



Gutter/Filter & Miscellaneous Operation & Maintenance Manual

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ATTENTION!

This Instruction Manual includes important safety information that should be read by the Engineer, Contractor, Owner, Operator, and Maintenance Personnel.

Paddock Recommends That A Copy of The Filter Operation Instructions Be Posted In The Filter Room.

OPERATION & MAINTENANCE MANUAL

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BULKHEAD OPERATIONS & MAINTENANCE MANUAL

SPECIAL INSTRUCTIONS

SAFETY INFORMATION

This bulletin includes important safety information that should be read by owners, managers, service personnel, and anyone in charge of the pool or pool area. Also, we suggest a copy be posted for quick reference.

1. Only personnel trained and familiar with the proper use of pool chemicals should handle acid, liquid chlorine, or chlorine compounds. Chemicals should never be used when swimmers are in the pool. Acid and liquid chlorine should always be stored, carried, or handled in plastic containers.
2. If grating is a part of the perimeter system, it should be kept firmly always clamped down and in good repair. When a section of grating becomes loose or damaged that area must be immediately covered, and a replacement of grating ordered. Under no circumstances should swimmers be allowed to use any portion of the perimeter that contains loose or damaged grating. Perimeter grating is not intended for foot traffic. Swimmers should be advised not to walk, stand, or jump on perimeter grates.
3. Ladders and grab rails are intended for the use of one swimmer at a time; they are not designed for handstands or other gymnastic stunts, and they should not be used for this purpose. Ladder treads should be inspected regularly. If a tread becomes loose or damaged, the ladder should be taken out of service until repairs are made.
4. Lifeguard Chairs are intended for the individual use of trained "on duty" lifeguards, one (1) guard per chair. Lifeguard chairs are not to be used by swimmers, spectators, or by more than one (1) person at a time. There should be no diving from portable lifeguard chairs. Umbrellas should be closed or removed from portable lifeguard chairs during windy conditions. All frame connections are to be checked for tightness. The seat is bolted to the frame assembly. It is important to advise all users to periodically check to determine that the studs are firmly fastened to the seat and the nuts are tight. If they become loose or detached, it could result in serious injury. Regarding outdoor installations or usage, it is suggested that the lifeguard chair(s) / or (seat is to be removed) and stored inside during the winter.
5. Starting Platforms should only be used by trained competitive swimmers or under the direct supervision of an instructor. Swimmers should execute shallow racing dives only. Impact with the pool bottom can cause severe injury. Starting platforms have warning labels and inform the purchaser of the need to remove the platforms during non-usage. If your starting platforms do not have warning labels, please contact the manufacturer immediately.
6. Bulkheads are designed and built for strength and safety. Any grating should be kept fully secured to avoid injury. **NO swimming under bulkhead. Never use bulkhead as a support or staging for equipment.** The bulkhead includes a compressor; please refer to owner's manual provided with the unit.

For questions concerning the usage of our equipment, please contact Paddock Pool Equipment Co., customer service.

Notes and Tips

From the Engineering Department

General notes:

1. Filter aid(s) such as alum are generally not required. Consult manufacturer before use.
2. Clean and repack the recirculation pump and/or check the seal and overhaul the motor at least once a year.
3. Establish definite periods for using the vacuum cleaner and skimmer in removing leaves and other foreign matter from the pool.
 - 3.1. Do not allow nails, pins, or other metal articles to remain in the pool for any length of time, as a rust stain will mar the finish.
 - 3.2. If the pool is empty for any reason, do not allow any walking on the floor, as stains and marks will result.
4. Brush walls and the floor of the pool frequently.
5. Filter(s) requires the pump strainer(s) to be cleaned regularly to eliminate the pump operating without water.
 - 5.1. Leaves become waterlogged, sink to the bottom of the pool, are sucked into the strainer, and clog it. This causes the pump to run dry, overheating the motor and damaging the seal.

If you have a sand filter:

1. Only use a grade no. 20, or 16/20 filter sand.
2. Periodically check the filter media and remove any accumulation of pine needles, grass cuttings or the like. This type of material may enter the tank through the overdrain distributor and become trapped therein.
3. If an amount of fine sand or similar material has accumulated in the bottom of a new pool prior to start-up, it is recommended that the pool be vacuumed to waste.
4. Pressure sand filter(s) are equipped with an automatic air relief valve to expel all air from the tank interior. Air relief valve(s) should be inspected periodically to insure proper operations.

If you have a regenerative filter:

1. Only use a premium grade of Perlite or DE for filtration media.
2. Do not use flocculant agents as this can damage the filter elements.

Specific notes for your filter can be found in the filter instruction portion of this manual.

Pool Chemistry & Sanitation

Helpful Hints & Suggestions

National Swimming Pool Foundation: Water Chemistry Guidelines

The table below presents target ranges for important water chemistry parameters. These guidelines were last updated for the 2014 edition of the NSPF® Pool & Spa Operator™ Handbook and are taught to students in CPO® (Certified Pool/Spa Operator) classes (generally commercial pool operators). For more information on CPO classes, go to www.nspf.org.

Recommended Guidelines for Water Quality

Parameter	Min.	Ideal	Max.	Who
Free Chlorine, ppm	1.0	2.0–4.0	5.0	Pools, Waterparks
	2.0	3.0–5.0	10.0	Spas
Combined Chlorine, ppm	0	0	0.2	Pools, Waterparks
	0	0	0.5	Spas
Total Bromine, ppm	2.0	4.0–6.0	10.0	All types
PHMB, ppm	30	30–50	50	All types
pH	7.2	7.4–7.6	7.8	All types
Total Alkalinity, ppm as CaCO ₃	60	80–100* 100–120**	180	All types
Total Dissolved Solids, ppm	NA	NA	1,500 over start-up***	All types
Calcium Hardness, ppm as CaCO ₃	150	200–400	1,000	Pools, Waterparks
	100	150–250	800	Spas
Heavy Metals	None	None	None	All types
Visible Algae	None	None	None	All types
Bacteria	None	None	Local code	All types
Cyanuric Acid, ppm	0	30–50	****	All types
Temperature, °F	78°F	80.5°F	82°F	Competition pools
	-	Personal preference	104°F	Other pools
	-	-	104°F	Spas
Ozone, ppm	-	-	0.1 over 8 hr. time-wtd. avg.	All types
ORP	Calibrate to disinfectant level*****			All types

† These commonly accepted chemical parameters do not supersede product label directions or local or state codes and regulations.

* For calcium hypochlorite, lithium hypochlorite, or sodium hypochlorite.

** For sodium dichlor, trichlor, chlorine gas, BCDMH.

*** Including TDS contribution of salt found in chlorine generating systems.

**** Dictated by state or local codes. Typically 100 ppm. (Some codes are higher, some are lower.)

***** Some state or local codes may dictate a minimum and maximum.

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RECOMMENDED GUIDELINES FOR WATER QUALITY

SEE LOCAL HEALTH REGULATION

- Ensure water chemistry is properly maintained and consistently monitored.
- Indoor pools on average use approximately 1/4 lb. to 1/2 lb. of chlorine per 10,000 gallons of water per day.
- Outdoor pools on average use approximately 2/3 lb. to 1 1/2 lb. of chlorine per 10,000 gallons of water per day.
- Shock the pool when combined chlorine is .2 ppm or more.
 - Add one (1) pound of calcium hypochlorite per 10,000 gallons of water.
 - Add the chlorine to a bucket of water. Stir until it dissolves, then add it to pool water.
- To find your combined chlorine, take a free chlorine reading. Then, subtract that from your total chlorine. This number will be your combined chlorine.

There are different types of chlorine feed systems: Calcium Hypochlorite, Sodium Hypochlorite (Bleach) and Trichlor. It is best to set the chlorine feed in the **mid-range** position and feed at a steadier continuous rate. This may also prolong equipment life by limiting on/off cycles. If the feed is set too **low**, residuals could drop below acceptable levels therefore causing undesirable conditions or even pool closure. If the feed rate is set too **high**, residuals can overshoot therefore fading swimsuits or undesirable conditions or even pool closure. Free residual will drop during periods of usage in pools and in inclement weather on outdoor pools. Maintain about 0.5 ppm above the desired operating rate to help offset bather load consumption.

Total Alkalinity

Total alkalinity acts as a “buffer” in the water to prevent large changes in pH. Higher than desired alkalinity can result in cloudy water, with the pH measuring more than 8. Low alkalinity can cause corrosion of piping and pitting of concrete or plaster surfaces as well as erratic pH swings. Generally, maintain 80-100 ppm total alkalinity but if calcium levels climb above 700 ppm, alkalinity levels may need to be lowered below 80 in order to maintain overall water balance. Contact your pool specialist for recommendations.

pH

The pH scale measures the acidity or basicity of pool water on a 1 (most acidic) to 14 (most basic) scale. Because pH is a logarithmic scale even a 0.1 or 0.2 pH unit change can have a noticeable effect on water balance. Often a slightly cloudy pool can be made crystal clear by lowering the pH by 0.1 or 0.2 particularly if the water is around 7.6.

Sodium Hypochlorite - (Liquid Bleach)

If sodium hypochlorite is used, a little over a pint of Muriatic acid will be required to counteract the effect on pH of 1 pound of chlorine feed in the form of sodium hypochlorite. A mid-range setting on the acid feeder is also desirable and therefore, the acid should be diluted. Ten or more to one is usual. When diluting, always add acid to water, never add water to acid.

Calcium Hypochlorite – (Tablet)

If calcium hypochlorite is used, a little less than a pint of Muriatic acid will be required to counteract the effect on pH of 1 pound of chlorine fed in the form of calcium hypochlorite. A mid-range setting on the acid is desirable and therefore, the acid should be diluted. Ten or more to one is usual. If diluting, always add acid to water, never add water to acid.

Trichlor – (Tablet)

If trichlor is used, about 1 pound of soda ash will be required to neutralize each pound of chlorine fed. A 15% solution is the maximum practical solubility of soda ash in water, therefore, dissolves approximately 1 pound of soda ash per one gallon of water (60 to 65 lbs. in a 55-gallon drum). On large pools, caustic soda may be used for pH control in lieu of soda ash. It is pumped directly from the container in which it is supplied and at full strength.

CO₂ – (Gas)

CO₂ is a safe alternative to Muriatic acid for pH control in swimming pools.

- CO₂ becomes a mild acid when dissolved in water (Carbonic acid).
- On a standard feed CO₂ flow meter, a normal setting would be 10 to 14 CFH (cubic feet per hour). Larger feed systems are available.
- CO₂ has a byproduct called bicarbonate which contributes to the rise of alkalinity. Alkalinity will need to be adjusted periodically with Muriatic acid, 1 pint per 10,000 gallon will lower 8 to 10 ppm.

Calcium Hardness

Calcium hardness is a measure of the dissolved calcium in the water. It has a wide range of acceptability and will be very dependent on how much and what type of make-up water is used to maintain the level of water in the pool. For ease of control, calcium hardness is typically allowed to find its own level in a pool (as long as it is between 200 and 400 is recommended) and then the alkalinity is adjusted to ensure balanced water. Only if the calcium falls outside of this range is any adjustment necessary on hardness.

Stabilizer - (Outdoor Pools Only)

Cyanuric acid, when added to pool water stabilizes the chlorine by converting most of it to a form that is resistant to sunlight. It significantly reduces chlorine consumption particularly on sunny days and in pools with large areas of shallow water. Maintaining a level of 20-50 ppm of stabilizer is recommended.

PADDOCK REPORTS

Technical Bulletin 08-01

GREEN BULLETIN

Are your pool operators taking full advantage of having an eco-friendly environment?

It is highly recommended that:

All pools should be vacuumed with a cartridge vacuum regularly to lighten the load on the filter and extend the filter runs.

Pools vacuumed with a cartridge vacuum on a regular basis remove heavy particulates and super fines which may be passing through the filter.

Pools should be brushed at regular intervals at the end of the swimming day to pick up the dirt overnight.

Paddock's Vacuum Sand Filter is a "GREEN" friendly product that is valued at a total of 7 LEED credits toward the "Green" project. DELETE IF REGEN

LEED Data off of www.arcat.com

• Water Efficiency

WE Credit 2 - Innovative wastewater technologies

WE Credit 3 - Water use reduction

• Energy and Atmosphere

EA Credit 1 - Optimize energy performance

• Innovation and Design Process

ID Credit 1 - Innovative design features

Equipment Templates

Filter Instructions



Operation and Maintenance Manual





"PPEC" Regenerative Series Filter

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FILTER OVERVIEW



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POOL EQUIPMENT COMPANY

PADDOCK REGENERATOR
REGENERATIVE MEDIA FILTER

"PPEC" Regenerative Series Filters

SCOPE

The filter in this manual is a Regenerative pressure diatomite or perlite design, manufactured by Paddock Pool Equipment Company, Inc. It is capable of sustaining the application now throughout the entire filter cycle without continuous body feed.

Each filter is a standard product of Paddock Pool Equipment Company, manufacturer of filtration equipment. Primary filter components include a tank, Flexible filter element assembly, and Regenerator™ "Bump" mechanism. All components and related subassemblies are factory assembled and tested prior to shipment.

PRINCIPLE OF OPERATION

Liquid travels through the filter in an up-flow direction. Unfiltered liquid typically enters a side connection in the tank, travels through a diffuser, then upward through the flexible filter element assembly leaving the filter via an outlet in the head.

When the system is initially started, the filter is pre-coated with diatomite or perlite filter media introduced through a vacuum transfer system. Pre-coat is pumped through filter where media is retained on the outer surface of elements forming the filter's "working surface." Similarly, particulates in the flow stream are held on the surface of the filter media while liquid passes through.

The filtration process is a mechanical straining of liquid through a porous layer of filter aid.

After a period of operation, accumulated solids gradually lessen the porosity of the "working surface" resulting in a decrease in effluent flow.

By activating the "Bump" mechanism, flow is restored and filter cycle is readily extended without backwashing or filter media change. This process, termed regeneration, repositions solids-laden pre-coat within the filter cake while randomly exposing new filter surface so the flow of liquid is no longer impeded. Following regeneration, filtration continues at full flow and at approximately original influent pressure. All "PPEC" series filters are capable of extended cycle operation and complete utilization of pre-coat. These automated filters provide programmed control of the regeneration cycle.

When solids-holding capacity of filter is finally reached (determined when regeneration no longer restores flow and pressure), the particulates and spent filter media are bumped from filter elements and drained from the tank. Reverse flow backwashing is neither necessary or recommended.



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FILTER TANK

Filter tank is diametrically divided into head and body components. The two are bolted together and made watertight by an O-ring seal.

Both body and head are of welded construction, with all wetted surfaces and connections fabricated from low carbon stainless steel. External brackets and support legs are also fabricated from stainless steel.

Tanks are designed for a 50 PSI working pressure using a safety factor of 4 to 1. All tanks are hydrostatically tested to 1.5 times the design working pressure.

Standard tank construction incorporates connections for filter influent, effluent and drain, pre-coat inlet, pressure and vacuum relief, instrumentation, and inspection window and lift shaft gland.

Inspection window is made of Pyrex glass, and is covered by a clear plastic safety shield.

ELEMENT ASSEMBLY

Principal components include a tube sheet, flexible filter elements, seals and a lift shaft. These combine to diametrically separate filter tank into upper and lower sections. Seals prevent unfiltered water from bypassing to the upper section, clean side of the filter. All components in assembly are constructed from materials inherently passive to the application.

For servicing, assembly can be removed from filter tank as a unit, or, if desired, by dismantling individual parts.

In its operating format, the entire assembly moves down and up on a vertical axis. During filtration it is in an up or sealed position so unfiltered liquid must pass through flexible filter elements before it can leave the tank. When bumping, the entire assembly slowly moves to a down position, and then is rapidly raised.



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FLEXIBLE FILTER ELEMENTS

Flexible filter elements are the porous support structures for diatomite or perlite filter media. Cylindrical in shape, each element is closed at bottom and open at top. The open end of a filter element is flanged and used for attaching each element to the tube sheet.

Outer wall of the filter element is made of filaments arranged so that external pressure causes a diminution of the tube diameter and pore size. Conversely, internal pressure results in an enlargement of diameter and pore size. Each element has an internal stainless steel spring to limit diameter diminution. During filtration the filter element is retentive. When bumped for regeneration or cleaning, it freely responds to internal pressure generated by a "Bump" stroke, propelling filter media and accumulated solids from its surface.

Filter elements have a maximum recommended operating differential of 20 psi and an ultimate of 75 psi.

"BUMP" MECHANISM

The "Bump" mechanism includes a pneumatically actuated Air-Stroke™ mounted on the head of the filter. It is connected to the flexible element assembly by a stainless steel shaft.

During bumping the Air-Stroke™ is alternately de-pressurized, then pressurized causing the flexible element assembly to move in a downward, then upward fashion. Total stroke travel is about 1-1/2 inches.

Bumping is operator-initiated on manual systems, and controller initiated on automated systems.

MODULAR SYSTEMS

System building through modular application of two or more filters is recommended. Dedicated pumps are used for each filter module. Pumps are sized for an equal portion of the total system flow rate. Thus, each filter module functions independently of each other.



APPLICATION DATA

SPECIFICATIONS

MODEL	TANK DIAMETER	WORKING PRESSURE	TANK MATERIAL	INLET OUTLET	DRAIN
PPEC 140	16 in.	50 psi	304L	3 x 8	3 x 7 1/2
PPEC 145	18 in.	50 psi	304L	3 x 8	3 x 7 1/2
PPEC 225	24 in.	50 psi	304L	4 x 9	3 x 7 1/2
PPEC 225S	24 in.	50 psi	304L	4 x 9	3 x 7 1/2
PPEC 350	30 in.	50 psi	304L	6 x 11	4 x 9
PPEC 350S	30 in.	50 psi	304L	6 x 11	4 x 9
PPEC 500	36 in.	50 psi	304L	6 x 11	4 x 9
PPEC 500S	36 in.	50 psi	304L	6 x 11	4 x 9
PPEC 700	42 in.	50 psi	304L	8 x 13 1/2	4 x 9
PPEC 700S	42 in.	50 psi	304L	8 x 13 1/2	4 x 9
PPEC 900	46 in.	50 psi	304L	8 x 13 1/2	4 x 9
PPEC 900S	46 in.	50 psi	304L	8 x 13 1/2	4 x 9
PPEC 1000	48 in.	50 psi	304L	8 x 13 1/2	4 x 9
PPEC 1275	48 in.	50 psi	304L	8 x 13 1/2	4 x 9
PPEC 1400	56 in.	50 psi	304L	10 x 16	4 x 9
PPEC 1400S	56 in.	50 psi	304L	10 x 16	4 x 9
PPEC 1675	60 in.	50 psi	304L	10 x 16	4 x 9
PPEC 2100	60 in.	50 psi	304L	10 x 16	4 x 9

Standard tank construction is non-code, safety factor = 4

OPERATING DATA

MODEL	GPM RANGE	PRE-	PRE-	** STATIC HEAD LOSS	** STATIC HEAD LOSS	* TOTAL HEAD LOSS	** TOTAL HEAD LOSS	"BUMP" SYSTEM HEAD LOSS	OPER. WEIGHT
		COAT LBS	COAT LBS DE			CLEAN			
PPEC 140	75-122	9	17	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	600
PPEC 145	105-171	12.5	24	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	800
PPEC 225	171-264	21	40	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	1200
PPEC 225S	212-335	26	50	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	1500
PPEC 350	300-444	33	63	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	2560
PPEC 350S	337-565	41	79	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	2600
PPEC 500	550-657	61	117	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	3200
PPEC 500S	528-835	65.5	126	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	3250
PPEC 700	750-895	76	146	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	4560
PPEC 700S	719-1138	82	158	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	4800
PPEC 900	647-1035	75	147	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	5860
PPEC 900S	819-1310	95	190	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	6000
PPEC 1000	730-1184	87.5	168	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	6160
PPEC 1275	950-1505	109	210	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	6500
PPEC 1400	901-1416	103	205	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	8910
PPEC 1400S	1141-1825	135	260	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	9900
PPEC 1675	1225-1670	141.5	272	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	10,400
PPEC 2100	1560-2490	182	350	1.5 ft.	23 ft.	3.02 ft.	26 ft.	Elec-Air	11,600

* Measured at gauge taps located on filter body and head

** Solids laden filter before regeneration



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PERFORMANCE (SWIMMING POOL SERVICE)

MODEL	OPTIMUM GPM	TURNOVER – U.S. GALLONS		
		4 HRS.	6 HRS.	8 HRS.
PPEC 140	100	24,000	36,000	48,000
PPEC 145	140	33,600	50,400	67,200
PPEC 225	233	56,000	84,000	112,045
PPEC 225S	285	68,400	102,600	136,800
PPEC 350	393	94,241	141,362	188,483
PPEC 350S	475	114,000	171,000	228,000
PPEC 500	581	139,344	209,016	278,688
PPEC 500S	703	168,720	253,080	337,440
PPEC 700	791	189,768	284,652	379,536
PPEC 700S	958	229,920	344,880	459,840
PPEC 900	914	219,411	329,116	438,821
PPEC 900S	1157	277,739	416,609	555,479
PPEC 1000	1046	251,118	376,678	502,237
PPEC 1275	1268	304,320	456,480	608,640
PPEC 1400	1273	305,581	458,372	611,162
PPEC1400S	1612	386,936	580,404	773,872
PPEC 1675	1650	396,000	594,000	792,000
PPEC 2100	2085	500,400	750,600	1,000,800

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Rev. 07/2021



FLEXIBLE FILTER ELEMENT DATA



The flexible element is a porous support structure for diatomite or perlite filter aid used in Paddock Pool Equipment Company Regenerator™ filters. Several elements are vertically installed within the filter to form a tube nest assembly.

The outer wall of an element is made of braided groups of filaments arranged at a specific angle. Thus, external pressure causes a diminishing of tube diameter and pore size. Each element has an internal stainless-steel spring to limit diameter diminution. Filament material varies with application.

During filtration the element is retentive. Conversely, when bumped for regeneration or cleaning the element responds to internal pressure generated by a "Bump" stroke, propelling filter media and accumulated solids from its surface.

Flexible elements have a recommended operating differential of 20 psi and an ultimate of 75 psi.

Model	FLEXIBLE ELEMENTS	BARE AREA	COATED AREA
PPEC 140	126	52.4	77.3
PPEC 145	168	69.9	103.2
PPEC 225	340	111.9	165.1
PPEC 225S	340	141.4	208.7
PPEC 350	572	188.3	277.7
PPEC 350S	572	237.9	351.2
PPEC 500	846	278.4	410.7
PPEC 500S	846	351.9	519.4
PPEC 700	1152	379.2	559.3
PPEC 700S	1152	479.2	707.3
PPEC 900	1342	441.7	651.5
PPEC 900S	1342	558.3	819.0
PPEC 1000	1524	501.6	739.9
PPEC 1275	1524	633.9	935.8
PPEC 1400	1871	616.1	908.8
PPEC 1400S	1871	778.8	1141.0
PPEC 1675	2506	824.8	1216.6
PPEC 2100	2506	1042.5	1538.8



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PADDOCK REGENERATOR[®]
REGENERATIVE MEDIA FILTER

REGENERATOR™ "BUMP" MECHANISM

DESCRIPTION

Paddock Pool Equipment Company's Regenerator™ filters utilize a DOWN-UP stroke of the flexible filter element assembly to cause a relative flow reversal through filter elements. This process, termed "Bump" cycle, enables periodic reorganization of filter media for maximum utilization of the media and extended filter cycles. It also assures resource efficient cleaning of the filter without resorting to conventional reverse-flow backwashing.

To transmit force needed for "Bump" stroke, internal filter parts are connected to an Air-Stroke™ actuator mounted on top of filter head. Stops are provided in both directions in order to achieve a specific stroke length.





OPERATION

Downstroke (compression stroke) allows gravity (weight of parts) to lower element assembly. Upstroke (extension stroke) is accomplished pneumatically by quickly filling actuator with compressed air.

Since actuator and element assemblies are mechanically connected, extension of Air-Stroke™ causes a rapid lifting of the element assembly to its upstroke position. This movement of the element cluster through an incompressible surrounding liquid propels filter media and accumulated particulates from the elements.

Regenerator™ "Bump" cycling is automatically initiated by the filter controller, while cleaning cycles are operator-initiated.

MECHANICAL

While Air-Stroke™ actuator can operate without damage through an arc of up to 30"; its application in Paddock Pool Equipment Company's "Bump" mechanism is along a single vertical axis, thus assuring a long service life. Compressed air used to fill and exhaust actuator is controlled by a 3-way solenoid valve triggered by control circuits in filter controller.

OPERATING LIMITS

- Pressure: 90 psi maximum
- Temperature: -35 F to +135 F
- Electrical Requirements: 1-60-120 VAC, 6.8 Watts
- Service Life: Exceeds 10 million cycles
- Maintenance: Maintain in an externally clean condition
- Air-Stroke™ Adjustment: None
- Compressed Air Requirements: **2 scfm @ 90 psig; 1" to 1-1/2" supply to regulator depending on length of pipe run**

CAUTION

Never inflate actuator when it is unrestricted; i.e., with compression and extension stops removed.

Do not inflate beyond specified pressure limit.

Improper use or over-inflation may cause a failure of the actuator with component damage or resulting in personal injury.



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REGENERATIVE MEDIA FILTER

PPEC 225-350 AIR FILTER/ REGULATOR

Ref. Parker Hannifin "Piggyback"

Features:

- A. Space-saving "Piggyback" combines all filter and regulator features to yield optimal performance
- B. High water-removal efficiency
- C. Quick response and accurate pressure regulation regardless of changing flow or inlet pressure

OPERATION:

If no air is supplied to unit, piston and valve poppet are held in open position by regulator's adjusting spring. Pressurized air flows through louvered deflector and is directed into a swirling pattern. Liquids and large dirt particles are thrown against inside wall of bowl and fall into "quiet zone" below lower baffle. The baffle prevents liquids and solids from re-entering air stream. Clean air passes through element and open poppet valve to outlet port. Pressure increases in outlet line and below regulating piston, causing piston to move against the adjusting spring. The poppet, following this movement, closes and stops air flow as soon as preset pressure level is reached. This pressure level is determined by adjusting spring through T-handle. Pressure level is now controlled automatically. Valve opens for more flow if secondary pressure decreases. Excess pressure causes regulating piston to move away from relief tube. Air can exhaust through vent hole in the piston and bonnet. (This happens for standard relieving type only.)





PADDOCK
POOL EQUIPMENT COMPANY

PADDOCK REGENERATOR[®]
REGENERATIVE MEDIA FILTER

AIR LUBRICATOR

Ref. Parker Hannifin Mist Lubricate

Features:

- A. Lubricates through broad air flow range
- B. Venturi By-Pass disc develops a linear oil delivery as air flow varies
- C. Precision needle valve results in repeatable oil delivery and minimum drip-rate change
- D. Bowl can be filled while air-line is under pressure
- E. Reverse flow capability

OPERATION:

Some of the air entering lubricator is passing through a nozzle at increased velocity. This creates a pressure differential which is used to inject oil into air stream. Higher pressure in the bowl forces oil through a pickup tube, adjustment needle, and sight dome into the low-pressure area above nozzle.

The By-Pass disc deflects at higher flow rates and governs amount of injected oil proportionally to the air flow. Rate of lubrication can be adjusted by the precision needle valve. Rotation of the needle counter-clockwise will increase drip rate. Drip rate can be observed in sight dome. After adjustment, drip rate is controlled automatically with changes in air flow. The bowl can be filled through the fill cap, while lubricator remains pressurized.





PANEL MOUNT FILTER CONTROLLER **(Refer to Fig. 1 on following page)**

1. The filter controller is factory-programmed and will power up in OFF/MANUAL mode
2. There are multiple functions on the touchscreen and they are as follows:

OPERATING MODES - Toggles between the three modes:

1. **OFF/MANUAL MODE** – This mode turns the filtration system off and is used during recharging of the filter and to adjust the On-stream time. When selected, the motor will stop, On-stream valve will close, and interlocks will be turned off. It is also used to exit the CLEANING/DEGREASING mode.
 - 1A. Press the number in the box to adjust the On-stream time. A numerical pad will appear and any number between 1-12 can be selected. This will set the time interval (in hours) between bump cycles.
 - 1B. The green “JOG” button is a momentary switch that when pressed and released will turn the motor on and off. The motor will run as long as the button is pressed. This is used to controllably fill the filter with water.
 - 1C. The green “JOG” button is a momentary switch that when pressed and released will actuate the bump mechanism on top of the filter. This is used to manually bump the filter during the recharging process.
 - 1D. Controls the vacuum transfer system for when the filter is being charged.
2. **ON/AUTO** – This mode turns the filtration system on and automatically controls the motor and cycling of the filter.
3. **CLEANING/DEGREASING** – This mode is used for degreasing and demineralizing the filter. When placed in this mode, the filter will continuously bump at a predetermined interval until the OFF/MANUAL mode is selected.

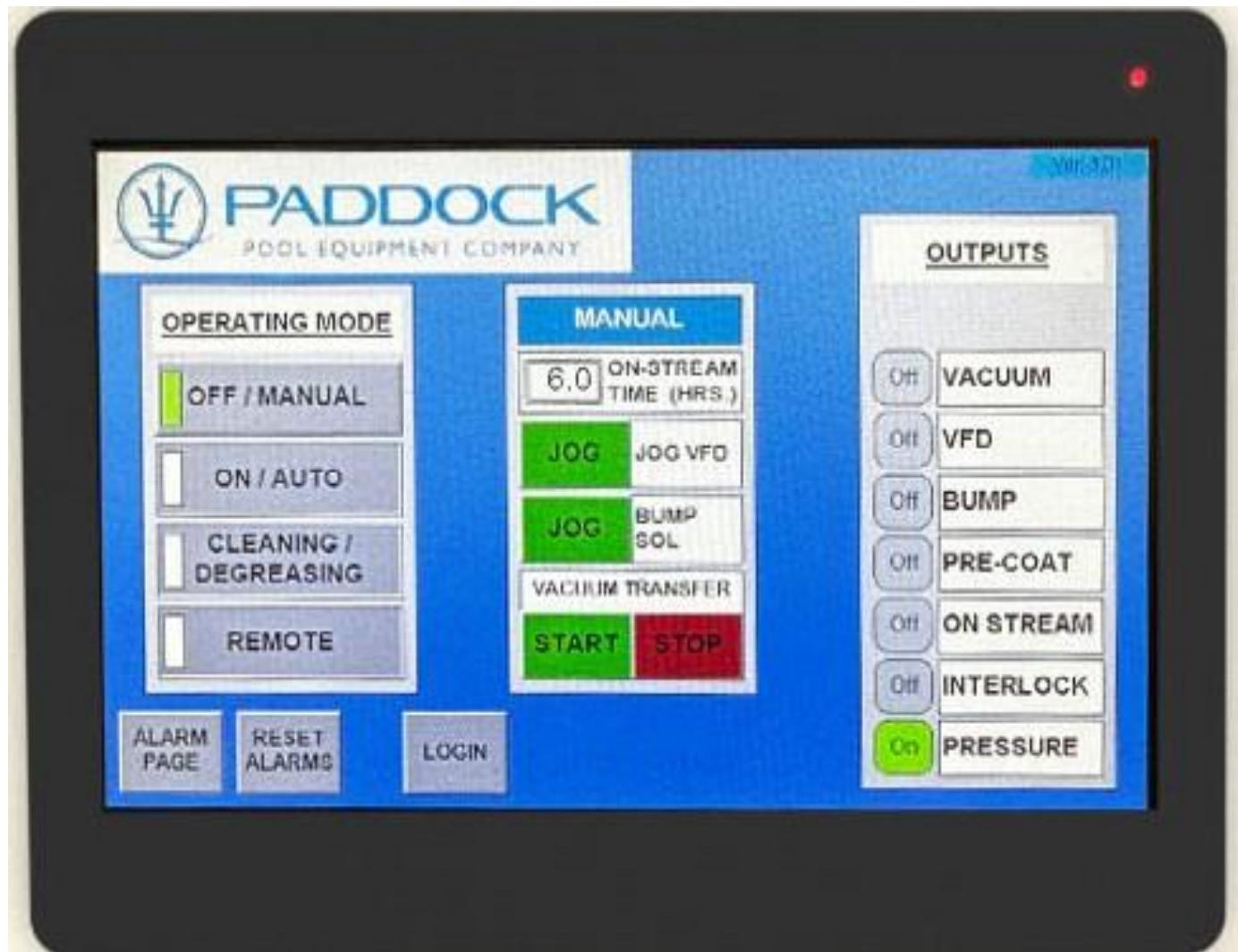


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PADDOCK REGENERATOR[®]
REGENERATIVE MEDIA FILTER

FILTER CONTROLLER

Fig. 1



OPERATING INSTRUCTIONS



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PADDOCK REGENERATOR
REGENERATIVE MEDIA FILTER

OPERATING DATA

Pre-Operating Checklist

- Power switches in panel – ON
- Enclosure door – SECURE
- Operating mode – OFF/MANUAL
- Vacuum Transfer – OFF
- On-Stream duration – SET
- Air supply to filter – ON
- Regulator set to proper setting – 90 PSI

CAUTION – TO PREVENT ELECTRIC SHOCK

**DISCONNECT SUPPLY CIRCUIT(S) BEFORE ATTEMPTING SERVICE TO THE SYSTEM OR
CONTROLLER; AND BEFORE OPENING ENCLOSURE DOOR**

IMPORTANT INFORMATION

1. Automatic Program can be interrupted at any time. On repowering, the controller will automatically initiate a new filter cycle beginning with a “BUMP” cycle.
2. The PPEC filter controller incorporates a system air pressure sensing circuit. If the system air pressure falls below set point, and alarm will trip, the screen will turn red, and the controller will STOP filter cycle. Upon restoration of normal air pressure, controller will restart filter beginning with a “BUMP” cycle.
3. If power is interrupted to the filter controller, once it is restored, it will revert to the OFF/Manual mode. The operator will need to place it back into ON/AUTO mode
4. If a fault occurs on the filter controller while it is in its ON/AUTO mode, once the fault has been corrected, it will automatically restart beginning with a “BUMP” cycle.



Filter Media Dump/Recharge Process

The following steps should be taken to properly dump the media from the filter:

1. Manually turn off heaters and chemical control systems 5-10 minutes before shutting filter down
2. Push the OFF/MANUAL MODE button on filter controller. The box to the left should turn green.
3. Close pump discharge valve if below grade
4. Push and hold the green jog button for the Bump solenoid on the filter controller until actuator boot on top of filter is fully relieved of air. Release the button and repeat two more times
5. Open high air vent line valve
6. Open dump valve on bottom of filter and drain completely
7. Push the green jog button for the VFD on the filter controller for 5-8 seconds to jog the pump washing out any solids left in bottom of filter. If below grade, opening and closing pump discharge valve for the same duration should be sufficient.
8. Close dump valve on bottom of filter and use the VFD jog button or open pump discharge valve if below grade to slowly refill filter completely (water should come out of the air vent line). Close air vent line valve and repeat steps 3-7 one more time
9. After completing step 7 for the second time, close dump valve, close air vent line, and open Vacuum Transfer drain valve letting the line drain completely. (Illustration of Vacuum Transfer valve orientations found on following page of this manual) If below grade, pump discharge valve should still be closed.

The following steps should be taken to properly charge the filter with media:

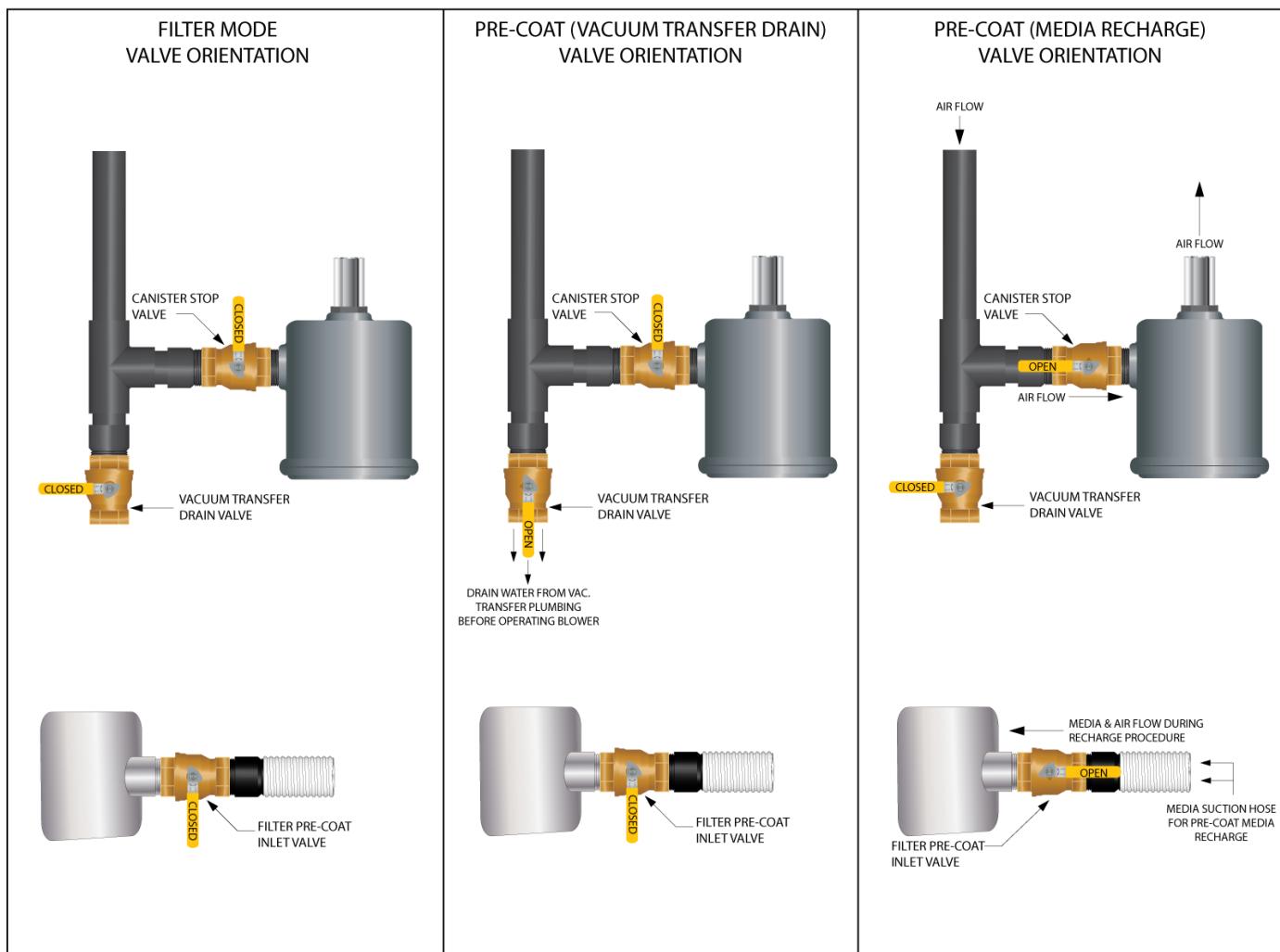
1. Close Vacuum Transfer drain valve and open Canister Stop valve and Filter Pre-Coat Inlet valve. Make sure the Vacuum Canister lid is securely fastened (illustration of valve orientation found on flowing page of this manual)
2. Press the green start button for the Vacuum Transfer on the filter panel and vacuum in proper quantity of media. Close Canister Stop and Filter Pre-Coat Inlet valves. Hang Vacuum Canister lid to allow any moisture to dry.
3. Open air vent line valve and use the VFD jog button or open pump discharge valve if below grade to slowly fill filter until a steady stream of water comes out of air vent line.
4. Close air vent line
5. Push the ON/AUTO button on filter controller. The box to the left should turn green and the sequence start
6. Monitor filter as it goes through pre-coat cycle and return to pool
7. Turn on heaters and chemical control systems



VACUUM TRANSFER SYSTEM

The Vacuum Transfer system is used to introduce media and cleaning agents into the filter. The following diagrams display the valve orientations on the Vacuum Transfer piping for proper operation.

VACUUM TRANSFER VALVE ORIENTATION

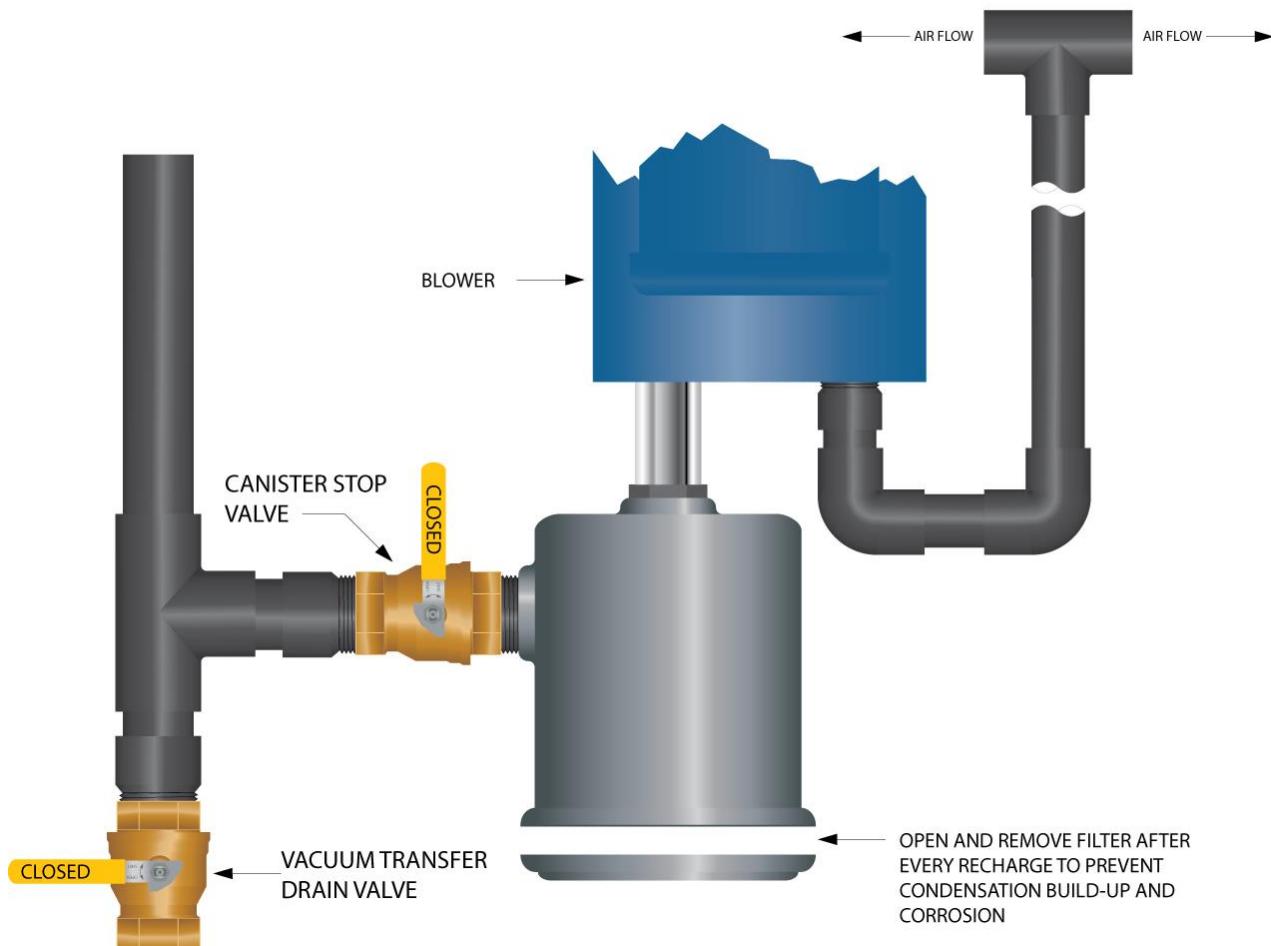




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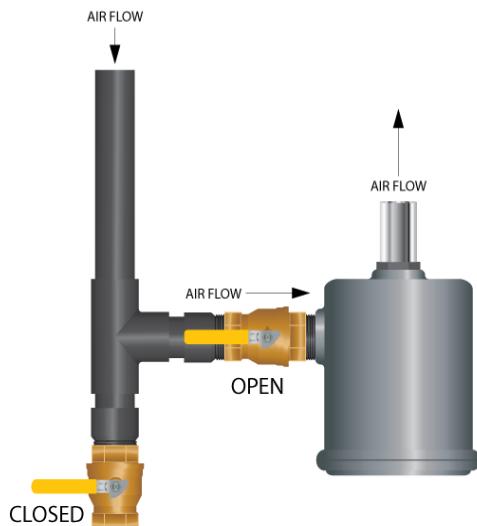
VACUUM TRANSFER FILTER CLEANING AND OPERATION





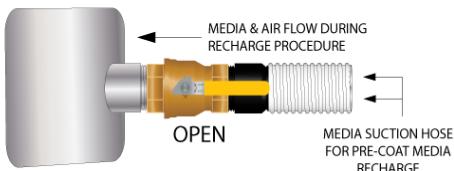
VACUUM TRANSFER INSTRUCTIONS

PRE-COAT (MEDIA RECHARGE) VALVE ORIENTATION



RECHARGING FILTER IS AN EASY PROCESS AND ONLY REQUIRES A FEW MINUTES. MAKE SURE SYSTEM IS OFF, ISOLATED, DRAINED AND RINSED PRIOR TO FOLLOWING STEPS.

1. DRAIN WATER FROM VACUUM TRANSFER PLUMBING (SEE VACUUM TRANSFER VALVE ORIENTATION DRAWING).
2. MAKE SURE HE PA FILTER IS IN FILTER CANISTER AND CLOSED
3. OPEN VALVES AS SHOWN
4. TURN VACUUM TRANSFER BLOWER ON (LOCATED ON FILTER CONTROLLER PANEL)
5. OPEN MEDIA BAGS AND BEGIN TRANSFERRING CORRECT AMOUNT OF MEDIA INTO FILTER BY USING VACUUM TRANSFER HOSE LOCATED ON FRONT OF FILTER. THE CORRECT AMOUNT OF MEDIA IS LOCATED ON FILTER LABEL AND IN OPERATORS MANUAL
6. ONCE ALL MEDIA HAS BEEN TRANSFERRED, TURN OFF VACUUM TRANSFER BLOWER, CLOSE ALL VALVES ON VACUUM TRANSFER AND FOLLOW VACUUM TRANSFER VALVE ORIENTATION DRAWING.



MAINTENANCE & CARE



FILTER MAINTENANCE

ESTABLISH A SCHEDULE

While Paddock Pool Equipment Company Regenerator™ filters are inherently resistant to effects of contaminants normally found in swimming pools, it is important to remember that body oils, sunscreen lotions, and cosmetics tend to form gummy residues inside filters. In addition, mineral content in a pool increases daily as a result of continuous chemical treatment and normal water evaporation process. Accordingly, if contaminant levels are allowed to get too high, deposits can form on filter elements that may eventually shorten filter cycles.

To guard against this, degreasing and chemical cleaning of the element assembly is suggested at approximately **six-month intervals**.

DEGREASING ELEMENT ASSEMBLY

The most effective means for removing gummy residues of body oils, sunscreen lotions, and cosmetics is through a soak cycle using a cold-water saponification, such as Paddock Pool Equipment Company Sodium Percarbonate (Degreasing Concentrate).

To initiate procedure:

- Perform normal filter media dump cycle and rinse as described earlier.
- Using the Vacuum Transfer system, add prescribed amount of Degreasing Concentrate (see table next page), then fill the filter tank slowly utilizing the green “Jog VFD” button.
- Press the “Cleaning/Degreasing” button (box to the left should turn green).
- Allow solution to remain in contact with elements for a minimum of 8 hours while in “Cleaning/Degreasing” mode.
- **High vent bleed valve must remain fully open during the degreasing cycle. Failure to do so will result in pressurization of the tank causing park failure and/or injury!**

After completing soak cycle, drain solution from filter tank. Refill and drain filter at least twice with pool water to thoroughly flush all wetted parts.



CLEANING / REMOVING MINERAL DEPOSITS

To complete maintenance procedure, a chemical cleaner such as Paddock Pool Equipment Company Citric Acid (Demineralizer) Again, fill filter with pool water and allow solution to remain in contact with elements for a minimum of 8 hours in its "Cleaning/Degreasing" mode.

After completing soak cycle, drain solution from filter. Refill and drain filter at least twice with pool water to thoroughly flush all of the wetted parts. Filter is now ready to go back into service.

GUIDELINE CHART QUANTITY

The following table should be used to determine amount of Degreasing Concentrate and Chemical Cleaner needed for each model.

