INSTALLATION MANUAL

Level Lift LG

MODELS

180003T

220003T

220004T

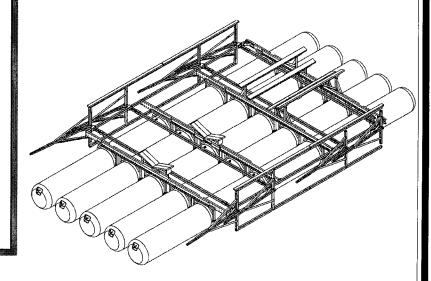
250004T

280004T

320004T

350005T

400005T





HydroHoist ® Boat Lifts

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

Pub. 10/15/04

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HYDROHOIST INTERNATIONAL, INC
915 WEST BLUE STARR DRIVE
CLAREMORE, OK USA 74017
PHONE 918-341-6811
OFFICE HOURS M-F 8AM TO 5PM CT

HydroHoist International, Inc. Safety Notice

TO ENSURE CONSUMER SAFETY, HYDROHOIST INTERNATIONAL, INC. HAS INSTALLED IN THE CONTROL UNIT'S ELECTRICAL SYSTEM AN AC GROUND FAULT CIRCUIT INTERRUPTER (GFCI) DEVICE WHICH IS TO BE USED IN SERIES WITH THE USER'S PRIMARY AC POWER SOURCE. THE GFCI IS AN INTEGRAL PART OF THE HYDROHOIST BOAT LIFT AND IS DESIGNED TO OFFER A LIMITED MEASURE OF PROTECTION TO THE USER AGAINST HAZARDOUS ELECTRICAL CONDITIONS OR SHOCKS SHOULD THEY OCCUR.

THE USER SHOULD BE AWARE OF THE FOLLOWING WARNING:

WARNING!

IF USER DISABLES THE CONTROL UNIT'S GROUND FAULT CIRCUIT INTERRUPTER (GFCI) DEVICE, HE IS IN DIRECT CONFLICT WITH THE RECOMMENDATIONS OF THE UNITED STATES GOVERNMENT CONSUMER PRODUCTS SAFETY COMMISSION. DISABLING THE GFCI COULD RESULT IN SEVERE ELECTRICAL SHOCK OR DEATH.

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

ANY INQUIRIES CONCERNING THE GROUND FAULT CIRCUIT INTERRUPTER (GFCI) DEVICE SHOULD BE REFERRED TO:

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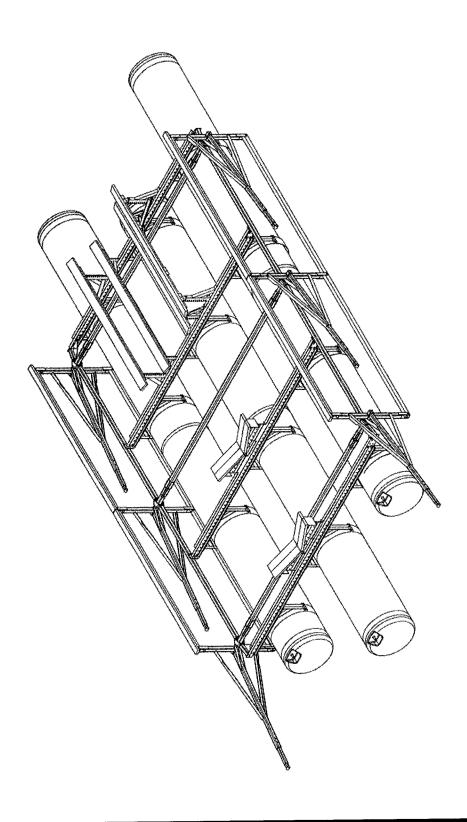
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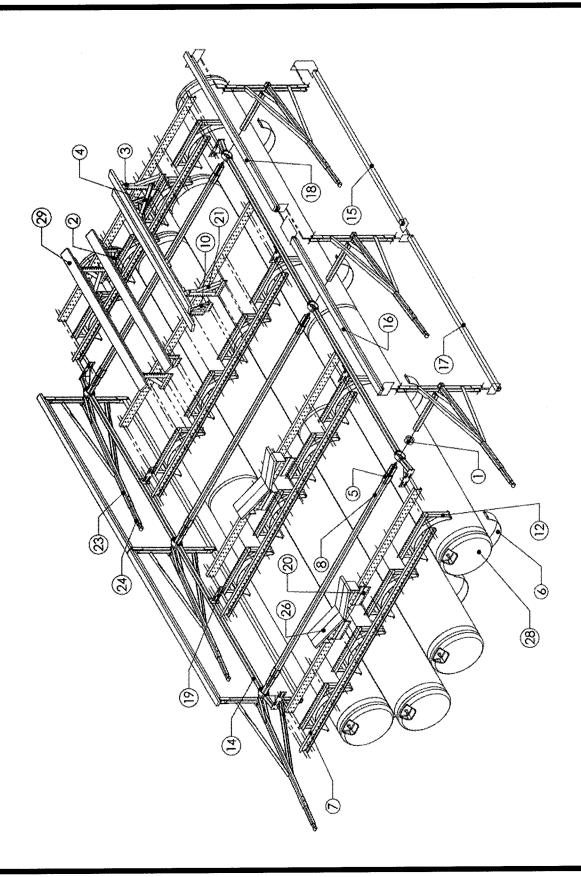
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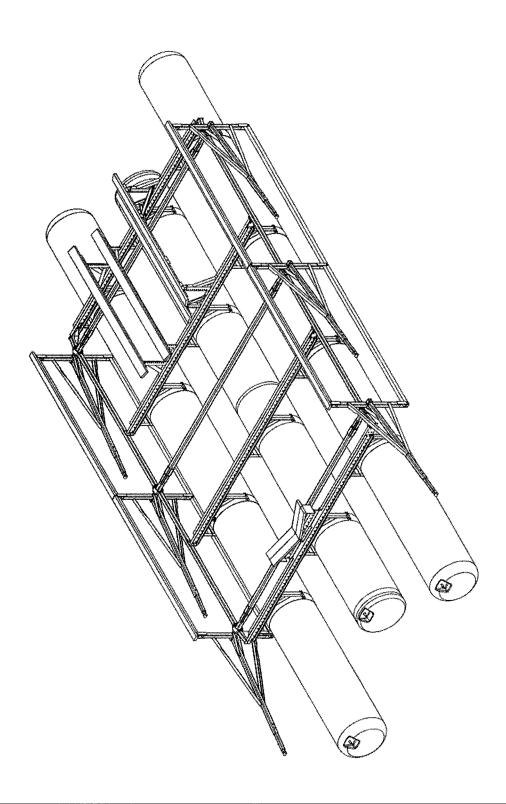
	18-	223TMEGAL	LG183T6ARM12	LG183T6ARM13	LG183T6ARM14	LG183T6ARM15	LG183T6ARM16	LG183T6ARM17	LG183T6ARM18	LG183T6ARM19	LG183T6ARM20	LG223T6ARM12	LG223T6ARM13	LG223T6ARM14	LG223T6ARM15	LG223T6ARM16	LG223T6ARM17	LG223T6ARM18	LG223T6ARM19	LG223T6ARM20
1	2916720	BUSH-SHORTFLANCED-SQHOLE	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
2	3081700	BRACEHLLLPAD253/41NANGLE	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	_2	2
3	3033200	RISER-HLILSUPT-171/2 IN-ANG	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
4	3033300	BRACEHLLLSUPT-301/21N-ANGL	2	2	2	2	2	2	2	2	2	2	2	2	2	2	_2	2	2	_2
5	3050050	TORQUEMANAGER-BIGL	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
6	3059300	TKBAND32LWRSID	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
7	3500820	CHANNEL-END-5"X7-2"	8	8						_	_	8	8	_		_	_	_	_	_
	3500310	CHANNEL-END-5'X9-2"	\perp		8	8		_	_	_	_	ᆜ		8	8	_	_	_	_	_
	3500340	CHANNEL-END-5"X11"-8"					-8	8	8	_		_	_	_	_	-8	8	-8	_	_
	3500380	CHANNEL-END-5'X14-8'			Ц	_	_	_	_	-8	8	_	_	_	_	4	4	4	-8	. 8
8	3065030	TORSIONBAR-EXT-7-2IN	3		Ц		_	_	_	_	4	3	ᆛ	4	4	4	_	4	_	4
	3065040	TORSIONBAR-EXT-8-2IN		3		_	_	_	_	_	_	4	_3		4	4	_	4	4	_
	3065050	TORSIONBAR-EXT-9-2IN	\bot		_3	_	_	4	4	4	4	_	_	3	ᆛ	4	4	_	4	ᅴ
	3065060	TORSIONBAR-EXT-10-2 IN			_	_3		4	4	_	_	_	4	_	4	ᆛ	4	4	4	4
	3065070	TORSIONBAR-EXT-11'-2IN		_	_	4	3	4	4	_	4	_	4	_	4	4	ᆛ	4	4	4
	3065080	TORSIONBAR-EXT-12-2IN	\perp	_	_	_	_	3	4	_	4		_	_	_	4	4	ᆛ	-	긕
	3065090	TORSIONBAR-EXT-13'-2IN	┷		_	_		_	_3	_	4	_	_	4	_	_	4	3	ᆛ	4
	3065902	TORSIONBAR-EXT-14-2IN	\perp		_	_		_	4	_3	4	_	_	4	_	4	4	4	3	ᆛ
	3065095	TORSIONBAR-EXT-15-2IN	\bot	_	4	4	_	4	4	4	_3	_	_	_	_	_	4	_	4	ᅼ
9	3077502	HOSE I 1/4 LD CUT 150 LG	11	_1	_1	1	1	_1	1	1	4	_1	1	1	1	_]	4	4	4	4
10	4031100	COLHLLSUPTUNV(DOI)-SHOWN	1 2	_2	_2	-2	-2	-2	-4	-2	4	4	4	4	4	-4	4	4	2	-4
11	4031110	COLHULSUPTUNV(NODOT)CPP	12	-2	_2	_4	-2	-2	-2	_2	-2	2	-4	-4	-4	-4	4	4	2	_2
12	4059700	TKBAND32 INURSID	12	12	12	-14	14	12	12	12	12	12	-4	12	12	12	12	12	12	12
13	4203100	PIPESTANDASSY (2003)	6	_6	6	6	6	6	6	-6	- 6	9	6	9	6	6	6	6	9	릨
14	4270105	SIIFFENER-SIDE-20L-6ARM	2	2	2	2	2	-2	-3	-4	-4	4	-4	-4	-4	-4	4	-4	4	2 2 2
16	4270110	PTIMAN-MALE 20L-REAMED CNLY	2	_2	-3	-4	<u> </u>	4	4	4	- 2	4	-4	-4	-4	4	4	4	2	-4
17	4270115	PTIMAN-MALE 20L-PADDED	2	-4	_2	4	2	4	4	-4	-4	-4	-4	4	4	4	4	4	$\frac{4}{2}$	4
18	4270120	PTIMAN-FEMALE-20L-REAMEDONL	2	2	2 2	4	$\frac{2}{2}$	$\frac{2}{2}$	-4	-4	$\frac{4}{2}$	4	4	4	4	-4	4	4	$\frac{4}{2}$	2
19	4270125	PTIMAN-FEMALE 20L-PALDED	_	-		-4	_	4	4	4	4	4	4	-4	4	4	4	4	-1	-1
20	4270130	CLAMP-SIDESTIFFENER-20L RISER-VERKTPAD-15/20/30KC	$\frac{4}{2}$	4	4	4	4	4	4	ᅾ	-4	4	ᅾ	ᅾ	ᆌ	-7	긐	+	2	긬
21	4354200 4360000	COLHULSUPT-18 INTAULIH	$\frac{4}{2}$	$\frac{4}{2}$	2	4	4	$\frac{4}{2}$	-1	-4	$\frac{4}{2}$	4	4	쉭	4	4	쉭	4	2	2
22	4360001	COLHULSUPT-18 INTALLERH	$\frac{1}{2}$	2	2	$\frac{4}{2}$	$\frac{4}{2}$	$\frac{4}{2}$	4	-2	$\frac{4}{2}$	2	7	췽	7	ᅾ	4	- 4	2	2
23	4522100	ARM-6-MEGAL	1 6	6	6	6	6	6	4	6	6	4	6	6	6	4	6	6	6	6
24	4522130	EXT-ARM20L	1 6	-6	4	6	d	व	ð	-6	d	व	व	ᇻ	4	d	đ	4	6	6
25	5048000	DKBRKT-HVYDUTY	T 6	6	6	6	d	व	đ	6	6	d	6	d	6	d	व	व	6	6
26	5201600	PAD-VBRKT-41 IN BASE	1	၂	ᅦ	ᆌ	귀	7	귀	ᆌ	7	1	1	ᆌ	ᆌ	1	1	1	ᆌ	ᆌ
27	5203000	PIPE-GLARDWITHCAP	6	6	đ	á	6	á	â	6	d	đ	6	6	6	đ	6	6	6	6
28	5353530	TANK-32 INX32-BIGL	1	7	7	3	3	য	7	্য	ৰ	켯	ᅔ	컹	컹	7	7	す	쿨	ј
		TANK-32 INX38-B(30K-4/TB)	Ħ	┪	1	┪	7	7	Ť	7	7	7	1	ᆌ	1	7	7	7	1	╗
 		TANK-32 IN X23'-BIGL	\top	┥	┪	┪	┪	_	┪	7	7	٦	7	7	1	Ť	Ť	十	十	Ť
29		PAD-HLLSUPPORT-HD-9	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
30		CONTROL-4V-2M-120VHPOPV	Ti	ᆌ	ᇻ	ᇻ	ᇻ	1	1	1	1	1	ᅨ	1	1	1	1	寸	ヿ゙	ᅦ
31		DOCKDRAINER	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	1
 		BAGKIT-PIPESTAND&GLARD	1 2	2	2	ᆟ	퀽	2	2	2	2	त्रे	2	7	7	才	2	2	2	方
		BAGKIT-BIGL-TORQLEMCR6ARM	1	1	7	7	7	1	1	1	1	1	1	7	ī	7	7	1	7	1
 		BAGKIT-DOCKBRKT20L	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	肀	1	ヿ
 		BAGKIT-20LUFT	1	1	1	1	1	1	1	1	1	4	7	7	7	+	Ť	┿	十	7
 		BAGKIT-22L3TLIFT	++		1	+	+	+	4	1	+	1	1	1	1	1	┪	1	ヿ	ᅱ

