

# INSTALLATION MANUAL

## *UltraLift UL2*

### MODELS

10000 UL2

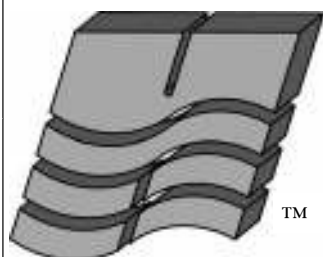
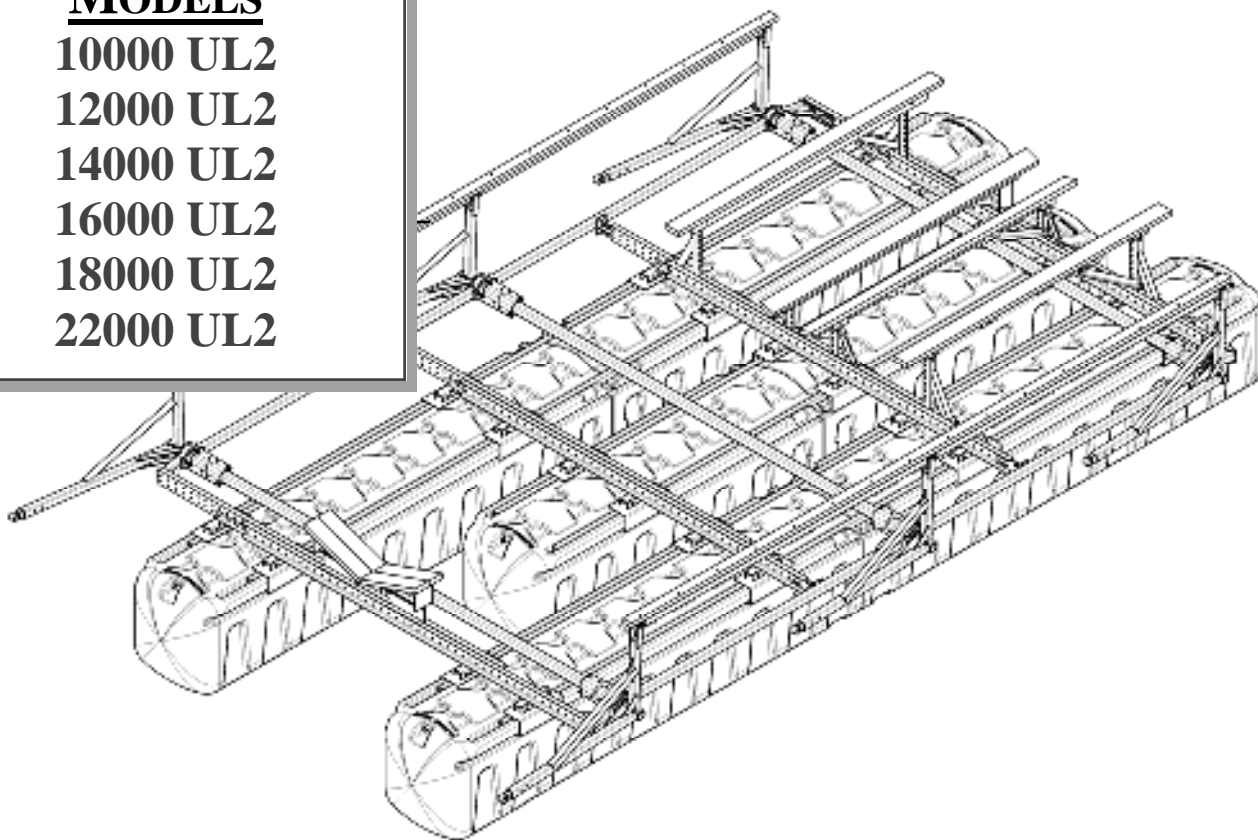
12000 UL2

14000 UL2

16000 UL2

18000 UL2

22000 UL2



## ***HydroHoist® Boat Lifts***

HydroHoist Marine Group  
P.O. Box 1286 Claremore, OK USA 74018  
1-800-825-3379

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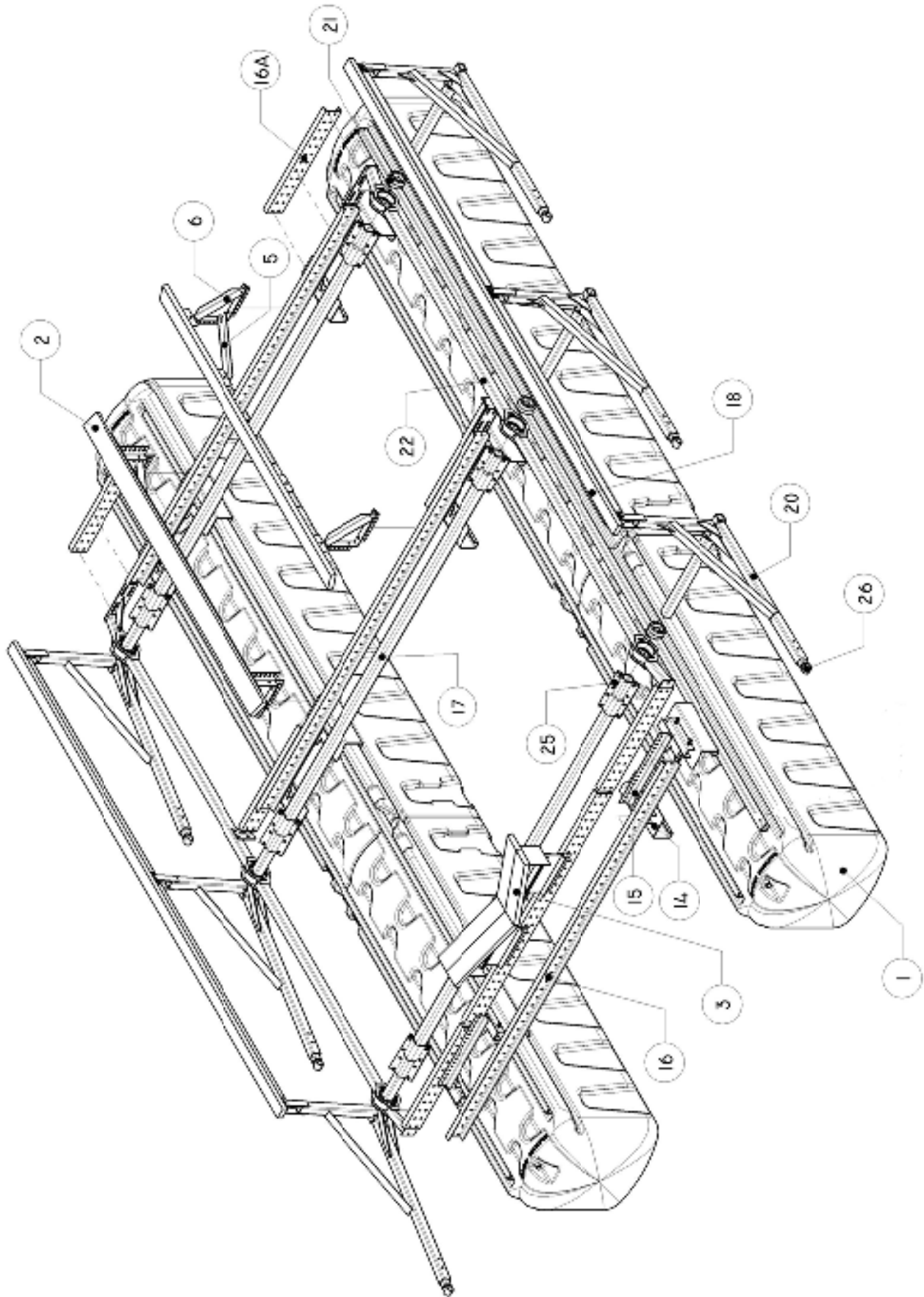
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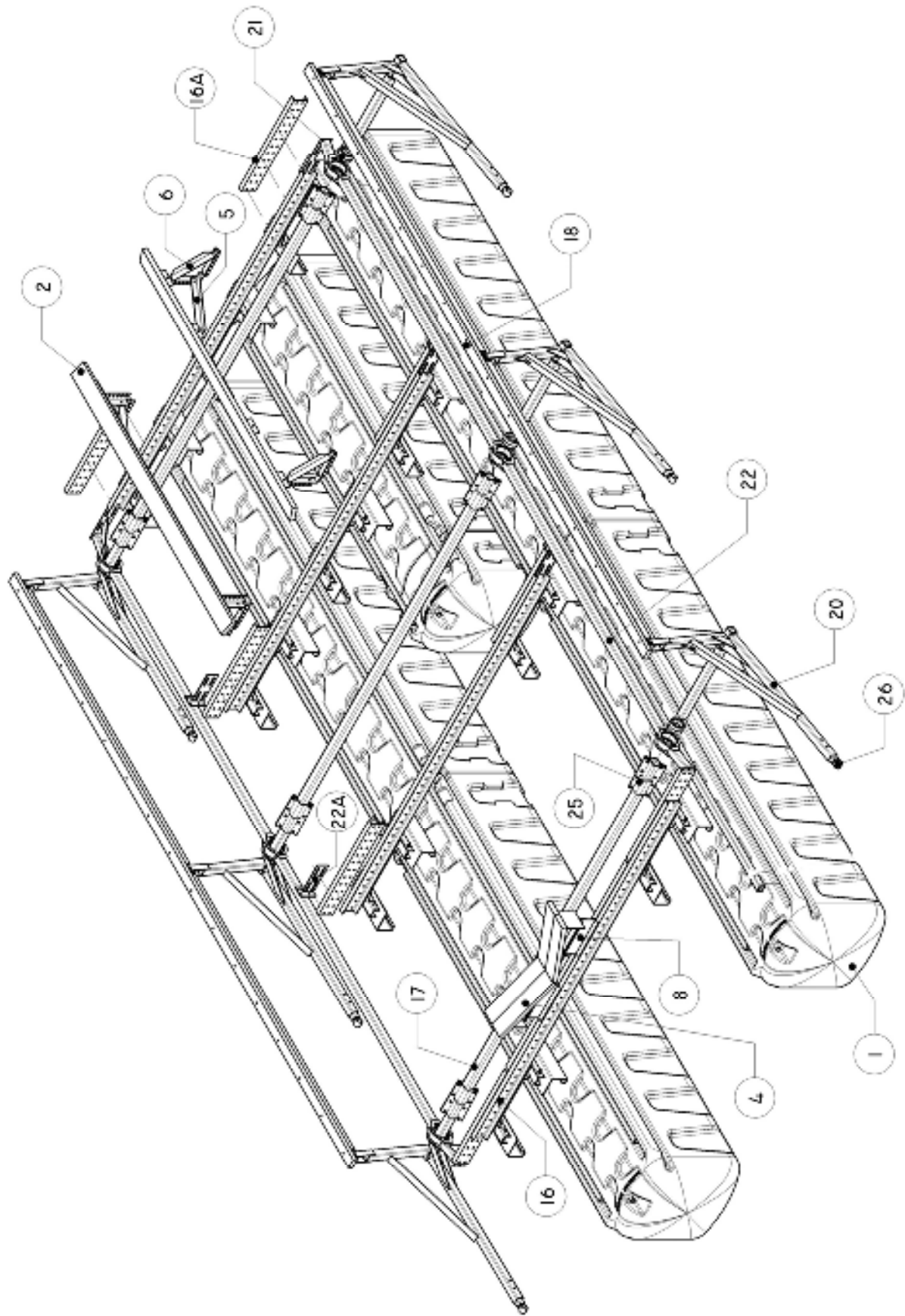
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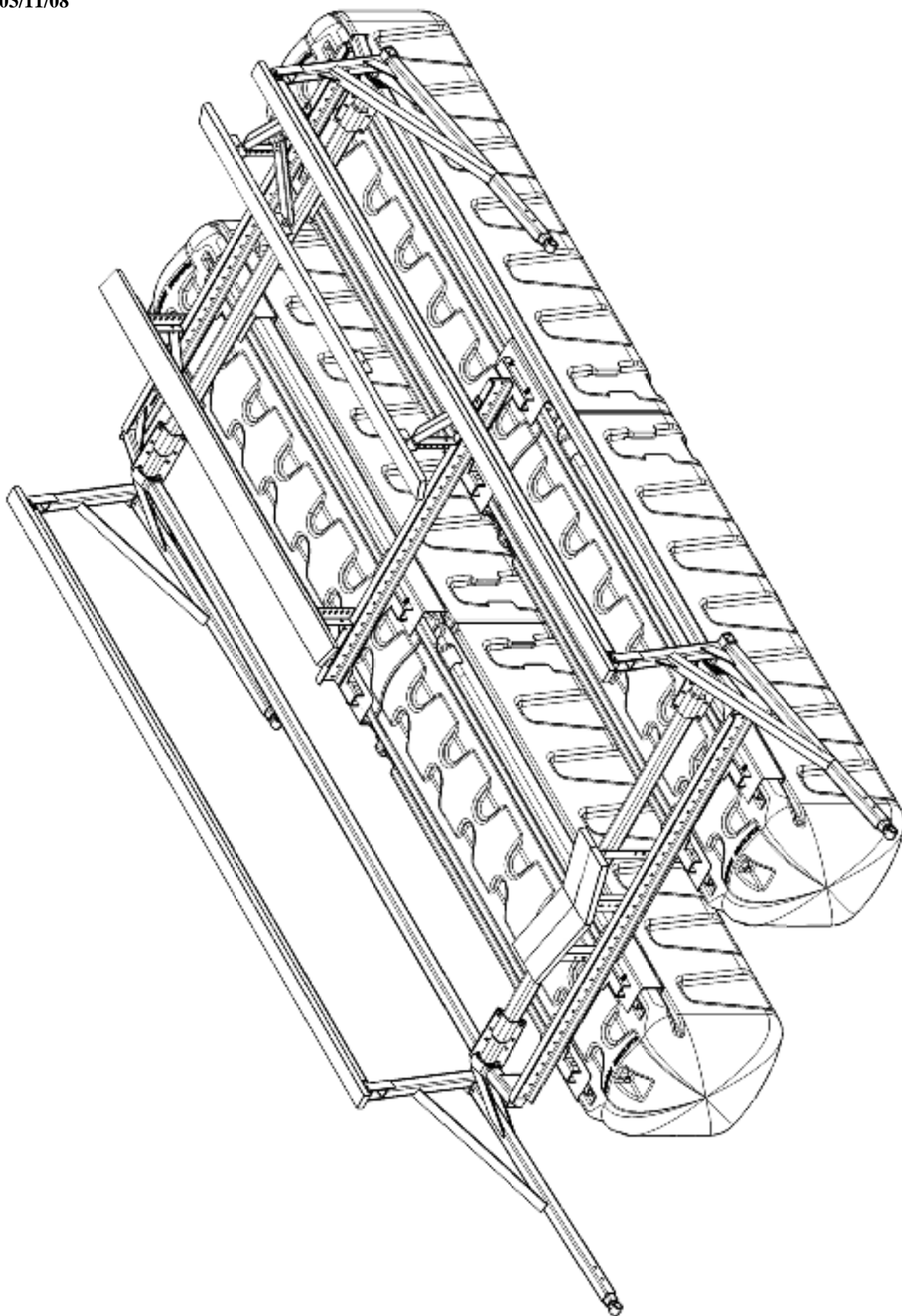
**Figure I-12,000 UL2-Model-16' Slip-Exploded**



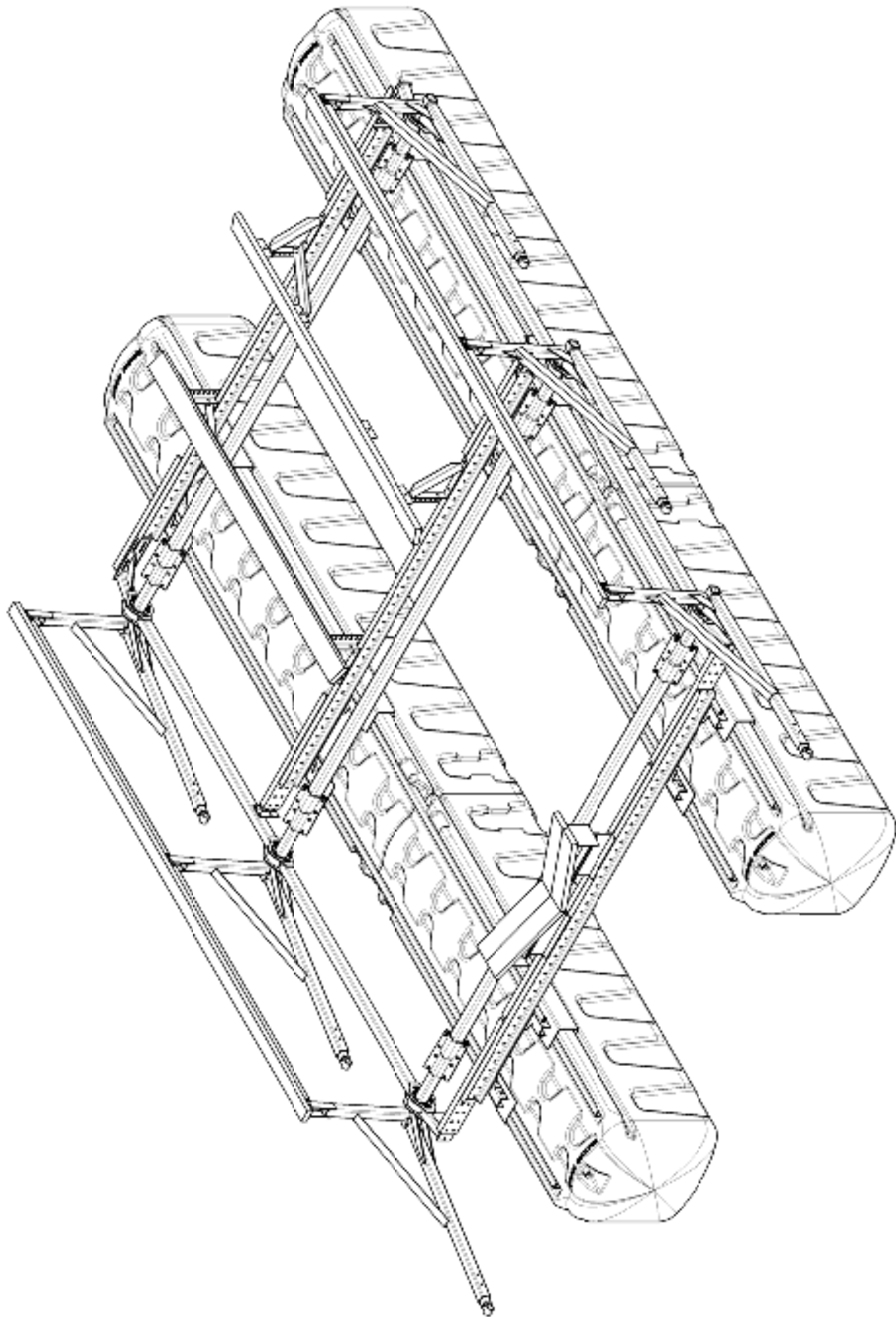
**Figure II-16,000 UL2-Model-16' Slip-6 Arm-Long Side Stiffener-Exploded**



