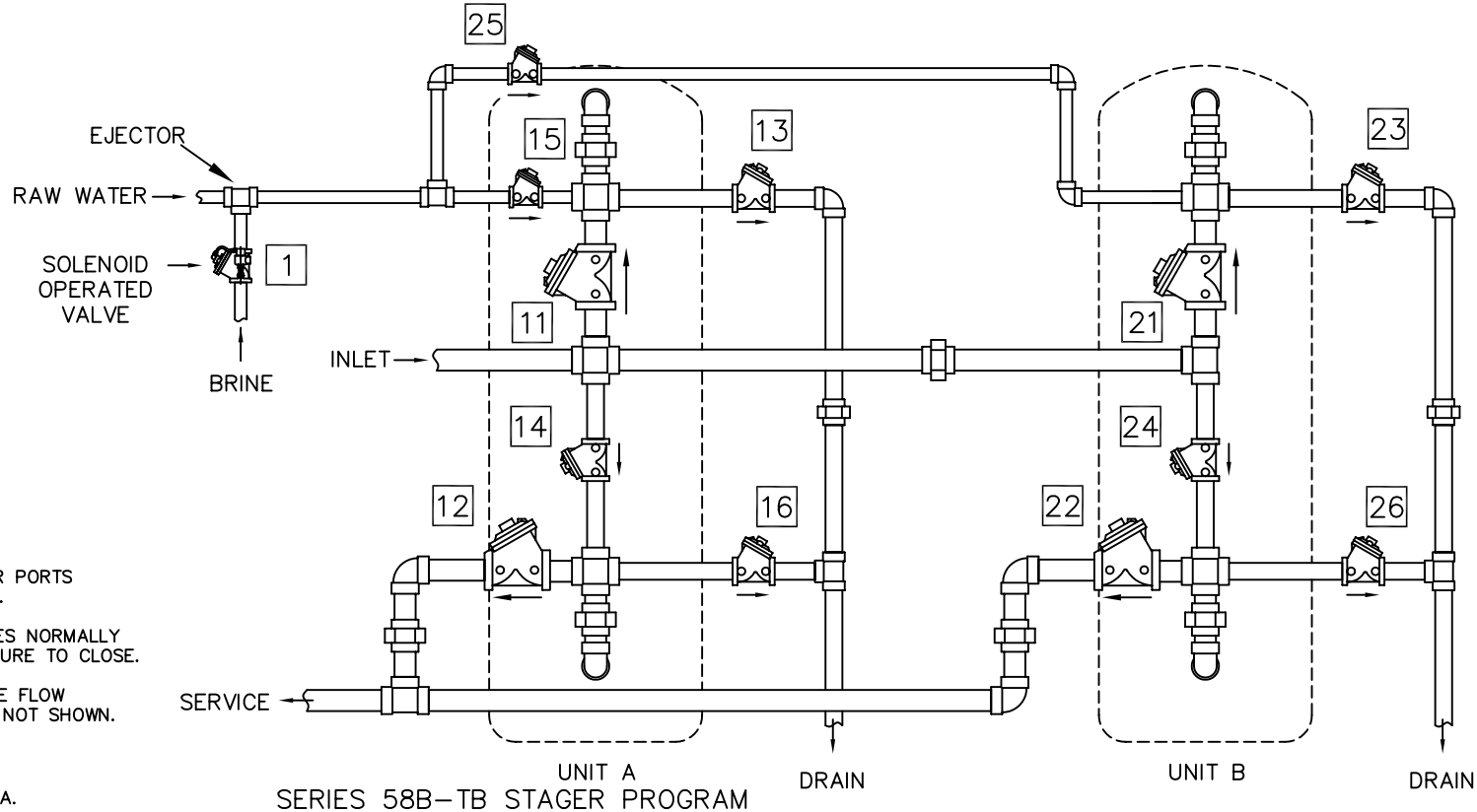
TWO UNIT ALTERNATING SOFTENER

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078293

TWO TANK ALTERNATING SOFTENER W/ TIMED BRINE (58-TB STAGER)





NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

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SERIES 58B–TB STAGER PROGRAM

NOTCH	POS.	FUNCTION		PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION		PORTS VENTED (NOTE 1)	VALVES OPEN
		UNIT A	UNIT B					UNIT A	UNIT B		
A	0*	SERVICE	STANDBY	6,14,16	21,11,12	J	5*	STANDBY	SERVICE	6,8,14	21,22,11
B						K					
C						L					
D	1	BACKWASH	SERVICE	1,2,6,8	13,14,21,22	M	6	SERVICE	BACKWASH	9,10,14,16	23,24,11,12
E						N					
F	2**	BRINE DRAW	SERVICE	4,5,6,8	15,16,21,22	P	7**	SERVICE	BRINE DRAW	12,13,14,16	25,26,11,12
G	3	SLOW RINSE	SERVICE	4,5,6,8	15,16,21,22	Q	8	SERVICE	SLOW RINSE	12,13,14,16	25,26,11,12
H	4	FAST RINSE	SERVICE	5,6,8,14	16,21,22,11	R	9	SERVICE	FAST RINSE	6,13,14,16	21,26,11,12

* – NOTCH LOCATION FOR 1ST AUX. CAM/SWITCH

** – NOTCH LOCATION FOR 2ND AUX. CAM/SWITCH

REV	DESCRIPTION	ECO	DWN	DATE	APVD
A	INITIAL RELEASE	NONE	JWB	31JUL01	

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TWO UNIT ALTERNATING SOFTENER W/ TIMED BRINE

SCALE	DRAWN	DATE	DWG. NO.
N/A	JWB	31JUL01	1078294

AQUAMATIC® 962 SERIES
STAGER CONTROLS

SOPHISTICATED ELECTRONICS FOR SUPERIOR PROGRAMMING

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

FEATURES/BENEFITS

Remote lockout input combine an AquaMatic stager with a 962 series electronic control, mounted and prewired in a NEMA-rated enclosure

Can be used simultaneously with time clock, meter immediate, or meter delayed regeneration types

Allows monitoring of flow and volume information in remote signal start applications

Control and stager automatically synchronize to the service position

Up to 15 programmable timed regeneration cycles are available [0-255 minutes]

Accepts input from variety of flow sensors

During a power outage, critical operating information is stored in memory

Can be programmed to lock capacity value

Key data [peak flow, average daily usage] is retrievable from memory

Programmable regeneration types for increased flexibility

Selected reserve options

- Fixed reserve: the reserve is fixed at a programmable percentage of the total capacity
- Variable reserve: the control monitors daily water usage and at the programmed time of regeneration, calculates the average water used for each day of the week

OPTIONS

Battery Backup

Contact closure [dry or powered] during a cycle or cycles

SPDT relay for additional signal

SPECIFICATIONS

NEMA 4XFG Fiberglass Enclosure

115 VAC 50/60 Hz and 230 VAC 50/60 Hz

U.S. or Metric Units of Measure

APPLICATIONS

SINGLE UNIT CONTROLS	MODEL NUMBER	DESCRIPTION
Typical Softeners and Filters	E948*	962 Control w/Model 48, 6 port stager
More Complex Softeners and Filters	E951*	962 Control w/Model 51, 8 port stager
MULTIPLE UNIT CONTROLS	**MODEL NUMBER**	**DESCRIPTION**
Twin-Alternating Softeners and Filters (with timed brine switch output)	E958-TB	962 Control w/Model 58-TB, 16 port stager
Twin-Alternating Softeners	E958-TA	962 Control w/Model 58-TA, 16 port stager
Sequential Filters (backwash only)	E948	962 Control w/Model 48, 6 port stager
2 Unit Sequential Filters (backwash and rinse)	E951	962 Control w/Model 51, 8 port stager
3 or 4 Unit Sequential Filters	E958	962 Control w/Model 58, 16 port stager

*Two-tank and three-tank parallel systems can be controlled by individual controls provided with lockout feature (lockout feature is void when using the added relay output option).

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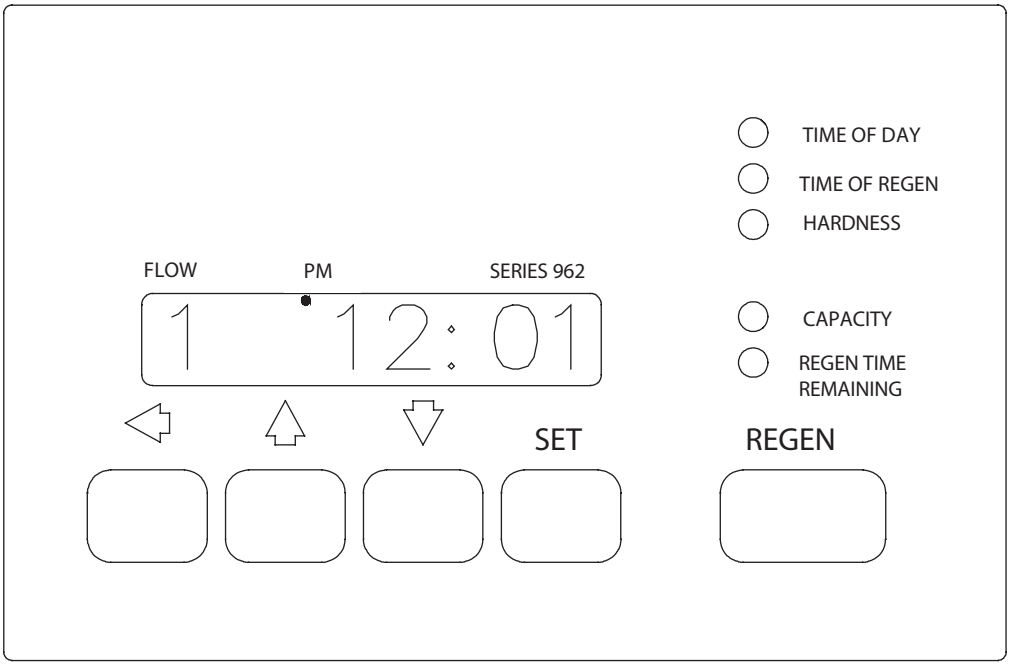
Series 962
Electronic Stager Control

Operation Manual



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Caution and Warning Symbols

The following international symbols appear in this manual to highlight caution and warning messages.

Cautions

Not heeding these messages could result in personal injury and/or damage to equipment.

Caution: This symbol indicates caution messages (Refer to User Manual).

Warnings

Not heeding these messages could result in serious personal injury.

Warning: This symbol is intended to alert the user to the presence of “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Specifications

Warning: Class I equipment - The composite enclosure used in this equipment does not automatically provide grounding between conduit connections. Use grounding bushing and jumper wires as part of the installation. **To avoid electric shock, grounding must be installed by the customer as part of the installation. Installation should be completed by qualified electricians and in accordance with the requirements of all state and local electrical codes as well as the National Electrical Code (NEC). A separate ground post has been provided inside this equipment enclosure and is indicated by the NEC ground symbol as shown below.**

NEC Ground Symbol

Warning: Overcurrent Protection - This equipment is not supplied with built in overcurrent protection (fuses or circuit breakers). An external switch and/or circuit breaker must be installed by a qualified electrician in accordance with all state and local electrical codes as well as the National Electrical Code (NEC). The external switch and/or circuit breaker must be in close proximity to this equipment and in easy reach of the operator. It must be clearly marked to indicate that it is the disconnecting device for this equipment. Recommend fuse size is 1 AMP.

Voltage Range: 230/115VAC (+/- 10%)

Frequency Range: 50/60Hz

Max. Rated Power: 4 Watts

Pollution Degree: 2

Overvoltage Category: II

Altitude: 6500 Ft. (2000 Meters)

Max. Rated Fluid (Air/Water) Pressures

Model E948	Model E951	Model E958/ E959
125 psi (8.6 bar)	125 psi (8.6 bar)	125 psi (8.6 bar)

NEMA 4X Enclosure: Intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water; undamaged by the formation of ice on the enclosure. The enclosure door must be kept tightly closed using all fasteners provided. ***Any modifications to this enclosure (i.e., added holes for cable entry/ mounting, conduit connections...etc.) may void the intended NEMA 4X rating. NEMA 4 and UL rated fittings should be used when modifying the enclosure***.

Relative Humidity Operating Range:

Temperature Range	Allowed Relative Humidity
0^{o}C to 37^{o}C (32^{o}F to 99^{o}F)	10% to 100% Condensing
38^{o}C to 55^{o}C (100^{o}F to 131^{o}F)	10% to 75% Non-Condensing

Inputs

Terminal Strip 1 (TB1) High Voltage

TB1, Terminal #1: Line Voltage Input

TB1, Terminal #4: Neutral Input

TB1, Terminal #6: Input to Aux. Switch Common

Optional Relay Inputs

Relay Terminal #6: Relay Common Input

Terminal Strip 2 (TB2) Low Voltage

TB2, Terminal #11: Turbine Meter Ground Input

TB2, Terminal #12: Turbine Meter Shield Input

TB2, Terminal #13: Turbine Meter Signal Input

TB2, Terminal #17: Delayed Start Input (Dry Contact)

TB2, Terminal #18: Delayed Start Input (Dry Contact)

TB2, Terminal #19: Lockout Input (Dry Contact)

TB2, Terminal #20: Lockout Input (Dry Contact)

Outputs

Terminal Strip 1 (TB1) High Voltage

TB1, Terminal #7: Aux. Switch N.C. Output

TB1, Terminal #8: Aux. Switch N.O. Output

Optional Relay Outputs

Relay Terminal #2: Relay N.C. Output

Relay Terminal #3: Relay N.O. Output

Terminal Strip 2 (TB2) Low Voltage

TB2, Terminal #14: Turbine Meter +12VDC Output

TB2, Terminal #12: Turbine Meter Shield Input

TB2, Terminal #13: Turbine Meter Signal Input

Series 962 Electronic Stager Controls

The Series 962 Electronic Stager Controls provide sophisticated, demand-based water conditioning by combining a microprocessor with a flow meter to electronically monitor the amount of water used. This fully programmable series of controls provide the ability to fine tune the operation to meet the application requirements. There are several 962 Stager models available.

Single Unit Controls	Model No.
Basic Softeners & Filters	E948
Complex Softeners & Filters	E951

Multiple Unit Controls	Model No.
Twin Alternating Softeners & Filters	E958-TA E958-TB
Sequential Filters (Backwash Only)	E948
2 Unit Sequential Filters	E951
3 or 4 Unit Sequential Filters	E958

Special Features of the Series 962 Control

Memory Retention

During a power outage, critical operating information is stored in nonvolatile memory. This information includes the time of day, water usage, all programming data and the number of days since the last regeneration. When power is restored, the information is returned to the microprocessor and operation resumes as if an outage never occurred. The time of day will be late by the length of the power outage. The time of day should be reset after an extended power outage. No other reprogramming is necessary. An optional backup battery will allow the control to keep track of time and water usage for up to 8 hours during a power outage. **The control will not initiate a regeneration while on battery backup.**

Programmable Cycles

The control is flexible in defining the appropriate cycles of operation.

Double Regeneration

For single tank applications, the control automatically calls for a second regeneration the following day if the current operation cycle exceeds the programmed capacity by 150% or more.

Capacity Setting Lockout

The control can be programmed to lock the capacity so it cannot be altered after installation.

Selectable Reserve Options

To meet the application requirements, the control allows selection of one of two reserve types:

Fixed Reserve - The reserve is fixed at a programmable percentage (30% factory preset) of the total capacity.

Variable Reserve - The controller monitors the daily water usage and at the programmed time of regeneration, calculates the average water used for each day of the week. The reserve capacity is set to 120% of the average water usage for the next day.

U.S. or Metric Units of Measure

To meet your display and programming requirements, the 962 Stager uses grains per gallon of hardness and kilograins of capacity for U.S. units; or parts per million of hardness and kilograms of capacity as gallons or cubic meters.

Calendar Override

If the volume of water used has not caused a regeneration, the 962 Stager can be set to regenerate every one to thirty days.

Manual Regeneration

A separate **REGEN** button is provided for manual regenerations. A double manual regeneration feature is included that allows back-to-back regenerations.

Operating Histories

Important operating data is stored in memory and is retrievable upon demand.

The historical data includes peak flow data as well as average daily water usage for each day of the week.

Remote Regeneration

A set of input terminals with a programmable delay are provided as a standard feature of the 962 Stager that allows regeneration to be initiated from a remote location. This feature can be used to facilitate remote manual regeneration requirements or assist in further automating the control system such as the use of a differential pressure switch.

Selectable Automatic Regenerations

There are four automatic regeneration methods; “delayed with immediate override”, “delayed only”, “day of week”, and “calendar override”. Immediate regeneration is used to start an automatic regeneration immediately when the capacity remaining in a tank is reduced to zero. Delayed regeneration is used to start an automatic regeneration at a predetermined time of day when the capacity remaining is below a defined reserve. The reserve capacity may be fixed or variable. The variable reserve is determined by past usage history. Regeneration can be accomplished based on the day of the week at a specific time of day or after programmable number of days since the last regeneration.

Optional Battery Backup

An optional backup battery can be provided so that the Time of Day and water usage will be maintained for up to **8 hours** during a power outage. All 962 Stager controls are provided as “Battery Backup Capable”. If the optional battery backup is provided with the Series 962, make sure that it is properly connected.

BATTERY BACKUP CONNECTIONS

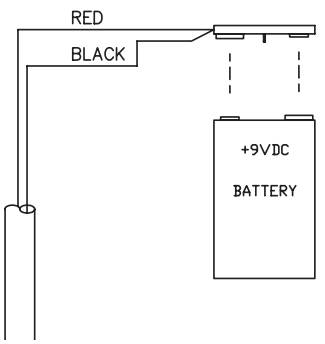

Figure 1

Flow Rate Display

In the normal operating mode the series 962 Stager control will alternate between **Capacity Remaining** (gallons or m^3) and **Flow Rate** (gallons per minute or m^3/hr). In the event of power loss, (including battery power) the display will alternate between **Time of Day** and **Capacity Remaining** once power has been restored. The control will remain in this display mode until the Time of Day is reset or until any button is pressed. The flow rate display is indicated by a small L.E.D. in the top left corner of the display. When P19 is set to “4” (user defined pulse equivalent) flow rate will not be displayed.

Programming the Series 962 Stager Control

This section contains common aspects of programming the 962 control and retrieving historical operating data. A label provided with the control should be filled out with programming parameters on system start-up.

Factory Default Values

Factory default values are shown on Table 1. **Capacity and Hardness values are set to 0 and must be changed to appropriate values before the control will operate. “Err 4” will be displayed until a valid number is entered for each of these items.**

Program Levels

The Series 962 Stager controls have been designed to facilitate different levels of programming requirements. Level I includes program variables that are frequently referenced by users, operators, installers and service personnel. They are accessible without the requirement of codes. Level II includes variables that are most typically used at the time of installation and initial setup. They are accessible only with access codes. Level III locations are used primarily for accessing operation history information. Level IV locations are used to set the regeneration days of the week. Level III and IV parameters also require access codes. Programming levels are further defined in Tables I, II, and III.

Levels	Access Code
I	None Required
II	Press and hold the (↑) and (↓) arrow buttons for 3 seconds
III	Press and hold the (←) and (↑) arrow buttons for 3 seconds
IV	Press and hold the (←) and (↓) arrow buttons for 3 seconds

Level I Programming

Level I program values are identified by the legend on the faceplate of the control. A green LED is illuminated when a Level I "P" value is displayed. Following are the Level I “P” values:

- Time of Day P1
- Time of Regeneration P2
- Hardness P3
- Capacity P5

P4 is skipped on the 962 Stager Programing.

Setting Time of Day

Press the **SET** button. The display will show the time of day with the minutes digit blinking. Press the UP (↑) arrow button to increase the number or the DOWN (↓) arrow button to decrease the number. To skip the number without changing, press the LEFT (←) arrow button. The first digit will stop flashing and the next digit will start flashing. When the far left digit is reached, pressing the LEFT (←) arrow button returns the flashing to the far right digit. Continue changing numbers until the desired Time of Day is obtained. Press the **SET** button to enter the value. The PM indicator will toggle when the “tens digit” of the hours is increased. The far left digit is used to indicate the day of week. Number 1 being Sunday and number 7 being Saturday.

The time of Regeneration, Hardness, and Capacity are set in a similar manner.

Level II Programming

The control will automatically enter Level II programming if P19 or P20 have not been set.

Press and hold the (↑) and (↓) arrow buttons for 3 seconds to enter the Level II programming mode. The display will show the letter “P” in the far left display digit. The parameter “P-number” is displayed in the far right display digit. See Table 1 for Level I and II programming values.

Changing a Program Value

Once the P value you want to change is displayed, press the (←) arrow button to display the current entry for that value. To change or modify the value, press the **SET** button. The digit on the right hand side of the display will begin to flash. Use the (↑) or (↓) arrow buttons to select the desired entry. Once the desired entry is obtained, press the (←) button to move to the next digit and change as needed. Once you have completed the appropriate changes, press the **SET** button. When you press the **SET** button the new entry is stored and the control automatically scrolls to the next P value. If a beep sounds, the new entry was not accepted. Table 1 lists the range available for a specific program value.

Level III Programming

Press and hold the (←) and (↑) arrow buttons for 3 seconds to enter the Level III programming mode. The display will show the letter “L” in the far left display digit. The parameter “L-number” is displayed in the far right display digit. The **SET** button is inactive except for L4. If **SET** is pressed when L4 is displayed, Peak Flow is reset to zero. If **SET** is pressed when any other location is displayed the control will beep.

Level IV Programming

Press and hold the (←) and (↓) arrow buttons for 3 seconds to enter the Level IV programming mode. Level IV programming is used to enter the user defined cycle times and day of week regeneration. All controllers have default settings for 4 cycle softener operation. **The operation type is determined by the value that is programmed in “P17” and must be changed if not being used as a 4 cycle conditioner.**

Entering "C" Values

"C" values are used to define a specific number of cycles to meet the application needs and are accessible through level IV programming mode.

Example: If the control is used in a system that has a total of 10 cycles of operation, select 6 for P17 and program C1-C10 for the amount of time desired for each cycle (up to 255 minutes).

Each "C" value represents 1 position of the rotary pilot stager that is being used. A maximum of 15 cycles may be used, each programmable from 0-255 minutes.

While the controller is in regeneration the display will show a “C” value in the far left display and the time remaining (in minutes) for that “C” value.

Example: [C1 15] = 15 min remaining in C1.

Entering “d” Values (Regeneration Days)

“d” values are used to start a regeneration on a certain day of the week. There are seven “d” values numbered from 1 to 7, with 1 representing Sunday and 7 representing Saturday. Set a 1 in “d7” to initiate an automatic regeneration every Saturday at the Time of Regeneration (P2). The automatic regenerations will occur at the time set in P2 regardless of the capacity remaining in the system. A value of “0” indicates no regeneration on that day. The default value is “0” for all “d” values.

Viewing a Program Value

Programmed values may be viewed at any time. Program values may not be changed during a regeneration.

Level I - To locate and display a P value in Level I press the (↑) or (↓) arrow button until the desired value is displayed. Level I parameters are indicated by the legend on the face plate of the control.

Level II - To locate and display a P value in Level II, simultaneously press the (↑) and (↓) arrow buttons for 3 seconds to gain access. Press the (↑) or (↓) arrow buttons until the desired location is displayed. Press (←) to display the value in the P location.

Level III - To locate and display an L value in Level III, simultaneously press the (←) and (↑) arrow buttons for 3 seconds to gain access an then press the (↑) or (↓) arrow buttons until the desired location is displayed. Press (←) to display the value in the L location.

Level IV - To locate and display a "d" value in Level IV, simultaneously press the (←) and (↓) arrow buttons for 3 seconds to gain access and then press the (↑) or (↓) arrow buttons until the desired location is displayed. Press (←) to display the value in the "d" location.

Manual Regeneration

To initiate a manual regeneration, simply press and hold the **REGEN** button for 3 seconds. If an immediate second regeneration is desired, wait for at least **one minute** after the first regeneration begins and then press and hold the **REGEN** button for 3 seconds. A second regeneration will be performed immediately following the first. The display will freeze and only show the Regeneration Time Remaining as an indication that the second regeneration will be initiated. When the first regeneration is complete, the second regeneration will begin and the display will alternate between Flow Rate and Regeneration Time Remaining. The second regeneration will be performed on the offline tank in twin alternating applications.

Lock-Out Feature

The lock-out feature may also be used to prevent regenerations when a signal is present at the lock-out terminals. Two or more 962 controls can be connected together (see Figure 2) to prevent one from regenerating while another is in regeneration. This signal can also come from external equipment that can provide a dry contact closure. (CONNECTION MUST BE A DRY CONTACT).

NOTE: When using the Relay Output Option the lockout feature cannot be used.

Flow Sensor Select Options

P19 is used to select the flow sensor type. Numbers 1 and 2 are for the Autotrol 1 inch and 2 inch turbine type flow sensors. The number in P20 will be ignored when P19 is programmed with a 1 or 2.

Other flow sensors can be used by entering a "3" in P19 and entering the correct "K-factor" in P20. The K-factor is defined as pulses per gallon for U.S. units or pulses per liter for metric units. The K-factor can be obtained from the flow sensor manufacturer.

If a "4" is entered in P19 then the definition of the number in P20 becomes gallons or liters per pulse depending on the units of measure selected.

