

# **MILBOATSTECHMAN/BK-07**

---

**VERSION 3**

## **MILITARY EMERGENCY BOAT SERVICE TECHNICAL MANUAL BOOK 07**

### **LANDING CRAFT 350 CLASS**

DISTRIBUTION STATEMENT: APPROVED FOR PUBLIC RELEASE, DISTRIBUTION IS UNLIMITED.

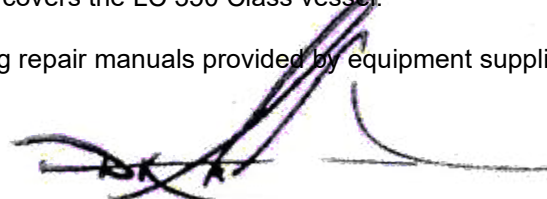
**PUBLISHED BY DIRECTION OF COMMANDER, NEW YORK NAVAL MILITIA**

## 17OCT23

From: Commander, New York State Military Emergency Boat Service

Subj: PROMULGATION OF MILITARY BOATS TECHNICAL MANUAL SERIES  
BOOK 7; LC 350 CLASS VESSEL

1. The New York State Military Emergency Boat Service Technical Manuals (MILBOATSTECHMAN) are consolidated information for each class of vessel in the boat service. They are intended to provide basic information regarding each class, with an overview on operational parameters, missions, equipment layout, and some basic troubleshooting guides if not provided by commercial owner's manuals.
2. Book 7 of the MILBOATSTECHMAN covers the LC 350 Class vessel.
3. This manual does not replace existing repair manuals provided by equipment suppliers.

A handwritten signature in blue ink, appearing to read 'D. K. McKnight', is written over a horizontal line. The signature is stylized and somewhat cursive.

D. K. McKNIGHT  
CAPT NYNM



LC 350 New York Harbor

**LC 350 CLASS VESSEL  
INFORMATION AND OPERATIONAL CAPABILITIES**

A. General.

The LC 350 Class vessel is a 39 foot boat (LOA) with twin outboard engines, and includes an accompanying trailer.

The class consists of two boats, built by William E. Munson Company, of Burlington, Washington. LC-350 was received in July 2018. LC-351 was received in March 2022.

1. The model of boat is: Munson 35 PackCat
2. Length: hull length: 35 feet. Length Overall (LOA): 39 feet, 0 inches.
3. Beam: 12 feet 2.5 inches
4. Hull type: Catamaran
5. Draft: Motor in lowered position: 30 inches
6. Freeboard: 41 inches
7. Height on trailer: 13 feet 1 inches
8. Average full weight: 15,000 lbs. with fuel
9. Fuel capacity: 300 gallons (gasoline), 1 tank
10. Crew size: 2-3 (Maximum 30 persons)
11. Propulsion:  
  
LC-350: Two Mercury Optimax 250 hp 2-stroke outboard motors  
  
LC-351: Two Mercury Four-stroke 250 hp V-8 outboard motors
  - a. Maximum speed: 45 MPH (6000 RPM)
12. Generator: n/a

B. Operational Parameters.

The following are important guidelines to safely operate the vessel:

1. **Adding cargo or other weight forward will change the center of buoyancy, causing the bow to settle further into the water, especially at slower speeds.**

a. Do not open bow door until vessel is at bare steerageway, or stopped. Otherwise, flooding may occur. This is especially important when carrying any cargo or weight in the forward area. (see image)



b. Plug the 1" drains near the bow door to prevent water coming up onto the deck.

2. LC-350 (only) is equipped with two-stroke engines, which consume injection oil along with gasoline. Operators must routinely check injection oil levels in the reservoirs found in the locker at the transom to ensure adequate supply.

3. The radar arch is designed to be removable for trailering operations. There are 8 nuts/bolts that secure arch (which includes blue strobe lights, radar sensor, and white light mast) to the cabin roof. The arch must be removed for trailering on public roads.

4. The vessel is considered a "Wide-Load" for towing.

C. Missions.

The boat is capable of several missions including patrol and cargo/personnel lift. With an enclosed and heated cabin, it is suitable for year-round operations. With a catamaran hull, it is a stable platform well-suited to operate in rough waters. For the purposes of NYNM, the primary missions are cargo lift and maritime patrol.

D. Features.

The boat includes the following features and components:

1. Hull:
  - a. Aluminum construction, with 5/16-inch bottom plate, 1/4-inch side plate, and 3/16 inch deck plate.
  - b. Catamaran hull
  - c. Welded aluminum bow, stern, roof, and aft cabin rails
  - d. 84in bow door with manual winch and safety chains. Rated to 4000 lbs.
  - e. Push knees, port and starboard bows.

- f. Centerline wave breaker between the two catamaran hulls.
  - g. Lifting crane, starboard; 500 lbs. capacity.
  - h. Access door, starboard.
  - i. All cabinets are key-lockable. SouthCo Orca T-handle compression latch.
2. Deck:
- a. (6) Aluminum tie-down pockets, rated at 500lbs each.
  - b. Self bailing scuppers
  - c. (8) 10-inch welded cleats
  - d. 4-inch aluminum tow post
  - e. Hatches (2) aft, (1) cabin, (2) bow
  - f. Bow locker for anchor storage
3. Cabin:
- SeaGlaze.
- a. Forward leaning windshield with ¼-inch clear, tempered glass-Diamond
  - b. Sliding Diamond SeaGlaze side windows
  - c. Windshield wipers (2 speed) (3)
  - f. Overhead grab rails
  - h. Heater, diesel WEBASTO 40 Airtop with 5-gallon fuel tank.
  - h. 2 Bentley Captains seats, 1 bench
  - i. Carbon monoxide detector-Xintex
  - j. Removable radar arch
4. Engines:
- a. LC-350: Twin outboards; 250 hp Mercury Optimax two-stroke, counter rotating  
(1) Ref: Mercury Marine Manual 8M0113742 1215
  - b. LC-351: Twin outboards; 250 hp Mercury four-stroke, counter rotating  
(1) Ref: Mercury Marine Manual 8M0175492
5. Generator: N/A
6. Steering:
- a. Seastar Helm wheel

7. Fuel system:
  - a. 300 gallons (single tank, centerline)
  - b. Fuel tank fills on port side
  - c. Requires two-stroke injection oil
8. Electrical system:
  - a. 12VDC system with three batteries (port, starboard, house)
  - b. Electronic battery charger – Xantrex TrueCharge2
  - c. 8 breaker panel-Blue Sea Systems, 12 VDC
  - d. Bilge pump - Rule-Mate 2000 GPH (4)
  - e. Shore power connection: Marinco 50-foot, 30amp, 125 volt, 2 pole, 3 wire yellow 10AWG
  - f. 12 VDC outlets (2) on dash, including USB ports.
  - g. 120 VAC outlet to the right of helm station near deck
9. Lighting:
  - a. Navigation/anchor lights -
  - b. Dual blue strobe lights on radar arch
  - c. Interior LED lighting including red night lights
  - d. Fore/aft deck flood lights
10. Navigation and electronics:
  - a. Multi-Function Device - Furuno TZTouch 12 with NAVnet  
(1) Ref: Furuno Electric Co Pub. No. OSE-44870-A

# Operational Overview

## Home screen operations

**Tap**

Home icon  
Displays the home screen.

Display icons (max. 10)

**Tap**

"eGuide" provides an abbreviated operator's guide.

Home screen

**POWER switch**

- Power on/off.
- Adjusts display brilliance.
- Changes hue.

How to edit a display icon  
Long tap a display icon to edit, delete, resize, or change its location.

**Tap**

Edit Delete

Size (large or small)

Display icon long tapped

## How to select a display

- From the home screen (see above)
- From the quick page

**Tap**

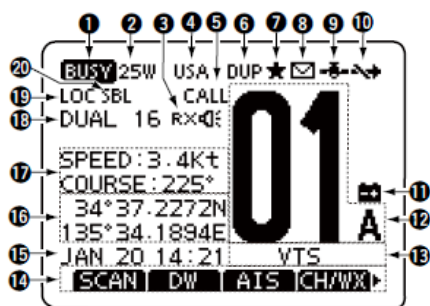
The quick page has the display icons selected to large size on the home screen.

Quick page

- Binnacle compass - Ritchie Helmsman HF743
- AIS – em-trak A100 Class A
- Marine VHF Radio – ICOM M506 (2)



## ■ Function display




- 1 **BUSY/TRANSMIT ICON** (pp. 11, 12)
  - The "BUSY" icon appears when receiving a signal or when the squelch is open.
  - The "TX" icon appears while transmitting.
- 2 **POWER ICON** (p. 11)
  - The "25W" icon appears when high power is selected.
  - The "1W" icon appears when low power is selected.
- 3 **RX HAILER ICON** (p. 75)
  - Appears while in the RX Hailer mode.
- 4 **CHANNEL GROUP ICON** (p. 10)
  - The selected channel group icon, USA "USA," International "INT" or Canadian "CAN" appears.
  - The "WX" icon appears when the weather channel is selected.
- 14 **KEY ICON** (p. 7)
  - Shows the programmed function of the softkeys on the front panel.
- 15 **TIME ZONE INDICATOR**
  - Shows the current time when a GPS receiver is connected, or the time is manually programmed.
    - When the GPS current time is invalid, "??" will blink every 2 seconds instead of the current time. After 23.5 hours has passed, "NO TIME" will appear.
    - "??" will blink every 2 seconds instead of the current time, after 4 hours have passed from when the time was manually programmed. The manually programmed time is held for only 23.5 hours, and after that, "NO TIME" will appear.
  - "LOCAL" appears when the offset time is set.
  - "MNL" appears when the time is manually programmed.
  - "UTC" appears when the GGA, GLL or GNS GPS sentence formats are included in the GPS signal.
  - The date information appears when the RMC GPS sentence formats are included in the GPS signal.
  - "NO TIME" appears when no GPS receiver is connected, and no time is manually input.
- 16 **POSITION INDICATOR**
  - Shows the current position when a GPS receiver is connected, or the position is manually programmed.
    - When the GPS position is invalid, "??" may blink every 2 seconds instead of position. The last position is held for only 23.5 hours, and after that, "NO POSITION" will appear.

- 5 **CALL CHANNEL ICON** (p. 9)
  - Appears when the Call channel is selected.
- 6 **DUPLEX ICON** (p. 10)
  - Appears when a duplex channel is selected.
- 7 **FAVORITE CHANNEL ICON** (p. 17)
  - Appears when a Favorite (Tag) channel is selected.
- 8 **MESSAGE ICON**
  - Blinks when there is an unread DSC message.
- 9 **GPS ICON**
  - Stays ON when the GPS receiver is activated and valid position data is received.
  - Blinks when invalid position data is being received.
- 10 **SWITCH ICON** (p. 69)
  - Appears when the "CH 16 SWITCH" in DSC Settings is set to OFF.
- 11 **LOW BATTERY ICON**
  - Blinks when the battery voltage drops to approximately 10.8 V DC or less.
- 12 **CHANNEL NUMBER READOUT**
  - Shows the selected operating channel number.
    - When a simplex channel is selected, "A" or "B" appears.
- 13 **CHANNEL NAME FIELD**
  - The channel name appears, if programmed. (p. 13)
    - "??" will blink every 2 seconds instead of position, after 4 hours have passed from when the position is manually programmed. The manually programmed position is held for only 23.5 hours, and after that, "NO POSITION" will appear.
    - "NO POSITION" appears when no GPS receiver is connected, and no position is manually input.
- 17 **COURSE/SPEED INDICATOR**
  - Shows the course and speed of your vessel if the GPS receiver is connected to the transceiver.
    - Course and speed are displayed when the RMC GPS sentence format is included in the GPS signal.
    - Course and speed are also displayed when the VTG and either the GGA, GLL or GNS GPS sentence formats are included in the GPS signal.
- 18 **SCAN INDICATOR**
  - "SCAN 16" appears during a Priority scan; "SCAN" appears during a Normal scan. (p. 17)
  - "DUAL 16" appears during Dualwatch; "TRI 16" appears during Tri-watch. (p. 18)
- 19 **LOCAL ICON** (p. 11)
  - Appears when the Attenuator function is turned ON.
- 20 **VOICE SCRAMBLER ICON\*** (p. 78)
  - Appears when the Voice Scrambler function is turned ON.
    - \*Appears only when the voice scrambler unit is installed.

11. Gauges:

- a. Mercury SmartCraft

- b. Fuel gauge on center gauge menu
- 12. Ground tackle:
  - a. Anchor, 16 lbs. Danforth Standard S1300;
- 13. Safety equipment:
  - a. (2) Fire extinguisher – 10 lb., ABC
  - b. PDFs (Type III)
  - c. Emergency flare kit
  - d. Ring buoy
  - e. Electric horn
- 14. Trailer:
  - a. 
  - b. Tri-axle trailer – Tuff Trailer MTT18200TG aluminum
  - c. GVWR: 21000 lbs.
  - d. 18,200 lb. capacity
  - e. Trailer weight: 2800 lbs.
  - f. Hand winch, Hydrastar surge brakes, spare tire
  - g. Trailer is 42 feet 6 inches in length when combined with boat.
  - h. Trailer dimensions: 36 feet 8 inches long, 8 feet 7 inches wide.

## E. Pre/Post -Operations Checklists

### 1. LC 350 (2-Stroke Engines)

#### **a. BEFORE USE**

- i. Verify the outboard is securely attached to the boat transom.
- ii. If the outboard or any of its fasteners are loose, tighten them to the specified torque. When checking to verify the outboard is securely fastened, look for loss of outboard transom bracket material or paint caused by movement between the outboard mounting fasteners and the outboard transom brackets. Also look for signs of movement between the outboard transom brackets and the boat transom or lift plate/setback bracket.
- iii. Check the propeller blades for damage.
- iv. Inspect all hoses, clamps, fittings, tubing, sealing gaskets, and mounting hardware for wear.

#### **b. AFTER EACH SALTWATER OR POLLUTED WATER USE**

- i. Flush all internal passages with fresh water.
- ii. Wash the power package exterior (cowl, midsection, and gearcase) with fresh water.
- iii. Flush the propeller and gearcase exhaust outlet with fresh water.
- iv. Flush the propeller and gearcase exhaust outlet with fresh water.
- v. Remove the cowl and wipe off any saltwater spray with a damp cloth.

#### **c. EVERY 25 HOURS OR EVERY 30 DAYS OF SALTWATER OR POLLUTED WATER USE**

- i. • Spray the powerhead and all external, unpainted metal surfaces (except anodes) with Corrosion Guard.

### 2. LC 351 (4-Stroke Engines)

#### **a. BEFORE EACH USE**

- i. Check engine oil level. (Refer to Checking Engine Oil Level Below)
- ii. Check that the lanyard stop switch stops the engine.
- iii. Inspect the outboard for tightness to the boat transom. If any looseness of the outboard or mounting fasteners exist, tighten the outboard mounting fasteners to the specified torque. When looking for signs of looseness, look for loss of outboard transom bracket material or paint caused by movement between the outboard mounting fasteners and the outboard transom brackets. Also look for

signs of movement between the outboard transom brackets and the boat transom (lift plate/setback bracket).

