INSTALLATION, OPERATION
and
MAINTENANCE MANUAL

for

WWF60
WHITE WATER FILTER
MODELS: WWF60-4L, WWF60-5L and WWF60-6L

We Put Technology In Motion™

NOTE:

If you need assistance in any form regarding the operation of your process equipment, contact your SWECO Representative or the SWECO home office immediately. Constant "Service-After-The-Sale" is the keynote of SWECO.

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Information contained within this publication is subject to change without notice.

FOREWORD
General Safety Practices

There are several forewarnings indicated throughout this manual that may stress a possible unsafe condition or important information regarding the use of this equipment. Read the definitions of DANGER, WARNING, CAUTION and NOTE. Read and understand all instructions before installing, operating, or servicing this machine. Failure to do so could result in severe personal injury or property damage. **Retain this manual for future reference.**

DANGER - Immediate hazards that WILL result in severe personal injury or death.

WARNING - Hazards or unsafe practices that COULD result in severe personal injury or death.

CAUTION - Hazards or unsafe practices that COULD result in minor personal injury or product or property damage.

NOTE - Important information concerning the use of the equipment.

WARNINGS:

1. When installing or maintaining this machine, shut off and lock out power before removing guards (door, cover, etc.). Follow all local and national electrical codes. Failure to comply could result in severe personal injury or property damage.
2. Keep all doors and guards in place at all times to avoid exposure to parts rotating at high speeds. While the power is on, severe injury can occur if hands, feet, or clothing reach inside the unit.
3. To prevent possible shock, ground machine per local and national electrical codes. A qualified electrician must perform all wiring. Failure to comply could result in severe personal injury or property damage.
4. Unit produces vibration and contains rotating parts. Accidental start-up of unit could result in death or serious injury. Turn off and lock-out system power before servicing.
5. Electrocution can occur if water contacts live electrical components. Shut off and lock out power before maintenance or repairs. Failure to comply could result in severe personal injury or property damage.
6. Read and understand this manual in its entirety before installing or operating the machine. Installation, adjustment, repair, and maintenance must be performed by qualified personnel. Do not perform any service other than those contained in this manual unless you are qualified. Failure to follow safe installation and servicing guidelines could result in severe personal injury or property damage.

CAUTIONS:

1. Securely tighten all nuts and bolts on the vibrating unit according to the instructions in this manual. Pay special attention to the motor mounting bolts. If a motor vibrates loose, damage to the power cord and to the structure may result as well as risk of personal injury.
2. Inspect parts during maintenance. If any structural weakness appears, replace the part.
3. Screens are fragile, Handle them carefully. Never place tools or parts on the screen or damage to the screen may occur. As screen life is dependent on a wide variety of issues like mesh size, flow rate, material properties, vibration level, maintenance, etc., we cannot guarantee how long a screen will last. Screens should be frequently inspected to check for wear or damage. Note that if screens continue to vibrate for hours after initial failure (tearing), wire segments may break loose from the mesh and fall into the screened product.
4. Provide proper guarding for personnel against harm from dust, fumes, or hazardous chemicals.
5. All persons operating the equipment and working in general area should wear standard safety equipment (i.e. safety glasses, ear protection, and steel-toed boots). All safety items must conform to local safety requirements.
6. If noise level exceeds 70dB in your environment, hearing protection is required to avoid impairment or loss of hearing.
7. Never operate with missing or worn parts. Failure to comply could result in personal injury or property damage.
8. All clamp rings must be properly installed and tight before start-up or damage to unit or risk of personal injury may result.
9. Do not start motor before removing shipping brackets. Failure to remove shipping brackets before start-up can cause damage to the unit, motor, and possibly cause personal injury.
10. Keep hands clear of pinch points. Failure to comply could result in severe personal injury.
11. This equipment must be installed, operated, and maintained by qualified personnel to avoid personal injury or damage to property.

NOTES:

1. WARNING and CAUTION labels have been placed on this separator where needed. If these labels become illegible, consult your SWECO Representative for replacement of labels.
2. The foundation must be stiff enough to support twice the separator weight, thereby minimizing transmitted vibration.
3. Use only authentic SWECO aftermarket parts to assure proper component fit and function.

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Introduction and Machine Overview

INTRODUCTION

The SWECO White Water Filter (WWF) provides high flow-rate, fine mesh centrifugal screening to remove all particles larger than the screen mesh opening with no dependence on differences in specific gravity.

The incoming flow enters the unit and travels up through the influent (center feed) pipe of the WWF and directs out of the numerous internal feed pipes through the adjustable feed nozzles (Refer to Figure 1-1).

The rotating screen cage generates a low centrifugal energy that forces the white water through the screens at a high rate. This force directs the rejected fibers down the inner surface and out through the concentrate pipe. The continuously operating, high pressure spray nozzles on the outside of the rotating screen are angled to facilitate the downward movement of the solids. These nozzles are also used to assist in the cleaning of the screens.

With the combination of the rotational velocity of the screens and the velocity of the influent, it makes it possible for the screens to remove particles smaller than the mesh openings.

The WWF discharges two streams; the rejected fibers called the concentrate (rejects) and the filtered white water that passes through the screens and discharges outward horizontally are the effluent (accepts).

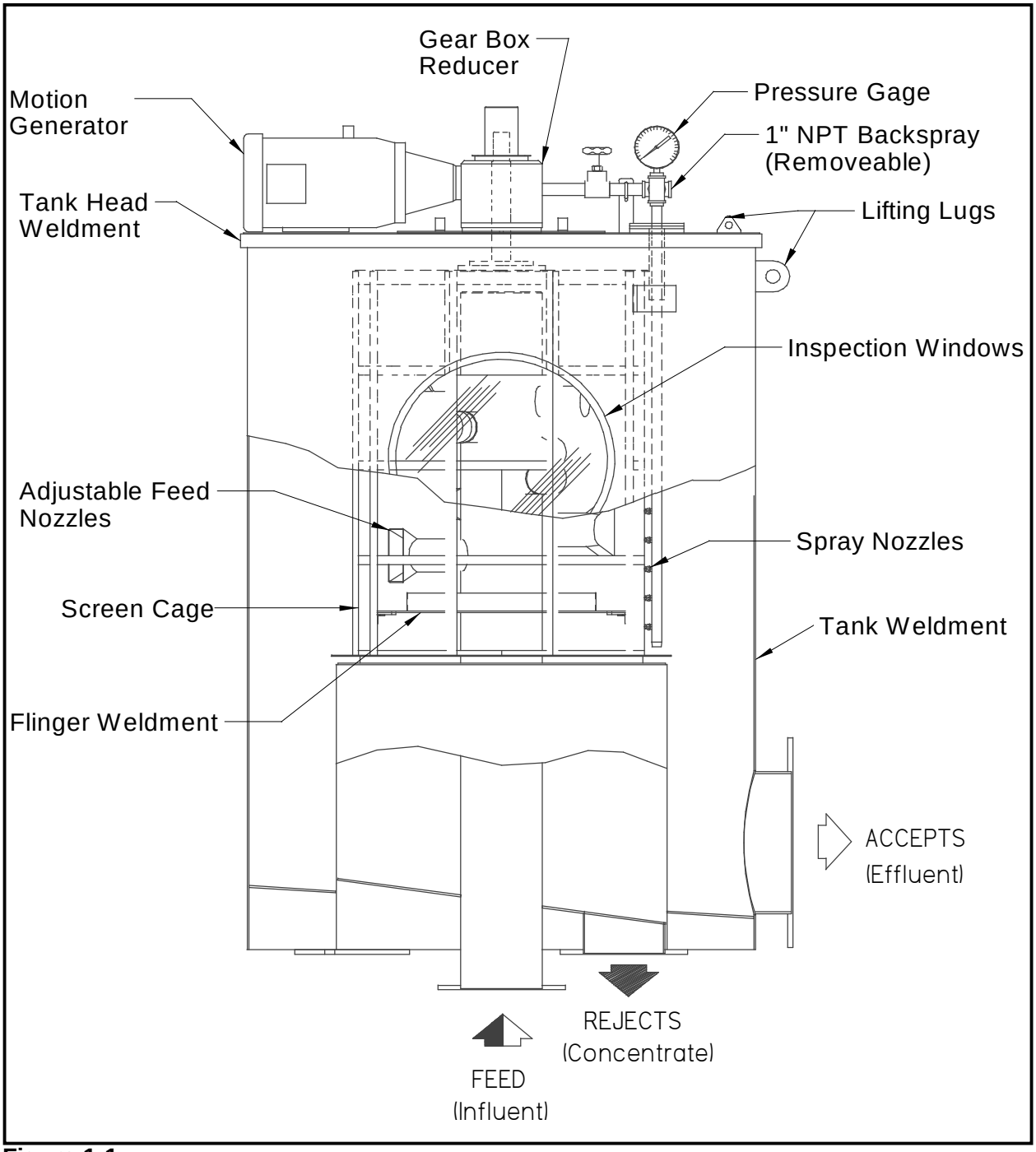


Figure 1-1
Machine Overview (WWF60-4L)

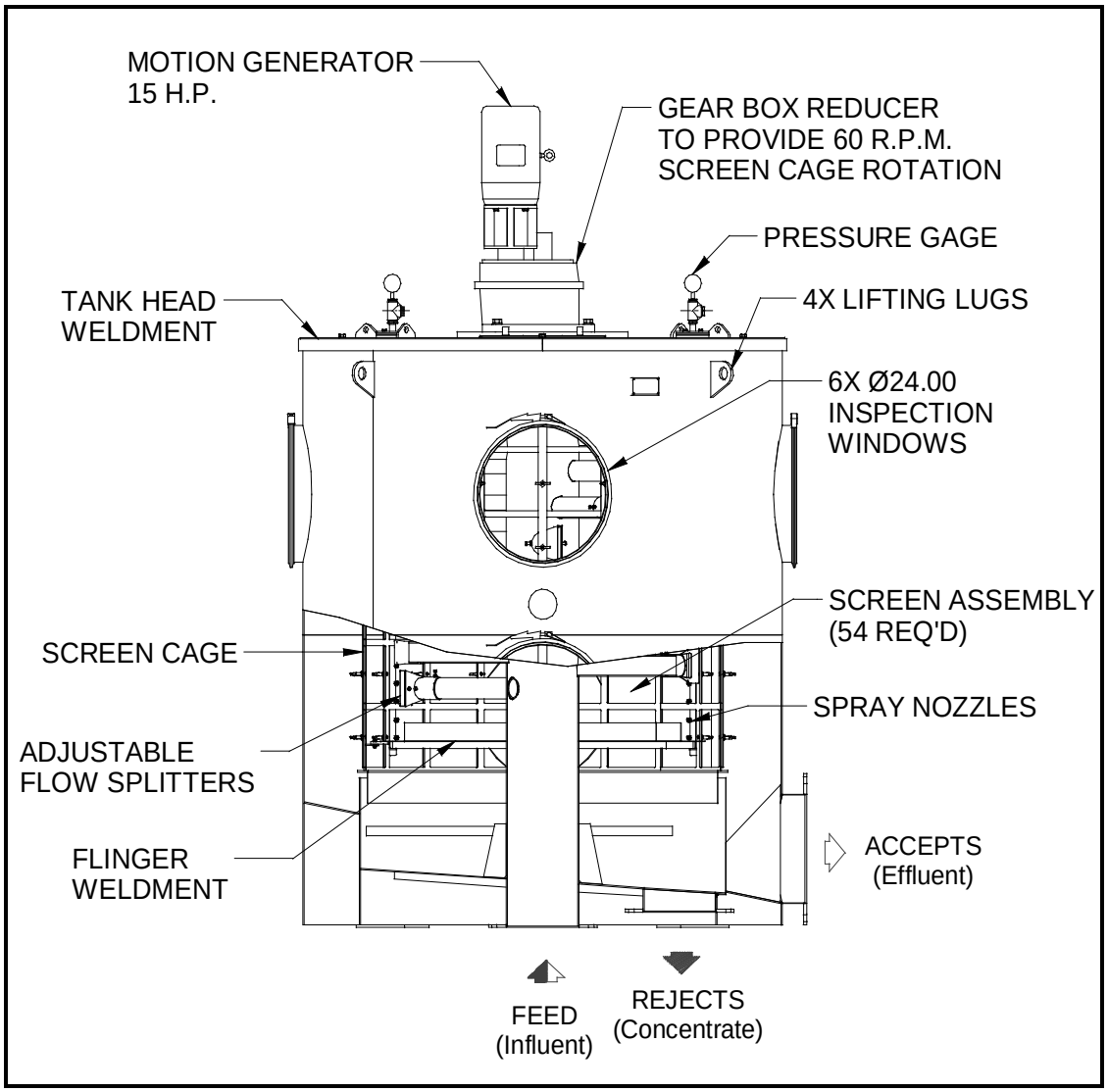


Figure 1-2
Machine Overview (WWF60-5L and WWF60-6L)

CHAPTER 2

Set-Up Adjustments and Operation

This section discusses notification of damages, mounting instructions and the various parts and their functions for the operation of a SWECO White Water Filter.

NOTIFICATION OF DAMAGE

Check the packing and the machine for damage when the machine is delivered. Notify SWECO and the carrier immediately of any damage to the machine. A relevant certificate from the driver must be supplied. Inform all parties of any damage that becomes apparent when the packing material is removed.

MOUNTING

Follow these instructions for mounting of the White Water Filter:

1. Remove unit from its shipping pallet and place it on a supporting structure. **Note: Space is necessary under the unit for the feed and rejects connections**.
2. Check packing slip. Contact SWECO or a representative if anything is missing.
3. Level unit using shims between base and foundation as required.
4. Anchor unit with four anchor bolts through the 3/4 inch diameter holes in the mounting pads.
5. Remove the four red shipping brackets. Save shipping brackets and hardware for later use.

   ⚠ **WARNING: Shipping brackets must be removed before start-up or can cause damage to unit and possible personal injury**.
6. Rotate screen cage by hand to make sure it is free to rotate. The cage should move smoothly with no interference. If interference exists, please call your SWECO Representative. The screen cage may be supported with shipping spacers or supports to stabilize it during shipment. If supports are in place they must be removed.

PIPING -- FEED, ACCEPTS AND REJECTS

The WWF60 should have a valve installed ahead of the feed pipe to help control the flow. The standard feed has a 12 inch stub connection located on the center feed pipe at the bottom of the unit. If using an automatic valve for turning the flow on and off for interrupted flow cleaning cycles, locate it closely to the units feed pipe (see Figure 2-1 showing inlet piping).

Recommended inlet pressure is 14 foot water head (6 PSI) at its influence nozzle. If an automatic valve is used for turning the flow on and off for interrupted flow cleaning cycles, it should be located as close as practical to the influent nozzle. A pressure gauge is helpful here to check feed pressure.

The standard reject discharge is the 12 inch connection located at the bottom of the unit. It is recommended to maintain this concentrate line size leading away from the unit in order to facilitate the gravity flow of concentrate and prevent line blockage with sludge.

The accepts discharge horizontally through an 18 inch end pipe. When using an open effluent channel, use an elbow to direct the accepts flow downward.

NOTE: Other diameter piping available for feed, accepts, and rejects. Also flanged ends are available upon request.

CAUTION: Locate the reject and accept piping away from the unit to allow free gravity flow. A back-up of liquid will cause poor performance and possible damage to the screen cage, screen panels and gear reducer.

