

HSES Evaporative Cooling System Installation Manual



Installation Information

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GrowerSELECT Evaporative Cooling System

General Installation Notes:

Make sure that power is disconnected from system prior to servicing.

Installation of this equipment and related OEM equipment should be in accordance with these instructions, OEM's installation instructions and local codes (if applicable). Failure to follow specified instructions may cause damage to equipment and/or personal injury or death.

Take special note of any Warnings or Safety Decals on the equipment and in manuals.

Always wear protective clothing and any applicable Personal Protective Equipment (Safety Glasses and/or Ear Plugs) when working with the equipment.

Discarded materials, equipment and boxes should be recycled in accordance with local and national codes.

Unless otherwise specified, all Feed Delivery Systems (Diameters) are installed similarly.

Safety Instructions:

Read all safety messages in this manual and on equipment safety decals. Follow recommended precautions and safe operating practices.

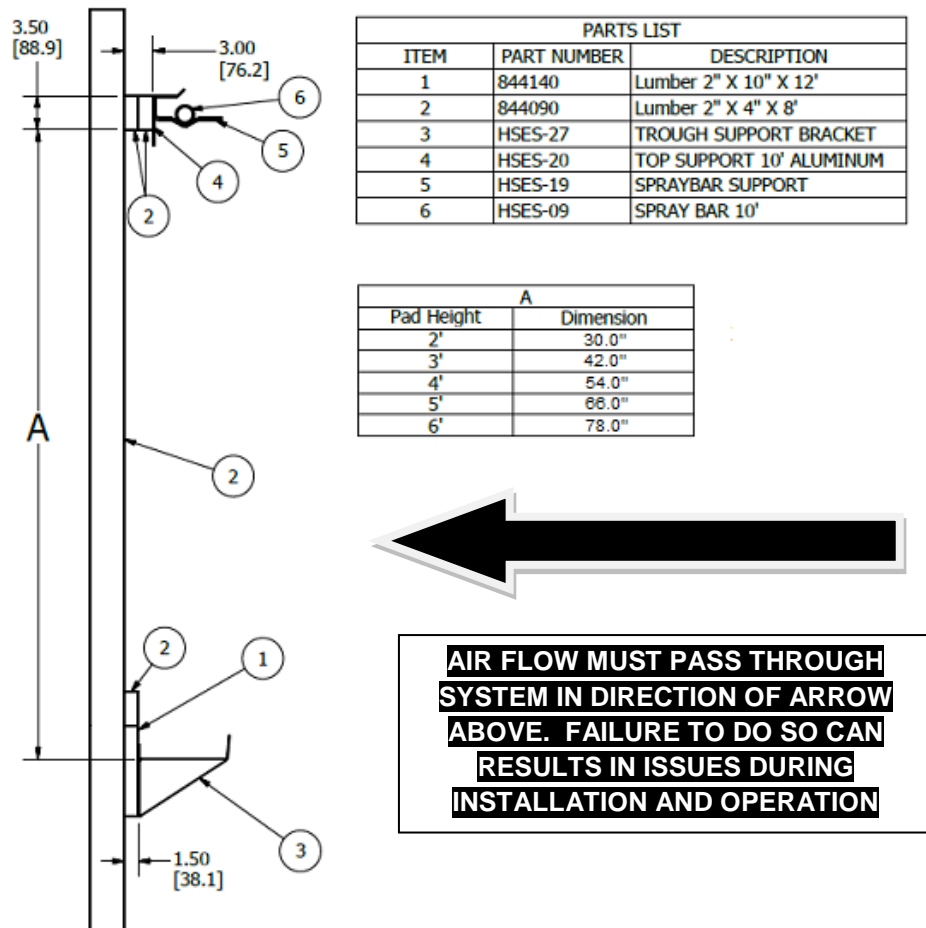
Ground all electrical equipment for safety.

Ground all non-current carrying metal parts to guard against electrical shock.

Always keep safety decals in good condition and replace missing or damaged decals.

Framing Instructions

Figure 1



ACTUAL HEIGHT OF EVAPORATIVE COOLING PAD MAY VARY SLIGHTLY, THEREFORE PROPER HEIGHT OF THE SYSTEM SHOULD BE VERIFIED UTILIZING PADS TO BE INSTALLED

(LUMBER NOT INCLUDED)

Figure 1 above shows the typical installation dimensions for a wall mounted system. Table A provides appropriate dimensions for varying Pad heights.

- Please note that in Concrete Installation the 2"X10" and 2"X4" base boards should be replaced with a single run of 2"X8" baseboards.**

Figure 2

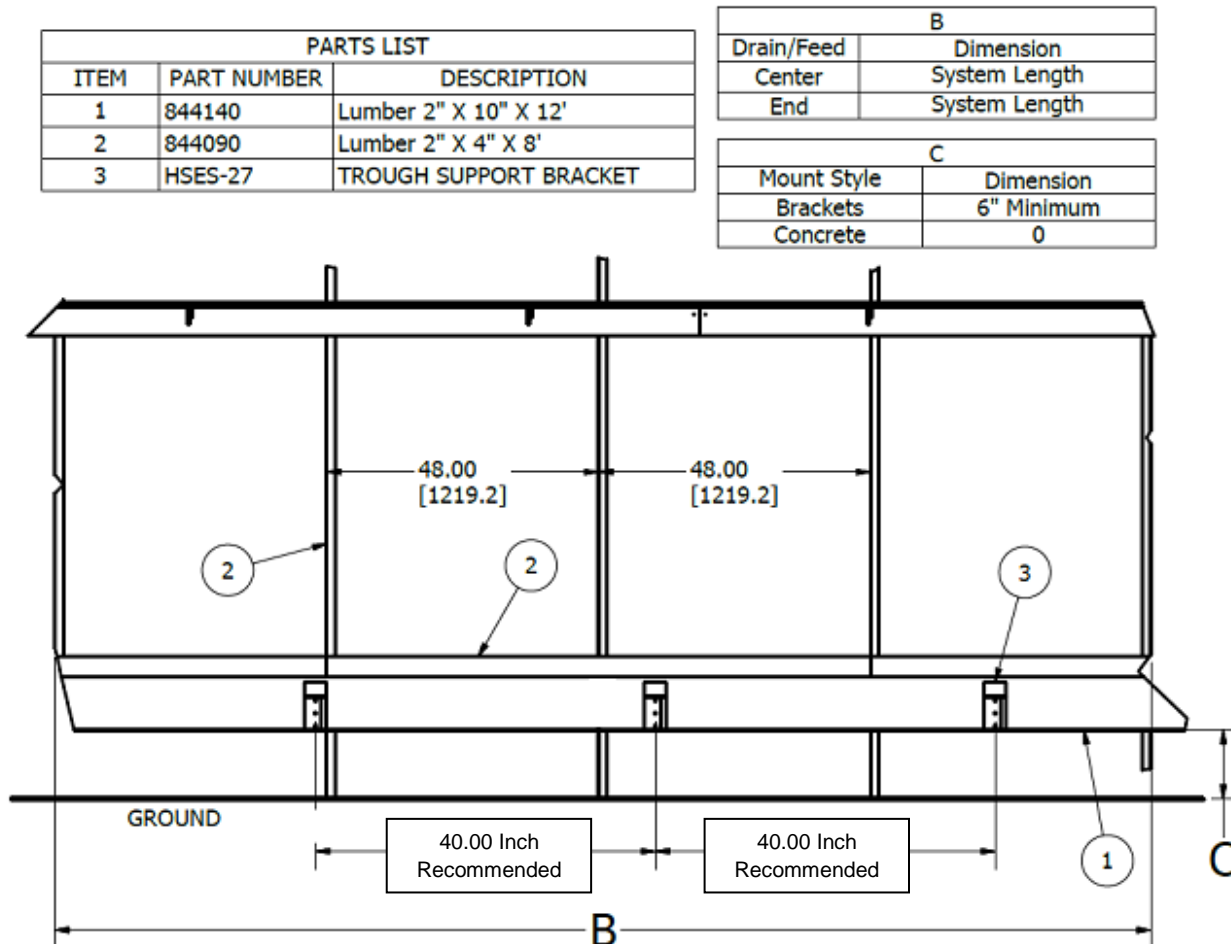


Figure 2 above shows the typical spacing for 2"X4" studs during framing along with typical spacing for the Trough Support Brackets (If Applicable). Table B and Table C provide the total framed opening requirement and minimum distance from the ground to the base of the Trough Support Bracket respectively.

- Beginning at the end of the system opposing the pump, the first bracket should be located to support the end cap with the extrusion. The second should be placed to support the trough halfway between the end cap and the coupler. The third should be located to support the trough coupler. This process should be repeated through the length of the system.

**(ENSURE ALL CONNECTIONS ARE SUPPORTED WITH MOUNTING BRACKETS
BRACKETS SHOULD BE SPACED NO GREATER THAN 5 FEET APART, IN SOME
INSTANCES SMALLER SPACING MAY BE DESIRED AND CAN BE ACHIEVED BY
ORDERING ADDITIONAL BRACKETS)**

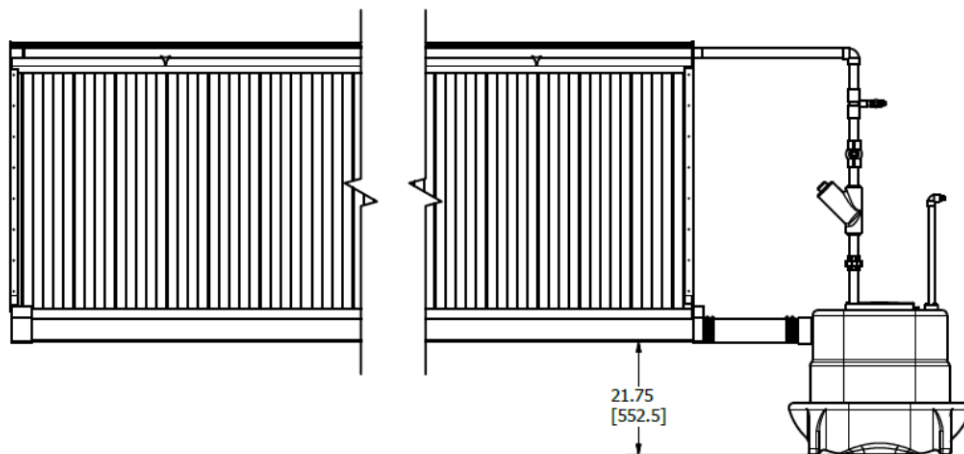
- If the system is wall mounted, the pump plate side brackets should be installed as shown in Figures 3 & 4. Figure 3 shows End Feed configuration, Figure 4 shows the center Feed Configuration.

SUMP ELEVATION

Figure 3 below show the elevation requirement for installation of the sump tank. The tank may be installed in-ground or above ground.

- **REGARDLESS OF TANK INSTALLATION THE BOTTOM OF THE TANK MUST BE 21.75" BELOW THE BOTTOM OF THE TROUGH.**

Figure 3



- If in-ground installation is preferred, Figure 4 below depicts the overall size of the sump tank. Earth should be removed to allow the tank to sit level at the correct level.

