OBF *USERS' MANUAL*

AUTOMATIC FILTERS, INC.

Tekleen®

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Table of Contents

SECTION I   INTRODUCTION

1.1   Description

The OBF series features automatic, self-cleaning screen type water filters. The filtration system consists of a tank body with a first stage mesh screen and a second stage fine screen, a 2" flushing valve and an electronic controller. (See OBF Design Specifications, pages 23 and 24)

1.2   Theory of Operation (see Page 16)

Pressurized water enters the filter inlet and travels through a 1/8" perforated stainless steel coarse screen where large particles are pre-filtered. The water then passes through a fine stainless steel screen where small contaminants (down to 10 microns) are filtered out. The clean water then exits the outlet.

When the fine screen becomes contaminated, a pressure differential is sensed causing the automatic controller to open the flushing valve. When the flushing valve opens, the pressure is reduced causing the clean water to reverse flow through the filter element pushing contaminants off the screen, through the nozzles, through the water motor and out the flush valve.

The water passing through the angular holes in the motor creates a torsional rotation of the nozzles, thus vacuuming the entire I.D. of the filter element.

When the screen is clean, the unit automatically returns to the full filtering mode.

The entire cleaning cycle takes approximately four to six seconds and uses 10 to 12 gallons of water. It should be noted that even during the backflush cycle, the filtration process continues uninterrupted.

1.3   Recommended Applications

Tekleen OBF water filters are ideal for filtering out silt, scale, sand, rust, dirt and organic material like algae, zebra muscles, and clams from virtually all types of water sources.

1.4   Design Features

Among the many features of the OBF models is their avoidance of the danger of forcing contaminated water back into the system, which often happens with a sand media filter. These filters will deliver clean water or no water.

The most predominant feature is its ability to remove organics such as algae and other suspended particles.

The entire back flushing mechanism and fine screen assembly is modular and can be removed from the filter body without disruption of the plumbing.

1.5   Filter Specifications Chart

Model #	Connection inches	Screen Area sq. ft.	Flushing Valve	Max Flow gpm	Empty Wt. lbs.
OBF - 2	2"	0.8	1	120	50
OBF - 3P	3"	1.5	2	250	60
OBF - 4P	4"	3.0	2	500	80

Specification: All stainless steel body with engineered plastic internals (determine). Maximum 125 psi, 200° F, triple layered stainless steel screen mesh 10μ to 800μ. 2 gallons per rinse with a 1" flushing valve & 8 gallons per rinse with a 2" valve.

1.6   Measurement Conversion Table

| Mesh	20	40	60	80	100	140	200	325	550
Micron	850	590	250	177	150	105	74	44	25
Inch	.033	.016	.010	.007	.006	.004	.003	.002	.001

SECTION II   INSTALLATION AND HOOK-UP

2.1   Mechanical Hook-Up and Orientation

The positioning of the filter tank should be determined by the disposal of waste water, and it should allow easy access and removal of filter element. (A minimum of three feet of clearance to the rear is required for OBF3-P and a minimum of four feet of clearance to the rear is required for OBF4-P)

The location of the flushing valve should provide for maximum unobstructed air discharge from the valve bonnet; this eliminates valve chatter during closing. The tank can rest on the inlet/outlet

STANDARD HOOK-UP AND ORIENTATION

nipples or can bc mounted on a stand if desired.
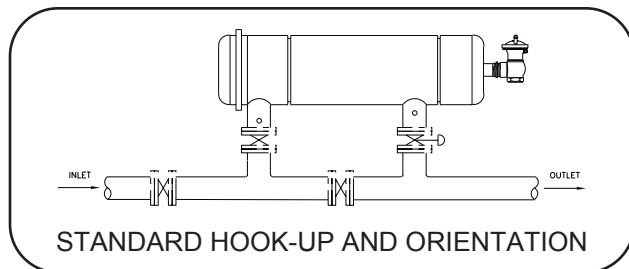
If two or more filters are required, it is recommended that they be manifolded with stainless steel manifolds above ground or PVC below ground and connected with 3"diameter risers extending above ground.

Assuming the filters are installed on a horizontal plane, the flushing valve is to be installed on the 2" diameter backflush nipple with the arrow pointing downstream and the bonnet pointing skyward.

When using the electronic controller model, mount solenoid on flushing valve and mount electronic controller in close proximity to the solenoid valve. The solenoid should be mounted in a vertical and upright position to reduce the possibility of contamination by foreign material.

2.2 Plumbing Hook-Up

Backflush discharge pipe should be 2 inches in diameter if line is less than 20 feet long with no more than one elbow; pipe with 2-1/2 inches or 3 inches in diameter should be used if line is longer and may be manifolded if desired. Any restrictions in the backflush line will reduce the cleaning ability of the filter.

The incoming line should have a minimum I in. air vent vacuum relief valve installed to prevent water hammer. Discharge lines should never run uphill. This will affect the required pressure differential and reduce cleaning.

Strongly Recommended: A block valve should be installed immediately upstream of the filter. During start-up, the block valve should only be barely cracked open to prevent a surge of pressure across the filter once tne pump is started. Once the pump is on-line, slowly open the block valve. This would prevent any possible damage to the filter due to a pressure surge. It is also recommended that a block valve be installed downstream of the filter which would enable the filter to be isolated for service.

2.3 Electronic Controller Hook-Up (See drawing on Page I5)

Before power is applied to the electronic controller, make all connections between controller and solenoid valves.
1. SOLENOID CHECK OUT - using appropriate power source to energize switch and proceed as follows: put ear close to solenoid, trip switch and listen for a "click" open and a "click" shut.
2. FLUSHING TIME ADJUSTMENT - the flush time is normally set for five seconds. For difficult contaminants, it may be increased to six seconds or longer.
3. PRESSURE DIFFERENTL ADJUSTMENT - the triggering differential is pre-set for 7 psi. It can be changed to different setpoints (see your rinse controller manual).

Using 1/8 - 1/4 inch diameter tubing:

1. Attach tubing to Port #1 on solenoid valve port and attach other end to fitting on the bottom of flushing valve bonnet.
2. Attach tubing to Port #2 on solenoid valve port and attach other end to an air or water supply source.
3. Attach tubing to fitting on clean water outlet and attach other end to fitting on rinse controller marked "low pressure".
4. Attach tubing to fitting on rinse controller marked "high pressure" and attach other end to fitting on dirty water inlet.

Important Note: Do not run tubing more than three feet in length (preferably two feet or less). Due to the pressure drop across the tubing, the electronic rinse controller may not operate properly if tubing is too long.

SECTION III   OPERATION AND ADJUSTMENTS

3.1   Start-Up

During the initial filling of the main pipeline, there may not be enough back pressure downstream from filter to allow the cleaning cycle to function properly. Therefore, it is necessary to install a valve on the outlet line to be partially closed (e.g. gate valve, ball valve or butterfly valve).

If a downstream main line valve is partially closed, enough to provide 35 psi on filter pressure gauges, the self-cycle will operate properly. Once the total system is fully charged, the downstream valve can be adjusted as the system requires, as long as 35 psi is maintained at the filter.