Capacity Based Regeneration Start Options

The following is an explanation of the regeneration start options for single tank 962 Stager controls.

At the time of regeneration (time set in P2) the control will check to see if a regeneration should start. This check depends on the value programmed in P15.

P15 = 0 or 2 Variable Reserve

The control calculates an average water usage for each day of the week when it is using variable reserve. A regeneration will start if the capacity remaining is less than 1.2 times the average water usage for the next day.

P15 = 1 or 3 Fixed Reserve

The reserve capacity is calculated using the fixed reserve capacity programmed in P16. The value in P16 is the percentage of the calculated system capacity used for the reserve.

Example: If the programmed capacity is 10,000 grains and the hardness is 10 grains/gallon the calculated system capacity is 1000 gallons. The reserve capacity is 300 gallons if the fixed reserve is set to 30%. A regeneration will start if the capacity remaining at the time of regeneration is less than 300 gallons.

The parameter P15 is also used to select immediate regenerations or delayed regenerations only.

P15 = 0 or 1 Delayed Regeneration Only

Automatic regenerations will occur at the time of regeneration only. The control will delay the start of regeneration until the time of regeneration even if the capacity remaining is reduced to zero gallons.

P15 = 2 or 3 Immediate Regeneration Override

In addition to delayed regenerations automatic regenerations will occur at any time during the day if the capacity remaining reaches zero.

Immediate Regeneration Only Option

Automatic regenerations performed at the time of regeneration (P2) can be eliminated by setting the control for fixed reserve with immediate regeneration override (P15 = 3) and setting the reserve capacity percentage (P16) to 0%. This will create a reserve capacity of zero gallons and override the Time of Regeneration (P2) to allow for an immediate regeneration. **These are the preferred settings for a Twin Alternating softener system**.

Advance Cycle Function

While in a regeneration cycle, you can advance the stager to the next cycle by pressing and holding the left arrow key (←) for 3 seconds. The stager and controller will then advance to the next regeneration cycle.

Cancel Regeneration Function

To cancel (abort) a regeneration, press and hold the left arrow (←) and **SET** keys for 3 seconds. The control will display an ERROR 3 and return the stager to the service (Home) position. Once in the service position, ERROR 3 will be cleared.

Press and hold the (↑) and (↓) arrow buttons to access Level II.

Table 1 - Level I and II Parameters

Parameter		Range of Values[a]	Minimum Increments	Default	Units of Measure	Notes
Name	Description					
P1	Day of week and time of day	(1-7) 1:00-12:59 AM or PM (1-7) 0:00 -23:59	(1 day) 1 minute	None	hour:minute	Range depends on value selected for P13. For day of week, SUN=1, MON=2, TUE=3, WED=4, THU=5, FRI=6, SAT=7
P2	Time of day to start regeneration	1:00-12:59 AM or PM 0:00-23:59	1 minute	2:00 am	hour:minute	Range depends on value selected for P13. Use only if P15 = 1
P3	Hardness of water	3-250 30-2500	1 10	0 0	grains/gallon ppm	Unit of measure depends value selected for P12
P4						Not Used
P5	Capacity of unit	1-5100 .1-510.0	1 .1	0	kilograins[b] kilograms[b]	Unit of measure depends on value selected for P12
P6						Not Used
P7						Not Used
P8						Not Used
P9	Backwash time	1-30	1	14	minutes	If P17=6 or 9, Do not program P9
P10	Rinse/Draw time	1-125	1	40	minutes	If P17=3, 6, or 9, Do not program P10
P11	Rinse time	1-19	1	4	minutes	If P17=6 or 9, Do not program P11
P12	Units of measure	0-1	1	0		0 = US, 1 = Metric
P13	Clock mode	0-1	1	0		0 = 12 hour clock 1 = 24 hour clock
P14	Calendar override	0-30	1	0	days	0 = no calendar override
P15	Reserve Type	0-3	1	0		0 = Variable reserve, 1 = fixed reserve, 2 = variable reserve with immediate regeneration, 3 = fixed reserve with immediate regen
P16	Initial average usage or fixed reserve	0-70	1	30	% of capacity	Description depends on value entered for P15
P17	Operation type[c]	3-9	1	4		0 - 2 = Not Used, 3 = 3 cycle filter 4 = 4 cycle softener, 5 = 4 cycle (180/182) butterfly config., 6 = User defined cycle times[d]., 9 = User defined (58-TB & 58-TR only).[d]
P18	Capacity change lock-out	0-1	1	0		0 = None, 1 = Capacity change locked-out
P19	Flow sensor select	1-4	1	3		1 = 1.0” Autotrol turbine, 2 = 2.0” Autotrol turbine, 3 = User defined K-factor (PPG), 4 = User defined pulse equivalent (GPP)
P20	K-factor or pulse equivalent	0.01-255.00	.01	0.01		Number used for meter K-factor or pulse equivalent
P21	Remote regeneration switch delay	1-254	1	60	seconds	Time remote switch must be active to start a regeneration

a. All parameters must be set within acceptable range of values or ERR4 will be displayed.
b. See Table 2 for conversions.
c. When using options 6 or 9 programming “C” values per Table 3 eliminates the need to program P9 through P11.
d. Program “C” values per Table 4.

Table 2 Conversions

To Convert Capacity in	Into Capacity in	Multiply by
kilograms (kg)	kilograins (kgr)	15.43
kilograins (kgr)	kilograms (kg)	0.0648
moles of $CaCO_3$	kilograms (kg)	0.10
equivalents of $CaCO_3$	kilograms (kg)	0.05

Press and hold the (←) and (↑) arrow buttons to access Level III.

Table 3 Level III History Data

Location	Range	Description
L 1	1-7	Day of week (Sun=1, Sat=7)
L 2	0-255	Days since last regeneration
L 3	1:00-12:59/0:00-23:59	Time that peak flow occurred
L4[a]	0-200/0-50.0	Peak flow gallons per minute/cubic meters (M^3) per hour since location reset
L 5	0-655360/0-6553.6	Water used today in gallons/M^3 since time of regeneration
L 6	0-655360/0-6553.6	Water used since last regeneration in gallons/M^3
L 7	0-655360/0-6553.6	Average water usage for Sunday in gallons/M^3
L 8	0-655360/0-6553.6	Average water usage for Monday in gallons/M^3
L 9	0-655360/0-6553.6	Average water usage for Tuesday in gallons/M^3
L 10	0-655360/0-6553.6	Average water usage for Wednesday in gallons/M^3
L 11	0-655360/0-6553.6	Average water usage for Thursday in gallons/M^3
L 12	0-655360/0-6553.6	Average water usage for Friday in gallons/M^3
L 13	0-655360/0-6553.6	Average water usage for Saturday in gallons/M^3
L 14	0-999990/0-99999.9	Total water used since NOVRAM test in gallons/M^3 (LSD)
L 15	0-167/0-16	Total water used since NOVRAM test in gallons/M^3 x 10^6 (MSD)

a. Press and hold SET for 5 seconds to reset.

Press and hold the (←) and (↓) arrow buttons to access Level IV.

Table 4 Level IV Parameters

#	Description of Parameter	Range of Values	Minimum Increment	Default	Notes
C1	Position 1 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C2	Position 2 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C3	Position 3 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C4	Position 4 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C5	Position 5 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C6	Position 6 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C7	Position 7 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C8	Position 8 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C9	Position 9 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C10	Position 10 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C11	Position 11 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C12	Position 12 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C13	Position 13 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C14	Position 14 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
C15	Position 15 Cycle Time	0 min -255 min	1 min	0	Stager Cycle (P17=6 or 9)
d1	Sunday	0-1	1	0	0 = no day of week regen this day
d2	Monday	0-1	1	0	0 = no day of week regen this day
d3	Tuesday	0-1	1	0	0 = no day of week regen this day
d4	Wednesday	0-1	1	0	0 = no day of week regen this day
d5	Thursday	0-1	1	0	0 = no day of week regen this day
d6	Friday	0-1	1	0	0 = no day of week regen this day
d7	Saturday	0-1	1	0	0 = no day of week regen this day

Note: The number of “C” values MUST equal exactly the number of stager regeneration cycles.

Example: If the parameter “Position 5 Cycle Time” is programmed then C1 through C4 must also be programmed.

Table 5 “C” Level Program Values for Select Stager Configurations

#	48-83	51-09	51-10	51-86	59-00	59-03	58-04	58-TB
C1	BW1 Time	BW Time	BW1 Time	BW1 Time	BW1 Time	BW1 Time	BW1 Time	BW Time
C2	BW2 Time	BR/SR Time	FR1 Time	BW2 Time	Draw1 Time	FR1 Time	FR1 Time	Draw Time
C3	BW3 Time	FR Time	BW2 Time	BW3 Time	SR1 Time	BW2 Time	BW2 Time	SR Time
C4	0	Refill Time	FR2 Time	BW4 Time	FR1 Time	FR2 Time	FR2 Time	FR Time
C5	0	0	0	BW5 Time	BW2 Time	BW3 Time	BW3 Time	0
C6	0	0	0	BW6 Time	Draw2 Time	FR3 Time	FR3 Time	0
C7	0	0	0	0	Rinse2 Time	0	BW4 Time	0
C8	0	0	0	0	FR2 Time	0	FR4 Time	0
C9	0	0	0	0	0	0	0	0
C10	0	0	0	0	0	0	0	0
C11	0	0	0	0	0	0	0	0
C12	0	0	0	0	0	0	0	0
C13	0	0	0	0	0	0	0	0
C14	0	0	0	0	0	0	0	0
C15	0	0	0	0	0	0	0	0

Table 6 Error Code Identification

Error Code	Description
1	Data stored in NOVRAM has been corrupted and is incorrect
2	Home switch (SW 2) closed when it should be open
3	Home switch (SW 2) open when it should be closed
4	One or more parameters are below the minimum value in Table I
5	System capacity less than 10 gallons or 0.1 m^3 (Capacity is set too low or Hardness is set too high)

Table 7 Installation Programmed Values Chart

Installation Date:					
"P" Value	**Description**	**Install Values**	**"C"/"d" Value**	**Description**	**Install Values**
P1	Day of week/Time of day		C1	Position 1 Cycle Time	
P2	Time of regeneration		C2	Position 2 Cycle Time	
P3	Hardness of water		C3	Position 3 Cycle Time	
P4	Not used		C4	Position 4 Cycle Time	
P5	Capacity of unit		C5	Position 5 Cycle Time	
P6	Not used		C6	Position 6 Cycle Time	
P7	Not used		C7	Position 7 Cycle Time	
P8	Not used		C8	Position 8 Cycle Time	
P9	Backwash time		C9	Position 9 Cycle Time	
P10	Rinse/Draw time		C10	Position 10 Cycle Time	
P11	Purge time		C11	Position 11 Cycle Time	
P12	Units of measure		C12	Position 12 Cycle Time	
P13	Clock Mode		C13	Position 13 Cycle Time	
P14	Calendar override		C14	Position 14 Cycle Time	
P15	Reserve type		C15	Position 15 Cycle Time	
P16	Initial average value or fixed reserve capacity		d1	Regenerate on Sunday	
P17	Operation type		d2	Regenerate on Monday	
P18	Capacity change lock out		d3	Regenerate on Tuesday	
P19	Turbine select		d4	Regenerate on Wednesday	
P20	K-factor or pulse equivalent		d5	Regenerate on Thursday	
P21	Remote regeneration switch delay		d6	Regenerate on Friday	
P22	Factory use only. Do not program.		d7	Regenerate on Saturday	

Parallel Operation

The 962 Stager control can be used for twin and triple tank applications, operating in a parallel mode. Parallel systems can be implemented with up to three individual controls by using the lock-out feature. Each control will provide a lock-out signal when it is in regeneration. This lock-out signal will prevent other controls from starting a regeneration when the controls are connected as in Figure 2.

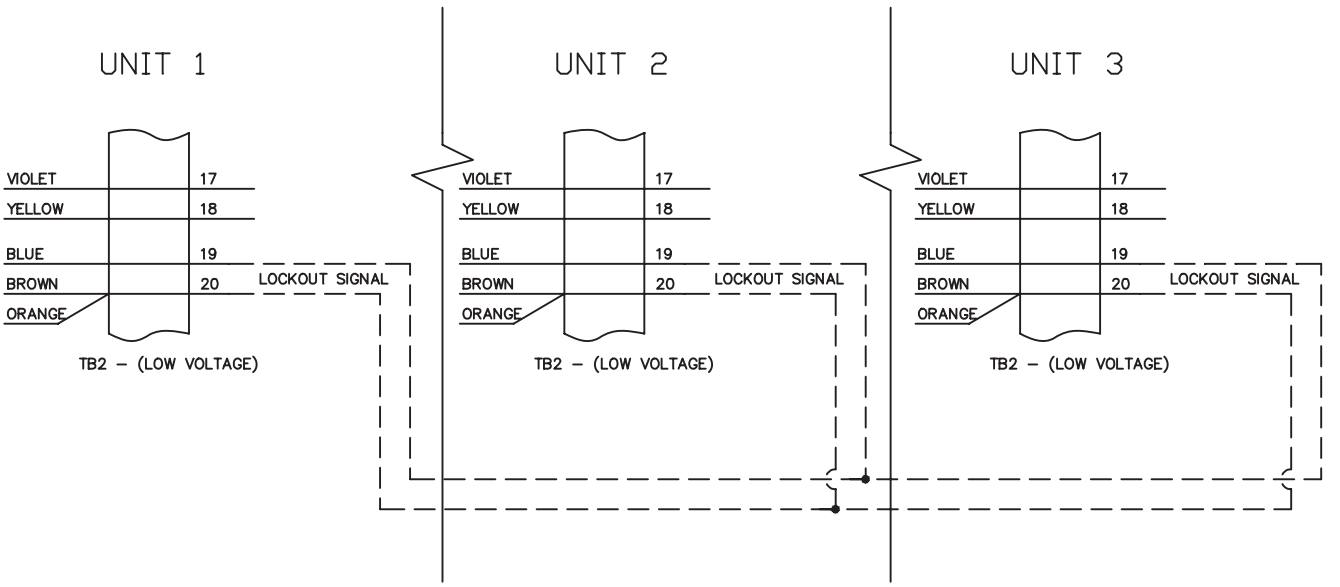

Figure 2 Parallel/Interlock Connections

NOTE: The lockout feature is void when using the relay output option.

Twin Alternating using a model 58-TA stager

The 962 Stager control can be used for Twin Alternating applications by combining a single 962 controller with a single model 58-TA Twin Alternating stager. The alternating of the system is performed by the stager and is independent of the controller. When using a model 58-TA, the “Tank in Service” is indicated by two NEMA 4 rated door-mounted lights that are operated by the stagers second auxiliary switch. **When using a model 58-TA Twin Alternating stager, P17 must be set to a 4 or 6 depending on the number of positions**.

Twin Alternating using a model 58-TB stager (Timed Brine)

The 962 Stager control can be used for Twin Alternating applications that require a timed brine draw (using 58-TR Stager). These Stagers do not use door-mounted lights to indicate the “Tank in Service”. The controller will display the “Tank in Service” in the left-most digit of the 6-digit display. It will display a 1 or 2 depending on which tank is in service. Flow is also displayed during this time. If any error condition occurs, the “Tank in Service” display will be set to a 2 by default. The controller will reset the display to the proper tank in service once a regeneration is performed on any tank. **When using a model 58-TB or 58-TR Twin Alternating stager, P17 must be set to a 9**.

Flow Sensor Connections

The 962 Stager control may be connected to a number of different flow sensing devices. Figure 3 shows the connections for the Autotrol turbine type flow sensor. Figure 4 shows the connections for the Signet flow sensor. Most of the flow sensors that are used will be wired similarly, though the wire colors may vary.

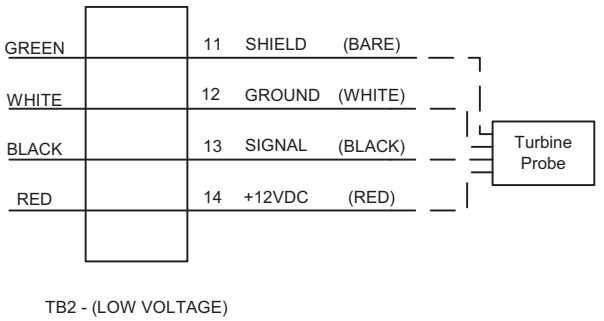

Figure 3 Autotrol Flow Sensor Connections

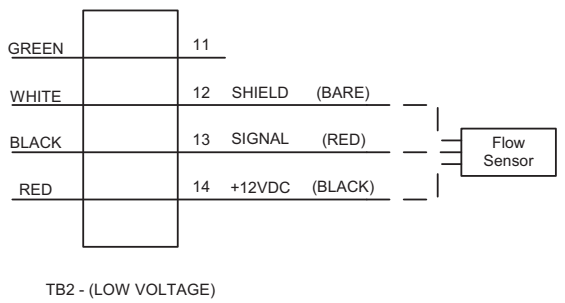

Figure 4 Signet Flow Sensor Connections

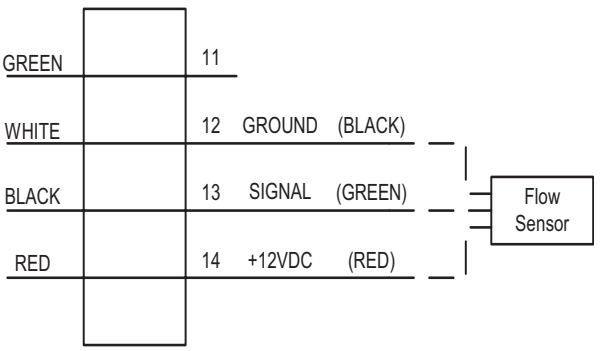

Figure 5 Fleck Flow Sensor Connections

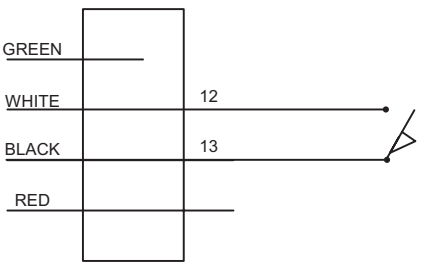

Figure 6 Pulse Transmitter 2 Wire Connection

AC Power Wiring

The 962 Stager controls have standard voltage configurations of 115 VAC 50/60 Hz, or 230 VAC 50/60 Hz. Power requirements must be specified when ordering. For 115 VAC jumpers are placed between terminals 1 and 3 and 2 and 4. For 230VAC jumpers are placed between terminals 2 and 3 only, Figure 5. Line voltage and neutral inputs are always on terminals 1 and 4 respectively.

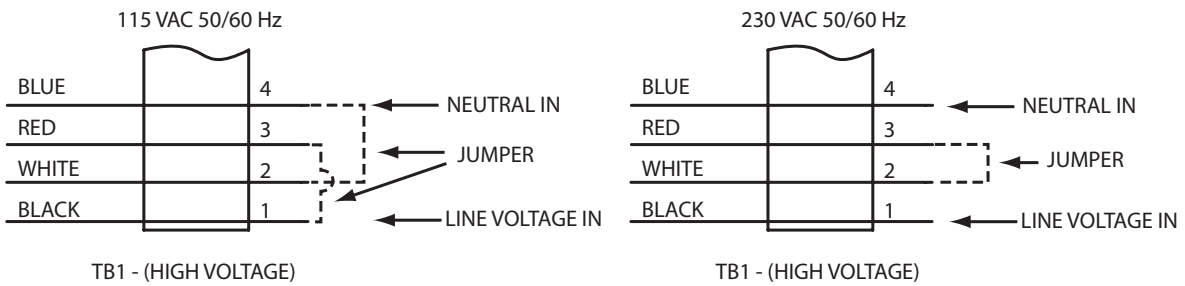

Figure 7 AC Power Connections

Remote Regeneration

A set of terminals with a programmable delay (P21) are provided as a standard feature of the 962 control, Figure 6. This feature allows for a regeneration to be initiated from a remote location. This feature can also be used to accommodate a differential pressure switch input or any dry contact closure from external equipment. Programmable value “P21” is used to monitor this input for the amount of time that is programmed (in seconds).

P21 is the length of time (in seconds) that the remote input signal will be ignored before starting a regeneration. THE CONNECTION MUST BE A NO VOLTAGE DRY CONTACT.

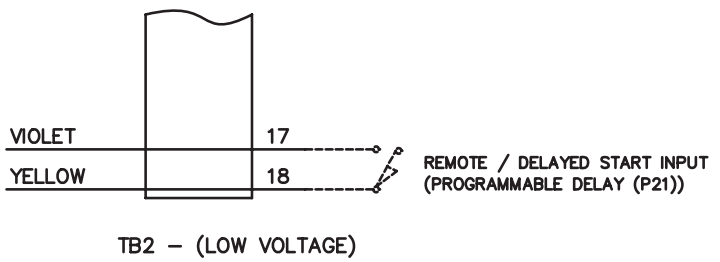

Figure 8 Remote Regeneration Start Connections

Relay Output Option

A single pole double throw (SPDT) relay may be added for outputs during Regeneration and Service mode. The relay output option is available on single unit and Twin Alternating models only. This feature may not be used however, with the parallel multi-tank systems using the lockout feature. The contacts of this relay are supplied as "Dry Contacts” (un-powered). See Figures 7 and 8 for wiring information.

NOTE: The lockout feature is void when using the relay output option.

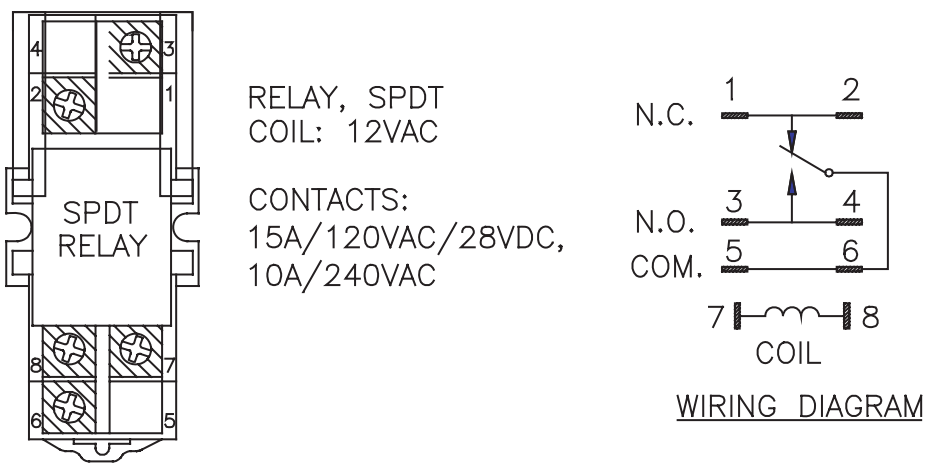

Figure 9 Relay Output Option

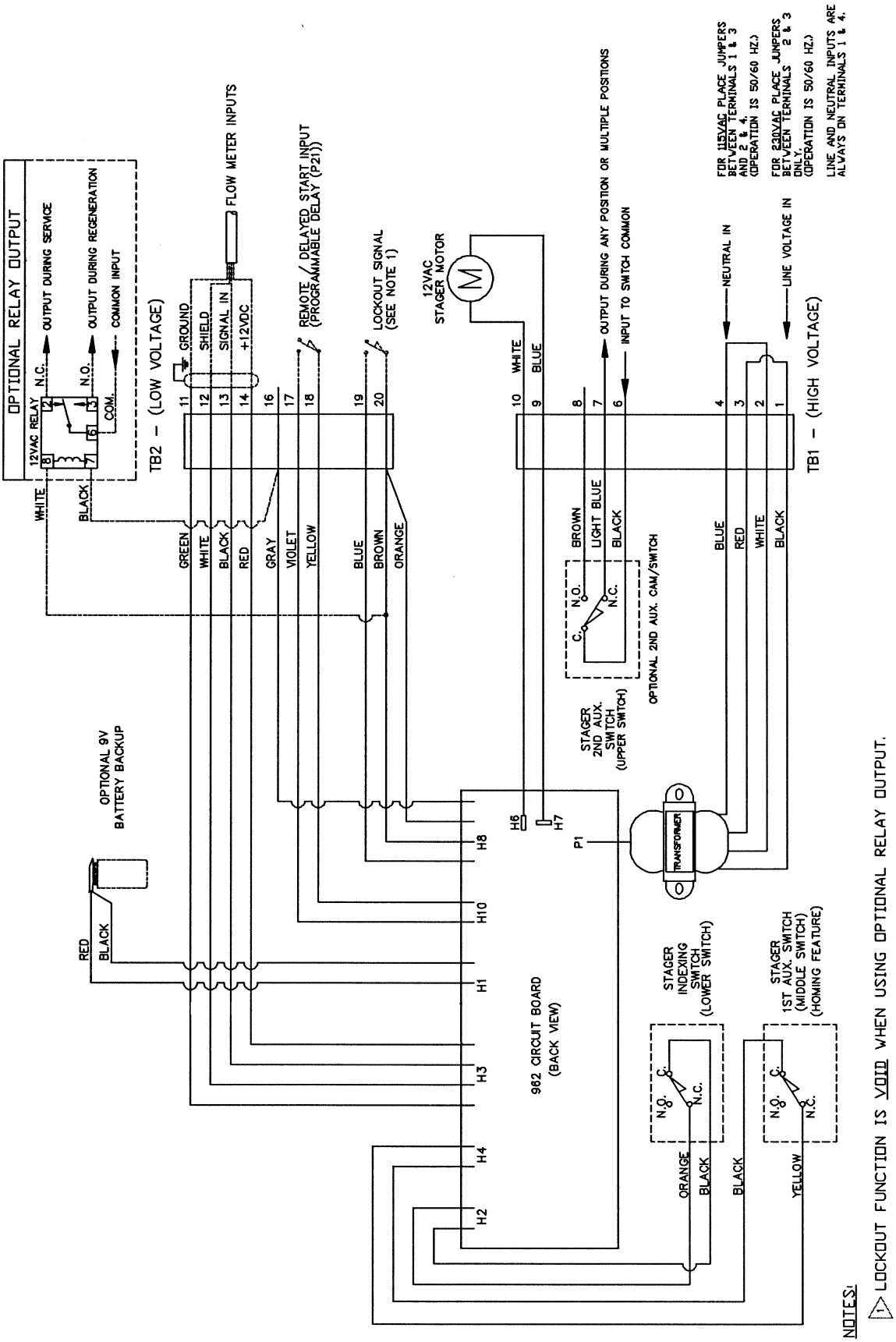

Figure 10 E948/E951 Standard Wiring Design

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1076301 Rev. H MA2016

AQUAMATIC® 48ES AND 51ES SERIES
COMMERCIAL STAGER CONTROLLERS

FULL-FUNCTION PROGRAMMING WITH CAPABILITY TO LINK MULTIPLE STAGERS

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

FEATURES/BENEFITS

LED Status Indicator
- Solid Blue: In Service
- Flashing Blue: Regen Queued
- Solid Green: Regen
- Flashing Green: Standby
- Solid Red: Error