- **THE DEPTH OF THE TANK IS DETERMINED BY THE ELEVATION OF THE TROUGH**

Figure 4

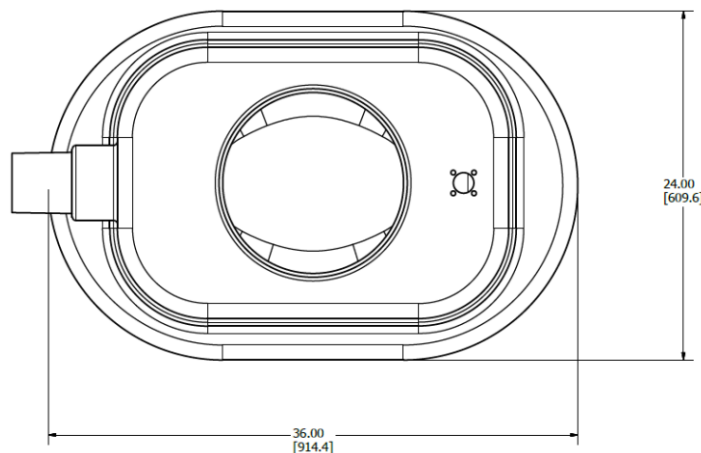


Figure 5

END FEED/DRAIN

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	TBD	844140	Lumber 2" X 10" X 12'
2	TBD	844090	Lumber 2" X 4" X 8'
3	TBD	HSES-27	TROUGH SUPPORT BRACKET
4	2	HSES-29	PUMP MOUNTING SIDE PANEL

B	
Drain/Feed	Dimension
End	System Length

C	
Mount Style	Dimension
Brackets	6" Minimum
Concrete	0

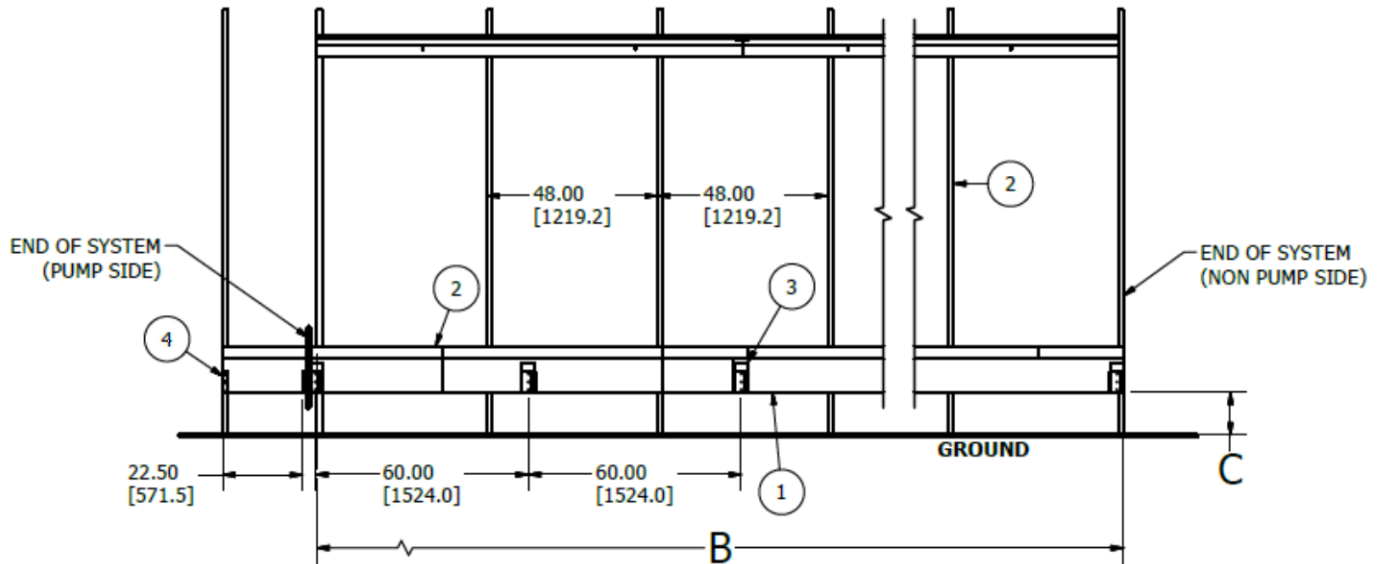


Figure 6

CENTER FEED/DRAIN

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	TBD	844140	Lumber 2" X 10" X 12'
2	TBD	844090	Lumber 2" X 4" X 8'
3	TBD	HSES-27	TROUGH SUPPORT BRACKET
4	2	HSES-29	PUMP MOUNTING SIDE PANEL

B	
Drain/Feed	Dimension
Center	System Length

C	
Mount Style	Dimension
Brackets	6" Minimum
Concrete	0

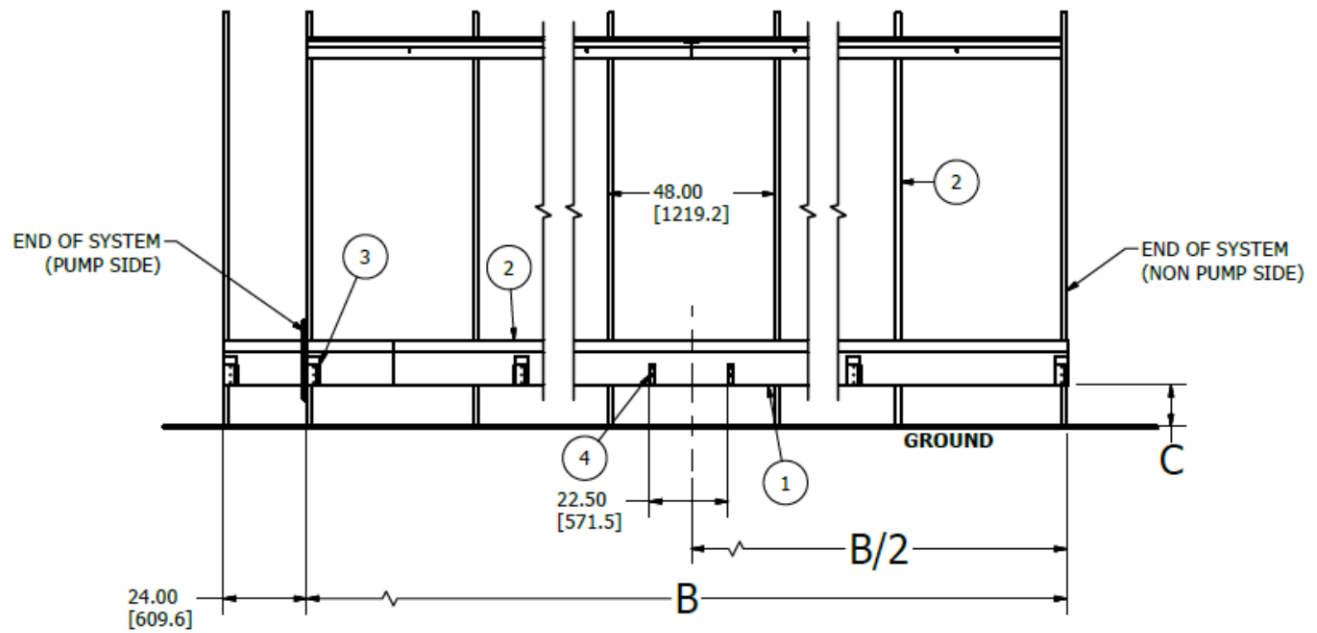


Figure 7

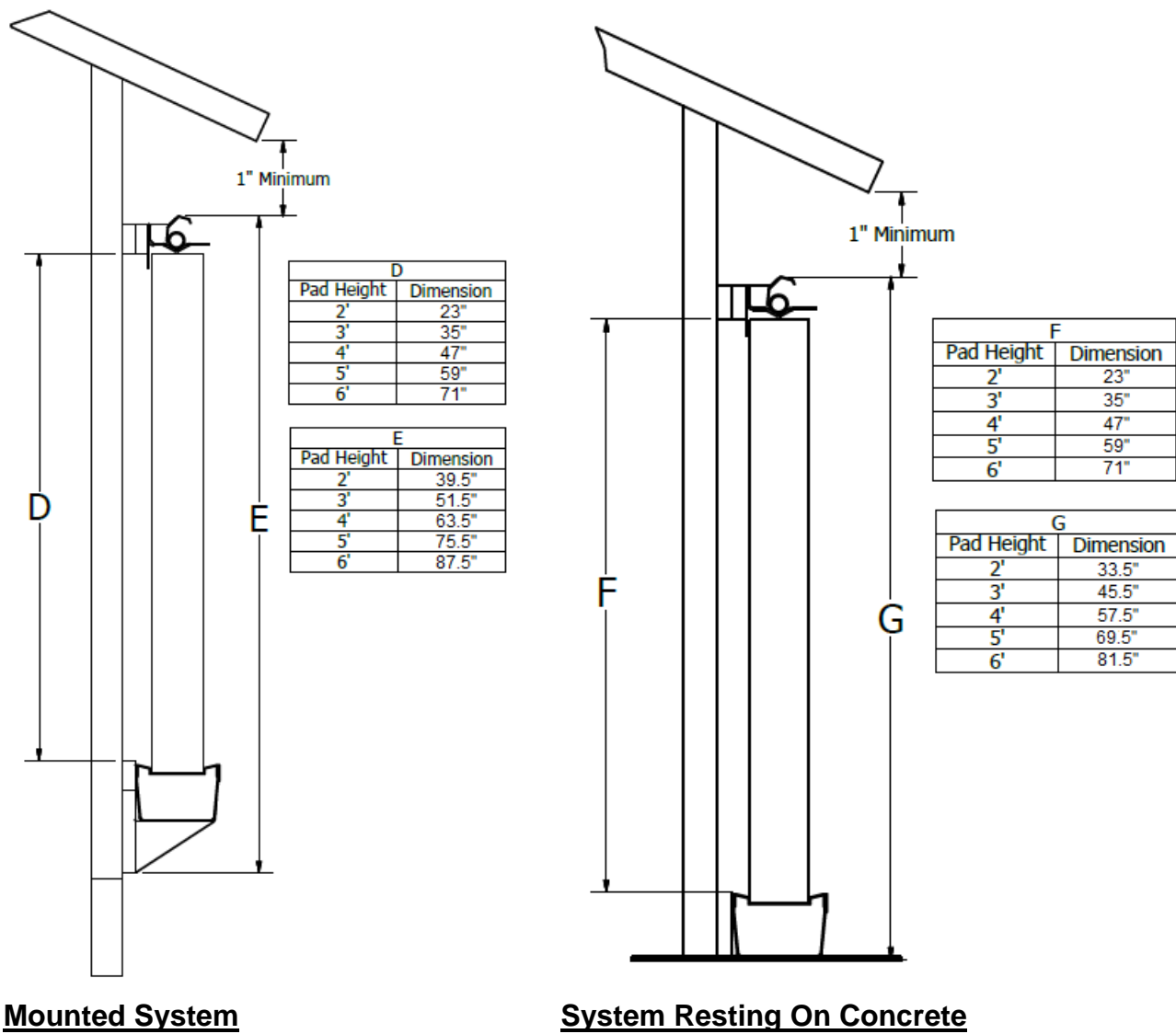


Figure 7 above shows the required rough opening height for wall mounted systems and systems resting on concrete. Tables D and E provide required rough opening height and total system height for wall mounted systems. Tables F and G provide required rough opening height and total system height for systems resting on concrete pads.