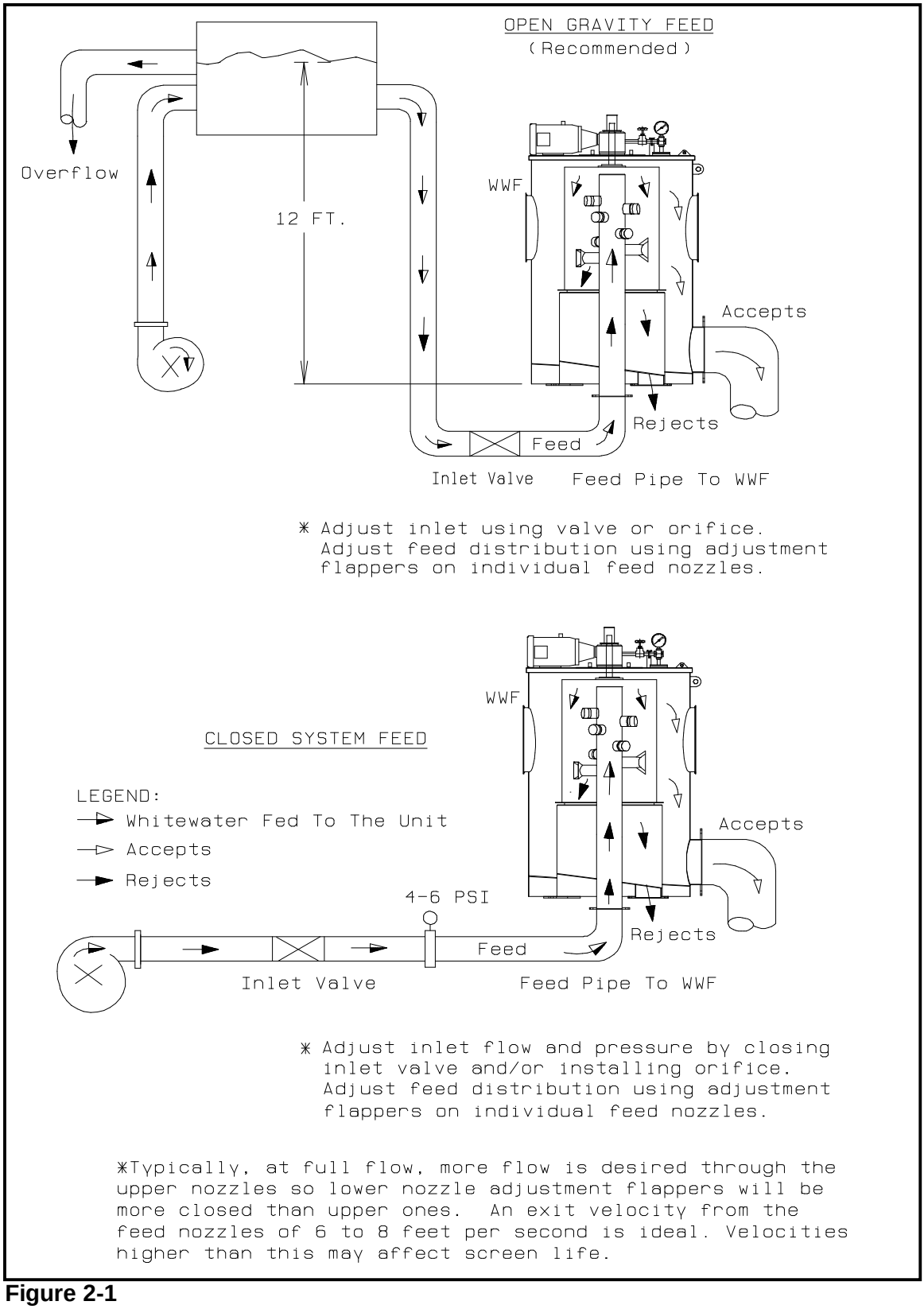


Figure 2-1
Pipe Feeder Nozzle System

BACK SPRAY PIPING AND ARRANGEMENT

The WWF60 unit has (4) four back spray bars located on the outside of the screen cage, 90° apart, which include high pressure nozzles to keep the screens clean (reference Figure 1-1). Each bar contains numerous spray nozzles that direct a spray inward against the screen surfaces.

The spray bars are removable through the top of the tank head weldment to facilitate checking and cleaning of the nozzles.

There should be 120-150 psig water pressure at the manifolds. If this pressure is not available directly, use a booster pump. A pressure gage is located close to the spray manifolds to determine the back spray pressure. To prevent screen damage from the high pressure sprays, the screen cage must be turning before the sprays are turned on.

The accepts flow can be used as a source for the back spray requirements. To be reliable, it needs to be less than 0.01% consistency and be pressurized to 120-150 psig.

If needed, install a pipeline Y-strainer or filter ahead of the gage in the back spray lines to prevent blockage of the back spray nozzles with fiber. If you need to remove the nozzles and clean them, be certain the orientation is correct when replaced (see Figure 2-2).

⚠ **CAUTION: Approved back flow prevention must be provided in accordance with applicable piping codes in all systems where cleaning solutions or other materials could enter a drinking water supply.**

Water consumption for the back sprays is 25 to 75 gpm depending on your model at 120-150 psig. It is necessary to operate these sprays continuously as long as feed is flowing to the unit.

When using the accepts flow or water containing any suspended solids, avoid using close tolerance back spray pumps, for example regenerative turbines. Even the smallest solids can gradually wear these pumps down, resulting in decreased performance from the pump and consequently the WWF unit.

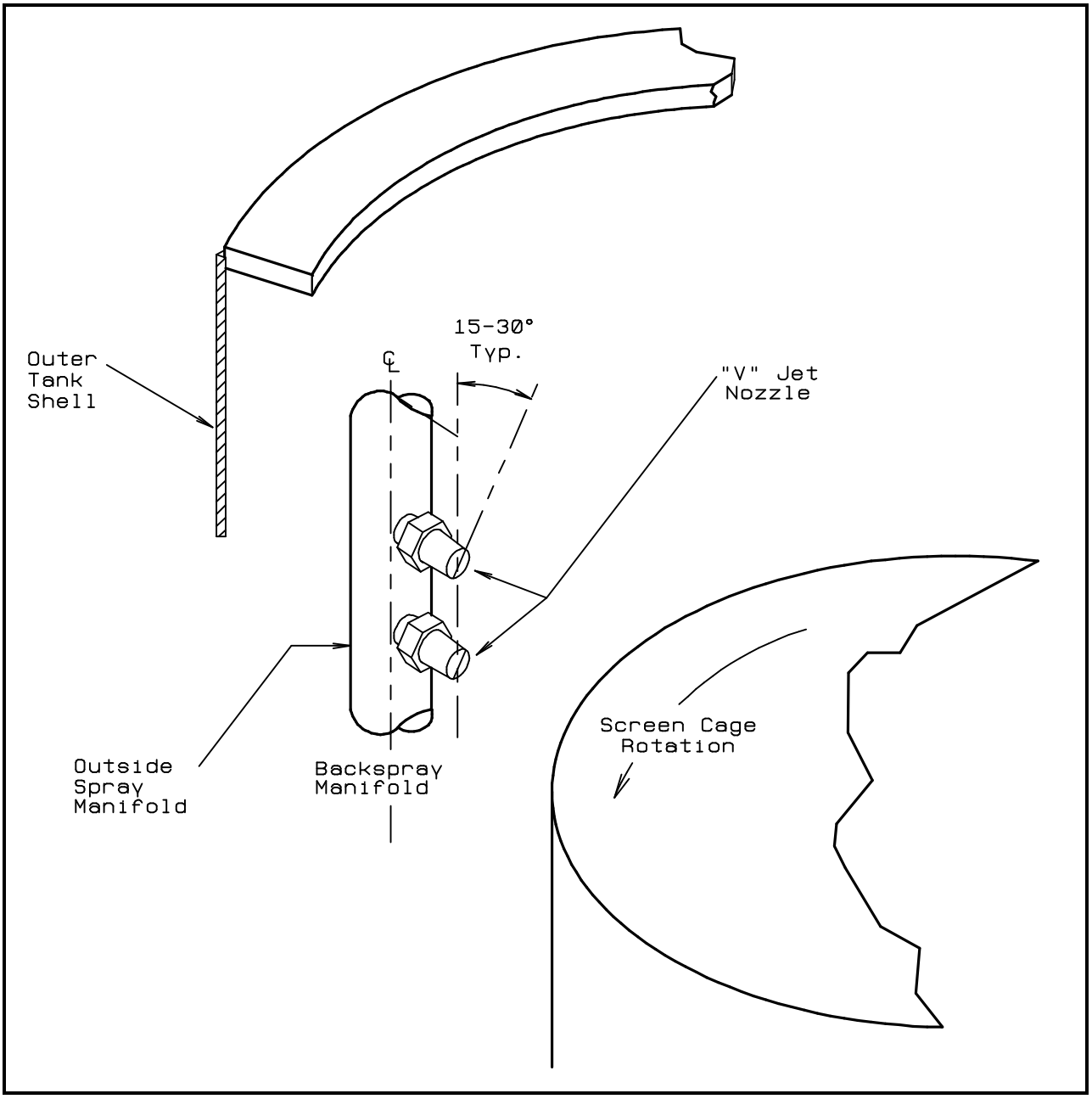


Figure 2-2
"V" Jet Orientation

INFLUENT FLOW

The WWF60 model has an influent pipe that directs the feed flow out of numerous internal feed pipes through the adjustable feed nozzles. Adjust these nozzles on the end of the pipe to direct the flow up or down with respect to the screen cage. Normal position would be the horizontal plane. The nozzles should be in the same direction as the screen cage turns (counter-clockwise). The nozzles discharge area or opening is also adjustable by turning the bolt, located on the nozzle weldment, in or out which changes the amount the hinged flapper can open. This changes the velocity of feed flow onto the screen cage. An ideal velocity is 6 to 8 feet per second.

⚠ **CAUTION: When installing or maintaining this unit, shut off and lock out power before removing guards. Follow all local and national electrical codes. Failure to comply could result in severe personal injury or property damage.**

To obtain access to the nozzles, remove one vertical row of screen panels. Rotate the screen cage by hand and adjust the nozzles through the inspection windows.

⚠ **CAUTION: Wear safety glasses when making any adjustments.**

Adjust the lower feed nozzles to a narrower gap than the upper ones. The bottom nozzles should be about 15 percent open with gradual increases up to the top nozzle that should be about 80 percent open. This, of course, is dependent on feed flow volume.

Once adjusted to suit your feed requirements, the nozzles should not need any more adjusting unless feed flow conditions change drastically.

To observe the feed flow pattern, simply view the feed flow splits with the screen cage drive locked out, the pump on, and one vertical row of screen panels removed. Turn the cage by hand and use a hand light to assist in the inspection.

⚠ **CAUTION: Make certain the feed water is low enough in temperature so as not to burn.**

The objective is to have most of the feed flow directed to the upper portion of the screen cage. Raising or lowering the screen cage has no effect on feed velocity, but can provide minor changes to the elevation at which the feed flow impacts the inside of the screen panels.

The maximum influent flow for the WWF60 will depend to a degree upon the nature and quantity of the solids in the influents. Excessive influent flows can result in a very high concentrate flow, internal concentrated bowl overflow and overstress and damage the screen panels.

The flow capacity is dependent upon the characteristics of the white water being treated and can also be determined by the application. Both the feed consistency and the mesh size and type used for the screen panels can cause excessive feed that can result in a high rejects flow and internal rejects overflow. It can also over stress and damage the screen panels. Inlet pressure at the inlet flange should be 4 to 6 psi (9-13 ft. head).

In conjunction with high volume problems, avoid any surges. Valves that open or close suddenly or pump motors that are oversized and come on line intermittently can cause considerable screen damage. Take adequate measures to prevent the hydraulic pressure surges and to prevent flows in excess of the unit's capacity for the white water being screened. One efficient means of surge control consists of placing a standpipe or open head box in the feed line. By design you make the length of the standpipe such that it will overflow at feed rates in excess of a safe predetermined volume. This will then eliminate any feed surges while still providing adequate operating flow. An orifice in the feed line, sized to minimize maximum feed flows at available pressures, effectively accomplishes this whether feeding from a head box or from direct pumping.

CARE AND HANDLING OF SCREENS

⚠ CAUTION: When installing or maintaining this unit, shut off and lock out power before removing guards. Follow all local and national electrical codes. Failure to comply could result in severe personal injury or property damage.

If there is a possibility that the water lines contain debris and can cause damage to the screens, it is recommended to remove all installed screens and run the unit at full flow to clear any damaging debris from the lines. This applies to new start-ups or when the installation has been idle. This reduces the chance of debris in the system causing damage to the screens. It is important to use a coarse prescreen whenever the white water contains debris that may cause heavy damage or screen breakage. (See Figure 2-3 for comparison of screen openings.)

⚠ CAUTION: Screens should be frequently inspected to check for excess wear or damage. Screens will eventually wear and will need to be replaced to avoid contamination from rejects or fragments from the screen cloth in the accepts.

You can use a SWECO Vibro-Energy Separator or Sta-Sieve upstream to a White Water Filter. For more information contact your SWECO Representative.

SCREEN INSTALLATION

The WWF60-4L uses (36) 10 inch x 20 inch screen panels, the WWF60-5L use (36) 10 inch x 20 inch and (18) 10 inch x 10 inch screen panels, and the WWF60-6L uses (54) 10 inch x 20 inch screen panels. Each providing approximately 100 square feet of available screen area. There are always 18 sides to the screen cage in all 60 inch models.

With power off, from the access window install the screen panels with the gaskets facing the screen cage.

⚠ CAUTION: Screens are fragile, handle them with care. Failure to comply can cause damage to screens.

Vertical stainless steel clamp bars hold the screens against the outside of the screen cage with two hand knobs per clamp bar to secure the screens in place.

When putting in the screens, it is best to install all of the screens before starting to tighten individual panels. The bottom row of screen panels are to fit tightly against the bottom ring as well as against the face of the cage.

All knobs should be securely hand tightened before starting the unit. Check each knob twice when tightening the panels; one knob may loosen while the other is being tightened.

Tensile Bolting Cloth					Mill Grade					Market Grade					Clear Opening			U.S. Std. Sieve		
Mesh TBC	Opening Inch	Opening Micron	Wire Dia.	% Open Area	Mesh Ml Gr	Opening Inch	Opening Micron	Wire Dia.	% Open Area	Mesh MG	Opening Inch	Opening Micron	Wire Dia.	% Open Area	Clear Open-Ing	Wire Dia.	% Open Area	Std. Sieve	Open-ing in Inches	Open-ing in Micron
															1.0000	.105	81.9			
															.7500	.063	82.0			
															.6250	.063	82.5			
															.5625	.063	81.0			
															.5000	.047	86.0			
					2	.4460	11328	.0540	79.6	2	.4370	11100	.0630	76.4	.4375	.047	79.3			
															.3750	.047	79.2			
															.3125	.047	75.5			
					3	.2923	7424	.0410	76.7	3	.2790	7087	.0540	70.1	.2500	.047	70.9			
					4	.2150	5461	.0350	74.0	4	.2023	5138	.0475	65.9				3.5	.2205	5600
										4	.1870	4750	.0630	56.0	.1875	.041	57.3	4	.1870	4750
					5	.1680	4267	.0320	70.6	5	.1590	4039	.0410	63.2				5	.1575	4000
					6	.1387	3523	.0280	69.6	6	.1318	3348	.0348	62.7	.1250	.041	56.7	6	.1319	3350
					7	.1149	2918	.028	64.8	7	.1080	2743	.0350	57.2				7	.1102	2800
					8	.1000	2540	.0250	64.0	8	.0964	2449	.0286	60.2				8	.0929	2360
					9	.0881	2238	.230	62.7											
					10	.0800	2032	.0200	64.0	10	.0742	1885	.0258	56.3				10	.0787	2000
					11	.0709	1801	.0200	61.0	11	.0730	1854	.0180	64.5						
14	.0620	1575	.0090	76.4	12	.0653	1659	.0180	60.8	12	.0603	1532	.0230	51.8				12	.0669	1700
16	.0535	1359	.0090	73.3	14	.0544	1382	.0170	57.2	14	.0510	1295	.0204	51.0				14	.0551	1400
18	.0466	1184	.0090	70.2	16	.0465	1181	.0160	55.4	16	.0445	1130	.0181	50.7				16	.0465	1180
20	.0410	1041	.0090	67.2																
22	.0380	965	.0075	69.7	18	.0406	1031	.0150	53.4	18	.0386	980	.0173	48.3				18	.0394	1000
24	.0342	869	.0075	67.2	20	.0360	914	.0140	51.8	20	.0340	864	.0162	46.2				20	.0335	850
26	.0310	787	.0075	64.8	22	.320	813	.135	49.6											
28	.0282	716	.0075	62.4	24	.0287	729	.0130	47.4	24	.0277	704	.0140	44.2				25	.0280	710
30	.0268	681	.0065	64.8	26	.0275	699	.0110	51.1											
32	.0248	630	.0065	62.7																
34	.0229	582	.0065	60.7	28	.0257	653	.0100	51.8									30	.0236	600
36	.0213	541	.0065	58.7	30	.0238	605	.0095	51.0	30	.0203	542	.0128	37.1						
38	.0198	503	.0065	56.7	32	.0223	566	.0090	50.9									35	.0197	500
40	.0185	470	.0065	54.8																
42	.0183	465	.0055	59.1	34	.0204	518	.0090	48.1											
44	.0172	437	.0055	57.4	36	.0188	478	.0090	45.8	35	.0176	447	.0118	37.9						
46	.0162	411	.0055	55.8	38	.0178	452	.0085	45.8									40	.0167	425
48	.0153	389	.0055	54.2	40	.0165	419	.0085	43.6	40	.0150	381	.0104	36.0						
50	.0145	368	.0055	52.6																
52	.0137	348	.0055	51.0														45	.0140	355
54	.0130	330	.0055	49.4	45	.0142	361	.0080	40.8											
58	.0127	323	.0045	54.6																
60	.0122	310	.0045	53.3																
62	.0116	295	.0045	51.7														50	.0118	300
64	.0111	282	.0045	50.7	50	.0125	318	.0075	39.1	50	.0110	279	.0090	30.3						
70	.0106	269	.0037	54.9																
72	.0102	259	.0037	53.8	55	.0112	284	.0070	37.9											
74	.0098	249	.0037	52.7														60	.0098	250
76	.0095	241	.0037	51.7																
78	.0091	231	.0037	50.6	60	.0102	259	.0065	37.5	60	.0092	234	.0075	30.5						
80	.0088	224	.0037	49.6																
84	.0084	213	.0035	49.8														70	.0083	212
88	.0079	201	.0035	47.9																
90	.0076	193	.0035	47.8																
94	.0071	180	.0035	45.0						80	.0070	178	.0055	31.4				80	.0071	180
105	.0065	165	.0030	46.9																
120	.0058	147	.0025	47.3						100	.0055	140	.0045	30.3				100	.0059	150
145	.0047	119	.0022	46.4						120	.0046	117	.0037	30.5				120	.0049	125
165	.0042	107	.0019	47.1						150	.0041	104	.0026	37.9				140	.0042	106
200	.0034	86	.0016	46.2						170	.0035	89	.0024	35.4				170	.0035	90
230	.0029	74	.0014	46.0						200	.0029	74	.0021	33.6				200	.0030	75
300	.0022	56	.0012	42.0						250	.0024	61	.0016	36.0				230	.0025	63
										270	.0016	32.2	.0016	32.2				270	.0021	53
										325	.0014	30.5	.0014	30.5				325	.0018	45
										400	.0010	36.0	.0010	36.0				400	.0015	38
										500	.0010	25.0	.0010	25.0				500	.0010	25
										635	.0008	25.0	.0008	25.0				635	.0008	20