Auxiliary inputs and outputs
- Remote signal start input (certain system types)
- Remote Lockout Input
- Programmable relay output/ chemical pump output

Front panel diagnostics button
- Flow rate
- Peak flow rate
- Totalizer
- Hours between last two regenerations
- Hours since last regeneration
- Adjustable volume remaining
- Valve position
- Software version

2x16 character backlit LCD display

Networks up to four stagers

Field-configurable for system types

Time of day can be automatically copied to the remaining controllers

Can be used simultaneously with time clock, meter immediate, or meter delayed regeneration types

Allows monitoring of flow and volume information in remote signal start applications

Control and stager automatically synchronize to the service position

Accepts input from a variety of flow sensors

During a power outage, critical operating information is stored in memory

Programmable regeneration types for increased flexibility

Reserve is fixed at a programmable percentage of the total capacity

Easy installation with plug-in wiring harnesses

OPTIONS

3-way universal solenoid installed

Auxiliary micro switch cam with signal in service or backwash

SPECIFICATIONS

NXT GENERIC METER GUIDELINES

Open collector output

Pulse rate generated must not exceed 100 pulses per second (100 Hz), or 6,000 pulses per minute

Support for meter outputs in the range of 1-255 gallons (25.5 m^3) for every 1-255 pulses
Example: 35 gallons/100 pulses
(= 3.5 gallons/10 pulses, = 0.35 gallons/1 pulse)

Meter must operate at 5 VDC

NXT

SYSTEM #	SYSTEM DESCRIPTION	STAGERS	TYPE
4	Single Unit	1	Time Clock: No Meter Immediate: One Meter Delayed: One Meter Remote: No Meter
5	Interlocked	2, 3, 4	Immediate: All Meters Remote: No Meter
6	Series	2, 3, 4	Immediate: One Meter Delayed: One Meter Remote: No Meter
7	Alternating	2	Immediate: One Meter Remote: No Meter
9	Alternating	2, 3, 4	Immediate: All Meters Remote: No Meter
14	Demand Flow	2, 3, 4	Immediate: All Meters

ELECTRICAL RATING

24V AC Transformers
115V AC +/- 20% input — 230V AC +/- 20% input

24V AC output w/40V A — 24V AC output w/108V A

HUMIDITY

95% RH, non-condensing

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43163 REV E MA2016

NXT ELECTRONIC STAGER CONTROLLER MASTER CHART

FILL IN PROPER DESIGNATIONS TO DETERMINE PRODUCT NUMBER: **N X - T - S B**

CONTROLLER Electronic Controller Series to be Provided
NX = NXT Stager Control

STAGER & PROGRAM Rotary Pilot Stager to be Provided
48-00 = Softener or Filter, 6 Port (Brass)
51-06 = Softener, Timed Brine Draw & Fill, 8 Port (Brass)
51-10 = Two Tank Filter w/ Sequential Regeneration, 8 Port (Brass)
51-S0 = Softener, N.O. In/Out, N.C. All other valves, 8 Port (Brass)

COMM CABLE CAT 6 Communication Cable to be Provided
0 = Less Communication Cable
1 = With 25 ft (7.6 m) CAT 6 Communication Cable
This cable used to connect up to 4 NXT Stager Controls
One less cable is required than number of controls in system

TRANSFORMER Electrical transformer to be Provided
0 = Less transformer *(Customer must supply 24VAC to controller)*
T = Transformer Mounted Inside Enclosure; 24VAC, 40 VA Output
Accepts 115V, 208V, or 240V 50/60 Hz Input Voltages

1st AUX. SWITCH First Extra Switch to be provided on Rotary Pilot Stager
S = SERVICE Return (Homing) on all NXT Stager Controls

2nd AUX. SWITCH Second Extra Switch to be provided on Rotary Pilot Stager
0 = NONE
*A to R = CAM POSITION Switch is to be active (I & O not used)
1 = 51-10 Stager with Notch in both Backwash Positions
2 = 51-10 Stager with Notch in both Rinse Positions
* Use a Letter to indicate Cam position Not a Number.

PRESSURE Program of Stager
0 = STANDARD (Vent to open)
1 = INVERTED (Pressure to open)

SOLENOID Used to keep a tank in stand-by position
0 = NONE
S = Solenoid included
Only Used for systems:
Twin Alternating System 7
Multiple Tank Alternating System 9
Demand Recall (Progressive Flow) System 14

STAGER REVISION
B = 48 and 51 Series Stagers

REV	ECO DESCRIPTION	BY/DATE
A	Initial Release	J. Josetti
B	Transformer Update	J. Josetti 23-May-17

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NX48 and NX51 NXT Stager Controller

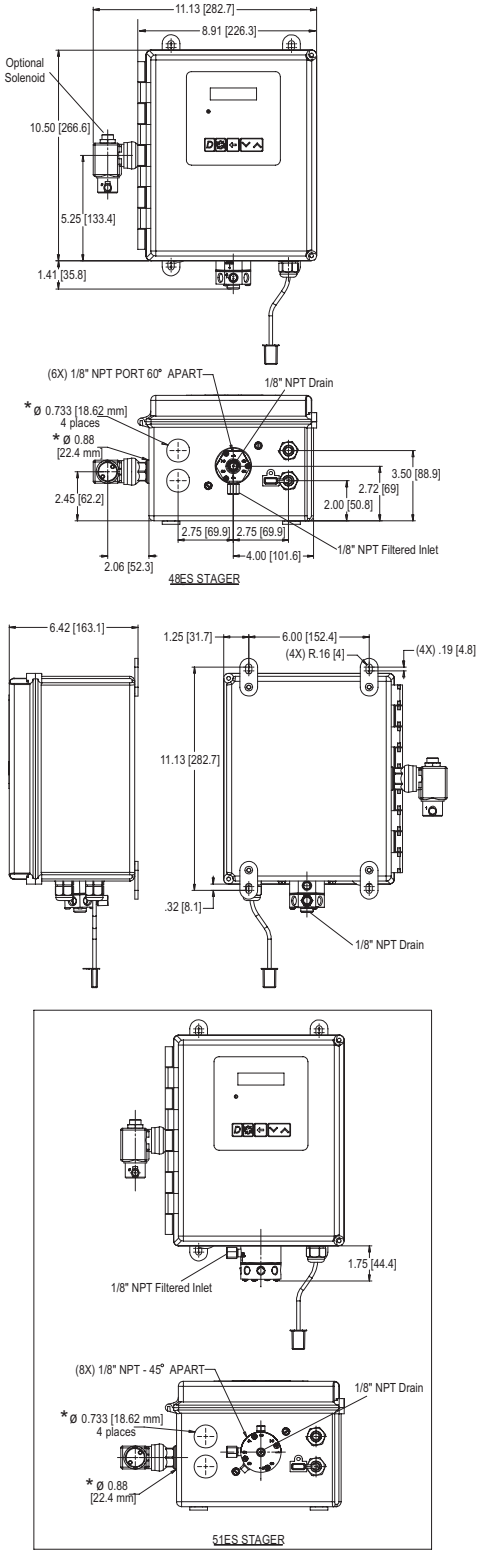
Service Manual

TABLE OF CONTENTS

IMPORTANT PLEASE READ:

- The information, specifications and illustrations in this manual are based on the latest information available at the time of printing. The manufacturer reserves the right to make changes at any time without notice.
- This manual is intended as a guide for service of the controller only. System installation requires information from a number of suppliers not known at the time of control manufacture. This product should be installed by a plumbing professional.
- This product must be installed in compliance with all state and municipal plumbing and electrical codes. Permits may be required at the time of installation.
- If daytime operating pressure exceeds 80 psi, nighttime pressures may exceed pressure limits. A pressure reducing valve must be installed if pressure exceeds 125 psi.
- Do not install the unit where temperatures may drop below 32°F (0°C) or above 110°F (43°C).
- Do not place the unit in direct sunlight. Black units will absorb radiant heat increasing internal temperatures.
- Do not strike the controller or any of the components.
- Warranty of this product extends to manufacturing defects. Misapplication of this product may result in failure to properly condition water, or damage to product.
- A prefilter should be used on installations in which free solids are present.
- Correct and constant voltage must be supplied to the controller to maintain proper function.

NXT STAGER DIMENSIONS



***NOTE: Drill as required. These holes will only be drilled at factory if required.**

Figure 1

SYSTEM SPECIFICATIONS 48 AND 51 NXT SERIES

Generic Meter Guidelines

- Open collector output
- Pulse rate generated must not exceed 100 pulses per second (100 Hz), or 6,000 pulses per minute
- Support for meter outputs in the range of 1-255 gallons (25.5 m^3) for every 1-255 pulses
  Example: 35 gallons/100 pulses
  (=3.5 gallons/10 pulses, = 0.35 gallons/1 pulse)
- Meter must operate at 5 VDC

Electrical Rating

- 115 VAC ±20% input, 24 VAC output w/50 VA (maintain input voltage in this range)
- 230 VAC ±20% input, 24 VAC output w/50 VA (maintain input voltage in this range)
- Max Rated Power 15W

Humidity

- 95% RH, non-condensing

Temperature

- Maximum control fluid temperature 140°F (60°C)
- Operate where ambient temperatures are above 32°F and below 110°F

Pressure

- Maximum control fluid pressure 125 psi (8.5 bar)
- Control fluid can be either water or air and must be equal to or greater than system pressure.

SYSTEM DEFINITIONS

System Number	System Description	# of Tanks/ Controls	Type	Service Outlet Valve Controlled by...	Operation Discussion
4	Single Unit	1	Time Clock: No Meter Immediate: One Meter Delayed: One Meter Remote Signal Start: No Meter	Stager (no solenoid required)	Single tank configuration. During Regeneration no water available to service unless optional bypass valve #2A installed.
5	Interlocked	2, 3, or 4	Immediate: All Meters Remote Signal Start: No Meter	Stager (no solenoid required)	All tanks in parallel supplying treated water. Each unit in the system will have its own flow meter/sensor input. The control will delay the start of Regeneration if another unit is already in Regeneration. Once that unit has completed a Regeneration cycle, and has returned to Service,the unit with longest regeneration queue time will begin Regeneration. No more than one unit will be in Regeneration at a time.
6	Series Regeneration	2, 3, or 4	Immediate: One Meter Delayed: One Meter Remote Signal Start: No Meter	Stager (no solenoid required)	All tanks in parallel supplying treated water. Only #1 control will monitor flow meter/ sensor input. When a regeneration is required for the system, it will regenerate valve address #1 first, immediately followed by #2, then #3, then #4 if installed. No more than one unit will be in Regeneration at a time.
7	Twin Alternating	2	Immediate: One Meter Remote Signal Start: No Meter	Solenoid (plug stager port 2)	One tank online supplying treated water, one tank in Standby. Only #1 control will monitor its flow meter/sensor input. Regeneration of a unit will begin after the other control has left Standby and returned to Service. When the Regeneration cycle is complete, the regenerated unit will enter Standby. Standby on each tank is controlled by a solenoid connected to the service outlet valve of that tank.
9	Multiple Tank Alternating	2, 3, or 4	Immediate: All Meters Remote Signal Start: No Meter	Solenoid (plug stager port 2)	One, two, or three tanks online supplying treated water, one tank in Standby. Meter/ sensor input is required on each tank. Regeneration of a unit will begin after the other control has left Standby and returned to Service. When the Regeneration cycle is complete, the regenerated unit will enter Standby. Standby on each tank is controlled by a solenoid connected to the service outlet valve of that tank.
14	Demand Recall	2, 3, or 4	Immediate: All Meters	Solenoid (plug stager port 2)	Meter input is required on each tank. Unit #1 will begin In Service with #2, #3, and #4 (if installed) will begin in Standby. At least one unit is In Service at all times. When flow rate to the Primary Service Unit increases to a user specified rate, the next unit in sequence will move from Standby to Service. As the flow rate falls below the user specified rate subsequent tanks will return to Standby. When the Primary Service Unit regenerates, the next unit in sequence will become the new Primary Service Unit. As each units capacity is reached the controller will initiate a Regeneration of that unit. Depending on the number of units in the system, and flow rate demand the regenerated unit will then be placed either into Standby or Service. Only one unit will be in Regeneration at a time.

SYSTEM OPERATION IN SERVICE (SYSTEM 14-DEMAND)

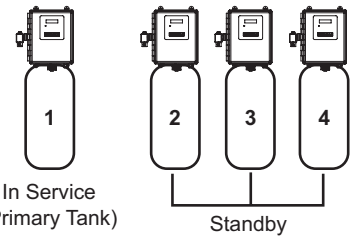
The system operates as part of a multi-tank regeneration system. This example applies to either a 2, 3 or 4 tank system.

Each tank in the system will have an active flow meter input, even in Standby.

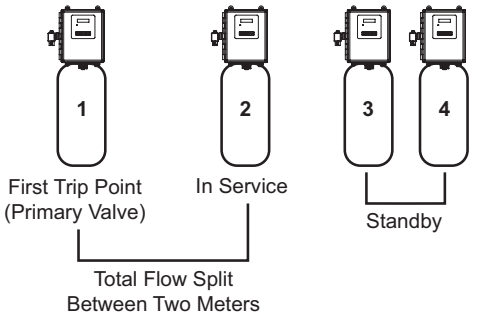
The number of tanks In Service depends on the flow rate.

Examples of a Four-Unit System:

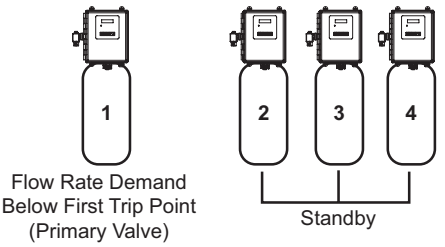
1. One Tank is In Service at all times (the "primary tank").



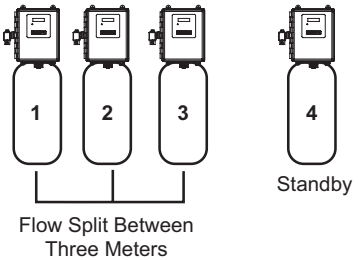
2. The total flow rate to the primary tank increased past the first trip point programmed rate. The flow stayed past the trip point delayed time. The next tank (least volume remaining) changes from Standby to In Service. This then splits the total flow between two meters.



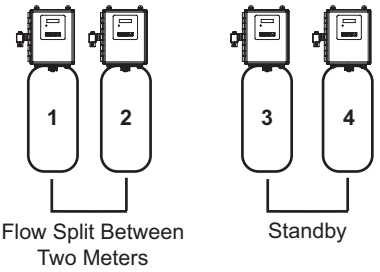
3. The flow rate demand decreased below the first trip point. The tank returns to Standby.



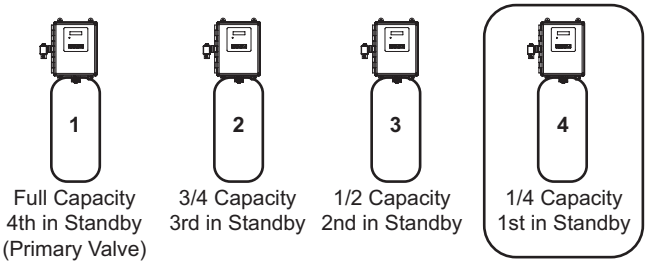
4. Total flow rate demand increased past a second trip point programmed rate. The second and third tank (least volume remaining) changes from Standby to In Service. The total flow is split between the three meters.



5. The third tank returns to Standby as demand decreases past the second trip point.

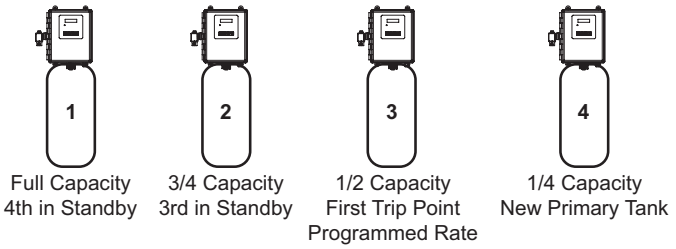


6. Tanks return to Standby due to decreased total flow rate and trip points programmed. The tank with the most remaining volume will be the first to go into Standby.



7. The primary tank regenerates. The next tank with the least remaining volume becomes the new primary tank. The tank with the next least volume remaining will be the first trip point programmed rate. Tanks continue operating in this order.

System Operation in Regeneration:



If two tanks are In Service and both reach Volume Remaining = 0, the other two tanks will shift from Standby to In Service. The lead tank with Volume Remaining = 0 will start Regeneration. The second tank with Volume Remaining = 0 will enter Standby. If flow increases past the trip point a third tank needs to enter In Service. The tank in Standby with Volume Remaining = 0 will shift into In Service to maintain a steady flow. Operating for extended periods in this mode may degrade the water quality.

TIMER DISPLAY FEATURES

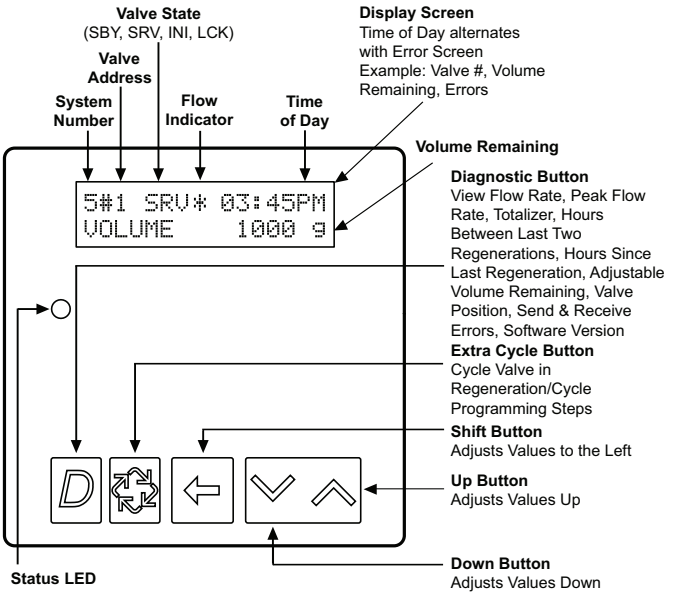


Figure 1

Valve State

INI (Initializing) - INI will display on the screen for 30 to 45 seconds when initializing after a power failure reset or programming.

RGQ (Regeneration Queued) -RGQ indicates that the reserve has been entered in a delayed system and regeneration has been queued. When in the main screen, press the Extra Cycle button to toggle service (SRV) with RGQ.

Service (SRV) - SRV will display when the unit is In Service.

LCK (Lock) - Lock will be displayed when contact closure is applied across the interlock terminals on the circuit board. See the “Network/Communication Cables & Connections” section of this manual.

LED Status Lights

Blue LED - Illuminates while the unit is In Service and no errors exist. The unit will always be In Service unless a regeneration trigger has occurred (green LED light will be displayed). A blinking blue light indicates the timer is In Service, and queued for regeneration.

Green LED - Illuminates when the unit is in Regeneration mode. A blinking green light indicates the timer is in Standby, and not in Regeneration.

Red LED- Illuminates when there is an error.

Flow Indicator

A rotating line (appearing as a rotating star shape) will display on the screen when flow is going through the meter.

NETWORK/COMMUNICATION CABLES & CONNECTIONS

Use a CAT5 Network/Communication cable.

Connect the network/communication cable to either port before programming.

The maximum cable length between timers is 100 feet.

Connect units together from one communication port to the next communication port. The order is not important.

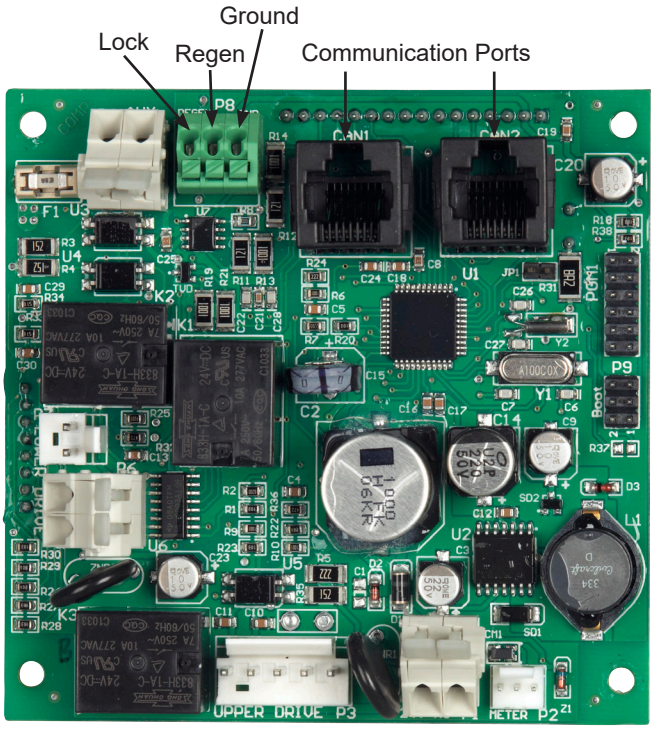


Figure 2 Current NXT Circuit Board

TIMER OPERATION

Set Time of Day

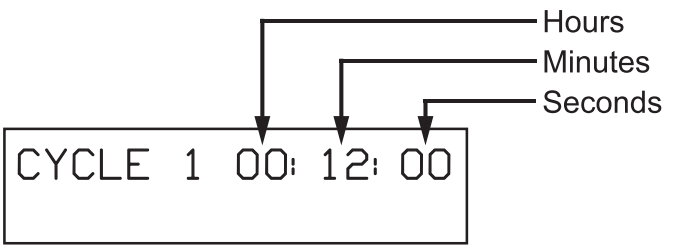
Hold the Up or Down button to change time. While in time change mode press Shift to adjust next digit over. On multiple tank systems change time on #1 control only. All other controls in system will mirror the time on control #1.

Manually Initiating a Regeneration

1. When timer is In Service or Stand By, press the Extra Cycle button on the main screen for five (5) seconds to force a manual regeneration if another unit is not in Regeneration.
2. The timer reaches Regeneration cycle Step #1.
3. Press the Extra Cycle button once to advance valve to the next Regeneration cycle.

Timer Operation During Regeneration

In the Regeneration cycle step display, the timer shows the current Regeneration cycle number the valve is in, or has reached, and the time remaining in that step. Once all regeneration steps are complete the timer returns to In Service and resumes normal operation.



Example: 12 minutes remaining in Cycle 1

Press the Extra Cycle button during a Regeneration Cycle to immediately advance the valve to the next cycle and resume normal timing.

Flow Meter Equipped Timer

During normal operation the Time of Day screen alternates with the Error screen (if errors are present).

As treated water is used, the Volume Remaining display counts down from the calculated system capacity to zero. When zero is reached a Regeneration cycle begins if no other units are in regeneration.

Timer Operation During Programming

The timer enters the Program Mode in Standby or Service Mode as long as it is not in regeneration. While in the Program Mode the timer continues to operate normally monitoring water usage. Timer programming is stored in memory permanently.

Timer Operation During A Power Failure

During a power failure all timer displays and programming are stored for use upon power re-application. The timer retains all values, without loss. The timer is fully inoperative and any calls for regeneration are delayed. The timer, upon power re-application, resumes normal operation from the point that it was interrupted.

NOTE: A flashing Time of Day display indicates a power outage. Hold the Up or Down button to reset time.

Remote Lockout

The timer does not allow the unit/system to go into Regeneration until the regeneration lockout input signal to the unit is cleared. This requires a contact closure to activate the lockout. The recommended gauge wire is 20 with a maximum length of 500 feet.