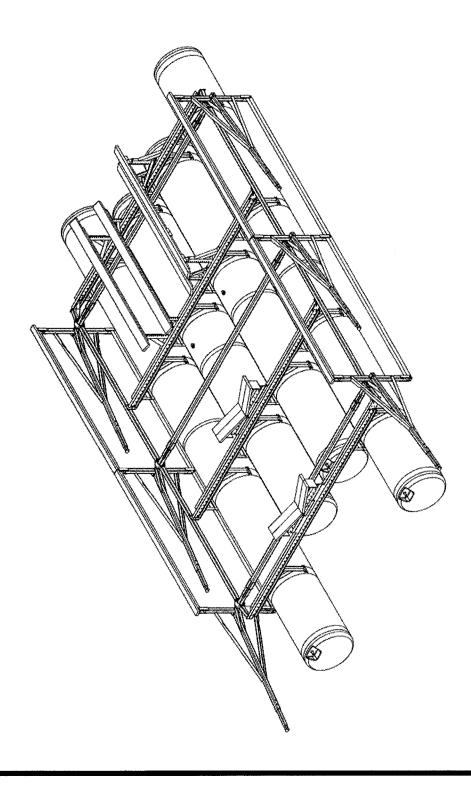
	22 4	T - 28 MEGA L	LG224T6ARM16	LG224T6ARM17	LG224T6ARM18	LG224T6ARM19	LG224T6ARM20	LG254T6ARM16	LG254T6ARM17	LG254T6ARM18	LG254T6ARM19	LG254T6ARM20	LG284T8ARM16	LG284T8ARM17	LG284T8ARM18	LG284T8ARM19	LG284T8ARM20
	2916720	BUSH - SHORT FLANGED - SQ HOLE	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
-	3031700	BRACE-HULL PAD-25 3/4 IN ANGLE	2	2		2	2	2	2	2	2	2	2	2	2	2	
3	3033200	RISER-HULL SUPT-17 1/2 IN- ANG	4	4		4	4	4	4	4	4		4	4	4	4	<u>2</u>
4	3033300	BRACE-HULL SUPT-30 1/2 IN-ANGL	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	3050050	TOROUE MANAGER-BIG L	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
ь	3059300	TK BAND-32 LWR-STD	14	14	14	14	14	16	16	16	16	16	16	16	16	16	16
7	3500320	CHANNEL - END - 5" X 7'-2"															
	3500310	CHANNEL - END - 5" X 9'-2"															
	3500340	CHANNEL - END - 5" X 11'-8"	8	8	8			8	8	8			8	8	8	\Box	
	3500380	CHANNEL - END - 5" X 14'-8"				8	- 8				- 8	8			\Box	8	8
8	3065030	TORSION BAR - EXT - 7' - 2 IN															
	3065040	TORSION BAR - EXT - 8' - 2 IN	T														
	3065050	TORSION BAR - EXT - 9' - 2 IN															
	3065060	TORSION BAR - EXT - 10' - 2 IN															
	3065070	TORSION BAR - EXT - 11' - 2 IN	3					3					3				
	3065080	TORSION BAR - EXT - 12' - 2 IN		3				1	3					3			
	3065090	TORSION BAR - EXT - 13' - 2 IN			3					3					3		
	3065902	TORSION BAR - EXT - 14' - 2 IN				3					3					3	
	3065095	TORSION BAR - EXT - 15' - 2 IN					3					3			_	_	<u>ي</u>
9	3077502	HOSE-1 1/4 I.D. CUT 150' LG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	ᅼ
10	4031100	COL-HULL SUPT UNIV (DOT)-SHOWN	2	2	2	2	2	2	2	2	2	2	2	2	2	2	_2
77	4031110	COL-HULL SUPT UNIV (NO DOT)OPP	12	2	2	2	2	2	2	2	2	2	2	2	2	-4	-1 2
12	4059700	TK BAND-32 IN UPR-STD	14	14	14	14	14	16	16	16	16	16	16	16	16	16	16
13	4203100	PIPESTAND ASSY (2003)	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
14	4270105	STIFFENER - SIDE - 20L - 6 ARM	2	2	2	2	2	2	2	2	2	2	2	2	2	2	∽
15 0	4270110	PITMAN - MALE-20L-REAMED ONLY	4	2	2	$\frac{2}{3}$	2	2	2	2	2	- 2	2	2	2	_	- 2
	4270115	PITMAN - MALE-20L-PADDED	- 4	2	2 2	_2	2	2	2	2 2	2	- 4	2	2	-21	2 2	-
17	4270120	PITMAN - FEMALE-20L-REAMED ONL	2	2		2			2	$\frac{2}{2}$	_	- 4	-4	$\frac{2}{2}$	$\frac{2}{2}$	2	
19	4270125	PITMAN - FEMALE-20L-PADDED	$\frac{1}{4}$	- 4	4	2	2	2	2	4	2 4	$-\frac{2}{4}$	4	$\frac{2}{4}$	4	4	$\frac{2}{4}$
20	4270130	CLAMP - SIDE STIFFENER - 20L	4	4	4	4	4	4	4	4	4	4	4	4	-4	4	7
	4354200	RISER-V BRKT PAD-15/20/30K C	—	4						_	_					2	
Z1 ZZ	4360000	COL-HULL SUPT-18 IN.TALL-LH	2	2	2	2 2	2	2	2	2 2	$\frac{2}{2}$	2	2	2	2	2	
23	4360001	COL-HULL SUPT-18 IN.TALL-RH	$\frac{2}{6}$	6	$\frac{2}{6}$	6	6	6	6	6	6	6	6	6	6	6	- 6
24	4522100 4522130	ARM - 6' - MEGA L EXT-ARM-20L	1 6	6	6	6	- 6	6	6	6	-6	6	6	6	6	-6	-6
25	5048000	DK BRKT-HVY DUTY	1 6	6	6	6	-6	6	6	6	6	- 6	6	6	6	- 6	- 6
20	5201600	PAD - V BRKT-41 IN, BASE	1 2	2	2	2	2	2	2	2	2	2	2	2	2	2	<u>-</u>
27	5203000	PIPE - GUARD WITH CAP	6	6		- 6	6	6		- 6	6	6	6	6	6	6	-6
28	5353530	TANK-32 IN X 32'- BIG L	7	2	2	2	2	4	4	4	4	4	Ť		1	-	
	5012601	TANK-32 IN X 38'-B(30K-4/TB)	T	Ť	H	一	Ŧ	-		_	一		- 2	2	2	2	2
	5014000	TANK-32 IN X 23'-BIG L	2	2	2	2	2		\Box	一			2	2	2	2	2
29	5360700	PAD - HULL SUPPORT-H.D9'	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
30	5801602	CONTROL - 4V-2M - 120V HIPO PV		1	1	1	1	1	1	4	1	-1	-1	1	1	. 1	-1
31	5808100	DOCK DRAINER	1	1	1	1	1			1	- 1	1	1	1	1	1	1
	6916400	BAG-KIT-PIPE STAND & GUARD	2	2		2	2	2	2	2	2	2	2	2	2	2	2
—	6925100	BAG-KIT-BIG-L-TORQUE MGR 6 ARM	1	1	1	1	1		1	1	1	1	1	1	1	l	1
	6935000	BAG-KIT-DOCK BRKT 20L	1	1	ĺ	1	1	1	1	- 1	1	_1	1	1	1	1	1
	6934024	BAG-KIT-22L 4TLIFT	1	1	1	1	1										
	6934025	BAG-KIT-25L LIFT						7		_1		_1					
	0934020	BAG-KIT-28L LIFT											Т	可	П	П	