Filter Model	Tank Volume (gals.)	Degreasing Concentrate (lbs.)	Note 1 Demineralizer (lbs.)
PPEC140	89	6.4	4.0
PPEC145	98	8.0	6.0
PPEC225S	129	17.6	10.0
PPEC350S	244	31.7	17.0
PPEC500S	291	41.6	24.0
PPEC700S	396	59.2	34.0
PPEC900S	496	64.5	35.0
PPEC1275	595	77.0	42.0
PPEC1400S	721	93.7	50.0
PPEC1675	801	126.4	75.0
PPEC2100	890	149.0	90.0

Note 1: Suggested pounds of Paddock Pool Equipment Company Degreasing Concentrate (packaged in 50-lb bag)

Note 2: Suggested pounds of Paddock Pool Equipment Company Demineralizer (packaged in 50-lb bag)



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SOME PRECAUTIONS

Take extreme care when handling cleaning agents for they can be harmful to the eyes, skin and clothing. [Read manufacturer's label instructions and Safety Data Sheet \(SDS\) before using.](#)

Isolate filter from the pool and recirculation system by closing valves, etc. before introducing cleaning solutions to filter.

Caution:

The use of muriatic acid as a cleaning chemical should be [AVOIDED](#). Muriatic acid, even in weak concentration, will quickly corrode most metals including stainless steel tank. It will also destroy filter elements.

SPEED CLEANING PROCEDURE - DEGREASING ONLY

Following the procedure outlined in degreasing the element assembly:

1. Place filter in ON/AUTO mode
2. Let the filter bump and then precoat for 10-15 seconds
3. Press the OFF/MANUAL button, then the CLEANING/DEGREASING button
4. Repeat steps 1-3 at hourly intervals for 4 hours
5. Drain and rinse (2) times
6. Charge filter and operate normally

For further information or question(s), see below to contact Paddock Pool Equipment Company, Customer Service.



PADDOCK
Regenerator™ FILTER

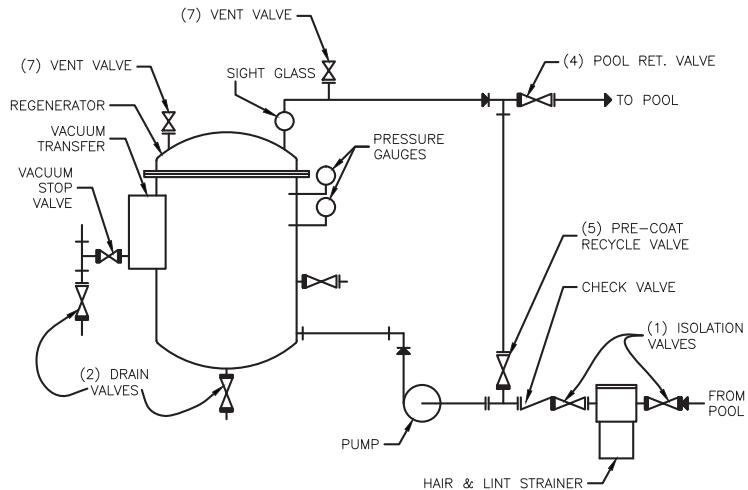


Certified to
NSF/ANSI Standard 50

MODEL NO.	PPEC 700S	SERIAL NO.	1123-PPEC700S-1147
EFF. FILTER AREA	707.3 AREA/SQ. FT	MAX. DESIGN FLOW	1138 GPM
		MAXIMUM TANK WORKING PRESSURE	50 PSI
		DIATOMACEOUS EARTH DE OR Perlite Material	158 DE LBS 82 LBS
REQ'D CLEARANCE	13 INCHES -VERT.		45.0 INCHES-HORIZ.

APPROVED FOR SWIMMING POOLS

SCHENECTADY CENTRAL PARK POOL NOBERTO POOLS, INC.



Rev. 05/2021

PART NO. XXXXX

PADDOCK
POOL EQUIPMENT COMPANY

ROCK HILL, SC 29730

OPERATING INSTRUCTIONS

BEFORE STARTING

Fill the air lubricator to the mark with clean pneumatic lubricating oil – Mobil Almo 525 air-tool oil or equal is preferred, though non-detergent SAE 10 motor oil can be used temporarily. Turn on the air supply and regulate to 100 psi. Cycle-check the bump mechanism through one complete operation. Prime the recirculation pump following the manufacturer's instructions. Close all filter-related valves.

For systems equipped with an automatic filter controller, follow operating procedure specified for the controller.

PRECOATING

A. CHARGE (filter tank must be empty)

Open filter drain valve (6). Drain any water from vacuum transfer line. Close valve (6). Install canister filter. Open valves (9) and (8). Activate vacuum transfer system using the vacuum hose connected to valve (8). Vacuum in the prescribed amount of filter aid into the filter. Turn off vacuum transfer.

B. FILL

Close valves (9) and (8). Open valves (1) and (7). Start pump.

NOTE: If the filter is installed below the pool water line, open valve (1), and allow the tank to fill by gravity with the pump off. Completely fill the filter with water, venting air through valve (7). Close valve (7) after all air has been eliminated.

C. RECYCLE

Open valve (5). The water flow is now recycled around the filter until the sight glass shows clear. It may be necessary to occasionally open valve (7) to keep the system purged of air.

FILTERING

After the sight glass clears, open valve (4). Close valve (5).

Use valve (4) to adjust the system flow rate. Note the difference in the pressure gauge readings. This is the "starting" differential pressure.

As the filter accumulates dirt, the differential across the gauges will increase. When the differential reaches 15 psi, or the flow diminishes to 80% of the design rate, regenerate the filter. **CAUTION:** At no time should the differential be allowed to exceed 25 psi.

REGENERATION (Extending the Cycle)

Switch off pump. Close valve (4). Activate the Bump Controller. When bumping stops, start pump and proceed as in PRECOATING–RECYCLE and FILTERING.

After each regeneration, and until the filter is ready to be cleaned, a slight increase in the starting differential can be expected. This is the result of dirt accumulating in the filter and is completely normal.

CLEANING

The filter should be cleaned when it becomes necessary to regenerate more frequently than every six hours.

Close valve (4), switch off pump. Close valve (1). Activate the Bump Controller. When bumping stops, open valve (2), and allow water and dirt to drain completely. Do not vent filter during the draining process.

After the filter has drained and with the drain still open, open valve (1) and run pump for a few seconds to flush filter bottom. **NOTE:** If the filter is installed below the pool water line, opening valve (1) briefly with the pump off will adequately flush the filter.

The filter is now ready for a fresh precoat. Proceed as in PRECOATING & FILTERING.

VACUUMING

Vacuuming can be performed directly into the filter whenever needed. For faster results, regenerate the filter before and after each vacuuming operation.

PREVENTATIVE MAINTENANCE (Flex-Tube Elements)

While Paddock Regenerator filters are inherently resistant to fouling, it is important to remember the mineral content of the pool water increases everyday as a result of the chemicals used and the normal water evaporation process. If the concentration of minerals gets too high, deposits may form on the filter elements and eventually shorten filter cycles. Accordingly, a chemical and detergent cleaning of the element assembly is suggested at about six-month intervals. For specific instructions, please refer to Filtrex Service Recommendation IS 5545-A.

WINTERIZING

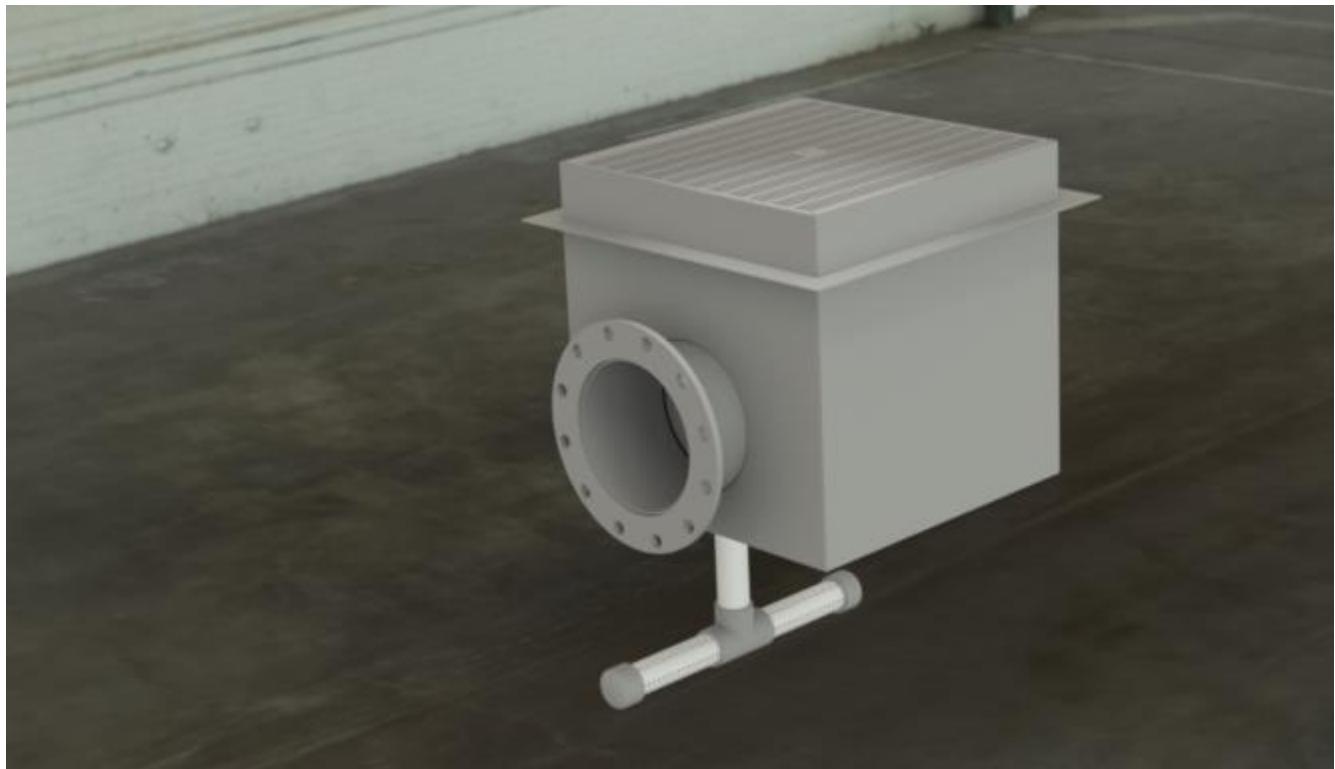
For outdoor installations exposed to freezing temperatures, cycle the filter as described under CLEANING. Perform PREVENTATIVE MAINTENANCE prior to any seasonal shutdown. Pressure gauges tend to hold water even after draining, and should be removed and stored in a heated location.

PLEASE REFER TO OPERATOR'S MANUAL.

Maintenance & Operation Guides



Main Drain Installation & Operation Manual



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Phone (803)324-1111 | www.paddockpoolequipment.com | 800-849-2729 Email:info@paddockindustries.com
Rev.05/2024



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1.0 REVISIONS

REVISION	DATE	DESCRIPTION	BY	CHECK
0	04/23/2024	Submission	VCC	
1	5/01/2024	Revised IAPMO R&T filing & content	VCC	

2.0 GENERAL INFORMATION

Introduction

For over fifty-five years, professionals of the most distinctive aquatic centers have come to rely on Paddock Pool Equipment Company to provide total project solutions. Far from just a pool equipment manufacturer, Paddock offers innovative high-performance products, and construction expertise to builders — all tailored to meet the unique demands of each individual project.

Paddock Suction Outlet Fitting Assemblies (SOFA) are certified by IAPMO R&T to comply with ANSI/APSP/ICC-16 2017 (PA 2021). These SOFAs shall not be installed in seating or backrest areas. There shall be no less than a 3-foot separation between suction fittings installed on a common line. These fittings are designed for installation with concrete, vinyl or composite lined pools.

Paddock's SOFA's have passed all required tests for body entrapment and hair entanglement. They have been approved to the maximum flow indicated on the SOFA flow rate chart.

**THIS DOCUMENT CONTAINS IMPORTANT SAFETY INSTRUCTIONS. READ, UNDERSTAND, AND FOLLOW
ALL WARNINGS AND INSTRUCTIONS.**

SAVE THESE INSTRUCTIONS!

Disclaimer: The information in this document is subject to change by Paddock Pool Equipment Company, Inc. ("Paddock") without notice. Paddock assumes no responsibility for inaccuracies or omissions and specifically disclaims any liabilities, losses or risks, personal, business or otherwise, incurred as a consequence, directly or indirectly, of the use or application of any or all of the contents of this document. For the latest or updated documentation, if available, contact Paddock at 555 Paddock Parkway, Rock Hill, SC 29730 T: (803) 324-1111 or visit us online at www.paddockpoolequipment.com.

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EXCEPT AS EXPRESSLY STATED HEREIN, PADDOCK POOL EQUIPMENT COMPANY INC. MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS OF THE PRODUCT FOR ANY PARTICULAR PURPOSE, EVEN IF THAT PURPOSE IS KNOWN OR SHOULD HAVE BEEN KNOWN TO PADDOCK.

Patents: Paddock has patents pending on the product(s) which it manufactures depicted in this document.

VGBA Compliant Sump and Cover Key Terminology



ESMD - Entrapment Safe Main Drain (Sump Unit)
AVRD - Anti-Vortex Reduction Device (Stainless Steel)
PCFC - Paddock Certified Flat Cover (Flat Cover)
SOFA – Suction Outlet Fitting Assembly

ANSI/APSP/ICC-16 2007 (PA 2021)

Paddock VGBA Compliant SOFA models available

Model #	Description
9300046	18" X 18" ESMD W/6" Connection, 6" AVRD, Relief Valve and 24" X 24" PCFC, Floor and Wall Flow Rating at 915 GPM
9300044	18" X 18" ESMD W/8" Connection, 8" AVRD, Relief Valve and 24" X 24" PCFC, Floor and Wall Flow Rating at 920 GPM
9300006	24" X 24" ESMD W/8" Connection, 8" AVRD, Relief Valve and 24" X 24" PCFC, Floor and Wall Flow Rating at 920 GPM
9300007	24 X 24 ESMD W/10" Connection, 10" AVRD, Relief Valve and 24" X 24" PCFC, Floor and Wall Flow Rating at 920 GPM
9300011	24" X 48" ESMD W/12" Connection, 12" AVRD, Relief Valve And (2) 24" X 24" PCFC, Floor Flow Rating at 3500 GPM and Wall Flow Rating at 3000 GPM
9300013	24" X 48" ESMD W/ (2)-12" Connection, (2)-12" AVRD, Relief Valve And (2) 24" X 24" PCFC, Floor Flow Rating at 3500 GPM and Wall Flow Rating at 3000 GPM
9300056	24" X 48" ESMD W/14" Connection, 14" AVRD, Relief Valve And (2) 24" X 24" PCFC, Floor Flow Rating at 3500 GPM and Wall Flow Rating at 3000 GPM

Specifications:

Paddock ANSI/APSP/ICC-16 2017 (PA 2021)

Compliant and IAPMO R&T Certified Swimming Pool Suction Outlet Fitting Assemblies

- The Swimming Pool Suction Outlet Fitting Assemblies (SOFA) shall include a velocity, vacuum entrapment, hair entanglement **ANTI-VORTEX REDUCTION DEVICE (AVRD)** which has been submitted under ANSI/APSP/ICC-16 2017 (PA 2021) for testing by IAPMO R&T and found to be in compliance with this standard.
- The SOFA both cover/grate and sump, shall be fabricated from 304L stainless steel. The outlet and outlet piping assembly shall be fabricated with stainless steel piping and designed for compliance with the testing requirements ANSI/APSP/ICC-16 2017 (PA 2021).
- The open area of the SOFA shall be equal to or exceeds the open area of the outlet pipe of the SOFA.
- All grating fasteners in the assembly shall be 316L stainless steel Pan Head Phillips fasteners. All exposed security fasteners shall be inserted or removed with #2 Phillips Screwdriver with a maximum torque of 19.8-inch pounds. All fasteners shall be engaged by a minimum of three (3) threads.
- The velocity of water entering any orifice on the cover/grate of the SOFA during normal operation shall not exceed 1.5 feet per second.
- Blockable SOFAs in existing pools with single SOFA systems shall be installed with an additional anti-entrapment device or system (listed in section 9.4 of ANSI/APSP/ICC-16 2017).
- Paddock's SOFAs must be installed as a multiple SOFA system.
- SOFAs shall be chosen so that the individual flow rate is great than the pumping system's MAX system flow rate (not including secondary circulation systems - skimmer, gutters, etc.)
- Paddock SOFAs are not designed to use any pool surface as a portion of the flow path.

Paddock Suction Outlet Fittings Flow Rates

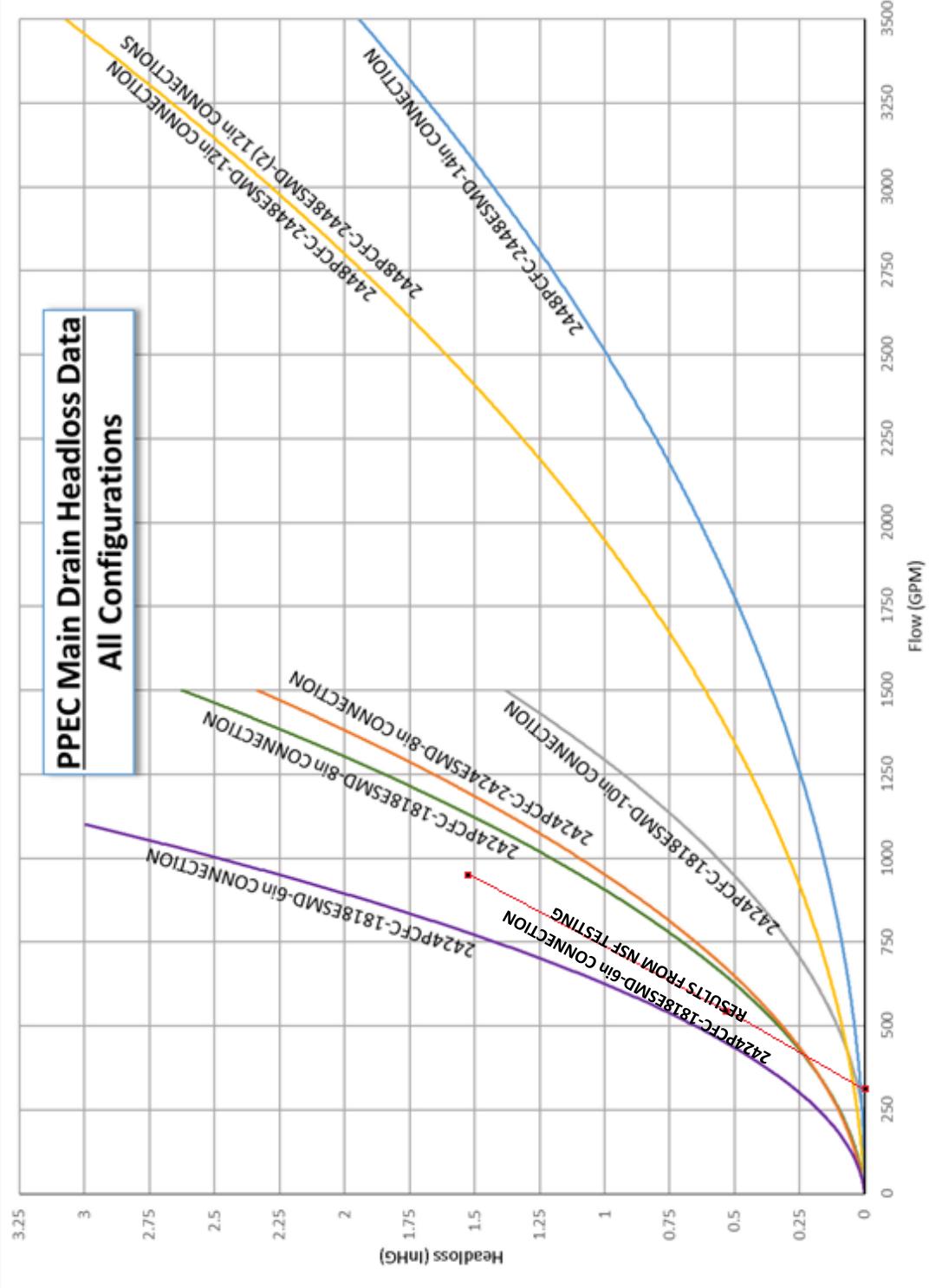
Suction Outlet P/N & Model #	Mounting Position	Total Open Area	Recommended Flow	Maximum Flow per NSF	Blockable or Unblockable
P/N 9300046 Model # 2424PCFC 1818ESMD (sump), 6" Connection	Floor or Wall Use	219.6 sq. inches	915 GPM @ 1.38 fps	915 GPM	Unblockable
P/N 9300044 Model # 2424PCFC 1818ESMD (sump), 8" Connection	Floor or Wall Use	219.6 sq. inches	920 GPM @ 1.38 fps	920 GPM	Unblockable
P/N 9300006 Model # 2424PCFC 2424ESMD (sump), 8" Connection	Floor or Wall Use	219.6 sq. inches	920 GPM @ 1.38 fps	920 GPM	Unblockable
P/N 9300007 Model # 2424PCFC-AVRD 2424ESMD (sump), 10" Connection	Floor or Wall Use	219.6 sq. inches	920 GPM @ 1.38 fps	920 GPM	Unblockable
P/N 9300011 Model # 2448PCFC-AVRD 2448ESMD (sump), 12" Connection	Floor Use	439.2 sq. inches	1996 GPM @ 1.5 fps	3500 GPM	Unblockable
	Wall Use	439.2 sq. inches	1996 GPM @ 1.5 fps	3000 GPM	Unblockable
P/N 9300013 Model # 2448PCFC-AVRD 2448ESMD (sump), (2) 12" Connections	Floor Use	439.2 sq. inches	1996 GPM @ 1.5 fps	3500 GPM	Unblockable
	Wall Use	439.2 sq. inches	1996 GPM @ 1.5 fps	3000 GPM	Unblockable
P/N 9300056 Model # 2448PCFC-AVRD 2448ESMD (sump), 14" Connection	Floor Use	439.2 sq. inches	1996 GPM @ 1.5 fps	3500 GPM	Unblockable
	Wall Use	439.2 sq. inches	1996 GPM @ 1.5 fps	3000 GPM	Unblockable

ONLY INSTALL ON SOFA CONFIGURATIONS LISTED.

CAUTIONARY NOTES:

- Do not exceed maximum allowable flow rate as stated above.
- If pump needs to be changed, a replacement must be the same as the original pump. If a different pump is required, a Registered Design Professional must be contracted to assure original flow rate is not exceeded.

Paddock Suction Outlet Fittings Head Loss Data (from CFD Study)



HEADLOSS MEASUREMENT TAKEN AS CLOSE AS PRACTICAL TO THE SUMP CONNECTION.

3.0 SERVICE LIFE OF PRODUCTS & COMPONENTS

Paddock Main Drain Cover Lifespan

- **Component Lifespans** – The SOFA cover and sump have a lifespan greater than 20 years. The screws should be replaced every 7 years.
- **Requirement** – Inspect cover at 10 years minimum for any signs of damage and replace if needed. (Covers older than 10 years must be inspected yearly by facility operators and documented, then every year thereafter for any damage compromising unit which would necessitate replacement.)
- **Requirement** – Replace screws every 7 years at minimum and document information for records (use only the size and grade of stainless-steel screws 8/32 x 1/2" SS 316 recommended by Paddock).
- **Recommendation** – Establish a yearly checklist for facility operators to document inspection of covers and screws for damage – replace any covers or screws immediately that are compromised, damaged or broken in any way. If threaded holes become damaged contact PPEC immediately to determine the best means of repair (brittle/missing pieces, cracks, non-superficial changes to color).
- The 2424ESMD and 2448ESMD Stainless Steel Sump Box and their components are permanently mounted in the pool shell and will not require replacement. This includes all integral parts listed on ESMD Parts List Breakdown.
- Paddock Main Drain Covers do not need to be replaced unless they are compromised, damaged or broken and all above requirements are met. These are stainless steel covers and should last life of facility if properly maintained. Ultraviolet light test which establishes life expectancy is for degradation of resin products such as PVC or plastics.
- SOFA(s) should be chosen so that the individual suction system flow rate is greater than the pumping system's **MAXIMUM** system flow rate.
- The capacity of the secondary circulation systems should not be included when evaluating an individual suction system flow rating.
- To determine the flow rating for pools with multiple blockable SOFAs in one body of water without isolation valves combine all SOFAs minus the flow rate of one. If not, all SOFAs flow rates are equal subtract the largest flow rate. The flow rating for existing pools with a single blockable SOFA is the flow rating of the SOFA when also installed w/an additional device to prevent suction entrapment. The flow rating of a single blockable SOFA without an additional device is zero.
- The flow rating for pools with single or multiple unblockable SOFAs shall be the combined flow rate of al SOFAs pipe together on one body of water.
- SOFAs shall not be located on backrests or seats.
- When installing and using this equipment basic safety precautions shall always be followed including the "**Important Safety Instructions**" included in Section 4 Installation Instructions.
- Service life begins when the SOFA is installed (with or without water).

4.0 INSTALLATION INSTRUCTIONS

SAVE THESE INSTRUCTIONS!

IMPORTANT SAFETY INSTRUCTIONS READ, UNDERSTAND, AND FOLLOW ALL WARNINGS AND INSTRUCTIONS

IMPORTANT: READ AND STORE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

WARNING! Install this equipment in accordance with the instructions provided. FAILURE TO FOLLOW INSTRUCTION AND/OR USE WITH COMPONENTS NOT PROVIDED BY PADDOCK AND INTENDED TO BE USED WITH THIS PRODUCT MAY RESULT IN IMPROPER POSITIONING OR FUNCTIONING OF SUCTION OUTLET AND MAY CAUSE SEVERE PERSONAL INJURY OR DEATH.

CAUTION LABEL: REMOVE AND INSTALL ALL EXPOSED SCREWS WITH A PHILLIP #2 SCREWDRIVER. APPLY A MAXIMUM TORQUE OF 19.8 INCH POUNDS. DO NOT USE POWER TOOLS TO INSTALL FASTENERS.

NOTE: GRATE ALIGNMENT & ELEVATION IS CRUCIAL. IF NOT PROPERLY ALIGNED, HOLES WILL NOT MATCH. MARK GRATE LOCATION ON FRAME TO MATCH FOR REINSTALLATION LATER. THE GRATE MUST BE SET FLUSH WITH POOL FLOOR, IF NOT THE EDGES POSE A HAZARD FOR POOL OCCUPANTS. FIELD MODIFICATIONS NOT AUTHORIZED BY PADDOCK POOL EQUIPMENT COMPANY OR THESE INSTALLATION INSTRUCTIONS SHALL VOID THE SOFA CERTIFICATION. ANY MODIFICATION THAT INCREASES THE FLOW RATE OF THE CIRCULATION SYSTEM SHALL REQUIRE RE-EVALUATION OF THE COVER/GRADE AND SUMP TO ENSURE THAT THE FLOW RATING OF THE SUCTION OUTLET FITTING ASSEMBLY (SOFA) IS NOT EXCEEDED.

NO CONFIGURATION CHANGES TO THE STRUCTURE OR FLOW PATH OF THIS DRAIN ASSEMBLY ARE ALLOWED UNLESS THE NEW CONFIGURATION HAS BEEN CERTIFIED.

ADHESIVES AND PERMANENT ATTACHMENT METHODS ARE PROHIBITED. THE COVER IS TO REMAIN REMOVABLE.

INSPECT FOR MISSING, BROKEN OR CRACKED SUCTION FITTINGS, THESE SHALL BE REPLACED BEFORE BATHERS ARE ALLOWED TO USE THE POOL.

ANY LOOSE COVER/GRAVES AND ASSOCIATED COMPONENTS SHALL BE REATTACHED BEFORE BATHERS ARE ALLOWED TO USE THE POOL.

*** **Make** sure product is properly cleaned with Sheila Shine or similar after installation. Carbon contamination could show up as surface rust in a couple of months from dissimilar materials coming in contact with stainless steel. Example: carbon drill bits or saw blades.

Installation: RENOVATION

1. Bonding SOFAs (Electrical Inspection may be required).
 - a. Chip to find rebar in structural frame of pool, which is grounded.
 - b. Attach grounding lug to existing structural rebar. (reference National Electric Code Article 680)
 - c. Attach grounding lug and 8-gauge grounding wire to structural frame of pool.



2. Drain Assembly for Testing
 - a. The Paddock SOFA includes a blanking plate to allow for plumbing pressure testing.
 - b. The supplied hardware will allow for installation of the blanking plate and the AVR. Ensure the blank plate is removed prior to putting the pool in operation.

3. Completing installation

- a. Confirm all suction outlet fitting components and fastener receptacles are clean and free of debris or obstructions during installation of cover/grate and fasteners.
- b. Start all fasteners by hand to ensure proper thread engagement and prevent cross threading then tighten to a maximum torque of 19.8-inch pounds. **Do not use power tools to install fasteners.**
- c. Make sure that cover is flush to the existing pool finish and confirm snugness of the cover/grate to the sump/frame by a hand check after installation.
- d. Marcite voids around frame if needed.
- e. Give owner certificate of compliance and extra screw pack for cover.
- f. **Log date of installation once work is completed.**

Contact Paddock Pool Equipment Company, Customer Service for assistance.

5.0 USER MAINTENANCE

Inspection Schedule

Daily (or before each use of the facility):

- a. Inspect the cover/grate, including fasteners, for damage or tampering each operation day.
- b. Missing, broken or cracked covers/grates, including fasteners, shall be replaced before bathers are allowed to use the pool.

Important Notes

- Before removing the cover/grate(s), mark the cover/grate that matches the screw hole(s) and make sure the smooth side is facing up. This will insure placement of cover/grate(s) will line-up correctly. Improper install of the cover/grate(s) will cause the screws to not fit the sump and a hazard to the bathers.
- Any loose cover/grates and associated components shall be reattached before bathers are allowed to use the pool.
- All exposed fasteners on Paddock Main Drain Cover/Grate require a Phillip #2 Screwdriver for insertion and removal. Start all fasteners by hand to ensure proper thread engagement and prevent cross threading then tighten to a maximum torque of 19.8-inch pounds. DO NOT USE POWER TOOLS TO INSTALL FASTENERS.
 - a. Confirm all SOFA components and fastener receptacles are clean and free of debris or obstructions during installation of cover/grate and fasteners.
 - b. Make sure that cover is flush to the existing pool finish and confirm snugness of the cover/grate to the sump/frame by a hand check after installation.
- Paddock Pool Equipment Company must be contacted in the event a fastener fails to engage (stripped or cross threaded hold) the stainless sump/frame prior to allowing bathers to return to the pool.

Winterization

The **winterization procedure** is to inspect drain(s) for cracks and damages.

- Replace grate if damaged. Also, inspect screws and make sure grate(s) is secure. Replace any missing screws. If required, remove grate(s) and associated hardware to allow for a sump pump to be utilized to prevent water from freezing in the sump.
- Store removed components in a well-marked box and store in a location that allows for easy retrieval for installation prior to putting the pool back into service. See above Important Notes.



Main Drain Operation Manual

6.0 DRAWINGS

Main Drain Assembly Drawing(s) (In Drawing Folder)



Main Drain Operation Manual

7.0 APPENDIX

Appendix



MAIN DRAIN INSTALLATION - SIGNOFF FORM

Job Name, City, State: _____ Job No.: _____

The following information is required to validate the expressed warranty. Complete this form upon start-up of pool and return via email (subject: Main Drain Installation) or mail to the address below.

info@paddockindustries.com

PLEASE NOTE: Warranty **DOES NOT** go into effect until completed installation form has been received by Paddock Pool Equipment Company.

Date of Main Drain Installation: _____

Service Life of Cover/Grate: **> 20 years -- This SOFA is UNBLOCKABLE**

Select Installed P/N & Model	Qty	Location (comp., therapy, warm-up,lifestyle)	Mounting Position	Suction Outlet P/N & Model #	Maximum Flow per IAPMO R&T
<input type="checkbox"/>			Floor Use	P/N 9300046 Model # 2424PCFC - 1818ESMD (sump),6" Connection	915 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300044 Model # 2424PCFC - 1818ESMD (sump),8" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300006 Model # 2424PCFC - 2424ESMD (sump), 8" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300007 Model # 2424PCFC-AVRD - 2424ESMD (sump), 10" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300011 Model # 2448PCFC-AVRD - 2448ESMD (sump), 12" Connection	3500 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300013 Model # 2448PCFC-AVRD - 2448ESMD (sump), (2) 12" Conn's	3000 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300056 Model # 2448PCFC-AVRD - 2448ESMD (sump), 14" Connection	3500 GPM
<input type="checkbox"/>			Wall Use		

Contractor/ Installer:

Signature: _____

Owner/Owner Representative:

Signature: _____

Contractor/Installer: _____

(Print name)

Owner: _____

(Print name)

Date: _____

Date: _____

I have instructed customer on proper maintenance of drains.

I have read and understand instructions as instructed by contractor/installer as to proper operations.

THE INSTALLATION SIGNOFF FORM TO BE PERMANENTLY POSTED NEAR THE PUMP CONTROLS, A COPY GIVEN TO THE POOL OWNER & A COPY KEPT WITH OTHER POOL RELATED DOCUMENTS



Starting Platforms Non-skid

Non-Skid Change &/or Replace Material

Removal:

1. Heat (hair dryer) can be applied to help loosen material.
2. Pick edge of vinyl away until you can get a grip.
3. Pull back vinyl against itself to remove. This will help keep adhesive from being left behind.
4. If any glue/adhesive is left, remove with Acetone using a lint-free paper towel. **Do not** get on the decals or hand grips. Clean thoroughly, then wipe with alcohol, we use Isopropyl 70/30. **DO NOT USE A METAL SCRAPER TO REMOVE ADHESIVE!**

Installation:

1. Lay Vinyl on top, positioning to where it is to be installed.
2. Tape vinyl through center to the platform. Creating a "hinge" in center where the tape is located.
3. Lift up one side of the hinge, remove liner all the way back to tape and then cut liner off.
4. Lay vinyl back down, keeping tight to not create wrinkles. Using a decal squeegee work from middle out, all the way down with firm, steady, even pressure. If a small bubble appears use pin (like a needle) to bleed out air.
5. Remove tape, repeat for second side of hinge.
6. Utilize an edge sealer such a Sealitpen <http://www.sealitpen.com/> or 3M 3950 edge sealer to complete seal. This is not required but will prolong life.
7. Let material set for a day before any use.

If you have questions or need assistance, contact our Customer Service.

Powder Coated Metal Care & Maintenance

Powder coating is a type of coating that is applied as a free-flowing, dry powder. Unlike conventional liquid paint which is delivered via an evaporating solvent, powder coating is typically applied electrostatically and then cured under heat or with ultraviolet light. It's very durable and can last for many years if treated well.

1. Clean as follow:
 - a. **Clean with mild soap and fresh water (not pool water)**, after washed, rinse off completely.
 - b. **Dry the surface completely after cleaning**; when water is left on the surface it can cause staining. **Avoid using any type of abrasive cleaner, pads or brushes as this can damage the finish.**
 - c. If you need to remove a **tough stain**, try using a soft cloth dampened with white vinegar. Gently rub the stained area until the stain is removed. Be sure to rinse the area off with fresh water (not pool water) afterwards then dry it completely. If tough stain(s) are still there, use a soft cloth or non-abrasive sponge with a water-based gentle cleaner for cleaning powder-coating surfaces.
2. **Power Wash on Low Settings** is one of the best ways to clean your powder-coated items. However, power washers are **super powerful**, so be prudent and use the low setting to avoid damage. **Dry the surface completely after cleaning/rinsing**; when water is left on the surface it can cause staining.
3. **Protecting the surface of the powder-coated metal by Waxing the Exposed Areas:**
 - a. Waxing the exposed areas of your powder-coated metal will help to protect it from the elements and keep it looking shiny and new. You can use commercial car wax or beeswax furniture polish by applying the wax with a soft cloth and rub it in using circular motions. Allow the wax to dry for at least 20 minutes before buffing it off with a clean, dry cloth.
 - b. **DO NOT** put wax on **non-skid surfaces**, this will cause safety hazard on the surface.

AVOID

Harsh Chemical Cleaners, Abrasives and Harsh Weather Conditions - these things can damage the finish on your product(s).

If you have any question contact Paddock Pool Equipment Customer Service.

Preventing P! in the Pool

Red STINGING eyes?

P! mixes with chlorine
to make chemicals that
cause red eyes



We Can Change That with the Help of All of You



Swim Coaches



Parents & Swimmers



Facility Managers



IDEA #1

Swim Coaches can...



Give swimmers bathroom breaks Every 30 to 60 minutes



IDEA #2

Parents can...



Schedule "out of pool" snack time that gives Children
a chance to use the restrooms



IDEA #3

Facility Managers can...



Schedule "Adult Only" swim time for 10 minutes every hour



And Everyone can help by...

Encouraging showering and bathroom use before entering
the pool, water park, or aquatic facility

 **PADDOCK**
POOL EQUIPMENT COMPANY

BREATHE & BELIEVE
Indoor Air Quality Solutions for Aquatic Facilities

www.paddockindustries.com


NATIONAL SWIMMING
POOL FOUNDATION®
*Keeping Pools Safer.
Keeping Pools Open.*

SAFETY INFORMATION

This bulletin includes important safety information that should be read by owners, managers, service personnel, and anyone in charge of the pool or pool area. Also, we suggest a copy be posted for quick reference.

1. Only personnel trained and familiar with the proper use of pool chemicals should handle acid, liquid chlorine or chlorine compounds. Chemicals should never be used when swimmers are in the pool. Acid and liquid chlorine should always be stored, carried, or handled in plastic containers.
2. If grating is a part of the perimeter system, it should be kept firmly clamped down and in good repair at all times. When a section of grating become loose or damaged that particular area must be immediately covered and a replacement of grating ordered. Under no circumstances should swimmers be allowed to use any portion of the perimeter that contains loose or damaged grating. Perimeter grating is not intended for foot traffic. Swimmers should be advised not to walk, stand, or jump on perimeter grates.
3. Ladders and grab rails are intended for the use of one swimmer at a time; they are not designed for handstands or other gymnastic stunts and they should not be used for this purpose. Ladder treads should be inspected regularly. If a tread becomes loose or damaged, the ladder should be taken out of service until repairs are made.
4. Lifeguard Chairs are intended for the individual use of trained "on duty" lifeguards, one (1) guard per chair. Lifeguard chairs are not to be used by swimmers, spectators, or by more than one (1) person at a time. There should be no diving from portable lifeguard chairs. Umbrellas should be closed or removed from portable lifeguard chairs during windy conditions. All frame connections are to be checked for tightness. The seat is bolted to the frame assembly. It is important to advise all users to periodically check to determine that the studs are firmly fastened to the seat and the nuts are tight. If they become loose or detached, it could result in serious injury. On outdoor installations or usage, it is suggested that the seat be removed and stored inside during the winter.
5. Starting Platforms should only be used by trained competitive swimmers or under the direct supervision of an instructor. Swimmers should execute shallow racing dives only. Impact with the pool bottom can cause severe injury. Starting platforms have warning labels and inform the purchaser of the need to remove the platforms during non usage. If your starting platforms do not have warning labels, please contact the manufacturer immediately.
6. Bulkheads are designed and built for strength and safety. Any grating should be kept fully secured to avoid injury. **NO swimming under bulkhead. Never use bulkhead as a support or staging for equipment.** The bulkhead includes a compressor; please refer to owner's manual provided with the unit.

For questions concerning the usage of our equipment, please contact Paddock Pool Equipment Co., customer service.



STARTING PLATFORMS

INSTALLATION & REMOVAL WITH CARE & MAINTENANCE

Paddock starting platforms are manufactured using 304L and/or 316L material and will require general maintenance over time. Please refer to and utilize Paddock's Care and Maintenance for Stainless Steel provided to you in your Operations Manual. For installation and removal, please follow the instructions listed below:

Installation

1. Remove each cover plate (**DO NOT DISCARD!**) and check anchors for debris.
2. Locate the brass compression collars, loosen the set screw on the side to prevent scratching and place one per platform leg.
3. Inspect the starting platform legs for debris and clean if required
 - a. If cleaning is required, use a green 3M® Scotch-Brite Pad to clean area going with the grain.
4. Use of a non water soluble grease to lubricate anchor is suggested for ease of placement.
 - a. Lubrication suggestions include marine bearing grease and/or white lithium grease.
5. Using two people, one on each side, lift the starting platform into position over the anchors. Slowly lower the platform continuing alignment until completely set in anchors.
6. Brass compression collars should be hand started to prevent cross threading. Once started by hand tighten with an 18" smooth faced adjustable wrench making sure **not to over tighten** and strip the brass compression collars.
7. Tighten set screw on brass compression collars to complete installation.

Removal

1. Remove all components from starting platforms including any timing and speakers.
2. Loosen the set screw on brass compression collars. Make sure to loosen set screw enough to prevent from damaging finish on starting platform legs while loosening brass compression collars.
3. Using an 18" smooth faced adjustable wrench loosens the brass compression collars. Use caution while loosening collars to prevent injury from slippage.
4. Using two people, one on each side, lift in a vertical direction, gently rocking back and forth to dislodge platforms from anchors. Continue rocking and lifting until platform is removed.
 - a. Ease of removal will vary based on frequency of the removal process.
5. Inspect the starting platform legs and anchors for debris and clean if required.
 - a. If cleaning is required, use a green 3M® Scotch-Brite Pad to clean area going with the grain.
6. **Replace the cover plates on anchors while not in use.**



Care and Maintenance

These materials require little if any maintenance. The following tips are intended as a guide to help you maintain your Paddock starting platforms.

1. Wash down the starting platforms including the tops weekly and / or as needed with fresh water to remove dirt and debris. After the final rinse using clean water, dry wipe will complete the process this will eliminate possibility of water stains. The longer the stain(s) is on the surface of stainless equipment, the higher chance of permanent discoloration or damage.
2. All starting platforms have warning labels, if yours starting platforms do not have the warning labels, contact our customer service immediately.
3. Follow general stainless steel cleaning procedures for cleaning - see the section on **Maintenance & Product Information** in the **Operation & Maintenance manual – Stainless Steel Products Care & Maintenance for cleaning**.
4. **If non-skid surface becomes dirty**, it can be cleaned using a stiff polypropylene hand brush. The use of the brush will help speed up the process by lifting the accumulated dirt from between the gritted surface.

Paddock Fast Track Starting Platforms are equipped with kick (wedge) plate.

1. For Fast Track Starting Platform Operation and Maintenance Manual (**if applicable**).



To Backwash Using Air Scour:

Shut off UV, Heaters, chemical controller(s), Water Level Controller, etc. 5-10 minutes prior to Backwash.

1. Reset vacuum limit switch if tripped. Close Main Drain valve #1 and Perimeter Overflow valve (#7). Draw the filter tank level down to top of sand bed, opening backwash viewport to see. Slowly close return to pool valve (#3), then shut off pump. Close Pump Suction Valve (#2).
2. Open Air Scour Control valve (#12) and turn on air scour blower. Run 3-5 minutes while monitoring sand bed to ensure water is not bypassing valves. Once the sand bed is thoroughly agitated, turn off air scour blower and close valve (#12). **If the water level does start to rise during air scouring, turn off the air scour blower immediately. Re-check valves #1, #7, and #3 for full closure. If water rises above backwash trough during air scouring, it will allow sand to enter said trough and potentially return to the pool after the backwashing cycle.**
3. Open Backwash Influent valve (#8) and open Air Relief valve (#12A). Allow water level in the tank to rise until it stops. Close Backwash Influent valve (#8) and Air Relief valve (#12A).
4. Open Backwash Suction valve (#4). Start pump and open Backwash-To-Waste valve #5 slowly to the designated flow. Draw the filter tank level down to the equalization screen. Look through backwash viewport and open Backwash Influent valve (#8) to regulate and maintain water level just below equalization screen, allowing dirty water to flow over edge of backwash trough. Backwash 3-4 minutes or until the sight glass is clear.
5. Close Backwash Influent valve #8 and turn off pump. Close Backwash Suction valve #4. Close backwash viewport window. Open Perimeter Overflow Valve(s) #7 and Main Drain Valve #1 allowing water level to rise to maximum level. Open Pump Suction Header valve #2 and turn on filter pump. Rinse filter to waste 15-20 seconds
6. Open Return to Pool (#3) to first setting or notch while slowly closing Backwash-To-Waste valve (#5). Then set Return to Pool valve (#3) to marked position for designated flow rate.
7. Run 2-3 minutes and check operation, turn on UV, heaters, controllers, etc.

When backwashing, it is important to keep the water level in the filter compartment just above the top lip of the backwash trough partition to maximize the efficiency of the backwash flow and dirt removal. This can be observed through the viewport window in the equalization screen. With the proper setting of the backwash discharge to waste valve (#5), the backwash flow can be easily maintained at the proper level in the filter tank and in the backwash trough by modulating Backwash Influent valve (#8).

Helpful hint: It is recommended that a manual backwash at the maximum flow rate allowable by backwash water receptacle capabilities for an extended time of 5-6 minutes is done a minimum of once a year. The air scour feature is not used during this suggested preventive maintenance backwash. This suggested manual extended flow backwash extends the media life & could prevent having to replace the sand in your filter.



Note: If the filter pump for the pool loses prime during the backwash procedure, follow these steps:

1. Turn the filter pump off.
2. Open manual air bleed tube located in the pump box and open valve #12A to allow any trapped air to escape.
3. Check to make sure all valves are in the proper position.
4. Allow the water in the filter tank to equalize with the pool.
5. Once the water in the filter tank has equalized with the pool, close air bleed tube in pump box and valve # 12A.
6. Turn the filter pump back on.

General:

If debris accumulates on the vacuum equalization screen, it should be removed at regular intervals. This can be accomplished during backwashing. If it is necessary to enter the filter chamber, use the ladder provided and put your weight directly over the support angles.

The Vacuum Equalization Screen (VES) is held in place with fasteners. There is a window in the VES to permit visual inspection of the condition of the media surface. One section near the access ladder is made for easy removal for inspection of the area beneath the screen. All sections may be removed for maintenance operation if required.

If pump loses prime for any reason, let tank fill with pump "off" to displace air, then start pump.



Gutter Depth Marker/ Target - Vinyl Decal Installation

Your graphics will come in three layers, a backing paper layer on the bottom to keep the adhesive from being exposed, the vinyl layer (this is your graphic), and a masking layer on top. The masking layer makes the vinyl easier to handle and keeps everything pre-spaced for you to apply your graphic as one piece.

You will need:

- Clean rags
- Denatured alcohol
- Microfiber towel
- Vinyl applicator

It is best to do this process when the pool is not in use.

1. Lower Water Level
 - a. Water level should be lowered at least an inch below the bottom level of the decal.
 - b. Make sure to turn off any auto-fill devices to keep water from rising while applying decals.
2. Clean Gutter Thoroughly
 - a. Wipe away any moisture.
 - b. Clean the entire area where the decals will be applied using denatured alcohol and a clean rag.
 - c. Wipe dry with a clean microfiber cloth.
3. Apply Decal
 - a. Peel the backing from the decal making sure they stay attached to the protective paper on the front.
 - b. Take care to make sure the decal is level and spaced correctly.
 - c. Apply the decal sticking the top part first to the cleaned gutter surface and using your hand or applicator, slowly starting from the top, slide down the decal gently pressing it onto the gutter until the decal is fully applied.
 - d. Using the applicator, firmly press the decal from the center out to push any air bubbles to the edge.
 - e. Carefully peel the protective paper off making sure the decal sticks to the gutter (If decal starts to come off with the protective paper, stop, put the protective paper back as far as needed, and use applicator to press decal to gutter surface).
4. Cure
 - a. Wait at least 12 hours before introducing water to decals.
5. You can use a SEALITPEN to seal the edges of the graphic for longer durability. Follow directions on the pen.

If you have any question(s) contact customer service see below for our information.

GRATING

High Density Polyethylene (HDPE)

ADJUSTMENTS & CHARACTERISTICS with CARE & CLEANING MAINTENANCE

HDPE Grating Adjustments & Characteristics

HPDE grating is highly durable and will give years of good service in the pool environment. The grating is held in place by either a front capture strip and a rear HDPE camlock or by a HDPE camlock front and back. A 1/4" x 1 1/2" x 3/16" allen head screw is used to tighten the camlock.

- Grating can be gapped up to 3/8" (three-eighths of inch), however at normal operating temperatures, the gap for indoor pool is 1/8" (one-eighth of inch) and outdoor pool is 1/4" (one-fourth of inch). An outdoor pool grating will contract and expand with sizeable temperature swings. Larger gaps can be expected in cold temperatures. At initial startup grating may need to be adjusted when pool reaches operating temperature.
- Grating fasteners needs to be inspected at the start of the swim season and periodically throughout the year. Adjust as needed, by hand loosening cam-locks with a 3/16" allen wrench, re-adjust gaps as listed above and re-tighten.