Regeneration Day Override Feature

If the Day Override option is turned on and the actual number of days since last regeneration exceeds the set regeneration day override value, the Regeneration cycle starts. If other units are in regeneration, it is added to a regeneration queue. This occurs regardless of the remaining volume available.

⚠ WARNING: This unit is not designed to drive/power external devices. Transformer must be grounded. Ground wire must be terminated to the back plate where grounding label is located.

Auxiliary Relay Output

The Auxiliary Relay Output on the circuit board can be programmed to be closed during a window of time within the regeneration sequence. The Aux Relay Output Start time sets the turn-on time referenced to the start of regeneration. The Aux Relay Output End time sets the turn-off time referenced to the start of regeneration. The Auxiliary Relay Output shares the same relay as the Chemical Pump Output. See wiring diagram for connection information.

Chemical Pump Output

When the Chemical Pump Output feature is enabled, the control will calculate volume of water used and close the relay when the set CPO Aux Relay Volume is reached. Once activated, the relay will stay closed for the amount of time set in CPO Aux Relay Time. The Chemical Pump Output only functions while in service, and the CPO volume is reset to zero each regeneration. The Chemical Pump Output shares the same relay as the Auxiliary Relay Output. See wiring diagram for connection information.

MASTER PROGRAMMING MODE FLOW CHART

CAUTION Before entering Master Programming, please contact your local professional water dealer.

When the Master Programming Mode is entered, parameters can be set to make the timer(s) function as needed.

NOTE: Depending on current option settings, some displays cannot be viewed or set.

Entering Master Programming Mode

1. Press and hold the Shift and Up buttons for 5 seconds.

   OR

2. Set the time of day display to 12:01 PM or 12:01HR. Press and hold Up or Down buttons to set the time. Then press the Up and Down buttons at the same time for 5 seconds.

Exiting Master Programming Mode

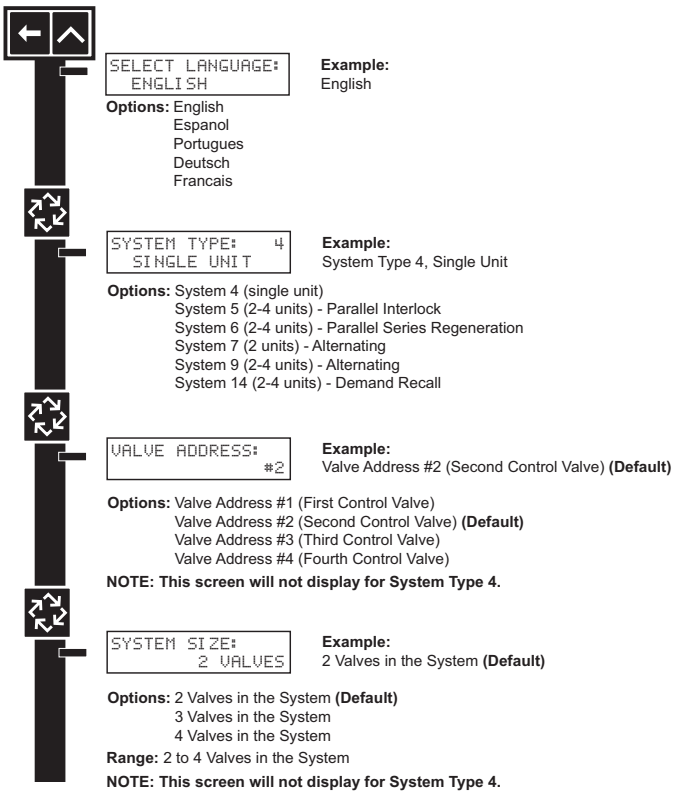
1. Press the Extra Cycle button once per display until all are viewed. Master Programming Mode is exited and the normal display screen appears.
2. To exit the Master Programming Mode without saving changes, press the Diagnostic button.

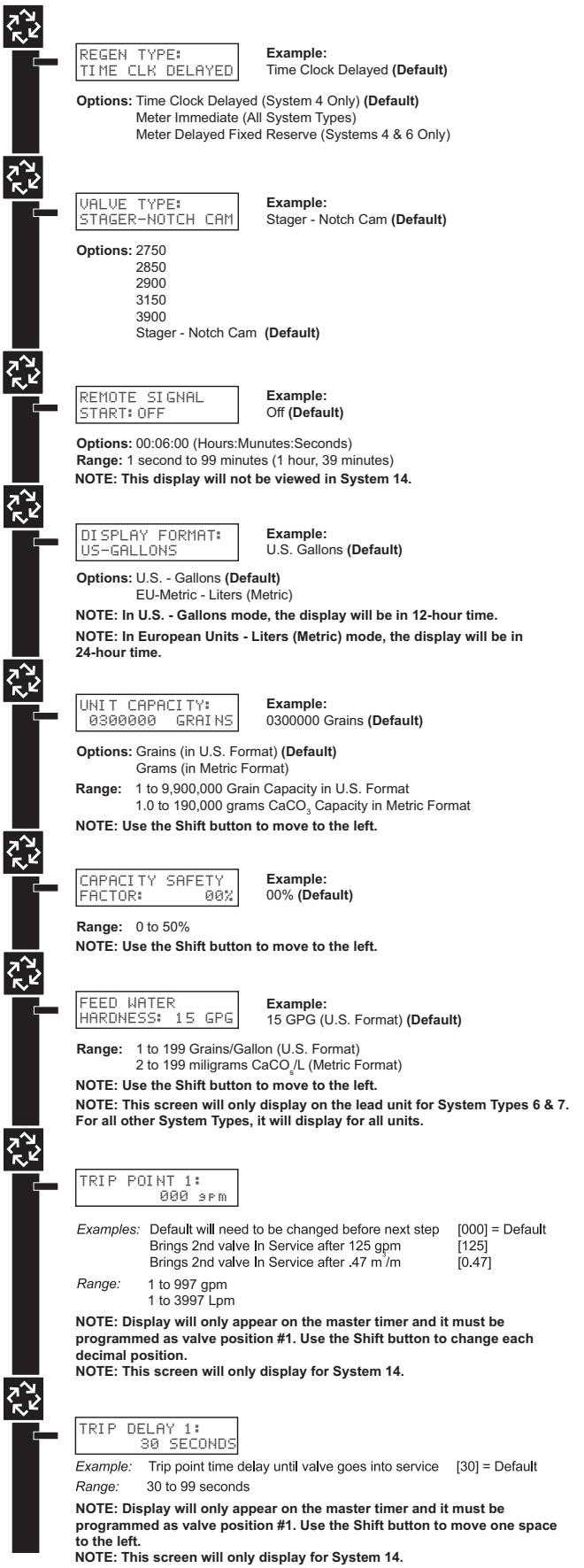
NOTE: If no keypad activity is made for 5 minutes while in the Master Programming Mode, or if there is a power failure, no changes will be saved, and the unit will go back to the main display screen.

Resets

Soft Reset: Press and hold the Up and Down buttons for 25 seconds until 12:00PM (or 12:00HR) appears. This resets all parameters except for the flow meter totalizer volume.

Master Reset: Hold the Extra Cycle button while powering up the unit. This resets all of the parameters in the unit. Check and verify the choices selected in Master Programming Mode.





MASTER PROGRAMMING MODE FLOW CHART *continued*

TRIP POINT 2:
gpm

Examples: Brings 3rd valve In Service after 250 gpm [250]
Brings 3rd valve In Service after .95 m^3/m [0.95]

Range: 2 to 998 gpm
1 to 3997 Lpm

NOTE: Display will only appear on the master timer and it must be programmed as valve position #1. System size must be 3 or 4 to appear. Use the Shift button to move one space to the left.
NOTE: This screen will only display for System 14.

TRIP DELAY 2:
30 SECONDS

Example: Trip point time delay until valve goes into Service [30] = Default

Range: 30 to 99 seconds

NOTE: Display will only appear on the master timer and it must be programmed as valve position #1. System size must be 3 or 4 to appear. Use the Shift button to move one space to the left.
NOTE: This screen will only display for System 14.

TRIP POINT 3:
gpm

Examples: Brings 4th Valve In Service after 350 gpm [350]
Brings 4th Valve In Service after 1.32 m^3/m [1.32]

Range: 3 to 999 gpm
1 to 3997 Lpm

NOTE: Display will only appear on the master timer and it must be programmed as valve position #1. System size must be 4 to appear. Use the Shift button to move one space to the left.
NOTE: This screen will only display for System 14.

TRIP DELAY 3:
30 SECONDS

Example: Trip point time delay until valve goes to Service [30] = Default

Range: 30 to 99 seconds

NOTE: Display will only appear on the master timer and it must be programmed as valve position #1. System size must be 4 to appear. Use the Shift button to move one space to the left.
NOTE: This screen will only display for System 14.

REGENERATION DAY
OVERRIDE:OFF

Example:
Off **(Default for Meter)**
On **(Default for Time Clock)**

REGENERATION DAY
OVERRIDE:01 DAYS

Example:
1 Day

Options: Off **(Default for Meter)** or On **(Default for Time Clock)**

Range: 1 to 99 Days

REGENERATION
TIME: 02:00AM

Example:
2:00 A.M. **(Default)**

Options: A.M. (U.S. Format)
HR (Metric Format)

NOTE: Regeneration time will not appear unless Regeneration Day Override is on.

CYCLE 1 00:10:00

Example: Backwash
00:10:00 **(Default 48-00 Stager & 51-09 Stager)**
(Hours:Minutes:Seconds)

CYCLE 2 01:00:00

Example: Brine
01:00:00 **(Default 48-00 Stager & 51-09 Stager)**
(Hours:Minutes:Seconds)

Options: 01:00:00 for Conditioner for the 48-00 Stager & 51-09 Stager **(Default)**
00:00:00 for Filter for the 48-00 Stager

CYCLE 3 00:10:00

Example: Fast Rinse
00:10:00 **(Default 48-00 Stager & 51-09 Stager)**
(Hours:Minutes:Seconds)

CYCLE 4 OFF

Example:
Off **(Default 48-00 Stager)**

CYCLE 4 00:12:00

Example: Refill
00:12:00 **(Default 51-09 Stager)**
(Hours:Minutes:Seconds)

CYCLE 5 OFF

Example:
Off **(Default 51-09 Stager)**

NOTE: This screen will only display when cycle 4 is not OFF.

AUXILIARY RELAY:
DISABLED

Example:
Auxiliary Relay is Disabled

Options: Enabled
Disabled **(Default)**

AUX RELAY OUTPUT
START 1 00:00:00

Example:
Auxiliary Relay Output Start 1 at
0 hours, 0 minutes, & 0 seconds

Range: 00:00:00 to 18:00:00

NOTE: Only displayed if Auxiliary Relay is enabled in previous screen. Auxiliary Relay will only display if Chemical Pump is OFF for System Types 6 & 7.

AUX RELAY OUTPUT
END 1 00:00:00

Example:
Auxiliary Relay Output End 1 at
0 hours, 0 minutes, & 0 seconds

Range: 00:00:00 to 18:00:00

CHEMICAL PUMP:
DISABLED

Example:
Chemical Pump is Disabled

Options: Enabled
Disabled **(Default)**

NOTE: This screen will only display on the lead unit for System Types 6 & 7. For all other System Types, it will display for all units.

CPO AUX RELAY
VOLUME: 000 9

Example:
Energize Chemical Pump relay every 50 gals (50)
Energize Chemical Pump relay every 200 L (200)

Range: 1 to 999 gallons in U.S. Format
1 to 9999 L in Metric Format

CPO AUX RELAY
TIME: 00:00:00

Example:
Each time chemical pump relay is on, run for
30 seconds (00:00:30)

Range: 00:00:00 to 02:00:00

FLOW METER:
1.0 PADDLE

Example:
1.0 Paddle Flow Meter

Options: 1.0 Paddle
1.0 Turbine
1.5 Paddle
1.5 Turbine
2.0 Paddle
3.0 Paddle
Generic

NOTE: Default flow meter type is based on the valve type. This screen will only display on the lead unit for System Types 6 & 7. All other system types it will display for all units.

MAXIMUM FLOW
RATE: 0000 gpm

Example:
Maximum Flow Rate of 0 gpm

Range: 20 - 2000 gpm (U.S. Format)
20 - 2000 Lpm (Metric Format)

NOTE: Only displayed if "Generic" is chosen for the flow meter.

ADD 01 GALLONS
EVERY 001 PULSES

Example:
Add 1 Gallon for Each Pulse in U.S. Format

Options: Gallons (U.S. Format)
Liters (Metric Format)

Range: 1 - 99 Gallons (U.S. Format)
0.1 - 09.9 L (Metric Format)
Pulses: 1 - 99

NOTE: Only displayed if "Generic" is chosen for the flow meter.

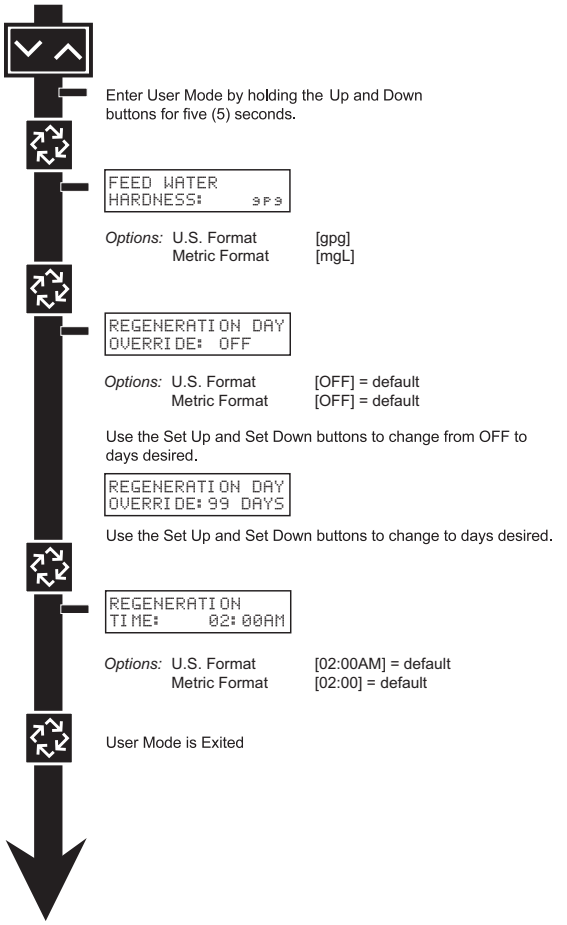
PROGRAMMING UNIT
PLEASE WAIT...

Example:
Master Programming Mode is Exiting

USER PROGRAMMING MODE FLOW CHART

Entering User Programming Mode

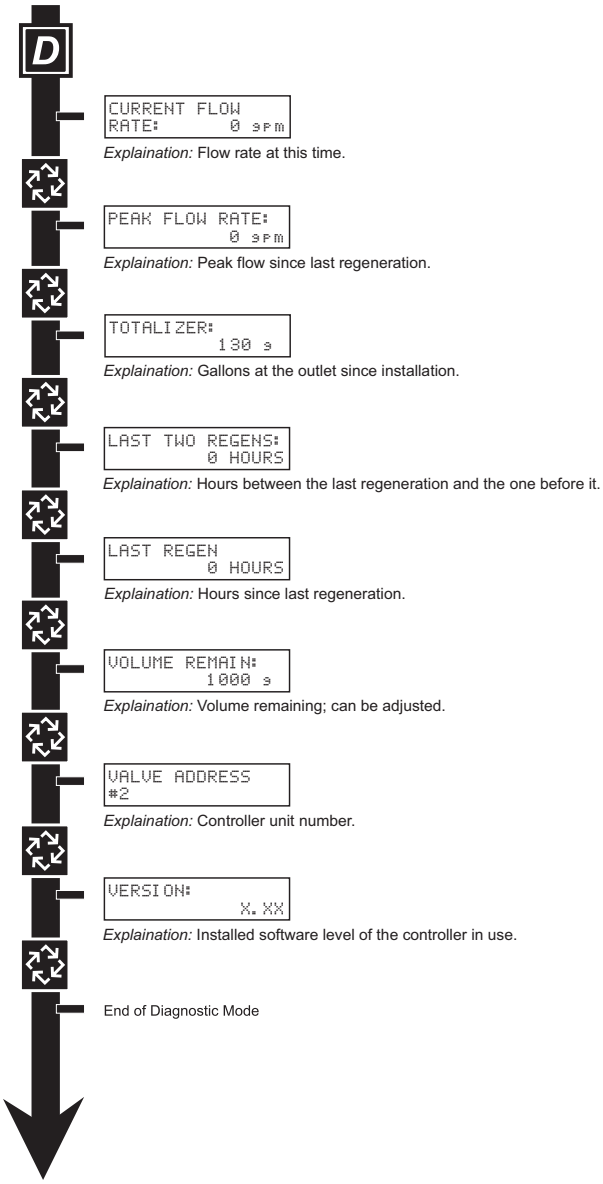
Hold the Up and Down buttons for 5 seconds.



DIAGNOSTIC PROGRAMMING MODE FLOW CHART

Entering Diagnostic Programming Mode

1. Push and release the "D" button.
2. Press the Extra Cycle button once per display until all displays are viewed and Normal Display is resumed.
3. Push and release the"D" button at anytime during diagnostic mode and the timer will exit the mode.
4. Depending on the current controller programming, certain displays may not be able to be viewed or set.



NXT Multi Language
Programming Parameters and Ranges

System Type	4 Time Clock	4 Metered Immediate	4 Metered Delayed	5 Interlock				6 Series				7 Alternating		9 Alternating				14 Demand Recall				Programming Parameter Ranges	
																						Gallons	Liters
Valve Address				1	2	3	4	1	2	3	4	1	2	1	2	3	4	1	2	3	4	1 thru 4	
Select Language	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	English, Espanol, Portugues, Deutsch, Francais	
System Size				x				x				x		x				x				1 thru 4	
Regen Type	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Time Clock, Metered Delayed, Metered Immediate	
Valve Type	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	2750, 2850, 2900, 3150, 3900, Stager	
Regenerant Flow	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Downflow, Upflow, Upflow Fill First	
Remote Signal Start	x	x	x	x	x	x	x	x				x		x	x	x	x					Off, 00:00:01 - 01:39:00	
Display Format	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	US - Gallons	EU - Metric-Liters
Unit Capacity		x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	x	1 - 9900000 Grains	1 - 198000 gCaCO3
Capacity Safety Factor		x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	x	0- 50%	
Feed Water Hardness		x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	x	1 - 199 Grains/Gallons	1 - 1999 mgL
Trip Point 1																		x				0 - 997gpm	0 - 3997 Lpm
Trip Delay 1																		x				30 - 99 Seconds	30 - 99 Seconds
Trip Point 2																		x				Trip Point 1 + 1 - 998 gpm	Trip Point 1 + 1 - 3998 Lpm
Trip Delay 2																		x				30 - 99 Seconds	30 - 99 Seconds
Trip Point 3																		x				Trip Point 2 + 1 - 999 gpm	Trip Point 2 + 1 - 3999 Lpm
Trip Delay 3																		x				30 - 99 Seconds	30 - 99 Seconds
Regeneration Day Override	x	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x	x	Off, 1 - 99	
Regeneration Time	x	o	o	o	o	o	o	o				o	o	o	o	o	o	o	o	o	o	12:00 a.m. - 11:59 p.m.	00:00 - 23:59 Hour
Cycle 1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	00:00:00 - 04:00:00	
Cycle 2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Off, 00:00:00 - 04:00:00	
Cycle 3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Off, 00:00:00 - 04:00:00	
Cycle 4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Off, 00:00:00 - 04:00:00	
Cycle 5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Off, 00:00:00 - 04:00:00	
Auxiliary Relay	x	x	x	x	x	x	x	u	x	x	x	u	x	x	x	x	x	x	x	x	x	Enabled, Disabled	
Aux Relay Output Start	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	00:00:01 to Total Regeneration Time - 1	
Aux Relay Output End	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	Start Time + 1 to Total Regeneration Time	
Chemical Pump		x	x	x	x	x	x	u				u		x	x	x	x	x	x	x	x	Enabled, Disabled	
CPO Aux Relay Volume		c	c	c	c	c	c	c				c		c	c	c	c	c	c	c	c	1 - 999 gallons	0001 - 9999 Liters
CPO Aux Relay Time		c	c	c	c	c	c	c				c		c	c	c	c	c	c	c	c	00:00:01 - 02:00:00	00:00:01 - 02:00:00
Flow Meter		x	x	x	x	x	x	x				x		x	x	x	x	x	x	x	x	1" 1.5" Paddle or Turbine, 2" Paddle, 3" Paddle, Generic	
Generic		x	x	x	x	x	x	x				x		x	x	x	x	x	x	x	x		
Maximum Flow Rate		a	a	a	a	a	a	a				a		a	a	a	a	a	a	a	a	20 - 2000 GPM	20 - 2000 LPM
Add _ _ _ Gallons or Liters		a	a	a	a	a	a	a				a		a	a	a	a	a	a	a	a	1 - 255 Gallons	001 - 255 Liters
Every _ _ _ Pulses		a	a	a	a	a	a	a				a		a	a	a	a	a	a	a	a	1 - 255	1 - 255

Notes

o - Regeneration Time will only be viewed if Regeneration Day Override is used.

u - If Auxiliary Relay is Enabled then Chemical Pump Relay will not be viewed or if Chemical Pump Relay is Enabled then Auxiliary Relay will not be viewed.

c - All Relay Output parameters programming will be viewed if Enabled.

a - If Generic Flow Meter is chosen, then programming parameters will be viewed.

Stager Operation

Stagers are motor driven, rotary multi-port valves used to control a set of valves in a predefined sequence. They function by internally connecting inlet pressure to a defined set of control ports and allowing other control ports be vented through a drain. Control ports are used to open and close valves in a preset sequence. As the stager advances to various positions, different valves are open and closed in a system. The control port pressure and vent sequence is preset at the factory and cannot be field altered.

Stager Installation

1. Connect a constant pressure water or air source to the 1/8" NPT stager inlet. Control fluid pressure must be equal to or greater than system pressure. To ensure long trouble free operation, a 100 micron filter in the control pressure line is recommended.
2. Stager drain port should be left open or discharged to unrestricted or open drain. DO NOT plug or restrict drain port.
3. Connect the 1/8" NPT control ports to appropriate valves. Refer to tubing schematic provided in the Plumbing Diagrams section of this manual. Tubing inside diameter should be 1/8" or larger.

Inverted Type Stagers

Stagers that are ordered inverted would be used on systems with all normally closed valves. Inverted Stagers send pressure signals to open valves and vent signals to close valves.

Filter Operation Using 48-00 Stagers

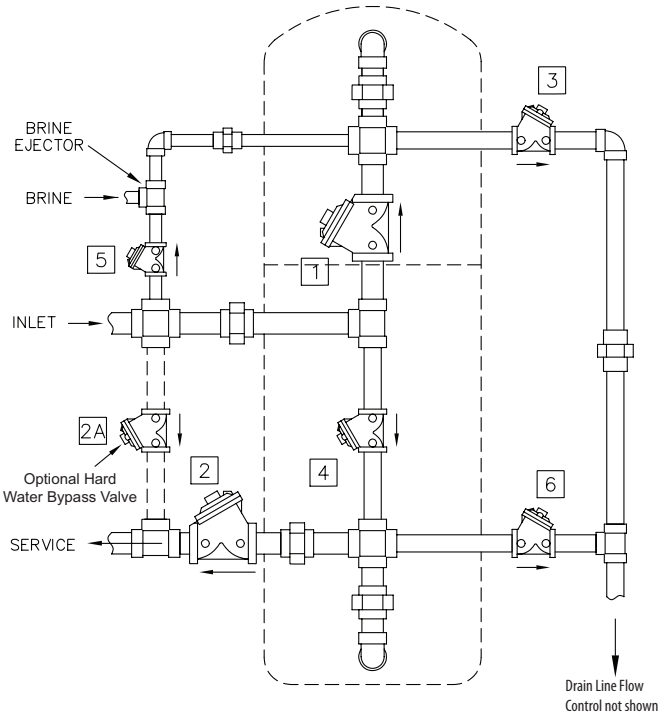
When using a 48-00 Stager to operate a filter:

1. Plug stager port #5 using a 1/8" pipe plug

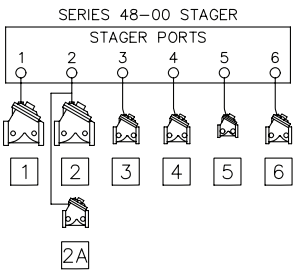
2. Program cycle 2 time to 0:00:00 or the desired settle time

PLUMBING DIAGRAMS

4 Position Softener (48-00 Stager)



4 POSITION SOFTENER

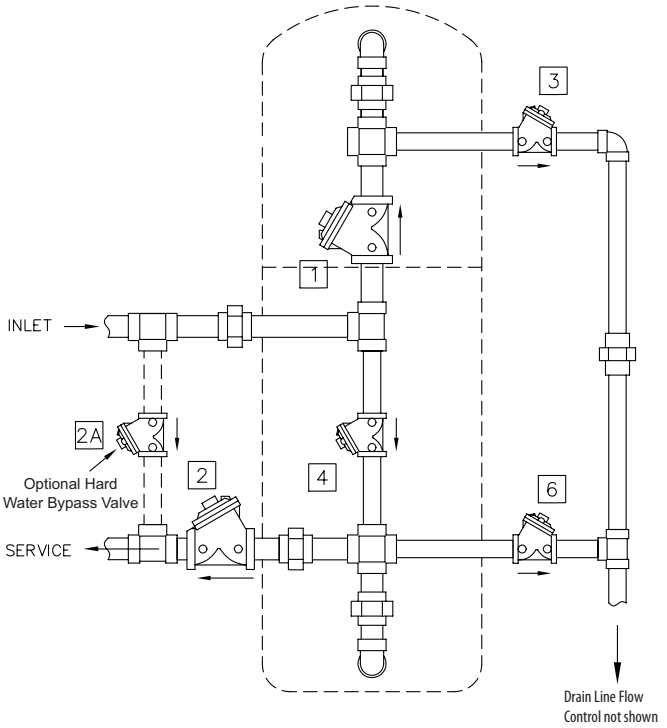


NOTCH	POS.	FUNCTION	PORTS VENTED[B]	VALVES OPEN[A]
A	4	SERVICE	1,2	1,2
B				
C	1	BACKWASH	3,4	3,4,2A
D				
E	2	BRINE	5,6	5,6,2A
F	3	RINSE	1,6	1,6,2A

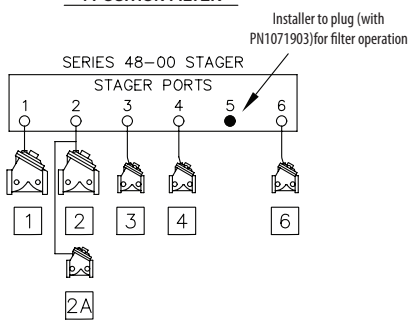
Note A: All valves normally open except optional valve 2A.
Note B: Inverted Stager types will have these ports pressurized. Inverted Stager to be used with all valves normally closed except optional valve 2A.

