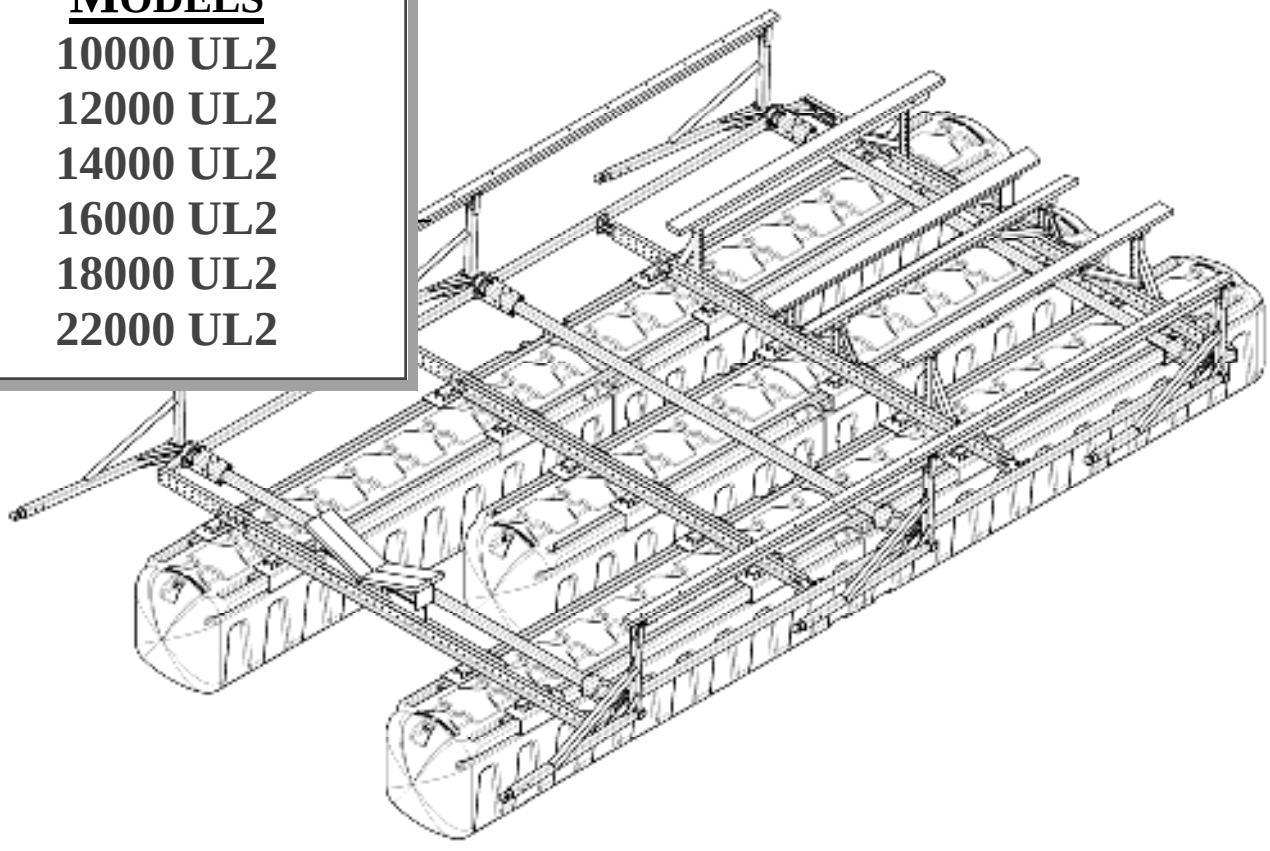
INSTALLATION MANUAL

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

Pub. 03/11/08

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WARNING!

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BEFORE CONNECTING AC POWER TO THE CONTROL UNIT, BE CERTAIN THAT THE PRIMARY AC POWER SUPPLY MEETS ALL APPLICABLE ELECTRICAL CODES.

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CONTENTS

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

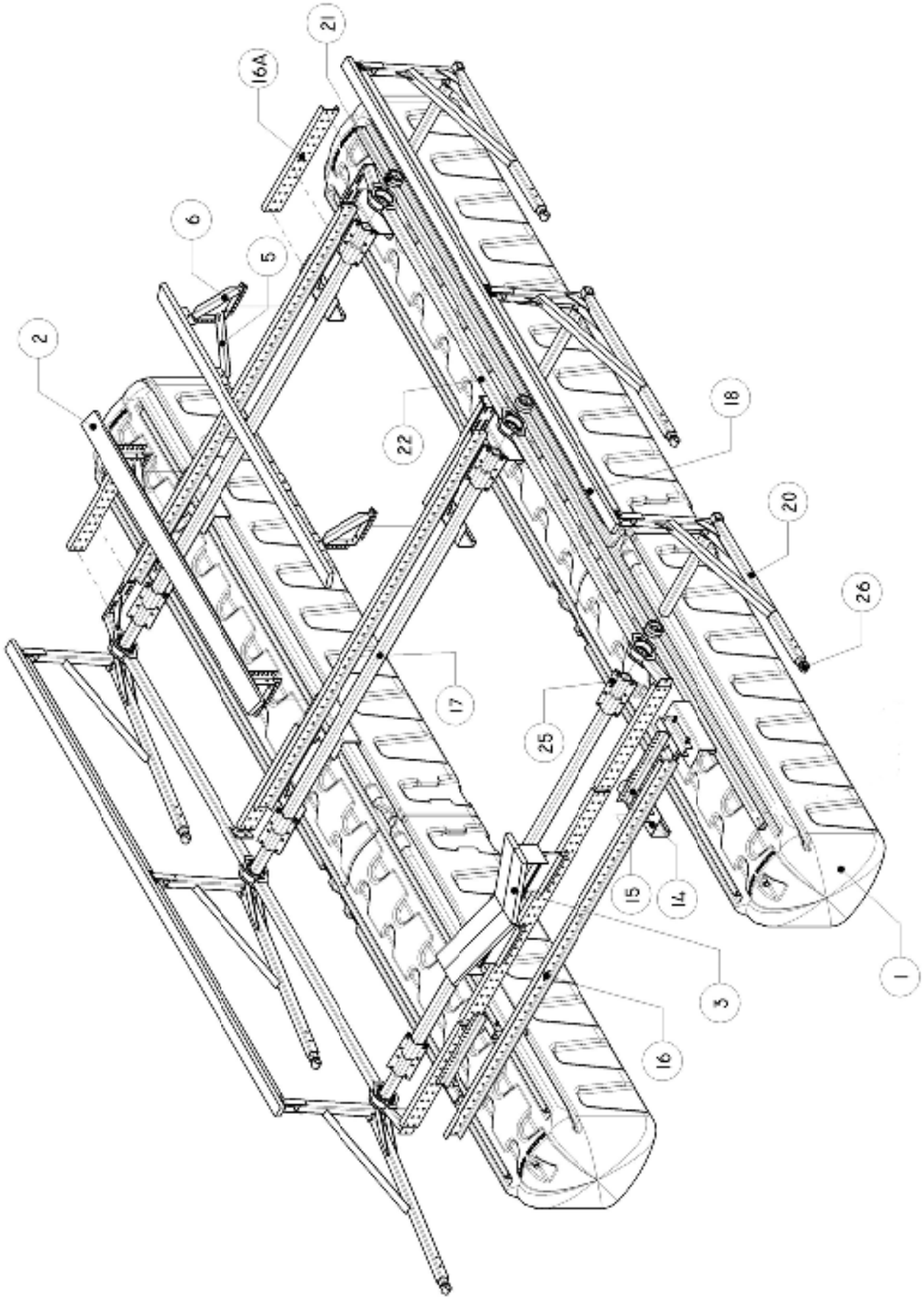
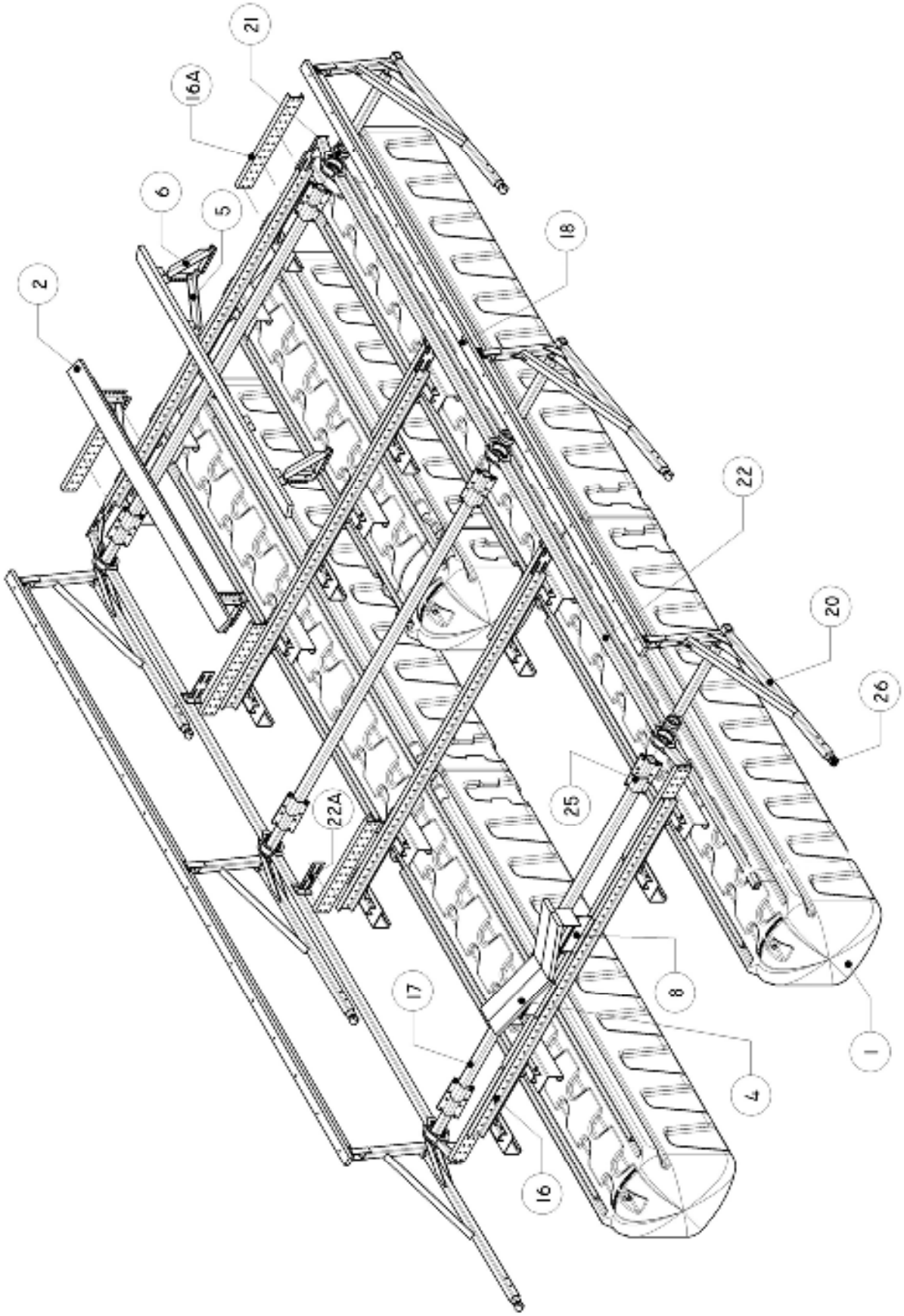