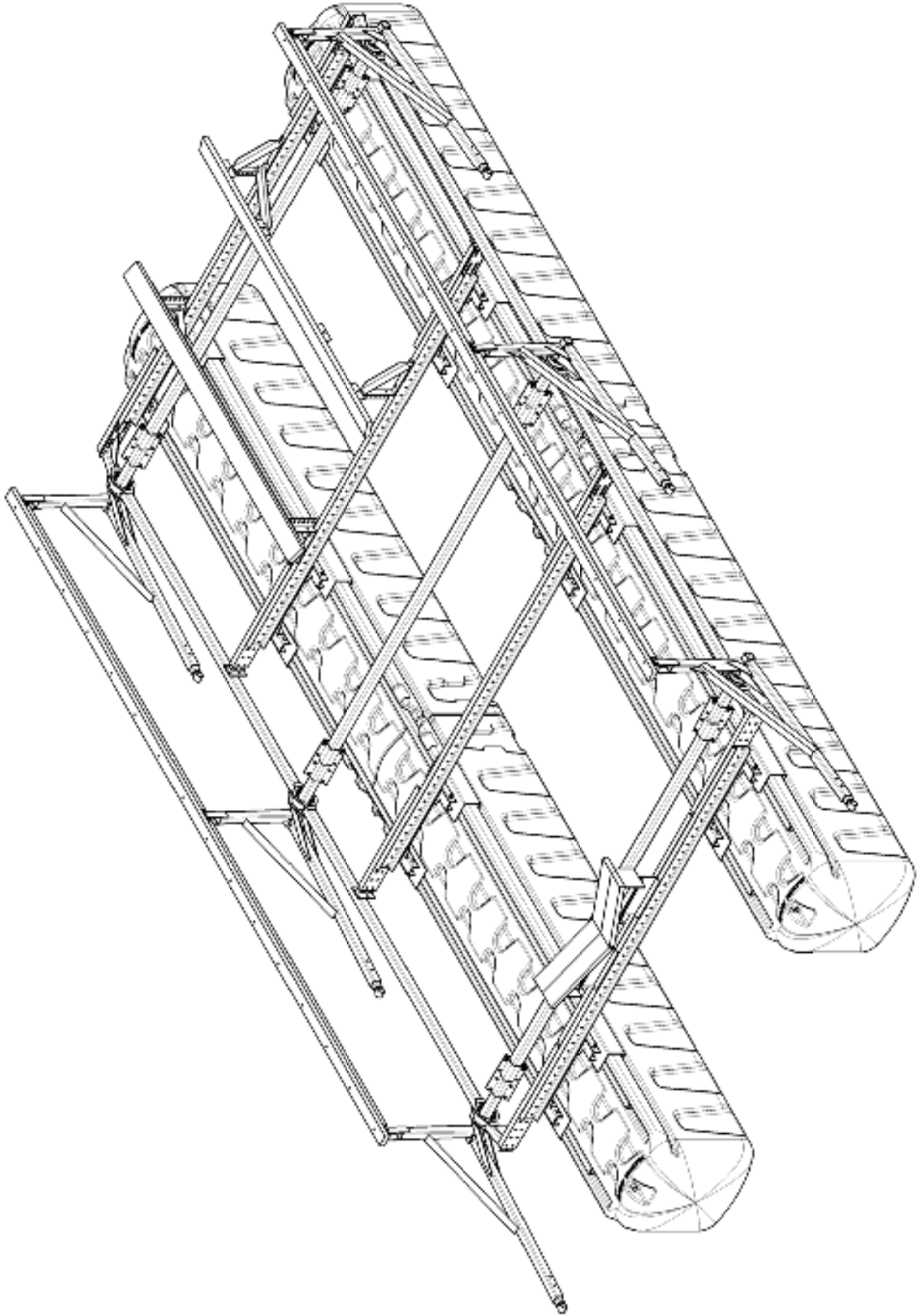
**Figure I-10,000 UL2-Model-12' Slip**



**Figure III-12,000 UL2-Model-16' Slip**

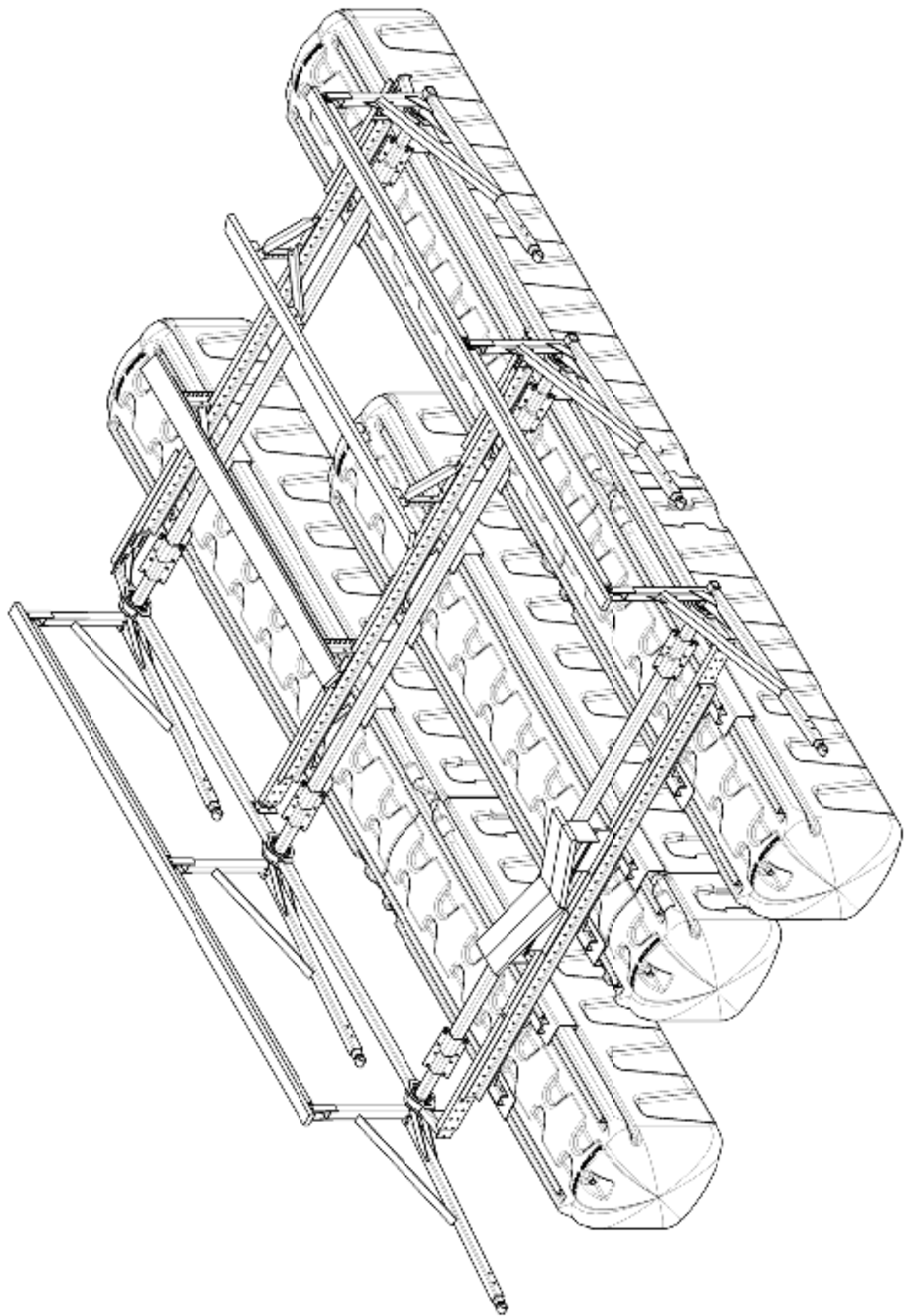


**Figure VI-14,000 L-Model-16' Slip-2T-6 Arm-Long Side Stiffener**

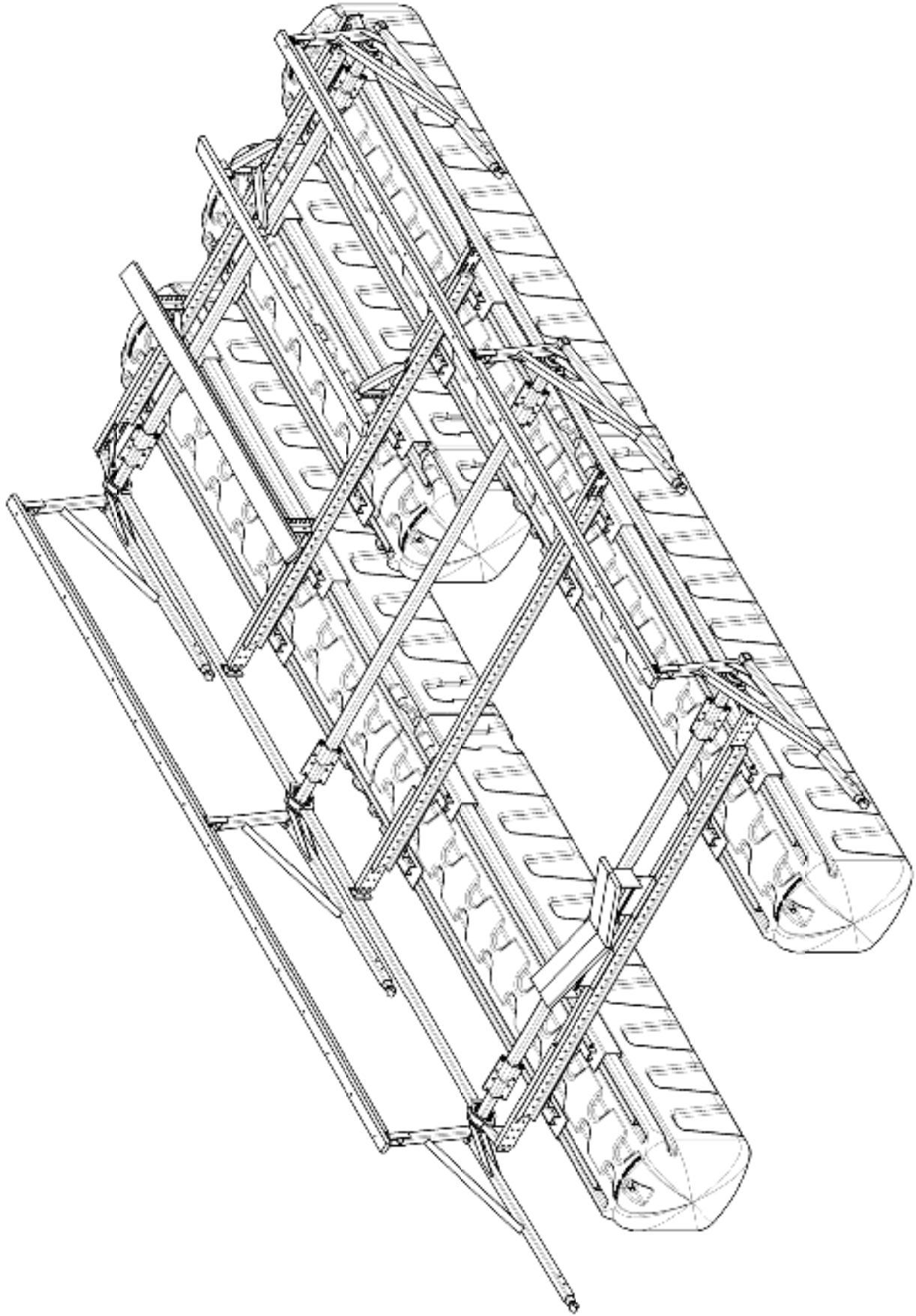




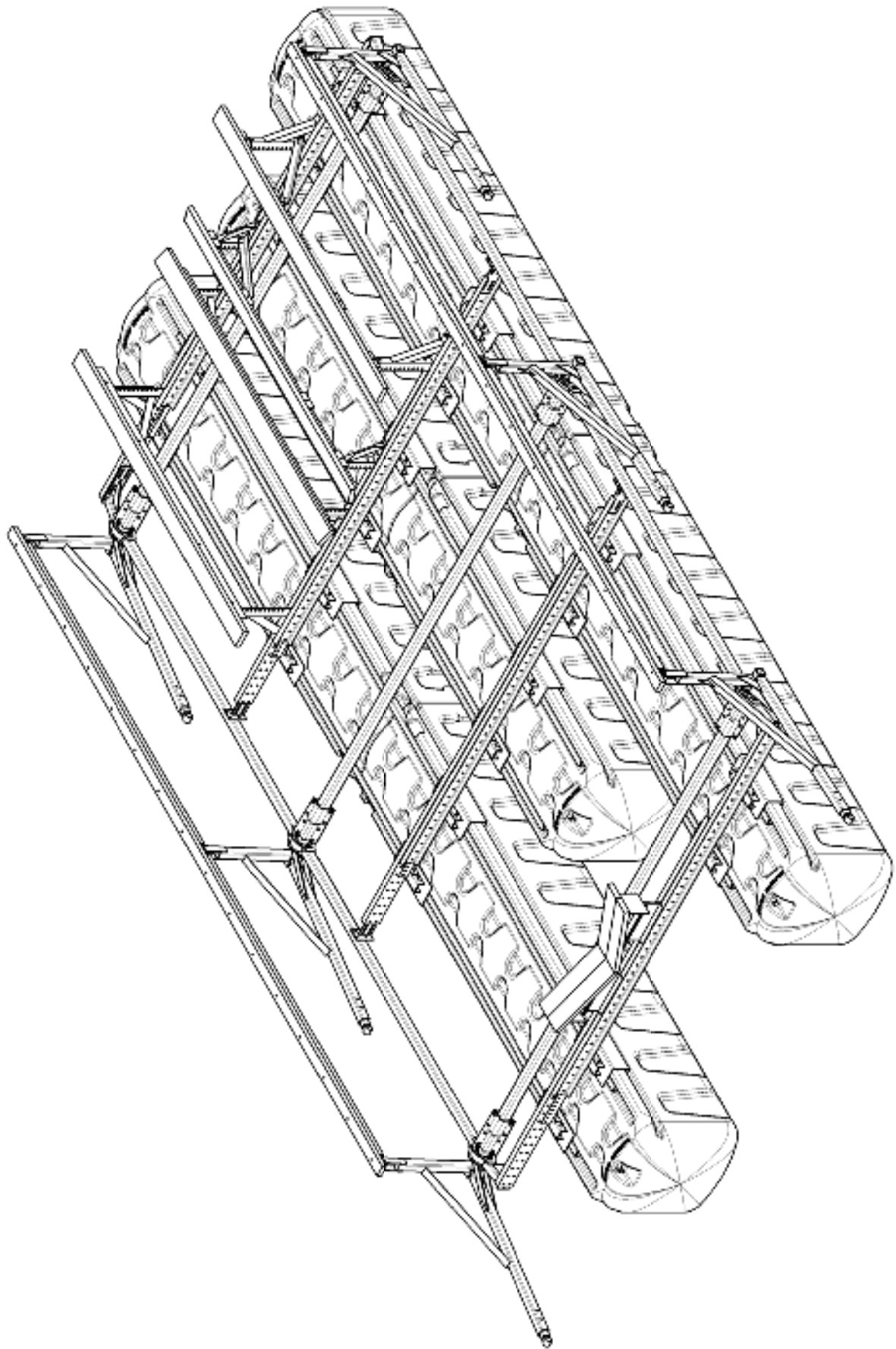
**Figure VII-16,000 UL2-Model-16' Slip-3T-6 Arm**



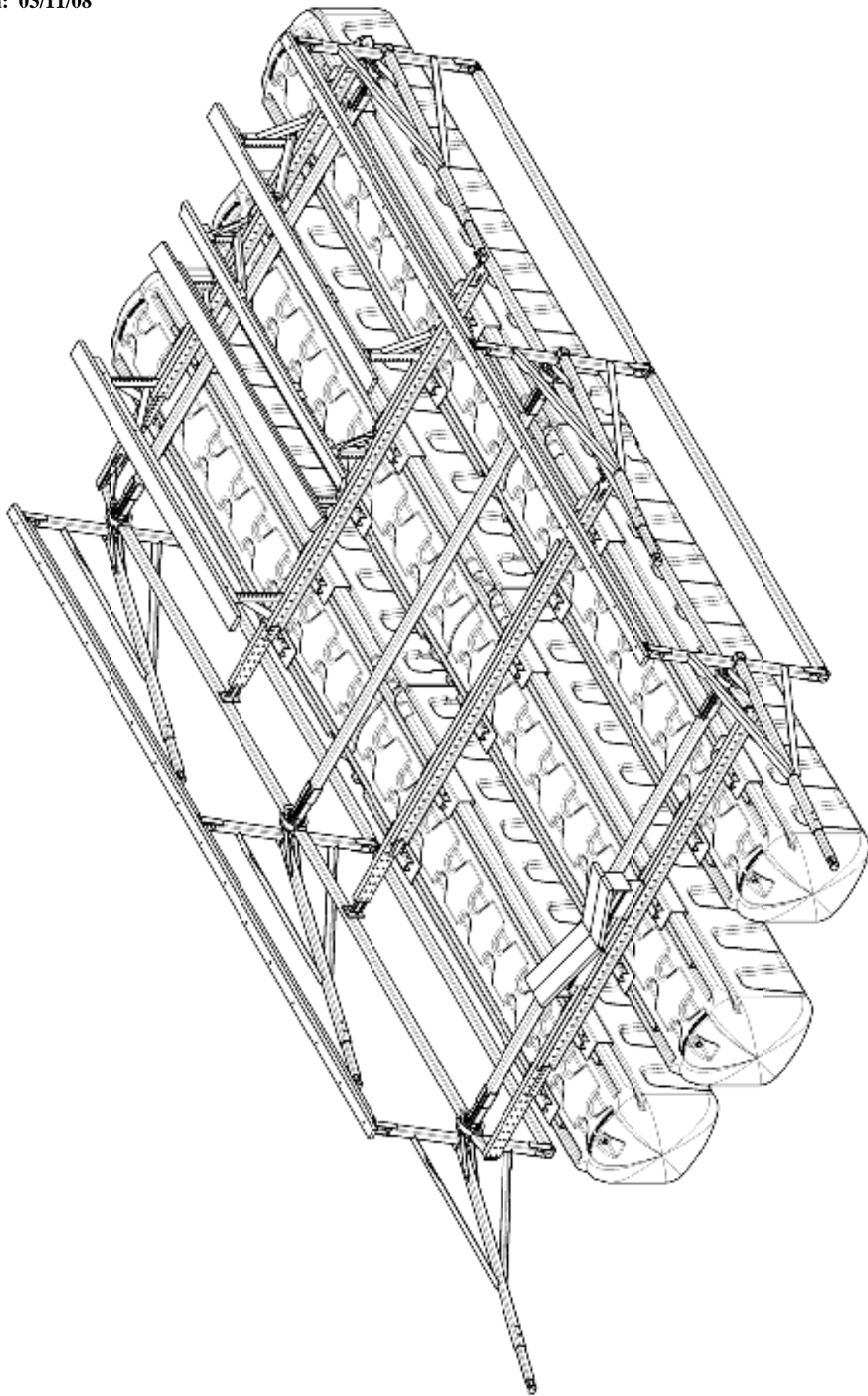
**Figure VIII-16,000 UL2-Model-16' Slip-3T-6 Arm-Long Side Stiffener**



**Figure VI-18,000 L-Model-18' Slip-3T-6 Arm**



**Figure VI-22,000 L-Model-18' Slip-3T-6 Arm**



# Getting Started

## Assembly Platform

Assembly should be done on a flat, level surface.

