

Autotrol Performa™ Cv

Conditioner/Filter

Water Control System

Installation, Operation and Maintenance Manual

For information on installation

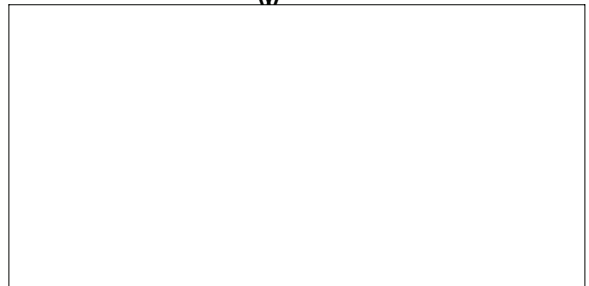


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1.0 Performa Cv System

1.1 Specifications

1.1.1 Performa Cv Conditioner

1.1.2 Performa Cv Filter Specifications

Flow Rates (Valve Only)

Service (15 psi (1.03 bar) @ 100 gpm)	25.0 gpm (5.7 m ³ /h)
Backwash (100 psi (6.9 bar) @ 25 psi (1.72 bar) @ 100 gpm)	25.0 gpm (4.5 m ³ /h)
Service	Cv = 6.5 (v = 5.5)
Backwash	Cv = 5.0 (v = 5.7)

Control Operation

942F Mechanical Clock Timer - 7 Day or 12 Day

Backwash	30 minutes
Initial Rinse	10 minutes

962F Microprocessor Demand

Backwash	4 to 60 minutes
Initial Rinse	2 to 10 minutes

962 FTC Electronic Time Clock

Backwash	4 to 60 minutes
Initial Rinse	2 to 10 minutes

Interval Regeneration a float Water Ratio

Valve Connections/Dimensions

Top Thread	2-1/2 in. max
Inlet/Outlet	1-3/4 in. - 12 NPT C-2, max
rain in	

4. M r h 0rain n i0 Xvat 0 but mpti 0 int a
 0rain b X v h X v X fh 0 nte XvaX , i rm a
 V-inb (1 -cm) 0 path far n 0 fh X n 0 h at
 h b t t m 0 fh X p i0 X v X v h h 0rain X
 0 n n c t i n . T i 0 v i X o v i 0 an a 0 uat 0 i p 0 n
 trap.

5. M r h 0rain mpti 0 int a n 0 v m a 0 0 v r
 X n , a 0 in -t p trap must b u 0 0 .

IMPORTANT N v r i n 0 r t 0rain X n int a 0rain, 0 v r
 X n 0 r trap. Xva 0 a X v an air 0 ap b t v n h 0rain
 X n an 0 h vast vat r t pr v nth p 0 0 i b i X 0 f
 0 va 0 b i n a bac -0 i p 0 n 0 int h 0 n 0 i t i n r .

iaur 1.3

Note.7(an ov)-6.592681n ov ba0.6(l)8.1()prac-6.6(t)15.3(e)-16.3(lc-6.6(e)0.6(l)17.9()ha)-6.6(enbeien-23.8()2T62681n o

1.3 Placing Performa Cv Conditioner/Filter into Operation

ft raxor vi us et pñ av b n e mpXt h uniti e r a t e b pac e int e p rati n e vñ e et p e car fu X.

1. R m v e nte XvaX e v r b first e pr e eñat h p e stic c p e f mlt f e nt e ft e v r e u X f e nt e f e v r up.

Note Tñ e X vñ a et p e vñ r e vñ r turninat h c c X in e icat r e vari us p e stic n e. Manua X e tat hñ e cam e aft **COUNTERCLOCKWISE** e n X unti X c c X in e icat r p e int e t e e ir e p e stic n e. (e manua X r a n rati n e ct e n e t e r ab e nte X e manua X p rati n e.)

2. R e tat c c X in e icat r **COUNTERCLOCKWISE** unti X it p e int e e ir ct X t e hñ e r **BACKWASH**.
3. i X m e ia tan vñ r vat r.

- a. Whñ vat r e sup X e ff p e ac hñ b p a e e vax (e) int e hñ e r vic p e stic n e.
- b. Op n vat r e sup X vax v r e X X t e app e imat X hñ 1/4 p n p e stic n e.

IMPORTANT: I f e p n e t e rap e X e r t e far m e ia ma b X et. I nhñ 1/4 p n p e stic n e u e u hñ ar air e capina e X X f e mlt e rain Xñ .

Conditioner

- a. Whñ a X fñ aih a e b n pura e f e mlt tan (vat r b aine t e f X v et a e i X f e mlt e rain) e p nhñ main sup X vax a Xñ va .
 - b. X v vat r t e run t e rain unti X ar.
 - c. Turn e ff vat r e sup X an e X thñ unit e tan e t e r ab ut fiv minut e. Tñ i e vñ a X v a X trapp e air t e e cap f e mlt tan .
4. e e vat r t e brin tan (initial Xñ). Whñ a buc t e hñ e e a e e app e imat X 4 a Xñ e (15 X r e) f vat r t e brin tan . I fñ tan hñ a e a X p e stic r m ab v hñ b t e m e fñ tan , a e e vat r unti Xñ X v X e app e imat X 1 in b (25 mm) ab v hñ p e stic r m.
 5. X e hñ e n e it e n r int e p rati n e.
 - a. Whñ hñ vat r e sup X vax e mp X t X e p n e car fu X a vanc hñ c c X in e icat r **COUNTERCLOCKWISE** hñ c nt r e ftñ **BRINE REFILL** p e stic n e . Xñ athñ i e p e stic n e unti X vat r e start e t e f X vñ e u hñ hñ brin Xñ int e hñ brin tan . e n e trun t e r m e r hñ an t e minut e.
 - b. e vanc hñ c c X in e icat r **COUNTERCLOCKWISE** unti X it p e int e t e hñ c nt r e ftñ **BRINE/SLOW RINSE** p e stic n e.

- c. Whñ hñ e n e it e n r int e p e stic n e b c t e e if vat r i e b in a r a vñ f e mlt brin tan . Tñ vat r X v Xñ hñ brin tan vñ r c e v r e X X . Ob e rvñ vat r X v Xñ rat X a thñ r minut e. I fñ vat r X v Xñ e n e tr c e e r i f it e e up r f r nc hñ **Troubleshooting** e ct e n e.

- e. e vanc hñ c c X in e icat r **COUNTERCLOCKWISE** t e hñ **REGENERATION COMPLETE** p e stic n e an e run vat r f e m a n arb fauc t unti Xñ vat r i e c X ar an e e ft.

Filter

Xñ X r m e ia e c p t carb n

- a. ft rñ aih a e b n pura e f e mlt tan (vat r b aine t e f X v et a e i X f e mlt e rain) e p nhñ main sup X a Xñ va . Bac vañ m e ia e r a minimum e 15 minut e r Xñ a r i f n e c e ar . Wat r runnat hñ e rain e u X b c X ar. Carb n m e ia e u X b a Xñ e t e a f r a minimum e f 12 hñ ur e t e a X v air bubb X e t e e cap p r t e bac vañ ma.
- b. ft rñ bac vañ i e e mp X t p X a in e nte X an e a Xñ v it e a vanc t e **BACKWASH COMPLETE**.

Electrical Connection

100 VAC, 115 VAC, and 230 VAC units: R m v t vñ t i f e mlt p e v r e r an e t n e r e t e it e fu Xñ n e . Ma e ur p e v r e urc matb eñ rati n a pñ t e n hñ e nte X B c r tain a vax e vñ t e e n e t e nte X e ut X t.

12 VAC: C n n cñ tñ p X a e fñ tran e t e r m r (e sup X e) e e n e ar cab X t e hñ matina e c t atñ r ar e r b t e m e fñ tim hñ u e ina . B c r tain hñ tran e t e r m r i e e cur an e i e p X a e int e ap e v r e urc e f e r r ct v X a hñ at i e n e t e nte X e b a vax e vñ t e .

2.2 Programming and Application

This section covers aspects of programming 62
Control

Note that the parameter is a unit of
measurement. The time unit is
minutes. The parameter is a unit
of measurement. The unit can be
minutes. The unit is active, for
example. NOTE: Column 2.1 and
2.4. It is for the parameter at the
unit is active. For example, parameter
(Table 2.4) is 1.5 units if it is 0 and
if it is 1.