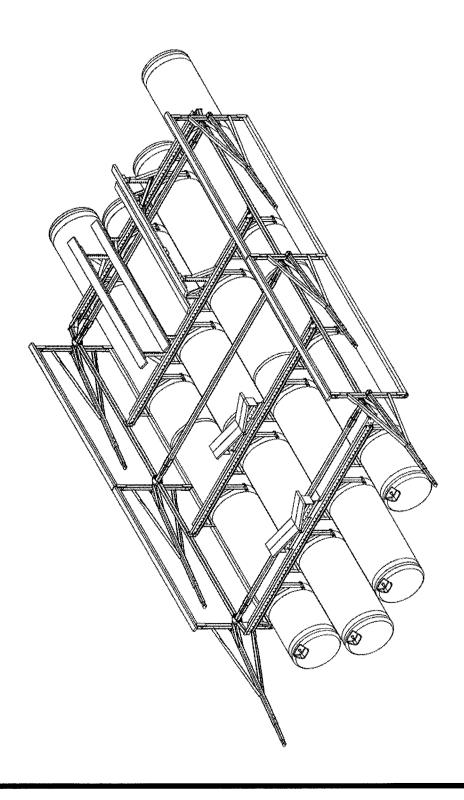
				_	_						_
	32	-40 NEGAL	LG324T8ARM16	LG324T8ARM17	LG324T8ARM18	LG324T8ARM19	LG324T8ARM20	LG355T8ARM19	LG355T8ARM20	LG405T8ARM19	LG405T8ARM20
1	2916720	BUSH-SHORTFLANGED-SOHOLE	8	8	8	8	8	8	8	8	-8
2	3031700	BRACE-HULLPAD 25 3/4 IN ANGLE	2	2	2	2	2	2	2	2	2
3	3033200	RISER-HULSUPT-17 1/2 IN-ANG	4	4	4	4	4	4	4	4	4
4	3033300	BRACEHULSUPT-30 1/2 IN-ANGL	2	2	2	2	2	2	2	2	2
5	3050050	TOROLEMANACHR-BIGL	16	16	16	16	16	16	16	16	16
6	3059300	TKBAND32LWR-STD	16	16	16	16	16	20	20	20	20
7 A	3500750	CHANNEL-END-6'X11'-8'	8	8	8						
	3500760	CHANNEL-END-6'X14-8'	П			8	8	8	8	8	8
8	3065070	TORSIONBAR-EXT-11'-2 IN	4								
	3065080	TORSIONBAR-EXT-12-2IN		4							
	3065090	TORSIONBAR-EXT-13'-2IN	П		4						
	3065902	TORSIONBAR-EXT-14-2IN	П			4		4		4	
	3065095	TORSIONBAR-EXT-15-2IN	П				4		4		4
9	3077503	HOSE-11/4" ID-CUT 230 LG	1	1	1	1	1	1	_1	1	1
10	4031100	COLHULSUPTUNV(DOT)-SHOWN	2	2	2	2	2	2	2	2	_2
11	4031110	COLHUL SUPTUNIV (NODOT) CPP	_2	2	2	2	2	2	2	2	$\overline{2}$
12	4059700	TKBAND32 INUPR-SID	16	16	16	16	16	20	20	20	20
13	4203100	PIPESTANDASSY (2008)	- 8	8	8	8	. 8	8	8	-8	8
14A	4523035	STIFFENER-SIDE30L8 ARM	_2	2	2	_2	2	2	2	2	2
15A	4270170	PTIMAN-MALE8 ARM	_2	2	2	2	_2	2	2	_2	2 2 2 2
16A	4270175	PTIMAN-MALEPADDED8 ARM	2	2	2	2	2	2	2	2	2
17A	4270180	PTIMAN-FEMALE-8 ARM	2	2	2	2	2	2	2	_2	2
18A	4270185	PTIMAN-FEMALEPADDED8 ARM	2	2	2	2	2	2	2	2	2
19A	4270138	CLAMP-SIDESTIFFENER-8 ARM	4	4	4	4	4	4	4	4	4
20	4354200	RISER-VBRKTPAD-15/20/30KC	4	4	4	4	4	4	4	4	4
21	4360000	COLHULSUPT-18 INTALL-LH	2	2	2	_2	2	2	2	2	2
22	4360001	COLHULSUPT-18 INTALL-RH	2	2	2	2	_2	_2	2	2	2
23	4522100	ARM-6-MEGAL	8	8	8	- 8	8	8	8	8	8
24	4522130	EXT-ARM-20L	8	.8	8	8	8	8	8	- 8	8
25	5048000	DKBRKT-HVYDUIY	8	8	8	. 8	8	8	8	8	_8
26	5201600	PAD-VBRKT-41 IN BASE	_2	_2	_2	_2	_2	_2	2	2	_2
27	5203000	PIPE-GLARDWIHCAP	8	8	8	8	8	8	8	8	8
28	5012601	TANK-32 IN X38-B(30K-4/TB)	<u>4</u>	4	_4	4	4	2	_2	_	
	5353530	TANK-32 INX 32 BIGL	Ш		Ц		_	3	_3	_5	_5
29	5360700	PAD-HULSUPPORTHD-9	4	4	4	4	_4	4	4	4	_4
30	5801602	CONTROL-4V-2M-120VHPOPV	_1	1	_1	_1	_1	1	_1	_1	_1
31	5808100	DOCKDRAINER	_1	1	1	1	1	_1	1	_1	_1
	6916400	BAGKIT-PIPESTAND&GUARD	2	_2	2	2	_2	2	2	2	_2
	6925200	BAGKIT-BIGLTORQLEMOR-	1	1	1	_1	_1	_1	_1	_1	_1
	6935050	BAGKIT-DOCKBKTMEGAL8 ARM	1	_1	_1	_1	_1	_1		_1	_1
	6934032	BAG-KIT-32L8 ARMLIFT	_1	_1	1	_1	_1	_	4	4	_
	6934035	BAGKIT-35L8 ARMLIFT	Щ		Ц	_ļ	_	_1	_1	4	_
	6934040	BAG-KIT-40L8 ARMLIFT	L							1	1

