



**STEELHEAD
MARINE**

ES1000



Installation and Operation Manual

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Yacht Crane Assembly

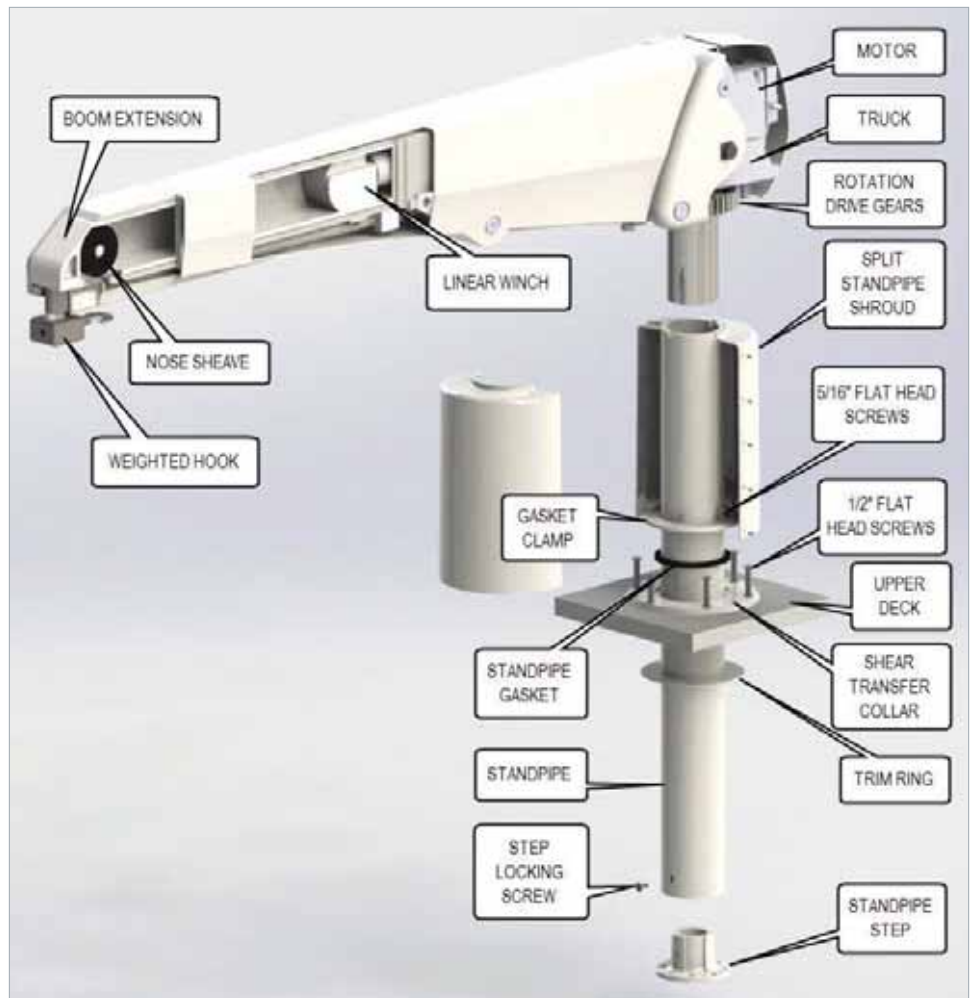


Figure 1a: Standpipe Mounted



Figure 1b: Fiberglass Base Mounted

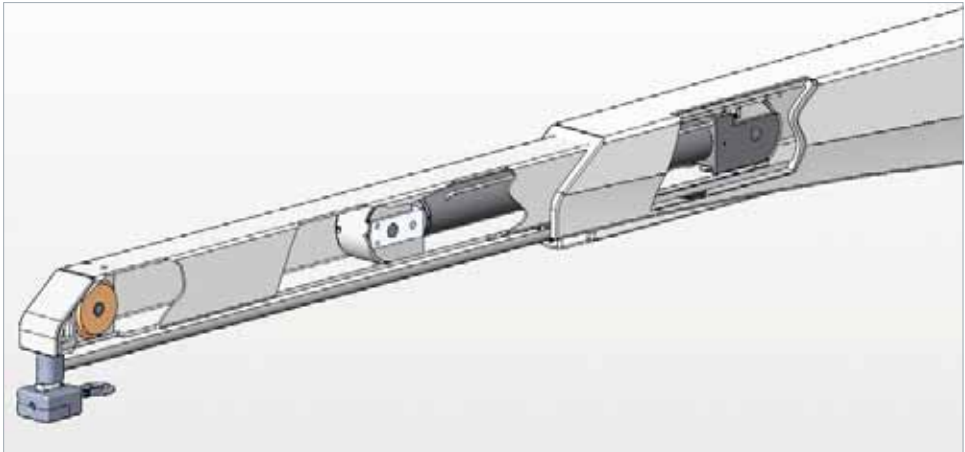


Figure 2a: Yacht Crane Cut-Away (Boom Body)

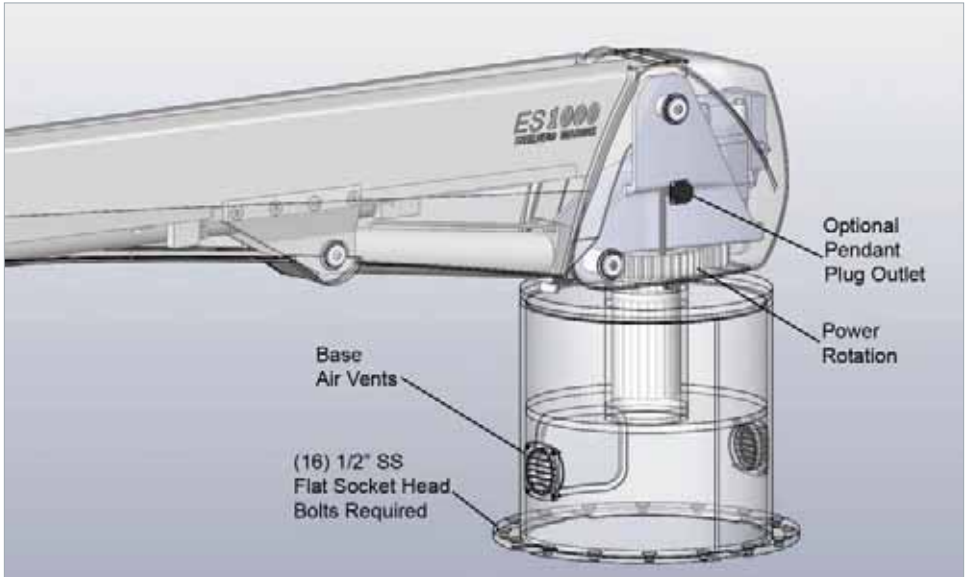



Figure 2b: Yacht Crane Aluminum Base Mount (Dia. 16" Base)

Notice to Installer

Throughout this publication, Warnings and Cautions accompanied by the International Hazard Symbol  are used to alert the manufacturer or installer to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly.

Observe Them Carefully!

These “safety alerts” alone, cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the installation and maintenance plus “common sense” operation are major accident prevention measures.

DANGER

Immediate hazards which WILL result in severe personal injury or death.

WARNING

Hazards or unsafe practices which COULD result in severe personal injury or death.

CAUTION

Hazards or unsafe practices which COULD result in minor injury or product or property damage.

NOTICE

Information which is important to proper installation or maintenance, but is not hazard-related.

Required Equipment and Tools

This section describes the equipment and tools needed or recommended for the yacht crane installation.

Supplied Equipment List

Your yacht crane comes with the following standard equipment: Crane assembly, complete with:

- bearing assembly installed
- hydraulic and electrical system
- composite rope, hook and weight assembly installed
- Wireless controller
- Four-function, eight button, wireless control or wired pendant control c/w 15' cable
- Owner's Handbook and Installation Manual
- Hydraulic hoses

Optional Equipment List

- **Customized base assembly** (built to your specification) or
- OR
- **Standpipe assembly containing:**
 - 9' standpipe(Or Custom)
 - Shear Transfer Collar
 - Standpipe Step
 - Trim Ring
- Hydraulic power pack, available in 12V or 24V
- 1/4" Amsteel replacement rope kit c/w eye splices (includes installation instructions)

Recommended Materials (not supplied)

You will need all or most of the following materials for the crane installation:

- (6) x 1/2" Flat Socket Head screws for thru-bolting (shear transfer collar) (*See Appendix Exploded Drawing*)
- (8) x 1/2" Flat Socket Head screws for thru-bolting (standpipe step) (*See Appendix Exploded Drawing*)
- (6) x 5/16" Flathead screw (gasket clamp)
- (6) x #10 Oval head self-tapping screws (trim ring)
- (16) x 1/2" Flat Socket Head screws (base mounting) (*See Figure 2b*)
- Sikaflex 292, Sikaflex 210T primer
- anti-corrosion paste (Tef-Gel)
- marine corrosion control grease
- heat-shrink-type electrical connectors
- electrical breakers

Required Tools

You should have the following tools on hand for installation:

- tape measure
- masking tape
- caulking gun
- drill motor
- portable band saw, or reciprocating power saw
- Phillips screwdrivers
- utility knife
- level
- hole saw (5 1/2")
- assorted drill bits
- assorted metal-working files
- wire strippers/cutters
- heat shrink tubing and gun
- wet/dry vacuum
- safety goggles and/or face shield
- Allen wrenches

