

GTX™ SUPER YACHT UNIT SUBSTATION

Installation, Maintenance, and Operation Manual



THE INFORMATION CONTAINED IN THE FOLLOWING DOCUMENT REPRESENTS THE STANDARD CAPABILITIES OF THE GTX™ SUPER YACHT UNIT SUBSTATION. EACH UNIT IS MANUFACTURED TO PROJECT SPECIFICATIONS AND WILL BE MODIFIED ACCORDINGLY.

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Intertek
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CONFORMS TO STD. ANSI/UL1062

GTX™ Super Yacht Unit Substation Installation, Maintenance, and Operation Manual

INTRODUCTION:

PRODUCT DESCRIPTION:

GTX Super Yacht Unit Substation is designed to distribute power to industrial equipment. The standard GTX Super Yacht Unit Substation ranges from 25 kVA to 330 KVA, single or three phase. The GTX Unit Substation is equipped with DOE2016 high efficiency dry-type isolation transformers that range from 25 kVA to 330 kVA each. Transformers are rated from 480V-600V primary to 120/240V, and/or 208Y/120V secondary. Other secondary voltages are available by request. The factory-installed and wired distribution panelboards ranges from 100A to 1200A main breaker or main lug and can be series or fully rated up to 200 kAIC and a current rating up to main current level of the panelboard. Standard panelboard bussing is 1000A PSI copper, with other materials and ratings available by request. Heavy duty thermostatically-controlled cooling fans provided in the GTX Super Yacht Unit Substation improve efficiency and reduce condensation. The GTX Super Yacht Unit Substation utilizes "take-apart" construction with a top solar access shield that is designed to lift off to reveal the concealed lifting shackles and removable "lift-off" side panels that provide easy 360-degree access to the transformers and electrical components for field maintenance and inspection. All GTX Super Yacht Unit Substations use high stranded tin plated copper wire rated at 600V, 105°C wiring that is routed away from sharp or moving parts. At points where internal wiring passes through metal walls or partitions, the wiring insulation is protected against abrasion or damage by plastic bushings or grommets and edge-guards. The GTX Super Yacht Unit Substation Enclosure is NEMA 3RX rated, constructed of 14 gauge 316L stainless steel with a white textured powder-coat finish.

GTX Super Yacht Unit Substations are ETL listed to Safety Standard for Unit Substation UL 1062 Dated January 29, 1997 Third Edition including revision through June 25, 2010.

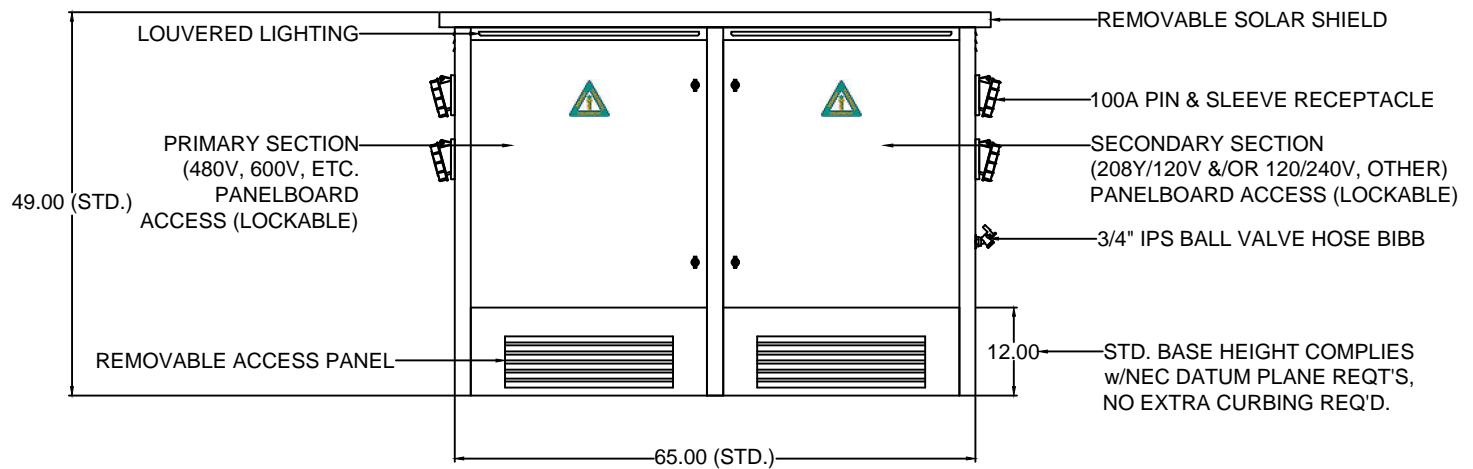
Specifications Subject to Change Without Notice

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GTX™ Super Yacht Unit Substation

