

S/V Sunflower electrical drawings and information

Wednesday, March 8, 2023

Revision	Date	Changes
Original	December 7, 2009	Developed for shore power transformer, forward shore power, and custom electrical panel
Revision 2	December 15, 2009	Added inverter details and inverter neutral bus
Revision 3	December 25, 2009	Major changes to add 4 ELCI devices to protect all AC busses
Revision 4	December 27, 2009	Added DC sources
Revision 5	January 1, 2010	Updated DC information, corrected AC grounding, added ELCI for aft shore power
Revision 6	January 4, 2010	Revised to use 4 BlueSea Systems 30A ELCI breakers, removed ELCI for aft shore power
Revision 7	January 7 2010	Revised loads on bus 2A & 2B to reflect actual wire runs, corrected several items on DC sources
Revision 8	January 18, 2010	Added grounding of GENSET neutral, details of GENSET wiring, details of transformer wiring, refrigerator/freezer control wiring
Revision 9	February 4, 2010	Changed bus 2A and 2B to match panel design (moves spare breaker), added final backplane picture
Revision 10	February 26, 2010	Added voltage sensing lines fuses for AC, added details of AC distribution (outlets), added DC: voltage sensing, SR fans, nav equipment, fuse blocks, water tank level system, arch lights
Revision 11	May 16, 2010	Added satellite TV system and cell phone amp
Revision 12	April 5, 2011	Added: inverter/charger detail, salon bench and Nav station GFCI, TV shield ground, GENSET battery charging circuit, shore power connections, mast connections,. Removed Nav page & cell phone amp. Change cell phone amp to freezer door
Revision 13	July 10, 2011	Connected primary bilge pump (1100 GPH) to fuse block #2 using original Beneteau wires (#145), removed wires to battery disconnects. Ran #8 AWG 12 VDC (+) wire to power fuse block #2 from inside the house battery disconnect
Revision 14	October 14, 2011	Added new outlet in salon powered from GENSET/Shore Power, modified for new wash down pump
Revision 15	April 21, 2013	Added cabin heater system, added thermostatic controlled cooling fans, 120/240V shore power switch, hard dodger wiring, and correct fuses/distribution for heads.
Revision 16	June 6, 2013	Added ChargeMaster charger, new shunt, new MasterBus network, and changed main DC wiring to accommodate.
Revision 17	August 8, 2013	High capacity alternator upgrade – interim configuration (between previous and Li-Ion configuration)
Revision 18	August 25, 2013	Updated MassCombi dip switches; Updated MasterBus network; removed voltage divider, changed DC busses detail to new config
Revision 19	May 22, 2014	AC outlets (AC fans) in aft staterooms; changed power to ChargeMaster, new "DC sources" to reflect Li-Ion configuration & chargers Bow compartment changed to show DC-DC converter, added pages for AC & DC panel faces & updated labels on panels
Revision 20	July 1, 2015	Updated MassCombi dip switches, updated MasterBus, final Li-Ion configuration, added dodger GFCI, swapped NAVSTA outlet and battery charger, serial interface for bow MAGIC charger. Updated M7 satellite TV for completeness and new wiring.

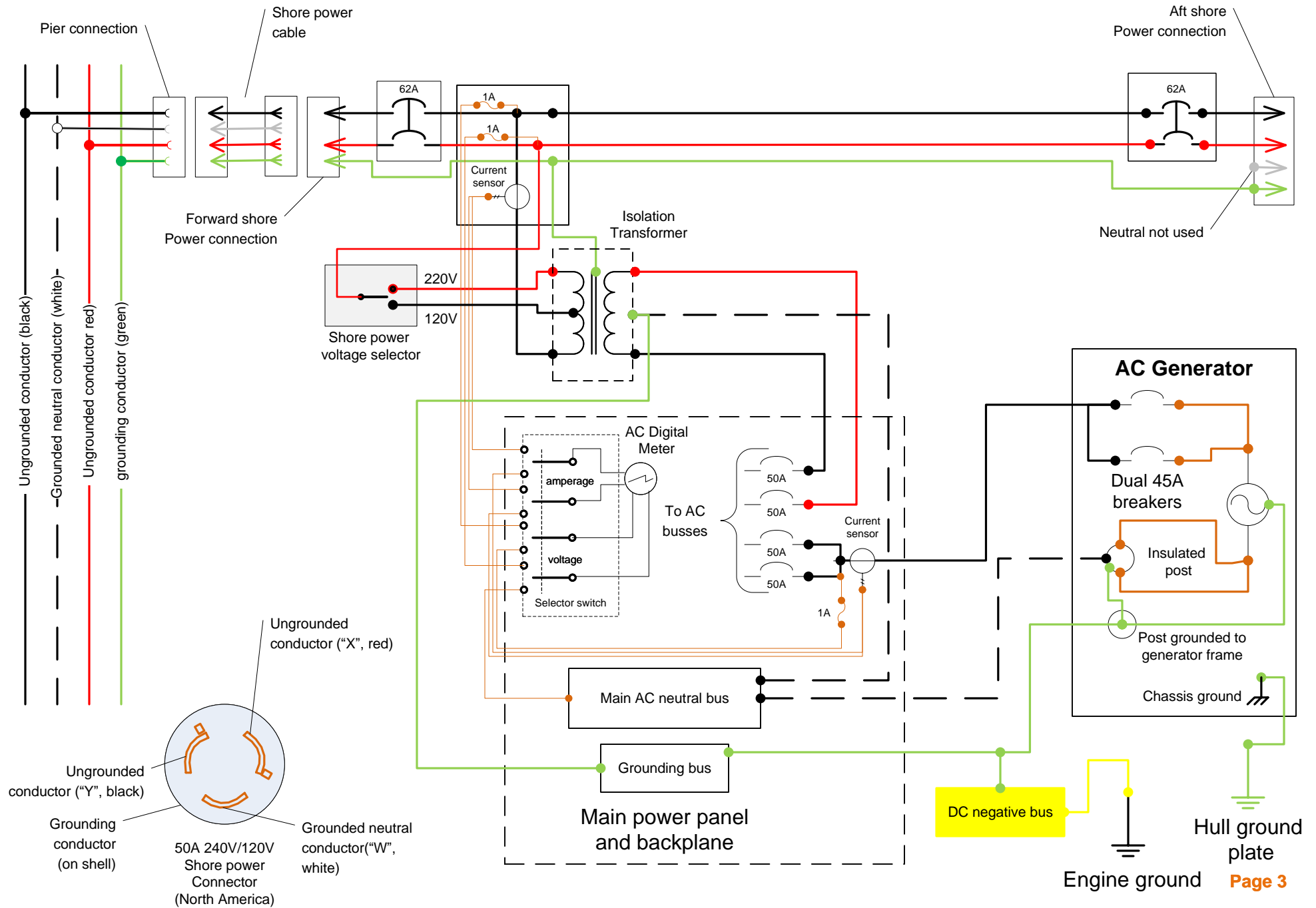
S/V Sunflower electrical drawings and information