Planning the Installation

Choosing the Installation Method

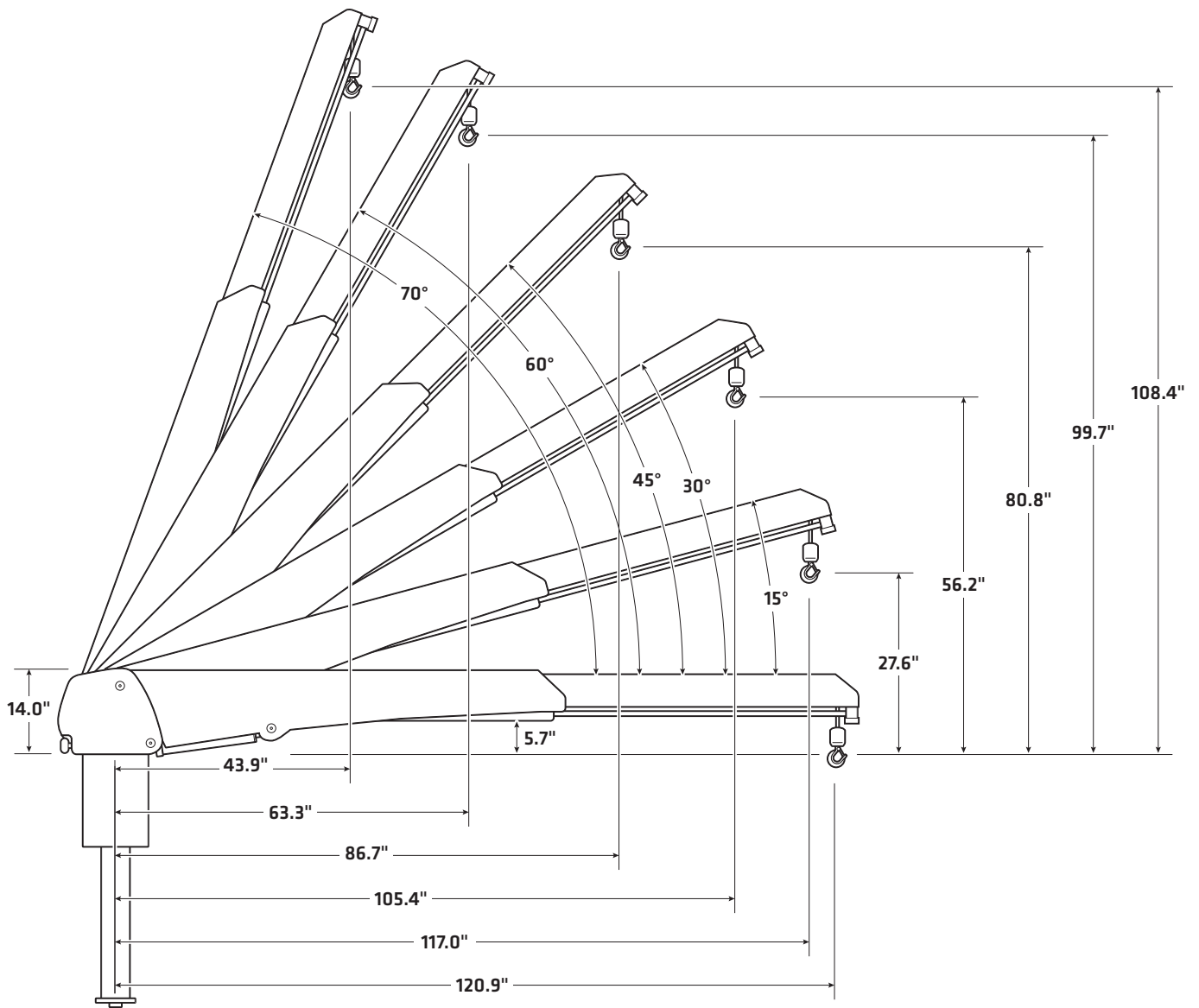
There are three ways to install the crane:

- 1. Standpipe Assembly (standard mounting option)** – to install the optional standpipe assembly (*see procedure on page 8*), you must have a maximum deck-to-deck height of 96". Maximum standpipe length 108 $\frac{3}{4}$ ".
- 2. HPU Pedestal Base** – the crane base can be bolted directly onto the deck if the yacht structure has been designed and built to accommodate the load. The fiberglass base, as an option, may contain the hydraulic power unit pre-plumbed and wired. A 20" x 30" paper template can be supplied if requested.
- 3. Circular Base** – this mounting option is designed to be bolted directly to the deck (requiring the yacht structure to be built to accommodate). The mounting flange of the base is approximately 19 $\frac{1}{2}$ " in diameter.
- 4. Square Base** – this mounting option is designed to be bolted directly to deck (requiring the yacht structure to be built to accommodate). The mounting flange of the base is approximately 24" X 24" .

Locating the Crane System

1. Choose the best storage location for your tender considering the following factors:
 - clearance needs to allow for rotation and storage of crane (check walk-around space, hatch, railing, and other clearances)
 - deck strength
 - standpipe base location on lower deck
 - accessibility for easy operation and maintenance
2. Determine the balance point of the tender, and mark this balance spot on the deck. The reach requirement of the crane is a horizontal measurement from the optimum crane location to the balance point of the tender.
3. To ensure the tender does not hit the side of the vessel during a launch and retrieval, allow 9" more than the tender's half beam measurement for clearance (i.e., half the width of the tender).
4. Check crane hook height vs. reach table (see below) at various luffing angles to ensure at least 8" of clearance between the tender and vessel (railings) during operation.
5. Double-check the reach and height requirements against the specifications of the crane to ensure the crane will meet your installation requirements.

Reach Table



Angle	Length	Height
0°	120.9"	0"
15°	117.0"	27.6"
30°	105.4"	56.2"
45°	86.7"	80.8"
60°	63.3"	99.7"
70°	43.9"	108.4"

Figure 3: Reach Table

Installing the Standpipe

NOTICE

There are three parts to the shear transfer collar: an 11" diameter base, a rubber gasket, and an 8" diameter gasket clamp.

Follow this procedure if you are installing the standard standpipe assembly.