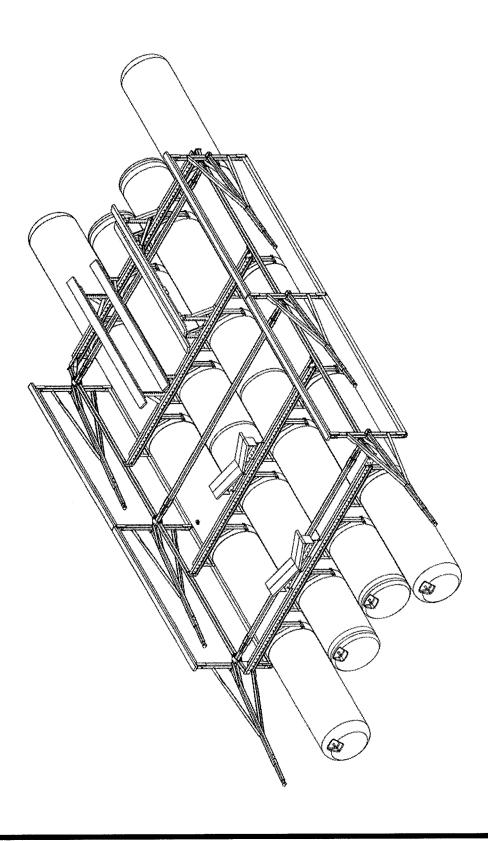


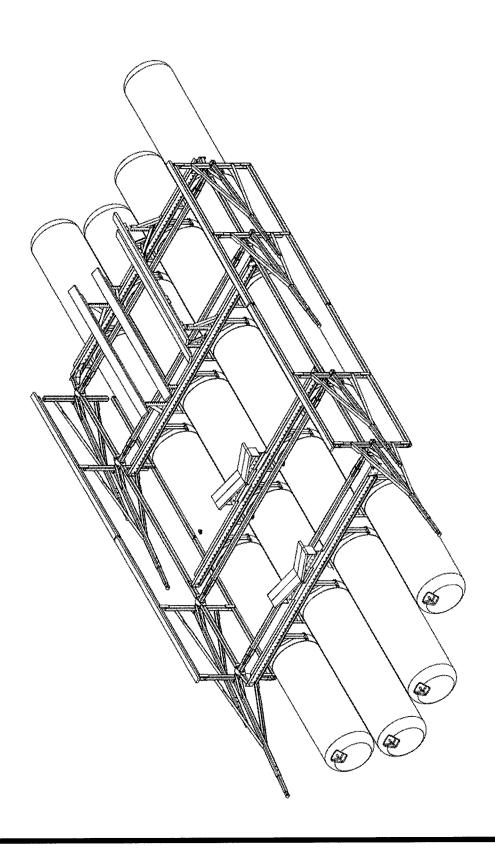


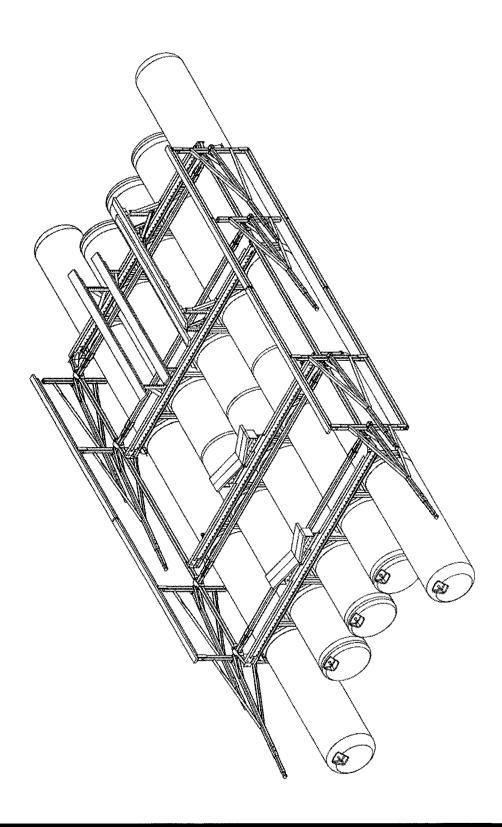


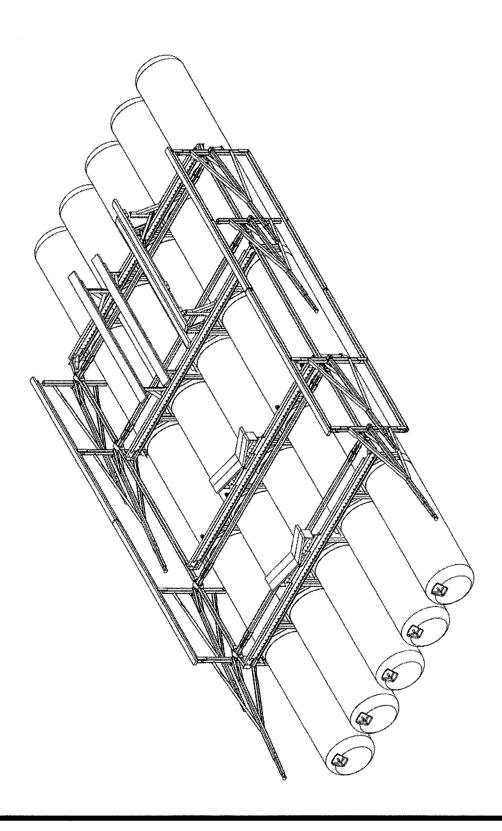












Getting Started

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 weightlbs.
	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.

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Assembly Instructions

Description

The assembly instructions presented within this section represent the steps for assembling the Level Lift 18/223T/224T/25/28/32/35/40 LG 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.

Tank Alignment

Step	Procedure
1.1	Align the Tanks [28] parallel with each other and with the Air Injection Nipple to the
	front of the hoist assembly and in the 12 o'clock position.

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

Step	Procedure
2.1	Refer to Fig. A1 for correct Tank Band [12] location, and loosely install the Tank Bands onto the tanks. Fasteners per band: (4ea) 7/16" x 2 bolt, nut & lockwasher. Note 1: Dimensions are referenced from the seam of the front End Cap, and from the front edge of each Tank Band. Note 2: The open side (inside angle) of the Upper Tank Band [12] angle is to the front of the Tanks.
2.2	Stand at the front of the Tanks and sight from the front to rear bands. The horizontal surface of the Upper Tank Band angles, front to rear must be parallel with each other – adjust if necessary keeping the Tank Nipple at the 12 o'clock position.

Fig. A1

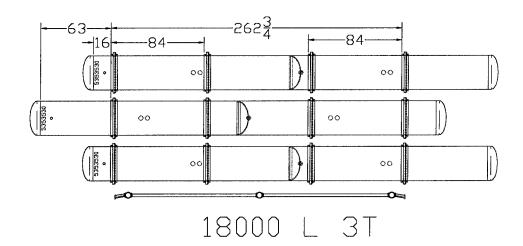


Fig. A2

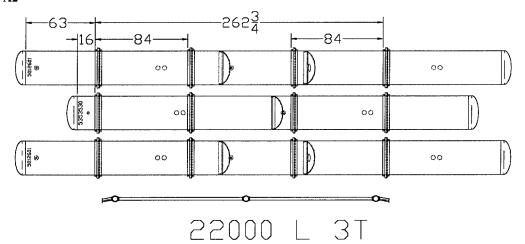


Fig. A3

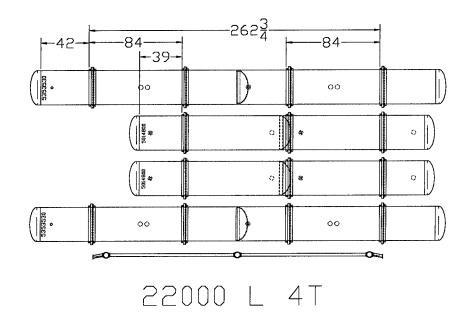


Fig. A4

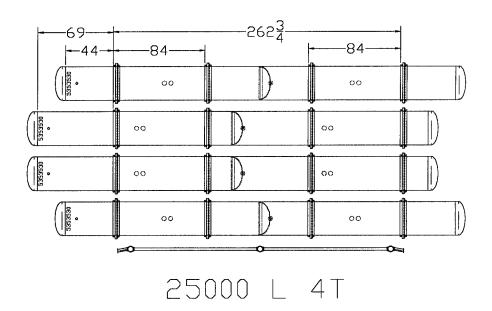


Fig. A5

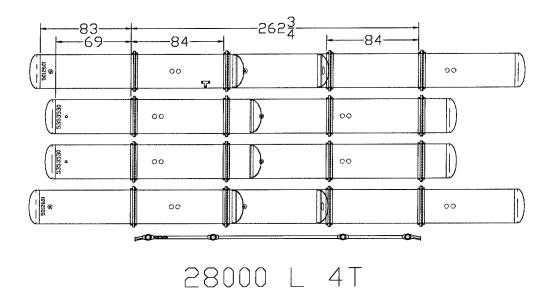
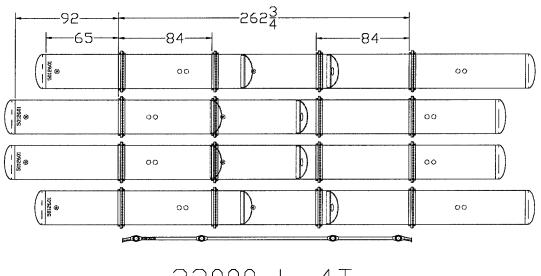
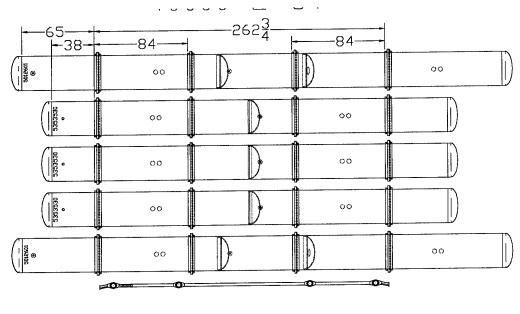