A flat-bed trailer is preferred, but a boat trailer with planks across the frame will work, provided that the assembly surface is flat and level

## Tools

A list of tools needed for hoist assembly is given below. In addition to these, tools for boat dock preparation, dock bumper removal, etc. may also be required.

- ◆ 1/2" Drive Ratchet (minimum 9 inch handle length for leverage)
- ◆ Electric Drill
- ◆ 3/4" Deep Well Socket
- ◆ 9/16" Deep Well Socket
- ◆ (2) 15/16" Open-end or Combination Wrenches
- ◆ 3/4" Open-end or Combination Wrenches
- ◆ 9/16 Open-ended or Combination Wrenchs
- ◆ (2) Come-A-Longs
- ◆ 5/16" Nut Runner or medium blade Slotted Screwdriver
- ◆ Medium Phillips Screwdriver
- ◆ Drift Pin or other hole aligning tool
- ◆ Large Hammer (3 or 4 lb. shop hammer is best)
- ◆ Knife or tool for cutting 1" rubber hose
- ◆ Measuring Tape

## Symbols & Conventions

All references to the LEFT or RIGHT are considered to be facing forward, as if driving a boat into the slip. Left is Port side, Right is Starboard side.

Parts are occasionally described as LEFT or RIGHT to identify their opposing construction, not location on the hoist.

All numbers in brackets [ ] after part names refer to the item numbers on the assembly illustrations within the manual.

# Site Preparation

## Verify

### The Boat Stall or Mooring Location.

- ♦ If the hoist is being installed in a commercial marina or multi-slip boat dock, confirm the correct mooring location for hoist and boat.

### The boat specifications.

- ♦ Make \_\_\_\_\_
- ♦ Model \_\_\_\_\_
- ♦ Length \_\_\_\_\_
- ♦ Beam \_\_\_\_\_
- ♦ Dry Weight of boat \_\_\_\_\_ lbs.
- ♦ Fuel: \_\_\_\_\_ gal. @ 6.6 lbs./gal. = \_\_\_\_\_ lbs.
- ♦ Water: \_\_\_\_\_ gal. @ 7.5 lbs./gal. = \_\_\_\_\_ lbs.
- ♦ Gear estimated @ 8% of boat's dry weight \_\_\_\_\_ lbs.
- ♦ Other equipment or weight \_\_\_\_\_ lbs.
- ♦ TOTAL LIFTING WEIGHT \_\_\_\_\_ LBS.

## Inspect

### The boat slip, dock or seawall to which the hoist will be installed.

- ♦ The structure should be of good, sturdy construction capable of maintaining a secure mooring for the hoist.
- ♦ The Dock Brackets, which will be mounted on the dock to provide hoist mooring, have a minimum gripping distance of 5 inches and a maximum gripping distance of 19 inches. Confirm that there is sufficient dock structure for the Dock Brackets.
- ♦ The Level Lift LG requires a minimum of **6 feet**, of water depth in which to operate. Confirm that there is sufficient water depth at all times of the year.
- ♦ Check for underwater obstructions, such as structural braces, cables, rocks, or sunken objects which will interfere with the hoist's operation.
- ♦ Check for overhead obstructions and confirm that sufficient clearance exists for the lifting of the boat.
- ♦ Confirm that electrical supply is available and sufficient for hoist operation.
- ♦ Confirm that sufficient dock space is available for mooring the hoist and boat.
- ♦ **CONFIRM THE BOAT HULL CONFIGURATION -**  
**Boats with a stepped hull design, or with through-the-hull apparatus, may require special positioning or alteration to the Hull Support Pads. Contact HydroHoist Engineering Department if proper hull support is in question.**

# Assembly Instructions

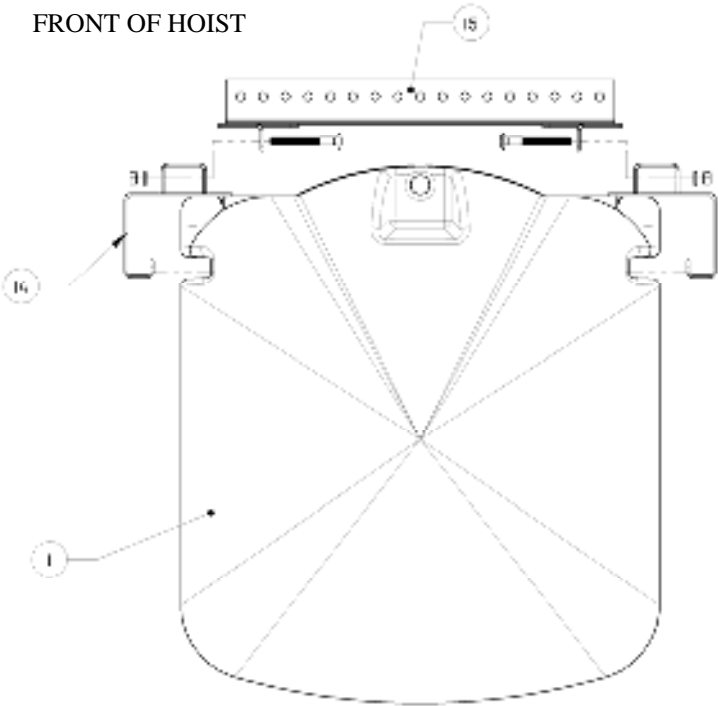
**Description**    The assembly instructions presented within this section represent the steps for assembling the UL2 10/12/14/16/18/22 HydroHoist Boat Lift. It is recommended that before assembling the components, you read and understand each procedural step to become familiar with how all parts are assembled.

**Tightening of Fasteners**    In the assembly procedures, DO NOT TIGHTEN fasteners until directed to do so. Insert bolts with appropriate washers, lock washers and nuts, but, unless otherwise instructed, leave the fasteners loose to allow movement of the parts for adjustment during assembly.

BOLT SIZE	FOOT POUNDS OF TORQUE
1/4-20	5 FT. LBS.
5/16-18	11 FT. LBS.
3/8-16	18 FT. LBS.
7/16-14	28 FT. LBS.
1/2-13	39 FT. LBS.
9/16-12	51 FT. LBS.
5/8-11	83 FT. LBS.

**Tank Band Assembly**  
*(front and rear of hoist) Fig. A*

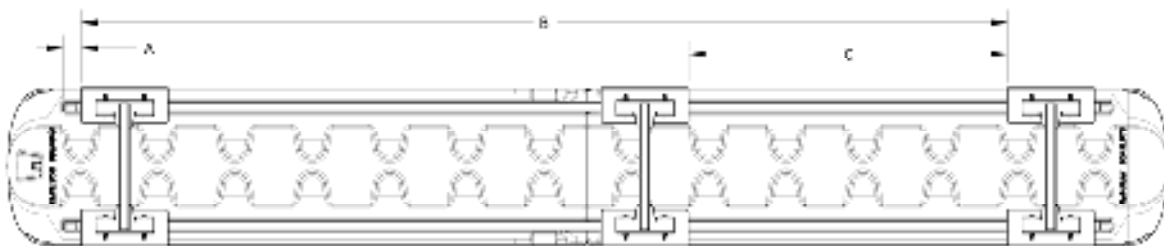
Step	Procedure
2.1	<p>Align the Tanks [1] parallel with each other and with the Air Injection Nipple to the front of the hoist .</p> <p>Refer to Fig. A for correct Tank Band [14-15] location, and loosely install the Tank Bands onto the tanks. Fasteners per band: (4ea) 1/2" x 4 1/2" carriage bolt, nut &amp; lockwasher.</p> <p><i>Note 1: Dimensions are referenced from the front edge (Nipple End) of the tank tube(9) tray.</i></p> <p><i>Note 2: The open side (inside angle) of the Upper Tank Bracket [15] angle is to the front of the Tanks.</i></p> <p><i>Note 3: Stern Loading installations - Refer to Section 7 Supplement</i></p>



**Tank Band Assembly**  
(front and rear of hoist) Fig. A

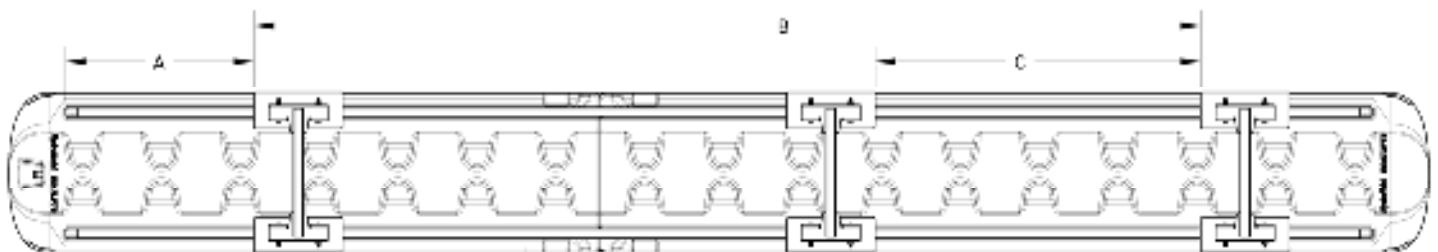
UL2 10,000 TANK BRACKET SETTINGS

A=3.5"  
B=192"  
C=66"



UL2 12,000 TANK BRACKET SETTINGS

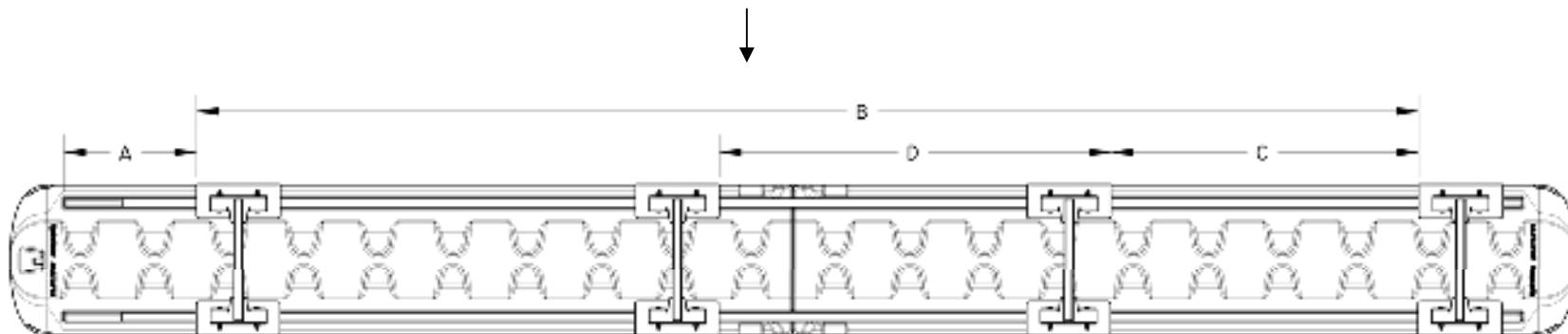
A=38"  
B=192"  
C=66"





UL2 14,000 TANK BRACKET SETTINGS

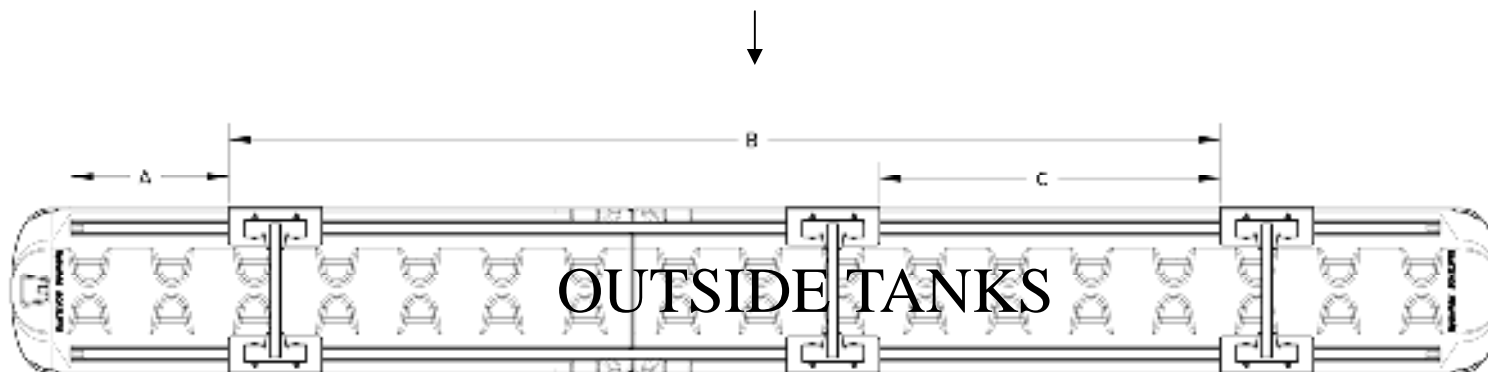
A=4"  
B=262"  
C=66"  
D= 84"



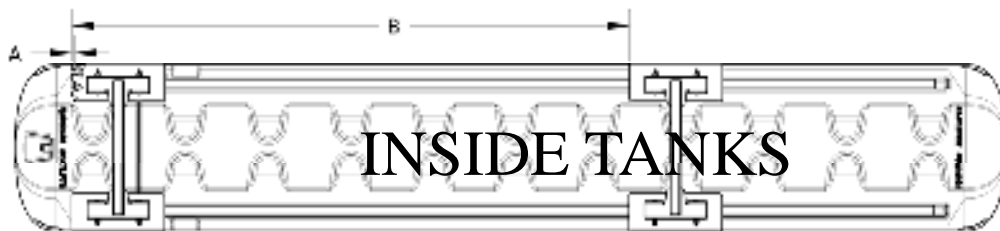
UL2 16,000SS TANK BRACKET SETTINGS

OUTSIDE TANKS

A=30.5"  
B=192"  
C=66"



OUTSIDE TANKS



INSIDE TANKS

UL2 16,000SS TANK BRACKET SETTINGS

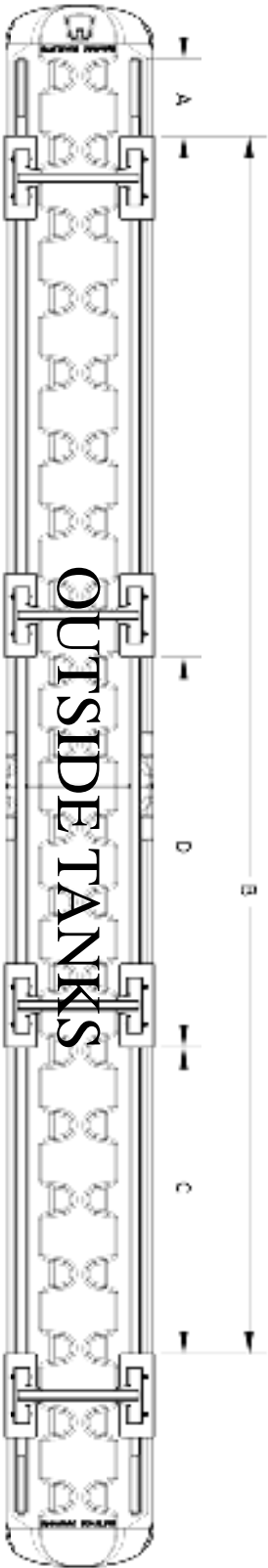
INSIDE TANKS

A=.5"  
B=108"

UL2 16,000L.S TANK BRACKET SETTINGS

OUTSIDE TANKS

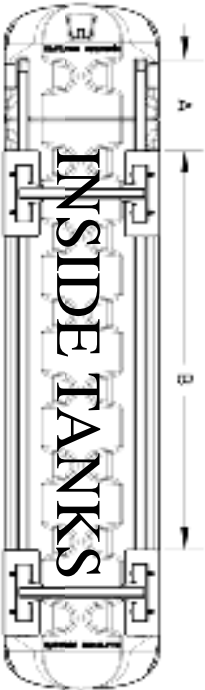
- A=16.5"
- B=262"
- C=66"
- D=84"



UL2 16,000L.S TANK BRACKET SETTINGS

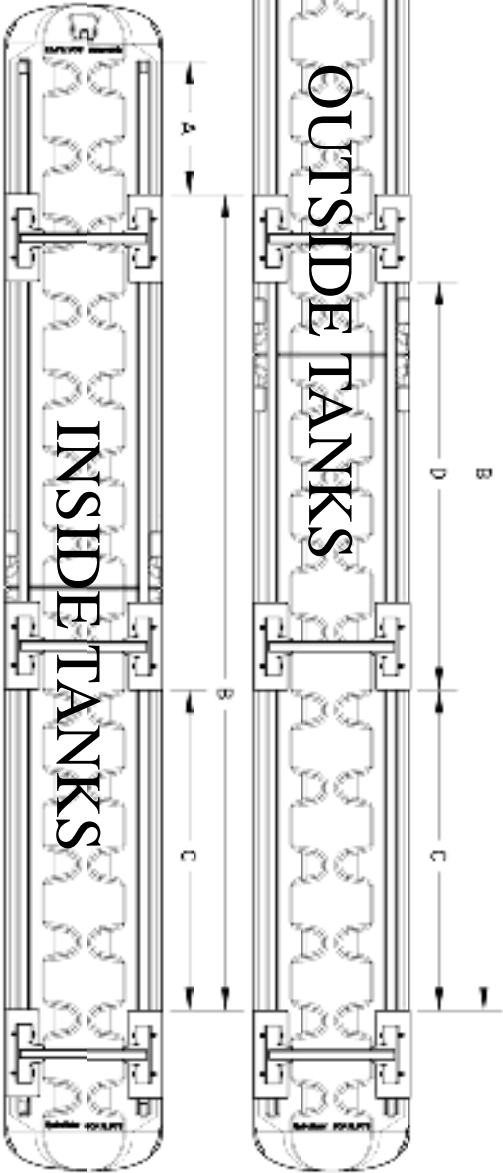
INSIDE TANKS

- A=19"
- B=84"



UL2 18,000 TANK BRACKET SETTINGS

INSIDE TANKS  
A=27.5"  
B=168"  
C=66"



UL2 18,000 TANK BRACKET SETTINGS

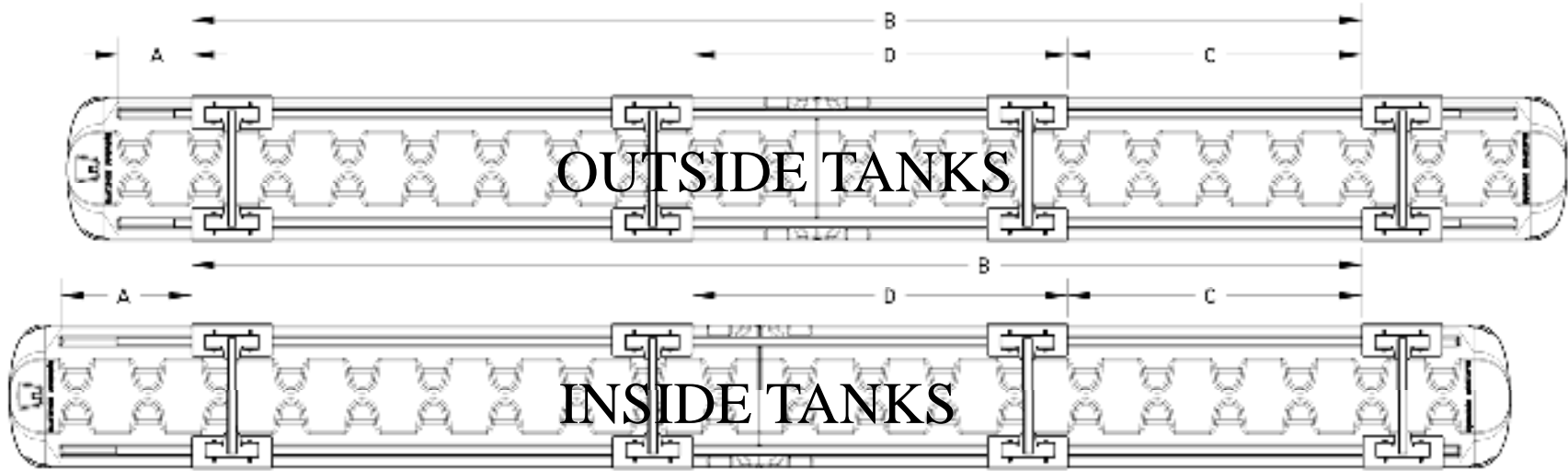
OUTSIDE TANKS  
A=29.5"  
B=262"  
C=66"  
D=84"



UL2 22,000 TANK BRACKET SETTINGS

OUTSIDE TANKS

A=16.5"  
B=262"  
C=66"  
D=84"



UL2 22,000 TANK BRACKET SETTINGS

INSIDE TANKS

A=29.5"  
B=262"  
C=66"  
D=84"



### IMPORTANT

The front End Channel is reinforced with a short section of channel at certain widths for certain capacities. Refer to Parts list to determine if your capacity and slip width call for a "back up channel".