Figure II-16,000 UL2-Model-16' Slip-6 Arm-Long Side Stiffener-Exploded



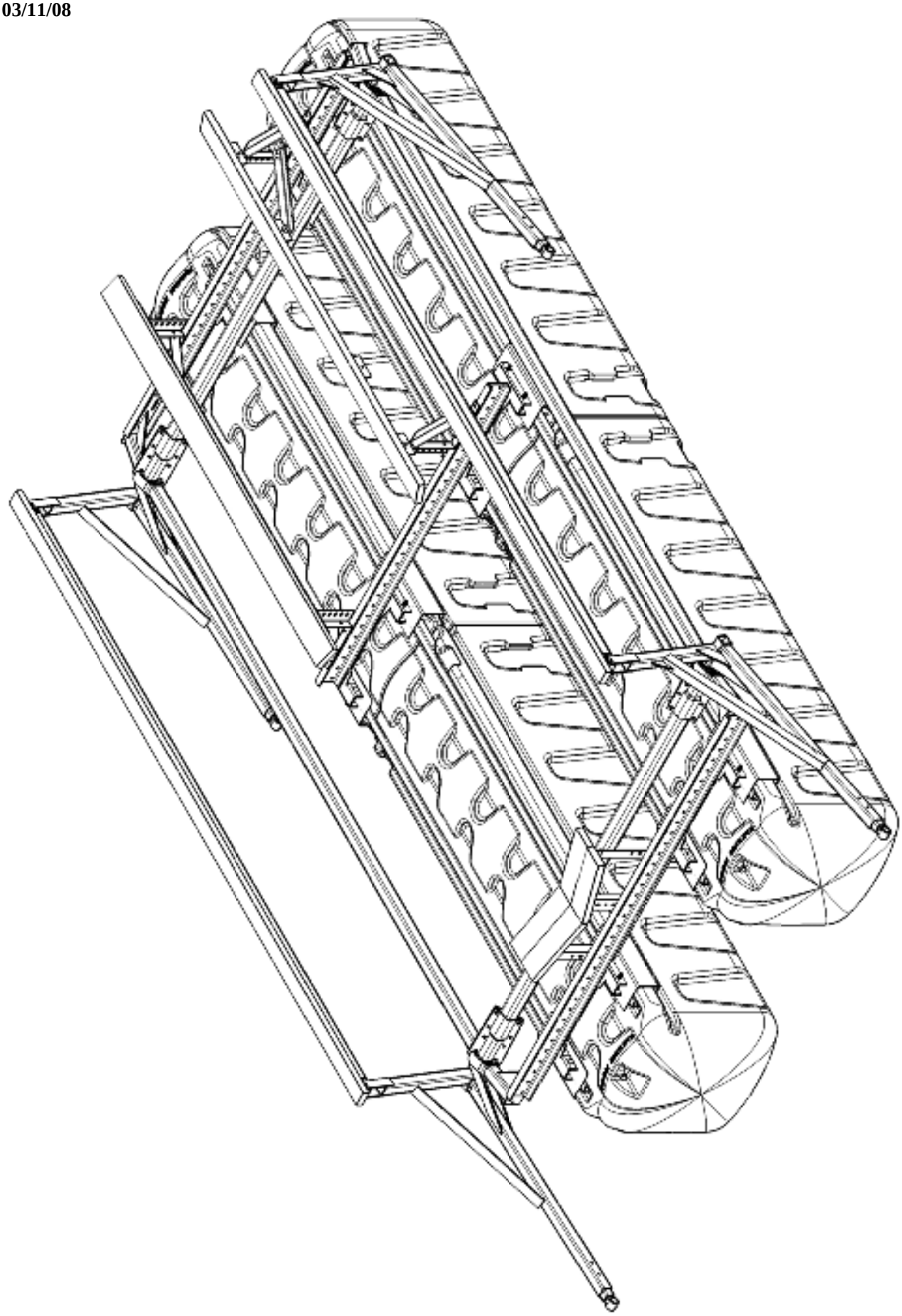


Figure I-10,000 UL2-Model-12' Slip

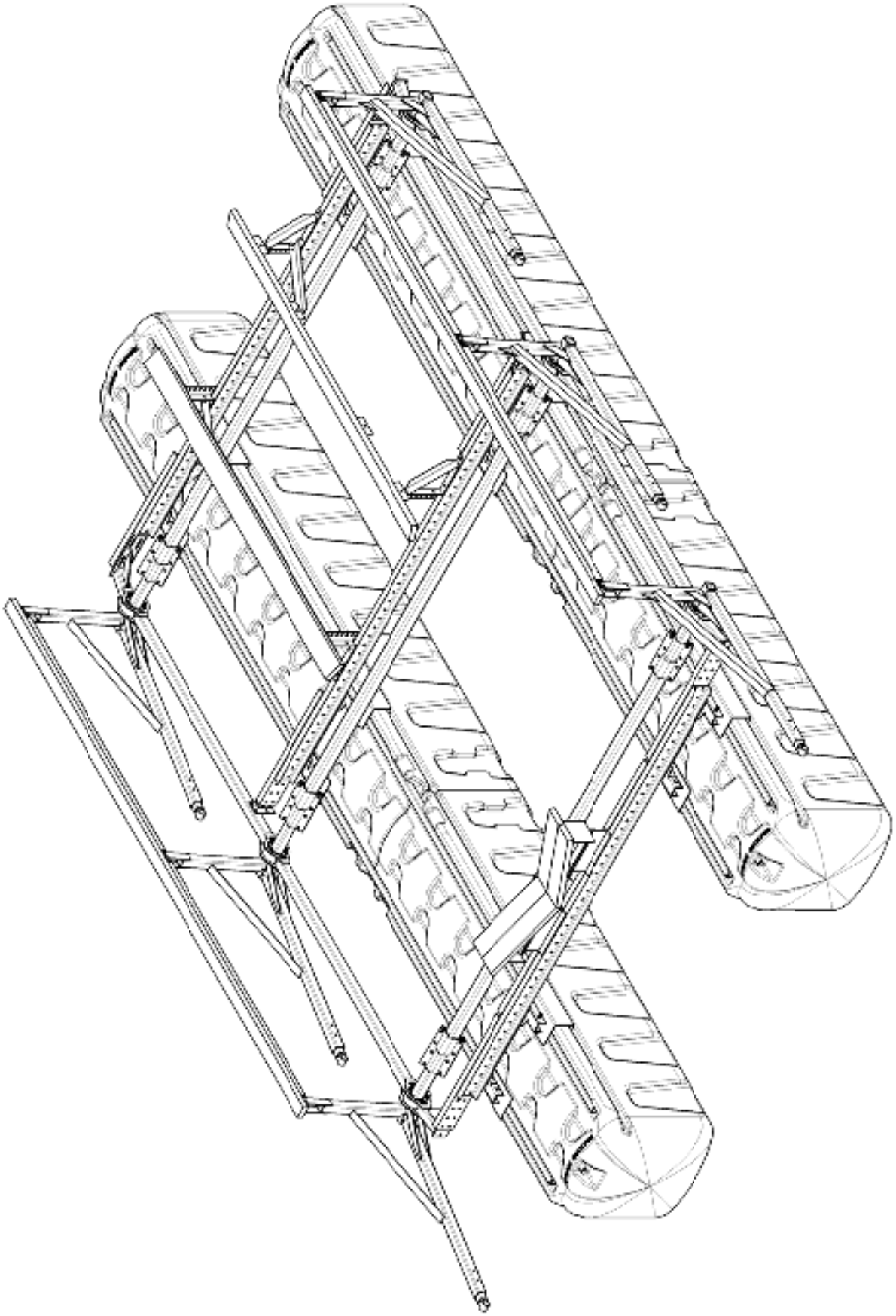
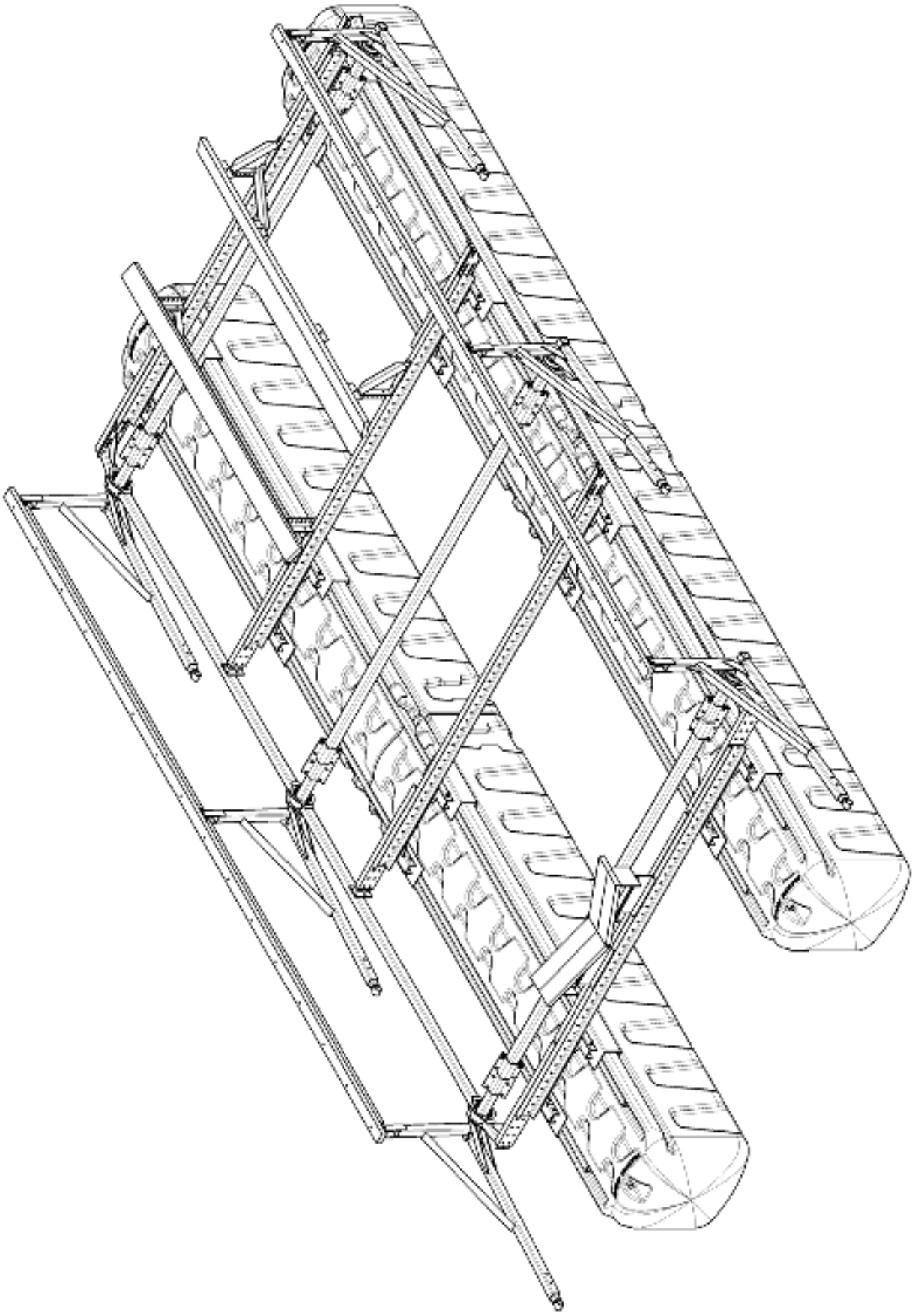