- iv. Visually inspect the fuel system for deterioration or leaks.
- v. Check the steering system for binding or loose components.
- vi. Check the propeller blades for damage.
- vii. Inspect the hydraulic steering fittings and hoses for leaks or damage, if equipped.
- viii. Inspect the hydraulic steering fluid level, if equipped.

**b. AFTER EACH USE**

- i. Flush out the outboard cooling system if operating in salt, polluted, or muddy water. Refer to Flushing the Cooling System.
- ii. Wash off all salt deposits and flush out the exhaust outlet of the propeller and gearcase with fresh water if operating in saltwater.
- iii. If operating in saltwater, inspect the powerhead and powerhead components for salt buildup. Refer to Cleaning Care for the Powerhead (Saltwater Use).

**c. \*Checking Engine Oil Level\***

- i. IMPORTANT: For an accurate oil level reading, the engine must be vertical for several minutes before removing the dipstick.
  - 1. Remove the dipstick and observe the area of the five beads.
  - 2. The bead or crosshatch which shows oil furthest from the end is the oil level

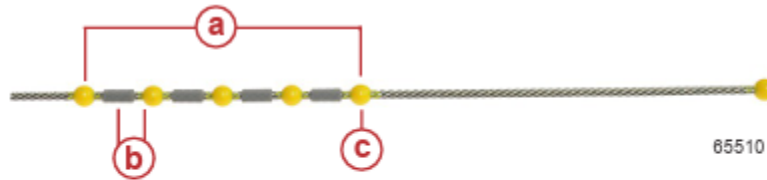


Oil level example

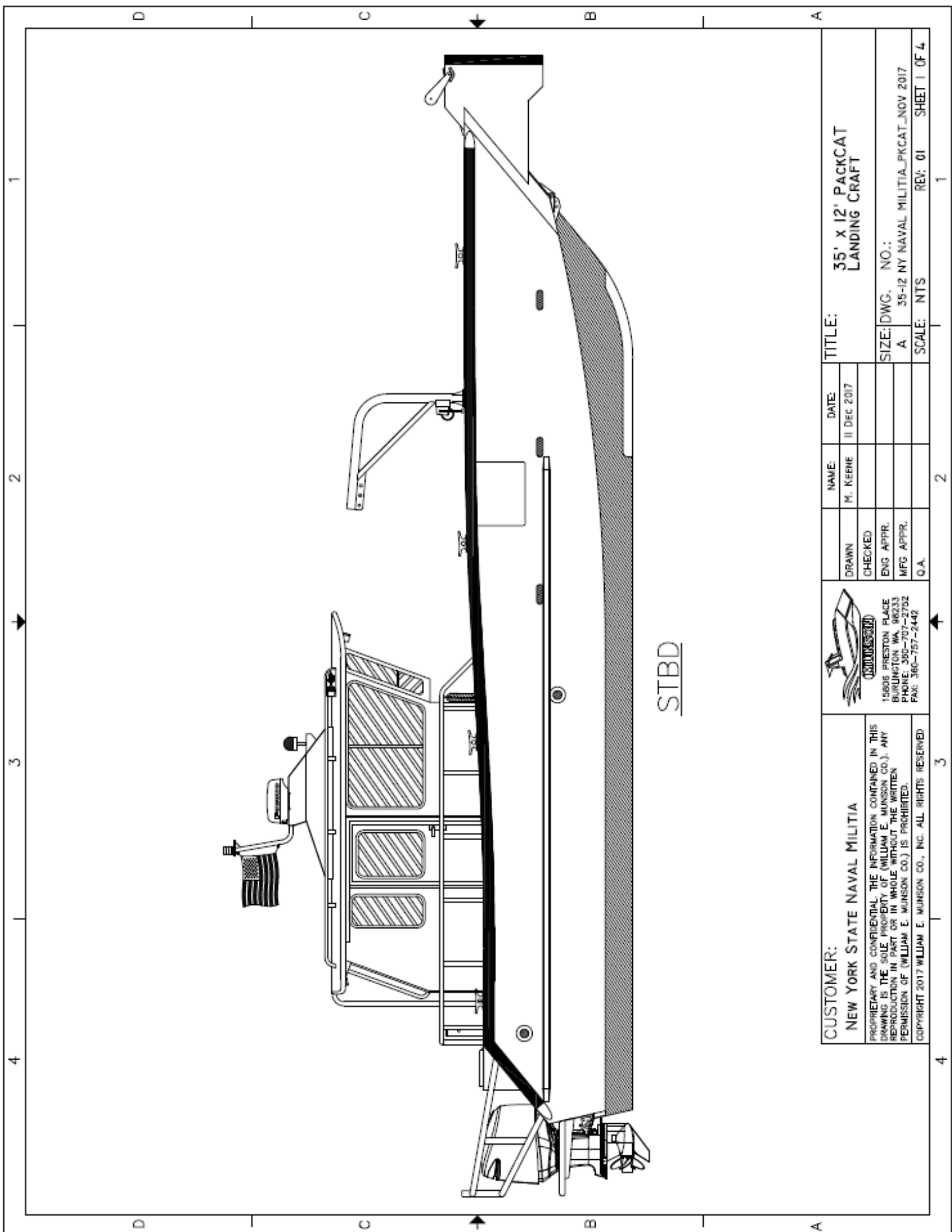
**d. DIPSTICK BEAD OIL LEVEL OVERVIEW**

- i. New oil (level) may be difficult to identify which is why the crosshatch between the beads are part of the dipstick assembly. When checking the oil level, if oil is on any of the five oil range beads or four crosshatch, the oil level is within the safe operating range. When the oil level is only on the lowest oil range bead, the operator can add 1.8 Liter (2 US qt) of oil and the level will remain within the safe operating range. When the oil becomes dark from hours of product use, it will be easier to identify the oil level on the dipstick.

- ii. **IMPORTANT:** Repeated removal and insertion of the dipstick to check the oil level will subsequently deposit oil further up the dipstick tube which potentially may cause an error reading the oil level.



- a** - Safe operating range
- b** - General area after an oil change
- c** - Add 1.8 Liter (2 US qt) of oil



STBD

**TITLE:** 35' x 12' PACKCAT LANDING CRAFT

**SIZE:** DWG. NO.: A 35-12 NY NAVAL MILITIA\_PKCAT\_NOV 2017

**SCALE:** NTS REV: 01 SHEET 1 OF 4

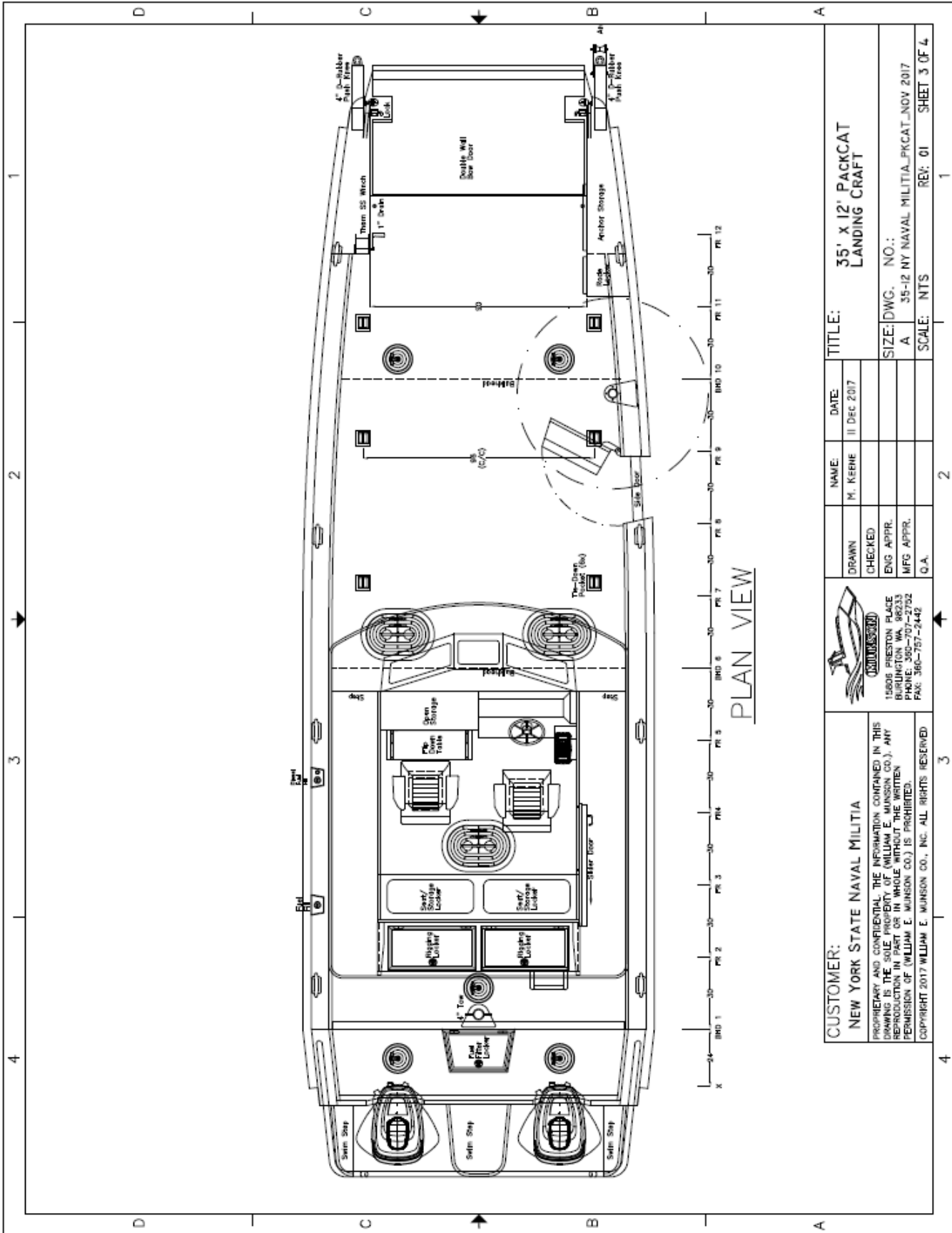
<b>NAME:</b> M. KEENE	<b>DATE:</b> 11 DEC 2017
<b>DRAWN</b>	<b>CHECKED</b>
<b>ENG APPR.</b>	<b>MFG APPR.</b>
<b>Q.A.</b>	



**CUSTOMER:** NEW YORK STATE NAVAL MILITIA

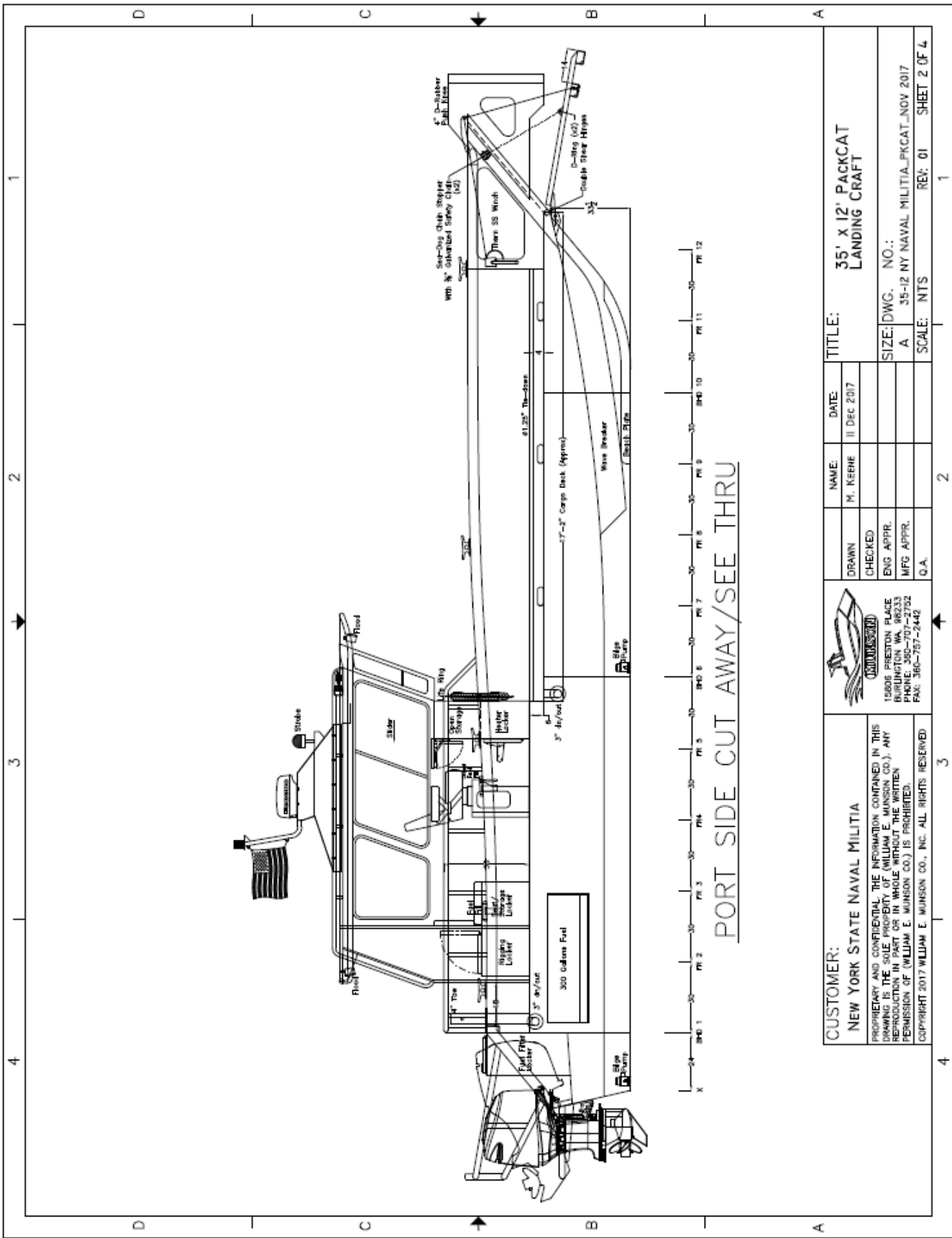
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF WILLIAM E. MUNSON CO., INC. ANY REPRODUCTION IN PART OR IN WHOLE WITHOUT THE WRITTEN PERMISSION OF WILLIAM E. MUNSON CO., INC. IS PROHIBITED.