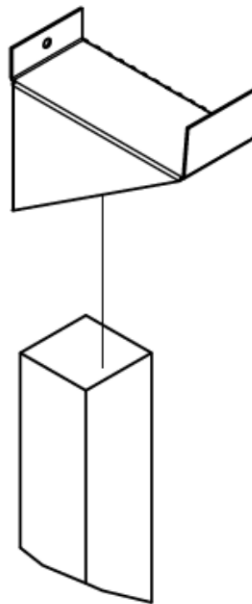
OFFSET BRACKETS

Some applications of the H2 Cool System require the system to be installed a set distance from the exterior wall. In this event 4"X4" Treated lumber posts can be installed in the ground and leveled with the trough placed in the brackets. The GrowerSELECT trough brackets (HSES-27) can then be installed on top of the 4"X4" as shown below in Figure 8. Additional framing will be required to seal openings underneath system, along ends of system, and along the top assembly of the system.

- **This method can also be used if current house framing is unfit for evaporative system installation**

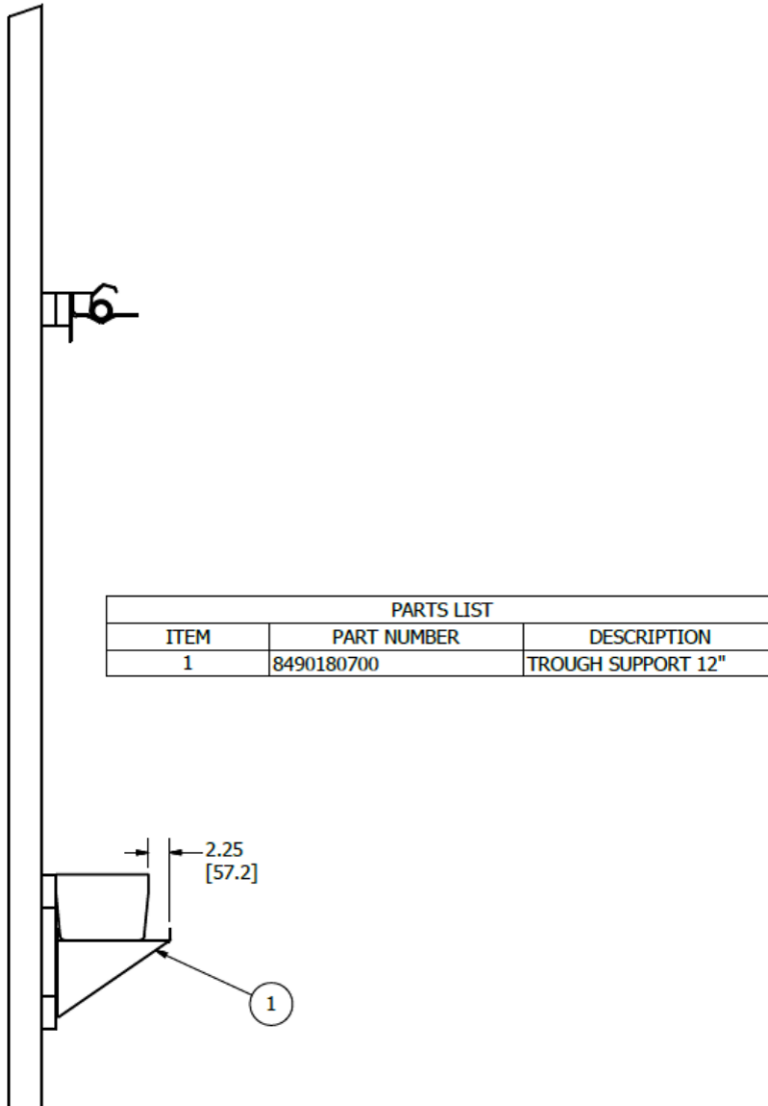
Figure 8

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HSES-27	TROUGH SUPPORT BRACKET
2	1	4"X4"	4" X 4" TREATED LUMBER



OFFSET BRACKETS

Figure 9



Some applications of the H2 Cool System require a 12" Offset Support Bracket to allow for movement of curtains either directly behind or directly in front of the cool cell system. Figure 9 above depicts the void that can be generated by utilizing the Offset Brackets (8490180700) over the standard brackets (HSES-27).

- **Due to the weight of the system being extended from the building a minimum on center bracket spacing of 4 feet is recommended.**
- **Additional wood supports may be required below recommended 2"X10" to allow for the extended length of the mounting section of offset brackets. A 2"X4" is shown installed below the 2"X10" in Figure 6 above.**

Top Assembly Instructions

1. Install the Top Support Flush with the header boards as shown in Figure 1. As shown above in Figure 1 there should be a 2"X4" spacer located behind the Top Support. (Please note that this spacer should terminate when the Top Support ends). At this time the Top Support should be fastened to the header bar with two screws (**80509**) on the far ends. This should be replicated throughout the length of the system.
2. The Spray Bar Support should be fastened to the Top Support with two screws (**80509**) and two washers (**605791**) as shown in Figure 10 below. This process should be replicated throughout the length of the system.
3. The Spray Deflector should be fastened to the Top Support using self tapping sheet metal screws (**60926**) as shown in Figure 11 below. The Spray Deflector should be fastened to the Top Support first utilizing the middle two holes as well as on the two ends where End Panels reside.
4. The Deflector Splice should be fastened to the Spray Deflector anywhere there is a meeting of two Spray deflectors with sheet metal screws (**60926**) as shown below in Figure 12. This process should be replicated throughout the length of the system.

Figure 10

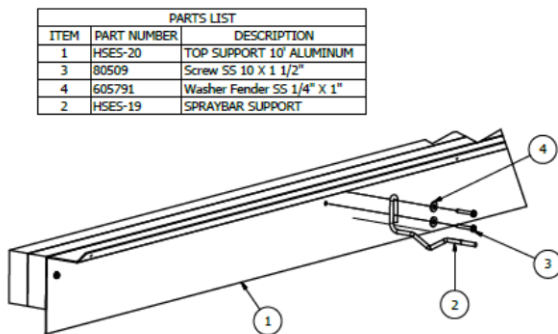


Figure 11

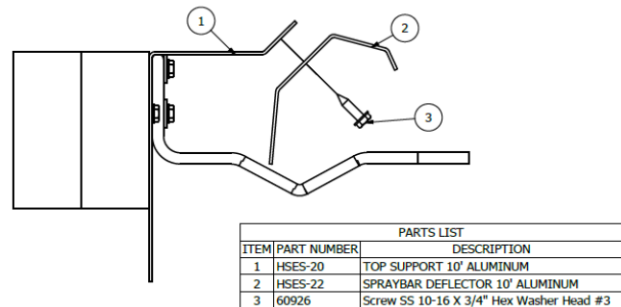
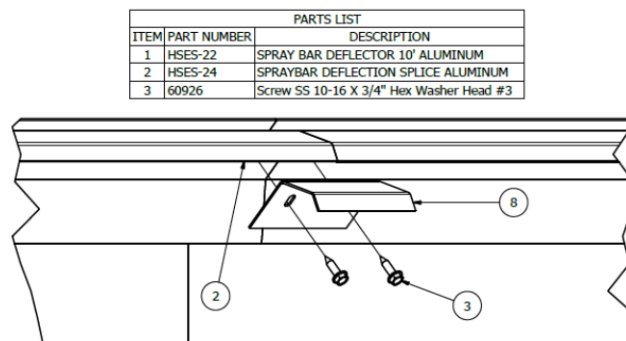


Figure 12



IN LINE JET PUMP

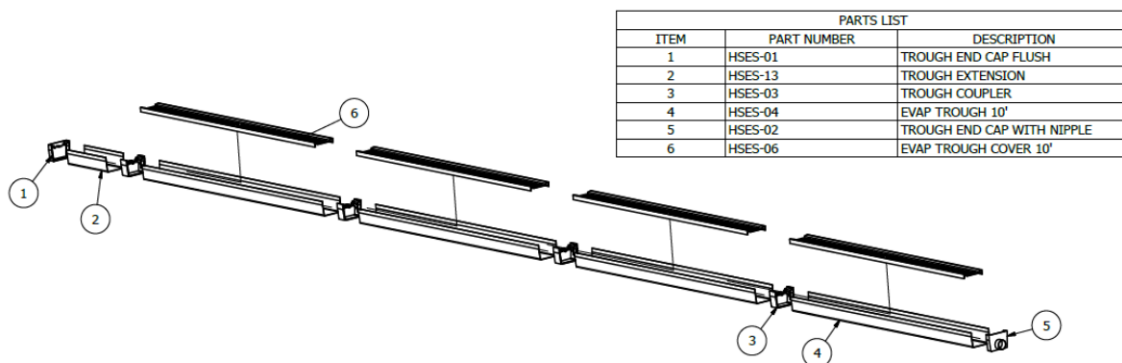
Trough Assembly Instructions

• **ALL TROUGH ASSEMBLY SHOULD TAKE PLACE IN FINAL RESTING PLACE OF TROUGH (ON BRACKETS OR ON CONCRETE)**

• **ENSURE PVC CEMENT IS NOT ALLOWED TO POOL IN CORNERS OF COUPLERS AND GLUE IS NOT HEATED BEFORE APPLICATION, FAILURE TO DO THIS CAN RESULT IN TROUGH WARPAGE**

1. Begin on the end of the system oriented away from the Pump/Float Housing and place a 10 foot section of trough onto the Trough Support Brackets or Concrete pad.
 2. Using PVC Cleaner, clean the first and last 3" of the Trough both inside and out.
 3. Using the supplied PVC cement, fill the channel of the Trough End Cap Nipple with the PVC Compound and slide onto the Trough.
 4. Utilizing the same PVC cement and process, repeat for a Trough Splice and slide onto the opposing end of the 10' Trough section.
 5. Using the methods above, repeat cleaning and applying PVC cement to Trough sections and Trough Splices throughout the length of the system.
 6. After the final section of 10' (or 5') trough has been installed, fill the channel of both sides of final Trough Splice and slide onto the end of the trough.
 7. Following instructions above, insert the Trough Extension from the Plumbing Kit into the final Trough Splice.
 8. Fill the channel of the Flush End Cap with PVC Cement then slide onto the Trough Extension closing the trough.
 9. Finally place all Trough Covers onto the length of the Trough and Install 4" Mechanical Plug (**HSES-33**) into End Cap with Nipple.
- Figure 13 below depicts a typical 40' Trough Assembly with Float Tank Extension.