If systems are to come on automatically, it is advisable to install a flow control or pressure sustaining valve downstream from the filters to create back pressure on the filters in order to enable proper flushing while pipe lines are being filled.

3.2   Pressure Differential Adjustment

The hydraulic controller has only one adjustment - a small brass screw with a locking nut, located at the top of the upper bulkhead. After the lock nut is loosened, the screw can be turned by finger pressure. The controller is factory adjusted to 7 psi differential. If field adjustment is necessary, loosen the lock nut and turn the screw counter clockwise until the filter flushes. When the filter is clear (4 - 6 seconds), turn clockwise one or two turns and wait for the flushing valve to close. When the flush valve has closed, turn screw counterclockwise slowly until the emitter on the side of the controller just starts to drip. Now each full turn clockwise will produce approximately 3 psi differential. Re-tighten locking nut to hold setting.

SECTION IV   MAINTENANCE

4.1   Filter Cleaning

Periodic cleaning of the pre-strainer is necessary for removal of large particles trapped in the chamber. Proceed as follows:

1.   Turn inlet water off.
2.   Relieve any pressure on downstream side of filter.
3.   Unbolt clamp and remove lid.
4.   Remove pre-strainer cap.
5.   Remove pre-strainer.

4.2   Filter Replacement

If the filter element should ever need replacing, follow steps outlined in Section 4.1 (Filter cleaning) and continue as follows:

1. Grasp flushing mechanism firmly and remove with quick jerking motion.
2. If flushing mechanism is not easily removed by method described above, prying may be required as follows:
    a. Pass a line (rope etc.) through two opposing holes in the pre-strainer and tie ends together, creating a loop approximately one foot long.
    b. Place a piece of wood (approximately 2 in. x 4 in. x 14 in.) across the face of the tank for protection.
    c. Insert a lever in the loop and pry against the wood until the screen breaks loose from its seal (approximately 1/4 in.) after which removal will be easy.
3. Disassemble fine filter element (see Page 13).
4. Grease all o-rings with waterproof "O" ring lubricant.
5. Re-assemble unit (reverse procedure).
6. Turn inlet water on.

NOTE: A 1/4 inch open end, box wrench or an adjustable crescent wrench will be required for this change over.

SECTION V   TROUBLESHOOTING GUIDE

5.1   Problem: Flushing valve does not close during start-up.

POSSIBLE CAUSE
System pressure is too low to close.

SOLUTION
Partially close a mainline valve downstream of the filter to maintain 25 psi on filter gauges. This pressure will ensure valve closure and also supply back pressure necessary to clean the screen.

5.2   Problem: Excessive pressure drop through filter without flushing.

POSSIBLE CAUSES

1. Controller is not turned on.
2. Flushing valve is installed backwards.
3. Filter is installed backwards.
4. Electronic controllaer is hooked up with a common negative instead of a common positive. A common negative causes all solenoids to stay open.

SOLUTION

1. Turn on power.
2. Install according to directional arrow.
3. Install pressure line to leg marked inlet.
4. See Pressure Dfflerential Adjustrnent, Section 3.2, page 6.
5. See Electronic Control Connection fig. 6.5, page 15.

5.3   Problem: Flushing valve chatter.

POSSIBLE CAUSE

Air in the valve bonnet.

SOLUTION

1. Point bonnet "skyward" (to vent trapped air).
2. Manually flush filter several times to flush air from the bonnet, the controller tank and the filter tank.
3. Add a 1/2 or 1 inch air vent/vacuum relief to the flush line.

5.4   Problem: Flushing valve stays open.

POSSIBLE CAUSES

1. Hole in flush valve diaphragm.
2. Dirt in solenoid valve.

SOLUTION

1. Disassemble solenoid valve, open flush valve and replace valve diaphragm.
2. Disassemble solenoid valve and clean.

5.5 Problem: Frequent or continuous flushing while filling main pipeline.

POSSIBLE CAUSES
1. Downstream pressure is not available to provide vacuum cleaning power.
2. Rapid-filling flow rate exceeds the controllers' pressure differential.

SOLUTION
Partially close downstream mainline valve; filter gauges should read 25 psi.

POSSIBLE CAUSE
Filter may have been shut down "dirty," with a contaminant that is difficult to remove after it dries on the screen.

SOLUTION
A super flush needs to be performed as follows: a downstream mainline valve should be adjusted providing that the static pressure against the valve does not exceed 80 psi. After the valve is adjusted, cycle the filter through several "long" flushings. This process uses the entire available differential pressure in the filter cleaning process.

5.6 Problem: Frequent flushing during normal operation.

POSSIBLE CAUSE
Very dirty water.

SOLUTION
Increase flushing time to 6 seconds or more.

POSSIBLE CAUSE
The controller pressure differential is set too close causing vibration to initiate a flush cycle.

SOLUTION
Increase pressure differential (see Page 2 for both electronic ant hydraulic controller).

POSSIBLE CAUSE
Screen may be partially plugged.

SOLUTION
Perform super flush as described above.

POSSIBLE CAUSE
Rotor may be jammed which results in only cleaning the screen area that is directly in front of the nozzles.

SOLUTION
Open tank and check for free movement of rotor mechanism.

POSSIBLE CAUSE
Pre-strainer is contaminated.

SOLUTION
While running, check pressure between filter inlet and filter outlet, use port provided on waste nipple. The difference between these two readings is the pressure drop through the pre-strainer. It should be zero.

5.7   Problem: When changing irrigation blocks, filter flushes rapidly.

POSSIBLE CAUSE
Water flow in new block is causing an increased pressure drop through filter which exceeds the controller setting.

SOLUTION
Re-adjust controller for the highest flow rate. (See pages 2 and 3).