Fig. A6



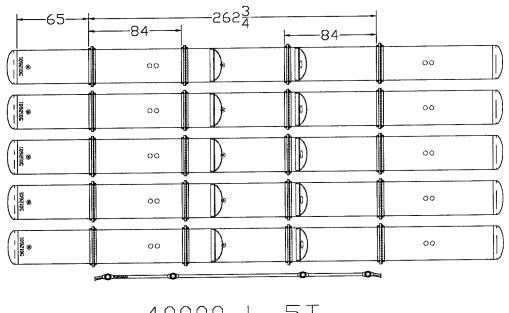
32000 L 4T

Fig. A7



35000 L 4T

Fig. A8



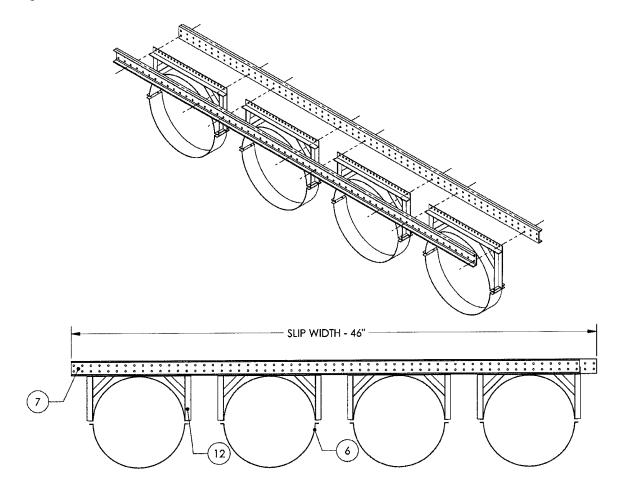
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End Channel Assembly Fig. B

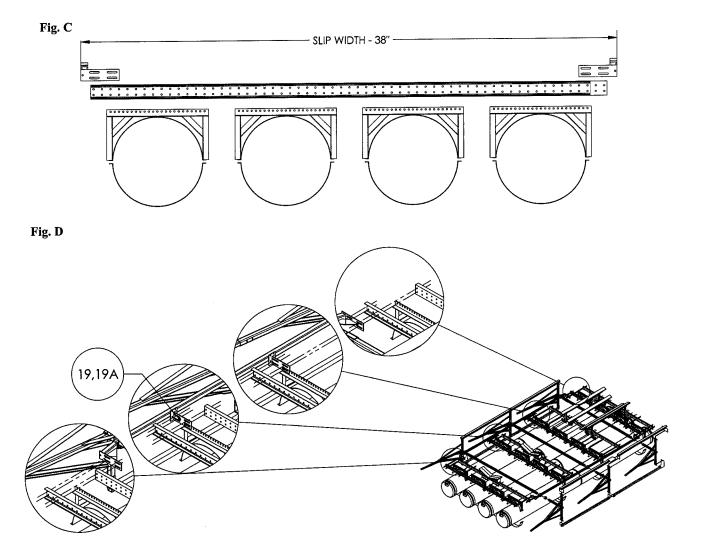
Step	Procedure
3.1	Position End Channels [7] on top of Upper Tank Bands [12] with the End Channels overlapping as indicated in Fig B. Align the outer hole in the one Upper Tank Band [12] with the outer holes in one End Channel [7]. The outer hole of the other Upper Tank Band will bolt to the outer hole of the other End Channel. The total width of the assembly will be approximately 46" less than the slip width. Fasteners per Tank
	Band: (2 ea.) 1/2 x 1-1/2 bolt, nut & lockwasher.

Fig. B



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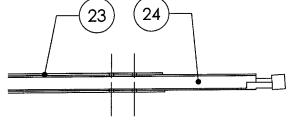
	Step	Procedure
Side Stiffener Assembly Fig. D	4.1	Install Side Stiffeners [14] with the ends angled down (bearing cage/ring up) to each side of the hoist between the Front & Rear End channels [7]. Measure the distance from outside edge to outside edge of Side Stiffeners at the front and rear to make sure both are the same width and 38" (+-1 inch) narrower than the slip width. Fasteners per Side Stiffener: (8 ea.) 1/2" x 1-1/2" bolt, nut, flatwasher & lockwasher. NOTE: Use flatwasher over slotted holes. Use 1/2" x 2" bolt when fastening three layers of steel.
	4.2	The middle frames must have a Clamp Side Stiffener [19] attached on both sides. The Clamp Side Stiffener bolts to the end channel in the same manner as the side stiffener. Then two U-Bolts are used to attach the Clamp Side Stiffener to the Side Stiffener. THIS IS VERY IMPORTANT



> Arm Extension Assembly Fig. E

Step	Procedure
5.1	Install Bolt Arm Extensions [24] into Stabilizer Arms [23]. Fasteners per Arm: (2 ea.) 1/2" x 3-1/2" bolts, locknuts & lockwashers. Tighten NOW to 75 ft. lbs.

Fig. E



NORMAL POSITION

Vertical Travel (draft) = 68" Horizontal Travel (swing) = 32"

Stabilizer Arm Assembly Figs. F1-F2

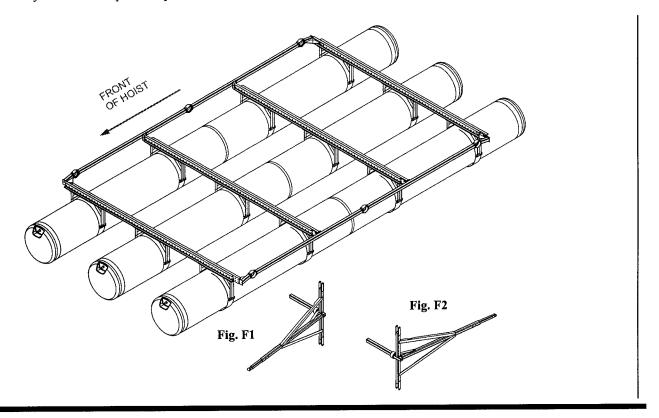
Step	Procedure
6.1	Install Square Hole Bushing [1], over Torsion Leg of Stabilizer Arm [23]. Slide Bushing [1] fully against Corner Brace of Stabilizer Arm.
6.2	Insert each Stabilizer Arm [23] through the Bearing Cage (Ring) of the Side Stiffener [14].

NOTE

Stabilizer Arms [23] may be assembled in TWO POSITIONS:

Fig. F1 Arms FORWARD - Most common installation.

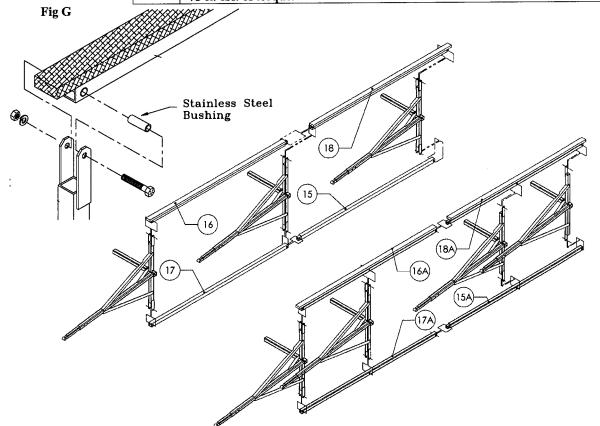
Fig. F2 Arms AFTWARD - Hoist will swing <u>forward</u> (toward front of slip). For installations where slip length requires maximum inclusion of tanks inside slip, and to provide minimum distance between dock header and boat stern for stern loading boats



	Step	Procedure
Stabilizer Arm Assembly Cont'd.	7.1	Slide each Torsion Bar [8] over the Torsion Leg of each Stabilizer Arm [23] 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.
	7.2	 Temporarily chain the Rear* Stabilizer Arms to the level position: Raise one Rear Stabilizer Arm to horizontal. Using a Chain from the Dock Bracket Parts Bag, form a loop around the Side Stiffener [14] and the end of the Stabilizer Arm [23]. Fasten the loop by bolting the chain links together with a 3/8" x 2-1/4" bolt, doublenuts, double flatwashers. 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.