Figure III-12,000 UL2-Model-16' Slip

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



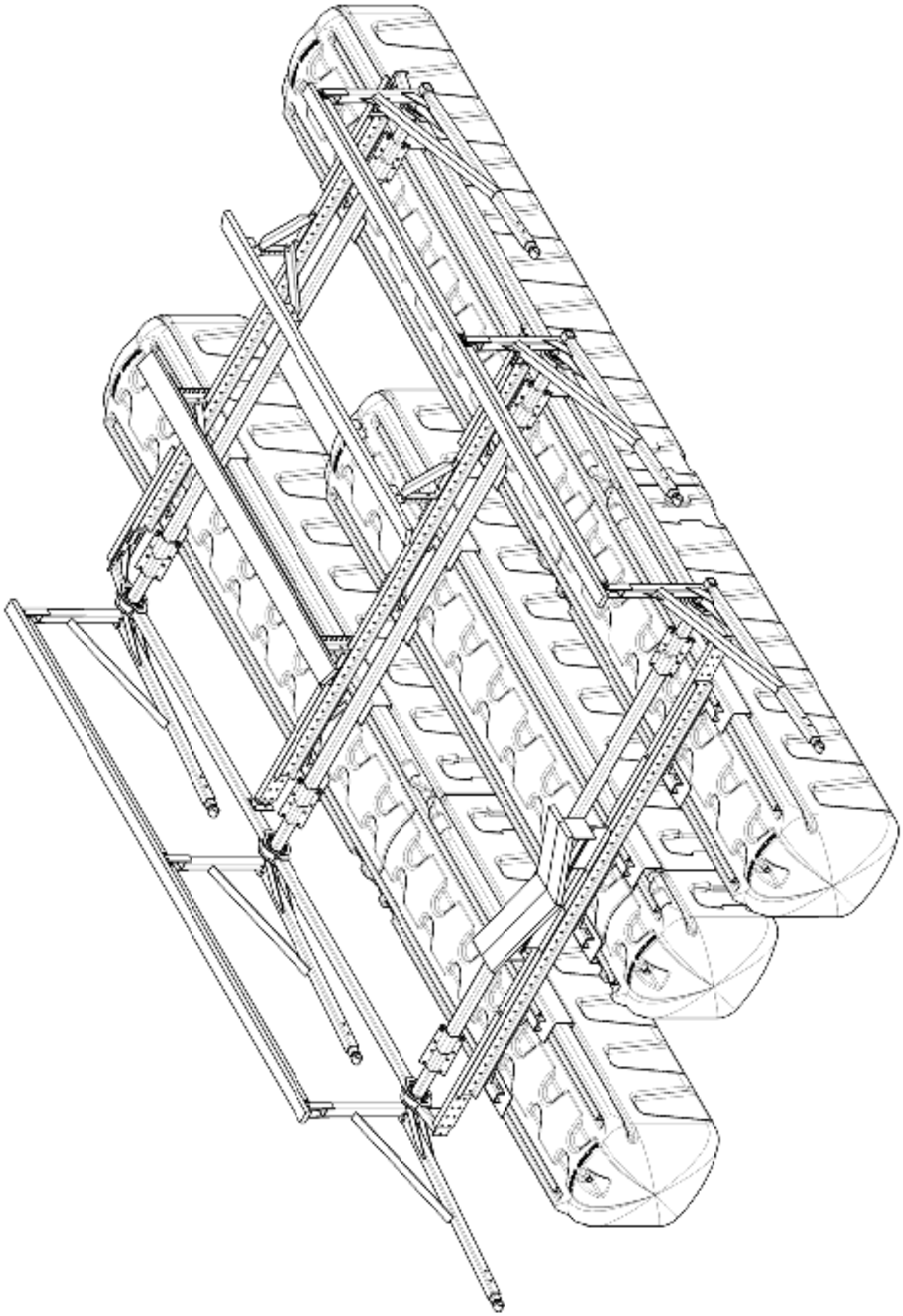


Figure VII-16,000 UL2-Model-16' Slip-3T-6 Arm

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

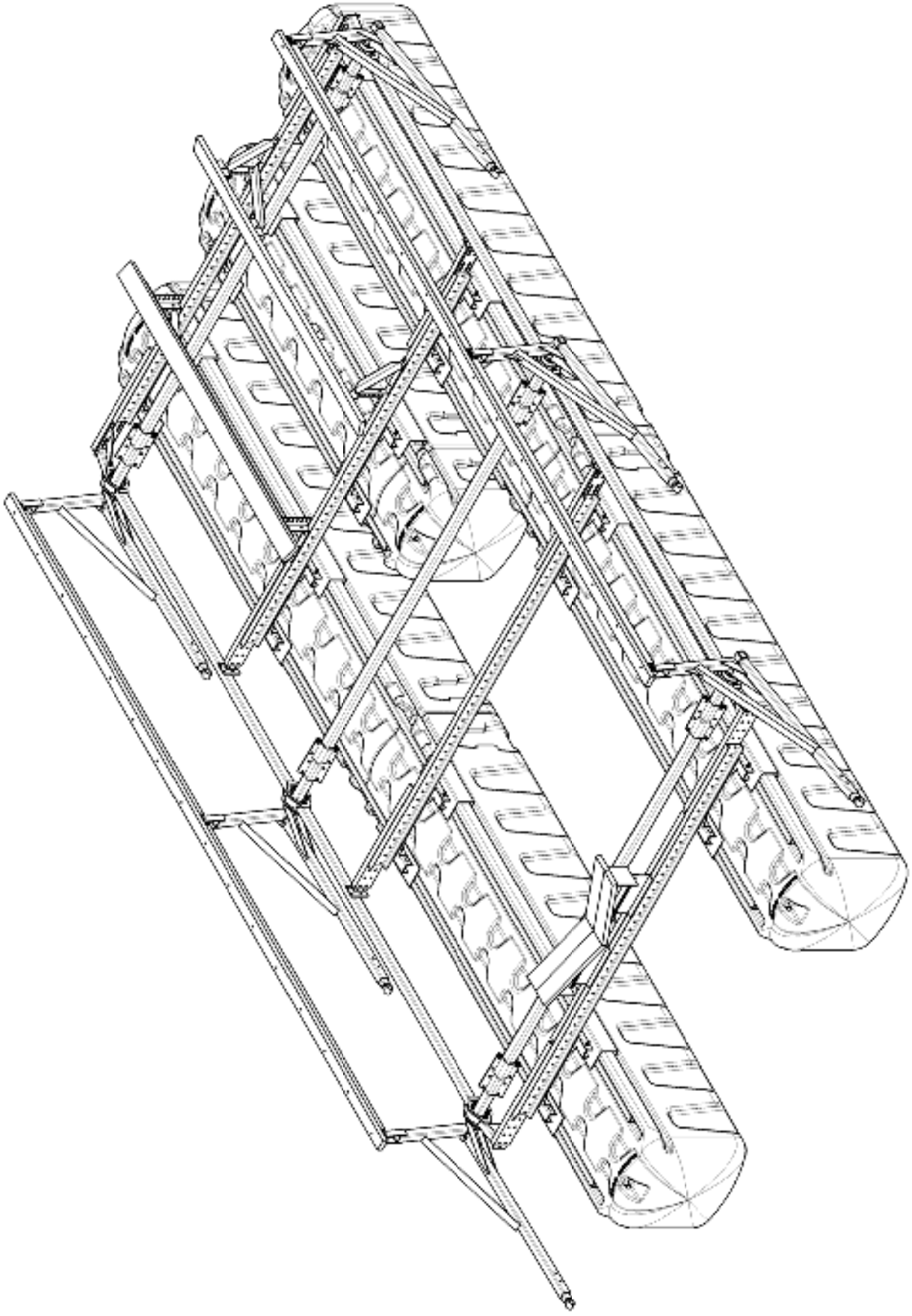
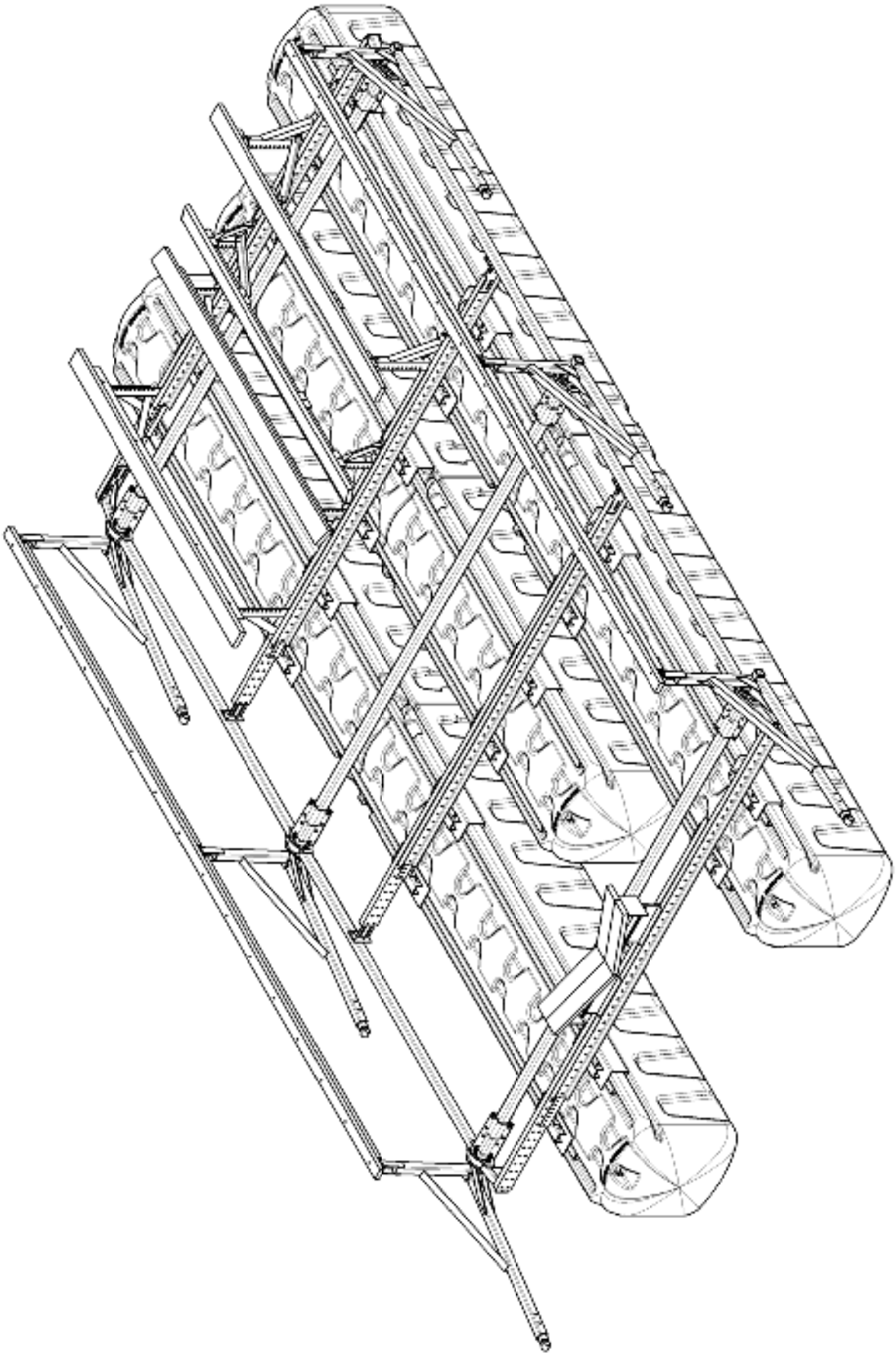


Figure VI-18,000 L-Model-18' Slip-3T-6 Arm



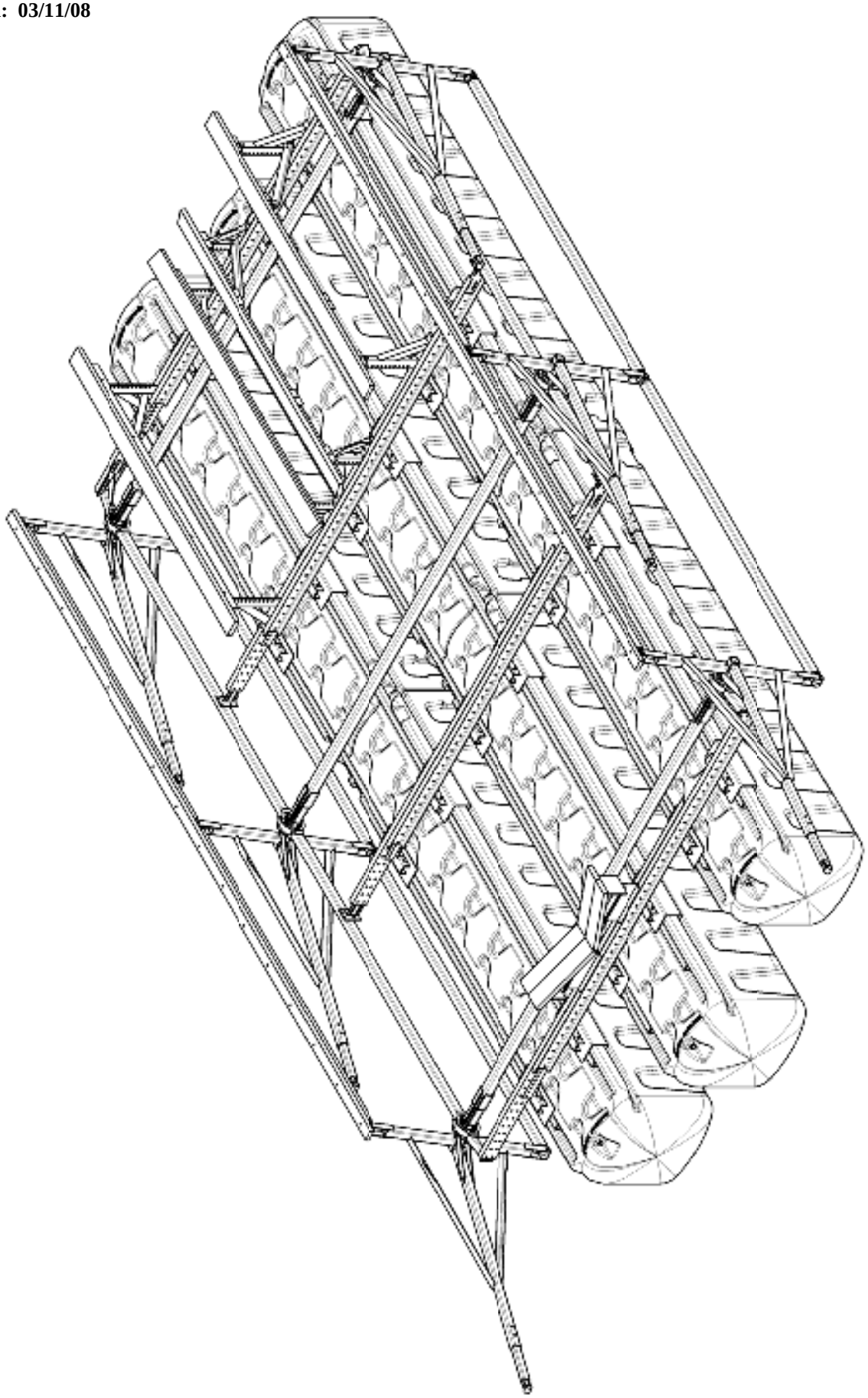


Figure VI-22,000 L-Model-18' Slip-3T-6 Arm

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.

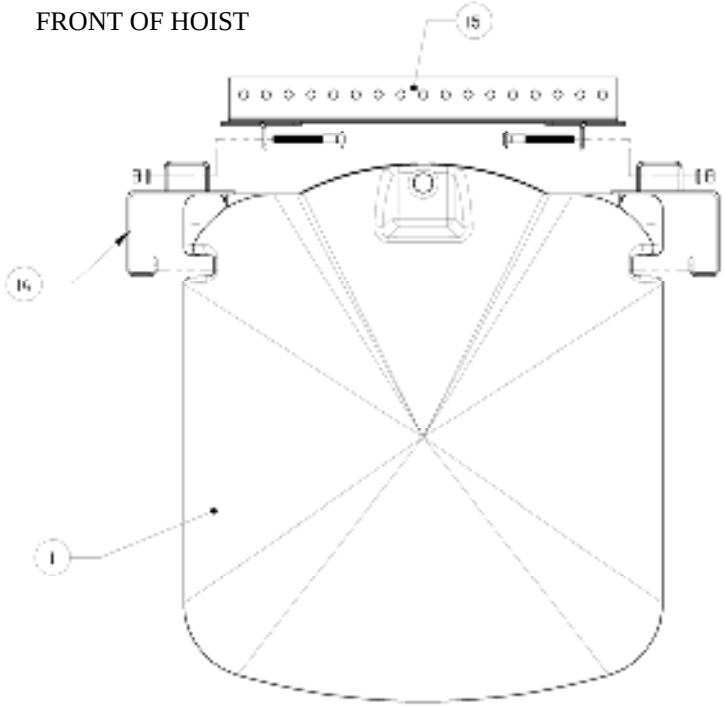
BOLT SIZE	FOOT POUNDS OF TORQUE
1/4-20	5 FT. LBS.
5/16-18	11 FT. LBS.
3/8-16	18 FT. LBS.
7/16-14	28 FT. LBS.
1/2-13	39 FT. LBS.
9/16-12	51 FT. LBS.
5/8-11	83 FT. LBS.

Tank Band Assembly

(front and rear of hoist) Fig. A

Step	Procedure
2.1	Align the Tanks [1] parallel with each other and with the Air Injection Nipple to the front of the hoist . 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 & lockwasher. ***Note 1:*** *Dimensions are referenced from the front edge (Nipple End) of the tank tube(9) tray.* ***Note 2:*** *The open side (inside angle) of the Upper Tank Bracket [15] angle is to the front of the Tanks.* ***Note 3:*** *Stern Loading installations - Refer to Section 7 Supplement*

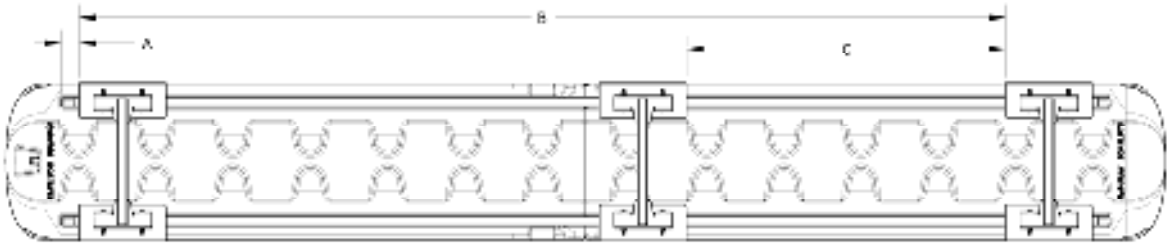
FRONT OF HOIST



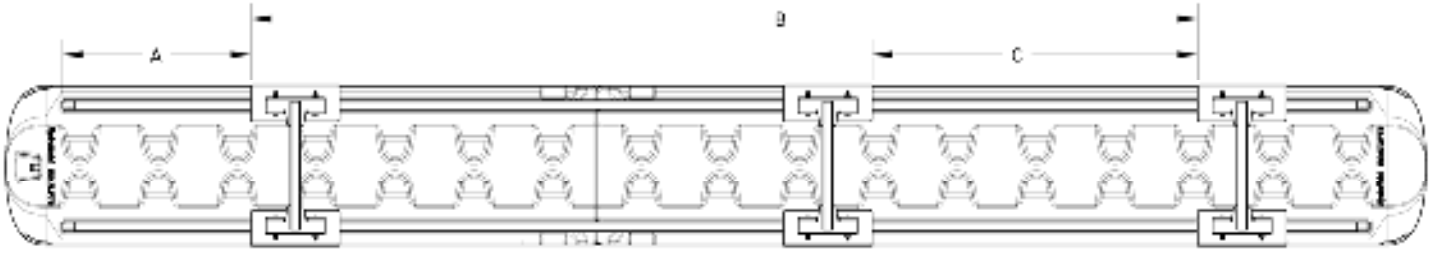
Tank Band Assembly

(front and rear of hoist) Fig. A

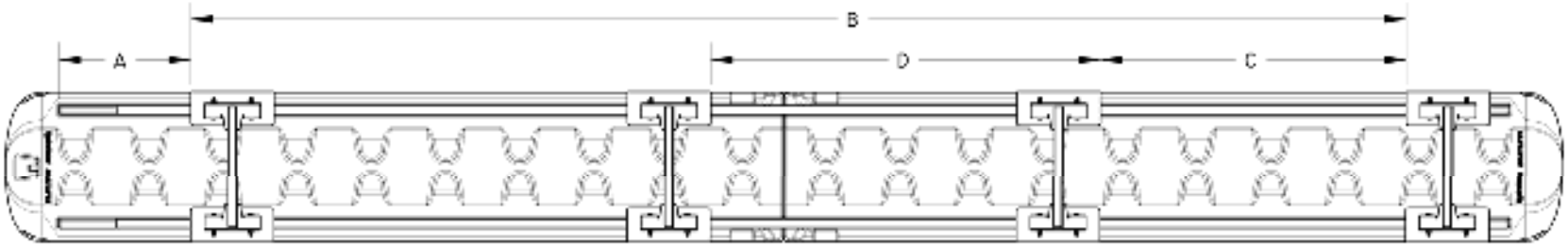
UL2 10,000 TANK BRACKET SETTINGS
A=3.5”
B=192”
C=66”



