

Autotrol Performa™ Cv

Conditioner/Filter

Water Control System

Installation, Operation and Maintenance Manual

It is not to be installed

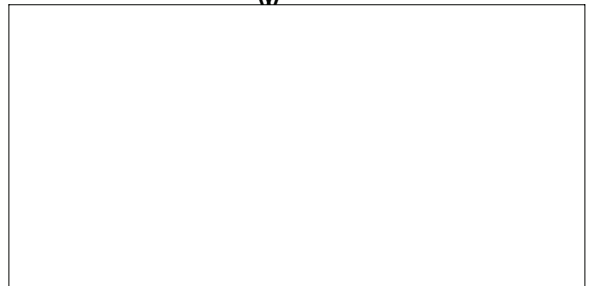


Table of Contents

1.0	rf rma Cv S et m	3
1.1	Sp cificati n	3
1.2	Insta Xti n	5
1.3	Xacin rf rma Cv C n'iti n r/ iX r int Op rati n	7
1.4	Inf cti n f Wat r C n'iti n r	
2.0	rf rma Cv j62 C ntr X	j
2.1	Inte ucti n t h rf rma CV C n'iti n ran' iX r S et m	j
2.2	E arammina an' ppxcati n	10
2.3	C n'iti n r E arammina TabX	16
3.0	rf rma Cv iX r VaX an' C ntr X, j62, j62 TC, j42	1
3.1	E arammina an' ppxcati n	1
3.2	E pxiati n f aram r VaX i f rh j62 SinaX an' araX Tan C ntr X	24
4.0	rf rma Cv rf rmanc @ art an' rap	27
4.1	E n raxSp cificati n	27
4.2	Inj ct r Curv	2
4.3	rf rma Cv C n'iti n r rf rmanc ata	31
5.0	rf rma Cv S rvic an' Te ubX .. tina	34
5.1	i et ricaX ata	34
5.2	r v ntativ Maint nanc	35
5.3	R m vinalh VaX i mbX f r S rvicina	36
5.4	R m vinalh C ntr X	36
5.5	P ntificati n f C ntr X VaX ina	3
5.6	VaX i c rincipX f Op rati n	3
5.7	rf rma Cv C n'iti n r X iaaram	3
5.	rf rma Cv iX r X iaaram	40
5.9	Te ubX .. tina	41
6.0	rf rma Cv art	44
6.1	VaX C mp n nt E pX Vi	44
6.2	art i et	45
6.3	rf rma Cv C ntr X	46

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) max p)	25.0 gpm (5.7 m ³ /h)
Backwash (125 psi (8.6 bar) max p)	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 Backwash	1 minute

962F Microprocessor Demand

Backwash	4 to 60 minutes
Initial Backwash	2 to 15 minutes

962 FTC Electronic Time Clock

Backwash	4 to 60 minutes
Initial Backwash	2 to 15 minutes

Interval Regeneration..... a full Water Regeneration

Valve Connections/Dimensions

Top Thread	2-1/2 inb 3/4", max
Inlet/Outlet	1-3/4 inb 3/4" - 12 N C-2, max
rain in	

1.2 Installation

Combination electrical unit must be mounted vertically.

Inspect unit carefully for carrier damage before installation.

Location Selection

- The distance between unit and rain or snow should be as great as possible.
- If it is to be supported at a right angle to the main support, make certain that adequate space is available.
- Since it must be accessible for maintenance, the location should be accessible.
- Do not install unit closer than 10 feet (3 m) from any other unit or structure. Watch for clearance from other units and structures.

6) On a flat

4. Mr. H. Rain is a but mpti in a
 rain b h v fh nte xva, t rm a
 v-inb (1-cm) path far n fh in h at
 h b tt m fh p is v h h rain
 n n cti n. T is i x v an a uat ip n
 trap.

5. Mr. H. Rain mpti in an v m a r
 in , a in -t p trap must b u s.

IMPORTANT N v r in rt rain in int a rain, r
 in r trap. X a a an air ap b t nh rain
 in an h ast at r t pr v nth p sibi f
 s a b in a bac -ip n in h n it 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 uet pñ av b n o mpXt *,h unitiè
r a* t b pac * int . p rati n . *

1. R m v o nte Xvax q v r b first* pr èinaht
pæstic cXps fè mlt fè nt, fht q v r. uXfè nt, f
q v r up.

Note Tñ fè X in a èt pè iXr *uir turninaht
c cX in*icat r t vari uè p èti nè. ManuaX è tat
ht camè aft **COUNTERCLOCKWISE**, nX untiX
c cX in*icat r p intè t * èir * p èiti n. (è
manuaX r a n rati n è cti n è f r ab q nte Xè
manuaX p rati n.)

2. R tat c cX in*icat r **COUNTERCLOCKWISE**
untiX it p intè *ir cX t h . r* **BACKWASH**.
3. iXm *ia tan ht at r.

- a. Wh at r èuppX ff, pæc ht b pa èè vax (è)
intè ht è r vic * p èiti n.
- b. Op n at r èuppX vax v r èX X t
appè imat Xht 1/4. p n p èiti n.

IMPORTANT: If p n * t. rap* X. r t. far, m *ia
ma b X èt. Inht 1/4. p n p èiti n, * u è. uXh ar
air ècapina èX X fè mlt *rain Xn .

Conditioner

- a. Vñ naX fh aih aè b n pura * fè mlt
tan (at r b aine t fX èt a* iX fè mlt
*rain), * p nh main èuppX vax aX a .
 - b. * at r t run t *rain untiX ar.
 - c. Turn ff at r èuppX an* Xth unit èan* f r
ab ut fiv minut è. f i è iXaX aXtrapp * air
t ècap fè mlt tan .
4. * at r t brin tan (initiaXfX
Wh a buc t. h. è , a* appè imat X
4 naX nè (15 X r è). f at r t brin tan . Ifht
tan h a è a èaX p èti rm ab v ht b t t m. fh
tan , a* at r untiX Xv X è appè imat X
1 inb (25 mm) ab v ht p èti rm.
 5. Xc ht q n*iti n r int . p rati n.
- a. Wh ht at r èuppX vax q mpXt X. p n,
car fuX a*vanc ht c cX in*icat r
COUNTERCLOCKWISE ht c nt r. fh
BRINE REFILL p èiti n. * ath i è p èiti n
untiX at r ètarte t fX ht è uXh ht brin Xn
intè ht brin tan . * n trun f r m r ht an t.
minut è.
 - b. *vanc ht c cX in*icat r
COUNTERCLOCKWISE untiX it p intè t ht
c nt r. fh **BRINE/SLOW RINSE** p èiti n.

- c. Wh ht q n*iti n r int i è p èiti n, b c t
è if at r i è b ina*ra n fè mlt brin tan .
Tñ at r Xv Xnht brin tan iXr c * v r
èX X. Obs rv at r Xv X è rat X aèth r
minut è. Ifht at r Xv X è n tr c * , r if
it è è up, r f r nc ht **Troubleshooting**
è cti n.

- *. *vanc ht c cX in*icat r
COUNTERCLOCKWISE t ht
REGENERATION COMPLETE p èiti n an* run
at r fè m a n arb fauc t untiX at r i è
cX ar an* è ft.

Filter

XfX r m *ia è c pt carb n

- a. ft rht aih aè b n pura * fè mlt tan
(at r b aine t fX èt a* iX fè mlt *rain)
* p nh main èuppX aX a . Bac a è
m *ia f r a minimum. f 15 minut è. r Xn a r if
n c è èar . Wat r runnin a t ht *rain è. uX b
cX ar.
Carb n m *ia è. uX b aX * t è a f r a
minimum. f 12h. ur èt aX air bubbX èt
ècap pri r t bac a è in a.
- b. ft rht bac a è i è q mpXt pX in q nte X
an* aX it t a*vanc t **BACKWASH**
COMPLETE.

Electrical Connection

100 VAC, 115 VAC, and 230 VAC units: R m v t i èt
ti fè mlt p r q r an* t n* q r t itè fuX Xnht .
Ma èur p r è urc matb èht ratina p rnt * n
ht q nte XB c rtaina aX è itb * è n t è nte X
* utXt.

12 VAC: C nn cth pX a fh tran èè rm r (èuppX *)
è q n*ar cabX t ht matina è c tath r ar. r
b t t m. fh tim ht è uèina. B c rtainht tran èè rm r
i è è cur an* i è pX a * int a p r è urc . f q r r ct
v Xa ht at i è n t è nte X* b a aX è itb .