#### Keel Spanner Assembly Fig. C

Step	Procedure
4.1	<u>If Keel Spanners [16A] are used</u> , adjust them an equal number of holes on both sides to approximately 28" to 34" narrower than the slip width and attach to Front & Rear End Channel [16]. Fasteners per Keel Spanner: (4 ea.) 1/2" x 1-1/2" bolt, nut & lockwasher.

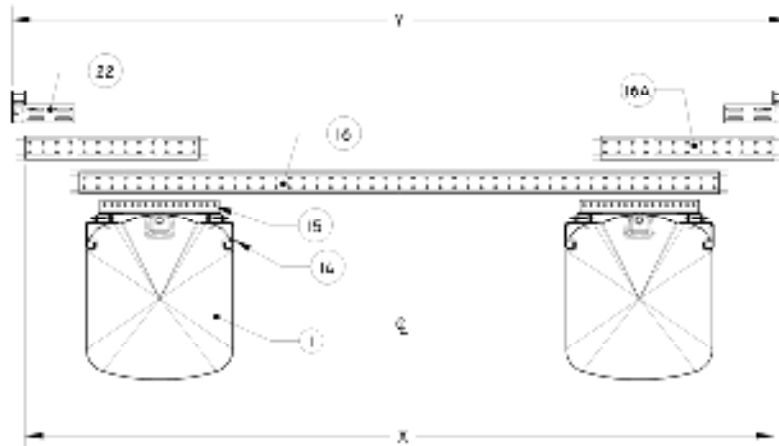
Fig. C

Y = 26" narrower than the slip width with Standard arms(4521900/4522000).

Y = 38" narrower than the slip width with Mega arms(4522100).

X = 28" to 34" narrower than the slip width with Standard arms(4521900/4522000).

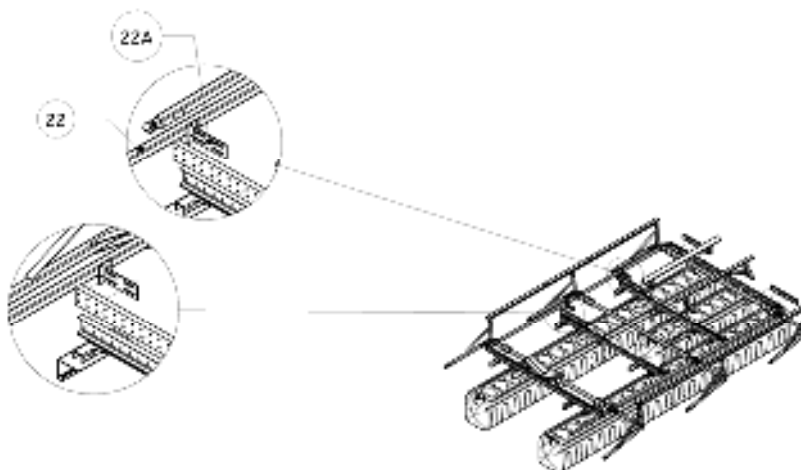
X = 46" narrower than the slip width with Mega arms(4522100).



#### Side Stiffener Assembly Fig. D

Step	Procedure
5.1	Install Side Stiffeners [22] with the ends angled down (bearing cage/ring up) to each side of the hoist between the Front & Rear End channels [16]. <i>Measure the distance from outside edge to outside edge of Side Stiffeners at the front and rear to make sure both are the same width and 26" (+-1 inch) narrower than the slip width.</i> Fasteners per Side Stiffener: (8 ea.) 1/2" x 2" bolt, nut, flatwasher & lockwasher. <b>NOTE:</b> <ul style="list-style-type: none"> <li>Use flatwasher over slotted holes.</li> </ul>
5.2 6ARM	On all 6 Arm lifts the middle frame (or frames) must have a Clamp Side Stiffener [22A] attached on both sides. The Clamp Side Stiffener bolts to the keel spanner in the same manner as the side stiffener. Then two side plates are used to attach the Clamp Side Stiffener to the Side Stiffener. <b>THIS IS VERY IMPORTANT</b>

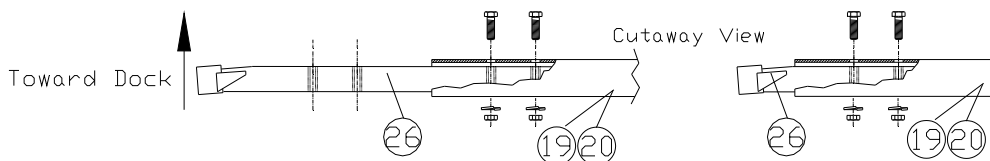
Fig. D



**Arm Extension  
Assembly**  
Fig. E

Step	Procedure
6.1	Install Bolt Arm Extensions [26] into Stabilizer Arms [19-20]. Fasteners per Arm: (2 ea.) 1/2" x 3-1/2" bolts, lock nuts & lockwashers. <b>Tighten NOW to 75 ft. lbs.</b> <ul style="list-style-type: none"> <li>Arm extension is achieved when bolted in holes as shown in Fig. E. Extended position is used <u>only</u> when maximum draft is needed for boat to pass over hoist, such as when backing boat over hoist for lifting. <b>Normal installation uses holes closest to Pivot End.</b></li> </ul>

Fig. E



**EXTENDED POSITION**

Vertical Travel (draft) = 56"  
Horizontal Travel (swing) = 26-3/4"

**NORMAL POSITION**

Vertical Travel (draft) = 46-5/8"  
Horizontal Travel (swing) = 22-1/4"

**Stabilizer Arm  
Assembly**  
Figs. F1-F4

Step	Procedure
7.1	Install Square Hole Bushing [21] over Torsion Leg of Stabilizer Arm [19-20]. Slide Bushing [21] fully against washer of Stabilizer Arm.
7.2	Insert each Stabilizer Arm [19-20] through the Bearing Cage (Ring) of the Side Stiffener [22]. For part numbering and reference, the Stabilizer Arms [19-20] are identified as Right and Left. The Right Arm [19] is identified with a welded dot placed on the inside face of the corner brace. The Left Arm [20] has no welded dot. The Arms are universal and either right or left can be used on either side of the lift - see note below.

**NOTE**

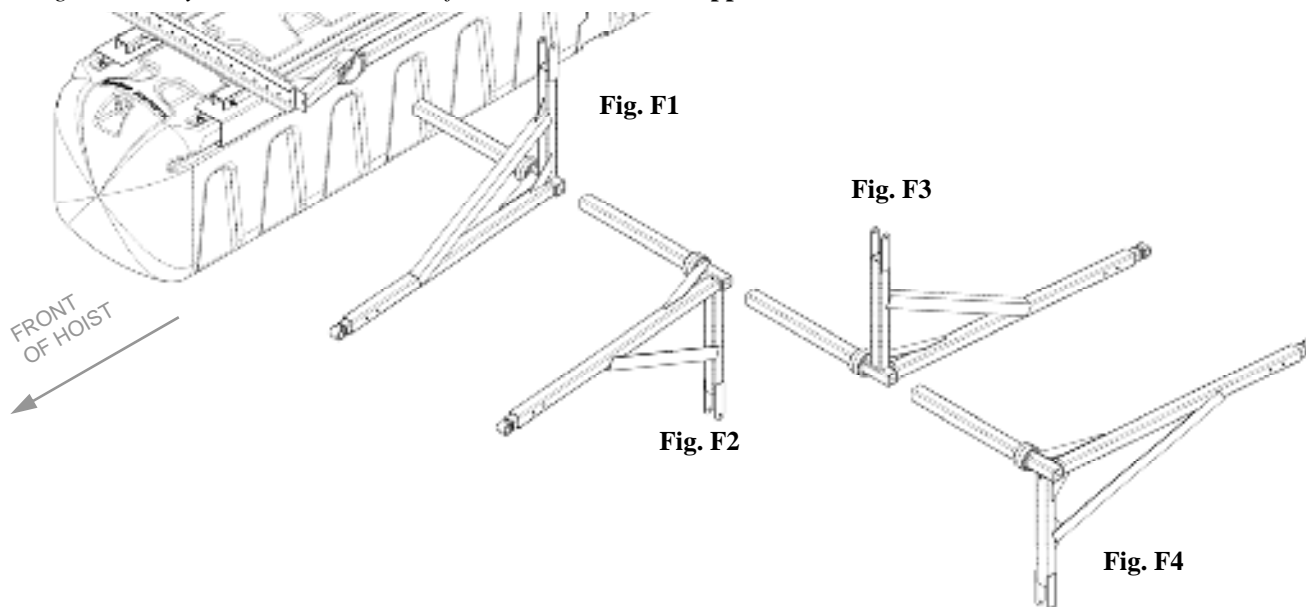
Stabilizer Arms [19-20] may be assembled in FOUR POSITIONS:

**Fig. F1** Arms FORWARD, Pitmans BOATSIDE - Most common installation.

**Fig. F2** Arms FORWARD, Pitmans TANKSIDE - For installations where the boat beam is greater than the slip width less 27", or when decking or walkways are installed on hoist frame.

**Fig. F3** Arms AFTWARD, Pitmans BOATSIDE - Hoist will swing forward ( toward front of slip). For installations where slip length requires maximum inclusion of tanks inside slip, and to provide minimum distance between dock header and boat stern for stern loading boats - See Section 7 Supplement

**Fig. F4** Arms AFTWARD, Pitmans TANKSIDE - Same as note #3 with the boat beam greater than the slip width less 27", or when decking or walkways are installed on hoist frame -See Section 7 Supplement



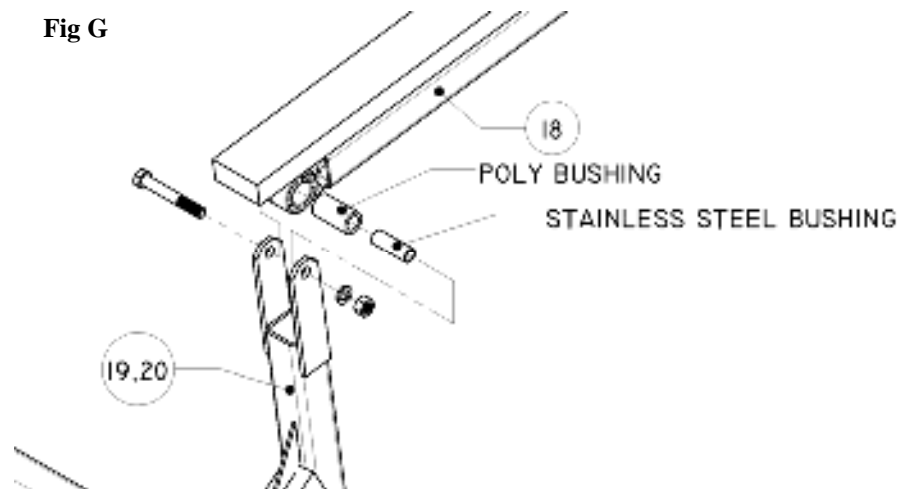
**Stabilizer Arm  
Assembly**  
*Cont'd.*

Step	Procedure
8.1	Slide each Torsion Bar [17] over the Torsion Leg of each Stabilizer Arm [19-20] making sure that it is an equal distance over each Leg. <i>Tip: Mark the Center of the Torsion Bar (Example: 5' 4" on a 10' 8" Bar), mark the Center of the End Channel, then align the Center marks.</i>
8.2	Temporarily chain the Rear* Stabilizer Arms to the level position: <ol style="list-style-type: none"> <li>1. Raise one Rear Stabilizer Arm to horizontal.</li> <li>2. Using a Chain from Dock Bracket Parts Bag No. 6917200, form a loop around the Side Stiffener [22] and the end of the Stabilizer Arm.</li> <li>3. Fasten the loop by bolting the chain links together with a 3/8" x 2-1/4" bolt, <u>double-nuts, &amp; double flatwashers</u>.</li> <li>4. Repeat on opposite side Rear Arm, making the two Arms parallel to each other.</li> </ol> <i>This is a temporary attachment, used to assist in further assembly and to transport the hoist to the boat dock - Although it is temporary, it must be secure enough to prevent the arms from lowering accidentally.</i> <p>*Chain Front Stabilizer Arms if installed AFTWARD.</p>

**Pitman Assembly**  
*Fig. G.*

Step	Procedure
9.1	Follow this step, one end at a time for each Pitman. (if it is 6 arm hoist, do middle hole last) Insert Stainless Steel Bushing into Bushing Sleeve at end of Pitman [18]. Place Pitman [18], with Bushing inserted, into clevis of Stabilizer Arms [19-20] rotate Stabilizer Arm into position if necessary to mate parts. Connect assembly with bolt. Fasteners per Pitman: (2) 5/8" x 4" bolt, nut & lockwasher. <b>Tighten NOW to approximately 75 ft.-lbs. of torque.</b>

**Fig G**



**Note...**

The parts installed in the next steps may have to be moved to better fit the bottom of the boat after it has been lifted. Accurate measurements of the boat's hull before assembly and careful attention to these steps may prevent repositioning the parts over the water.

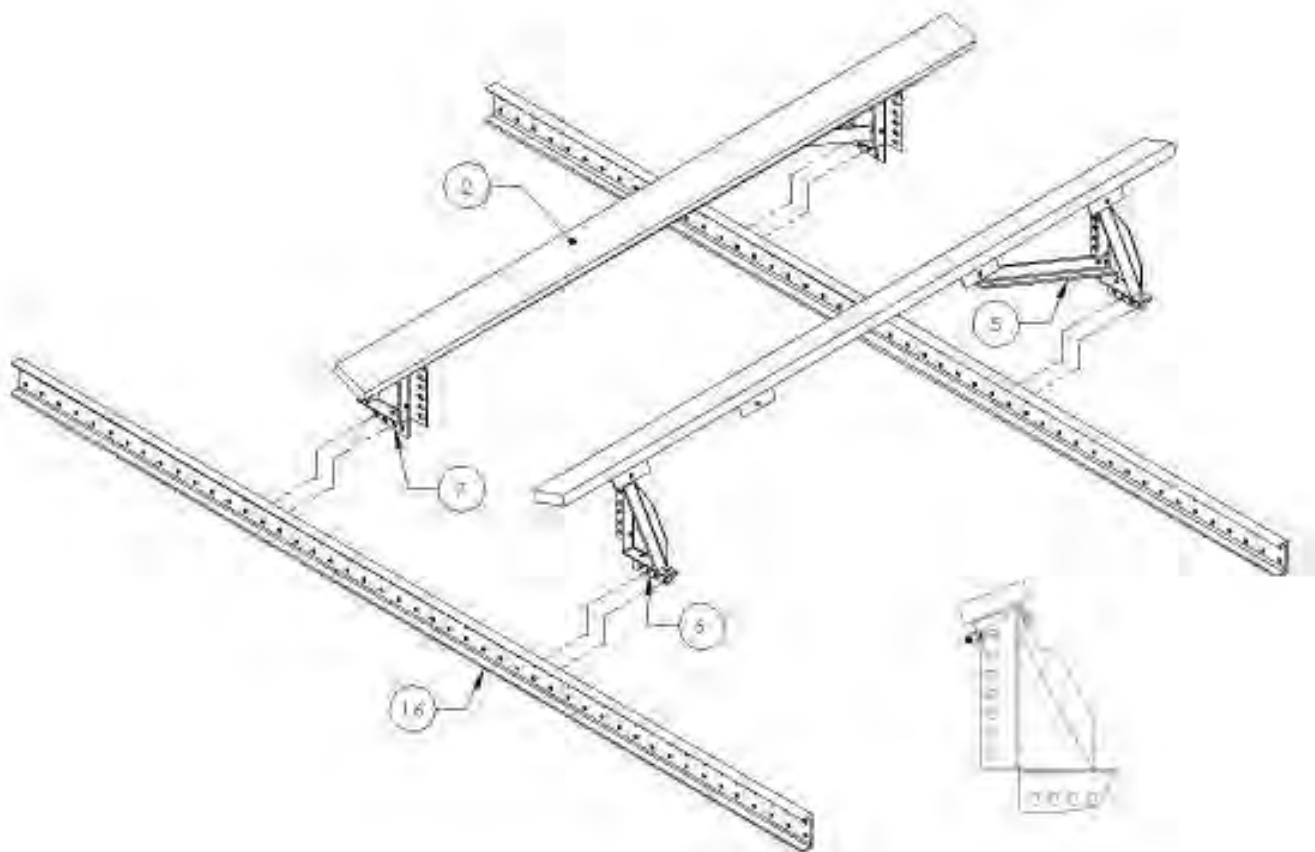
**Positioning...**  
*Fig. H*

If the boat hull is unable to be measured prior to hoist assembly, space the Hull Support Columns [6-7] 36" to 42" apart. Typically, the longer leg of the columns [6-7] are positioned vertically to lift the boat higher above the water, however the shorter leg of the column may be positioned vertically to accommodate a boat with a deeper draft.