PLUMBING DIAGRAMS *continued*

4 Position Filter (48-00 Stager)



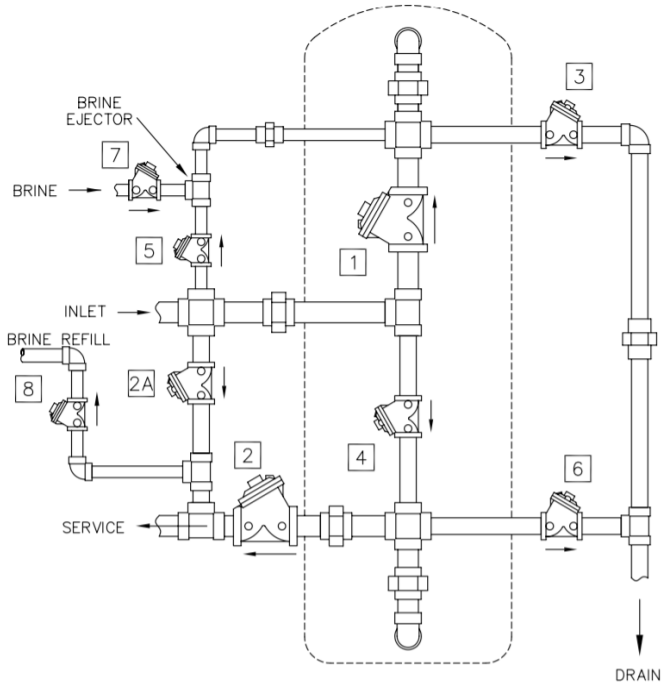
4 POSITION FILTER

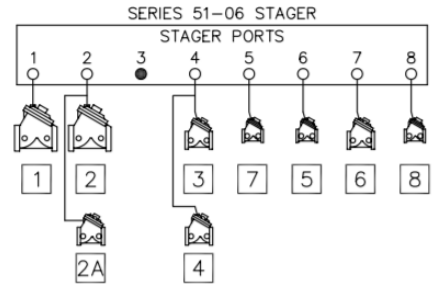


NOTCH	POS.	FUNCTION	PORTS VENTED [B]	VALVES OPEN [A]
A	4	SERVICE	1,2	1,2
B				
C	1	BACKWASH	3,4	3,4,2A
D				
E	2	BRINE [C]	5,6	5,6,2A
F	3	RINSE	1,6	1,6,2A

Note A: All valves normally open except optional valve 2A.
Note B: Inverted Stager types will have these ports pressurized. Inverted Stager to be used with all valves normally closed except optional valve 2A.
Note C: Program Cycle 2 time to 00:00:00 for filter operation.

5 Position Softener w/Timed Brine Refill (51-06 Stager)





NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,2	1,2
B				
C	1	BACKWASH	4	3,4,2A
D				
E	2	BRINE	5,6,7	5,6,7,2A
F	3	SLOW RINSE	6,7	5,6,2A
G	4	FAST RINSE	1,7	1,6,2A
H	5	BRINE REFILL	1,2,8	1,2,8

NOTE:

1. ALL OTHER PORTS PRESSURIZED.

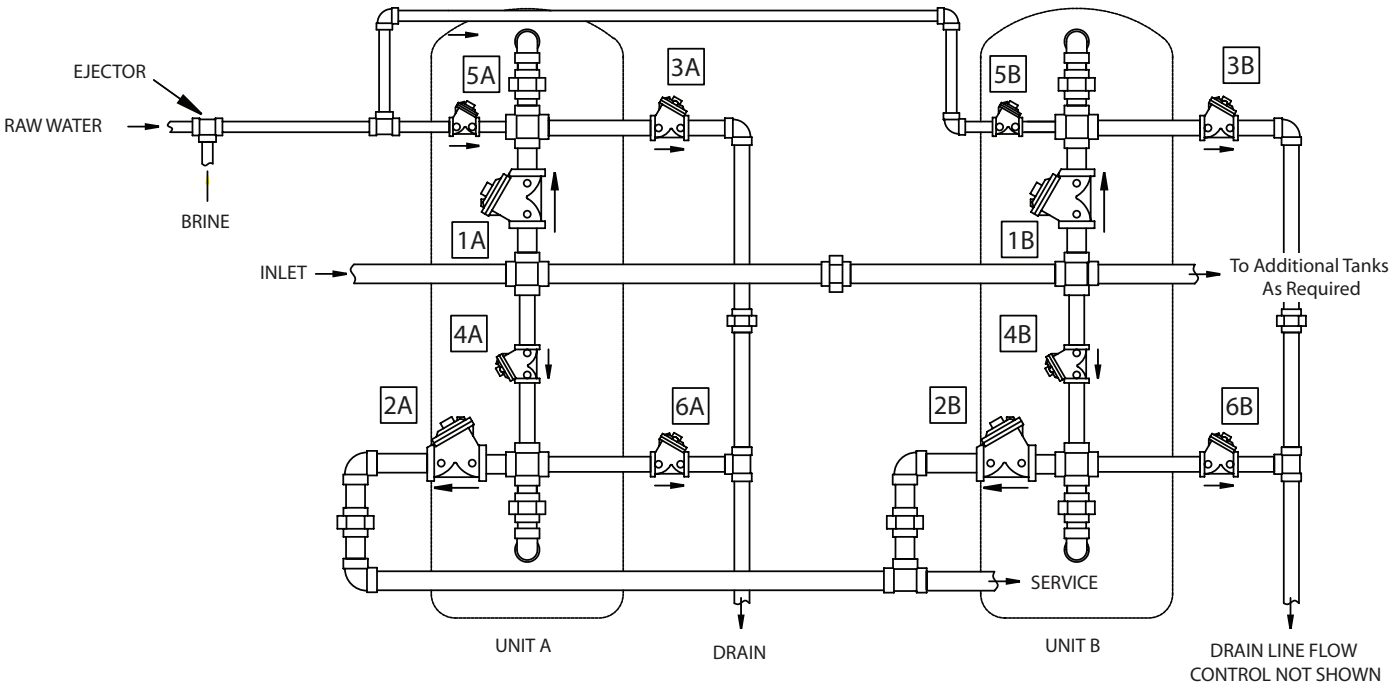
2. ALL VALVES (EXCEPT NO. 2A) NORMALLY OPEN, PRESSURE TO CLOSE. VALVE 2A NORMALLY CLOSED.

3. VALVE 2A REQUIRED FOR RAW WATER BYPASS DURING REGENERATION.

4. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

PLUMBING DIAGRAMS *continued*

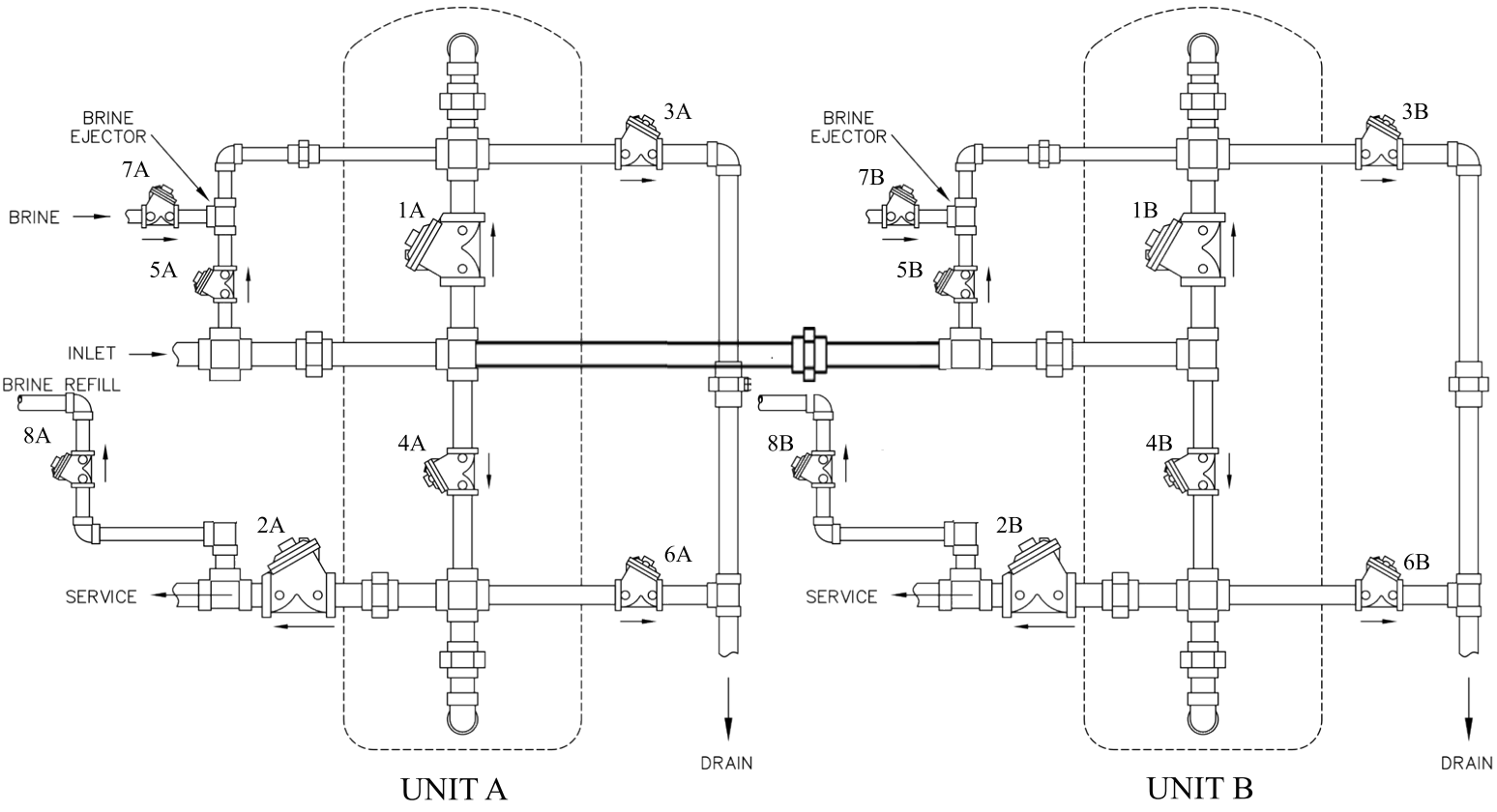
Multiple Tank 4 Position Softener (48-00 Stager)



NOTE: All valves normally open, pressure to close.

NOTE: Valve 2 for each tank is controlled by solenoid for system 7, 9, 14

Multiple Tank 5 Position Softener (51-06 Stager)

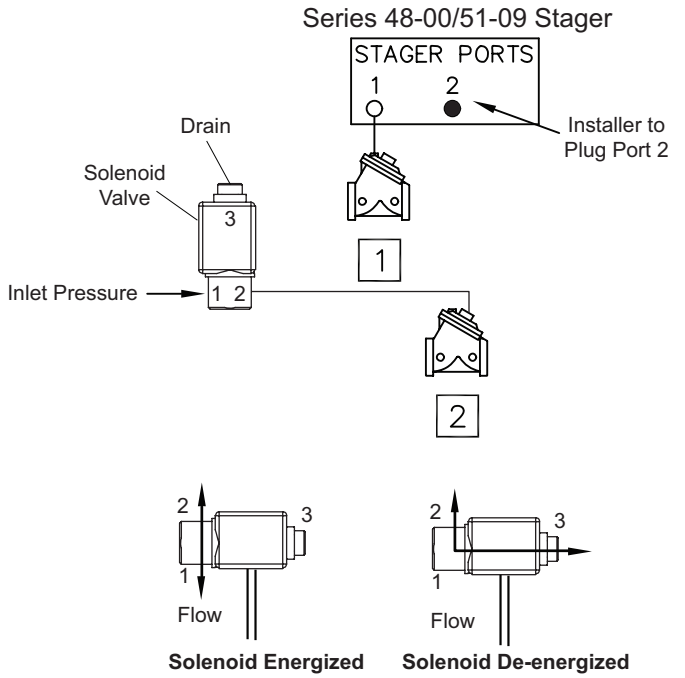


NOTE: All valves normally open, pressure to close.

NOTE: Valve 2 for each tank is controlled by solenoid for system 7, 9, 14

SOLENOID USE

Solenoids only required for Systems 7, 9 and 14



Energized To Close

The NXT Stager control can operate an optional 24 VAC solenoid to control when a tank is off line. This solenoid is electrically connected to the "lower drive" connection on the circuit board, and control pressure is run through the solenoid to the service outlet diaphragm valve.

The solenoid installed at the factory is a universal type. It is plumbed in an energize to close configuration when service outlet valve is normally open.

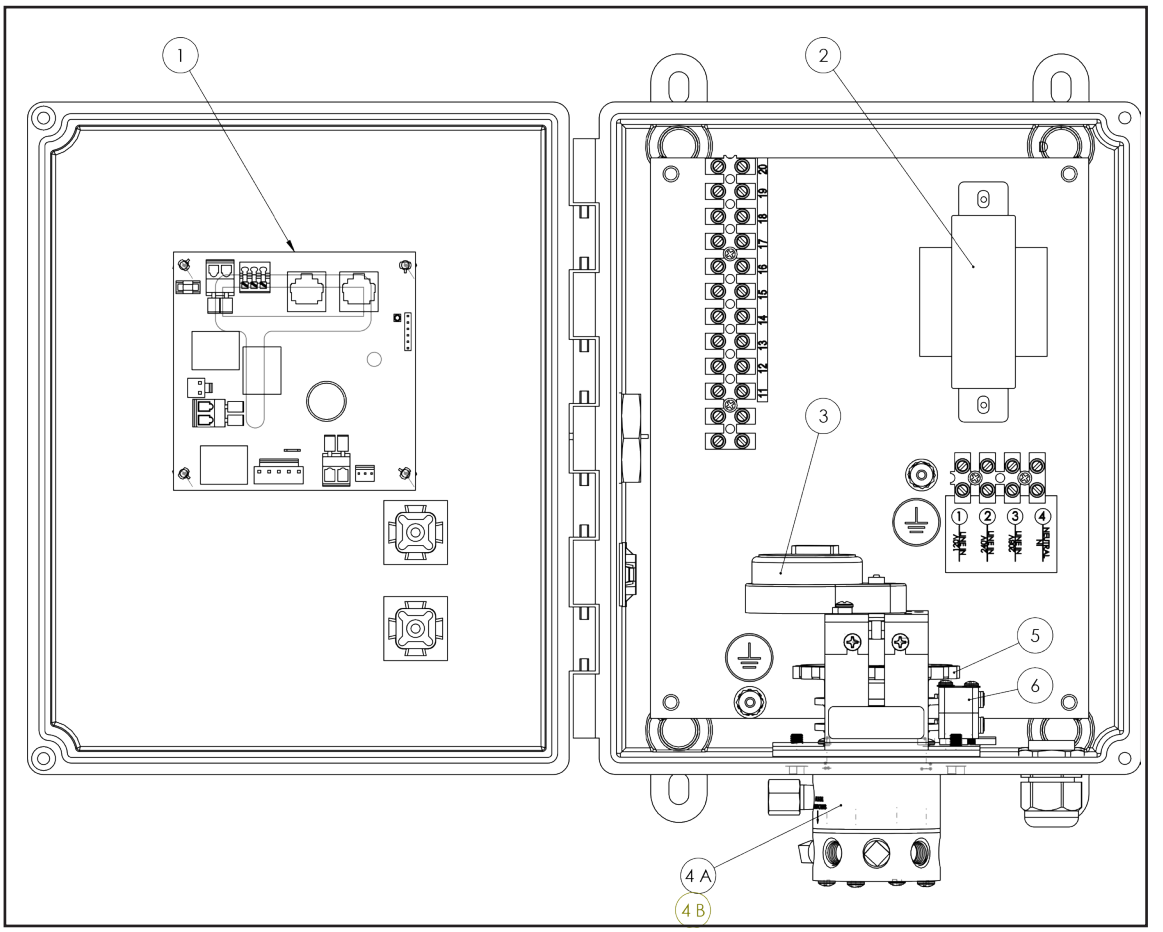
When a tank enters Regeneration or Standby the solenoid is energized. Pressure from solenoid port 1 passes to port 2. The diaphragm valve #2 will close.

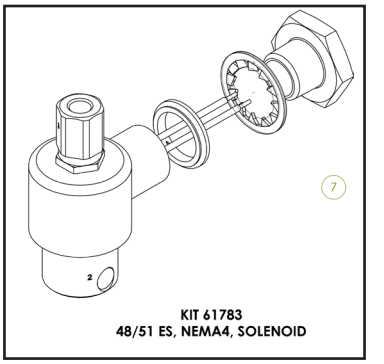
When a tank enters In Service the solenoid is de-energized. The inlet pressure to solenoid port 2 is stopped. The diaphragm valve is vented through solenoid port 2 to port 3 (drain). The valve #2 opens.

Inverted Stagers Only - Energize to Open

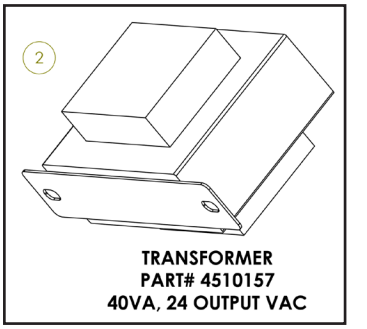
If the service outlet vavle is normally closed, connect constant pressure source to solenoid port 3. Connect solenoid port 2 to service outlet valve. Solenoid port 1 is drain.

STAGER CONTROLLER, 51 & 48, NXT, NEMA 4
24V/50-60Hz ASSEMBLY

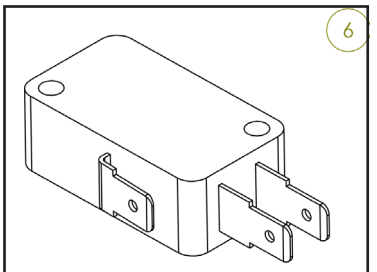




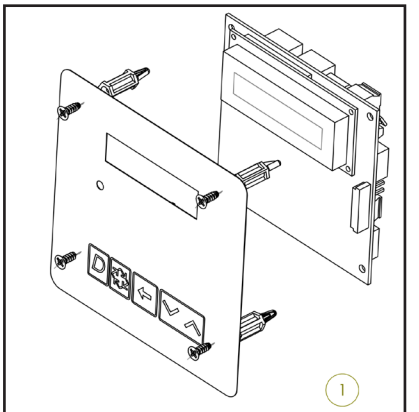
KIT 61783
48/51 ES, NEMA4, SOLENOID



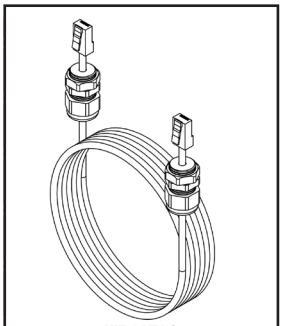
TRANSFORMER
PART# 4510157
40VA, 24 OUTPUT VAC



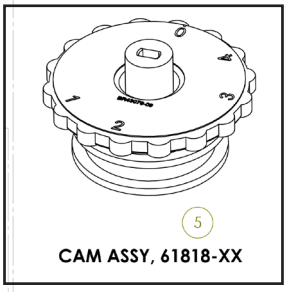
PART# 1075499
MICRO SWITCH



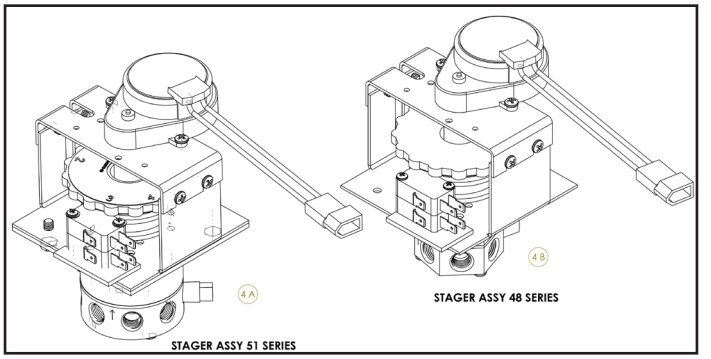
KIT 61784
48/51 ES, 3214NXT, CKT BOARD & KEYPAD



KIT 61764
CABLE ASSY, COMMUNICATION
CAT 5 5 METERS LENGTH



CAM ASSY, 61818-XX



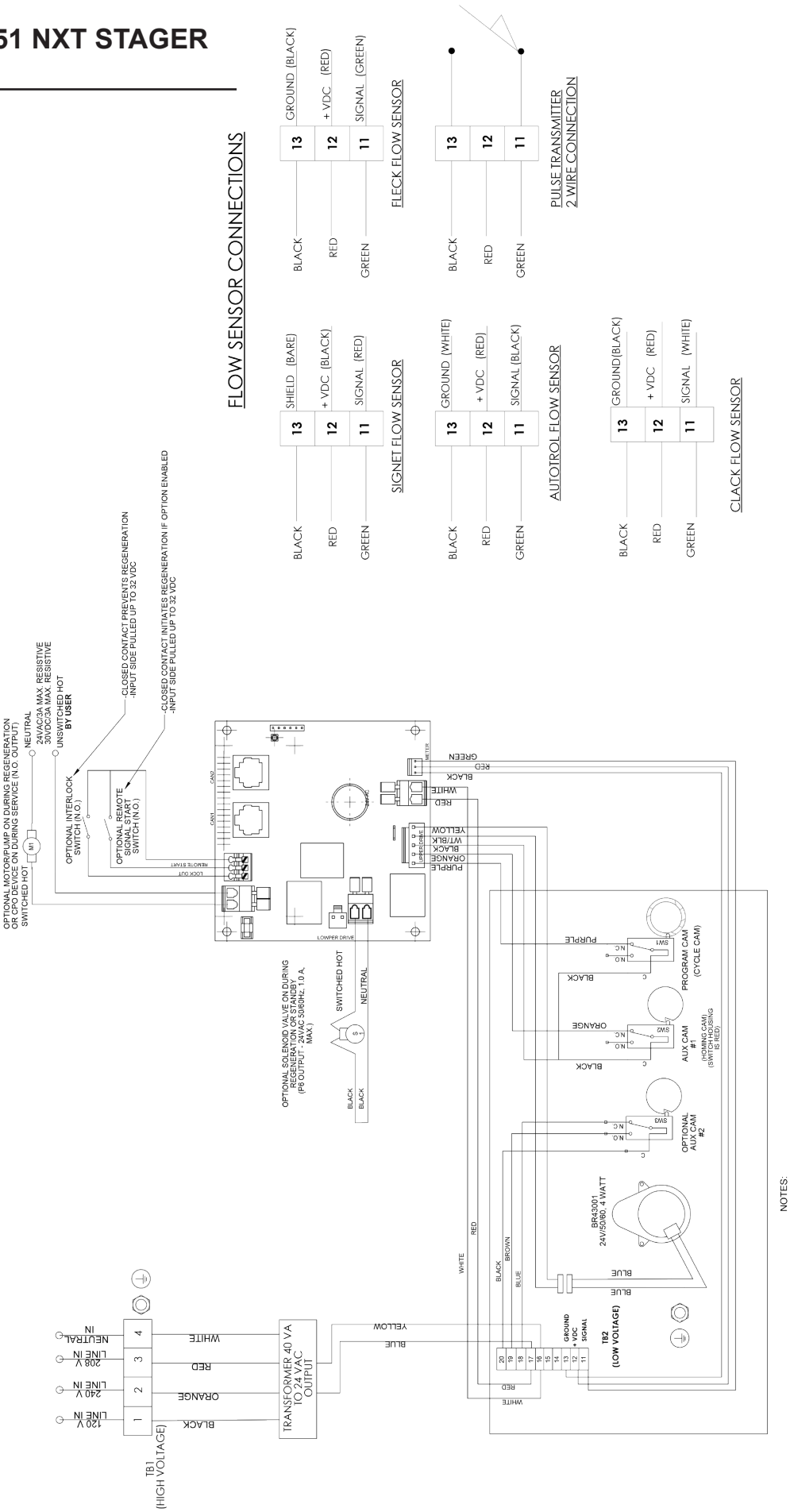
STAGER ASSY 48 SERIES

STAGER ASSY 51 SERIES

Service Parts Common To Both 48 & 51 NXT Stager Control

61783.....Kit, 48/51 ES NEMA4, Solenoid
61784.....Kit 48/51 ES, 3214 NXT, CKT Board & Keypad
61764.....Cable Assy, Communication, CAT 5, 5 Meters Long
1075499.....Switch, Micro
40941.....Wire Harness, Upper Drive
1075502.....Wire Harness, 2nd Aux Switch
43001.....Motor
4510157.....Transformer
See Service Assemblies Section for Stager and Cam Assemblies

WIRING DIAGRAM 48/51 NXT STAGER CONTROLLER



TROUBLESHOOTING

Detected Errors

If a communication error is detected, an Error Screen will alternate with the main (time of day) screen every few seconds.