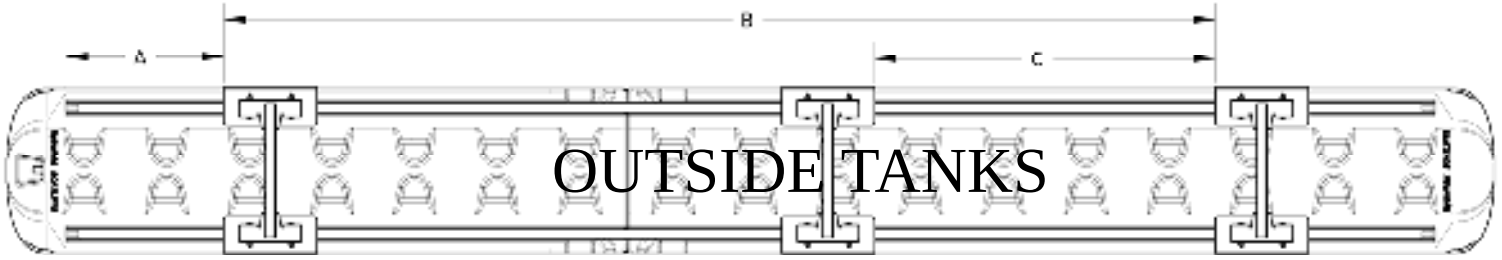
UL2 12,000 TANK BRACKET SETTINGS
A=38”
B=192”
C=66”

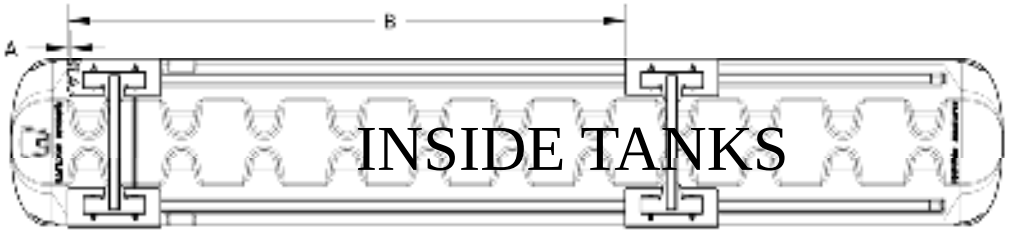


UL2 14,000 TANK BRACKET SETTINGS
A=4”
B=262”
C=66”
D= 84”



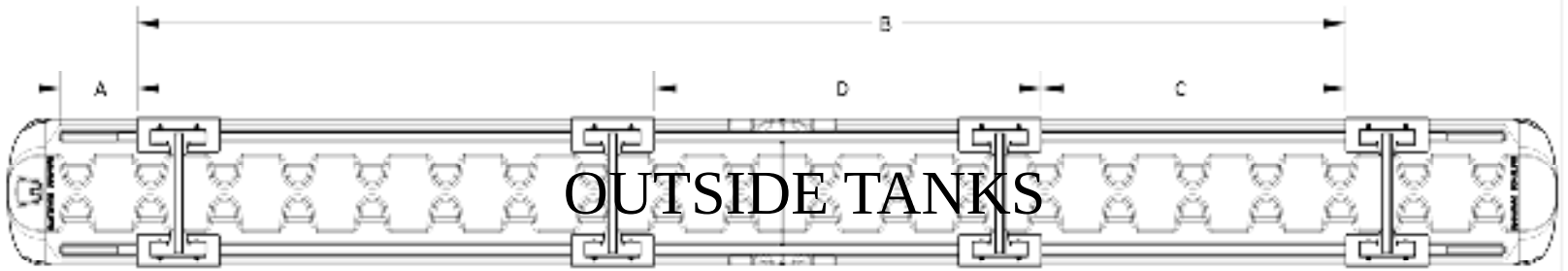
UL2 16,000SS TANK BRACKET SETTINGS
OUTSIDE TANKS
A=30.5”
B=192”
C=66”



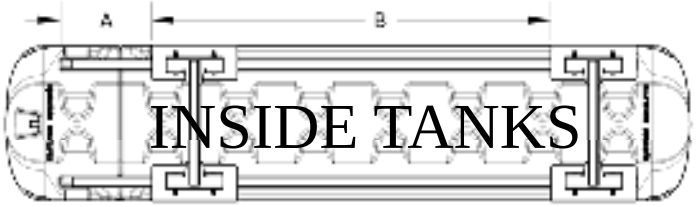


UL2 16,000SS TANK BRACKET SETTINGS
INSIDE TANKS
A=.5”
B=108”

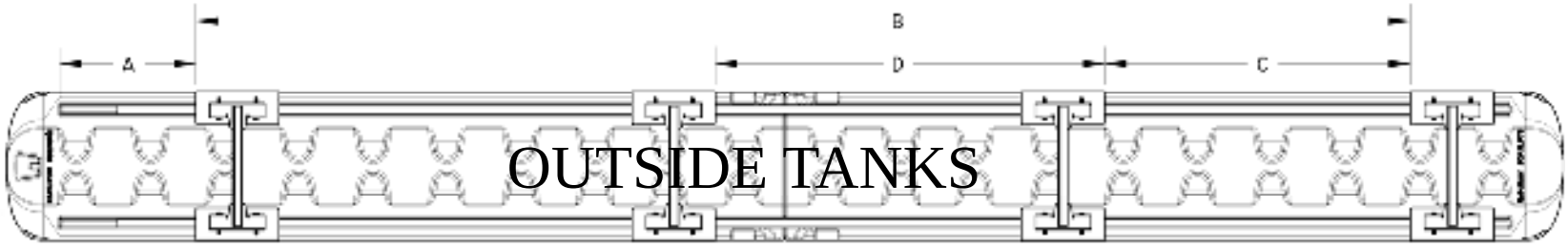
UL2 16,000LS TANK BRACKET SETTINGS
OUTSIDE TANKS
A=16.5”
B=262”
C=66”
D=84”



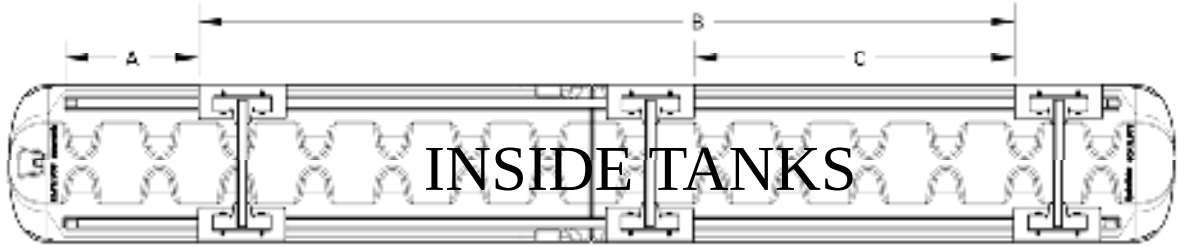
UL2 16,000LS TANK BRACKET SETTINGS
INSIDE TANKS
A=19”
B=84”



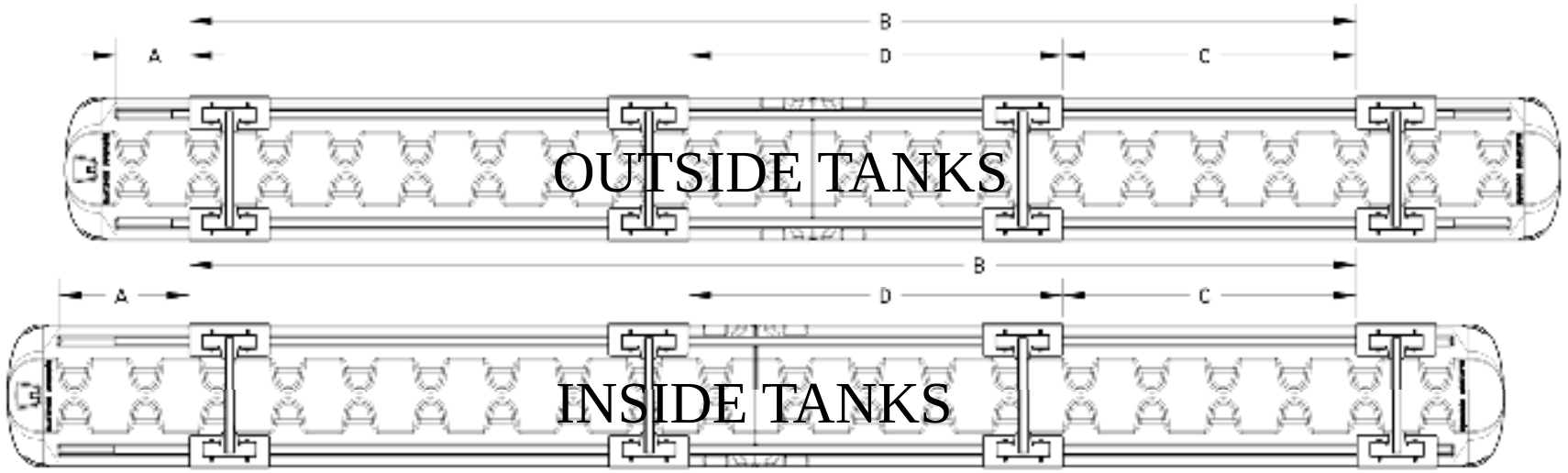
UL2 18,000 TANK BRACKET SETTINGS
OUTSIDE TANKS
A=29.5”
B=262”
C=66”
D=84”



UL2 18,000 TANK BRACKET SETTINGS
INSIDE TANKS
A=27.5”
B=168”
C=66”



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

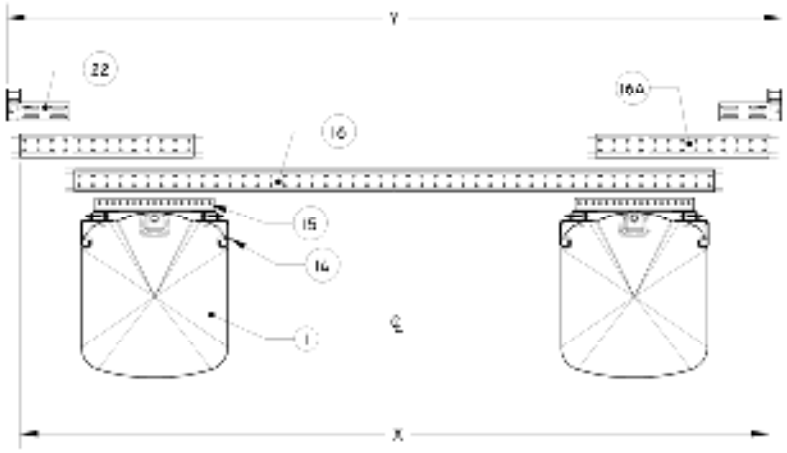
The front End Channel is reinforced with a short section of channel at certain widths for certain capacities. Refer to Parts list to determine if your capacity and slip width call for a "back up channel".

Keel Spanner Assembly

Fig. C

Step	Procedure
4.1	If Keel Spanners [16A] are used, 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).

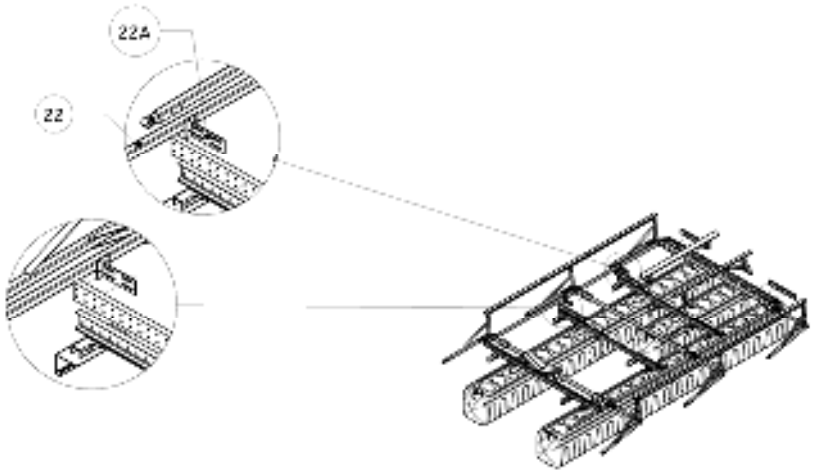
X = 46" narrower than the slip width with Mega arms(4522100).