5.8   Problem: Screen will not clean properly.

POSSIBLE CAUSE
The flush cycle might be set too short (5 seconds is normal). Flushing valve does not open fully.
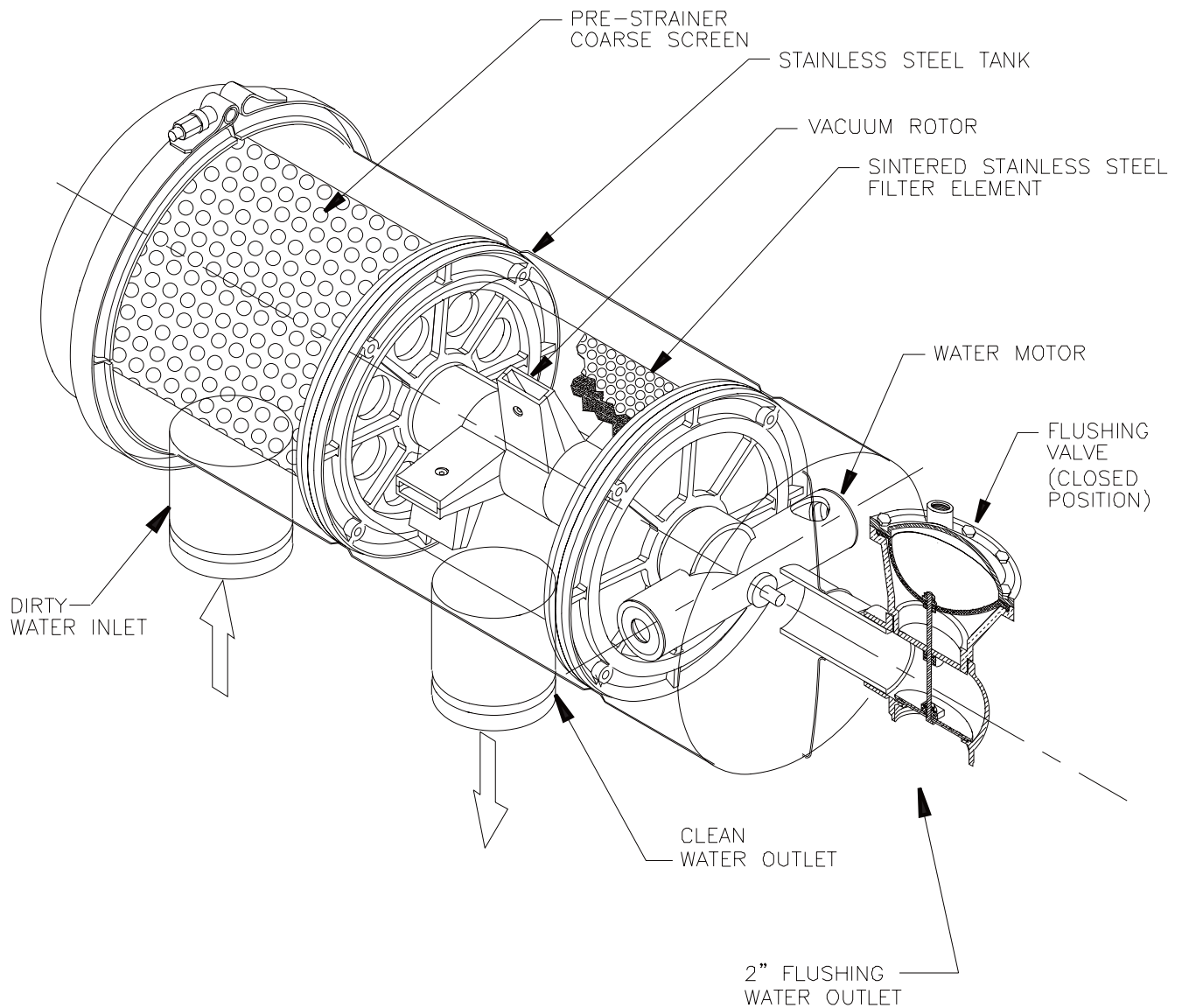
SOLUTION
Restriction in flushing valve dump line due to long "run" distance, running uphill, 2" line more than 20' long, 2" line has more than one elbow.

POSSIBLE CAUSE
Filter was shut down "dirty" with contaminant drying on the screen.

SOLUTION
Perform super flush as described on Section 5.5, page 9. If unsuccessful, remove filter, see Page 5 and soak in swimming pool acid solution (I qt. muriatic acid to 5 gal. water) for 15 minutes. Then spray the filter with a high pressure hose to remove the contaminant. After reinstalling the filter, perform another super flush.

PRE-STRAINER
COARSE SCREEN

STAINLESS STEEL TANK

VACUUM ROTOR

SINTERED STAINLESS STEEL
FILTER ELEMENT

WATER MOTOR

FLUSHING
VALVE
(CLOSED
POSITION)

DIRTY
WATER INLET

CLEAN
WATER OUTLET

2" FLUSHING
WATER OUTLET

AUTOMATIC FILTERS, INC.
2672 S. La Cienega Boulevard
Los Angeles, CA 90034
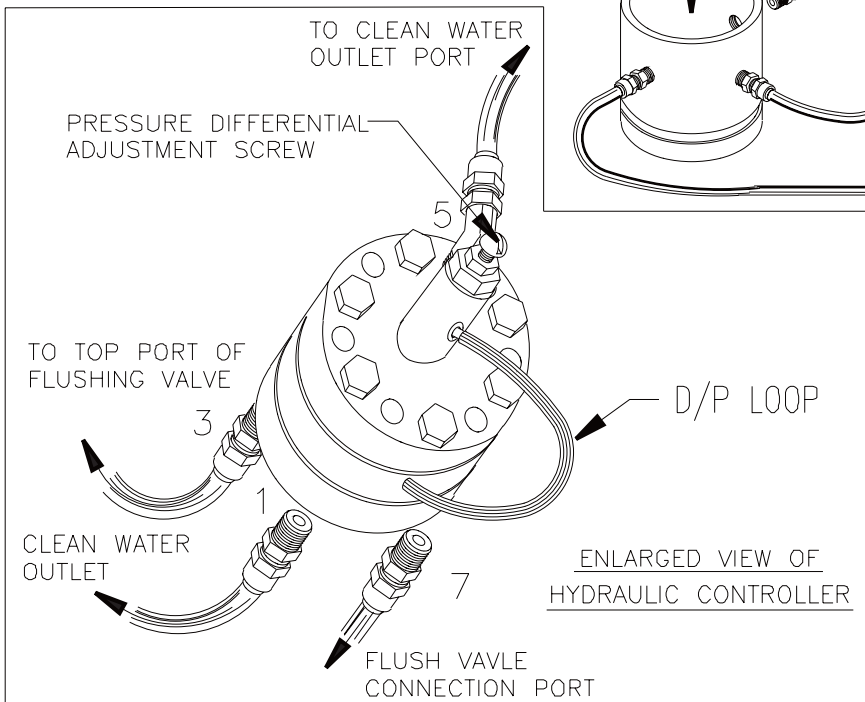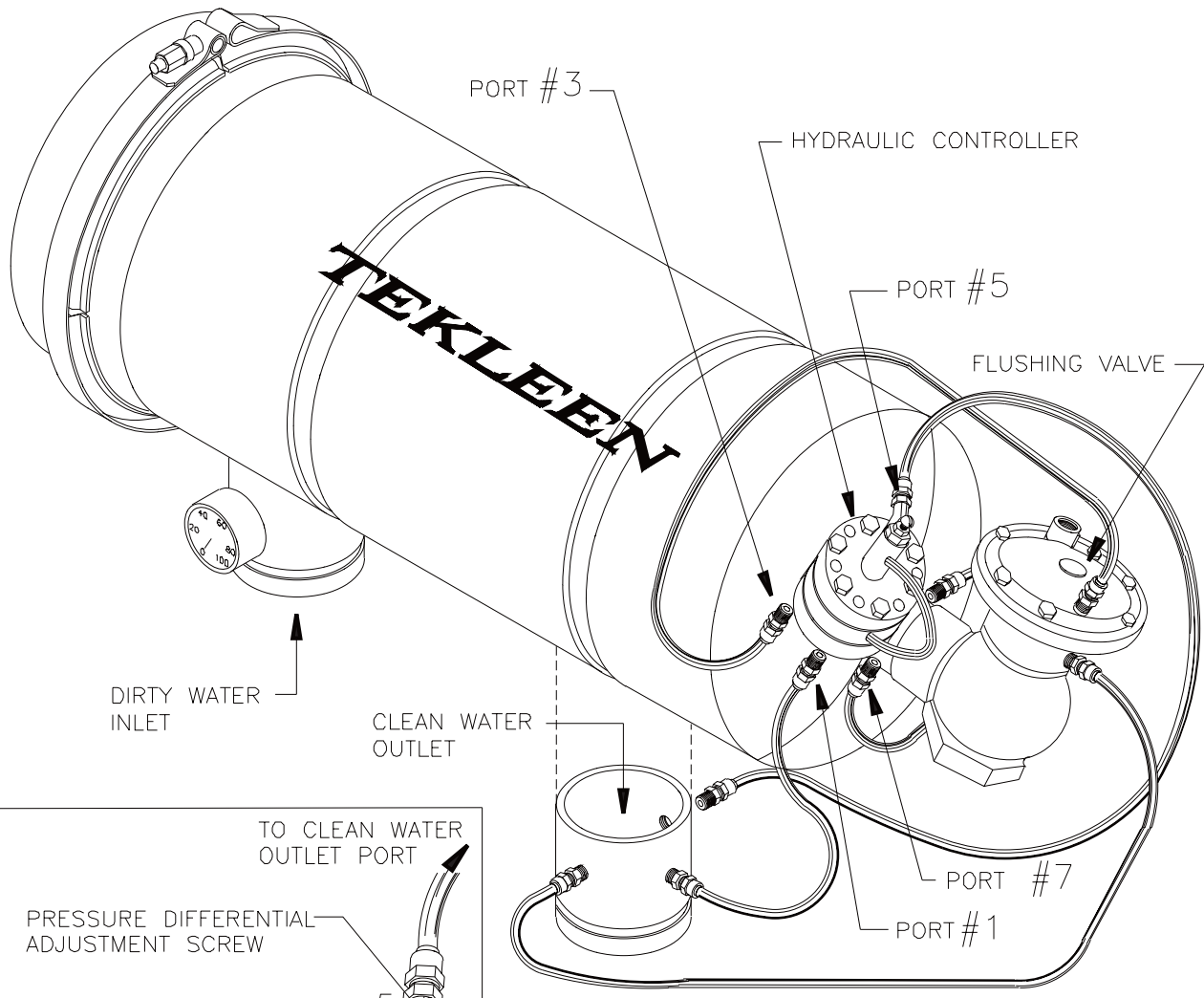(800) 336-1942
(310) 839-2828
FAX (310) 839-6878