- All units In Service remain in the In Service position.
- All units in Standby go to In Service.
- Any unit in Regeneration when the error occurs completes Regeneration and goes to In Service.
- No units are allowed to start a Regeneration Cycle while the error condition exists, unless they are manually forced into Regeneration.
- When an error is corrected and the error no longer displays (it may take several seconds for all of the units in a system to stop displaying the error message), the system returns to normal operation.

NOTE: During the error condition the control continues to monitor the flow meter and update the volume remaining. Once the error condition is corrected all units return to the operating status they were in prior to the error. Regeneration queue is rebuilt according to the normal system operation. Or, if more than one unit has been queued for regeneration, then the queue is rebuilt according to which one communicates first.

Message Displayed	Cause For Error	Correction
Flashing time	Power outage.	Program time by holding UP on Unit #1.
Detected Error = Matching Address	Two or more units programmed with the same valve address number.	Program each unit with unique valve address number in Master Programming.
Detected Error = Program Mismatch	Master program parameters do not match between two or more controls.	Confirm Master Programming for each unit.
Detected Error = No Message #1	No power to Control #1.	Power Control #1.
	Communication Cable to Valve Address #1 bad or missing.	Connect or replace Communication Cable.
Detected Error = No Message #2	No power to Control #2.	Power Control #2.
	Communication Cable to Valve Address #2 bad or missing.	Connect or replace Communication Cable.
Detected Error = No Message #3	No power to Control #3.	Power Control #3.
	Communication Cable to Valve Address #3 bad or missing.	Connect or replace Communication Cable.
Detected Error = No Message #4	No power to Control #4.	Power Control #4.
	Communication Cable to Valve Address #4 bad or missing.	Connect or replace Communication Cable.
Detected Error = E2 Reset Unit	This message appears after a software reset.	Reprogram control using Master Programming section.
Test Mode	Circuit Board was not programmed at factory.	Replace Circuit Board.
Black Squares on screen	Bad Circuit Board.	Replace Circuit Board.
INI on screen for more than 2 minutes	Circuit board not getting feedback from cycle switch.	Inspect Motor - should be rotating.
		Connect wire harness to cycle switch.
		Check Cycle Micro Switch.
CHG on screen for more than 2 minutes	Control programmed incorrectly as 2900 or 3900 valve type.	Reprogram unit as Stager Valve type.

SERVICE ASSEMBLIES

48-00 ES Stager Assembly

61808-01 .....Stager Assy, 48-00, NXT 24VAC, HMG No 2nd Aux Switch
61808-02 .....Stager Assy, 48-00, NXT 24VAC, SA, 2nd Aux Notched in Service
61808-03 .....Stager Assy, 48-00, NXT 24VAC, SC, 2nd Aux Notched In Backwash
61808-10 .....Stager Assy, 48-00, Inverted, NXT 24VAC, HMG No 2nd Aux Switch
61808-20 .....Stager Assy, 48-00, Inverted, NXT 24VAC, SA, 2nd Aux Notched in Service
61808-30 .....Stager Assy, 48-00, Inverted, NXT 24VAC, SC, 2nd Aux Notched In Backwash
1074817.....Kit, Internal Parts, 48-00 Stager
61817-01 .....Cam Assy, 48-00 NXT, HMG, no 2nd Aux Cam
61817-02 .....Cam Assy, 48-00 NXT, SA, 2nd Aux Notched in Service
61817-03 .....Cam Assy, 48-00 NXT, SC, 2nd Aux Notched in Backwash

51-06 ES Stager Assembly

61967-01 .....Stager Assy, 51-06, NXT 24VAC, HMG, No 2nd Aux Switch
61967-02 .....Stager Assy, 51-06, NXT 24VAC, SA, 2nd Aux Notched in Service
61967-03 .....Stager Assy, 51-06, NXT 24VAC, SC, 2nd Aux Notched in Backwash
61967-04 .....Stager Assy, 51-06, NXT 24VAC, SH, 2nd Aux Notched in Refill
1074888.....Kit, Internal Parts, 51-06 Stager
61968-01 .....Cam Assy, 51-06 NXT, HMG, No 2nd Aux Switch
61968-02 .....Cam Assy, 51-06 NXT, SA, 2nd Aux Notched in Service
61968-03 .....Cam Assy, 51-06 NXT, SD, 2nd Aux Notched in Backwash

16605 West Victor Rd. New Berlin, WI 53151

P: 262–326–0100 | www.aq–matic.com | techsupport@aq–matic.com

1163574 REV F MA2017

AQUAMATIC®
FLUID EJECTORS

COMMERCIAL CONTROL VALVE ACCESSORIES

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

OPERATING SPECIFICATIONS

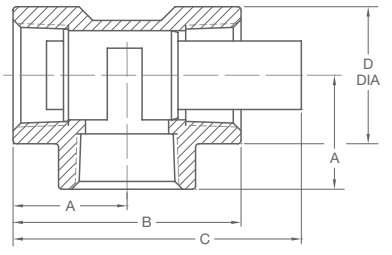
Min Operating Pressure	20 psi (1.37)
Max Operating Pressure	125 psi (8.6 bars)
Operating Temperature	up to 140°F (60°)
Body Material	PVC

For optimum performance, ejectors should be installed with a section of straight pipe extending from the discharge side.

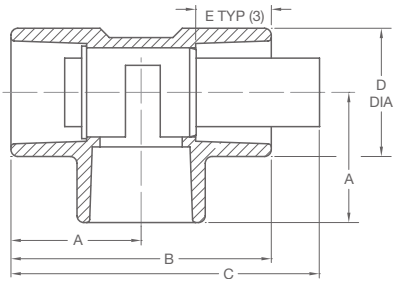
DIMENSIONS (NOMINAL & APPROXIMATE)

MODEL #	SIZE		DIAMETER				
	NPT	SOCKET	A	B	C	D	E
540	1/2"	-	1.37" (35 mm)	2.75" (70 mm)	-	1.31" (33 mm)	-
540S	-	1/2"	1.37" (35 mm)	2.75" (70 mm)	-	1.31" (33 mm)	0.88" (22 mm)
541	3/4"	-	1.72" (44 mm)	3.44" (88 mm)	-	1.5" (40 mm)	-
541S	-	3/4"	1.72" (44 mm)	3.44" (88 mm)	-	1.56" (40 mm)	1" (25 mm)
542	1"	-	1.72" (44 mm)	3.44" (88 mm)	-	1.81" (46 mm)	-
542S	-	1"	1.88" (48 mm)	3.75" (96 mm)	-	1.81" (46 mm)	1.13" (20 mm)
544	1-1/2"	-	2.09" (53 mm)	4.19" (106 mm)	5.25" (143 mm)	2.38" (60 mm)	-
544S	-	1-1/2"	2.38" (60 mm)	4.75" (120 mm)	5.63" (143 mm)	2.38" (60 mm)	1.38" (35 mm)
546	2"	-	2.78" (71 mm)	5.56" (168 mm)	6.63" (168 mm)	3" (76 mm)	-
546S	-	2"	2.78" (71 mm)	5.56" (168 mm)	6.63" (168 mm)	3.06" (78 mm)	1.5" (38 mm)

NPT



Socket Weld



PERFORMANCE

INLET PRESSURE PSI (BAR)	NOZZLE FLOW RATES - GAL/MIN (L/MIN)													
	540 (1/2")						541 (3/4")				542 (1")			
	540-1 BLACK	540-2 BROWN	540-3 RED	540-4 WHITE	540-5 BLUE	DRAW FACTOR	541-1 RED	541-2 WHITE	541-3 BLUE	DRAW FACTOR	542-1 RED	542-2 WHITE	542-3 BLUE	DRAW FACTOR
20 (1.37)	0.13 (0.52)	0.18 (0.73)	0.31 (1.22)	0.62 (2.44)	0.90 (3.50)	0.80	1.07 (4.30)	1.80 (7.20)	2.90 (11.2)	1.15	4.40 (17.3)	5.80 (22.0)	8.20 (31.7)	1.04
30 (2.06)	0.16 (0.60)	0.23 (0.84)	0.38 (1.42)	0.76 (2.82)	1.10 (4.00)	0.78	1.30 (4.90)	2.10 (8.30)	3.50 (13.0)	1.20	5.40 (20.0)	7.10 (25.0)	10.0 (36.0)	0.94
40 (2.75)	0.19 (0.74)	0.26 (1.00)	0.44 (1.74)	0.88 (3.50)	1.20 (4.90)	0.82	1.50 (6.00)	2.50 (10.2)	4.00 (16.0)	1.26	6.20 (24.5)	8.20 (31.0)	11.7 (45.0)	0.95
50 (3.44)	0.21 (0.86)	0.29 (1.20)	0.49 (2.02)	0.98 (4.00)	1.40 (5.70)	0.83	1.70 (7.00)	2.80 (11.8)	4.50 (18.4)	1.25	7.00 (28.4)	9.20 (36.0)	13.0 (52.0)	0.85
60 (4.13)	0.23 (0.91)	0.32 (1.27)	.54 (2.14)	1.10 (4.20)	1.50 (6.08)	0.85	1.80 (7.40)	3.10 (12.5)	4.90 (19.5)	1.15	7.60 (30.0)	10.0 (38.0)	14.4 (55.0)	0.82
70 (4.82)	0.25 (0.96)	0.35 1.34)	0.58 (2.25)	1.20 (4.40)	1.65 (6.40)	0.88	2.00 (7.80)	3.30 (13.1)	5.30 (20.5)	1.08	8.20 (31.6)	10.8 (40.0)	15.5 (58.0)	0.80
80 (5.51)	0.27 (1.05)	0.37 (1.47)	0.62 (2.47)	1.30 (4.90)	1.80 (7.00)	0.85	2.15 (8.50)	3.60 (14.4)	5.70 (22.5)	1.00	8.70 (34.8)	11.6 (44.0)	16.6 (63.0)	0.78
100 (6.9)	0.30 (1.13)	0.42 (1.60)	0.70 (2.66)	1.40 (5.20)	2.00 (7.50)	0.83	2.40 (9.20)	4.00 (15.5)	6.40 (24.3)	0.95	9.80 (37.5)	13.0 (47.5)	18.5 (68.5)	0.75
120 (8.27)	0.33 (1.21)	0.46 (1.70)	0.76 (2.84)	1.50 (5.60)	2.20 (8.10)	0.80	2.60 (9.80)	4.30 (16.6)	7.00 (26.0)	0.90	10.7 (40.0)	14.2 (50.7)	20.0 (73.0)	0.70
Nozzle Dia. E	0.038	0.042	0.052	0.070	0.086	-	0.098	0.125	0.157	-	0.188	0.219	0.250	-
Throat Dia. F	0.076	0.086	0.104	0.140	0.172	-	0.196	0.250	0.312	-	0.375	0.438	0.500	-

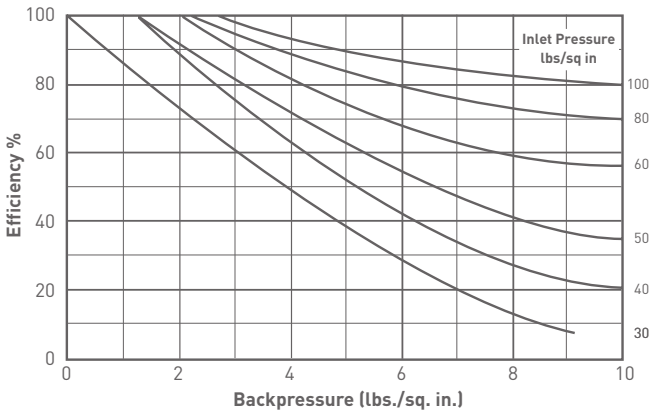
INLET PRESSURE PSI (BAR)	NOZZLE FLOW RATES - GAL/MIN (L/MIN)											
	544 (1-1/2")						546 (2")					
	544-1 RED	544-2 WHITE	544-3 BLUE	544-4 YELLOW	544-5 ORANGE	DRAW FACTOR	546-1 RED	546-2 WHITE	546-3 BLUE	546-4 YELLOW	546-5 ORANGE	DRAW FACTOR
20 (1.37)	8.70 (34.2)	13.4 (52.5)	17.0 (66.0)	21.0 (83.0)	24.5 (97.6)	1.08	29.5 (116)	35.7 (140)	28.4 (152)	45.0 (178)	52.0 (207)	1.08
30 (2.06)	10.6 (39.5)	16.4 (60.0)	20.7 (76.0)	25.7 (96.0)	30.0 (112)	1.12	36.0 (134)	43.7 (162)	47.0 (176)	55.0 (205)	64.0 (240)	1.12
40 (2.75)	12.3 (48.4)	19.0 (21.2)	24.0 (93.4)	29.7 (117)	34.7 (138)	1.16	41.7 (164)	50.0 (198)	54.0 (216)	64.0 (252)	74.0 (294)	1.16
50 (3.44)	13.8 (58.0)	21.2 (86.0)	26.8 (108)	33.2 (136)	38.8 (160)	1.15	46.6 (190)	56.5 (230)	61.0 (250)	71.4 (292)	83.0 (340)	1.15
60 (4.13)	15.0 (16.3)	23.0 (91.0)	29.5 (114)	36.3 (144)	42.5 (170)	0.95	51.0 (200)	62.0 (244)	66.5 (265)	78.0 (310)	91.0 (360)	0.95
70 (4.82)	16.3 (62.0)	25.0 (96.0)	31.8 (120)	39.3 (152)	46.0 (178)	0.90	55.0 (212)	67.0 (256)	71.0 (278)	84.5 (325)	98.0 (380)	0.90
80 (5.51)	17.4 (68.0)	27.0 (105)	34.0 (132)	42.0 (166)	49.0 (195)	0.80	59.0 (232)	71.0 (280)	77.0 (306)	90.0 (357)	106 (416)	0.80
100 (6.9)	19.5 (74.0)	30.0 (113)	38.0 (142)	47.0 (180)	55.0 (210)	0.80	66.0 (250)	80.0 (300)	86.0 (330)	100 (385)	118 (445)	0.80
120 (8.27)	21.3 (78.0)	32.8 (120)	41.5 (152)	51.5 (190)	60.0 (225)	0.75	72.0 (268)	87.0 (325)	94.0 (350)	110 (410)	130 (480)	0.75
Nozzle Dia. E	0.281	0.312	0.359	0.406	0.438	-	0.469	0.500	.0547	0.578	0.625	-
Throat Dia. F	0.562	0.625	0.719	0.812	0.875	-	0.938	1.000	1.094	1.156	1.250	-

Data based on: 1. Water media specific gravity 1.0; 2. Suction lift 3 ft. (1 meter); 3. Discharge head 0 ft. or meters; 4. Media temperature 60°F (15°C)

PERFORMANCE

Fig. 1: Efficiency vs. Backpressure

At different inlet pressure. Suction lift 3 feet (1 m).



SPECIFIC GRAVITY

FLUID	SPECIFIC GRAVITY
Saturated Brine (NaCl)	1.2
Hydrocholoric Acid (30%)	1.14
Sodium Hydroxide (50%)	1.52
Sulphuric Acid (20%)	1.13
Sodium Hydroxide (25%)	1.16

DRAW RATE

TO CALCULATE DRAWRATE

A = Nozzle flowrate
B = Specific gravity
C = Draw factor
D = Efficiency factor

$$\text{Drawrate} = \frac{(A)\ (C)\ (D)}{B}$$

HOW TO ORDER

1. Select series number based on required pipe size.
2. Add "S" suffix to series number if socket weld ends desired.
3. Add nozzle size suffix as determined by supply pressure and required flow (see example).

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3026818 REV D MA2016

AQUAMATIC® EASY NEST KIT

SIMPLIFYING VALVE NESTS

MADE IN THE USA
OF FOREIGN & DOMESTIC PARTS

FEATURES/BENEFITS

No-hassle selection documentation for specifying, engineering and building the valve nest system

Easy nest kits include diaphragm valves, control, pilot tubing, tubing fittings for the valve, injector (for softener system), and suggested application drawings for assembly of the unit

Filter and softener configurations available

Service flow rates: 80-1300 gpm (18-295 m^3/h)* per tank

Backwash flow rates: 35-392 gpm (8-89 m^3/h) for a softener system* 35-1200 gpm (8-272 m^3/h) for a filter system*

All components can be serviced while the valve is in-line

Unique Y-pattern design with large seat opening and high lift disc permits higher flow rates at lower pressure loss than other comparable valves

Larger diaphragm area compared to seat area permits drip-tight closing without any springs

Pre-formed, stress-relieved diaphragm minimizes fatigue, maximizes valve responsiveness and diaphragm lifetime

Diaphragm acts as an actuator, eliminating the need for electric or pneumatic actuators

OPTIONS

Available in either composite or metal valve configurations

Electronic 962 stager control

TYPICAL APPLICATIONS

Tank Sizes Coverage
36"-120" for softeners and filters

* Flow rates shown are valve only, not the completed system

AQUAMATIC® EASY NEST KITS

OPERATING SPECIFICATIONS

Valve Body	Cast Iron or Glass-filled Noryl
Diaphragm	Buna N/Polyamide
Injector	PVC
Control Enclosures (Electronic)	NEMA 4X Fiberglass
Operating Pressure	20 to 120 psi (1.38 to 8.27 bar)
Operating Temperature	35° to 120°F (2° to 38°C)
Operating Voltages	115V, 50/60 Hz; 220V, 50/60 Hz

PERFORMANCE RANGE (SINGLE TANK SYSTEMS)

Service Flow Rates	80 to 1300 gpm (18 to 295 m^3/h) per tank
Backwash Flow Rates (Softeners)	35 to 392 gpm (8 to 89 m^3/h)
Backwash Flow Rates (Filters)	35 to 1200 gpm (18 to 272 m^3/h)
System Sizes	36" to 120"diameter tanks

CONFIGURATIONS

System Configurations

Single Tank Softeners	4 Position
Multi-Tank Softeners	2, 3, and 4 Tank, Parallel; 2 Tank Alternating Softeners
Single Tank Filters	3 Position
Multi-Tank Filters	2, 3, and 4 Tank, Sequential

Control Configurations

Electronic	Demand and Time Clock (Battery Back-up)
Programmable Regeneration Range tion	0-255 Minutes Regenera- (Each Cycle)
Stager Valves	6, 8 and 16 Ports

Piping Configurations

Valves	
Cast Iron	3/4"- 3" Female Thread, NPT, BSP, JIS; 3"- 6" Flanged
Noryl (Plastic)	1" - 3" Union, Female Solvent Weld; 2"- 3" Female Solvent Weld or
Flange	
Injectors	1/2"- 2" Female
	NPT Thread, Solvent Weld
Stager Tubing	1/4" Poly Tubing

AVAILABLE STANDARD SOFTENER CONFIGURATIONS

MODEL #	PART #	TANK DIAMETER IN. (CM)	RESIN AMOUNT FT.³ (LITERS)	PIPE SIZE	SERVICE FLOW RATE @ PRESSURE DROP		BACKWASH FLOW RATE @ PRESSURE DROP	
					GPM @ PSI	M³/HR @ BARS	GPM @ PSI	M³/HR @ BARS
CAST IRON VALVESW								
S425-36	1078826	36 (92)	20 (565)	2"	100 @ 6.4	22.7 @ .4	36 @ 2.3	8.1 @ 0.2
S425-42	1078783	42 (106)	30 (850)	2"	150 @ 14.3	34 @ 1.0	48 @ 4.4	10.9 @ 0.3
S426-48	1078784	48 (120)	40 (1130)	2"	180 @ 14.0	40.9 @ 1.0	63 @ 7.5	14.3 @ 0.5
S426-54	1078785	54 (135)	50 (1415)	2.5"	220 @ 13.7	50 @ .0.9	80 @ 12.2	18 @ 0.8
S427-60	1078786	60 (150)	60 (1700)	3"	300 @ 10.0	68 @ 0.7	98 @ 6.3	22.2 @ 0.4
S427-63	1078828	63 (160)	70 (1980)	3"	325 @ 11.6	73.8 @ 0.8	108 @ 7.5	24.5 @ 0.5
S428-72	1078787	72 (180)	85 (2400)	4"	425 @ 4.8	96.6 @ 0.3	140 @ 8.5	31.8 @ 0.6
S428-78	1078788	78 (200)	100 (2830)	4"	500 @ 6.6	113.6 @ 0.5	165 @ 11.8	37.5 @ 0.8
S428-84	1078789	84 (215)	125 (3540)	4"	625 @ 10.0	142 @ 0.7	192 @ 10.5	43.6 @ 0.7
S428-90	1078790	90 (230)	140 (3965)	4"	700 @ 13.0	159 @ 0.9	220 @ 13.8	50 @ 1.0
S429-96	1078791	96 (245)	165 (4670)	6"	825 @ 4.0	187.5 @ 0.3	255 @ 7.6	58 @ 0.5
S429-102	1078792	102 (260)	185 (5240)	6"	925 @ 4.2	210 @ 0.3	285 @ 9.2	64.7 @ 0.6
S429-108	1078793	108 (275)	210 (5945)	6"	1100 @ 6.0	250 @ 0.4	320 @ 11.5	72.7 @ 0.8
S429-114	1078794	114 (290)	235 (6655)	6"	1200 @ 7.0	272 @ 0.5	355 @ 3.5	80.6 @ 0.2
S429-120	1078795	120 (305)	260 (7360)	6"	1300 @ 8.3	295 @ 0.6	390 @ 5.0	88.6 @ 0.3

AQUAMATIC EASY NEST KITS

MODEL #	PART #	TANK DIAMETER IN. (CM)	RESIN AMOUNT FT.³ (LITERS)	PIPE SIZE	SERVICE FLOW RATE @ PRESSURE DROP		BACKWASH FLOW RATE @ PRESSURE DROP	
					GPM @ PSI	M³/HR @ BARS	GPM @ PSI	M³/HR @ BARS
COMPOSITE VALVES SERIES K52								
S524-36	1078796	36 (92)	20 (565)	1.5"	80 @ 9.0	18.1 @ 0.6	35 @ 11	7.9 @ 0.8
S526-42	1078797	42 (106)	30 (850)	2.5"	150 @ 4.5	34 @ 0.3	48 @ 4.0	10.9 @ 0.3
S526-48	1078798	48 (120)	40 (1130)	2.5"	180 @ 7.0	41 @ 0.5	63 @ 5.6	14.3 @ 0.4
S526-54	1078799	54 (135)	50 (1415)	2.5"	220 @ 10	50 @ 0.7	80 @ 10	18 @ 0.7
COMPOSITE VALVES SERIES K53								
S534-36	1078800	36 (92)	20 (565)	1.5"	100 @ 8.7	22.7 @ .60	35 @ 7.5	7.9 @ 0.5
S535-42	1078801	42 (106)	30 (850)	2"	150 @ 6.4	34 @ .44	48 @ 2.0	10.9 @ 0.1
S535-48	1078802	48 (120)	40 (1130)	2"	180 @ 9.2	41 @ .63	63 @ 4.0	14.3 @ 0.3
S537-54	1078803	54 (135)	50 (1415)	3"	220 @ 2.4	50 @ .16	80 @ 7.0	18 @ 0.5
S537-60	1078829	60 (150)	60 (1700)	3"	300 @ 4.5	68.1 @ .31	98 @ 8.4	22.2 @ 0.6
S537-63	1078804	63 (160)	65 (1840)	3"	325 @ 5.3	73.8 @ .36	110 @ 4.0	25 @ 0.3
S537-72	1078805	72 (182)	90 (2550)	3"	425 @ 9.0	96.6 @ .62	140 @ 7.0	31.8 @ 0.5