Figure 2-3
Screen Mesh Conversion Chart

MOTOR WIRING

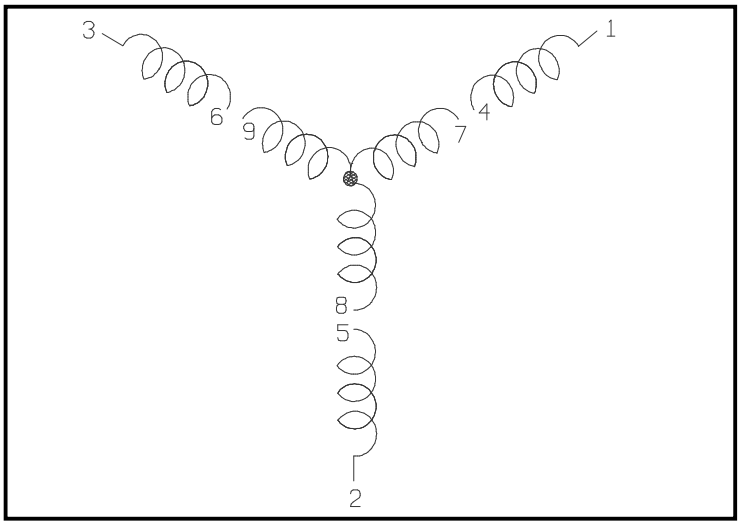
The WWF60 has a fixed speed cage drive. This WWF60-4L drive consists of a 7-1/2 HP and the WWF60-5L and WWF60-6L consists of a 15 HP motor. Check your nameplate for voltage, speed and type of your motor.

We recommend that a fused disconnect switch or circuit breaker be installed ahead of the unit, although an existing branch disconnect switch may fulfill this requirement.

⚠ **CAUTION: When installing or maintaining this unit, shut off and lock out power before removing guards. Follow all local and national electrical codes. (Do not use external line switching to start and stop the drive motor.) Failure to comply could result in severe personal injury or property damage.**

After all electrical hook-ups have been made, jog the unit and check rotation of the motor. The screen rotation should be counter-clockwise (plan view) and is in the same direction as the internal feed nozzles. If motor rotation is not correct, interchange any two lead wires (refer to Figure 2-4). Figure 2-4 also shows an example of a standard wye wound, dual voltage, and nine lead motor connection.

⚠ **WARNING: To prevent possible shock, ground per local and national electrical codes. Failure to comply could result in severe personal injury or property damage. A qualified electrician must perform all wiring.**



VOLTAGE	LINE "A" TO	LINE "B" TO	LINE "C" TO	TIE LEADS	TIE LEADS	TIE LEADS
LOW	3 & 9	2 & 8	1 & 7	6, 5, & 4	-	-
HIGH	1	2	3	6 & 9	5 & 8	4 & 7
Reverse Rotation By Interchanging any Two Line Leads						

Figure 2-4
Interchange of Lead Wires

GEAR REDUCER INSTRUCTIONS

The precision construction of the reducer merits caution in selecting the proper lubricant. The factory fills the reducer to the proper level with AGMA #7 compound oil. The unit is shipped with Universal Mounting oil. Before putting unit into operation, substitute the vent plug for the solid pipe plug at the position desired. See Figure 2-5 for vent plug location.

If you are installing a replacement gear reducer, install vent breather plug. Refer to instruction tag that shows proper position according to reducer mounting. After installation of the breather plug, the unit is ready for use.

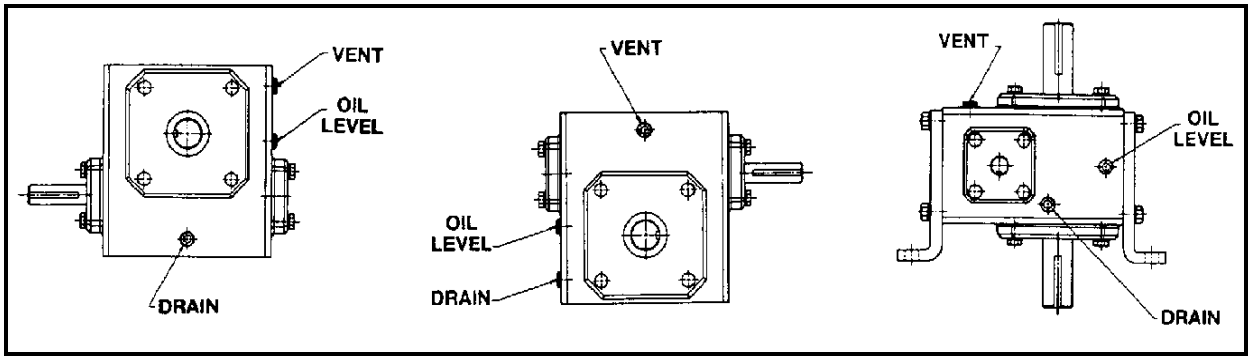


Figure 2-5
Gear Reducer Diagram (WWF60-4L)

NOTE: Figure 2-5 refers to WWF60-4L. For gear reducer information for WWF60-5L and 6L and additional information on gear reducer for WWF60-4L, refer to gear reducer manual following unit manual.

PRE-START CHECK

Before start-up of unit, follow these procedures:

1. Turn screen cage by hand to make sure it is free to rotate without any interference. If interference exists, consult your SWECO Representative.
2. It is essential that the screen panels do not rub on anything. If the unit is shipped with screen panels installed, remove all but one vertical row (see section *Care and Handling of Screens* in this chapter). Rotate cage by hand to be sure nozzles do not rub screens. If rubbing occurs, contact your SWECO Representative, otherwise, remove panels and do not install screens without first consulting *Screen Installation* information in this chapter.
3. Check oil level in drive gear box to make sure it is filled to the oil level overflow mark (for oil types see Figure 3-5.)
4. After above three pre-start checks have been completed, make sure the specified back spray pressure is available (120-150 psig) and the back spray nozzles are not clogged. The unit with the screen cage running in the proper direction should now be ready for gradual introduction of white water feed.

⚠ CAUTION: Whenever starting screen cage motor, tighten the screen clamps securely (whether or not screens are in the unit) to prevent from coming loose and causing damage to machine.

CHAPTER 3

Maintenance and Repairs

The WWF has three major assemblies or weldments:

1. Screen cage and drive assembly
2. Flinger weldment
3. Concentrate tank weldment

To make minor internal adjustments and repairs, remove the windows or access panels to reach the inside of the unit.

⚠ **CAUTION: When installing or maintaining this unit, shut off and lock out power before removing guards. Follow all local and national electrical codes.**

⚠ **CAUTION: Take care in removing the window, cracking can occur with harsh handling.**

When you need to make major adjustments that are difficult or impossible to make through the window or access door opening, it is best to remove complete sub-assemblies as described below:

REMOVAL OF SCREEN CAGE, FLINGER AND DRIVE ASSEMBLY

1. Disconnect and lock out electrical power.
2. Close feed valve. (Disconnect and lock out a spraying cleaning cycle.)
3. Carefully remove an inspection window for internal access.
4. Remove and store screen panels. Use a suitable spacer material between the screens to prevent screen frames from damaging adjacent panels.
5. Remove the flinger and drop it down to displace the screen cage or it will interfere with the feeder system. Disconnect the flinger from the screen cage by removing the 1/4-NC bolts holding the flinger to the screen cage. Let it down gently so it rests in the reject bowl (refer to Figure 1-1).
6. The tank head and drive assembly bolt to the tank weldment. Remove bolts and lift the tank head and screen cage weldment from the tank weldment using an overhead lift. Be sure the capacity of the lift will safely lift and hold the screen cage weldment. The tank head and screen cage will lift out in one piece. Make certain the lift is vertically straight to avoid damage to the screen cage or back spray.

RE-ASSEMBLY OF UNIT (WWF60-4L)

After adjustments have been made, follow these steps for re-assembly of WWF60-4L unit:

1. Make sure the flinger assembly is in the bottom of the concentrate bowl over the feed pipe.
2. Carefully lower the screen cage, tank head and drive assembly (all in one piece) vertically back down onto the tank weldment being sure to center the screen cage in the reject bowl.

   ⚠ **CAUTION: Keep hands clear to prevent possible injury from equipment.**
3. Lower the screen cage into place being careful to center the screen cage in the reject bowl.
4. Shim the screen cage up to allow the shaft to slide through the gearbox.

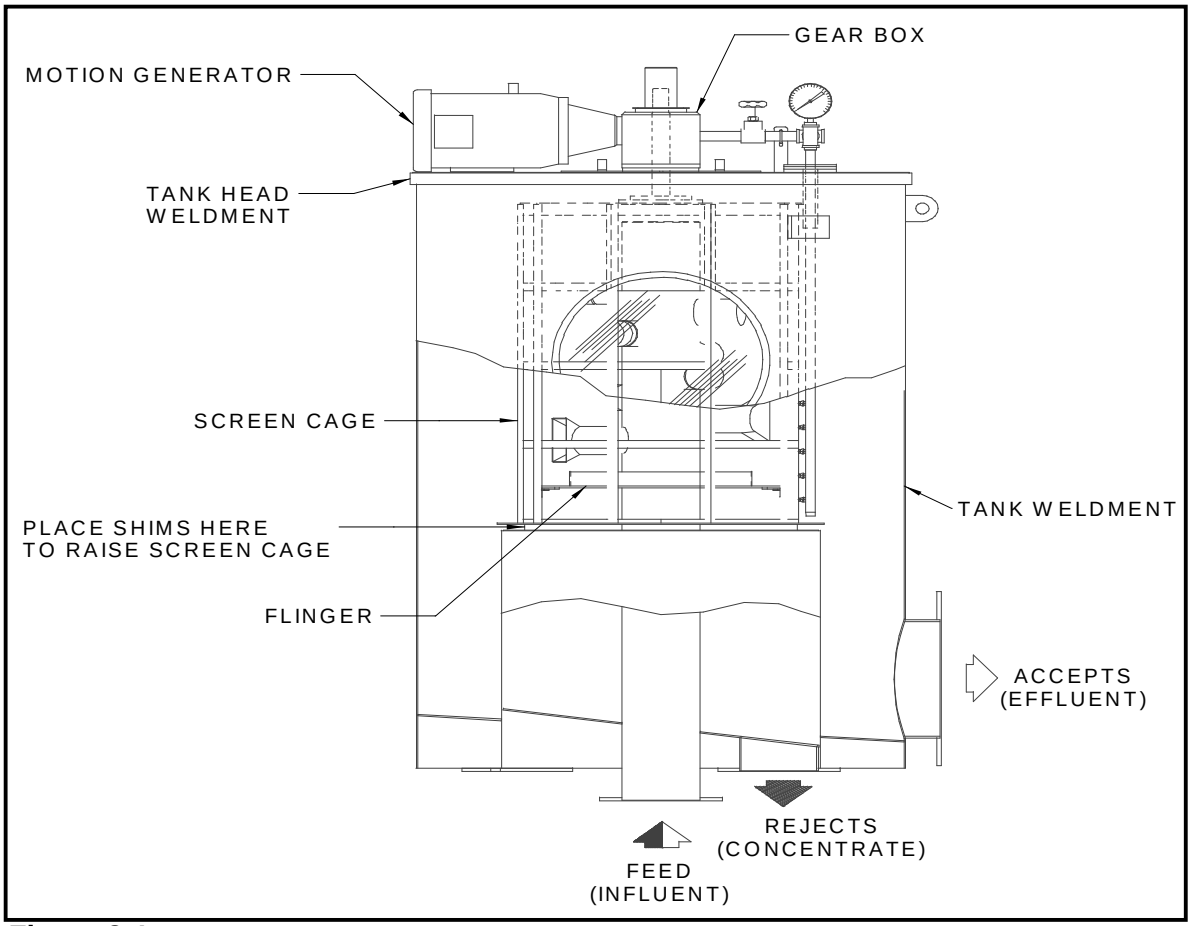


Figure 3-1
Re-Assembly of Unit (WWF60-4L)

5. Lower tank head back onto tank weldment and bolt.
6. If the screen cage, motor and gear box have been disassembled, mount motor and gear drive onto tank head. Secure drive shaft to gear box and elevate screen cage to proper vertical adjustment. The cage should be approximately one inch above the concentrate bowl flange.
7. Slide the gear box bushing over the power adapter shaft. Shim bushing up to top of shaft. Insert key.

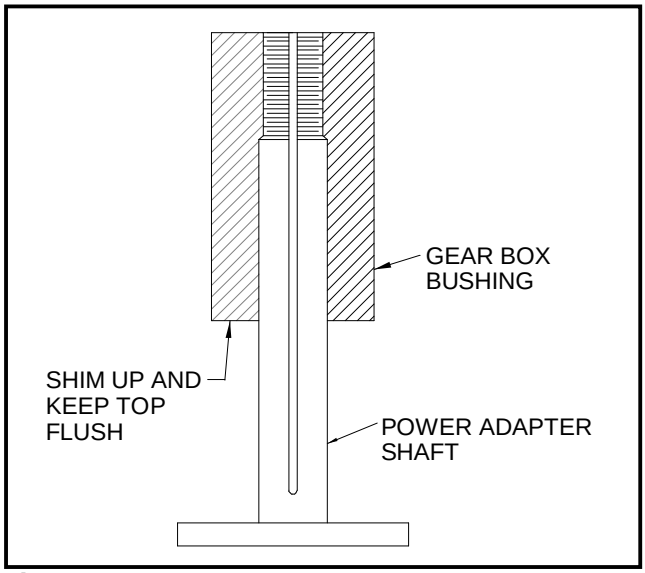


Figure 3-2
Gear Box Bushing and Power Adapter Shaft

8. Slide gear box down over shaft and bushing. Lower until the horizontal setscrew holes in the gear box top line up with the holes in the bushing adapter.
9. Insert setscrews to hold bushing in position inside of gear box.

   Do not tighten setscrews onto shaft.

10. Remove the shims below the bushing. Let the gear box and bushing slide down the shaft until the gear box rests on the top cover.

NOTE: The bushing must be flush with the gear box top, but not above.

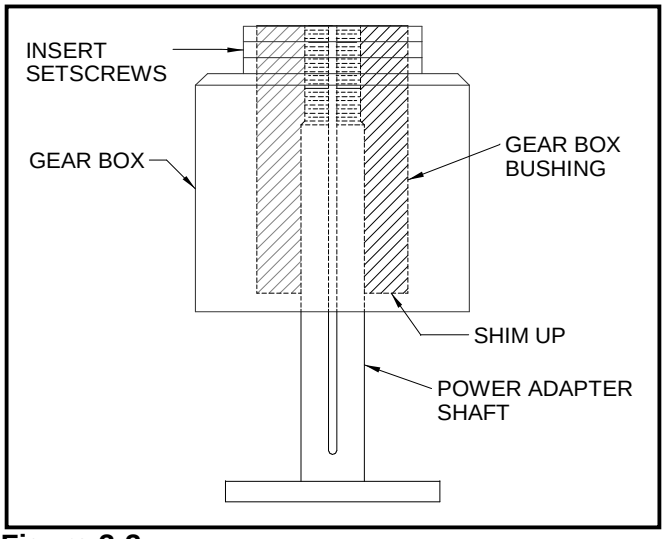


Figure 3-3
Gear Box

11. Add the nut to the top of the shaft and lift the screen cage to the proper position, approximately one inch above the concentrate bowl flange.
12. Tighten the horizontal setscrews through the bushing onto the shaft.
13. Make sure the gear box is properly filled with oil.