**Hull Support  
 Assembly**  
 Fig. H

Step	Procedure
10.1	Attach two Hull Support Columns [6-7] to the center End Channel [16] and two Hull Support Columns to the rear End Channel. Attach the columns with the flat side of the angles facing to the rear of the hoist assembly, and the brace angle of the column outboard. Fasteners per Column: (2ea) 1/2" x 1-1/2" bolt, nut & lockwasher.
10.2	Attach Hull Support Pads [2] to the tops of the front and rear Hull Support Columns [6-7]. The pad's long angle iron frame member should be <i>inboard</i> so that its weight keeps the pad tilted inboard, toward the boat hull. Fasteners per Pad: (2ea) 1/2" x 5" bolt, nut & lockwasher.
10.3	Install the Hull Support Pad Braces [5] between the Hull Support Pads [2] and the Hull Support Columns [6-7]. <i>The flat side of the braces face inboard.</i> Fasteners per Brace: (1ea) 1/2" x 1-1/2" bolt, nut & lockwasher at Column; (1ea) 1/2" x 5" bolt, nut & lockwasher at Hull Support Pad.
10.4	<b>Tighten</b> the 5" Hull Support Pad bolts only enough to flatten the lockwashers. <b><i>Do not tighten any other bolts at this time.</i></b>

**Fig. H**

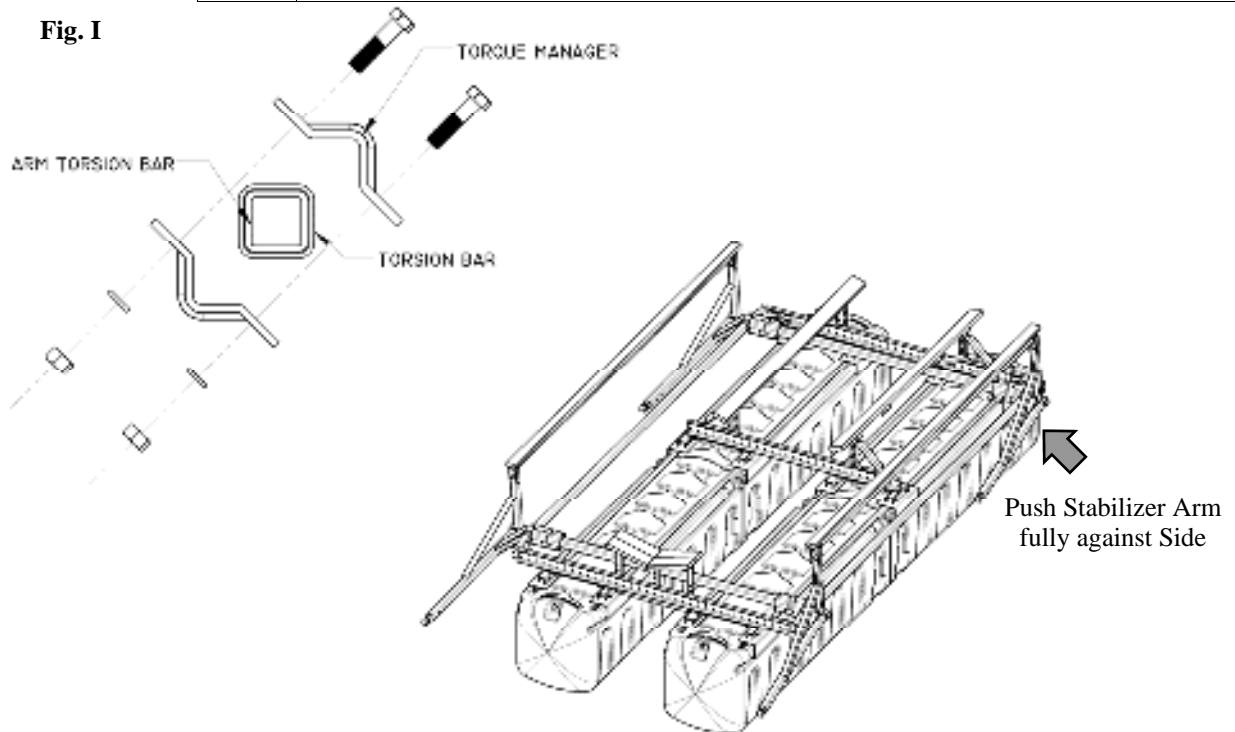




**Torsion Bar Clamps**  
Fig. I

Step	Procedure
11.1	Push all four Stabilizer Arms [19-20] fully against the Side Stiffener [22] so that there is no lateral clearance between Side Stiffener, Square Hole Bushing, and Stabilizer Arm.
11.2	Assemble the Torque Managers [25] at each end of each Torsion Bar [17].- see Fig. I. Fasteners per Torsion Bar (8 ea) 5/8" x 2-1/2" bolt, nut & lockwasher.
11.3	With the Stabilizer Arms parallel to each other, <b>TIGHTEN THE TORSION BAR CLAMPS AS TIGHT AS POSSIBLE.</b>

**Fig. I**



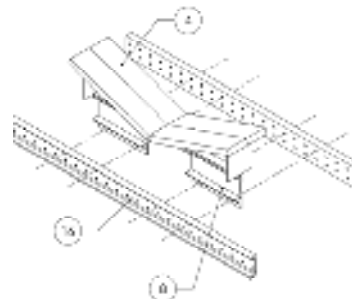
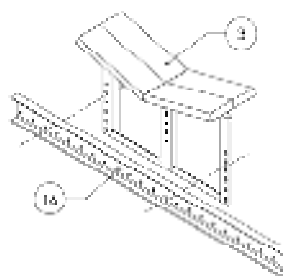
**"V" Pad Assembly**  
Fig. J

Step	Procedure
12.1	<b>FOR PT. No. 5029000 - 32" BASE STYLE.</b> Center "V" Pad [3] on the front End Channel [16], estimate the needed height and attach. Fasteners (6 ea) 1/2" x 1-1/2" bolt, nut, lockwasher, & flatwasher over slotted holes.
12.2	<b>FOR PT. No. 52016000 - 10/20/30 C STYLE.</b> 1. Attach Risers [8] to "V" Pad [4]. Fasteners: (4 ea) 1/2" x 1-1/2" bolt, nut & lockwasher. 2. Center assembly on the front (dual) End Channels [16] and attach. Fasteners: (4 ea) 1/2" x 1-1/2" bolt, nut & lockwasher.

**Fig. J**

32" BASE STYLE

10/20/30 C STYLE

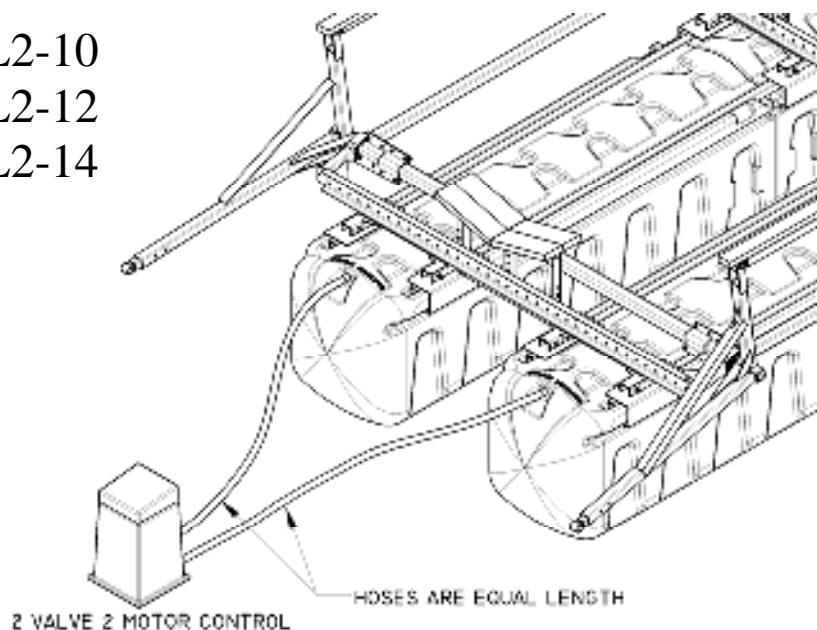


**Hose Assembly**  
*Fig. K*

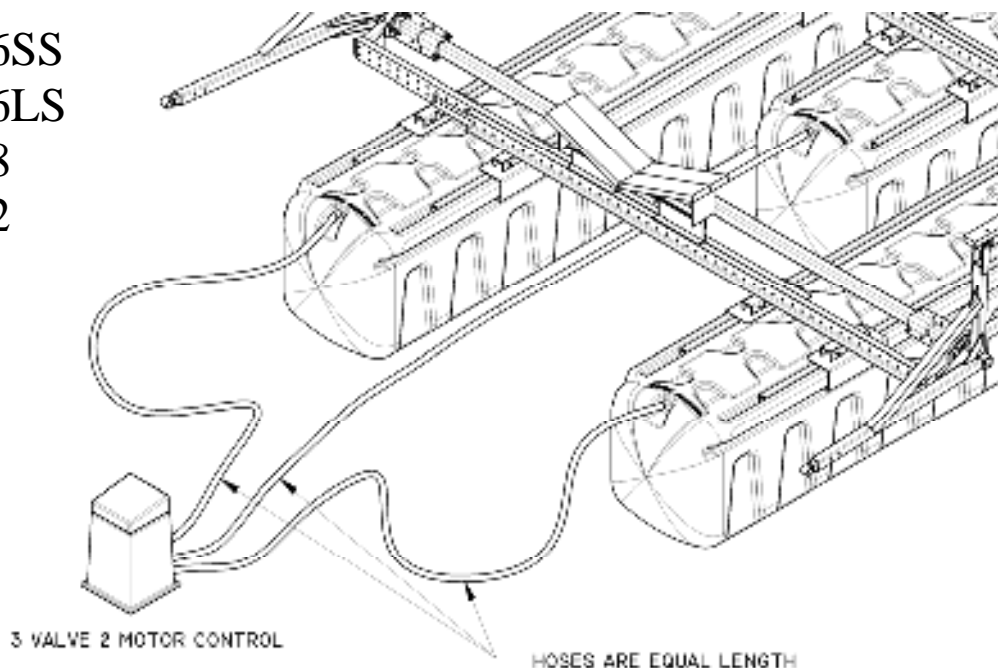
Step	Procedure
15.1	See Fig. K for proper assembly of Hose Sets, application of Hose Clamps and PVC Tees. 1. <b>UL2-10/UL2-12/UL2-14</b> - From the 30 ft. roll of Hose supplied, make (2) equal sections of Hose. <b>UL2-16SS/UL2-16LS/UL2-18/UL2-22</b> - From the 75 ft. roll of Hose supplied, make (3) equal sections from the Hose.
15.2	Attach Hoses to Tanks using Hose Clamps.

**Fig. K**

UL2-10  
 UL2-12  
 UL2-14



UL2-16SS  
 UL2-16LS  
 UL2-18  
 UL2-22



## Final Steps

Step	Procedure
16.1	Using a Ratchet Puller ("Come-A-Long") connected near the ends of the front Stabilizer Arms [ 19-20], pull the front Stabilizer Arms inboard approximately three inches. <i>Note: Attach the hooks of the Come-A-Long near the end of the Arm, but NOT through the mounting hole at the Arm's end. In assembling the hoist, the Arms are slightly WIDER than the Dock Bracket attachment points, the purpose of pulling the Arms inboard, is to allow the Arm ends to position between the Dock Bracket.</i>
16.2	Repeat Step 16.1 above with the rear Stabilizer Arms. <i>Note: The cable of the Come-A-Long should extend <u>under</u> the Side Stiffener - caution should be taken to protect the Tanks from possible damage by the cable.</i>
16.3	Secure the Control Unit Frame to the V Pad and make sure all Valves are closed in the Dry-Dock position.
16.4	Attach a towing line to the rear End Channel. Tank Plugs are recommended for all tows.
16.5	Slowly tow the hoist to its mooring location.

# Installation

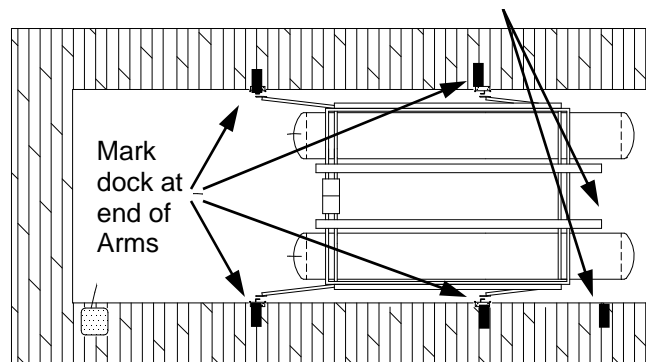
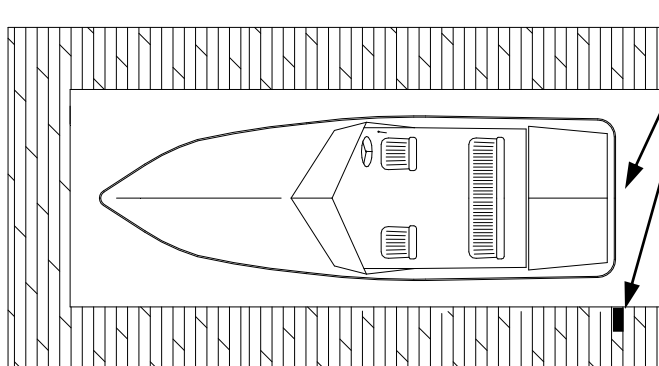
## Selecting Position for Boat & Hoist (BOW FIRST LOADING) Fig. K

Step	Procedure
1.1	<b>BOW FIRST LOADING ONLY - For STERN LOADING instructions See Section 7 Supplement.</b> Pull the <b>boat</b> into the boat stall so that the bow can be easily reached from the front of the slip, and allow at least 18 inches of space at the dock level between the dock and the boat in the event the boat may need to be later moved in final positioning.
1.2	With the boat in the desired location, place a mark on the dock where the boat's transom is positioned. <b>Note:</b> Do not include extensions to the hull such as swim platforms; the transom mark should reflect the location of the the <b>end of the bottom of the hull</b> .
1.3	Remove the boat and pull the <b>hoist</b> into the berth.
1.4	Position the hoist along side the dock and align the <b>rear end</b> of the Hull Support Pads with the <b>transom mark</b> on the dock.  With the hoist held stationary at this position, place <b>marks</b> on the dock at the location of the <b>Stabilizer Arm attachment points</b> .

Fig. K

Mark dock at boat's transom

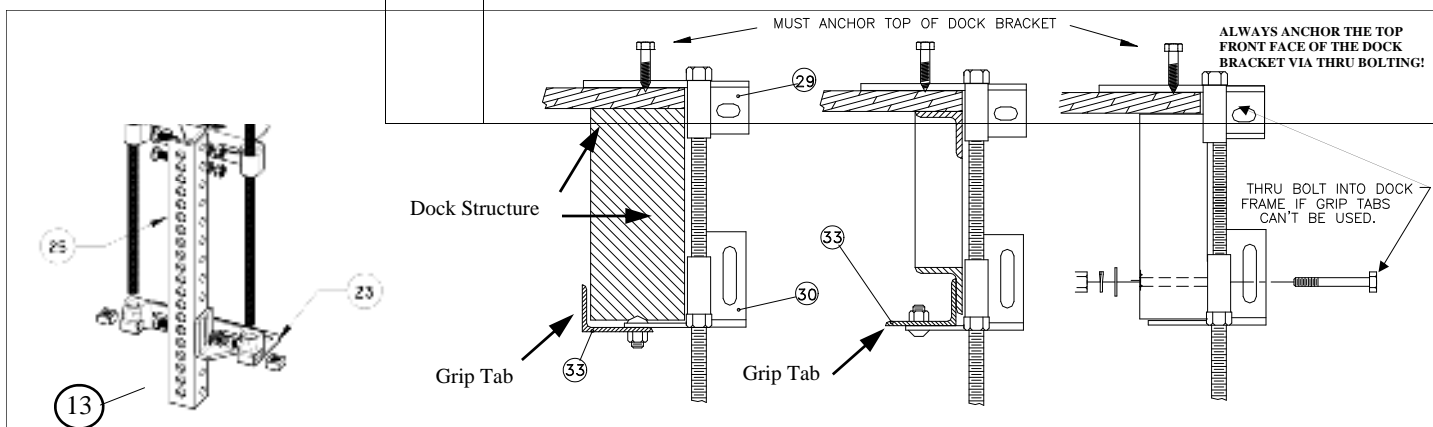
Position Hull Pads at transom mark



## Dock Bracket Attachment Fig. L

Step	Procedure
2.1	Attach Dock Brackets with the holes of the Vertical Angles [32] aligned with the marks on the dock. Note: Grip Tabs [33] must be installed to reduce inboard movement of the Lower Dock Bracket Angle [30]. If Grip Tabs are not applicable, it will be necessary to (later) <b>through-bolt</b> the Dock Bracket to the dock structure to eliminate inboard movement. Fasteners: (2 Grip Tabs per Dock Bracket - 2 ea 1/2" x 1" Carriage Bolt & nut.
2.2	Tighten the 20" Dock Bracket Bolts [31] just enough that the Dock Brackets will stay in position - <i>do not fully tighten at this time, further horizontal adjustment may be needed later.</i>