Figure 13



SUBMERSIBLE PUMP

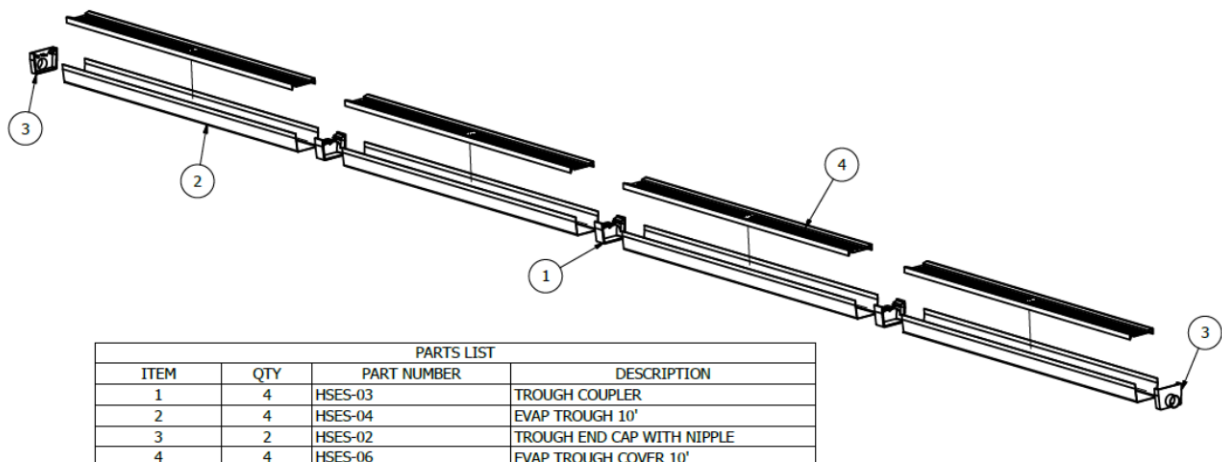
Trough Assembly Instructions

- **ALL TROUGH ASSEMBLY SHOULD TAKE PLACE IN FINAL RESTING PLACE OF TROUGH (ON BRACKETS OR ON CONCRETE)**
 - **ENSURE PVC CEMENT IS NOT ALLOWED TO POOL IN CORNERS OF COUPLERS AND GLUE IS NOT HEATED BEFORE APPLICATION, FAILURE TO DO THIS CAN RESULT IN TROUGH WARPAGE.**
1. Begin on the end of the system oriented away from the Pump/Tank and place a 10 foot section of trough onto the Trough Support Brackets or Concrete pad.
 2. Using PVC Cleaner, clean the first and last 3" of the Trough both inside and out.
 3. Using the supplied PVC cement, fill the channel of the Trough End Cap Nipple with the PVC Compound and slide onto the Trough.
 4. Utilizing the same PVC cement and process, repeat for a Trough Splice and slide onto the opposing end of the 10' Trough section.
 5. Using the methods above, repeat cleaning and applying PVC cement to Trough sections and Trough Splices throughout the length of the system.
 6. After the final section of 10' (or 5') trough has been installed, fill the channel of second Trough End Cap with Nipple and secure to trough.
 7. Finally place all Trough Covers onto the length of the Trough and Install 4" Mechanical Plug (HSES-33) into End Cap with Nipple on opposite side of Tank.

• **IF CENTER FEED APPLICATION IS USED, PLACE 4" MECHANICAL PLUG INTO BOTH END CAPS**

- Figure 14 below depicts a typical 40' Trough Assembly

Figure 14



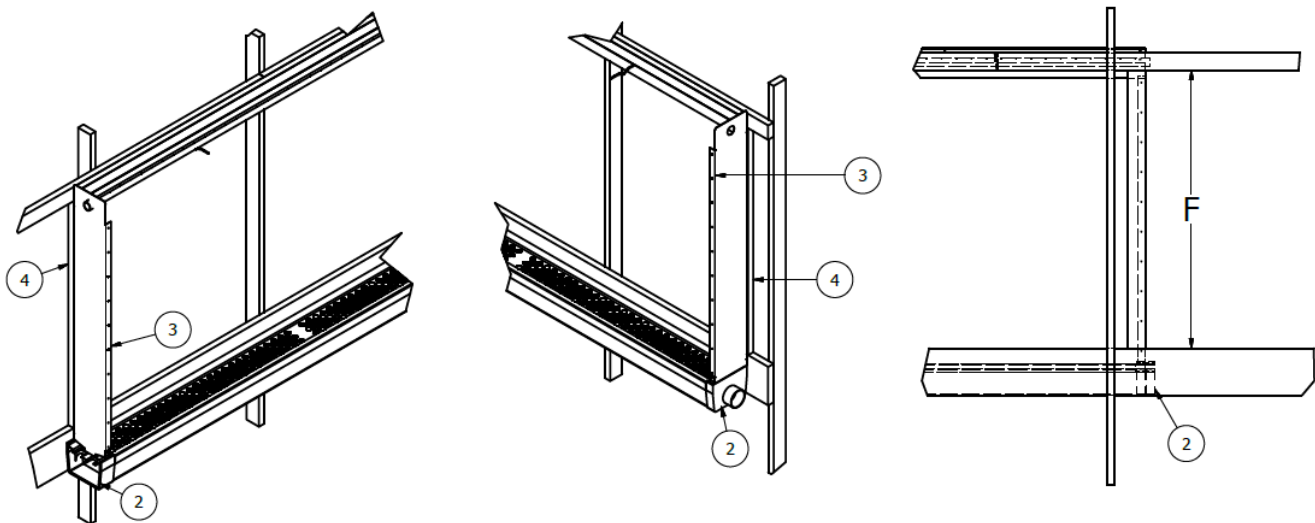
Important

The supplied tube of PVC Cement (Weld-On® 719™) is a special **Extra Heavy Bodied Slow Setting PVC Plastic Cement** and is the only adhesive that should be used to assemble cooling system trough components together. It is a solvent based adhesive designed especially for gluing PVC components together. The substitution of other adhesives and/or silicon, acrylic, etc. (painter's type) caulks will result in leakage over time. They are sealants and not adhesives. The supplied cement should be sufficient to glue applicable components but if additional cement is required; it can be obtained at any Hog Slat retail outlet under part number HSES-34.

End Panel Assembly Instructions

1. Using methods in section shown above, insert cement and place final Splice on the end of the trough as shown below in Figure 15.
2. Cut 2"x4" Cap to appropriate length according to Table F above.
3. Using screws (**80509**), toenail 2"x4" Cap into the rough opening ensuring it mounts flush to Trough End with Nipple and in the middle of the last Trough Splice as shown below in Figure 15.
4. Again using supplied screws (**80509**), fasten End Panels to 2"x4" Cap as shown below. Fasteners should be inserted through the holes in the side of the End Panel.

Figure 15



PARTS LIST		
ITEM	PART NUMBER	DESCRIPTION
1	HSES-02	Trough End Cap With Nipple
2	HSES-03	Trough Coupler
3	HSES-17	End Panel 5' Aluminum
4	2"x4" Cap	2"x4" Cut To Dimension F

Pad Assembly Instructions

(NOTE: THE EVAPORATIVE COOLING MEDIA SHOULD MATCH SYSTEM CHARACTERISTICS)

BEFORE BEGINNING, MAKE SURE PADS ARE ORIENTED CORRECTLY. REFERENCE CAN BE FOUND ON SIDE OF COOLING PADS.

1. Begin on either end of the system by placing the Evaporative Cooling Pads into the channel on the Trough Cover against the End Panel.
2. Insert Evaporative Cooling Pad into Trough Cover channel for the length of the system ensuring pads are compacted against each other
3. With roughly 3 feet of void remaining, place Evaporative Cooling Pad against remaining End Panel.
4. Continue placing Pad until void is filled. If necessary cut a remaining pad to size to complete filling void.
5. Capture pad with Pad Retainer and Tri Knobs as shown below in Figure 16. Repeat for length of system.
6. Finally, Pad Retainer Clips should be installed on Pad Retainer joints to ensure Pad Retainers remain on the same linear plane as shown below in Figure 17.

Figure 16

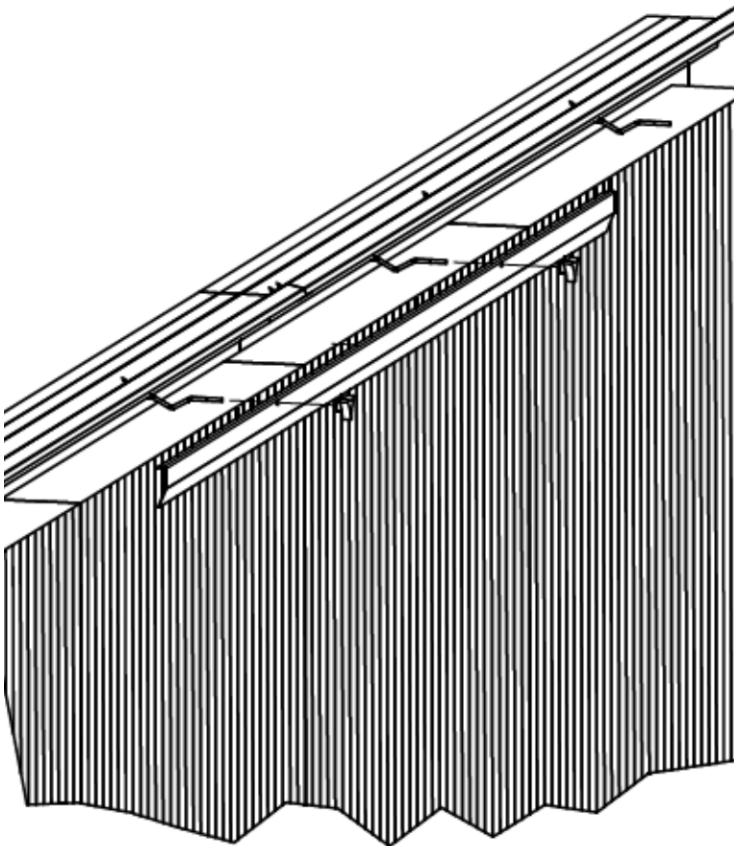
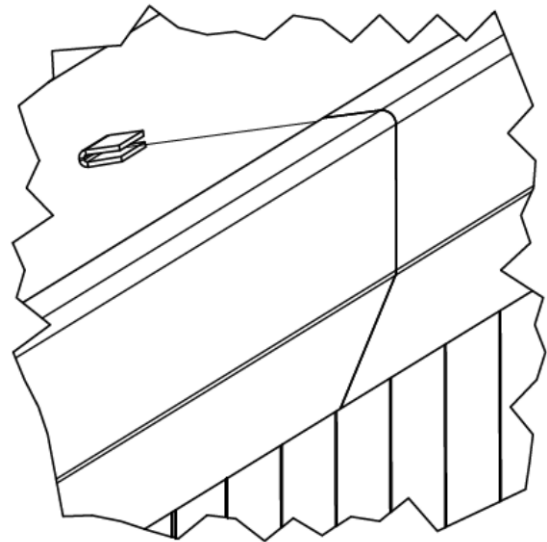


Figure 17



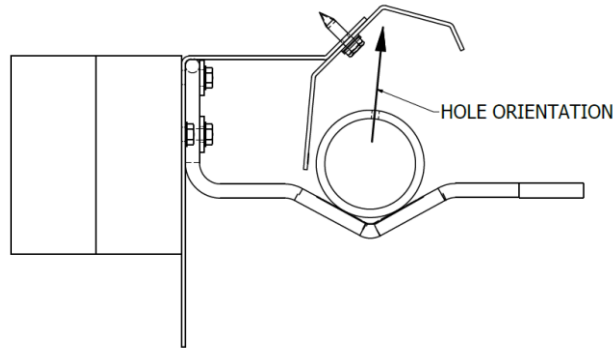
Spray Bar Assembly Instructions

ENSURE SUPPLIED TEFLON TAPE IS USED ANYWHERE A THREADED CONNECTION OCCURS

SPRAY BAR PLUMBING INSTRUCTIONS

1. Begin plumbing assembly by placing Spray Bars on Spray Bar Supports for the length of the system.
2. Align Spray Bar so holes are oriented as shown below in Figure 18.