Wednesday, March 8, 2023

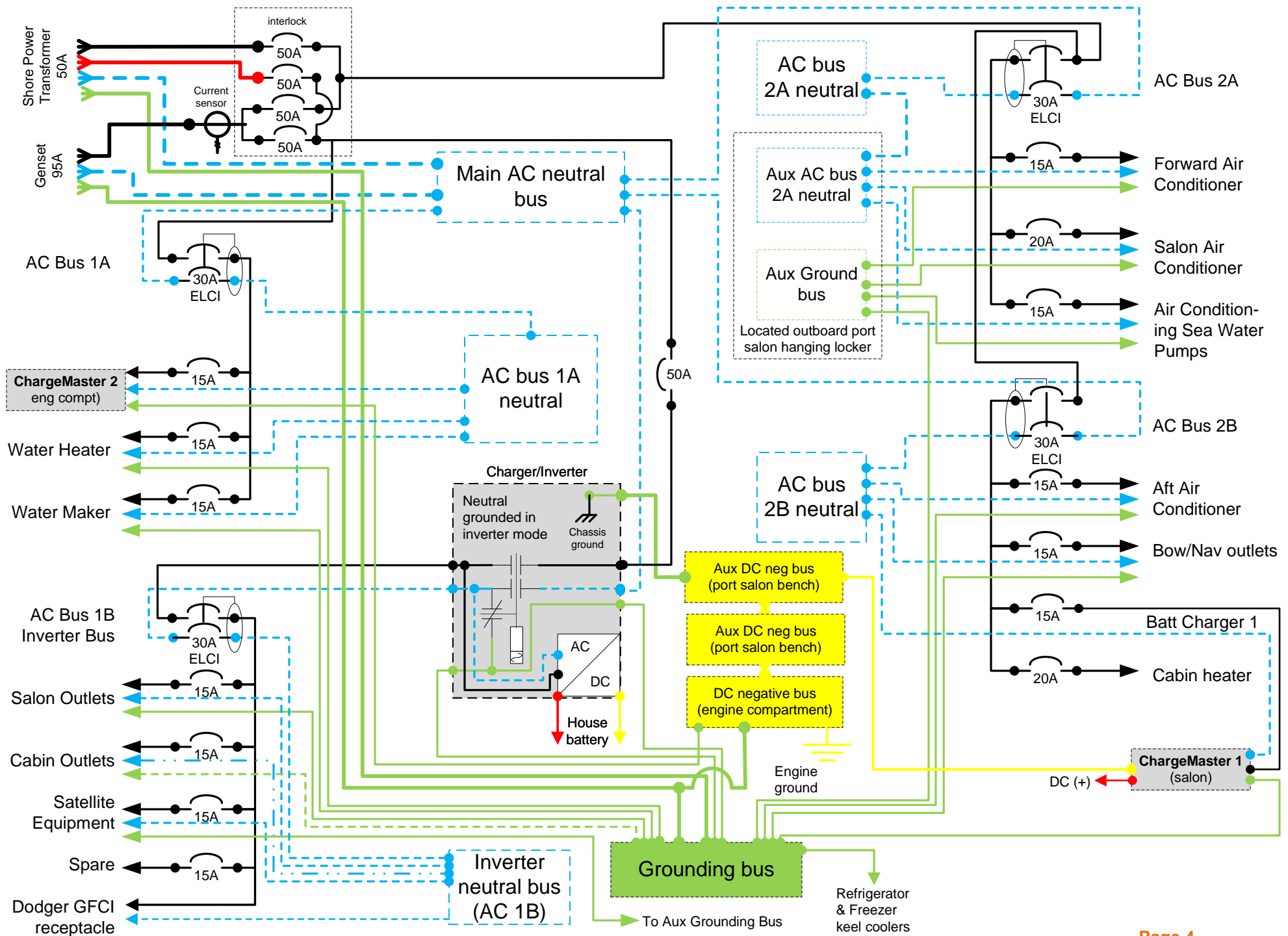
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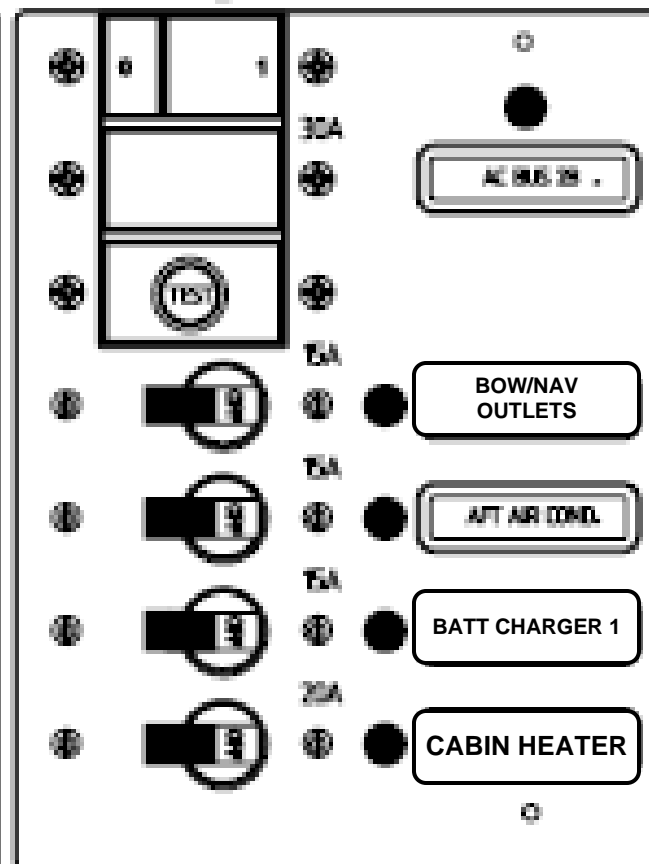
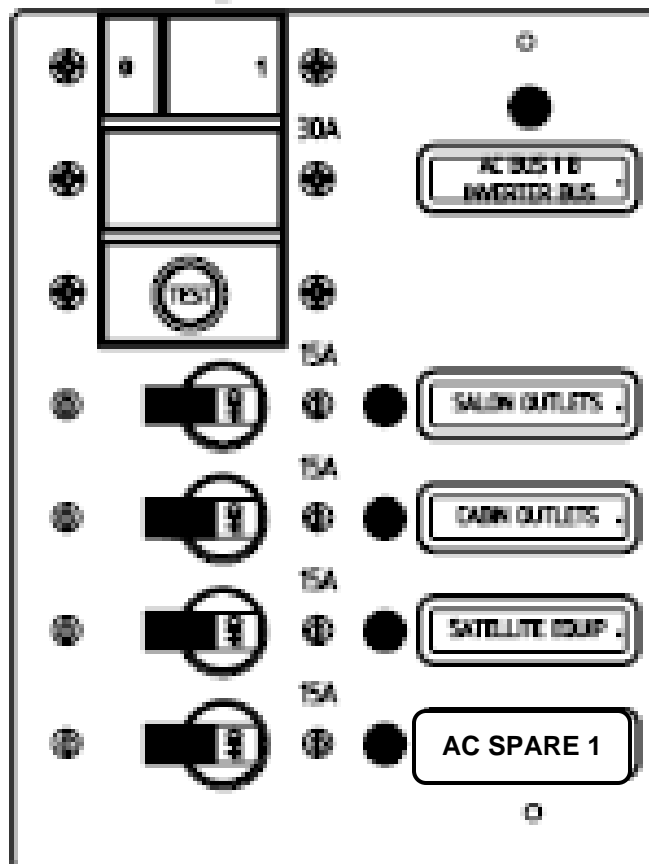
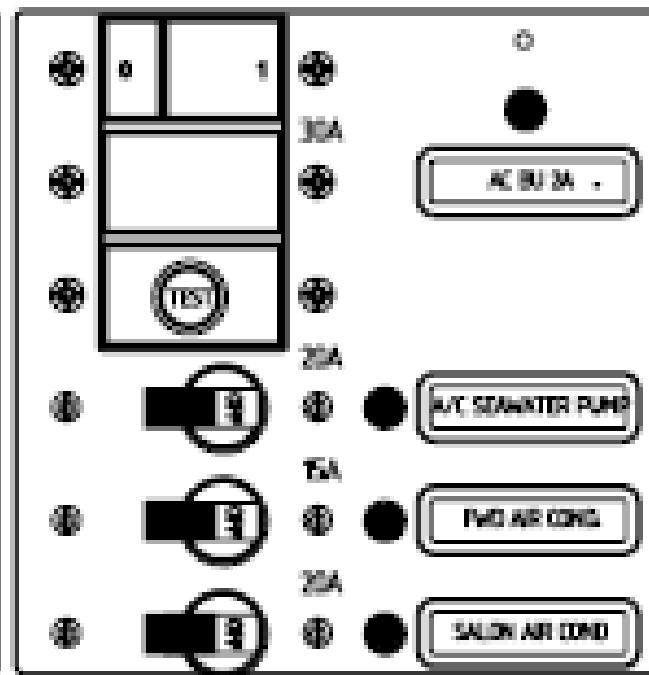
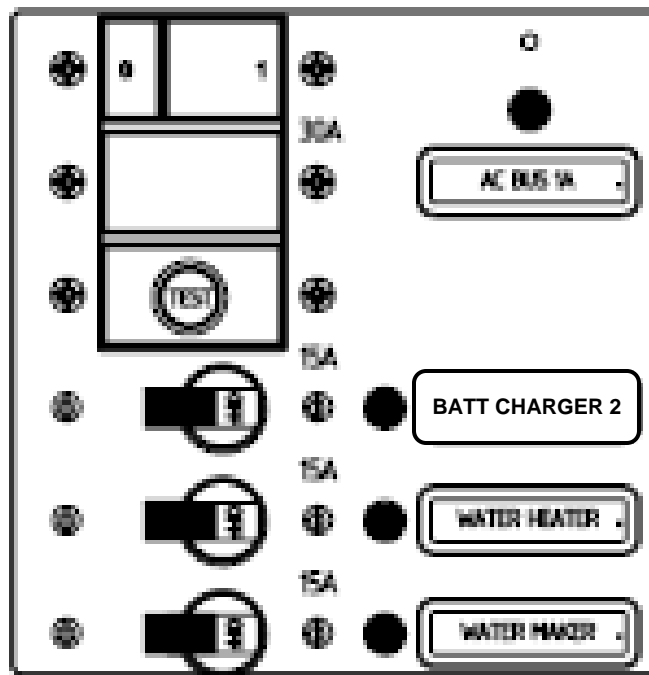
AC power sources