Care and Maintenance

- Paddock's HDPE grating is marine-grade polymer sheeting which is resistant to most chemicals and requires little maintenance to keep it looking new.
- Keep harsh solvents, acids, wood stains and wood preservatives away from Paddock HDPE finish. They may cause permanent staining and damage.
- Staining from rust is very difficult to remove so keep uncoated non stainless metals away from HDPE material.
- Shoes with marking soles can leave scuff marks that can be difficult to remove

Cleaning

- For daily cleaning of everyday dirt and stains, use a non-abrasive cleaner such as "Zud" or "Soft Scrub" and a nylon brush to scrub lightly. Excessively hard scrubbing can mar the finish.
- Hard to remove stains will usually go away if you soak the area with bleach. **When using this method, you must remove the grating from the stainless steel so it will not cause corrosion.** Do not use 100% granular or tablet chlorine as a bleach alternate.
- Pressure washing can mar the finish.
- Petroleum based stains can be difficult to remove, soak the area with WD-40®. Then use acetone or toluene with a white nylon scrub pad (color-based pads can transfer dye color to finish when combined with acetone)
- Do not use MEK, turpentine or naphtha solvent.
- Do not use polishes such as Armor-All ® to non-skid areas, this will reduce the slip coefficient and cause a fall/slip hazard.

MAIN DRAIN INSTALLATION - SIGNOFF FORM

Job Name, City, State: _____ Job No.: _____

The following information is required to validate the expressed warranty. Complete this form upon start-up of pool and return via email (subject: Main Drain Installation) or mail to the address below.
info@paddockindustries.com

PLEASE NOTE: Warranty **DOES NOT** go into effect until completed installation form has been received by Paddock Pool Equipment Company.

Date of Main Drain Installation: _____

Service Life of Cover/Grate: > 20 years -- This SOFA is UNBLOCKABLE

Select Installed P/N & Model	Qty	Location (comp., therapy, warm-up, lifestyle)	Mounting Position	Suction Outlet P/N & Model #	Maximum Flow per IAPMO R&T
<input type="checkbox"/>			Floor Use	P/N 9300046 Model # 2424PCFC - 1818ESMD (sump), 6" Connection	915 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300044 Model # 2424PCFC - 1818ESMD (sump), 8" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300006 Model # 2424PCFC - 2424ESMD (sump), 8" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300007 Model # 2424PCFC-AVRD - 2424ESMD (sump), 10" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300011 Model # 2448PCFC-AVRD - 2448ESMD (sump), 12" Connection	3500 GPM
<input type="checkbox"/>			Wall Use		3000 GPM
<input type="checkbox"/>			Floor Use	P/N 9300013 Model # 2448PCFC-AVRD - 2448ESMD (sump), (2) 12" Conn's	3500 GPM
<input type="checkbox"/>			Wall Use		3000 GPM
<input type="checkbox"/>			Floor Use	P/N 9300056 Model # 2448PCFC-AVRD - 2448ESMD (sump), 14" Connection	3500 GPM
<input type="checkbox"/>			Wall Use		3000 GPM

Signature: _____

Contractor/ Installer:

Contractor/Installer: (Print name)

Signature: _____

Owner/Owner Representative:

Owner: (Print name)

Date: _____

Date: _____

I have instructed customer proper maintenance of main drains.

I have read and understand instructions as instructed by contractor/installer as to proper operations.

THE INSTALLATION SIGNOFF FORM TO BE PERMANENTLY POSTED NEAR THE PUMP CONTROLS, & A COPY GIVEN TO THE POOL OWNER & A COPY KEPT WITH OTHER POOL RELATED DOCUMENTS



Designing the future of stainless steel perimeters

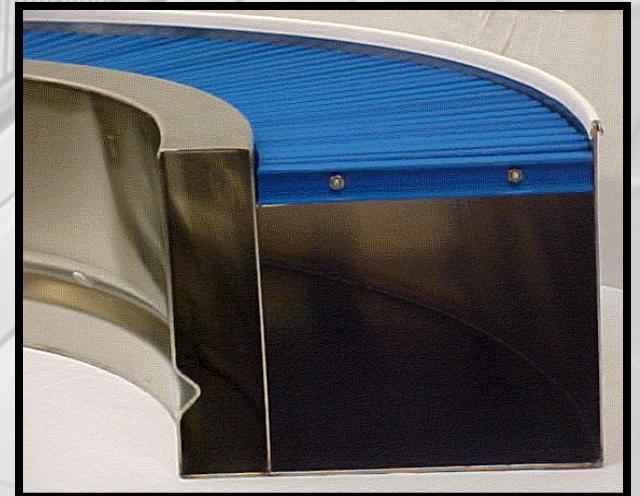
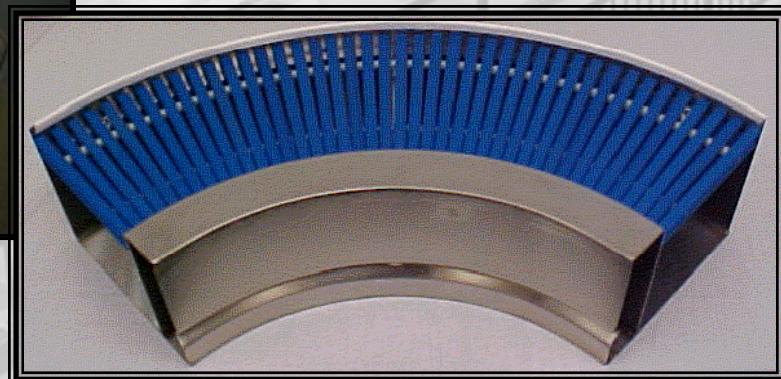


PADDOCK
POOL EQUIPMENT COMPANY

The best stainless steel perimeter just got better!

The Radius Section

- Increased Channel Efficiency and Flow
 - Safer Configuration for the User
 - Corner Maintenance Eliminated
 - Aesthetic Free Form Design





STAINLESS STEEL PRODUCTS

Care & Maintenance Guide

General Precautions:

Scratching can occur on a bright finish by cleaners that contain hard abrasives or even by "grit" in wash water. The best preventive measure is to avoid using abrasive cleaners unless absolutely necessary. When abrasives are needed first experiment on an inconspicuous area. A "soft abrasive", such as Zud liquid or Bon Ami should be tried first to see initial test results. While cleaning with products mentioned be sure to observe direction of grain in material. Following grain while cleaning material will limit scratching. Many cleaners contain corrosive ingredients which require thorough cleaning and rinsing with clean water and is recommended for all cleaning procedures.

General Maintenance Procedures:

Stainless steel equipment will need to be cleaned on a regular basis for aesthetic considerations and to preserve corrosion resistance against evaporated chloramines or spotting. Stainless steel is protected from corrosion by a thin layer of chromium oxide. Oxygen from the atmosphere combines with chromium in stainless steel to form this passive chromium oxide film that helps protect against corrosion. Any contamination of surface by dirt, chlorides, greases, or other material will hinder this passivation process, and traps corrosive agents thus reducing corrosion protection. Chlorine and bromine used for sanitation are highly caustic chemicals to stainless steel, while heat and humidity enhance corrosiveness of these chemicals especially in natatoriums. Thus, some form of routine maintenance is necessary to preserve appearance and integrity of surface. Stainless steel is easily cleaned by many different methods. They actually thrive with frequent cleaning, and unlike some other materials it is impossible to "wear out" stainless steel by excessive cleaning. Your goal should be a robust cleaning and maintenance program to keep stainless steels protective chromium oxide layer intact which helps prevent corrosion.

To increase longevity of your stainless steel equipment, follow these steps:

1. Establish a proper grounding of all equipment being installed at aquatic facilities. Make it a point that dissimilar metals are not in direct contact of one another. Taking this precaution will minimize risk of forming an electrolytic cell between equipment, pool water and atmosphere at facility.



2. Once all equipment has been installed at facility, apply a coat of paste wax (automotive or marine wax) and buff equipment with soft cloth to assist in extended corrosion protection. Redo this process with waxing after using cleaners or at six-month intervals on stainless equipment. This wax will form a protective barrier between stainless steel and environmental elements left behind by evaporating pool water on equipment.
3. As stated previously rinse all equipment frequently with fresh water and dry with soft clean cloth. This should wash away any accumulated halogen salts such as chlorine or bromine. **DO NOT** use pool water, salt water, high PH or iron in water to clean your stainless steel products.
4. Pool equipment should be inspected regularly. Look for any tarnish, discoloration, stubborn stains, grease build up, blemishes or water spotting of stainless equipment. If apparent, then take appropriate steps to remove corrosive elements with a non-chlorinated stainless steel cleaner and water rinse.

NEVER use steel wool, sandpaper, hydrochloric acid, muriatic acid, mineral acids or harsh abrasive cleaners on stainless steel equipment. Steel wool will add to corrosion due to dissimilar metal materials coming into contact with equipment. Discoloration should be removed at first sign with a cleaner or polisher recommended for stainless steel equipment.

Note: Avoid adding chlorine in close proximity to stainless steel equipment. Dilute chlorine in 5-gallon bucket and pour as far from stainless equipment as possible. Also avoid cleaning masonry and pool decks with strong acid solutions that come in contact with stainless steel products. Do not pour straight muriac acid directly into pool for PH control. This method increases corrosion to stainless steel around application area.

Effective Cleaning Methods:

There are many choices available for cleaning stainless steel in market that consumers may utilize. Depending upon cleaning needed and degree of contamination, some products may be better than others. Although some products are listed as stainless steel cleaners, they may scratch surface and may contain chloride bleach which will discolor, tarnish or dull finish if not removed completely.

There are many industry associations that have listed available product that can be utilized in cleaning stainless steel products. Use of these proprietary names is intended only to indicate a type of product available and does not constitute an endorsement. Omission of any proprietary product does not imply inadequacy. Review each product being utilized in strict accordance with instructions on packaging. No one product is best for every form of cleaning, since there are many levels of corrosion.



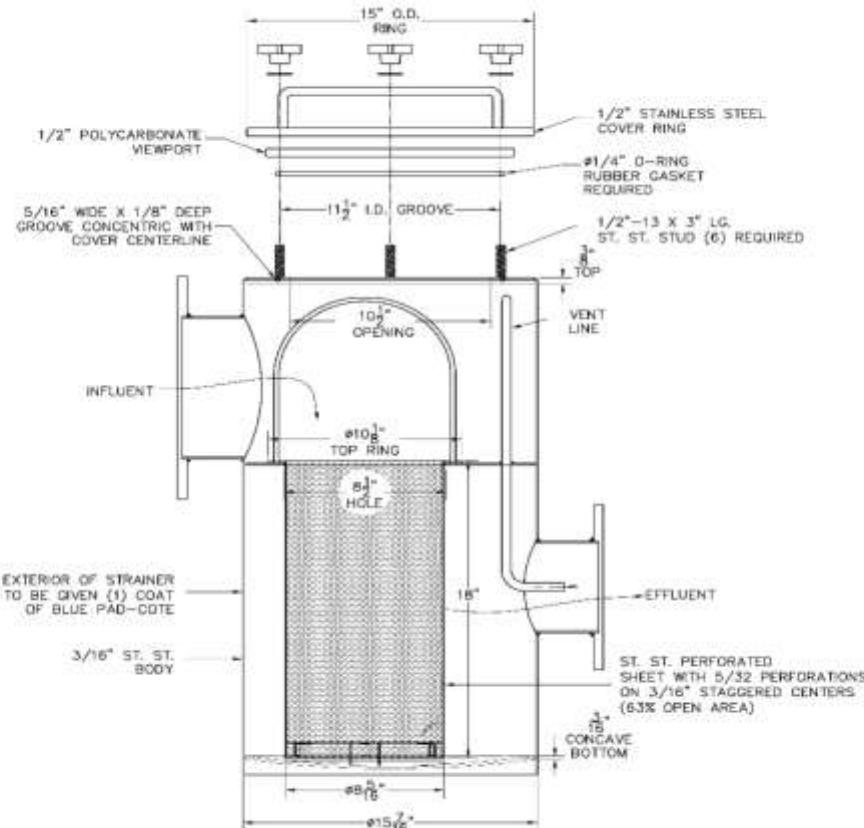
The simplest, safest and least costly method that will adequately do the job is always best. The longer a stain is on surface of stainless equipment, the higher chance of permanent discoloration or damage. Stainless steel surfaces thrive with frequent cleaning because there is no surface coating to wear off material. A soft cloth and clean warm water should always be first choice for mild stains and loose dirt and soils. A final rinse with clean water and a dry wipe will complete process and eliminate possibility of water stains. **DO NOT** use pool water, salt water, and water with high PH or iron content to clean your stainless steel products.

Dealing with stubborn stains, discolored or tarnished stainless steel product try and utilize recommended merchandise per various manufacturers. Some recommended product: CitiSurf product such as 77 plus or 2310, Sta-clean, Zud liquid, Samae, Bon Ami, Allchem concentrated cleaner, Twinkle, 3M stainless steel cleaner and polish, Sheila Shine, Perfect Sink, Liquid Nu Steel, Lumin cleaner, Gade FFF or Grade F Italian pumice, Highlite and many others.

Surface restoration may be needed when stainless steel is scratched or pitted due to heavy corrosion. This can be accomplished by mechanically polishing as opposed to chemical cleaning above. A professional familiar with process should be contacted to handle.

Paddock Industries Pump Strainer Installation, Start-Up, Shut-Down

The Pump Strainer is a high-quality stainless-steel vessel incorporating a perforated stainless-steel basket designed to strain hair, lint, and other large particles from the fluid stream that might clog or damage the pump's impeller. A typical design is shown in the cross-sectional view below.



Installation

Support the strainer, pump, and plumbing independently using standard concrete pedestals to mount the pump and standard pipe supports for the plumbing. Typically, the strainer sits on the floor, but a pedestal can be constructed for it, if necessary. Attach the strainer flange to the pump flange using standard flange gaskets and hardware. Likewise, attach the influent plumbing to the strainer. Install an isolation valve in the influent line upstream of the strainer, and another in the effluent line downstream of the pump.

Start-Up

Close both isolation valves, remove the strainer lid, and fill the strainer and pump volute with water through the lid opening if pump is installed above water level. In a flooded-suction situation, crack open the influent isolation valve to allow the strainer and volute to fill with water, then close influent isolation valve. Re-install the strainer lid, making sure it is secured and sealed tightly. Open the influent isolation valve and start the pump. After about five seconds, slowly open the effluent isolation valve, taking 5-10 seconds to open the valve. This slow opening of the effluent isolation valve after pump is started eliminates the possibility of creating a water hammer (also known as hydraulic shock).

555 Paddock Parkway, Rock Hill, SC 29730

Telephone: 803 324 1111 * Facsimile: 803 324 1116 * Email: info@paddockindustries.com
www.paddockindustries.com



Shut-Down....

Gradually close the effluent isolation valve, taking 5-10 seconds, before turning pump off. This slow closing of the effluent isolation valve prior to turning the pump off prevents water hammer. This “dead-heading” of the pump for a few seconds will in no way damage it. If the strainer is to be opened at this time for cleaning, close the influent isolation valve before removing the lid. Upon replacement of a clean basket, re-install the lid and secure it tightly, and open the influent isolation valve. Do not open the effluent isolation valve until after the pump is started so as to prevent water hammer.

A Word About Water Hammer....

Water hammer is a destructive pressure spike caused by the sudden deceleration of water flow. The pressure spike potential can be easily calculated by multiplying the water velocity at normal flow in feet per second by 65. This gives the pressure spike potential in pounds per square inch. For example, water flowing at 6 ft/s will cause a 390 psi water hammer if the water flow is suddenly stopped. This can occur upon starting a pump with air in the plumbing every time the water flow encounters an elbow or tee, or upon closing a valve suddenly, or even upon simply turning off a pump without first slowing the water flow down. **Failure to prevent water hammer constitutes abuse and will render any warranties void.**



Winterizing

Compak Vacuum Sand Filter

Follow the suggested procedures below:

1. Lower water level in pool below stainless steel gutter.
2. Shut down auto-fill controller and domestic water supply.
3. Once the water level is lowered, close the main drain valve, perimeter overflow valve, return to pool valve to isolate the filter from the pool and open remaining valve(s) to prevent pipes breaking if freeze occurs.
 - a. In high water table areas we recommend that some water is left in the filter to prevent lifting from hydrostatic pressure from ground water. If this is not an issue please pull water level down to the sand level, turn off pump, refer to step #3, and place a small bilge pump in the backwash trough to remove remaining water.
4. Remove drain plugs from pump box (if available) on filter tank and pump housing.
5. Drain and blow out all auxiliary lines such as chlorinators, heaters, sample lines, etc.
6. Check filter and pipes periodically through winter months for possible excess water in these areas in case of valve leakage or rain water.
7. Cover pool if possible or remove debris ASAP to prevent surface damage or excess algae.
8. Power down Mark 5, recirculation pump and VFD (if provided). Put the VFD disconnect switch in the off position. Supplemental heat will be required if the room temperature drops below (-20° F).
9. Disconnects for recirculation pump and optional VFD should be lockout / tag out to prevent accidental powering of equipment.

Helpful Hint:

It is recommended that a manual backwash at a full flow rate for an extended time of 5 to 6 minutes is done a minimum of once a year. If your system has the optional air scour feature, it is recommended that the air scour feature is not used during this suggested preventive maintenance backwash. This suggested manual extended flow backwash extends the media life and could prevent having to replace the sand in your filter.

Perimeter Overflow & Recirculation

Perimeter Overflow & Recirculation System

Your low carbon stainless steel pool perimeter will require maintenance. See the section [Maintenance & Product Information – Proper Care & Maintenance Guide of Stainless Steel Products](#).

TYPE POOL

The stainless steel recirculation system on your pool is Paddock Gutter R300 or C100 or M100 TG or DI (drop in) top grate; or TGEC-top grate extra chamber or TGDD-top grate deck drain with Evacuator, with integral deck drain with evacuator and draw points, including HDPE Grating.

Has Tile Facia and Bartlett End walls.

It has [] filtered water inlet fittings around the perimeter. Should they ever need replacing, the size is [] **DELETE THIS IF TROUGH OR DECK DRAIN ONLY**

Should you ever need other parts, please refer to **Drawing No. []**

NOTE: Any Missing Inlet Fittings Should Be Replaced Immediately, To Prevent Possible Injury.

Modular Deck Drain and/or Evacuator

The Evacuator and Deck Drain system on your pool is a Modular Deck Drain with Evacuator and dropouts to Sanitary Drain including HDPE Grey or White Grating.

Please refer to **Drawing No. [] DELETE IF NO EVACUATOR**

The Deck Drain system on your pool is Modular Deck Drain with dropouts to Sanitary Drain including HDPE Grey or White Grating. Please refer to **Drawing No. [] DELETE IF NOT DECK DRAIN only**



Operation Guidelines

Congratulations on your recent purchase and installation of a Paddock Evacuator® Source-Capture System. The Evacuator is an engineered solution designed specifically for your facility to work with your mechanical (HVAC) system to eliminate and/or prevent air quality issues. Evacuator Technology source-captures and exhausts heavy trichloramine-laden air and other disinfectant by-products (DBPs) directly from the pool's surface and wet deck before this contaminated air can be recirculated through your mechanical system. We appreciate your commitment to healthy air quality.

Evacuator Design Specifications: Refer to Project Drawing(s)

Maintenance for Evacuator System(s)

Integral Gutter Evacuator System

- See **Stainless Steel Products Care & Maintenance** and **Grating High Density Polyethylene (HDPE)**.

Modular Deck Drain &/ Deck Drain Evacuator System

- Rinse with fresh water after cleaning the pool deck to ensure no dirt or debris is left on the surface of the grating.
- Large debris should not be washed into deck drain. The risk of poor drainage or drain blockage could create an issue of water pooling on the deck and become a hazard to pool staff and patrons.
- Using a 3/16" hex driver, check the cam-lock screws occasionally to ensure they are still tightened as desired. Cam-lock screws are stainless steel material, be careful not to over-tighten as the screw may be broken.
- If stains are present, use a cleaner such as Soft Scrub® and a nylon scrub brush. Scrub lightly as excess force could mar the finish. **Do not use 100% chlorine**, as commonly used to treat a pool, to clean a persistent stain.
- **Do not** use MEK, turpentine, or naphtha solvent. The grating is HDPE material see **GRATING/SHEETING HDPE Care & Cleaning Maintenance** sheet.

PVC Evacuator Bench System

- Rinse with fresh water and hand dry weekly to maintain a clean, spot-free surface.
- Use a non-abrasive mild detergent and cloth as necessary for cleaning.
- The top of bench is HDPE material see **GRATING/SHEETING HDPE Care & Cleaning Maintenance** sheet.

Wall-Mount System

- Rinse with fresh water and hand dry weekly to maintain a clean, spot-free surface.
- Polish with fiberglass wax twice a year to maintain gloss.

Maintenance for Evacuator System

Exhaust Fan Model: Greenheck

- Maintain as defined by Manufacturer's Installation, Operation, and Maintenance Manual.
- Exhaust fans may require routine maintenance procedures. Reference manual as needed.

Variable Frequency Drive (VFD) Model:

- Maintain as defined by Manufacturer's Operator's Manual.
- Owner to determine adequate operation levels at different load periods and document the appropriate settings. These VFD settings can be posted in the facility operating manual.

Typical modes / operation levels may include:

- Unoccupied Mode: facility may be closed during this time.
- Occupied Mode / Normal Operation: typical everyday use, normal "business" hours.
- Event Mode / High-Use Operation: swim meets, high-use periods, large bather loads.

Pool Maintenance

Clean facilities are safer, more attractive and provide a more enjoyable experience for everyone.

Pool

- Vacuum regularly to keep organics off the pool bottom.
- Backwash to remove accumulating organics in the sand filters as recommended by manufacturer.
- Recharge regenerative media filters regularly to remove accumulated organics as recommended by manufacturer.

Pool Deck

- Wash down pool deck regularly to remove organics that are brought into the facility by patrons & guests, which are also produced because of facility use by patrons.
- Use non-oxidizing cleaning solutions to clean the deck.
- Clean deck drains periodically to remove build-up of organics.

Pool Deck Equipment

- Rinse and clean deck equipment on a regular basis to remove build-up of organics and corrosive condensate from chloramines and DBPs.
- Periodically wipe down stainless steel goods to remove caustic residue. Apply polish to stainless steel deck equipment, doors, water fountains, and any other fixtures that may be affected.

Patron Hygiene Program

- An effective patron hygiene program will greatly improve air and water quality, along with the staff and user experience.
- Post facility signage to encourage good personal hygiene programs.

- Swim Coaches can give swimmers breaks every 30 to 60 minutes. Urine is a major contributor to organic loading of a pool and a source of eye and skin irritation.
- Parents can schedule “out of pool” snack time that gives children a chance to use the restrooms.
- Facility Managers can schedule “Adult Only” swim time every hour.
- Everyone can help by encouraging showering and bathroom use before entering the pool, water park, spa, or any body of water within an aquatic facility.
- Maintain a “clean pool deck” policy: no street shoes, glass, food allowed on deck, etc.

Clean facilities are safer, more attractive, and provide a more enjoyable experience for all.

Pool Water Considerations

Filtration:

- A properly functioning filtration system is essential to providing patrons with a clean, healthy swimming environment. A well-functioning filtration system includes an accurately sized filtration system with an appropriate filter bed, proper turnover rate, and filter media to be in good condition.

Chemical Feed System

- Chemical Controller capable of controlling sanitizer (ORP readings) & pH levels.
- Chemical feed system that provides a controlled feed rate of sanitizing and pH controlling chemicals on demand as needed.

Secondary Pool Disinfection

- Secondary disinfection systems can be added for additional layer of sanitation, **and** chloramine reduction at point of contact. Systems must be maintained on a regular, scheduled basis according to the manufacturer’s guidelines for optimal operation and disinfection.
- Enzymes: supplementing your water chemistry program with Orenda™ Technologies Catalytic Enzymes will encourage the bio-oxidation of organic contaminants commonly found in pools, spas, and other recreational water systems. These enzymes naturally consume and digest oils and organics allowing your sanitizer (chlorine/bromine) to be more effective. Proper use of enzymes can also reduce chloramine production.

Water Chemistry

- See Section 1 on Table of Contents, under Special Instructions – **Pool Chemistry & Sanitation.**

Air Quality Recipe for Success with Evacuator System

Introduction:

Most indoor swimming environments pose a challenge for owners and operators due to the multitude of factors that are required to provide a safe, comfortable swimming environment. Treating pool water with an oxidizing sanitizer is a must for maintaining healthy pool water. Unfortunately, there is a resulting reaction which causes issues for most indoor swimming environments.

All pools generate off-gassing Disinfectant By-Products (DBPs) because of oxidizing chemicals (chlorine/bromine) doing what they are supposed to do: *Oxidize Organics*. Organics could be defined as common foreign objects introduced to the pool: dirt, hair, skin cells, saliva, urine, etc. The issue relative to indoor pools and oxidizing organics is where these DBPs go and what impact they are having on the following: Patrons & Staff, Facility & Replacement Costs, Operating Costs, and Reputation.

Facts:

- Swimmers introduce organics into pools and onto pool decks which must be oxidized to maintain a healthy environment.
- The oxidation process results in DBPs off-gassing from the chlorinated pool water, including water splashed onto pool decks as well as aerosolize through water features.
- Traditional indoor aquatic facility HVAC systems are designed to heat, cool, and/or dehumidify natatorium air. They also are designed to introduce outdoor air (dilution) on an as-needed basis.
- The combination of chlorine oxidizing organics, DBPs off-gassing from the water's surface & pool deck, and the HVAC re-circulating DBP-laden air, creates a compounding effect of the contaminated air, which all contribute to a "Poor Indoor Air Quality Cycle".

Water & Air: Bridging the Gap

A swimming pool's water purification system, operating procedures, and resulting water quality conditions serve as the foundation for a natatorium's overall environment. Water temperature, filtration effectiveness, water chemistry conditions, chemical feed systems, types of chemicals, supplemental disinfecting equipment, facility maintenance procedures, and the organic load in pool water (clarity is an indicator) all contribute to the health of the pool water in both a positive and/or negative way. A swimming pool is a living biological 'science project' and requires consistent professional maintenance to stay ahead of compounding issues.

A natatorium's mechanical system provides patron comfort in the natatorium. This depends on operating parameters, equipment condition, and engineered airflow. The equipment must be designed properly and maintained on a regular basis to ensure proper effective operation.

Facility Air Considerations

Mechanical System Design & Operation

- | | |
|---|--|
| <ul style="list-style-type: none">• Proper Airflow Rates:<ul style="list-style-type: none">○ Total Airflow○ Supply Air○ Exhaust Air○ Outdoor Air○ Evacuator Exhaust• Duct System Design<ul style="list-style-type: none">○ Proper Return & Supply Distribution○ Avoid Dead Spots, Stratification, & Zonal Effects○ May Need Supply Register Adjustments○ May Need Supplemental Directional Fans | Design Parameters

_____ |
|---|--|

Secondary Facility Air Disinfection

- Cold Plasma Ionization: Located within the Pool Dehumidification Unit (PDU), this system disinfects and reduces VOC (volatile organic compound) levels in the air being recirculated in the indoor aquatic environment. This technology creates positive and negative ions, which are drawn to airborne particles due to their polarization, making them larger and increasing the effectiveness of filtration. In the same manner, they attach to pathogens such as viruses, bacteria, and mold spores, robbing and deactivating the hydrogen component of the pathogen creating a cleaner/safer environment. It also has additional air quality improvements such as odor control and reducing allergens. The use of the Cold Plasma system will also allow you to run your outside air at lower levels when conditions warrant it, saving energy.

System Balance:

Paddock Evacuator Technology is designed to complement the operation of the existing mechanical system. Upon installation of Evacuator Technology, the owner/operator should consult his servicing mechanical contractor to balance the existing mechanical system's exhaust rate with that of the Evacuator.

Balance Mechanical System to:

- Chloramines are always produced and released into the air in aquatic facilities, even during unoccupied times.
- A recommended 0.05"—0.15" WC negative pressure must be always maintained in the natatorium air space. This keeps the 'pool [corrosive air] in the pool [environment].'
- Maintain outdoor air introduction through the existing mechanical system as designed by a professional mechanical engineer and/or manufacturer's recommendation and at least the ASHRAE minimum outdoor air standard, unless otherwise specified.
- **Opening doors and windows are not recommended, as this can overload the mechanical equipment, interrupt the intended air flow patterns, and/or create an environment with bad (or worse) air conditions.**
- Owner/operator may reduce exhaust air further in the existing mechanical system during off-hour / unoccupied times to recover energy costs as design allows. Technology now exists that allows facilities to run below ASHRAE minimum outdoor air volumes based on certain criteria.
- Reduce the exhaust rate of the existing mechanical system as required. In some cases, the exhaust fan(s) in the existing mechanical system may be shut down completely as Evacuator Technology may handle 100% of the required exhaust.
- Source-capture exhaust removes a much higher amount (percentage) of airborne chloramines and other disinfection by-products per CFM exhaust than conventional return exhaust.
- Turn off / disconnect supplementary exhaust fans in the space, per design. Most of the exhaust will typically be through the Evacuator, unless otherwise designed. Please check with your installer or the supplied drawings to verify this information.
- **The Evacuator should run 24 hours per day, 365 days per year.**

Maintenance

- Establish a routine maintenance schedule per manufacturer's guidelines.
- Monitor system airflow rates, to be confirmed by facility operator monthly or when issues arise.
- Hire a HVAC maintenance company / mechanical contractor to manage a preventative maintenance schedule who is accustomed to dealing with indoor pools to ensure proper operation and routine up-keep.
- HVAC operating schedule that meets the need of facility programming.
- Consider design upgrades to enhance efficiency and effectiveness of existing system(s).
- When replacing the existing mechanical system, complete a study to determine the best system(s) available based on new technology and code requirements.

Chloramines are always produced and released into the air in aquatic facilities, even during unoccupied times.

Owners Responsibility & Suggested Operating Guidelines to Complement Evacuator Technology:

- Ensure Evacuator is always running: 24 hours per day, 365 days per year. If Evacuator is deemed to not be operational, contact Paddock or your local mechanical representative immediately.
- Reduce organics introduced into the pool area by enforcing aggressive patron hygiene and maintenance programs.
- Maintain pool water chemistry based on the guidelines provided above.
- Maintain Evacuator, Pool, & Mechanical System as outlined above for best results.
- Balance existing mechanical system to ensure a recommended 0.05"—0.15" WC negative pressure exists in the facility.
- Maintain existing mechanical system to ensure proper airflow and outdoor air introduction as designed per the facilities operating parameters.
- HVAC Maintenance Company / Mechanical Contractor is scheduled to provide routine maintenance as defined by the mechanical equipment manufacturer.

Preventative maintenance is the key!

Bray

SERIES 30/31 Wafer/Lug
2"-20" (50mm-500mm)

BUTTERFLY VALVES
RESILIENT SEATED



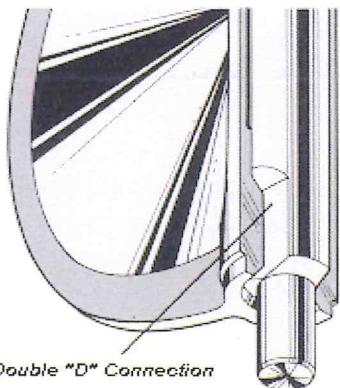
The
High
Performance
Company

SERIES 30/31

2"-20" (50mm-500mm)
 Bray® Controls is proud to offer a high quality line of butterfly valves to meet the requirements of today's market. Combining years of field experience, research and development, Bray has designed many unique features in the Series 30/31 not previously available. The results are longer service life, greater reliability, ease of parts replacement and interchangeability of components.

DISC AND STEM CONNECTION (A)

Features a high-strength through stem design. The close tolerance, double "D" connection that drives the valve disc is an exclusive feature of the Bray valve. It eliminates stem retention components being exposed to the line media, such as disc screws

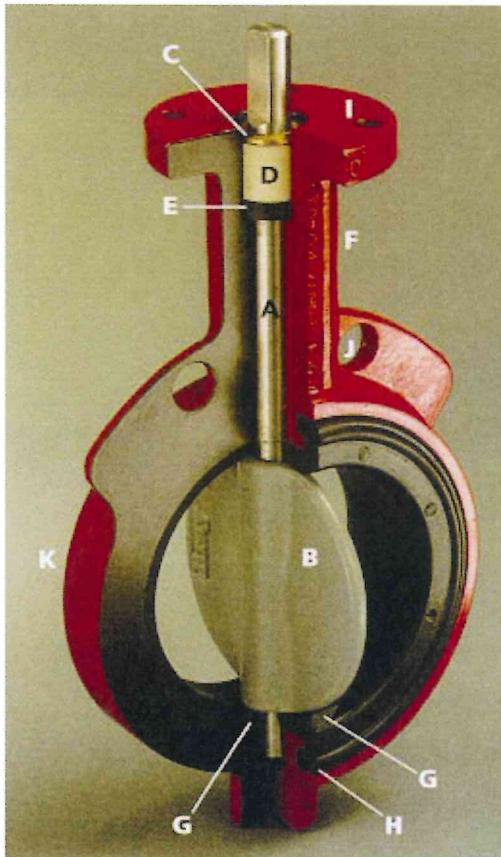


Double "D" Connection

and taper pins, which commonly result in leak paths, corrosion, and vibration failures. Disc screws or taper pins, due to wear and corrosion, often require difficult machining for disassembly. Disassembly of the Bray stem is just a matter of pulling the stem out of the disc. Without fasteners obstructing the line flow, the Series 30/31 Cv values are higher than many other valves, turbulence is reduced, and pressure recovery is increased. The stem ends and top mounting flange are standardized for interchangeability with Bray actuators.

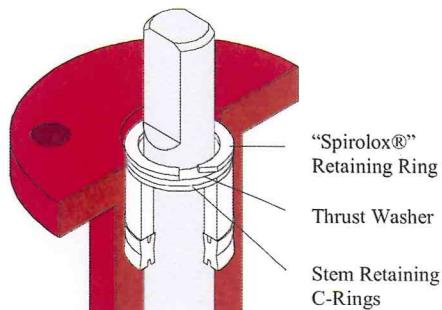
DISC (B)

Casting is spherically machined, hand polished to provide a bubble-tight shut off, minimum torque, and longer seat life. The disc O.D. clearance is designed to work with all standard piping.



"SPIROLOX®" RETAINING RING (C)

The stem is retained in the body by means of a unique Stainless Steel "Spirolox®" retaining ring, a thrust washer and two C-rings, manufactured from brass as standard, stainless steel upon request. The retaining ring may be easily removed with a standard hand tool. The stem retaining assembly prevents unintentional removal of the stem during field service.



**"Spirolox®" designation is a registered trademark of TRW, Inc.

STEM BUSHING (D)

Non-Corrosive, heavy duty acetal bushing absorbs actuator side thrusts.

STEM SEAL (E)

Double "U" cup seal design is self-adjusting and gives positive sealing in both directions. Prevents external substances from entering stem bore.

NECK (F)

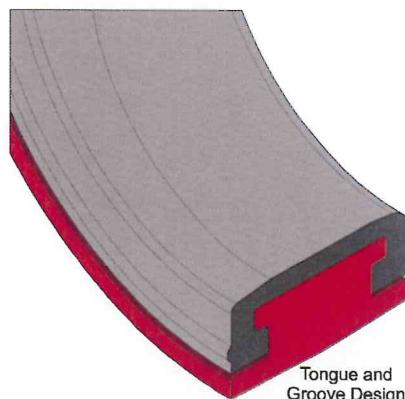
Extended neck length allows for 2" of piping insulation and is easily accessible for mounting actuators.

PRIMARY AND SECONDARY SEALS (G)

The Primary Seal is achieved by an interference fit of the molded seat flat with the disc hub. The Secondary Seal is created because the stem diameter is greater than the diameter of the seat stem hole. These seals prevent line media from coming in contact with the stem or body.

BRAY UNIQUE SEAT DESIGN (H)

One of the valve's key elements is Bray's unique "Tongue-and-Groove" seat design. This resilient seat features lower torque than many valves on the market today and provides complete isolation of flowing media from the body. The tongue-and-groove seat to body retention method is superior to traditional designs, making field replacement simple and fast. The seat is specifically designed to seal with slip-on or weld-neck flanges. The seat features a molded O-ring which eliminates the use of flange gaskets. An important maintenance feature is that all resilient seats for Bray butterfly valves Series 20, 21, 30, 31, 34 are completely interchangeable.



Tongue and Groove Design

SERIES 30/31

ACTUATOR MOUNTING FLANGE AND STEM CONNECTION (I)

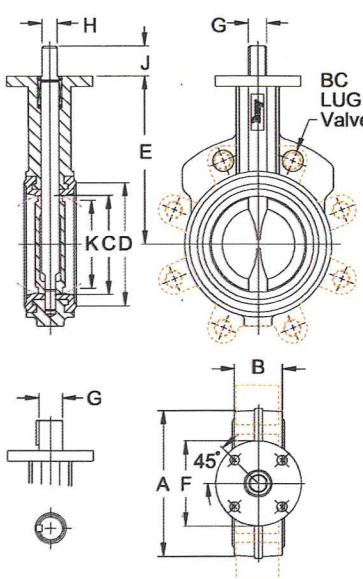
Universally designed to ISO 5211 for direct mounting of Bray® power actuators and manual operators.

FLANGE LOCATING HOLES (J)

Provides quick and proper alignment during installation.

BODY (K)

One-piece wafer or lug style. Epoxy coating for excellent corrosion resistance. Bray valve bodies meet ANSI 150 pressure ratings for hydrostatic shell test requirements.



DESIGN FEATURES

Bray's Series 30 valve is a wafer version with flange locating holes, and the Series 31 is the companion lug version for dead-end service and other flange requirements. All Bray valves are tested to 110% of full pressure rating before shipment.

A major design advantage of Bray valve product lines is international compatibility. The same valve is compatible with most world flange standards - ANSI Class 125/150, BS 10 Tables D&E, BS4504 NP 10/16, DIN ND10/16, AS 2129 and JIS 10. In addition, the valves are designed to comply with ISO 5752 face-to-face and ISO 5211 actuator mounting flanges. Therefore, one valve design can be used in many different world markets. Due to a modular concept of design, all Bray® handles, manual gear operators and pneumatic and electric actuators mount directly to Bray valves. No brackets or adapters are required. Bray interchangeability and compatibility offers you the best in uniformity of product line and low-cost performance in the industry today.

EPOXY COATING CORROSION PROTECTION

Bray's standard product offers valve bodies with an epoxy coating, providing excellent corrosion and wear

resistance to the valve's surface. The Bray epoxy coating is a hard, high gloss red finish.

- Chemical Resistance - resists a broad range of chemicals including: dilute aqueous acids and alkalies, petroleum solvents, alcohols, greases and oils. Offers outstanding resistance to humidity and water.
- Weatherability - outdoor tested resistant to ultra-violet radiation.
- Abrasion Resistance - excellent resistance to abrasion.
- Impact Resistance - withstands impact without chipping or cracking.

NYLON 11 COATING

Optionally available for valve bodies where outstanding protection and performance is needed. A thermoplastic produced from a vegetable base, this coating is inert to fungus growth and molds. Nylon 11 is *USDA Approved*, as well as certified to ANSI/NSF 61 for water service.

- Corrosion Resistance - superior resistance to a broad range of chemical environments. Salt spray tested in excess of 2,000 hours and seawater immersion tested for over 10 years without corrosion to metal substrates. Nylon 11 features a very low coefficient of friction and excellent resistance to impact and ultra-violet radiation.

DIMENSIONS SERIES 30 WAFER

Valve Size	ins	mm	Mtg Flange Drilling						G	H	J	K		
			A	B	C	D	E	F						
2	50	3.69	1.62	2.00	2.84	5.50	3.54	2.76	4	.39	.55	.39	1.25	1.32
2½	65	4.19	1.75	2.50	3.34	6.00	3.54	2.76	4	.39	.55	.39	1.25	1.91
3	80	4.88	1.75	3.00	4.03	6.25	3.54	2.76	4	.39	.55	.39	1.25	2.55
4	100	6.06	2.00	4.00	5.16	7.00	3.54	2.76	4	.39	.63	.43	1.25	3.57
5	125	7.12	2.12	5.00	6.16	7.50	3.54	2.76	4	.39	.75	.51	1.25	4.63
6	150	8.12	2.12	5.75	7.02	8.00	3.54	2.76	4	.39	.75	.51	1.25	5.45
8	200	10.50	2.50	7.75	9.47	9.50	5.91	4.92	4	.57	.87	.63	1.25	7.45
10	250	12.75	2.50	9.75	11.47	10.75	5.91	4.92	4	.57	1.18	.87	2.00	9.53
12	300	14.88	3.00	11.75	13.47	12.25	5.91	4.92	4	.57	1.18	.87	2.00	11.47

SERIES 31 LUG

Lug Bolting Data		
BC	No. Holes	Thrcds UNC-2B
4.75	4	5/8-11
5.50	4	5/8-11
6.00	4	5/8-11
7.50	8	5/8-11
8.50	8	3/4-10
9.50	8	3/4-10
11.75	8	3/4-10
14.25	12	7/8-9
17.00	12	7/8-9

Valve Size	ins	mm	Mtg Flange Drilling						G	H	KEY SIZE	K		
			A	B	C	D	E	F						
14	350	17.05	3.00	13.25	15.28	13.62	5.91	4.92	4	.57	1.38	2.00	.39x.39	13.04
16	400	19.21	4.00	15.25	17.41	14.75	5.91	4.92	4	.57	1.38	2.00	.39x.39	14.85
18	450	21.12	4.25	17.25	19.47	16.00	8.27	6.50	4	.81	1.97	2.50	.39x.47	16.85
20	500	23.25	5.00	19.25	21.59	17.25	8.27	6.50	4	.81	1.97	2.50	.39x.47	18.73

Lug Bolting Data		
BC	No. Holes	Thrcds UNC-2B
18.75	12	1-8
21.25	16	1-8
22.75	16	11/8-7
25.00	20	11/8-7

SELECTION DATA

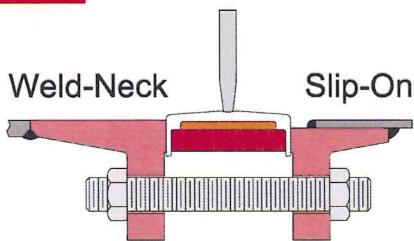
FLANGE REQUIREMENTS

Bray valves are designed for installation between ANSI Class 125/150 lb. weld-neck or slip-on flanges, BS 10 Tables D&E, BS 4504 NP 10/16, DIN ND 10/16, AS 2129 and JIS 10, either flat faced or raised faced. While weld-neck flanges are recommended, Bray has specifically designed its valve seat to work with slip-on flanges, thus eliminating common failures of other butterfly valve designs. When using raised face flanges be sure to properly align valve and flange. Type C stub-end flanges are not recommended.

Cv VALUES-VALVE SIZING COEFFICIENT

Valve Size		Disc Position (degrees)									
ins	mm	90°	80°	70°	60°	50°	40°	30°	20°	10°	
2	50	144	114	84	61	43	27	16	7	1	
2 1/2	65	282	223	163	107	67	43	24	11	1.5	
3	80	461	364	267	154	96	61	35	15	2	
4	100	841	701	496	274	171	109	62	27	3	
5	125	1376	1146	775	428	268	170	98	43	5	
6	150	1850	1542	1025	567	354	225	129	56	6	
8	200	3316	2842	1862	1081	680	421	241	102	12	
10	250	5430	4525	2948	1710	1076	667	382	162	19	
12	300	8077	6731	4393	2563	1594	1005	555	235	27	
14	350	10538	8874	5939	3384	2149	1320	756	299	34	
16	400	13966	11761	7867	4483	2847	1749	1001	397	45	
18	450	17214	14496	10065	5736	3643	2237	1281	507	58	
20	500	22339	18812	12535	7144	4536	2786	1595	632	72	

Cv is defined as the volume of water in U.S.G.P.M. that will flow through a given restriction or valve opening with a pressure drop of one (1) p.s.i. at room temperature. Recommended control angles are between 25°-70° open. Preferred



Note: Flanges on both sides of installed valve must be the same type

PRESSURE RATINGS*

For bi-directional bubble-tight shut off, disc in closed position:

Inches	mm	psig	bar
2-12	50-300	175	12
14-20	350-500	150	10

For Dead-end Service Applications:

With downstream flanges installed or with vulcanized seats, the dead-end pressure ratings are equal to valve bi-directional ratings as stated above. With no downstream flanges or with seats that are not vulcanized, the dead-end pressure rating for 2"-12" valves is 75 psi (5 bar) for 14"-20" valves, 50 psi (3.5 bar.)

* Pressure Ratings are based on standard disc diameters. For low pressure application, Bray offers a standard reduced disc diameter to decrease seating torques and to extend seat life, thus increasing the valve's performance and reducing actuator costs for the customer.

VELOCITY LIMITS

For On/Off Services

Fluids - 30 ft/sec (9m/s)

Gases - 175 ft/sec (54m/s)

EXPECTED SEATING/UNSEATING TORQUES (Lb.-Ins.)

Valve Size		Full-Rated Pressure Valve				Reduced Disc
ins	mm	50	100	150	175	50
2	50	125	130	135	140	125
2 1/2	65	195	205	215	220	195
3	80	260	275	290	297	260
4	100	400	425	450	462	267
5	125	615	670	725	755	410
6	150	783	871	953	1003	537
8	200	1475	1650	1825	1915	983
10	250	2240	2520	2800	2940	1493
12	300	3420	3870	4320	4545	2280
14	350	4950	5700	6450	-	3300
16	400	6400	7700	9000	-	4267
18	450	7850	9850	11850	-	5267
20	500	10300	12900	15500	-	6867

Valve Torque Rating - Bray has classified valve torque ratings according to 3 types: non-corrosive lubricating service, general service, and severe service. Torques listed above are for general services. Consult Bray for torque information corresponding to specific application.

TO USE TORQUE CHART, NOTE THE FOLLOWING:

- 1) For Bray valves, Series 20, 21, 30, 31 and 34.
- 2) Review Technical Bulletin No. 1001, Expected Seating/Unseating Torque's, for explanation of the 3 service classes and their related seating/unseating torque values for given pressure differentials of Full-Rated and Reduced Disc Diameter valves.

3) Dynamic Torque values are not considered. See Technical Bulletin No. 1002 for evaluation of Dynamic Torque values vs. Seating/Unseating Torque values.

- 4) Do not apply a safety factor to above torque values when determining actuator output torque requirement.
- 5) For 3 way assemblies where on valve is opening and other is closing, multiply torque by 1.5 factor.

SELECTION DATA

RECOMMENDED SPECIFICATIONS FOR BRAY SERIES

30/31 SHALL BE:

- Epoxy coated, cast iron, wafer or lug bodies.
- With flange locating holes that meet ANSI 125/150 (or BS 10 tables D&E, BS 4504 NP 10/16, DIN ND 10/16, AS 2129 and JIS 10) drillings.
- Through-stem direct drive double "D" design requiring no disc screws or pins to connect stem to disc with no possible leak paths in disc/stem connection.
- Stem mechanically retained in body neck and no part of stem or body exposed to line media.
- Tongue-and-groove seat design with primary hub seal and a molded o-ring suitable for weld-neck and slip-on flanges. Seat totally encapsulates the body with no flange gaskets required.
- Spherically machined, hand polished disc edge and hub for minimum torque and maximum sealing capability.
- Equipped with non-corrosive bushing and self-adjusting stem seal.
- Bi-directional and tested to 110% of full rating.
- Bi-directional pressure ratings:
2"-12" valves: 175 PSI
14"-20" valves: 150 PSI
- Lug bodies for dead end service
With downstream flanges or vulcanized seats, pressure ratings are equal to bi-directional ratings as stated above.
With no downstream flanges or non-vulcanized seats:
2"-12" valves: 75 psi.
14"-20" valves: 50 psi.
- No field adjustment necessary to maintain optimum field performance
- The valve shall be Bray Series 30 wafer / 31 lug or equal.