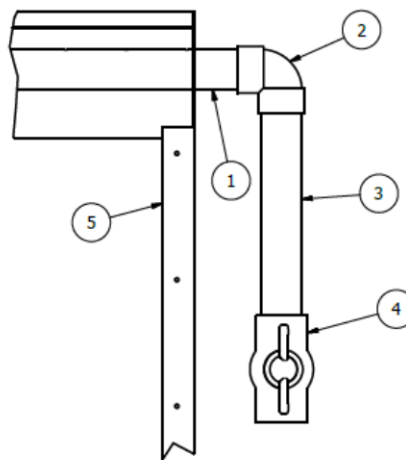
Figure 18



3. Using self tapping screws (**60926**), fasten spray pipe together to eliminate separation and rotation.
4. On the ends of the spray line install a dog leg assembly as shown below in Figure 19. (If system has dual pumps this step should be excluded)

Figure 19

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HSES-09	SPRAY BAR 10'
2	1	60052	Elbow 90° PVC S X S 1 1/2" (SCH 40)
3	12.000 in	603412	1 1/2" PVC PIPE (SCH 40)
4	1	602190	VALVE BALL PVC COMPACT 1 1/2" (SCH 40)
5	1	HSES-17	END PANEL 5' ALUMINUM



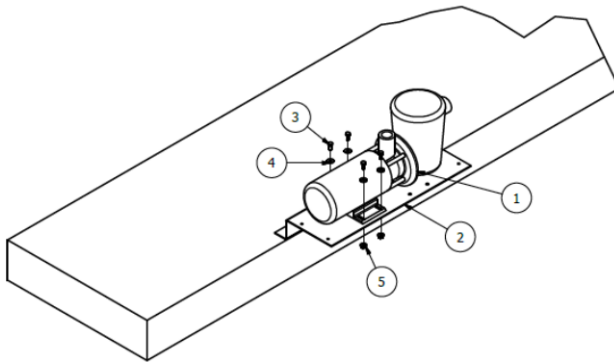
IN LINE JET PUMP

Pump Assembly Instructions

1. Begin by mounting the pump plate either to the Pump Plate Side Support Brackets or by anchoring the Pump plate to the concrete. Both methods are shown in Figures 20 and 21 below.
2. Place the Pump on the plates so the intake is oriented towards the system.
3. Utilizing supplied bolts (**605082**), lock washers (**60589**) and nuts (**60624**), secure the Pump to the Pump Plate.

Figure 20

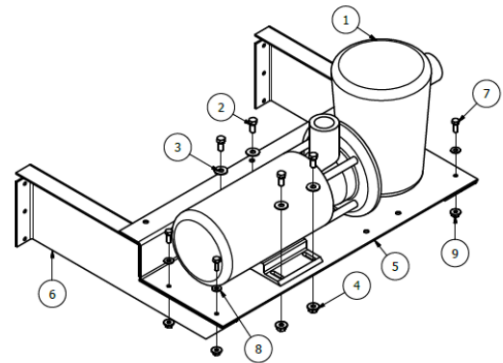
CONCRETE MOUNTED



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	H2P-XX	JET PUMP
2	1	HSES-28	PUMP MOUNTING PLATE
3	4	605082	Bolt Ss 5/16" X 3/4"
4	4	60589	Washer Lock Ss 5/16"
5	4	60624	Nut Serrated Flange 5/16-18 Yellow Zinc Gr.2

Figure 21

BRACKET MOUNTED



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	H2P-XX	JET PUMP
2	4	605082	Bolt Ss 5/16" X 3/4"
3	4	60589	Washer Lock Ss 5/16"
4	4	60624	Nut Serrated Flange 5/16-18 Yellow Zinc Gr.2
5	1	HSES-28	PUMP MOUNTING PLATE
6	2	HSES-29	PUMP MOUNTING SIDE PANEL
7	4	60601	Bolt Ss 1/4" X 3/4"
8	4	60579	Washer Flat Ss 1/4"
9	4	60577	Nut Serrated Flange 1/4-20 Zinc

IN LINE JET PUMP ***Exit Plumbing Instructions***

- Starting with the pump exit, assemble the components as shown below in Figure 22 and 23, using the PVC pipe cleaner and PVC cement supplier with the Plumbing Kit. Both Center Feed and End Feed arrangements are shown below.

Figure 22

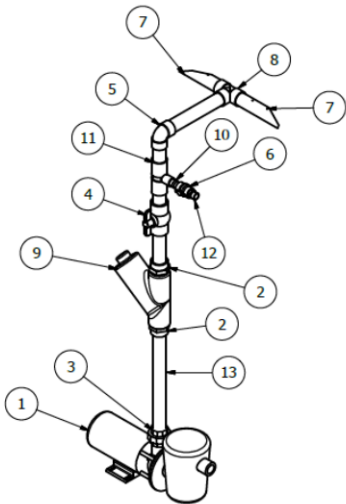
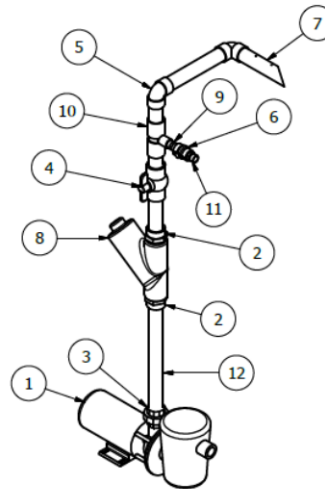


Figure 23



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	H2P-XXXJ	Pump 3/4 HP Jet H2 Evap System Grower Select
2	2	60057	Adapter Pvc Male 1 1/2" (SCH 40)
3	1	H2P-004	Union Pump 2" X 1-1/2" S O-Ring & Gasket
4	1	602190	Valve Ball PVC Compact 1 1/2"
5	1	60052	Elbow 90° PVC S X S X 1 1/2" SCH 40
6	1	6021602	Valve Ball PVC 3/4" Female Threaded
7	2	HSES-09	SPRAY BAR 10'
8	1	600510	Tee S X S X S 1 1/2" SCH 40
9	1	LS150-12	Strainer Filter Y 1-1/2" 12 Mesh
10	1	384001	Nipple PVC 3/4" X 3/4" Close Threaded
11	1	603750	Tee Reducing 1-1/2" S X 1-1/2" S X 3/4" FPT PVC (SCH 40)
12	1	60167	Coupling 3/4" MWH C 3/4" MPT Brass
13	TBD	630412	5' 1 1/2" PVC Pipe (Cut to Length)

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	H2P-XXXJ	Pump 3/4 HP Jet H2 Evap System Grower Select
2	2	60057	Adapter Pvc Male 1 1/2" (SCH 40)
3	1	H2P-004	Union Pump 2" X 1-1/2" S O-Ring & Gasket
4	1	602190	Valve Ball PVC Compact 1 1/2"
5	2	60052	Elbow 90° PVC S X S X 1 1/2" SCH 40
6	1	6021602	Valve Ball PVC 3/4" Female Threaded
7	2	HSES-09	SPRAY BAR 10'
8	1	LS150-12	Strainer Filter Y 1-1/2" 12 Mesh
9	1	384001	Nipple PVC 3/4" X 3/4" Close Threaded
10	1	603750	Tee Reducing 1-1/2" S X 1-1/2" S X 3/4" FPT PVC (SCH 40)
11	1	60167	Coupling 3/4" MWH C 3/4" MPT Brass
12	TBD	630412	5' 1 1/2" PVC Pipe (Cut to Length)

Please note: 115 Volt pump installation may require a variation in installation.

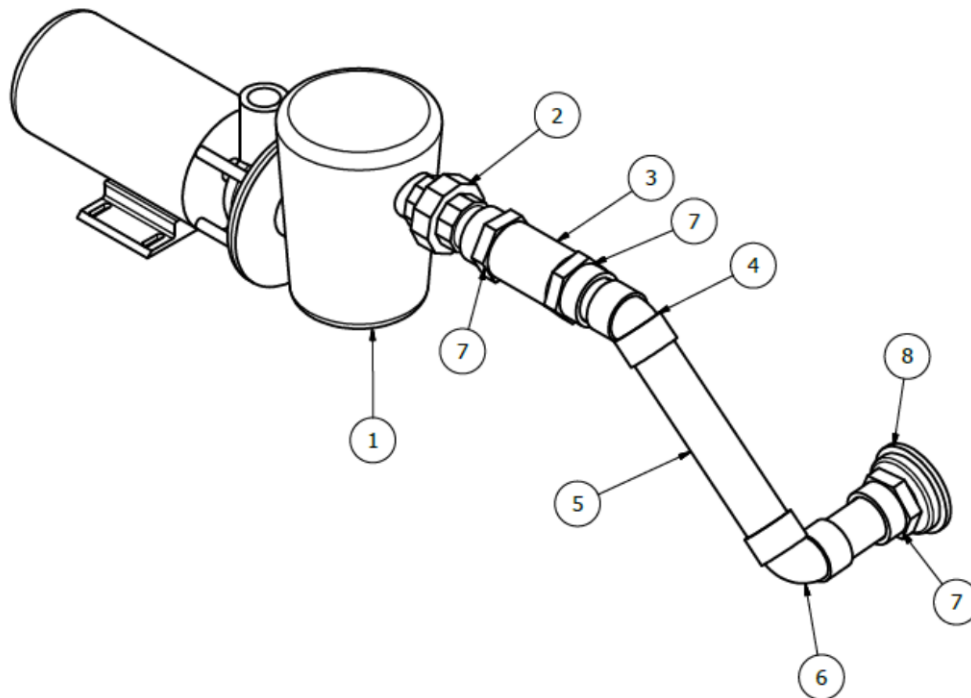
- In 115 Volt Pump installations, the 2" Pump Union (H2P-004) is replaced with a 1 1/2" Pump Union (H2P-003).
- The required components are included in the corresponding pump kits.

IN LINE JET PUMP

Entrance Plumbing Instructions

1. Begin by marking the center point of the intake hole 1.75" from the bottom of the trough and **no less than 18"** from the end of the system for an end feed configuration. For a center feed configuration, the center point should be marked 1.75" from the bottom of the trough aligned on the linear center of the system.
2. Drill a 2.375" inch diameter hole centered on the point marked in the step before.
 - ***Make sure PVC shavings are cleaned from tank after fabrication***
3. Secure Bulk Head Fitting and tighten to create a water tight seal.
4. Beginning with the 1 ½" Male PVC Adapter exiting the tank assemble the plumbing to the Pump Intake as shown below in Figure 24.