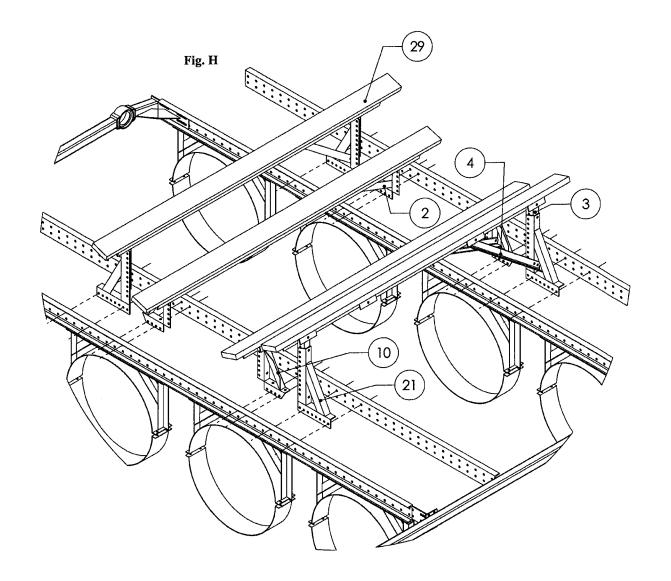
Pitman Assembly Fig. G.

8.1 Follow this step, one end at a time for each Pitman.
On a 6 arm lift the connection between the Male Pitman [15,16] and the Female Pitman [17,18] must be bolted through the middle arm with a stainless steel bushing and 5/8" x 4" bolt, nut, & lockwasher. For an 8 arm lift the middle connection is bolted together using a 5/8" x 4" bolt, nut, & lockwasher before bolting to any of the arms. Then insert a stainless steel bushing in the remaining holes on the pitman and bolt to the corresponding pitman using the same fasteners. This means 2 more bolts/pitman on a 6 arm lift and 4 more on an 8 arm lift. Tighten NOW to approximately 75 ft.-lbs. of torque.



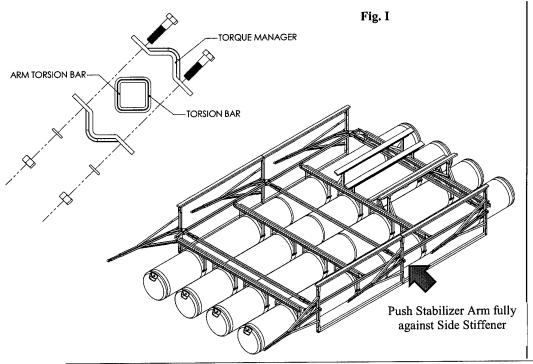
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	Step	Procedure
Hull Support Assembly Fig. H	9.1	Attach two Hull Support Columns [10,11], [21,22] to the center End Channel [7] and two Hull Support Columns to the rear End Channel. Attach the columns with the flat side of the angles facing to the front 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.
	9.2	Attach Hull Support Pads [29] to the tops of the front and rear Hull Support Columns [10,11], [21,22]. Fasteners per Pad: (2ea) 1/2" x 5" bolt, nut & lockwasher.
	9.3	Install the Hull Support Pad Braces [2,4] between the Hull Support Pads [29] and the Hull Support Columns [10,11], [21,22]. 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.
	9.4	Tighten the 5" Hull Support Pad bolts only enough to flatten the lockwashers. Do not tighten any other bolts at this time.



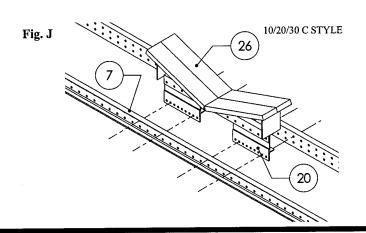
Torsion Bar Clamps Fig. I

Step	Procedure
10.1	Push all four Stabilizer Arms [23] fully against the Side Stiffener [14] so that there is no lateral clearance between Side Stiffener, Square Hole Bushing [1], and Stabilizer Arm.
10.2	Assemble the Torque Managers [5] at each end of each Torsion Bar [8] see Fig. H. Fasteners per Torsion Bar (8 ea) 5/8" x 2-1/2" bolt, nut & lockwasher.
10.3	With the Stabilizer Arms parallel to each other, TIGHTEN THE TORSION BAR CLAMPS AS TIGHT AS POSSIBLE (MINIMUM 100 FTLBS. TORQUE)



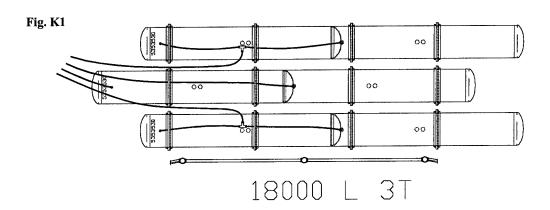
"V" Pad Assembly Fig. J

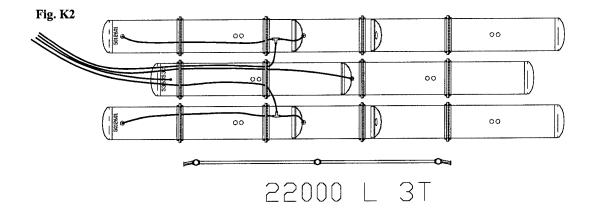
Step	Procedure
11.1	FOR PT. No. 5201600 - 10/20/30 C STYLE.
	1. Attach Risers [3] to "V" Pad [26]. Fasteners: (4 ea) 1/2" x 1-1/2" bolt, nut & lockwasher.
	2. Center assembly on the front (dual) End Channels [7] and attach. Fasteners: (4 ea) 1/2" x 1-1/2" bolt, nut & lockwasher.

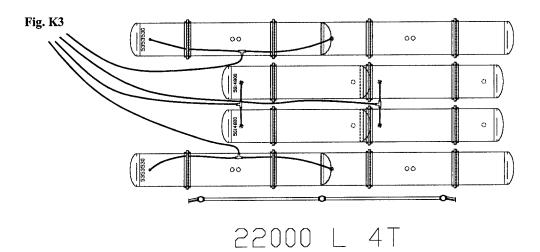


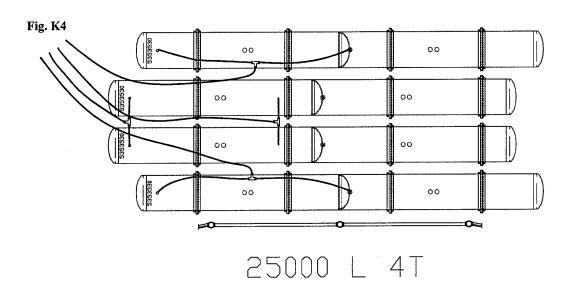
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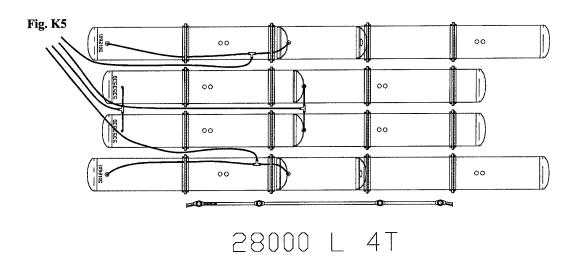
	Step	Procedure
Hose Assembly Fig. K	12.1	See Fig. K for proper assembly of Hose Sets, application of Hose Clamps and PVC Tees.
	12.2	Attach Hoses to Tanks using Hose Clamps.