Fig. L

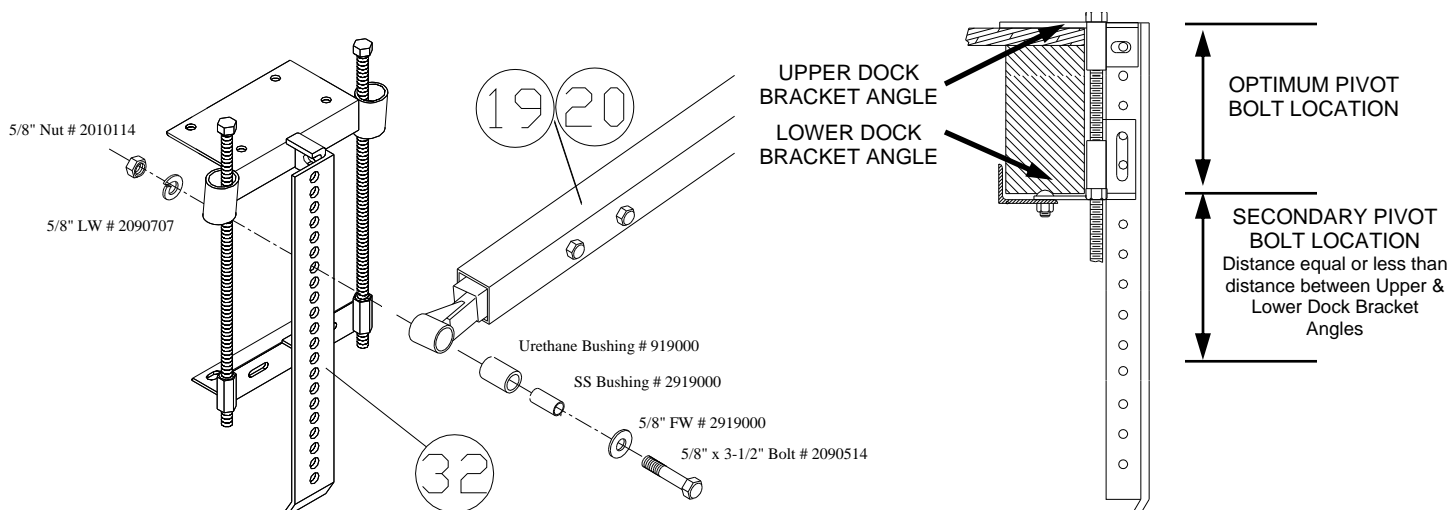


## Lift Attachment

Fig. M

Step	Procedure
3.1	Float hoist into position with the arms lined up with the Dock Brackets.
3.2	Loosen <b>front</b> "come-a-long" <u>only enough</u> to allow the <b>front</b> Stabilizer Arms [19-20] to touch the Vertical Angles [32] of the Dock Brackets.
3.3	<b>SELECT PIVOT BOLT HEIGHT:</b> The optimum Pivot Bolt location is any point between the Upper and Lower Dock Bracket Angle. At no time should the Pivot Bolt be located below the Lower Dock Bracket Angle a distance <b>greater</b> than the distance between the Upper and Lower Dock Bracket Angles. <b>See Fig M</b>
3.4	<b>FRONT ARMS ONLY -</b> Insert Urethane & Stainless Steel Pivot Bushings into the Pivot End of <b>one front</b> Stabilizer Arm [19-20]. Attach Stabilizer Arm to Vertical Angle [32] of Dock Bracket - <i>it may be necessary to push down or lift up on the Arm to access the selected pivot location..</i> Fasteners per Arm: (1 ea) GRADE 8 - 5/8" x 3-1/2" bolt, Flatwasher, Lockwasher, & Nut. <b>TIGHTEN AS TIGHT AS POSSIBLE.</b>
3.5	<b>MEASURE THE DISTANCE FROM THE PIVOT BOLT TO THE WATER -</b> THIS DISTANCE WILL BE REPEATED FOR THE OTHER THREE ARMS - <b>ALL PIVOT BOLTS MUST BE AN EQUAL DISTANCE ABOVE THE WATER.</b>
3.6	Repeat Step 3.4 with opposite <b>front</b> Stabilizer Arm [19-20]. ( <b>Do Not</b> loosen or remove come-a-longs at this time). <b>TIGHTEN AS TIGHT AS POSSIBLE.</b>
3.7	<b>REAR ARMS ONLY -</b> Insure hoist is square in the slip by measuring the distance between the right and left Stabilizer Arms [19-20] and the Vertical Angles [32] of their Dock Brackets. If the distances <u>are not equal</u> , correct by moving one of the <b>front</b> Dock Brackets forward or backward until the hoist is square in the slip.
3.8	Loosen <b>rear</b> "come-a-long" <u>only enough</u> to allow the <b>rear</b> Stabilizer Arms [19-20] to touch the Vertical Angles [32] of the Dock Brackets. Attach Arms [19-20] to Vertical Angles [32] as in Step 3.4. <b>TIGHTEN AS TIGHT AS POSSIBLE. (Do Not</b> loosen or remove come-a-longs at this time). <b>NOTE-</b> <i>It may be necessary to stand on the rear of the hoist with the Control Unit Valve open (Launch) until hoist lowers enough to connect the rear Arms at the selected pivot locations....CAUTION - Maintain at least 4" of tank above the water, and be sure to <u>close the Valve</u> when position is achieved.</i>

Fig.M



## Anchoring Dock Brackets

Fig. M

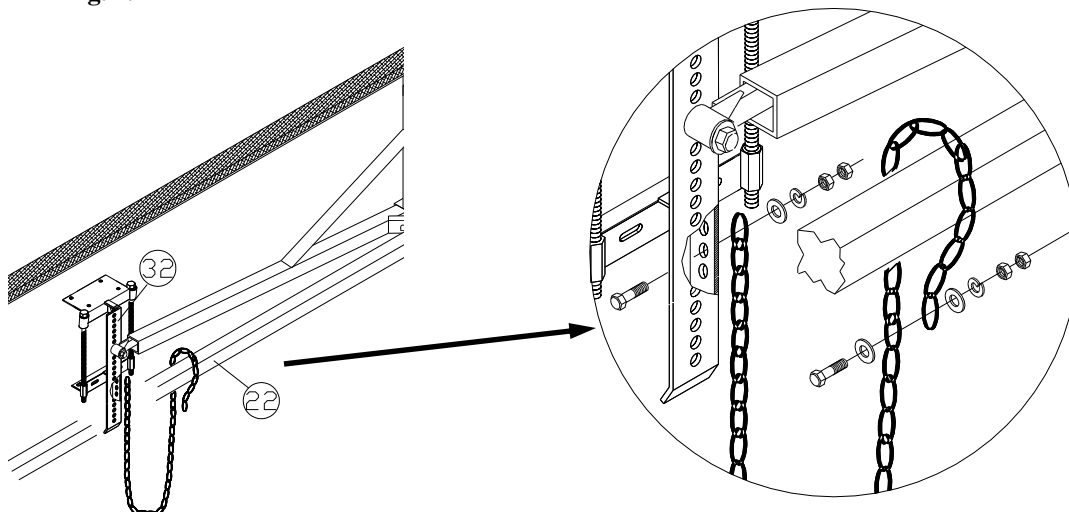
Step	Procedure
4.1	With the Come-a-longs still attached, the Pivot Ends of the Arms in contact with the Vertical Angles [32], and the Dock Brackets fully against the dock structure, <b>TIGHTEN</b> the 20" Dock Bracket Bolts [31] to about 35 ft-lbs of torque.
4.2	With the Come-a-longs still attached, <b>ANCHOR</b> the <b>top</b> Dock Bracket Angles [29] to the dock to prevent inboard movement. <b>See Fig. L.</b> Fasteners: Installer's option, depending on dock construction material.
4.3	Remove the Come-a-longs. As the Come-a-longs are released, the Arms must exert additional "out-pressure" against the Dock Brackets. <i>If there is no out-pressure, double check original slip measurements and hoist assembly width. Two inches of out-pressure may be gained by loosening the Torsion Bar Clamps and Side Stiffeners and forcing the Side Stiffeners outboard. If greater than two inches of adjustment is necessary, the hoist must be rebuilt by changing the End Channel and or Keel Spanners.</i>
4.4	If Grip Tabs were not used, <b>ANCHOR</b> the <b>bottom</b> Dock Bracket Angles [30] to the dock by thru-bolting the Angles to the dock. <b>See Fig. L.</b> Fasteners: Installer's option, depending on dock construction material.

## Catch Chains

Fig. N

Step	Procedure
5.1	Remove the 3/8" x 2-1/4" bolt, double nuts and double flatwashers from the chains previously looped around the Side Stiffeners and Arms. Make a small but loose loop of chain around (each) Side Stiffener [22] only. Fasteners per Chain: (1 ea) 3/8" x 2-1/4" bolts, double nuts, and double flatwashers.
5.2	<p>Attach other end of Chain(s) to Vertical Angle [32] at a point BELOW the Pivot Bolt. Fasteners per Chain: (1 ea) 3/8" x 2-1/4" bolts, double nuts, and double flatwashers.</p> <p><b>IMPORTANT:</b></p> <ol style="list-style-type: none"> <li>Chain length must be <b>equal length</b> on each side of hoist - unequal length may cause hoist to lift high and launch low on one side.</li> <li>Length of Chain (attachment point) is determined by: <ul style="list-style-type: none"> <li>The height of the attachment point above the water.</li> <li>The draft of the boat.</li> </ul> </li> <li>The Ideal length allows the hoist to lower just enough to allow the boat to easily pass over hoist when boat is loaded with crew and gear, and in rising and falling waves.</li> <li>The Chains must never be loose when the hoist is in the fully down position - this indicates that the hoist is too low and the Stabilizer Arms are binding against the Pitmans causing damage to parts.</li> </ol>

Fig. N



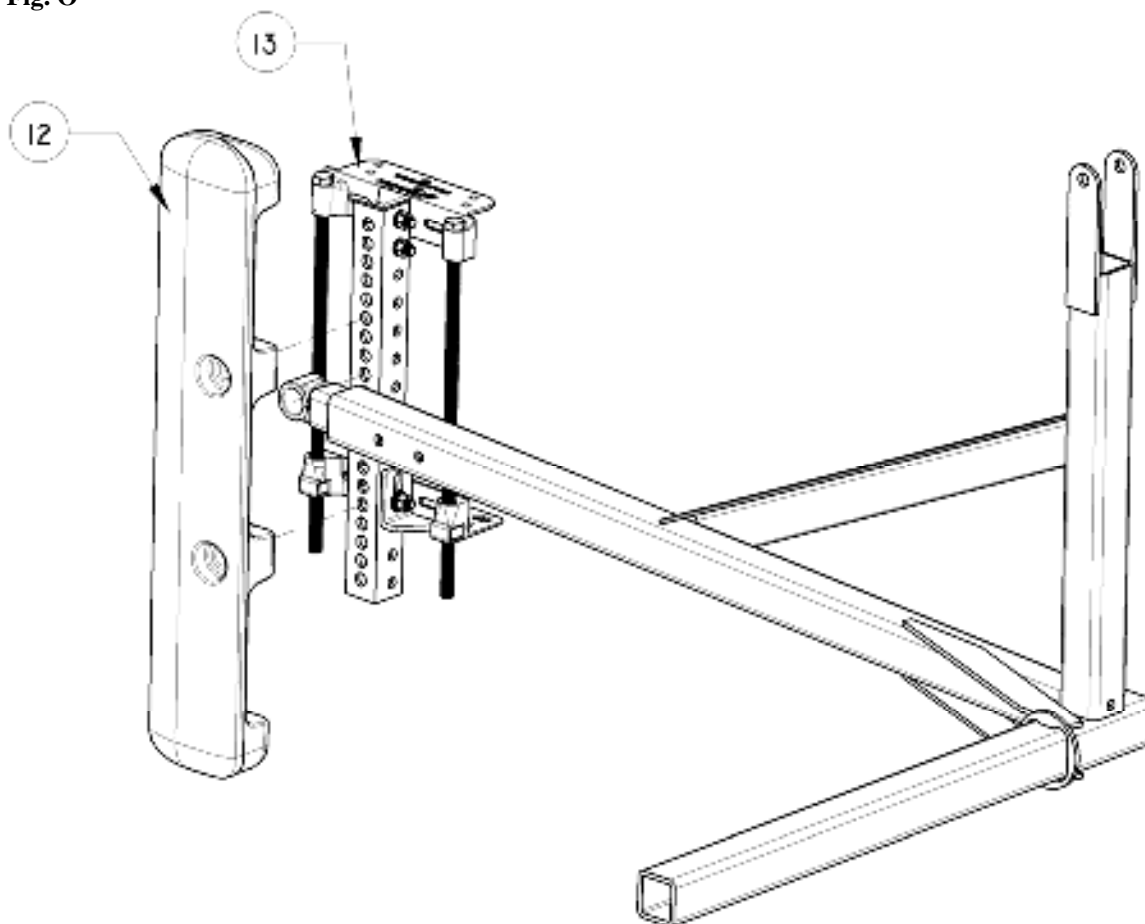
## Adjustments

Step	Procedure
6.1	CHECK ALL DOCK BRACKET BOLTS FOR TIGHTNESS.
6.2	Attach the Control Unit to the dock in the desired location and connect the power cord to proper power source. Test the motor switch to ensure operation.
6.3	Remove Tank Plugs if used
6.4	Lower the hoist according to the OPERATING INSTRUCTIONS (inside Control Unit). With the hoist submerged, check to see if the Catch Chains are tight - if not, shorten the Chains to the point that hoist is suspended by the chains - See Step 5.2.
6.5	Raise the hoist to the point the frame (front and rear End Channels and Side Stiffeners) are just above the water. The frame should be equal height (within 3 inches) above the water at all four corners - if not, measure from the Pivot Bolts to the waterline as in Step 3.5. <i>Note: If all Pivot Bolts are correct, and the hoist is still uneven, the hoist was assembled uneven. See Section 6 - Trouble Shooting</i>
Step	Procedure
7.1	Attach HydroGuard[12] to the Dock Bracket Vertical Angle [13] in the 3rd hole above the arm bolt, or the 7th hole below the arm bolt, depending on arm location along vertical angle[13]. Fasteners per HydroGuard: (2 ea) 5/8" x 4" bolt, nuts, flatwashers and lockwashers. Tighten to 20 ft. lbs.

## HydroGuards

Fig. S

Fig. O



# Final Adjustments

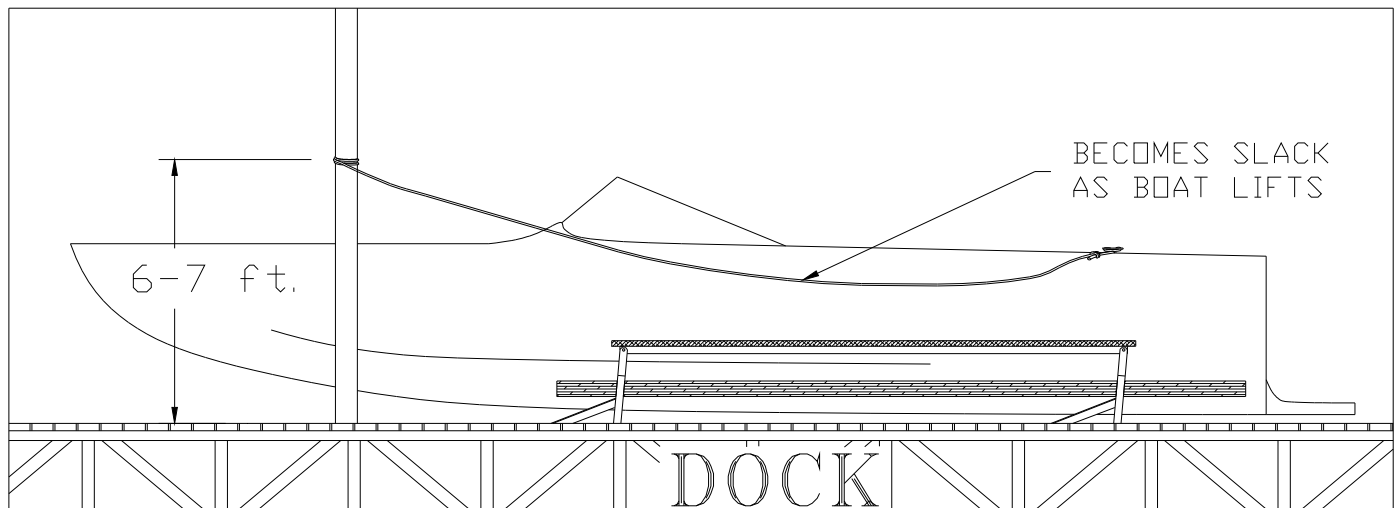
## Lifting the Boat

Step	Procedure
1.1	Pull the boat over the hoist and align the boat's transom with the mark on the dock (Sec. 4 Step 1.2). <i>This will properly position the transom just above the end of the Hull Support Pads as the hoist rises.</i>
1.2	Hold the boat in position at the transom mark and center it side to side over the hoist.
1.3	<b><i>Continue holding the boat in position,</i></b> rotate the Control Unit Valve(s) to the Lift/Launch position and turn the Power Switch to the ON position and continue holding boat in position until hoist makes contact with boat. <i>Note: It may be necessary to reset the GFCI switch to activate the Switch.</i>
1.4	Allow hoist to lift boat and observe the lifting operation - <ul style="list-style-type: none"><li>• STOP LIFTING if boat is off center side-to-side or fore-to-aft. Lower hoist and reposition boat.</li><li>• STOP LIFTING if Dock Bracket movement is observed. Lower hoist and secure Dock Brackets.</li><li>• STOP LIFTING if hoist is not rising level. Lower hoist and reposition boat.</li></ul>
1.5	<b>STOP LIFTING</b> as soon as the frame is out of the water, but the hoist is not fully raised. Observe the distance from the waterline to each corner of the hoist - <b>each corner should be an equal distance (within 3 inches) above the waterline.</b> <ul style="list-style-type: none"><li>• If the hoist is out of level in excess of 3 inches front to rear, or the dock fingers appear to be loaded excessively, lower hoist and reposition boat toward the high end of the hoist.</li><li>• If the hoist is out of level in excess of 3 inches side to side the boat may be loaded off center or the Torsion Bar Clamps are not tight.</li></ul>
1.6	Continue lifting the boat until air bubbles appear from all tanks. Turn the Power Switch to OFF and rotate Control Unit Valve(s) to the Dry Dock position. The hoist and boat should now be fully lifted.
1.7	<b>INSPECT HOIST AND BOAT:-</b> <ul style="list-style-type: none"><li>• Check Hull Support Pad locations for proper fit to boat hull - the boat should be centered side to side with the Pads contacting the hull between the chines and the rear of the Pads should extend to include the engine compartment. <b>Note: it is acceptable for the Hull Pads to cross the chines at the bow, but not acceptable from mid-ship to stern.</b></li><li>• Check V Pad Assembly for proper height and fit to keel</li><li>• Check Dock Brackets for secure hold.</li><li>• Check all components for correct operation.</li></ul>



### Guide Ropes

Step	Procedure
2.1	<b>With hoist, pads and boat correct,</b> lower hoist until boat is almost free floating and place Control Unit Valve(s) in Dry Dock position.
2.2	Tie a small loop (about 6 inches in diameter) in one end of each Guide Rope and place the loops over the REAR cleats of the boat.
2.3	Tie the Ropes (tight, no slack) to a roof support post forward of the front Dock Brackets and 6 to 7 feet <i>above</i> the deck of the dock. NOTE: If no overhead structure is available, the forward end of the Guide Ropes may be tied to (only) the FRONT End Channel of the hoist. <b>DO NOT attach Ropes to any other structure or component of the hoist.</b>



### Final Inspection

Step	Procedure
3.1	Operate the hoist again - <b>launch then lift</b> - checking for proper positioning of the boat and Pads, and for proper operation of the lift.

### Wrapping Up

- ◆ Secure a bow line to the boat and to the boat dock.
- ◆ Confirm that the Operating Instructions are in the Control Unit.
- ◆ Unplug the power cord and stow it in a secure position.
- ◆ Complete the Warranty information and apply the adhesive Serial Number Tag to the Top Plate of the Control Unit.
- ◆ Close and secure the Control Unit Lid.
- ◆ Whenever possible, instruct the boat owner in the proper operating procedures of the hoist.

# Trouble Shooting

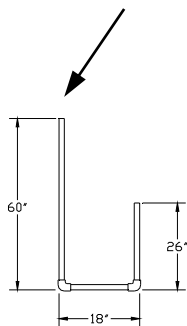
<b>CONDITION:</b>	Hoist will not completely lift boat from water or stern remains low.
<b>CAUSE:</b>	A Water or equipment in boat creating additional weight. B Boat weight exceeds lifting capacity of hoist.
<b>CORRECTION:</b>	A Remove water or equipment. B Install correct size hoist to accommodate the boat's true weight.
<b>CONDITION:</b>	Hoist tips to side when lifting or launching.
<b>CAUSE:</b>	A Restricted air flow to one of the lifting tanks. B Hoses not of equal length. C Hoist is not square, frame is twisted. D Catch Chains not of equal length.
<b>CORRECTION:</b>	A Remove kinks or water-lock from hoses. B Correct hose length. C Loosen Tank Bands, Torsion Bar Clamps level hoist. D Adjust length of Catch Chains.
<b>CONDITION:</b>	Hoist leans to one side.
<b>CAUSE:</b>	A Torsion Bar not properly adjusted. B Pivot Bolts not equal height above waterline.
<b>CORRECTION:</b>	A Loosen Torsion Bar Clamps , level hoist. B Correct height of Pivot Bolts.
<b>CONDITION:</b>	Hoist leaks down on one side.
<b>CAUSE:</b>	A Leak in valve, tank, or hose.
<b>CORRECTION:</b>	A Locate leak and repair.