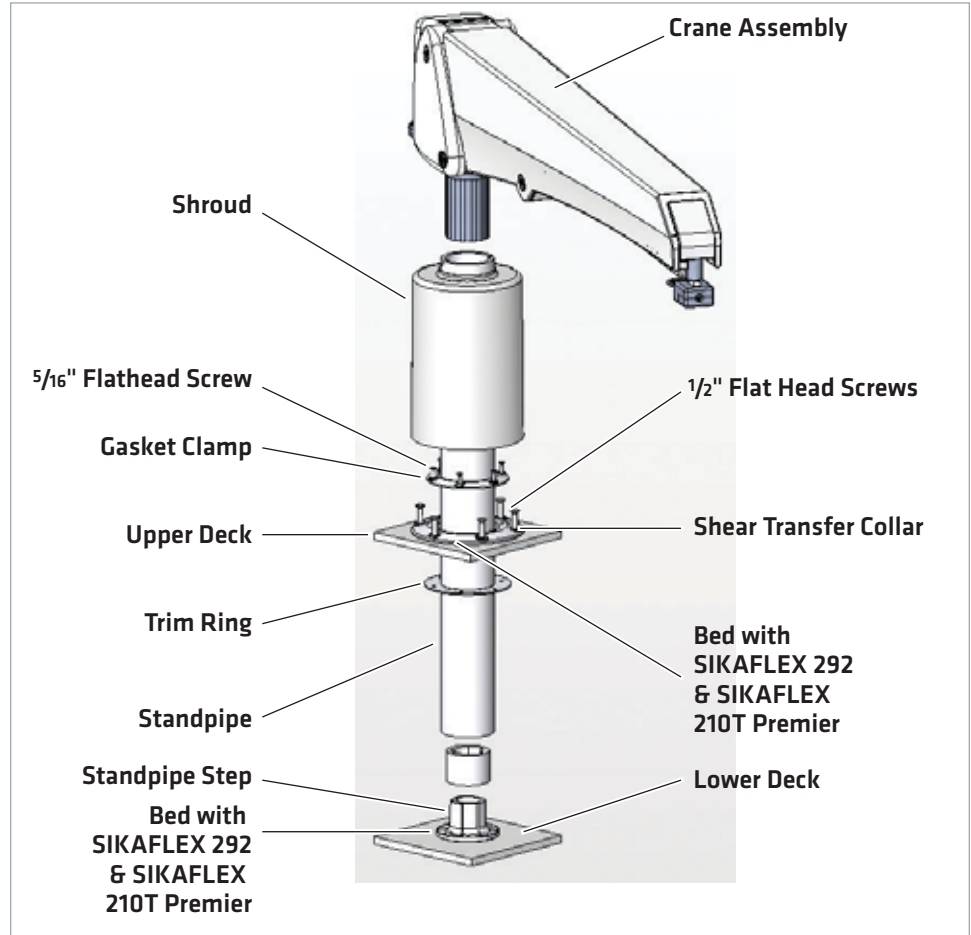


Figure 4a: Exploded View of Standpipe

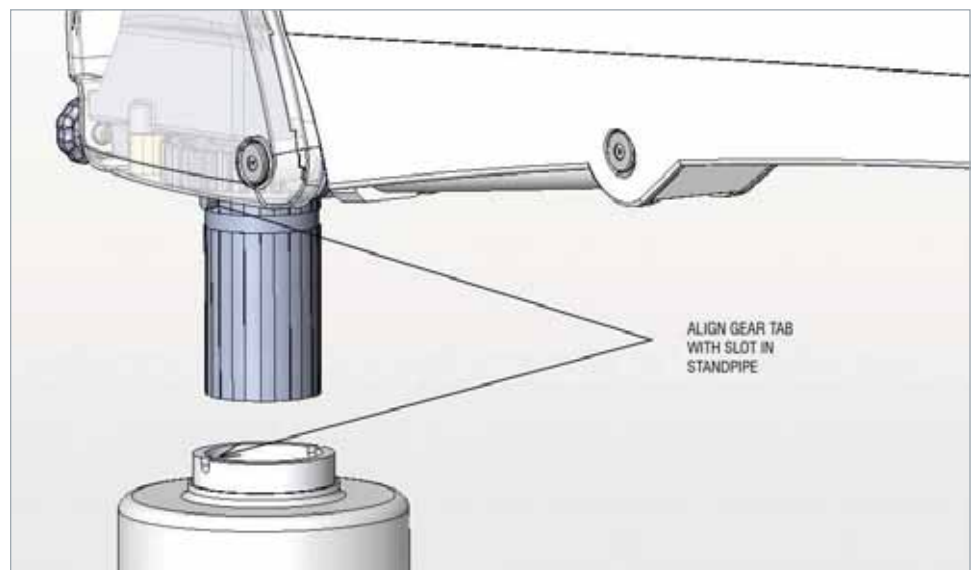


Figure 4b: Gear Tab Alignment

1. Locate the standpipe in the chosen location for the tender and mark its centerline on both upper and lower decks. The standpipe must be installed vertically plumb without contacting the vessel between decks while flexing under load.
2. Drill 1/4" pilot hole in upper deck and re-check centers for clearance. The shear transfer collar will tolerate up to 3° of deck angle. If the deck to standpipe angle is greater than this, the deck should be leveled to 90° by creating a mounting platform.
3. Drill 5 1/2" hole through upper deck. Mount shear transfer collar to upper deck by drilling six 1/2" clearance holes for thru-bolting through the upper deck.
4. Clean deck surface and mount shear transfer collar by bedding with Sikaflex 292 and Sikaflex 210T Primer and installing fasteners through holes on 11" diameter base of collar (*using bolts or screws as per Step 4*).
5. Seal deck core material and clean off excess sealant.
6. With assistance from below, lower standpipe through collar to lower deck. Mark location of standpipe step on lower deck.
7. On Lower deck, drill 2 1/2" hole through center of standpipe step location for exit of hydraulic hoses.
8. Drill eight 1/2" mounting holes.
9. Seal deck core material as directed by shipyard and bed standpipe step with Sikaflex 292 and Sikaflex 210T Primer.
10. Install step fasteners to secure step onto deck floor.
11. With assistance from below, reinstall standpipe, sliding trim ring over bottom of standpipe before placing over step (the trim ring will attach to ceiling of lower deck). Ensure that the standpipe contacts standpipe step evenly all the way around, with outer lip of step protruding.
12. Install 3/8" bolt through standpipe into step to lock standpipe into position.
13. Secure collar clamp and gasket to shear transfer collar by tightening the six 5/16" bolts evenly. These bolts compress sealing gasket on collar and lock standpipe into position on upper deck.
14. Mount trim ring to ceiling of lower deck using four screws.
15. Fit fiberglass standpipe shroud over top of standpipe, trimming to fit deck contour.
 - Glue gear assembly into top of standpipe with Plexus, *as outlined on page 10 of this manual*.
 - Locate Crane and Base in desired location.
16. Lead hoses through center of standpipe step to power pack and connect hoses to marked ports on power pack (*See Figure 5b*).

Hydraulic and Electrical Connections (Pedestal Base)

Installation of Pedestal Base:

1. Locate Crane and Base in desired location.
2. Drill mounting holes, bed base with Sikaflex 292 and Sikaflex 210T Primer and then bolt down.
3. Complete electrical connections as per wiring diagram in Figure 5a.
4. Connect wireless receiver by connecting 12-pin deutsch plug at HPU or optional pendant hand control by plugging it into connection on truck.
7. Crane is ready to operate.

NOTICE

The Yacht deck structure at the desired location of the Crane and Base must be designed to handle this load.

Rotation Gear Installation

Each ES series Steelhead Marine Crane is shipped with a 50ml tube of Plexus MA310. This is to be applied to the gear prior to the installation to the standpipe or base. See details below for correct application procedures.

1. Dry fit and check gear to standpipe or base tube. The gear should slide into the pipe section and bottom to allow the tabs to match



2. Steelhead Marine supplies the Plexus and mixing tube. Applying the entire tube will be required to ensure correct adhesion of the gear to the pipe section



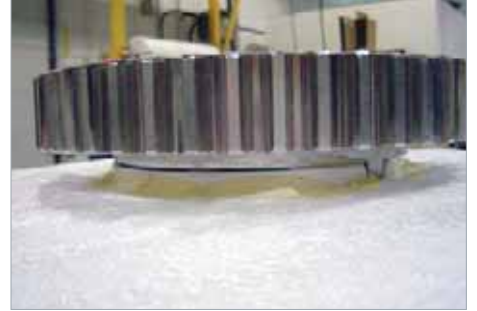
3. Apply Plexus to area shown below.



4. Once the Plexus has been applied you have a 10 minute working time so be sure to install the gear into the pipe section as soon as the Plexus adhesive has been applied.



5. Clean any excess Plexus adhesive with mineral spirits or Acetone.



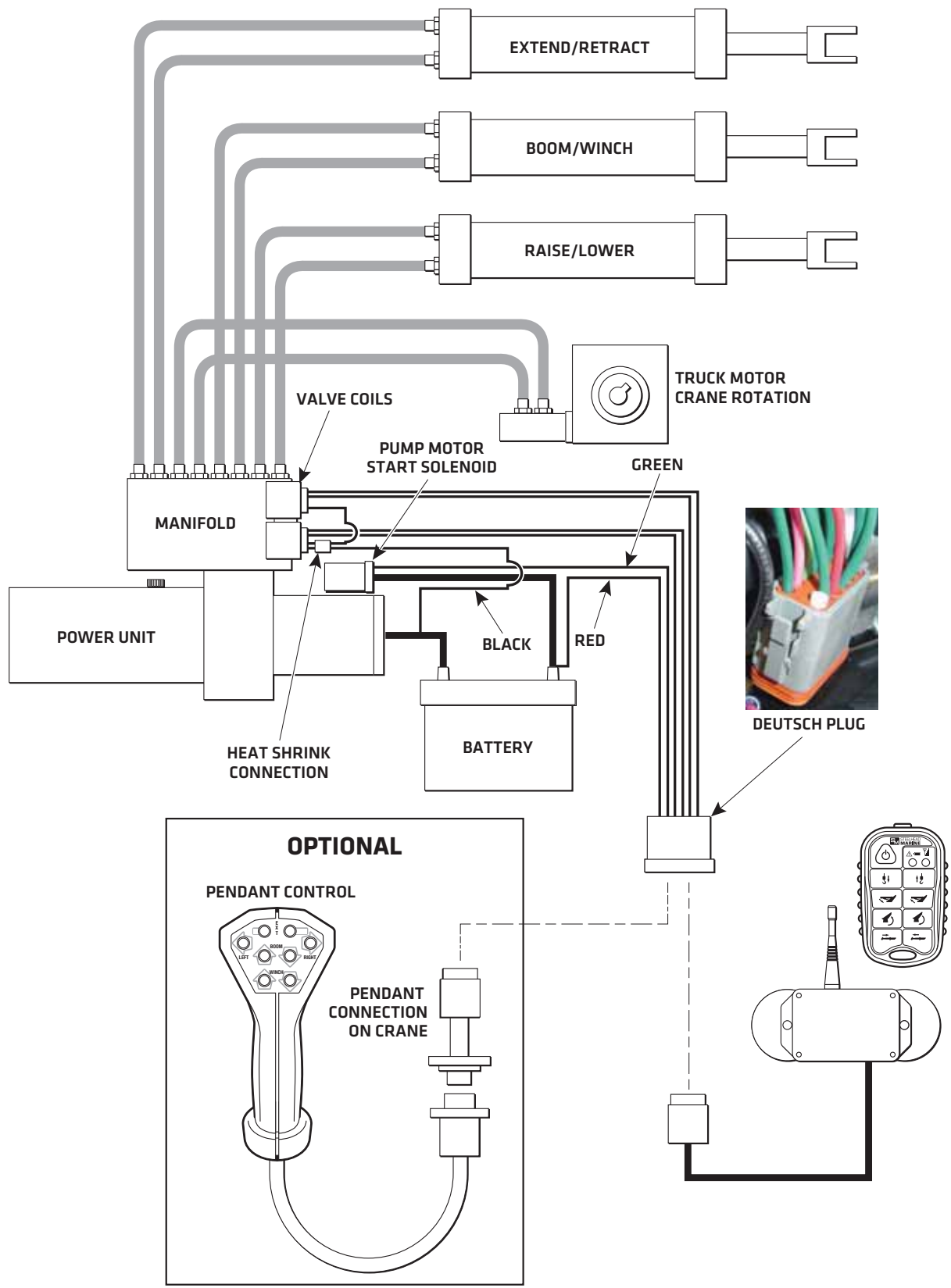


Figure 5a: Electrical and Hydraulic Connections



Figure 5b: Pump Motor Solenoid Wiring



Figure 5c: Color Coded Hoses on Manifold

Completing and Testing the Installation

To complete and test the installation of the crane:

1. Retract all hydraulic cylinders. (ie. rope all the way out, boom horizontal and retracted.)
2. Fill hydraulic reservoir tank with **AW 32 Hydraulic Oil, 1" from top of tank**. Test crane as follows:
 - Turn breakers on momentarily.
 - Ensure power unit turns on, by pressing a function on controller.
 - Turn breakers off.
 - Check all wiring.
 - Turn control breaker on.
 - Lightly touch each button on the wireless control or pendant hand control to make sure crane moves appropriately.
3. Check entire system for leaks and tighten fittings if necessary.
4. During shipment, air may have collected in hydraulic system. To bleed, operate all hydraulic functions through their full travel capacity 3 or 4 times, using pendant hand control. This will remove any air in the system.
5. Recheck oil level in reservoir to ensure 1" from top has been maintained.