Level I Parameters (Table 2.1)

h(var(r(f) 0) 2. 7(a) 4. 3(a) 5(a) 1.5.2(m) 0.5(2) - 1.3(a) 0.5(1) - 6.3(2) 2.4 - 4(3) - 2.1(6) 2.4) 4(B(1) 3(6) 0(4) 7(t) - 1.2(1) 0(0) 5(2) 7(1) 6(1) 1(0) 2(1) - 1(0)

Salt Amount

Salt amount in total is 6 units (2.7 grams).
For salt amount is 6 units (2.7 grams).

Table 2.2 - Suggested Settings for P4, P5, P6, P7

P5 Capacity Setting (gallons)	Reservoir Volume (Liters)				
	3 ft ³ (5)	4 ft ³ (113)	5 ft ³ (142)	6 ft ³ (170)	7 ft ³ (198)
P4 Salt Setting: (gallons)					
60 (3.9)	18 (8.2)	-	-	-	-
80 (5.2)	-	24 (10.9)	-	-	-
84 (5.4)	30 (13.6)	-	-	-	-
90 (5.8)	45 (20.4)	-	-	-	-
100 (6.4)	-	-	30 (27.2)	-	-
112 (7.2)	-	40 (18.1)	-	-	-
120 (7.7)	-	60 (27.2)	-	36 (16.3)	-
140 (9.0)	-	-	50 (22.7)	-	42 (19)
150 (9.7)	-	-	75 (34)	-	-
168 (10.8)	-	-	-	60 (27.2)	-
180 (11.6)	-	-	-	90 (40.8)	-
196 (12.7)	-	-	-	-	70 (31.8)
210 (13.6)	-	-	-	-	105 (47.6)
P6 Refill Setting: 14 inch tank = 74 (.74 gpm) 16 inch thru 21 inch tank = 130 (1.39 gpm)					
P7 Brine Draw Setting. (gallons) at 50 psi (3.5 bar) inlet pressure. (gallons) at 50 psi inlet pressure. (gallons) at 50 psi inlet pressure. (gallons) at 50 psi inlet pressure. (gallons) at 50 psi inlet pressure. (gallons) at 50 psi inlet pressure.					
Tank diameter	Inlet	Pressure	P7 equals	Flow	
14 in (35.5 cm)	M	1055	60	Brine	
16 in (40.6 cm)	Q	1035	80	urp	
18 in (45.7 cm)	Q	1035	80	urp	
21 in (53.3 cm)	R	1035	83	ar	

Level II Parameters (Table 2.4)

The vertical parameter 6h is shown in Table 2.4. To access the vertical parameter, use the **DOWN ARROW** (\downarrow) and **UP ARROW** (\uparrow) buttons to move the cursor to the desired parameter.

Refer to Table 2.4 for the parameter list. Use the **UP ARROW** (\uparrow) button to move the cursor to the desired parameter. Use the **DOWN ARROW** (\downarrow) button to move the cursor to the next parameter. Use the **LEFT** (\leftarrow) and **RIGHT** (\rightarrow) buttons to move the cursor to the left or right of the parameter. Use the **SET** button to enter the parameter value. Use the **ESC** key to exit the parameter menu.

Use the parameter number to select the parameter. Use the **LEFT** (\leftarrow) button to move the cursor to the left of the parameter. Use the **RIGHT** (\rightarrow) button to move the cursor to the right of the parameter. Use the **SET** button to enter the parameter value. Use the **ESC** key to exit the parameter menu.

aram t r 22. Sp ciaXc. ar nt r ath fact r t p aram aX fi p rtin nt X cati n t r sp cific n t X: M tric t r ampX. T i s param t r b. uX n v r b b ana b h n. u s r.

Electronic Time Clock Operation

arammin a aut matic r a n rati n fr u nc
 T EXcti nic Tim CXC h a s t r a n rati n
 pti n s Int rvaXR a n rati n an a f W
 R a n rati n.

T initiat an aut matic r a n rati n n r b h ft
 pti n s mu s t b b. s n. T s s t m ma a b
 r a n rat r manual b pr s inalt R a n rati n
 butt n t r h r s n s.

Interval Regeneration. T EXcti nic Tim CXC
 ma b p aramm t r a n rat in int rva s fup t
 30 a s. T i s fatur i s aram t r 14 CaX ar
 Ov r r (s TabX 2.4). E ampX lf 5 i s p aramm
 int 14 h n h s s t m v r a n rat v r fiv a s
 ath tim p aramm int 2.

Day of Week Regeneration. T EXcti nic Tim
 CXC ma b p aramm t r a n rat n a s p cific
 a r n s p cific a s ft. T instructi n s t r
 h i s pti n ar f un in TabX 2.3 n pa 15.

Application

T r r ma Cv j62 C n it i n r an h r r ma Cv
 j62 iX r ma b p rat s a s in aX u aX r tripX
 s s t m.

Dual and Triplex Conditioners and Filters

T u aX an r tripX s s t m s r uir a iff r nt cam
 h an h cam h at i s u s in h s in aX unit s s t m s.
 T a s r uir an int r o n n ct in aX c ut cabX.
 T i s aX s h unith at i s in r a n rati n r bac v a s
 t s in aX h r unith an pr v n t h m f s m s t art in a
 ar a n rati n r bac v a s unith first unit i s finia s.
 u aX an r tripX unith s uX b p X mb in paraX X h
 ab h r. In a muX-unit s s t m h bac v a s vat r i s
 s uppX b h h r unit r unith in h s s t m. In a
 u aX X r s s t m s n s rati n mu s t b s iv n h ath
 unit in s r vic i s abX t s at i s s r vic r uir m n t s
 an b abX t s uppX s uffi ci nt bac v a s vat r t h
 h r f iX r h iX it i s in h bac v a s c c X. T r i s a
 s Xcti n s ur, TabX 4.6, in s ct i n 4.0 s s s t in
 u aX in alt b ic fa u aX r tripX s s t m. T i s
 s Xcti n s ur i s ba s s n m ia bac v a s
 r uir m n t s an tan iam t r.

paraX X it mu s t b purb a s t r muX-unit p rati n.
 T i t numb r s ar

- uaX araX X C n it i n r NI 1035 j23
- TripX araX X C n it i n r NI 1035 j25
- uaX araX X iX r NI 1035 j24
- TripX araX X iX r NI 1035 j26

i s incX paraX X p rati n cam s an h p p r
 int r o n n ct cabX.

Manual Start Regeneration

T t r c h n t s p r r ma r a n rati n, pr s h
REGEN butt n. T i s butt n i s X cat s n h f s n t ft
 n t s VM n u pr s h **REGEN** butt n, h n t s
 p r r ma a fuX a n rati n ft n n it i n r.

If you press this button again more than one minute after regeneration begins, but before the regeneration is complete, a second regeneration will start when the first regeneration is finished. T
 i s p s v iX r > an n X s. V h R a n Tim
 R main in a s an in i cat i n h ath s n s
 r a n rati n v iX b p r r m s. VM n h first
 r a n rati n i s c mp X t h s n s n v iX b s in an
 h i s p s v iX X r nat b t v n X van R a n Tim
 R main in a.

Automatic Regeneration

**Programming Day of the Week Regeneration/
Backwash**

Ent r a , f t W R a n r a t i n / b a c v a b
 p e a r a m m i n a b p r e i n a t L E F T A R R O W (←)
 b u t t n a n t D O W N A R R O W (↓) b u t t n
 e i m u x a n u s e r 3 e c n e . T i a e a r e , v n a e
 1 , 2 , 3 , t c . , n t i s p a . S c t t a e , f t
 r a n r a t i n / b a c v a b e , u c c u r . T a c t i v a t
 h i a t a , b a n a h 0 t a 1 . T i p e a r a m m i n a m e
 i x b i t i f n e a r p r e e r 3 0 e c n e . I f
 h i f a t u r i e u e i n c o n j u n c t i n v h c a x n a r , v r r e
 h i c a x n r , v r r e t i m r i x b r e t a t h n e f
 h i e r a n r a t i n / b a c v a b .

Table 2.3 - Day of Week Regeneration/Backwash

Description of Parameter

Reserve Options

T i r a r t e t p e f r e r v . p t i n e f r h i e c n t e X
 f i e r e r v a n e m a r t r e r v h i e t r i c a v a t r u s a a
 p a t t r n) . T i a r e c t v h a r a m t r 1 5 .

T i f a c t r e t v a X e r 1 6 i e 3 0 M i b m a n e h a t
 3 0 % . f t t a e e t m c a p a c i t i e u e e r h e s t a r t i n a
 a v r a e r a d e a .