NOTE: Make sure the screen cage is balanced to operate properly.

14. Remove the shims and insure the clearance of approximately one inch between the screen cage and the concentrate bowl flange.
15. Bring the flinger back up into place and attach it once again to the screen cage.

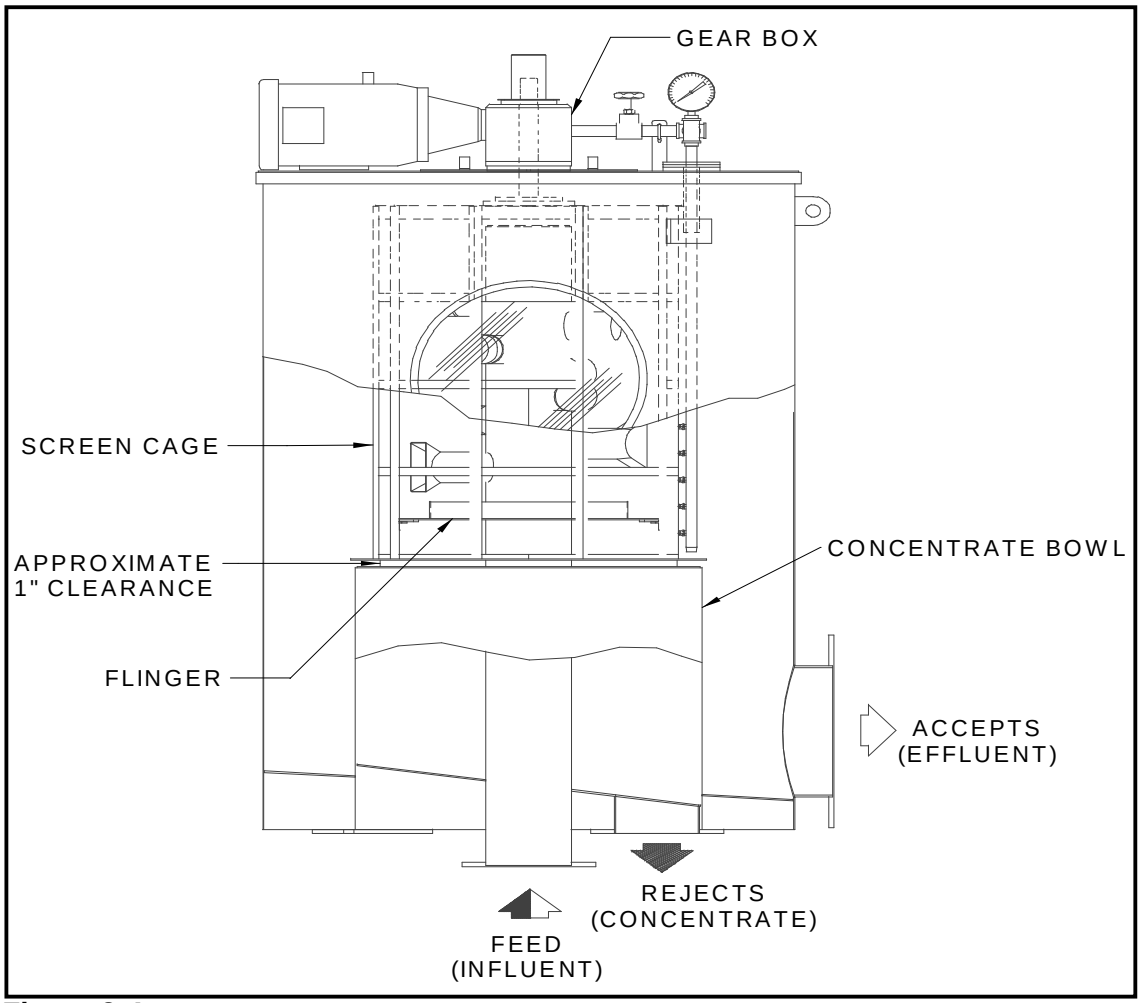


Figure 3-4
Clearance

RE-ASSEMBLY OF UNIT (WWF60-5L AND WWF60-6L)

After adjustments have been made, follow these steps for re-assembly of a WWF60-5L/6L unit:

1. Make sure flinger is in bottom of concentrate bowl over feed pipe.
2. Carefully lower screen cage, tank head and drive assembly (all in one piece) vertically back down onto tank weldment being sure to center screen cage in reject bowl.

   ⚠ **CAUTION: Keep hands clear to prevent possible injury from equipment.**
3. Lower screen cage into place being careful to center the screen cage in reject bowl.
4. Shim screen cage up to allow the shaft to slide through the gearbox.
5. Lower tank head back onto tank weldment and bolt.

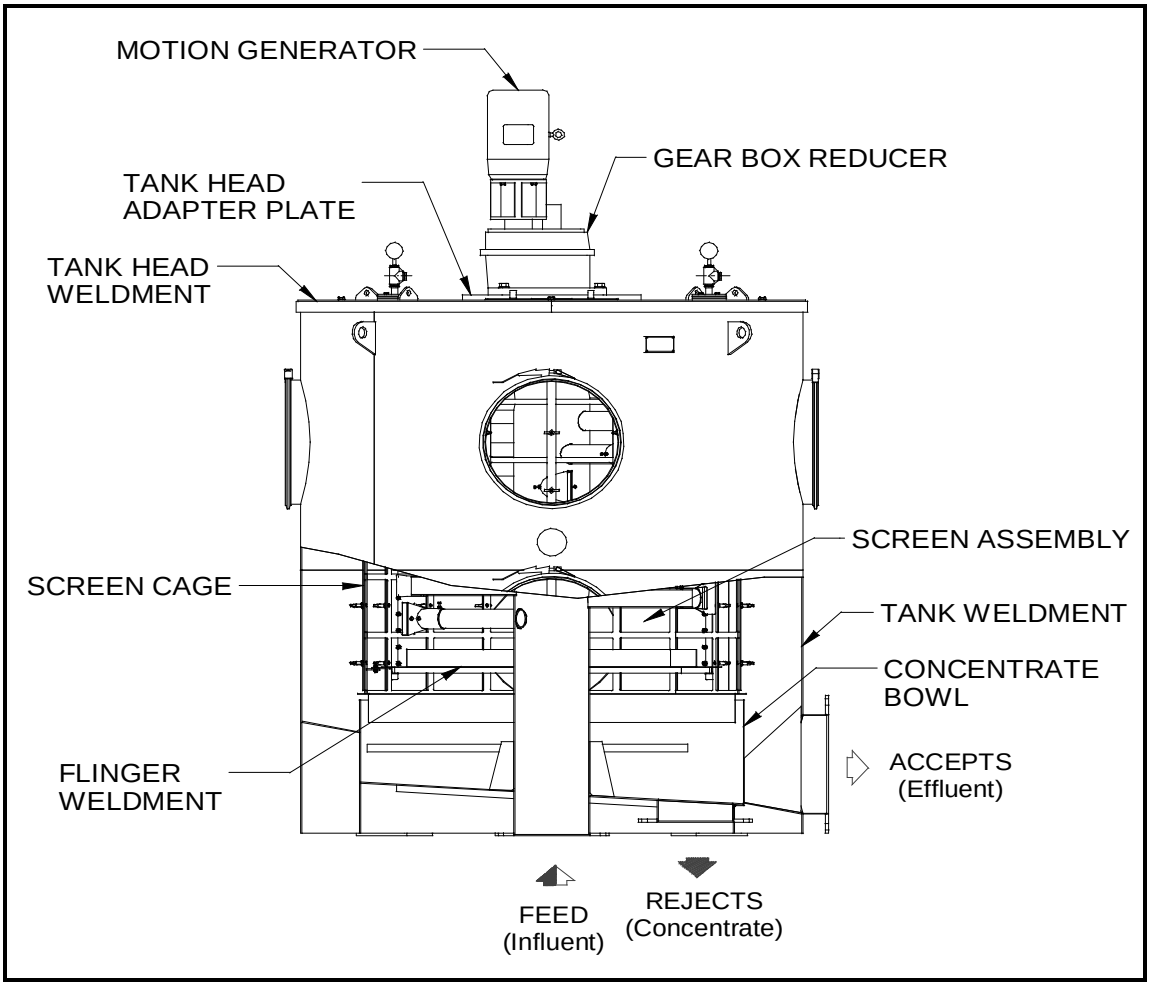


Figure 3-5
Re-Assembly of Unit (WWF60-5L and WWF60-6L)

6. If the screen cage, motor and gear box have been disassembled, mount and secure motor to gear box reducer. Slide gear box over power adapter shaft and secure. Next mount gear box reducer to tank head adapter plate and fasten with 7/8-NC hardware. Elevate screen cage to proper vertical adjustment. The cage should be approximately one inch above the concentrate bowl flange.
7. Make sure gear box is properly filled with oil.

    **NOTE: Make sure screen cage is balanced to operate properly.**
8. Remove shims and insure clearance of approximately one inch between screen cage and concentrate bowl flange.
9. Bring flinger back up into place and attach it once again to screen cage.

SCREEN BLINDING

⚠ CAUTION: Screens should be frequently inspected to check for excess wear or damage. Screens will eventually wear and will need to be replaced to avoid contamination from rejects or fragments from the screen cloth in the accepts.

It is also essential that the screens be kept clean to operate properly. When the screens become dirty ("blinded"), less water can pass through the screens into the accepts, giving a bad "hydraulic split." Hydraulic split is the ratio of the percentage of feed flow that passes through the screens to the percentage retained as rejects. For example, a 75/25 split indicates that 75 percent of the feed passes through the screen while 25 percent retains as rejects.

If the screen panels become coated with grease, tar or “blinded” with solid particles or fibers, the percent of water passing through the screen will decrease and the concentrate flow will increase proportionately. In extreme cases, this can cause the concentrate bowl to overflow, thus degrading the effluent quality. Proper screen cleaning can prevent this condition.

⚠ CAUTION: Do not operate the machine with the concentrate bowl overflowing.

Hydraulic split will vary with respect to the flow rate, fiber concentration, and the nature of the fiber in the feed. Under normal operating conditions with clean screens, the split can vary from 90/10 to 80/20.

Below are the various ways of determining screen "blinding":

1. Without removing any screens, screen blinding can be detected if the hydraulic split worsens while the feed to the unit remains the same. When the split becomes unacceptable, the screens may need to be replaced or cleaned outside the unit with suitable solvents or higher pressure water jet spray cleaners to make certain enough accept volume is produced to satisfy your design needs.
2. Take a screen out of the unit, dry it, and hold it up to the light. If the screen is quite filmy compared to a clean screen of the same mesh, it is blinded.

⚠ **CAUTION: When installing or maintaining this unit, shut off and lock out power before removing guards. Follow all local and national electrical codes. Failure to comply could result in severe personal injury or property damage.**

3. Rub the screen surface and note whether a greasy trail results. If so, the screens are blinded.
4. Hold a wetted screen panel parallel with the ground and try to run water through it vertically. If the water runs off or puddles on the top side of the screen while not passing through the screen, then blinding is occurring.
5. One of the best methods of determining the degree of blinding is to place a screen panel under a low-powered microscope and visually inspect the openings in the cloth.

If the screens start to blind regularly, follow these instructions:

1. Install a cycle with hot water and a good cleaning agent to keep the screens clean. Consult your local SWECO Representative to help with this matter.

    **NOTE: Be sure to run the WWF for at least one minute with the back sprays on and the influent pump off to guarantee the screens stay clean to prevent bacterial build-up. This applies to starting or shutting down a unit. On units with cleaning cycles, there should be no influent flow during the cleaning. Never run the feed flow to the unit with the back sprays off.**

2. Check back spray pressure and spray nozzles to make certain they are not plugged. If blinding or slime buildup is severe, increase the back spray pressure to 180 psi.

GEAR REDUCER LUBRICATION

For proper lubrication of gear reducer, refer to gear reducer instruction manual following unit manual.

GEAR REDUCER DRAWINGS AND PARTS LIST

Your White Water Filter machine has either a Falk or Sterling gear reducer with 25 to 1 ratio. Refer to the nameplate on the gear reducer to determine your specific manufacturer and specifications.

A MANUAL SHOULD BE INCLUDED WITH THE UNIT MANUAL FOR MAINTENANCE REQUIREMENTS AND PARTS LIST FOR THE SPECIFIC GEAR REDUCER.

RECOMMENDED SPARE PARTS

For continuous, uninterrupted service from your SWECO White Water Filter, we recommend stocking the following spare parts for each unit:

- Two complete sets of screen panels (refer to Sales Order).
- One motor (refer to Sales Order).
- One gear reducer.

CHAPTER 4

Dimensional Data and Parts Lists and Drawings

This section includes drawings with dimensional data and drawings and parts lists for White Water Filter units WWF60-4L, WWF60-5L and WWF60-6L. A bill of material is provided stating the components used in the final assembly of each unit size. Also, included are drawings showing the location of each part stated in the parts lists.

The fourth digit of the SWECO part number designates the material of construction. If the fourth character is shown as a dash "_" this indicates that the part is offered in different types of steel. See note specifying material codes. When reordering, specify material type of unit or part. Order by part number NOT item number.

Refer to sales drawing (if applicable) specific to your order for unit dimensional information. Also, the parts listed on the sales drawing are specific to your unit and will take precedence over the parts listed in this chapter.

Accessories and replacement parts must meet the technical requirements. This can be guaranteed by using original parts from SWECO.

NOTE

Below is a list of available types of steel and their codes:
"C" represents carbon steel
"S" represents 304 stainless steel
"Y" represents 316L stainless steel
"K" represents special material

WHITE WATER FILTER UNIT
WWF60-4L
SPECIFICATIONS

Approximate Unit Weight:	8,000 Lbs.
Influent Connector:	12"
Effluent Connector:	18"
Concentrate Connector:	12"
Flanges:	Drilled 150# A.S.A. (optional)
Screen Panels (4L):	(36) 10" x 20"
Motor Horsepower (4L):	7-1/2

Refer to Figure 4-1 and 4-2 for the Dimensional Drawings and Figure 4-3 for the Parts List Drawing

DIMENSIONAL DATA (WWF60-4L)