FILTER ASSEMBLY

SEE DETAIL A

DETAIL A
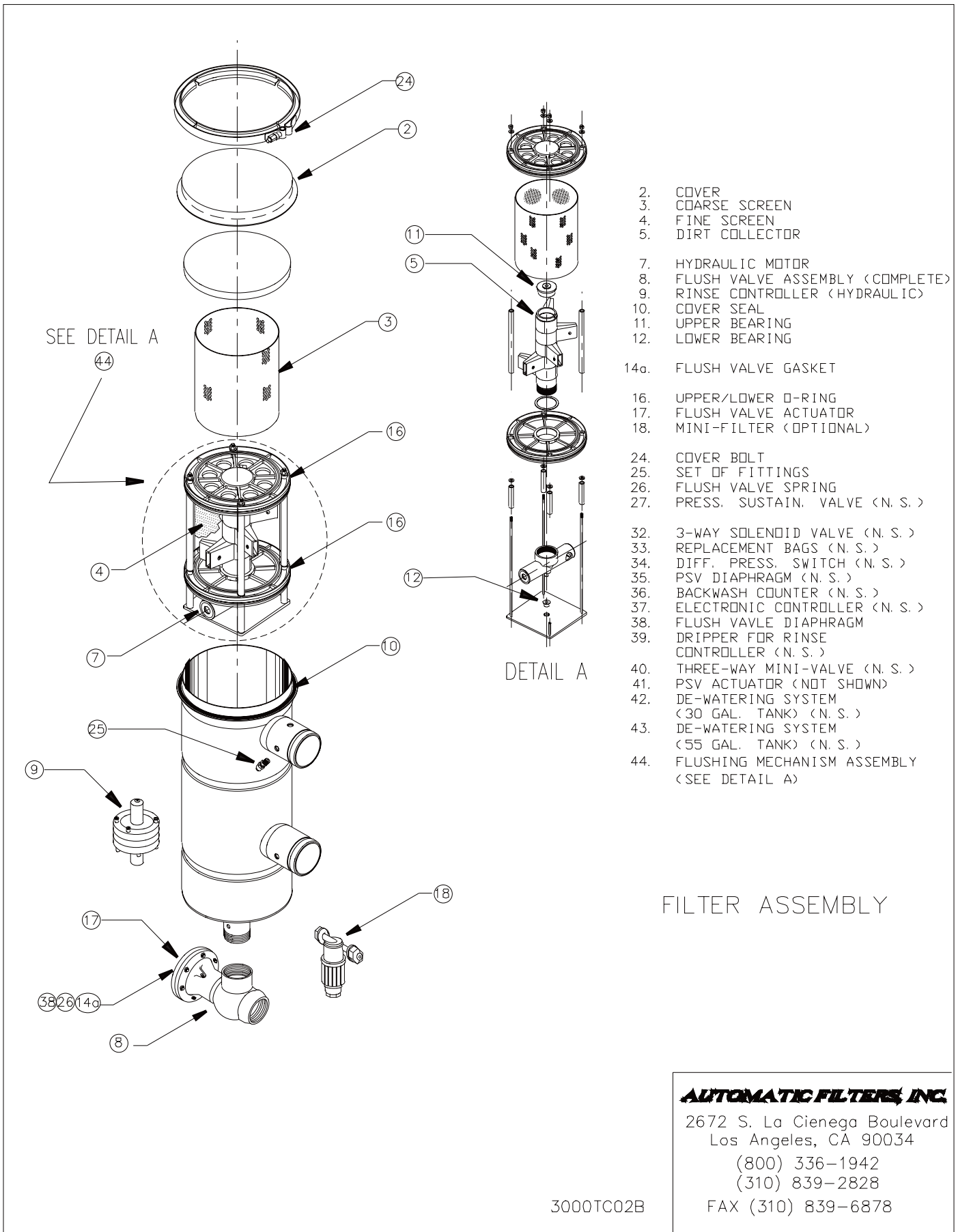
2.	COVER
3.	COARSE SCREEN
4.	FINE SCREEN
5.	DIRT COLLECTOR
7.	HYDRAULIC MOTOR
8.	FLUSH VALVE ASSEMBLY (COMPLETE)
9.	RINSE CONTROLLER (HYDRAULIC)
10.	COVER SEAL
11.	UPPER BEARING
12.	LOWER BEARING
14a.	FLUSH VALVE GASKET
16.	UPPER/LOWER O-RING
17.	FLUSH VALVE ACTUATOR
18.	MINI-FILTER (OPTIONAL)
24.	COVER BOLT
25.	SET OF FITTINGS
26.	FLUSH VALVE SPRING
27.	PRESS. SUSTAIN. VALVE (N.S.)
32.	3-WAY SOLENOID VALVE (N.S.)
33.	REPLACEMENT BAGS (N.S.)
34.	DIFF. PRESS. SWITCH (N.S.)
35.	PSV DIAPHRAGM (N.S.)
36.	BACKWASH COUNTER (N.S.)
37.	ELECTRONIC CONTROLLER (N.S.)
38.	FLUSH VAVLE DIAPHRAGM
39.	DRIPPER FOR RINSE CONTROLLER (N.S.)
40.	THREE-WAY MINI-VALVE (N.S.)
41.	PSV ACTUATOR (NOT SHOWN)
42.	DE-WATERING SYSTEM (30 GAL. TANK) (N.S.)
43.	DE-WATERING SYSTEM (55 GAL. TANK) (N.S.)
44.	FLUSHING MECHANISM ASSEMBLY (SEE DETAIL A)