Fixed Reserve

M n f i e r e r v i e e c t e , h e n t e X m u x i p X e
 h i m a i m u m e e t m c a p a c i t b h i p r c n t v a X e t
 i n a r a m t r 1 6 a n u e e h r e u x a e a r e r v .

e a r a m a r a m t r 1 5 i e a e u e e t e c t M h r
 h i e n t e X v a i t e u n t i h T i m e f R a n r a t i n e t i n
 a r a m t r 2 t e a r a n r a t i n , r i f h e n t e X
 e . u x b o i n a r a n r a t i n i m m e i a t X M n h
 c a p a c i t r m a i n i a i e e h a n h r e r v .

Smart Reserve (water usage pattern)

T i h r r e r v . p t i n a X v h e n t e X a j u e h
 r e r v b a e u p n h h i e t r i c a v a t r u s a a p a t t r n
 . f h e e t m . T i e n t e X p e t r a c . f h v a t r
 u s a a f r a b e a . f h v a n u e e h a t a e
 a v r a u s a a m u x i p e b 1 . 2 a e h r e r v e r h a t
 e a . E v r e a a t h T i m e f R a n r a t i n , h e n t e X
 r c a x u a t e h e a e a v r a a v a t r u s a a . I f X e h a n
 1 0 % . f a e a e a v r a a v a t r u s a a i e u e e , h e n t e X
 v i x n t b a n a h e a e a v r a a . I f m r h a n t v i c h
 e a e a v r a a i e u e e , h e n t e X u e e h a c t u a X u s a a
 i n h i r e r v c a x u a t i n .

S i n c a n v i n s t a X t i r h a e n h i e r . f v a t r u s a a ,
 h i e n t e X m u x i p X e h p r c n t e f c a p a c i t v a X e t i n
 a r a m t r 1 6 b h i t a e e t m c a p a c i t t
 e t r m i n s t a r t i n a a v r a a f r a b e a . f h v .

2.3 Conditioner Programming Tables

Table 2.4 - Level II Programming Performa Cv 962 Parallel Multi Tank or Single Tank Conditioner

Parameter	Description	Range of Values	Minimum Increment	Recommended Program Value	Units of Measure	Notes
6	R fix nts r	2-200	1	Selected from Table 2.2		This number with contents of rate for fixed rate. R fix nts X inst. R fix tim is cast at r fix p ram unt. f vat rint brin fan.
7	Brin ra rat	2-200	1	Selected from Table 2.2		This number with contents of rate rat bas. nh inj ct r s. T tim inh ra p sit n i h n cast.
8	Bac val tim	4-60	1	14*	Minut	*Ma b a just t r app cati n

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Table 2.5 - Programming Performa Cv 962TC Electronic Time Clock Conditioner

Table 2.5 - Programming Performa Cv 962TC Electronic Time Clock Conditioner

3.0 Performa Cv Filter Valve and Controls, 962F, 962FTC, 942F

3.1 Programming and Application

The information in this section is for programming the controller.

Table 3.1 - Programming Performa Cv 962F Three Cycle Filter

Parameter	Description	Range of Values	Minimum Increment	Recommended Program Value	Units of Measure	Notes
1	Advanced timing	(1-7) 1 00-12 53 Metric	(1 min)	Current Day and Time	hour Minute	Range of parameter values is 1 to 13. For advanced timing =1, M=2, T=3, WE=4, T=5, RI=6, T=7, T=8, T=9, T=10, T=11, T=12, T=13
2	Time back start	(1-7) 0 00-23 53 Metric		As required	hour Minute	Range of parameter values is 1 to 13
3	Programmer			10 100	µs Metric	
4	Programmer			0.5	µs	
5	Filter capacitance			As required	Metric	Filter capacitance (µF) = 6.7 * n a.1(n)30. () TJ0 - Filter capacitance (µF) = 12c-Ti (Mi)--1. ()-3 ()-

Table 3.2 - Programming Performance Cv 962F Five Cycle Filter

Parameter	Description	Range of Values	Minimum Increment	Recommended Program Value	Units of
-----------	-------------	-----------------	-------------------	---------------------------	----------

Electronic Time Clock Operation

The initial automatic backwash function must be enabled. The automatic backwash manual bypass button must be set to ON.

The programmed automatic regeneration frequency

The Electronic Time Clock has a regeneration interval of 12 hours. The interval can be set to 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100 hours.

Interval Backwash. The Electronic Time Clock makes a programmed regeneration interval at intervals up to 30 minutes. The interval is adjustable in 2-minute increments. It is set at 14. The programmed interval is 14 minutes. The automatic backwash valve is set at 14 minutes. The programmed interval is 2.

Day of Week Backwash. The Electronic Time Clock makes a programmed backwash on a specific day of the week. The instruction for the day of the week is found in Table 2.3, on page 17.

Application

The remote control unit is used to control the remote control unit. The remote control unit is used to control the remote control unit. The remote control unit is used to control the remote control unit.

Dual and Triplex Conditioners and Filters

The dual and triplex conditioners and filters are used to control the remote control unit.

The dual and triplex conditioners and filters are used to control the remote control unit.

3.2 Mechanical

Series 942F Mechanical Control

The Series 942F mechanical control provides a time delay function for fire alarm applications.

Figure 3.1

3.2.1 Settings

Setting the Time of Day and the Back Valve and the Manual Back Valve in the 942F control.

Setting the Time of Day

Rotate the Clockwise until the pointer indicates the correct time of day. When the time of day is set, the indicator will back valve at approximately 2:00 a.m. If it is desired to have the unit back valve at another time, simply flip the current time of day accordingly. For example, to have the unit back valve at 4:00 a.m., set the Clockwise at the actual current time of day.

Note: Do not rotate the Calendar Cap by hand. The Clockwise the Calendar Cap. To manually in the Calendar Cap, rotate the Clockwise clockwise

Adjusting the Backwash Setting

The Backwash indicator number (BCW) on the control panel indicates the backwash cycle time. When the indicator number is 0, the backwash cycle is disabled. To adjust the backwash cycle time, turn the indicator number to the desired value. The backwash cycle time is set in minutes. The indicator number can be adjusted by turning the knob clockwise. The indicator number can be reset to 0 by turning the knob counter-clockwise. The indicator number can be set to 0 by turning the knob counter-clockwise. The indicator number can be set to 0 by turning the knob counter-clockwise. The indicator number can be set to 0 by turning the knob counter-clockwise.

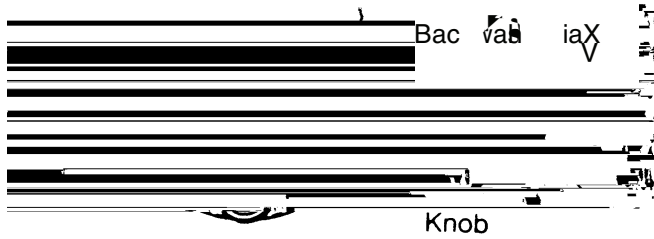


Figure 3.2 Backwash Control

Table 3.4 - Cycle Times for 942F Control

Cycle	Time (Minutes)
Backwash	- 30
ura	0

3.3 Explanation of Parameter Values for the 962 Single and Parallel Tank Controls

This section contains a table explaining the programming parameters in the 962 electronic controls.

Number	Description of Program Values	Explanation
--------	-------------------------------	-------------

5
pa 12

1 Capacitance of the capacitor is 5 μF. The circuit is shown in the figure.

13 The parameters of the circuit are given in the figure. The circuit is shown in the figure.

20 The circuit is shown in the figure. The circuit is shown in the figure.

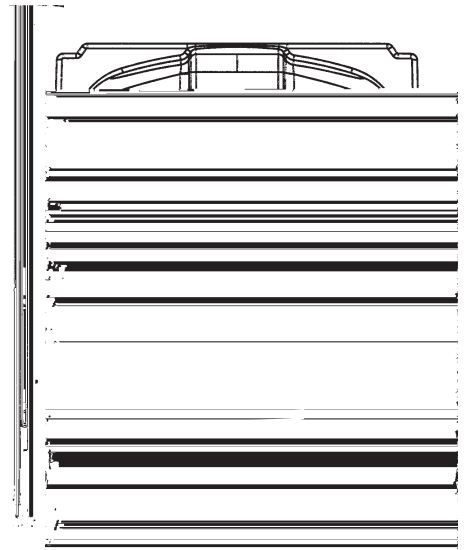
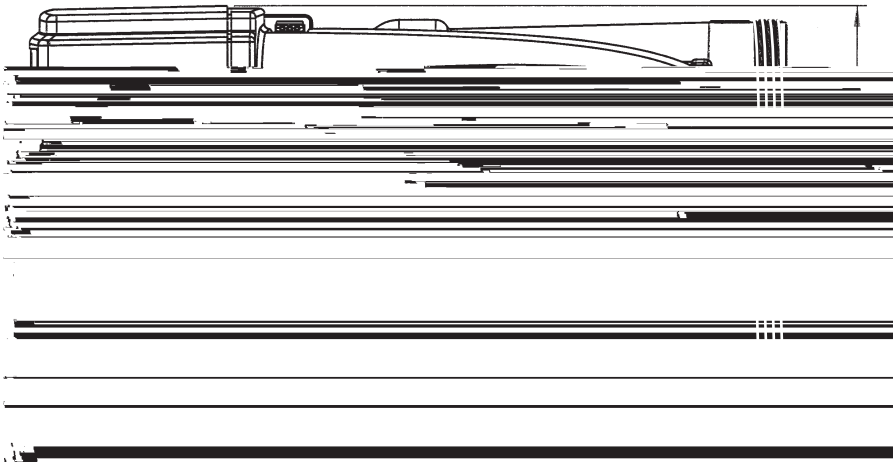
* The circuit is shown in the figure. The circuit is shown in the figure.