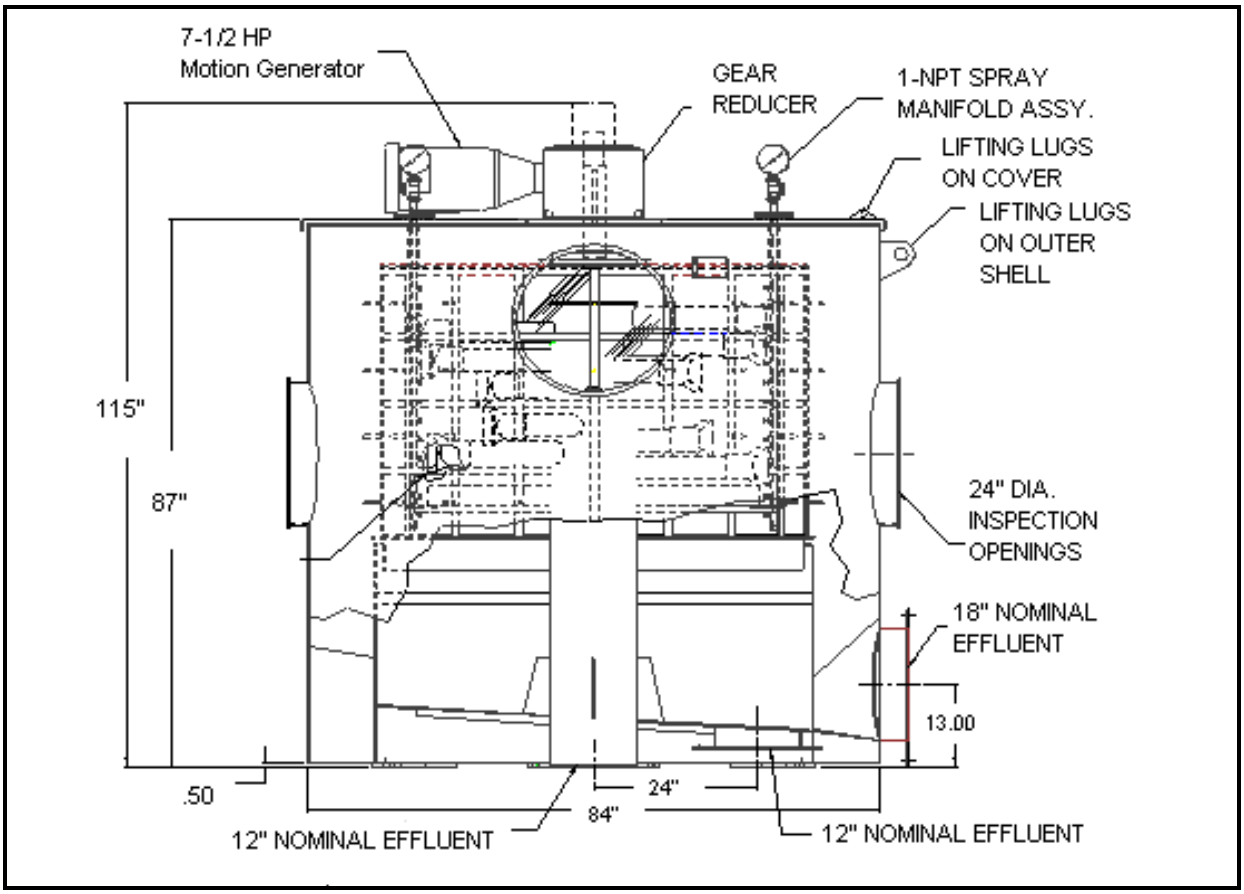


Figure 4-1
Elevation View, WWF60-4L

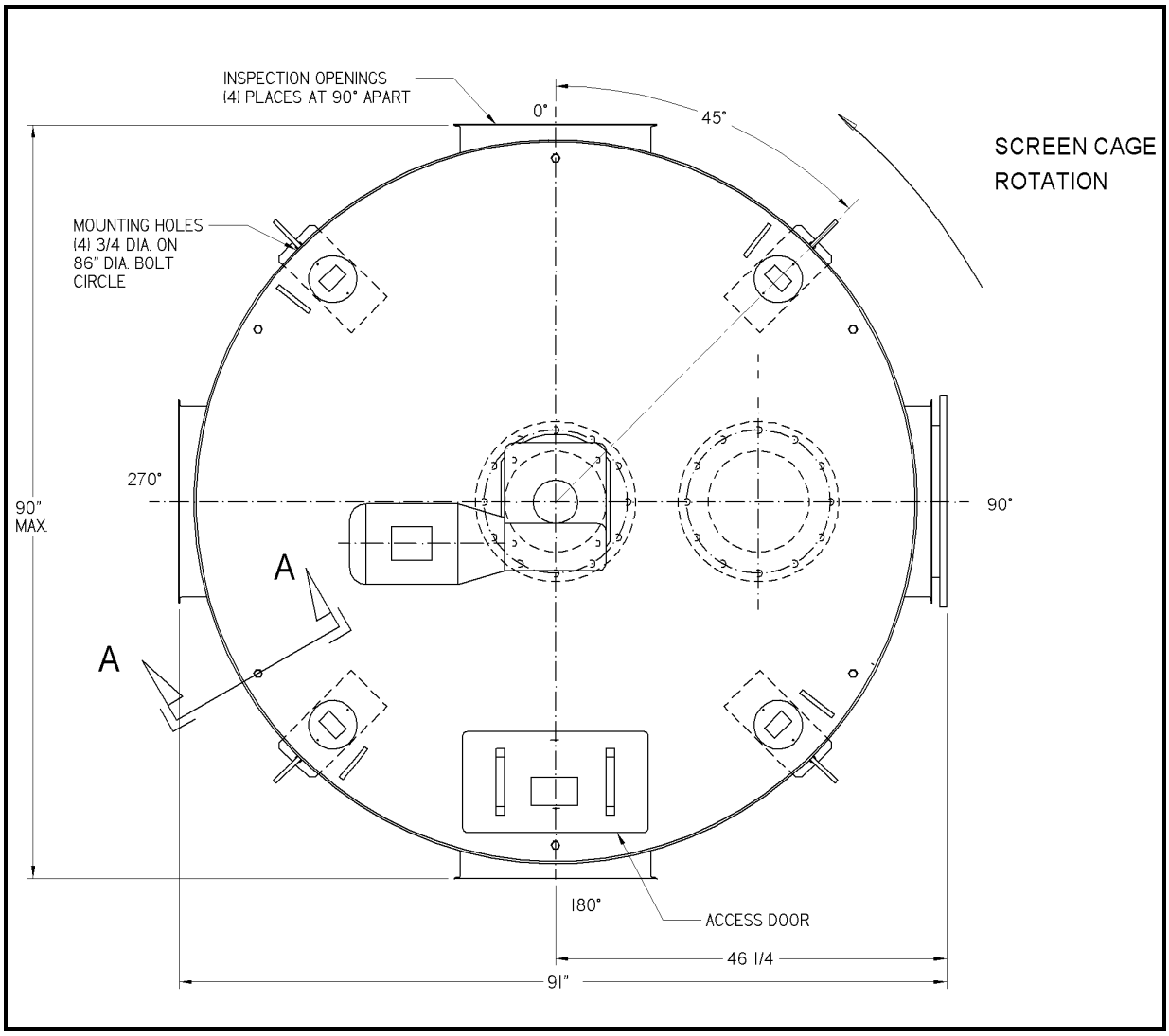


Figure 4-2
Orientation View, WWF60-4L

PARTS LIST FOR WWF60-4L FINAL ASSEMBLY

(Refer to Figure 4-3)

ITEM NO.	DESCRIPTION	SWECO PART NO.	QTY.
1	Tank Weldment	Consult SWECO	1
2	Access Cover	W30_04041	1
3	Flinger Weldment	W60_08010	1
4	Screen Cage Weldment	W60Y03040	1
5	Nozzle Weldment	W60_07050-00AA	12
6	Tank Head Weldment	W60_04135	1
7	Warning Label	S48K02139	1
8	Clamp Ring Assembly	S24S81124	4
9	Lexan Window	W30K01088	4
10	Name Plate	W30Y00015	1
11	Clamp Bar	W30_03071	36
12	Spray Bar Weldment	W30_04032	4
13	Spray Manifold Assembly (Includes #41-43)	W60_07000	4
14	Cover Gasket, Black Neoprene	W60N00033	1
15	Power Adapter Weldment	W60_05036	1
16	Window Gasket, Black Neoprene	S24N81104	4
17	Power Adapter Cover	W60_05046	1
18	Pressure Gauge (0-200 PSI)	00-282	4
19	Reducer Bushing, 1-MNPT X 1/4-FNPT, 316SST	02-494	4
20	Tee, 1-FNPT, 316SST	02-470	4
21	Hex Bushing, 1-MNPT X 3/4-FNPT, 316SST	02-478	8
22	Motor, 7-1/2 HP	See Sales Order	1
23	-	-	-
24	Falk or Sterling Gear Reducer 25:1 Ratio	00-728	1
25	Split Lock Washer, 1/4", SST	05-104	2
26	Socket Head Cap Screw, 1/4-NC X 3/4" Lg., SST	04-346	10
27	Flat Washer, 1/4", SST	05-162	6
28	Hex Head Cap Screw, 1/4-NC X 1” Lg., SST	04-584	42
29	Hex Nut, 1/4-NC, SST	03-146	42
30	Locking Handle, Brass	12-324	72
31	Hex Head Cap Screw, 5/8-NC X 1” Lg., SST	04-462	6
32	Hex Nut, 5/8-NC, SST	03-145	14
33	Split Lock Washer, 5/8", SST	05-176	16
34	Logo, 5"	00-712	4
35	Drive Screws, #4 X 3/16"	04-110	4
36	Lock Washer, 116	07-276	1
37	Lock Nut, TAN 16	07-275	2
38	Hex Head Cap Screw, 5/8-NC x 1-3/4" Lg., SST	04-620	4
39	Gasket for Tank Top, Closed Sponge Rubber	W30N04040	6 Ft.
40	Hex Head Cap Screw, 5/8-NC X 2” Lg., SST	04-917	6
41	Spray Manifold Weldment	W60_07001	1
42	Cap Pipe 3/4-NPT, SST	02-346	1
43	V-Spray Nozzle, Flat, 1/4”, SST, 1 GPM @ 40 PSI	02-462	13

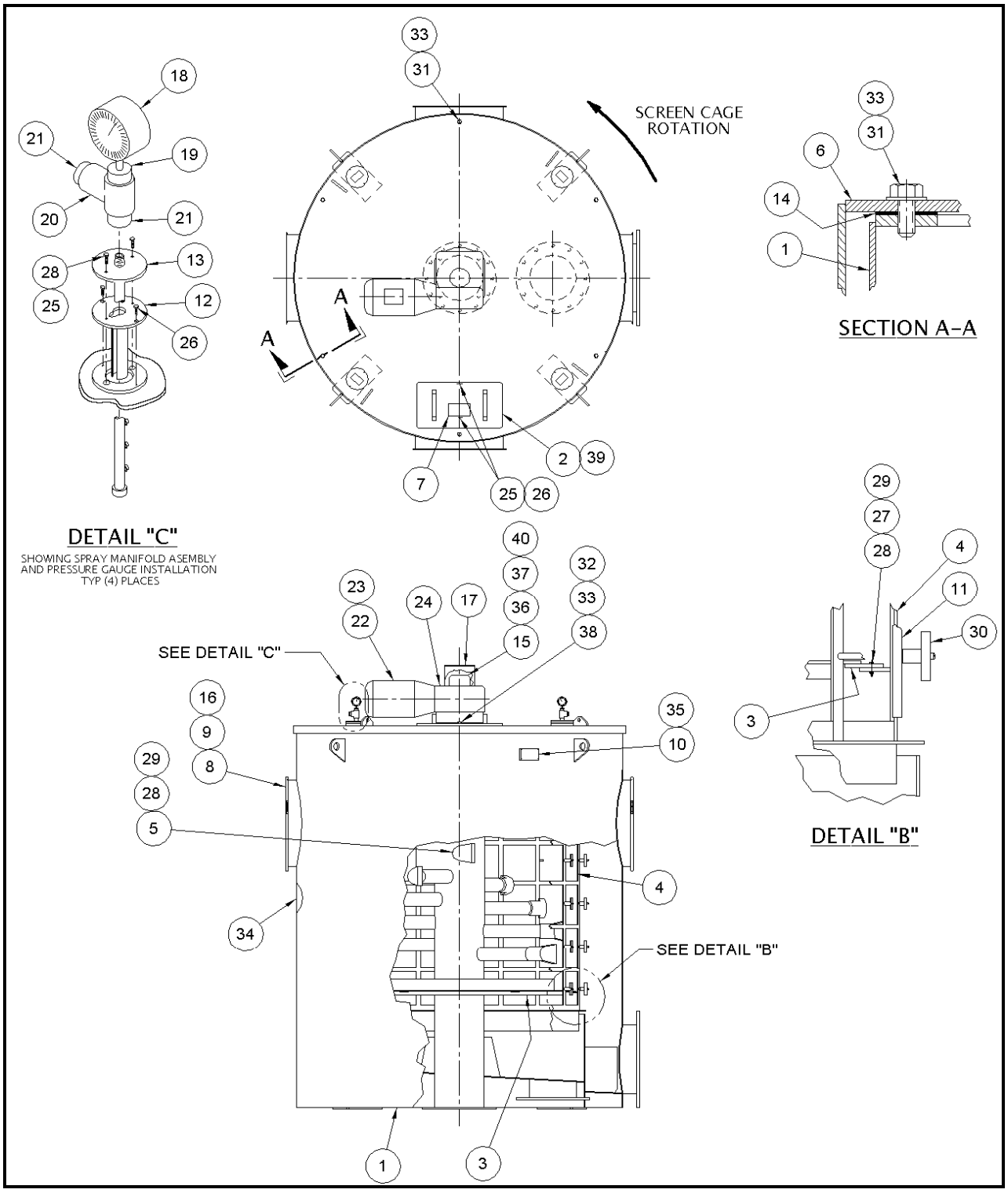
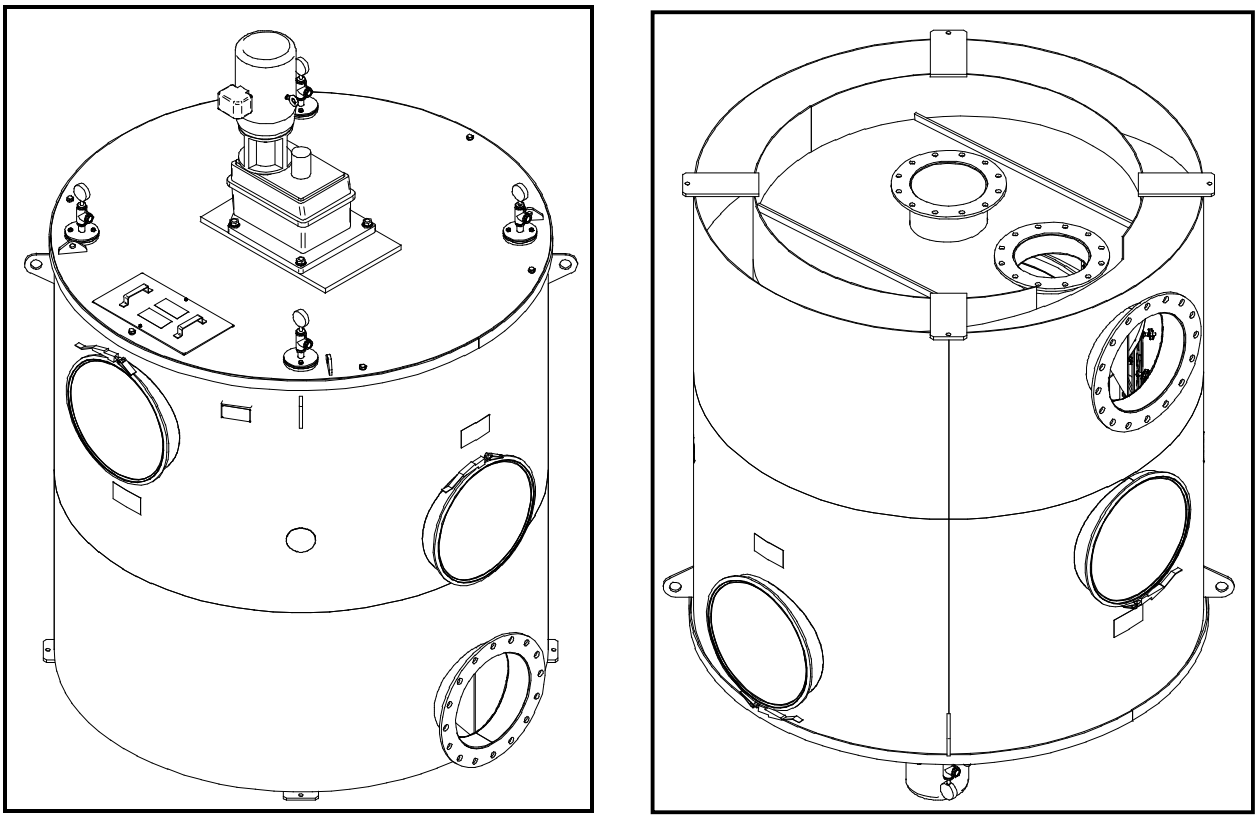


Figure 4-3
Final Assembly, WWF60-4L

PARTS LIST AND DRAWINGS FOR WWF60-5L

(Refer to Figure's 4-4 through 4-12)

SPECIFICATIONS	
Approximate Shipping Weight:	9,000 Lbs.
Approximate Operating Weight:	11,000 Lbs.
Influent Connector:	12"
Effluent Connector:	18"
Concentrate Connector:	12"
Flanges:	Drilled 150# A.S.A. (Optional)
Screen Panels:	(36) 10" x 20" and (18) 10" x 10"
Motor Horsepower:	15