AVAILABLE STANDARD FILTER CONFIGURATIONS

MODEL #	PART #	TANK DIAMETER IN. (CM)	PIPE SIZE	SERVICE AND BACKWASH FLOW RATE @ PRESSURE DROP					
				5 GPM/FT^2		10 GPM/FT^2		15 GPM/FT^2	
				GPM @ PSI	M^3/HR @ BARS	GPM @ PSI	M^3/HR @ BARS	GPM @ PSI	M^3/HR @ BARS
CAST IRON VALVES									
F425-42	1078806	42 (106)	2"	48 @ 1.5	10.9 @ 0.1	96 @ 5.8	21.8 @ 0.4	145 @ 13.2	33 @ 0.9
F426-48	1078807	48 (120)	2"	62 @ 1.7	14 @ 0.1	125 @ 6.7	28 @ 0.5	190 @ 15	43.2 @ 1.0
F426-54	1078808	54 (135)	2.5"	80 @ 2.8	18.1 @ 0.2	160 @ 7.2	36.2 @ 0.5	240 @ 16	54.5 @ 1.1
F427-60	1078809	60 (150)	3"	97 @ 1.1	22.0 @ 0.1	195 @ 4.3	44 @ 0.3	295 @ 9.5	67 @ 0.6
F428-72	1078810	72 (180)	4"	140 @ 0.5	31.8 @ 0.03	280 @ 2.5	63.6 @ 0.2	425 @ 5.5	96.6 @ 0.4
F428-78	1078811	78 (200)	4"	165 @ 0.7	36.3 @ 0.05	330 @ 3.2	75 @ 0.2	500 @ 7.5	113 @ 0.5
F428-84	1078812	84 (215)	4"	190 @ 1.0	43 @ 0.07	380 @ 4.4	87.5 @ 0.3	580 @ 10.0	132 @ 0.7
F428-96	1078813	96 (245)	4"	250 @ 1.6	56.8 @ 0.1	500 @ 7.4	113.6 @ 0.5	750 @ 16.0	170 @ 1.1
F429-108	1078814	108 (275)	6"	315 @ 0.5	71 @ 0.03	635 @ 2.0	143.6 @ 0.1	960 @ 4.5	218 @ 0.3
F429-120	1078815	120 (305)	6"	390 @ 0.8	88.6 @ 0.06	780 @ 3.0	177 @ 0.2	1180 @ 7.4	268 @ 0.5
COMPOSITE VALVES SERIES K52									
F524-36	1078816	36 (90)	2"	35 @ 1.7	8.0 @ 0.1	70 @ 6.8	16 @ 0.5	105 @ 15	23.8 @ 1.0
F526-42	1078817	42 (105)	2.5"	48 @ 0.46	11 @ 0.03	96 @ 2.0	22 @ 0.1	145 @ 4.2	33 @ 0.3
F526-48	1078818	48 (120)	3"	62.5 @ 0.8	14.2 @ 0.06	125 @ 3.2	28.4 @ 0.2	190 @ 7.3	43.2 @ 0.5
F526-54	1078819	54 (135)	3"	80 @ 1.3	18.1 @ 0.1	160 @ 5.2	36.2 @ 0.4	240 @ 11.5	54.5 @ 0.8
COMPOSITE VALVES SERIES K53									
F534-36	1078820	36 (90)	1.5"	35 @ 1.2	8 @ .08	70 @ 4.3	16 @ 0.3	105 @ 9.6	23.8 @ 0.7
F535-42	1078821	42 (105)	2"	48 @ 0.6	11 @ 0.04	96 @ 2.7	22 @ 0.2	145 @ 6.0	33 @ 0.4
F535-48	1078822	48 (120)	2"	62.5 @ 1.1	14.2 @ 0.08	125 @ 4.5	28.4 @ 0.3	190 @ 10.5	43.2 @ 0.7
F537-54	1078823	54 (135)	3"	80 @ 0.4	18.1 @ 0.03	160 @ 1.6	36.2 @ 0.1	240 @ 3.5	54.5 @ 0.2
F537-60	1078829	60 (150)	3"	98 @ 0.6	22.2 @ 0.04	195 @ 2.2	44.3 @ 0.2	295 @ 5.4	67 @ 0.4
F537-63	1078824	63 (160)	3"	107 @ 0.7	24 @ 0.05	215 @ 2.7	48 @ 0.2	325 @ 7.0	73.8 @ 0.5
SF37-72	1078825	72 (180)	3"	140 @ 1.2	31.8 @ 0.08	280 @ 5.0	63.6 @ 0.3	425 @ 11.4	96.6 @ 0.8

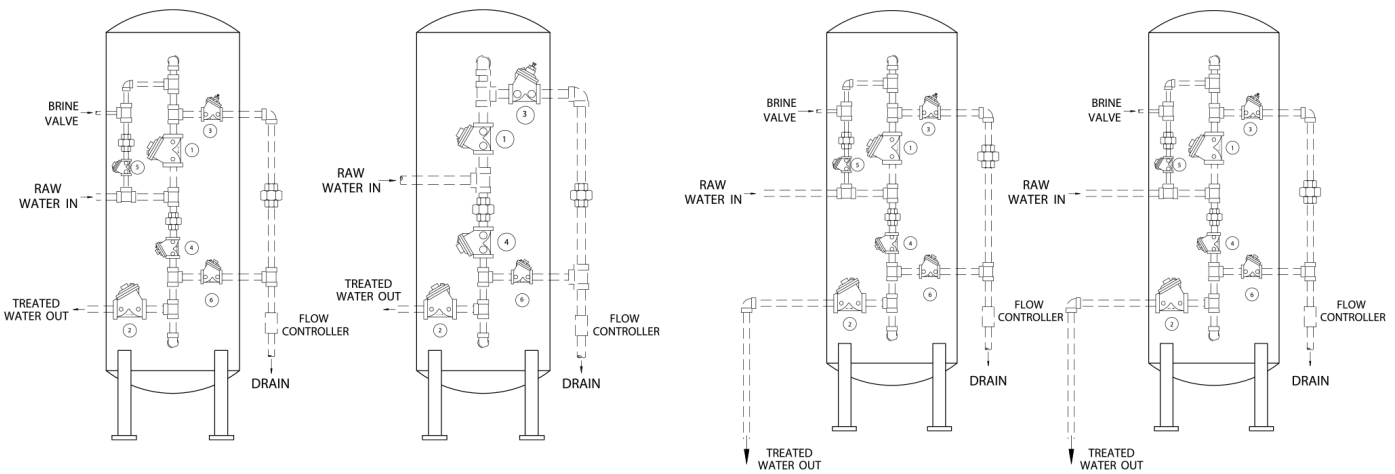
NOTE: Data supplied herein is provided as a guide only. Actual results may vary depending upon actual water conditions and system layout.
Flow rates shown are valves only, not completed systems.

ELECTRONIC CONTROLLERS

PART NUMBER	DESCRIPTION
1078837	Single tank, 4 position softener
1078838	Single tank, 3 position filter
1078839	2 tank sequential filter
1078840	3 tank sequential filter
1078841	4 tank sequential filter
1078842	2 tank alternating softener
1078843	2 tank alternating softener w/rinse

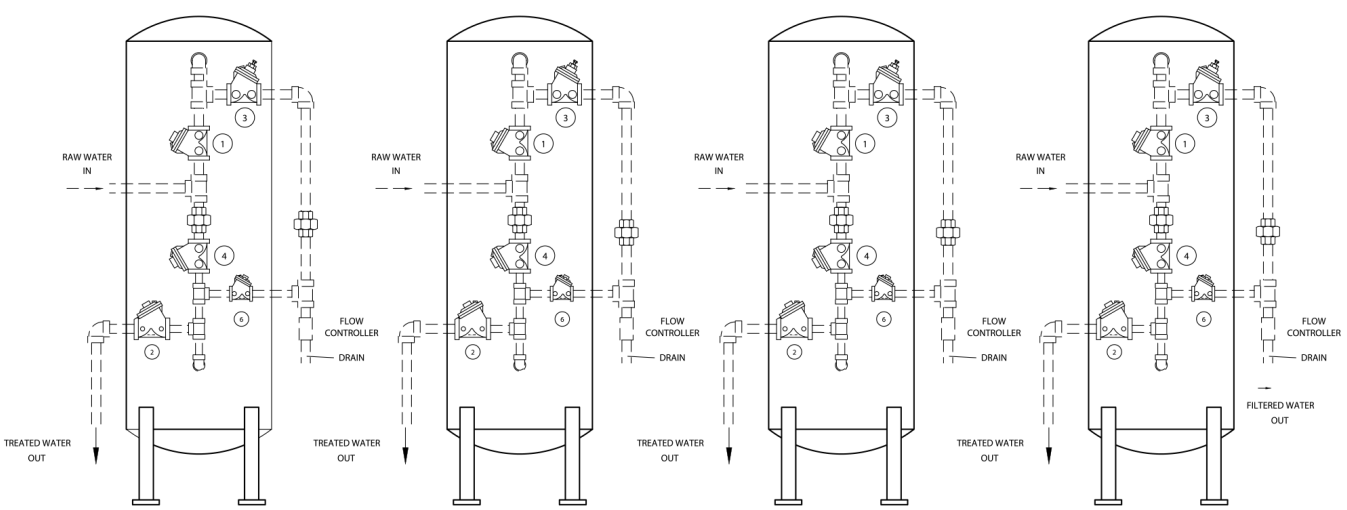
STANDARD SYSTEM LAYOUTS

TWO TANK ALTERNATING SOFTENERS



SOFTENER FILTER UNIT A UNIT B

FOUR TANK ALTERNATING SOFTENERS



UNIT A UNIT B UNIT C UNIT D

All systems are designed for guideline purposes only. Final authorship of engineering design and application is the responsibility of the assembling OEM. Pentair cannot be responsible for the performance and integrity of the installed system.

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AQMatic

AQUAMATIC® EASY NEST
KITS INSTALLATION SUGGESTIONS

TABLE OF CONTENTS

GENERAL RECOMMENDATIONS

Hydraulics

- Vacuum breakers should be installed to prevent siphoning.
- Flexible connectors should follow FRP tank manufacturer's recommendations.

Electrical

- Supply of electricity should be compatible with the voltage required by the controller.
- Comply with local electrical codes and ensure an uninterrupted supply of power is available.

Plumbing

- Proper piping practices should be used on media tanks.
- Comply with local plumbing codes and follow common practices while plumbing the components.
- Plumber tape should be used on threads for cast iron Easy Nest Kits.
- Do not use plumber tape on plastic Easy Nest Kits.

Floor Drain

- Units should be located close to a clean working drain.
- The drains capacity should be checked for accepting backwash and Fast Rinse flows.
- An air gap should be installed on the drain to prevent backflow contamination.
- The systems drain line should be less than a 15 foot pipe length equivalent.
- Elevation of the drain line should be less than five feet above the injector.

Floor

- The floor should be able to support the installation weight of the system and be fairly level.

Isolating/Bypass Valving

- A manual bypass around the system for easy servicing and emergencies is recommended.

Matching Flanges

- Companion flanges are not included for large valves.

Upper and Lower Distributors/False Bottom

- Follow component manufacturers recommendations.

Media Tanks

- Steel and FRP tanks can be used if proper piping practices are followed.

New System Check Out and Troubleshooting Guide

This is a guide for starting a system after all of the initial installation is completed:

- Plumbing is complete including raw water supply (inlet), Service (outlet), drain (including Drain Line Flow Control), and regenerate draw line. The brine tank and brine valve are installed, however no salt has been added at this time. A sufficient amount of water should be added to the brine tank so the water level is above the salt grid (if installed).
- The media tanks are loaded and the tanks are filled with water.
- Control Pressure to stager is connected to a constant source that is equal or larger than line pressure. Drain port of stager is open to atmosphere. For trouble-free operation, the use of a 5-micron filter, in the control pressure line is recommended.
- All necessary diaphragm valve/stager tubing has been connected.
- The control has power available but is not powered up at this time.

System Check Out

1. Manually advance stager to the Backwash Position by rotating the cam counterclockwise.
2. Open feed water supply valve fully (tanks have already been filled with water prior to this step). Water should flow to drain at Backwash flow rate, which is determined by a Drain Line Flow Control installed in the drain line. Water to Service should stop after several seconds. If water continues to Service refer to Section 1 of the Troubleshooting guide.
3. Backwash system until water to drain runs clear. Observe that no media is being washed to drain. If media is being washed to drain, turn feed water supply off immediately and refer to Section 2 of the Troubleshooting guide.
4. Manually advance stager to Draw/Slow Rinse position. Flow of water to drain should decrease substantially. Water level in the brine tank should begin to go down. After verifying draw rate, please move to next step.
   - If flow to drain does not decrease, refer to Section 3 of the Troubleshooting guide.
   - If level in brine tank does not go down, refer to Section 4 of the Troubleshooting guide.
5. Manually advance stager to Fast Rinse. Flow to drain should increase to the level it was during Backwash. If the flow does not increase, refer to Section 5 of the Troubleshooting guide.
6. Manually advance stager to Service position.
7. Apply power to controller.
8. If Electronic controller (with 962 timer) is used, follow instructions as outlined in 962 programming manual.
9. System Check Out is complete and may be placed into service.
10. Open Service outlet valve.

CALIFORNIA PROPOSITION 65 WARNING

⚠ WARNING: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

TROUBLESHOOTING GUIDE

Section	Symptom	Probable Cause	Correction
1	Water to service, no water to drain or water to both service and drain.	Tubing from stager to diaphragm valves may be incorrect. Refer to nest diagram, valves 3 and 4 tubing should not have pressure to them, all others should have pressure.	Refer to Manual to identify and correct tubing mistake.
2	Media washing to drain.	No drain line flow control is installed or drain line flow control is not sized correctly for media and/or water temperature.	Check for drain line flow control in drain line. Refer to media specification sheet for proper backwash rate.
3	Flow to drain does not decrease in draw cycle.	Tubing from stager to diaphragm valves may be incorrect. Refer to nest diagram, tubing going to valves 5 and 6 should not have pressure to them, all others should have pressure.	Refer to manual to identify and correct tubing mistake.
4	Level in brine tank does not go down.	Tubing from stager to diaphragm valves may be incorrect. Refer to nest diagram, tubing on valves 5 and 6 should not have pressure to them, all others should have pressure. Brine valve may be preventing draw.	Refer to manual to identify and correct tubing mistake. If tubing is correct, examine brine valve instruction sheet for troubleshooting information regarding the brine valve.
5	Flow to drain does not increase to the level it was during Backwash.	Tubing from stager to diaphragm valves may be incorrect. Refer to nest diagram, tubing on valves 1 and 6 should not have pressure to them, all others should have pressure.	Refer to manual to identify and correct tubing mistake.

TROUBLESHOOTING GUIDE *CONTINUED*

Problem	Possible Cause	Solution
Brine tank overflow.	Brine valve malfunctioning.	Repair or replace brine valve.
Valve operation erratic or slow.	Insufficient control pressure to stager.	Check control pressure to the stager, must be equal to or greater than line pressure.
	Stager drain port restricted or plugged.	Check stager drain for restriction and/or obstruction.
Improper or no backwash flow.	Backwash flow controller plugged or obstructed.	Check backwash flow controller for obstruction and remove obstruction.
	Backwash valves 3 and 4 not opening.	Check stager port connected to valves 3 and 4. It should be vented. If pressured, check stager operation. If vented, check and repair diaphragm valve.
Improper or no fast rinse flow.	Backwash flow controller plugged or obstructed.	Check backwash flow controller for obstruction and remove obstruction.
	Rinse outlet, valve No. 6, not opening.	Check stager port connected to valve 6. It should be vented. If pressured, check stager operation. If vented, check and repair diaphragm valve.
Poor water quality.	Service flow rate too high.	Check and adjust flow rate, if necessary.
	Media bed channeling or scaled.	Backwash media to reclassify media bed and check media condition.

EXISTING EASY NEST SYSTEM
TROUBLESHOOTING GUIDE

Preliminary Checklist

Check to make sure:

- Vent ports on the diaphragm valves are not plugged or obstructed.
- Stager drain port is open to atmosphere.
- Controller has uninterrupted power source.
- Control pressure is equal to or greater than the system pressure and is a constant source.
- Systems using Easy Nest Kits consist of Normally Open type Diaphragm Valves controlled by pressure/vent signals from the stager control ports. Check for stager signal (pressured/vented) on valves by disconnecting tubing from the stager port connected to the valve. If upper diaphragm chamber (valve cap) is pressurized, valve should be closed and if vented, it should be open.

Problem	Possible Cause	Solution
Failure to draw brine.	Rinse outlet, valve No. 6, not opening.	Check for control signal on valve No. 6. If pressured, check stagers operation. If vented, disassemble and repair valve.
	Back pressure on injector.	Drain line flow controller restricted or too small.
	Low water pressure.	Inlet pressure must be at least 30 psi.
	Service inlet, valve No. 1, not closing.	Check for control signal on valve No. 1. If pressured, check stagers operation. If vented, disassemble and repair valve.
	Backwash inlet, valve No. 4, not closing.	Check for control signal on valve No. 4. If pressured, check stagers operation. If vented, disassemble and repair valve.
Mineral discharge to service.	Bottom distributor in media tank damaged or broken	Check and replace distributor.
Mineral discharge to drain.	Backwash flow control missing	Check drain line of flow controller.
	Backwash flow control oversized	Check for proper sizing of flow controller.
	Change in water pressure (If fixed orifice type, backwash flow controller is used)	If system has pressure fluctuation, install properly sized flow control in the drain line.
Change in water temperature.	Water temperature.	If water temperature is changed, adjust backwash flow rate per specification supplied by media manufacturer.
Low service flow rate and/or high pressure loss.	Service inlet and outlet, valve No. 1 and 2, not opening.	Disconnect tubing from stager ports 1 and 2. If pressured, stager is malfunctioning, repair stager. If stager port 1 and 2 are vented, check valve No. 1 and 2, repair valves.
Poor quality water to service.	Backwash inlet, valve No. 4, not closing.	Disconnect tubing from stager port No. 4. If pressured, stager is malfunctioning. If vented, check valve No. 5 and repair.
	Unit not regenerating.	Check controller operation and regeneration frequency setting.
	No brine draw.	Check brine valve operation.
	Lack of brine/salt in brine tank.	Check salt level. Fill brine tank, if necessary.
Unit will not regenerate automatically.	No electric power to timer.	Check electrical power supply for interruption.
	No flow indications (E9XX controller only).	Check flow meter.
	Control not programmed correctly.	Program control, see control manual.
Leak to drain.	Backwash outlet and/or rinse outlet valve not closing.	Disconnect tubing from stager ports 3 and 6. If vented, stager malfunctioning. If pressured, check valve and repair.
	Insufficient or lack of control pressure to stager.	Check control pressure to the stager, must be equal to or greater than line pressure to valves.
Salt in service line.	Not enough rinse time.	Check slow rinse and fast rinse time, adjust if necessary.
	Brine draw rate too slow.	Back pressure on injector.
	Back pressure on injector.	Check backwash flow controller or obstruction and remove obstruction.
	Salt dosage too high.	Check and adjust salt dosage.

COMPONENT TROUBLESHOOTING

Introduction

The Easy Nest Kit consists of three main components, Diaphragm Valves, Injector (for softeners) and Stager Controller. Troubleshooting guide for all three components is outlined below.

Diaphragm Valves

Problem	Possible Cause	Solution
Valve not closing.	Insufficient control pressure from stager port.	Check stager ports & tubing for obstruction.
	Valve disc damaged.	Disassemble valve and replace disc.
	Vent port plugged or obstructed.	Remove plug from vent port and check vent port for any obstruction, clear obstruction.
Valve operation slow or sluggish.	Tubing from stager is obstructed.	Remove obstruction.
	Vent port obstructed.	Remove obstruction.
Water leak through vent port when valve is closed. Water leak through vent port when valve is open.	Damaged diaphragm.	Replace diaphragm.
	Leak through the dynamic o-ring.	Disassemble valve and replace o-ring.
Water hammer when valve closes.	Excessive control pressure.	Reduce control pressure, must be equal to system pressure.
Valve does not open.	Stager drain port plugged or restricted.	Check and remove restriction from the stager drain port.

Stager

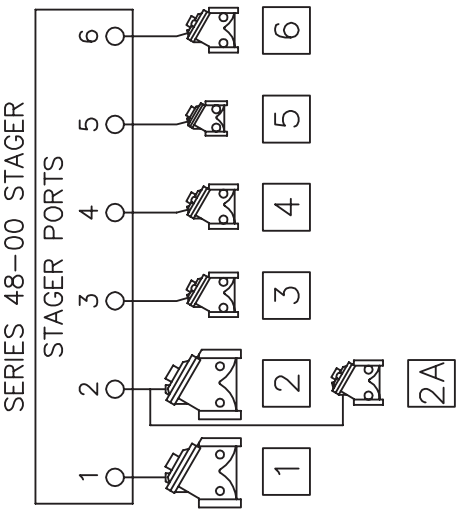
Problem	Possible Cause	Solution
Continuous leak to drain.	Foreign material between stem plate and gasket.	Clean & remove the foreign material.
	Stem plate and/or gasket worn or damaged.	Replace damaged parts.
Stager out of position, or not stopping at correct position. Stager not advancing.	Misaligned or damaged switch.	Align switch replace switch if damaged.
	Damaged motor.	Replace motor.
Stager ports not venting.	Restriction in tubing.	Check and remove restriction.
	Stager drain port plugged or restricted.	Check stager drain port and remove restriction.
No pressure at control ports. Low control pressure at the control ports.	Restricted or plugged control line to the stager. Control pressure must be equal to line pressure of the system.	Remove restriction.

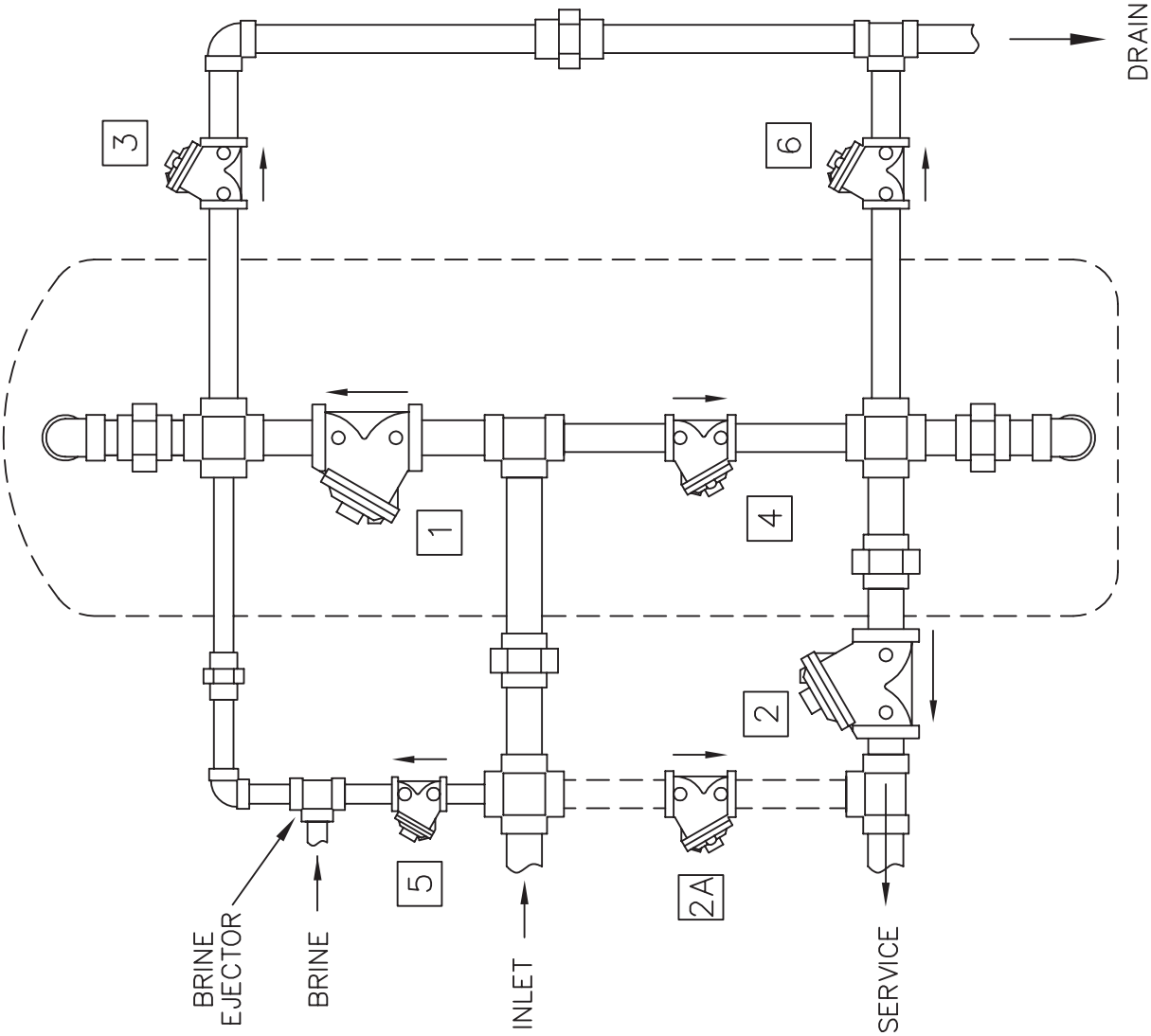
Controller

Refer to the controller manual.