TEMP. RANGE OF SEATS

Type	Maximum	Minimum
EPDM	+250°F(121°C)	-40°F(-40°C)
Buna-N	+212°F(100°C)	0°F(-18°C)
FKM*	+400°F(204°C)	0°F(-18°C)

MATERIALS SELECTION

2"-20" (50mm-500mm)

BODY:

- Cast Iron ASTM A126 Class B
- Ductile Iron ASTM A536
- Cast Steel ASTM A216 WCB
- Aluminum ASTM B26

SEAT:

- Buna-N - Food Grade
- EPDM - Food Grade
- FKM*
- White Buna-N - Food Grade

STEM:

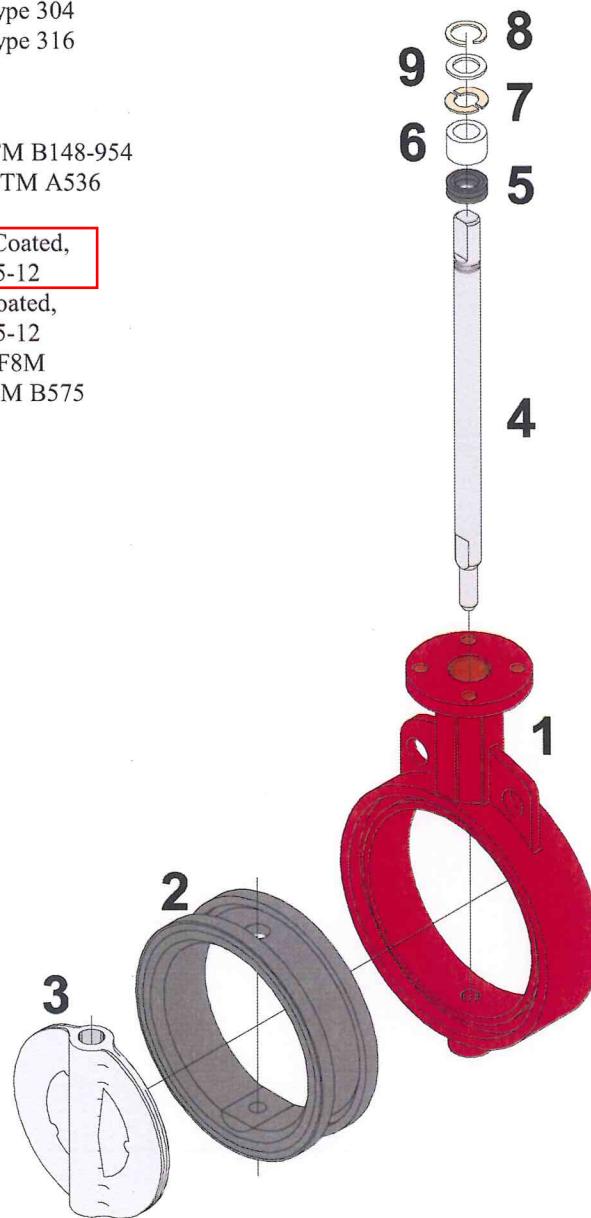
- Coated Carbon Steel
- 416 SS ASTM A582 Type 416
- 304 SS ASTM A276 Type 304
- 316 SS ASTM A276 Type 316
- Monel

DISC:

- Aluminum Bronze ASTM B148-954
- Coated Ductile Iron ASTM A536 Gr. 65-45-12
- Ductile Iron,Nylon 11 Coated, ASTM A536 Gr. 65-45-12
- Ductile Iron, Halar® Coated, ASTM A536 Gr. 65-45-12
- 316 SS ASTM A351 CF8M
- Hastelloy® C-276 ASTM B575 Alloy N10276

COMPONENTS

No.	Qty.	Description
1	1	Body
2	1	Seat
3	1	Disc
4	1	Stem
5	1	Stem Seal
6	1	Stem Bushing
7	2	Stem Retainer
8	1	Thrust Washer
9	1	Retaining Ring



*FKM is the ASTM D1418 designation for Fluorinated Hydrocarbon Elastomers (also called Fluoroelastomers.)

Hastelloy® is a registered trademark of Haynes International, Inc.

Halar® is a registered trademark of Ausimont U.S.A., Inc.

Weights are in lbs.

INSTALLATION

Position the disc in the partially open position, maintaining the disc within body face-to-face. Place the body between flanges and install flange bolts. *Do not use flange gaskets.*

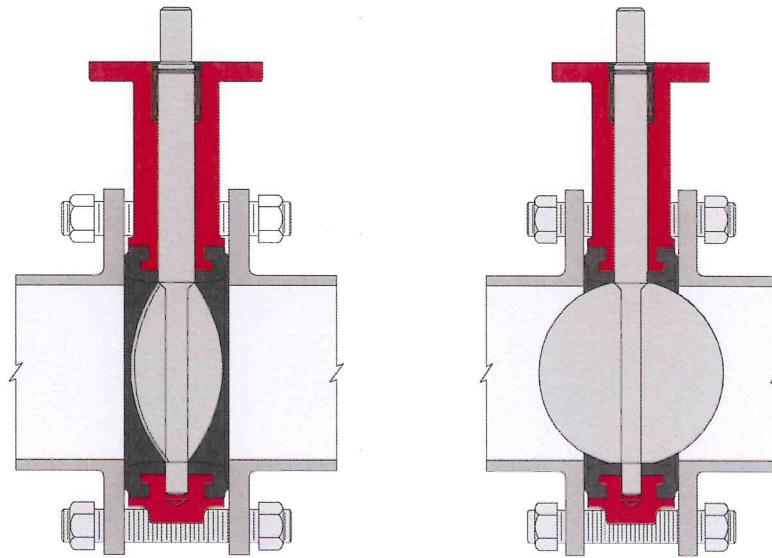
Before tightening flange bolts, carefully open the disc to the full open position to ensure proper alignment and clearance of the disc O.D. with the adjacent pipe I.D. Leave disc in the full open position and tighten flange bolts per required specification. Once bolts are tightened, carefully rotate disc to closed position to ensure disc O.D. clearance.

MAINTENANCE AND REPAIR

The many Bray features minimize wear and maintenance requirements. No routine lubrication is required. All components-stem, disc, seat, bushing, stem seal, etc., are field replaceable, no adjustment is needed. If components require replacement, remove the valve from the line by placing the disc near the closed position, spread the flanges, support the valve, then remove the flange bolts. No valve maintenance, including removal of manual or power actuators, should be performed until the piping system is completely depressurized.

DISASSEMBLY

Remove handle, gear operator , or actuator from actuator mounting flange. Remove "Spirolox®" retaining ring. Remove stem with its thrust washer and two C-ring stem retainers. Remove bushing and seal. Remove the disc from the seat, protecting disc edge at all times. Push the seat into an oval shape, then remove the seat from the body.

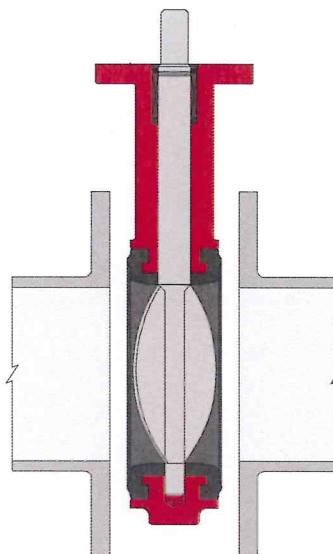


Disc in the Partially Open Position

Disc in the Full Open Position

Assembly

Push the valve seat into an oval and push it into the body with seat stem holes aligned to body stem holes. Push stem into the stem hole of body. For aid in inserting disc, slightly protrude stem beyond the I.D. of the top of the seat. Install a light coating of food grade silicone oil (for silicone free applications use soap and water) on the I.D. of seat. Insert the disc into the seat by lining up the disc hole with the stem hole of the seat. Note: the broached double "D" flats in the disc must be toward the bottom of valve body. (Take special care when lining disc up with stem.) With a downward pressure and rotating the stem back and forth, push the stem until the stem touches the bottom of the body stem hole. Make certain that when pushing the stem through disc bottom, the broached flats of stem and disc are aligned. After the stem has engaged the disc, but before the stem is firmly seated in the body, replace the stem seal and bushing. Install the two C-ring stem retainers in the groove in the stem and thrust washer on top of the C-ring. Seat the stem firmly in the body and install the "Spirolox®" retaining ring back into position.



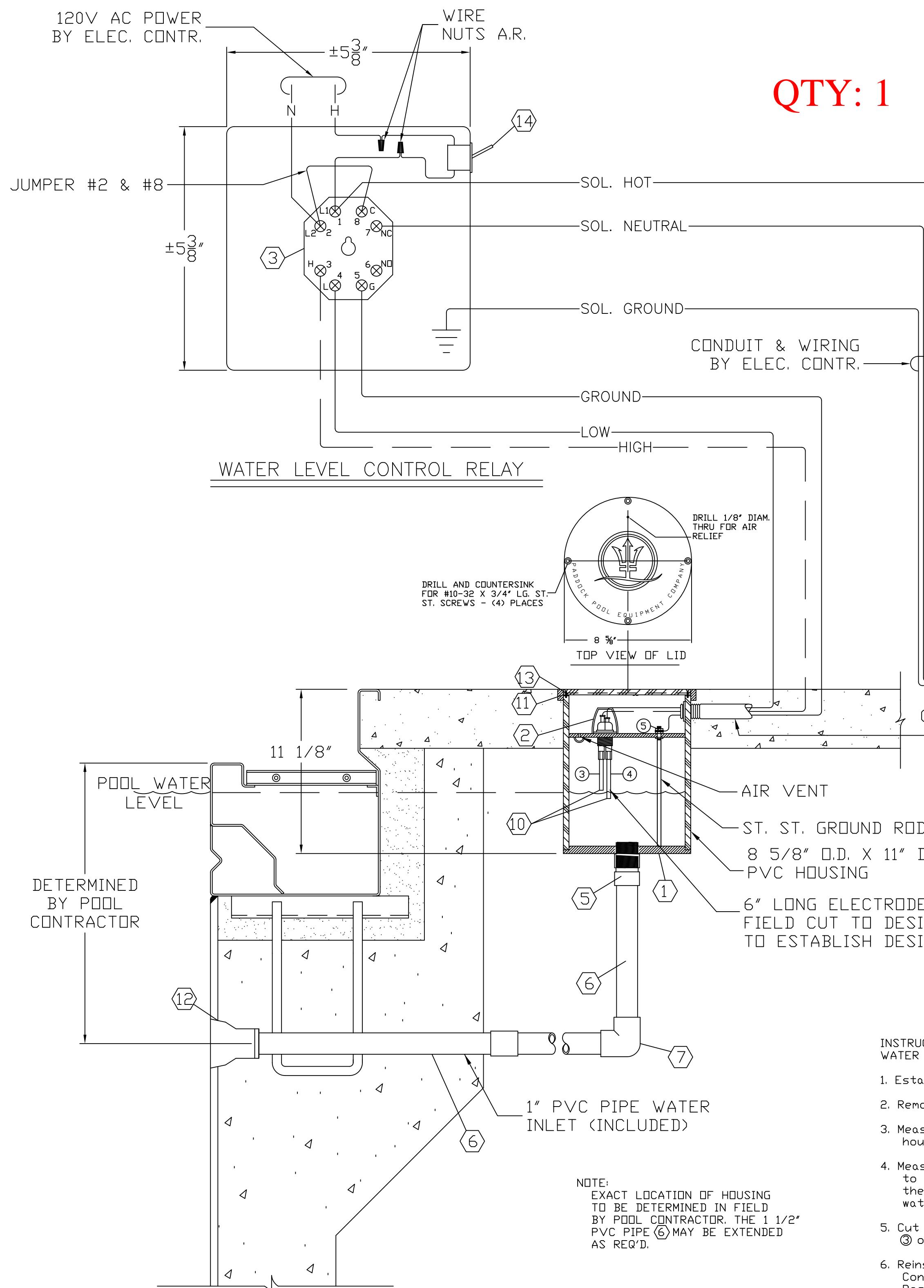
Disc in the Near Closed Position

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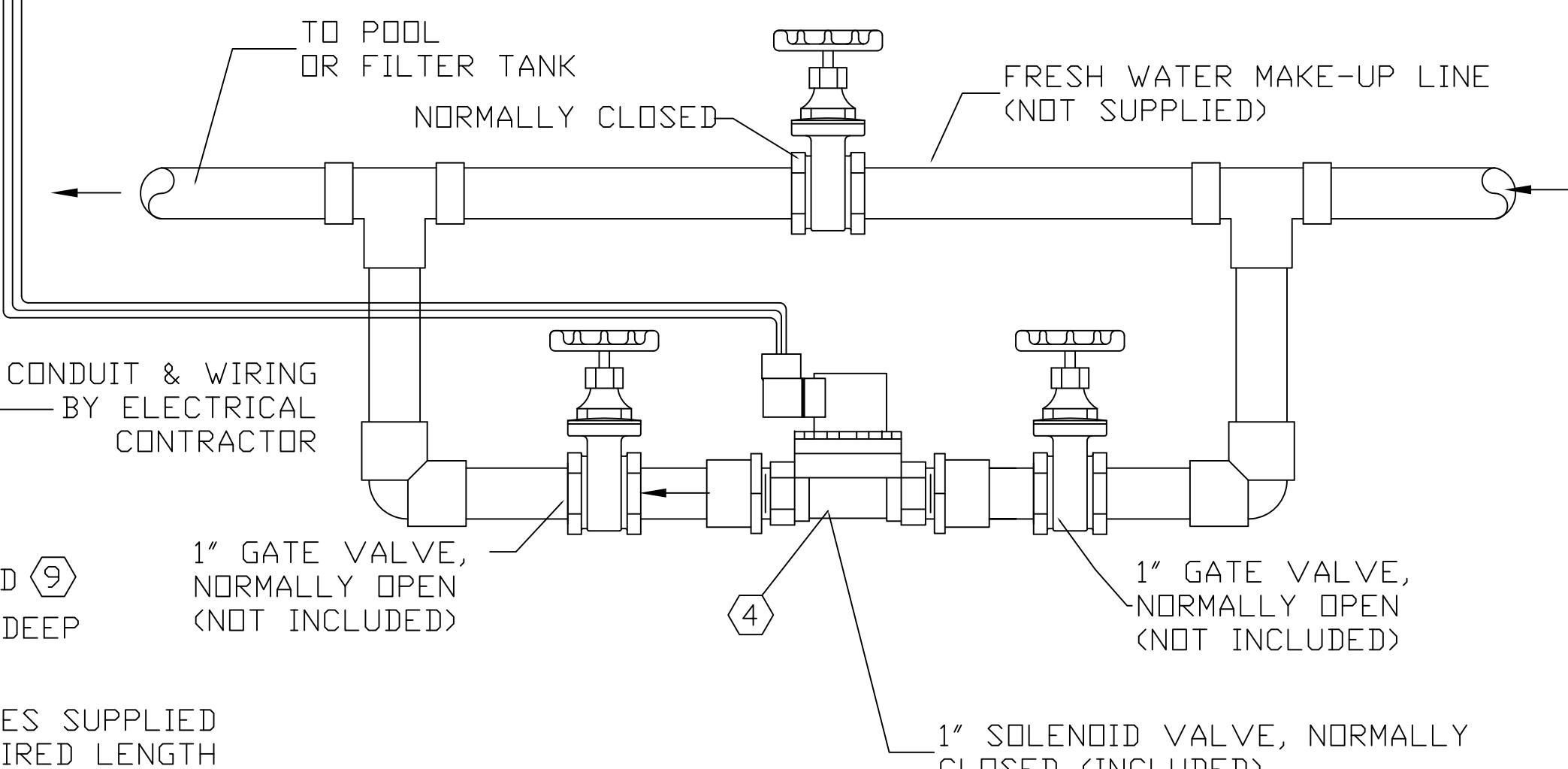
Bray CONTROLS®

A Subsidiary of BRAY INTERNATIONAL, INC.
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Phone: 281.894.5454 Fax: 281.894.9499
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Project Documentation



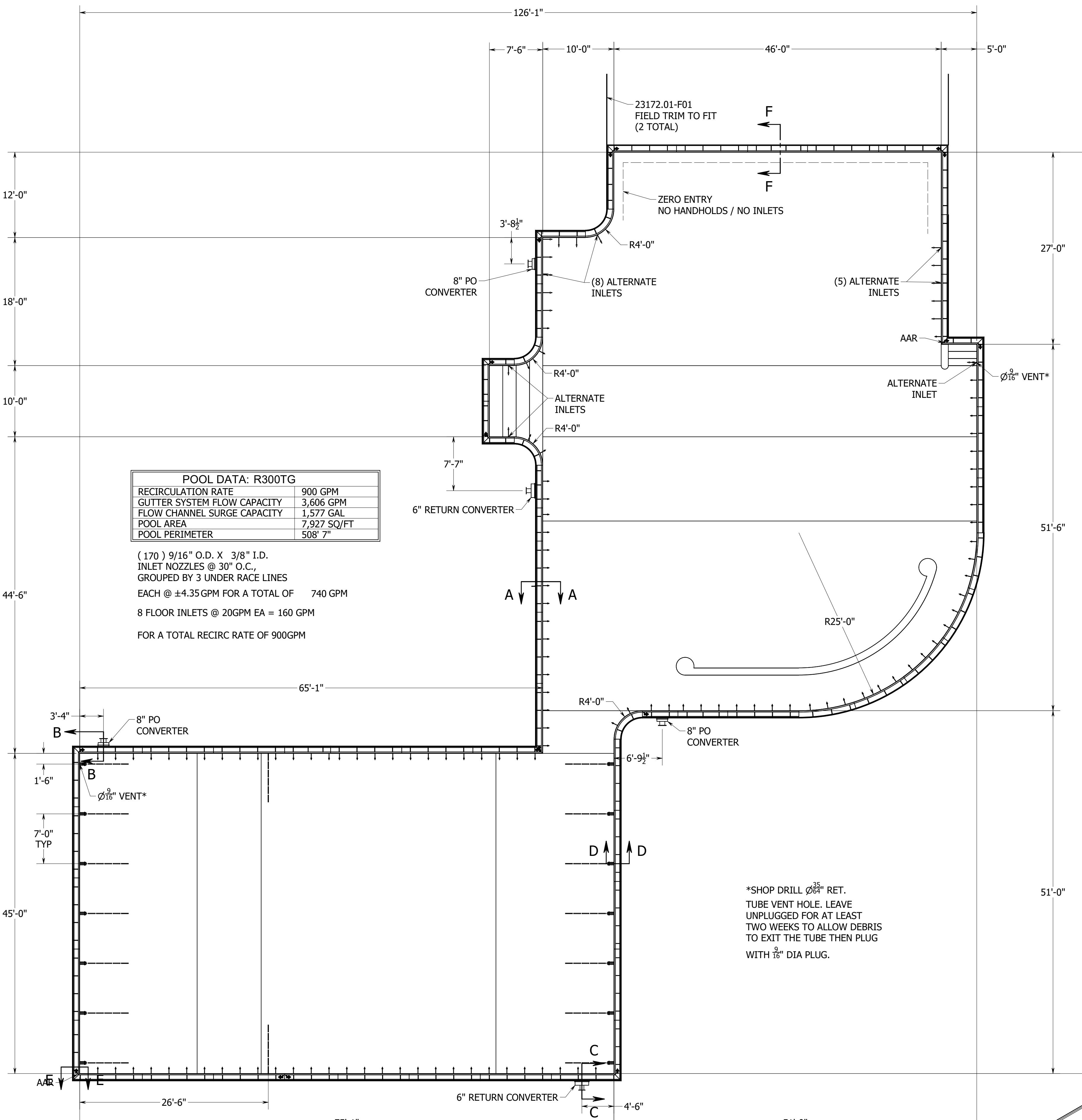
ITEM	QTY	DESCRIPTION
1	1	PVC HOUSING W/AIR VENT (AB-1325-A)
2	1	ELECTRODE HOLDER - TYPE CE 2 44500 OA B/W A-10-536
3	1	WARRICK RELAY MODEL #16MC1A1 & 5 3/8" x 5 3/8" x 3 3/4" MNT. BOX
4	1	SOLENOID VALVE-1" -110 V SLOW CLOSING ADJUSTABLE FROM 1/2 SEC. TO 4 1/2 SEC.
5	1	1" PVC MALE ADAPTOR
6	2	1" X 24" LG. PVC SCH. 80 NIPPLE T.O.E.
7	1	1" PVC SCH. 80 90° SOCKET ELL
8		
9	1	1/4"Ø X 7" L W/ 1 1/2" THD. 1 END & (3) ST. ST. NUTS & WASHERS
10	2	ELECTRODE RODS TYPE 316 ST. ST. X 6" LONG X 1/4"Ø
11	1	SOFT RUBBER GASKET (DWG. AB-2347)
12	1	HAYWARD SP-1019 GUTTER DRAIN 2" W/2" X 1" SOC X SOC BUSHING
13	4	#10-32 FLATHEAD PHILLIPS X 3/4" LONG ST. ST. SCREWS
14	1	TOGGLE SWITCH-SERVALITE #91086U, 10A, 125VAC, DOUPLE INSULATED



NOTE:
SOLENOID VALVE MUST BE INSTALLED IN THE POSITION SHOWN

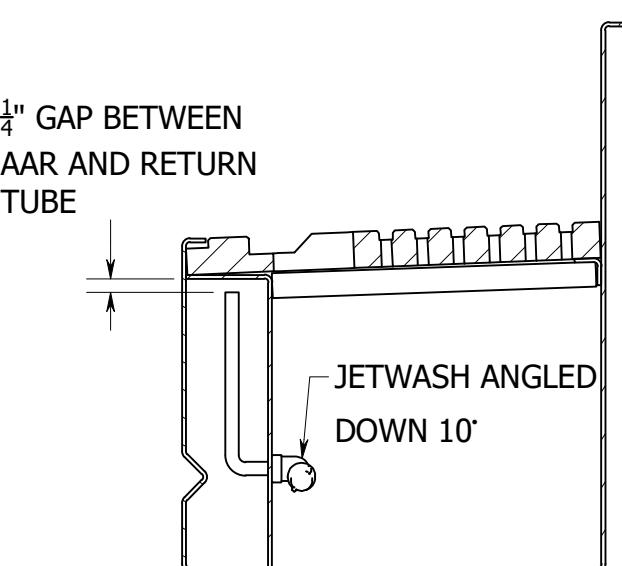
PN9500032

555 Paddock Parkway Rock Hill, SC 29730 Phone: (803)324-1111 Fax: (803)324-1116 info@paddockindustries.com	DESCRIPTION #6610 WATER LEVEL CONTROLLER DETAILS-1" SOLENOID
DO NOT SCALE DRAWING TOLERANCE UNLESS OTHERWISE NOTED: X. ± 1/16 .X. ± .020 1/X ± 1/32 .XX. ± .010 X ± 1/4" .XXX. ± .005	JOB NAME XXXXXX
DRAWN DCR 4/11/15	LOCATION XXXXXXXX
CHECKED	CUSTOMER XXXXXXX
APPROVED	SCALE (UNLESS NOTED): AS SPECIFIED SIZE C PART NO. XXXX
MATL: PVC	QTY. XXX W.O. # XXX REV. 0
	DWG. NO. A-1326-1"SOLE



POOL PLAN
SCALE 1/8" = 12"

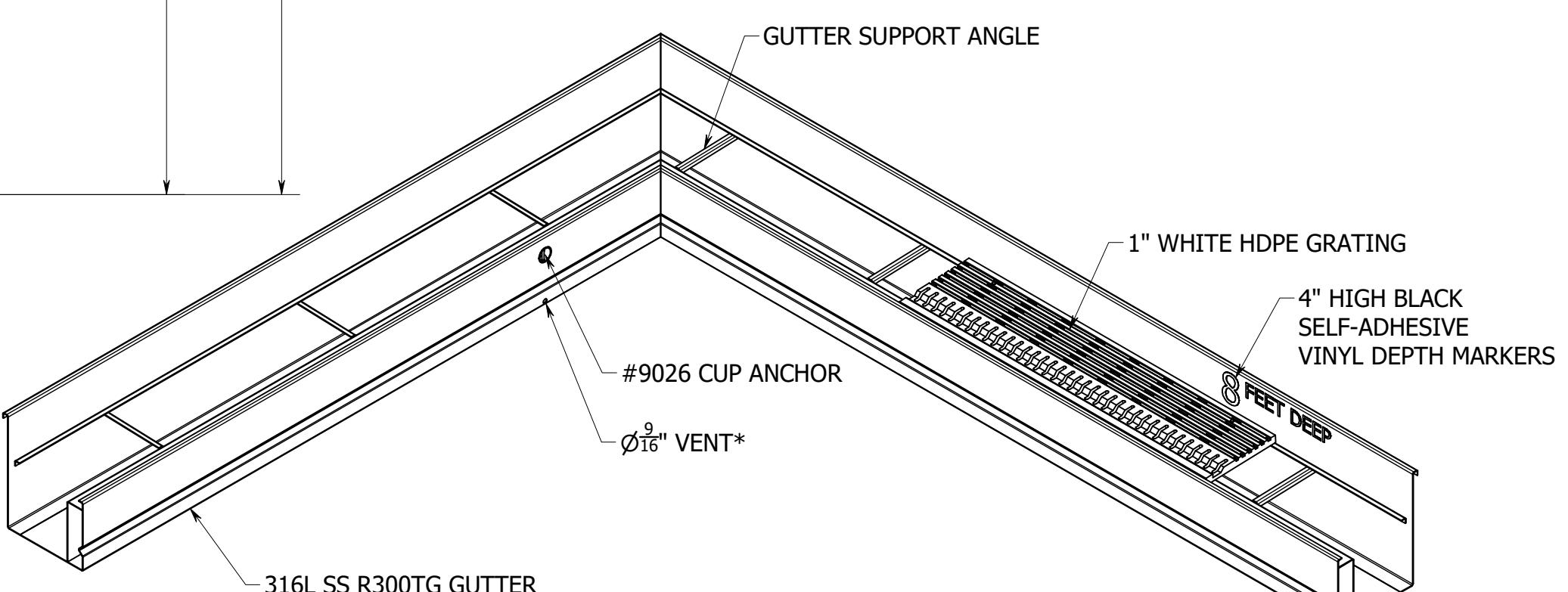
CUP ANCHOR DETAIL
SECTION D-D
SCALE 3/16" = 1"



JETWASH & AAR DETAIL
SECTION E-E
SCALE 3/16" = 1"

**BLACK VINYL SELF-ADHESIVE
DEPTH MARKER DECALS,
4" HIGH WHOLE NUMBERS,
2" HIGH LETTERS & FRACTIONAL NUMBERS**

DEPTH MARKERS	
DEPTH	
1 FOOT DEEP	3
1 1/2 FEET DEEP	1
2 FEET DEEP	2
2 1/2 FEET DEEP	3
3 1/2 FEET DEEP	5
4 FEET DEEP	5
4 1/2 FEET DEEP	2
5 FEET DEEP	2
8 FEET DEEP	5

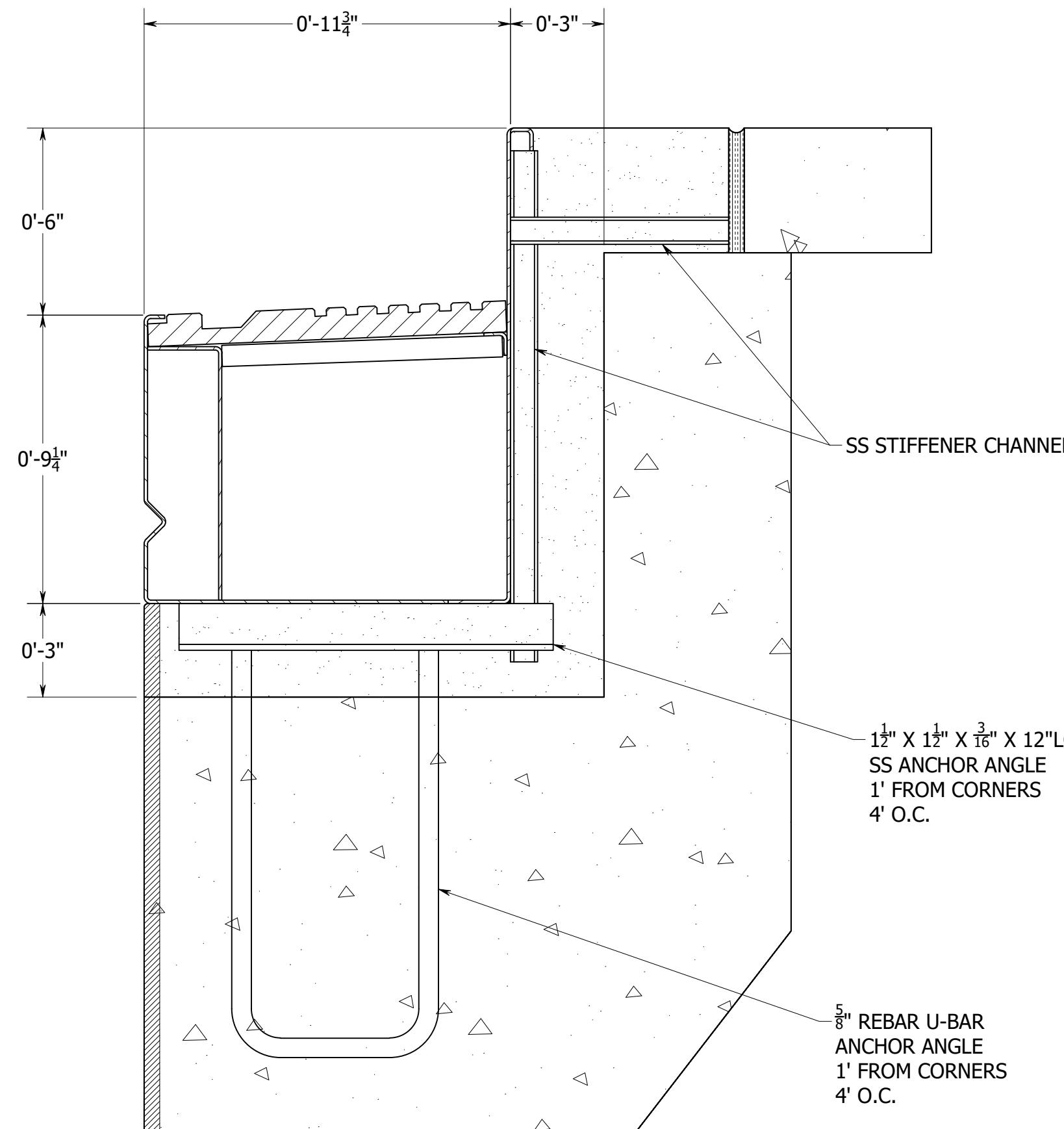


PARTS LIST		
PART NUMBER	QTY	DESCRIPTION
23172.01-SG01	11	R300, 120"
23172.01-SG02	1	R300, 105 1/2", CORNER
23172.01-SG03	1	R300, 120", CUP ANCHOR
23172.01-SG04	1	R300, 77 1/2"
23172.01-SG05	1	R300, 118", CORNER, (L) JETWASH
23172.01-SG06	1	R300, 118", CORNER, (R) JETWASH
23172.01-SG07	1	R300, 56"
23172.01-SG08	1	R300, 72"
23172.01-SG09	1	R300, 42", CORNER, ALT INLET
23172.01-SG10	1	R300, 60", CORNER, (R) JETWASH, NO INLETS
23172.01-SG11	1	R300, 60", CORNER, NO INLETS
23172.01-SG12	1	R300, 42", CORNER, (R) JETWASH, ALT INLET
23172.01-SG13	1	R300, 90", ALT INLETS
23172.01-SG14	1	R300, 78", CORNER, (L) JETWASH, ALT INLETS
23172.01-SG15	1	R300, 72", CORNER, ALT INLETS
23172.01-SG16	1	R300, 96", CORNER, (L) JETWASH, NO INLETS
23172.01-SG17	1	R300, 105 1/2", CORNER, (R) JETWASH, NO INLETS
23172.01-SG18	2	R300, 120", NO INLETS
23172.01-SG19	1	R300, 101", NO INLETS
23172.01-SG20	1	R300, 105 1/2", CORNER, (L) JETWASH, NO INLETS
23172.01-SG21	1	R300, 100 1/2", ALT INLETS
23172.01-SG22	1	R300, 118", CORNER, ALT INLETS
23172.01-SG23	1	R300, 60", DBL CORNER, NO INLETS, (R) JETWASH, AAR
23172.01-SG24	1	R300, 92 1/2"
23172.01-SG25	1	R300, 84"
23172.01-SG26	1	R300, 60", (L) JETWASH
23172.01-SG27	1	R300, 120", CUP ANCHOR
23172.01-SG28	1	R300, 120", (2) CUP ANCHORS
23172.01-SG29	1	R300, 114", CUP ANCHOR
23172.01-SG30	2	R300, 120", (2) CUP ANCHORS
23172.01-SG31	1	R300, 90", CORNER, CUP ANCHOR, (L) JETWASH
23172.01-SG32	1	R300, 90", (L) JETWASH
23172.01-SG33	1	R300, 120", CUP ANCHOR, (R) JETWASH
23172.01-SG34	1	R300, 105 1/2", CORNER
23172.01-SG35	1	R300, 90", CORNER, CUP ANCHOR, (R) JETWASH, AAR
23172.01-SG36	1	R300, 120", (2) CUP ANCHORS
23172.01-SG37	1	R300, 105 1/2", CORNER, (R) JETWASH, VENT, ALT INLET
23172.01-SG38	1	R300, 105 1/2", CORNER, CUP ANCHOR, VENT
23172.01-SG39	1	R300, 90", CORNER, CUP ANCHOR, VENT
23172.01-SG40	1	R300, 105 1/2", CORNER, (R) JETWASH
23172.01-SG41	1	R300, 105 1/2", CORNER, (R) JETWASH, NO INLETS
23172.01-RG01	3	RADIUS R300TG, 75 13/32"
23172.01-RG02	1	RADIUS R300TG, 75 13/32", ALT INLETS
23172.01-RG03	5	RADIUS R300TG, 94 1/4"
P0813-R300-8PO	3	R300 8" PERIMETER OVERFLOW CONVERTER
P0813-R300-6RET-8IN-R1	2	R300 6" RETURN CONVERTER
23172.01-F01	2	PL12GA x 16 13/32" x 120"
P0802-3750	187	INLET NOZZLE, 9/16" O.D. X 3/8" I.D.
P0802-0000	2	INLET NOZZLE, BLIND, Ø 9/16" O.D.
P0802-0-PLUG	189	TEST PLUG, 0
P0801.01-1200-R0	145	ANCHOR ANGLE, L1 1/2" x 1 1/2" x 3/16" x 12"
P0810-10x140x060	145	UBAR ANCHOR, RB Ø 5/8" x 32 15/16"
P2103-00700.04-R0	145	STIFFENER CHANNEL, C7/8" x 9/16" x 12GA x 7"
P2103-01564.01-R0	130	STIFFENER CHANNEL, C7/8" x 9/16" x 12GA x 16 13/32"
P2103-01000.01-R0	15	STIFFENER CHANNEL, C7/8" x 9/16" x 3/32" x 10"
P0806-F14000	11	CORNER GRATE SUPPORT, p12GA x 2" x 14"
P0899-R300TG-GG-11.5	2	INST GUIDE, SH 1" x 11 1/2" x 12"
P0899-GG-025-10	2	GRATE INSTALL GUIDE, SH 1" x 10" x 12"
P2104-12000.02-R0	2	EXTRA ANGLE, PL12GA x 5 3/32" x 120"
23172.01-P0899-DEPTH MARKER	1	VINYL DEPTH MARKER SET
P0899-APPO	1	ACCESSORY PACK OF PUNCH OUTS
ZSSC-001	1	ZUD SS CLEANER
SBP-001	6	SCOTCH BRITE PAD

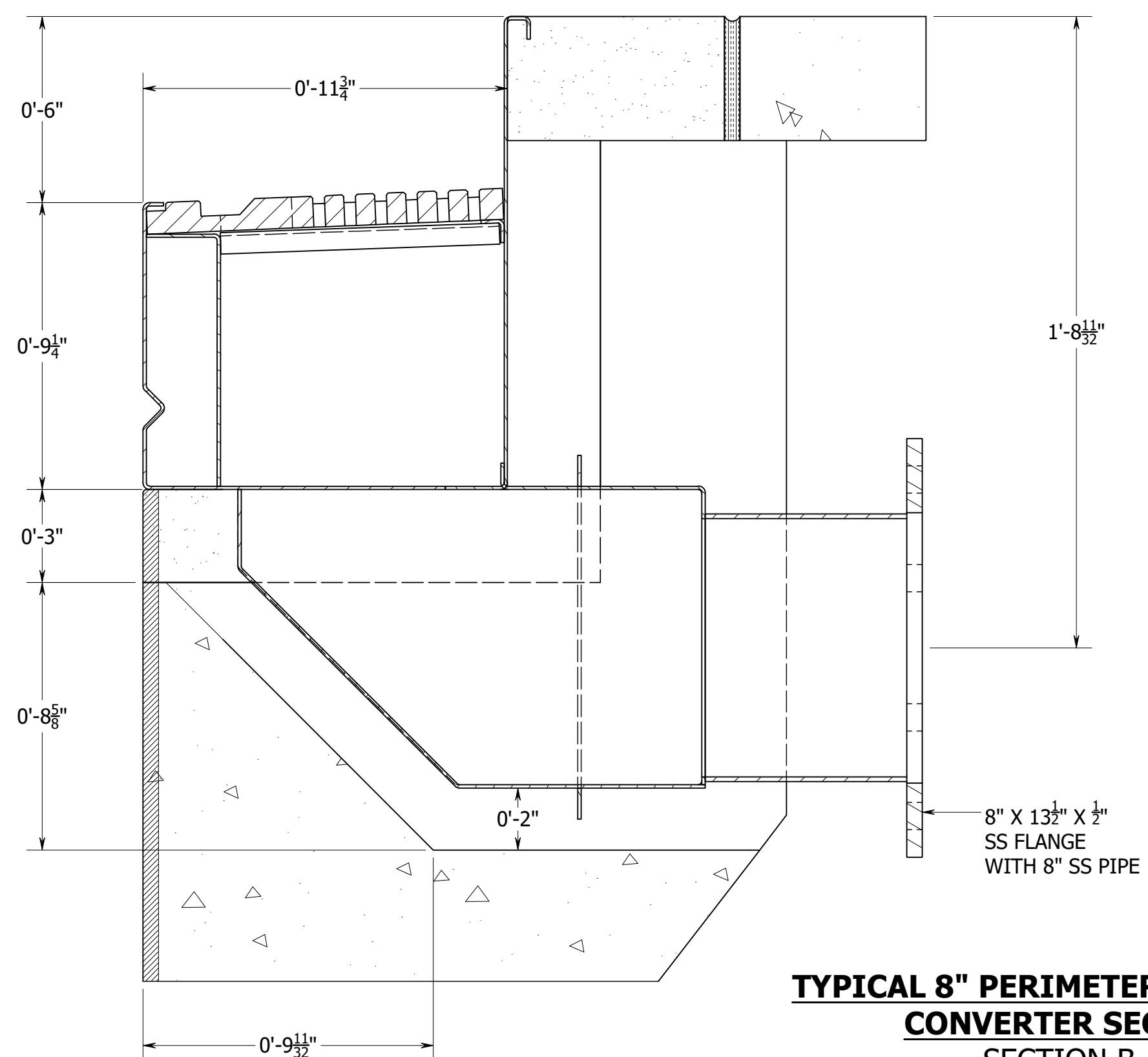
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REV	DATE	BY	DESCRIPTION
REVISION HISTORY			
555 Paddock Parkway Rock Hill, SC 29738 Phone: (803)324-1111 Fax: (803)324-1116 info@paddockindustries.com			
DO NOT SCALE DRAWING			
TOLERANCE UNLESS OTHERWISE NOTED:			
X ± 1/16"	.XX ± 0.010"		
1/X ± 1/32"	.XXX ± 0.005"		
X ± 1/4"			
JOB NAME: SCHENECTADY CENTRAL PARK			
DRAWN	BY	DATE	
CHECKED			
APPROVED			
MATERIAL	QTY:	W.O. #	DWG. NO.
		23172.01	SHEET #
			1 OF 2

CONFIDENTIAL

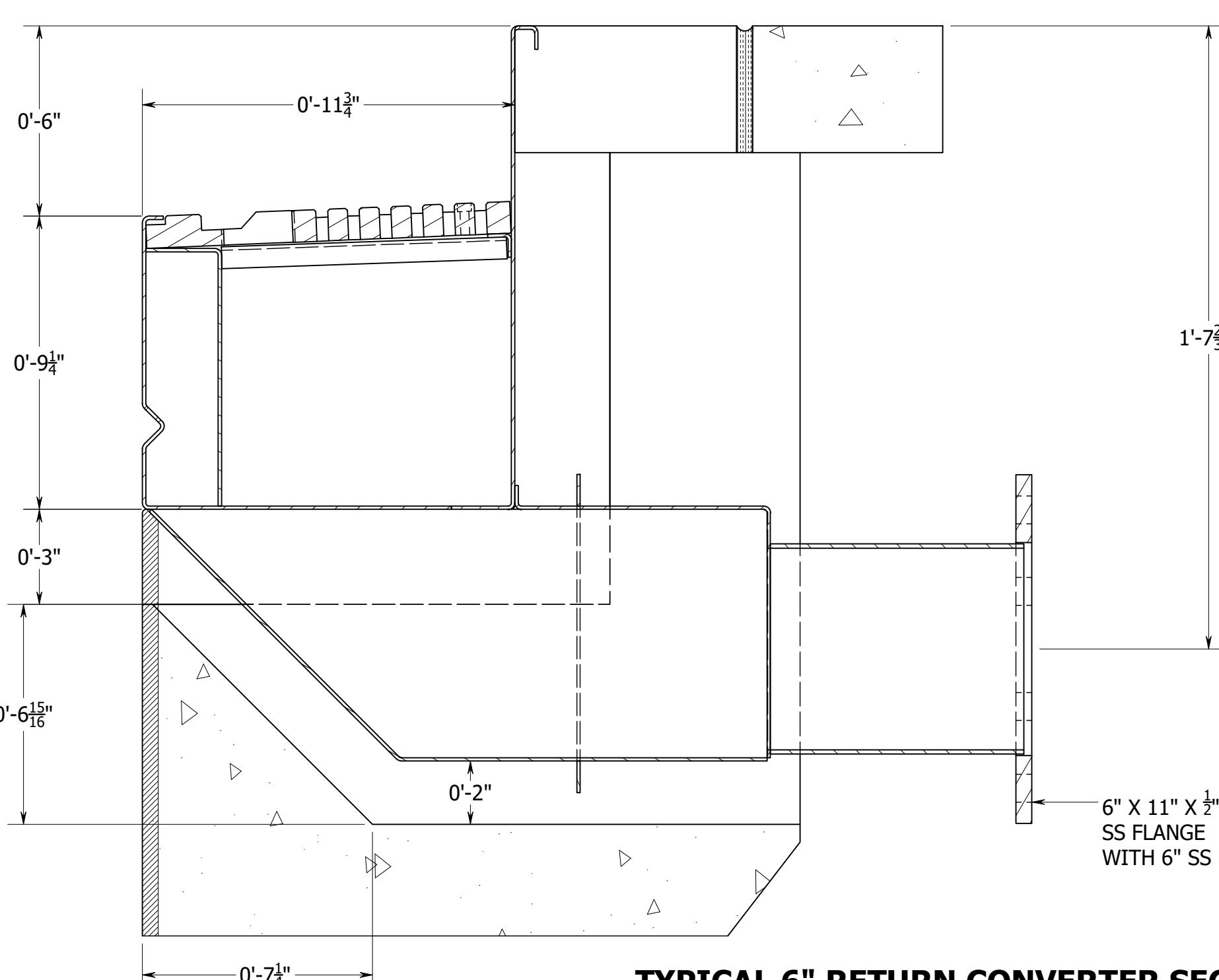
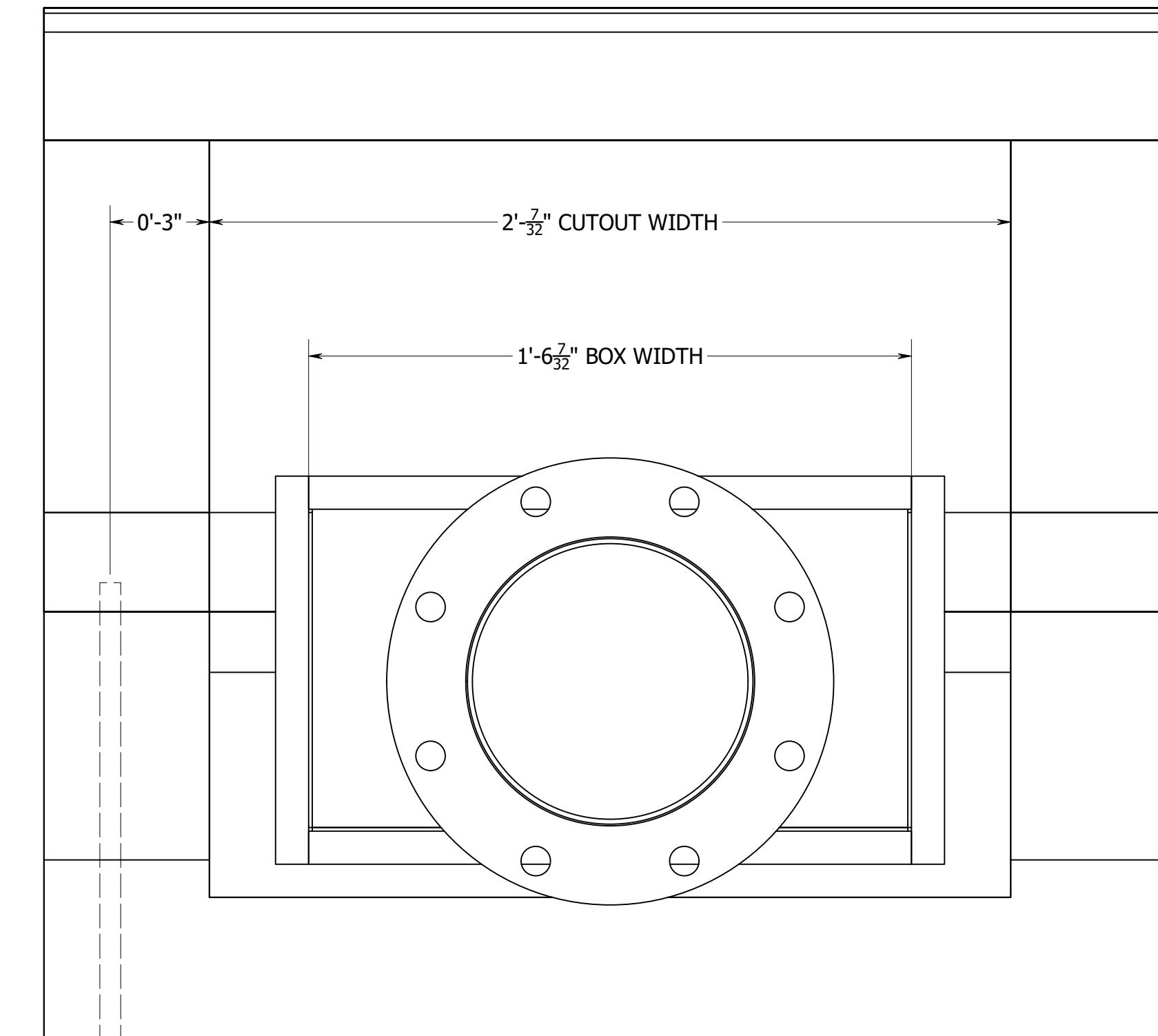
PROPRIETARY INFORMATION OF
PADDOCK POOL EQUIPMENT CO.
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(UNPUBLISHED)



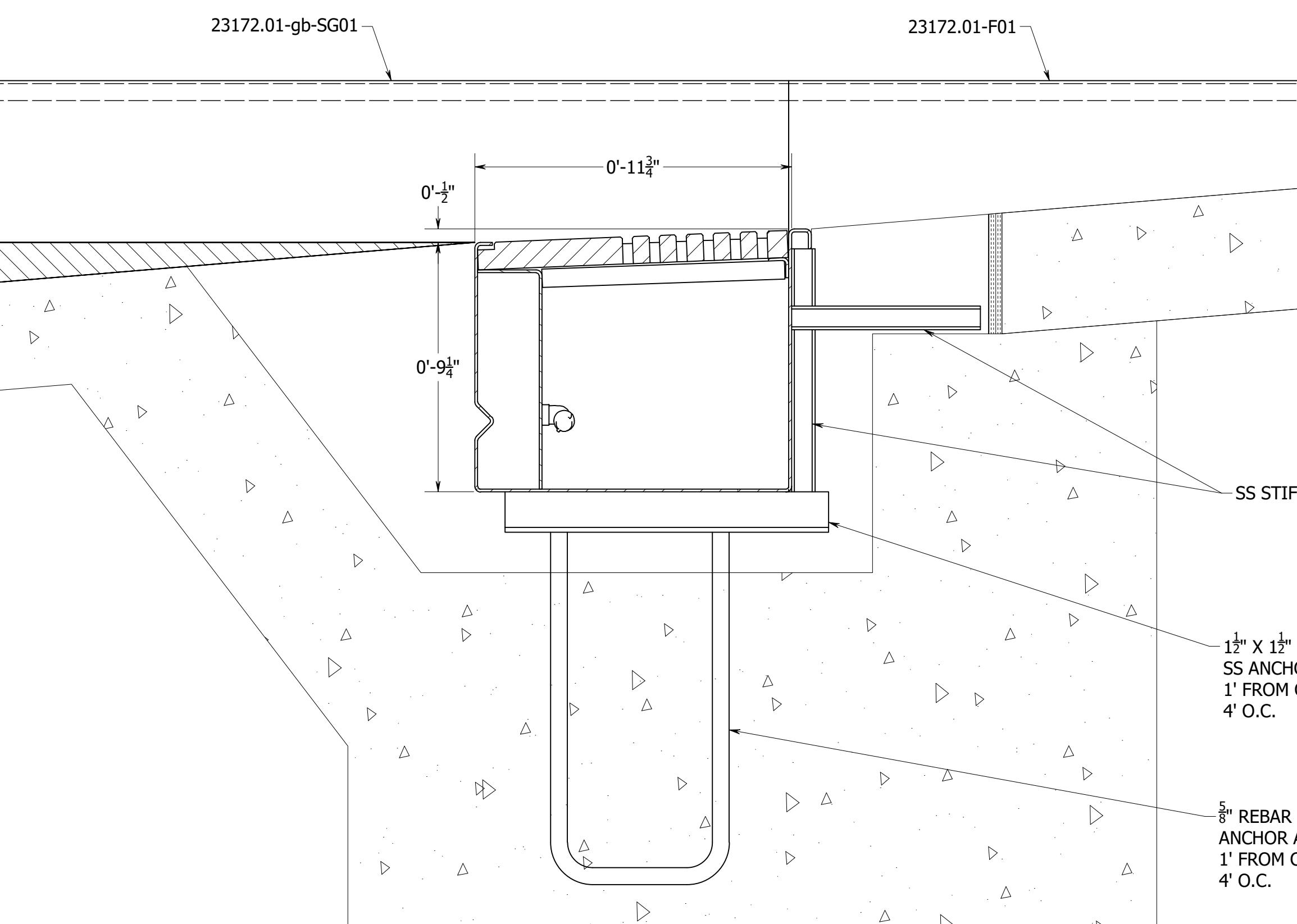
TYPICAL R300TG GUTTER SECTION
SECTION A-A
SCALE 1/4" = 1"