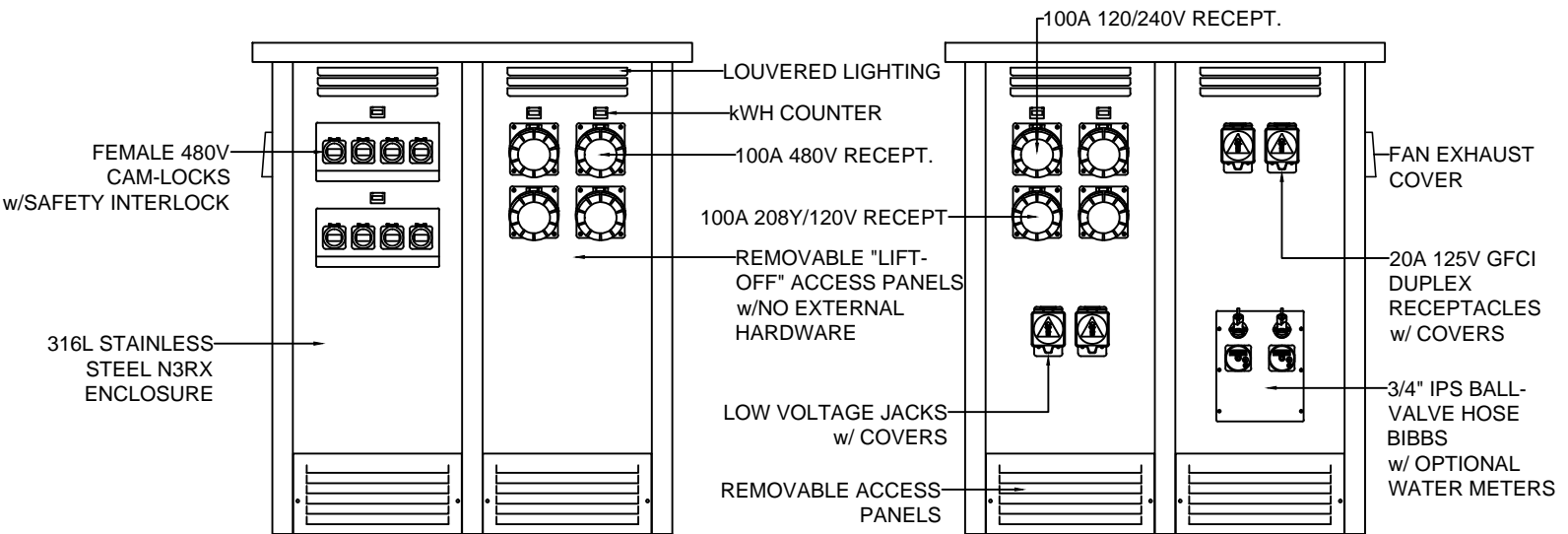
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TYPICAL FRONT VIEW
(DOORS CLOSED)



TYPICAL PRIMARY SECTION
LEFT SIDE VIEW

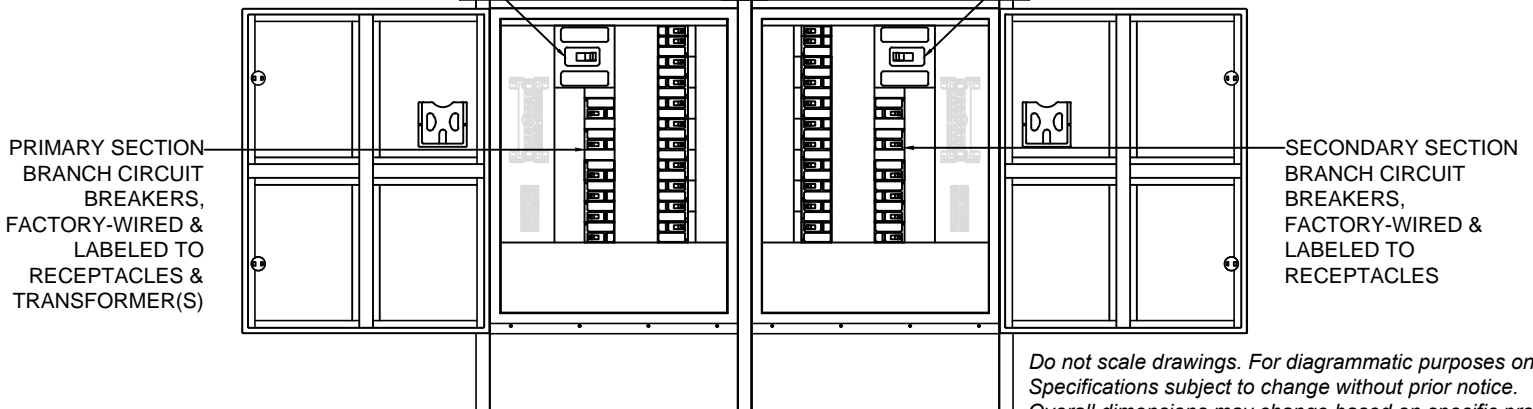
TYPICAL SECONDARY SECTION
RIGHT SIDE VIEW



PRIMARY SECTION MAIN
(MCB or MLO)
FIELD-TERMINATION POINT

TYPICAL FRONT VIEW
(DOORS OPEN)

SECONDARY SECTION MAIN
(MCB or MLO)
FACTORY-WIRED



Do not scale drawings. For diagrammatic purposes only. Specifications subject to change without prior notice. Overall dimensions may change based on specific project requirements.

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CAUTION

Use lockout/tag-out precautions as prescribed in OSHA, NFPA 70E and other safety manuals during maintenance shutdown of any systems or circuits.