1.4 Disinfection of Water Conditioners

The material for construction of the material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use.

The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use.

The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use.

Sodium or Calcium Hypochlorite

Application

The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use.

5.25% Sodium Hypochlorite

The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use.

1. 5.25%

- The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use.
- The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use.

2. Brin tan

- The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use. The material should be of high quality and should not be contaminated at the time of use.

csr5

foot.

2

a. Back

Salt Amount

Salt amount is not variable. The faux
variable is 6 pounds (2.7 kilograms).

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

P5 Capacity Setting (gallons) (liters)	Reservoir Volume (gallons)				
	3 ft ³ (5)	4 ft ³ (113)	5 ft ³ (142)	6 ft ³ (170)	7 ft ³ (19)
P4 Salt Setting: (gallons) (liters)					
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 inb tan = 74 (.74 gpm) 16 inb thru 21 inb tan = 130 (1.39 gpm)					
P7 Brine Draw Setting. Draw rate at 50 psi (3.5 bar) in test is 1.0 gpm. Draw rate at 50 psi for brine draw is 1.0 gpm.					
Tank diameter	Injection	Arithmetic	P7 equals	Control	
14 in (35.5 cm)	M	105573	60	Brine	
16 in (40.6 cm)	Q	103573	80	urp	
1 in (45.7 cm)	Q	103573	80	urp	
21 in (53.3 cm)	R	10354	83	ar	

Level II Parameters (Table 2.4)

The v XII aram t rē ar 6h r uh 22 in TabX
2.4. T acc ēē v XII aram t rē, simuxan . uē
pr ēē an h . h DOWN ARROW (↓) an UP
ARROW (↑) butt nē t r h r ē ē n ē . " numb r
iē iē pē .

R f r t TabX 2.4 t fin h param t r aē ē ciat ē h
ab " numb r. ē h UP ARROW (↑) butt nē r h
DOWN ARROW (↓) butt nē m v fē mē n param t r
t h n t. T iē iē pē c c ē ē h ē uh h " numb rē
ē . n in TabX 2.1 an TabX 2.4. M n ē ur ab
22, h n t numb r iē ē bac t 1.

M nh param t r numb r ē u ant ē b an ē ē . n
h iē iē pē , pr ēē h LEFT (←) butt nē t
iē iē pē h ē ata aē ē ē ē ē t h at param t r. r ē ē h
SET butt nē an h far r h t numb r ē nh iē iē pē
ē tarts fē ē ē in ē. (←) u ant ē b an ē h (t)15./ 2. RRO12Tj053 Tc1 ē 56-1. ē ē 2 . j(h)-1 ē

aram t r 22. Sp ciaX. ar nt r ath
fact r t p aram aX fi p rtin nt Xcat n t r
p cific n t X: M tric t r ampX. Th is
param t r b. uX n v r b b an a b h n
u t r.

Electronic Time Clock Operation

arammin a aut matic r a n rati n fr u nc
Th EXct nic Tim CXch a t r a n rati n
pti ns Int rvaX R a n rati n an a f W
R a n rati n.

Th initiat an aut matic r a n rati n n r b h ft
pti ns mu t b b. t n. Th t t m ma a b
r a n rat r manuaX b pr t t n h R a n rati n
butt n t r h r t a n t.

Interval Regeneration Th EXct nic Tim CXc
ma b p aram r t r a n rat in int rvaX fup t
30 a t. Th is fatur is aram t r 14 CaX ar
Ov rr (t TabX 2.4). E ampX If 5 is p aram r
int 14 h n h t t m iX r a n rat v r fiv a t
ath tim p aram r int 2.

Day of Week Regeneration Th EXct nic Tim
CXc ma b p aram r t r a n rat n a p cific
a r n p cific a t ft. Th instructi n t r
h is pti n ar t un in TabX 2.3 n pa 15.

Application

Th r rma Cv 62 C n it n r an h r rma Cv
62 iX rma b p rat a t a t n X, u aX r tripX
t t m.

Dual and Triplex Conditioners and Filters

Th u aX an r tripX t t m t r uir a iff r nt cam
h an h cam h at is u t in h t n X unit t t m t.
Th aX r uir an int r n n ct n X c ut cabX.
Th is aX t h unit h at is in r a n rati n r bac a t
t t n aX h r unit a n pr v nt h m f m tartin a
ar a n rati n r bac a t until first unit is finia t.
u aX an r tripX unit t b uX b pX mb in paraX X h
ab h r. In a muX-unit t t m h bac a t at r is
tuppX b h h r unit r unit in h t t m. In a
u aX iX r t t m t n t rati n mu t b aiv n h ath
unit In t r vic is abX t t at i t t r vic r uir m nt t
an b abX t tuppX tuffici nt bac a t at r t h
h r f iX r h iX it is in h bac a t c cX. Th r is a
t Xcti n au r, TabX 4.6, in t ct n 4.0 t a t t in
u aX in h b ic f a u aX r tripX t t m. Th is
t Xcti n au r is ba t n m ia bac a t
r uir m nt t an t iam t r.

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

uaX araX X C n it n r	N 1035J23
TripX araX X C n it n r	N 1035J25
uaX araX X iX r	N 1035J24
TripX araX X iX r	N 1035J26

it incX paraX X p rati n cam a n h p p r
int r n n ct cabX.

Manual Start Regeneration

Th t r h t n t X p r rma r a n rati n, pr t t h
REGEN butt n. Th is butt n is Xcat t n h f t ft
t n t X n u pr t t h **REGEN** butt n, h t n t X
p r rma a fuX r a n rati n ft t n it 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. Th
is p t iX r z an n X h R a n Tim
R mainin a t an in icati n h ath t a n
r a n rati n iX b p r r m t. V n h first
r a n rati n is t mpX t h t a n n iX b a n an
h is p t iX r nat b t n X an R a n Tim
R mainin a.

Automatic Regeneration

Programming Day of the Week Regeneration/ Backwash

Enter a float W Ration/bac ab
p programming b pr inah LEFT ARROW (←)
button an DOWN ARROW (↓) button
simul an us r 3 Q n. The a ar h. na
1, 2, 3, tc., nh ipa. Xct h a a fh
r n rati n/bac ab h. u. ccur. T activat
h at a, b and h 0 to a 1. The programming m.
it if n. ar pr r 30 Q n. If
h if atur is u in a njecti n h ca n r. v r r
h ca n r. v r r tim r r tath n. f
h is r n rati n/bac ab .

Table 2.3 - Day of Week Regeneration/Backwash

#	Description of Parameter
---	-----------------------------

Reserve Options

The r ar t. t p a. fr a rv . pti n a h i a nte X
fi r a rv an a mar r a rv h i a rica at r u a a
patt rn). The ar a Xct h aram t r 15.

Fixed Reserve

When fi r a rv i a Xct h a nte X mup X a
h ma imum a t m capacit b h p rc nt va a t
in aram t r 16 an us a h r u a a a r a rv .

Smart Reserve (water usage pattern)

The h rr a rv . pti n a h a nte X a ju a h
r a rv ba a up nh h i a rica at r u a a patt rn
a fh a t m. The nte X p a trac a fh at r
u a a f r ab a a fh an us a h at a a
av ra a u a a mup X b 1.2 a h r a rv f r h at
a . Ev r a a th Tim . f R a n rati n, h a nte X
r ca u a t a h a a a av ra a at r u a a . If a h an
10% fa a a av ra a at r u a a i a u a h a nte X
i a b a n a h a a a av ra a . If m r h ant ic h
a a a av ra a i a u a h a nte X a h a h a h
in h r a rv ca u a t i n.

Since an i nsta t i h a n h i a r . f at r u a a ,
h a nte X mup X a h p rc nt f capacit va a t i n
aram t r 16 b h t a a a t m capacit t
t r min a rti n a av ra a f r ab a a fh .

The fact r a t va a f r 16 i a 30 h i b m an a h at
30% fh t a a a t m capacit i a u a h a h a rti n a
av ra a f r ab a a .

Programming aram t r 15 i a a u a h a h a h r
h a nte X a h a h a h Tim . f R a n rati n a t i n
aram t r 2 t a r a n rati n, r i f h a nte X
a . u a b a i n a r a n rati n i m m i a t X h n h
capacit r maini n a i a h a h a h r a rv .