Top/Front Bottom/Rear

Figure 4-4
Isometric View, WWF60-5L

Item No.	Description	SWECO Part No.	MS	304SST	316SST	Qty.
1	Tank Weldment	W60_01077-00	-	-	-	1
2	Gasket, 1/4" x 1-1/2", Poron Foam	RS3N81233	-	-	-	1
3	Tank Head Cover	W60_04135-00	-	-	-	1
4	Hex Head Cap Screw, 5/8-NC x 1.500 Long		04-133	04-604	04-1635	6
5	Split Lock Washer, 5/8"		05-117	05-176	05-245	16
6	Gasket, Tank Top, Closed Sponge Rubber	W30N04040	-	-	-	1
7	Tank Access Cover Weldment	W30_04041-00	-	-	-	1
8	Socket Head Cap Screw, 1/4-NC x .750 Lg.		04-265	04-346	04-1512	2
9	Split Lock Washer, 1/4"		05-113	05-235	05-227	2
10	Screen Cage Weldment	W60_19110-00	-	-	-	1
11	Flinger Weldment	W60_08010-00	-	-	-	1
12	Hex Head Cap Screw, 1/4-NC x 1.00 Long		04-226	04-584	04-1412	6
13	Flat Washer, 1/4"		05-142	05-162	05-106	6
14	Hex Nut, 1/4-NC		03-121	03-146	03-109	6
15	Power Adapter Weldment, 15 HP Drive	W60_05052-00	-	-	-	1
16	Socket Head Cap Screw, 5/8-NC x 2.0, Grade 5		04-1562	-	-	6
17	Flat Washer, 5/8"		05-167	05-174	05-318	6
18	Adapter Plate to Reducer	W60_05054	-	-	-	1
19	Hex Head Cap Screw, 5/8-NC x 2.0 Long		04-161	04-917	04-1145	4
20	Hex Nut, 5/8-NC		03-130	03-145	03-401	4
21	Mixer Drive, 25:1 Ratio	00-1488	-	-	-	1
22	Hex Head Cap Screw, 7/8-NC x 2.50 Long		-	04-1440	-	4
23	Split Lock Washer, 7/8"		-	1345397	05-177	4
24	Flat Washer, 7/8"		05-213	05-238	-	4
25	Hex Head Cap Screw, 1/2-NC x 1.25 Long, Grade 8		04-1425	-	-	4
26	Split Lock Washer, 1/2"		05-124	05-103	05-230	4
27	Nozzle Assembly	W60_07049-00	-	-	-	14
28	Clamp Bar	W30_19040	-	-	-	36
29	Handle, 3/8-NC, Brass	12-324	-	-	-	72
30	Spray Guard Weldment	W30_04032-00	-	-	-	4
31	Flat Socket Head Cap Screw, 1/4 x .750 Lg.		04-283	04-306	-	8
32	Spray Manifold Assembly	W60_07003-00	-	-	-	4
32a	Spray Manifold	W60_07004-00				1
32b	Pipe Cap, 3/4-NPT			02-346		1
32c	Nozzle, Flat V, 1/4			02-462		16
33	Hex Head Cap Screw, 3/8-NC x 1" Long		04-231	04-1585	04-212	8
34	Split Lock Washer, 3/8"		05-115	05-109	05-228	8
35	Bushing, 1-MNPT to 3/4-FNPT		-	-	02-478	8
36	Tee, 1-NPT		-	02-1393	02-470	4
37	Bushing, 1-MNPT to 1/4-FNPT		-	-	02-494	4
38	Pressure Gage, 0-200 PSI	00-282	-	-	-	4
39	Channel Gasket, Black Neoprene	S24N81104	-	-	-	4
40	View Window, 23-3/8" Dia.	W30K01088	-	-	-	4
41	Clamp Ring Assembly, Over Center	S24S01124	-	-	-	4
42	Name Plate Data	W30Y00015	-	-	-	1
43	Drive Screws, #4 x 3/16" Long		04-110	04-1246	-	4
44	Decal, Warning Eccentric Weights	S48K02137	-	-	-	4
45	Label, Warning for Guards and Door	S48K02136	-	-	-	1
46	Label, Instructions for Motor	S48K02139	-	-	-	1
47	Sweco Logo, 5"	00-712	-	-	-	2
48	Shipping Bracket Kit	W60_19126	-	-	-	1

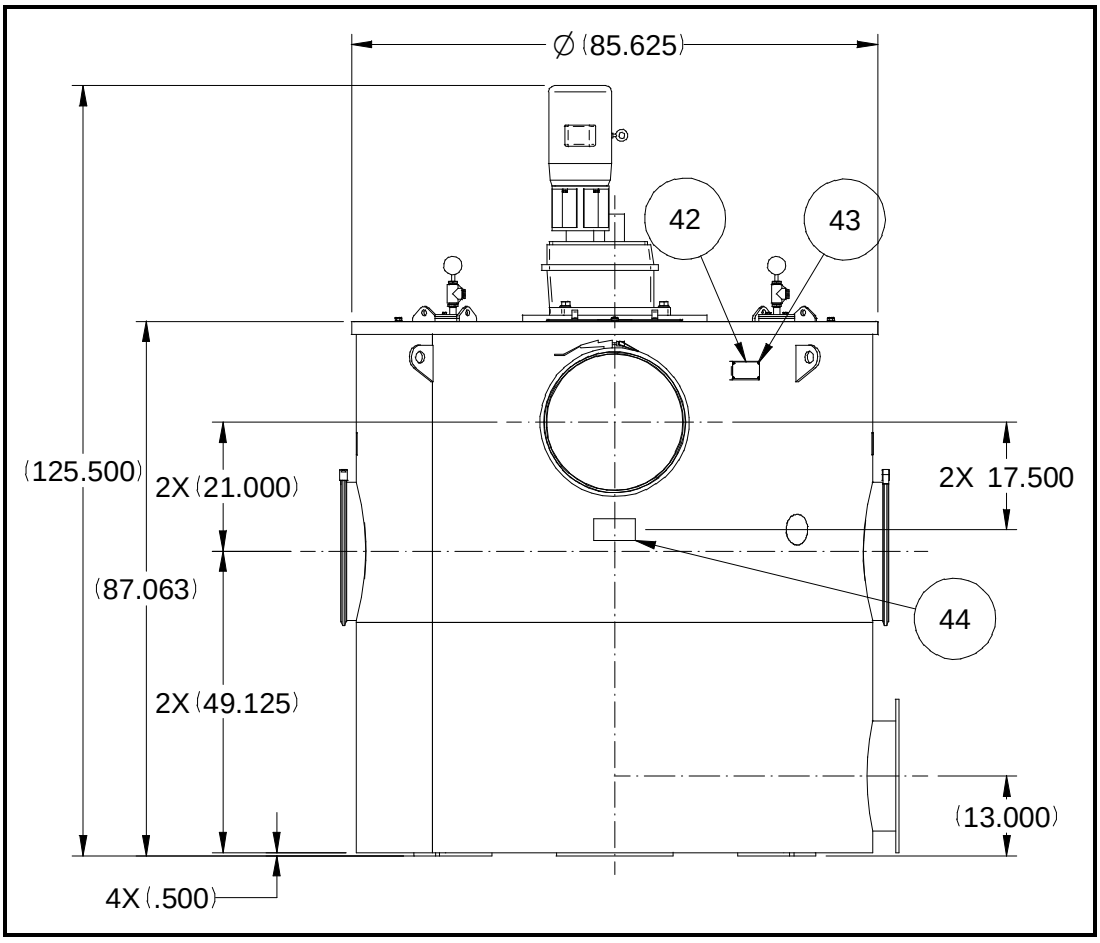


Figure 4-5
Elevation View, WWF60-5L

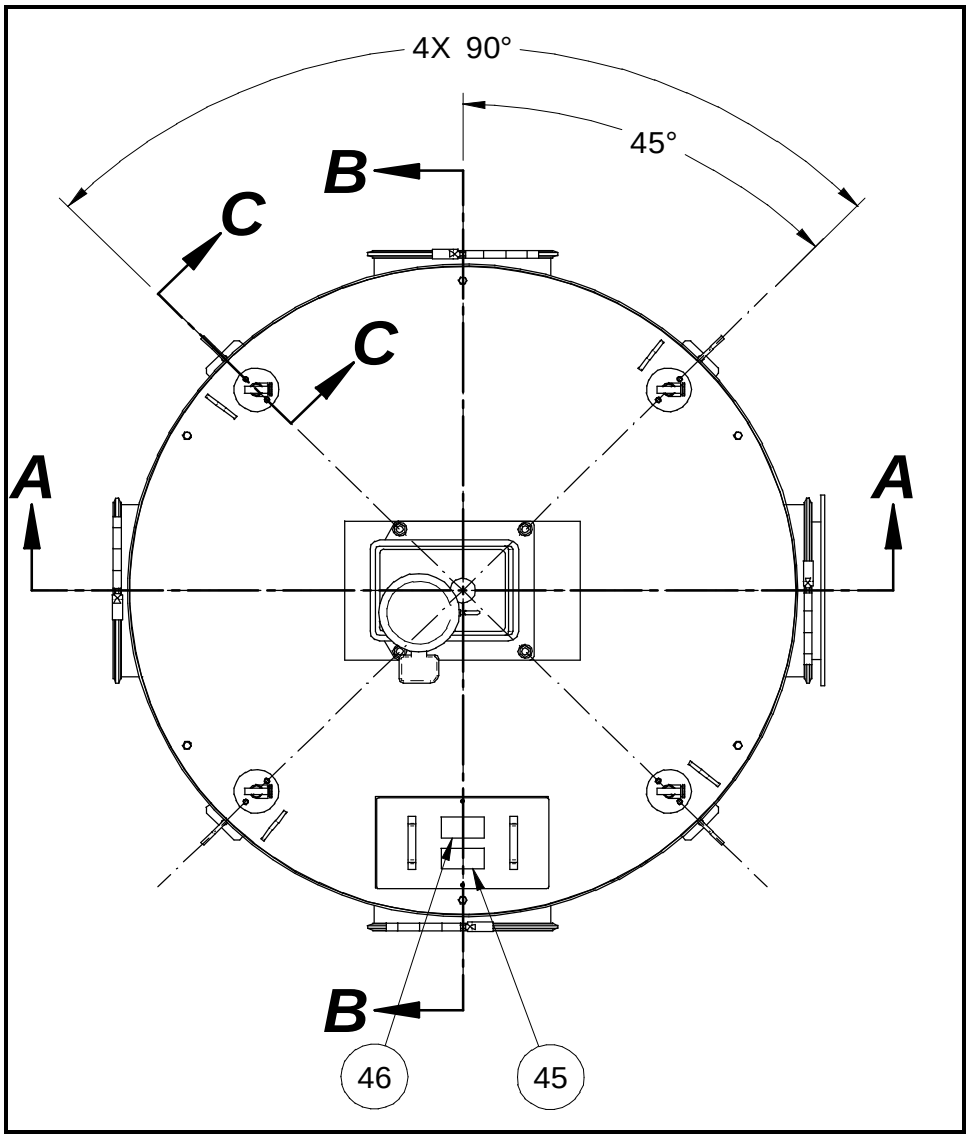


Figure 4-6
Orientation View, WWF60-5L

See Figure 4-8 for Section A-A
See Figure 4-9 for Section B-B
See Figure 4-10 for Section C-C

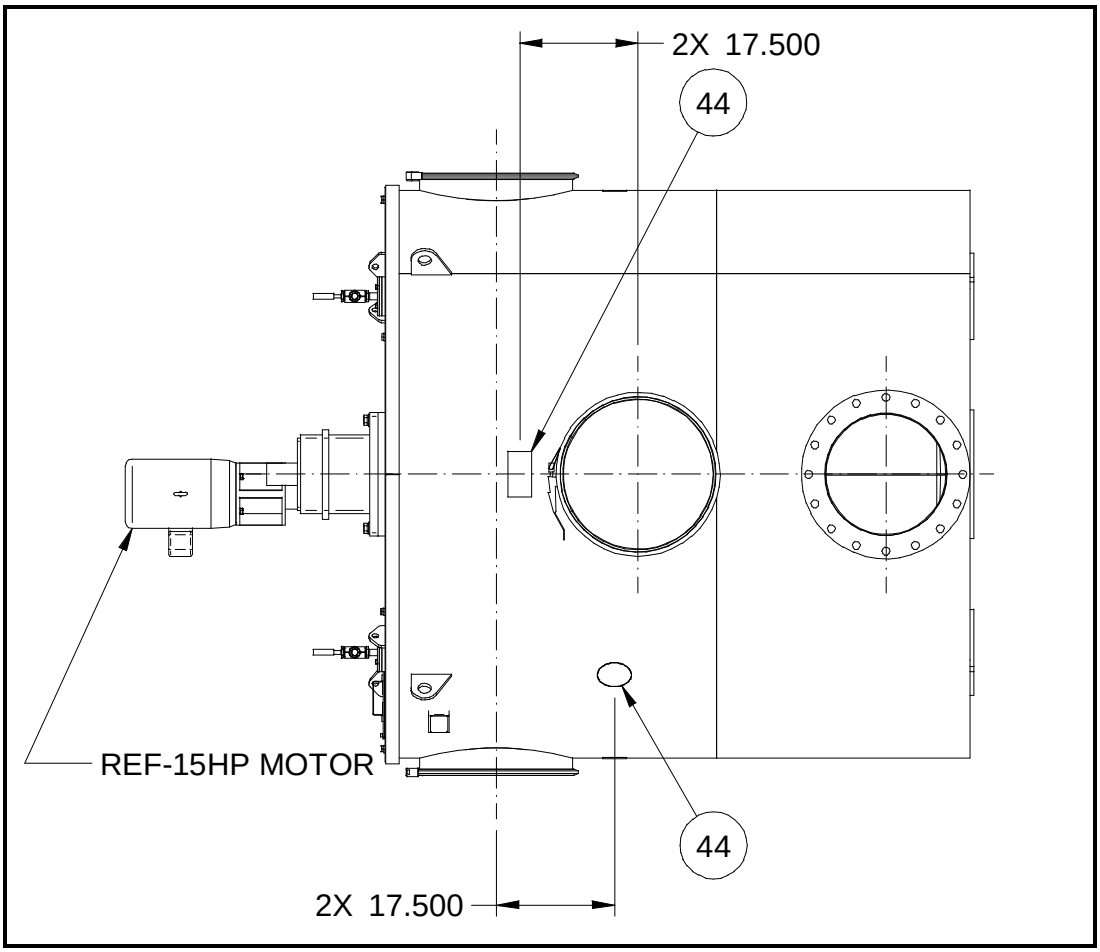


Figure 4-7
Side View, WWF60-5L

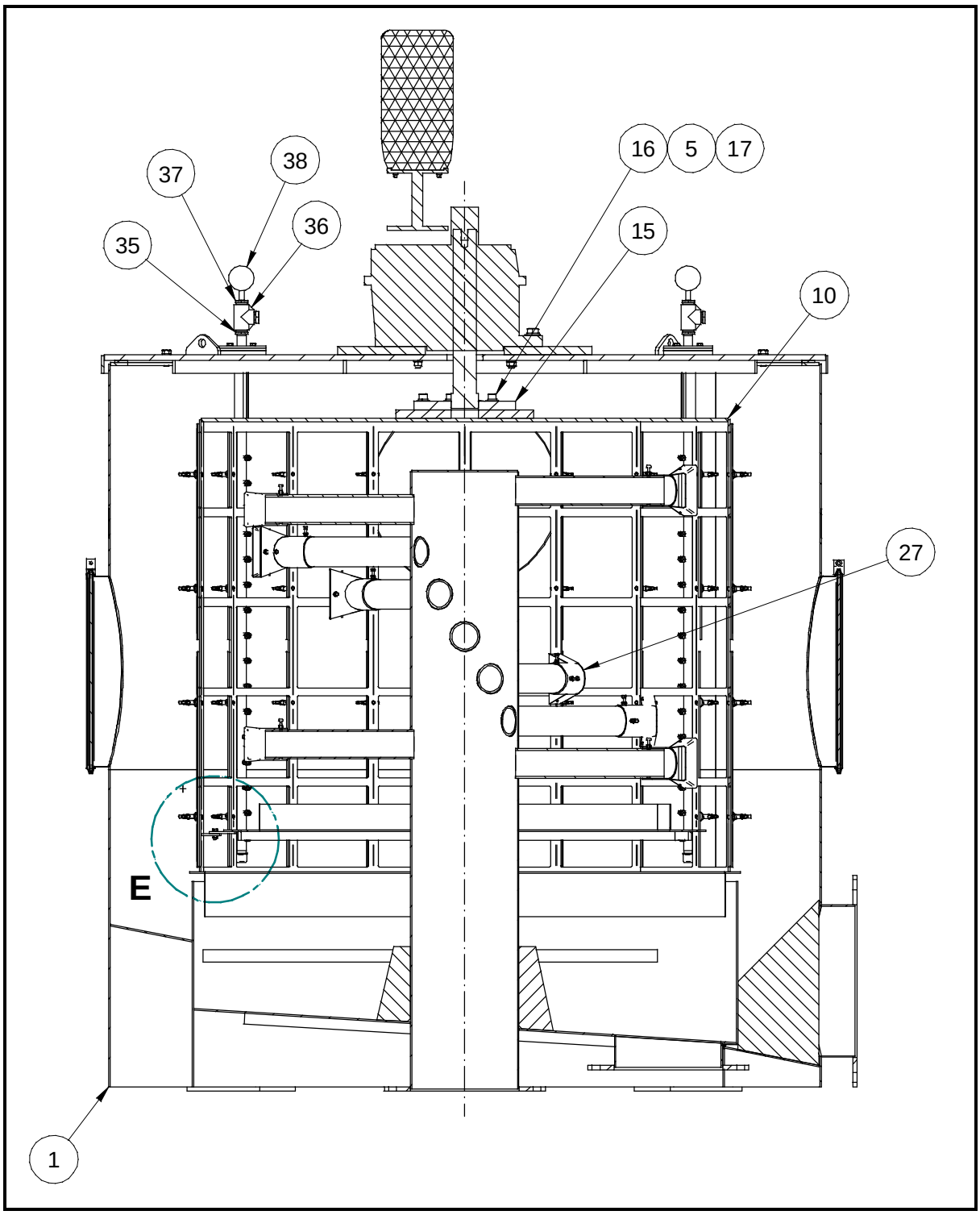


Figure 4-8
Final Assembly, Section A-A, WWF60-5L
(Per Figure 4-6)