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]. *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.* Fasteners per Side Stiffener: (8 ea.) 1/2" x 2" bolt, nut, flatwasher & lockwasher. **NOTE:** • Use flatwasher over slotted holes.
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. **THIS IS VERY IMPORTANT**

Fig. D

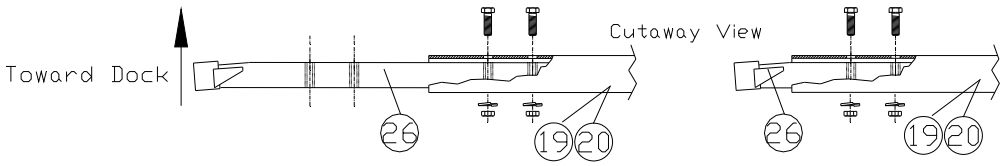


Arm Extension Assembly

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. **Tighten <u>NOW</u> to 75 ft. lbs.** • *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.* ***Normal installation uses holes closest to Pivot End.***

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.*

<u>NOTE</u>

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 <u>forward</u> (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**

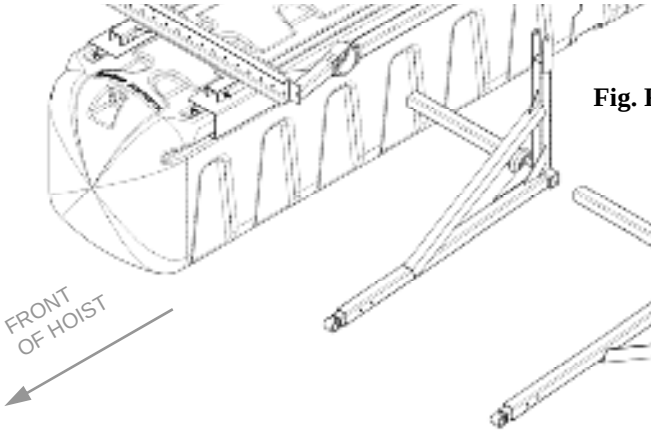


Fig. F1

Fig. F2

Fig. F3

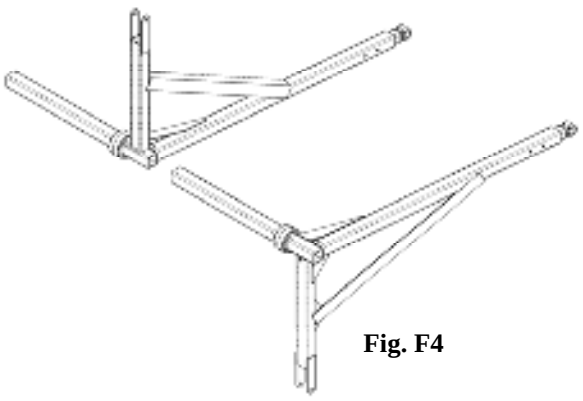


Fig. F4

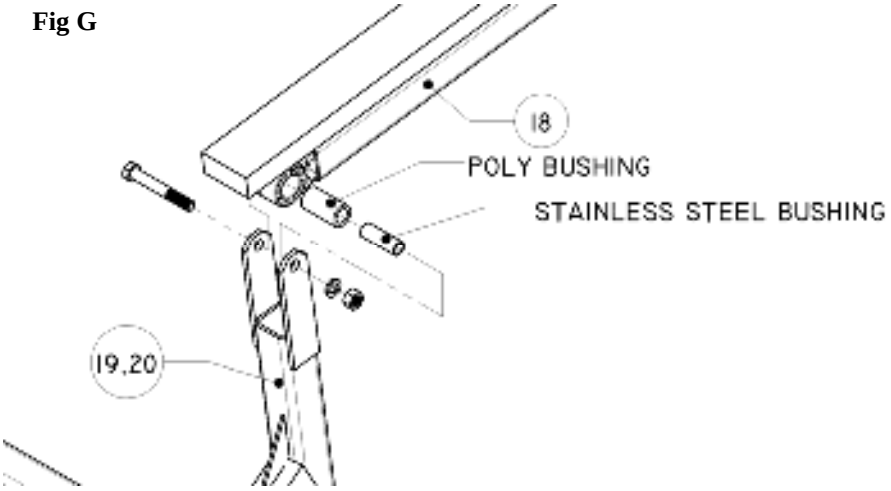
Stabilizer Arm Assembly
Cont'd.

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. *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.*
8.2	Temporarily chain the Rear* Stabilizer Arms to the level position: ***1.*** Raise one Rear Stabilizer Arm to horizontal. ***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. ***3.*** Fasten the loop by bolting the chain links together with a 3/8" x 2-1/4" bolt, double-nuts, & double flatwashers. ***4.*** Repeat on opposite side Rear Arm, making the two Arms parallel to each other. *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.*** *Chain Front Stabilizer Arms if installed AFTWARD.

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. **Tighten NOW to approximately 75 ft.-lbs. of torque.**

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

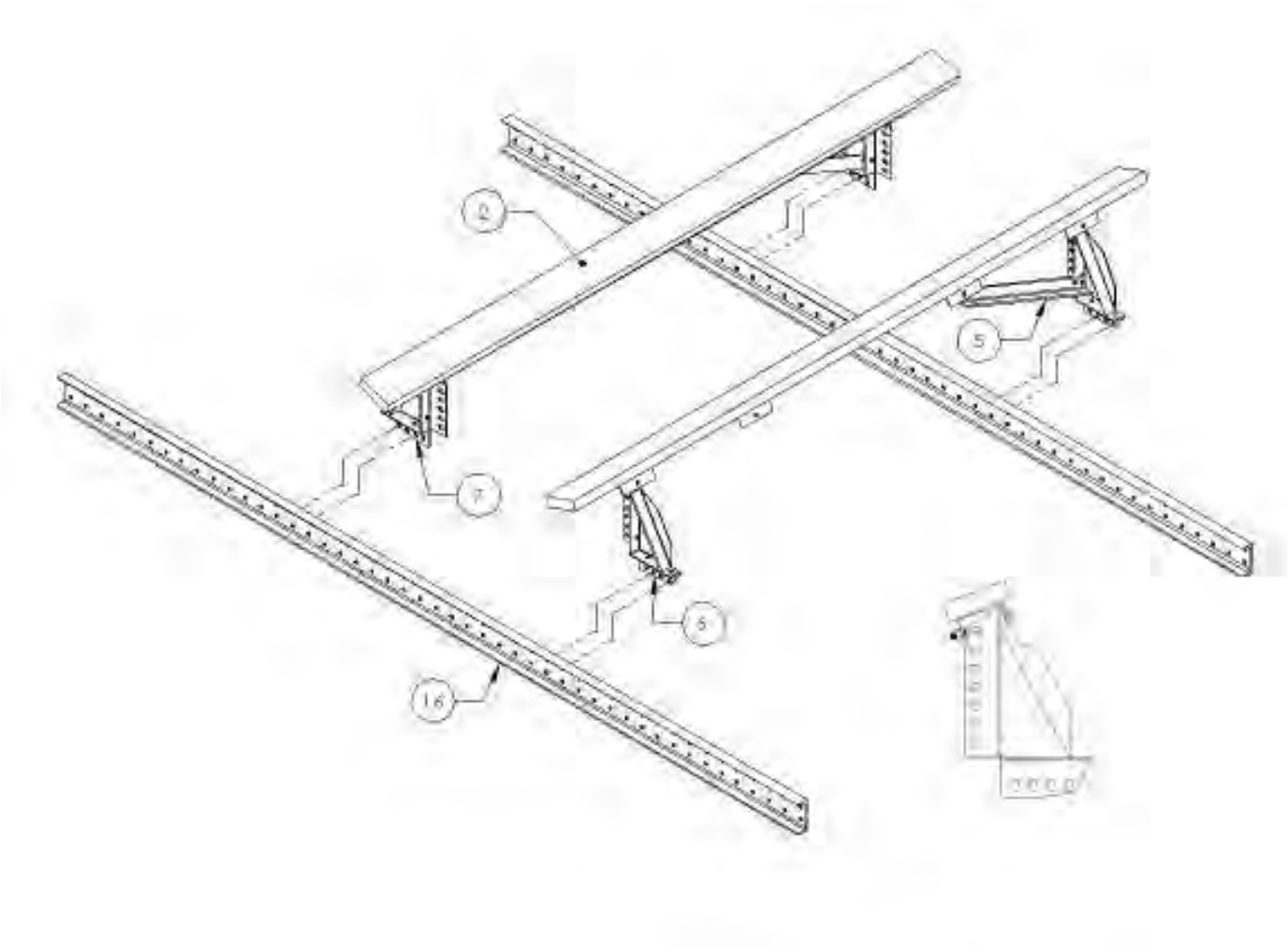
If the boat hull is unable to be measured prior to hoist assembly, space the Hull Support Columns [6-7] 36" to 42" apart. Typically, the longer leg of the columns [6-7] are positioned vertically to lift the boat higher above the water, however the shorter leg of the column may be positioned vertically 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 *inboard* 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]. *The flat side of the braces face inboard.* 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	**Tighten** the 5" Hull Support Pad bolts only enough to flatten the lockwashers. ***Do not*** *tighten any other bolts at this time.*

Fig. H

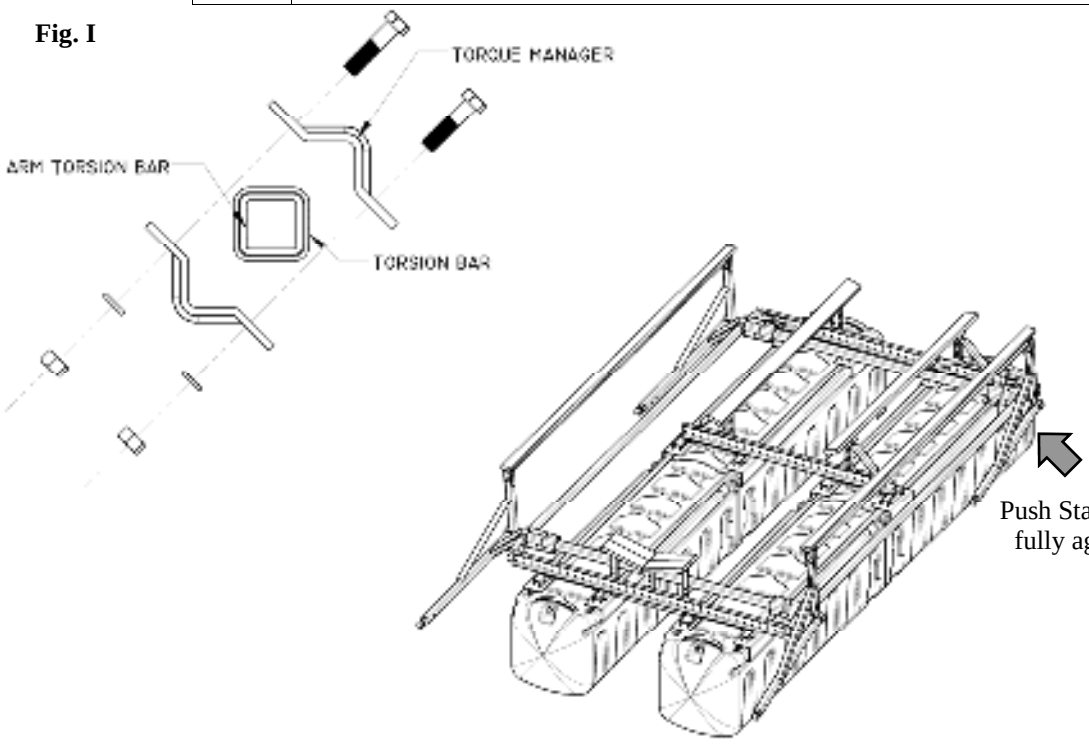


Torsion Bar Clamps

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, **TIGHTEN THE TORSION BAR CLAMPS AS TIGHT AS POSSIBLE.**

Fig. I



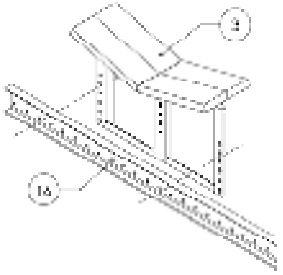
"V" Pad Assembly

Fig. J

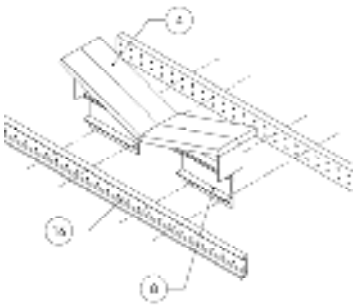
Step	Procedure
12.1	**FOR PT. No. 5029000 - 32" BASE STYLE**. Center "V" Pad [3] on the front End Channel [16], estimate the needed height and attach. Fasteners (6 ea) 1/2" x 1-1/2" bolt, nut, lockwasher, & flatwasher over slotted holes.
12.2	**FOR PT. No. 52016000 - 10/20/30 C STYLE.** 1. Attach Risers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



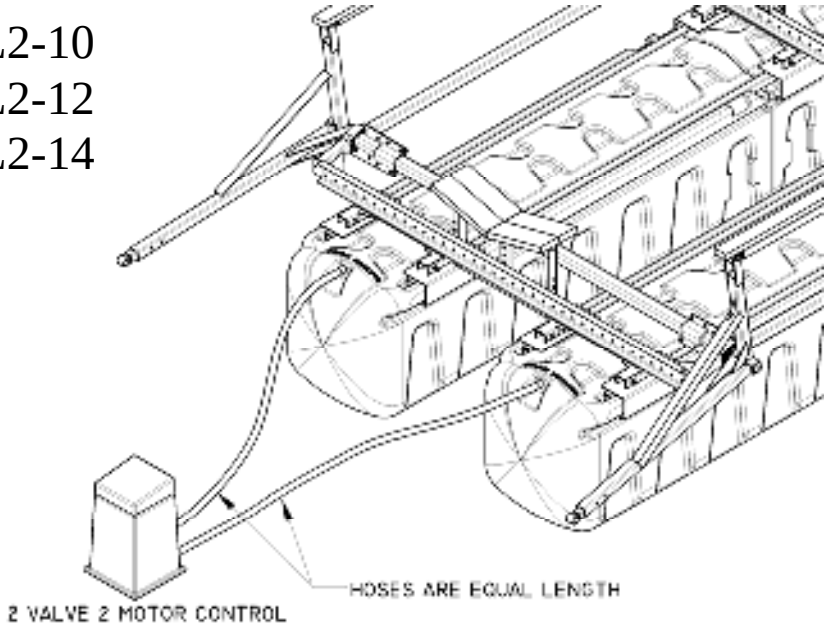
Hose Assembly

Fig. K

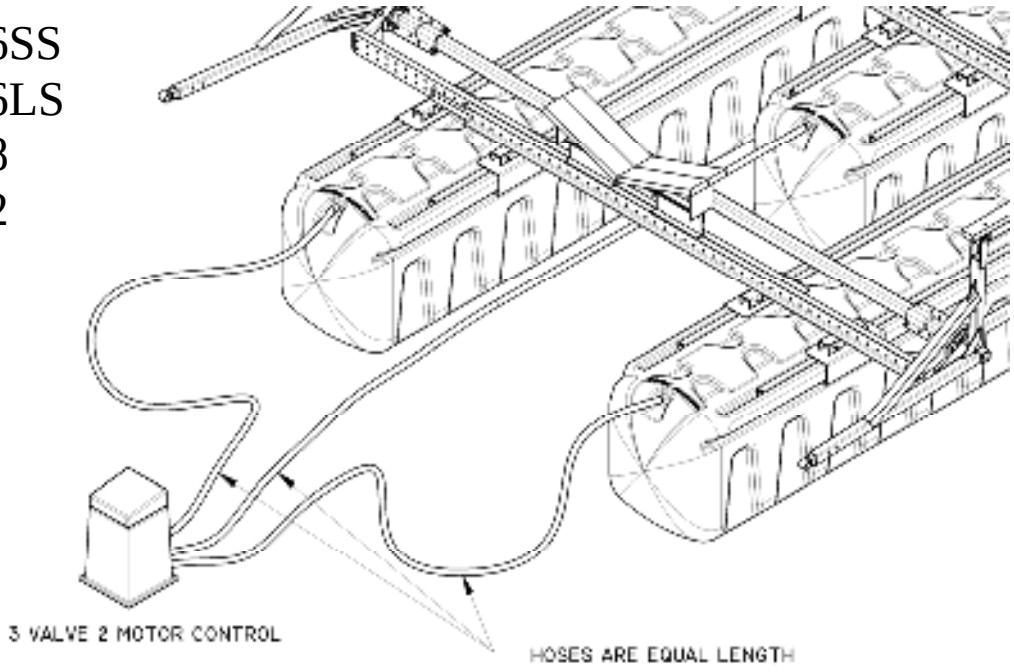
Step	Procedure
15.1	See Fig. K for proper assembly of Hose Sets, application of Hose Clamps and PVC Tees. 1. **UL2-10/UL2-12/UL2-14** - From the 30 ft. roll of Hose supplied, make (2) equal sections of Hose. **UL2-16SS/UL2-16LS/UL2-18/UL2-22** - From the 75 ft. roll of Hose supplied, make (3) equal sections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