<b>CONDITION:</b>	Control Unit Blower not working.
<b>CAUSE:</b>	A GFCI circuit open. B Switch or Blower Motor malfunctioning. C Power service to dock not on.
<b>CORRECTION:</b>	A Reset GFCI switch. B Replace Switch or Blower Motor. C Turn on service to dock.

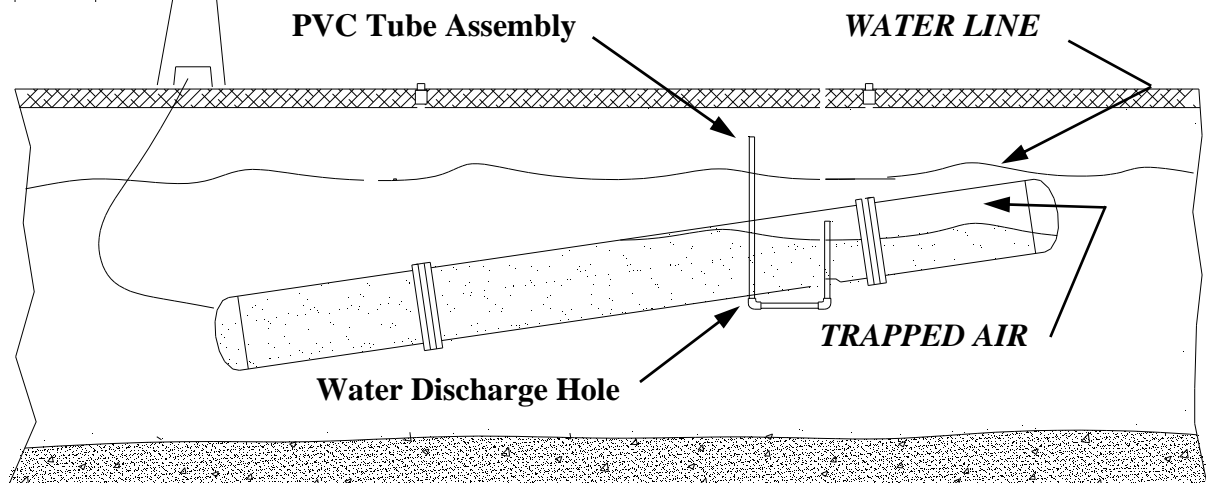
<b>CONDITION:</b>	<b>Air trapped in tanks.</b> Front of hoist below water, rear of hoist above water.
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**Construct a PVC Tube Assembly as shown**



**TO MANUALLY EXHAUST AIR FROM TANKS:**

- 1 INSERT PVC TUBE ASSEMBLY INTO TANK AT WATER DISCHARGE HOLE.
- 2 BLOW INTO PVC TUBE ASSEMBLY TO PURGE WATER IN TUBE.
- 3 EXHAUST TRAPPED AIR IN TANK THROUGH PVC TUBE ASSEMBLY.
- 4 MAINTAIN SIDE TO SIDE STABILITY BY ALTERNATING FROM ONE TANK TO OTHER.
- 5 CONTINUE EXHAUSTING TRAPPED AIR UNTIL REAR OF LIFT HAS SUBMERGED.

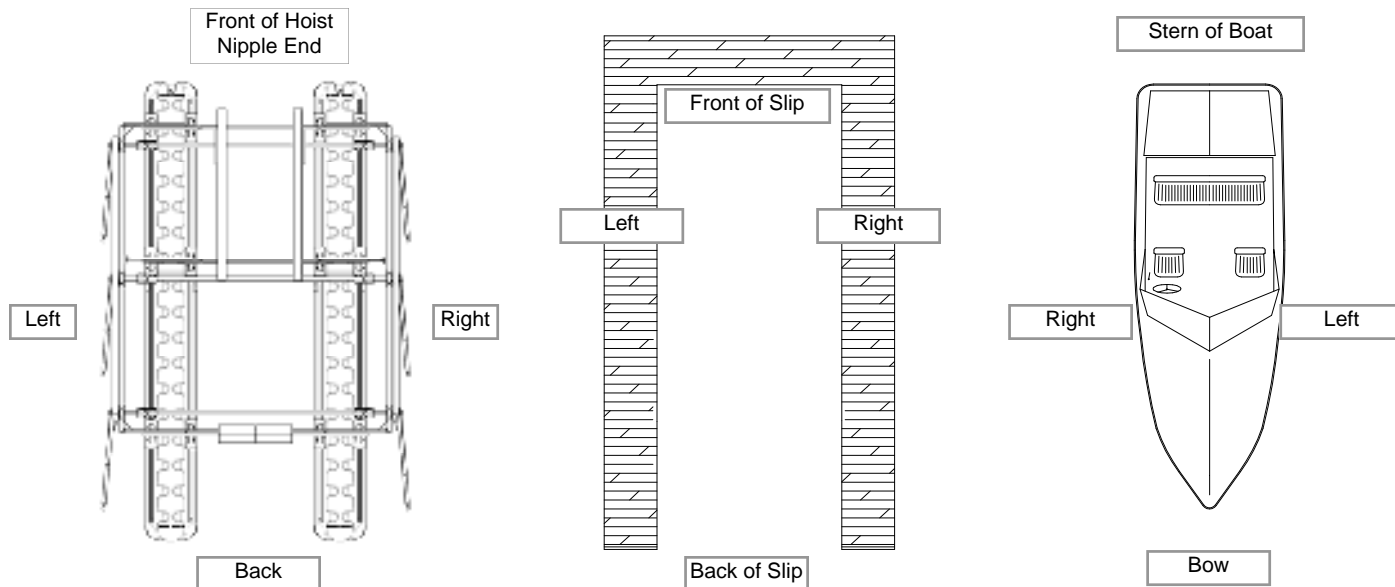


# STERN LOADING

## Symbols & Conventions

To avoid confusion in direction, all references for Left & Right / Bow & Stern / Front & Back are explained in the diagram below:

All numbers in brackets [ ] refer to the parts shown in SEC. 3, PG. 2, FIG A.



## Tank Bracket Assembly

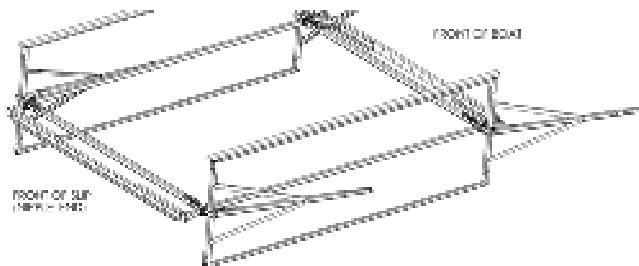
### Procedure

In STERN LOADING installations, the Tanks are assembled 180 degrees OPPOSITE of Bow First installations, so that the Hoses and Control Unit are to the FRONT of the slip. Use the opposite of Fig A (Tank Bracket Settings) See Section 3 pages 2-6.

## Stabilizer Arm Assembly

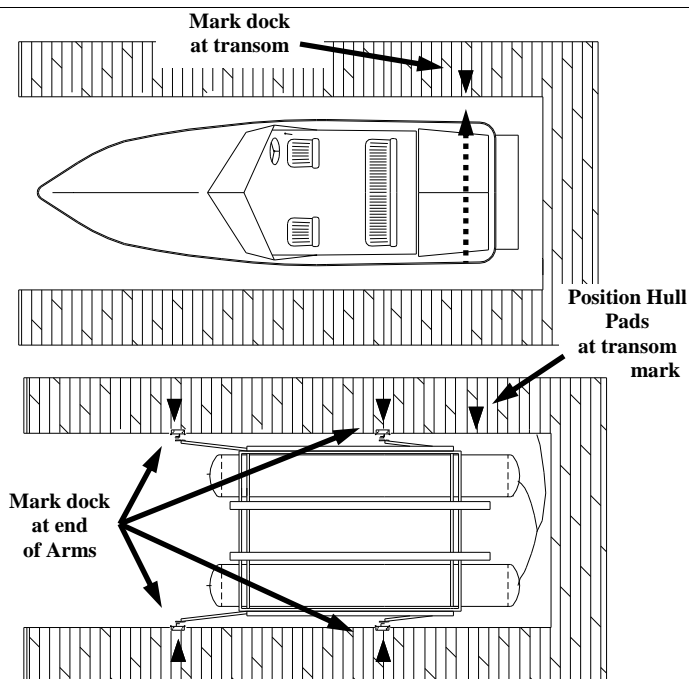
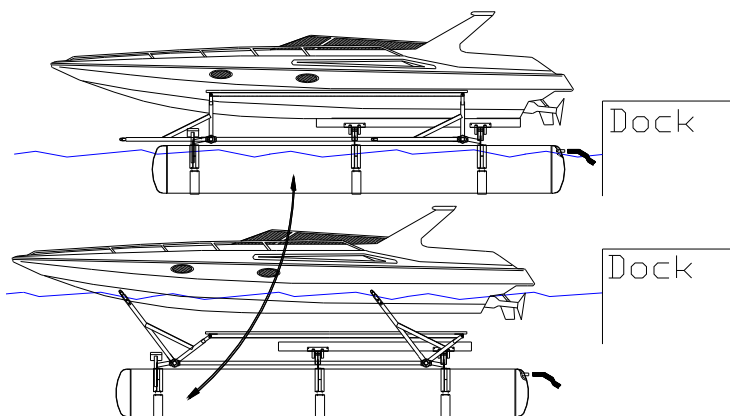
### Procedure

In STERN LOADING installations, the Stabilizer Arms are assembled with the Pivot Ends to the BACK of the hoist and slip. This allows the stern of the boat to position nearest the dock header for passenger access.  
 Refer to chart below for Stabilizer Arm assembly.



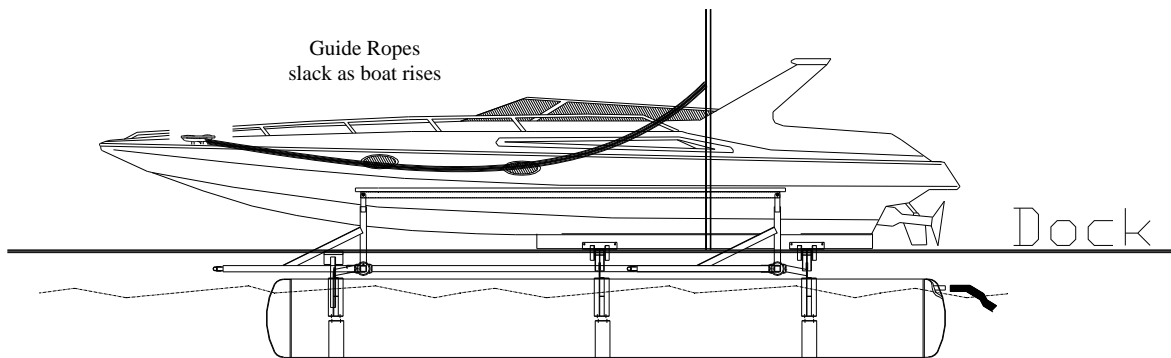
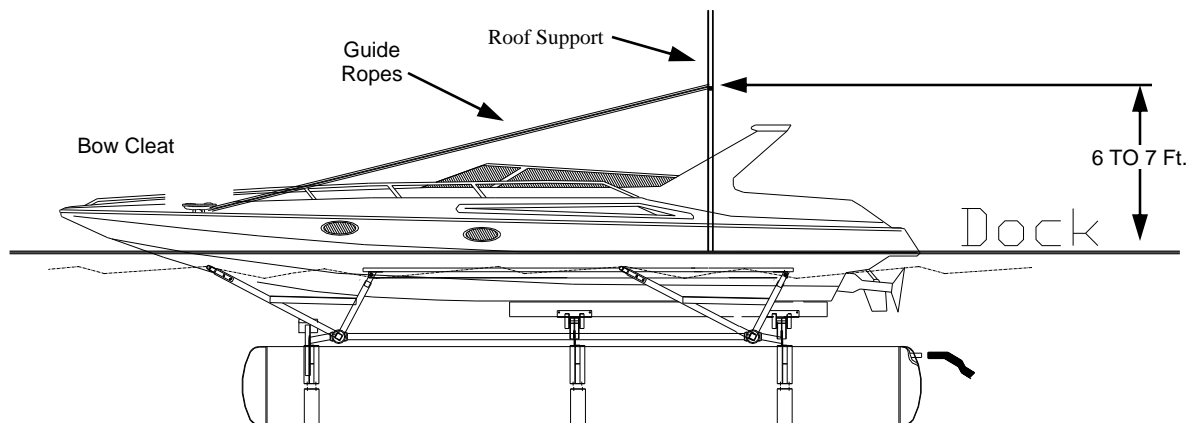
## Selecting Position for Boat & Hoist (STERN FIRST LOADING)

Step	Procedure
1.1	<b>STERN FIRST LOADING ONLY -</b> Pull the <b>boat</b> into the boat stall so that the STERN can be easily reached from the front of the slip, allowing a minimum of 24 inches of space at the dock level between the front of the slip (dock header) and the boat or out-drives. <b>IMPORTANT -</b> The space allowed between boat and dock is needed for: 1. Any repositioning of the boat for proper balance on the hoist. 2. Horizontal travel of the hoist and boat as the hoist is raised. See diagram below.
1.2	With the boat in the desired location, place a mark on the dock where the boat's transom is positioned. <b>Note:</b> Do not include extensions to the hull such as swim platforms; the transom mark should reflect the location of the <b>end of the bottom of the hull</b> .
1.3	Remove the boat and pull the <b>hoist</b> into the slip.
1.4	Position the hoist inside the slip and align the Hull Support Pads with the <b>transom mark</b> on the dock. <b>IMPORTANT -</b> There must be at least 24 inches of space between the Tanks and the front of the slip (dock header) to allow for Hoses and the horizontal travel of the hoist as it is raised; if necessary, move the hoist toward the back of the slip to provide this distance.
1.5	With the hoist held stationary at the correct position, place <b>marks</b> on the dock at the location of the <b>Stabilizer Arm attachment points</b> .



## Guide Ropes

Step	Procedure
	<b>With hoist, Pads and boat correct,</b> lower hoist until boat is almost free floating and place Control Unit Valve(s) in Dry Dock position.
	Tie a small loop (about 6 inches in diameter) in one end of each Guide Rope and place the loops over the BOW cleats of the boat.
	Tie the Ropes (tight, no slack) to a roof support post forward of the front Dock Brackets and 6 to 7 feet <i>above</i> the deck of the dock. NOTE: If no overhead structure is available, the forward end of the Guide Ropes may be tied to (only) the FRONT End Channel of the hoist. <b>DO NOT attach Ropes to any other structure or component of the hoist.</b>