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 nte r	2-200	1	Selected from Table 2.2		This number is the number of times the conditioner will be run for the fixed rate. The fixed rate is the number of times the conditioner will be run for the fixed rate. The fixed rate is the number of times the conditioner will be run for the fixed rate.
7	Brin ra rat	2-200	1	Selected from Table 2.2		This number is the number of times the conditioner will be run for the brine rate. The brine rate is the number of times the conditioner will be run for the brine rate. The brine rate is the number of times the conditioner will be run for the brine rate.
8	Bac a tim	4-60	1	14*	Minutes	*Maximum adjustment for application
10	Ri6(t)-(X-1. (5.1(6(t-2(t-6() t-14.5(i1(6(22(u1-55(.)-46)-107 1(6(t)-5 .4(5)5.621(6(t5. (634.1(31.0606 0 T 0.013-0.00 T (14)30					

to Section 3.2 for the explanation of the programming parameters and the notes.

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

 t. S. cti n 3.2 f r^o tai^o p^o nati n. fli p^o rammina param t r^o nti i pa .

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

3.1 Programming and Application

The following table provides a summary of the programming parameters for the Performa Cv Filter Valve and Controls.

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 59 M r M M tric (1-7) 0 00-23 59	(1 M) 1 Minut	Current Day and Time	Hour Minut	Range of parameter values is 1 to 13. For a full cycle, M=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	Timing start back	1 00-12 59 M r M 00 00-23 59		As required	Hour Minut	Range of parameter values is 1 to 13
3	Programmed pressure			10 100	PSI Metric	
4	Programmed pressure			0.5		
5	Filter capacitance			As required	PSI Metric	iv h v Xim tric capacit (n) fh fix r b 6.7 n a.1(n)30. () TJ0 - iv h v Xim tric capacit uM (20(p3j () 12c)-Ti (Mi)--1.)-3-3 ()-

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

To initiate an automatic backwash, the timer must be set to manual. The timer must be set to manual by pressing the manual button on the right side of the timer.

The timer will automatically reset to manual after the backwash cycle.

The Electronic Time Clock has a timer that can be set to manual or automatic. The timer can be set to manual or automatic by pressing the manual button on the right side of the timer.

Interval Backwash The Electronic Time Clock can be programmed to backwash at intervals up to 30 minutes. The timer is set to manual by pressing the manual button on the right side of the timer. It is set to manual by pressing the manual button on the right side of the timer. It is set to manual by pressing the manual button on the right side of the timer.

Day of Week Backwash The Electronic Time Clock can be programmed to backwash on a specific day of the week. The timer is set to manual by pressing the manual button on the right side of the timer. It is set to manual by pressing the manual button on the right side of the timer.

Application

The timer can be set to manual or automatic. The timer can be set to manual or automatic by pressing the manual button on the right side of the timer. It is set to manual by pressing the manual button on the right side of the timer.

Dual and Triplex Conditioners and Filters

The timer can be set to manual or automatic. The timer can be set to manual or automatic by pressing the manual button on the right side of the timer. It is set to manual by pressing the manual button on the right side of the timer.

The timer is set to manual by pressing the manual button on the right side of the timer. It is set to manual by pressing the manual button on the right side of the timer.

3.2 Mechanical

Series 942F Mechanical Control

The Series 942F mechanical control provides a time clock function for fixed applications.

Figure 3.1

3.2.1 Settings

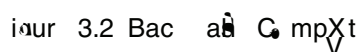
Setting the Time of Day and the Backlash and the manual backlash adjustment of the 942F control.

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 unit back at approximately 2:00 a.m. If it is desired to have the unit back at an earlier or later time, simply move the current time of day accordingly. For example, to have the unit back 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

Thi Bac ǎ iaX iour 3.2) ǝ nte ǝh bac ǎ tim . Wh h In'ca' r n b in h B C W ǝ COM ETE p ǝti n, ǝtat h Bac ǎ iaX ǝunt rǝc ǝ ǝat xǝt. n fuxturn t canc ǝuth curr nt ǝttina. ǝh rǝc inǝ ǝ un' i xǝ r pac ǝ b ǝh avi rǝc inǝ ǝ un' h nh pr v ǝ ǝttina ǝ canc ǝ. Onc h h avi rǝc inǝ ǝh ar' h n ǝttina ma b ǝ tb ǝtatin ǝh Bac ǎ iaX h ǝ ǝir ǝ ǝttina. Thi numb rǝ nh Bac ǎ iaX r pr ǝ nt MN TES". f bac ǎ tim .



Cycle	Time (Minutes)
Bac an	- 30
ura	0

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

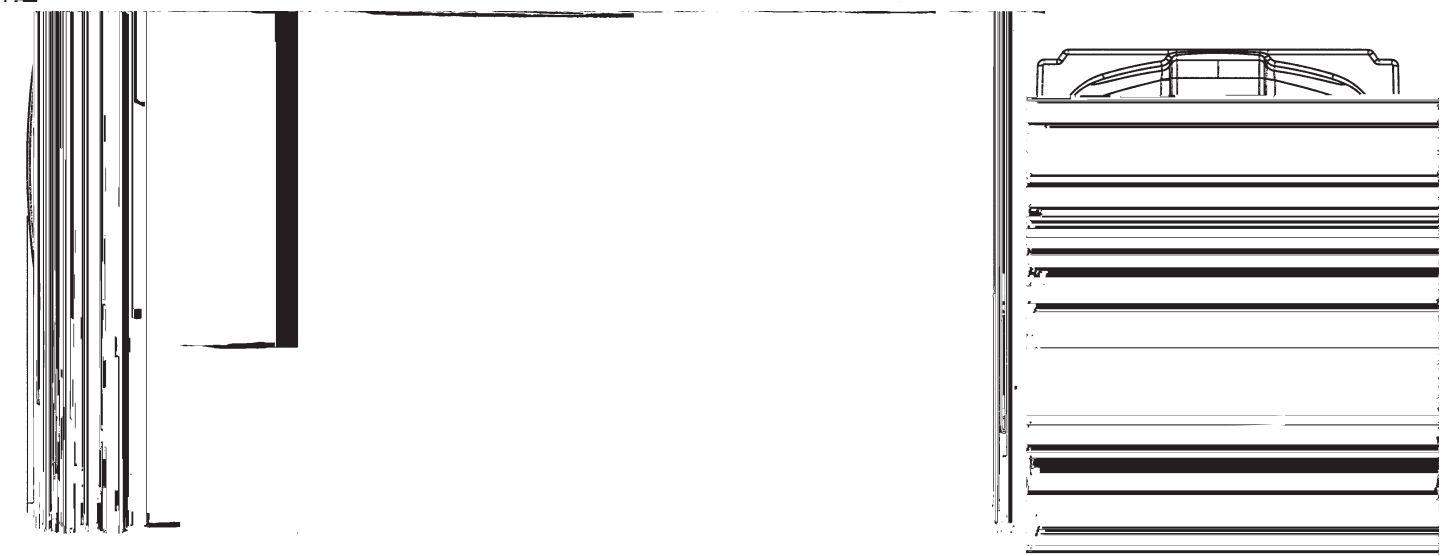
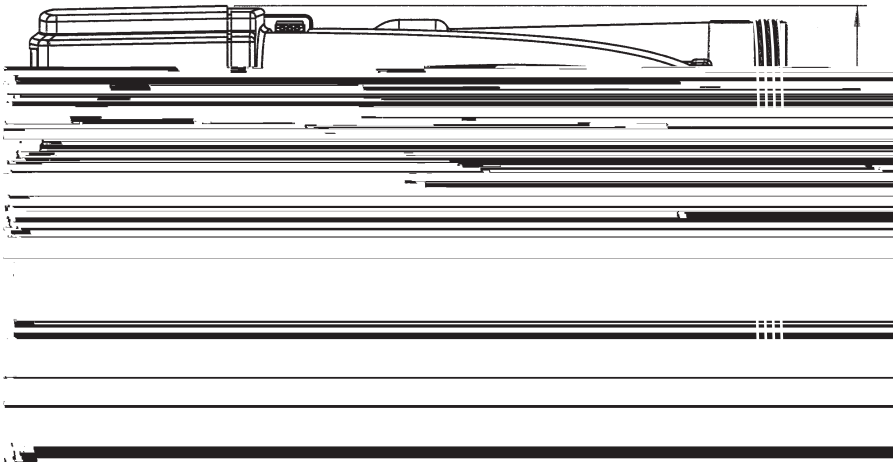
This section contains a table explaining the programming parameters for the 962 electronic controls.