See Figure 4-12 for Detail E

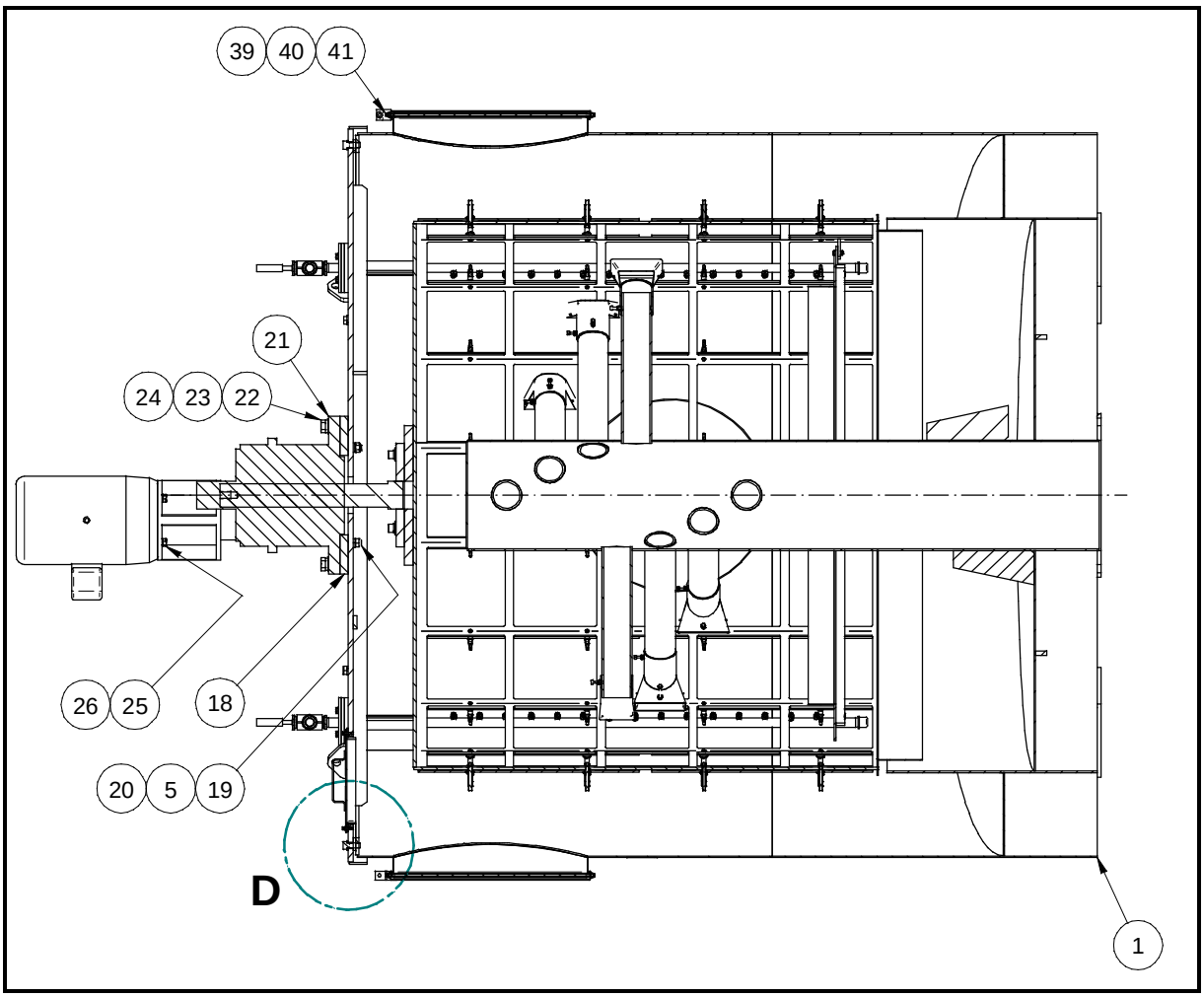


Figure 4-9
Final Assembly, Section B-B, WWF60-5L
(Per Figure 4-6)

See Figure 4-11 for Detail D

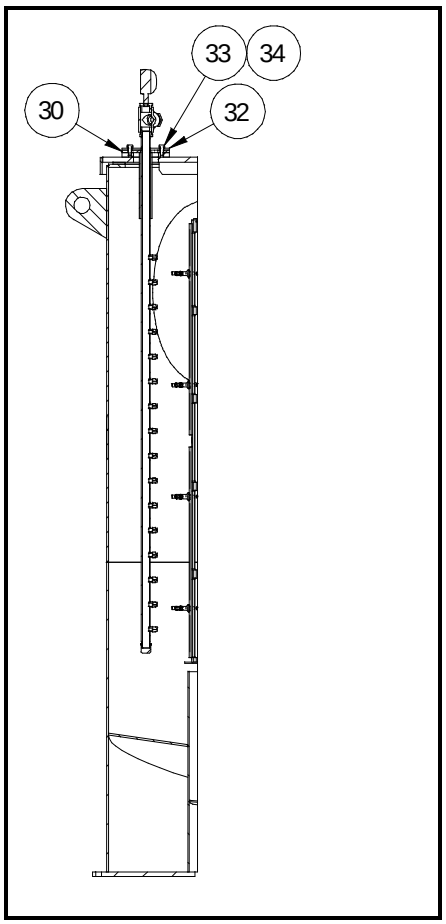


Figure 4-10
Final Assembly, Section C-C, WWF60-5L
(Per Figure 4-6)

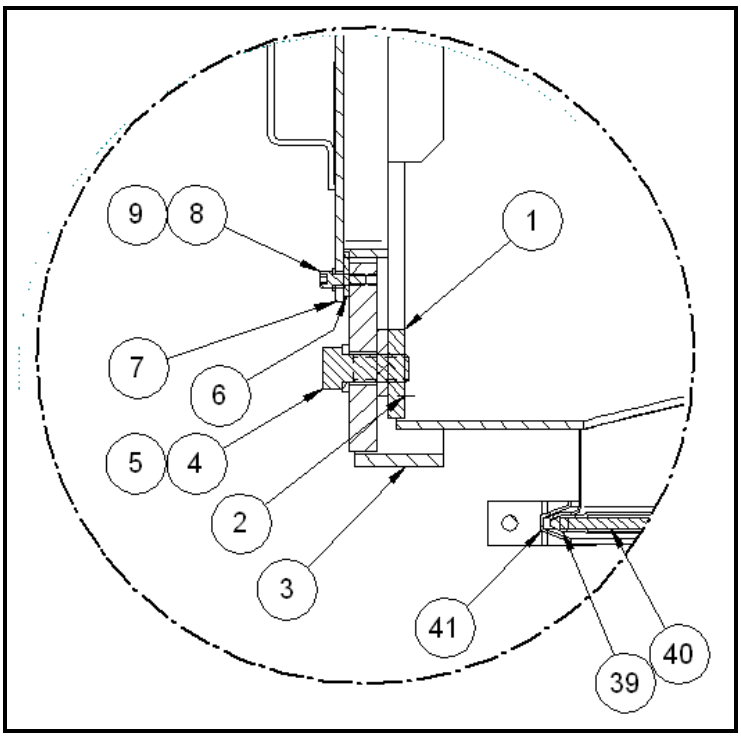


Figure 4-11
Final Assembly, Detail D, WWF60-5L
(Per Figure 4-9)

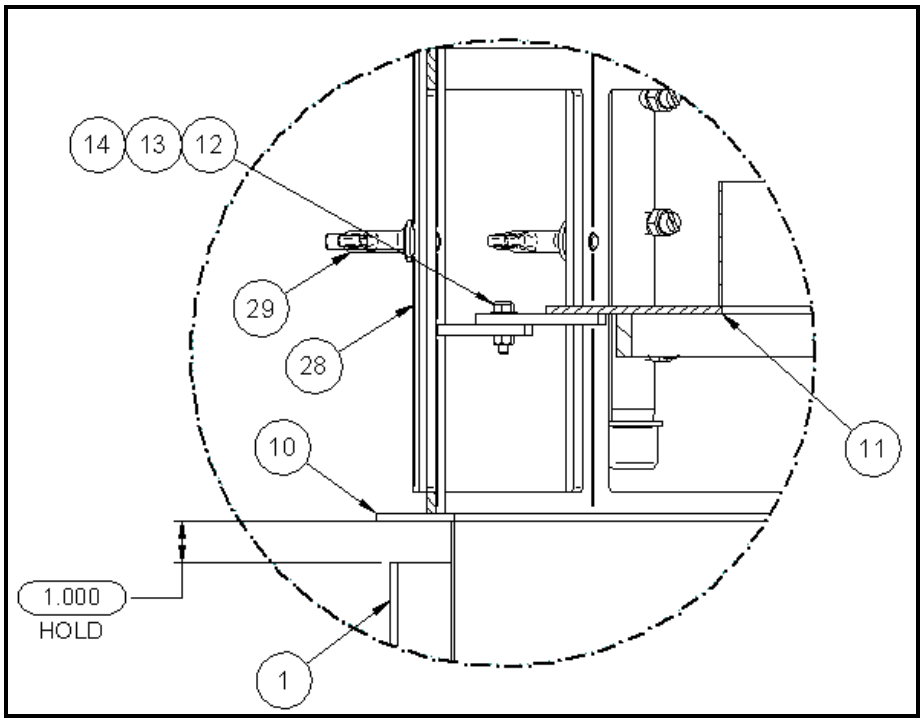


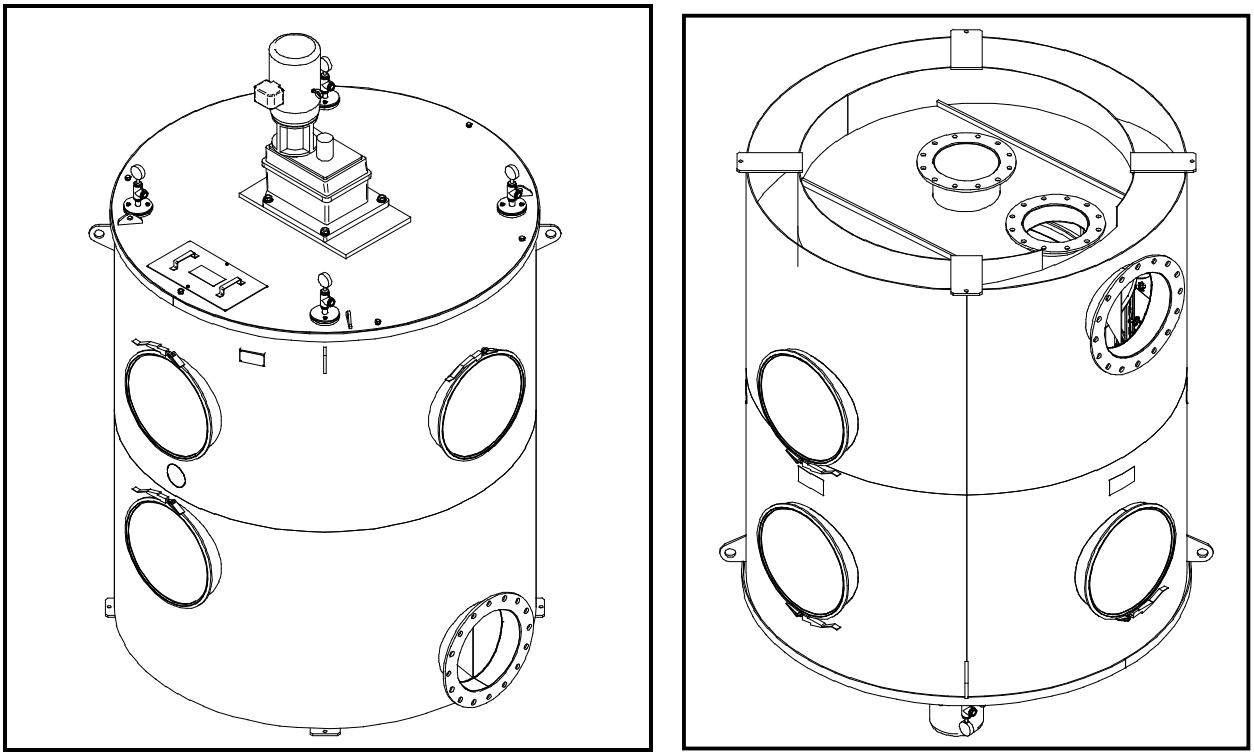
Figure 4-12
Final Assembly, Detail E, WWF60-5L
(Per Figure 4-8)

PARTS LIST AND DRAWINGS FOR WWF60S-6L

(Refer to Figure's 4-13 through 4-17)

SPECIFICATIONS

Approximate Shipping Weight:	10,000 Lbs.
Approximate Operating Weight:	12,000 Lbs.
Influent Connector:	12"
Effluent Connector:	18"
Concentrate Connector:	12"
Flanges:	Drilled 150# A.S.A. (Optional)
Screen Panels:	(54) 10" x 20"
Motor Horsepower:	15



Top/Front Bottom/Rear

Figure 4-13
Isometric Views, WWF60-6L

ITEM NO.	DESCRIPTION	SWECO PART NO.	MS	304SST	316SST	QTY.
1	Tank Weldment	W60_01067-00	-	-	-	1
2	Gasket, 1/4" x 1-1/2", Poron Foam	RS3N81233	-	-	-	1
3	Tank Head Cover Weldment	W60_04135-00	-	-	-	1
4	Hex Head Cap Screw, 5/8-NC X 1.500	-	04-133	04-604	04-1635	6
5	Split Lock Washer, 5/8"	-	05-117	05-176	05-245	16
6	Gasket, Tank Top, Closed Sponge Rubber	W30N04040	-	-	-	1
7	Tank Head Access Cover Weldment	W30_04041-00	-	-	-	1
8	Socket Head Cap Screw, 1/4-NC x .750 Long	-	04-265	04-346	04-1512	2
9	Split Lock Washer, 1/4"	-	05-113	05-235	05-227	2
10	Screen Cage Weldment	W60_19112-00	-	-	-	1
11	Flinger Weldment	W60_08010-00	-	-	-	1
12	Hex Head Cap Screw, 1/4-NC X 1.00 Long	-	04-226	04-584	04-1412	6
13	Flat Washer, 1/4"	-	05-142	05-162	05-106	6
14	Hex Nut, 1/4-NC	-	03-121	03-146	03-109	6
15	Power Adapter Weldment, 15 HP Drive	W60_05052-00	-	-	-	1
16	Socket Head Cap Screw, 5/8-NC X 2.00 Long, Grade 5	-	04-1562			6
17	Flat Washer, 5/8"	-	05-167	05-174	05-318	6
18	Adapter Plate	W60_05054	-	-	-	1
19	Hex Head Cap Screw, 5/8-NC X 2.00 Long	-	04-161	04-917	04-1145	4
20	Hex Nut, 5/8-NC	-	03-130	03-145	03-401	4
21	Mixer Drive, 25:1 Ratio	00-1488	-	-	-	1
22	Hex Head Cap Screw, 7/8-NC X 2.50 Long	-	-	04-1440		4
23	Split Lock Washer, 7/8"	-	-	1345397	05-177	4
24	Flat Washer, 7/8"	-	05-213	05-238	-	4
25	Hex Head Cap Screw, 1/2-NC X 1.250 Long, Grade 8	-	04-1425			4
26	Split Lock Washer, 1/2"	-	05-124	05-103	05-230	4
27	Nozzle Assembly	W60_07049-00	-	-	-	16
28	Clamp Bar	W30_19078	-	-	-	36
29	Handle, 3/8-NC, Brass	12-324	-	-	-	108
30	Spray Guard Weldment	W30_04032-00	-	-	-	4
31	Flat Socket Head Cap Screw, 1/4-NC X .750	-	04-283	04-306		8
32	Spray Manifold Assembly	W60_07006-00	-	-	-	4
32a	Spray Manifold Weldment	W60_07007-00				1
32b	Nozzle, 1/4, Flat V, 303SST, 1 GPM@40 PSI	02-462				19
32c	Pipe Cap, 3/4-NPT		-	02-346	-	1
33	Hex Head Cap Screw, 3/8-NC X 1.00 Long	-	04-231	04-1585	04-212	8
34	Split Lock Washer, 3/8"	-	05-115	05-109	05-228	8
35	Bushing, 1-MNPT to 3/4-FNPT		-	-	02-478	8
36	Tee, 1- NPT	-	-	02-1393	02-470	4
37	Bushing, 1-MNPT to 1/4-FNPT		-	-	02-494	4
38	Pressure Gage, 0-200 PSI	00-282	-	-	-	4
39	Channel Gasket, Black Neoprene	S24N81104	-	-	-	6
40	View Window, 23-3/8" Dia.	W30K01088	-	-	-	6
41	Clamp Ring Assembly, O/C	S24S01124	-	-	-	6
42	Name Plate Data	W30Y00015	-	-	-	1
43	Drive Screw, #4 X 3/16" Long, Right Hand Type “U”	-	04-110	04-1246	-	4
44	Decal, Warning Eccentric Weight	S48K02137	-	-	-	4
45	Label Warning, Belt Guard	S48K02136	-	-	-	1
46	Label, Instructions for Motor	S48K02139	-	-	-	1
47	SWECO Label, 5"	00-712	-	-	-	2
48	Shipping Bracket Kit	W60_19126	-	-	-	1