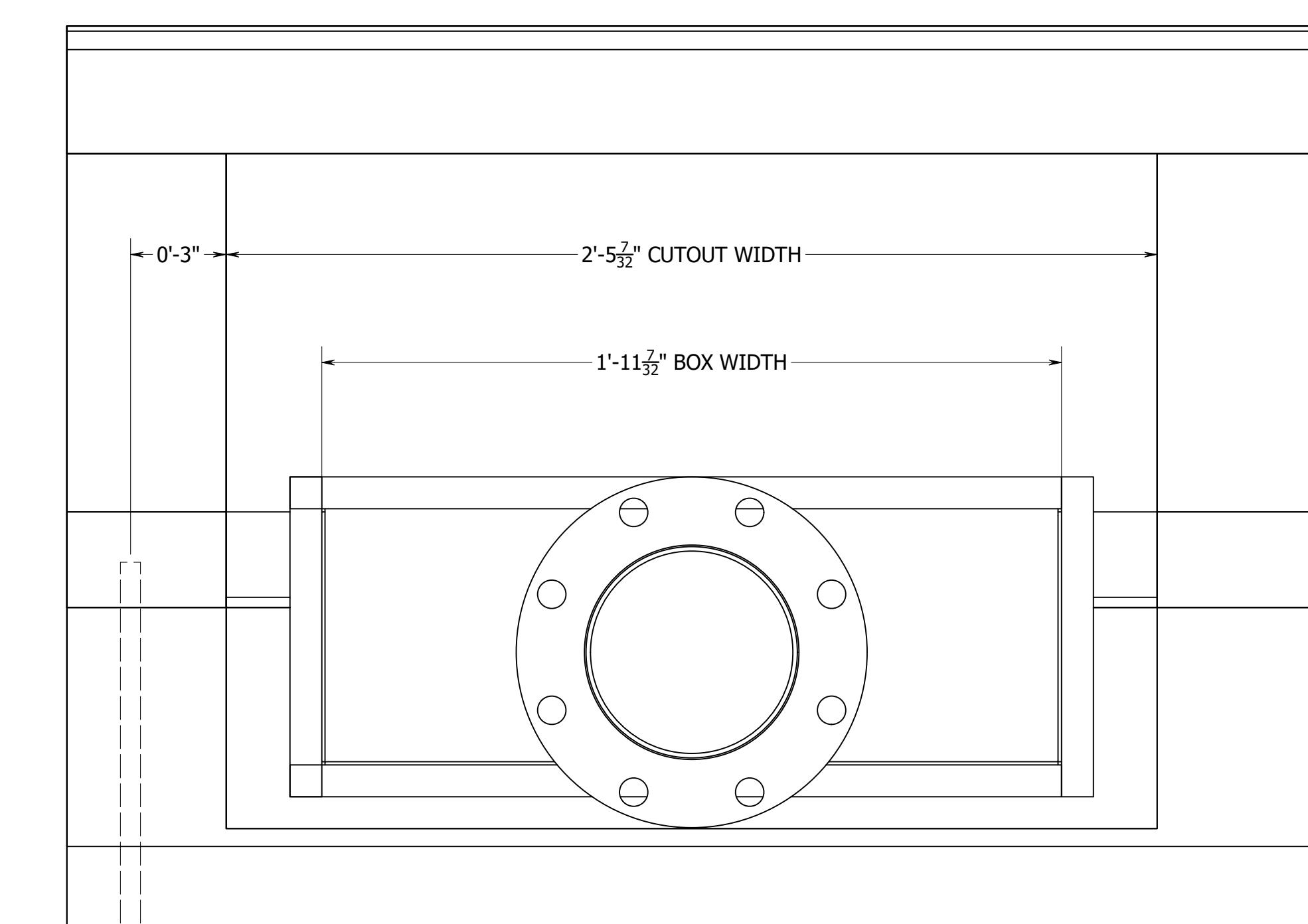
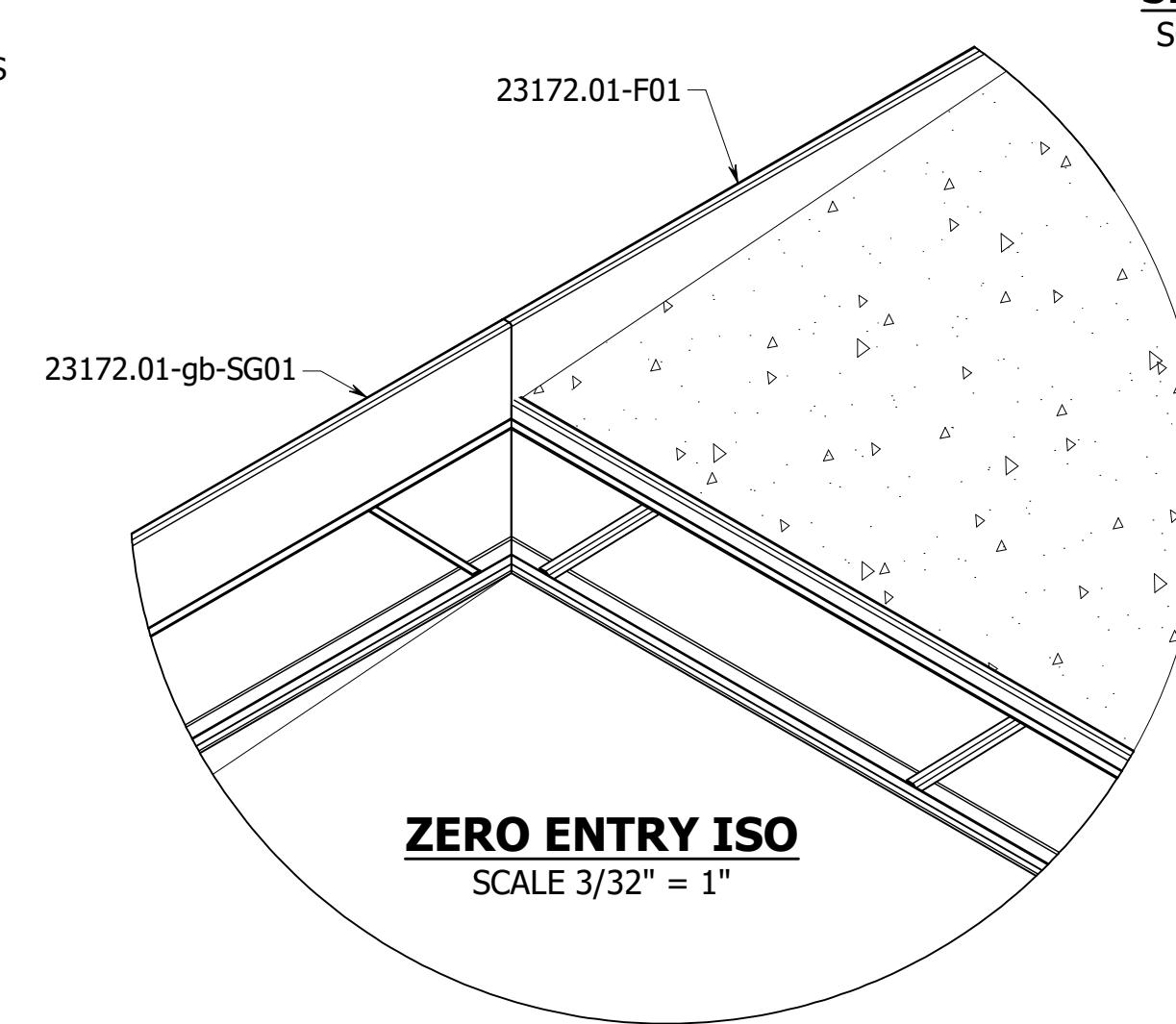
TYPICAL 8" PERIMETER OVERFLOW CONVENTER SECTION
SECTION B-B
SCALE 1/4" = 1"



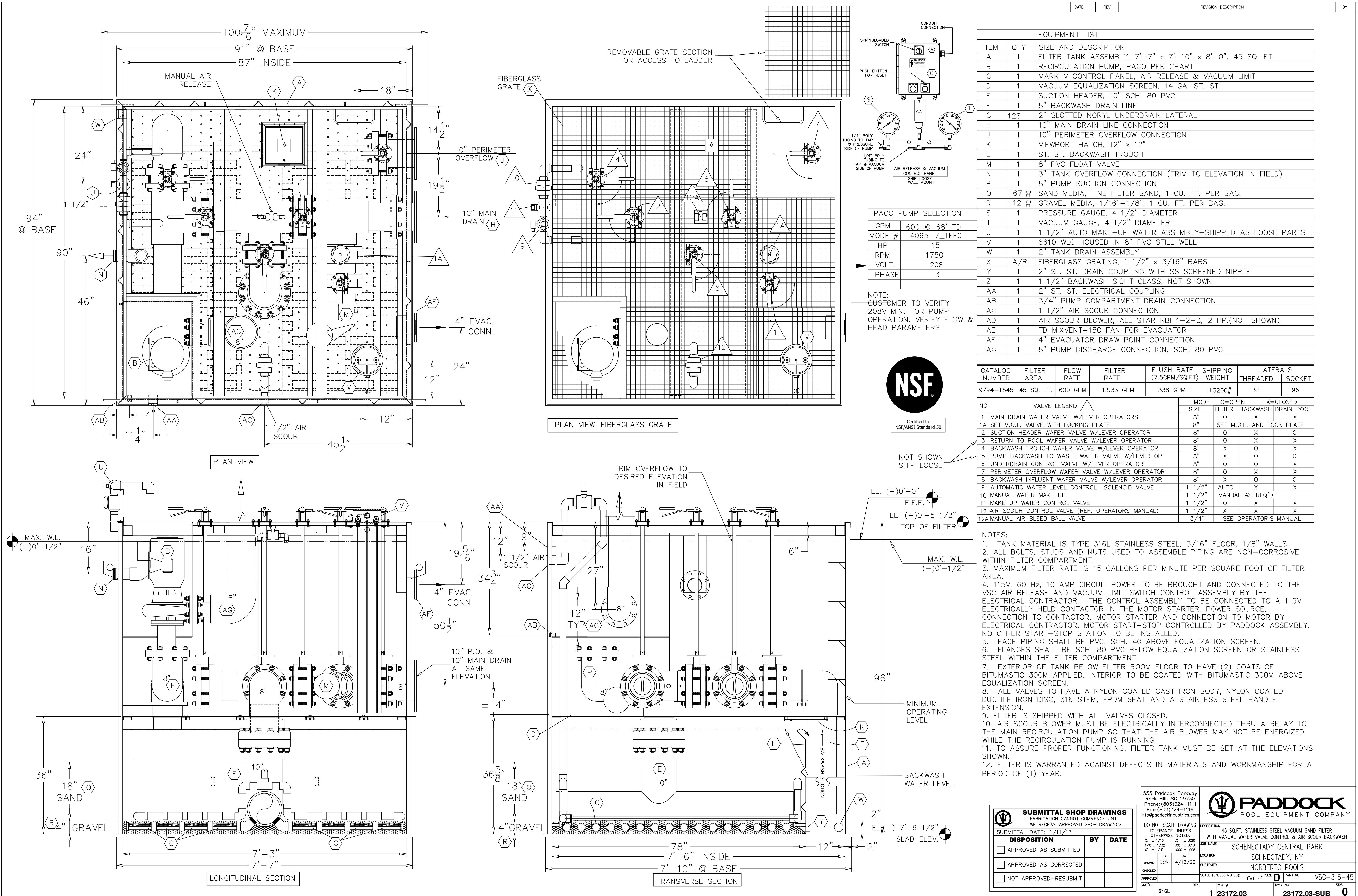
TYPICAL 6" RETURN CONVERTER SECTION
SECTION C-C
SCALE 1/4" = 1"

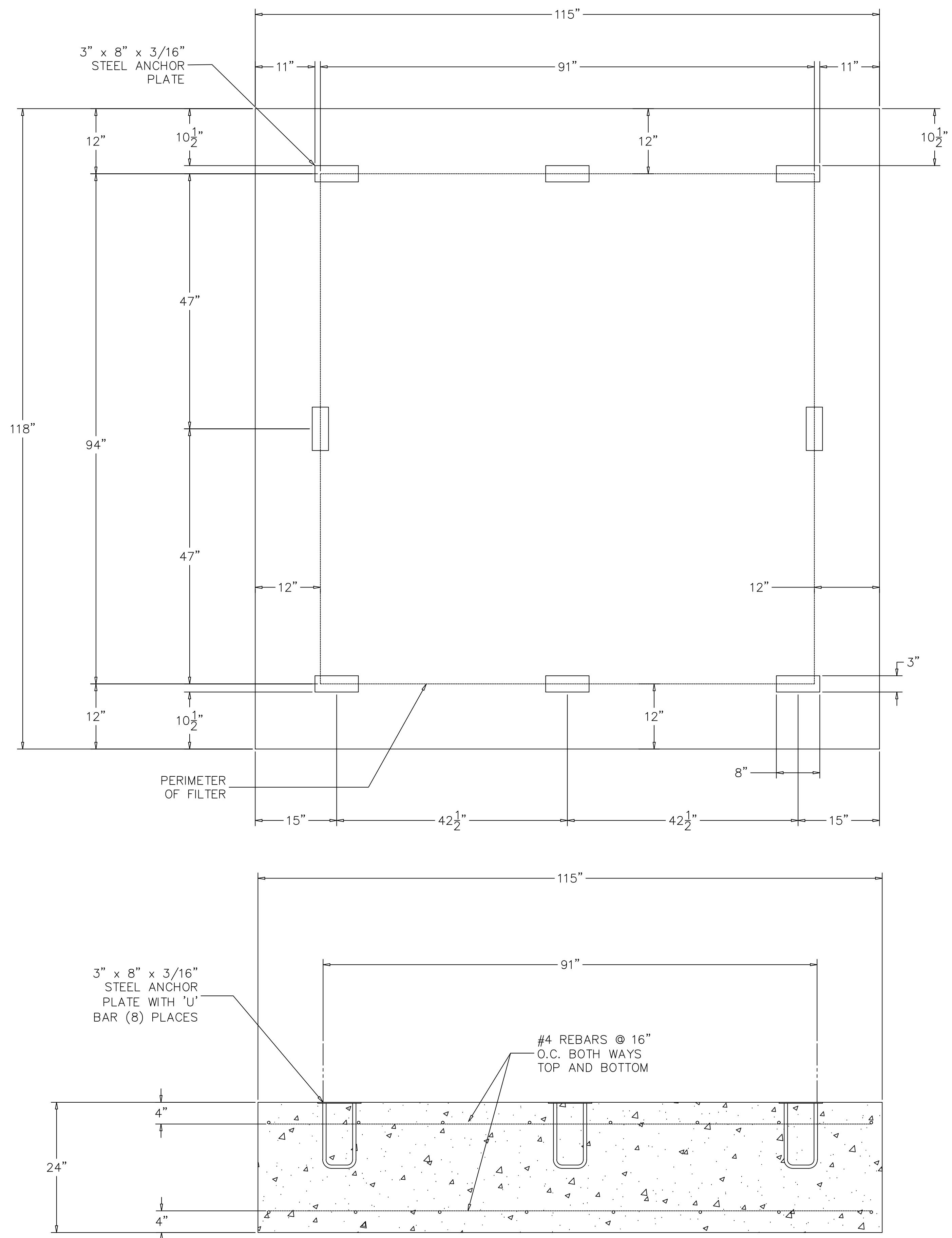


TYPICAL R300TG @ ZERO ENTRY SECTION
SECTION F-F
SCALE 1/4" = 1"



0	7/19/23	RDT	ORIGINAL ISSUE
REV	DATE	BY	DESCRIPTION
REVISION HISTORY			
555 Paddock Parkway Rock Hill, SC 29730 Phone: (803)324-1111 Fax: (803)324-1116 info@paddockindustries.com			PADDOCK
DO NOT SCALE DRAWING			POOL EQUIPMENT COMPANY
DIMENSION UNLESS OTHERWISE NOTED:			DESCRIPTION 508" 7" 316L SS R300TG GUTTER
X ± 1/16" .XX ± 0.010"			JOB NAME SCHENECTADY CENTRAL PARK
1/X ± 1/32" .XXX ± 0.005"			CUSTOMER NORBERTO POOLS
X ± 1/4" .XXXX ± 0.002"			APPROVED
DRAWN BY DATE 7/18/23			SCALE (UNLESS NOTED)
CHECKED			SIZE
APPROVED			PART NO.
MATL:	QTY:	W.O. #	DWG. NO.
			23172.01
			SHEET #
			2 OF 2

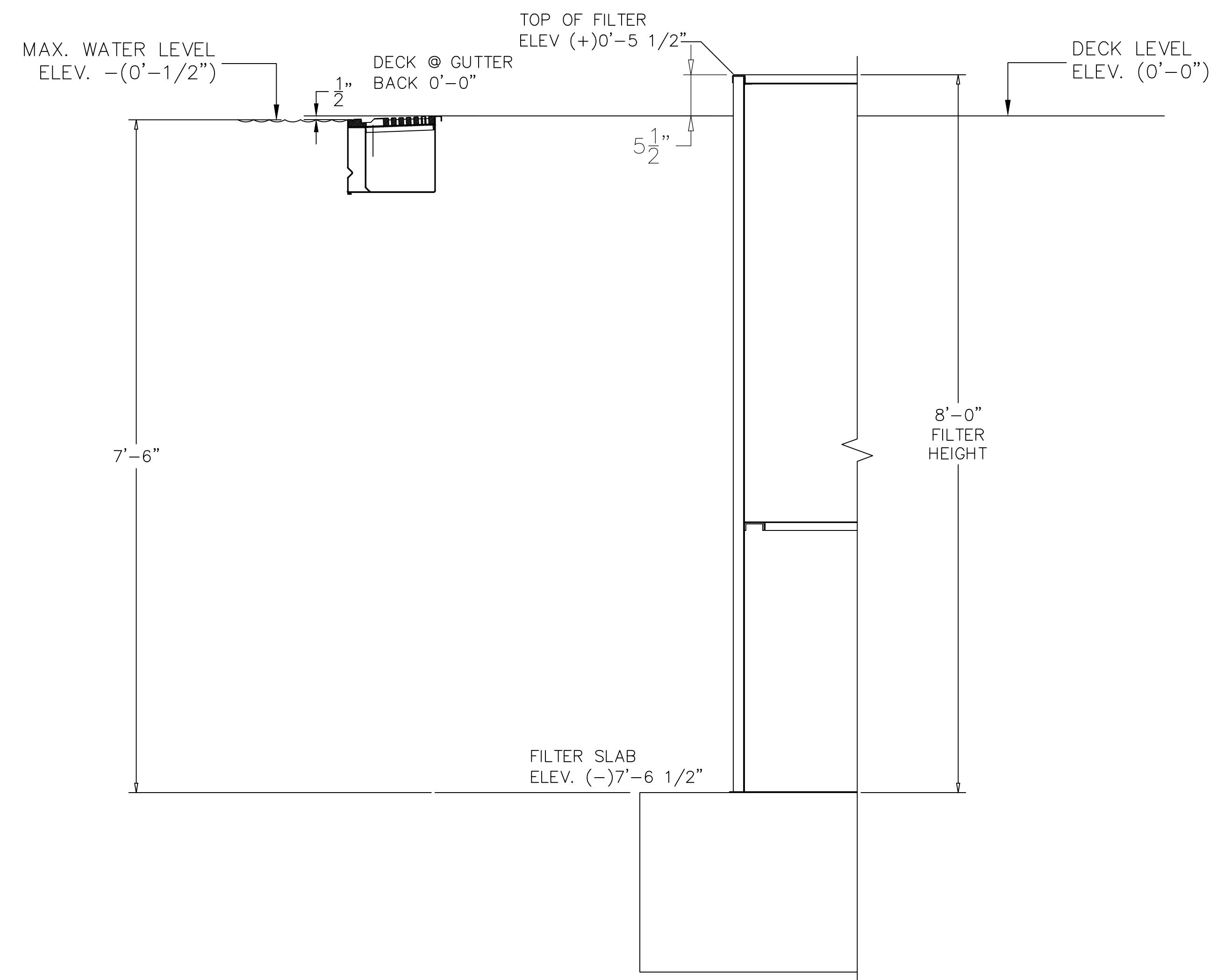




NOTES:

- NOTES:

 1. COMPAK VSC TANK SHIPPING WEIGHT: ±3,200 LBS
 2. FILTER FOOTPRINT: 59.4 SQ. FT.
 3. (8) 3" x 8" x 3/16" ANCHOR PLATES W/ 'U' BARS REQUIRED



	SUBMITTAL SHOP DRAWINGS FABRICATION CANNOT COMMENCE UNTIL WE RECEIVE APPROVED SHOP DRAWINGS		
SUBMITTAL DATE: 1/11/13			
DISPOSITION	BY	DATE	
<input type="checkbox"/> APPROVED AS SUBMITTED			
<input type="checkbox"/> APPROVED AS CORRECTED			
<input type="checkbox"/> NOT APPROVED—RESUBMIT			

55 Paddock Parkway Rock Hill, SC 29730 Phone: (803)324-1111 Fax: (803)324-1116 fo@paddockindustries.com			 PADDOCK POOL EQUIPMENT COMPANY				
DO NOT SCALE DRAWING TOLERANCE UNLESS OTHERWISE NOTED: .X. ± 1/16 .X. ± .020 .1/X ± 1/32 .XX ± .010 .X' ± 1/4" .XXX ± .005			DESCRIPTION ANTI-FLOATATION SLAB FOR MANUAL 45 SQ.FT. VACUUM SAND FILTER				
			JOB NAME SCHENECTADY CENTRAL PARK				
			LOCATION SCHNECTADY, NY				
			CUSTOMER NORBERTO POOLS				
			SCALE (UNLESS NOTED): 1"=1'-0"		SIZE	PART NO.	
					D	VSC-316-45	
AT'L.:		QTY.	W.O. #		DWG. NO.		REV.
XXX		1	23172 03		23172 03-S		0

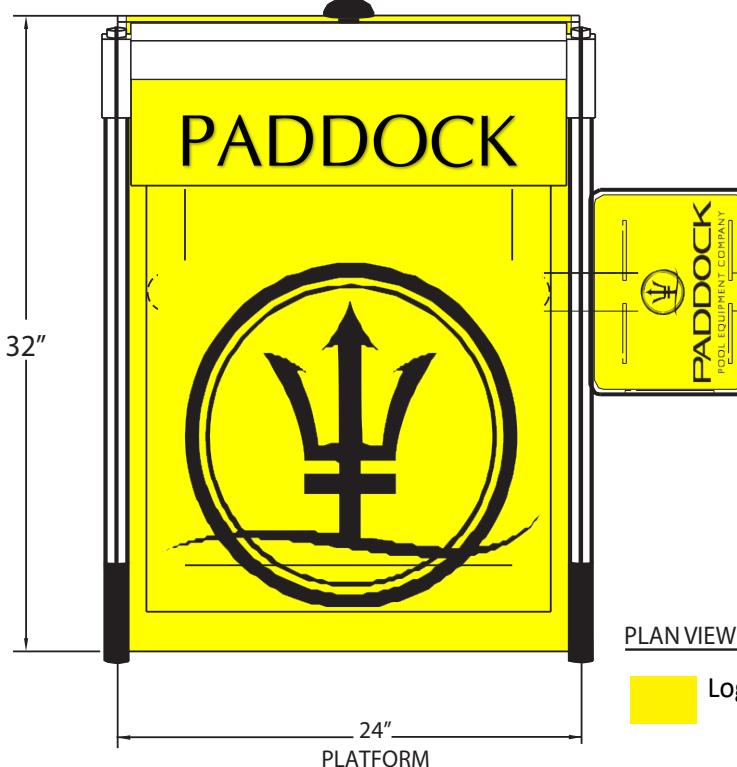


4912 Fast Track Starting Platform Custom Logo

Name of Job SO23172 Schnectady Central Park Pool

Custom Logo Art Requirements:

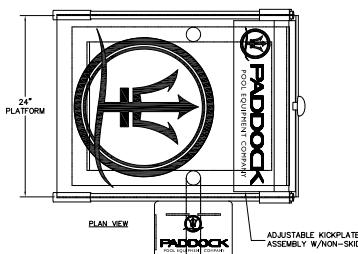
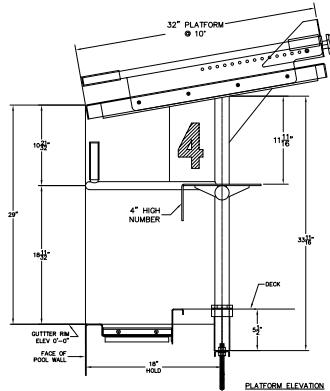
- Facility's Contact person name _____
 - phone # _____
 - email address _____
- Vector format saved as CS6 Adobe Illustrator or eps format with **all layers**.
- Resolution at full scale.
- Send all fonts (name & size) used in the artwork or convert all text to outlines before saving.
- Logo guidelines for fonts and colors are also required.
- **Note: - PMS code color for all color(s) that are used in the logo. Please include the name & size of the font(s).**



Logo Area - We do not recommend using solid white background due to the maintenance.



Fast Track Starting Platform



Paddock's **Fast Track Starting Platform** is quickly and easily removable.

The platform shall be side mounted and have a 24" wide x 32" long stainless steel top.

Flush with front edge of platform is a backstroke starting bar. There are also two vertical backstroke grips made of stainless steel positioned 15" on center.

Lane numbers will be visible from all four sides of platform.

On top of starting platform shall be equipped with side rails made from 1" O.D. stainless steel tube welded to 1/8" stainless steel plate.

Mounted to side rails will be a removable "wedge" made of 12 gauge, stainless steel with a 45 degree incline on the surface facing forward to pool. Front surface shall have a non-slip surface. The wedge will use spring loaded plunger pins to lock securely into place. Single mechanism will be used to retract both pins simultaneously with one hand for ease of adjustment. Wedge shall slide uninhibited along guide rails on sides of platform.

Top of starting platform shall be with a non-slip solid surface.

Colors and custom logos are available as options.

Anchors with 19" spacing are sold separately, P/N 9400110, Model 4912-A.

P/N 9400115, Model 4912, Type 304, Qty ____

P/N 9400113 Model 4912, Type 316L, Qty 6

**# 4ME98 - Electric Air Compressor: 5 hp, 1 Stage, Vertical, 60 gal Tank,
14.2 cfm, Splash Lubricated**



PN210021

Auto Drain Valve

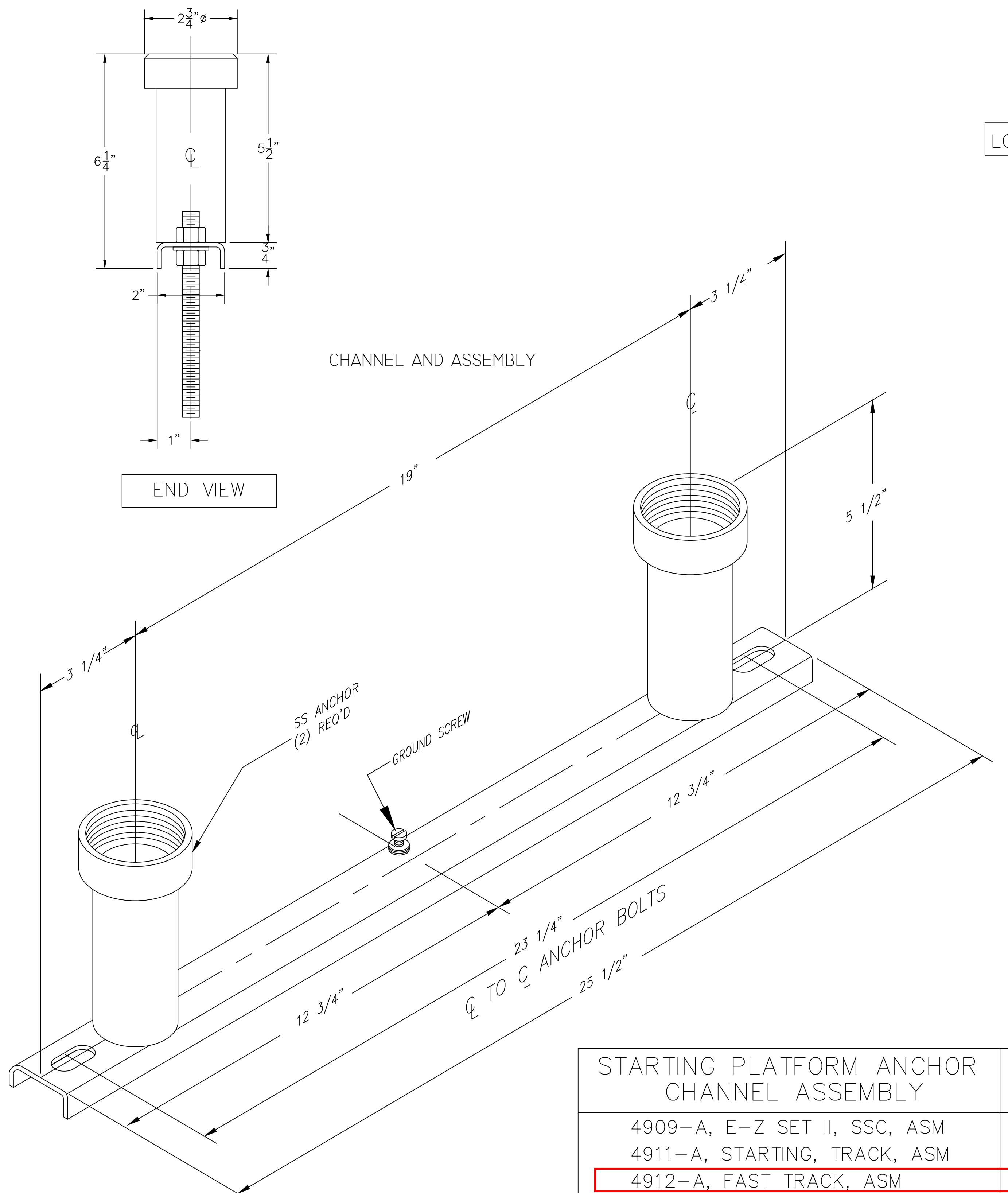
PN210024

.5 HP, 60 gal., Vertical Splash Lubricated
Tank Mounted Electric Air Compressor
14.2

.Item # **4ME98**

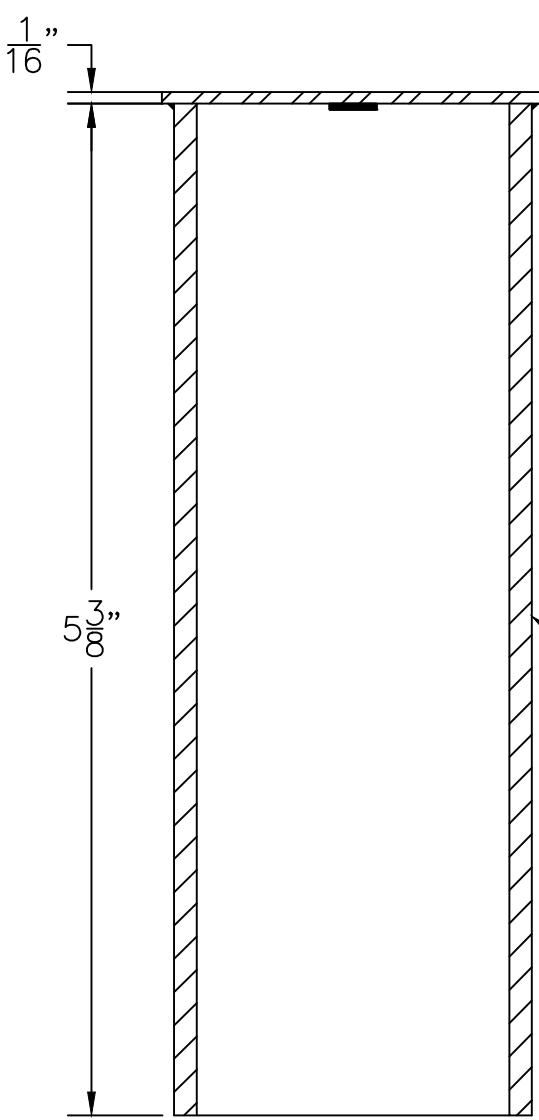
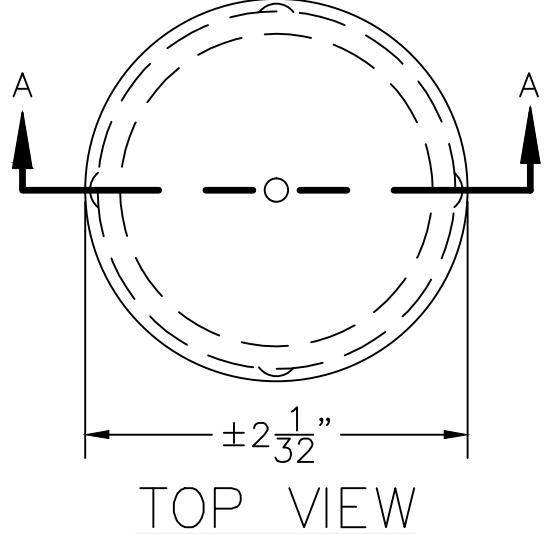
Mfr. Model #4ME98

ITEM	ELECTRIC AIR COMPRESSOR	DUTY CYCLE	INTERMITTENT
LUBRICATION TYPE	SPLASH LUBRICATED	THERMAL PROTECTION	YES
AIR TANK STYLE	VERTICAL	SOUND LEVEL	85 dBA
Number of stages	1	INCLUDES	MANUAL DRAIN VALVE, OIL SIGHT GLASS, PRESSURE GAUGE, PRESSURE SAFETY VALVE
OUTPUT POWER	5 HP	CYLINDER MATERIAL	CAST IRON
FREE AIR FLOW RATE @ MAXIMUM PRESSURE	14.2 CFM	FINISH	POWDER COATED
MAXIMUM OPER. PRESSURE	135 PSI	ASME TANK	YES
AIR TANK SIZE	60 GAL	CONTROL TYPE	PRESSURE SWITCH
INPUT VOLTAGE	208-240V AC, 480V AC	ON PRESSURE SWITCH SETTING	105 PSI
PHASE	THREE	OFF PRESSURE SWITCH SETTING	140 PSI
FREQUENCY	60Hz	INLET SIZE	¾ IN
COMPRESSOR PACKAGE TYPE	BASE MODEL	OUTLET SIZE	¾ IN
PUMP STYLE	SIMPLEX	OUTLET TYPE	NPT
PUMP TYPE	RECIPROCATING	OUTLET GENDER	FEMALE
PUMP LOCATION	TOP MOUNT	OVERALL LENGTH	23 IN
PUMP OIL CAPACITY	40 FLOZ	OVERALL WIDTH	31 IN
MOTOR TYPE	OPEN DRIPPROOF	OVERALL HEIGHT	71 IN
CURRENT RATING	13.4 TO 13.2 A, 6.6 A	STANDARDS	ASME APPROVED, CSA, CALIFORNIA CODE 462(L)(2), UL LISTED, UL1450
MAXIMUM SPEED	950 RPM		

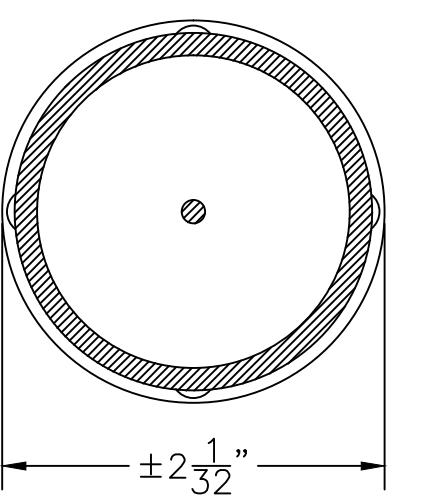


LOCKING COLLAR (BUSHING)
PART NO. 8000158

SS CLOSURE CAP



SECTION A-A

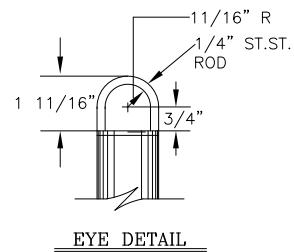
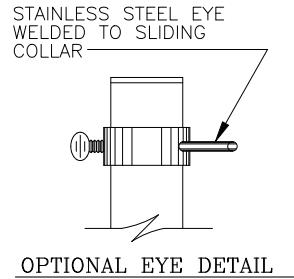
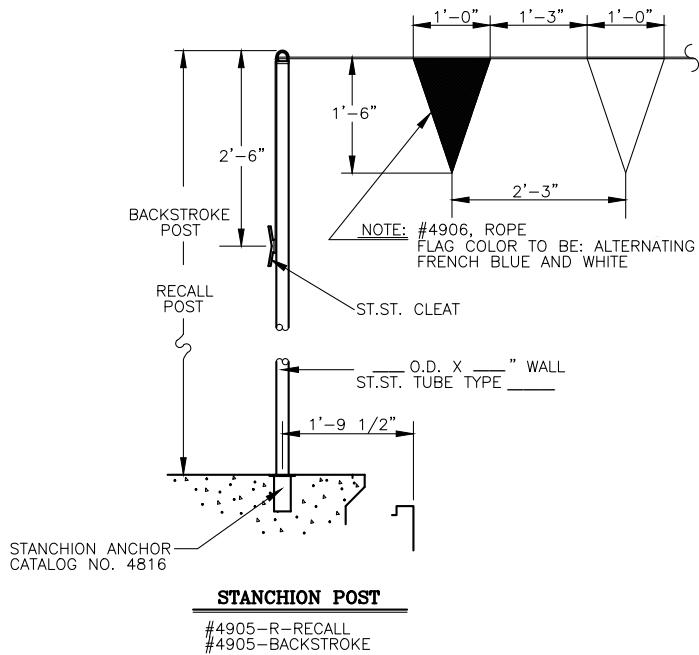


STARTING PLATFORM ANCHOR CHANNEL ASSEMBLY	PART NO.	MODEL NO.	QTY
4909-A, E-Z SET II, SSC, ASM		4909S	
4911-A, STARTING, TRACK, ASM		4911S	
4912-A, FAST TRACK, ASM	9400154	4912	6
LOCKING COLLAR (BUSHING)	8000158	ALL MODELS	

CAP SLIP-IN FOR ANCHOR ASSEMBLY	PART NO.	MODEL NO.	QTY
SS CAP, SLIP-IN FOR ANCHOR ASM	8000162	ALL MODELS	



Stanchion Post



Paddock's **Backstroke Posts and Recall Posts** are fabricated from Type 304 or 316L stainless steel tubing with outside diameter of 1.90" and standard wall thickness .083" (.120" and .145" are also available)

Each post is provided with an eyebolt at the top and a cleat for securing rope.

Posts are held by anchor sockets located in pool bottom and pool deck so they can be removed if necessary.

Standard height of backstroke post is 7 feet. Also available in other heights.

Standard height of recall post is 5 feet. Also available in other heights.

Sliding collar is optional.

P/N **9400181**, Model 4905-____, Backstroke Post Height Required **8** FT **1.9**" OD x **.109**" Wall Type **316** Qty **4**

P/N _____, Model 4905R-____, Recall Post Height Required _____ FT _____" OD x _____" Wall Type _____ Qty _____

P/N 9500043, Model 4905SC, Sliding Collar with Eyebolt Qty **4**

P/N _____, Model 4906, Backstroke Pennant Line, 48 Nylon Pennants per 100' Line Qty _____

DECK EQUIPMENT

Escutcheon

4
8
3
7



The polished stainless steel round 1.90" escutcheon plates are used with mounting anchors.

Note: 4 1/2" diameter

Submittal Information:

QTY: 28 Type: 316L

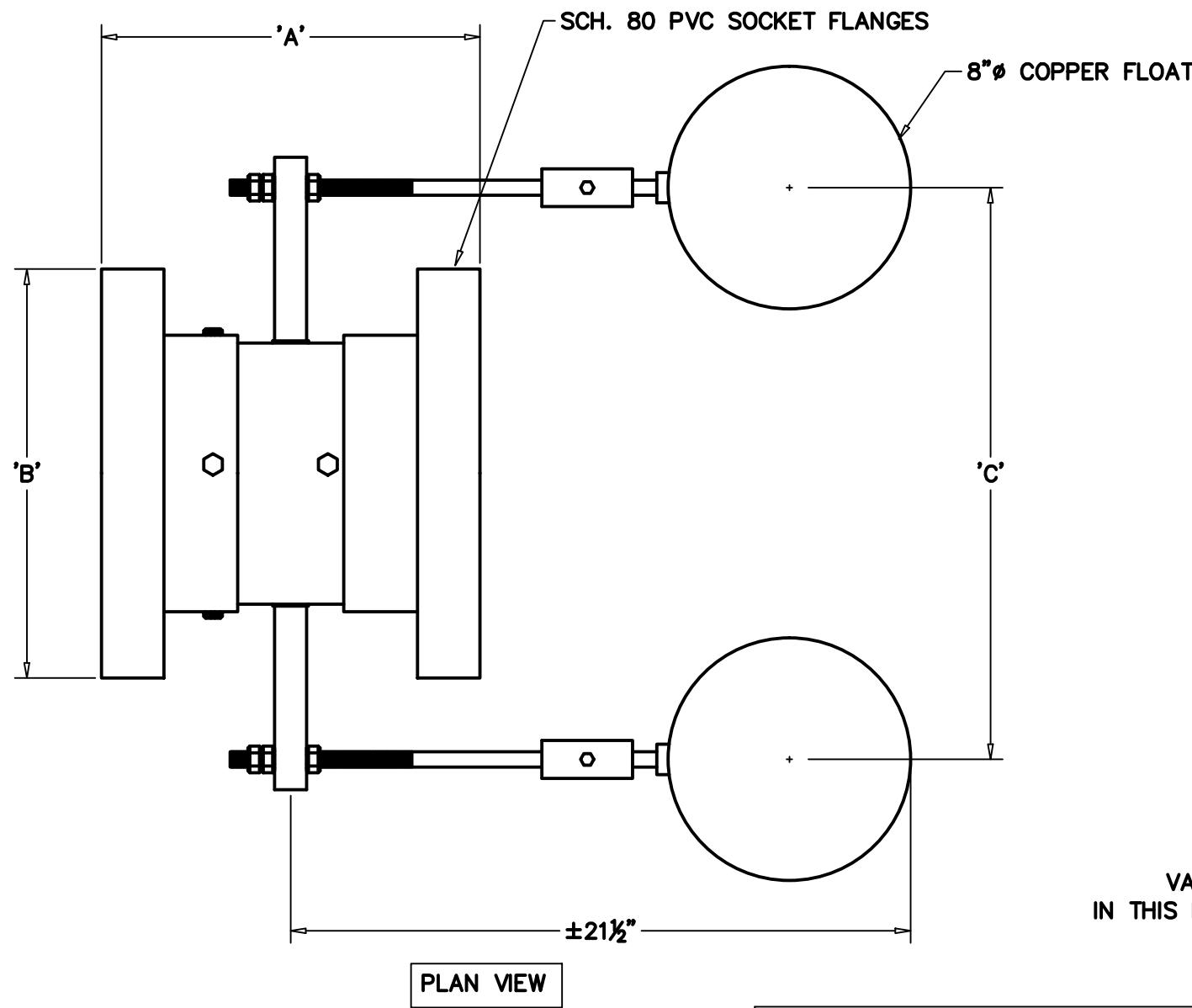
PN 200058

Additional Information



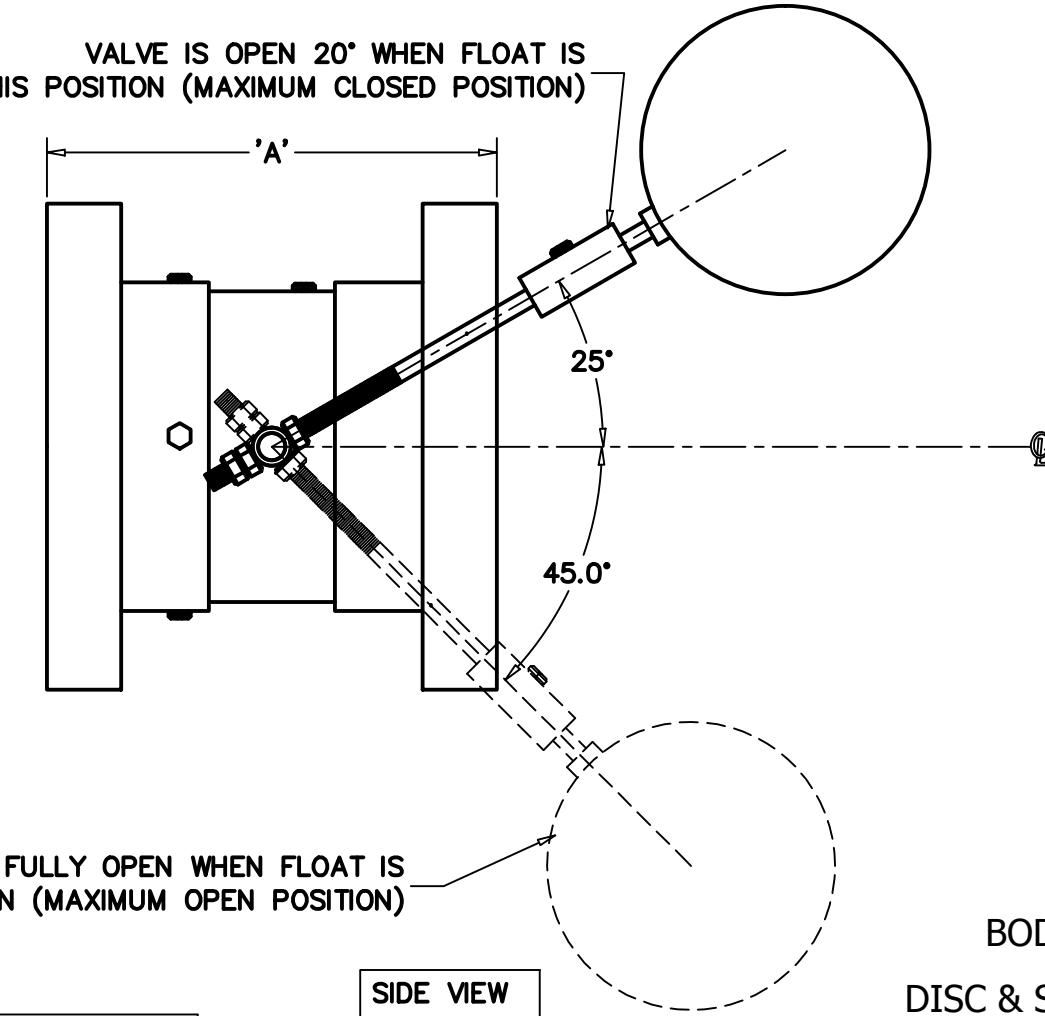
555 Paddock Parkway
Rock Hill, SC 29730
Ph: 803-324-1111
Fx: 803-324-1116

DATE	REV	REVISIONS DESCRIPTION		BY



PLAN VIEW

VALVE IS OPEN 20° WHEN FLOAT IS
IN THIS POSITION (MAXIMUM CLOSED POSITION)



SIDE VIEW

BODY - SCH 80 PVC
DISC & SHAFT - T304 ST. ST.
FLOAT ARMS - T304 ST. ST.
FLOATS - COPPER

VALVE SIZE, PIPE,
FLANGE, & FLOAT
CENTER DISTANCE

PN #	QTY.	SIZE	A	B	C
9000150		3"	9 1/2"	7 1/2"	12 3/4"
9000151		4"	10"	9"	14 1/4"
9000152		6"	12 1/2"	11"	16 3/8"
9000153		8"	12 1/2"	13 1/2"	18 7/8"
9000154	1	10"	16 1/2"	16"	26"
9000155		12"	18"	19"	29"

555 Paddock Parkway
Rock Hill, SC 29730
Phone: (803)324-1111
Fax: (803)324-1116
email@paddockpool.com



DO NOT SCALE DRAWING
TOLERANCE UNLESS
OTHERWISE NOTED:
X. ± 1/16 .X. ± .020
1/X ± 1/32 .XX. ± .010
X' ± 1/4" .XXX ± .005

DESCRIPTION	3"-12" PVC FLOAT VALVE WITH DUAL FLOATS			
JOB NAME	XXX			
LOCATION	XXX			
DRAWN	BY	DATE	3/26/07	
CHECKED				
APPROVED			NTS	SIZE B STD. DWG. NO. XXX SHEET 1 OF 1
MATL.:	CALC. WT.	QTY.	W.O. # X P-	DWG. NO. XXX REV. 0
PVC	XXX	X	P-	XXX 0

IP66

Up to 22kW

- ✓ Outdoor rated
- ✓ Dust-tight
- ✓ Washdown ready

See [Page 5](#)



Key Features

- ✓ Internal Category C1 EMC filter
- ✓ Internal PI control
- ✓ Internal brake chopper
- ✓ Dual analogue inputs
- ✓ Operates up to 50°C
- ✓ **Bluetooth®** connectivity
- ✓ Option for control of single phase motors (see [Page 8](#))

Modbus RTU CAN

on-board as standard

Internal Category C1 EMC Filter

An internal filter in every Optidrive E3 saves cost and time for installation.