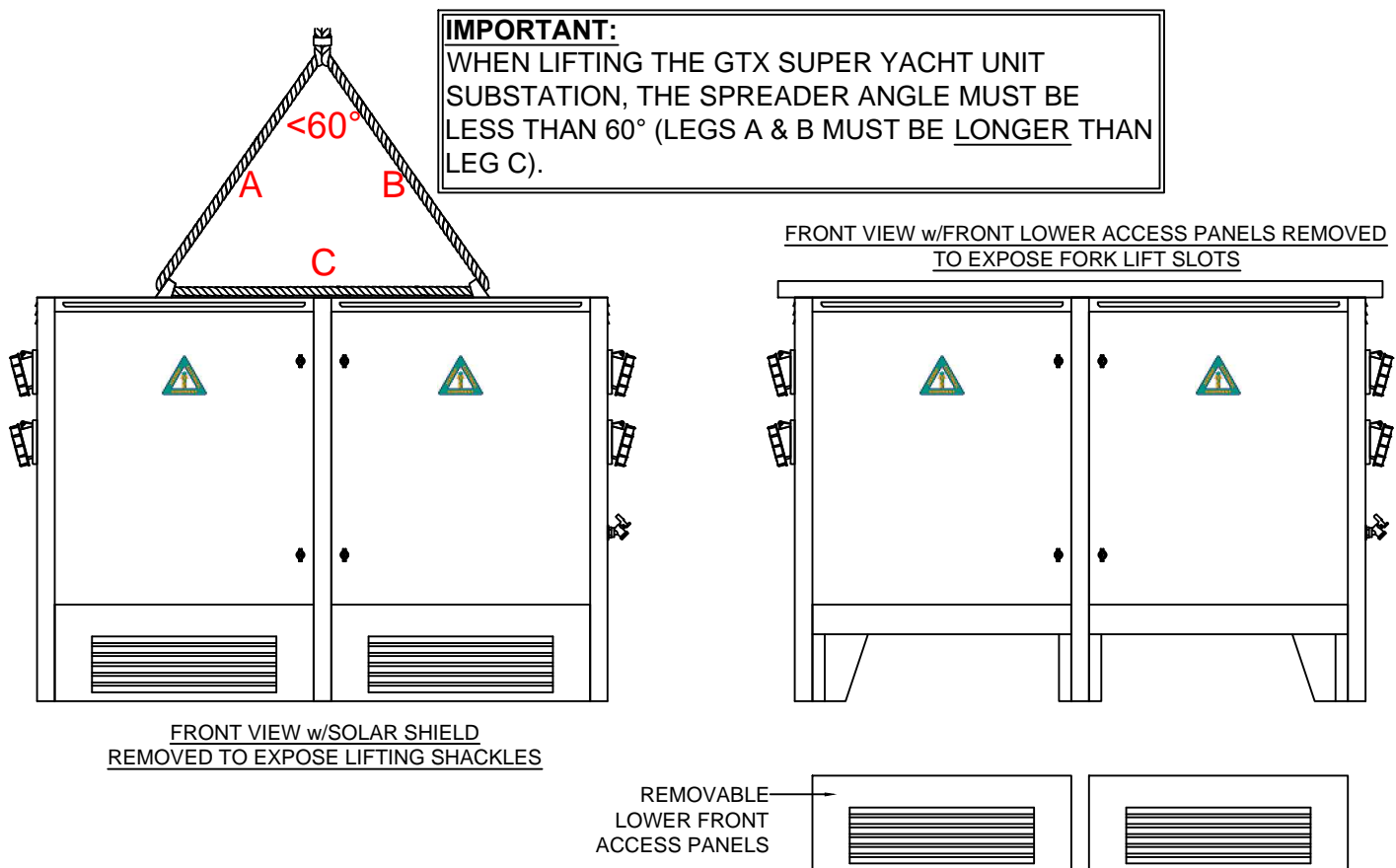
WARNING: BEFORE INSTALLING OR WORKING ON GTX SUPER YACHT UNIT SUBSTATION ELECTRICAL EQUIPMENT. READ THE INSTALLATION INSTRUCTION IN ITS ENTIRETY. ONLY QUALIFIED ELECTRICIANS OR CONTRACTORS FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THIS EQUIPMENT SHOULD INSTALL THIS UNIT SUBSTATION OR ANY ELECTRICAL DEVICE. INSTALLATION SHOULD BE DONE IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRIC CODES.

FOR ALL CONSTRUCTION: **WARNING HAZARDOUS VOLTAGE** CAN CAUSE SEVERE INJURY, DEATH, OR DAMAGE TO EQUIPMENT. DE-ENERGIZE UPSTREAM SOURCE BEFORE OPENING THE GTX SUPER YACHT UNIT SUBSTATION. CHECK THAT ALL WIRES HAVE ZERO VOLTAGE.

INSTALLATION:

Step 1: Handling / Lifting the GTX Super Yacht Unit Substation:

- **LIFTING SHACKLE METHOD:** This lifting assembly has been tested at a load of four times the static weight of the Super Yacht Unit. The lifting shackles are located under the solar shield. The solar shield can be removed by removing the screws located around the lower edge of the shield.
- **FORKLIFT METHOD:** Lifting slots are provided on each end of the GTX Super Yacht Unit Substation. Remove the louvered panels on each end of the unit. Use fork extensions so that the forks are spread to the outside of the slots, making sure that the forks extend past the end of the equipment. Forks that do not extend through the complete Super Yacht Unit could damage internal components. Forklift access can also be accomplished from the front or rear of the unit with the removal of the louvered access panels.



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Step 2: Mounting the GTX Super Yacht Unit Substation:

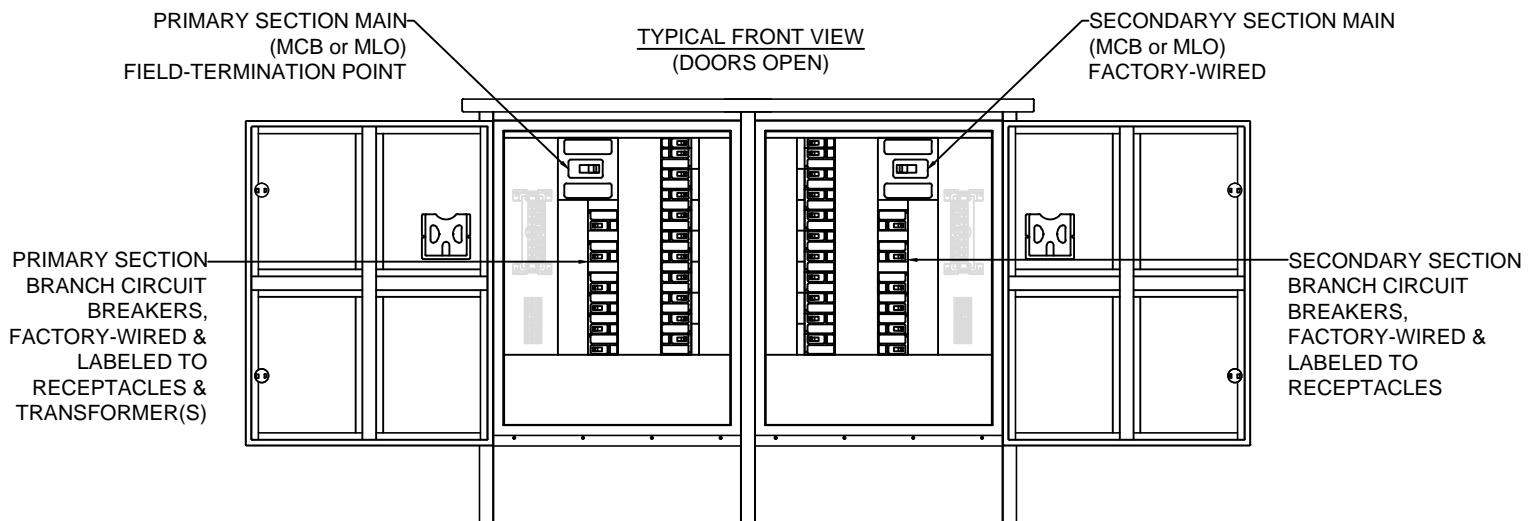
Remove the front and rear access panels on the bottom of the GTX Super Yacht Unit Substation. This will expose the mounting slots at the bottom of the equipment. Do not remove the neoprene pad from the bottom equipment. The neoprene pads provide isolation from the dock surface.

On Wooden Docks: Transfer mounting slot locations from the base of the equipment to dock. Drill ½" hole for ½" through-bolt. Line the GTX Super Yacht Unit Substation mounting slots to the holes in the dock. Feed bolts through the mounting hole and dock. Torque bolts and nuts to min. 18 ft. lbs.

On Concrete Docks: Transfer mounting hole locations from the base of the GTX Super Yacht Unit Substation to dock. Follow manufacturer's instructions for installation of ½" expansion bolts. Line the mounting slots with the holes on the dock. Thread ½" bolt into the expansion nuts to the manufacturer's recommended torque value.

Step 3: Wiring Installation:

- Open the primary section main door of the GTX Super Yacht Unit Substation to remove the dead fronts to expose the main circuit breaker or main lug. *Note: location of the field terminals can vary based on customer/project requirements.*
- Remove gland plate from top of GTX Super Yacht Unit Substation frame (beneath the primary section panelboard). Punch or cut the desired hole(s) in the gland plate. Install appropriate fittings in the gland plate.
- Feed all primary circuit wires through the gland plate to the main circuit breaker/main lug.
- Secure the gland plate back in place to the base.
- Install the primary feeder wiring to the main circuit breaker/main lug and torque to the labeled value.



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Step 4: Water Connection:

Remove the water access panel to access the back side of the 3/4" female ball valve (see figures below). Feed the piping through the bottom of the water compartment and plumb into the ball valve. Marina Electrical Equipment recommends using a 90° street elbow or a Pex to male-threaded elbow (for flexible piping). After plumbing, guide the assembly back into the water compartment and mount the water access panel back onto the pedestal.

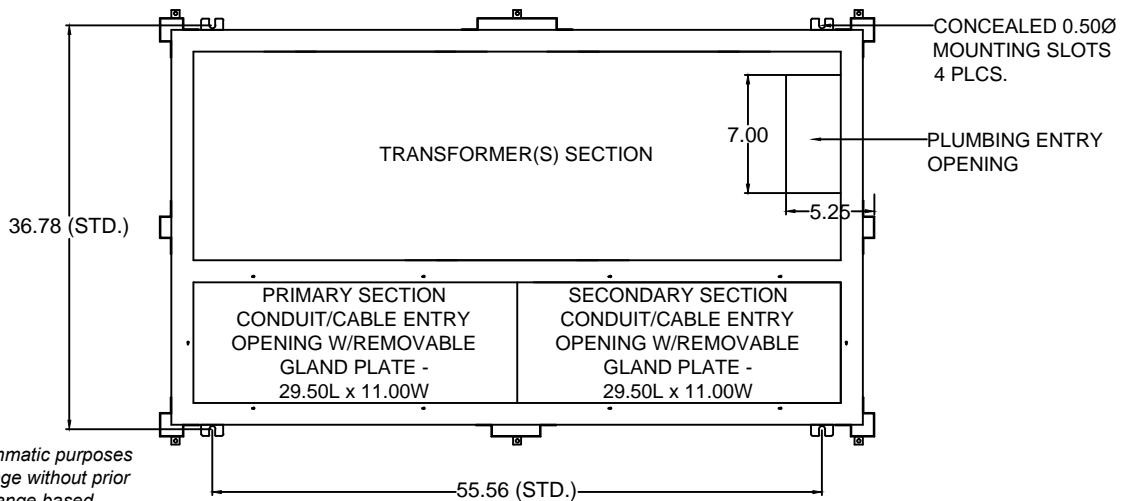
Step 5: Phone, Cable TV, Data Connections:

Remove the weatherproof cover and jack insert to access the back side of the jacks. Pull the phone line, CATV line and/or data line from under the mounting base and into the single gang box to make the appropriate terminations into each of the corresponding jacks. Carefully guide the lines back into the box and re-mount the jack insert and weatherproof cover onto the pedestal.