** The circuit is shown in the figure. The circuit is shown in the figure.

*** The circuit is shown in the figure. The circuit is shown in the figure.

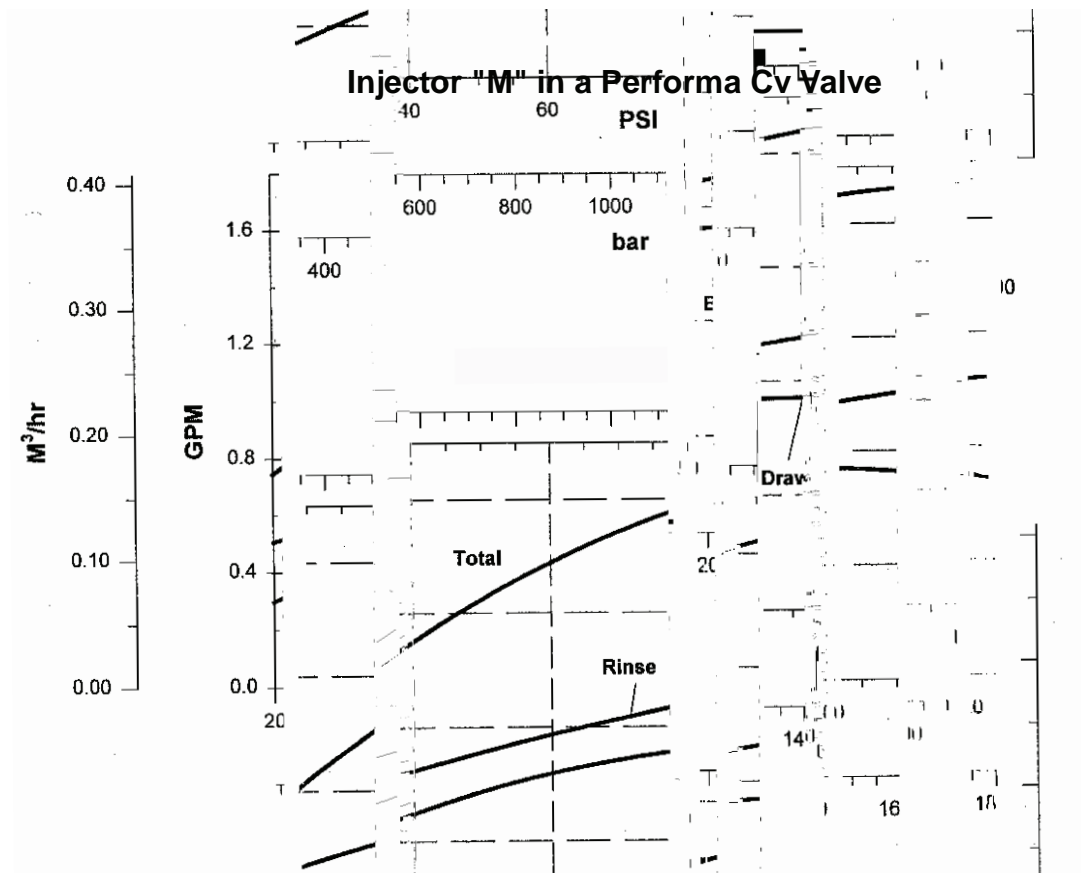
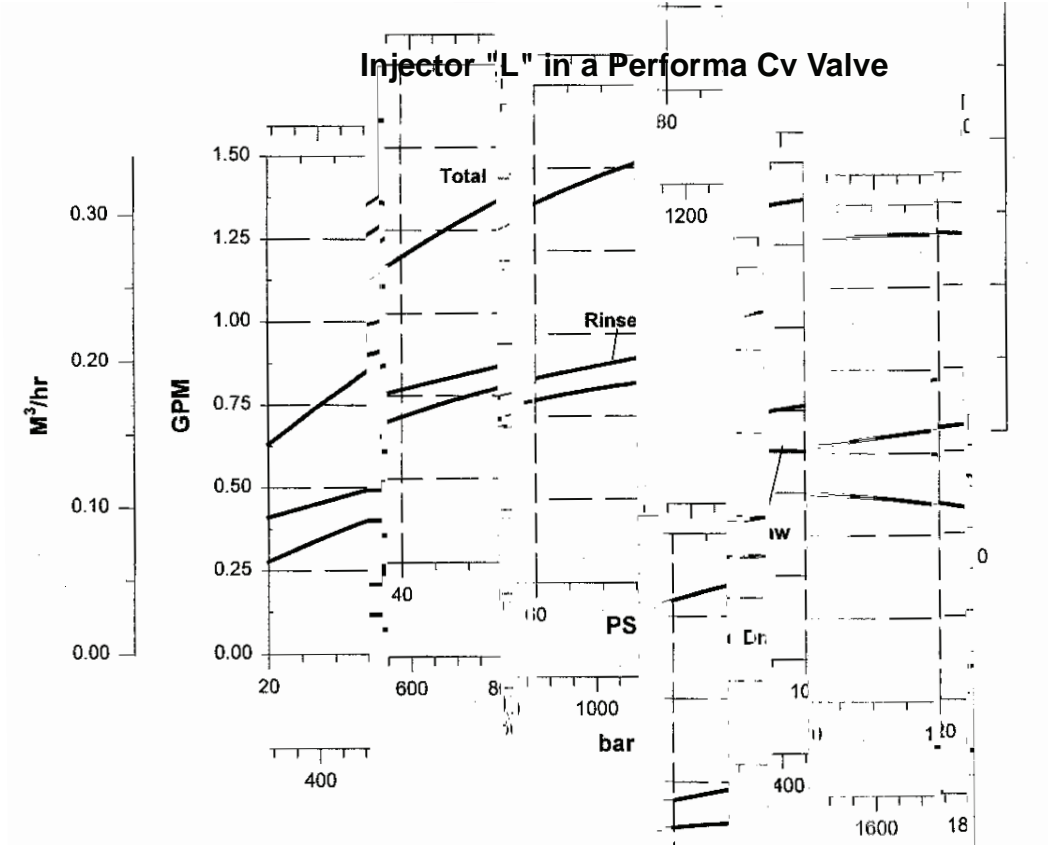
4.0 Performa Cv Performance Charts and Graphs