PARTS LIST 10-14 UL2			UL21610	UL21611	UL21612	UL21613	UL21614	UL21615	UL21616	UL21617	UL21618	UL21619	UL21620	UL21621	UL21622	UL21623	UL21624	UL21625	UL21626	UL21627	UL21628	UL21629	UL21630	UL21631	UL21632	UL21633	UL21634	UL21635	UL21636	UL21637	UL21638	UL21639	UL21640	UL21641	UL21642	UL21643	UL21644	UL21645	UL21646	UL21647	UL21648	UL21649	UL21650	UL21651	UL21652	UL21653	UL21654	UL21655	UL21656	UL21657	UL21658	UL21659	UL21660	UL21661	UL21662	UL21663	UL21664	UL21665	UL21666	UL21667	UL21668	UL21669	UL21670	UL21671	UL21672	UL21673	UL21674	UL21675	UL21676	UL21677	UL21678	UL21679	UL21680	UL21681	UL21682	UL21683	UL21684	UL21685	UL21686	UL21687	UL21688	UL21689	UL21690	UL21691	UL21692	UL21693	UL21694	UL21695	UL21696	UL21697	UL21698	UL21699	UL21700	UL21701	UL21702	UL21703	UL21704	UL21705	UL21706	UL21707	UL21708	UL21709	UL21710	UL21711	UL21712	UL21713	UL21714	UL21715	UL21716	UL21717	UL21718	UL21719	UL21720	UL21721	UL21722	UL21723	UL21724	UL21725	UL21726	UL21727	UL21728	UL21729	UL21730	UL21731	UL21732	UL21733	UL21734	UL21735	UL21736	UL21737	UL21738	UL21739	UL21740	UL21741	UL21742	UL21743	UL21744	UL21745	UL21746	UL21747	UL21748	UL21749	UL21750	UL21751	UL21752	UL21753	UL21754	UL21755	UL21756	UL21757	UL21758	UL21759	UL21760	UL21761	UL21762	UL21763	UL21764	UL21765	UL21766	UL21767	UL21768	UL21769	UL21770	UL21771	UL21772	UL21773	UL21774	UL21775	UL21776	UL21777	UL21778	UL21779	UL21780	UL21781	UL21782	UL21783	UL21784	UL21785	UL21786	UL21787	UL21788	UL21789	UL21790	UL21791	UL21792	UL21793	UL21794	UL21795	UL21796	UL21797	UL21798	UL21799	UL21800	UL21801	UL21802	UL21803	UL21804	UL21805	UL21806	UL21807	UL21808	UL21809	UL21810	UL21811	UL21812	UL21813	UL21814	UL21815	UL21816	UL21817	UL21818	UL21819	UL21820	UL21821	UL21822	UL21823	UL21824	UL21825	UL21826	UL21827	UL21828	UL21829	UL21830	UL21831	UL21832	UL21833	UL21834	UL21835	UL21836	UL21837	UL21838	UL21839	UL21840	UL21841	UL21842	UL21843	UL21844	UL21845	UL21846	UL21847	UL21848	UL21849	UL21850	UL21851	UL21852	UL21853	UL21854	UL21855	UL21856	UL21857	UL21858	UL21859	UL21860	UL21861	UL21862	UL21863	UL21864	UL21865	UL21866	UL21867	UL21868	UL21869	UL21870	UL21871	UL21872	UL21873	UL21874	UL21875	UL21876	UL21877	UL21878	UL21879	UL21880	UL21881	UL21882	UL21883	UL21884	UL21885	UL21886	UL21887	UL21888	UL21889	UL21890	UL21891	UL21892	UL21893	UL21894	UL21895	UL21896	UL21897	UL21898	UL21899	UL21900	UL21901	UL21902	UL21903	UL21904	UL21905	UL21906	UL21907	UL21908	UL21909	UL21910	UL21911	UL21912	UL21913	UL21914	UL21915	UL21916	UL21917	UL21918	UL21919	UL21920	UL21921	UL21922	UL21923	UL21924	UL21925	UL21926	UL21927	UL21928	UL21929	UL21930	UL21931	UL21932	UL21933	UL21934	UL21935	UL21936	UL21937	UL21938	UL21939	UL21940	UL21941	UL21942	UL21943	UL21944	UL21945	UL21946	UL21947	UL21948	UL21949	UL21950	UL21951	UL21952	UL21953	UL21954	UL21955	UL21956	UL21957	UL21958	UL21959	UL21960	UL21961	UL21962	UL21963	UL21964	UL21965	UL21966	UL21967	UL21968	UL21969	UL21970	UL21971	UL21972	UL21973	UL21974	UL21975	UL21976	UL21977	UL21978	UL21979	UL21980	UL21981	UL21982	UL21983	UL21984	UL21985	UL21986	UL21987	UL21988	UL21989	UL21990	UL21991	UL21992	UL21993	UL21994	UL21995	UL21996	UL21997	UL21998	UL21999	UL22000	UL22001	UL22002	UL22003	UL22004	UL22005	UL22006	UL22007	UL22008	UL22009	UL22010	UL22011	UL22012	UL22013	UL22014	UL22015	UL22016	UL22017	UL22018	UL22019	UL22020	UL22021	UL22022	UL22023	UL22024	UL22025	UL22026	UL22027	UL22028	UL22029	UL22030	UL22031	UL22032	UL22033	UL22034	UL22035	UL22036	UL22037	UL22038	UL22039	UL22040	UL22041	UL22042	UL22043	UL22044	UL22045	UL22046	UL22047	UL22048	UL22049	UL22050	UL22051	UL22052	UL22053	UL22054	UL22055	UL22056	UL22057	UL22058	UL22059	UL22060	UL22061	UL22062	UL22063	UL22064	UL22065	UL22066	UL22067	UL22068	UL22069	UL22070	UL22071	UL22072	UL22073	UL22074	UL22075	UL22076	UL22077	UL22078	UL22079	UL22080	UL22081	UL22082	UL22083	UL22084	UL22085	UL22086	UL22087	UL22088	UL22089	UL22090	UL22091	UL22092	UL22093	UL22094	UL22095	UL22096	UL22097	UL22098	UL22099	UL22100	UL22101	UL22102	UL22103	UL22104	UL22105	UL22106	UL22107	UL22108	UL22109	UL22110	UL22111	UL22112	UL22113	UL22114	UL22115	UL22116	UL22117	UL22118	UL22119	UL22120	UL22121	UL22122	UL22123	UL22124	UL22125	UL22126	UL22127	UL22128	UL22129	UL22130	UL22131	UL22132	UL22133	UL22134	UL22135	UL22136	UL22137	UL22138	UL22139	UL22140	UL22141	UL22142	UL22143	UL22144	UL22145	UL22146	UL22147	UL22148	UL22149	UL22150	UL22151	UL22152	UL22153	UL22154	UL22155	UL22156	UL22157	UL22158	UL22159	UL22160	UL22161	UL22162	UL22163	UL22164	UL22165	UL22166	UL22167	UL22168	UL22169	UL22170	UL22171	UL22172	UL22173	UL22174	UL22175	UL22176	UL22177	UL22178	UL22179	UL22180	UL22181	UL22182	UL22183	UL22184	UL22185	UL22186	UL22187	UL22188	UL22189	UL22190	UL22191	UL22192	UL22193	UL22194	UL22195	UL22196	UL22197	UL22198	UL22199	UL22200	UL22201	UL22202	UL22203	UL22204	UL22205	UL22206	UL22207	UL22208	UL22209	UL22210	UL22211	UL22212	UL22213	UL22214	UL22215	UL22216	UL22217	UL22218	UL22219	UL22220	UL22221	UL22222	UL22223	UL22224	UL22225	UL22226	UL22227	UL22228	UL22229	UL22230	UL22231	UL22232	UL22233	UL22234	UL22235	UL22236	UL22237	UL22238	UL22239	UL22240	UL22241	UL22242	UL22243	UL22244	UL22245	UL22246	UL22247	UL22248	UL22249	UL22250	UL22251	UL22252	UL22253	UL22254	UL22255	UL22256	UL22257	UL22258	UL22259	UL22260	UL22261	UL22262	UL22263	UL22264	UL22265	UL22266	UL22267	UL22268	UL22269	UL22270	UL22271	UL22272	UL22273	UL22274	UL22275	UL22276	UL22277	UL22278	UL22279	UL22280	UL22281	UL22282	UL22283	UL22284	UL22285	UL22286	UL22287	UL22288	UL22289	UL22290	UL22291	UL22292	UL22293	UL22294	UL22295	UL22296	UL22297	UL22298	UL22299	UL22300	UL22301	UL22302	UL22303	UL22304	UL22305	UL22306	UL22307	UL22308	UL22309	UL22310	UL22311	UL22312	UL22313	UL22314	UL22315	UL22316	UL22317	UL22318	UL22319	UL22320	UL22321	UL22322	UL22323	UL22324	UL22325	UL22326	UL22327	UL22328	UL22329	UL22330	UL22331	UL22332	UL22333	UL22334	UL22335	UL22336	UL22337	UL22338	UL22339	UL22340	UL22341	UL22342	UL22343	UL22344	UL22345	UL22346	UL22347	UL22348	UL22349	UL22350	UL22351	UL22352	UL22353	UL22354	UL22355	UL22356	UL22357	UL22358	UL22359	UL22360	UL22361	UL22362	UL22363	UL22364	UL22365	UL22366	UL22367	UL22368	UL22369	UL22370	UL22371	UL22372	UL22373	UL22374	UL22375	UL22376	UL22377	UL22378	UL22379	UL22380	UL22381	UL22382	UL22383	UL22384	UL22385	UL22386	UL22387	UL22388	UL22389	UL22390	UL22391	UL22392	UL22393	UL22394	UL22395	UL22396	UL22397	UL22398	UL22399	UL22400	UL22401	UL22402	UL22403	UL22404	UL22405	UL22406	UL22407	UL22408	UL22409	UL22410	UL22411	UL22412	UL22413	UL22414	UL22415	UL22416	UL22417	UL22418	UL22419	UL22420	UL22421	UL22422	UL22423	UL22424	UL22425	UL22426	UL22427	UL22428	UL22429	UL22430	UL22431	UL22432	UL22433	UL22434	UL22435	UL22436	UL22437	UL22438	UL22439	UL22440	UL22441	UL22442	UL22443	UL22444	UL22445	UL22446	UL22447	UL22448	UL22449	UL22450	UL22451	UL22452	UL22453	UL22454	UL22455	UL22456	UL22457	UL22458	UL22459	UL22460	UL22461	UL22462	UL22463	UL22464	UL22465	UL22466	UL22467	UL22468	UL22469	UL22470	UL22471	UL22472	UL22473	UL22474	UL22475	UL22476	UL22477	UL22478	UL22479	UL22480	UL22481	UL22482	UL22483	UL22484	UL22485	UL22486	UL22487	UL22488	UL22489	UL22490	UL22491	UL22492	UL22493	UL22494	UL22495	UL22496	UL22497	UL22498	UL22499	UL22500	UL22501	UL22502	UL22503	UL22504	UL22505	UL22506	UL22507	UL22508	UL22509	UL22510	UL22511	UL22512	UL22513	UL22514	UL22515	UL22516	UL22517	UL22518	UL22519	UL22520	UL22521	UL22522	UL22523	UL22524	UL22525	UL22526	UL22527	UL22528	UL22529	UL22530	UL22531	UL22532	UL22533	UL22534	UL22535	UL22536	UL22537	UL22538	UL22539	UL22540	UL22541	UL22542	UL22543	UL22544	UL22545	UL22546	UL22547	UL22548	UL22549	UL22550	UL22551	UL22552	UL22553	UL22554	UL22555	UL22556	UL22557	UL22558	UL22559	UL22560	UL22561	UL22562	UL22563	UL22564	UL22565	UL22566	UL22567	UL22568	UL22569	UL22570	UL22571	UL22572	UL22573	UL22574	UL22575	UL22576	UL22577	UL22578	UL22579	UL22580	UL22581	UL22582	UL22583	UL22584	UL22585	UL22586	UL22587	UL22588	UL22589	UL22590	UL22591	UL22592	UL22593	UL22594	UL22595	UL22596	UL22597	UL22598	UL22599	UL22600	UL22601	UL22602	UL22603	UL22604	UL22605	UL22606	UL22607	UL22608	UL22609	UL22610	UL22611	UL22612	UL22613	UL22614	UL22615	UL22616	UL22617	UL22618	UL22619	UL22620	UL22621	UL22622	UL22623	UL22624	UL22625	UL22626	UL22627	UL22628	UL22629	UL22630	UL22631	UL22632	UL22633	UL22634	UL22635	UL22636	UL22637	UL22638	UL22639	UL22640	UL22641	UL22642	UL22643	UL22644	UL22645	UL22646	UL22647	UL22648	UL22649	UL22650	UL22651	UL22652	UL22653	UL22654	UL22655	UL22656	UL22657	UL22658	UL22659	UL22660	UL22661	UL22662	UL22663	UL22664	UL22665	UL22666	UL22667	UL22668	UL22669	UL22670	UL22671	UL22672	UL22673	UL22674	UL22675	UL22676	UL22677	UL22678	UL22679	UL22680	UL22681	UL22682	UL22683	UL22684	UL22685	UL22686	UL22687	UL22688	UL22689	UL22690	UL22691	UL22692	UL22693	UL22694	UL22695	UL22696	UL22697	UL22698	UL22699	UL22700	UL22701	UL22702	UL22703	UL22704	UL22705	UL22706	UL22707	UL22708	UL22709	UL22710	UL22711	UL22712	UL22713	UL22714	UL22715	UL22716	UL22717	UL22718	UL22719	UL22720	UL22721	UL22722	UL22723	UL22724	UL22725	UL22726	UL22727	UL22728	UL22729	UL22730	UL22731	UL22732	UL22733
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PARTS LIST 16-18 UL2

TANK

1	5025512	TANK 36" X 12"									1	1	1	1	1	1							
	5025516	TANK 36" X 16"	1	1	1	1	1	1	1	1													
	5025520	TANK 36" X 20"																1	1	1	1	1	1
	5025524	TANK 36" X 24"	2	2	2	2	2	2	2	2													
	5025528	TANK 36" X 28"									2	2	2	2	2	2	2	2	2	2	2	2	2

HULL SUPPORT

2	5025200	HULL SUPPORT PAD 3'	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	5029000	V PAD 32" BASE	1	1	1	1	1	1	1	1		1	1	1	1	1							
4	5201600	V PAD 10/20/30C STYLE									1						1	1	1	1	1	1	1
5	3031700	BRACE 25 3/4" HULL SUPPORT	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6	4031100	HULL SUPPORT COLUMN LH (DOT)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
7	4031110	HULL SUPPORT COLUMN RH (NO DOT)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8	4354200	RISER V PAD 10/20/30C									2						2	2	2	2	2	2	2

DOCK BRACKET

12	5203500	HYDROGUARD	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
13	5049000	CAST DOCK BRACKET HD	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

TANK BRACKETS

14	4240015	SIDE TANK BRACKET	12	12	12	12	12	12	12	12	16	16	16	16	16	16	16	16	16	16	16	16	16
15	4240010	TOP TANK BRACKET	6	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8	8	8	8	8	8

END CHANNEL

16A	3500330	END CHANNEL 5"X32"	7	7	6	6	6	6	6		9	9	8	8	8	8							
16	3500350	END CHANNEL 5"X62"																					
	3500390	END CHANNEL 5"X62"				1																	
	3500320	END CHANNEL 5"X72"					3	3						4	4		8						
	3500310	END CHANNEL 5"X92"	3	3					3		4	4				4		8	8				
	3500340	END CHANNEL 5"X118"			3	3	3	3				4	4	4	4				8	8	8		
	3500380	END CHANNEL 5"X148"							3	6					4	8						8	8

TORSION BAR EXTERNAL

17	3065020	TORSION BAR EXTERNAL 62"																					
	3065030	TORSION BAR EXTERNAL 72"																					
	3065040	TORSION BAR EXTERNAL 82"	3								3						3						
	3065060	TORSION BAR EXTERNAL 92"		3							3						3						
	3065060	TORSION BAR EXTERNAL 102"			3							3					3						
	3065070	TORSION BAR EXTERNAL 112"				3							3					3					
	3065080	TORSION BAR EXTERNAL 122"					3							3					3				
	3065090	TORSION BAR EXTERNAL 132"						3							3					3			
	3065092	TORSION BAR EXTERNAL 142"							3							6					3		
	3065096	TORSION BAR EXTERNAL 152"								3												3	
	3065096	TORSION BAR EXTERNAL 162"							3	3												3	

PITMAN

18	5521500	PITMAN PADDED BIG L 4 ARMS	2	2	2	2	2	2	2	2	2	2	2	2	2	2							
	4270140	PITMAN ASSEMBLY - LONG STEEL															2	2	2	2	2	2	2
	4523950	PITMAN PADDED BIG L 6 ARMS																					
19	4521900	STABILIZER ARM RH	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
20	4522000	STABILIZER ARM LH	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
21	2916730	SQUARE HOLE BUSHING	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

SIDE STIFFENER

	4270105	SIDE STIFFENER 20L									2	2	2	2	2	2	2	2	2	2	2	2	2
	4523905	SIDE STIFFENER BIG L 6 ARMS	2	2	2	2	2	2	2	2													
22A	4270130	CLAMP SIDE STIFFENER	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4

CONTROL UNIT

23	4220785	CONTROL 2M2V UL2																					
	4220780	CONTROL 2M3V UL2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

HOSE

24	3072505	HOSE 1 1/4" ID 30' LONG																					
	3072502	HOSE 1 1/4" ID 75' LONG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

MISC

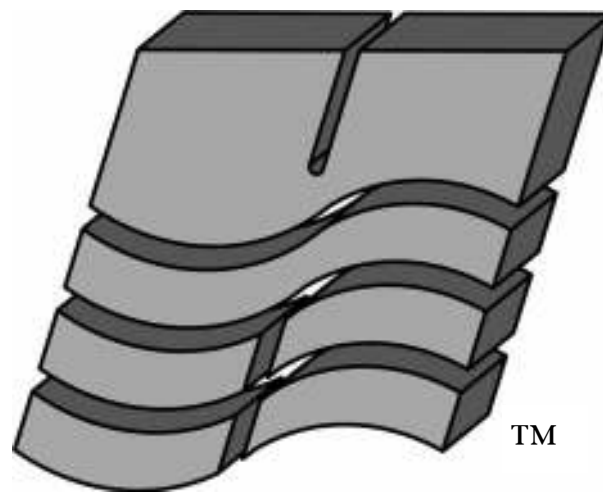
25	3050050	TORQUE MANAGER	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
26	4523700	ARM EXTENSION	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

PARTS BAGS

	6950018	PARTS BAG - UL2 18,000															1	1	1	1	1	1	1
	6927000	PARTS BAG - DUAL PITMAN - 6 ARM															1	1	1	1	1	1	1
	6950116	PARTS BAG - UL2 - 16,000 - LONG STEEL									1	1	1	1	1	1							
	6950016	PARTS BAG - UL2 - 16,000 - SHORT STEEL	1	1	1	1	1	1	1	1													
	6950013	PARTS BAG - DOCK BRKT - 12/22K	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	6925100	PARTS BAG - BIG L TORQUE MGR - 6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1



PARTS LIST 22 UL2			UL22213	UL22214	UL22215	UL22216	UL22217	UL22218	UL22219	UL22220
TANK										
	5025528	TANK 36" X 28"	3	3	3	3	3	3	3	3
HULL SUPPORT										
2	5360700	HULL SUPPORT PAD 9" - HD	4	4	4	4	4	4	4	4
4	5201600	V PAD 10/20/30C STYLE	1	1	1	1	1	1	1	1
5	3031700	BRACE 25 3/4" HULL SUPPORT	2	2	2	2	2	2	2	2
5A	3033300	BRACE 30 1/2" HULL SUPPORT	2	2	2	2	2	2	2	2
6	4031150	HULL SUPPORT COLUMN UNIV.	4	4	4	4	4	4	4	4
	4360000	HULL SUPPORT COLUMN - TALL LH	4	4	4	4	4	4	4	4
	4360001	HULL SUPPORT COLUMN - TALL RH	4	4	4	4	4	4	4	4
8	4354200	RISER V PAD 10/20/30C	2	2	2	2	2	2	2	2
DOCK BRACKET										
12	5203500	HYDROGUARD	6	6	6	6	6	6	6	6
13	5049000	CAST DOCK BRACKET HD	6	6	6	6	6	6	6	6
TANK BRACKETS										
14	4240015	SIDE TANK BRACKET	24	24	24	24	24	24	24	24
15	4240010	TOP TANK BRACKET	12	12	12	12	12	12	12	12
END CHANNEL										
	3500320	END CHANNEL 5"X7"2"	8							
	3500310	END CHANNEL 5"X9"2"		8	8					
	3500340	END CHANNEL 5"X11"8"				8	8	8		
	3500380	END CHANNEL 5"X14"8"							8	8
TORSION BAR EXTERNAL										
	3065040	TORSION BAR EXTERNAL 8"2"	3							
	3065050	TORSION BAR EXTERNAL 9"2"		3						
	3065060	TORSION BAR EXTERNAL 10"2"			3					
	3065070	TORSION BAR EXTERNAL 11"2"				3				
	3065080	TORSION BAR EXTERNAL 12"2"					3			
	3065090	TORSION BAR EXTERNAL 13"2"						3		
	3065092	TORSION BAR EXTERNAL 14"2"							3	
	3065095	TORSION BAR EXTERNAL 15"2"								3
PITMAN										
	4270140	PITMAN ASSEMBLY - LONG STEEL	2	2	2	2	2	2	2	2
	4270141	PITMAN ECONOMY - LONG STEEL	2	2	2	2	2	2	2	2
19	4522100	MEGA ARM	6	6	6	6	6	6	6	6
21	2918730	SQUARE HOLE BUSHING	6	6	6	6	6	6	6	6
SIDE STIFFENER										
	4270105	SIDE STIFFENER 20L	2	2	2	2	2	2	2	2
22A	4270130	CLAMP SIDE STIFFENER	4	4	4	4	4	4	4	4
CONTROL UNIT										
	4220780	CONTROL 2M3V UL2	1	1	1	1	1	1	1	1
HOSE										
	3072502	HOSE 1 1/4" ID 75' LONG	1	1	1	1	1	1	1	1
MISC										
25	3050050	TORQUE MANAGER	12	12	12	12	12	12	12	12
26	4522130	ARM EXTENSION	8	6	6	6	6	6	6	6
PARTS BAGS										
	6950013	KIT BAG - DOCK BRACKET - UL2 12/22	1	1	1	1	1	1	1	1
	6927000	PARTS BAG - DUAL PITMAN ASSY	1	1	1	1	1	1	1	1
	6950022	KIT BAG - UL2 22,000	1	1	1	1	1	1	1	1
	6925100	PARTS BAG - BIG L TORQUE MGR - 6	1	1	1	1	1	1	1	1



***UL2 10-22***