Figure 24

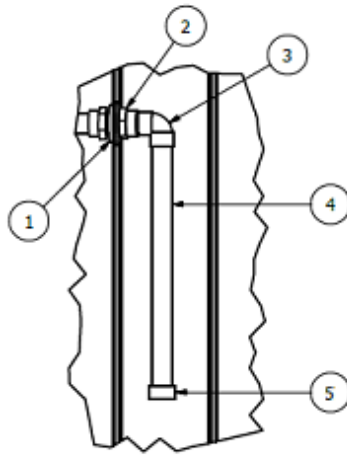


PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	H2P-XXXJ	Pump 3/4 HP Jet H2 Evap System Grower Select
2	1	H2P-003	Union Pump 1-1/2" S O-Ring & Gasket
3	1	S1520-15F	Valve PVC Check 1-1/2" Threaded
4	1	60053	Elbow, 45 Degree PVC S X S X 1 1/2" (SCH 40)
5	TBD	603412	Pipe PVC 1-1/2" X 5' Sch 40 Plain End
6	1	60052	Elbow, 45 Degree PVC S X S X 1 1/2" (SCH 40)
7	3	60057	Adapter, PVC Male 1 1/2" (SCH 40)
8	1	HSES-36	Adapter Tank 1-1/2"

5. Using Supplied PVC cement and PVC cleaner build the Intake assembly as shown below in Figure 25. Ensure that intake holes are oriented towards the bottom of trough and that the intake pipe is parallel to the bottom of the trough.

To ensure pump water supply is not interrupted pick up pipe should be installed a minimum of 2 feet away from incoming water supply!

Figure 25



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HSES-36	Adapter Tank 1-1/2"
2	1	60057	ADAPTER, PVC MALE 1 1/2" (SCH 40)
3	1	60052	ELBOW, 90 DEGREE S X S 1 1/2" (SCH 40)
4	1	HSES-12	PICK-UP PIPE
5	1	60058	CAP, PVC 1 1/2" (SCH 40)

Please note: 115 Volt pump installation may require a variation in installation.

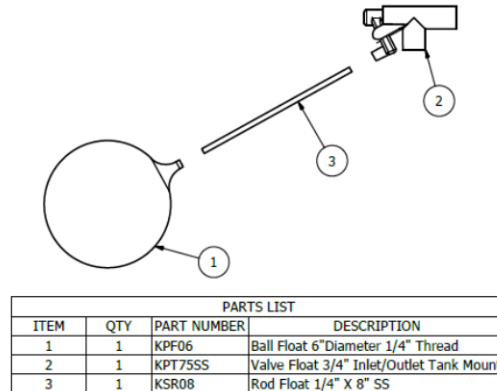
- Pumps should be able to be removed from the system completely for winterization.
- If required, install 1 1/2" Union (603841) between 45 degree elbow and 90 degree elbow and the pump union (H2P-003) is replaced with a 1 1/2" Male adapter.
- The required components are included in the corresponding pump kits.

IN LINE JET PUMP

Float Kit Assembly Instructions

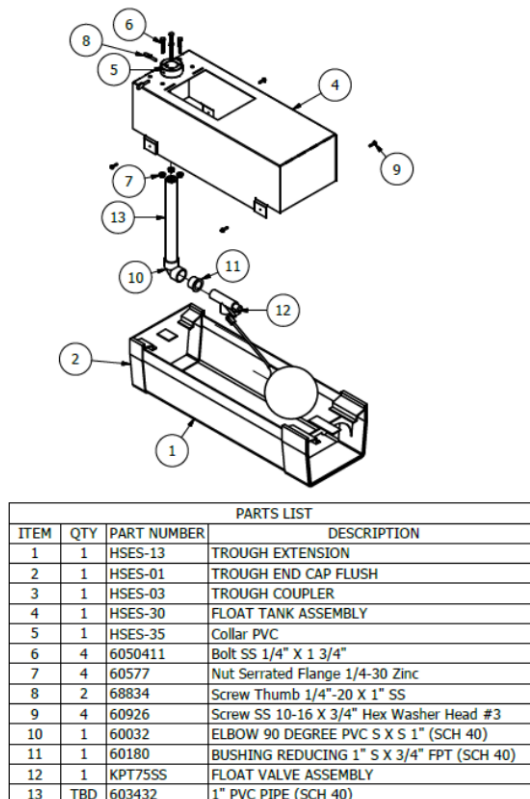
1. Begin the float tank kit assembly by securely assembling the Ball, Rod, and Valve as shown below in Figure 26.

Figure 26



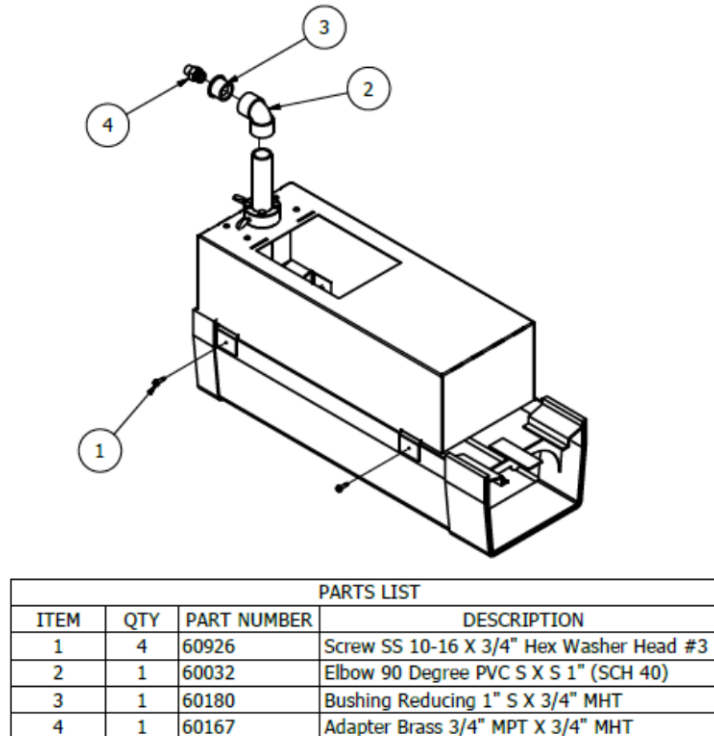
2. Assemble float tank housing as shown below in Figure 27.

Figure 27



3. Secure PVC pipe inside of the Float Collar with the thumb screws and attach the 1" Male PVC Elbow and 1" to 3/4" PVC Reducing Bushing to the top of the 1" PVC Pipe.
 4. If not already completed, attach Float Tank Assembly to the Trough extension with the supplied 10-16 self tapping screws (60926)
 5. Finally, thread Male Brass Fitting into Reducer and attach supply line.
- These steps are shown below in Figure 28.

Figure 28



During set up of water level the Kerick Valve should be raised as high as possible inside the float tank housing. Any adjustments of water level should be executed by adjusting the lever arm of the Kerick Valve.

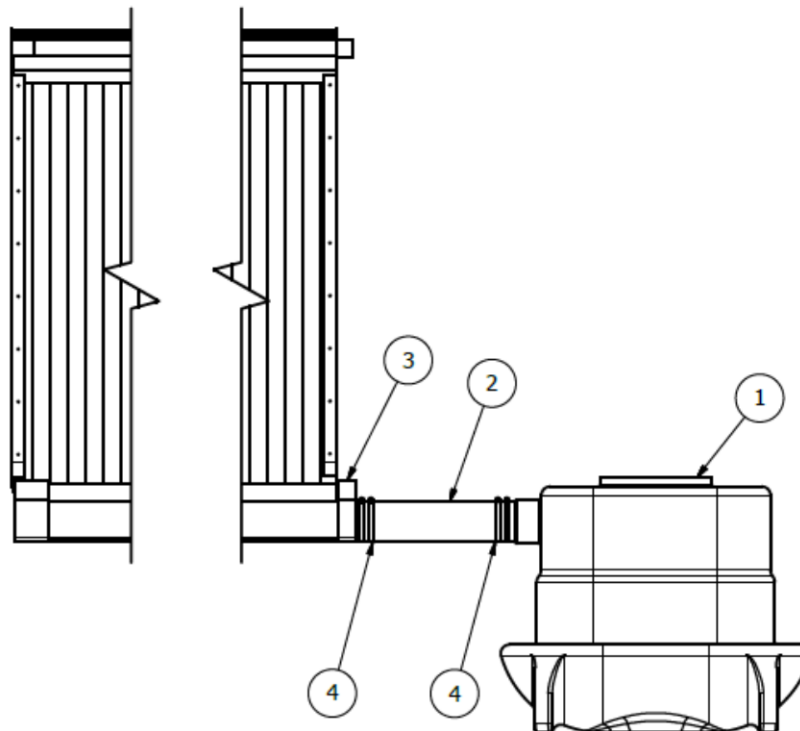
Simply lowering the Kerick Valve will cause a restriction of incoming water!

SUBMERSIBLE PUMP

Tank Installation (End Feed)

1. Begin by connecting the Tank (HSES-40) to the trough using the supplied flexible hose (HSES-39). 5 feet of hose is supplied with each system. If additional hose is required please order separate. Using all (4) hose clamps (620-072), secure hose to the end cap with a nipple and to the entry of the Tank as shown below in Figure 29.

Figure 29



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HSES-40	Tank Sump Grower Select Cool Cell System
2	1	HSES-39	Hose 4" Flexible Black Grower Select Per Foot
3	1	HSES-02	Trough End Cap With Nipple
4	4	620-072	Clamp Hose Ss 3" To 5"

SUBMERSIBLE PUMP END FEED

Tank Installation (Center Feed)

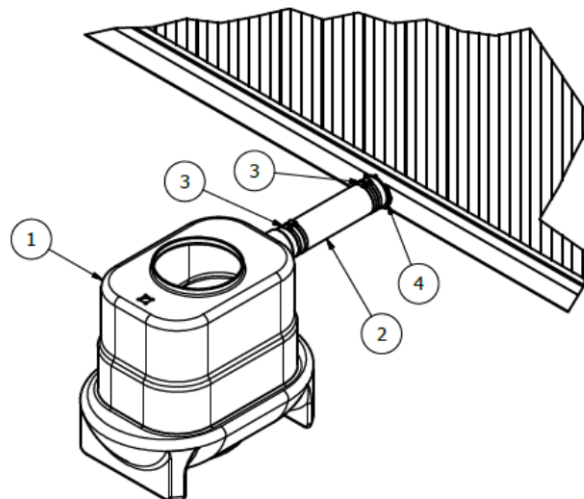
The center feed kit is an additional installation option and requires a separate order of part number HSES-45.

1. Select and mark the center of the trough where 4" bulk head (HSES-45) will insert. Drill a 4" hole in center of trough allowing room for lock nut of the tank adapter to fit. Insert the threaded end of the tank adapter with one rubber gasket on the exterior and one on the interior of the trough. Securely tighten lock nut inside trough.

- **HOLE SHOULD LEAVE A MINIMUM OF 2.75" FROM THE BOTTOM OF THE TROUGH**
- **A SMALL SECTION OF THE TROUGH COVER DIRECTLY OVER THE 4" TANK ADAPTER MAY HAVE TO BE REMOVED TO ALLOW TROUGH COVER TO SIT LEVEL ONTO TROUGH**

2. Connect the Tank (HSES-40) to the bulkhead using the supplied flexible hose (HSES-39). 5 feet of hose is supplied with each system. If additional hose is required please order separate. Using all (4) hose clamps (620-072) secure hose to the bulk head and to the entry of the Tank as shown below in Figure 30.