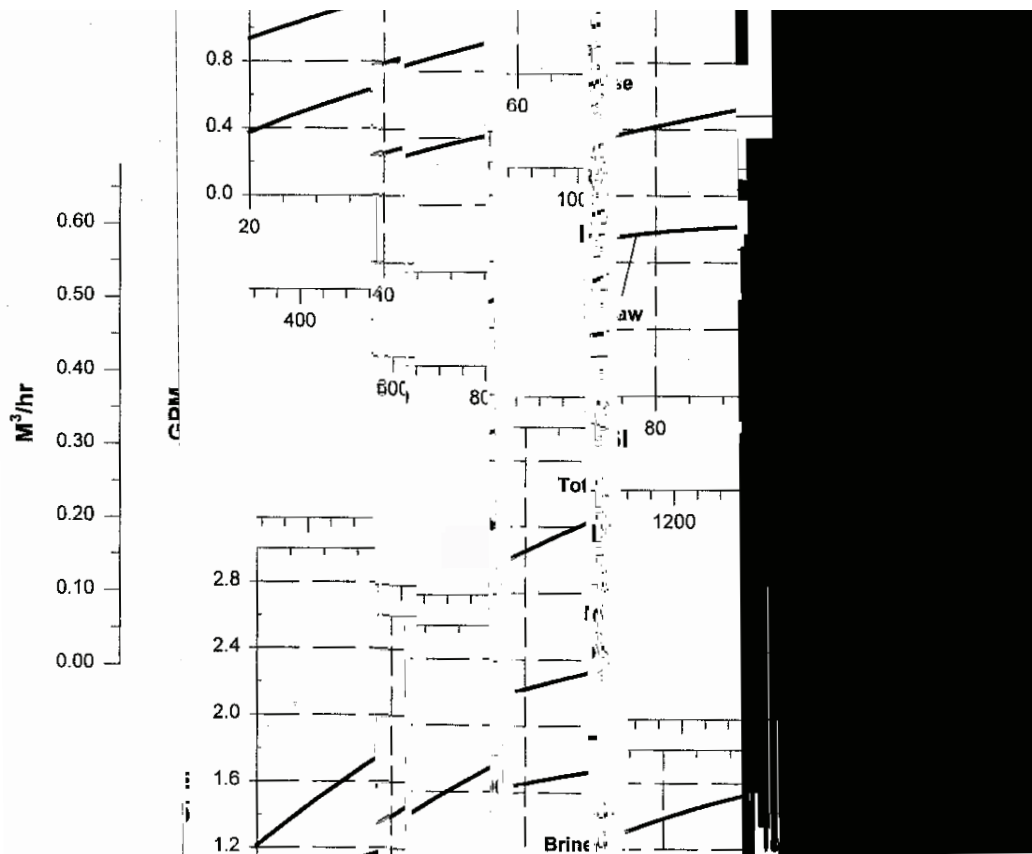
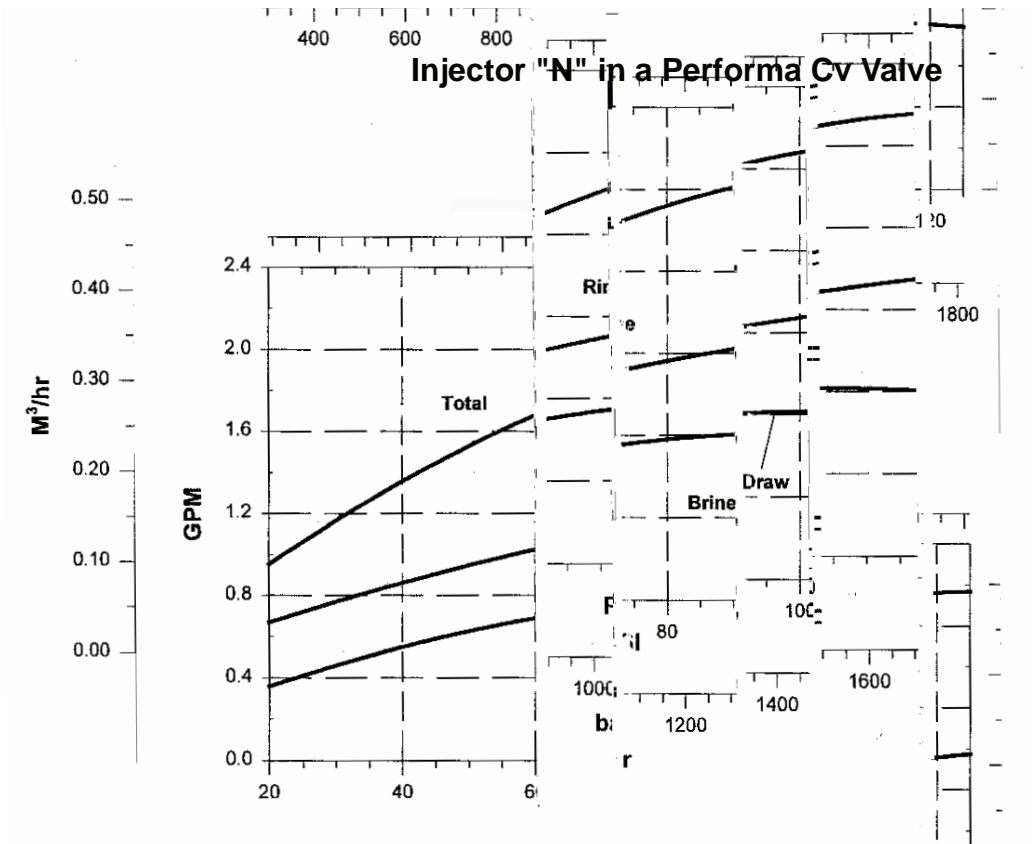
4.1 General Specification



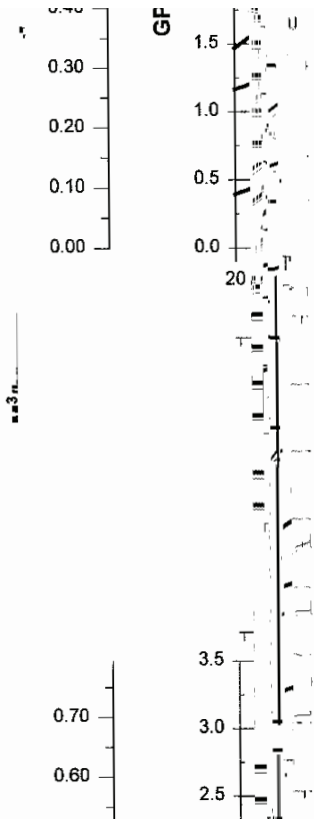
Static Tension	300 psi (20.6 bar)
Working Tension	20-120 psi (1.3 - 8.27 bar)
Standard Electrical Rating	362 Vac or 120 Vac / 24 hr or 50 > 12 V transformer, 60 > 120 Vac or 12 V transformer
Electrical Cord (Standard Rating)	.60-inb (1.5-m) 3-wire with ground
Working Tension	2-1/2-inb max
Roller Diameter	1.050-inb O (26.7-mm)
Roller Width	1/2 inb / 1/2 inb (13 mm / 13 mm) in the center of the track
Standard Cord Connection	1-inb (25.4-mm) copper tube adaptor
Optional Cord Connections	1-1/4-inb, 3/4-inb, 22-mm, and 2 -mm copper tube adaptor 3/4-inb BSPT, 1-inb BSPT, 1-inb NPT brass pipe adaptor 3/4-inb, 1-inb, 1-1/4-inb, 25-mm PVC tube adaptor
Brin Cord Connection	3/4-inb NPT max
Chain Cord Connection	3/4-inb NPT max
Optional Passages	Rating and function, 1-inb partition, reinforced plastic
Cord Material, Tension	Reinforced plastic
Rubber Cord	Compound is required for rivet
Material (Timber)	362, 362, 362TC, 362TC available in Europe, Germany, France, Italy, Spain, Japan
Material (Aluminum)	362, 362, 362TC, 362TC available in Europe, Germany, France, Italy, Spain, Japan
Brin Ratchet Cord	0.74 and 1.3 M
Electrical Cord Connections	5, 7, 10, 12, 15, 20 M. B. and 20 M must be used for

4.2 Injector Curves





Injector "R" in a Performa Cv Valve



4.3 Performa Cv Conditioner Performance Data

Table 4.1 - Performa Cv Injector Performance Chart

Injectors L - R Flow Rate Charts (gpm)										
PSI	L		M		N		Q		R	
	Draw	Rinse	Draw	Rinse	Draw	Rinse	Draw	Rinse	Draw	Rinse
20	0.26	0.4	0.3	0.5	0.4	0.65	0.4	0.5	0.45	1.2
30	0.3	0.45	0.4	0.55	0.45	0.75	0.5	0.75	0.5	1.3
60	0.5	0.6	0.6	0.8	0.75	1	0.8	1.4	0.8	1.75
90	0.6	0.65	0.7	0.9	0.8	1.1	0.9	1.6	1	2
100	0.6	0.7	0.7	1.0	0.8	1.6	1.0	1.8	1.1	2.2

Injectors L - R Flow Rate Charts (Lpm)										
Bar	L		M		N		Q		R	
	Draw	Rinse	Draw	Rinse	Draw	Rinse	Draw	Rinse	Draw	Rinse
1.4	0.5	1.5	1.1	1.5	1.5	2.5	1.5	3.4	1.5	4.5
2.1	1.1	1.7	1.5	2.1	1.7	2.8	1.7	3.6	1.7	4.7
4.2	1.7	2.3	2.3	3.0	2.3	3.8	3.1	5.3	3.4	6.6
5.6	2.3	2.5	2.6	3.2	3	4.2	3.4	6	3.6	7.6
7.0	2.3	2.7	2.6	3.4	3	4.7	3.6	6.6	4.2	8.3