FILTER ASSEMBLY

AUTOMATIC FILTERS, INC.
2672 S. La Cienega Boulevard
Los Angeles, CA 90034
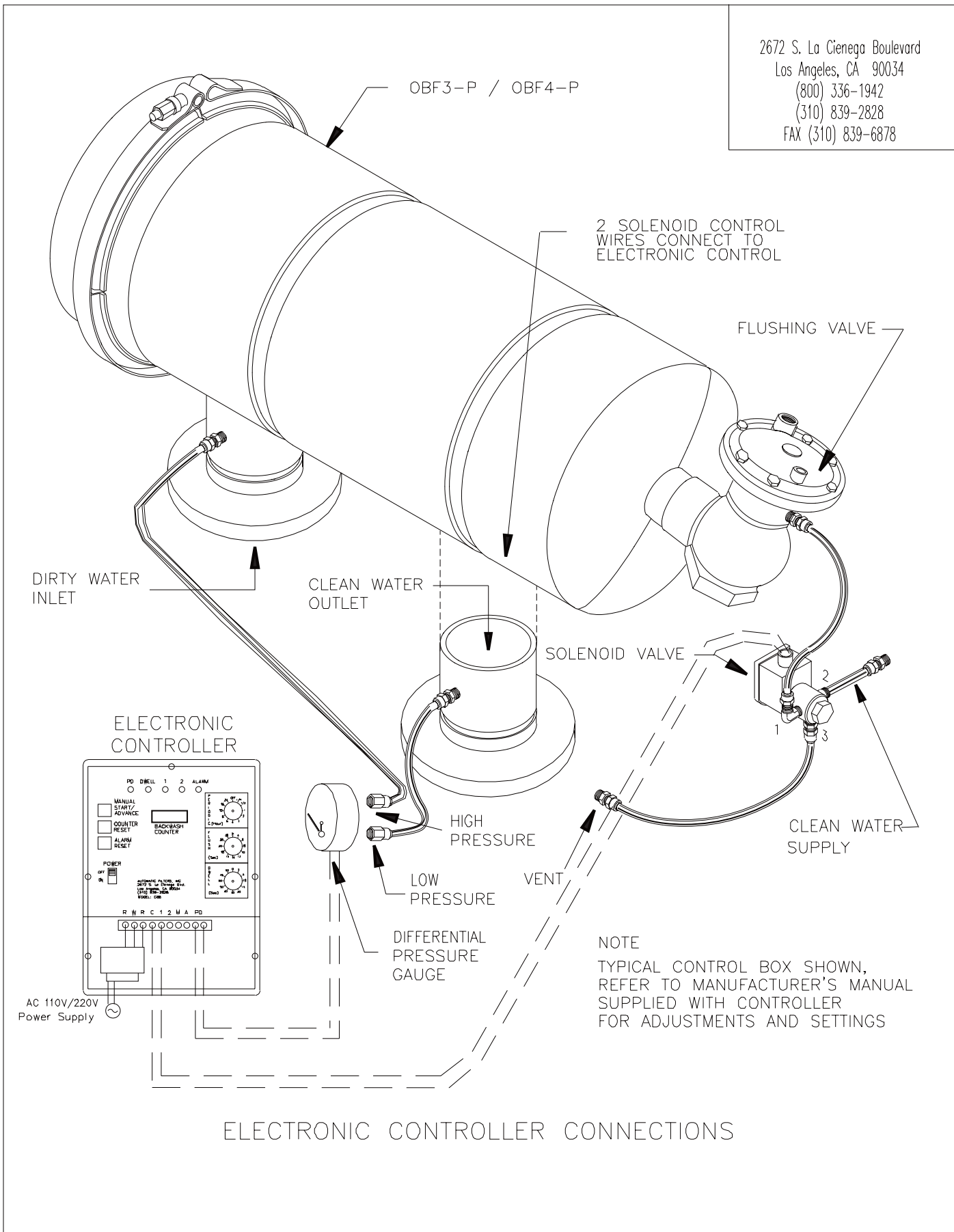(800) 336-1942
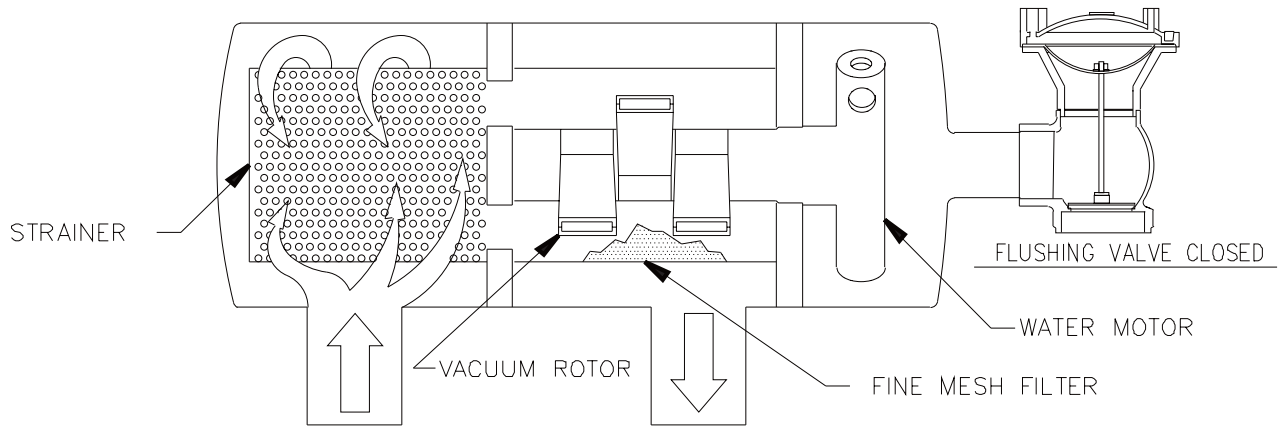(310) 839-2828
FAX (310) 839-6878

3000TC02B

PORT #3

HYDRAULIC CONTROLLER

PORT #5

FLUSHING VALVE

TEKLEEN

DIRTY WATER
INLET

CLEAN WATER
OUTLET

PORT #7

PORT #1

TO CLEAN WATER
OUTLET PORT

PRESSURE DIFFERENTIAL
ADJUSTMENT SCREW

5

TO TOP PORT OF
FLUSHING VALVE

3

D/P LOOP

1

CLEAN WATER
OUTLET

7

ENLARGED VIEW OF
HYDRAULIC CONTROLLER

FLUSH VAVLE
CONNECTION PORT

AUTOMATIC FILTERS, INC.
2672 S. La Cienega Boulevard
Los Angeles, CA 90034
(800) 336-1942
(310) 839-2828
FAX (310) 839-6878