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

5
pa 12

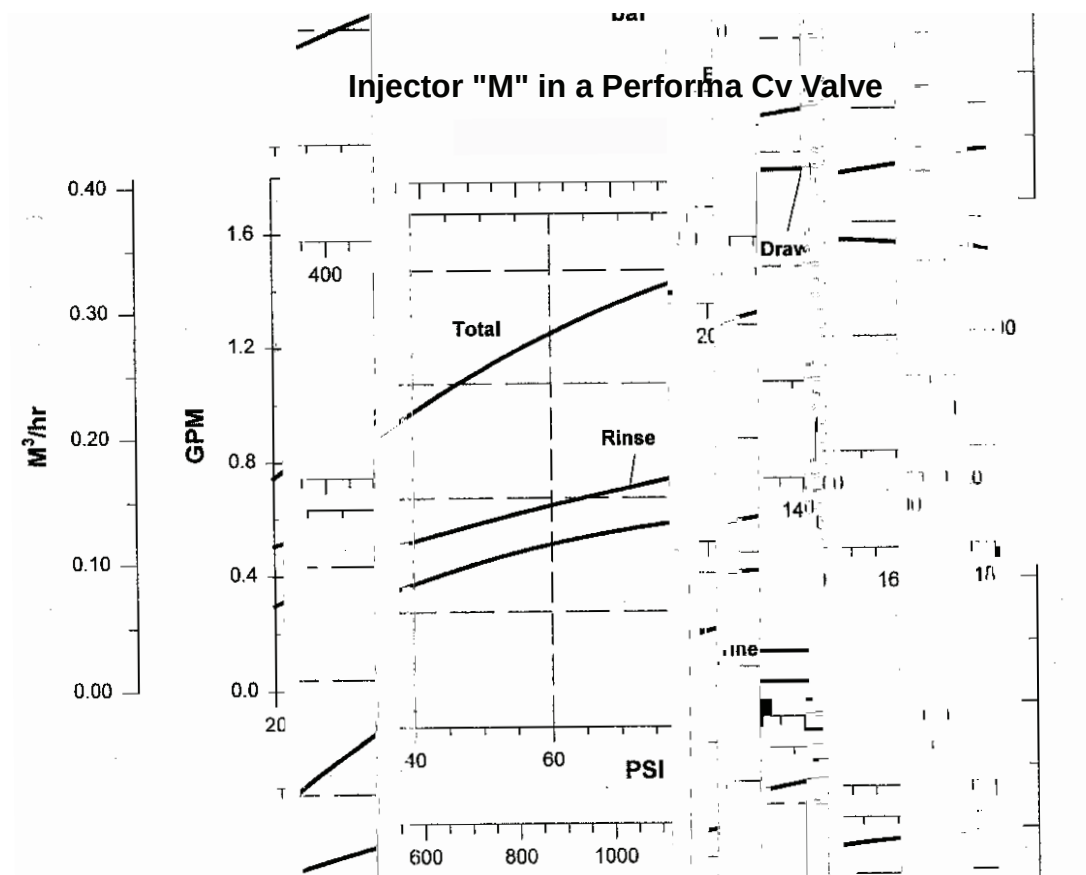
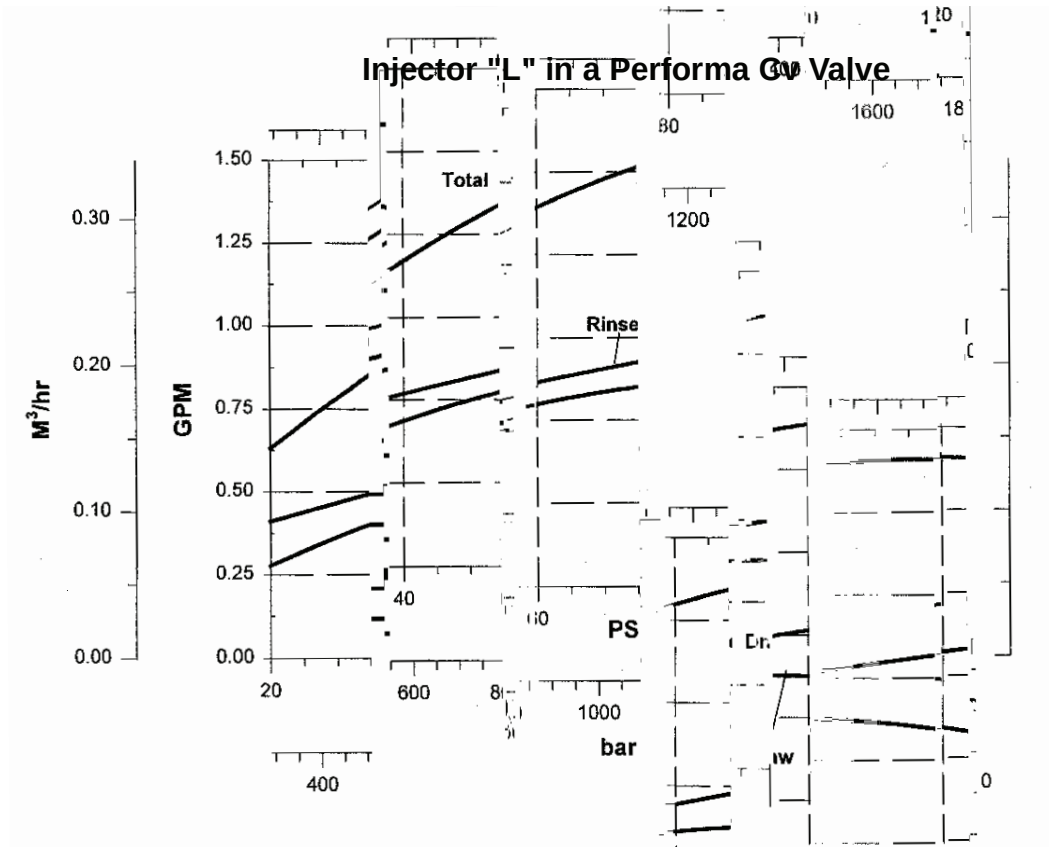
4.0 Performa Cv Performance Charts and Graphs