Table 4.2 - Service and Backwash Flow Performance Data

Flow vs Pressure Drop (gpm)			Flow vs Pressure Drop (Lpm)		
PSI	Service (Cv 6.5)	Backwash (Cv 4.0)	Bar	Service (Cv 6.5)	Backwash Cv 4.0)
5	15	10	0.35	56	34
10	20	13	0.5	76	47
15	25	16	1	105	61
20	30	20	1.4	140	80
25	32	22	1.7	152	86
30	35	24	2.1	168	93

Table 4.3 - Recommended Drain Flow Controls (Backwash Anion and Cation Resin @ 55°F (12.7°C) Water Temperature

Tank Diameter Inches (mm)	Bed Area sq. ft.	Anion Resin @ 3 gpm/sq ft (m ³ /h/sq ft)	Cation Resin @ 5 gpm/sq ft (m ³ /h/sq ft)
14 (35.6)	1.02	3 (0.7)	5 (1.1)
16 (40.6)	1.3	4 (0.9)	7 (1.5)
18 (45.7)	1.76	5 (1.1)	9 (1.9)
21 (53.3)	2.4	7 (1.5)	12 (2.6)

Table 4.4 - Performa Filter

Pressure Loss vs Flow (gpm)		
PSI	Service (Cv 6.5)	Backwash (Cv 5.0)
5	15	11
10	20	16
15	25	19
20	29	22
25	32	25
30	35	27
Pressure Loss vs Flow (Lpm)		
Bar	Service (Kv 5.6)	Backwash (Kv 5.8)
0.35	56	42
0.7	66	61
1	75	72
1.4	109	83
1.7	121	95
2.1	132	102

Table 4.5 - Typical Backwash Flow Requirements for Various Filter Medias (based on 55°F (12.7°C) water temperature)

		GAC/CARBON FILTER-AG, CALCITE			
		GREENSAND			
		BIRM			
		SAND, MULTI-MEDIA			
Tank Dia. inches (mm)	Bed Area sq. ft.	8 gpm/sq ft (Lpm/sq ft)	10 gpm/sq ft (Lpm/sq ft)	12 gpm/sq ft (Lpm/sq ft)	15 gpm/sq ft (Lpm/sq ft)
14 (35.6)	1.02	(30)	10 (3)	12 (45)	15 (57)
16 (40.6)	1.3	11 (42)	13 (49)	16 (61)	20 (76)
1 (45.7)	1.76	14 (53)	17 (64)	21 (79)	*26 (97)
21 (53.3)	2.4	19 (72)	24 (91)	*29 (109)	
24 (60.9)	3.14	25 (95)			

*Maximum backwash rate is 25 gpm/sq ft or 1.72 bar pressure drop.

Table 4.6 - Performa Cv Filter Sizing Selection Guide for Dual Unit Filters.

Typical backwash flow requirements for various filter medias (based on 55°F (12.7°C) water temperature.							
		GAC/CARBON FILTER-AG, CALCITE					
		GREENSAND					
				BIRM			
						SAND, MULTI-MEDIA	
Tank Dia. inches (mm)	Bed Area sq. ft.	8 gpm/sq ft (Lpm/sq ft)	10 gpm/sq ft (Lpm/sq ft)	12 gpm/sq ft (Lpm/sq ft)	15 gpm/sq ft (Lpm/sq ft)		
14 (35.6)	1.02	(30)	10 (3)	12 (45)	N R		
16 (40.6)	1.3	11 (42)	13 (49)	N R	N R		
1 (45.7)	1.76	*14 (53)	N R	N R	N R		
21 (53.3)	2.4	N R	N R	N R	N R		

* Maximum backwash pressure 25 psi or 1.72 bar per filter.

N R = Not Recommended. For more information, contact your local distributor or visit our website at www.performafilter.com.

5.2 Preventative Maintenance

Injector Screen and Injector

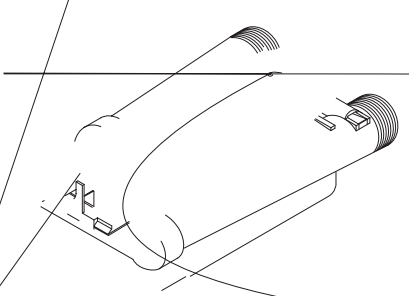
În epocă anului cînd anbrin tan anscr nfix r, n n. f
brin pic up tub. nc a ar. r m n e im nt
app ar e in h b t m. fh brin tan .

Cînd an inj ct r ecr n an inj ct r. nc a ar

1. Încălziți și verificați unitățile de transfer.
 2. Înlocuiți filtrele de alimentare cu apă și apă caldă (dacă este cazul) în bazele de alimentare.
 3. Revizuiți și curățați bazele de alimentare cu apă caldă (dacă este cazul) și filtrele de alimentare.
 4. Înlocuiți filtrele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă (vezi 5.1).
 5. Cînd anscr n ușină a fin bruă. Nu uitați cînd an.
 6. Înlocuiți și curățați puștile de alimentare cu apă caldă și filtrele de alimentare cu apă caldă.
 7. Nu vă uitați să verificați și să curățați filtrele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă.
- Cînd anscr n ușină a fin bruă. Nu uitați cînd an.
8. Lubrificați O-ringurile și injectoarele, injectoarele și injectoarele cu **silicone lubricant only!**
 9. Înlocuiți și curățați filtrele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă.
 10. Revizuiți și curățați injectoarele, injectoarele și injectoarele.

IMPORTANT: Nu utilizați nici un fel de plastic cap. Nu utilizați capul în interiorul puștii. Overtințarea poate cauza brăzda și plasticul capului poate fi imediat vizibil.

11. Încălziți și verificați unitățile de transfer și filtrele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă.
12. Revizuiți și curățați filtrele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă.



îaur 5.1

Water Meter Maintenance

Ti m t rina vic u e v h h 62 Cv man
c nte ma r uir simp maint nanc . In rar
instanc e, h turbin h fh vat r m t r can
c ct e ma partic e, f. r iz e n, v ntua
pr v ntinal h m turnina.

1. Înlocuiți filtrele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă (dacă este cazul) în bazele de alimentare.
2. Revizuiți și curățați bazele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă (vezi 5.1).
3. Revizuiți și curățați bazele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă (vezi 5.1).
4. Înlocuiți și curățați puștile de alimentare cu apă caldă și filtrele de alimentare cu apă caldă (vezi 5.1).
5. Curățați și lubrificați turbină și filtrele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă.
6. Curățați și lubrificați turbină și filtrele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă.
7. Revizuiți și curățați turbină și filtrele de alimentare cu apă caldă și filtrele de alimentare cu apă caldă.

T b c f r p r m t r e p r a t i n e p n a
v n s t r a m f a u c t a n e b e r v h h v a t r f x v
i n i c a t i n b x n i n a c x n e n h c n t e x i s p a .

*R V r i e a t r a m a r f a b @ m i c a c o m p a n .

5.3 Removing the Valve Assembly for Servicing

1. Unplug the pressure.
2. Shut off the water supply, and put the pressure valve (3) into the pressure position.
3. Remove the water from the air receiver, and drain the pressure from the pressure valve (3) into the pressure position. (Refer to Figure 5.2).

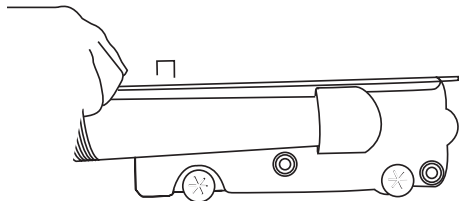


Figure 5.2

Remove the air from the receiver, and drain the pressure from the pressure valve (3) into the pressure position. (Refer to Figure 5.2).

Remove the air from the receiver, and drain the pressure from the pressure valve (3) into the pressure position.

1. Turn the pressure valve, and drain the pressure from the pressure valve (3) into the pressure position.

5.4 Removing the Control

Complete the following steps to remove the 360 control from the receiver.

1. Unplug the vacuum transformer.
2. Shut off the water supply, and put the pressure valve (3) into the pressure position.
3. Remove the air from the receiver, and drain the pressure from the pressure valve (3) into the pressure position. (Refer to Figure 5.3). If the front of the receiver is removed, the pressure valve (3) is in the pressure position.