HYDRAULIC CONTROLLER CONNECTIONS

OBF3-P / OBF4-P

2 SOLENOID CONTROL WIRES CONNECT TO ELECTRONIC CONTROL

FLUSHING VALVE

DIRTY WATER INLET

CLEAN WATER OUTLET

SOLENOID VALVE

CLEAN WATER SUPPLY

ELECTRONIC CONTROLLER

PD DWELL 1 2 ALARM

MANUAL START/ ADVANCE

COUNTER RESET

ALARM RESET

BACKWASH COUNTER

POWER
OFF
ON

AUTOMATIC FILTERS, INC.
2672 S. La Cienega Blvd.
Los Angeles, CA 90034
(310) 839-2828
MODEL: C6B

R W R C 1 2 M A PD

AC 110V/220V
Power Supply

HIGH PRESSURE

LOW PRESSURE

VENT

DIFFERENTIAL PRESSURE GAUGE

NOTE

TYPICAL CONTROL BOX SHOWN,
REFER TO MANUFACTURER'S MANUAL
SUPPLIED WITH CONTROLLER
FOR ADJUSTMENTS AND SETTINGS

ELECTRONIC CONTROLLER CONNECTIONS

STRAINER
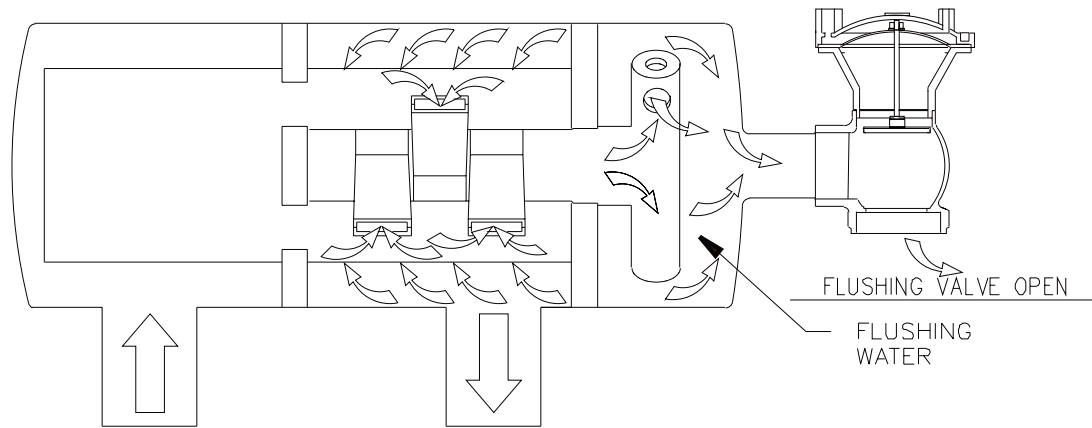
FLUSHING VALVE CLOSED

WATER MOTOR

VACUUM ROTOR

FINE MESH FILTER

1. DIRTY WATER ENTERS STRAINER AND LARGE
PARTICLES ARE REMOVED AND DEPOSITED ON THE EXTERIOR OF THE STRAINER

FLUSHING VALVE CLOSED

STRAINED WATER
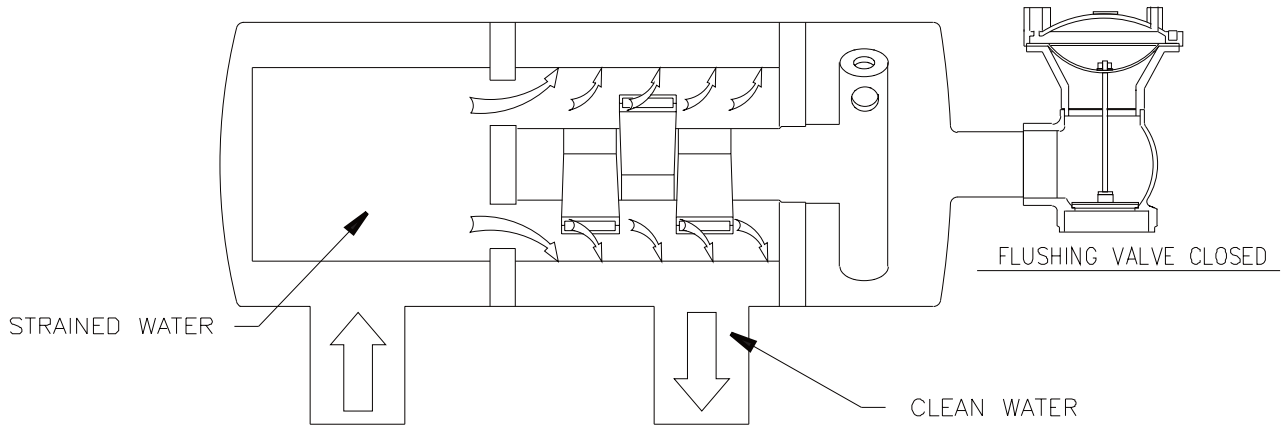