Wednesday, March 8, 2023



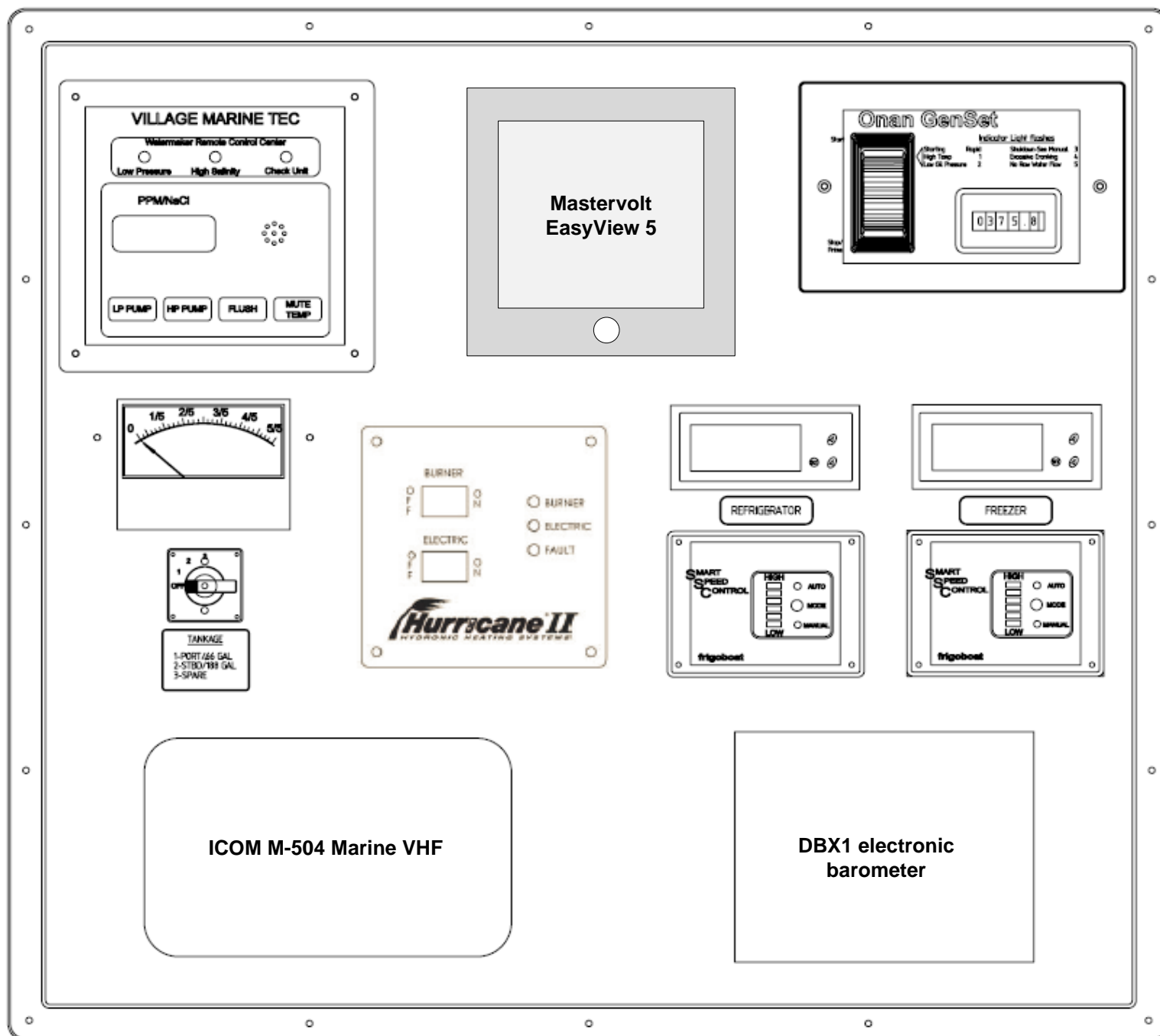
Main AC Distribution Panel and backplane





Instrument Panel

Wednesday, March 8, 2023



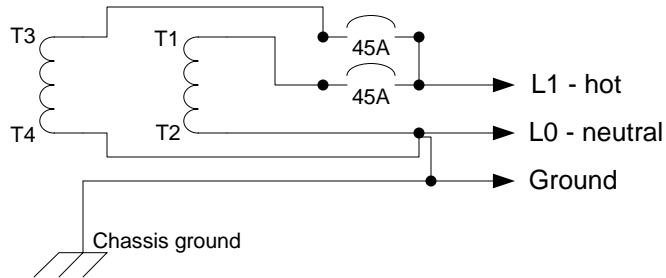
Wednesday, March 8, 2023

Brown indicates original
Beneteau cables/wire.
Black is new wire.



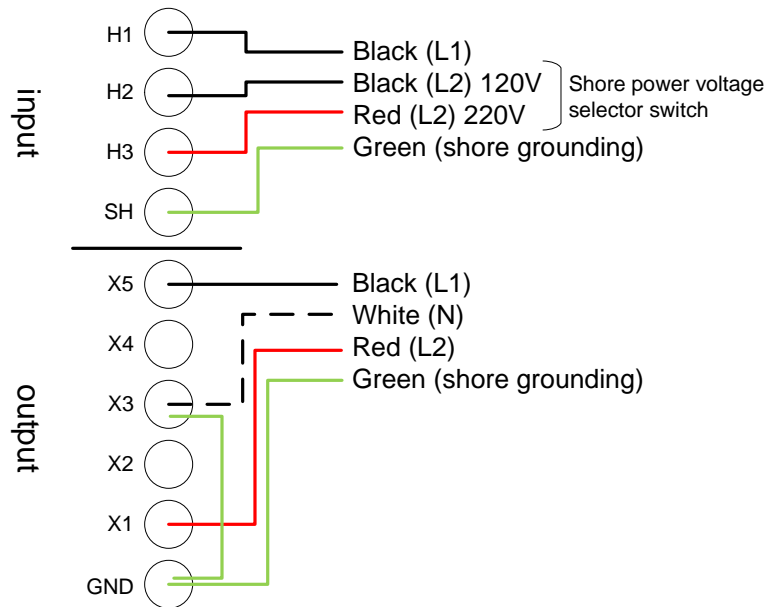
AC Details

Wednesday, March 8, 2023

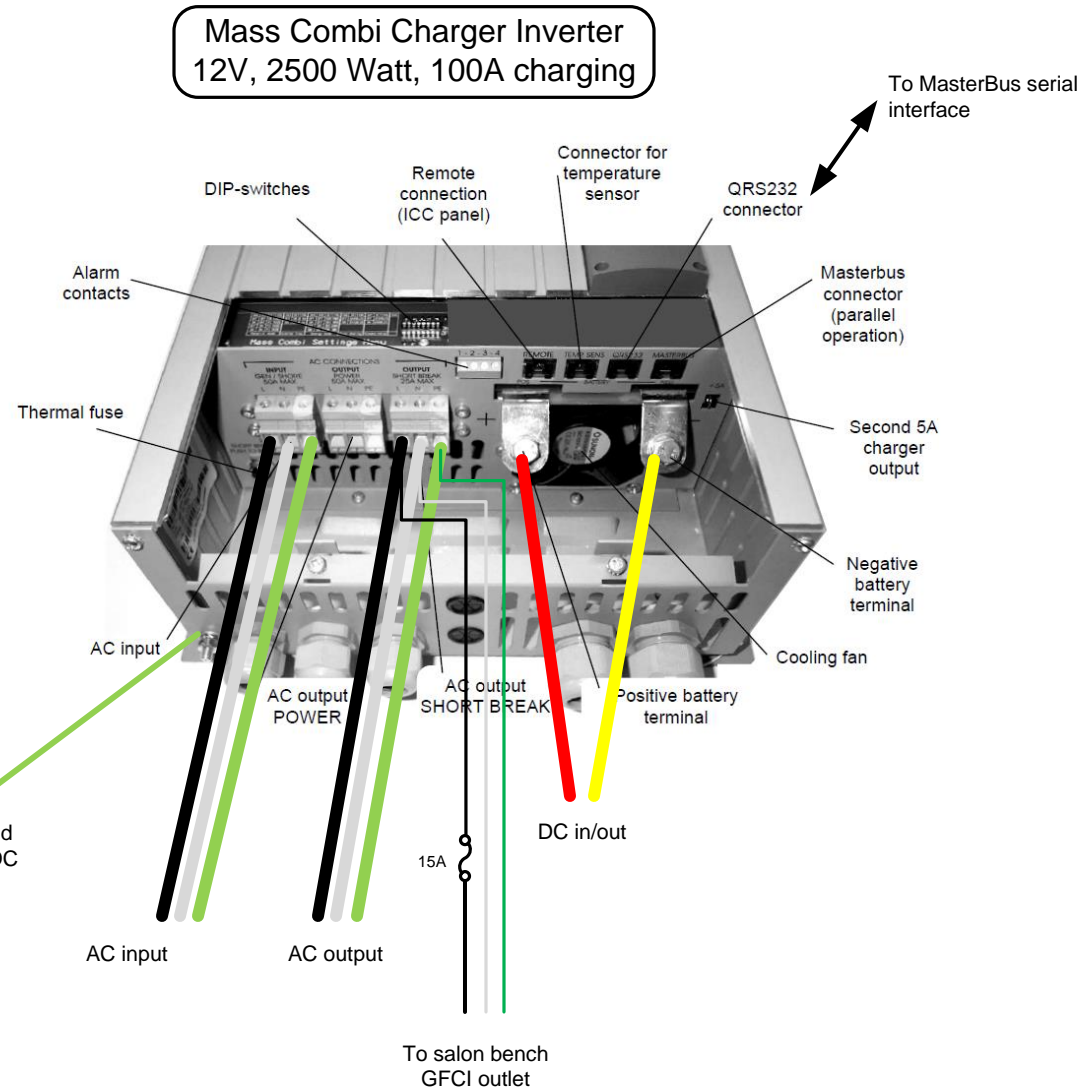


Onan Genset control box single phase, 120V, 60 HZ connection

Note: ground to external ground lug is disconnected so there is only one path to ground.