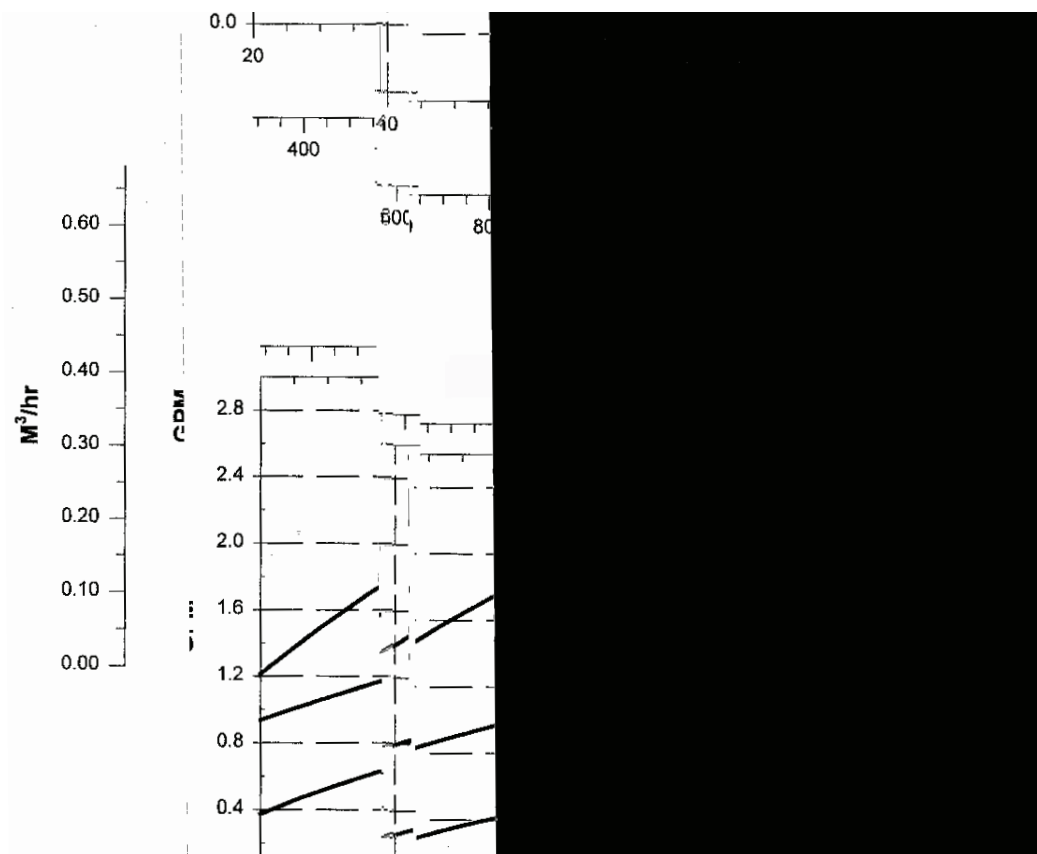
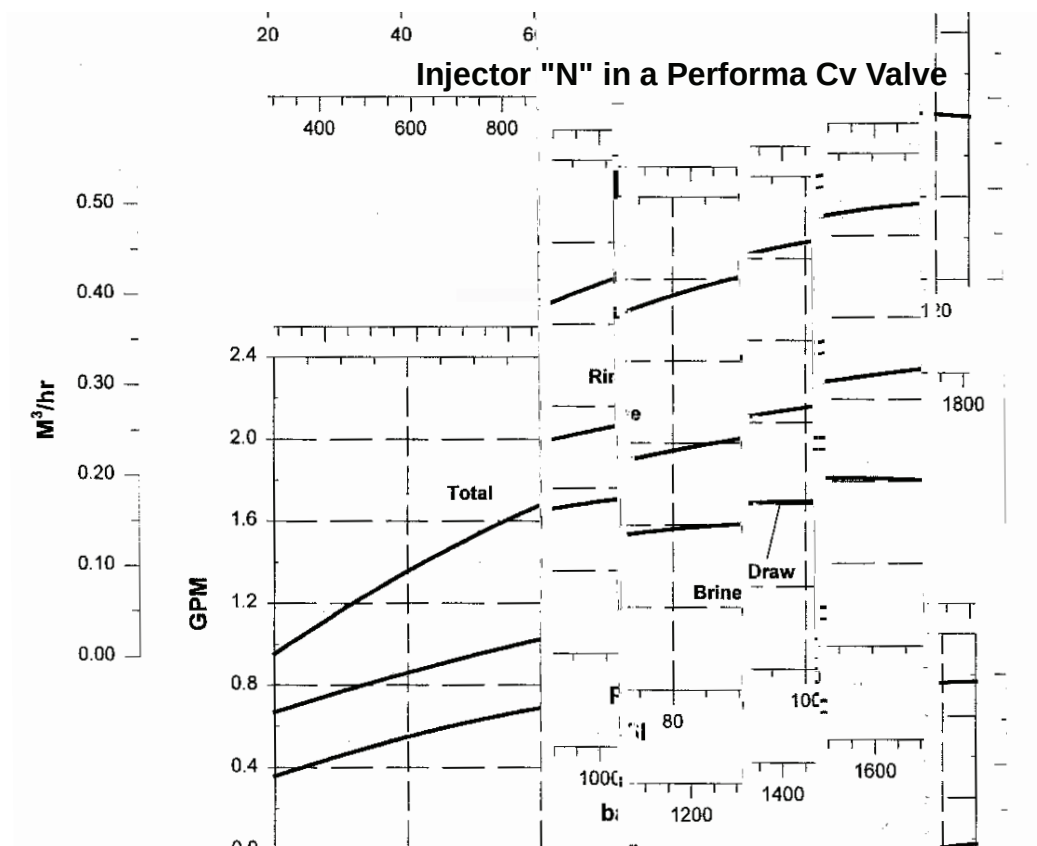
4.1 General Specification

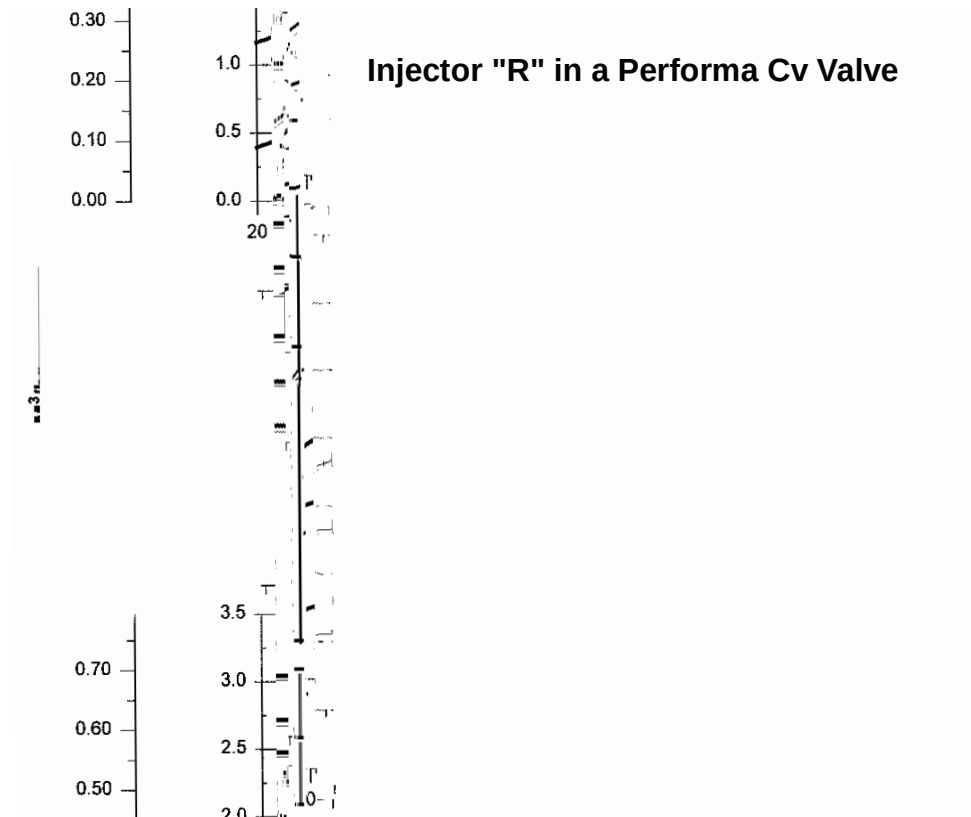


Static T_{st} r_{st} r_{st} 300 p_{si} (20.6 bar)
 W r i n a r_{st} r_{st} 20-120 p_{si} (1.3 - 27 bar)
 Stan^a ar^a EXctrical^a Ratina^a 362 r_{st} a^a trans^a rm r_{st} 12V 60 z, 12V 50 z
 342 r_{st} a^a r_{st} 12^a a^a /24^a ur 50 z 12 V trans^a rm r_{st}, 60 z 120 Vac. r_{st} 12 V trans^a rm r_{st}
 EXctrical^a C^a r^a (Stan^a ar^a ratina^a)60-inb (1.5-m) 3- ir_{st} h_{st} p_{st} a^a
 r_{st} r_{st} Tan_{st} T_{st} r_{st} a^a 2-1/2-inb max_{st}
 Ri_{st} r_{st} ip_{st} iam t_{st} r_{st} R_{st} uir_{st} 1.050-inb O_{st} (26.7-mm)
 Ri_{st} r_{st} ip_{st} n_{st} 1/2 inb 1/2 inb (13 mm 13 mm) h_{st} ih_{st} rh_{st} an_{st} h_{st} p_{st} f_{st} tan_{st}
 Stan^a ar^a C^a nn cti_{st} n_{st} 1-inb (25.4-mm) a^a pp_{st} r_{st} tub_{st} a^a apt_{st} r_{st}
 Opti_{st} na_{st} C^a nn cti_{st} n_{st} 1-1/4-inb , 3/4-inb , 22-mm, an^a 2 -mm a^a pp_{st} r_{st} tub_{st} a^a apt_{st} r_{st}
 3/4-inb B_{st} T_{st}, 1-inb B_{st} T_{st}, 1-inb N_{st} T_{st} bra_{st} a^a pip_{st} a^a apt_{st} r_{st}
 3/4-inb , 1-inb , 1-1/4-inb , 25-mm C_{st} VC tub_{st} a^a apt_{st} r_{st}
 Brin_{st} in_{st} C^a nn cti_{st} n_{st} 3/ -inb N_{st} T_{st} max_{st}
 rain_{st} in_{st} C^a nn cti_{st} n_{st} 3/4-inb N_{st} T_{st} max_{st}
 Opti_{st} na_{st} B_{st} pas_{st} a^a V_{st} R_{st} tatin_{st} h_{st} an_{st} X_{st} a^a, fu_{st} 1-inb p_{st} rtina_{st}, r_{st} int_{st} rc_{st} a^a stic_{st}
 C_{st} nte_{st} X_{st} a^a u_{st} X_{st}, Tan_{st} a^a apt_{st} r_{st} R_{st} int_{st} rc_{st} a^a stic_{st}
 Rubb_{st} r_{st} C_{st} mp_{st} un_{st} a^a r_{st} a^a at_{st} r_{st} v_{st} ic_{st}
 a^a ram_{st} C_{st} x_{st} (Tim_{st} r_{st}) 342 vai_{st} x_{st} b_{st} in_{st} 12^a a^a En_{st} a^a a^a, r_{st} man_{st}, r_{st} nb_{st}, Ita_{st} an_{st}, Spani_{st} a^a, Japan_{st} a^a
 362, 362, 362TC, 362 TC vai_{st} x_{st} b_{st} in_{st} En_{st} a^a a^a, r_{st} man_{st}, r_{st} nb_{st}, Ita_{st} an_{st}, Spani_{st} a^a, Japan_{st} a^a
 Brin_{st} R_{st} fix_{st} C^a nte_{st} X_{st} 0.74 an^a 1.3 a^a M_{st}
 E_{st} t_{st} max_{st} Bac_{st} a^a C_{st} nte_{st} X_{st} 5, 10, 12, 15, 20 a^a M_{st}. B_{st} a^a n_{st} 20 a^a M_{st} must_{st} b_{st} uti_{st} a^a urc_{st} a^a