Figure 5.3

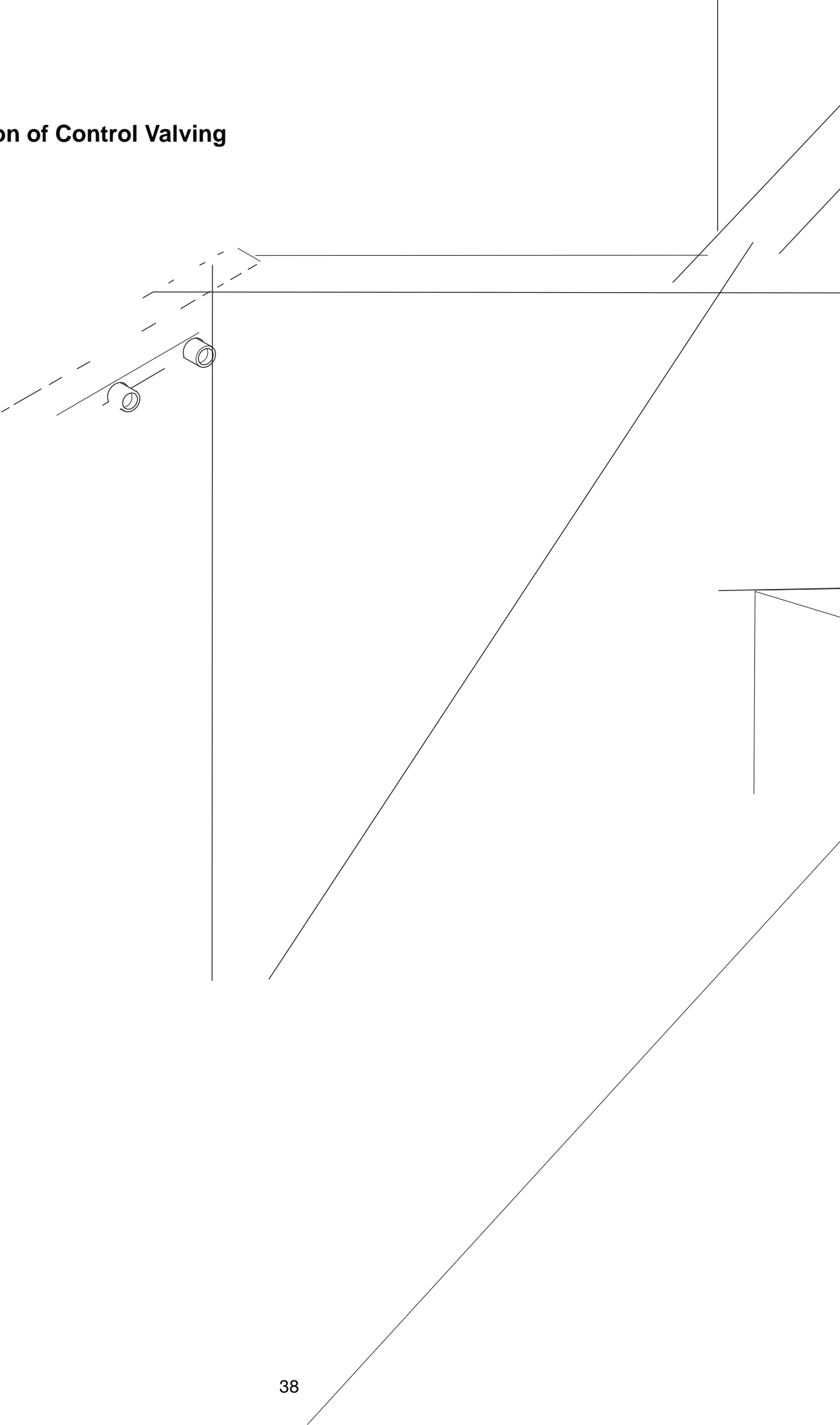
4. Remove the control from the receiver. The back of the receiver is the front of the receiver, and the front of the receiver is the back of the receiver. (Refer to Figure 5.4).

Figure 5.4

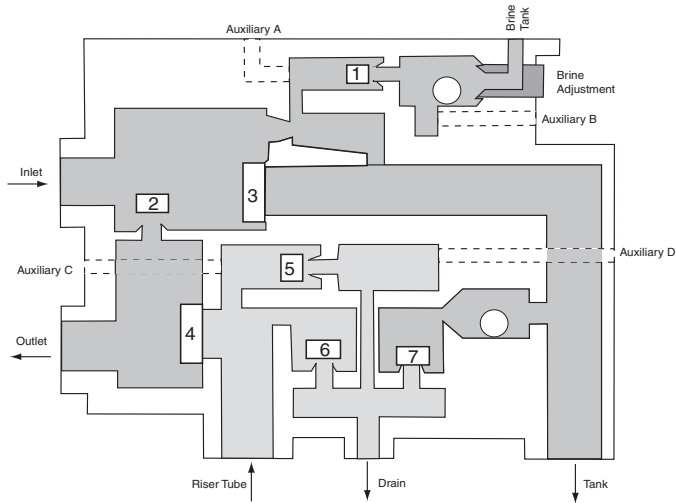
5. Turn the control back to the normal position. The control must be in the normal position. If the control is in the normal position, the control is in the normal position. (Refer to Figure 5.5).

Figure 5.5

5.5 Identification of Control Valving

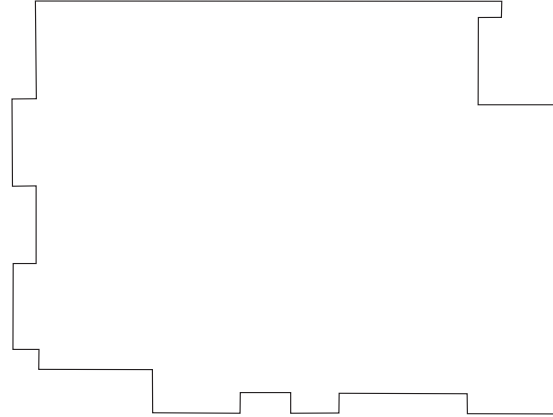


3 Brine/Slow Rinse Position



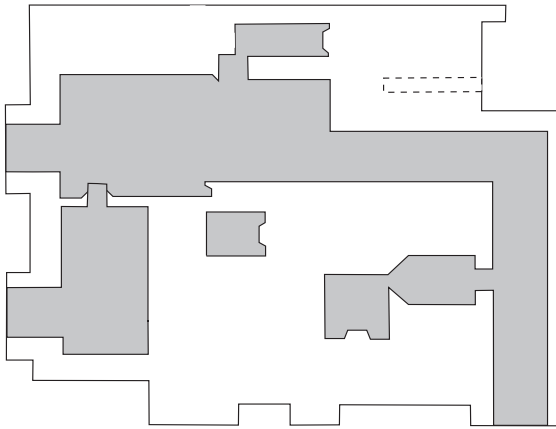
Name	Valve No.
Brine	1 - Open
By-Pass	2 - Open
Inlet	3 - Closed
Outlet	4 - Closed
2nd Tank Top	5 - Open
Purge	6 - Open
Backwash	7 - Closed

4 Fast Rinse Position



5.8 Performa Cv Filter Flow Diagrams

1 Backwash Position



2 Fast Rinse Position

5.9 Troubleshooting

The following information is provided to help you identify and correct the problem. For more information, see the Troubleshooting section of the manual.

IMPORTANT: Service personnel should not attempt to repair the unit unless they are qualified to do so. If you are not qualified, contact a qualified service technician.

Valve Troubleshooting

Problem	Possible Cause	Solution
1. Gas not flowing to the burner.	a. Gas valve is not open. b. Restricted gas line. c. Inlet gas pressure is too low. d. Inlet gas valve is closed. e. Gas (2 and 4) not connected.	a. Set pump to maintain 30 psi at operating pressure. b. Remove restriction. c. Check inlet gas pressure. d. Replace inlet gas valve. e. Remove gas line matter from gas line and check for leaks.
2. Burner is not firing.	a. Burner valve (1) is not open. b. Gas not flowing to burner. c. Gas (3 and 4) not connected. d. Inlet gas valve is closed.	a. Manual gas pressure setting is not correct. b. Remove gas line matter from gas line and check for leaks. c. Check inlet gas pressure. d. Check gas line connection.
3. Burner is not firing properly.	a. Inaccurate timing. b. Gas line matter in gas line causing irregular flow. c. Inlet gas valve is closed.	a. Correct timing. b. Remove gas line matter. Manual gas pressure setting is not correct. c. Replace inlet gas valve.
4. Intermittent or irregular burner.	a. Gas valve is not open. b. Inlet gas valve is closed.	a. Set pump to maintain 30 psi at operating pressure. b. Replace inlet gas valve.
5. No gas flow to the burner.	a. Unit is not turned on. b. No gas in burner tank. c. Gas not flowing to burner.	a. Check gas pressure. b. Check gas flow.
6. Gas not flowing to the burner.	a. Inlet gas valve is not open. b. Gas line matter in gas line. c. Gas (6 and 7) not connected.	a. Replace inlet gas valve. b. Remove gas line matter. c. Check gas flow.
7. Burner is not firing properly.	a. Gas line matter in gas line. b. Gas (2 and 4) not connected.	a. Manual gas pressure setting is not correct. b. Replace gas line.