COPYRIGHT 2017 WILLIAM E. MUNSON CO., INC. ALL RIGHTS RESERVED



PLAN VIEW

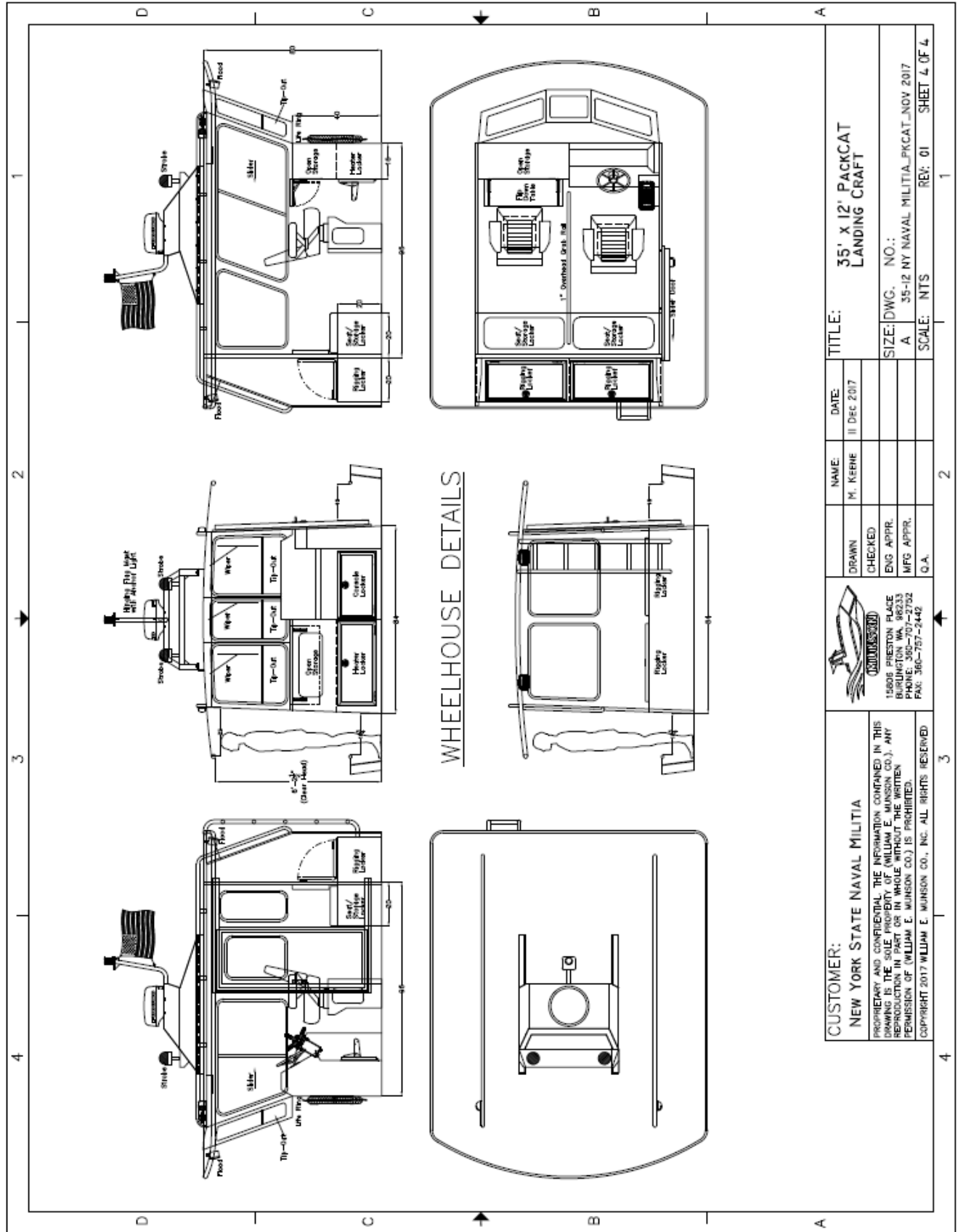
CUSTOMER: NEW YORK STATE NAVAL MILITIA		TITLE: 35' x 12' PACKCAT LANDING CRAFT	
PROPRIETARY AND CONFIDENTIAL. THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF WILLIAM E. MUNSON CO., ANY REPRODUCTION IN PART OR IN WHOLE WITHOUT THE WRITTEN PERMISSION OF WILLIAM E. MUNSON CO. IS PROHIBITED. COPYRIGHT 2017 WILLIAM E. MUNSON CO., INC. ALL RIGHTS RESERVED		NAME: M. KERNE	DATE: 11 DEC 2017
DRAWN CHECKED		SIZE: DWG. NO.: A 35-12 NY NAVAL MILITIA_PCKAT_NOV 2017	
ENG APPR. MFG APPR.		SCALE: NTS	
O.A.		REV: 01 SHEET 3 OF 4	



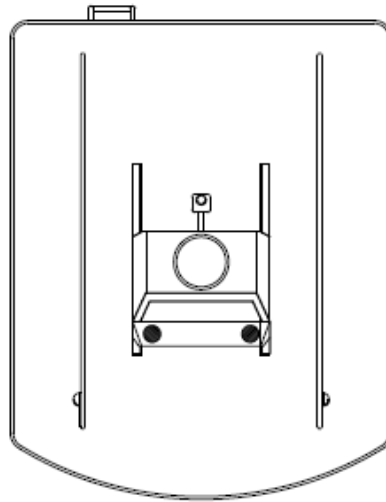
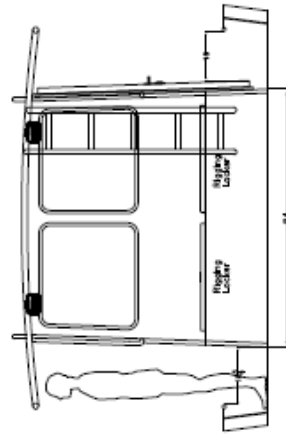
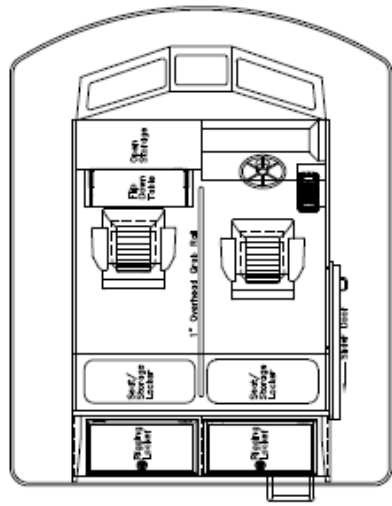
PORT SIDE CUT AWAY/SEE THRU

CUSTOMER: NEW YORK STATE NAVAL MILITIA		TITLE: 35' X 12' PACKCAT LANDING CRAFT	
<small>PROPRIETARY AND CONFIDENTIAL. THE INFORMATION CONTAINED IN THIS DRAWING IS THE PROPERTY OF WILLIAM E. MUNSON CO., INC. ANY REPRODUCTION IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF WILLIAM E. MUNSON CO., INC. IS PROHIBITED.</small> <small>Copyright 2017 William E. Munson Co., Inc. All Rights Reserved</small>		DATE: 11 DEC 2017 NAME: M. KEENE DRAWN: [ ] CHECKED: [ ] ENG. APPR. [ ] MFG APPR. [ ] Q.A. [ ]	
15805 PRESTON PLACE WILLIAMSBURG, VA 23186 PHONE: 804-707-3733 FAX: 804-757-2442		SIZE: DWG. NO.: A 35-12 NY NAVAL MILITIA_PKCAT_NOV 2017 SCALE: NTS REV: 01 SHEET 2 OF 4	





WHEELHOUSE DETAILS



<b>CUSTOMER:</b> NEW YORK STATE NAVAL MILITIA <small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF WILLIAM E. MUNSON CO., ANY REPRODUCTION IN PART OR IN WHOLE WITHOUT THE WRITTEN PERMISSION OF WILLIAM E. MUNSON CO. IS PROHIBITED.          COPYRIGHT 2017 WILLIAM E. MUNSON CO., INC. ALL RIGHTS RESERVED.</small>				<b>TITLE:</b> 35' x 12' PACKCAT LANDING CRAFT
DRAWN M. KEENE	CHECKED ENG APPR. MFG APPR. Q.A.	DATE: 11 DEC 2017	NAME: M. KEENE	NO.: A
SIZE: A		SCALE: NTS	REV: 01	SHEET 4 OF 4



(LC 350 Bow view)



(LC 350 Stern view)



(LC 350 Cabin)



(WEBASTO diesel heater)

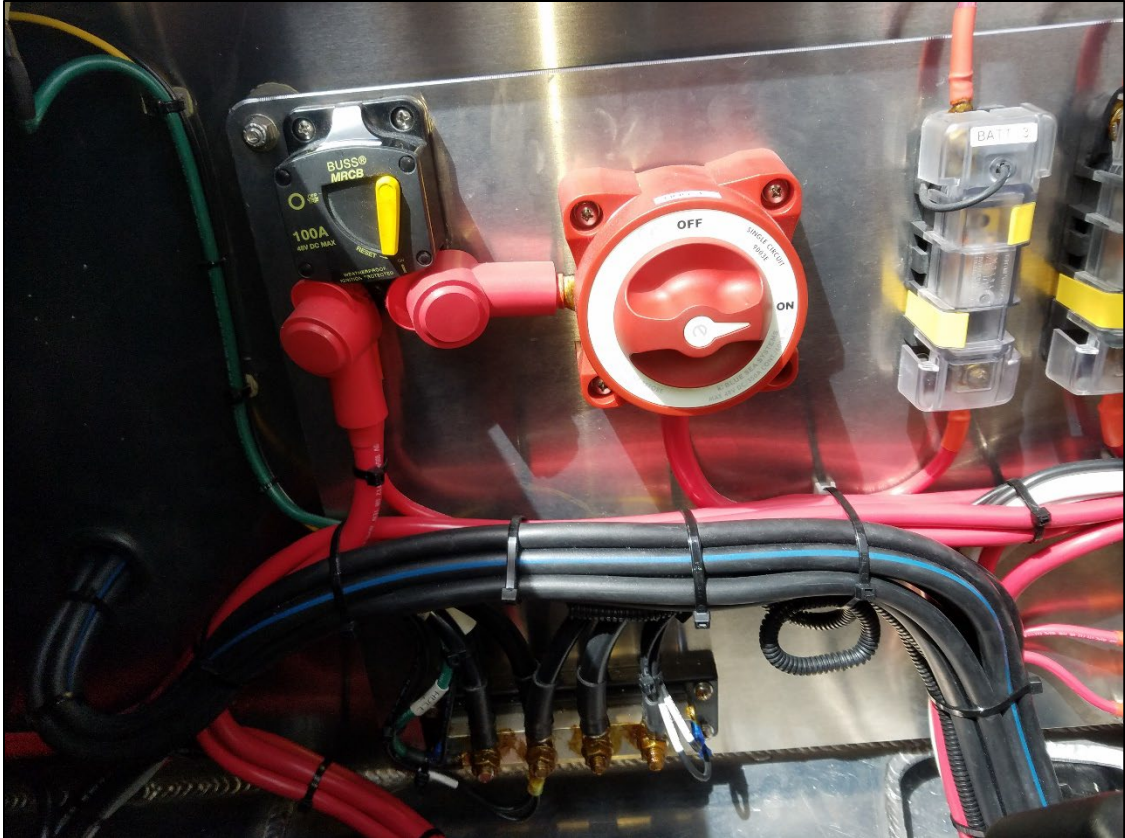


(Helm console)

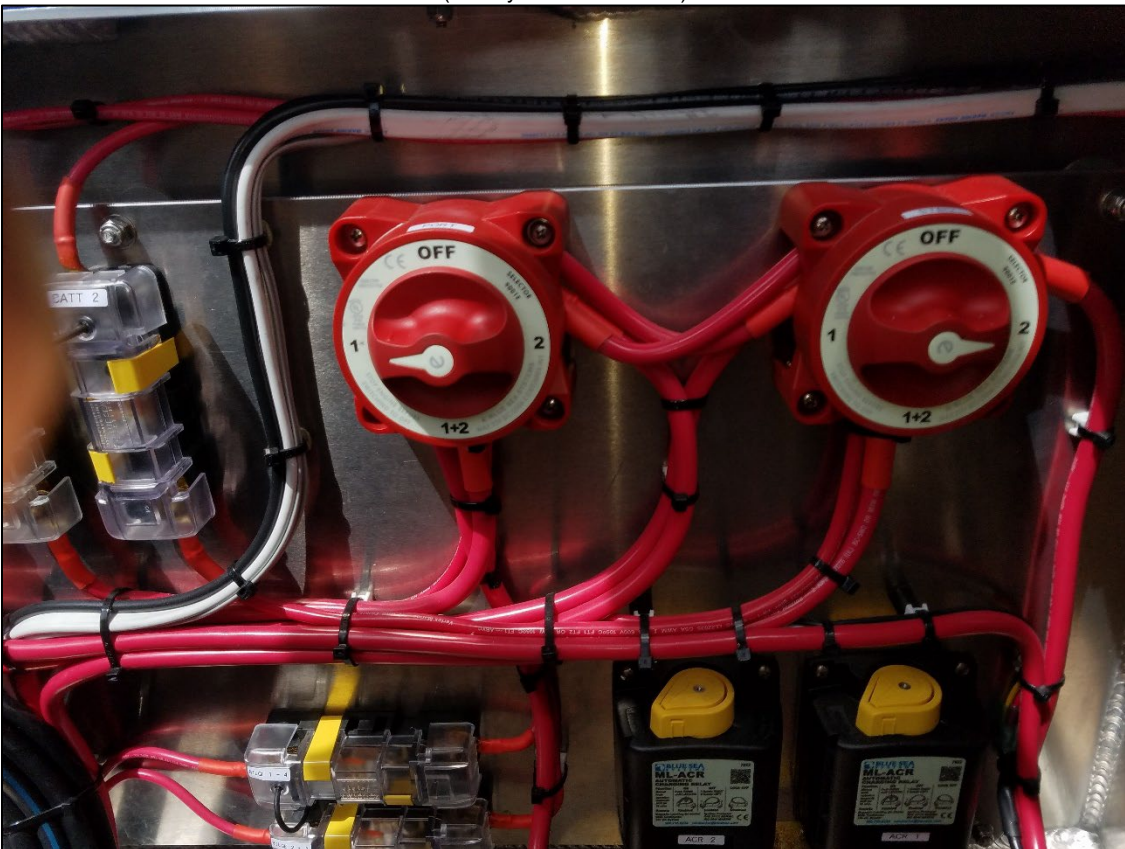
(Engine controller)



(Electrical switch panel)



(Battery isolator switches)



# Fuel System

---

## Introduction:

The fuel system of your Munson Boat has been specifically designed and constructed for your vessel. It has been tested and inspected in accordance with ABYC and CFR standards to ensure safe operation and environmental compliance.