Cat C1 according to EN61800-3:2004



OPTIDRIVE™ E³

IP66 Outdoor

Up to 22kW

Outdoor rated enclosed drives for direct machine mounting, dust tight and ready for washdown duty



Locally customisable

Flat front to terminal cover with mounting points for switches and an internal PCB.



Switched or non-switched

Conformal coating as standard



Coated Heatsink as Standard

Ideal for hygiene based operations requiring washdown — such as food and beverage



1 2 x RJ45 ports

eliminate the need for a splitter.

2 Easily accessible EMC disconnect

3 Easy to wire

due to the large, accessible chamber and removable gland plate.

IP66/Nema 4X outdoor rated

Built with tough polycarbonate plastics specifically chosen to withstand degradation by ultra violet (UV), greases, oils and acids. Also robust enough not to be brittle at -20°C.

Dust-Tight Design

Install directly on your processing equipment and be sure of protection from dust and contaminants.

Washdown Ready

With a sealed ABS enclosure and corrosion resistant heatsink, the Optidrive E3 IP66 is ideal for high-pressure washdown applications.

Switched models

Simply wire up the drive, turn the inbuilt potentiometer and the motor will start running – allowing immediate energy savings.

Saving energy cannot be easier than this!

For ultimate ease of use



Local Speed Potentiometer

Run Reverse / Off / Run Forward Switch

Lockable Mains Disconnect / Isolator



Application Macros

Switch modes at the touch of a button to optimise Optidrive E3 for your application

Single parameter application macro selection



Industrial Mode

Industrial Mode optimises Optidrive E3 for load characteristics of typical industrial applications.

Applications include:

- ✓ Conveyors
- ✓ Mixers
- ✓ Treadmills

Sensorless Vector provides high starting torque and excellent speed regulation

IP20 panel mount units or
IP66 for direct machine mounting



Rapid parameter cloning using
OPTISTICK Smart



Pump Mode

Pump Mode makes energy efficient pump control easier than ever.

Applications include:

- ✓ Dosing Pumps
- ✓ Borehole Pumps
- ✓ Transfer Pumps
- ✓ Swimming Pools
- ✓ Spas
- ✓ Fountains

- Constant or variable torque
- Internal PI control



Fan Mode

Fan Mode (inc. fire operation) makes air handling a breeze, ideal for simple HVAC systems.

Applications include:

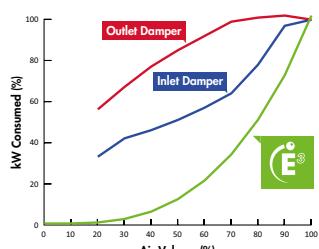
- ✓ Air Handling Units
- ✓ Ventilation Fans
- ✓ Circulating Fans
- ✓ Air Curtains
- ✓ Kitchen Extract



- High efficiency **variable torque** motor control
- Flying start capability
- Mains loss ride through
- PI control

Instant Power Savings

The graph below shows the incredible efficiency of Optidrive E3 for controlling airflow compared to traditional damper control methods.



Modbus RTU CAN

on-board as standard

How much energy could you save?

Estimate potential energy savings, CO₂ emissions and financial savings for your application with the Invertek Drives Energy Savings Calculator app.



Download on the
App Store

GET IT ON
Google Play

www.invertekdrives.com/calculator



OPTIDRIVE™ E³

	kW	HP	Amps	Frame	Model Code	Product Family	Generation	Frame Size	Voltage Code	Output Current x 10	Supply Phases	EMC Filter	Breaker Monitor	Enclosure Option
110–115V±10% 1 Phase Input	0.37	0.5	2.3	1	ODE - 3 - 1 1 0023 - 1 0 1 #									
	0.75	1	4.3	1	ODE - 3 - 1 1 0043 - 1 0 1 #									
	1.1	1.5	5.8	2	ODE - 3 - 2 1 0058 - 1 0 4 #									
200–240V±10% 1 Phase Input	0.37	0.5	2.3	1	ODE - 3 - 1 2 0023 - 1 # 1 #									
	0.75	1	4.3	1	ODE - 3 - 1 2 0043 - 1 # 1 #									
	1.5	2	7	1	ODE - 3 - 1 2 0070 - 1 # 1 #									
	1.5	2	7	2	ODE - 3 - 2 2 0070 - 1 # 4 #									
	2.2	3	10.5	2	ODE - 3 - 2 2 0105 - 1 # 4 #									
	4	5	15.3	3	ODE - 3 - 3 2 0153 - 1 0 4 #									
200–240V±10% 3 Phase Input	0.37	0.5	2.3	1	ODE - 3 - 1 2 0023 - 3 0 1 #									
	0.75	1	4.3	1	ODE - 3 - 1 2 0043 - 3 0 1 #									
	1.5	2	7	1	ODE - 3 - 1 2 0070 - 3 0 1 #									
	1.5	2	7	2	ODE - 3 - 2 2 0070 - 3 # 4 #									
	2.2	3	10.5	2	ODE - 3 - 2 2 0105 - 3 # 4 #									
	4	5	18	3	ODE - 3 - 3 2 0180 - 3 # 4 #									
	5.5	7.5	24	3	ODE - 3 - 3 2 0240 - 3 # 4 #									
	7.5	10	30	4	ODE - 3 - 4 2 0300 - 3 # 4 #									
	11	15	46	4	ODE - 3 - 4 2 0460 - 3 # 4 #									
	15	20	61	5	ODE - 3 - 5 2 0610 - 3 F 4 2									
	18.5	25	72	5	ODE - 3 - 5 2 0720 - 3 F 4 2									
380–480V±10% 3 Phase Input	0.75	1	2.2	1	ODE - 3 - 1 4 0022 - 3 # 1 #									
	1.5	2	4.1	1	ODE - 3 - 1 4 0041 - 3 # 1 #									
	1.5	2	4.1	2	ODE - 3 - 2 4 0041 - 3 # 4 #									
	2.2	3	5.8	2	ODE - 3 - 2 4 0058 - 3 # 4 #									
	4	5	9.5	2	ODE - 3 - 2 4 0095 - 3 # 4 #									
	5.5	7.5	14	3	ODE - 3 - 3 4 0140 - 3 # 4 #									
	7.5	10	18	3	ODE - 3 - 3 4 0180 - 3 # 4 #									
	11	15	24	3	ODE - 3 - 3 4 0240 - 3 # 4 #									
	15	20	30	4	ODE - 3 - 4 4 0300 - 3 # 4 #									
	18.5	25	39	4	ODE - 3 - 4 4 0390 - 3 # 4 #									
	22	30	46	4	ODE - 3 - 4 4 0460 - 3 # 4 #									
	30	40	61	5	ODE - 3 - 5 4 0610 - 3 F 4 2									
	37	50	72	5	ODE - 3 - 5 4 0720 - 3 F 4 2									

Replace # in model code with colour-coded option

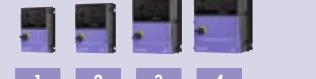
Enclosure Types

A		IP66 Outdoor Use Non-switched
B		IP66 Outdoor Use Switched

IP20

2		IP20
F		Internal EMC Filter
0		No Internal EMC Filter

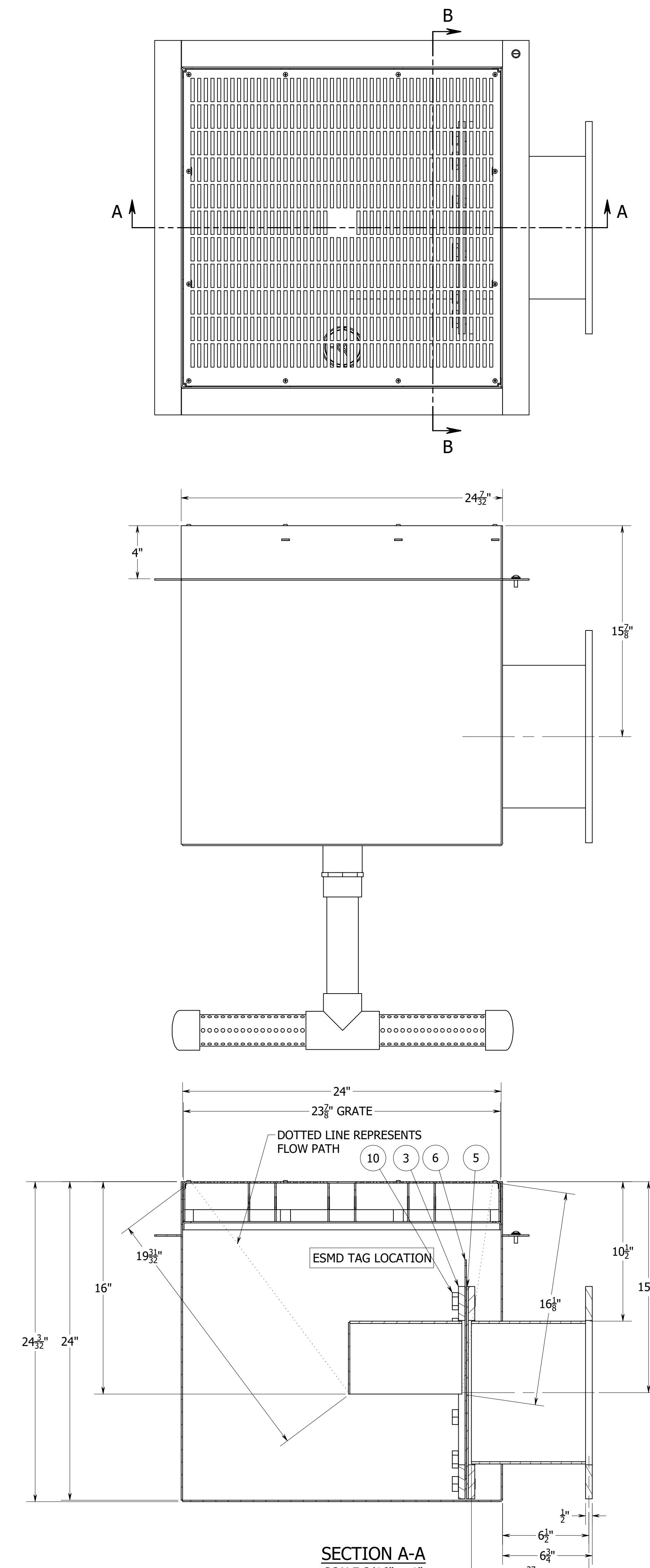
IP20	
Size	1 2 3 4 5
mm Height	173 221 261 420 486
mm Width	83 110 131 171 222
mm Depth	123 150 175 212 226
kg Weight	1.0 1.7 3.2 9.1 18.1
Fixings	4xM5 4xM5 4xM5 4xM8 4xM8

IP66	
Size	1 2 3 4
mm Height	232 257 310 360
mm Width	161 188 210.5 240
mm Depth	162 182 238 275
kg Weight	2.5 3.5 7.0 9.5
Fixings	4xM4 4xM4 4xM4 4xM4

Drive Specification

Input Ratings	Supply Voltage 110 – 115V ± 10% 200 – 240V ± 10% 380 – 480V ± 10%	Programming Keypad Display PC	I/O Specification Power Supply Programmable Inputs Digital Inputs Analog Inputs Programmable Outputs Relay Outputs Analog Outputs Application Features Fire Mode Maintenance & Diagnostics Standards Compliance
Output Ratings	Output Power 110V 1 Ph Input: 0.5–1.5HP [230V 3 Ph Output] 230V 1 Ph Input: 0.37–4kW [0.5–5HP] 230V 3 Ph Input: 0.37–11kW [0.5–15HP] 400V 3 Ph Input: 0.75–22kW 460V 3 Ph Input: 1–30HP	Control Specification Control Method PWM Frequency Stopping Mode Braking Skip Frequency	Fault Memory Data Logging Monitoring
Ambient Conditions	Temperature Storage: -40 to 60°C Operating: -20 to 50°C	Setpoint Control Analog Signal Digital	Low Voltage Directive EMC Directive Machinery Directive Conformance
Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL)	Fieldbus Built-in Modbus RTU	Adjustable speed electrical power drive systems. EMC requirements 2014/30/EU Cat C1 according to EN61800-3:2004 2006/42/EC CE, UL, RCM
Humidity	95% Max, non condensing	CANopen 125–1000 kbps	
Vibration	Conforms to EN61800-5-1	Modbus RTU 9.6–115.2 kbps selectable	
Enclosure	Ingress Protection IP20, IP66		

**QTY: 2 - Lap Pool
Area A**



PARTS LIST		
ITEM	QTY	PART NUMBER
1	1	ESMD-2424-10-1.01-R0
2	1	FC-2424.01-R1
3	1	AVRD-10.01-R0
4	1	HSRL-01
5	1	P2104-100x02.11-R0
6	1	BP10-304
7	1	SP1056
8	1	ADPTR-0200MPTx0200SOC.08-R0
9	12	PHMP-#08Cx0108-316
10	12	HHMB-075Cx0104-316
11	1	RHMSL-025Cx0012-BR
12	2	FW-025-BR

DESCRIPTION
COMMENTS

WELDMENT, 24" X 24" ESMD, (1) 10" CONNECTION
304L SS

WELDMENT, 24" X 24" FLAT MD COVER
304L SS

SHOP ASSEMBLY, HYDROSTATIC RELIEF FOR MAIN DRAIN BOXES
PVC

AVRD-10.01-R0
304L SS

GASKET, Ø10", 150# PATTERN, PL 1/8" x Ø16"
NEO

BLANKING PLATE, PL12GA x 16 1/2" x 13"
304L SS

CYC HYDRO RELIEF VALVE, 1.5IN/2IN - ABS WHITE
CYCOLAC/HAYWARD

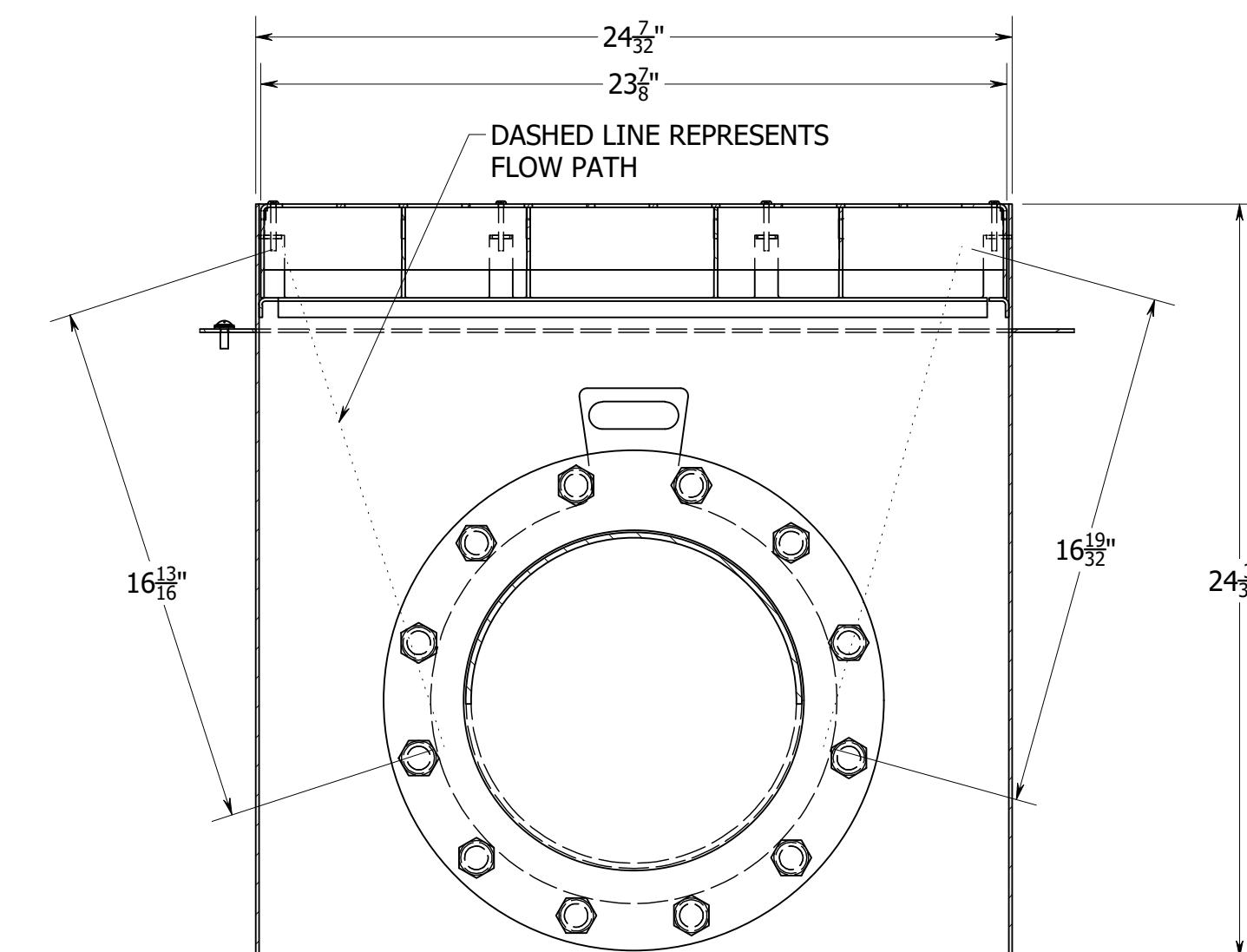
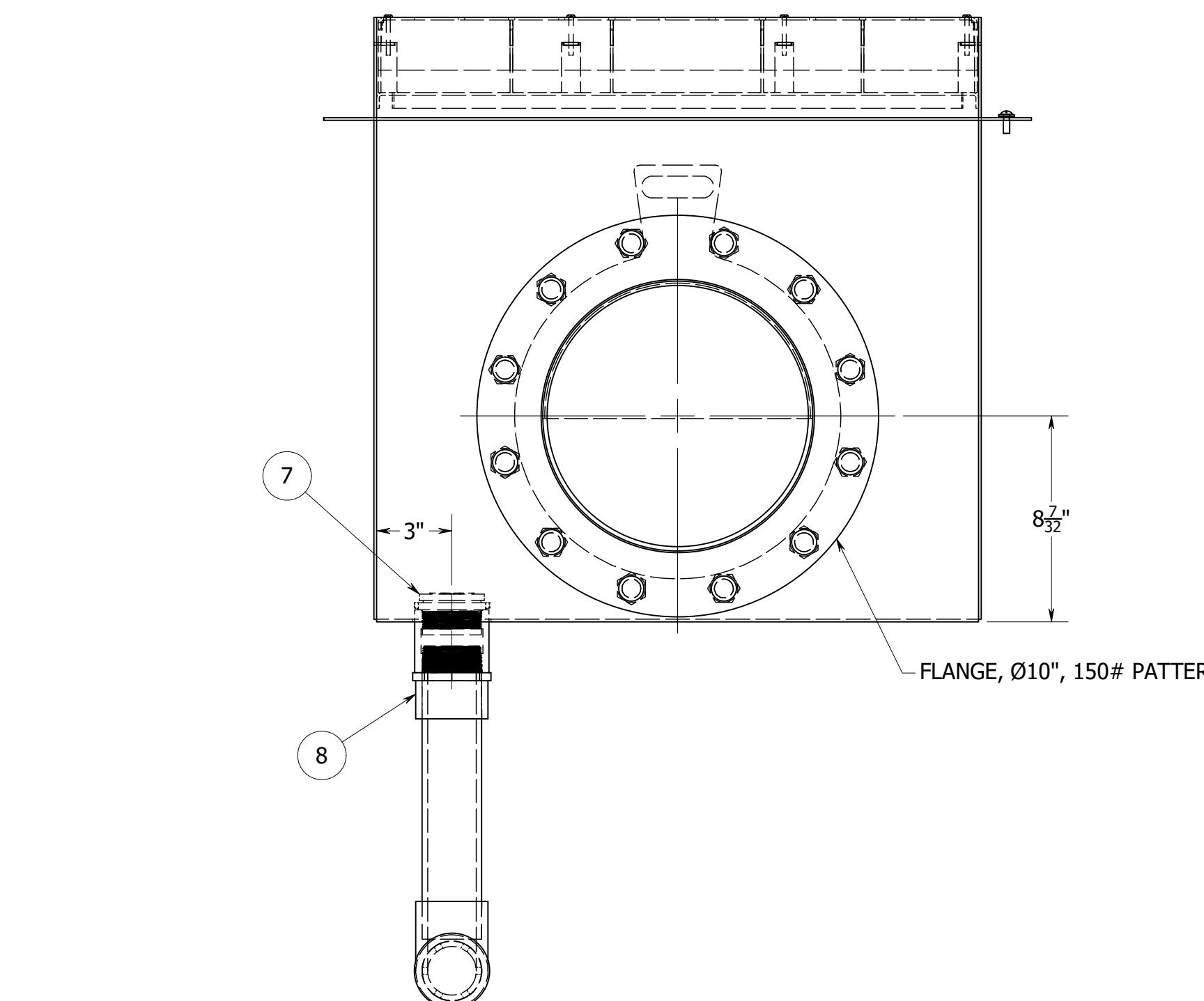
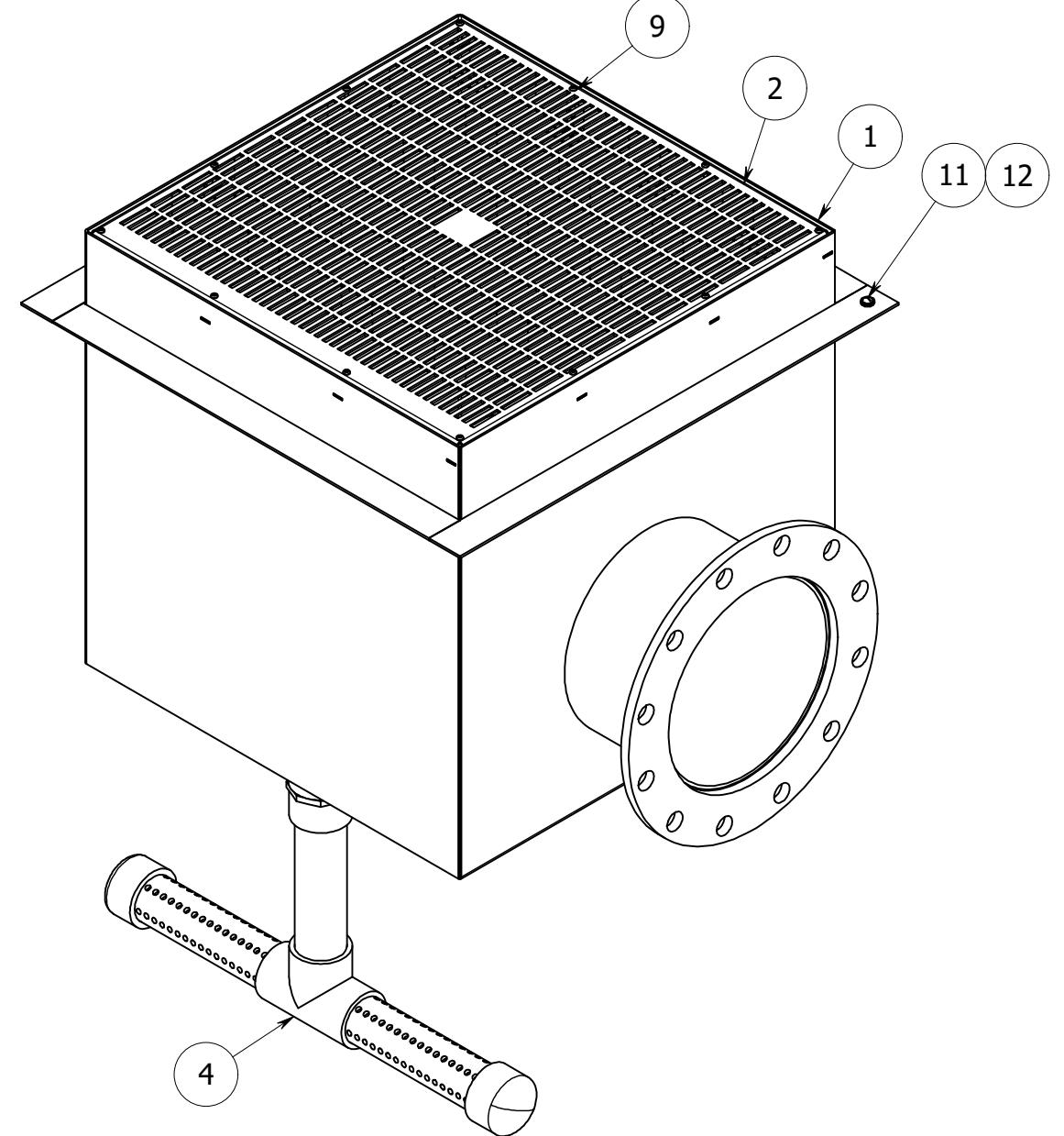
2" MALE ADAPTER SOCKET
PVC

PAN HEAD PHILLIPS SCREW, TORQUE RATING 19.8 INCH LBS, #8-32 X 1 1/2"
316 SS

HEX HEAD BOLT, 3/4"-10 X 1 1/4"
316 SS

ROUND HEAD SLOT MACHINE SCREW, 1/4"-20 X 3/4"
BRONZE

FLAT WASHER, Ø1/4"
BRONZE



2424 PCFC STAINLESS STEEL FRAME AND GRATE IN 24x24 SUMP					
VELOCITY (FT/SEC)	OPEN AREA (IN ²)	MAX FLOW (GPM)	TOTAL QTY	TOTAL OPEN AREA (IN ²)	TOTAL MAX FLOW (GPM)
1.39	212.89	920	1	212.89	920
1.0	212.89	663.55	1	212.89	663.55
0.5	212.89	331.78	1	212.89	331.78

NSF MAXIMUM SAFE FLOW RATE OF ONE (1) 2424PCFC EQUALS 920GPM

* THE NSF SAFETY FLOW IS THE MAXIMUM FLOW MEETING THE ANSI/APSP/ICC-16 2017 REQUIREMENTS. THE RECOMMENDED MAXIMUM DESIGN FLOW IS BASED ON A VELOCITY THAT DOES NOT EXCEED 1.39 FT/SEC. PADDOCK CERTIFIED COVERS & GRATES COMPLY WITH BODY BLOCKING ELEMENT TEST PER ANSI/APSP/ICC-16 2017

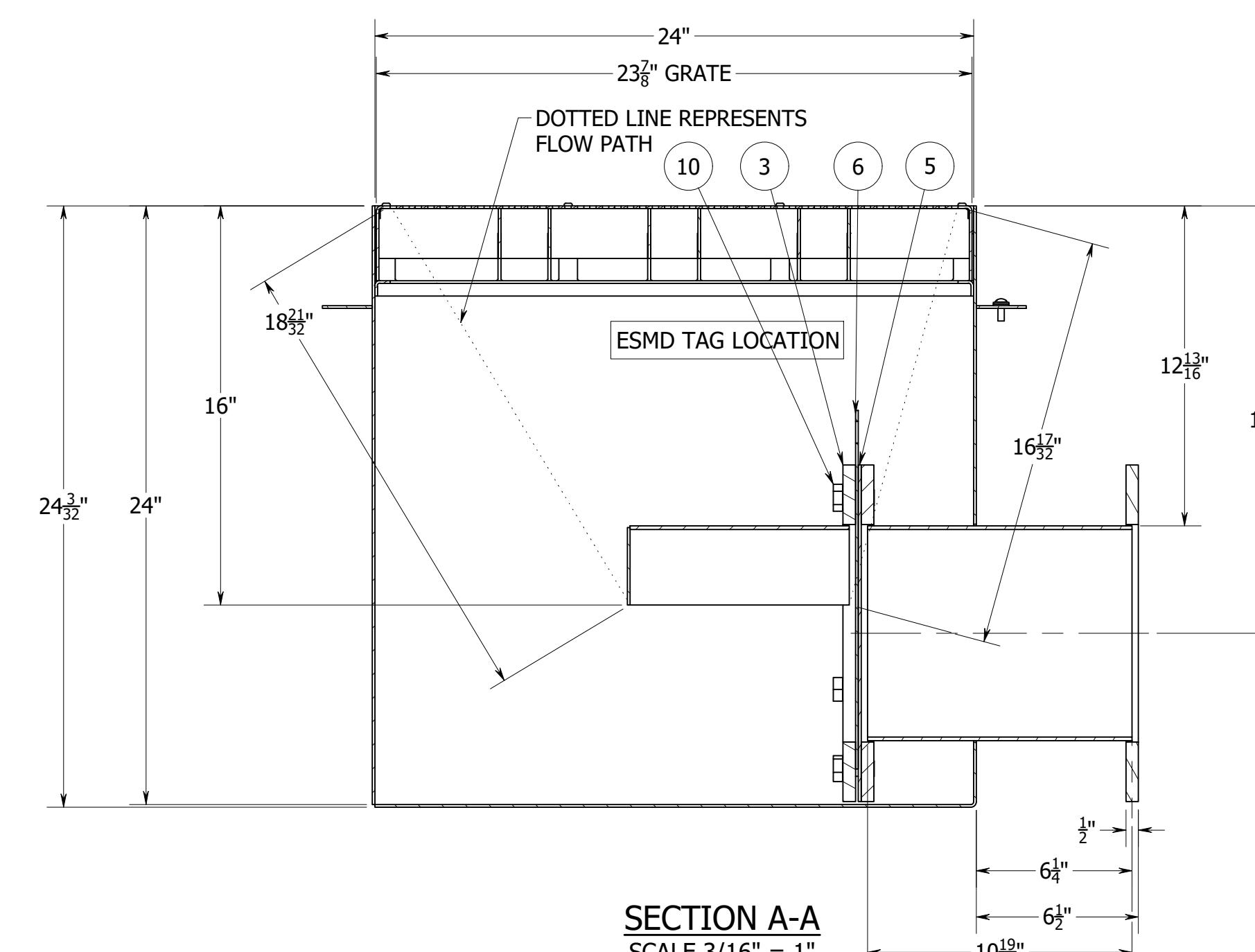
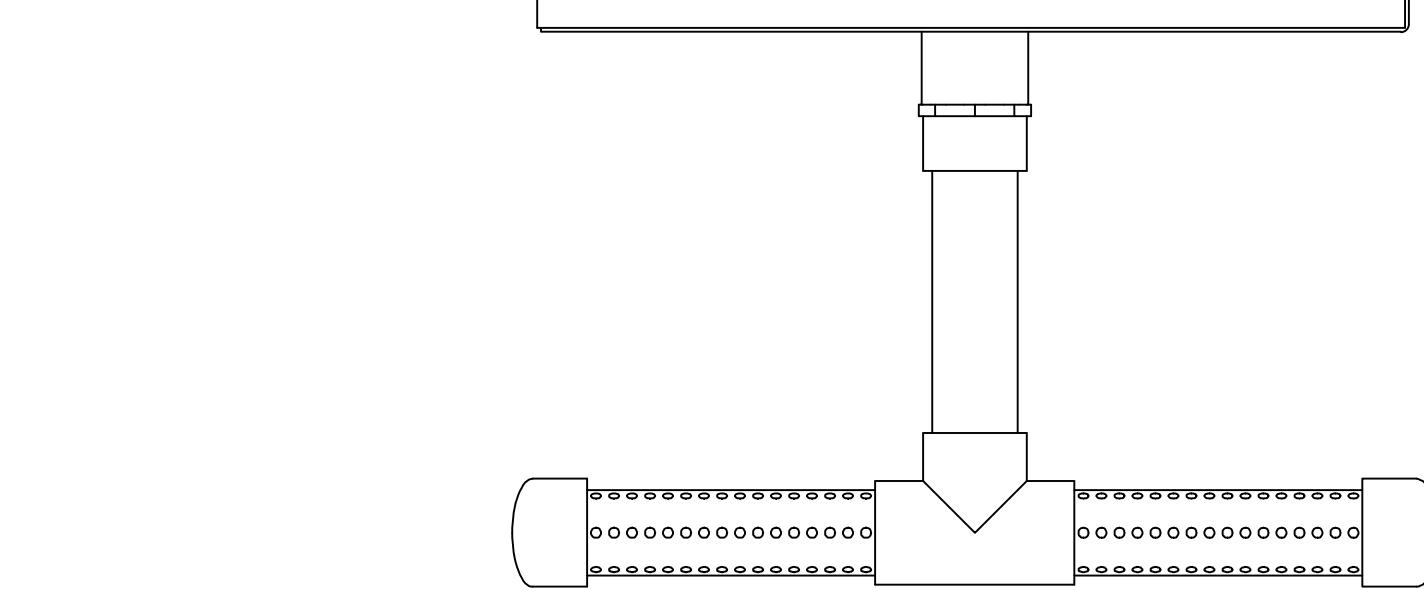
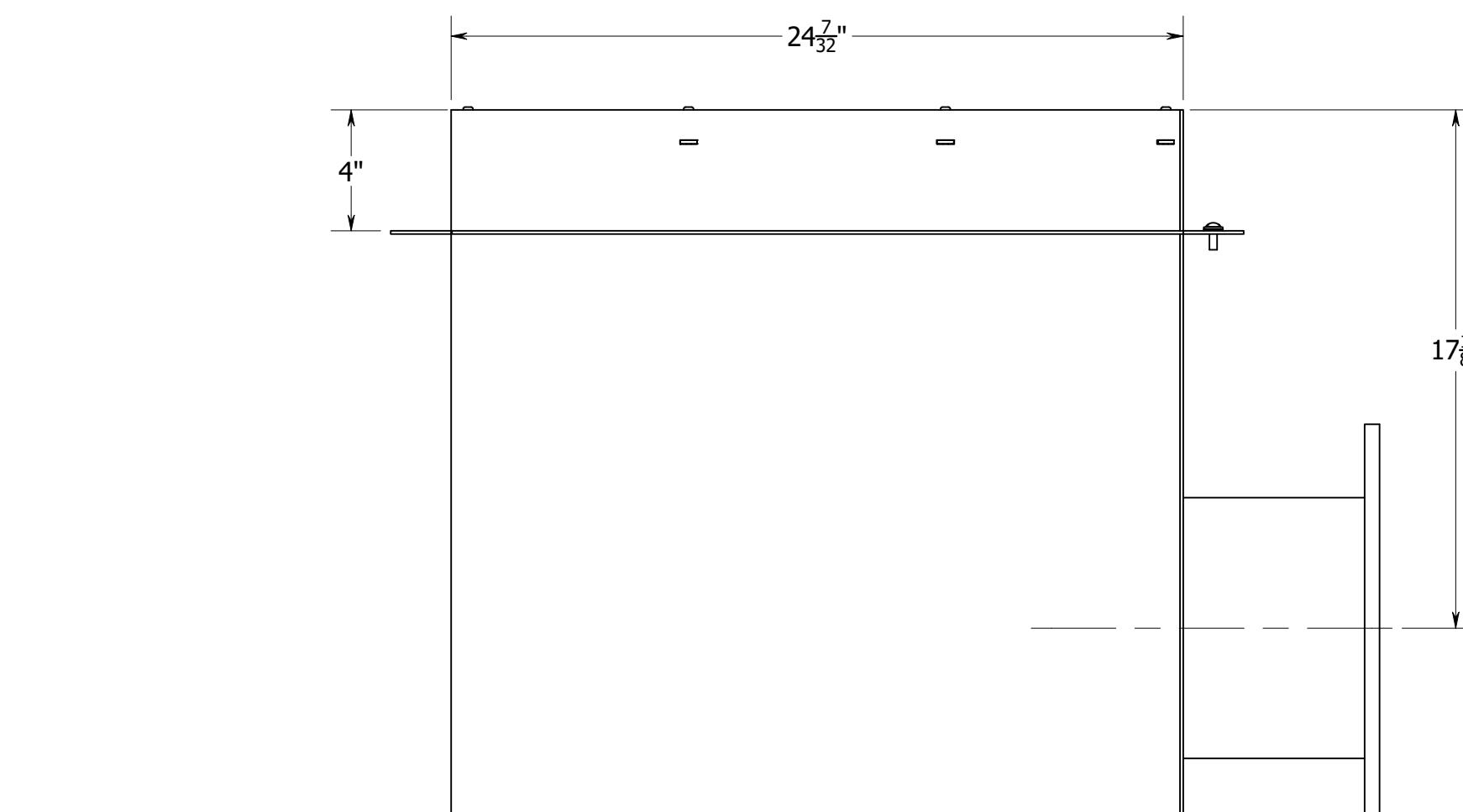
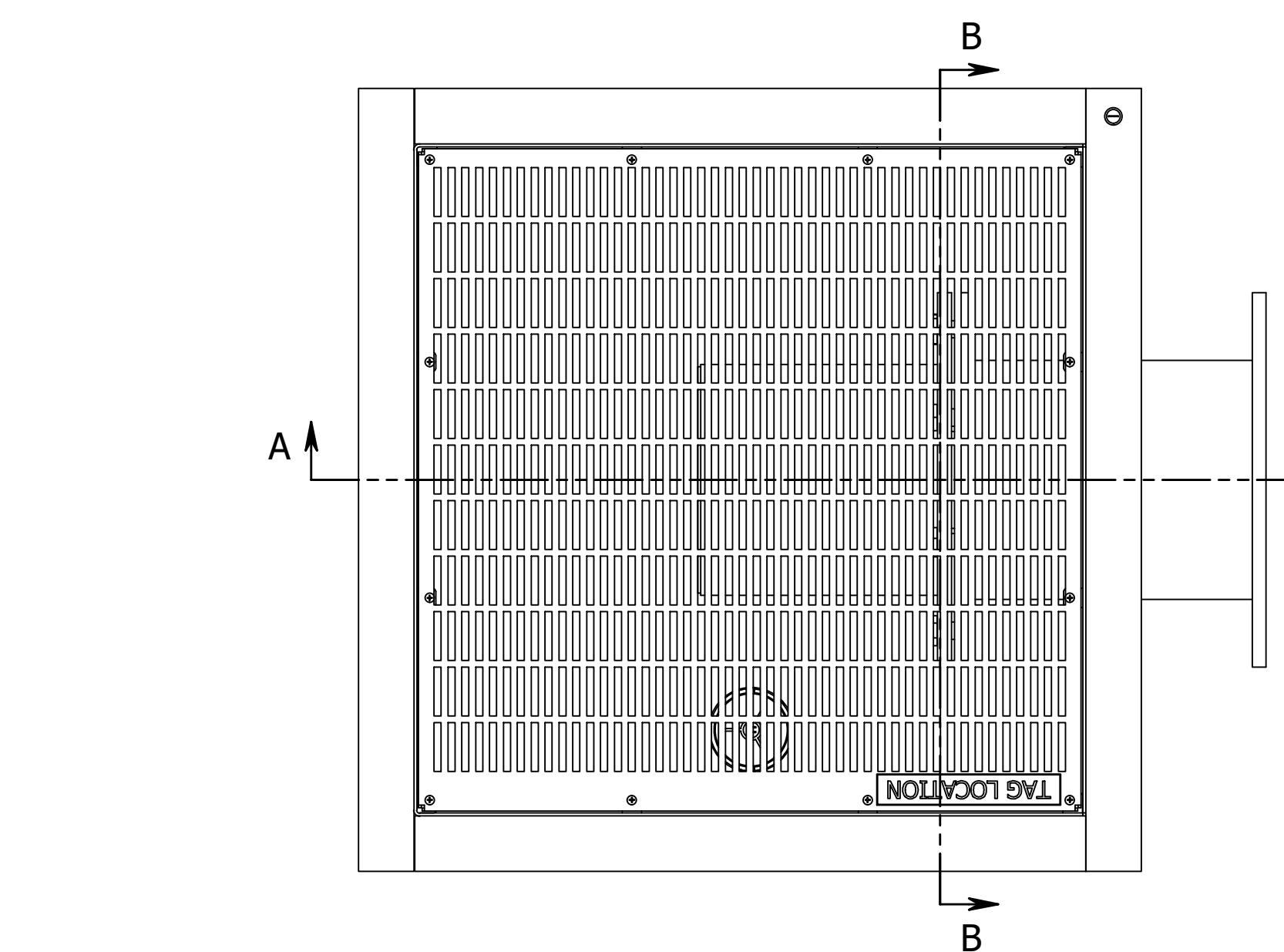


NSF/ANSI/CAN 50 &
ANSI/APSP - 16

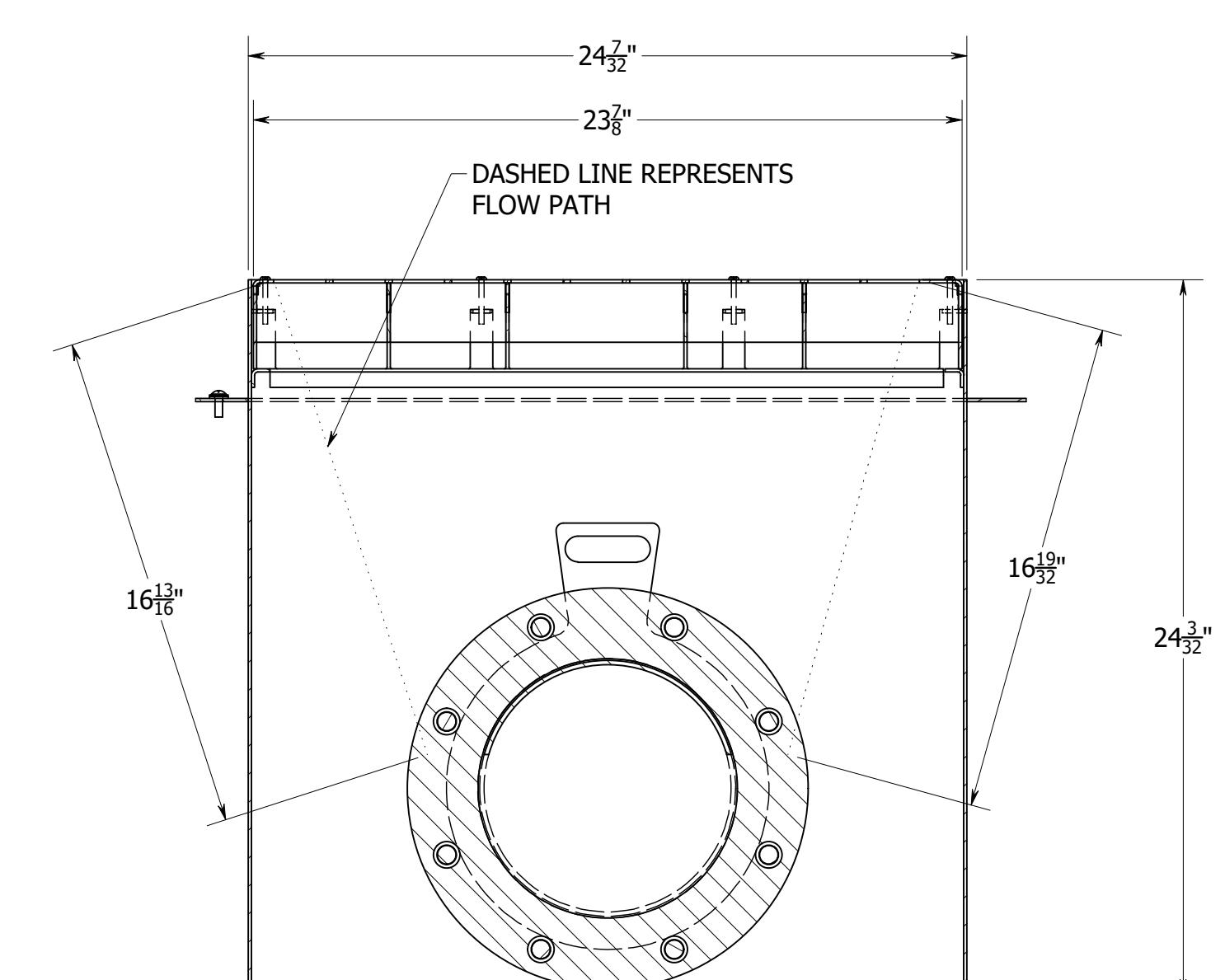
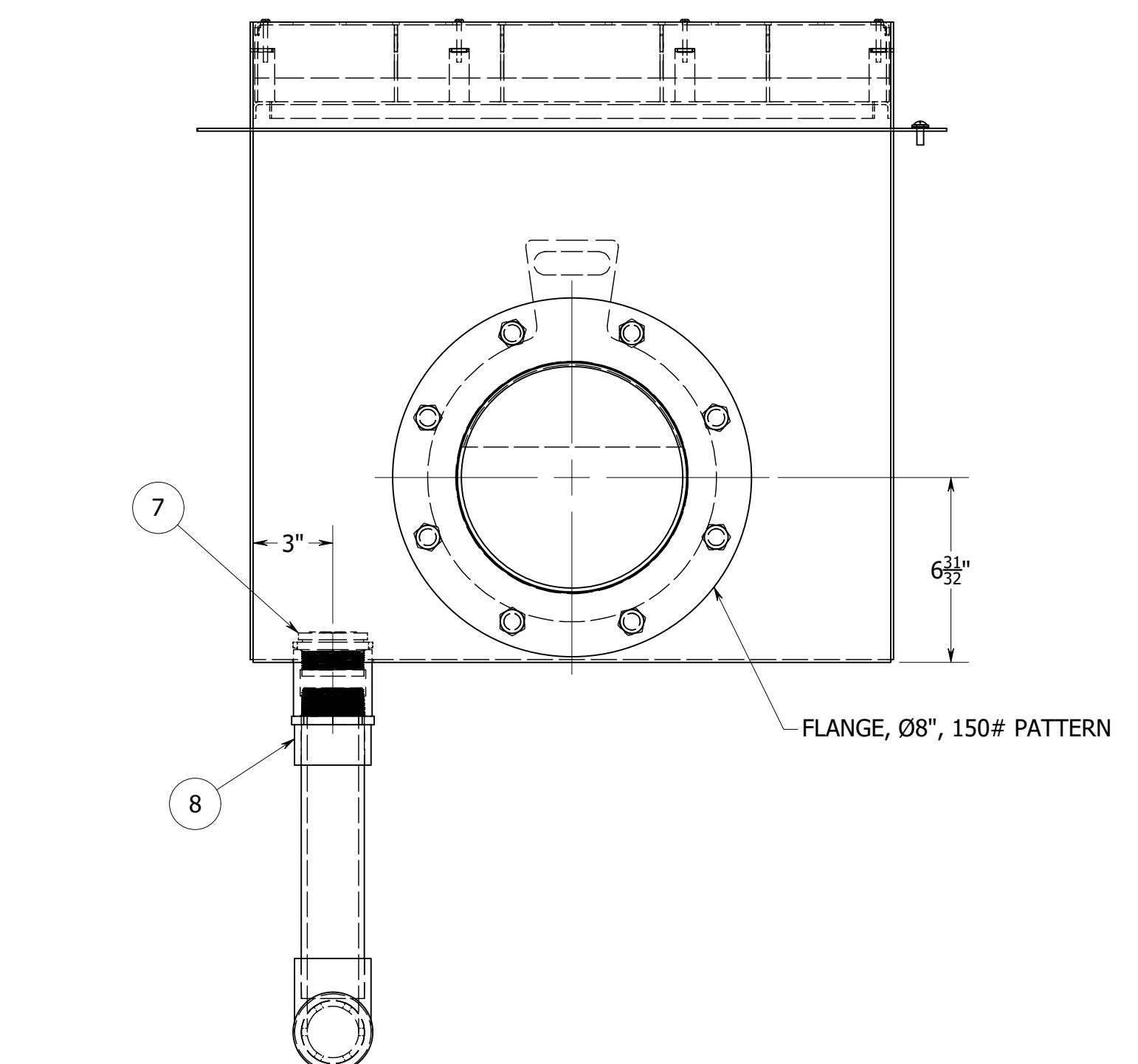
PART NUMBER: 9300007