Shore Power Isolation Transformer 240V, 60 HZ primary input connections

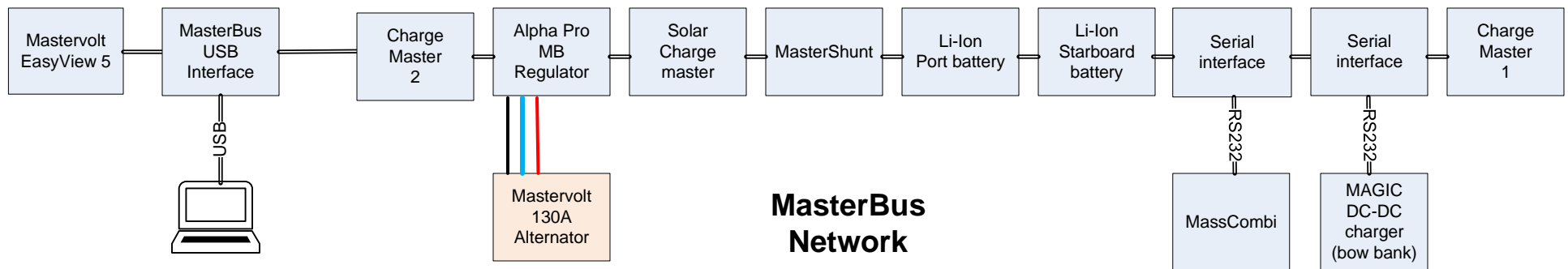


Mass Combi 12/2500 – 100 Inverter Charger

Wednesday, March 8, 2023

Dip Switch A												
parallel mode			frequency		energy mode			battery type			ground relay	
SW1	SW2	setting	SW3	setting	SW4	SW5	setting	SW6	SW7	setting	SW8	setting
OFF	OFF	single	OFF	60 hz	OFF	OFF	high pwr	OFF	OFF	standard	OFF	disabled
ON	OFF	master	ON	50 hz	ON	OFF	idle 40VA	ON	OFF	GEL/AGM	ON	enabled
OFF	ON	slave	CAUTION: SW3 ON & OFF are reversed in the manual & correctly labeled on the device		OFF	ON	idle 150 VA	OFF	ON	semitraction		
ON	ON	separate slave			ON	ON	econ, 208V	ON	ON	forced float		

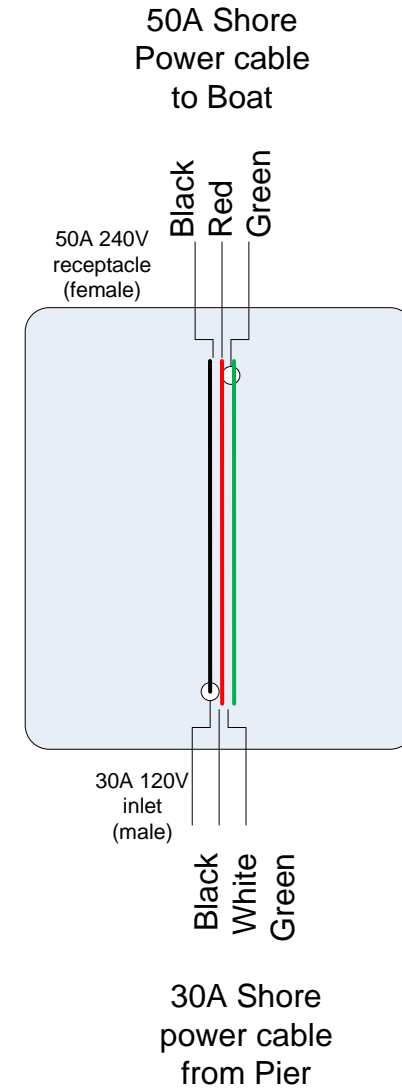
DIP Switch B													
power sharing				power support		gen/main support		power quality		combi/inv control		equalize	
SW1	SW2	SW3	setting	SW4	setting	SW5	setting	SW6	setting	SW7	setting	SW8	setting
OFF	OFF	OFF	25 A	OFF	disabled	OFF	disabled	OFF	disabled	OFF	disabled	equalize mode starts with on-off pulse	
ON	OFF	OFF	16 A	ON	enabled	ON	enabled	ON	enabled	ON	enabled		
OFF	ON	OFF	10 A										
ON	ON	OFF	6 A										
*	*	ON	off										