## Specifications & Capacities:

Boat Model	PackCAT
Boat Length	35'
HIN	MUN887PKC818
Tank Description	Single Fuel Tank
Tank Total Volume	327 GAL
Tank Rated Capacity	300 GAL

## Fueling Your Vessel:

Proper fueling is very important in preventing onboard fires. Gasoline vapors are heavier than air and can spread rapidly into enclosed spaces. Refer to section III of the owner's manual for pre-departure recommendations on inspecting / clearing the fuel tank void of vapors.

Under federal law (the Oil Pollution Act of 1990 and the Clean Water Act) it is illegal to discharge any petroleum product into the water. By law, any oil or fuel spill that leaves a sheen on the water must be reported to the U.S. Coast Guard at **1-800-424-8802**.

**WARNING: NEVER TOP OFF YOUR FUEL TANKS AFTER AUTOMATIC PUMP SHUTOFF. DOING SO MAY RESULT IN DAMAGE TO EVAPORATIVE EMISSIONS SYSTEM**

## Emission Certification Information & Testing:

### Fuel Tank:

Munson Fuel Tanks are constructed with .25" 5052 – H32 Aluminum and meet all permeation emission control requirements listed under 40 CFR 1060.103. All tanks undergo Static pressure testing in accordance with procedures specified under 33CFR 183.580.

### **Emission Standards and Related Requirements:**

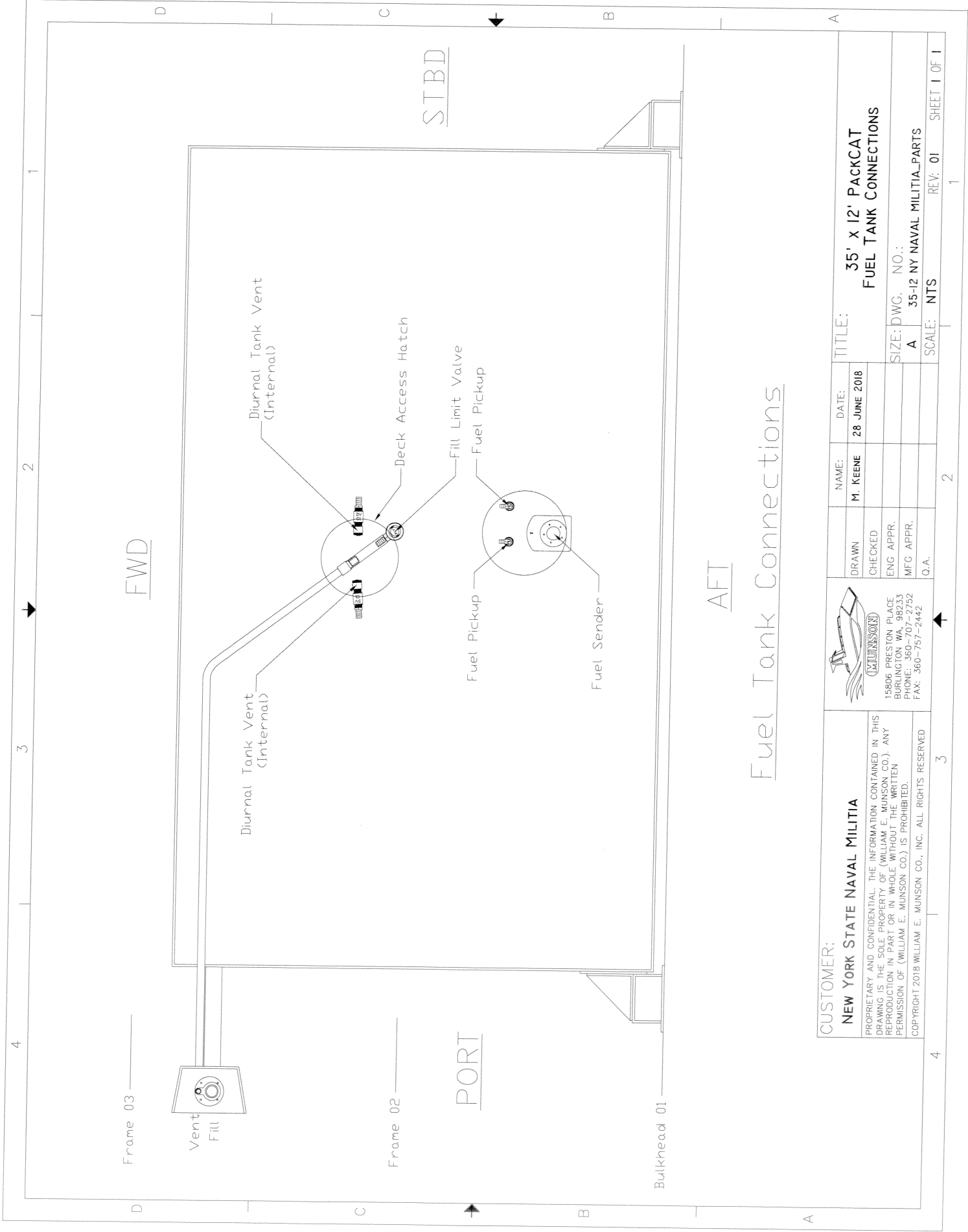
In compliance with ABYC and CFR statues designed to protect and preserve the environment, Munson fuel systems are designed in accordance with the following emission standards and requirements:

- (a) Title 40CFR Section 1060.102 permeation emission control requirements for fuel lines
- (b) Title 40CFR Section 1060.103 permeation emission control requirements for fuel tanks
- (c) Title 40CFR Section 1060.105 diurnal emission control requirements for fuel tanks.
- (d) General requirements for components and equipment subject to the emission standards in Title 40CFR 1060.102 through 1060.105
- (e) ABYC 24.18.4.1 Fuel System Testing – Emission components.

### **Diurnal Emissions Components:**

Munson fuel systems are designed using Perko components. All Perko components are EPA certified (where applicable) and carry a manufacturer's warranty.

<b><i>Component</i></b>	<b><i>Perko Part #</i></b>	<b><i>Quantity</i></b>
Fill Limit Valve (1-1/8")	0586T0118	1
Inlet Check Valve	0635000	1
Fuel Fill	0663G00BLK	1
Carbon Canister (2.0L)	0486020055	1
Air – Fuel Separator	0488001	1
P-Trap Vent Valve	0630004BLK	1



FWD

Fuel Tank Connections

AFT

CUSTOMER:

**NEW YORK STATE NAVAL MILITIA**

PROPRIETARY AND CONFIDENTIAL. THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF (WILLIAM E. MUNSON CO.). ANY REPRODUCTION IN PART OR IN WHOLE WITHOUT THE WRITTEN PERMISSION OF (WILLIAM E. MUNSON CO.) IS PROHIBITED.  
 COPYRIGHT 2018 WILLIAM E. MUNSON CO., INC. ALL RIGHTS RESERVED



15806 PRESTON PLACE  
 BURLINGTON WA, 98233  
 PHONE: 360-707-2752  
 FAX: 360-757-2442

DRAWN	NAME:	DATE:	TITLE:
CHECKED	M. KEENE	28 JUNE 2018	35' x 12' PACKCAT FUEL TANK CONNECTIONS
ENG APPR.			SIZE: DWG. NO.:
MFG APPR.			A 35-12 NY NAVAL MILITIA_PARTS
O.A.			SCALE: NTS



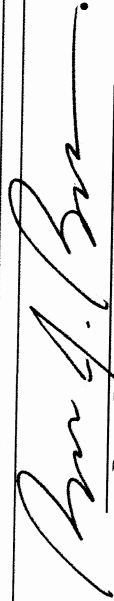


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
2018 MODEL YEAR  
CERTIFICATE OF CONFORMITY  
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION  
AND AIR QUALITY  
ANN ARBOR, MICHIGAN 48105

**Certificate Issued To:** Delphi Corporation  
(U.S. Manufacturer or Importer)  
**Certificate Number:** JDPHPMDRNN10-002

**Effective Date:**  
12/12/2017  
**Expiration Date:**  
12/31/2018

  
Byron J. Bunker, Division Director  
Compliance Division

**Issue Date:**  
12/12/2017  
**Revision Date:**  
N/A

**Manufacturer:** Delphi Corporation  
**Evaporative Family:** JDPHPMDRNN10  
**Category:** EVAP\_FAMILY  
**Useful Life:** 10 Years  
**Applicable Regulation:** Part 1060  
**Applicable Emission Standard:** 0.16 ( g/gal/day )  
**Design Based Certification:** N

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547), 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1045 or 40 CFR Part 1060 and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued for the diurnal systems, more fully described in the documentation required by 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1045 or 40 CFR Part 1060 and produced in the stated model year.

This certificate of conformity covers only the diurnal systems which conform in all material respects to the design specifications that applied to those components described in the documentation required by 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1045 or 40 CFR Part 1060 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1045 or 40 CFR Part 1060. This certificate of conformity does not cover diurnal systems imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR Part 90.126, 40 CFR Part 90.506, or 40 CFR Part 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1045 or 40 CFR Part 1060. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1045 or 40 CFR Part 1060.

This certificate does not cover diurnal systems sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

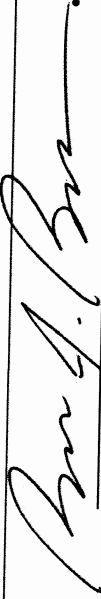


**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
2017 MODEL YEAR  
CERTIFICATE OF CONFORMITY  
WITH THE CLEAN AIR ACT**

**OFFICE OF TRANSPORTATION  
AND AIR QUALITY  
ANN ARBOR, MICHIGAN 48105**

**Certificate Issued To:** Perko, Incorporated  
(U.S. Manufacturer or Importer)  
**Certificate Number:** HPERPMDRN640-001

**Effective Date:**  
11/28/2016  
**Expiration Date:**  
12/31/2017

  
Byron J. Bunker, Division Director  
Compliance Division

**Issue Date:**  
11/28/2016  
**Revision Date:**  
N/A

**Manufacturer:** Perko, Incorporated  
**Evaporative Family:** HPERPMDRN640  
**Category:** EVAP\_FAMILY  
**Useful Life:** 10 Years  
**Applicable Regulation:** Part 1060  
**Applicable Emission Standard:**  
**Design Based Certification:** Y

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547), 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1060 and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued for the diurnal systems, more fully described in the documentation required by 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1060 and produced in the stated model year.

This certificate of conformity covers only the diurnal systems which conform in all material respects to the design specifications that applied to those components described in the documentation required by 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1060 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1060. This certificate of conformity does not cover diurnal systems imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR Part 90.126, 40 CFR Part 90.506, or 40 CFR Part 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1060 or 40 CFR Part 1060. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 90, 40 CFR Part 1054, 40 CFR Part 1060 or 40 CFR Part 1060.

This certificate does not cover diurnal systems sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

FILED

# PERKO®

## Certificate of Compliance

**Name of Product:** 0630

**Type of Product:** P-Trap

**Manufacturer:** PERKO, Inc.  
16490 N.W. 13th Avenue  
Miami, Florida 33169-5707  
U.S.A.

These products are for use on fuel tanks to comply with the EPA standards and meet the requirements of U.S.C.G. Safety Standards (July 31, 2011) for 40 CFR Parts 9, 60, 80 et al. (Control of Diurnal Emissions From Nonroad Spark-Ignition Engines and Equipment). :

***Tested in accordance with ABYC Safety Standards  
for Gasoline Fuel Systems, H-24.***

***P-trap - H-24 Watertight-weather-tight - Imanna - 10/28/10***



(Signatory)

10/28/10

(Original Issue Date Model Year 2011)  
Subject to Subsequent Revisions



# INSTALLATION NOTES

# ELECTRICAL DIAGRAMS

SHEET 1 OF 17

SHEET	LIST OF PAGES	TITLE
1	INSTALLATION NOTES	
2	BATTERY SWITCHPLATE	
3	HELM BREAKER PANEL	
4	HELM FUSE PANEL	
5	WIPER FUSE PANEL	
6	SWITCH LAYOUT	
7	SWITCH DETAIL	
8	BILGE PUMPS 1+4	
9	BILGE PUMPS 2+3	
10	WEBASTO	
11	TRIM TABS	
12	120VAC SYSTEM	
13	BATTERY CHARGER	
14	MERCURY OPTIMAX RIGGING	
15	ELECTRONICS FUSE PANEL	
16	ELECTRONICS	
17	ACRS	
18	XXX	
19	XXX	
20	XXX	
21	XXX	
22	XXX	
23	XXX	
24	XXX	
25	XXX	

**GENERAL NOTES:**

1. ALL WIRE IS VERTEX BRAND OR EQUIVALENT, UL LISTED MTW DR THW, BC-5W2 105 C-600/1000V TINNED COPPER, MARINE GRADE

2. ALL ELECTRICAL CIRCUIT DESIGN AND INSTALLATION WILL ADHERE TO UNITED STATES COAST GUARD (USCG) REGULATIONS AND AMERICAN BOAT AND YACHT COUNCIL (ABYC) RECOMMENDATIONS WHERE APPLICABLE

**SYMBOLS USED IN DIAGRAMS:**

FUSES USED FOR CIRCUIT PROTECTION, DISPLAYED AMPERAGE RATING OF FUSE AND BLUE SEA SYSTEM PART NUMBER.

CIRCUIT BREAKERS USED FOR CIRCUIT PROTECTION, DISPLAYED AMPERAGE RATING BLUE SEA SYSTEM PART NUMBER.

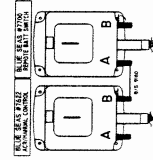
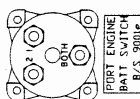
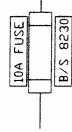
SWITCHES USED TO CONTROL HELM LOADS, DISPLAYED SWITCH TYPE BLUE SEA SYSTEM PART NUMBER.