For more information, see the Troubleshooting section of the manual.

962 Control Troubleshooting

Alarms

The Model 962 continuously monitors and reports an alarm if it detects a malfunction. The alarm is a biphasic, non-redundant, non-assertive signal.

When an alarm occurs, the system will report an error number from 1 to 4. The table below shows the error number, a description of the fault, the cause of the error, and the action to be taken. The alarm, printed on the control panel, will reset itself after 30 seconds.

Model 960 Alarms

Indication	Description	Cause	Solution
Err1	Excessive air	Control timing error program.	Refer to the program manual Model 960 Control System ().
Err2	Imprecise start of run rate (limit switch open).	Valve cam after manual start of run rate. Valve cam after manual start of run rate component. Auxiliary. Auxiliary drive. Auxiliary.	Refer to the manual of the valve after start of run rate. Refer to the manual of the valve after start of run rate. Refer to the manual of the valve after start of run rate.
Err3	Imprecise finish of run rate (limit switch open).	Valve cam after manual start of run rate component. Auxiliary. Auxiliary drive. Auxiliary.	Refer to the manual of the valve after start of run rate. Refer to the manual of the valve after start of run rate. Refer to the manual of the valve after start of run rate.
Err4	Imprecise control timing (error in control timing of the valve).	On the control timing of the valve.	Adjust the range 3 to 250. Capacitance range 0.1 to 140.0.

Problem

6. N. vat r f. v. is p. h. n
 vat r is f. v. in a. (e. n. e.
 n. t. b. n.).

7. C. n. t. e. v. is p. h. i. s. f. > n. at
 R. a. n. Tim. R. main. i. a.
 . C. n. t. e. X. a. n. rat. e. ath
 v. e. n. a. tim. e. f. a. .

Possible Cause

- a. B. p. a. s. s. e. v. a. y. in. b. p. a. s. s. e. p. a. s. s. i. t. i. n.
- b. M. t. r. p. e. b. e. i. s. e. n. n. c. t. e. r. n. t. f. u. e. n. n. c. t. e. m. t. h. u. s. i. n. a.
- c. R. e. t. r. i. c. t. e. m. t. r. t. u. r. b. i. n. e. t. a. t. i. n. e. u. t. e. r. i. a. n. m. a. t. r. i. a. n. m. t. r. !

- . f. c. t. i. v. m. t. r. p. e. b. .
- . f. c. t. i. v. c. i. r. c. u. i. t. b. a. r. .

a. B. a. c. k. b. a. c. k. r. a. t. i. n. e. v. r. r. o. u. t. e. .

- a. e. v. r. e. u. t. a. e. .
- b. Tim. e. f. a. e. t. i. n. e. r. r. c. t. X.
- c. Tim. e. f. r. a. n. r. a. t. i. n. e. t. i. n. e. r. r. c. t. X.

Solution

- a. L. i. f. t. b. p. a. s. s. e. v. a. y. i. n. t. e. r. v. i. c. p. a. s. s. i. t. i. n.
- b. u. x. i. n. e. r. t. p. e. b. i. n. t. e. m. t. h. u. s. i. n. a.

c. R. e. m. o. v. e. m. t. h. u. s. i. n. a. f. r. o. m. u. p. t. u. r. b. i. n. a. n. d. f. i. x. i. n. g. t. h. e. c. o. n. v. e. r. t. e. r. Turb. i. n. e. u. x. i. n. g. s. p. i. n. f. r. o. m. X. I. f. n. o. t. r. e. f. r. e. s. h. W. a. t. e. r. M. t. r. M. a. i. n. t. e. n. a. n. c. e. c. t. i. n. e.

- . R. e. p. l. a. c. e. m. e. n. t. s. X.
- . R. e. p. l. a. c. e. m. e. n. t. s. X.

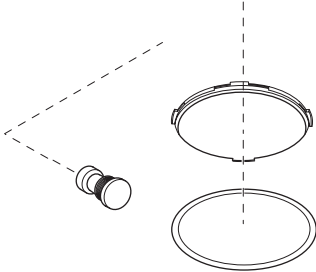
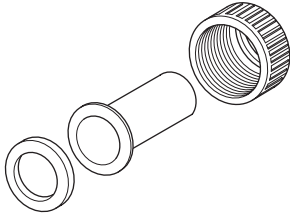
a. R. e. f. r. e. s. h. M. a. n. u. a. l. R. a. t. i. n. e. c. t. i. n. e.

- a. R. e. t. i. m. e. f. a. t. o. r. r. e. c. t. tim. e. f. a. .
- b. R. e. t. i. m. e. f. a. t. o. r. r. e. c. t. tim. e. f. a. .
- c. R. e. t. i. m. e. X. 6(t)-30.2.2.2(e. f. o. t)-31.1(i)-30.-25.4224.1(i)-30.3

61-415-2(4) 54(4) 5anT (14(13(a) ()-0.34(a) 4.7 (Jan-2(54ac) 3.4(0

6.0 Performa Cv Parts

6.1 Valve Component Exploded View



6.2 Parts List

Part				Part			
Code	No.	Description	Qty.	Code	No.	Description	Qty.
1	1000413	rf rma Cv C n'iti n r VaX	1	10	101042	O-Rin	1
		X V C nte X		11	1035622	Tan Rin	1
	100041	rf rma Cv iX r VaX		12		Ximbin	1
2	1035611	J62 C n'iti n r Cam	1	1001606	3/4-inb C pp r Tub	apt r it	
	10303	J62 C n'iti n r Cam		1001600	1-inb C pp r Tub	apt r it	
	10303 0	J62 iX r Cam		1041210	1-1/4-inb C pp r Tub	apt r it	
	10303 4	J62 iX r Cam		100160	22-mm C pp r Tub	apt r it	
3		rain C nte X	1	100160	2 -mm C pp r Tub	apt r it	
	1030355	C		1001613	3/4-inb C VC Tub	apt r it	
	1030356	C		1001614	1-inb C VC Tub	apt r it	
	1030357	C		1001615	25-mm C VC Tub	apt r it	
	103035	C		10016	3/4-inb N T	aptic ip	apt r it
	103035	C		1001603	1-inb N T	aptic ip	apt r it
	1030360	C		1001604	3/4-inb BS T	aptic ip	apt r it
	1000406	C		1001605	1-inb BS T	aptic ip	apt r it
	1000407	C		1001611	3/4-inb BS T Bra	ip	apt r it
	100040	C		1001610	1-inb N T Bra	ip	apt r it
	100040	C		1001612	1-inb BS T Bra	ip	apt r it
	1000410	C		13	1033444	Turbin	1
4	1030502	BaX X V C nte X	2	14	10015 0	Sprin, Xpp r VaX	
5		Inj ct r mbX (incX O-Rin)	1	15	103032	C v r	1
	1035736	_ Inj ct r - Oran		*		VaX ic it	
	1035737	_M Inj ct r - B		1041174	Star		
	103573	N Inj ct r - er n		1041175	S v r S rvic		
	103573	_Q Inj ct r - urpX		*	1034312	Int ro nn ct CabX, uaXOp rati n	
	1035 4	_R Inj ct r - ar er		10355	Int ro nn ct CabX, TripX Op rati n		
6	100026	Inj ct r Cap mbX (incX O-RIn)	1	*	107576	Batt r, J-V, XR b araX	
7		Brin R fix C nte X	1	*		araX it, MuX-unit Op rati n	
	1000224	74 apm		*	1035	uaX araXC n'iti n r it	
	100051	1.3 apm		*	1035	TripX araXC n'iti n r it	
	100244	rain ittin EX (3/4h. e barb)	1	*	1035	TripX araX iX r	
	1000226	Scr n/Cap mbX	1				

N . t . n . n

6.3 Performa Cv Controls