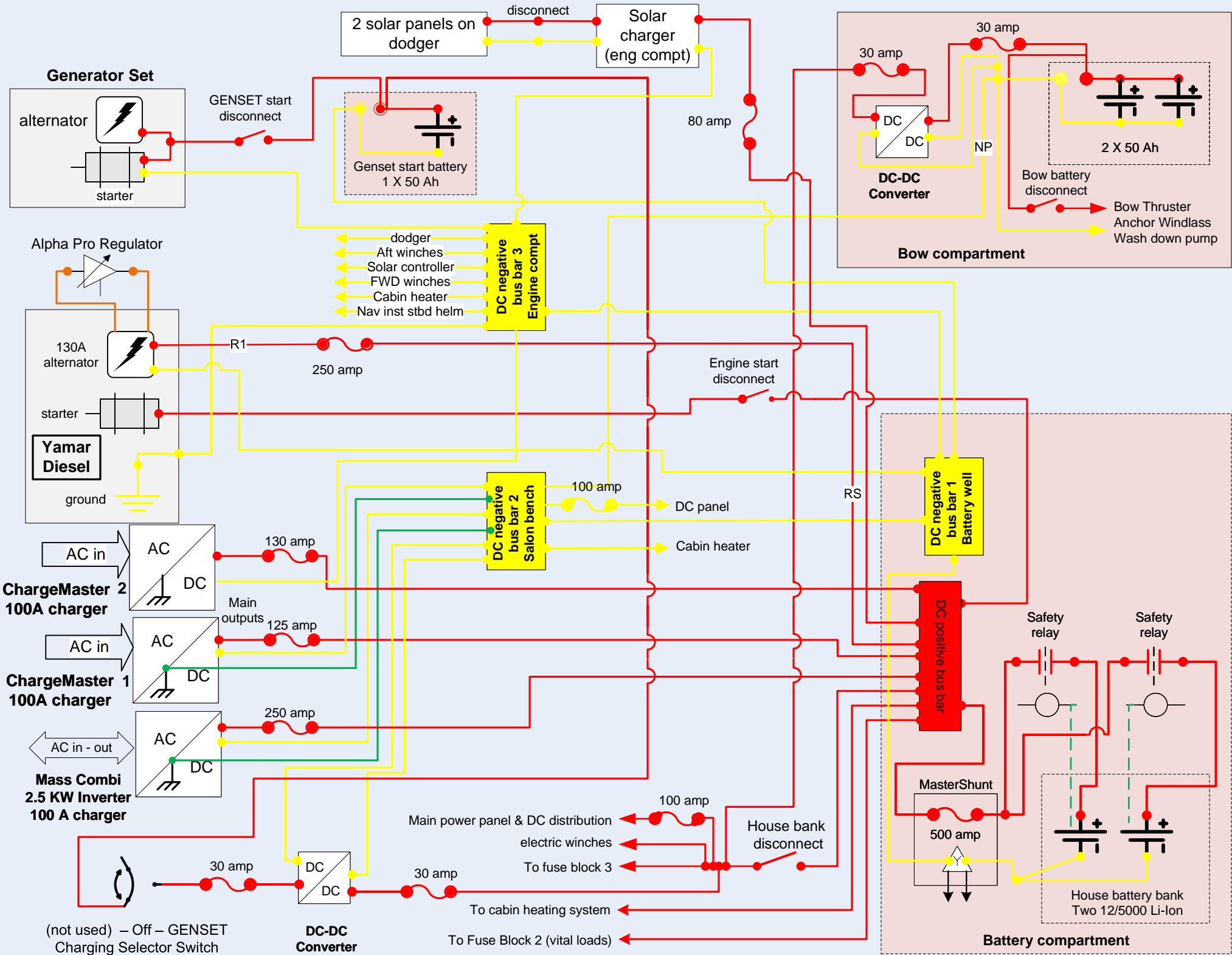


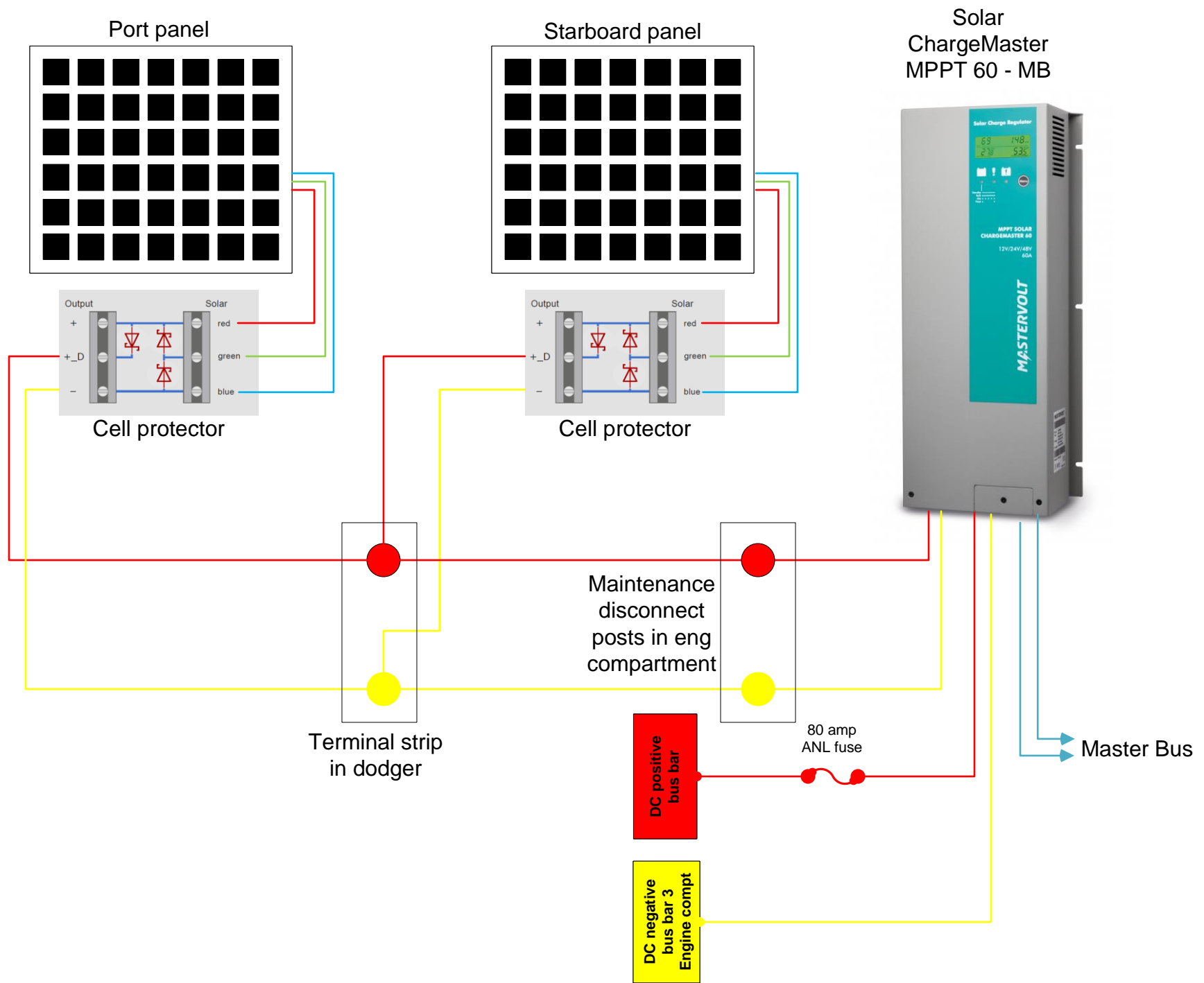
Type of Shore Power on pier	Pig tail adapter	Shore Power Cable (30A)	Special Equipment	Shore Power Cable (50A)	Boat
100A 3ph 240V shore power (female)	100A 3ph 240V male 50A 240 V female Red/Black hot green ground			male female 50A 240V 50 ft shore power cable	Boat selectable 120V or 220V shore power
50A 240V North American shore power (female)				male female 50A 240V 50 ft shore power cable	Boat 50A 240V (male) Select 220 V shore power
30A 240V European shore power (female)	30A 240V male European Red/Black hot green ground			male female 50A 240V 50 ft shore power cable	Boat 50A 240V (male) Select 220V shore power
30A 120V North American shore power (female)		male female 30A 120V 50 ft shore power cable	Adapter box 30A 120V male 50A 240 V female	male female 50A 240V 50 ft shore power cable	Boat 50A 240V (male) Select 120V shore power
20A 120V shore power (Canada) (female)	20A 120V male Black hot, White neutral green ground	male female 30A 120V 50 ft shore power cable	Adapter box 30A 120V male 50A 240 V female	male female 50A 240V 50 ft shore power cable	Boat 50A 240V (male) select 120V shore power
15A 120V shore power (household outlet) (female)	20A 120V male Marinco straight plug adapter	male female 30A 120V 50 ft shore power cable	Adapter box 30A 120V male 50A 240 V female	male female 50A 240V 50 ft shore power cable	Boat 50A 240V (male) select 120V shore power