4.2 Injector Curves







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	0.9	0.45	1.2
30	0.3	0.45	0.4	0.55	0.45	0.75	0.5	0.95	0.5	1.3
60	0.5	0.6	0.6	0.8	0.75	1	0.8	1.4	0.9	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	0.9	0.8	1.6	0.95	1.6	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	0.9	1.5	1.1	1.9	1.5	2.5	1.5	3.4	1.7	4.5
2.1	1.1	1.7	1.5	2.1	1.7	2.8	1.9	3.6	1.9	4.9
4.2	1.9	2.3	2.3	6	2.8	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	3.8	7.6
7	2.3	2.9	2.6	3.4	3	4.9	3.6	6.8	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	9	0.35	56	34
10	20	13	0.7	76	49
15	25	16	1	95	61
20	29	18	1.4	109	68
25	32	20	1.7	121	76
30	35	22	2.1	132	83

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 (.7)	5 (1.1)
16 (40.6)	1.3	4 (.9)	7 (1.5)
18 (45.7)	1.76	5 (1.1)	9 (1.9)
21 (53.3)	2.4	7 (1.5)	12 (2.7)

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	93
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 (99)
21 (53.3)	2.4	19 (72)	24 (91)	*29 (110)	
24 (60.9)	3.14	25 (95)			

*Maximum at 25 psi 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
18 (45.7)	1.6	*14 (53)	N R	N R	N R
21 (53.3)	2.4	N R	N R	N R	N R

* Maximum flow rate is 25 psi or 1.72 bar per square foot of filter area.

N R = Not Recommended. For units with 12" or 18" diameter tanks, the flow rate should be increased to 15 gpm/sq ft for units with 21" diameter tanks.

5.2 Preventative Maintenance

Injector Screen and Injector

Inspect and clean the injector screen and injector. If the injector screen is dirty, it will cause the engine to run poorly. Clean the injector screen and injector.

Clean the injector screen and injector.

1. Turn off the engine and disconnect the battery.
2. Remove the fuel filter and replace it with a new one.
3. Remove the fuel filter and replace it with a new one.
4. Remove the fuel filter and replace it with a new one.
5. Clean the injector screen and injector.
6. Clean the injector screen and injector.
7. Clean the injector screen and injector.

Clean the injector screen and injector.

Lubricate the O-rings, the injector, the injector cap, and the injector screen with **silicone lubricant only!**

10. Reinstall the injector, the injector cap, and the injector screen.

IMPORTANT: Do not use any plastic cap. If the cap is plastic, it will cause the engine to run poorly. Use a metal cap.

11. Turn off the engine and disconnect the battery.

12. Turn off the engine and disconnect the battery.

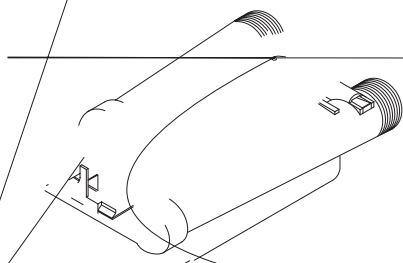


Figure 5.1

Water Meter Maintenance

The water meter is located in the basement. It is used to measure the amount of water used. The water meter is located in the basement. It is used to measure the amount of water used.

1. Turn off the water supply and remove the cap.

2. Remove the cap and replace it with a new one.

3. Remove the cap and replace it with a new one.

4. Remove the cap and replace it with a new one.

5. Clean the water meter and replace it with a new one.

6. Clean the water meter and replace it with a new one.

7. Reinstall the water meter and replace it with a new one.

8. Reinstall the water meter and replace it with a new one.

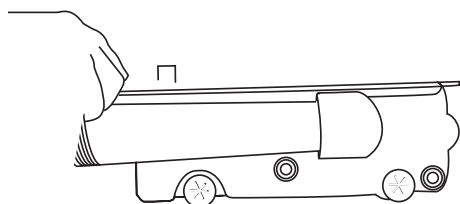
9. Turn on the water supply and replace the cap.

The water meter is located in the basement. It is used to measure the amount of water used. The water meter is located in the basement. It is used to measure the amount of water used.

The water meter is located in the basement. It is used to measure the amount of water used. The water meter is located in the basement. It is used to measure the amount of water used.

5.3 Removing the Valve Assembly for Servicing

1. InpXah p r e r'.
2. A ut, ff at r suppX. r put b passvax (s) int
b pass p siti n.
3. R m v o v ran' h scr riv r, r X v tan
pr ssur b pub ina, p nvaX N. . (r arfapp r)
n o nts Xas d. n (iaur 5.2).



jour 5.2

1 n u s • h a x b v a x b p a s s e , x e n a n •
 t a b h i n x t , u t x t , b r i n a n • r a i n x n e f e m
 v a x • l f u s i n h 1 2 6 5 b p a s s e , x e n a n •
 m v v a x f e m b p a s s e a d x a d e n i n a n •
 r m v i n h b r i n a n • r a i n x n •

Inscr (a unt rxc is) an r m v vaX
fr m tan

- The process of controlling variables in a process.

5.4 Removing the Control

Compt. h. f. in a st p. t. r m. v. h. 60. 6. 2. ft
Cntr. f. r. v. c. i. n. a

1. ~~in~~ ~~pro~~ ~~xi~~ ~~ah~~ ~~a~~ ~~m~~ ~~unt~~ ~~trans~~ ~~fer~~ ~~m~~ ~~r~~.
2. ~~ut~~ ~~ff~~ ~~h~~ ~~at~~ ~~re~~ ~~supp~~ ~~o~~ ~~r~~ ~~pu~~ ~~th~~ ~~b~~ ~~pas~~ ~~se~~ ~~vay~~ (e)
~~int~~ ~~b~~ ~~pas~~ ~~se~~ ~~p~~ ~~o~~ ~~siti~~ ~~n~~.
3. ~~R~~ ~~m~~ ~~v~~ ~~h~~ ~~r~~ ~~a~~ ~~r~~ ~~e~~ ~~v~~ ~~r~~ ~~b~~ ~~pr~~ ~~se~~ ~~in~~ ~~ah~~ ~~t~~ ~~tab~~ ~~e~~
~~p~~ ~~o~~ ~~v~~ ~~i~~ ~~n~~ ~~h~~ ~~o~~ ~~v~~ ~~r~~ ~~i~~ ~~aur~~ ~~5.3~~ ~~if~~ ~~th~~ ~~f~~ ~~e~~ ~~n~~ ~~t~~ ~~f~~
~~h~~ ~~o~~ ~~v~~ ~~r~~ ~~a~~ ~~n~~ ~~r~~ ~~m~~ ~~v~~ ~~t~~ ~~p~~ ~~o~~ ~~s~~ ~~e~~ ~~h~~ ~~vay~~ ~~b~~ ~~o~~.

jour 5.3

4. R v 3 st m pr 3 ur b p ninat Bac ab
rain Vax (t) 3 v rt vax bac f mlt
G ntr X h a scr riv r, iaur 5.4.

jour 5.4

5. T r m v h cam̃ aft. r t r instaxit, h are
 . nh r ar. fh cam̃ aft must b p̃ intina ath
 xh . nh r arh . . p". fh t p p̃ at . T i s̃ . ccure
 h nh c c x in . icat r i s̃ . tat . h r fix
 p̃ . it i n . r s̃ . . n. nh bac . fh cam̃ aft t
 . i s̃ n a a it f̃ m h r arh . . p". fh t p p̃ at ,
 iaur 5.5.
 s̃ x h cam̃ aft bac t . i s̃ n a a it f̃ m h
 tim r. iaur 5.6.

jour 5.5

1

F

\

6. i
a'

a!