Step 7: Changing the LED Bulbs:

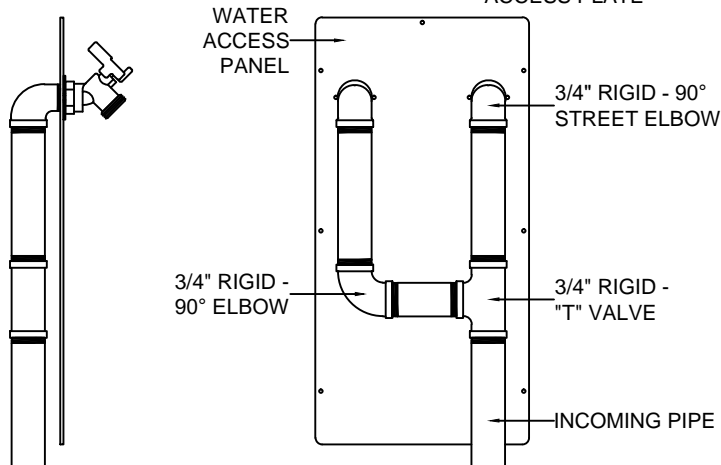
Remove the top solar shield to expose the lamp holders and bulbs. Replace the bulbs and top.

TYPICAL TOP VIEW SHOWING MOUNTING FOOTPRINT



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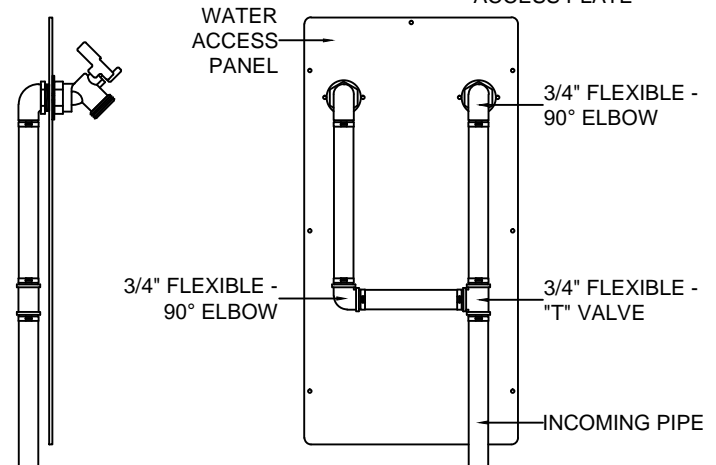
REAR VIEW OF ACCESS PLATE