CLEAN WATER

2. STRAINED WATER ENTERS FINE MESH FILTER
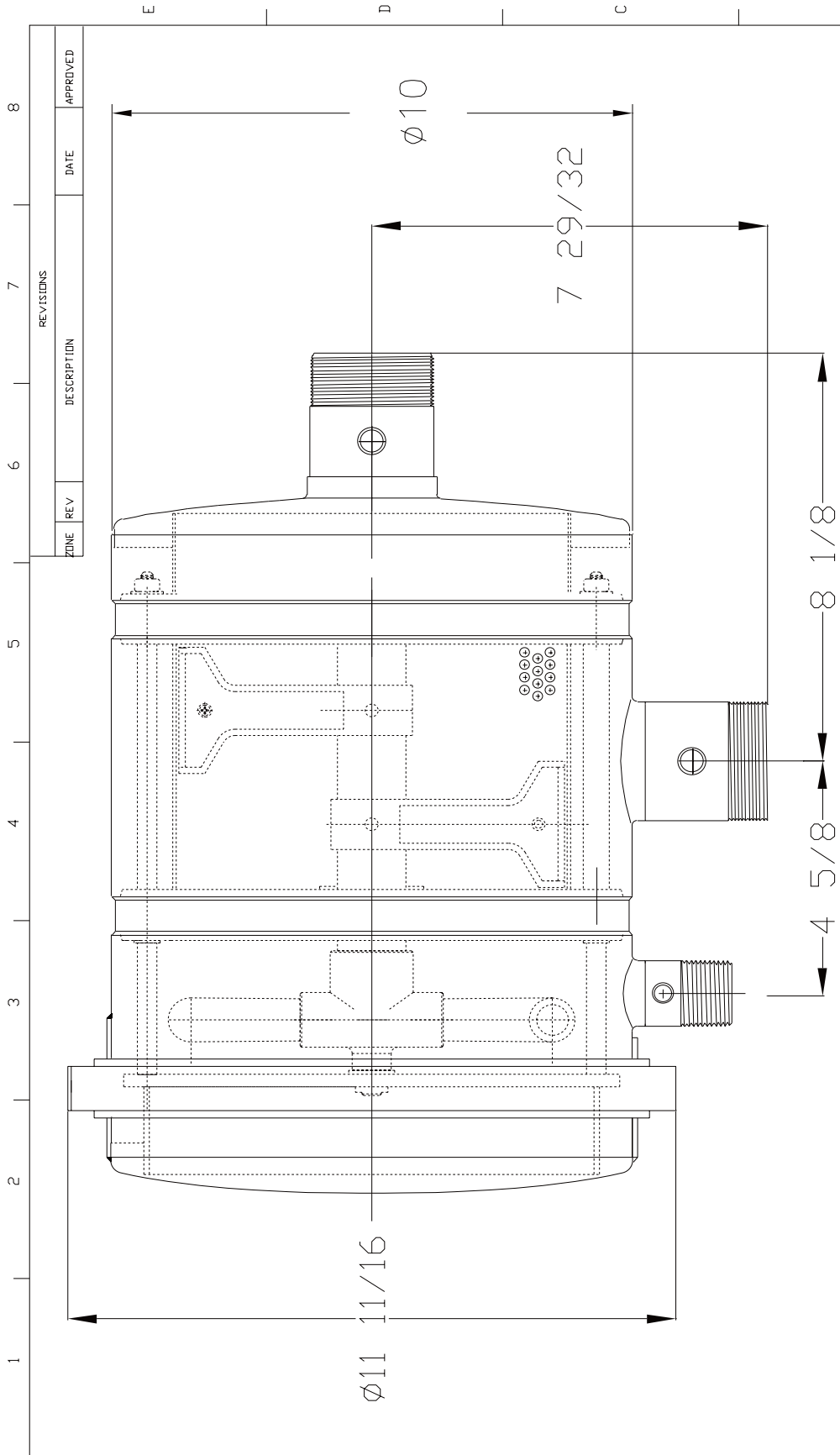AND CLEAN WATER FLOWS OUT TO IRRIGATION SYSTEM

FLUSHING VALVE OPEN

FLUSHING
WATER

3. DEBRIS IS REMOVED FROM INTERIOR OF THE FILTER
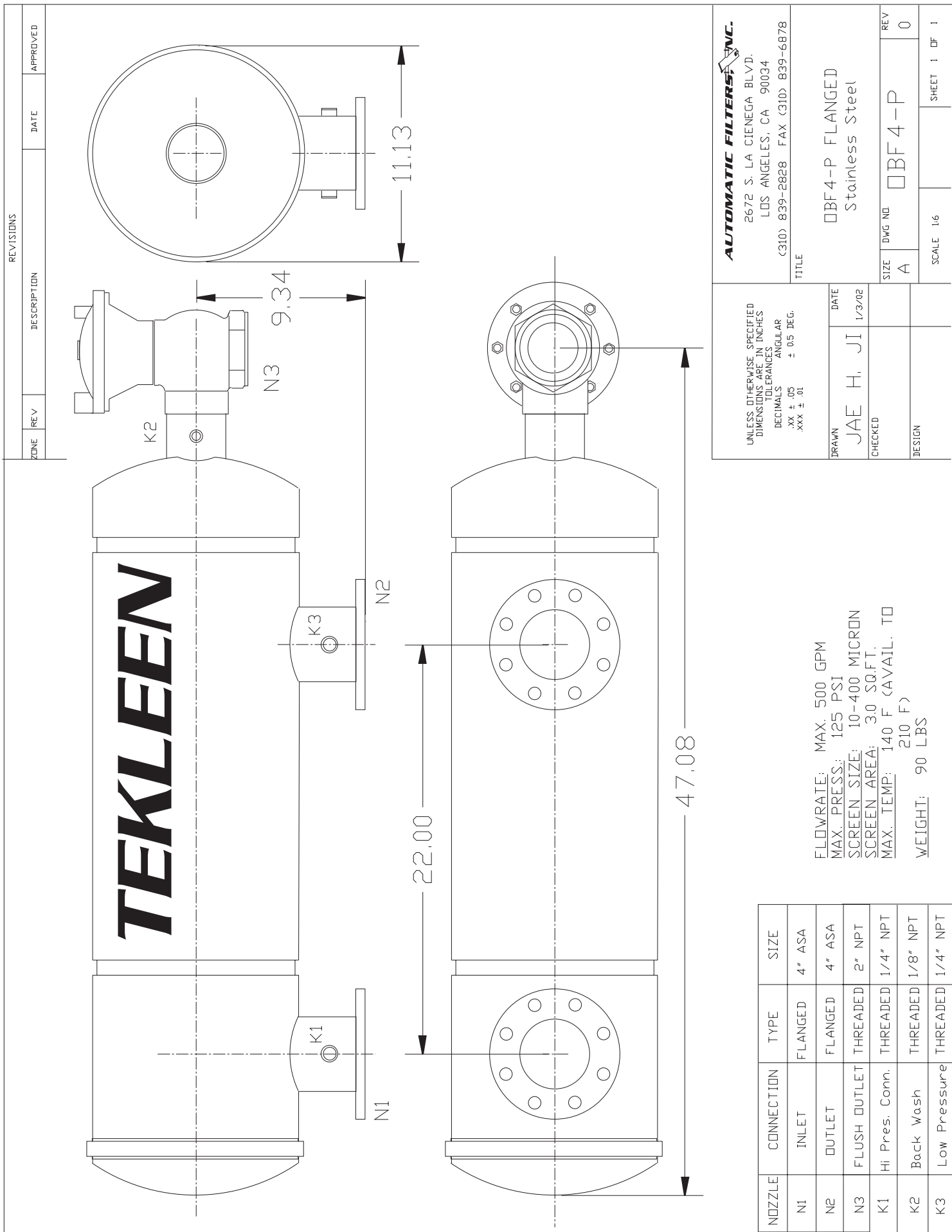BY THE VACUUM ROTOR AND FLOWS OUT THE FLUSHING VALVE

FILTERING & FLUSHING SEQUENCE

NOTES:
1. MATERIAL: 316 STAINLESS STEEL
   AND ENGINEERING GRADE PLASTIC
2. DIMENSIONS SUBJECT TO CHANGE WITHOUT NOTICE
3. DRAWING NOT TO SCALE
4. FOR REFERANCE ONLY

Ø10

7 29/32

8 1/8

4 5/8

Ø11 11/16

ZONE	REV	DESCRIPTION

REVISIONS

DATE   APPROVED

2672 S. LA CIENEGA BLVD.
LOS ANGELES, CA 90034
(310) 839-2828 FAX (310) 839-6878

TITLE

2" OBF FILTER

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS   ANGULAR
.XX ± .05   ± 0.5 DEG.
.XXX ± .01

DRAWN   JAE H. JI   DATE 5/8/02
CHECKED
DESIGN

SIZE A   DWG NO. 2INCHFILTER   REV 0

scale 1:14   SHEET OF

11.13

9.34

N3

K2

N2

K3

22.00

47.08

K1

N1

Automatic Filters, Inc.