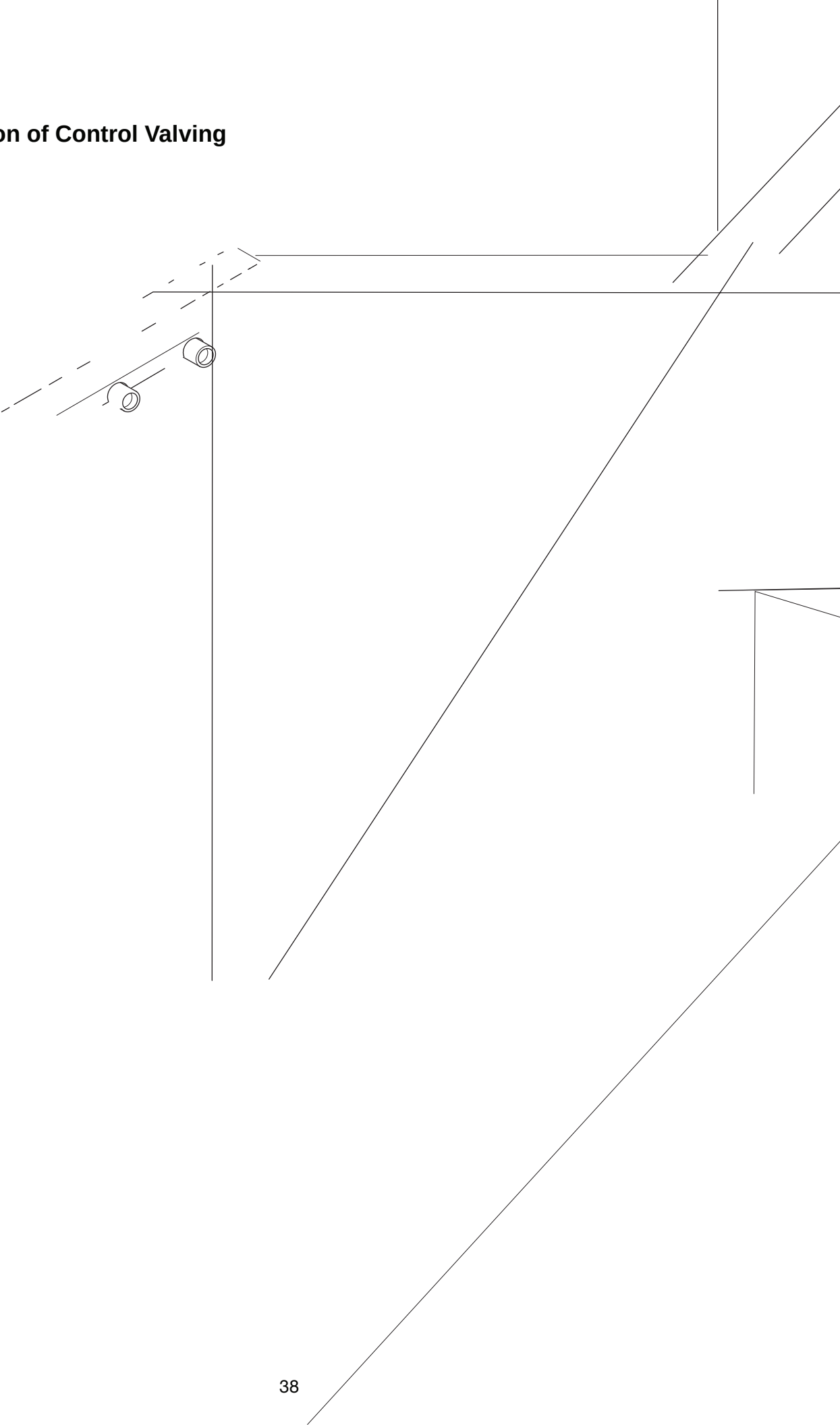
!

h

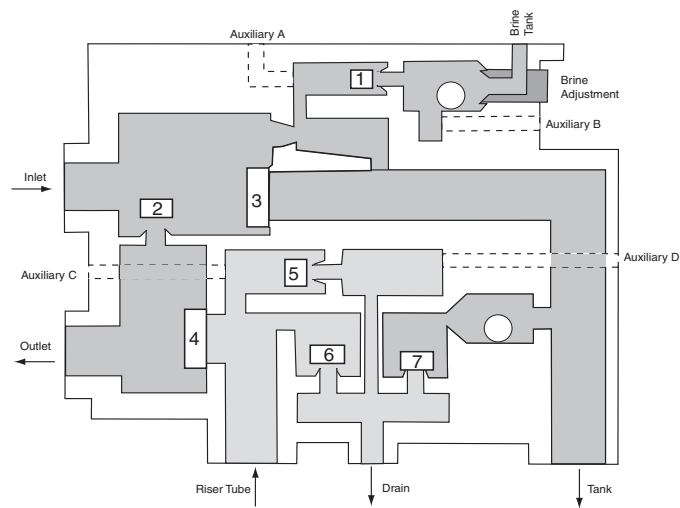
h

1

5.5 Identification of Control Valving

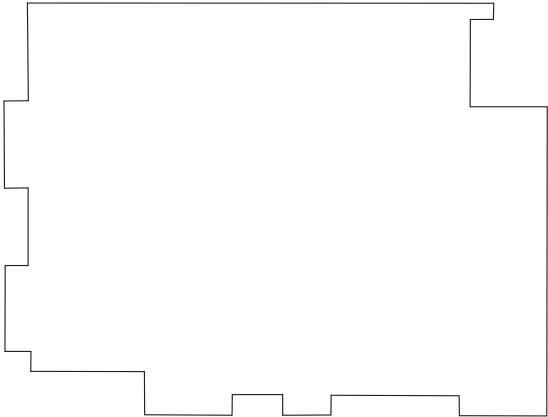


3 Brine/Slow Rinse Position



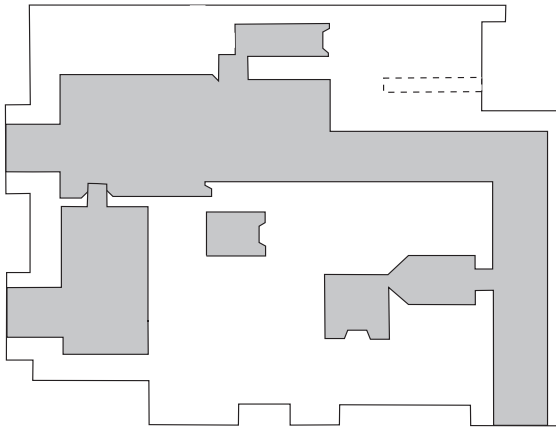
Name	Valve No.
Brine	1 - Open
By-Pass	2 - Open
Inlet	3 - Closed
Outlet	4 - Closed
2nd Tank Top	5 - Open
Purge	6 - Open
Backwash	7 - Closed

4 Fast Rinse Position



5.8 Performa Cv Filter Flow Diagrams

1 Backwash Position



2 Fast Rinse Position

5.9 Troubleshooting

T t b n X a up n h i b l t ut te X r f rma
G ntr Xvax i s bas v i s etabx an pr v n in
S rvic v rman are v r b u a p r b x m r
u sti n aris r fr inah p rati n fi S st m,
H G nte X can b S rvic v asix r parts m nti n v,
r f r t p x v vi S inh **Replacement Parts**
S cti n fi is manuax

IMPORTANT: S rvic p c ur sh atr vuir h atr
pr eeur t b r m v f m h e st m ar mar
h a ! aft rh p eibX cau . T r m v atr
pr eeur f m h e st m, puth b pass vax . r
h r -vax b pass int h b pass p it i n an . p n
h bac ad rain vax h e v rh vax bac fr m
h a nteX h a scr riv r. R e r e st m atr
pr eeur h nh e rvic . r is e mpXt .