SIDE VIEW

TYPICAL DUAL WATER CONNECTION w/ RIGID PIPE

REAR VIEW OF ACCESS PLATE



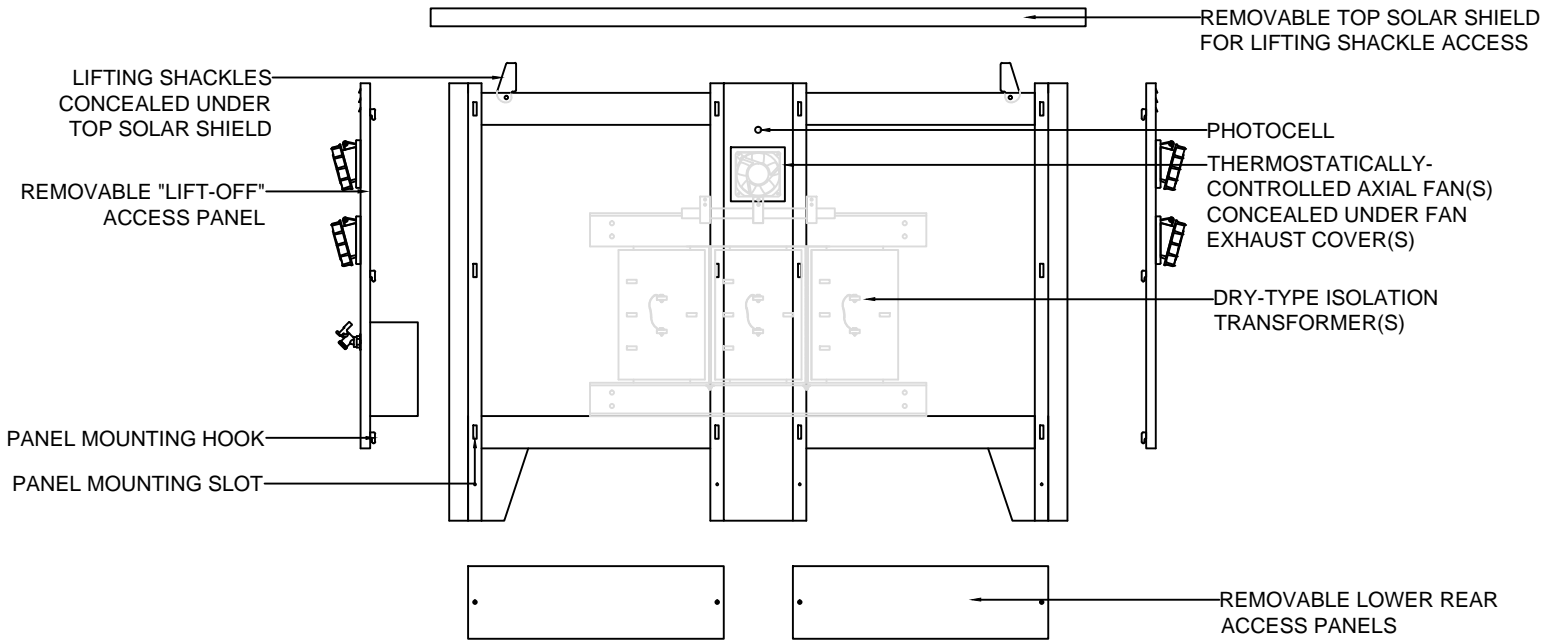
SIDE VIEW

TYPICAL DUAL WATER CONNECTION w/ FLEXIBLE PIPE

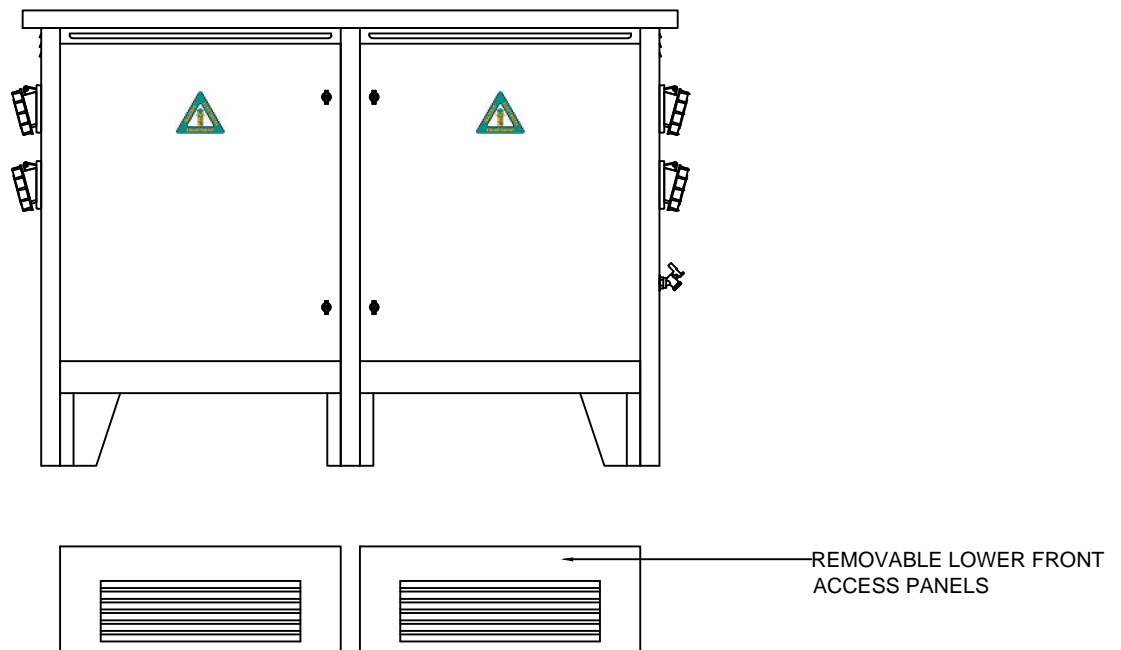
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TYPICAL REAR VIEW SHOWING REMOVED ACCESS PANELS



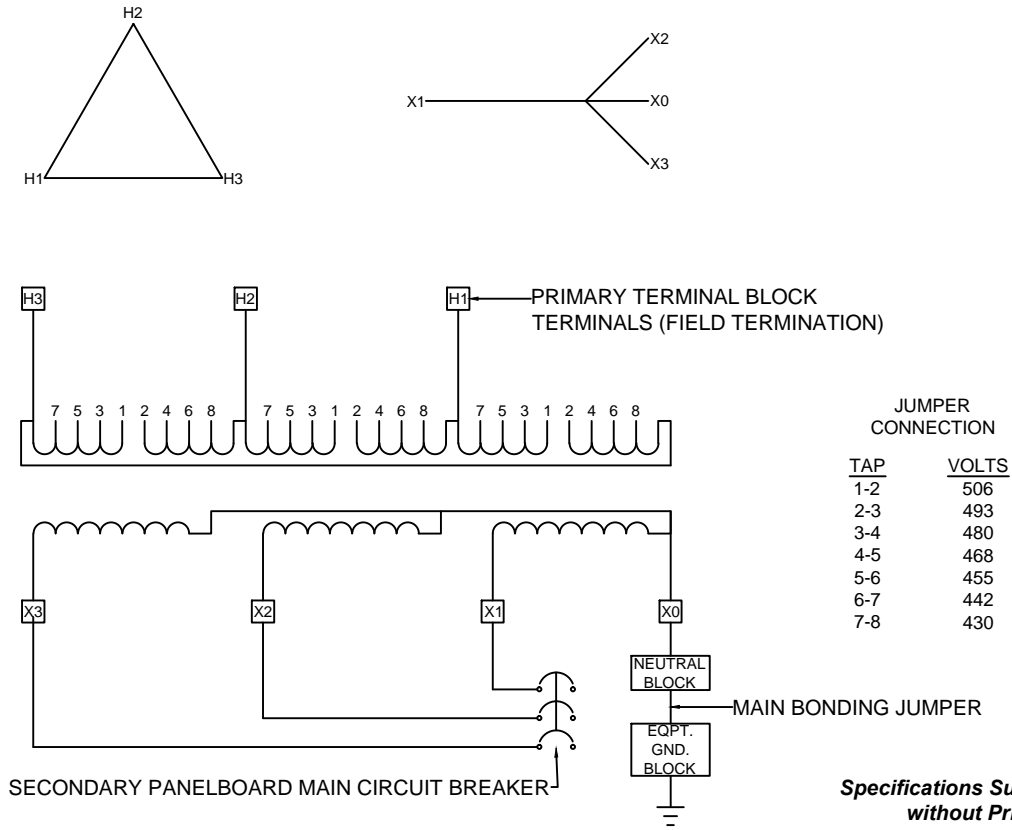
TYPICAL FRONT VIEW SHOWING REMOVED ACCESS PANELS