Shore Power Connections

Wednesday, March 8, 2023





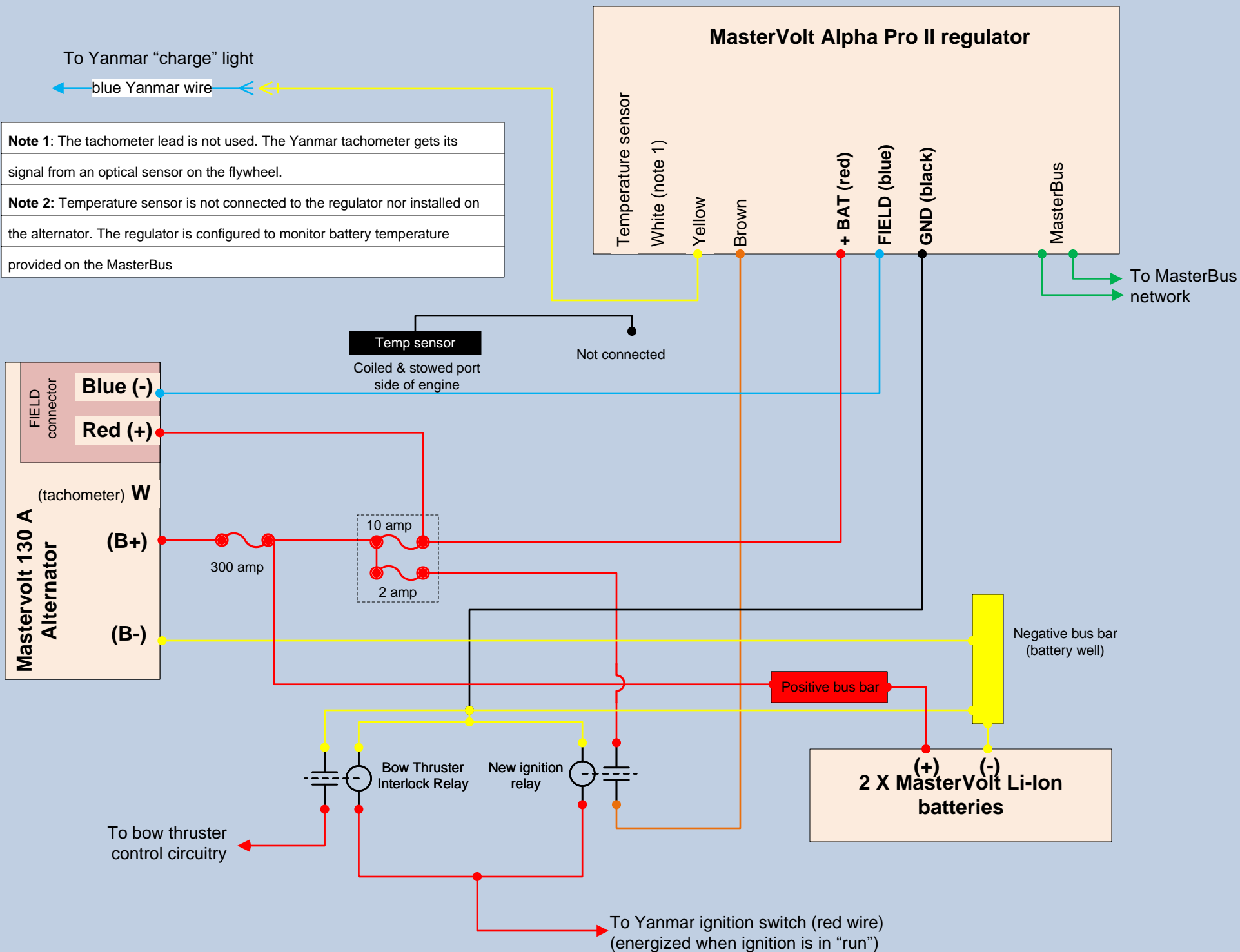


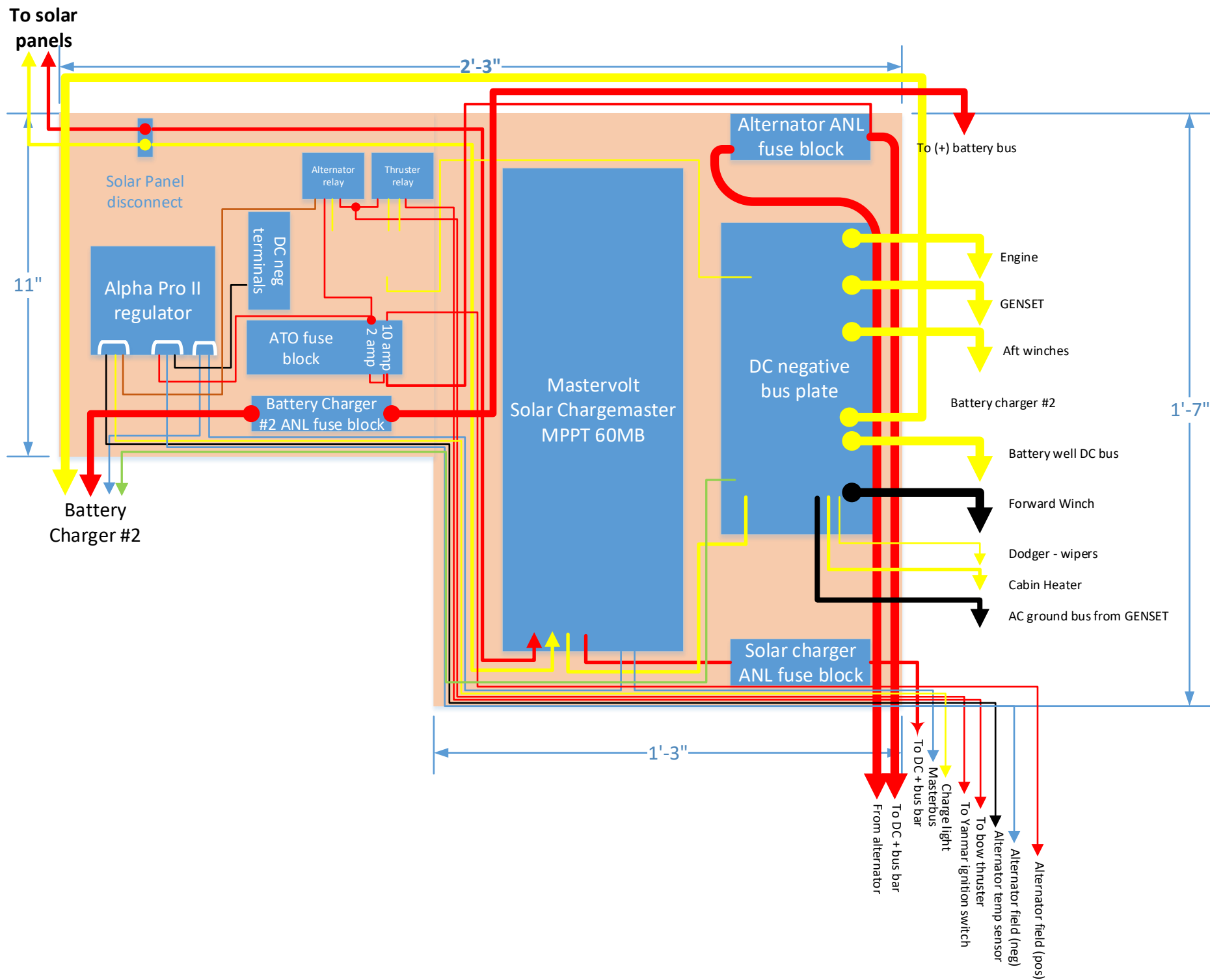
To Yanmar "charge" light

← blue Yanmar wire

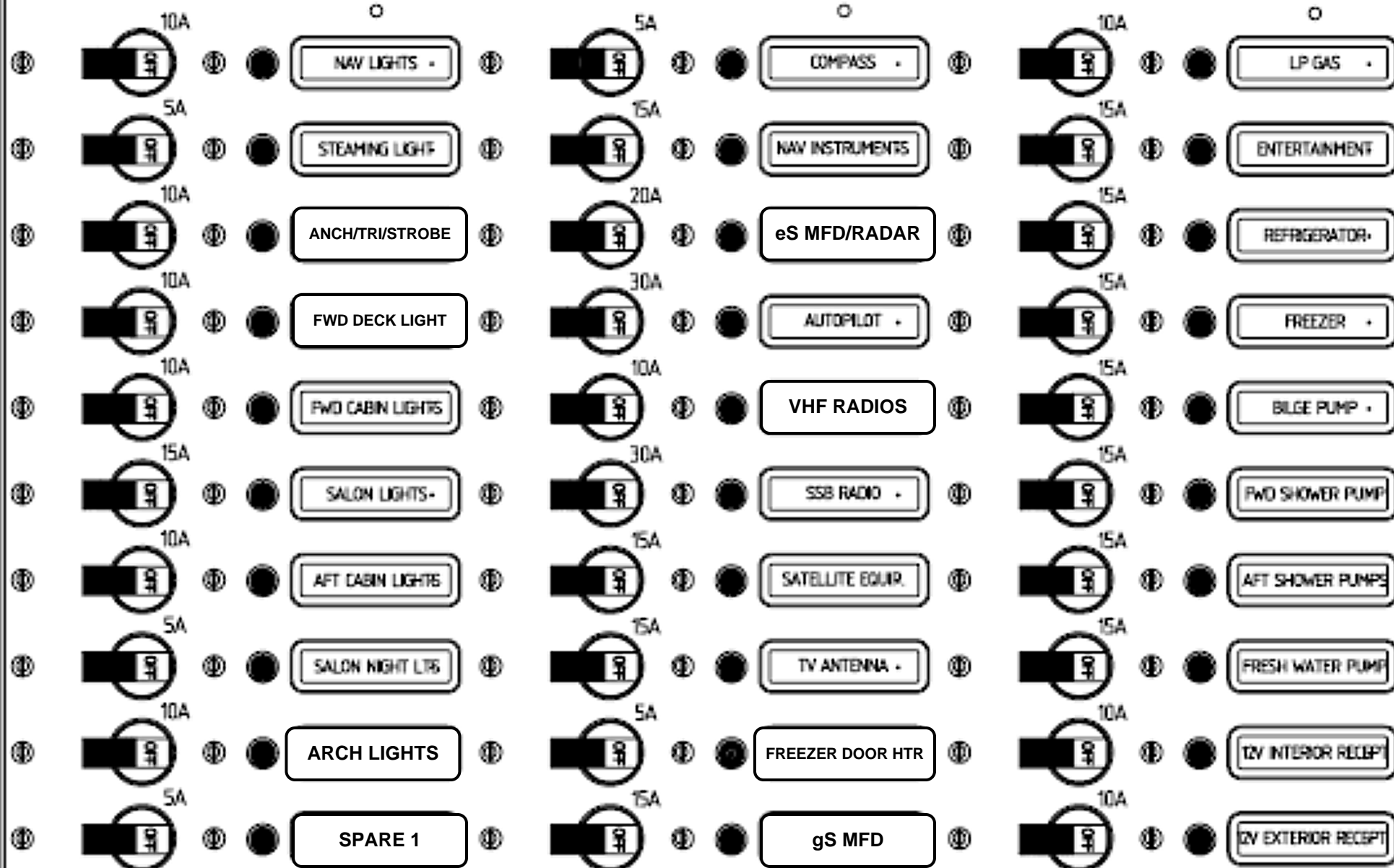
Note 1: The tachometer lead is not used. The Yanmar tachometer gets its signal from an optical sensor on the flywheel.

Note 2: Temperature sensor is not connected to the regulator nor installed on the alternator. The regulator is configured to monitor battery temperature provided on the MasterBus