BATTERY SWITCH, USED TO ISOLATE AND CONNECT BATTERIES TO ENGINE STARTERS AND OTHER LOADS. BLUE SEA SYSTEM PART NUMBER

REMOTE BATTERY SWITCH AND ACR USED TO ISOLATE AND CONNECT BATTERIES TO ENGINE STARTERS AND OTHER LOADS. BLUE SEA SYSTEM PART NUMBER

POS OR NEG POST USED TO CONNECT WIRES. BLUE SEA SYSTEM PART NUMBER

SYMBOL INDICATING A CONNECTION TO A NEGATIVE BUS



**NOTES FOR LOADS AND WIRE SIZES:**

1. HELM DC PANEL - 80A LOAD  
3% VOLTAGE DROP  
35 FT WIRE RUN = #0 AWG CABLE

HELM PANEL WIRE SIZE		
ROUND TRIP(FT)	15-25	25-30
WIRE GAUGE	#2	#1
	#0	#00

2. BILGE PUMPS 1 & 4 - 15A LOAD  
3% VOLTAGE DROP  
35 FT WIRE RUN = #8 AWG CABLE

BILGE PUMP WIRE SIZE		
ROUND TRIP(FT)	<39	39-60
WIRE GAUGE	#8	#6
	#4	

3. BILGE PUMPS 2 & 3 - 15A LOAD  
3% VOLTAGE DROP  
35 FT WIRE RUN = #8 AWG CABLE

BILGE PUMP WIRE SIZE		
ROUND TRIP(FT)	<39	39-60
WIRE GAUGE	#8	#6
	#4	

4. #1 BILGE PUMP - 7.5A LOAD  
3% VOLTAGE DROP  
39 FT WIRE RUN = #10 AWG CABLE

BILGE PUMP WIRE SIZE		
ROUND TRIP(FT)	<32	32-51
WIRE GAUGE	#12	#10
	#8	#6

5. #2 BILGE PUMP - 7.5A LOAD  
3% VOLTAGE DROP  
32 FT WIRE RUN = #10 AWG CABLE

BILGE PUMP WIRE SIZE		
ROUND TRIP(FT)	<32	32-51
WIRE GAUGE	#12	#10
	#8	#6

6. #3 BILGE PUMP - 7.5A LOAD  
3% VOLTAGE DROP  
65 FT WIRE RUN = #8 AWG CABLE

BILGE PUMP WIRE SIZE		
ROUND TRIP(FT)	<32	32-51
WIRE GAUGE	#12	#10
	#8	#6

7. #4 BILGE PUMP - 7.5A LOAD  
3% VOLTAGE DROP  
58 FT WIRE RUN = #8 AWG CABLE

BILGE PUMP WIRE SIZE		
ROUND TRIP(FT)	<32	32-51
WIRE GAUGE	#12	#10
	#8	#6

8. ENG STARTER REQUIREMENTS  
MANUFACTURE RECOMMENDATIONS  
20 FT WIRE RUN = #2 AWG CABLE

200-250 OPTIMAX ENG STARTER WIRE SIZE		
ROUND TRIP(FT)	<21	22-24
WIRE GAUGE	#2	#0

9. BATTERY CHARGER - 20A LOAD  
3% VOLTAGE DROP  
15 FT WIRE RUN = #6 AWG CABLE

BATTERY CHARGER WIRE SIZE		
ONE WAY TRIP(FT)	<15	15-20
WIRE GAUGE	#8	#6
	#4	#2

BATTERY RESERVE CAPACITY	
2 BATTERIES X 160 MIN = 320 MIN	
320 MIN X 25 AMPS = 8000 AMP MINUTES	
8000 MIN/55A LOAD = 145 MIN	
145 MIN/60 = 2.4 HOURS OF BAT RESERVE	

CHARGING SOURCE RATINGS	
SOURCE	AMPS
STBD ALTERNATOR	60
PORT ALTERNATOR	60



15606 PRESTON PLACE  
BURLINGTON, WA 98233  
Ph: 360.703.2752  
Fax: 360.757.2442

DRAWN BY BPE

DATE 4-26-2018

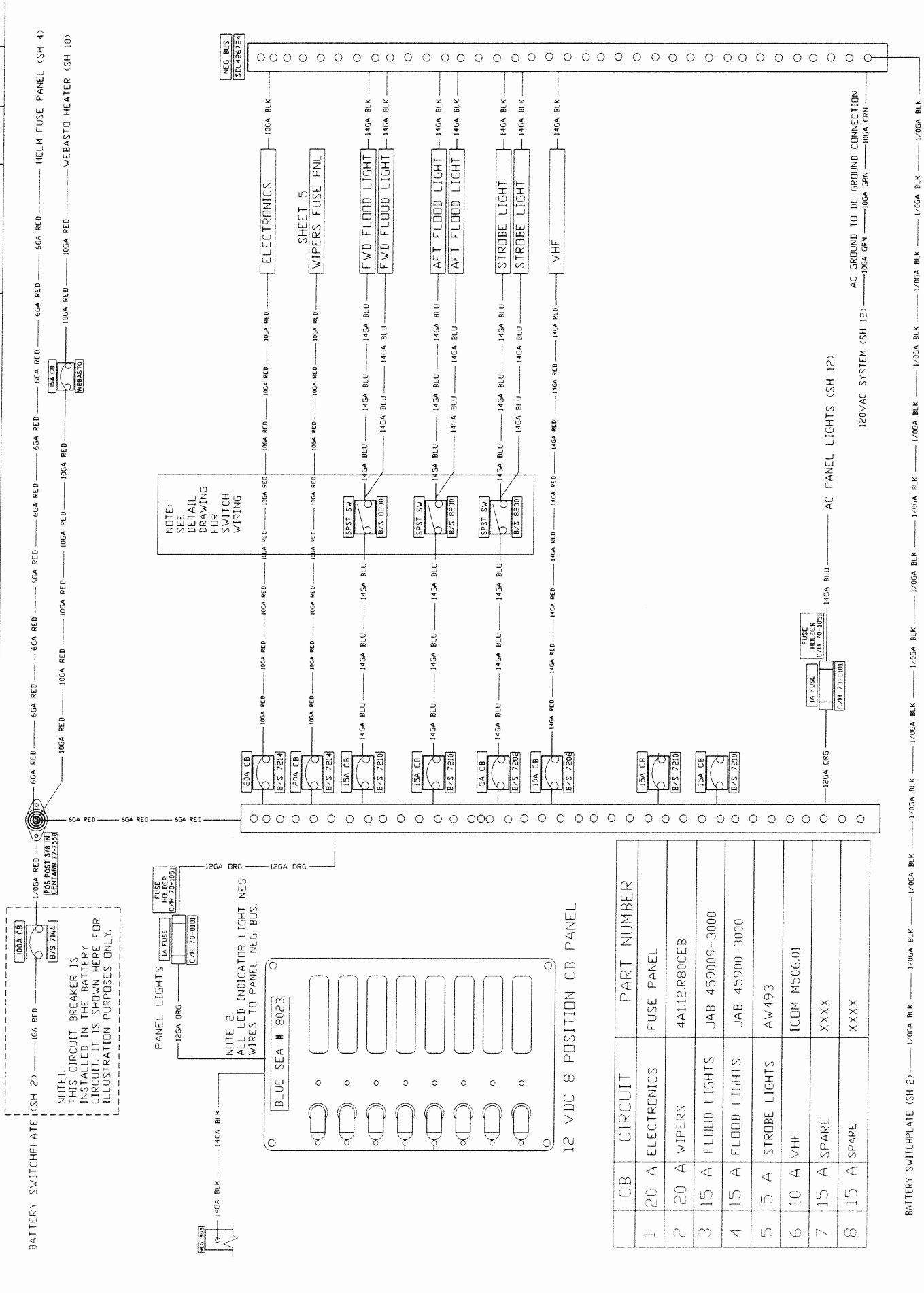
FILE 35 MILITIA

SCALE NTS

REV 0



# HELM BREAKER PANEL



**35' X 12' PACKCAT  
FOR NEW YORK STATE NAVAL MILITIA**



15806 PRESTON PLACE  
BURLINGTON, WA. 98233  
PH. 360.707.2752  
FAX. 360.757.2442

DRAWN BY **BPE**  
DATE **4-26-2018**  
FILE **35 MILITIA**

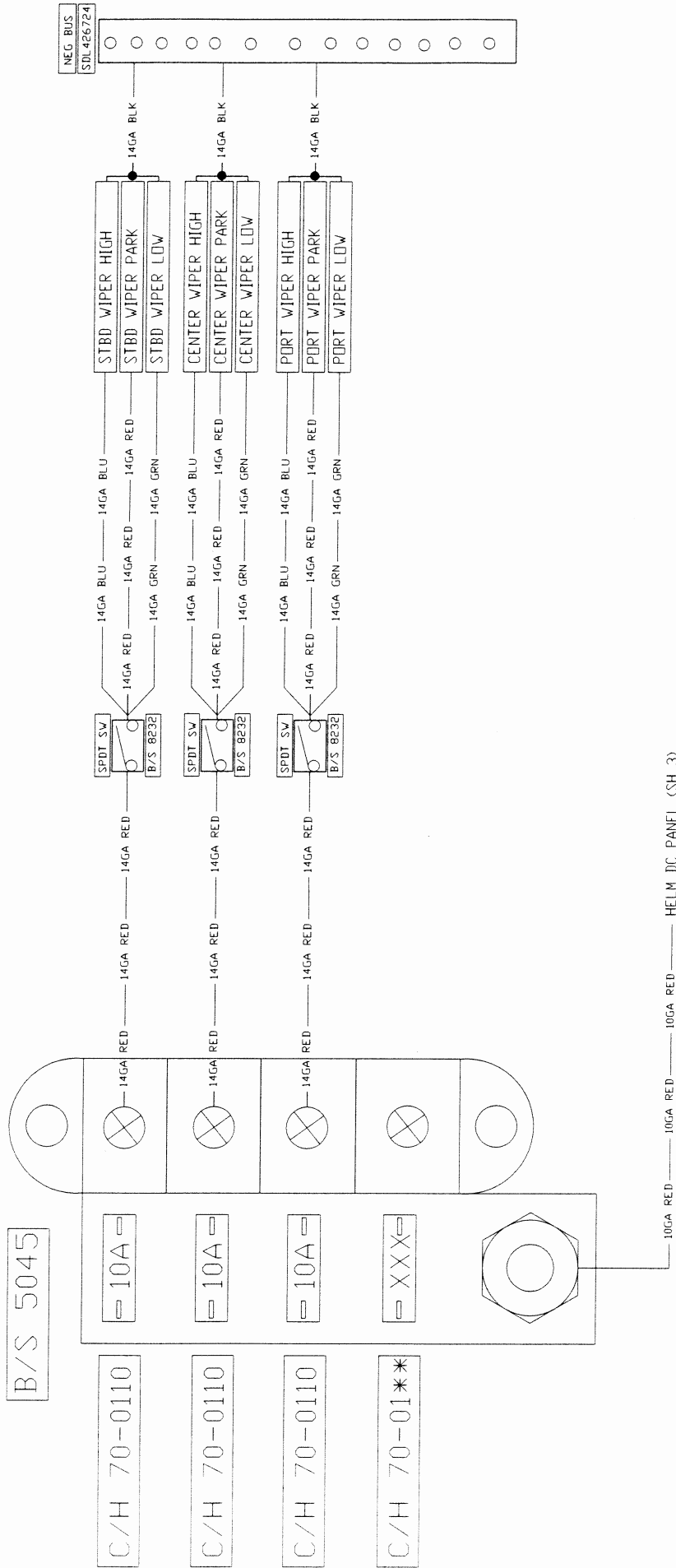
SCALE **NTS**  
REV **0**



# WIPER FUSE PANEL

## ELECTRICAL DIAGRAMS

SHEET 5 OF 17



35' X 12' PACKCAT  
FOR NEW YORK STATE NAVAL MILITIA



15806 PRESTON PLACE  
BURLINGTON, WA 98233  
Ph: 360.707.2752  
Fax: 360.757.2442

DRAWN BY  
BPE

DATE  
4-26-2018

FILE  
35 MILITIA

SCALE  
NTS

REV  
0

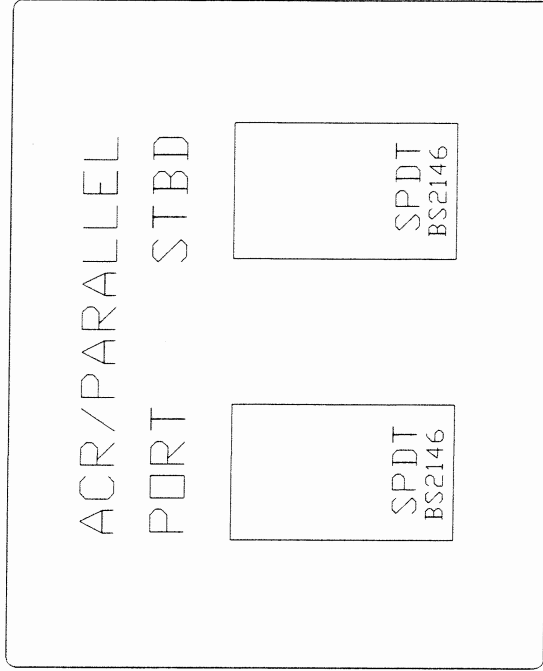
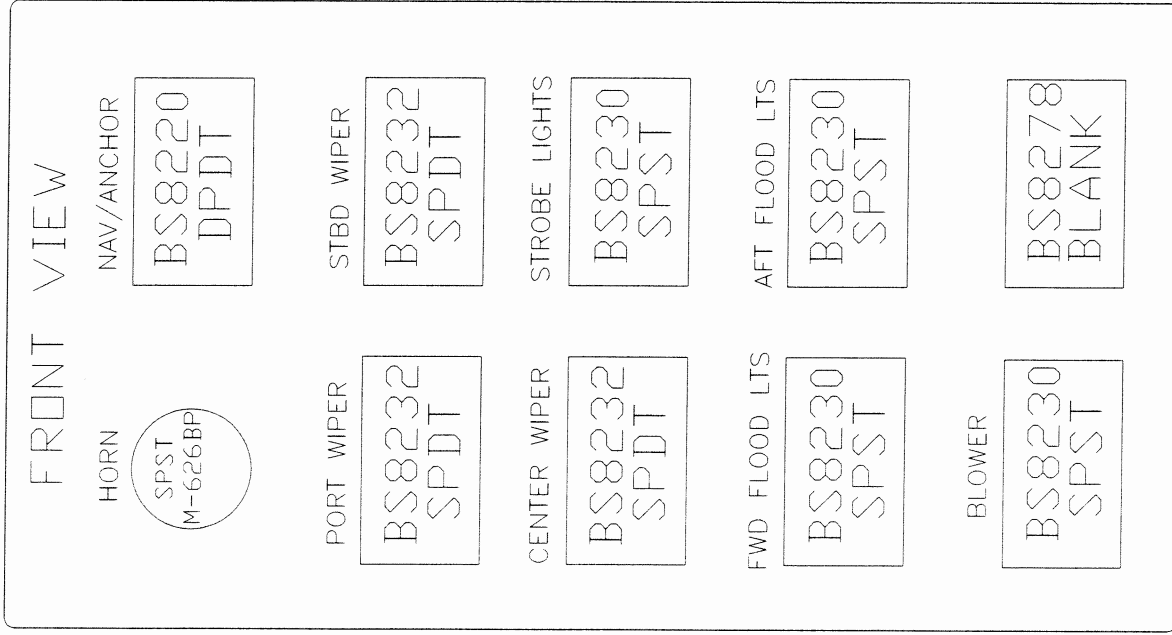
COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.