2672 S. LA CIENEGA BLVD.
LOS ANGELES, CA 90034
(310) 839-2828 FAX (310) 839-6878

TITLE

OBF4-P FLANGED
Stainless Steel

OBF4-P

SIZE A   DWG NO   REV 0

SCALE 1:6   SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS   ANGULAR
.XX ± .05   ± 0.5 DEG.
.XXX ± .01

DRAWN   JAE H. JI   DATE 1/3/02
CHECKED
DESIGN

FLOWRATE: MAX. 500 GPM
MAX. PRESS.: 125 PSI
SCREEN SIZE: 10-400 MICRON
SCREEN AREA: 3.0 SQ.FT.
MAX. TEMP: 140 F (AVAIL. TO 210 F)
WEIGHT: 90 LBS

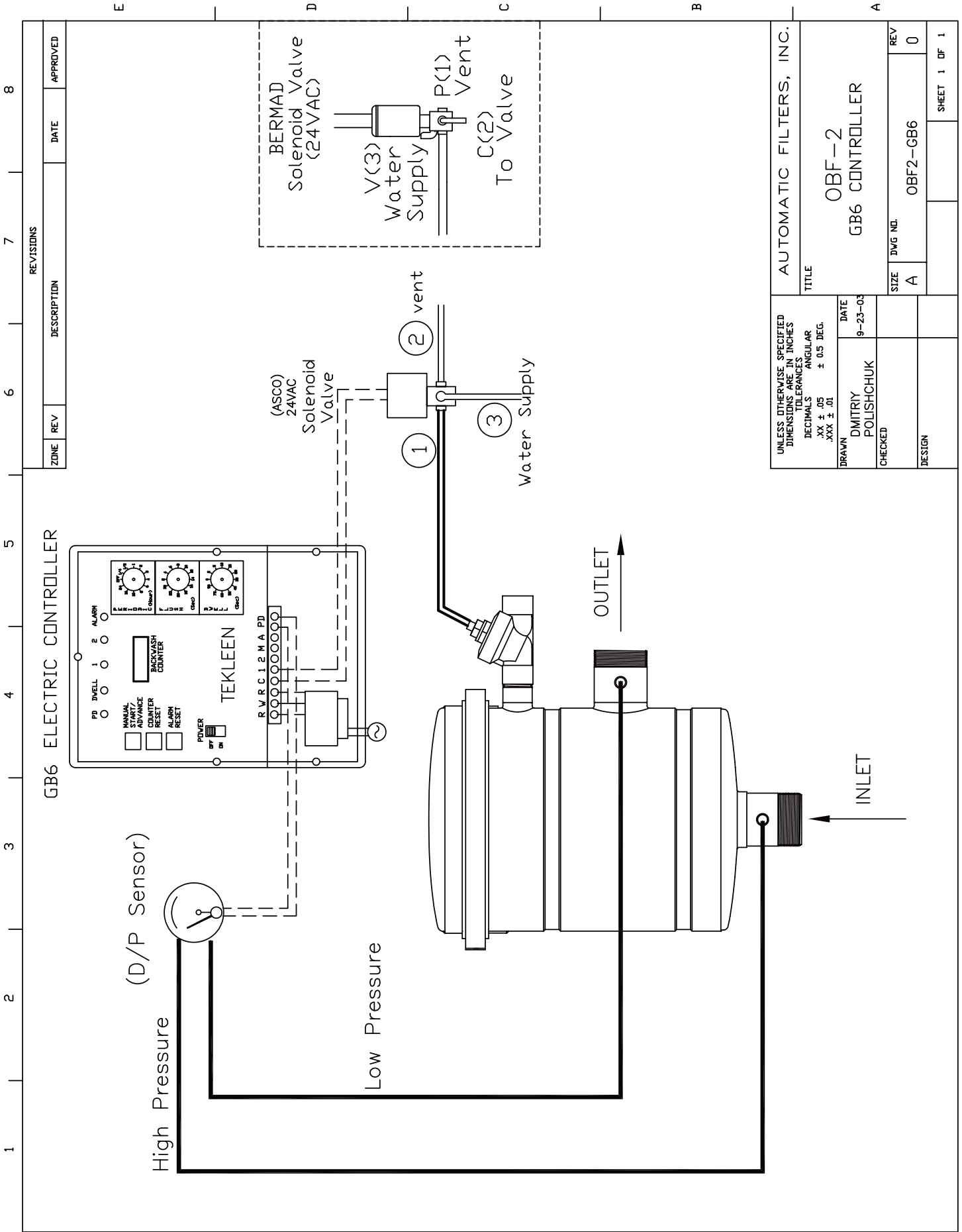| NOZZLE	CONNECTION	TYPE	SIZE
N1	INLET	FLANGED	4" ASA
N2	OUTLET	FLANGED	4" ASA
N3	FLUSH OUTLET	THREADED	2" NPT
K1	Hi Pres. Conn.	THREADED	1/4" NPT
K2	Back Wash	THREADED	1/8" NPT
K3	Low Pressure	THREADED	1/4" NPT

FLUSH OUTLET

OUTLET

INLET

2) Cover
3) Coarse Screen
4) Fine Screen
5) Dirt Collector
7) Hydraulic Motor
10) Cover Seal
11) Upper Bearing
12) Lower Bearing
16) Upper/Lower O-Ring

BERMAD
Solenoid Valve
(24VAC)

V(3)
Water
Supply

P(1)
Vent

C(2)
To Valve

(ASCO)
24VAC
Solenoid
Valve

② vent

①

③

Water Supply

GB6 ELECTRIC CONTROLLER

ALARM

PD DVELL 1 2

BACKWASH
COUNTER

MANUAL
START/
ADVANCE

COUNTER
RESET

ALARM
RESET

POWER
OFF
ON

TEKLEEN

R V R C 1 2 M A PD

OUTLET

INLET

(D/P Sensor)

High Pressure

Low Pressure

AUTOMATIC FILTERS, INC.

TITLE
OBF-2
GB6 CONTROLLER

SIZE
A

DWG NO.
OBF2-GB6

REV
0

SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS   ANGULAR
.XX ± .05   ± 0.5 DEG.
.XXX ± .01

DATE
9-23-03

DRAWN
DMITRIY
POLISHCHUK

CHECKED

DESIGN

REVISIONS

ZONE | REV | DESCRIPTION | DATE | APPROVED

FLOW

CLEAN SCREEN

0 PSID

100 Micron

150 Micron

2 PSID

50 Micron

4 PSID

200 Micron
20 Micron
5-10 Micron

6 PSID

PRESSURE DROP DATA

Filter Flange Size

Flange sizes (diagonal lines): 1", 1.5", 2", 2", 3", 4", 6", 8", 10", 12", 14", 16", 20"

X-axis: FLOW RATE (gpm) — 1, 10, 100, 1000, 2000, 10000

Y-axis: DELTA P (psi) — 0.1, 1, 10