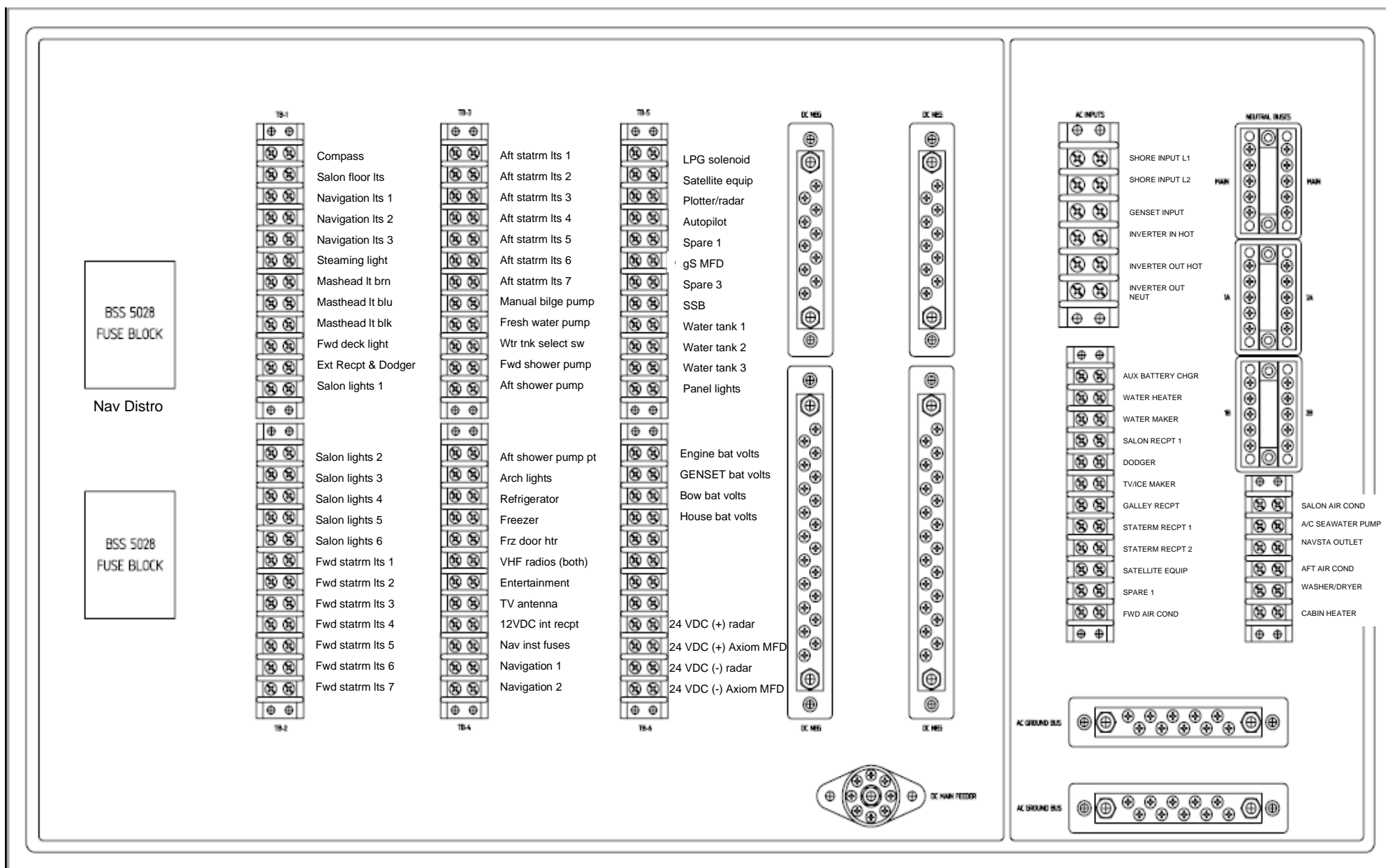


S/V Sunflower



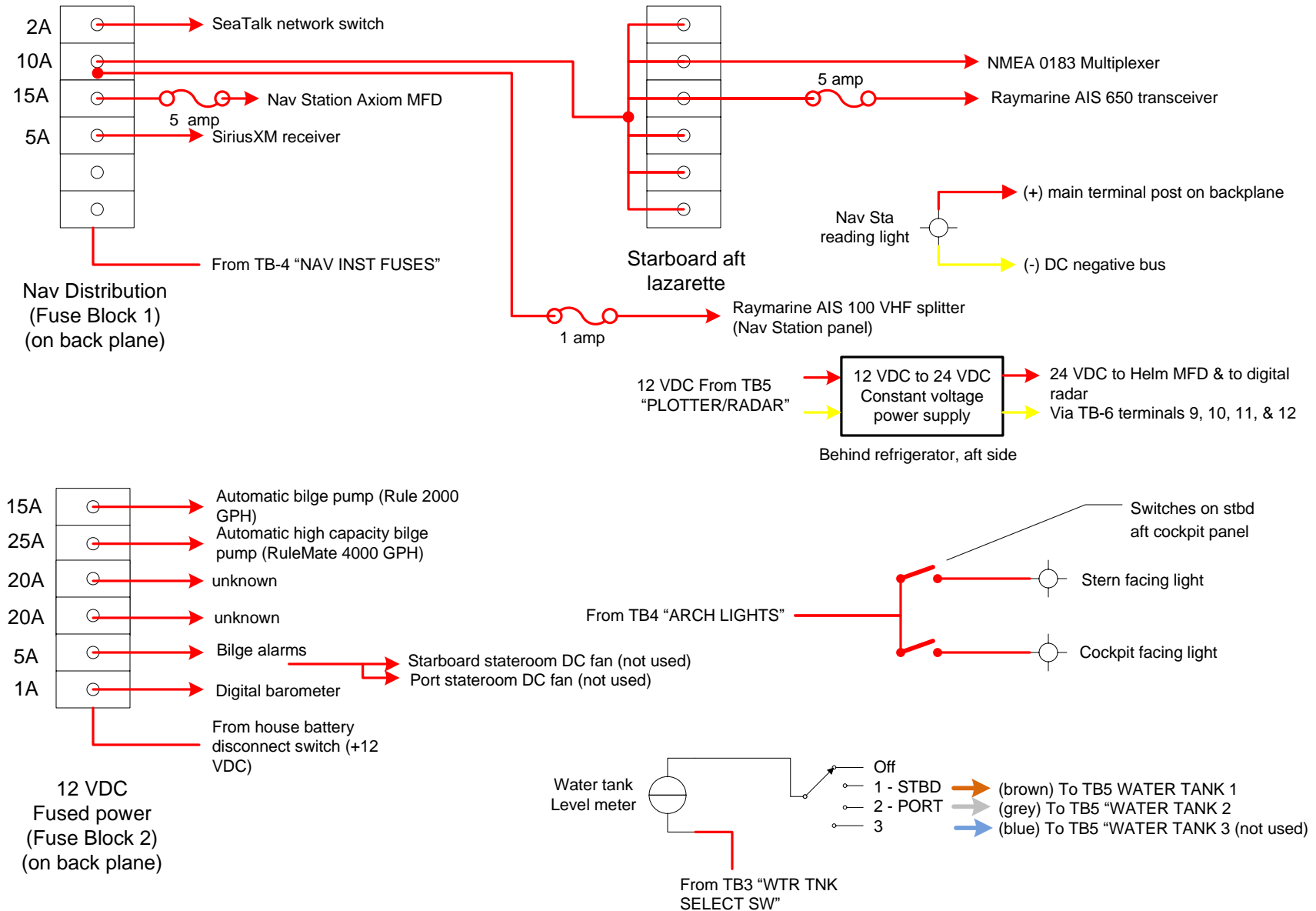
backplane

Wednesday, March 8, 2023



DC Distribution 1

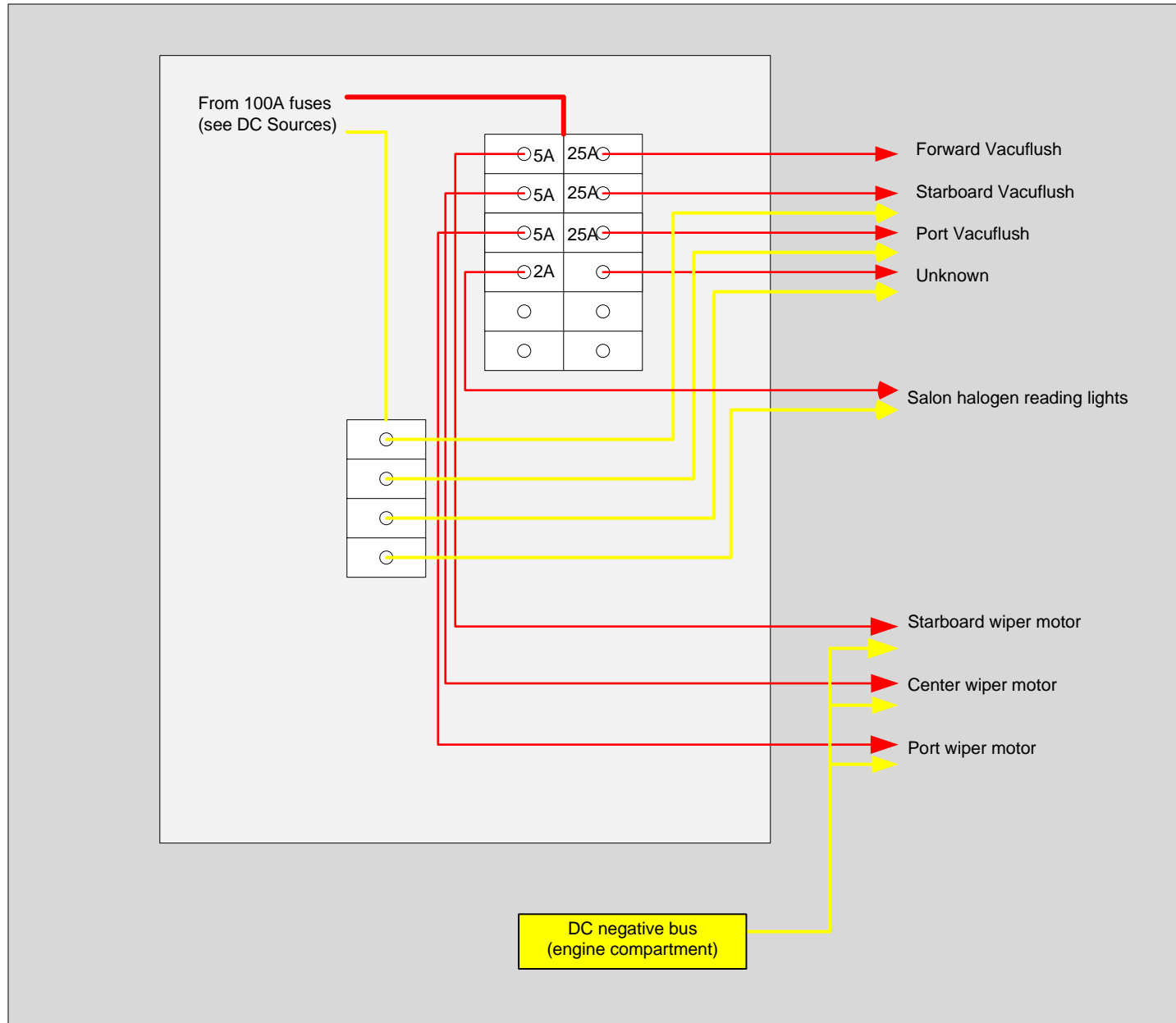
Wednesday, March 8, 2023



DC Distribution 2

Wednesday, March 8, 2023

DC fuse block and connector block in port salon bench locker