4 POSITION SOFTENER (48-00 STAGER)

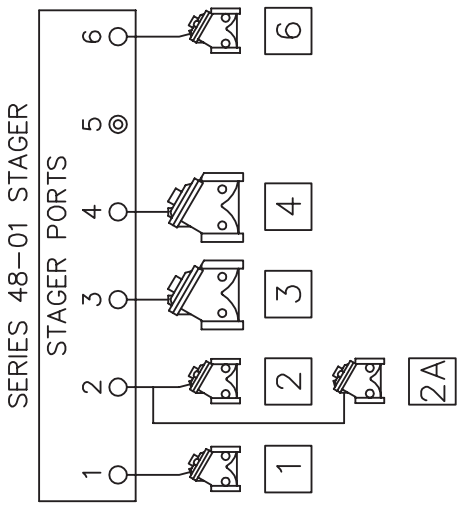
NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	4	SERVICE	1,2	1,2
B				
C	1	BACKWASH	3,4	3,4,2A
D				
E	2	BRINE	5,6	5,6,2A
F	3	RINSE	1,6	1,6,2A

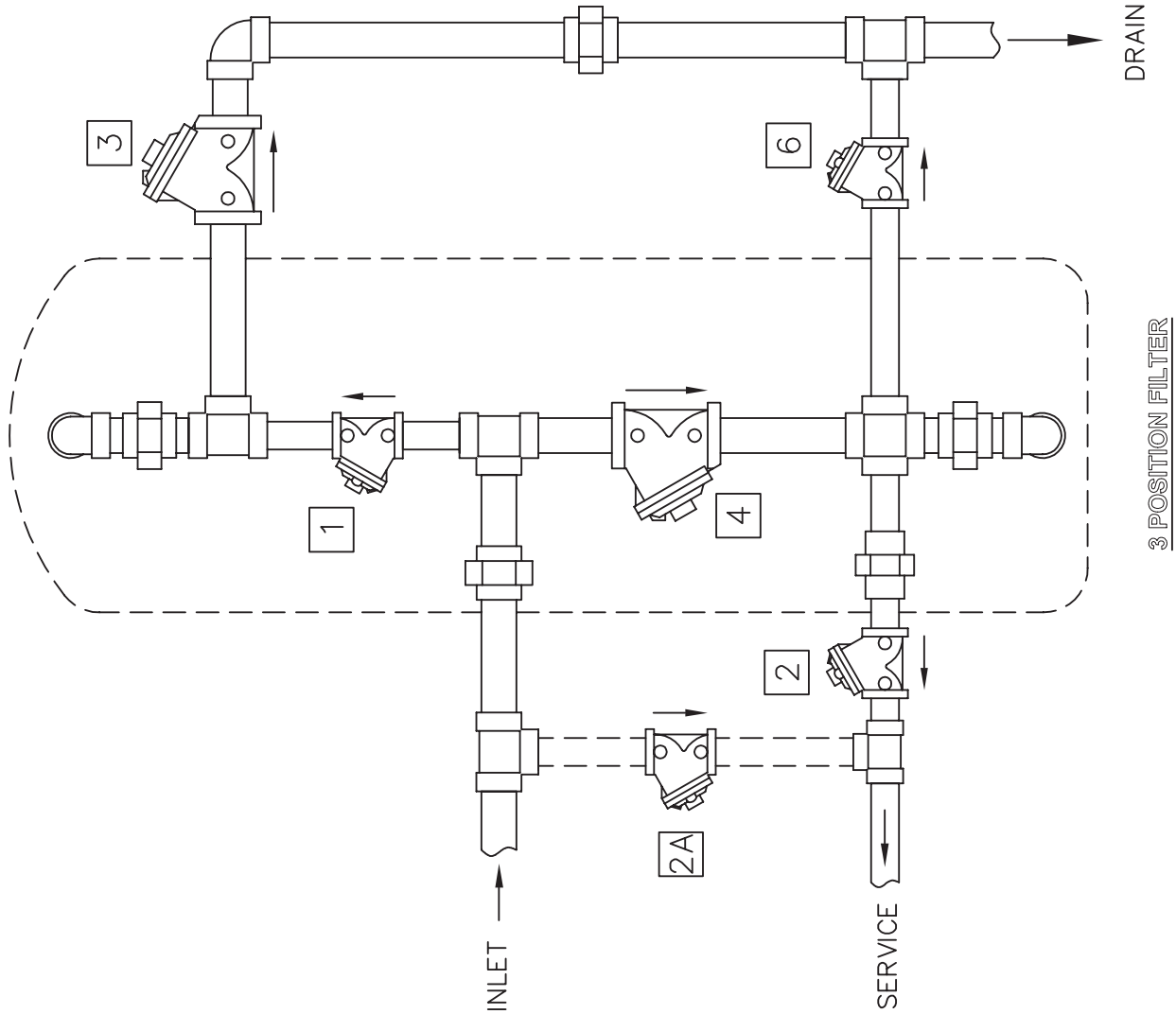




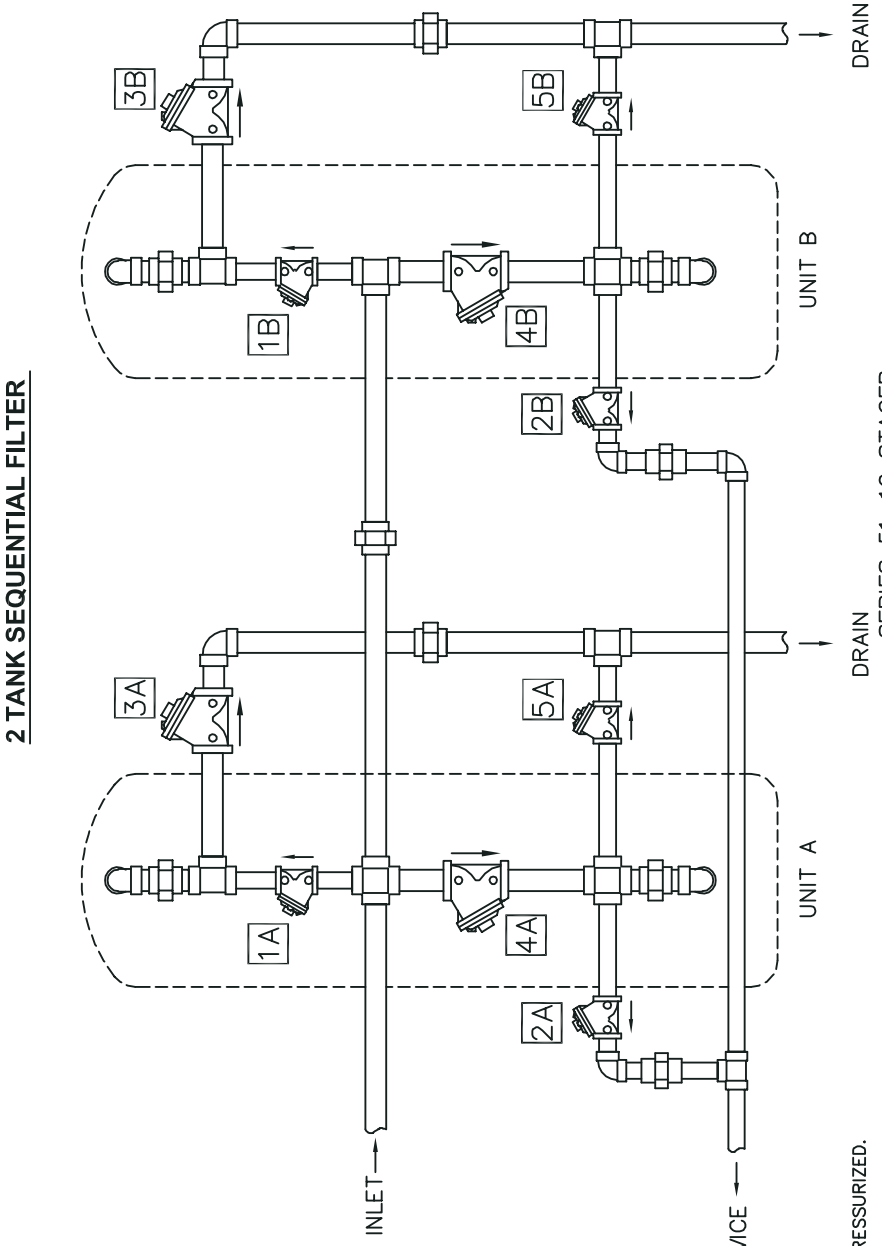
3 POSITION FILTER (48-01 STAGER)

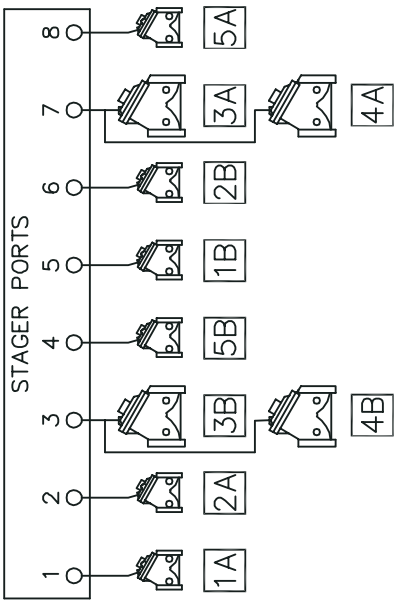
NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	3	SERVICE	1,2	1,2
B	.....	.....	.....	.....
C	1	BACKWASH	3,4	3,4,2A
D	.....	.....	.....	.....
E	.....	.....	.....	.....
F	2	RINSE	1,6	1,6,2A





2 TANK SEQUENTIAL FILTER (51-10 STAGER)





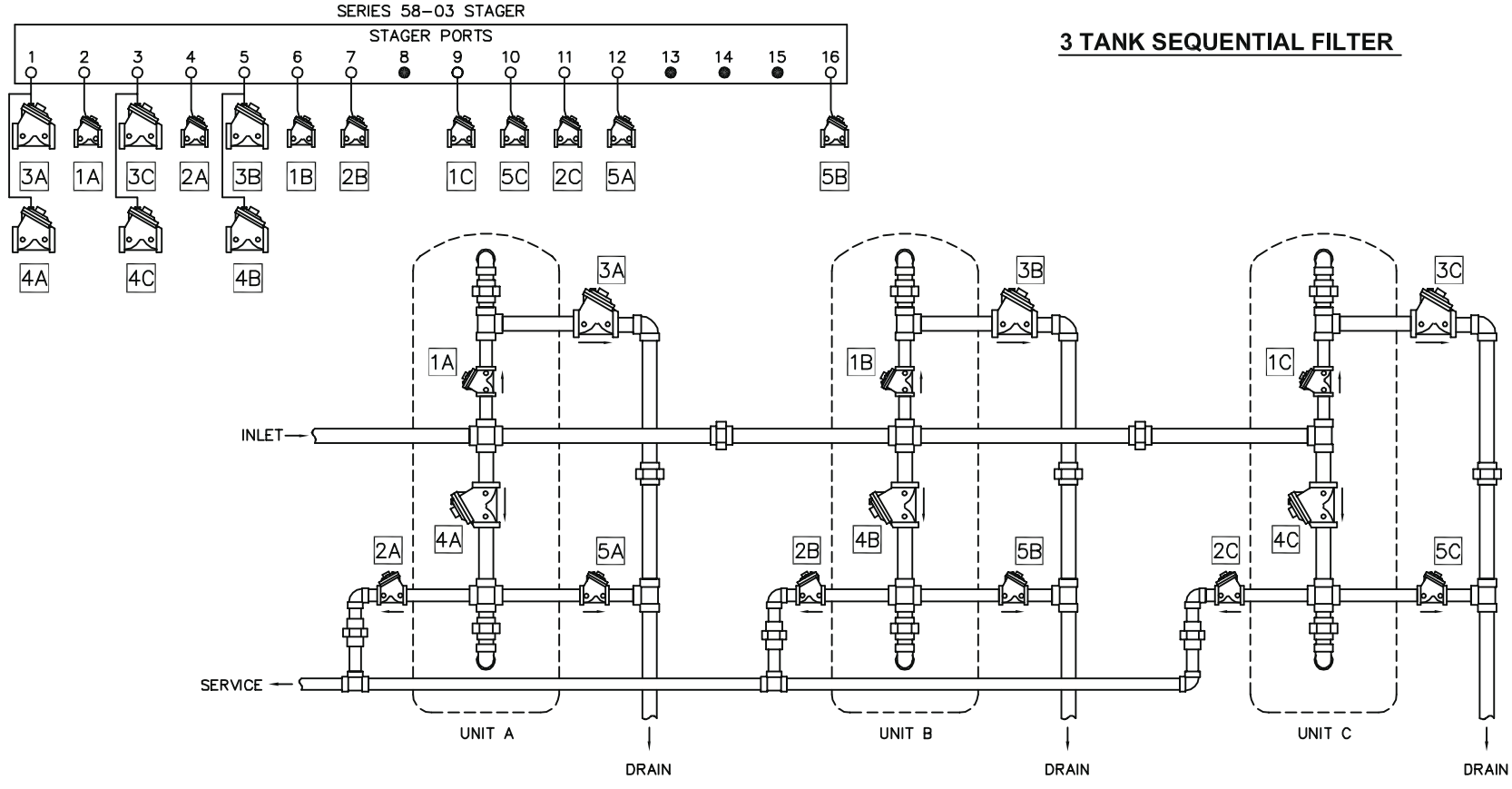
NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	1,2,5,6	1A,2A,1B,2B
B				
C	1	BACKWASH UNIT A	5,6,7	1B,2B,3A,4A
D	2	RINSE UNIT A	1,5,6,8	1A,1B,2B,5A
E				
F				
G	3	BACKWASH UNIT B	1,2,3	1A,2A,3B,4B
H	4	RINSE UNIT B	1,2,4,5	1A,2A,5B,1B

3 TANK SEQUENTIAL FILTER (58-03)

3 TANK SEQUENTIAL FILTER

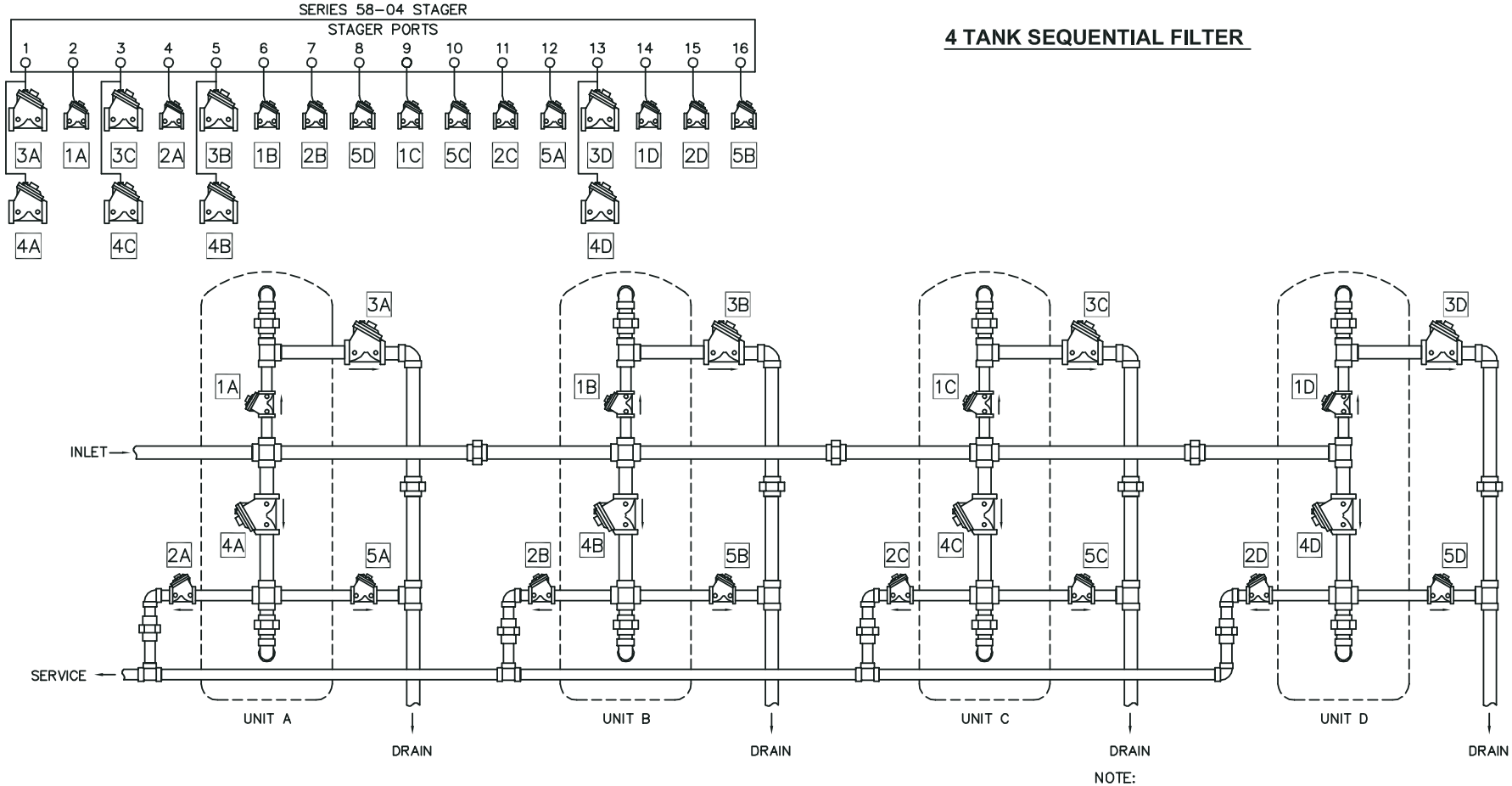


NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	2,4,6,7,9,11	1A,2A,1B,2B,1C,2C	J				
B					K				
C	1	BACKWASH UNIT A	1,6,7,9,11	3A,4A,1B,2B,1C,2C	L	5	BACKWASH UNIT C	2,3,4,6,7	1A,2A,1B,2B,3C,4C
D	2	RINSE UNIT A	2,6,7,9,11,12	1A,5A,1B,2B,1C,2C	M	6	RINSE UNIT C	2,4,6,7,9,10	1A,2A,1B,2B,1C,5C
E					N				
F					P				
G	3	BACKWASH UNIT B	2,4,5,9,11	1A,2A,3B,4B,1C,2C	Q				
H	4	RINSE UNIT B	2,4,6,9,11,16	1A,2A,1B,5B,1C,2C	R				

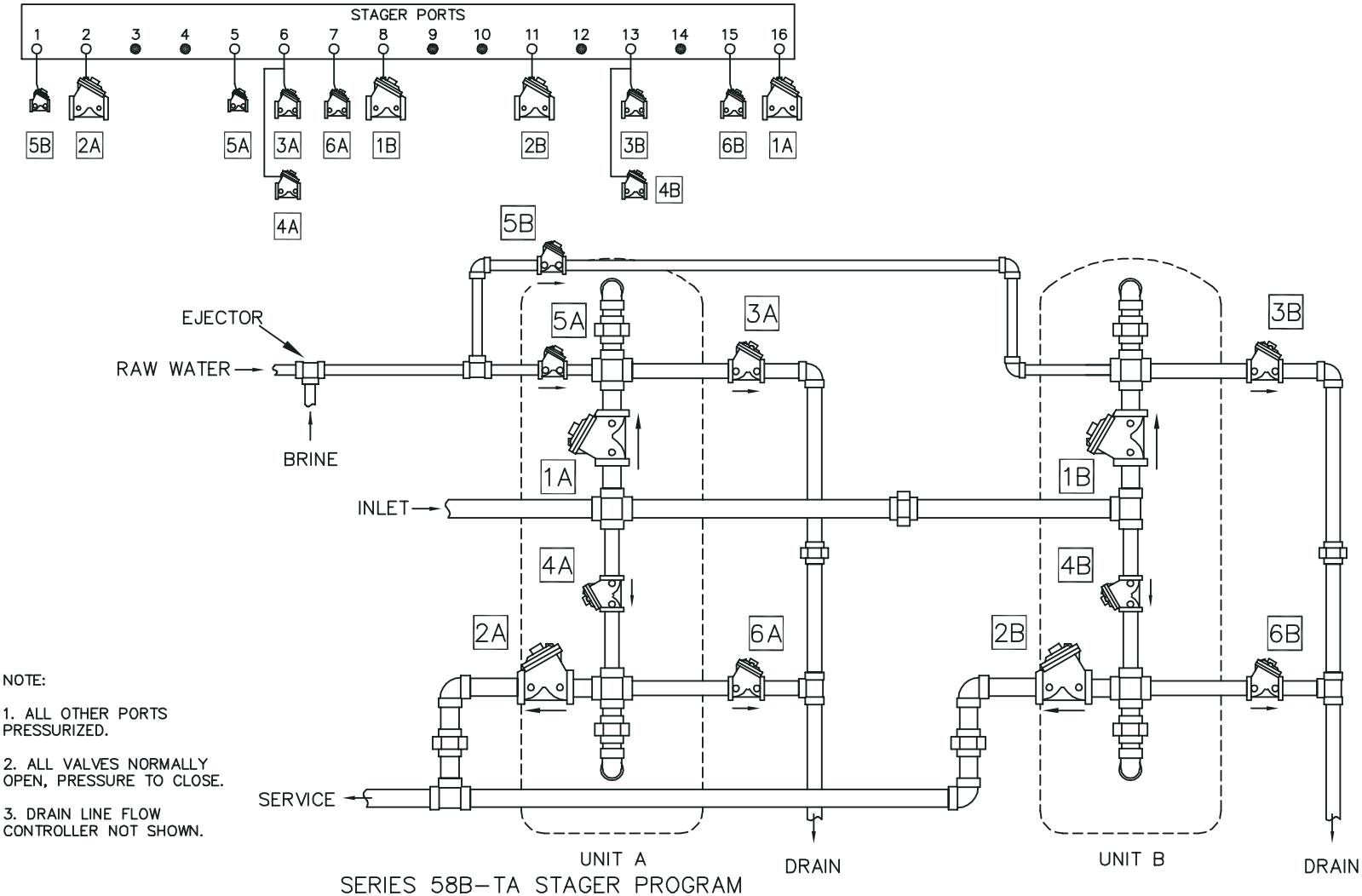
4 TANK SEQUENTIAL FILTER (58-04 STAGER)



NOTE:
1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION	PORTS VENTED (NOTE 1)	VALVES OPEN
A	0	SERVICE	2,4,6,7,9,11	1A,2A,1B,2B,1C,2C,1D,2D	J				
B					K				
C	1	BACKWASH UNIT A	1,6,7,9,11	3A,4A,1B,2B,1C,2C,1D,2D	L	5	BACKWASH UNIT C	2,3,4,6,7	1A,3C,4C,2A,1B,2B,1D,2D
D	2	RINSE UNIT A	2,6,7,9,11,12	1A,1B,2B,1C,2C,5A,1D,2D	M	6	RINSE UNIT C	2,4,6,7,9,10	1A,2A,1B,2B,1C,5C,1D,2D
E					N				
F					P				
G	3	BACKWASH UNIT B	2,4,5,9,11	1A,2A,3B,4B,1C,2C,1D,2D	Q	7	BACKWASH UNIT D	2,4,6,7,9,11,13	1A,2A,1B,2B,1C,2C,(3D,4D)
H	4	RINSE UNIT B	2,4,6,9,11,16	1A,2A,1B,1C,2C,1D,2D,5B	R	8	RINSE UNIT D	2,4,6,7,8,9,11,14	1A,2A,1B,2B,5D,1C,2C,1D

TWO TANK ALTERNATING SOFTENER (58-TA STAGER)



NOTE:

1. ALL OTHER PORTS PRESSURIZED.
2. ALL VALVES NORMALLY OPEN, PRESSURE TO CLOSE.
3. DRAIN LINE FLOW CONTROLLER NOT SHOWN.

SERIES 58B–TA STAGER PROGRAM

NOTCH	POS.	FUNCTION		PORTS VENTED (NOTE 1)	VALVES OPEN	NOTCH	POS.	FUNCTION		PORTS VENTED (NOTE 1)	VALVES OPEN
		UNIT A	UNIT B					UNIT A	UNIT B		
A	0	SERVICE	STANDBY	1,2,8,16	5B,2A,1B,1A	J	4	STANDBY	SERVICE	8,11,16	1B,2B,1A
B						K					
C						L					
D	1	BACKWASH	SERVICE	6,8,11	3A,4A,2B,1B	M					
E	2	BRINE/SLOW RINSE	SERVICE	5,7,8,11	5A,6A,2B,1B	N					
F						P	6	SERVICE	BACKWASH	2,13,16	2A,3B,4B,1A
G						Q	7	SERVICE	BRINE/SLOW RINSE	1,2,15,16	5B,2A,6B,1A
H	3	FAST RINSE	SERVICE	7,8,11,16	6A,1B,2B,1A	R	8	SERVICE	FAST RINSE	2,8,15,16	2A,1B,6B,1A

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