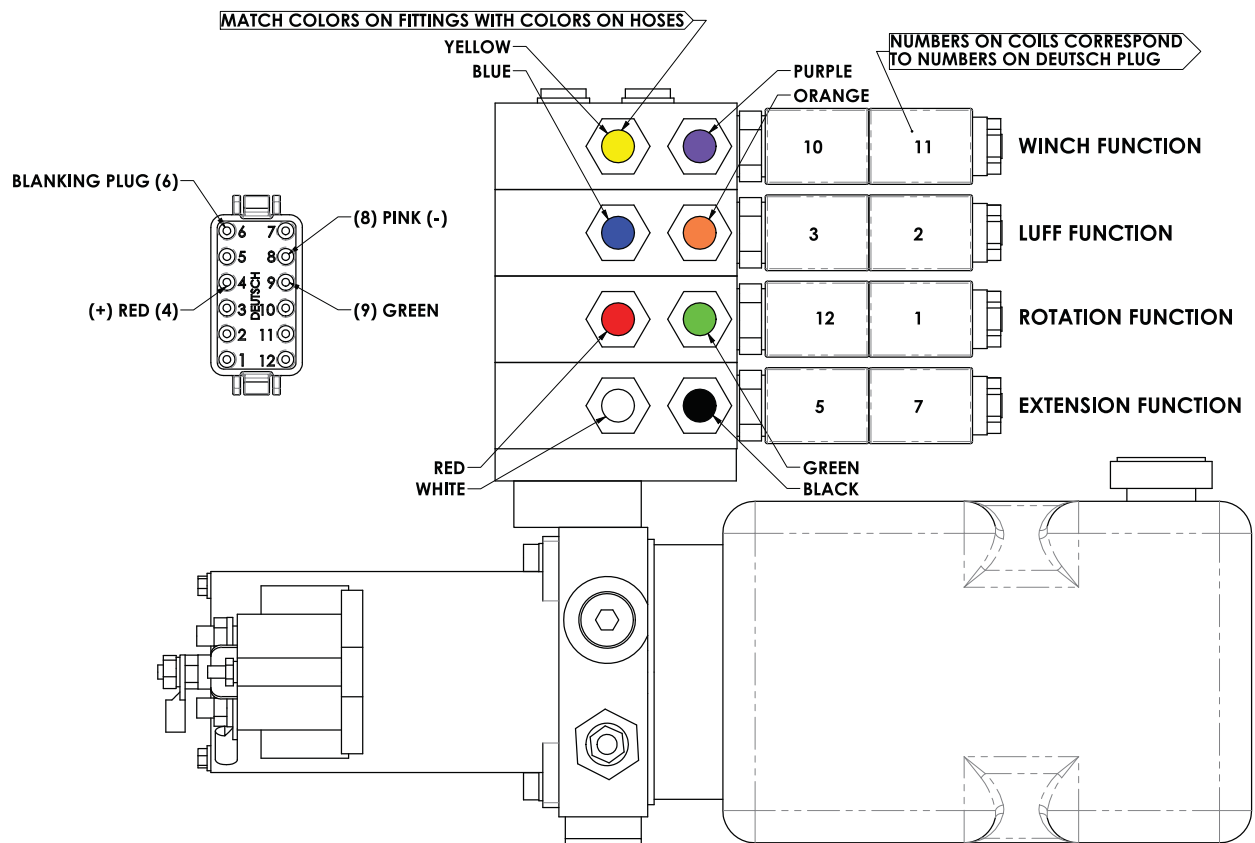


Figure 6a: 4-Function HPU Electrical/Hydraulic

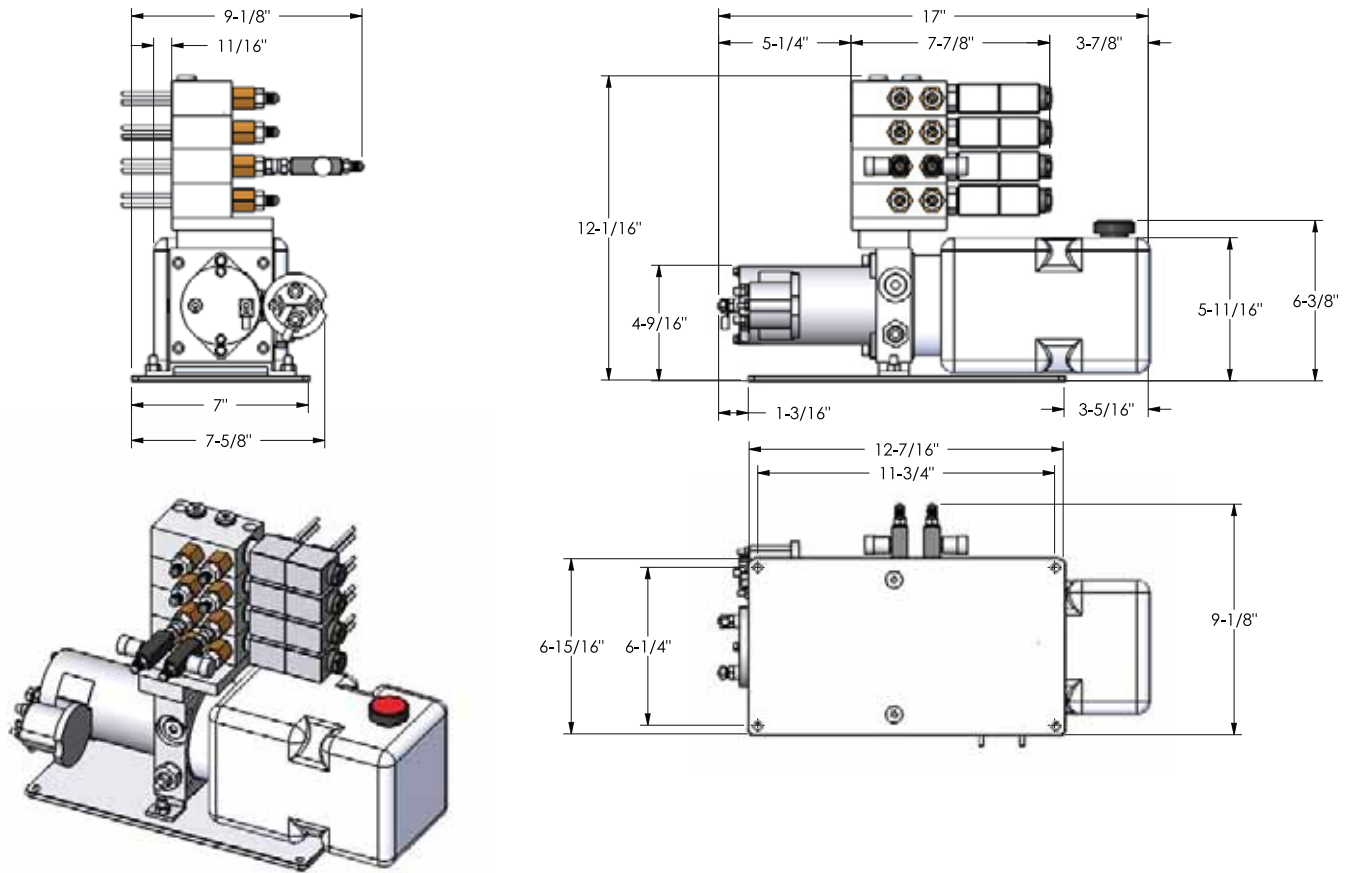


Fig 6b: 4-Function HPU Dimensional Information

Operating Instructions

WARNING

REVIEW BEFORE OPERATING.

Misuse of the crane may result in injury or death.

Always follow carefully these safety cautions:

- Never load the crane system beyond its capacity of 1000 lb.
- Be sure the area around and under the tender is clear of people and obstacles before lowering, including lower decks and water level.
- Remove all cargo and excess water from the tender before raising or lowering.
- Ensure all passengers leave tender before raising and lowering
- This crane is not a personnel lift
- Position the crane directly over the load when operating
- The crane is designed for vertical hoisting only
- Do not launch or retrieve a tender in rough sea conditions, or while underway.
- Be aware that yachts tend to list when launching a tender. Use caution when rotating a load.
- Do not allow children to operate the crane.
- Keep hands away from all moving parts.
- Turn the crane's power supply off when not in use.
- Detach crane from tender and retract boom to stow.
- Detach (optional) pendant control and STORE IN A DRY LOCATION when not in use.

Operating Instructions

1. Unlock the rotation brake by turning knob CCW (*See Figure 8*)
2. Turn on hydraulic supply by turning on the crane's DC breaker to supply the crane's power pack.
3. Turn on wireless controller or remove waterproof plug on crane body and plug in pendant control.
4. Disconnect weighted hook from storage mount and allow it to hang freely.
5. Attach the tender's lifting bridle to the weighted hook. Using the controller (*Figure 7a/7c*), position the lifting bridle to enable attachment to the tender.
6. Raise the lifting bridle just enough to remove any slack from the cables. Check all attachments to the tender.
7. Remove the tender's attachments to the deck, and ensure the tender's drain plug is installed.
8. Attach the handling lines to the bow and stern of the tender.
9. Raise the tender high enough to clear all deck obstructions and railings.
10. Rotate the load outboard, controlling the tender position with bow and stern lines.
11. Lower the load to the water. Pay out enough cable so that the tender does not load the cable and crane as it rides waves or swells.
12. Using the load-handling lines, pull the tender to a point near the vessel where it may be boarded. Disconnect the lifting bridle from the tender.
13. Secure the weighted hook so that it does not swing into the side of the vessel.

NOTICE

The crane's capacity is designed to lift the tender at the maximum boom extension. For maximum operator control while lifting and rotating the tender, the objective is to keep the tender as close to the crane as possible. Maximum control is achieved by having the minimum boom extension and having a minimum rope length.