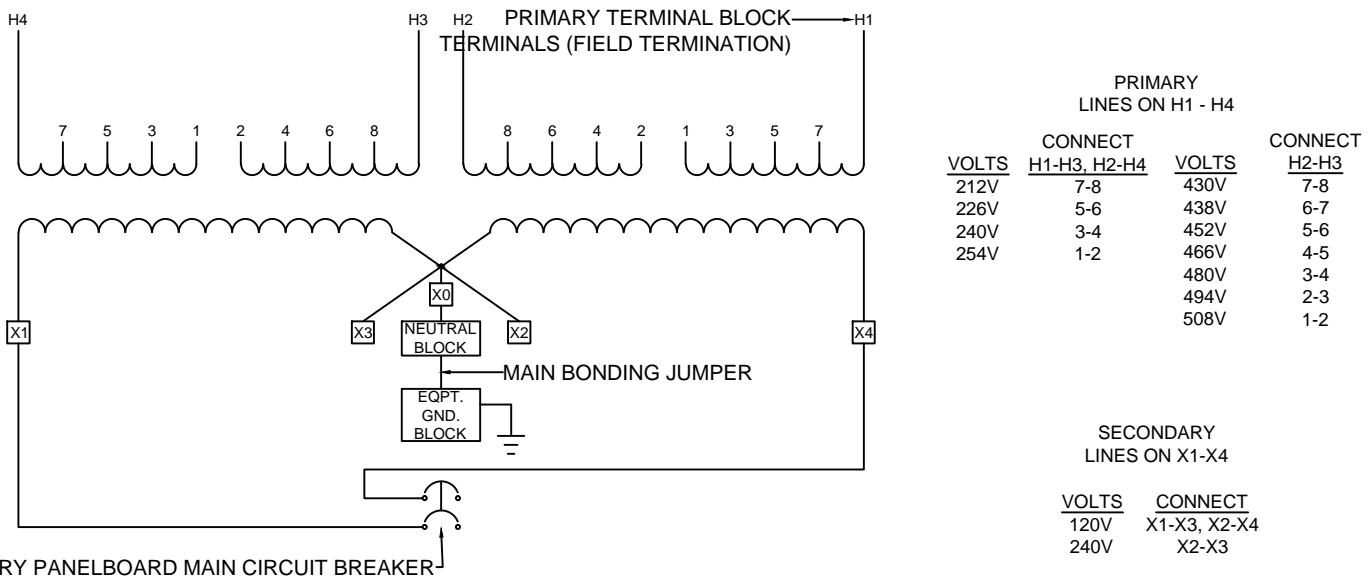
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TYPICAL THREE PHASE WIRING DIAGRAM



TYPICAL SINGLE PHASE WIRING DIAGRAM



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Note: Test and inspect all connections, main feed and branch feeds using a multi meter, high-pot tester, and/or any other test required by the local jurisdiction in the area.

WARNING:

UNITS EQUIPPED WITH GROUND-FAULT MONITORING DEVICES: REMOVE PROTECTIVE FUSE ON POWER CIRCUIT PRIOR TO PERFORMING HI-POT TEST TO AVOID DAMAGING THE DEVICE. SUCH FAILURES ARE NOT COVERED BY THE MANUFACTURER'S WARRANTY.

UNITS EQUIPPED WITH SURGE-PROTECTIVE DEVICES (SPDs): TURN THE LABELED CIRCUIT BREAKER PROTECTING THIS DEVICE TO THE "OFF" POSITION PRIOR TO PERFORMING HI-POT TEST TO AVOID DAMAGING THE DEVICE. SUCH FAILURES ARE NOT COVERED BY THE MANUFACTURER'S WARRANTY.

UNITS EQUIPPED WITH SOLID-STATE METERING DEVICES: DISCONNECT THE POWER HARNESS TO EACH DEVICE PRIOR TO PERFORMING HI-POT TEST TO AVOID DAMAGING THE DEVICE. SUCH FAILURES ARE NOT COVERED BY THE MANUFACTURER'S WARRANTY.

EXTERIOR MAINTENANCE:

Dirt, grime, bird droppings and insect residue can be removed by use of a mild degreasing solution mixture of one teaspoon per gallon of warm water. Gently scrub the housing exterior and rinse clean. Spiders and other insects can be controlled by use of a **WATER-BASED** insect spray.

TOUCHING UP DAMAGED POWDER COAT:

- 1) Scuff the area well with wet and dry 220-grit sandpaper.
- 2) Clean the area (dishwashing detergent and water) and allow to dry.
- 3) Shake the touch-up powder paint can vigorously for two to three minutes each time you are going to use it to paint.
- 4) Apply the paint in thin coats until you achieve the correct darkness of color. Apply the paint at approximately 8 inches from the surface. Allow each coat of paint to dry for at least 30 minutes before applying another coat. In most cases you can reach the desired color in three coats of paint. In rare cases you might require more than three coats of paint; if this is the case let the final coat dry for at least 24 hours before touching the surface.

WARNING: DO NOT use any petroleum or solvent-based insect spray or corrosion inhibiting products on any part of the power pedestal. These solvents will compromise the structural integrity of the polycarbonate material and cause stress cracking and material failure. Use of any such solvents will void the manufacturer's warranty.

INTERIOR MAINTENANCE:

WARNING: Turn off or disconnect the power supplying this equipment before beginning work. This might require you to contact your local utility to disconnect the power to an existing panel board or disconnect. The line side of the main breaker in a panel board is energized unless power is disconnected upstream. Marina Electrical Equipment, Inc. will not assume any responsibility for property damage or personal injury resulting from misuse of the information in this manual.

1. Annual Terminal Maintenance:

Open the main door and remove the dead front to expose the **de-energized** terminals. The main lug terminals and each circuit breaker lug should then be thoroughly examined for signs of excessive heating, loose and/or corroded connections, and any other sign of damage or wear. All loose or damaged connections need to be tightened or replaced.

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Thoroughly examine any copper wire to aluminum lug connections for signs of corrosion. If any corrosion is found, simply remove the copper wire, clean the wire, coat with **synthetic** anti-corrosion grease and reinstall the wire.

2. Annual Receptacle and Circuit Breaker Maintenance:

The receptacles and circuit breakers should be examined on an annual basis. If any sign of heating or corrosion is evident, the component should be replaced.