# SWITCH LAYOUT

## ELECTRICAL DIAGRAMS

SHEET 6 OF 17



35' X 12' PACKCAT  
FOR NEW YORK STATE NAVAL MILITIA



15806 PRESTON PLACE  
BURLINGTON, WA, 98233  
PH: 360.707.2752  
FAX: 360.757.2442

DRAWN BY  
BPE

DATE  
4-26-2018

FILE  
35 MILITIA

SCALE  
NTS

REV  
0

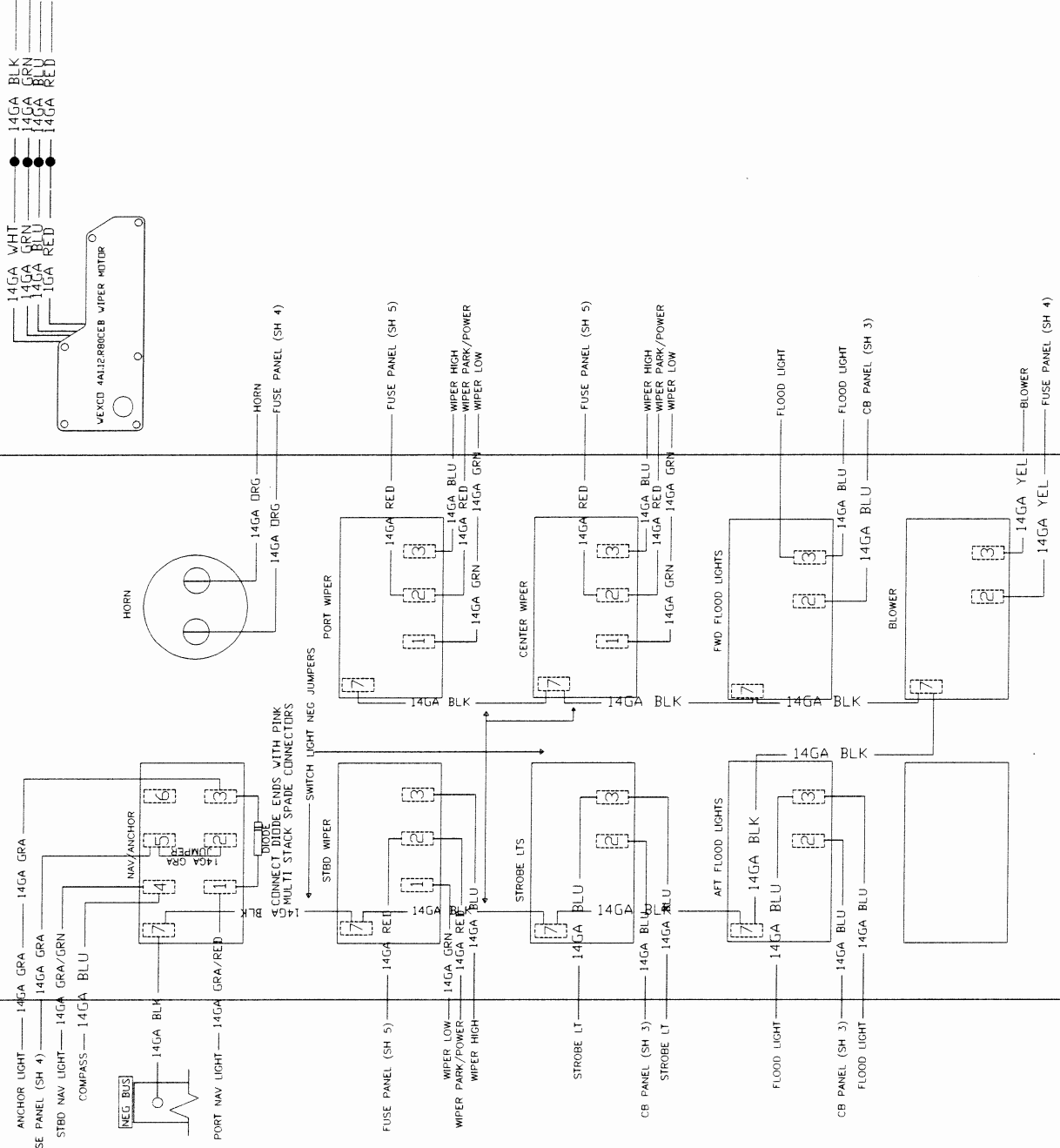
COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.

# SWITCH DETAIL

# ELECTRICAL DIAGRAMS

SHEET 7 OF 17

REAR VIEW



35' X 12' PACKCAT  
 FOR NEW YORK STATE NAVAL MILITIA



15806 PRESTON PLACE  
 BURLINGTON, WA 98233  
 PH: 360.707.2752  
 FAX: 360.757.2442

DRAWN BY  
**BPE**

DATE  
**4-26-2018**

FILE  
**35 MILITIA**

SCALE  
**NTS**

REV  
**0**

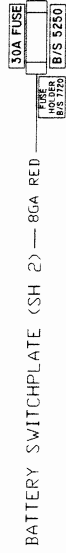
COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.

# BILGE PUMPS 1+4

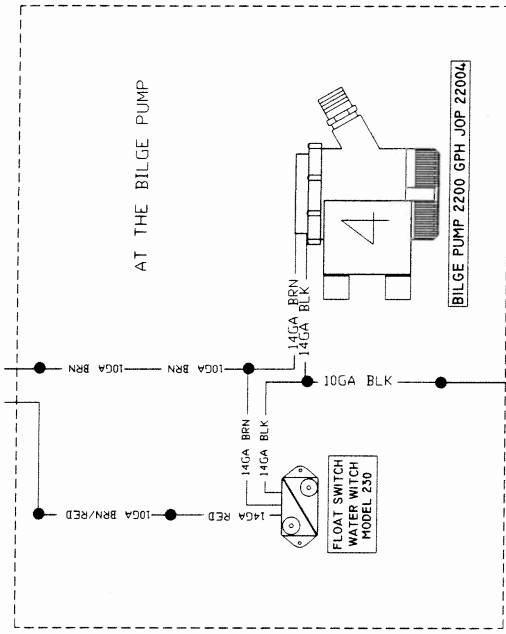
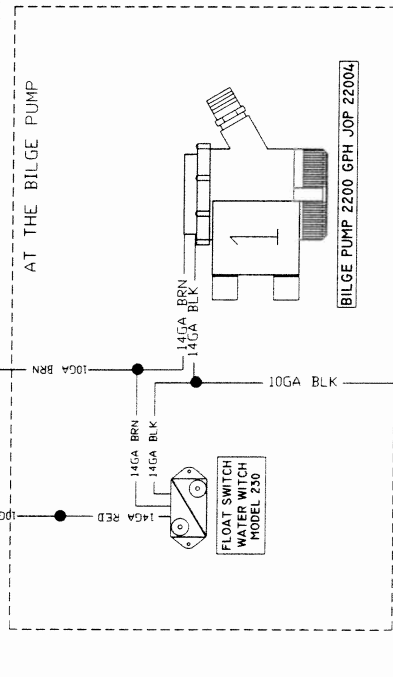
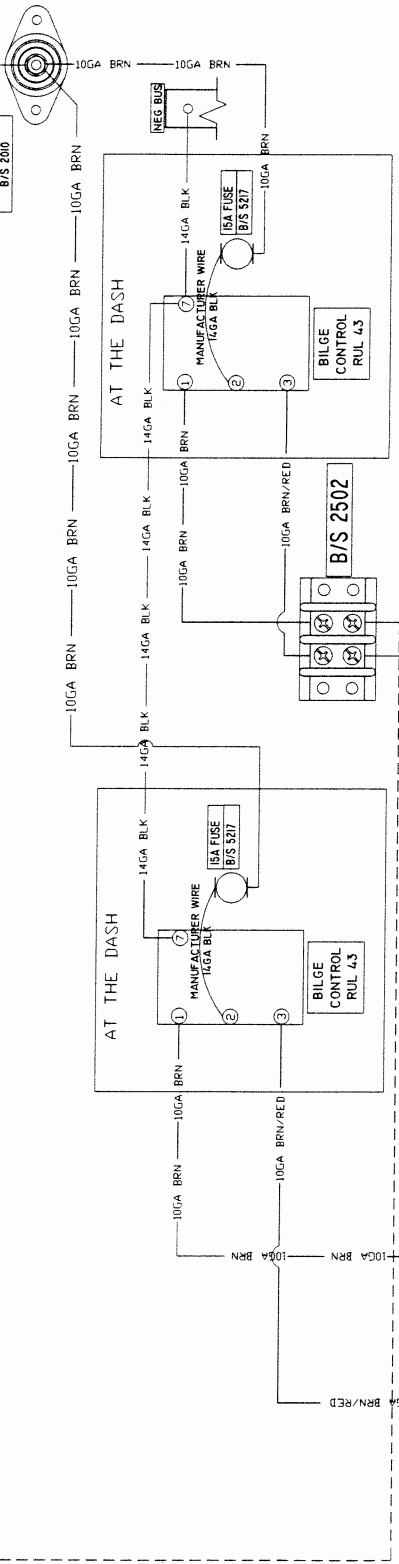
# ELECTRICAL DIAGRAMS

SHEET 8 OF 17

NOTE: THIS FUSE IS INSTALLED IN THE ENGINE BATTERY SWITCH CIRCUIT. IT IS SHOWN HERE FOR ILLUSTRATION PURPOSES ONLY.



MINI FUSE POST  
B/S 2100



35' X 12' PACKCAT  
FOR NEW YORK STATE NAVAL MILITIA



15606 PRESTON PLACE  
BURLINGTON, WA. 98233  
Ph: 360.701.2752  
Fax: 360.757.2442

DRAWN BY BPE  
DATE 4-26-2018  
FILE 35 MILITIA

SCALE NTS  
REV 0

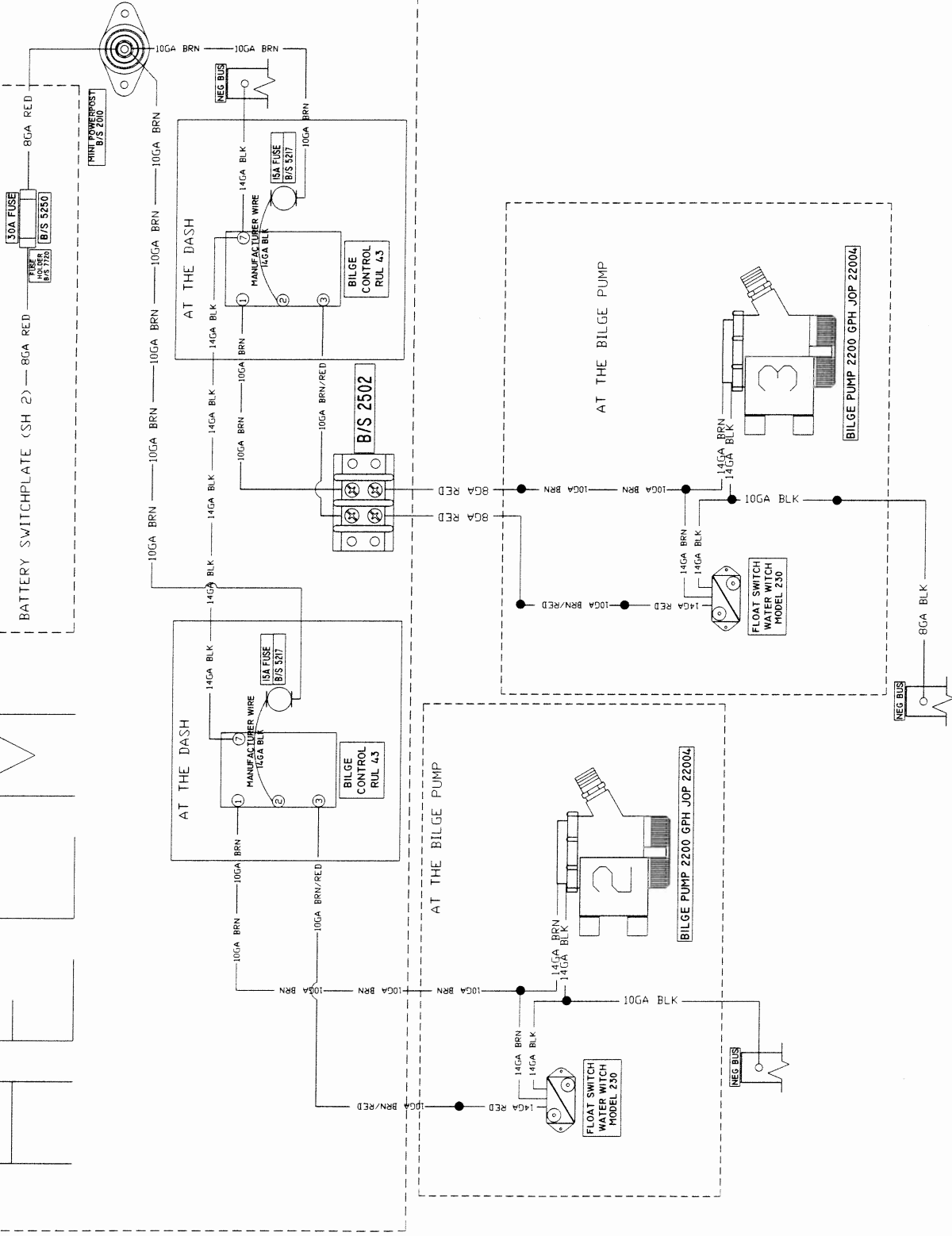
COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.

# BILGE PUMPS 2+3

## ELECTRICAL DIAGRAMS

SHEET 9 OF 17

NOTE 1  
THIS FUSE IS INSTALLED IN THE ENGINE BATTERY SWITCH CIRCUIT. IT IS SHOWN HERE FOR ILLUSTRATION PURPOSES ONLY.