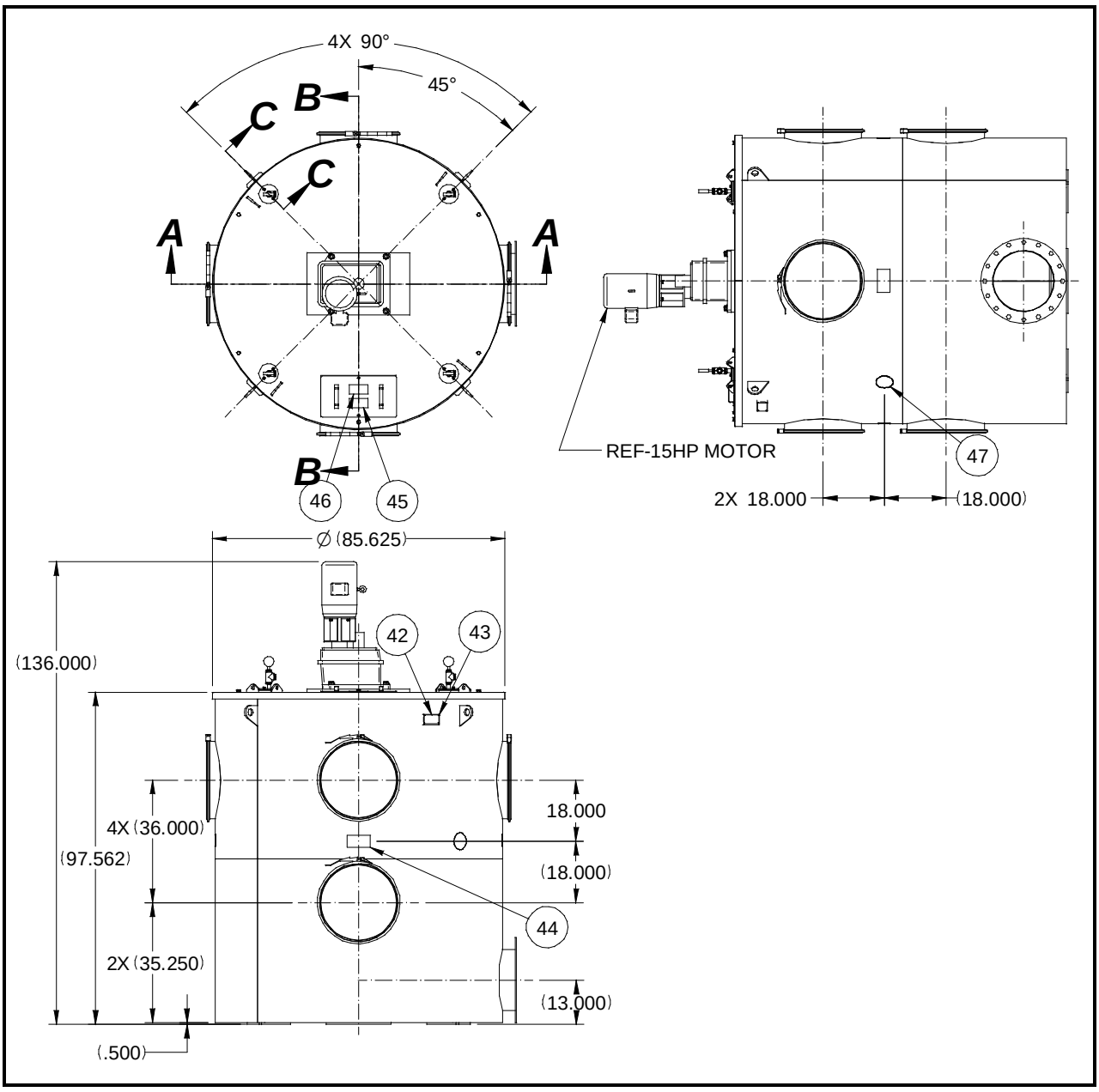


Figure 4-14
Final Assembly, WWF60-6L

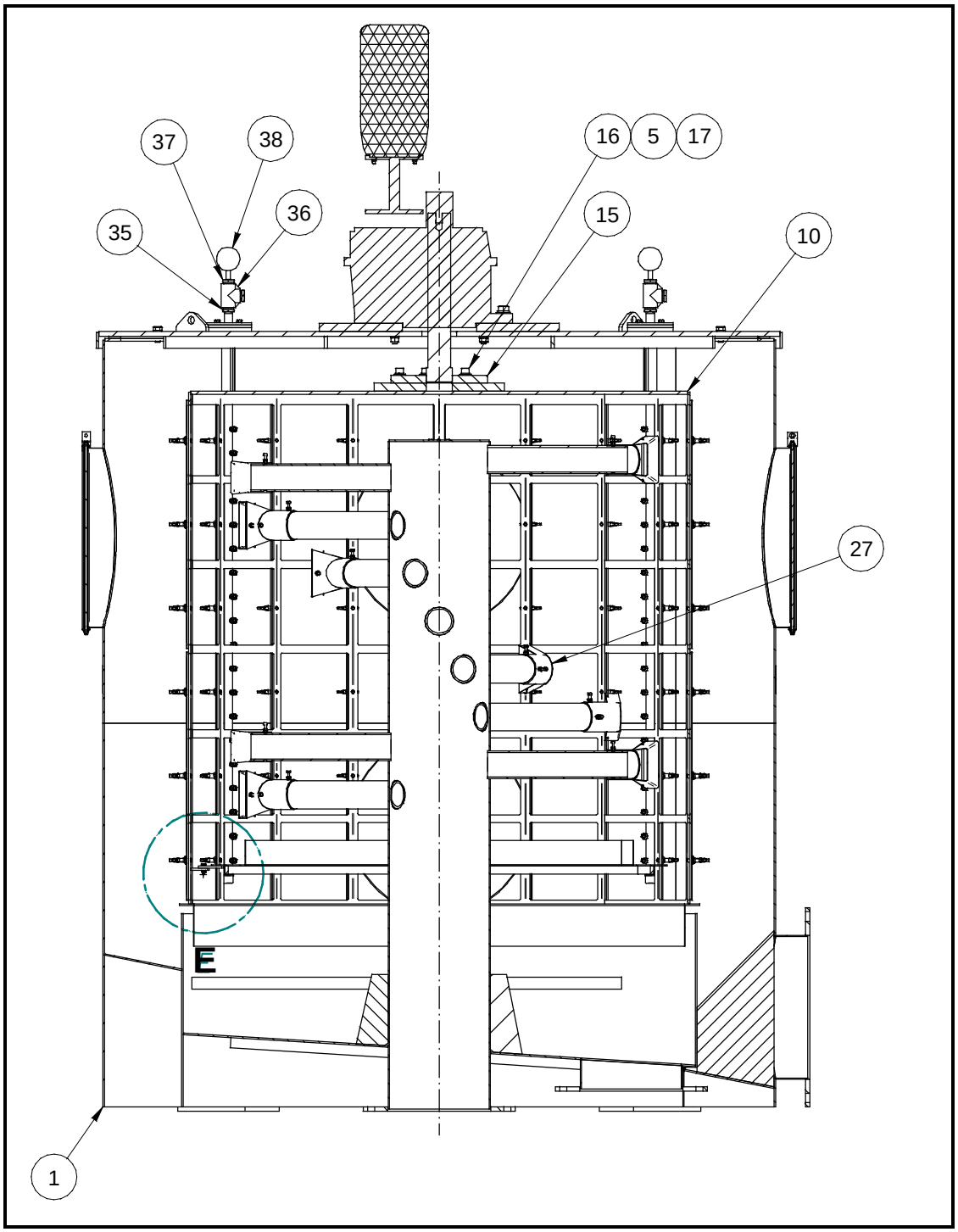


Figure 4-15
Final Assembly, Section A-A, WWF60-6L
(Per Figure 4-14)

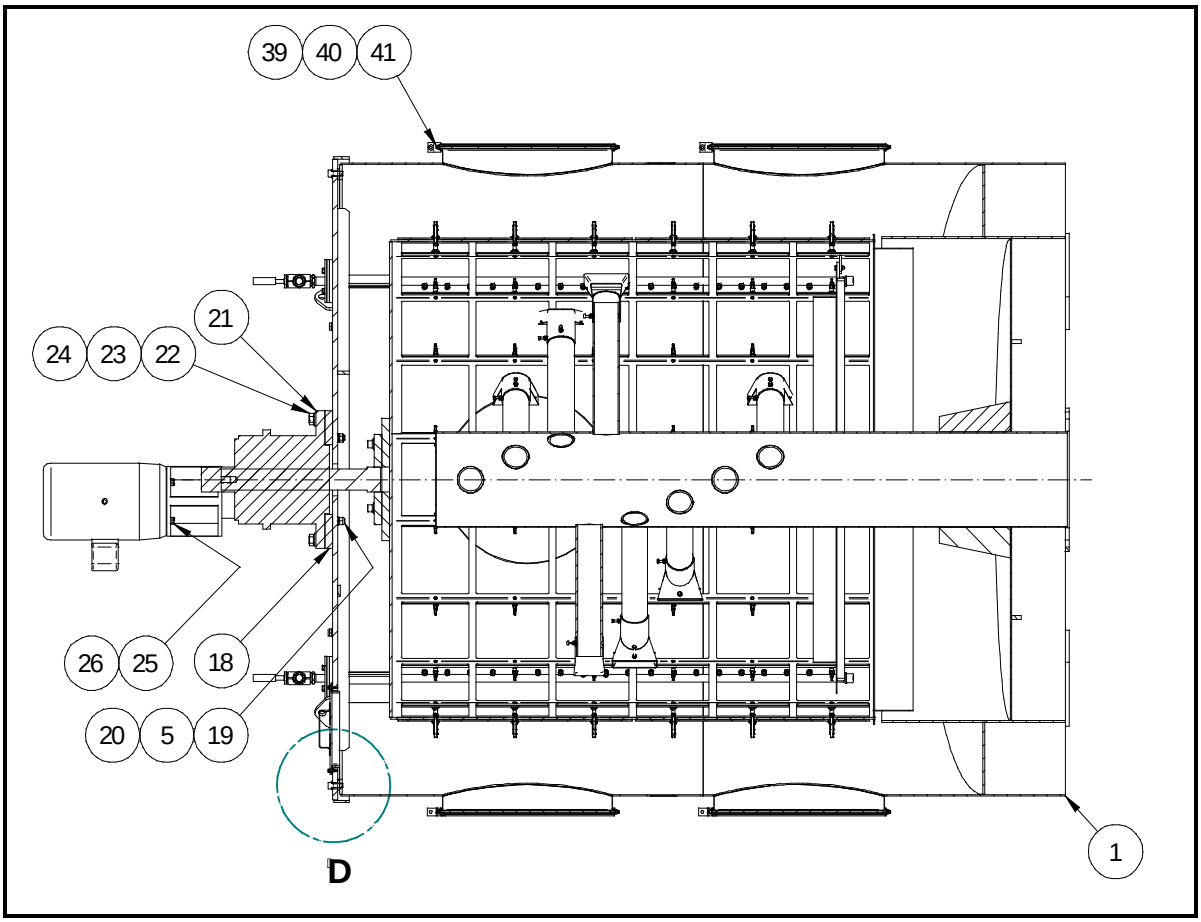


Figure 4-16
Final Assembly, Section B-B, WWF60-6L
(Per Figure 4-14)

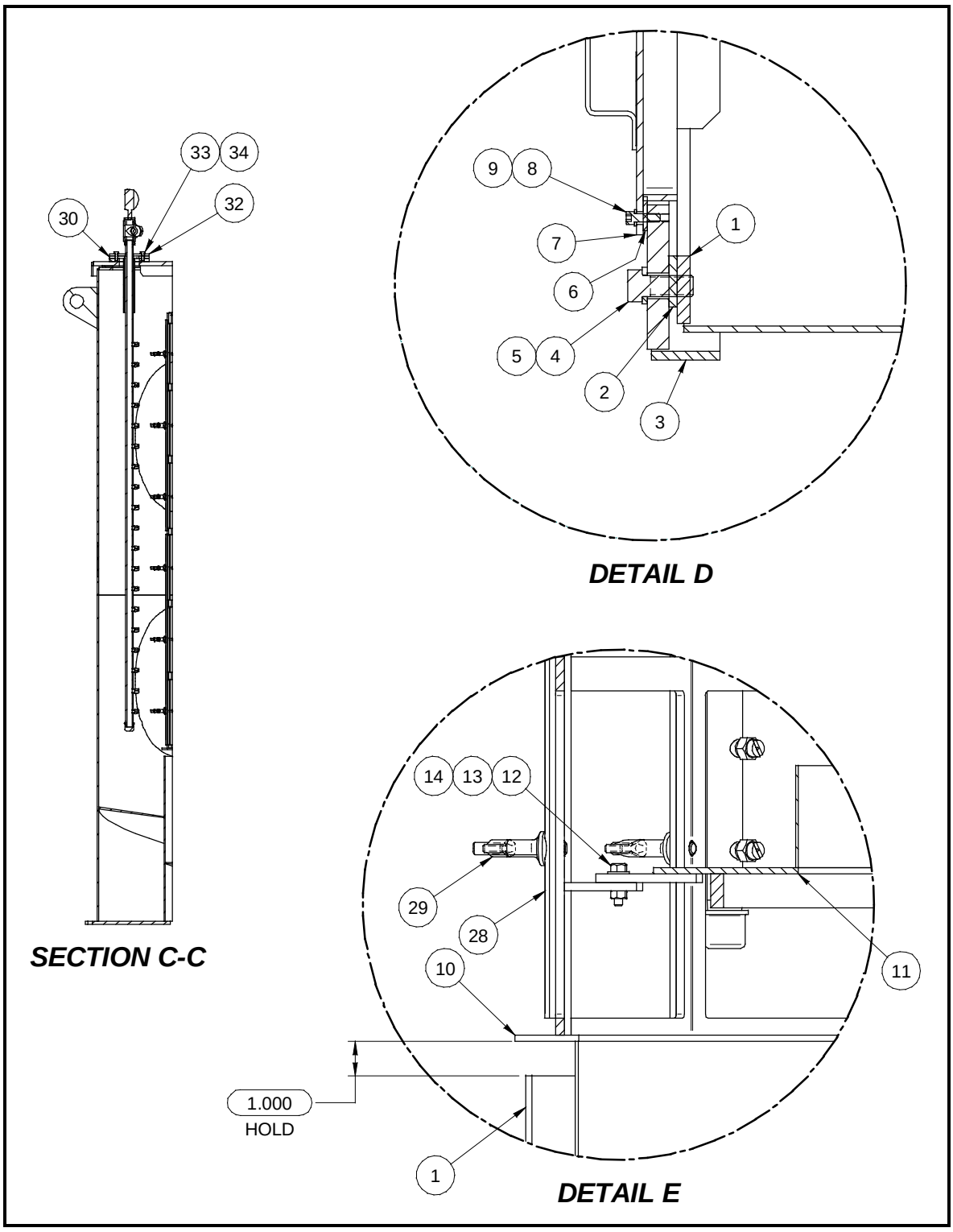


Figure 4-17
Final Assembly, Section and Detail Views, WWF60-6L

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