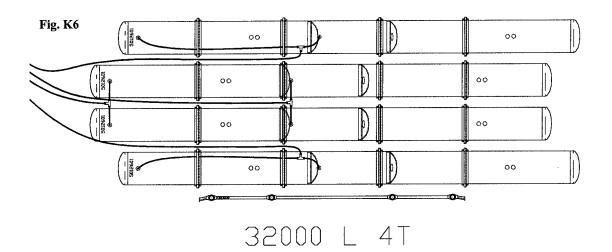


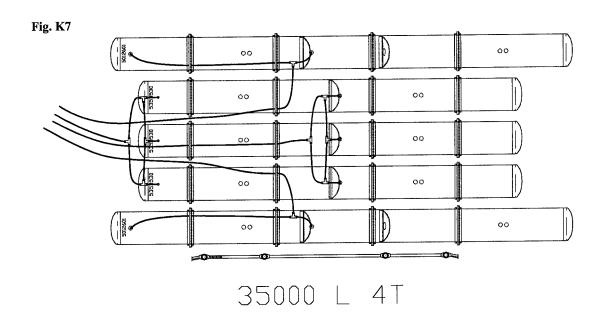


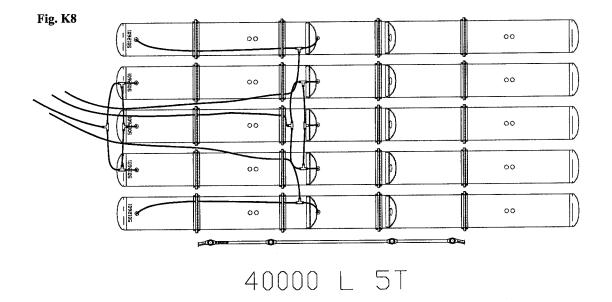












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Final Steps

Step	Procedure
13.1	Using a Ratchet Puller ("Come-A-Long") connected near the ends of the front Stabilizer Arms [23], 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 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.
13.2	Repeat Step 13.1 above with the middle and rear Stabilizer Arms. 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.
13.3	Secure the Control Unit Frame to the V Pad and make sure all Valves are closed in the Dry-Dock position.
13.4	Attach a towing line to the rear End Channel. Tank Plugs are recommended for all tows.
13.5	Slowly tow the hoist to its mooring location.

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Installation

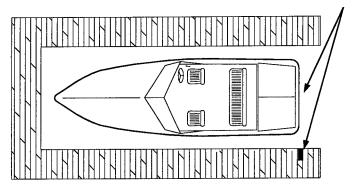
Selecting Position for Boat & Hoist (BOW FIRST LOADING) Fig. K

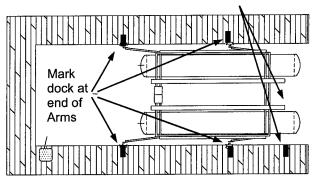
Step	Procedure
1.1	BOW FIRST LOADING ONLY - REVERSE FOR STERN LOADING Pull the boat into the boat stall so that the bow can be easily reached from the front of the slip, and allow at least 18 inches of space at the dock level between the dock and the boat in the event the boat may need to be later moved 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 <i>Stabilizer Arm attachment points</i> .

Fig. K

Mark dock at boat's transom

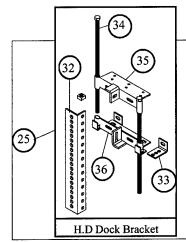
Position Hull Pads at transom mark

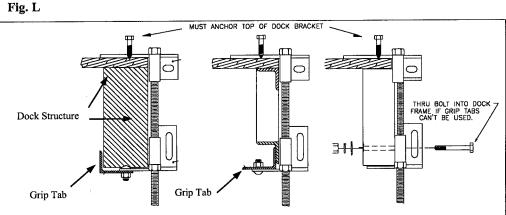




Dock Bracket Attachment Fig. L

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 [36]. 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 [34] just enough that the Dock Brackets will stay in position - do not fully tighten at this time, further horizontal adjustment may be needed later.

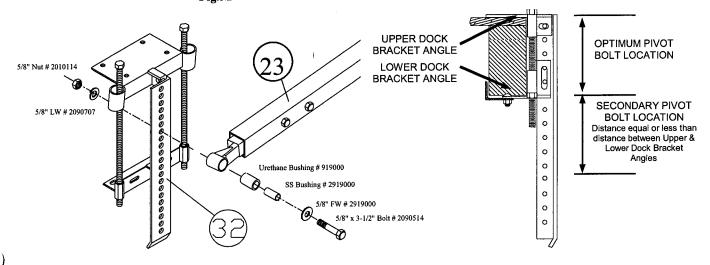




Lift Attachment Fig. M

Step	Procedure
3.1	Float hoist into position with the arms lined up with the Dock Brackets.
3.2	Loosen <i>front</i> "come-a-long" <u>only enough</u> to allow the <i>front</i> Stabilizer Arms [23] 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 O
3.4	FRONT ARMS ONLY - Insert Urethane & Stainless Steel Pivot Bushings into the Pivot End of one front Stabilizer Arm [23]. 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) 5/8" x 3-1/2 bolt, Flatwasher, Lockwasher, & Castle Nut and Cotter Pin. TIGHTEN AS TIGHT AS POSSIBLE (ABOUT 100
3.5	MEASURE THE DISTANCE FROM THE PIVOT BOLT TO THE WATER - THIS DISTANCE WILL BE REPEATED FOR THE OTHER ARMS - ALL PIVOT BOLTS MUST BE AN EQUAL DISTANCE ABOVE THE WATER.
3.6	Repeat Step 3.4 with opposite <i>front</i> Stabilizer Arm [23]. (Do Not loosen or remove come-a-longs at this time). TIGHTEN AS TIGHT AS POSSIBLE (ABOUT 100 FT-LBS).
3.7	REAR ARMS ONLY - Insure hoist is square in the slip by measuring the distance between the right and left Stabilizer Arms [23] 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 [23] to touch the Vertical Angles [32] of the Dock Brackets. Attach Arms [23] to Vertical Angles [32] as in Step 3.4. TIGHTEN AS TIGHT AS POSSIBLE (ABOUT 100 FT-LBS). (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



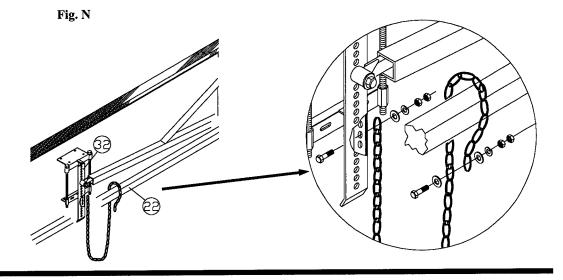
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Anchoring Dock Brackets Fig. M

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 [25] to about 35 ft-lbs of torque.
4.2	With the Come-a-longs still attached, ANCHOR the <i>top</i> Dock Bracket Angles [35] to the dock to prevent inboard movement. See Fig. M. 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 <i>bottom</i> Dock Bracket Angles [30] to the dock by thru-bolting the Angles to the dock. See Fig. M. 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 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.



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	Step	Procedure
Adjustments	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

Pipe Stands Fig. O

Step	Procedure
7.1	Attach Pipe Stands [11] with Covers [12] to the Dock Bracket Vertical Angles [32]
	where they will best protect the boat (Note: the arm shown is for a smaller lift). The
	Pipe Stand [11] may be bolted above ore below the arm depending on where the Arms
	[23] bolt to the Dock Brackets [25] Fasteners per Pipe Stand: (2 ea) 1/2" x 1-1/2" bolt

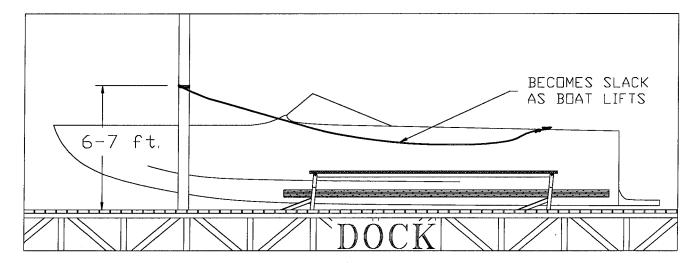
Final Adjustments

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	Ro	pes
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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 <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. 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	
i.	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.

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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.