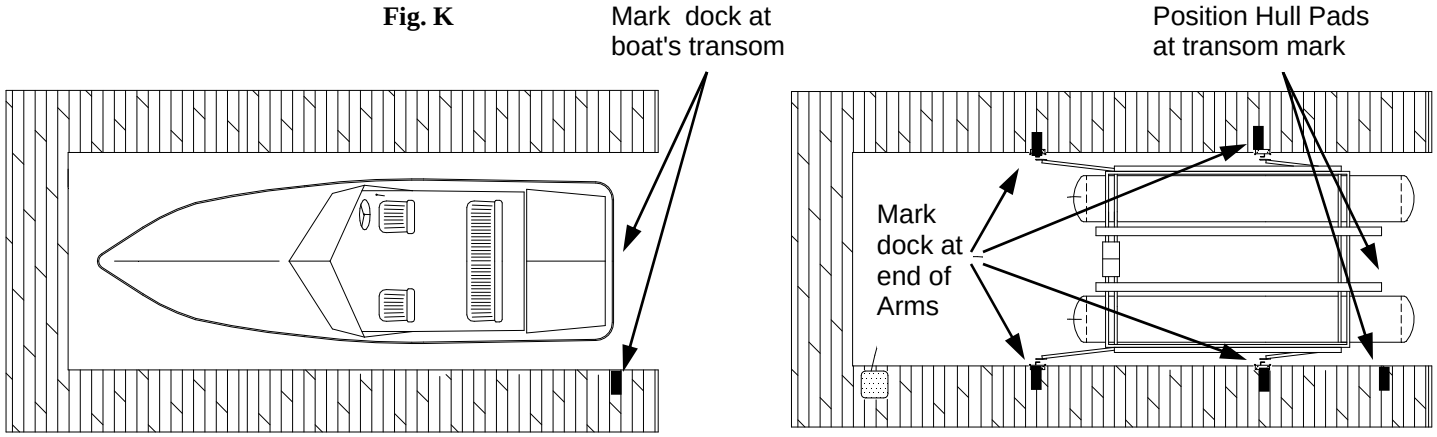
Step	Procedure
16.1	Using a Ratchet Puller ("Come-A-Long") connected near the ends of the front Stabilizer Arms [19-20], pull the front Stabilizer Arms inboard approximately three inches. *Note: Attach the hooks of the Come-A-Long near the end of the Arm, but NOT through the mounting hole at the Arm's end. In assembling the hoist, the Arms are slightly WIDER that the Dock Bracket attachment points, the purpose of pulling the Arms inboard, is to allow the Arm ends to position between the Dock Bracket.*
16.2	Repeat Step 16.1 above with the rear Stabilizer Arms. *Note: The cable of the Come-A-Long should extend under the Side Stiffener - caution should be taken to protect the Tanks from possible damage by the cable.*
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.

Selecting Position for Boat & Hoist *(BOW FIRST LOADING)*

Fig. K

Step	Procedure
1.1	***BOW FIRST LOADING ONLY - For STERN LOADING instructions See Section 7 Supplement.*** Pull the ***boat*** 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. ***Note****: Do not include extensions to the hull such as swim platforms; the transom mark should reflect the location of the the* ***end of the bottom of the hull.***
1.3	Remove the boat and pull the **hoist** into the berth.
1.4	Position the hoist along side the dock and align the **rear end** of the Hull Support Pads with the **transom mark** on the dock. With the hoist held stationary at this position, place **marks** on the dock at the location of the ***Stabilizer Arm attachment points.***

Fig. K

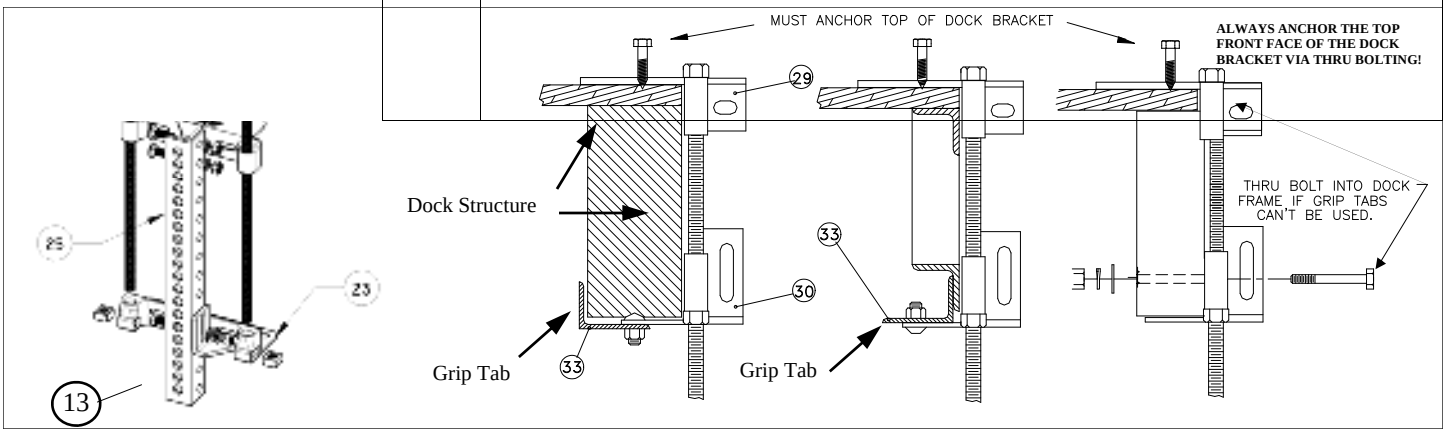


Dock Bracket Attachment

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) **through-bolt** 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 - *do not fully tighten at this time, further horizontal adjustment may be needed later*.

Fig. L

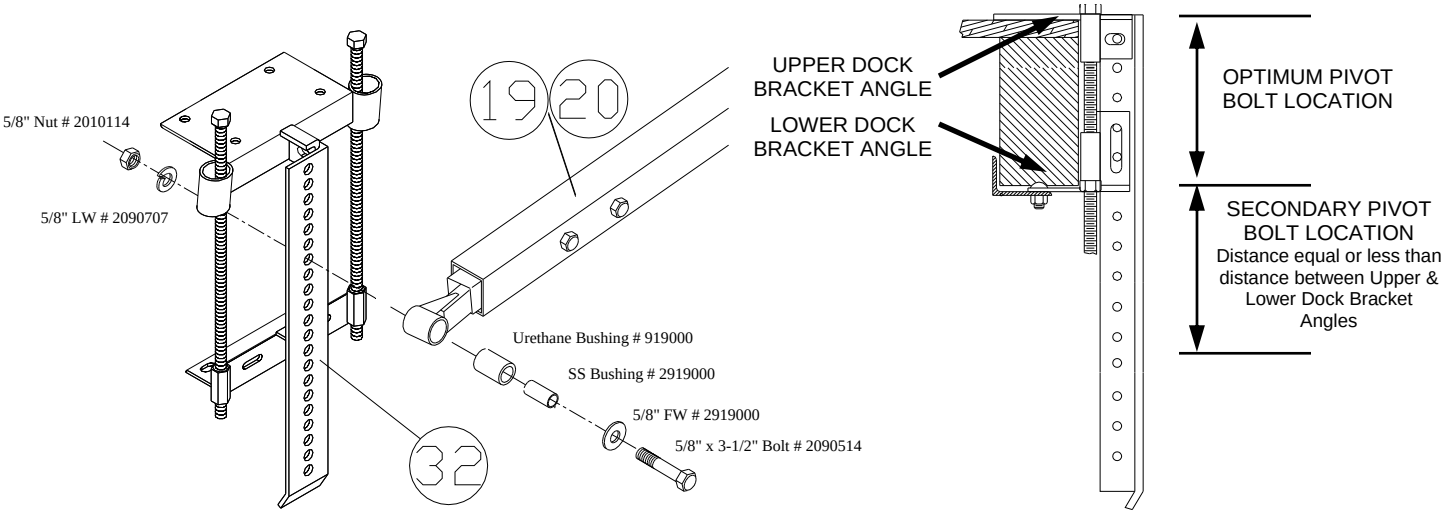


Lift Attachment

Fig. M

Step	Procedure
3.1	Float hoist into position with the arms lined up with the Dock Brackets.
3.2	Loosen ***front*** "come-a-long" only enough to allow the ***front*** Stabilizer Arms [19-20] to touch the Vertical Angles [32] of the Dock Brackets.
3.3	SELECT PIVOT BOLT HEIGHT: 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 **greater** than the distance between the Upper and Lower Dock Bracket Angles. **See Fig M**
3.4	**FRONT ARMS ONLY** - Insert Urethane & Stainless Steel Pivot Bushings into the Pivot End of **one** *front* Stabilizer Arm [19-20]. Attach Stabilizer Arm to Vertical Angle [32] of Dock Bracket - *it may be necessary to push down or lift up on the Arm to access the selected pivot location.*. Fasteners per Arm: (1 ea) GRADE 8 - 5/8" x 3-1/2 bolt, Flatwasher, Lockwasher, & Nut. **TIGHTEN AS TIGHT AS POSSIBLE.**
3.5	**MEASURE THE DISTANCE FROM THE PIVOT BOLT TO THE WATER** - THIS DISTANCE WILL BE REPEATED FOR THE OTHER THREE ARMS - **ALL PIVOT BOLTS MUST BE AN EQUAL DISTANCE ABOVE THE WATER .**
3.6	Repeat Step 3.4 with opposite ***front*** Stabilizer Arm [19-20]. (**Do Not** loosen or remove come-a-longs at this time). **TIGHTEN AS TIGHT AS POSSIBLE.**
3.7	**REAR ARMS ONLY** - 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 are not equal, correct by moving one of the **front** Dock Brackets forward or backward until the hoist is square in the slip.
3.8	Loosen ***rear*** "come-a-long" only enough to allow the ***rear*** 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. **TIGHTEN AS TIGHT AS POSSIBLE.** (**Do Not** loosen or remove come-a-longs at this time). ***NOTE-*** *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 close the Valve when position is achieved.*

Fig.M



Anchoring Dock Brackets

Fig. M

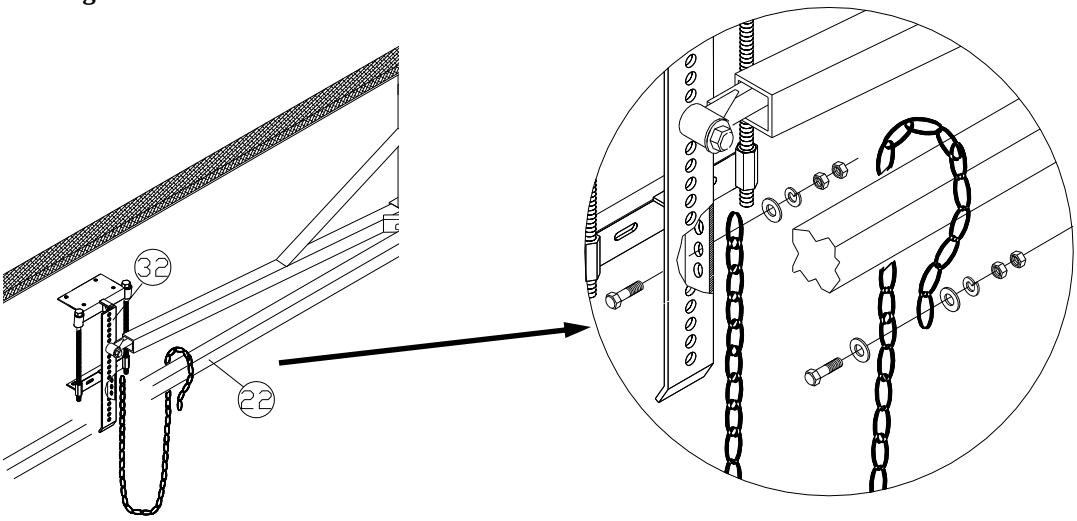
Step	Procedure
4.1	With the Come-a-longs still attached, the Pivot Ends of the Arms in contact with the Vertical Angles [32], and the Dock Brackets fully against the dock structure, **TIGHTEN** the 20" Dock Bracket Bolts [31] to about 35 ft-lbs of torque.
4.2	With the Come-a-longs still attached, **ANCHOR** the ***top*** Dock Bracket Angles [29] to the dock to prevent inboard movement. **See Fig. L**. 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. *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.*
4.4	If Grip Tabs were not used, **ANCHOR** the ***bottom*** Dock Bracket Angles [30] to the dock by thru-bolting the Angles to the dock. **See Fig. L**. 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	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. **IMPORTANT:** 1. Chain length must be **equal length** on each side of hoist - unequal length may cause hoist to lift high and launch low on one side. 2. Length of Chain (attachment point) is determined by: • The height of the attachment point above the water. • The draft of the boat. *3* 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. *4* 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.