35' X 12' PACKCAT  
FOR NEW YORK STATE NAVAL MILITIA

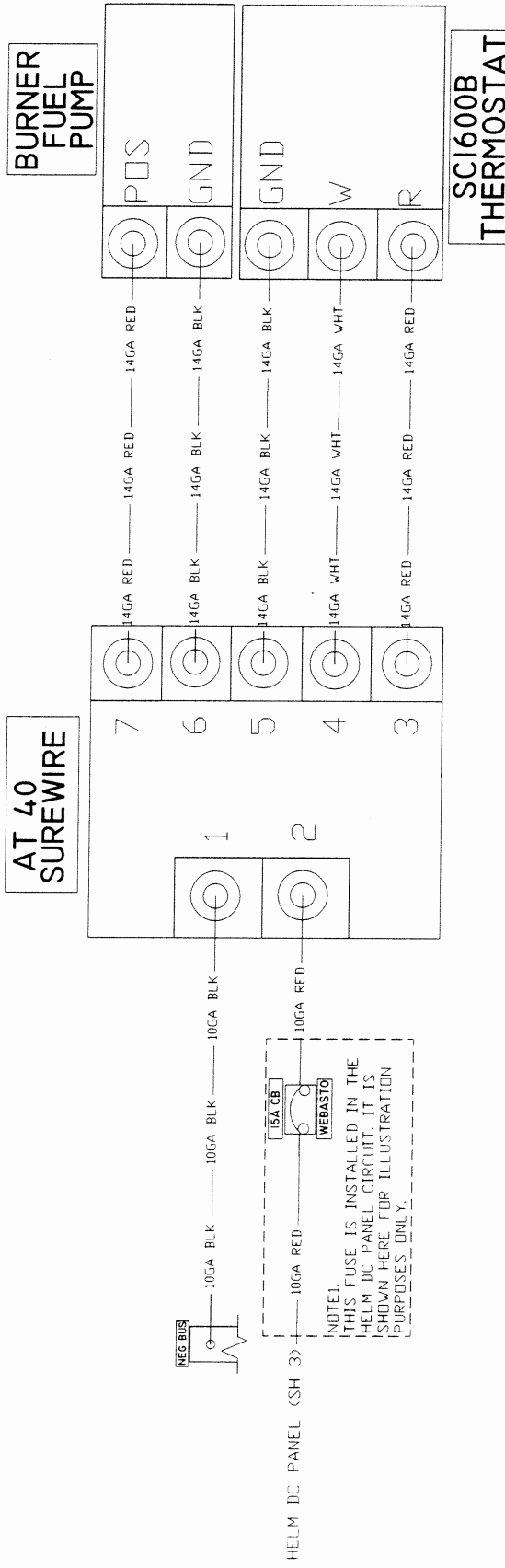


15806 PRESTON PLACE  
BURLINGTON, WA 98233  
Ph. 360.707.2752  
Fax. 360.757.2442

DRAWN BY BPE  
DATE 4-26-2018  
FILE 35 MILITIA

SCALE NTS  
REV 0

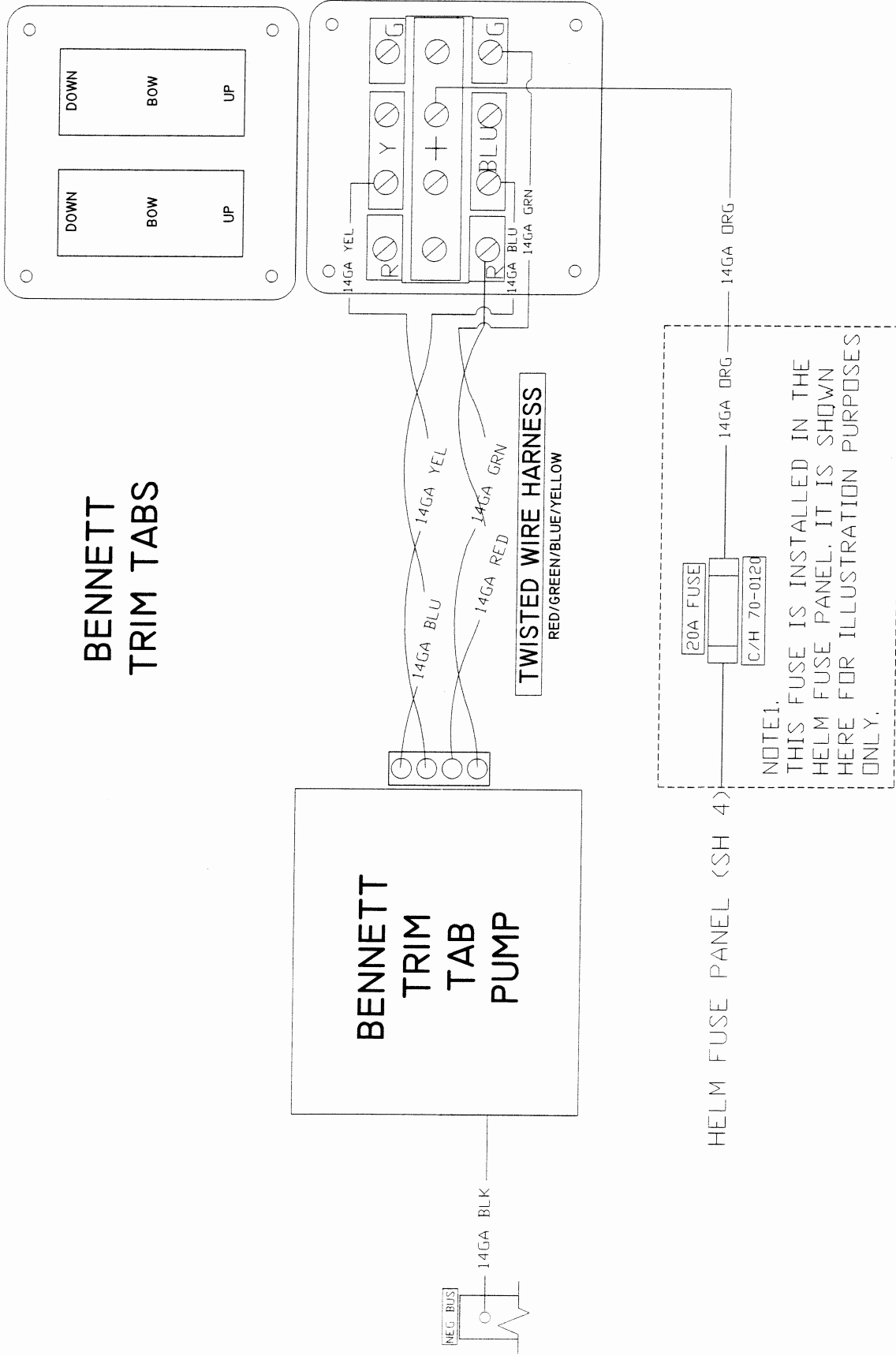
COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.



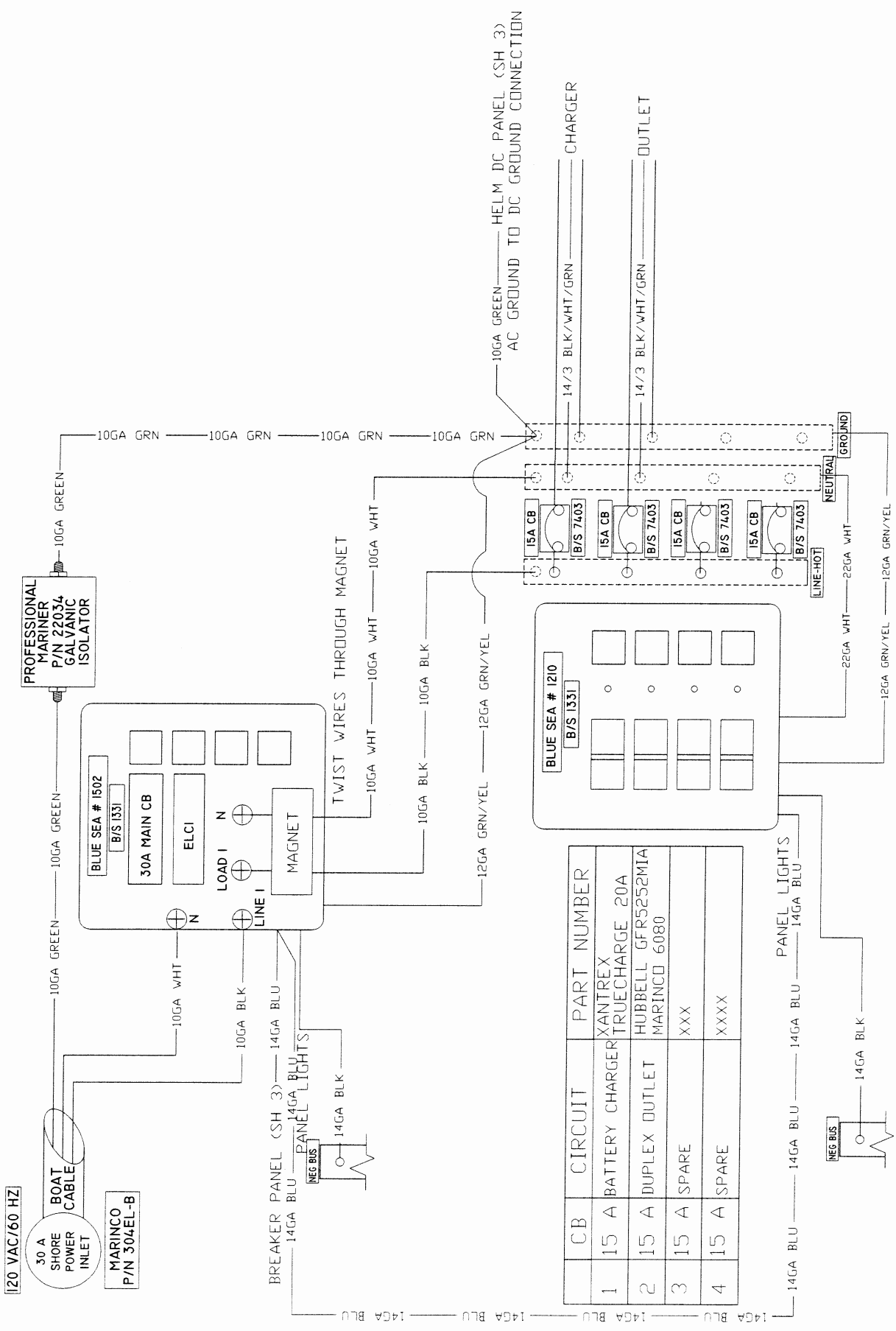
# TRIM TABS

## ELECTRICAL DIAGRAMS

SHEET 11 OF 17



# I20VAC SYSTEM



CB	CIRCUIT	PART NUMBER
1	15 A BATTERY CHARGER	XANTREX TRUECHARGE 20A
2	15 A DUPLEX OUTLET	HUBBELL GFR5252M1A
3	15 A SPARE	XXX
4	15 A SPARE	XXXX

35' X 12' PACKCAT  
FOR NEW YORK STATE NAVAL MILITIA



15806 PRESTON PLACE  
BURLINGTON, WA 98233  
Ph: 360.707.2752  
Fax: 360.757.2442

DRAWN BY  
BPE

DATE  
4-26-2018

FILE  
35 MILITIA

SCALE  
NTS

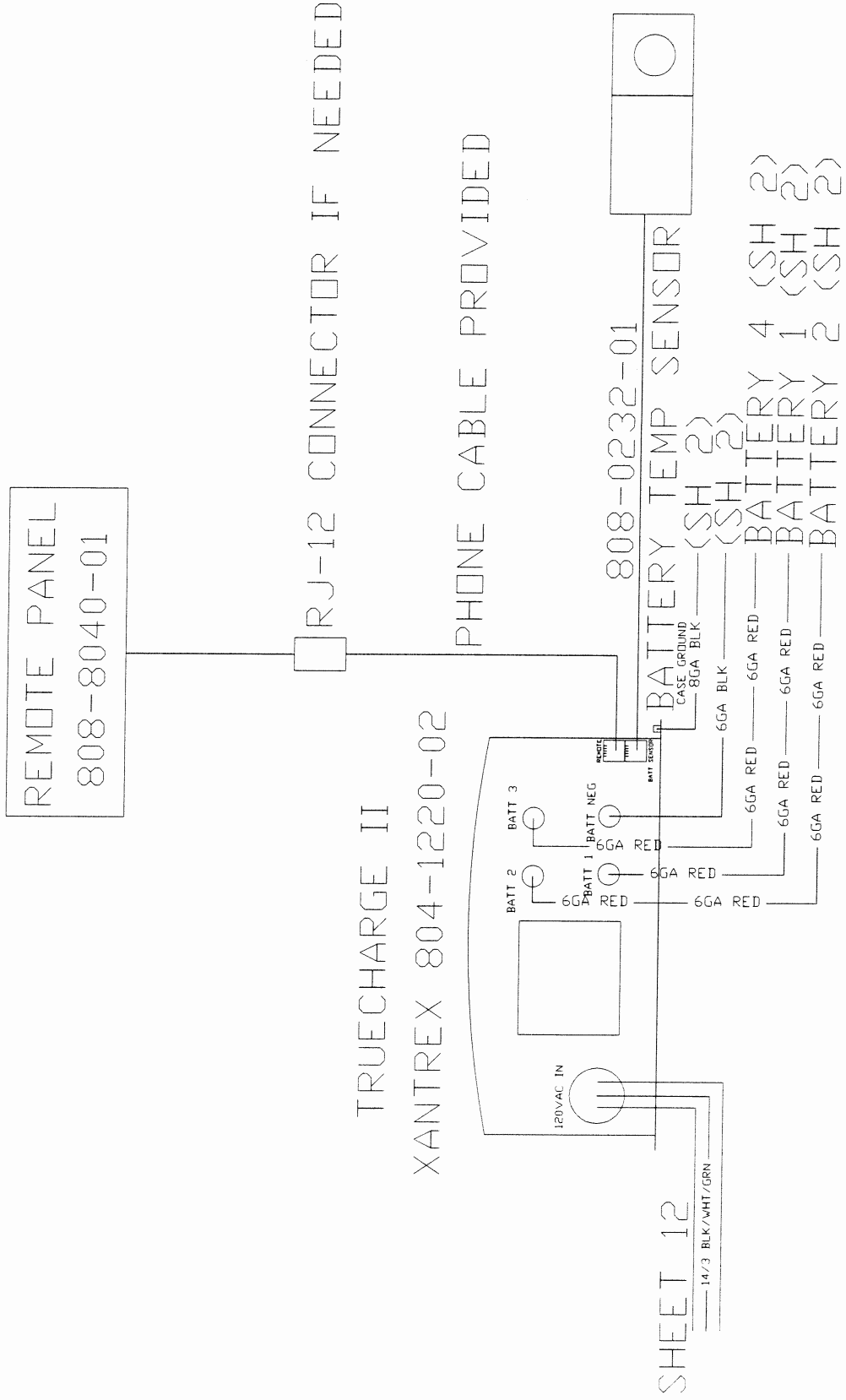
REV  
0

COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.