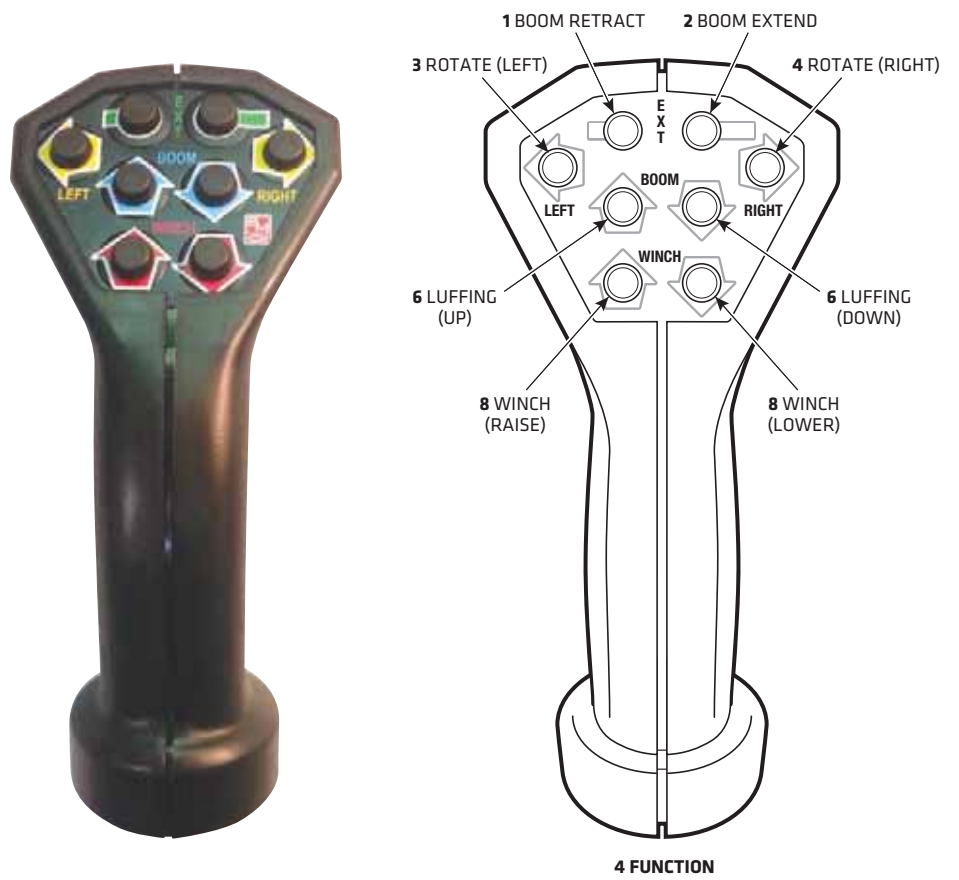


Figure 7a: Pendant Control



Figure 7b: Wireless Receiver

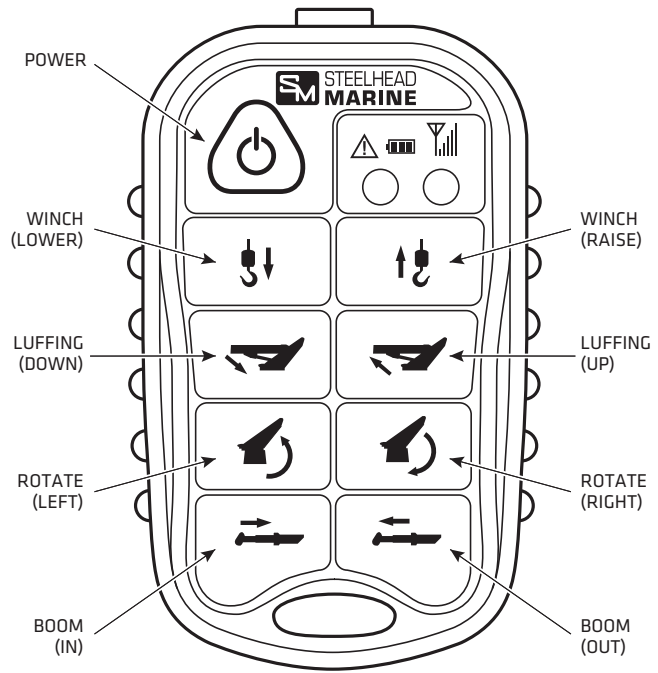


Figure 7c: Wireless Controller

⚠ CAUTION

Hazards or unsafe practices which COULD result in minor injury or product or property damage.

Crane Storage

The crane must be stored with the boom extension fully retracted to prevent corrosion to the linear winch rod, which would result in damage to the cylinder seals.

To properly store the crane after use

1. Lower crane to horizontal position.
2. Slide weighted hook onto hook mount.
3. Retract hook line and boom extension until crane is stowed.
4. If the crane is wired control option, detach pendant control and attach waterproof cap.
5. Lock crane rotation by turning knob CW (See Figure 8).

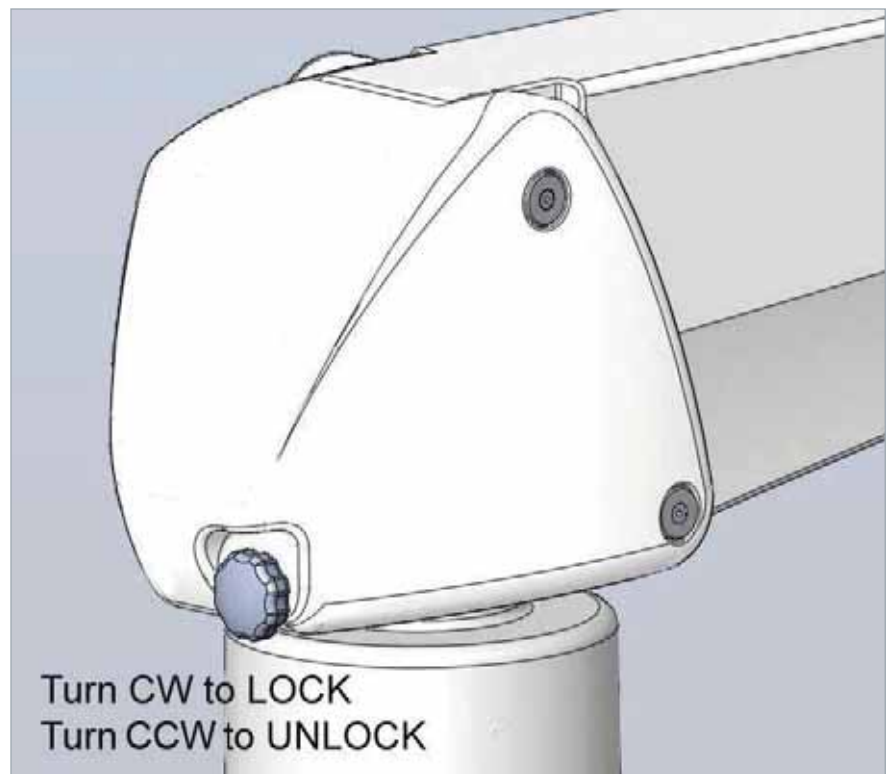


Figure 8: Crane Rotation Brake

Maintenance

Maintenance Schedule *(please refer to Figure 1a)*

	Monthly	Quarterly	Annually	As Required
Inspect main hoist cable. Replace upon first sign of frays, fish hooks, flattening, kinks, corrosion, audible pinging or snapping sounds.	✓			
Inspect all cables and hydraulic hoses and fittings. Replace at first sign of corrosion or excessive wear.	✓			
Inspect crane and its hardware components for signs of damage or malfunctioning parts.			✓	
Touch-up any paint damage to preserve the crane's finish.				✓
Wash crane with soap and water including top sheave and manifold area.	✓			
When cleaning the crane, inspect for hydraulic leaks at the power unit and cylinders. Tighten the fittings as required to stop any leaks.	✓			
Inspect and lubricate the crane rotation bearings.		✓		
Inspect the sheaves.	✓			
Service the hydraulic system annually or after 50 hours of use, whichever comes first.			✓	
Maintain fluid levels at 1" below the top of the reservoir on the crane power unit. Use AW-32 or equivalent non-foaming hydraulic fluid only.				✓
Apply white lithium grease between the rotation gear (ring gear) and pinion gear.			✓	

⚠ Safety Cautions

Death, injury, or damage may result if the crane's cable is not inspected regularly, and replaced as needed.

Counter balances have been factory set for optimal performance; crane safety may be jeopardized by unauthorized adjustments.

Troubleshooting

PROBLEM	PROBABLE CAUSE	SOLUTION
Boom will not extend	Wrong button pressed	See Figure 7a and 7c on Page 15 and 16
Crane will not luff	No power (control)	Turn control breaker on
Linear winch does not raise or lower	Wrong button pressed	See Figure 7a and 7c on Page 15 and 16
	Hook still attached to hook hanger	Disconnect
	Tender not disconnected	Release tender tie downs
	Overload on crane	Check tender for equipment and excess water
	Hook travel exceeded	Max travel 20' hook retracts to within 8" of outer sheave
	Cable jammed inside linear winch	Call Dealer for service or instructions
Winch does not hold weight	Hydraulic components need servicing	Call Dealer for service or instructions
Boom settles under load	Hydraulic components need servicing	Call Dealer for service or instructions
Boom rotates when not under power	Hydraulic components need servicing	Call Dealer for service or instructions

Customer Service

For service, contact the dealer from which you purchased the yacht crane. Contact information is on the last page of this manual.

Specifications

Electrical System

- The control system is available in 2 voltages: 12 volt, 3.5 amps/ 24 volt, 2 amps
- Standard wireless control provides 2-way, 4-function control. Low voltage output from wireless receiver automatically starts hydraulic power pack or ship's hydraulics.
- Optional hand held pendant with 15' cord provides 2-way, 4-function control and connects to crane body with waterproof plug and cap. Low voltage output automatically starts hydraulic power pack or ship's hydraulics.