Fig. N



Adjustments

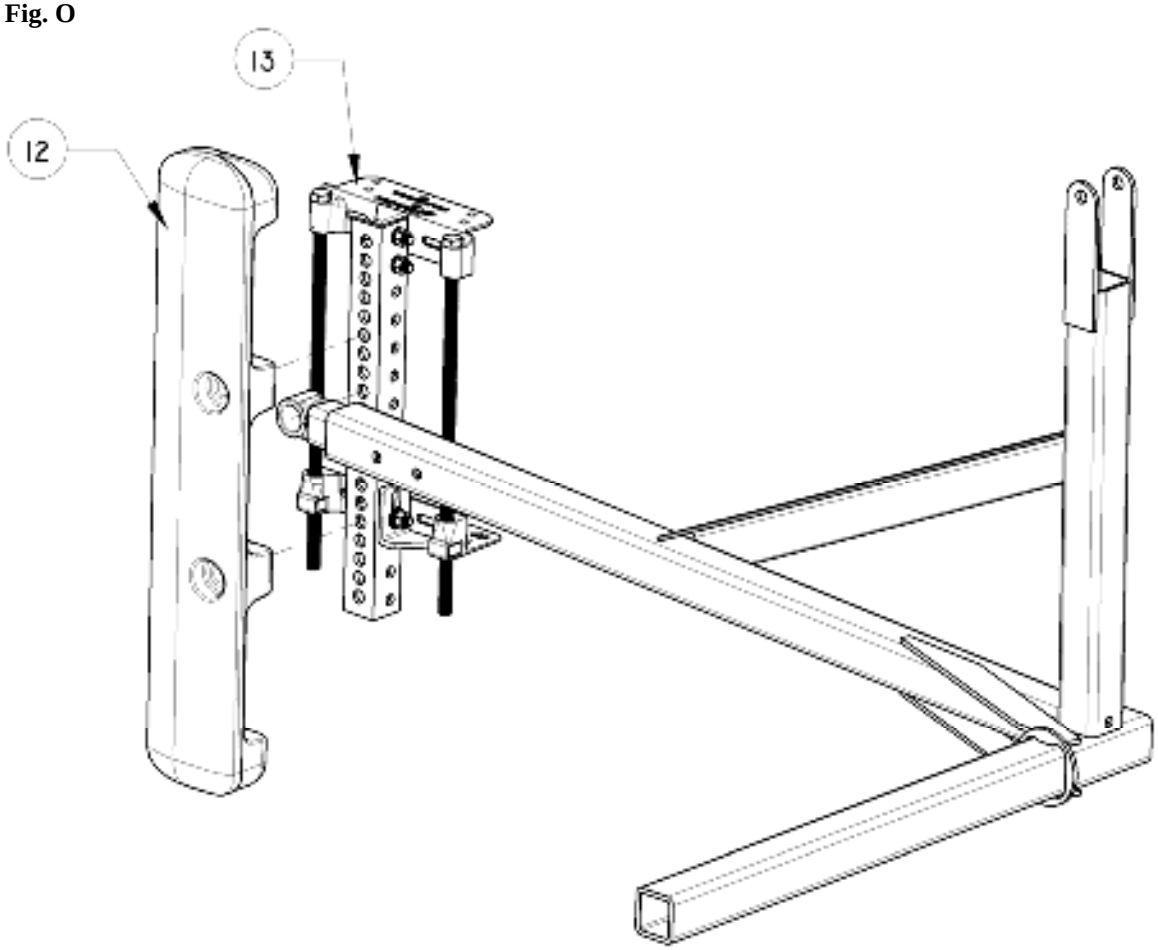
Step	Procedure
6.1	CHECK ALL DOCK BRACKET BOLTS FOR TIGHTNESS.
6.2	Attach the Control Unit to the dock in the desired location and connect the power cord to proper power source. Test the motor switch to ensure operation.
6.3	Remove Tank Plugs if used
6.4	Lower the hoist according to the OPERATING INSTRUCTIONS (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. *Note: If all Pivot Bolts are correct, and the hoist is still uneven, the hoist was assembled uneven. See Section 6 - Trouble Shooting*

HydroGuards

Fig. S

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.

Fig. O



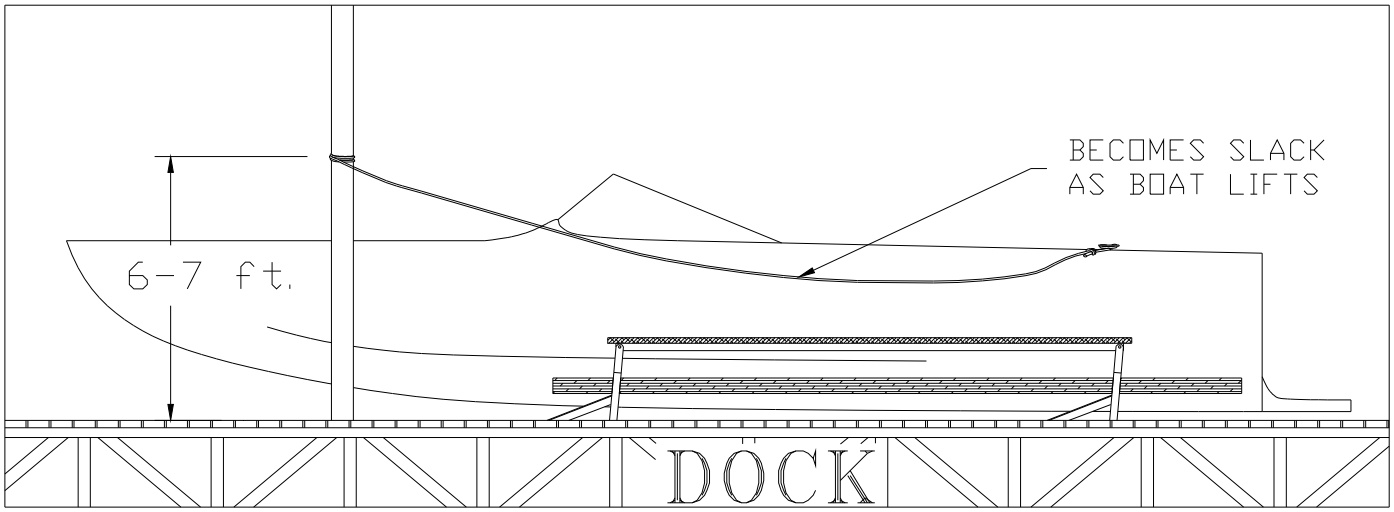
Final Adjustments

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). *This will properly position the transom just above the end of the Hull Support Pads as the hoist rises.*
1.2	Hold the boat in position at the transom mark and center it side to side over the hoist.
1.3	***Continue holding the boat in position,*** 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. *Note: It may be necessary to reset the GFCI switch to activate the Switch.*
1.4	Allow hoist to lift boat and observe the lifting operation - • STOP LIFTING if boat is off center side-to-side or fore-to-aft. Lower hoist and reposition boat. • STOP LIFTING if Dock Bracket movement is observed. Lower hoist and secure Dock Brackets. • STOP LIFTING if hoist is not rising level. Lower hoist and reposition boat.
1.5	**STOP LIFTING** 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 - **each corner should be an equal distance (within 3 inches) above the waterline.** • 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. • 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.
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	**INSPECT HOIST AND BOAT:-** • 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. **Note: it is acceptable for the Hull Pads to cross the chines at the bow, but not acceptable from mid-ship to stern.** • Check V Pad Assembly for proper height and fit to keel • Check Dock Brackets for secure hold. • Check all components for correct operation.

Guide Ropes

Step	Procedure
2.1	**With hoist, pads and boat correct,** 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 *above* 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. **DO NOT attach Ropes to any other structure or component of the hoist.**



Final Inspection

Step	Procedure
3.1	Operate the hoist again - **launch then lift** - 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

CONDITION:	Hoist will not completely lift boat from water or stern remains low.
CAUSE:	A Water or equipment in boat creating additional weight. B Boat weight exceeds lifting capacity of hoist.
CORRECTION:	A Remove water or equipment. B Install correct size hoist to accommodate the boat's true weight.

CONDITION:	Hoist tips to side when lifting or launching.
CAUSE:	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.
CORRECTION:	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.

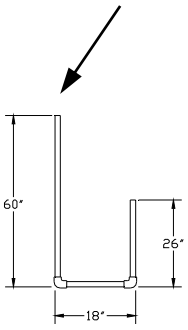
CONDITION:	Hoist leans to one side.
CAUSE:	A Torsion Bar not properly adjusted. B Pivot Bolts not equal height above waterline.
CORRECTION:	A Loosen Torsion Bar Clamps , level hoist. B Correct height of Pivot Bolts.

CONDITION:	Hoist leaks down on one side.
CAUSE:	A Leak in valve, tank, or hose.
CORRECTION:	A Locate leak and repair.

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

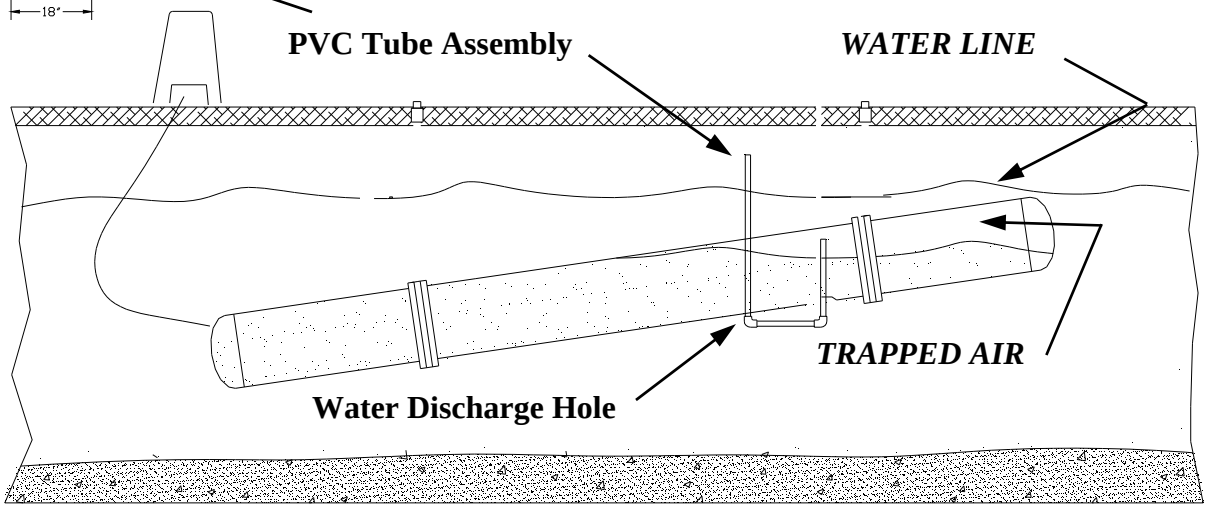
CONDITION:	**Air trapped in tanks.** Front of hoist below water, rear of hoist above water.

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.*



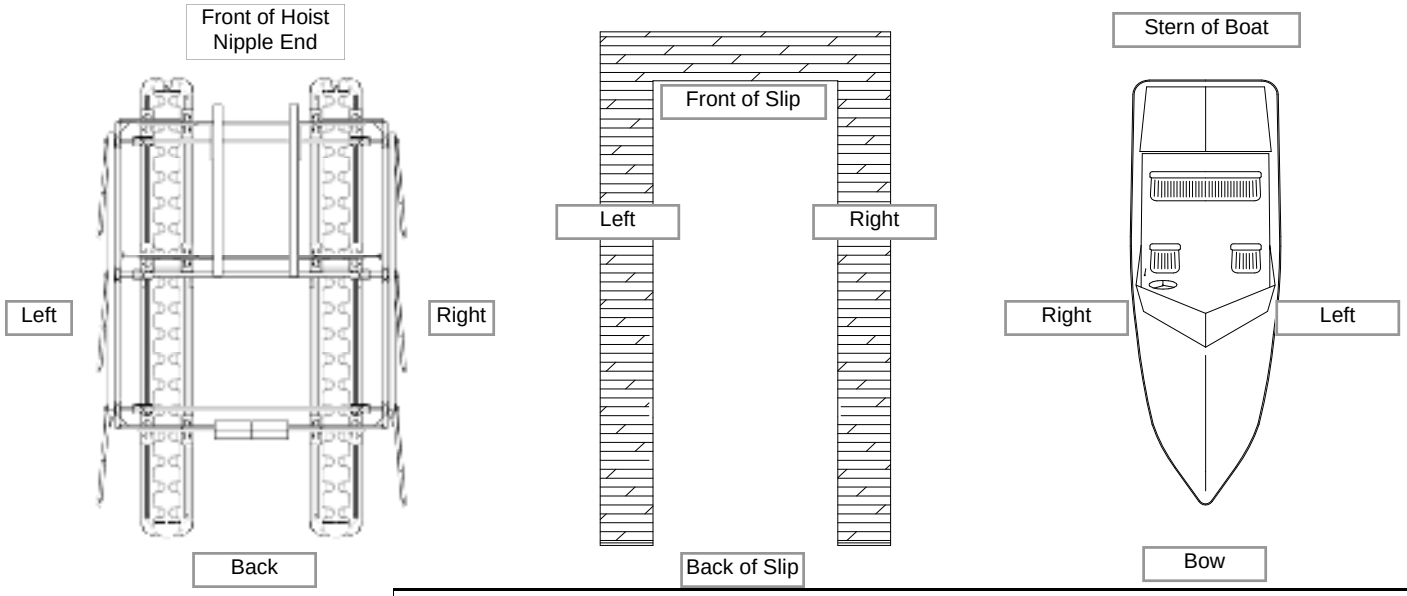
End of Sec.6

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.



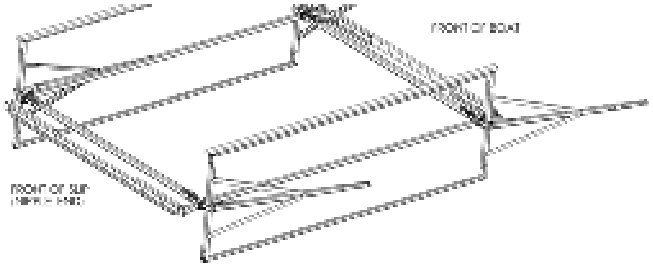
Tank Bracket Assembly

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.