3. Annual Water Assembly Maintenance:

In colder climates, water supply lines should be blown-out with compressed air as part of the winterization process to prevent damage from freezing. The 3/4" ball valve should be worked opened and closed, and then left open to allow any water to escape and avoid damage to the valve from freezing temperatures.

4. Annual Light Fixture Maintenance:

The light fixture can be tested by covering the photocell for 2-4 minutes to simulate darkness. The photocell should close the circuit to illuminate the bulb. Should the bulb not illuminate, remove the top solar shield and expose the lamp assembly. Check the 5A protective inline fuse and replace if necessary. Replace the bulb(s) and re-fasten the top

OPERATION:

1. Connect Shore Power Cord to Vessel:

Insert the female end of the shore power cord into the vessel's power inlet connection. Twist the plug to lock on and tighten the locking plug retainer nut until the cord set is snug to the vessel.

2. Connect Shore Power Cord to Power Pedestal:

With the circuit breakers in the OFF position, insert the shore power cord into the receptacle and twist the plug clockwise until it locks onto the receptacle.

3. Turn the Circuit Breaker ON:

With both connections secured, turn the circuit breaker to the ON position. Check to see that the power indicator light on the vessel indicates a successful attachment of the shore power cord. A circuit breaker which trips under load indicates an issue with the vessel wiring and or equipment. Short circuits, overload and/or ground faults (if the equipment is equipped with ground fault protective circuit breakers) will cause circuit breakers to trip, requiring the vessel's electrical system to be examined and repaired by a qualified electrician before the vessel can reconnect to the power pedestal.

For units equipped with optional ground fault circuit breakers: if the breaker immediately trips upon inserting the shore power cord, the grounded (neutral) conductor and the equipment ground conductor are improperly bonded on the vessel. A qualified electrician must repair this faulty wiring/equipment before the vessel can reconnect to the equipment.

3. Cam-Lock Connections:

The cam-lock female receptacle connections are equipped with an electric safety interlock. The circuit breaker protecting the cam-locks will be in the "TRIP" position in the native state. The circuit breaker can only be energized once all of the make cam-connectors are inserted. Should any of the male cam-lock connectors be removed, the circuit breaker will trip immediately.

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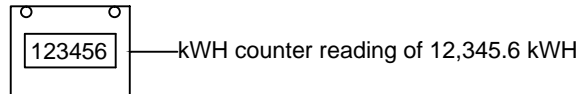
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CAM-LOCK CONNECTION PROCEDURE:

1. Connect the shore power cord(s) to vessel as previously described.
2. Locate the labeled protective circuit breaker on the GTX Super-Yacht Unit Substation and verify it is in the tripped or off position.
3. Insert each male cam-lock connector from the connected vessel into the appropriate female cam-lock receptacles.
4. Move the circuit breaker handle to "OFF" and then "ON" to energize the vessel.
5. If the circuit breaker trips, a qualified electrician must check for short circuits, overcurrent, and/or ground faults before attempting to re-energize.

4. Reading the Kilowatt-Hour (kWH) Counter:

Power outlet panels equipped with kWH Meters provide an electromechanical odometer output with six (6) digits. The far right digit on this counter represents tenths of a kWH. For example, a kWH counter reading of " 1 2 3 4 5 6" would indicate 12,345.6 kWH. The previous reading would be deducted from this reading to determine the kWH used between readings. For example, a previous reading of 9,688.2 kWH: $12,345.6 - 9,688.2 = \underline{2,657.4}$ kWH used between readings. This usage would be multiplied by the kWH rate for billing.



Specifications Subject to Change Without Notice

END OF SECTION

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WARRANTY POLICY

Housings:

Marina Electrical Equipment, Inc. (MEE) warrants that the main housing and attached parts (top, lens, doors, receptacle faceplates, circuit breaker plates, and mounting base plate) will be free from failure resulting from defects in material and/or workmanship, and are covered by a limited warranty of one (1) year. Should any of the above parts fail to comply with the above-mentioned warranty, MEE will either repair or replace the defective part(s), or credit the purchaser for the purchase price of the part. This warranty is voided if any petroleum-based solvent is used anywhere on or near any of the polycarbonate parts. These parts include, but may not be limited to: the top, lens, doors, receptacle faceplates, circuit breaker plates, terminal blocks, and the mounting base plate.

Internal Components:

MEE warrants that all internal electrical components shall be covered by a limited warranty of one (1) year. Items covered include but are not limited to: transformers, panelboards, ground fault monitor relays, surge protective devices, receptacles, circuit breakers, photocells, lamp holders, coil transformers, counters and wiring harnesses. Should any of the above parts fail to comply with this warranty policy, MEE will coordinate the repair or replacement of the defective part(s) with the respective supplier.

Solid-State Electric kWh Monitors:

MEE warrants that the International Intelligent Meter (IIM) solid-state electric kWh monitors will be free from failure resulting from defects in material and/or workmanship, and are covered for one (1) year. Although the IIM meters contain integrated surge protection, MEE and IIM will not warrant the product against severe over-voltage conditions such as lightning strikes or abnormal utility surges. Should an electric monitor fail to comply with the above-mentioned warranty, MEE will either repair or replace the defective part(s)/components, or credit the purchaser for the purchase price of the part. This warranty is voided if the damage to any or all of the components is the result of abuse, misuse, or Force Majeure. This warranty is voided if the factory seal is broken or manipulated.

This warranty policy does not cover damage or failure resulting from abuse, misuse, negligence or Force Majeure. All warranty claims must be made in writing and all defective products shall be returned to MEE for evaluation unless stated otherwise by MEE. MEE will not be responsible for reimbursing the purchaser for any sort of expense incurred by the purchaser as a result of the repair or replacement of a warranty claim.

Send all warranty claims to:

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END OF SECTION