Hydraulic System

- Operating pressure is 2,700 psi.
- Hydraulic power is supplied by ship's hydraulics or Steelhead Marine power packs, which are available in the following voltages. 12 volt, 117 amps (160 AMP Breaker) 24 volt, 58 amps (80 AMP Breaker)
- **Luffing** – boom elevation, a counterbalance cylinder locks boom at any angle between 0 and 70 degrees
- **Winch** – 8 to 1 linear winch provides quiet lowering and hoisting 9:1 Safety Factor
- **Oil used** – AW 32 Hydraulic Oil or equivalent.

Fittings, Hardware, and Cables

- The hook and weight are an integrated assembly constructed of 316 stainless steel.
- The hoist rope is 1/4" diameter and made of Amsteel composite.

Equipment Dimensions

	HEIGHT	WIDTH	LENGTH	WEIGHT
Hydraulic power pack, 4 Function	12"	7 3/4"	17"	30 lb
Standpipe assembly		5 1/4" diameter	108" std	90 lb
Crane assembly	14 1/2" at truck	9 1/4"	85" retracted 133 1/2" extended	315 lb
Control cable			15'	
Shipping Crate				200 lb

Important Safety Notice

WARNING

**PLEASE READ CAREFULLY
BEFORE OPERATING.**

In an effort to offer additional flexibility for launching and retrieving please note there is no mechanical rotation stop with the Steelhead ES1000/ES1500 Yacht Cranes.

It is of critical importance that the crane operators not rotate the crane beyond 360° (one complete rotation).

Rotating the crane beyond its safe operating limits may damage the hydraulic system which could result in serious property damage and personal injury.

If the crane has been rotated in a complete circle during operation, rotate it back in the opposite direction to return it to the stowed position.

If the crane has rotated beyond 1 and 1/2 rotation (540°), the following steps should be completed after returning the crane to the stowed position in order to ensure damage has not occurred.

1. Check all hoses to ensure none of them have developed kinks, leaks, or damage at the connection points on the crane.
2. Check the connections to the Hydraulic Power Unit to ensure they are still properly connected and have not developed kinks, leaks, or damage to the fittings.

If you have any questions regarding this safety notice or the operation of your crane, please contact us at 604-607-0091.



2 Year Platinum Warranty

Steelhead Marine Ltd. (“SML”) warrants to the original end-user (the “Buyer”) only that the “equipment” and its components are free from defective materials and workmanship for a period of two years from the date of purchase by the Buyer when purchased from SML. In the case of a new vessel, from the commissioning date of the vessel, or 2 years from the date the equipment leaves SML possession (whichever is less).

This Limited Warranty covers the cost of shop labor and materials when the defective equipment or its component(s) are delivered to SML.

Examination of the Crane: The Buyer (or representative) must examine the Crane upon delivery, and must report all defects to SML within ten (10) days of said delivery, failing which it shall be conclusively agreed between SML and the Buyer that the Crane has been delivered as specified in the contract. The Buyer shall report all visible shipping damage to the delivering shipping agent forthwith upon delivery. Failure to report shipping damage as provided above shall result in any and all shipping damage repair costs becoming the responsibility of the Buyer without recourse to SML or the shipping agent.

Making a Warranty Claim: The Buyer shall establish its warranty claim by delivering to SML, within the period of this Limited Warranty, a statement in clear and concise terms, setting forth the basis of the warranty claim together with proof of purchase, the make and model of the equipment, the date on which the equipment was installed, the name and return address of the party making the claim, and the name of the person or company installing the equipment.

Upon receipt of a valid warranty claim, SML reserves the right to either repair or replace the equipment or its components on board the vessel upon which it is installed, or require the Buyer to return the defective equipment or component(s) to SML transportation prepaid.

This Limited Warranty shall include the cost of materials and labor for the repair or replacement of the equipment or its components. This Limited Warranty


also covers the equipment or its components to be repaired or replaced on board the vessel upon which it is installed, however, all expenses associated with transportation of product(s), transportation of field service technician(s), and all in-the-field collateral support (equipment service, welding service, painting service) are the Buyer’s responsibility.

Repaired or replaced products are warranted for the remaining portion of this original Limited warranty period as outlined above.

Exclusions: This Limited Warranty shall not be effective and shall be void, if the equipment or its components are:

- (i) Not installed or used under normal conditions and as recommended by SML;
- (ii) Subjected to abuse, neglect, or carelessness;
- (iii) Altered or repaired by anyone not authorized by Steelhead during the term of this Limited warranty;
- (iv) Subjected to lift weight in excess of rated capacity.; or
- (v) Subjected to persons being the load or part of the load during operation of the equipment.

This Limited Warranty does not cover, and SML is in no way responsible for any supporting or structural elements of the vessel upon which the Crane is installed, or any hoses, hydraulic fluids, filters, paint, or anodized finishes not supplied by SML.



Except as expressly provided in this Limited Warranty, SML is not responsible for the proper installation of the equipment or its supporting elements. It is the responsibility of the Buyer to ensure that the supporting and structural elements, and the equipment's connection thereto, are properly engineered and can withstand the loads of the equipment while in operation. The Buyer shall periodically inspect all structural and supporting elements of the vessel and equipment, all hoses and hydraulic assemblies for signs of wear, corrosion, and/or visible deterioration. The Buyer shall cease operation of the equipment at the first indication of deterioration.

This Limited Warranty shall not be valid except when delivered by an authorized representative of SML or installing shipyard, and the Buyer shall not be entitled to rely on any other representations or warranties, whether oral or written, except as provided in this limited warranty.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES. ANY WARRANTY IMPLIED BY STATUTE AND NOT EXCLUDED HEREIN, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS IN EFFECT ONLY DURING THE DURATION OF THE EXPRESS WARRANTY SET FORTH HEREIN.

This warranty gives the Buyer specific legal rights, and the Buyer may also have other rights which may vary from country to country or state to state. This warranty shall be construed pursuant to the laws of the Province of British Columbia.

Contact Information

Steelhead Marine Service Representatives

For distribution enquiries, please
contact **Jake Burns**

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Lusty & Blundell Ltd.

38 Tawa Drive Albany
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Auckland 9 New Zealand

Tel: 09 415 8303
Fax: 09 415 8304
Email: grantm@lusty-blundell.co.nz
Web: www.lusty-blundell.co.nz

So-Pac Marine

PO Box 303-180 North Harbor
North Shore 0751
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Tel: +64 (9) 448 5900
Email: mhall@sopac.co.nz
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Ova Marine Ltd.

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Cekek Yeri, No: 45
Yalova, Istanbul

Tel: +90 226 813 0015
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Email: info@ovamarine.com
Web: www.ovamarine.com

United Kingdom

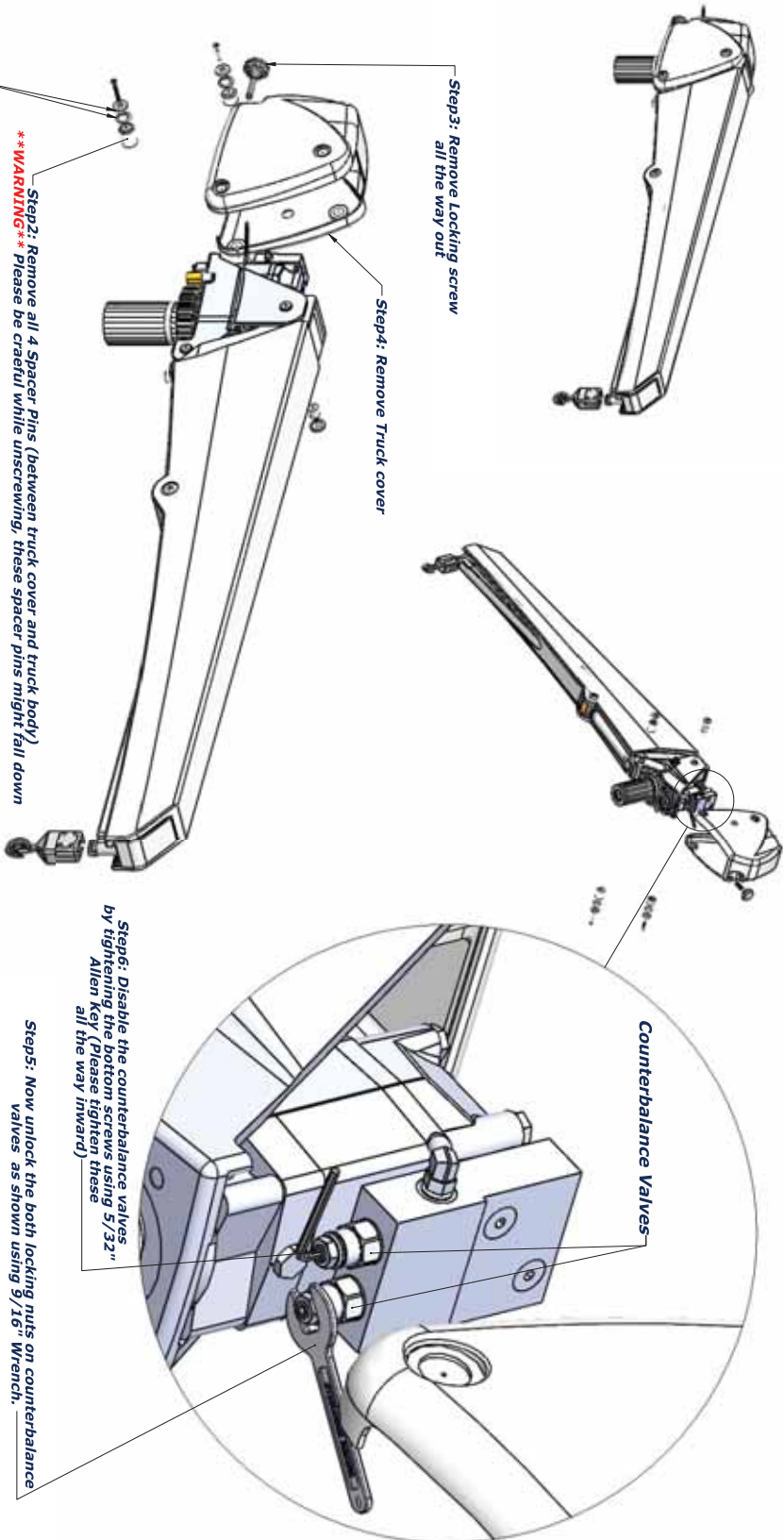
MDS Marine Ltd.