Figure 30



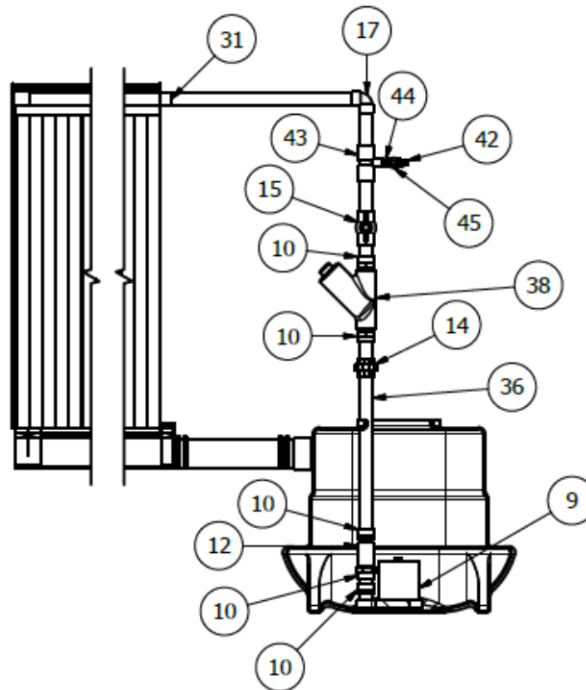
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HSES-40	TANK, SUMP HSES
2	1	HSES-39	Hose 4" Flexible Black Grower Select Per Foot
3	4	620-072	Clamp Hose Ss 3" To 5"
4	1	HSES-45	TANK ADAPTER ASSEMBLY, 3.5" THREADS

SUBMERSIBLE PUMP

Exit Plumbing Instructions (End Feed)

- Starting with the pump exit, assemble the components as shown below in Figure 31, using the PVC pipe cleaner and PVC cement supplier with the Plumbing Kit. End Feed arrangement is shown below.

Figure 31



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
9	1	H2P-230S	Pump 1/2 HP 230V Sump H2 Evap System Grower Select
10	5	60057	Adapter, PVC Male 1 1/2" (SCH 40)
12	1	S1520-15F	Valve PVC Check 1-1/2" Threaded
14	1	603841	Union Pvc 1 1/2" (SCH 40)
15	1	602190	Valve Ball PVC Compact 1 1/2"
17	1	60052	Elbow 90* PVC S X S X 1 1/2" (SCH 40)
31	TBD	HSES-09	SPRAY BAR 10'
36	TBD	630412	5' 1 1/2" PVC Pipe (Cut to Length)
38	1	LS150-12	Strainer Filter Y 1-1/2" 12 Mesh
42	1	60167	Coupling 3/4" MWH C 3/4" MPT Brass
43	1	603750	Tee Reducing 1 1/2" S X 1 1/2" S X 3/4" FPT PVC (SCH 40)
44	1	384001	Nipple PVC 3/4" X 3/4" Close Threaded
45	1	6021602	Valve Ball PVC 3/4" Female Threaded

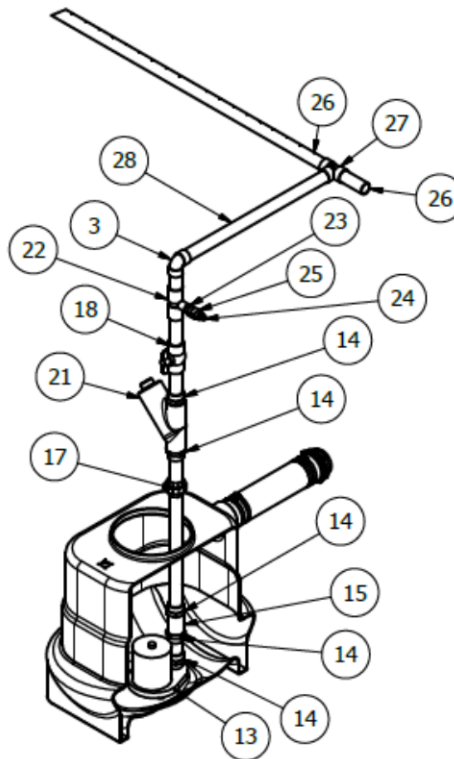
SUBMERSIBLE PUMP

Exit Plumbing Instructions (Center Feed)

- Starting with the pump exit, assemble the components as shown below in Figure 32, using the PVC pipe cleaner and PVC cement supplier with the Plumbing Kit. Center Feed arrangement is shown below.

- SPRAY BAR AND PAD RETAINER MAY HAVE TO BE CUT/MODIFIED TO ALLOW FOR ACCURATE FIT AND SPACING**

Figure 32



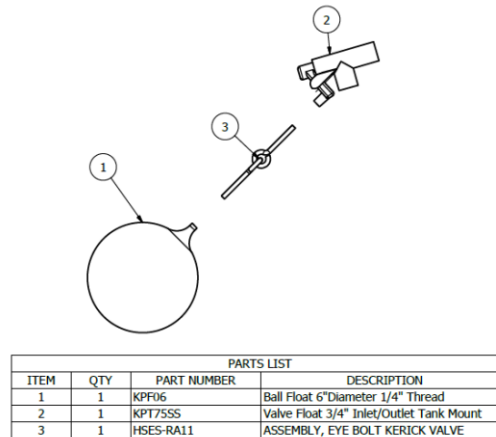
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
3	3	60052	Elbow 90° PVC S X S X 1 1/2" (SCH 40)
13	1	H2P-230S	Pump 1/2 HP 230V Sump H2 Evap System Grower Select
14	5	60057	Adapter, PVC Male 1 1/2" (SCH 40)
15	1	S1520-15F	Valve PVC Check 1-1/2" Threaded
17	1	603841	Union PVC 1 1/2" (SCH 40)
18	1	602190	Valve Ball PVC Compact 1 1/2"
21	1	LS150-12	Strainer Filter Y 1-1/2" 12 Mesh
22	1	603750	Tee Reducing 1 1/2" S X 1 1/2" S X 3/4" FPT PVC (SCH 40)
23	1	384001	Nipple PVC 3/4" X 3/4" Close Threaded
24	1	60167	Coupling 3/4" MWH C 3/4" MPT Brass
25	1	6021602	Valve Ball PVC 3/4" Femal Threaded
26	2	HSES-09	SPRAY BAR 10'
27	1	600510	Tee S X S X S 1 1/2" (SCH 40)
28	TBD	630412	5' 1 1/2" PVC Pipe (Cut to Length)

SUBMERSIBLE PUMP

Float Valve Assembly Instructions

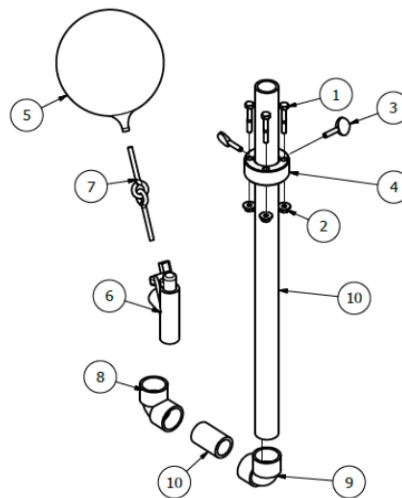
1. Begin the float tank kit assembly by securely assembling the Ball, Rod, and Valve as shown below in Figure 33.

Figure 33



2. Assemble float valve assembly as shown below in Figure 34.

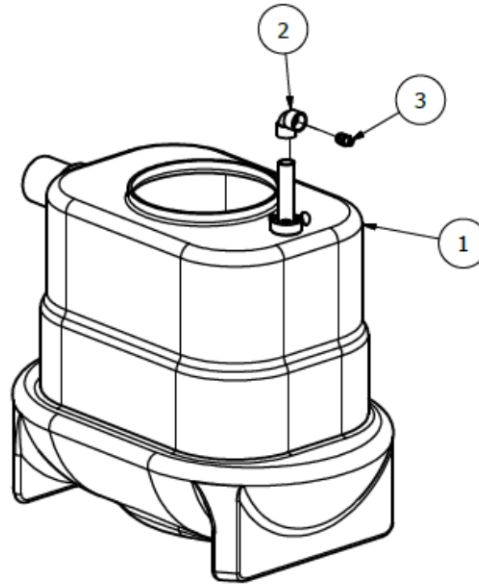
Figure 34



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	4	6050411	BOLT SS 1/4" X 1 3/4"
2	4	60577	NUT SERRATED FLANGE ZINC 1/4-20
3	3	68834	SCREW THUMB 1/4"-20 X 1" SS
4	1	HSES-35	FLOAT VALVE COLLAR
5	1	KPF06	BALL FLOAT 6" DIAMETER 1/4" THREAD
6	1	KPT75SS	VALVE FLOAT 3/4" IN/OUT TANK MOUNT
7	1	HSES-RA11	INTERLOCKING EYE BOLTS
8	1	604191	Elbow Reducing 90 Degree 1" S X 3/4" FPT PVC (SCH 40)
9	1	60032	Elbow 90 Degree Pvc S X S 1" (SCH 40)
10	TBD	603432	Pipe PVC SCH 40 1" X 5' Plain End

3. Secure PVC pipe inside of the Float Collar with the thumb screws and attach the 1" Male PVC Elbow and 1" to 3/4" PVC Reducing Bushing to the top of the 1" PVC Pipe.

Figure 35



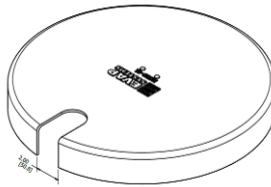
PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HSES-40	Tank Sump Grower Select Cool Cell System
2	1	604191	Elbow Reducing 90 Degree 1" S X 3/4" FPT PVC (SCH 40)
3	2	60167	Adapter Brass 3/4" MPT X 3/4" MHT

During set up of water level the thumb screws should be used to set the height of the water by raising or lowering the entire valve assembly

4. Finally, place the tank cap (HSES-41) onto the tank. A section of the cap will have to be removed. An example is shown below in Figure 36.

- **EXACT DIMENSION OF CUT SHOULD BE DETERMINED BY INSTALLER AS FEED PIPE AND SIZE MAY VARY**

Figure 36



Pump Wiring Instruction

Wire Connection:

Again, make sure that power is disconnected from system prior to servicing.

This Power Unit is supplied prewired for 230 volt operation with the proper rotation direction for correct motor rotation. If 115 volt operation is required, please see wiring instruction on Motor Data Label for converting to 115 volt operation.