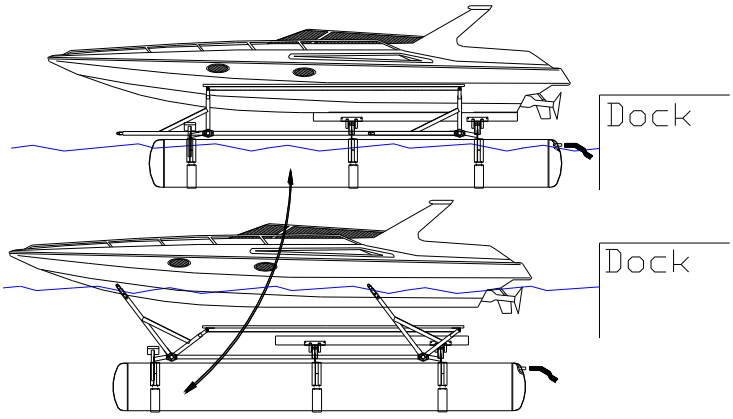
Stabilizer Arm Assembly

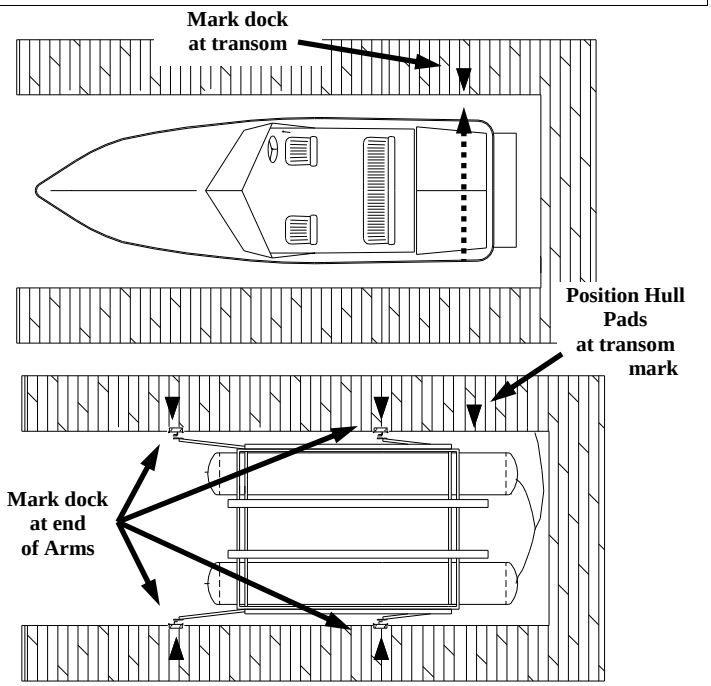
Procedure
In STERN LOADING installations, the Stabilizer Arms are assembled with the Pivot Ends to the BACK of the hoist and slip. This allows the stern of the boat to position nearest the dock header for passenger access. Refer to chart below for Stabilizer Arm assembly.



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

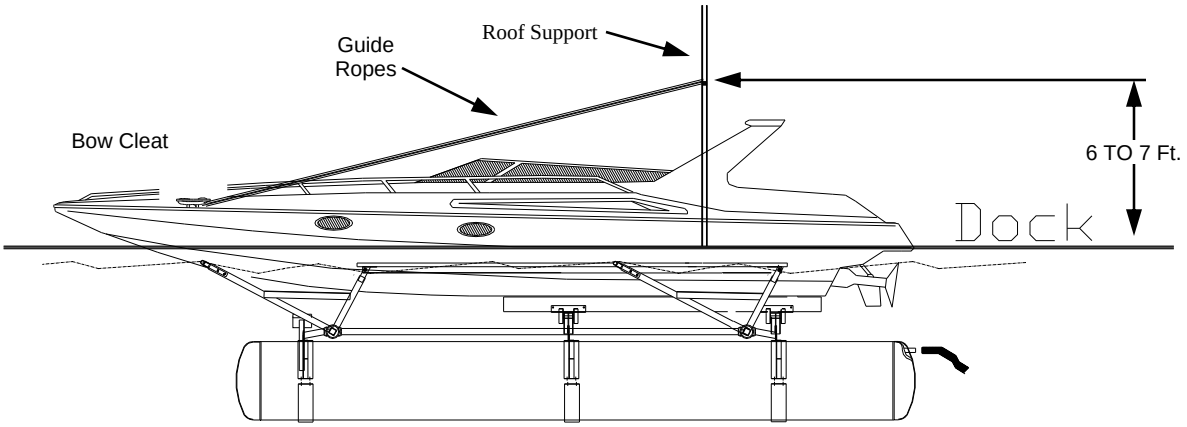
Step	Procedure
1.1	***STERN FIRST LOADING ONLY -*** Pull the ***boat*** into the boat stall so that the STERN can be easily reached from the front of the slip, allowing a minimum of 24 inches of space at the dock level between the front of the slip (dock header) and the boat or out-drives. IMPORTANT - 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. ***Note****: Do not include extensions to the hull such as swim platforms; the transom mark should reflect the location of the* ***end of the bottom of the hull.***
1.3	Remove the boat and pull the **hoist** into the slip.
1.4	Position the hoist inside the slip and align the Hull Support Pads with the **transom mark** on the dock. **IMPORTANT -** 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 **marks** on the dock at the location of the ***Stabilizer Arm attachment points*****.**

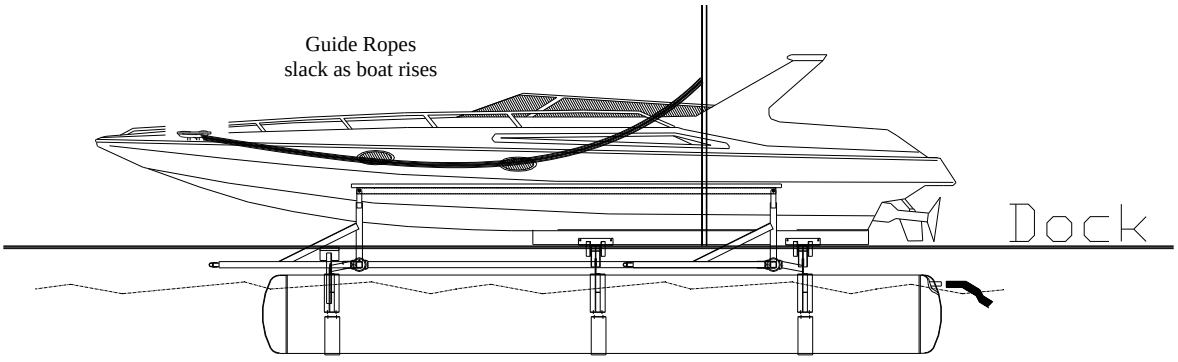




Guide Ropes

Step	Procedure
	With hoist, Pads and boat correct, 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 *above* 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. **DO NOT attach Ropes to any other structure or component of the hoist.**





PARTS LIST 10-14 UL2

			UL1610	UL1611	UL1612	UL1613	UL1614	UL1615	UL1616	UL1617	UL1618	UL1210	UL1211	UL1212	UL1213	UL1214	UL1215	UL1216	UL1217	UL1218	UL1410LGSS	UL1411LGSS	UL1412LGSS	UL1413LGSS	UL1414LGSS	UL1415LGSS	UL1416LGSS	UL1417LGSS	UL1418LGSS
		TANK																											
1	5025512	TANK 36" X 12'																											
	5025516	TANK 36" X 16'																											
	5025520	TANK 36" X 20'	2	2	2	2	2	2	2	2	2																		
	5025524	TANK 36" X 24'										2	2	2	2	2	2	2	2	2									
	5025528	TANK 36" X 28'																			2	2	2	2	2	2	2	2	2
		HULL SUPPORT																											
2	5020200	HULL SUPPORT PAD 9"	2	2	2	2	2	2	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 12" BASE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	5201600	V PAD 10/20/30C STYLE																											
5	4031720	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	2	2	2	2	2	2
6	4031150	HULL SUPPORT COLUMN UNIVERSAL	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
8	4384200	RISER V PAD 10/20/30C																											
		DOCK BRACKET																											
12	5203000	HYDROGUARD	4	4	4	4	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
13	5069000	CAST DOCK BRACKET HG	4	4	4	4	4	4	4	4	4	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	12	12	12	12	12	12	12	12	12	12	16	16	16	16	16	16	16	16	16
15	4240010	TOP TANK BRACKET	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8	8
		END CHANNEL																											
16A	3500330	END CHANNEL 5"X3/2"		4		4		4	4	4	4	6	6	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8	8
16	3500350	END CHANNEL 5"X5/2"																											
	3500390	END CHANNEL 5"X9/2"	1														1									1			
	3500310	END CHANNEL 6"X7/2"	2	3	1					3	3	3						1	1		4	4					1	1	
	3500318	END CHANNEL 6"X9/2"			3	3	1		1				3	3						3			4	4					4
	3500340	END CHANNEL 8"X11/2"					2	3	2	3	1				3	3	3	3							4	4	4	4	
	3500350	END CHANNEL 8"X14/2"									2									3									4
		TORSION BAR EXTERNAL																											
17	3065020	TORSION BAR EXTERNAL 6'2"	2								1									1									
	3065030	TORSION BAR EXTERNAL 7'2"		2								2									2								
	3065040	TORSION BAR EXTERNAL 8'2"			2								2									2							
	3065050	TORSION BAR EXTERNAL 9'2"				2								2									2						
	3065060	TORSION BAR EXTERNAL 10'2"					2								2									2					
	3065070	TORSION BAR EXTERNAL 11'2"						2								2									2				
	3065080	TORSION BAR EXTERNAL 12'2"							2								2									2			
	3065090	TORSION BAR EXTERNAL 13'2"								2	2							2									2		
	3065092	TORSION BAR EXTERNAL 14'2"																	2										2
		PITMAN																											
18	4521600	PITMAN PADDED BIG L 4 ARMS	2	2	2	2	2	2	2	2	2																		
	4270140	PITMAN ASSEMBLY - LONG STEEL																			2	2	2	2	2	2	2	2	2
	4523600	PITMAN PADDED BIG L 6 ARMS										2	2	2	2	2	2	2	2	2									
19	4521900	STABILIZER ARM RH	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20	4522000	STABILIZER ARM LH	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
21	2916730	SQUARE HOLE BUSHING	4	4	4	4	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		SIDE STIFFENER																											
22	4521200	SIDE STIFFENER BIG L 4 ARMS	2	2	2	2	2	2	2	2	2																		
	4270150	SIDE STIFFENER 20L																			2	2	2	2	2	2	2	2	2
	4523650	SIDE STIFFENER BIG L 6 ARMS										2	2	2	2	2	2	2	2	2									
22A	4270130	CLAMP SIDE STIFFENER										2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		CONTROL UNIT																											
23	4220735	CONTROL 2M2V UL2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	4220760	CONTROL 2M3V UL2																											
		HOSE																											
24	3072525	HOSE 1/4" ID 35' LONG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	3072592	HOSE 1/4" ID 75' LONG																											
		MISC																											
25	3000050	TORQUE MANAGER	8	8	8	8	8	8	8	8	8	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
26	4523700	ARM EXTENSION	4	4	4	4	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		PARTS BAGS																											
	5950015	PARTS BAG - UL2 - 10000	1	1	1	1	1	1	1	1	1																		
	5950010	PARTS BAG - UL2 - 10000 - 4 ARM	1	1	1	1	1	1	1	1	1																		
	5950012	PARTS BAG - UL2 12,000 - 6 ARM										1	1	1	1	1	1	1	1	1									
	5950015	PARTS BAG - DOCK BRKT - 12/22K										1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	5950014	PARTS BAG - UL2 14,000 LONG STEEL																			1	1	1	1	1	1	1	1	1
	5925020	PARTS BAG - BIG L TORQUE MGR - 4	1	1	1	1	1	1	1	1	1																		
	5925100	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

		PARTS LIST 16-18 UL2	UL21612	UL21613	UL21614	UL21615	UL21616	UL21617	UL21618	UL21620	UL21612LGSS	UL21613LGSS	UL21614LGSS	UL21615LGSS	UL21616LGSS	UL21617LGSS	UL21618LGSS	UL21620LGSS	UL21813	UL21814	UL21815	UL21816	UL21817	UL21818	UL21819	UL21820
		TANK																								
1	5025512	TANK 36" X 12'									1	1	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	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	2	2	2
		HULL SUPPORT																								
2	5025200	HULL SUPPORT PAD 9"	2	2	2	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	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	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	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	2	2	2
8	4354200	RISER V PAD 10/20/30C									2						2	2	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	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	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	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	8	8	8
		END CHANNEL																								
16A	3500330	END CHANNEL 5"X3'2"	7	7	6	6	6	6	6		9	9	8	8	8	8	8									
16	3500350	END CHANNEL 5"X6'2"																								
	3500390	END CHANNEL 5"X6'2"					1																			
	3500320	END CHANNEL 5"X7'2"					3	3							4	4			8							
	3500310	END CHANNEL 5"X9'2"	3	3					3		4	4					4			8	8					
	3500340	END CHANNEL 5"X11'8"			3	3	3	3					4	4	4	4						8	8	8		
	3500380	END CHANNEL 5"X14'8"							3	6							4	8							8	8
		TORSION BAR EXTERNAL																								
17	3065020	TORSION BAR EXTERNAL 6'2"																								
	3065030	TORSION BAR EXTERNAL 7'2"																								
	3065040	TORSION BAR EXTERNAL 8'2"	3								3								3							
	3065050	TORSION BAR EXTERNAL 9'2"		3								3								3						
	3065060	TORSION BAR EXTERNAL 10'2"			3								3								3					
	3065070	TORSION BAR EXTERNAL 11'2"				3								3								3				
	3065080	TORSION BAR EXTERNAL 12'2"					3								3								3			
	3065090	TORSION BAR EXTERNAL 13'2"						3								3								3		
	3065092	TORSION BAR EXTERNAL 14'2"							3								8								3	
	3065095	TORSION BAR EXTERNAL 15'2"																								3
	3065096	TORSION BAR EXTERNAL 16'2"							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	2									
	4270140	PITMAN ASSEMBLY - LONG STEEL																2	2	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	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	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	6	6	6
		SIDE STIFFENER																								
	4270105	SIDE STIFFENER 20L									2	2	2	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	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	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	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	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	6	6	6
		PARTS BAGS																								
	6950018	PARTS BAG - UL2 18,000																	1	1	1	1	1	1	1	1
	6927000	PARTS BAG - DUAL PITMAN - 6 ARM																	1	1	1	1	1	1	1	1
	6950116	PARTS BAG - UL2 - 16,000 - LONG STEEL									1	1	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	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	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	2916730	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	6	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

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