Valve Troubleshooting

Problem	Possible Cause	Solution
1. Control valve not working.	a. Check at pressure sensor. b. Restrict flow rate. c. Inject repressurization! d. Inject repressurization! e. Valve (2 and 4) not closed.	a. Set pump to maintain 30 psi at control point. b. Restrict flow rate. c. Clean injection rate sensor. d. Replace injection rate. e. Restrict flow rate matter for measurement. Check repressurization point. Restrict if not.
2. Brine tank level low.	a. Brine valve (1) broken. Stop. b. Check control valve for flow rate. c. Valve (3 and 4) not closed. Reinject brine causing flow. d. Inject brine.	a. Manual pressure rate valve set to flow rate. b. Restrict variable valve rate. c. Check flow rate matter for brine injection point. Manual pressure rate valve set to flow rate. d. Check flow rate not in brine flow rate.
3. Set measurement rate for flow rate.	a. Inaccurate setting. b. Flow rate matter for control valve causing inaccuracy. c. Flow rate control valve.	a. Control setting. b. Restrict variable valve rate for flow rate. Flow rate matter for manual pressure rate valve. Brine rate for control valve (after repressurization, pressure rate valve pure for flow rate matter). c. Replace control valve.
4. Intermittent flow rate.	a. Check at pressure sensor. b. Flow rate injection rate!	a. Set pump to maintain 30 psi at control point. b. Replace broken injection rate injection rate cap.
5. No measurement rate at rate.	a. Unit not in rate. b. No flow in brine tank. c. Valve injection rate!	a. Check flow rate. b. Check flow rate.
6. Control valve not working.	a. Inaccurate back valve control valve. b. Flow rate matter for control valve. c. Pressure rate!	a. Replace back valve control valve. b. Restrict flow rate matter for back valve.
7. Flow rate not working at rate.	a. Flow rate (6 and 7) for brine valve (1) for pressure rate flow rate matter for pressure rate. b. Valve set for turn pressure rate for pressure rate.	a. Manual pressure rate valve set to flow rate. b. Replace pressure rate.

962 Control Troubleshooting

Alarms

The Model 962 continuously monitors the status of the alarm system. If an alarm is initiated, the alarm is a built-in feature of the system. The alarm is a built-in feature of the system.

The alarm is a built-in feature of the system. The alarm is a built-in feature of the system. The alarm is a built-in feature of the system. The alarm is a built-in feature of the system. The alarm is a built-in feature of the system.

Model 960 Alarms

Indication	Description	Cause	Solution
Err1	Excessive air	Control system is not working properly.	Check the air flow. If the air flow is excessive, the control system will not work properly.
Err2	Impulse start of rotation (miter) is not working properly.	Valve camshaft adjustment is not correct. Manual start of rotation is not working properly.	Check the valve camshaft adjustment. If the adjustment is not correct, the valve camshaft will not work properly. Check the manual start of rotation. If the manual start of rotation is not working properly, the manual start of rotation will not work properly.
Err3	Impulse finish of rotation (miter) is not working properly.	Valve camshaft adjustment is not correct. Manual start of rotation is not working properly.	Check the valve camshaft adjustment. If the adjustment is not correct, the valve camshaft will not work properly. Check the manual start of rotation. If the manual start of rotation is not working properly, the manual start of rotation will not work properly.
Err4	Impulse rotation (miter) is not working properly.	On the rotation of the miter, the manual start of rotation is not working properly.	Check the rotation of the miter. If the rotation of the miter is not working properly, the rotation of the miter will not work properly. Check the manual start of rotation. If the manual start of rotation is not working properly, the manual start of rotation will not work properly.

Problem

6. N₁ at r f₁ is p₁ h n
at r is f₁ in a (c₁ n₁)
n₁ t b₁ n₁).

7. C₁ n₁ t₁ is p₁ z n at
R₁ n₁ Tim₁ R₁ main in a.
C₁ n₁ t₁ X₁ n₁ rat₁ a th₁
n₁ a tim₁ a f₁ a₁ .

Possible Cause

- B p a s s v a₁ in b p a s s p a s s i t i n₁.
- M t r p s b₁ is c₁ n n c t₁ r n t f u₁
c₁ n n c t₁ t₁ m t h₁ u s i n a₁.
- R s t r i c t₁ m t r t u r b i n₁ t a t i n₁ u₁ t₁
t₁ r i o n m a t r i a₁ n m t r₁!

- f c t i v m t r p s b₁ .
- f c t i v c i r c u i t b a r₁ .

- B a c t₁ b a c r a n r a t i n₁ e r₁
r₁ u s t₁ .

- a₁ r a u t a₁ a₁ .
- T i m₁ a f₁ a₁ a t i n₁ c r r c t₁ X₁.
- T i m₁ a f r a n r a t i n₁ a t i n₁ c r r c t₁ X₁.

Solution

- L i f t b p a s s v a₁ i n t₁ s r v i c p a s s i t i n₁.
- u s i n s r t p s b₁ i n t₁ m t h₁ u s i n a₁.

- R m v m t h₁ u s i n a₁, f r u p t u r b i n₁ a n₁
f u s h c x a n a t r. T u r b i n₁ h₁ u s s p i n₁
f r₁ X₁. I f n₁ t₁ r f r t h₁ W a t r M t r₁
M a i n t n a n c₁ a c t i n₁.

- R p s c c n t s₁ X₁
- R p s c c n t s₁ X₁

- R f r t h₁ M a n u a l R a n r a t i n₁ a c t i n₁.

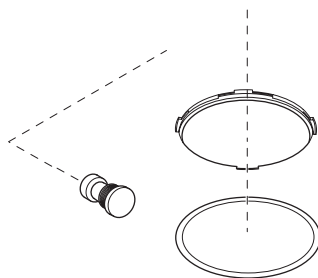
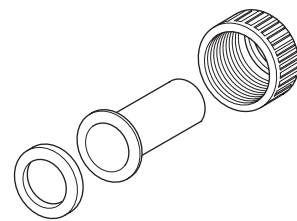
- R a t t i m₁ a f₁ a₁ t₁ c r r c t t i m₁ a f₁ a₁ .
- R a t t i m₁ a f₁ a₁ t₁ c r r c t t i m₁ a f₁ a₁ .

- R a t t i m₁ X₁6(t)-30.23.2(a f s 0 t)-31.1(i)-30.-25.4224.1()-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 G n'iti n r VaX 33 , 1/2	1	10	1010423	O-Ring	1
		X G nte X		11	1035622	Tan Ring	1
	100041	rf rma Cv iX r VaX 33 , 1/2 X G nte X		12		Ximbin apt r ite	1
2	1035611	62 G n'iti n r Cam 33 , Sin X nit	1	1001606	3/4-inb G pp r Tub	apt r it	
	1030377	62 G n'iti n r Cam 33 , MuX nit		1001670	1-inb G pp r Tub	apt r it	
	1030300	62 iX r Cam 33 , Sin X nit		1041210	1-1/4-inb G pp r Tub	apt r it	
	1030304	62 iX r Cam 33 , MuX nit		100160	22-mm G pp r Tub	apt r it	
3		rain G nte X 33 mbX	1	1001603	2 -mm G pp r Tub	apt r it	
	1030355	C 33 , 5 apm		1001613	3/4-inb C VC Tub	apt r it	
	1030356	C 33 , 6 apm		1001614	1-inb C VC Tub	apt r it	
	1030357	C 33 , 7 apm		1001615	25-mm C VC Tub	apt r it	
	103035	C 33 , 8 apm		1001763	3/4-inb N T Xstic ip	apt r it	
	1030353	C 33 , 9 apm		1001603	1-inb N T Xstic ip	apt r it	
	1030360	C 33 , 10 apm		1001604	3/4-inb BS T Xstic ip	apt r it	

N . t . n

6.3 Performa Cv Controls