1	11/07/22	PTT	ADDED FLOW DATA
0	02/28/22	PTT	ORIGINAL ISSUE
REV	DATE	BY	DESCRIPTION
REVISION HISTORY			
DO NOT SCALE DRAWING TOLERANCE UNLESS OTHERWISE NOTED: X ± 1/16" X ± 0.020" 1/8 ± 1/32" XX ± 0.010" X ± 1/4" XXX ± 0.005" SCALE 3/16" = 1"			
DESCRIPTION 24" X 24" MAIN DRAIN W/ (1) 24" X 24" FLAT COVER & (1) Ø10" CONN.			
DRAWN BY DATE PTT 02/25/22			
CHECKED BY DATE APPROVED DWG. NO. MD-304-2424FC-2424-10-1-R0			
DWG. NO. MD-304-2424FC-2424-10-1-R0			
SHEET # 1 OF 1			

SECTION B-B
SCALE 3/16" = 1"

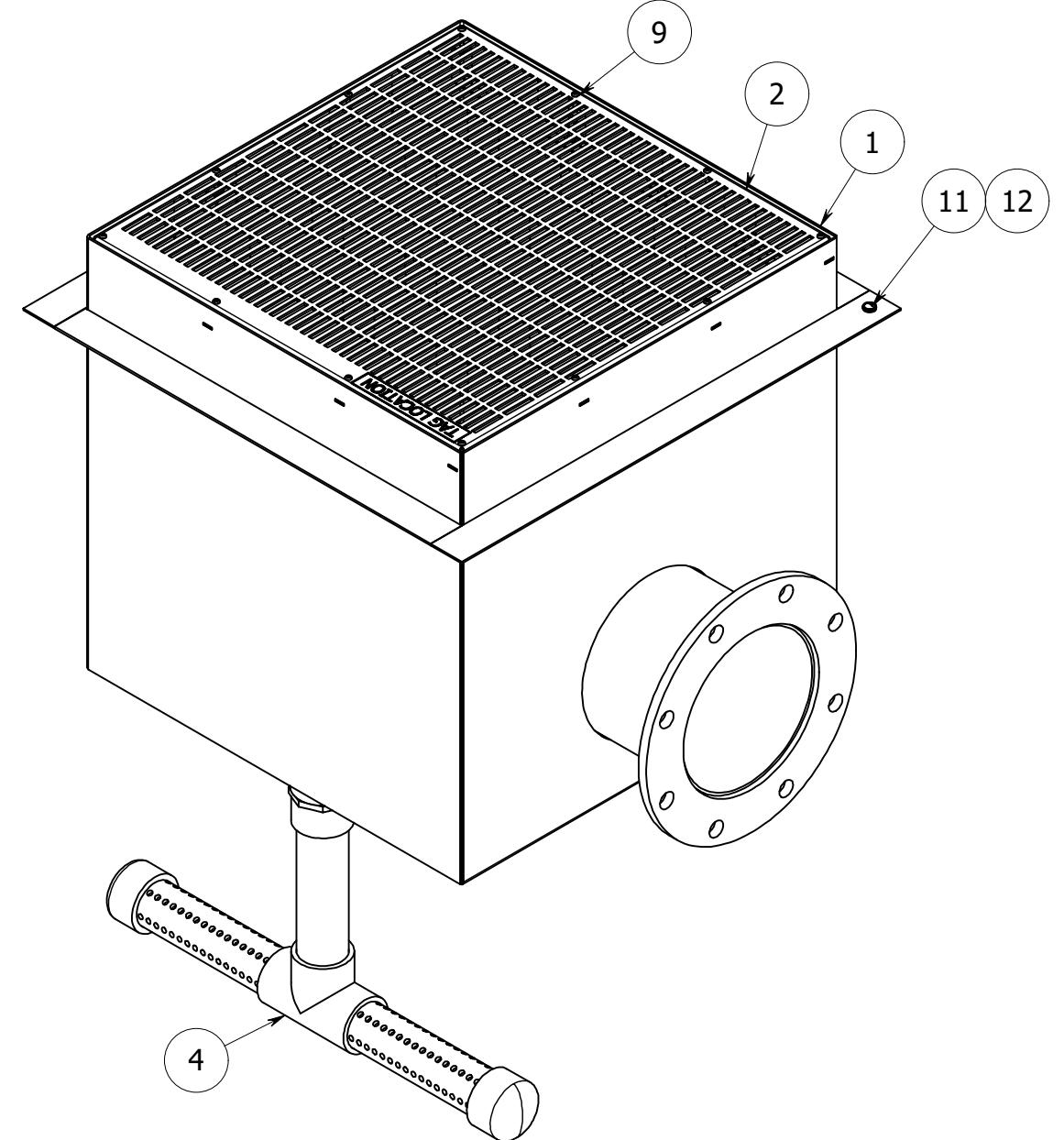


**QTY:2 - Leisure Pool
Area B**



SECTION B-B
SCALE 3/16" = 1"

ITEM	QTY	PART NUMBER	DESCRIPTION	COMMENTS
1	1	ESMD-2424-8-1	WELDMENT, 24" X 24" ESMO, (1) 8" CONNECTION	304L SS
2	1	FC-2424	WELDMENT, 24" X 24" FLAT MD COVER	304L SS
3	1	AVRD-08	WELDMENT, 8" AVRD FOR 24" X 24"	304L SS
4	1	HSRL-01	SHOP ASSEMBLY, HYDROSTATIC RELIEF FOR MAIN DRAIN BOXES	PVC
5	1	P2104-080x02.11-R0	GASKET, Ø8", 150# PATTERN, PL 1/8" x Ø13 1/2"	NEO
6	1	BP08-304	BLANKING PLATE, PL12GA x 14 3/8" x 10 7/8"	304L SS
7	1	SP1056	CYC HYDRO RELIEF VALVE, 1.5IN/2IN - ABS WHITE	CYCOLAC/HAYWARD
8	1	ADPTR-0200MPTx0200SOC.08-R0	2" MALE ADAPTER SOCKET	PVC
9	12	PHMP-#08Cx0108-316	PAN HEAD PHILLIPS SCREW, TORQUE RATING 19.8 INCH LBS, #8-32 X 1 1/2"	316 SS
10	8	HHMB-063Cx0104-316	HEX HEAD BOLT, 5/8"-11 X 1 1/4"	316 SS
11	1	RHMSL-025Cx0012-BR	ROUND HEAD SLOT MACHINE SCREW, 1/4"-20 X 3/4"	BRONZE
12	2	FW-025-BR	FLAT WASHER, Ø1/4"	BRONZE



PART NUMBER: 9300006

0	02/28/22	PTT	ORIGINAL ISSUE
REV	DATE	BY	DESCRIPTION
REVISION HISTORY			
DO NOT SCALE DRAWING			
TOLERANCE UNLESS OTHERWISE NOTED: X ± 1/16" X ± 0.020" 1/X ± 1/32" XX ± 0.010" X ± 1/4" XXX ± 0.005"			
DESCRIPTION 24" X 24" MAIN DRAIN W/ (1) 24" X 24" FLAT COVER & (1) Ø8" CONN.			
DRAWN BY	DATE	SPEC. NO.:	
PTT	02/25/22		
CHECKED	APPROVED	DWG. NO.	MD-304-2424FC-2424-8-1
APPROVED		SHEET #	1 OF 1



PADDOCK

EMPLOYEE OWNED SINCE 2019

PPEC REGENERATOR FILTER COMPONENTS

Item	Name
R1	PPEC Regenerator Filter
R2	Pnuematic On-Stream Valve
R3	Pnuematic Precoat Valve
R4	Precoat Fill Valve
R5	Flow Meter
R6	Control Panel
R7	Bump Assembly
R8	Vacuum Transfer Pump
R9	Drain Valve
F10	Check Valve
F11	Valve
F12	Strainer
F13	Reducing Precoat Tee
F14	Pump (not by PPEC)
F15	Reducer
F16	Air Compressor
F17	Auto Air Bleed
F18	Receiver Tank
F19	Air Dryer
F20	Air Line
F21	VFD
F22	Air Bleed (not by PPEC)



REGENERATOR FILTER SCHEMATIC

Drain Requirements:

- Gravity drainage of filter is needed to properly waste heavily laden media.
- Slop drainage pipe away from filter, terminating in an open sump/sewer connection. (Check local codes for air-break requirements and media discharge containment.)
- Filter drainage rate is controlled at approximately 50 GPM. Ideally, drainage plumbing should be designed for 500 GPM, providing adequate run-off capacity in case of operator error.
- If sewer is higher than the filter drain, a gravity sump with a sump pump to lift the waste the sewer is required. Match sump to filter volume notated on attached chart.

Electrical Requirements:

- The Control Panel requires a dedicated 120V 20-amp circuit.
- VFD - 2 pairs of 22/4 or 18/4 shielded wire for interface (single conduit)
- UV System, Chemical Controller, Heater, Dehumidification - 22/4 or 18/4 shielded wire for interface (single conduit per unit)
- Flow Meter - 22/4 or 18/4 shielded wire from meter to MOD1 control box(single conduit)
- All panel penetrations should be made on the sides or bottom of panel.
- The filter & all other equipment need to be bonded.

Filter Location:

- Side clearance of three feet should be provided around the filter to allow for operator access.
- Minimum clearance over the filter is 13", more clearance improves service access.
- Provide a mount point(one-ton minimum safe load) above the filter to facilitate head removal.
- Typical clearance underneath the filter (measured from face of drain flange to floor) is 14".

Flow Meter Installation Location:

- The flow meter should be installed on the straight run of pipe into the influent connection between the pump and the filter (allows flow to be monitored through the pre-coat & on-stream cycles).
- The flow meter requires a distance of 20x the pipe diameter before and 5x the pipe diameter after.

Air Supply:

- The PPEC Regenerative filters require a continuous supply of dry 80 PSI air to operate 2 pneumatic valves & a pneumatic "bump" mechanism.
- Multiple filters may require multiple compressors/receivers.
- Air lines should be Ø3/4" braided 300 PSI hose or ¼" copper.
- Do not heat fittings within 2' of filter connection, direct heat can damage regulator components.
- An air dryer may be installed and plumbed between the air supply and the filter. This will help pull any remaining moisture out before it reaches the filter. By-Pass valve to be provided with dryer.

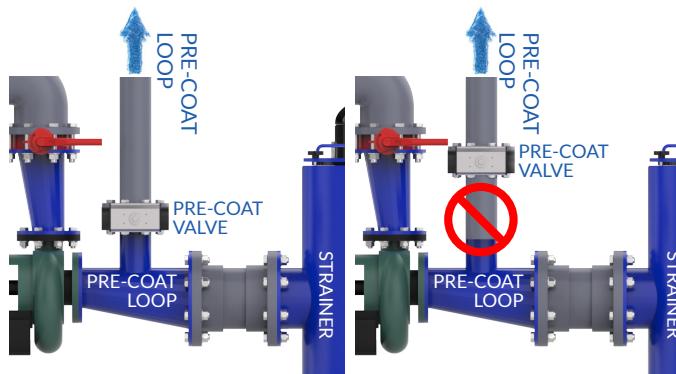
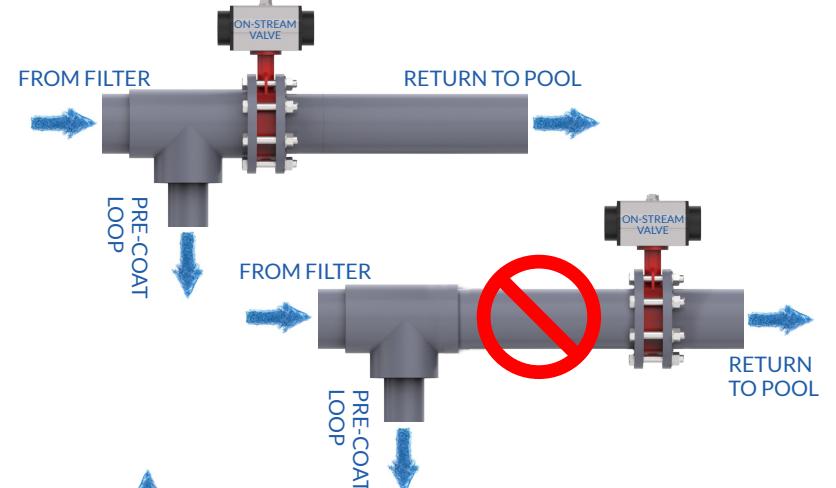


Plumbing Design Guidelines:

- The PPEC Regenerator filters will operate efficiently above or below pool level. A check valve is needed either in front of the pump strainer or between the pump strainer & pre-coat tee. If the pump is below water level a check valve is suggested above the pump discharge as well.
- Efficient filter operation requires a minimum 5' straight run of pipe going into the influent connection. Refer to flow meter location for more information.
- Reduce the number of fittings and plane changes between the pump discharge and the filter.
- Use sweeping 90's or two 45's to decrease turbulence if 5' straight run is not possible.
- Any increase or reduction in piping size should be done as close to the pump discharge as possible.

On-Stream Valve Location:

- Locate valve actuator to allow operator to view valve status, do not mount below pipe.
- Install On-Stream Valve with a spigot flange to decrease the area prior to the valve to prevent media build-up. This reduces media returning to the pool.



Pre-coat Valve Location:

- The pre-coat valve should be installed as close as possible to the pre-coat tee between the pump and strainer. If this is not done, the resulting entrained air can be pushed into the filter and cause media separation which will result in media getting into the pool.
- The pre-coat line and valve are one significant pipe size smaller than the filter connections.

Filter Media Selection:

- Regenerators are NSF approved for diatomaceous earth (DE)* or perlite filter media.
- PPEC provides PF-60 perlite media

*PPEC's preferred media

Air Lines to Valves:

- Pneumatic valves should be connected to their respective control solenoid located on the right side of the filter control mounting bracket (top is on-stream, bottom of pre-coat) using ¼" x 0.04" wall nylon or poly tubing.
- Speed control set screws for valves are located on the front of the solenoid, adjust to a 3-5 sec open & closure rate.

High Vent Air Bleed:

- Must be installed at the highest point in the return line between filter effluent & the on-stream valve to prevent entrained air from re-circulation.
- If the air bleed is improperly installed it could result in decreased filter performance.



Model #	Width (inches) "A"	Overall & Shipping Height (inches) "B"	Tank Influent Connection (inches) "C"	Max Design Filtration Rate (GPM/ft ²)**	Effective Filtration (Area/sq.ft.)	Design Flow Range (gpm)	Tank Volume (gals)	PreCoat Perlite (lbs)	PreCoat (+) DE (lbs)	Operating Weight (lbs)	Shipping Weight (lbs)	Drain Connection (Nom. Pipe Size)	Tank Connection (Nom. Pipe Size)	Minimum Sump Size (gals)	Compressor / Receiver Tank Sizes (gals)
PPEC 225S	27.00	86.75	24.00	1.60	208.7	212-335	129	26	50	1500	1025	4	4	100	60 / N/A
PPEC 350S	33.00	88.25	24.44	1.60	351.2	337-565	244	41	79	2600	1300	4	6	165	60 / N/A
PPEC 500S	39.50	92.48	25.88	1.60	519.4	528-835	291	65.5	126	4250	1750	4	6	225	60 / N/A
PPEC 700S	45.00	96.69	28.25	1.60	707.3	719-1138	396	82	158	4800	2200	4	8	390	60 / N/A
PPEC 900S	50.63	104.19	30.13	1.60	819.0	819-1310	496	95	190	6000	2750	4	8	446	60 / N/A
PPEC 1275	51.00	103.63	30.81	1.60	935.8	950-1505	525	109	210	6500	3100	4	8	670	60 / 30
PPEC 1400S	58.63	107.69	32.63	1.60	1141.0	1141-1825	721	135	260	9900	4100	4	10	810	60 / 30
PPEC 2100	63.50	116.49	34.19	1.60	1538.8	1560-2490	890	182	350	11600	5800	4	10	960	60 / 30

**Contact manufacturer for assistance in proper plumbing layout.

(+) Preferred Media

REGENERATOR DESIGN BEST PRACTICES

PADDOCK DEMINERALIZING COMPOUND

Paddock Regenerator™ Environmental Regenerative Filter



PADDOCK DEGREASING CONCENTRATE

Paddock Regenerator™ Environmental Regenerative Filter



PRECAUTIONARY INFORMATION

Avoid contact with eyes or skin. The use of safety goggles, rubber gloves and dust mask is recommended when handling this product.

CONTAINS

Citric Acid
Methyl Red Hydrochloride

CAS

77-92-9
439-52-7

EYES: Do not wear contact lenses when working with this material. Flush immediately with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of entire eye surface.
SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN: Wash with soap and water. If irritation develops, SEEK MEDICAL ATTENTION IMMEDIATELY.

INGESTION: If swallowed, induce vomiting by sticking finger down throat. Drink large quantities of water. NEVER give anything by mouth to an unconscious person.
SEEK MEDICAL ATTENTION IMMEDIATELY.

For Technical Support call 1-800-849-2729

NET CONTENTS: 50 LBS.

PRECAUTIONARY INFORMATION

Avoid contact with eyes or skin. The use of safety goggles, and rubber gloves is recommended when handling this product.

CONTAINS

Sodium Metasilicate
Sodium Carbonate
Ethoxylated Alcohols, C9-C11
Na-A-Zeolite

CAS

6834-92-0
497-19-8
68439-46-3
68989-22-0

EYES: Flush immediately with plenty of water for at least 15 minutes, holding eyelids apart to ensure flushing of entire eye surface.
SEEK MEDICAL ATTENTION IMMEDIATELY.

SKIN: Wash with water. If irritation develops, SEEK MEDICAL ATTENTION IMMEDIATELY.

INGESTION: If swallowed, DO NOT induce vomiting. Drink large quantities of water. If available, drink several glasses of milk. NEVER give anything by mouth to an unconscious person. SEEK MEDICAL ATTENTION IMMEDIATELY.

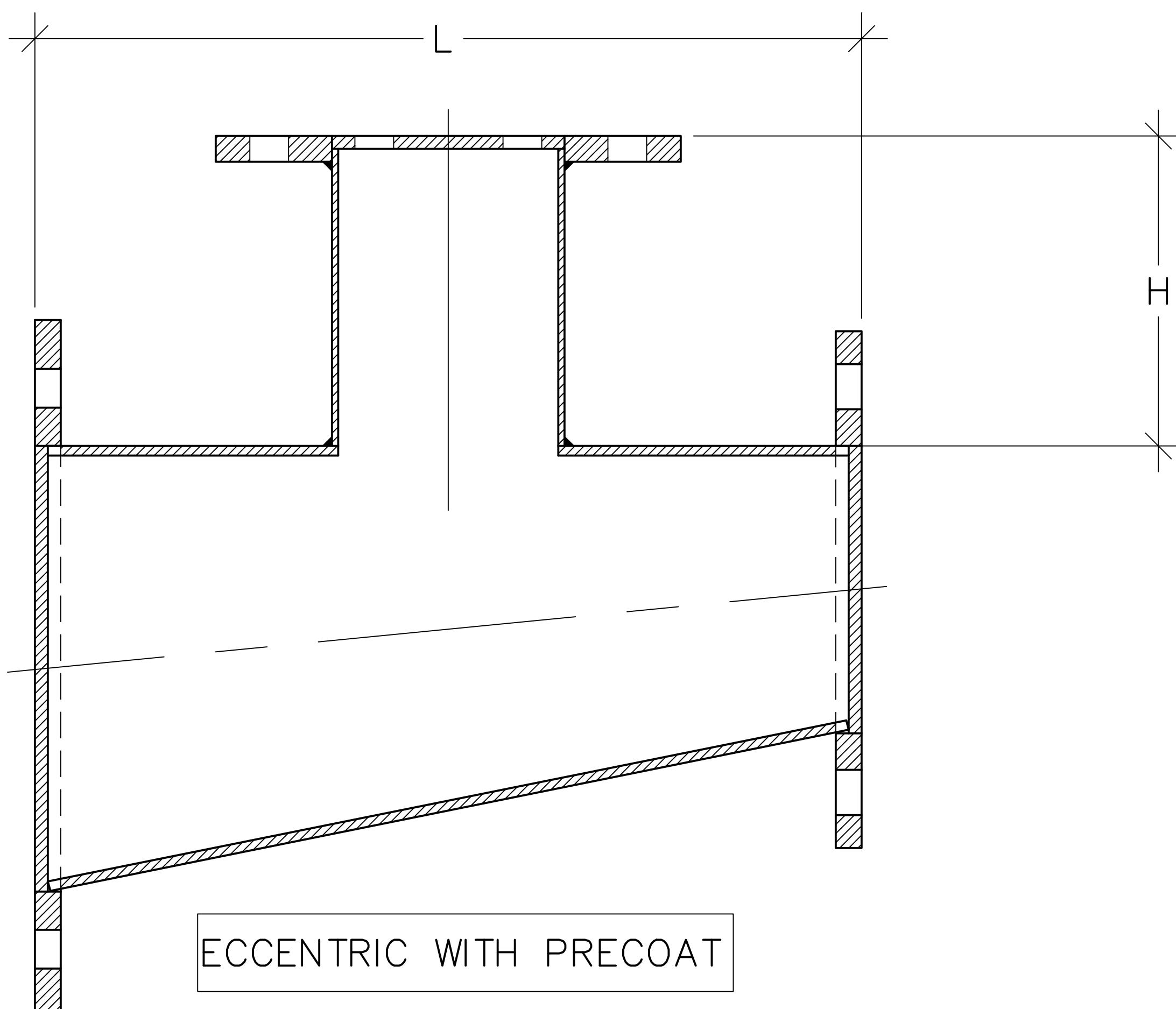
For Technical Support call 1-800-849-2729

NET CONTENTS: 50 LBS.

STAINLESS STEEL FLANGED REDUCERS WITH PRECOAT CONNECTION

REDUCER FLANGES MEET ANSI STANDARD 125# FLANGE DRILLING

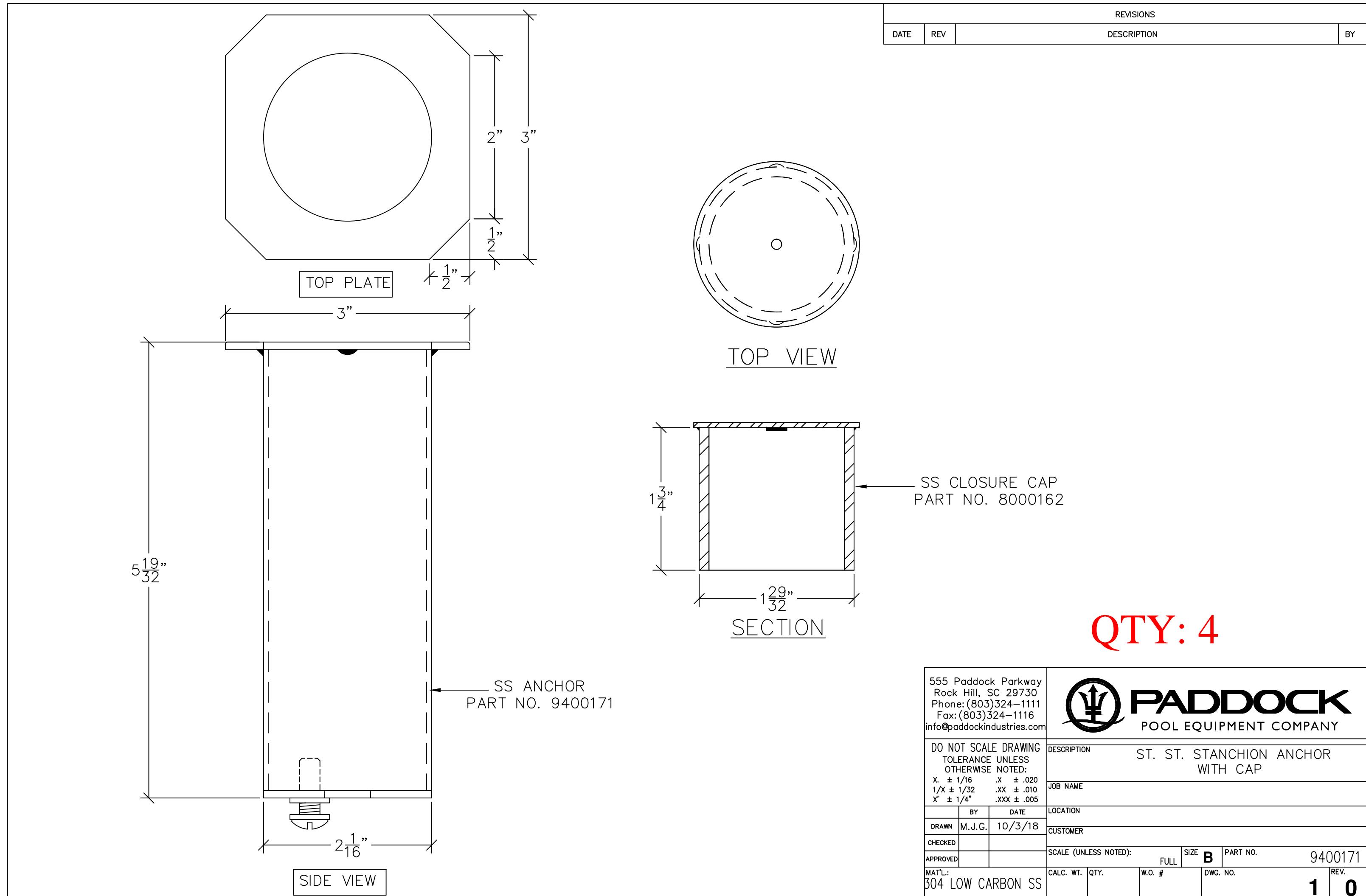
Paddock Pool Equipment Co.
555 Paddock Parkway
Rock Hill SC 29730

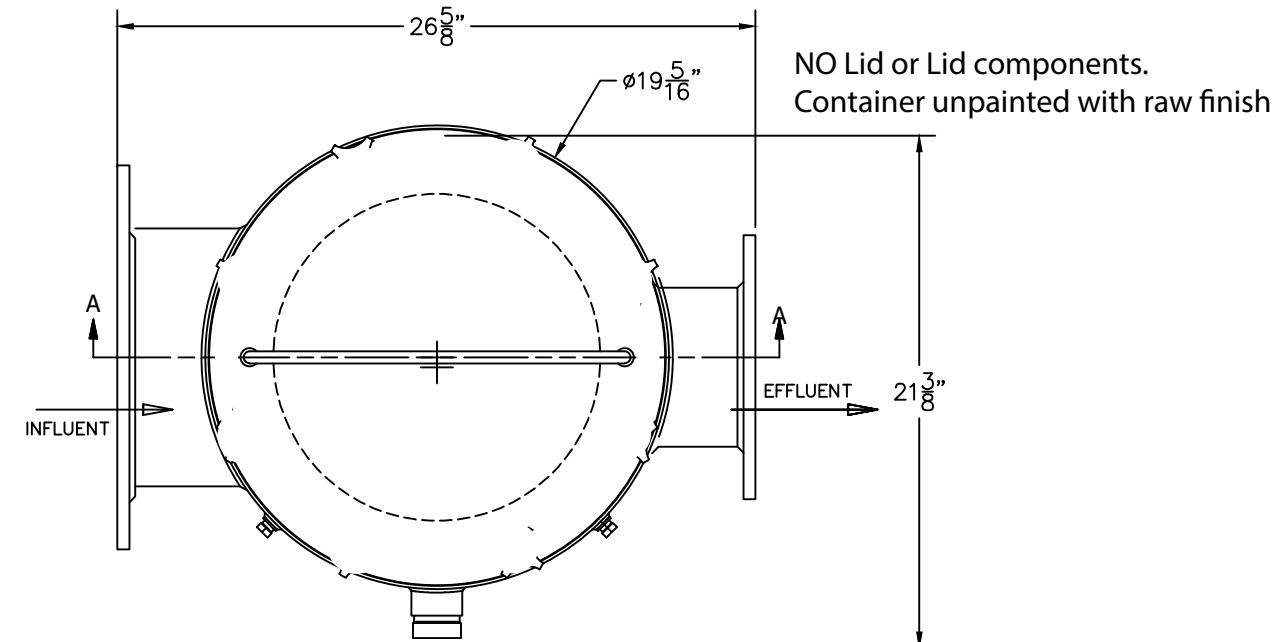


ECCENTRIC REDUCERS W/PRECOAT

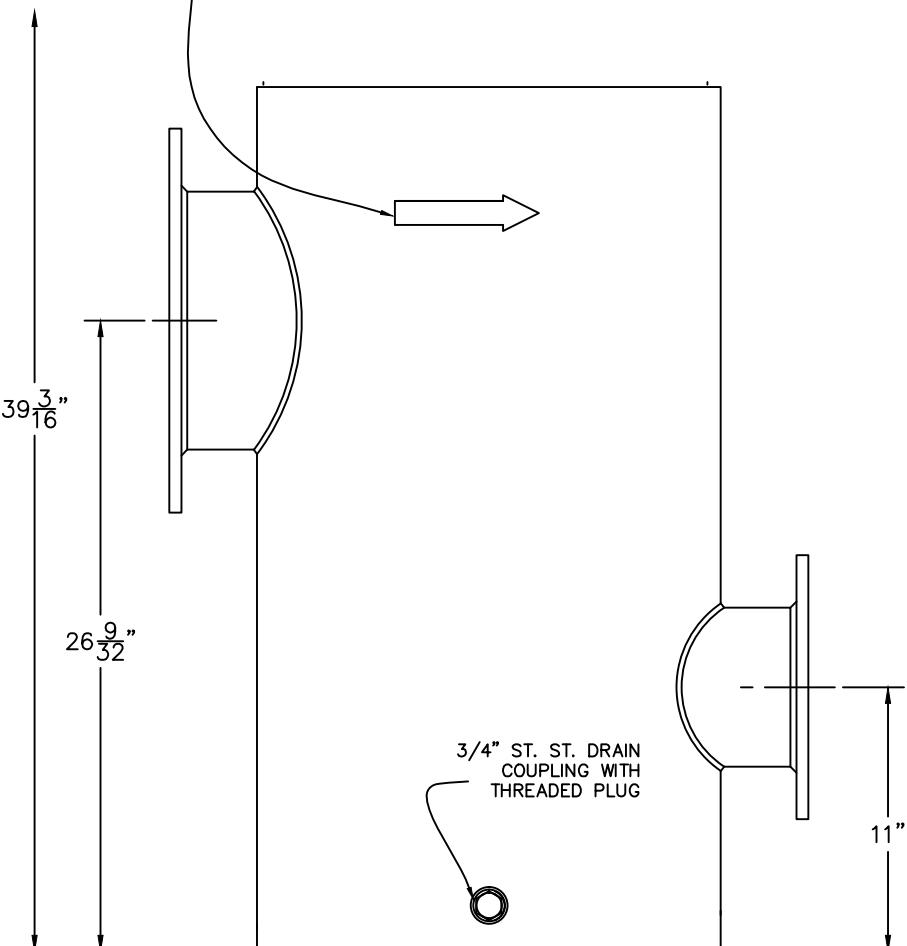
SIZE	"L"	"H"	PRECOAT	PART NUMBER	SIZE	"L"	"H"	PRECOAT	PART NUMBER
3" X 2"	16"	6"	NONE		10" X 5"	16"	6"	4"	
3" X 2½"	16"	6"	NONE					6"	
4" X 2"	16"	6"	4"		10" X 6"	16"	6"	8"	
4" X 2½"	16"	6"	4"					4"	
4" X 3"	16"	6"	4"		10" X 8"	16"	6"	6"	
5" X 4"	16"	6"	4"					8"	
6" X 3"	16"	6"	4"		12" X 6"	16"	6"	4"	
6" X 4"	16"	6"	4"					6"	
6" X 5"	16"	6"	4"		12" X 8"	16"	6"	8"	
8" X 4"	16"	6"	4"					4"	
8" X 5"	16"	6"	4"		12" X 10"	16"	6"	6"	
8" X 6"	16"	6"	4"					8"	
			6"		14" X 8"	16"	6"	4"	
			8"					6"	
			4"		14" X 10"	16"	6"	8"	
			6"					4"	
			8"		14" X 12"	16"	6"	6"	
			4"					8"	
			6"					4"	
			8"					6"	

QTY- 1

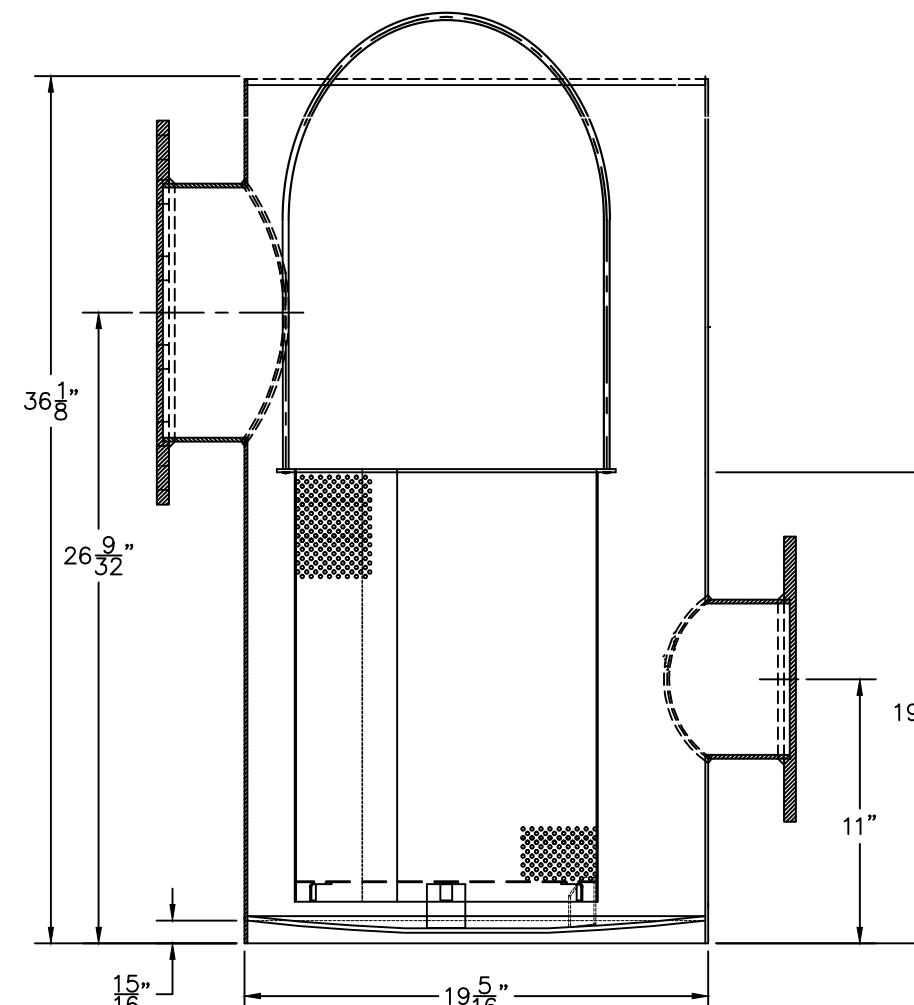




TOP VIEW
SCALE 1/8" = 1"



FRONT ELEVATION
SCALE 1/8" = 1"



SECTION A-A
SCALE 1/8" = 1"

QTY	STRAINER SIZE	INLET SIZE	FLANGE DIAMETER	OUTLET SIZE	FLANGE DIAMETER	OPEN AREA	RATIO	WT (#)
1	10 X 10	10"	16"	10"	16"	71.8 IN ²	5.66:1	303.0
	10 X 8	10"	16"	8"	13 1/2"	71.8 IN ²	5.66:1	301.2
	10 X 6	10"	16"	6"	11"	71.8 IN ²	5.66:1	299.9
	10 X 5	10"	16"	5"	10"	71.8 IN ²	5.66:1	299.4
	12 X 12	12"	19"	12"	19"	101.64 IN ²	4:1	315.0
	12 X 10	12"	19"	10"	16"	101.64 IN ²	4:1	313.2
	12 X 8	12"	19"	8"	13 1/2"	101.64 IN ²	4:1	311.4
	12 X 6	12"	19"	6"	11"	101.64 IN ²	4:1	310.0
	12 X 5	12"	19"	5"	10"	101.64 IN ²	4:1	309.5

WITH EXTRA STRAINER BASKET

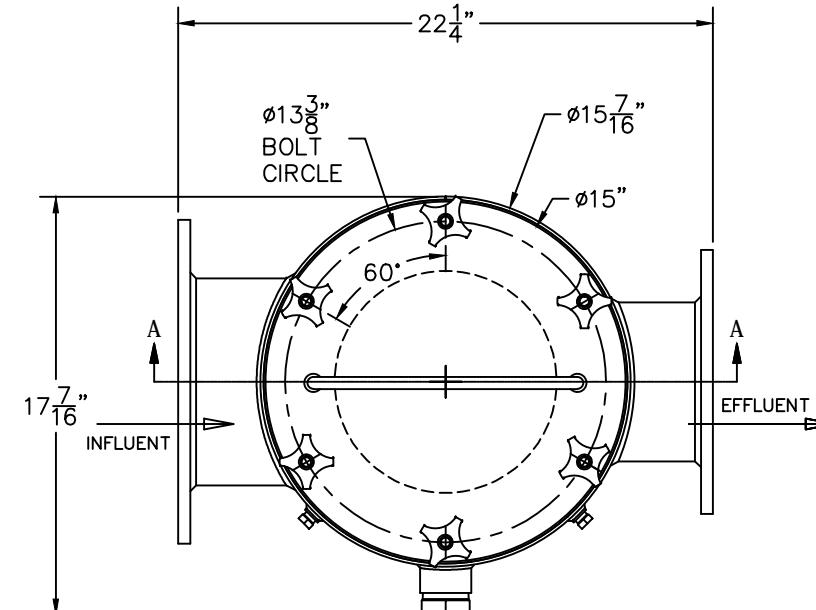
PADDOCK HAIR AND LINT STRAINERS ARE FABRICATED FROM TYPE 304 1/8" THICK STAINLESS STEEL.

STAINLESS STEEL DRAIN COUPLING WITH THREADED PLUG ARE PROVIDED

PERFORATED BASKET IS CONSTRUCTED OF 18 GAUGE TYPE 304 STAINLESS STEEL W/A 52% OPEN AREA AND 1/8" PERFORATED HOLES.

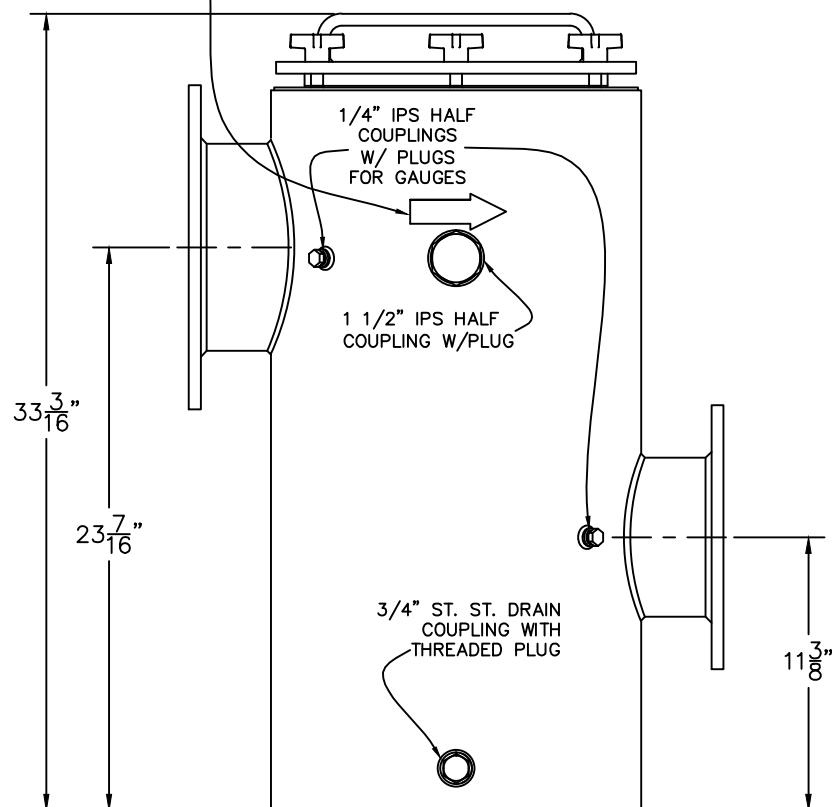
STRAINER IS SHIPPED WITH (1) EXTRA BASKET.

555 Paddock Parkway Rock Hill, SC 29730 Phone: (803)324-1111 Fax: (803)324-1116 info@paddockindustries.com			 PADDOCK POOL EQUIPMENT COMPANY		
DO NOT SCALE DRAWING TOLERANCE UNLESS OTHERWISE NOTED: X. ± 1/16 .X. ± .020 1/X ± 1/32 .XX. ± .010 X' ± 1/4" .XXX ± .005			DESCRIPTION MEDIUM 304 STAINLESS STEEL ROUND STRAINERS		
JOB NAME —			LOCATION —		
DRAWN	BY	DATE	CUSTOMER	—	
BLC		5/7/12		—	
CHECKED			SCALE (UNLESS NOTED):	1/8" = 1"	SHEET 1 OF 1
APPROVED			MATL.:	CALC. WT.	SIZE B STD. DWG. NO. XXX
				QTY. P-	DWG. NO. — REV. 0

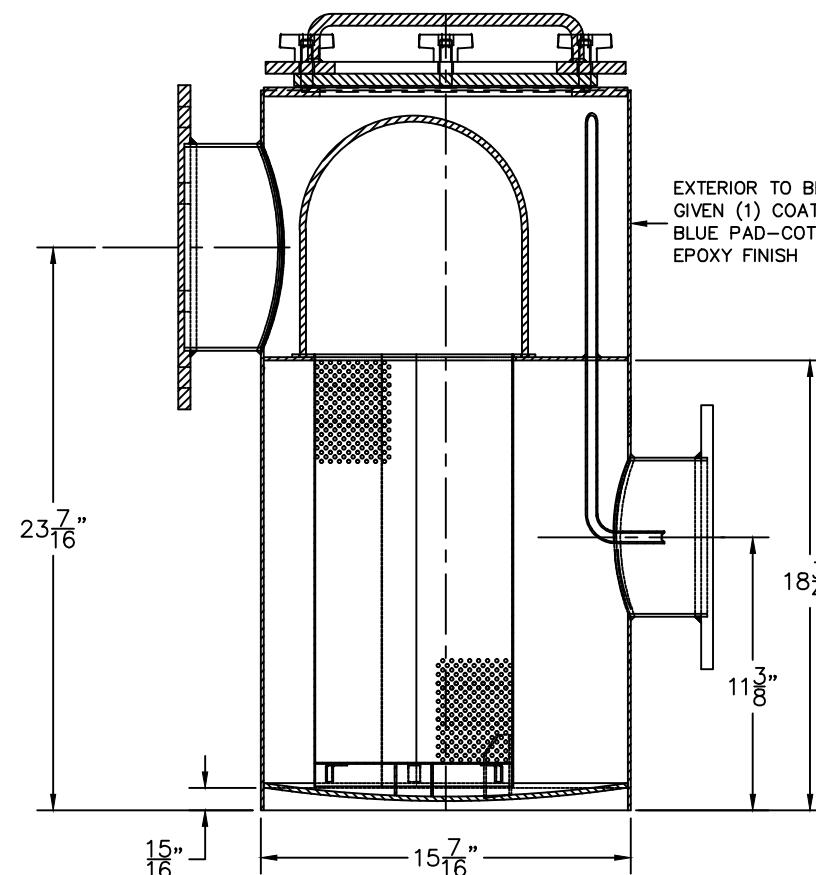


TOP VIEW
SCALE 1/8" = 1"

FLOW DIRECTIONAL
ARROW DECAL ON
SIDE OF STRAINER



FRONT ELEVATION
SCALE 1/8" = 1"



SECTION A-A
SCALE 1/8" = 1"

QTY	STRAINER SIZE	INLET SIZE	FLANGE DIAMETER	OUTLET SIZE	FLANGE DIAMETER	OPEN AREA	RATIO	WT (#)
1	4 X 4	4"	9"	4"	9"	11.5 IN ²	20.6:1	191.7
	4 X 3	4"	9"	3"	7 1/2"	11.5 IN ²	20.6:1	191.3
	6 X 6	6"	11"	6"	11"	26.07 IN ²	9.16:1	194.2
	6 X 5	6"	11"	5"	10"	26.07 IN ²	9.16:1	193.7
1	6 X 4	6"	11"	4"	9"	26.07 IN ²	9.16:1	193.0
	6 X 3	6"	11"	3"	7 1/2"	26.07 IN ²	9.16:1	192.5
1	8 X 8	8"	13 1/2"	8"	13 1/2"	45.7 IN ²	5.22:1	196.9
	8 X 6	8"	13 1/2"	6"	11"	45.7 IN ²	5.22:1	195.6
1	8 X 5	8"	13 1/2"	5"	10"	45.7 IN ²	5.22:1	195.1
	8 X 4	8"	13 1/2"	4"	9"	45.7 IN ²	5.22:1	194.3

WITH EXTRA STRAINER BASKET

Per Strainer Size

PADDOCK HAIR AND LINT STRAINERS ARE FABRICATED FROM TYPE 304 1/8" THICK STAINLESS STEEL.

4", 6", AND 8" STRAINERS FEATURE A 1/2" STAINLESS STEEL COVER RING WITH 1/2" THICK POLYCARBONATE VIEWPORT.

LIDS ARE MACHINED TO ELIMINATE SHARP EDGES AND ARE SEALED WITH A 1/4" DIAMETER RUBBER 'O'-RING GASKET.

LOCKING ASSEMBLIES PERMIT EASY ACCESS AND CLOSING WITHOUT USE OF TOOLS.

STAINLESS STEEL DRAIN AND VACUUM COUPLINGS WITH THREADED PLUGS ARE PROVIDED ALONG WITH DRILLED AND TAPPED GAUGE CONNECTIONS.

SYSTEM IS DESIGNED FOR 60 PSI WORKING PRESSURE.

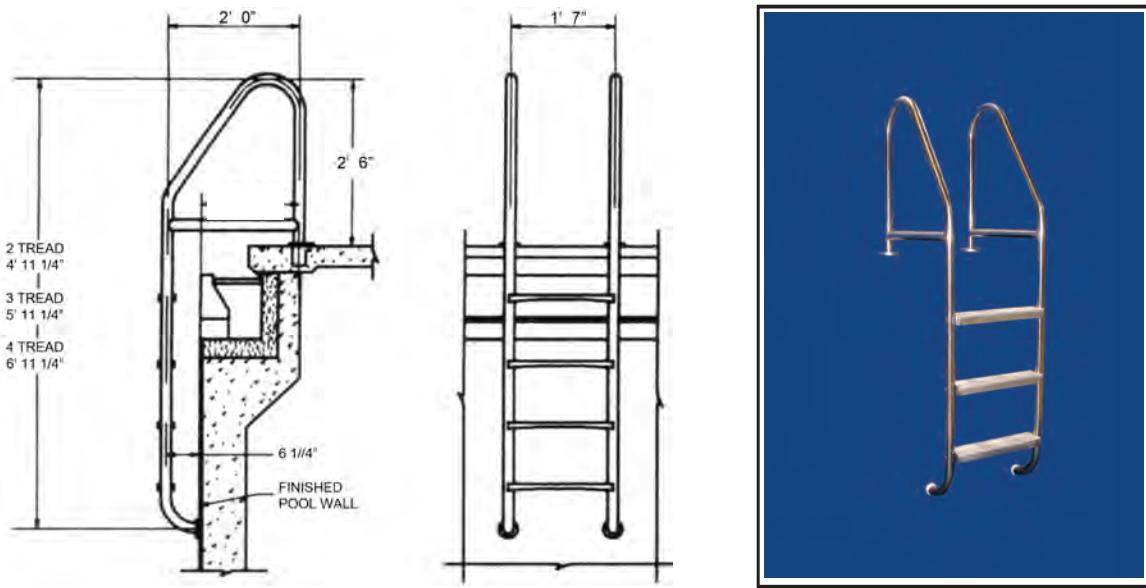
PERFORATED BASKET IS CONSTRUCTED OF 18 GAUGE TYPE 304 STAINLESS STEEL W/A 52% OPEN AREA AND 1/8" PERFORATED HOLES.

STRAINER IS SHIPPED WITH (1) EXTRA BASKET.

555 Paddock Parkway Rock Hill, SC 29730 Phone: (803)324-1111 Fax: (803)324-1116 info@paddockindustries.com	 PADDOCK POOL EQUIPMENT COMPANY			
DO NOT SCALE DRAWING TOLERANCE UNLESS OTHERWISE NOTED: X. $\pm 1/16$.X. $\pm .020$ 1/X $\pm 1/32$.XX. $\pm .010$ X' $\pm 1/4"$.XXX. $\pm .005$	DESCRIPTION SMALL 304 STAINLESS STEEL ROUND STRAINERS			
JOB NAME	—			
DRAWN BY DATE	LOCATION —			
DRAWN BLC 5/4/12	CUSTOMER —			
CHECKED	SCALE (UNLESS NOTED):			
APPROVED	1/8" = 1"	SIZE B	STD. DWG. NO. XXX	SHEET 1 OF 1
MAT'L.: CALC. WT.	QTY.	W.O. # P-	DWG. NO.	REV. 0



Ladder



Paddock's **Ladders** are fabricated from Type 304 or 316L stainless steel tubing with an outside diameter of 1.90" and standard wall thickness of .083". (Outside diameter of 1.5" or wall thickness of .120" is also available.)