Black wire should be connected to L1(M1) and White wire should connect to L2(M2). Green should be connected to Ground (See Figure 37)

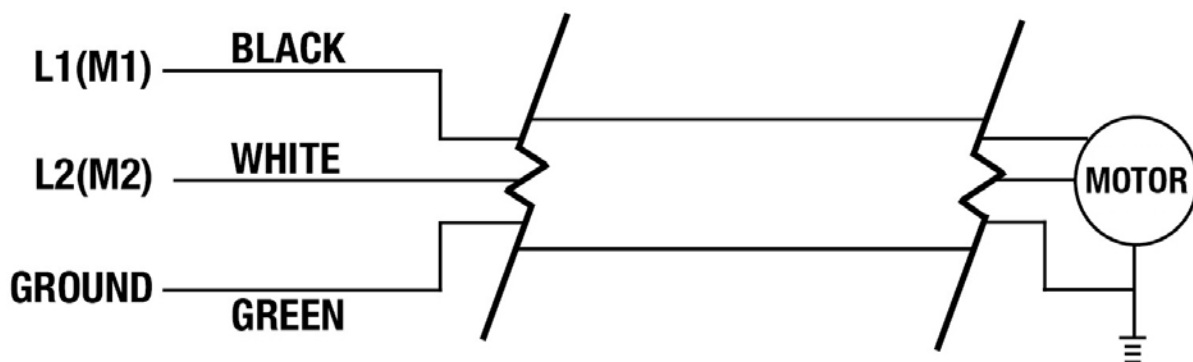


Figure 37

WARNING **ELECTRICAL SHOCK HAZARD!**

- Motor replacement and the associated wiring changes should only be made by qualified and properly trained individuals.
- Failure to follow the above warning can cause improper equipment function, premature failure of equipment or electrical shock, leading to property damage or personal injury.

Operation Instructions

New System Operation / Annual Start Up

Several inspections and procedures should take place/be completed for newly installed system.
(This process is also applicable for annual start up.

1. Before addition of water, remove any debris from the trough. This debris consists of but is not limited to PVC shavings, loose fasteners, trash, and leaves.
 - The trough should be kept clear of debris constantly.
2. Tighten Trough Plug and Fill trough with water.
 - Inspect Trough and Bulk Head connections for any leakage.
 - If there is any leakage, drain the Trough and correct joint where leakage was observed.
3. Ensure the strainer basket attached to the pump is full of water.
 - **FOR SUMP MAKE SURE TANK IS FULL BEFORE OPERATION**
 - Although the pump is self priming, it is highly recommended to fill the strainer basket with water.
4. Turn on the pump.
5. Adjust the flow of water through the spray bar by adjusting the PVC Ball Valve oriented vertically on the feed pipe for the Spray Bar.
 - A correctly adjusted system should provide an even coating of water across the front of the pad without excess water evacuating the system from the pads.
 - This adjustment should be done with facility operating at full tunnel as tunnel fans pull water into the pad and reduce the amount of water across the face of the pad.
6. Adjust bleed off rate
 - The system should be bled off at the exit of the Filter.
 - A bleed off rate of 1 gallon per minute per linear foot is highly recommended.

Winterizing the System

1. Remove Trough plug from the trough and allow all water to exit the Trough.
 - During this process make sure all Ball Valves are completely open to evacuate the plumbing.
2. Remove plug for the strainer basket on the pump and allow all water to exit the pump.
 - For sump system evacuate the tank of water.
 - During this process make sure all Ball Valves are completely open to evacuate the plumbing.
3. Replace all plugs and close all ball valves to eliminate any objects from entering the system.
4. Remove pumps completely from system.

Normal Operation

1. Please refer to Controller Manual for daily operation programming.
2. Ensure water levels are accurate and that the system is not over filled.
 - The water level should be roughly 1" below the pads for correct operation.
3. The pads should be allowed to completely dry daily.
4. The system should shut down 30 minutes before the tunnel fans in order for pads to completely dry

Issues

- **IF ADDITIONAL ISSUES ARISE, PLEASE REFER TO EVAPORATIVE COOLING CHECK LIST**

Emergency Operation

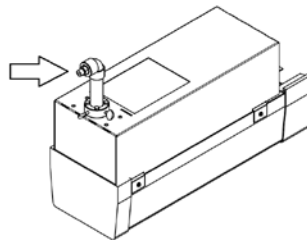
- In the event it is discovered that a pump is not operational or supplying water to the system, the H2 Evaporative system is equipped with an Emergency Operation override.

Before taking any measures please follow steps below:

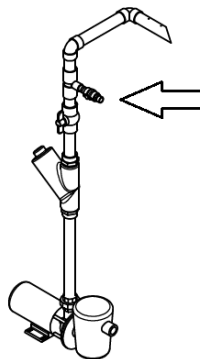
1. Ensure system has and is receiving water.
2. Ensure pump is receiving power (and Strainer Basket is not clogged for jet systems)
3. Ensure Filter is not clogged and preventing water from passing.

If the above steps have been completed and it is determined that there is a problem with the recirculation of water from the trough to the spray bar (pump, filter, cracked line, etc...) then follow below procedure to operate the system in emergency state.

1. Disconnect the incoming water line for the brass fitting on the float tank



2. Attach incoming water line to brass fitting on feed pipe (Extra hose may be required)



3. Close 1 ½" Ball Valve above filter and turn on water supply from the hose.
4. The length of the system determines the amount of water that will be distributed to the Evaporative Media.

! THIS IS NOT A PERMANENT SOLUTION AND SHOULD ONLY BE USED WHILE A PERMANENT SOLUTION IN BEING IMPLEMENTED!

REPLACEMENT PARTS LIST

Part Number	Description
LS150-12	Strainer Filter Y 1-1/2" 12 Mesh
HS612	Knob 3 Arm 1/4-20 X 1/2" Female Brass Insert
HSES-01	Trough End Cap Flush
HSES-02	Trough End Cap Nipple
HSES-03	Trough Coupler
HSES-04	Evap Trough 10'
HSES-05	Evap Trough 5'
HSES-06	Evap Trough Cover 10'
HSES-07	Evap Trough Cover 5'
HSES-09	Spray Bar 10'
HSES-11	Spray Bar 5'
HSES-12	Pick Up Pipe
HSES-13	Trough Extension
HSES-14	End Panel 2' Aluminum Open Top
HSES-15	End Panel 3' Aluminum Open Top
HSES-16	End Panel 4' Aluminum Open Top
HSES-17	End Panel 5' Aluminum Open Top
HSES-18	End Panel 6' Aluminum Open Top
HSES-19	Spray Bar Support
HSES-20	Top Support 10' Aluminum
HSES-21	Top Support 5' Aluminum
HSES-22	Spray Bar Deflector 10' Aluminum
HSES-23	Spray Bar Deflector 5' Aluminum
HSES-24	Spray Bar Deflection Splice Aluminum
HSES-25	Pad Retainer 10' Aluminum
HSES-26	Pad Retainer 5' Aluminum
HSES-27	Bracket Trough Support
8490180700	12" Offset Trough Support Bracket
HSES-28	Pump Mounting Plate
HSES-29	Pump Mounting Side Panel
HSES-30	Float Valve Cover
HSES-31	Float Valve Access Hatch
HSES-32	Pad Retainer Clip Aluminum
HSES-33	4" Mech Plug
HSES-34	Adhesive For Cool Cell
HSES-35	PVC Collar
HSES-36	Tank Adapter
HSES-39	Hose 4" Flexible Black Grower Select Per Foot
HSES-40	Tank Sump Grower Select Cool Cell System
HSES-41	Cap Sump Tank 13" Grower Select
HSES-45	Assembly Tank Adaptor 3.5" Threads
KPF06	Kerick Float
KPT75SS	Kerick Valve
KSR08	Kerick Shaft
S1520-15F	Valve PVC Check 1-1/2" Threaded
620-072	Clamp Hose Ss 3" To 5"

Evaporative Cooling Pad Issue Checklist

Before contacting a Hog Slat representative, please obtain checklist information

1. **Check pad orientation and manufacturing logos.**
Ensure pads are H2 pads and they have a valid date code printed.
If applicable edge guard should be facing away from the house
Steeper flutes should also be facing away from the house
Most modern pads have an orientation logo on the side for reference
2. **Is there evidence of proper pad maintenance?**
Check for scale, mineral, or debris buildup on inner and outer faces of pad
Properly maintained pads will be clear of debris and allow air to pass freely
Pads should be cleaned regularly, seasonally for most pads.
3. **What is the condition of the system and contents?**
Check for clogged filters, strainer baskets, and header pipes
Check contamination and algae buildup in the trough and water reservoir
Properly maintained systems will be mostly clean with little or no build up.
4. **Is the system being routinely flushed?**
Check to see if the system is flushed on a regular schedule.
At a minimum the system including reservoir should be completely flushed monthly. Routine flushing of the system helps to clean the pads and eliminate minerals and scale build up from normal operation.
5. **What is the water level of the system?**
Check the water level of the system
Ensure there is no standing water around the base of the pads
A proper system will have a water level roughly 1" below the pads
6. **What is the pH and water quality of the system?**
Using disposable pH strips check the pH of the system.
A correct system pH is between 6 and 8.
If the pH is found to be out of range check the pH of the water supply.
Visually inspect the water in the system.
Properly maintained system water should be clear or slightly cloudy.
7. **Have any chemicals been added to the system.**
Check to see if any chemicals have been used for cleaning or algae control.
If chemicals have been used make sure they are approved.
Make sure no foreign substances have been introduced to the system.
Foreign substances include: Roundup, Bleach, Degreasers
8. **Are the pads being allowed to dry?**
Check on operation schedule of system
If possible pads should be allowed to dry completely at least once daily
Running the fans for 30 minutes longer than cool cell system aids in drying

1.

2.

3.

4.

5.

6.

7.

8.

Hog Slat Limited Warranty

Hog Slat warrants products to be free from defects in material or workmanship for a period of twenty-four (24) months from the date of **original purchase**. Hog Slat will credit, repair, or replace, at its option any product deemed defective within this time period. Labor costs associated with the replacement or repair of the product are not covered by the Seller/Manufacturer.

Warranty Extension Coverage

The Limited Warranty period is extended for the following products:

Cool Cell System	5 Years (Less Pads and Pumps)
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Conditions and Limitations

1. The product must be installed by and operated in accordance with the instructions published by the **Seller/Manufacturer or Warranty will be void.**
2. Warranty is void if **all components** are not original equipment supplied by the **Seller/Manufacturer.**
3. This product must be purchased from and installed by an authorized retailer/distributor or certified representative thereof or the Warranty will be void.
4. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance shall not be considered defects under the Warranty.
5. This Warranty applies only to components/systems for the care of poultry and livestock. Other applications in industry or commerce are not covered by this Warranty.
6. This Warranty applies only to the Original Purchaser of the product.

The **Seller/Manufacturer** shall not be liable for any **Consequential or Special Damage** which any purchaser may suffer or claim to suffer as a result of any defect in the product. **"Consequential"** or **"Special Damages"** as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.

THIS WARRANTY CONSTITUTES THE SELLER/MANUFACTURER'S ENTIRE AND SOLE WARRANTY AND THIS MANUFACTURER EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

Hog Slat Retailers/Distributors are not authorized to modify or extend the terms and conditions of this Warranty in any manner or to offer or grant any other warranties for Hog Slat products in addition to those terms expressly stated above. An officer of Hog Slat must authorize any exceptions to this Warranty in writing. The Seller/Manufacturer reserves the right to change models and specifications at any time without notice or obligation to improve previous models.



This equipment must be installed in accordance with all State and Local Codes and applicable Regulations which should be followed in all cases. Authorities having jurisdiction should be consulted before installations are made.



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**Part Number: HSMANUAL-019 Rev A10
Market - Hog & Poultry
Product Group: Grower Select**

Rev A10 - Added "Tube of Cement" requirement on page 15