Hamble Point Marina
Workshop 7, Firefly Road School Lane
Hamble, Southampton SO 31 4NB
United Kingdom

Tel: 44 (0) 2380 457656
Mobile: 44 (0) 7712 645551
Email: info@mdsmarine.co.uk www.mdsmarine.co.uk

Appendix – Emergency Rotation

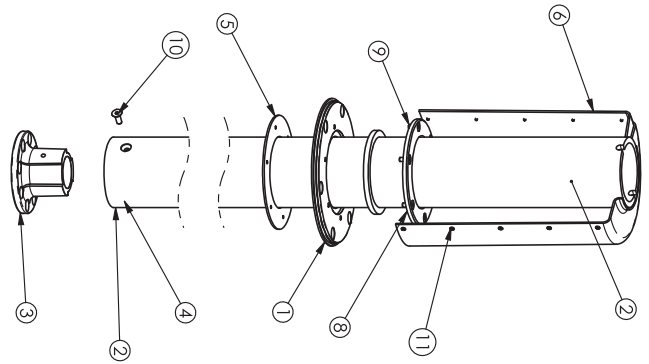
Emergency Rotation Drawing ES1000/ES1500



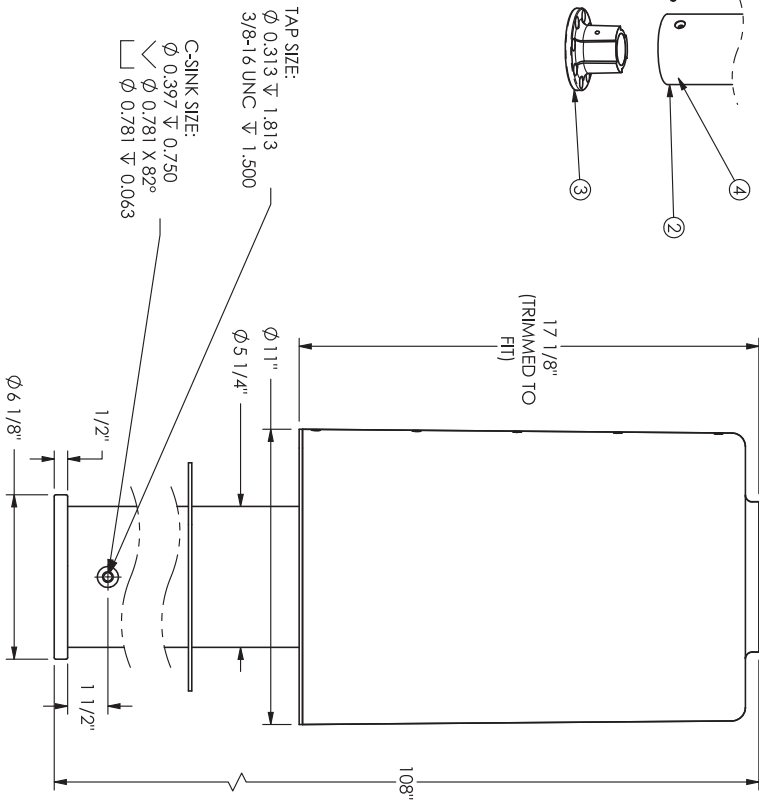
Step7: Now rotate the crane manually to storage position.
Step8: Enable counterbalance valves back by Unscrewing back (2-1/2" turns outward) the bottom screws on counterbalance valve and tightening the locking nuts.
Step9: Contact Service Representative for further assistance

CAD GENERATED DRAWING. DO NOT MANUALLY UPDATE UNLESS SPECIFICALLY DESCRIBED ALL DIMENSIONS ARE IN INCHES. TOLERANCES: FRACTIONS = ±1/16 DECIMALS = ±0.010 ANGLES = ±1.0		Unit # 2 - 5897 271 Street, Langley, B.C. Canada Tel: 604-607-0081 Fax: 604-607-0082 Web: www.steelheadmarine.net Email: sales@steelheadmarine.net	
DRAWN: G.B. DATE: 14/11/2014 CHECKED: G.R. APPROVED:	EST1000/ES1500 Emergency Rotation Drawing PROJECT: ES1000/ES1500 DWG. NO.: ES10-SV011	SCALE: 1:10 SHEET: 1 OF 1 REV.:	3rd ANGLE PROJ.

Appendix – Stanpipe Assembly



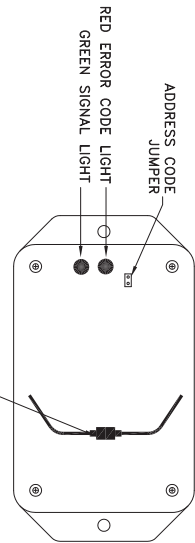
BILL OF MATERIAL					
ITEM NO.	QTY.	PART NUMBER	DESCRIPTION	Material	Grade
1	1	EST10-S0204	SHEAR TRANSFER COLLAR	1/2" PLATE	6061-T6 ALUMINIUM
2	1	EST10-S0201	STANDPIPE PIPE	6061-T6 ALUMINIUM	6061-T6 ALUMINIUM
3	1	SM08-S0103	S/P STEP	A356 CAST ALUMINIUM	
4	1	SM08-S0104	S/P STEP SLEEVE	A356 CAST ALUMINIUM	
5	1	SM08-S0107	S/P TRIM RING	6061-T6 ALUMINIUM	
6	2	EST10-S0202	S/P SHROUD	FIBERGLASS (2)	
7	1	SM08-S0106	STANDPIPE SEAL	5 1/4" ID x 6 1/4" OD x 3/8" THICK	NEOPRENE
8	1	SM08-S0108	S/P GASKET CLAMP - MACHINED	3/8" PLATE	6061-T6 ALUMINIUM
9	6	FAST-FH50090	SCREW, FLAT HEAD, ALLEN, 5/16-18 X 3/4"		
10	1	SCHCSCREW D.3/75-16X1X1-HXN	FAST-FH00300	FLAT HEAD PHILLIPS SCREW, #8-32 X 3/8"	
11	10				



REV	DATE	BY	APPR	DESCRIPTION

SM STEELHEAD MARINE 2-5967 27 th Street, Langley, B.C. Canada Tel: 604-607-0091 Fax: 604-607-0092 Web: www.steelheadmarine.net Email: sales@steelheadmarine.net		PROJECT: EST1000 DWG. NO.: EST10-S0200
DRAWN: G.R. DATE: 01/29/2008 CHECKED: D.H. APPROVED:	TOLERANCES: FRACTIONS = ±1/16 0.010 = ±0.000 0.000 = ±0.005 ANGLES = ±1.0	SHEET: 1 OF 2 REV:

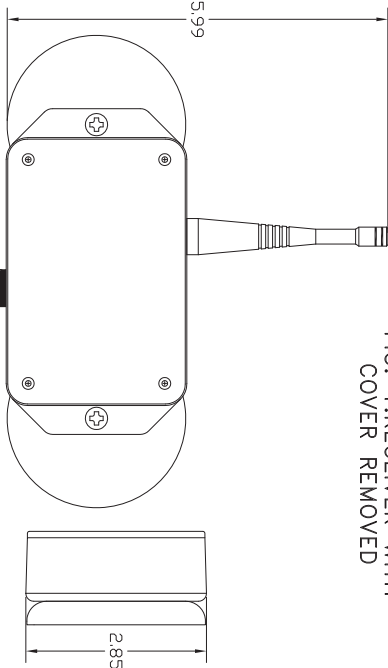
Appendix – Micro Crane Remote



DISCONNECT WHEN USED ON CRANES WITH ELECTRIC WINCH
FIG. 1: RECEIVER WITH COVER REMOVED

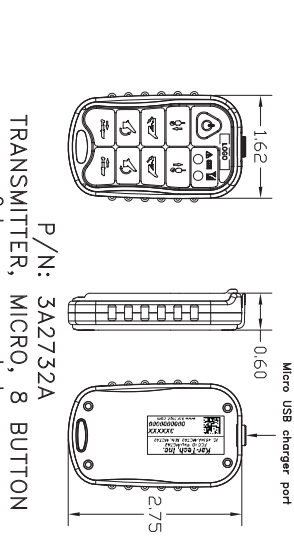
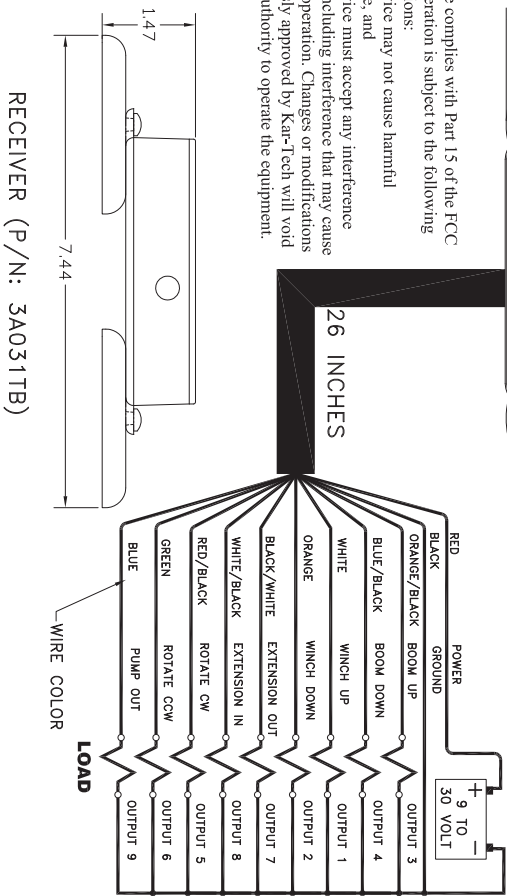
TRANSMITTER ERROR CODE CHART	ERROR CODE	PROBABLE CAUSE
1	LOW BATTERY	
2	FAULTY CIRCUIT TO WINCH UP	
3	FAULTY CIRCUIT TO WINCH DOWN	
4	FAULTY CIRCUIT TO BOOM UP	
5	FAULTY CIRCUIT TO BOOM DOWN	
6	FAULTY CIRCUIT TO ROTATION CW	
7	FAULTY CIRCUIT TO ROTATION CCW	
8	FAULTY CIRCUIT TO EXTENSION OUT	
9	FAULTY CIRCUIT TO EXTENSION IN	

ERROR CODE NUMBER IS THE NUMBER OF RED LIGHT BLINKS BETWEEN EVERY FLASH.