Ladder rails are spaced 19" apart with a cross brace for added stability and furnished with slip-resistant stainless steel treads.

Exposed surfaces shall be polished to a Paddock buff finish.

A rubber bumper on each rail protects the interior pool finish.

Paddock deck anchors with Paddock escutcheon plates are available.

P/N _____, Model 4539-_____, 2-Tread Ladder Type _____, _____" OD x _____ Wall Less Anchors, Qty _____

P/N _____, Model 4540-_____, 3-Tread Ladder Type **316**, **1.9**" OD x **.083** Wall Less Anchors, Qty **2**

P/N _____, Model 4541-_____, 4-Tread Ladder Type **316**, **1.9**" OD x **.083** Wall Less Anchors, Qty **2**

P/N _____, Model 4542-_____, 5-Tread Ladder Type _____, _____" OD x _____ Wall Less Anchors, Qty _____

DECK EQUIPMENT

Wedge Deck Anchor

4
8
0
1



The body shall be constructed of cast bronze and shall have a tapered chamber to receive wedge by means of which a ladder or other rail may be held securely.

Wedge shall be of cast bronze and shall be drawn against rail being anchored by means of a $\frac{1}{2}$ " bolt.

Wedge deck anchor shall be provided with a ground connection at its base and shall have an anchoring protrusion at its center.

PN 200153

Paddock No. 4837 stainless steel escutcheon gracefully covers wedge deck anchor.

1.90" OD Tubing

Submittal Information:

QTY - 28

Additional Information



555 Paddock Parkway
Rock Hill, SC 29730
Ph: 803-324-1111
Fx: 803-324-1116

Z1000 Bypass Package



1 - 500 HP

HVAC Optimized with Intelligent Bypass and Advanced BAS Interface

Features

- Two Contactor Bypass
- 100K AIC Package Rating
- Input "Non-Fused" Disconnect
- Drive H-O-A Keypad used for Bypass
- Standard Digital Inputs (5)
 - Run
 - Safety
 - BAS Interlock
 - Auto Transfer to Bypass
 - Smoke Purge
- Programmable Digital Inputs (3)
- Form "C" Programmable Relays (4)
- Built-in BACnet protocol (BTL certified), Apogee, Metasys, Modbus/Memobus accessible via RS-422/485 communication, which is standard
- All Bypass Functions Work with Serial Communications
- Phase Loss & Low Voltage Monitor – Protects Against Contactor Coil Burn-out
- Motor Amp Display in Bypass
- Duct Pressurization Function (Pre-run)
- Bypass Sync



NEMA 1 Wall-Mount Enclosed

- 50 - 100HP, 208V
- 100 - 200HP, 480V



NEMA 1 Floor Mount

- 125 - 150HP, 208V
- 250 - 500HP, 480V

OPTIONS

- ▶ Circuit Breaker - 100K AIC
- ▶ Drive Service Switch
- ▶ Three Contactor Bypass
- ▶ Custom Nameplate
- ▶ EtherNet/IP
- ▶ LonWorks

Z1000 Bypass Package

Models and Ratings

208V Models

	D002	D003	D004	D007	D010	D016	D024	D030	D046	D059
Base No.: Z1Bx [] (x denotes enclosure type)										
Rated Output Current (A)	2.4	3.5	4.6	7.5	10.6	16.7	24.2	30.8	46.2	59.4
Nominal HP	0.5	0.75	1	2	3	5	7.5	10	15	20
Type 1	Height	41.60				45.10		48.20		
Type 12	Width	6.77						10.18		
Type 12	Depth	12.92						13.19		
Type 12	Weight	70				80		90		
Type 3R	Height	28.8				34.8		39.8		
Type 3R	Width	17.9				20.5		25.5		
Type 3R	Depth	17.9						17.3		
Type 3R	Weight	150				210		275		

	D074	D088	D114	D143	D169	D211	D273	D343	D396
Base No.: Z1Bx [] (x denotes enclosure type)									
Rated Output Current (A)	74.8	88.0	114.0	143.0	169.0	211.0	273	343	396
Nominal HP	25	30	40	50	60	75	100	125	150
Type 1	Height	52.80	42.79	49.09		84.16			
Type 12	Width	12.68	25.80	28.41		41.26			
Type 12	Depth	14.20	16.06	20.87		33.94			
Type 12	Weight	160	280	380		950	1250	1650	1700
Type 3R	Height	39.8	51.2	84.2					
Type 3R	Width	25.5	32.7	41.3					
Type 3R	Depth	17.3	22.8	32.0					
Type 3R	Weight	275	420	490	850	945	1215	1300	1350
Type 3R	Height	40.1	51.1	91.1					
Type 3R	Width	28.7	39.0	41.3					
Type 3R	Depth	21.4			50.7		46.6		
Type 3R	Weight	275	420	490	850	945	1215	1300	1350

Note: Data subject to change.



NEMA 1



NEMA 12



NEMA 3R

YASKAWA

Z1000 Bypass Package

Models and Ratings

480V Models

Base No.: Z1Bx [] (x denotes enclosure type)	B001	B002	B003	B004	B007	B011	B014	B021	B027	B034	B040	B52L	B052			
Rated Output Current (A)	1.6	2.1	3.2	4.8	7.6	11.0	14.0	21.0	27.0	34.0	40.0	52.0	52.0			
Nominal HP	0.5 / 0.75	1	2	3	5	7.5	10	15	20	25	30	40	40			
Dimensions (in) and Weight (lb)	Type 1	Height	41.60				45.10			48.20	52.80					
	Type 12	Width	6.77							10.18	12.68					
	Type 12	Depth	12.92							13.19	14.20					
	Type 12	Weight	70			80		90		160						
	Type 3R	Height	28.8			34.8		39.8								
	Type 3R	Width	17.9			20.5		25.5								
	Type 3R	Depth	17.9					17.3								
	Type 3R	Weight	150			210		275								
	Type 1	Height	29.1			34.8		40.1								
	Type 1	Width	21.2			23.7		28.7								
	Type 1	Depth	21.4													
	Type 1	Weight	150			210		275								

Base No.: Z1Bx [] (x denotes enclosure type)	B065	B077	B096	B124	B156	B180	B240	B302	B361	B414	B477	B590				
Rated Output Current (A)	65.0	77.0	96.0	124.0	156.0	180.0	240.0	302	361	414	477	590				
Nominal HP	50	60	75	100	125	150	200	250	300	350	400	500				
Dimensions (in) and Weight (lb)	Type 1	Height	52.80	42.79		49.09	84.16									
	Type 12	Width	12.68	25.80		28.41	41.26			69.76						
	Type 12	Depth	14.20	16.06		20.87	33.94			30.50						
	Type 12	Weight	160	280		380	1250	1600	1700	1800	2100	2200				
	Type 3R	Height	51.2			84.2										
	Type 3R	Width	32.7			41.3	69.8									
	Type 3R	Depth	22.8			32.0	30.5									
	Type 3R	Weight	410	475	500	550	850	950	1200	1300	1315	1900	2100			
	Type 1	Height	51.1			91.1										
	Type 1	Width	39.0			41.3			66.3							
	Type 1	Depth	21.4			50.7			46.6			43.5				
	Type 1	Weight	410	475	500	550	850	950	1200	1300	1315	1900	2100			

Note: Data subject to change.



NEMA 1



NEMA 12

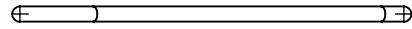


NEMA 3R

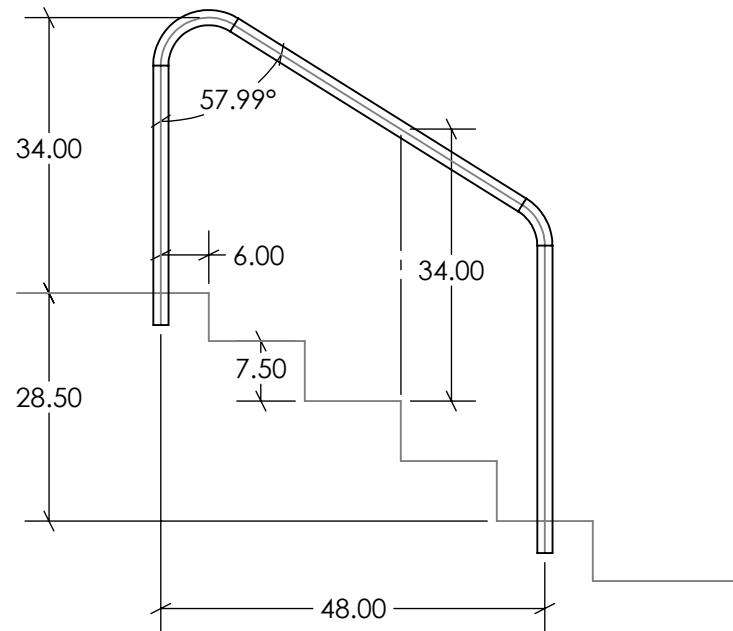
Rail Drawings - Signature Block

I authorize S.R. Smith, LLC to fabricate the custom rail product(s) shown on this drawing in accordance with Customer's Purchase Order No. _____

I understand and agree that custom rail products are unique and are made to the specifications shown on this drawing. SR Smith, LLC warrants only conformance to specification; not installation. ALL OTHER WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE ARE SPECIFICALLY DISCLAIMED.

DO NOT INSTALL ANCHORS PRIOR TO RECEIVING ANY CUSTOM RAILING.Customer Name: _____
Date: _____Authorized Signature: _____
Authorized Name (Print): _____

* LEG LENGTHS INCLUDE 4"
TO GO INTO ANCHORS.



RAIL #	JOB #	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, TOLERANCES ARE:		DESCRIPTION: PADDOCK POOL EQUIPMENT	REV. A
QUANTITY: 2	WEIGHT: 30.0 LBS.	WELDED LEG LOCATION.....+/- .125 ANGLES.....+/- .5 DEGREES ELEVATIONS.....+/- .125 OVERALL LENGTH UNDER 18'.....+/- .188 OVER 18'.....+/- .375	MATERIAL: 1.90 x .109 (304) 600 GRIT S/S TUBING QUOTE NO.: 64367A	DRAWN BY: DTJ CHECKED BY: DATE: 2/18/24	
				DATE:	SIZE: A SCALE: 1:24 SHEET 1 OF 1

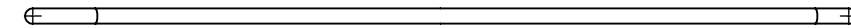
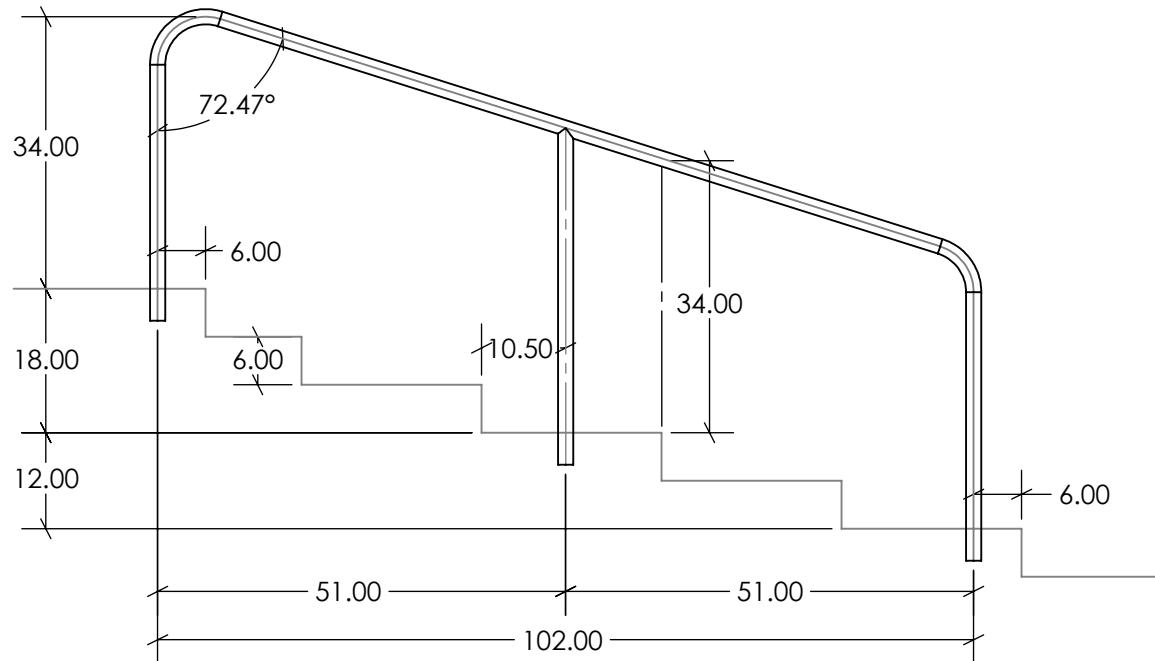
SR Smith™

P.O. BOX 400 - 1017 S.W. BERG PARKWAY
CANBY, OREGON 97013
PHONE (503) 266-2231

Rail Drawings - Signature Block

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DO NOT INSTALL ANCHORS PRIOR TO RECEIVING ANY CUSTOM RAILING.Customer Name: _____
Date: _____Authorized Signature: _____
Authorized Name (Print): _____*** LEG LENGTHS INCLUDE 4"
TO GO INTO ANCHORS.**

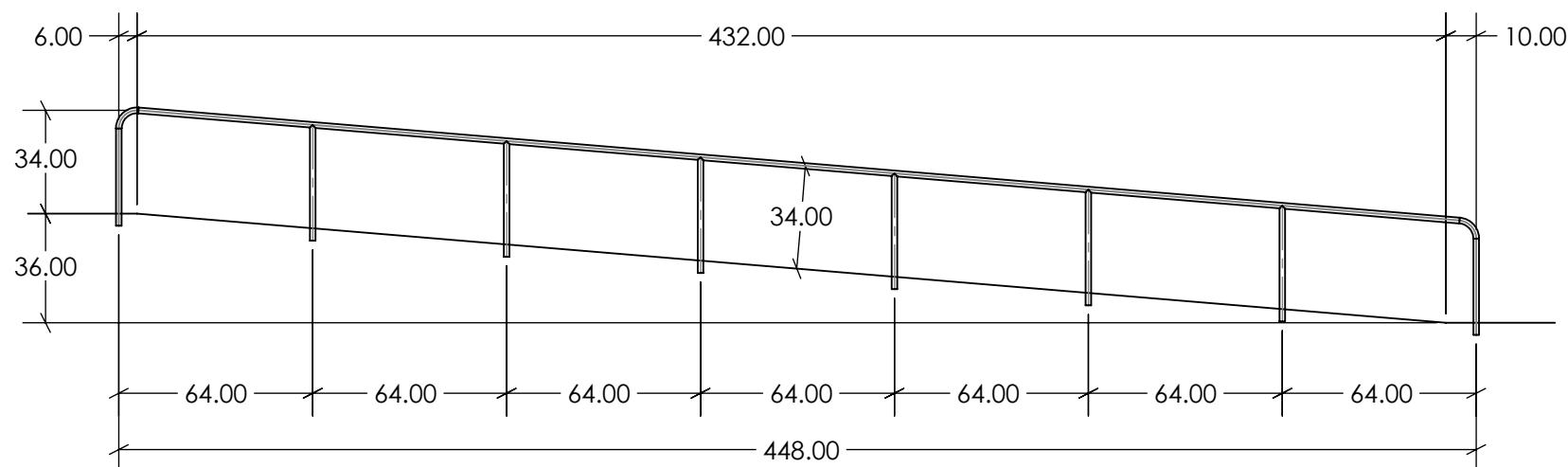
RAIL #	JOB #	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, TOLERANCES ARE:		DESCRIPTION: PADDOCK POOL EQUIPMENT	REV. A
QUANTITY: 2	WEIGHT: 50.0 LBS.	WELDED LEG LOCATION.....+/- .125 ANGLES.....+/- .5 DEGREES ELEVATIONS.....+/- .125 OVERALL LENGTH UNDER 18'.....+/- .188 OVER 18'.....+/- .375	MATERIAL: 1.90 x .109 (304) 600 GRIT S/S TUBING QUOTE NO.: 64367B	DRAWN BY: DTJ CHECKED BY: DATE: 2/18/24	
				DATE:	SIZE: A SCALE: 1:24 SHEET 1 OF 1

SR Smith™P.O. BOX 400 - 1017 S.W. BERG PARKWAY
CANBY, OREGON 97013
PHONE (503) 266-2231

Rail Drawings - Signature Block

I authorize S.R. Smith, LLC to fabricate the custom rail product(s) shown on this drawing in accordance with Customer's Purchase Order No. _____

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DO NOT INSTALL ANCHORS PRIOR TO RECEIVING ANY CUSTOM RAILING.Customer Name: _____
Date: _____Authorized Signature: _____
Authorized Name (Print): _____*** LEG LENGTHS INCLUDE 4"
TO GO INTO ANCHORS.**

RAIL #	JOB #	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES, TOLERANCES ARE:		DESCRIPTION:		
QUANTITY:	WEIGHT:	WELDED LEG LOCATION.....+/- .125 ANGLES.....+/- .5 DEGREES ELEVATIONS.....+/- .125 OVERALL LENGTH UNDER 18'.....+/- .188 OVER 18'.....+/- .375	DRAWN BY: DTJ CHECKED BY: DATE: 2/18/24 SIZE: A SCALE: 1:24 SHEET 1 OF 1	PADDOCK POOL EQUIPMENT	REV. A	P.O. BOX 400 - 1017 S.W. BERG PARKWAY CANBY, OREGON 97013 PHONE (503) 266-2231
2	170.0 LBS.	MATERIAL: 1.90 x .109 (304) 600 GRIT S/S TUBING QUOTE NO.: 64367C				
COPYRIGHT © 2024 S.R. SMITH, LLC. ALL RIGHTS RESERVED						

SR Smith™P.O. BOX 400 - 1017 S.W. BERG PARKWAY
CANBY, OREGON 97013
PHONE (503) 266-2231

Rail Drawings - Signature Block

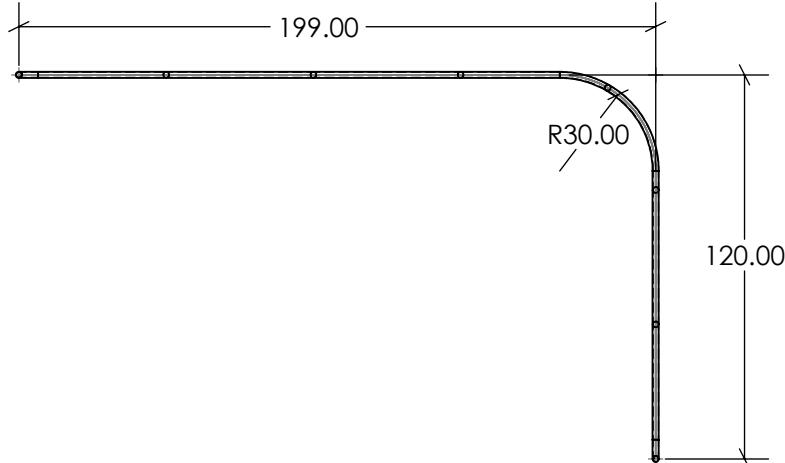
I authorize S.R. Smith, LLC to fabricate the custom rail product(s) shown on this drawing in accordance with Customer's Purchase Order No. _____

I understand and agree that custom rail products are unique and are made to the specifications shown on this drawing. SR Smith, LLC warrants only conformance to specification; not installation. ALL OTHER WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE ARE SPECIFICALLY DISCLAIMED.

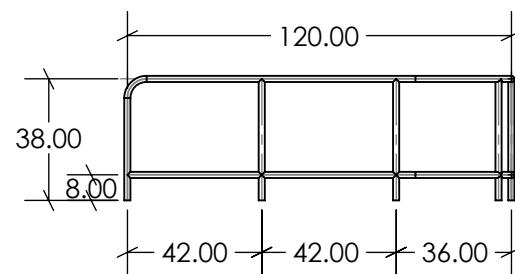
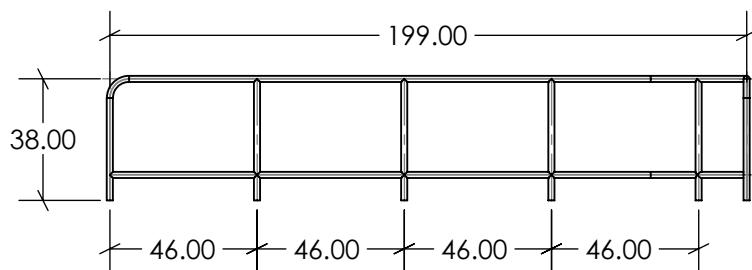
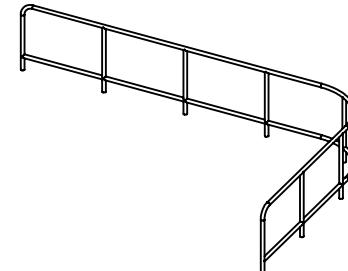
DO NOT INSTALL ANCHORS PRIOR TO RECEIVING ANY CUSTOM RAILING.

Customer Name: _____
Date: _____

Authorized Signature: _____
Authorized Name (Print): _____



* LEG LENGTHS INCLUDE 4"
TO GO INTO ANCHORS.



RAIL #	JOB #
QUANTITY: 1	WEIGHT: 215.0 LBS.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES,
TOLERANCES ARE:

WELDED LEG LOCATION.....+/- .125
ANGLES.....+/- .5 DEGREES
ELEVATIONS.....+/- .125
OVERALL LENGTH
UNDER 18'.....+/- .188
OVER 18'.....+/- .375

DESCRIPTION:
PADDOCK POOL EQUIPMENT

MATERIAL:
1.90 x .109 (304) 600 GRIT S/S TUBING

QUOTE NO.: 64367D **REV.** A

DRAWN BY: DTJ **DATE:** 2/18/24

CHECKED BY: **DATE:**

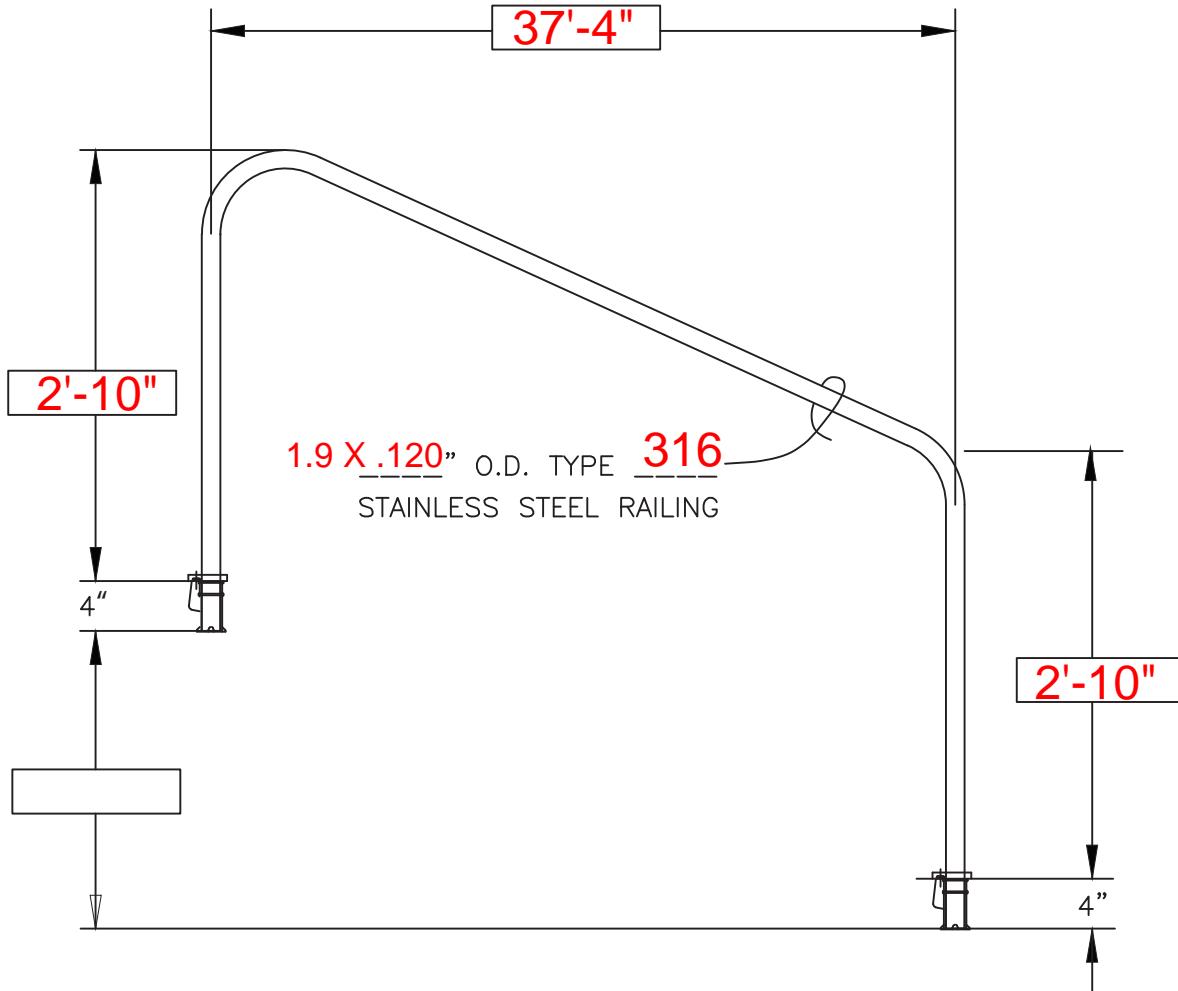
SR Smith™

P.O. BOX 400 - 1017 S.W. BERG PARKWAY
CANBY, OREGON 97013
PHONE (503) 266-2231

SIZE: A **SCALE:** 1:24 **SHEET 1 OF 1**



Ramp Rails Handrails



Paddock's **Handrails** are fabricated from Type 304 or 316L stainless steel tubing with an outside diameter of 1.90" and standard wall thickness of .083". (Outside diameter of 1.50", or wall thickness of .120" and .145" are also available)

Handrails are 34" above pool floor and inclines at same angle as that of stairs or ramp.

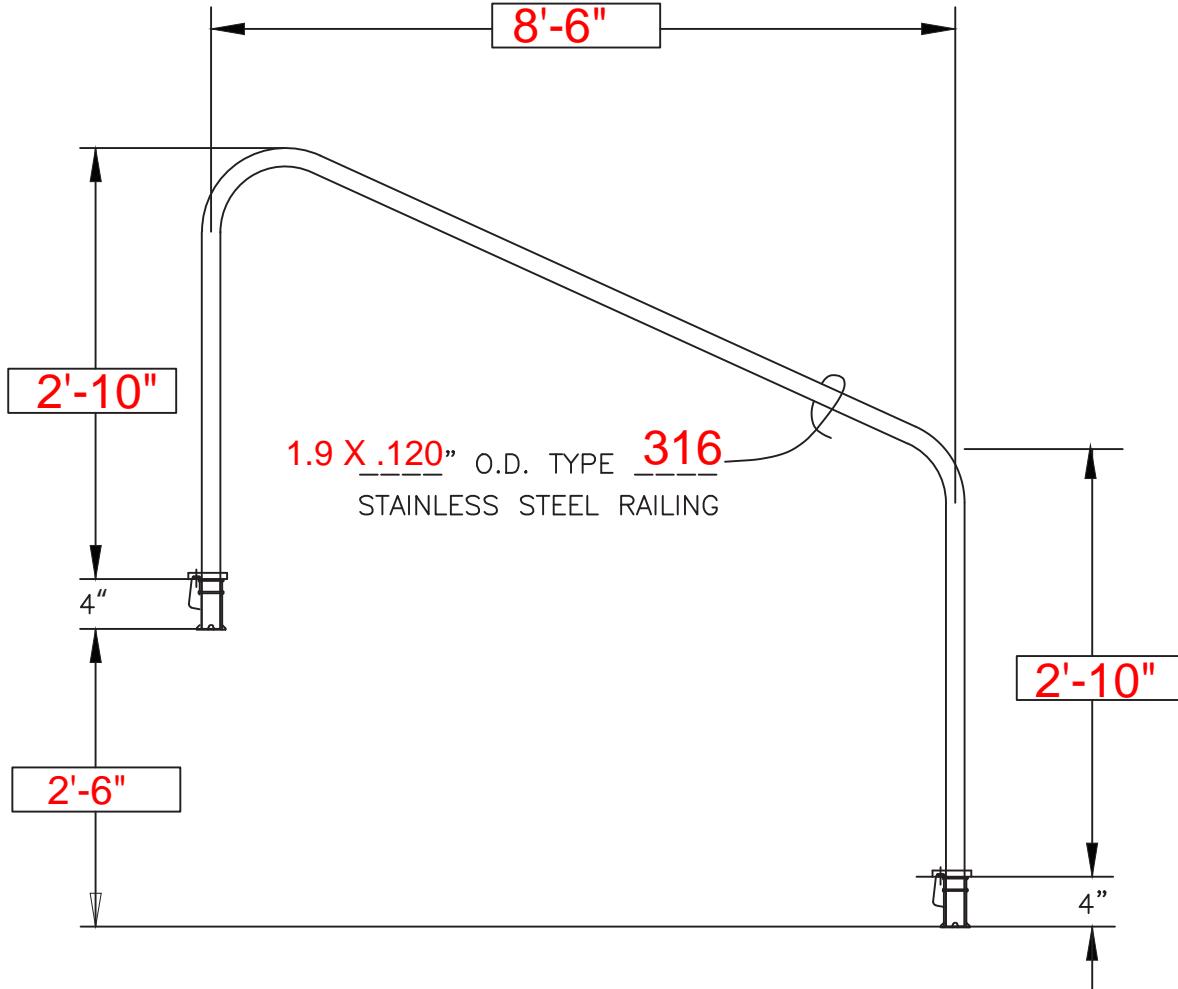
They are held by anchor sockets located in pool bottom and pool deck so they can be removed if necessary.

Paddock deck anchors with Paddock escutcheon plates are available.

P/N 9400128, Model 4718-C, Type 316, 1.9 " OD x .120 " Wall Less Anchors, Qty 2



Step Rails Handrails



Paddock's **Handrails** are fabricated from Type 304 or 316L stainless steel tubing with an outside diameter of 1.90" and standard wall thickness of .083". (Outside diameter of 1.50", or wall thickness of .120" and .145" are also available)

Handrails are 34" above pool floor and inclines at same angle as that of stairs or ramp.

They are held by anchor sockets located in pool bottom and pool deck so they can be removed if necessary.

Paddock deck anchors with Paddock escutcheon plates are available.

P/N 9400119, Model 4718-C, Type 316, 1.9 " OD x .120 " Wall Less Anchors, Qty 2

Warranty Documents



High Density Polyethylene (HDPE) Grating



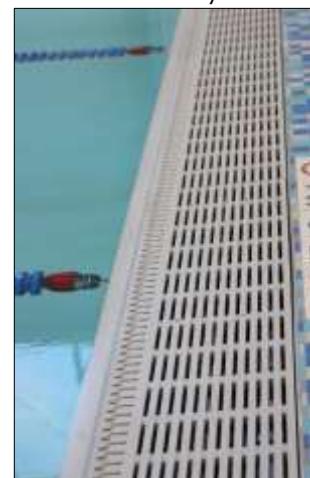
FEATURES:

- Machined slots are to allow fast flow of water through grating.
- Matte-textured slip-resistant finish provides non-skid surface.
- Low maintenance finish is easy to clean and eliminates need for repair.
- Will not crack, rot, delaminate, swell or absorb water.
- Environmentally stabilized for harsh sun and tough aquatic environments.
- Does not react with pool chemicals.
- Available in lengths up to 8 feet.
- Designed to fit most radius gutter or hard configuration corners.
- Standard color is grey or white. (Grey is recommended for indoor pools only)

8000420 White HDPE



8000421 Grey HDPE



MAIN DRAIN INSTALLATION - SIGNOFF FORM

Job Name, City, State: _____ Job No.: _____

The following information is required to validate the expressed warranty. Complete this form upon start-up of pool and return via email (subject: Main Drain Installation) or mail to the address below.
info@paddockindustries.com

PLEASE NOTE: Warranty **DOES NOT** go into effect until completed installation form has been received by Paddock Pool Equipment Company.

Date of Main Drain Installation: _____

Service Life of Cover/Grate: > 20 years -- This SOFA is UNBLOCKABLE

Select Installed P/N & Model	Qty	Location (comp., therapy, warm-up, lifestyle)	Mounting Position	Suction Outlet P/N & Model #	Maximum Flow per NSF
<input type="checkbox"/>			Floor Use	P/N 9300046 Model # 2424PCFC - 1818ESMD (sump), 6" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300044 Model # 2424PCFC - 1818ESMD (sump), 8" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300006 Model # 2424PCFC - 2424ESMD (sump), 8" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300007 Model # 2424PCFC-AVRD - 2424ESMD (sump), 10" Connection	920 GPM
<input type="checkbox"/>			Wall Use		
<input type="checkbox"/>			Floor Use	P/N 9300011 Model # 2448PCFC-AVRD - 2448ESMD (sump), 12" Connection	3500 GPM
<input type="checkbox"/>			Wall Use		3000 GPM
<input type="checkbox"/>			Floor Use	P/N 9300013 Model # 2448PCFC-AVRD - 2448ESMD (sump), (2) 12" Conn's	3500 GPM
<input type="checkbox"/>			Wall Use		3000 GPM
<input type="checkbox"/>			Floor Use	P/N 9300056 Model # 2448PCFC-AVRD - 2448ESMD (sump), 14" Connection	3500 GPM
<input type="checkbox"/>			Wall Use		3000 GPM

Signature: _____

Contractor/ Installer:

Signature: _____

Owner/Owner Representative:

Contractor/Installer: (Print name)

Owner: (Print name)

Date: _____

Date: _____

I have instructed customer proper maintenance of main drains.

I have read and understand instructions as instructed by contractor/installer as to proper operations.

THE INSTALLATION SIGNOFF FORM TO BE PERMANENTLY POSTED NEAR THE PUMP CONTROLS, A COPY GIVEN TO THE POOL OWNER & A COPY KEPT WITH OTHER POOL RELATED DOCUMENTS



www.paddockindustries.com

MAIN DRAIN INSTALLATION - SIGNOFF FORM

Job Name, City, State: _____

Job No.: _____

The following information is required to validate the expressed warranty. Complete this form upon start-up of pool and return via email info@paddockindustries.com (subject: Main Drain Installation), fax or mail to the address below.

PLEASE NOTE: *Warranty **DOES NOT** go into effect until completed installation form has been received by Paddock Pool Equipment Company.*

Date of Main Drain Installation: _____

Contractor/ Installer:

Signature: _____

(Print name)

Date: _____

I have instructed customer to proper maintenance of drains.

Owner/Owner Representative:

Signature: _____

Owner: _____
(Print name)

Date: _____

I have read and understand instructions as instructed by contractor/installer as to proper operations.

List Main Drains installed *location* (comp., therapy, spa, warm-up, etc.) & *type* (wall or floor):

Item # _____ Location _____ Type _____ Qty: _____
Item # _____ Location _____ Type _____ Qty: _____
Item # _____ Location _____ Type _____ Qty: _____
Item # _____ Location _____ Type _____ Qty: _____

P.O. Box 11676, Rock Hill, SC 29731-1676 • 555 Paddock Parkway, Rock Hill, SC 29730-8589

Telephone: (803) 324-1111 • (800) 849-2729 • Facsimile: (803) 324-1116

info@paddockindustries.com



WARRANTY

1. **LIMITED WARRANTY:** All Paddock "PPEC Series" filters shall be warranted as described. Applicable warranty period shall be fifteen (15) years from date of installation. Warranty shall cover filter body and filter head. Internals shall be warranted for a period of ten (10) years from date of installation. Warranty shall be non-prorated. Warranty obligation of Seller is limited to providing remedial service during Seller's normal business hours and days during warranty period and repairing or replacing at its option, a Product which has been, during warranty period, promptly reported by Purchaser to Seller at Paddock Pool Equipment Company P.O. Box 11676, Rock Hill, SC 29731, as defective in material or workmanship and is so found by Seller upon inspection. Examination and repair or replacement of such Product will be effected on location with no charge to Purchaser for service time expended. Product to be examined replaced or repaired at Purchaser's facility. If examined and Product is found not to be defective or is not for some other reason within warranty coverage, Seller's service time expended on location will be charged to Purchaser. Purchaser shall be responsible for all maintenance service. (This warranty gives Purchaser specific legal rights and Purchaser may also have other rights which vary from state to state.)
 - a. **Warranty Limitation and Exclusion:** Seller shall have no further warranty obligation under this agreement if the Product is subject to abuse, misuse, negligence, freezing, improper installation, accident or use contrary to instruction furnished by sellers Product operation and maintenance documentation.
 - b. **DISCLAIMER OF UNSTATED WARRANTIES:** WARRANTY PRINTED ABOVE IS THE ONLY WARRANTY APPLICABLE TO THIS PURCHASE AND IS EXCLUSIVE. IT IS IN LIEU OF ALL OTHER WARRANTIES (WHETHER WRITTEN, ORAL OR IMPLIED) INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OR MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.
 - c. **LIMITATION OF LIABILITY:** IT IS UNDERSTOOD AND AGREED THAT SELLER'S LIABILITY, WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, NEGLIGENCE OR OTHERWISE, SHALL NOT EXCEED THE RETURN OF THE AMOUNT OF THE PURCHASE PRICE PAID BY PURCHASER AND UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES. THE PRICE STATED FOR THE PRODUCT IS A CONSIDERATION IN LIMITING SELLER'S LIABILITY. NO ACTION, REGARDLESS OF FORM ARISING OUT OF THE TRANSACTIONS UNDER THIS AGREEMENT MAY BE BROUGHT BY PURCHASER MORE THAN ONE YEAR AFTER THE CAUSE OF ACTION HAS ACCRUED. (Some states do not allow exclusion or limitation of consequential damages, so above limitation or exclusion may not apply to you.)
2. All Paddock supplied electronic controls and products shall be warranted as described. Applicable warranty period shall be five (5) years from date of installation. Warranty shall be non-prorated.
3. All Paddock supplied valves shall be warranted as described. The applicable warranty period shall be two (2) years from date of installation. Warranty shall be non-prorated.
4. **INDEMNIFICATION:** Purchaser hereby agrees to indemnify and hold Seller harmless from and against any liability, cost, expense (including reasonable attorney's fees), claims, judgment, settlement or damage that Seller may be required to pay to any employee of Purchaser who alleges or proves that he or she has been injured in the course of his or her employment while working with the equipment or material supplied by the Seller under the Agreement, which is caused or contributed to by the negligence or default of Purchaser. If the Purchaser resells the equipment or material supplied by the Seller under this Agreement, Purchaser will request and if possible obtain from its purchase indemnifications similar to the foregoing for the benefit of the Purchaser and Seller harmless with regard to any claim for economic loss raised by a purchaser on resale of the equipment.

555 Paddock Parkway, Rock Hill, SC 29730

Telephone: 803 324 1111 * Facsimile: 803 324 1116 * e-mail: info@paddockindustries.com

Revision: 7/9/2014



WARRANTY

STAINLESS STEEL RECIRCULATION SYSTEM

Paddock warrants the Stainless Steel Recirculation System to be free of defects in material and workmanship under normal use and service. Fabricated stainless steel components (structural) are warranted against failure due to defective material or workmanship for a period of one (1) year effective from in-service date.

Paddock's obligation under this warranty shall be limited to repair or replacement of any component manufactured by Paddock Pool Equipment Company, Inc. that proves defective after notification and examination by Paddock.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damage due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damage caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if this system is operated in accordance with the written instructions given, it will perform in complete accordance with the specifications.

Note: See Attached Sales Bulletin 84-4-R

PADDOCK POOL EQUIPMENT CO., INC.

Project: _____

Location: _____

Date: _____



WARRANTY

STAINLESS STEEL RECIRCULATION SYSTEM

Paddock warrants the Stainless Steel Recirculation System to be free of defects in material and workmanship under normal use and service. Fabricated stainless steel components (structural) are warranted against failure due to defective material or workmanship for a period of one (1) year effective from in-service date. **NOTE: Grating supplied and warranted by Others.**

Paddock's obligation under this warranty shall be limited to repair or replacement of any component manufactured by Paddock Pool Equipment Company, Inc. that proves defective after notification and examination by Paddock.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damage due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damage caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if this system is operated in accordance with the written instructions given, it will perform in complete accordance with the specifications.

Note: See Attached Sales Bulletin 84-4-R

PADDOCK POOL EQUIPMENT CO., INC.

Project: _____

Location: _____

Date: _____



WARRANTY

STAINLESS STEEL RECIRCULATION SYSTEM

Paddock warrants the Stainless Steel Recirculation System to be free of defects in material and workmanship under normal use and service. Fabricated stainless steel components (structural) are warranted against failure due to defective material or workmanship for a period of three (3) years effective from in-service date. High Density Polyethylene (HDPE) components (grating) are warranted against failure due to defective material or workmanship for a period of ten (10) years effective from in-service date.

Paddock's obligation under this warranty shall be limited to repair or replacement of any component manufactured by Paddock Pool Equipment Company, Inc. that proves defective after notification and examination by Paddock.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damages due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damage caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if this system is operated in accordance with the written instructions given, it will perform in complete accordance with the specifications.

Note: See Attached Sales Bulletin 84-4-R

PADDOCK POOL EQUIPMENT CO., INC.

Project: _____

Location: _____

Date: _____



WARRANTY

STAINLESS STEEL RECIRCULATION SYSTEM

Paddock warrants the Stainless Steel Recirculation System to be free of defects in material and workmanship under normal use and service. Fabricated stainless steel components (structural) are warranted against failure due to defective material or workmanship for a period of five (5) years effective from in-service date. High Density Polyethylene (HDPE) components (grating) are warranted against failure due to defective material or workmanship for a period of ten (10) years effective from in-service date.

Paddock's obligation under this warranty shall be limited to repair or replacement of any component manufactured by Paddock Pool Equipment Company, Inc. that proves defective after notification and examination by Paddock.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damages due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damage caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if this system is operated in accordance with the written instructions given, it will perform in complete accordance with the specifications.

Note: See Attached Sales Bulletin 84-4-R

PADDOCK POOL EQUIPMENT CO., INC.

Project: _____

Location: _____

Date: _____



WARRANTY

STAINLESS STEEL RECIRCULATION SYSTEM

Paddock warrants the Stainless Steel Recirculation System to be free of defects in material and workmanship under normal use and service. Fabricated stainless steel components (structural) are warranted against failure due to defective material or workmanship for a period of one (1) year effective from in-service date. High Density Polyethylene (HDPE) components (grating) are warranted against failure due to defective material or workmanship for a period of ten (10) years effective from in-service date.

Paddock's obligation under this warranty shall be limited to repair or replacement of any component manufactured by Paddock Pool Equipment Company, Inc. that proves defective after notification and examination by Paddock.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damages due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damage caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if this system is operated in accordance with the written instructions given, it will perform in complete accordance with the specifications.

Note: See Attached Sales Bulletin 84-4-R

PADDOCK POOL EQUIPMENT CO., INC.

Project: _____

Location: _____

Date: _____



WARRANTY

GRATING - HIGH DENSITY POLYETHYLENE (HDPE)

Paddock warrants that the High-Density Polyethylene (HDPE) Grating to be free of defects in material and workmanship under normal use and service. HDPE gutter grating are warranted against failure due to defective materials or workmanship for a period of ten (10) years effective from in-service date.

Paddocks obligation under this warranty shall be limited to repair or replacement of any component manufactured by Paddock Pool Equipment Company, Inc. that proves defective after notification and examination by Paddock.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damages due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damages caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if the product is operated in accordance with the written instructions and with the proper care and maintenance, it will perform in accordance with the specifications.

PADDOCK POOL EQUIPMENT COMPANY

Project: _____

Location: _____

Date: _____



WARRANTY

STAINLESS STEEL STRAINER(S)

Paddock warrants Stainless Steel Strainer(s) manufactured by Paddock and supplied for the project, to be free of defects in material and workmanship under normal use and service.

Paddock's obligation under this warranty shall be limited to repair or replacement of any part or parts manufactured by Paddock Pool Equipment Company which may thus prove defective under normal use and service within one (1) year of first use, which upon Paddock's examination shall disclose to its satisfaction to be thus defective.

Components and parts by other manufacturers are subject to the terms, conditions, and limits of the manufacturer's warranty.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damages due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damage caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if this system is operated in accordance with the written instructions given, it will perform in complete accordance with the specifications.

Note: See Attached Sales Bulletin 84-4-R

PADDOCK POOL EQUIPMENT CO., INC.

Project: _____

Location: _____

Date: _____



WARRANTY

MOVEABLE BULKHEAD (HDPE GRATING)

Paddock warrants that the Movable bulkhead to be free of defects in material and workmanship under normal use and service. HDPE components (grating) are warranted against failure due to defective material or workmanship for a period of ten (10) years effective from in-service date. Fabricated stainless steel components (structural) are warranted against failure due to defective material or workmanship for a period of fifteen (15) years effective from in-service date.

Paddock's obligation under this warranty shall be limited to repair or replacement of any component manufactured by Paddock Pool Equipment Company, Inc. that proves defective after notification and examination by Paddock.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damages due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damages caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if the product is operated in accordance with the written instructions and with the proper care and maintenance, it will perform in accordance with the specifications.

PADDOCK POOL EQUIPMENT COMPANY

Project: _____

Location: _____

Date: _____



WARRANTY

EVACUATOR SYSTEM

Paddock warrants Evacuator System manufactured by Paddock and supplied for the project, to be free of defects in material and workmanship under normal use and service. Paddock's obligation under this warranty shall be limited to repair or replacement of any part or parts manufactured by Paddock Pool Equipment Company which may thus prove defective under normal use and service within one (1) year of first use, which upon Paddock's examination shall disclose to its satisfaction to be thus defective.

Components and parts by other manufacturers are subject to the terms, conditions, and limits of the manufacturer's warranty.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damages due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damage caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if this system is operated in accordance with the written instructions given, it will perform in complete accordance with the specifications.

Note: See Attached Sales Bulletin 84-4-R

PADDOCK POOL EQUIPMENT CO., INC.

Project: _____

Location: _____

Date: _____



WARRANTY

FILTER ACCESSORIES, DECK AND RACING, MAIN DRAINS AND MISCELLANEOUS EQUIPMENT

Paddock warrants any Filter Accessories, Deck Equipment, Racing Equipment, Main Drains, and Miscellaneous Equipment, manufactured by Paddock and supplied for the project, to be free of defects in material and workmanship under normal use and service. Paddock's obligation under this warranty shall be limited to repair or replacement of any part or parts manufactured by Paddock Pool Equipment Company which may thus prove defective under normal use and service within one (1) year of first use, which upon Paddock's examination shall disclose to its satisfaction to be thus defective.

Components and parts by other manufacturers are subject to the terms, conditions, and limits of the manufacturer's warranty.

Paddock is not liable for any loss of time, inconvenience, labor or material charge incurred in connection with the removal, cartage, or replacement of equipment, for damages due to loss of use of the product or swimming pool, for utility or water cost required to make repairs or for any other incidental or consequential damages. This warranty is expressly in lieu of all other obligations or liabilities on Paddock's part. This warranty shall not apply to any damage caused by accidents, negligence, alteration, abuse or misuse. Warranty claims hereunder shall be considered timely, only if Paddock is notified in writing of such defects or claims within the warranty period.

We agree that if this system is operated in accordance with the written instructions given, it will perform in complete accordance with the specifications.

Note: See Attached Sales Bulletin 84-4-R

PADDOCK POOL EQUIPMENT CO., INC.

Project: _____

Location: _____

Date: _____



SALES BULLETIN 84-4-R

SUBJECT: CHLORIDES NULLIFY WARRANTIES

The warranty expressed or implied for any filter tank, balance tank or other appurtenance supplied by Paddock Pool Equipment Co., Inc. is predicated on the owner maintaining the water within correct chemical parameter; in particular with respect to the chloride content of the water. Should the chloride content of the water exceed 100 milligrams per liter (100 ppm) as proven by an independent test using mercuric nitrate reagent, then such warranties on the filter tank(s), balance tank or other appurtenances are immediately null and void. Any damage caused by allowing chlorides to exceed this limit (even if such damage appears after water chemistry conditions have been corrected), will not be accepted as warranty items by Paddock Pool Equipment Company, Inc.

Furthermore, the use of salt based chlorine generators will immediately nullify and void warranty due to the potential corrosive environment created by such systems.