# BATTERY CHARGER

ELECTRICAL DIAGRAMS

SHEET 13 OF 17



35' X 12' PACKCAT  
FOR NEW YORK STATE NAVAL MILITIA



15816 PRESTON PLACE  
BURLINGTON, WA 98233  
Ph: 360.707.2752  
Fax: 360.757.2442

DRAWN BY: BPE  
DATE: 4-26-2018  
FILE: 35 MILITIA

SCALE: NTS  
REV: 0

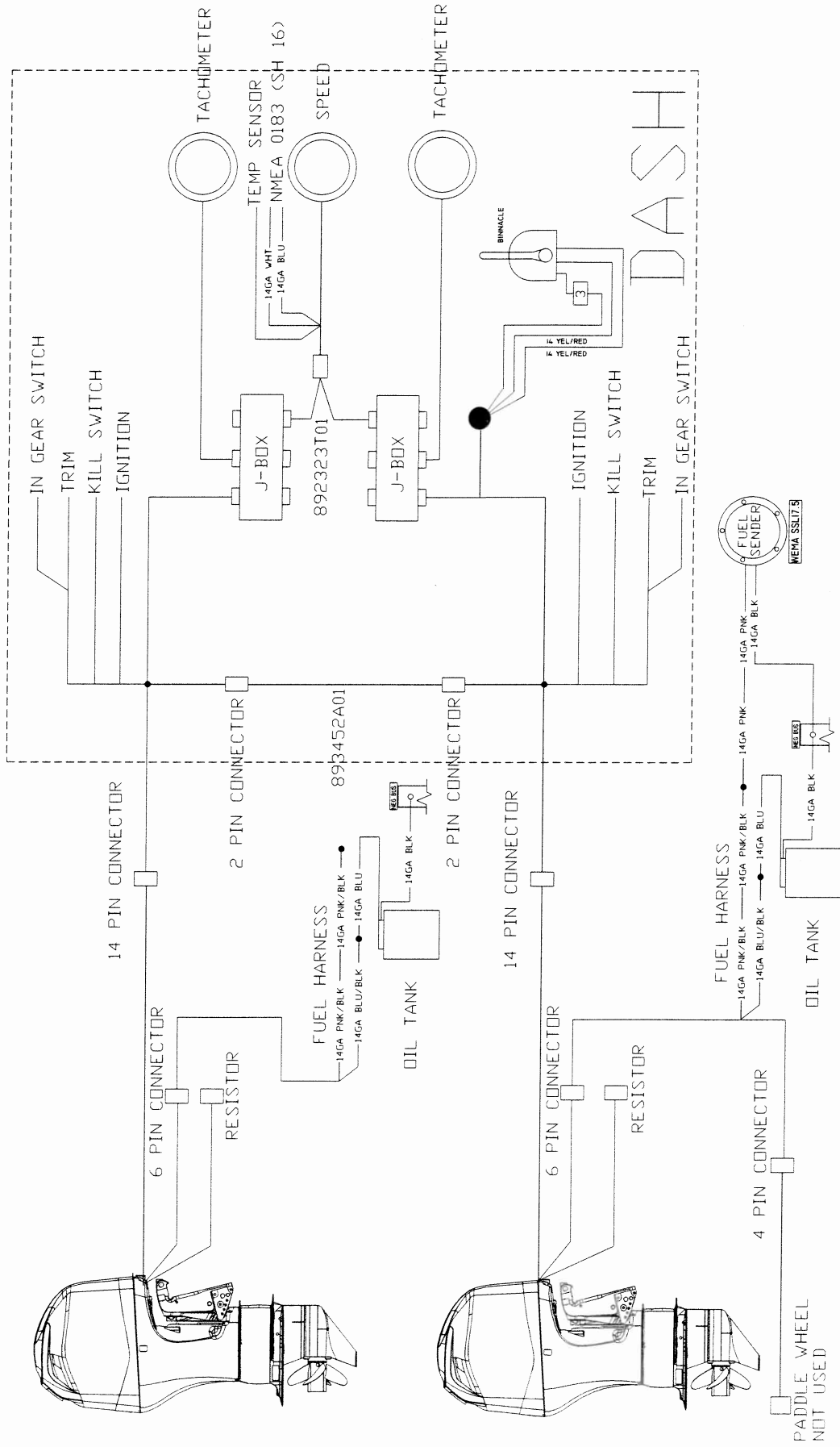
COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.



# MERCURY OPTIMAX RIGGING

ELECTRICAL DIAGRAMS

SHEET 14 OF 17



35' X 12' PACKCAT  
FOR NEW YORK STATE NAVAL MILITIA



15806 PRESTON PLACE  
BURLINGTON, WA. 98233  
Ph. 360.707.2752  
Fax. 360.757.2442

DRAWN BY BPE  
DATE 5-29-2018  
FILE 35 MILITIA

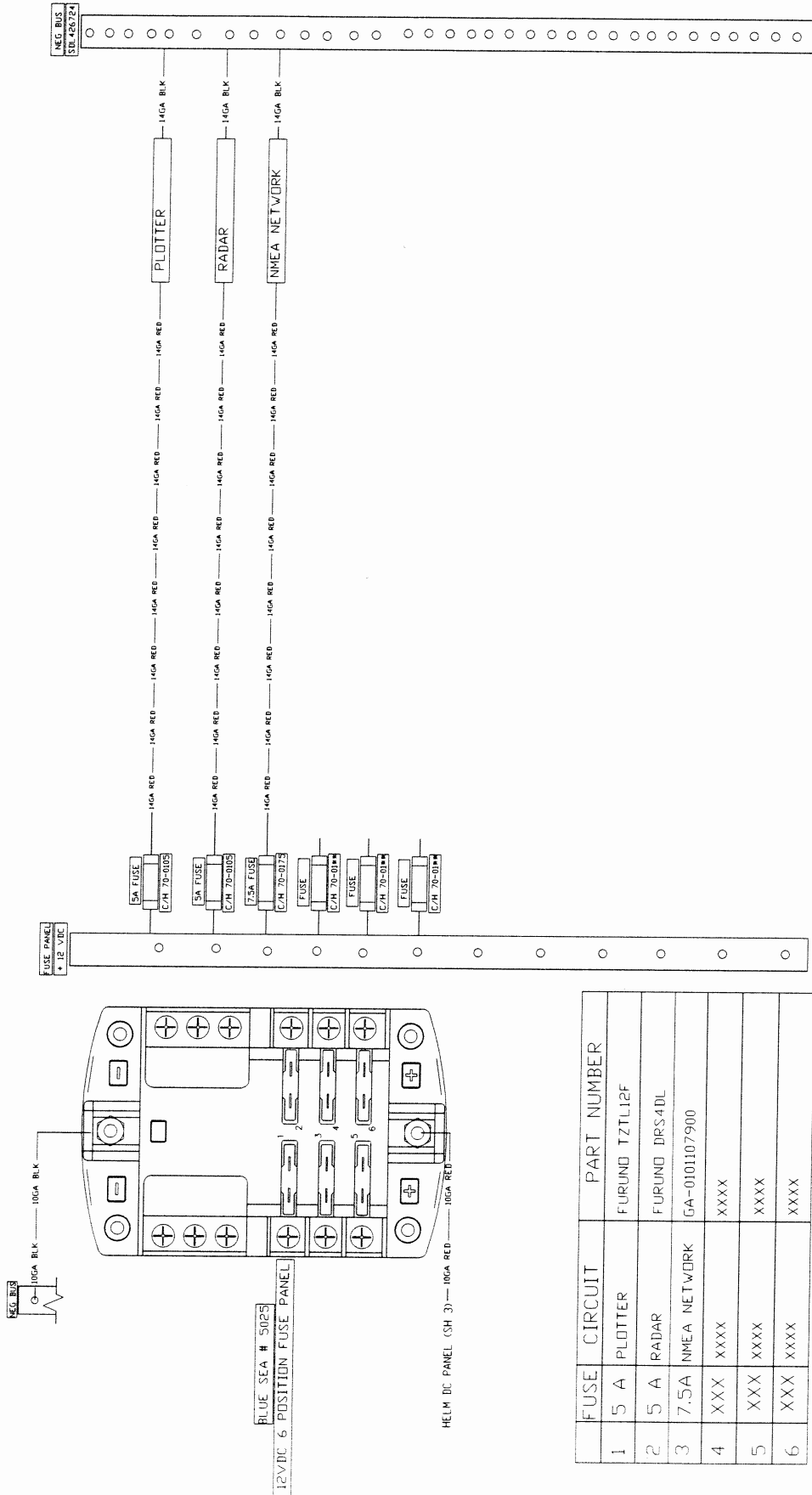
SCALE NTS  
REV 1

COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.

# ELECTRONICS FUSE PANEL

# ELECTRICAL DIAGRAMS

SHEET 15 OF 17



FUSE	CIRCUIT	PART NUMBER
1	5 A PLOTTER	FURUND TZTL12F
2	5 A RADAR	FURUND DRS4DL
3	7.5A NMEA NETWORK	GA-0101107900
4	XXX	XXXX
5	XXX	XXXX
6	XXX	XXXX

35' X 12' PACKCAT  
FOR NEW YORK STATE NAVAL MILITIA

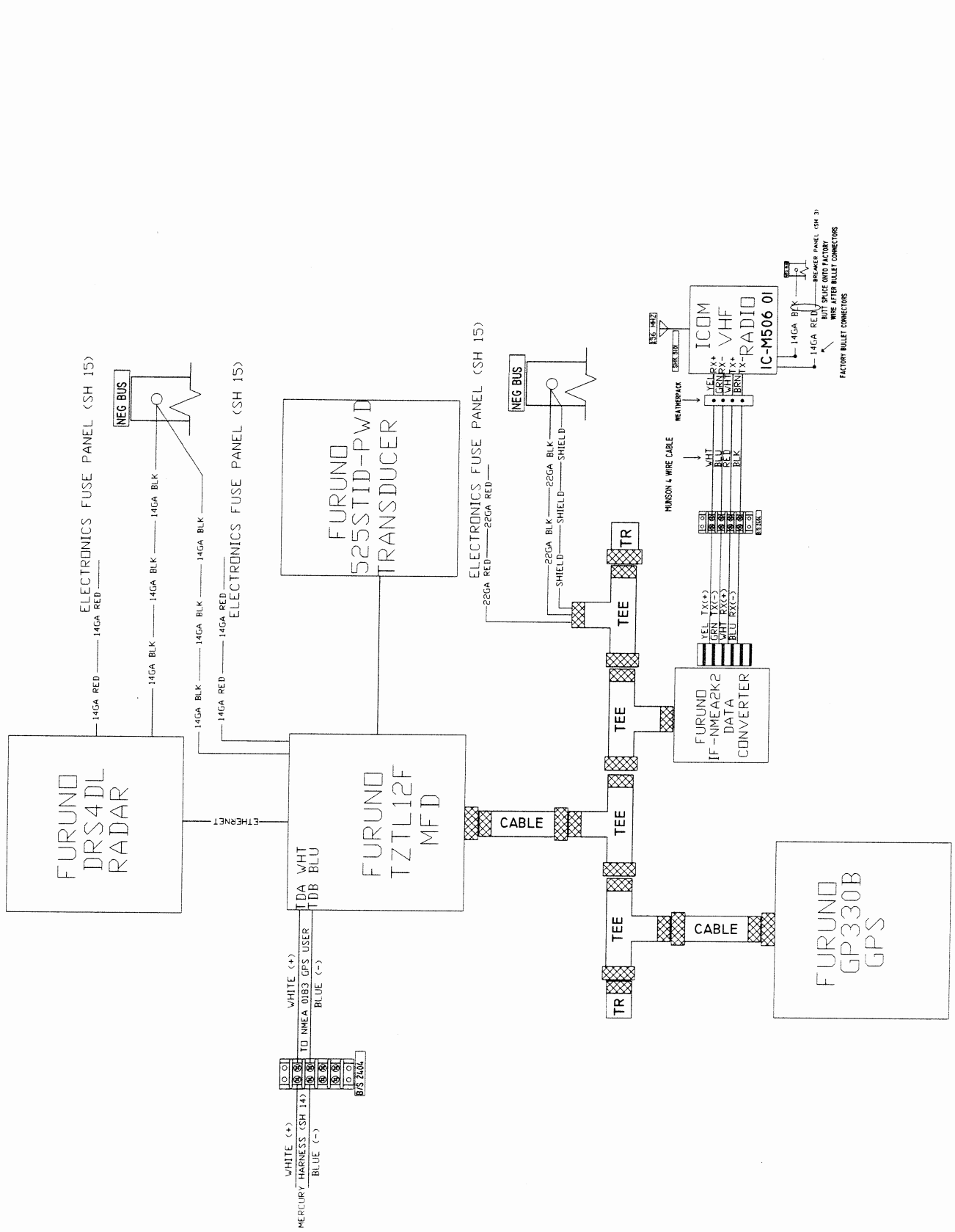


15806 PRESTON PLACE  
BURLINGTON, WA 98233  
PH: 360.707.2752  
FAX: 360.757.2442

DRAWN BY BPE  
DATE 4-26-2018  
FILE 35 MILITIA

SCALE NTS  
REV 0

COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.



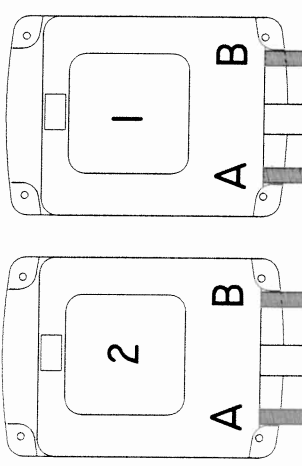
15806 PRESTON PLACE  
BURLINGTON, WA, 98233  
PH: 360.707.2752  
FAX: 360.757.2442

DRAWN BY: BPE  
DATE: 4-26-2018  
FILE: 35 MILITIA  
SCALE: NTS  
REV: 0

COPYRIGHT 2014 WILLIAM E. MUNSON COMPANY, INC. ALL RIGHTS RESERVED.

BLUE SEAS #7622 ACR W/MANUAL CONTROL  
BLUE SEAS #7622 ACR W/MANUAL CONTROL

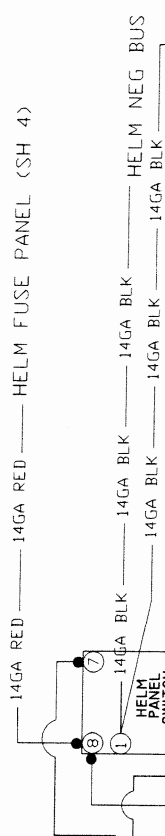
NOTE 1. TORQUE STUD NUTS TO 140 IN/LBS AS PER MANUFACTURER INSTRUCTIONS.



START BATTERY SWITCH (SH 2)  
2GA RED 2GA RED

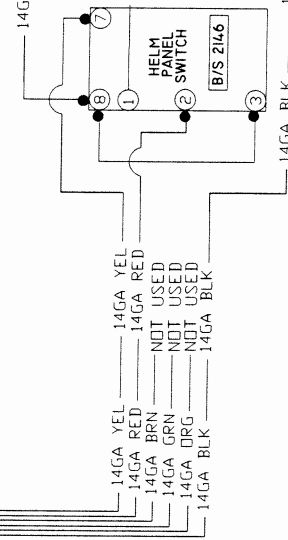
START BATTERY SWITCH (SH 2)  
14GA RED 14GA RED

HELM FUSE PANEL (SH 4)  
14GA RED 14GA RED



HOUSE BATTERY (SH 2)  
14GA RED 14GA RED

START BATTERY NEG BUS (SH 2)  
14GA BLK 14GA BLK



START BATTERY NEG BUS (SH 2)  
14GA BLK 14GA BLK

MILBOATSTECHMAN/BK-07  
LC 350 CLASS

**NEW YORK NAVAL MILITIA  
MILITARY EMERGENCY BOAT SERVICE**