RECEIVER ERROR CODE CHART	ERROR CODE	PROBABLE CAUSE
1	RADIO SIGNAL PROBLEM	
2	FAULTY CIRCUIT TO WINCH UP	
3	FAULTY CIRCUIT TO WINCH DOWN	
4	FAULTY CIRCUIT TO BOOM UP	
5	FAULTY CIRCUIT TO BOOM DOWN	
6	FAULTY CIRCUIT TO ROTATION CW	
7	FAULTY CIRCUIT TO ROTATION CCW	
8	FAULTY CIRCUIT TO EXTENSION OUT	
9	FAULTY CIRCUIT TO EXTENSION IN	
10	FAULTY CIRCUIT TO PUMP RELAY	

ERROR CODE NUMBER IS THE NUMBER OF RED LIGHT BLINKS BETWEEN EVERY FLASH.



OPERATION:
 Press and hold the power button on the transmitter until both LEDs turn on, then release. The green LED will flash rapidly when communication has been established with the receiver. The LED flashes slowly if the receiver is off or there is no communication between the transmitter and receiver. Turn the receiver on and press the corresponding buttons on the transmitter keypad to turn on and off each of the outputs.

CHARGING:
 Plug the charging connector into the port at the top of the transmitter. Observe orientation and do not use force. A solid red LED indicates battery is charging. Once the internal battery is fully charged, the red LED will turn off and the green LED will turn on. A fully discharged unit will take up to 3 hours to recharge. Use only approved chargers. *Note: It will take longer to charge if the transmitter is on during charging.*

LED INDICATORS:
 The transmitter has two LED indicators, the red BATTERY/DIAGNOSTIC indicator and the green TRANSMIT indicator. The green TRANSMIT indicator flashes rapidly whenever there is communication between the transmitter and the receiver.

The red BATTERY/DIAGNOSTIC indicator starts blinking once every second when the battery voltage is low and requires charging. It also blinks when there is a problem with the system in the form of an error code. Refer to the ERROR CODE CHART tables for more information.

NOTE: To check for low battery, turn the receiver off and leave the transmitter on. If the transmitter red LED continues to blink, the battery is low and requires charging. If the red LED blinks only when the receiver is on, count the number of blinks and refer to the ERROR CODE CHART tables for additional information.

NOTE: The red LED will stay on while charging and when the charge is completed the green LED will stay on.

TEACH ID CODE:
 To synchronize a new transmitter and receiver together, refer to Fig. 1 and use the following procedure:

1. Remove receiver cover
2. Apply power to the receiver
3. Place a jumper across the TEACH ID jumper inside the receiver. Both green and red LEDs will toggle inside the receiver. Remove the jumper and store it on one pin
4. Get transmitter and receiver to teach. Press and hold the POWER button until both LEDs turn on, continue holding for 30 seconds until the receiver's red LEDs blink together
5. Release the POWER button and wait for 1 second or until the green and red LEDs stop blinking and green LED starts blinking rapidly.
6. Replace the cover on the receiver

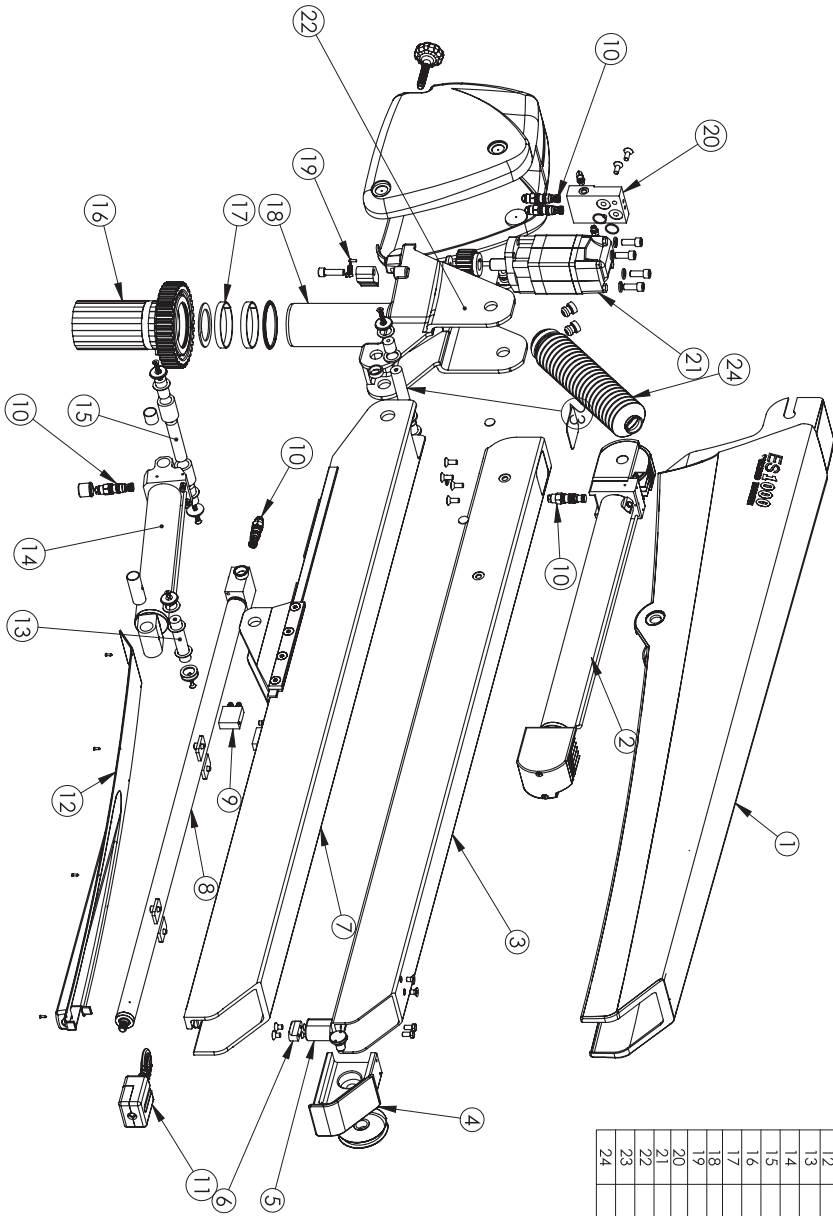
SPECIFICATIONS:

Electrical:
 RF Transmit power (EIRP): 10 mW
 RF Frequency: 902-928 MHz
Transmitter:
 Power: Rechargeable 3.7V Lithium Polymer battery
 Operation time with full charge: 30 to 40 hours continuous
Receiver:
 Power: 9 to 30 Volts DC
 Outputs: 5A max each (20A system max)
Environmental:
 Transmitter: -20C to +60C IP Rating: 66
 Receiver: -40C to +85C IP Rating: 69K
 Vibration: 3G to 200Hz

KAR-TECH		MFG DATE	
Delafield, WI 53018		XX	XX
MICRO CRANE REMOTE		XXX	XX
CND DRAWING DO NOT REVISE MANUALLY		FUNCTION	1/8
SCALE	DATE	BY	CHKD
1/8"	06-21-12	3A-273-1-A-3	15 49g

Appendix - Exploded View

ES1000 - GENERAL EXPLODED ASSEMBLY



ITEM	DESCRIPTION
1	Cover - Main Boom
2	Linear Winch Asy
3	Boom Extension Asy
4	Boom Tip Sheave Asy
5	End Block - Extension Cylinder
6	Hook Mount Asy
7	Main Boom
8	Extension Cylinder Asy
9	Transition Manifold Blocks
10	Sun Counter Balance Valves - CBCG - LDN
11	Hook Asy
12	Boom Cover - Bottom
13	Luff Pin Asy - Boom
14	Luff Cylinder Asy
15	Luff Pin Asy - Truck
16	Main Gear Asy
17	Truck Bearing Kit
18	Truck
19	Rotation Lock Asy
20	Manifold - Rotation
21	Motor - Squier Dan Foss
22	Truck Asy
23	Main Hinge Pin Asy
24	HOSE BELLOW ASSEMBLY

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DO NOT SCALE.
UNITS: DIMENSIONS ARE IN INCHES.
ALL DIMENSIONS ARE IN INCHES.

TOLERANCES:
 FRACTIONS = ±1/16
 0.00 = ±0.030
 0.00 = ±0.010
 0.00 = ±0.005
ANGLES = ±1.0

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PROJECT: ES1000
DWG. NO.: ES10-ASSEMBLY - EXPL

DRAWN: DH
DATE:
CHECKED:
APPROVED:

SCALE: 1:10

SHEET: 1 OF 1
REV.:



Contact

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5367 271st Street Langley, British Columbia Canada V4W 3Y7