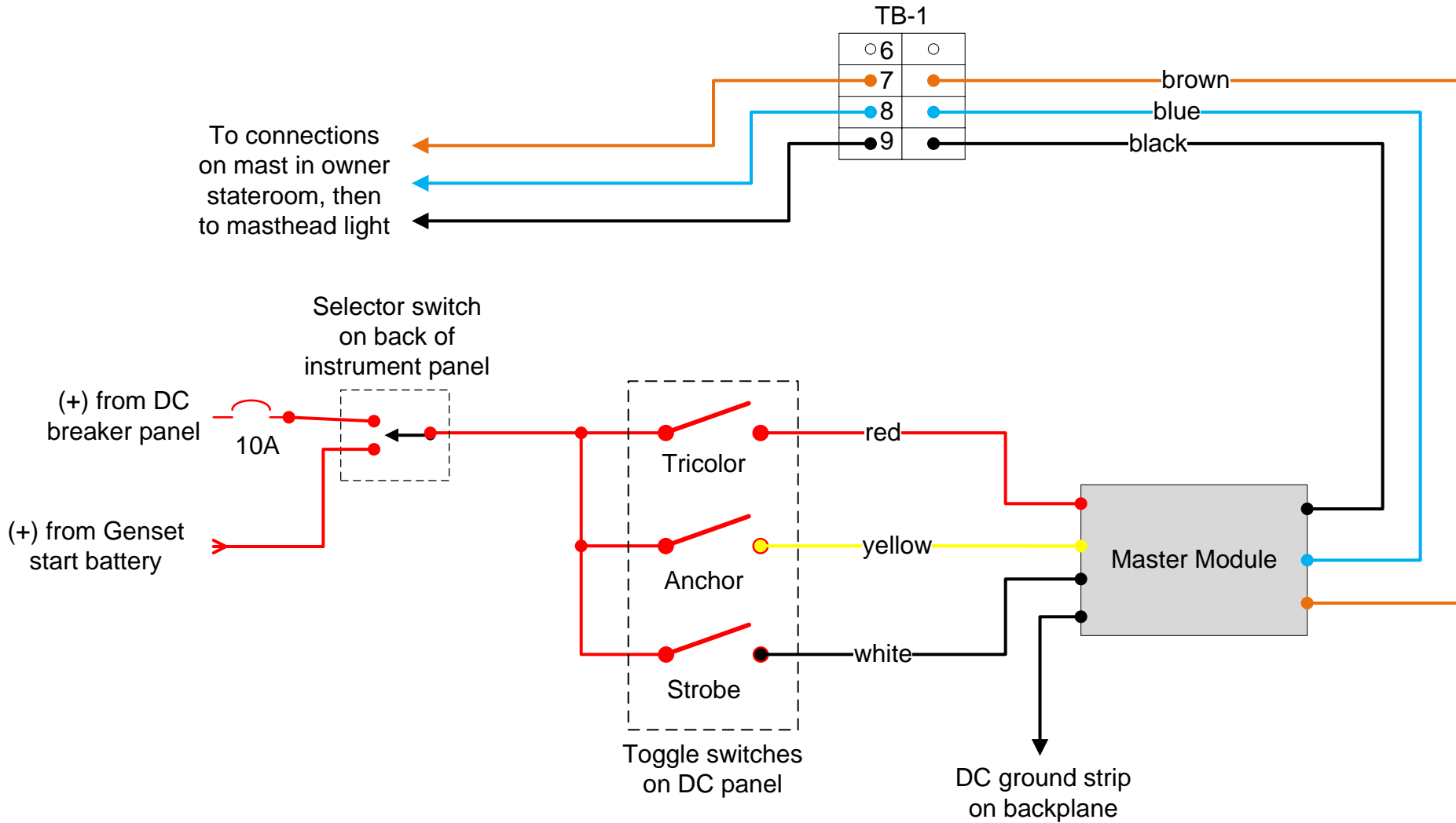
Wednesday, March 8, 2023

Wednesday, March 8, 2023



Masthead light (Tricolor, Anchor, Strobe)

(provides alternate power supply for masthead light)

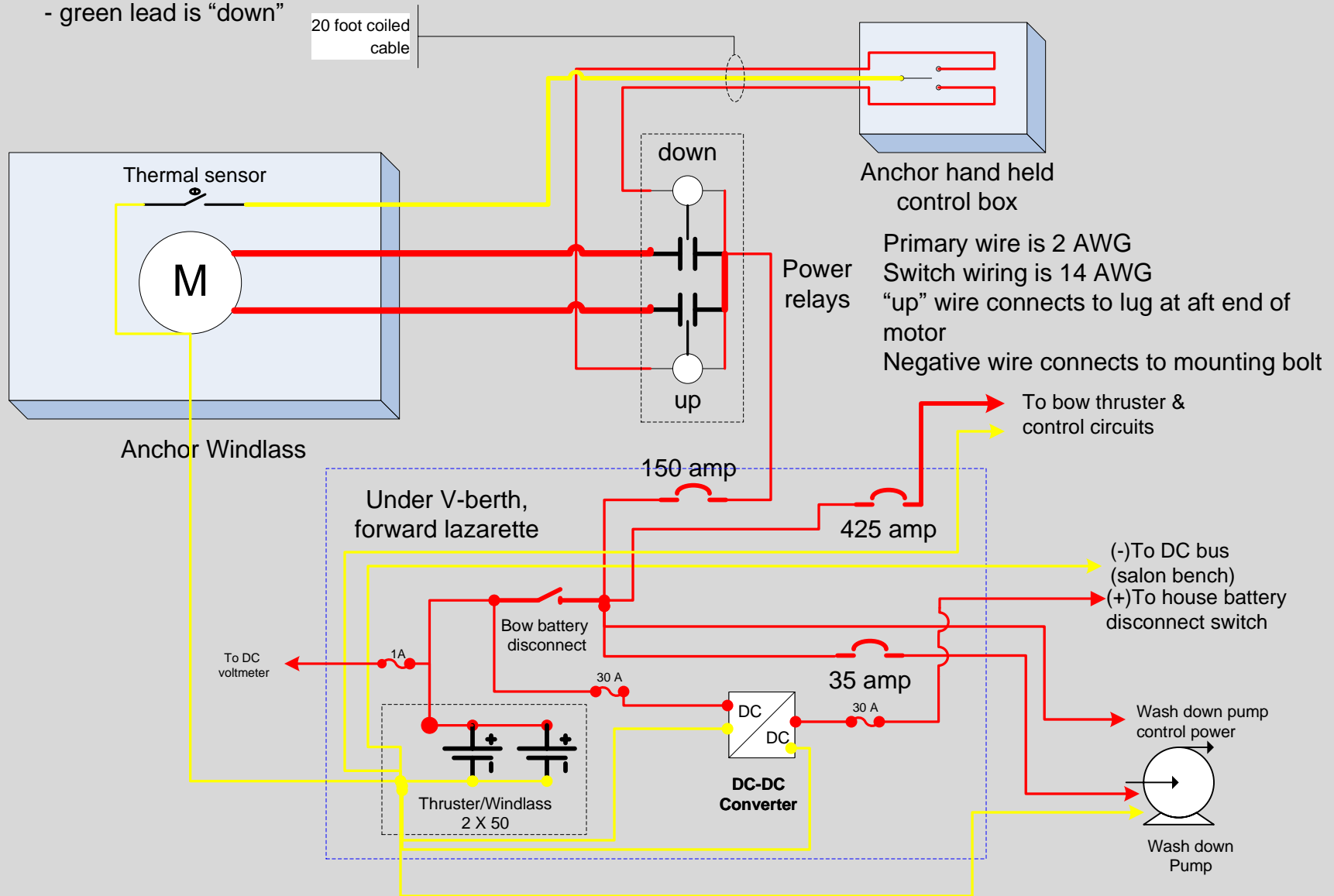


Forward Lazarette DC

Wednesday, March 8, 2023

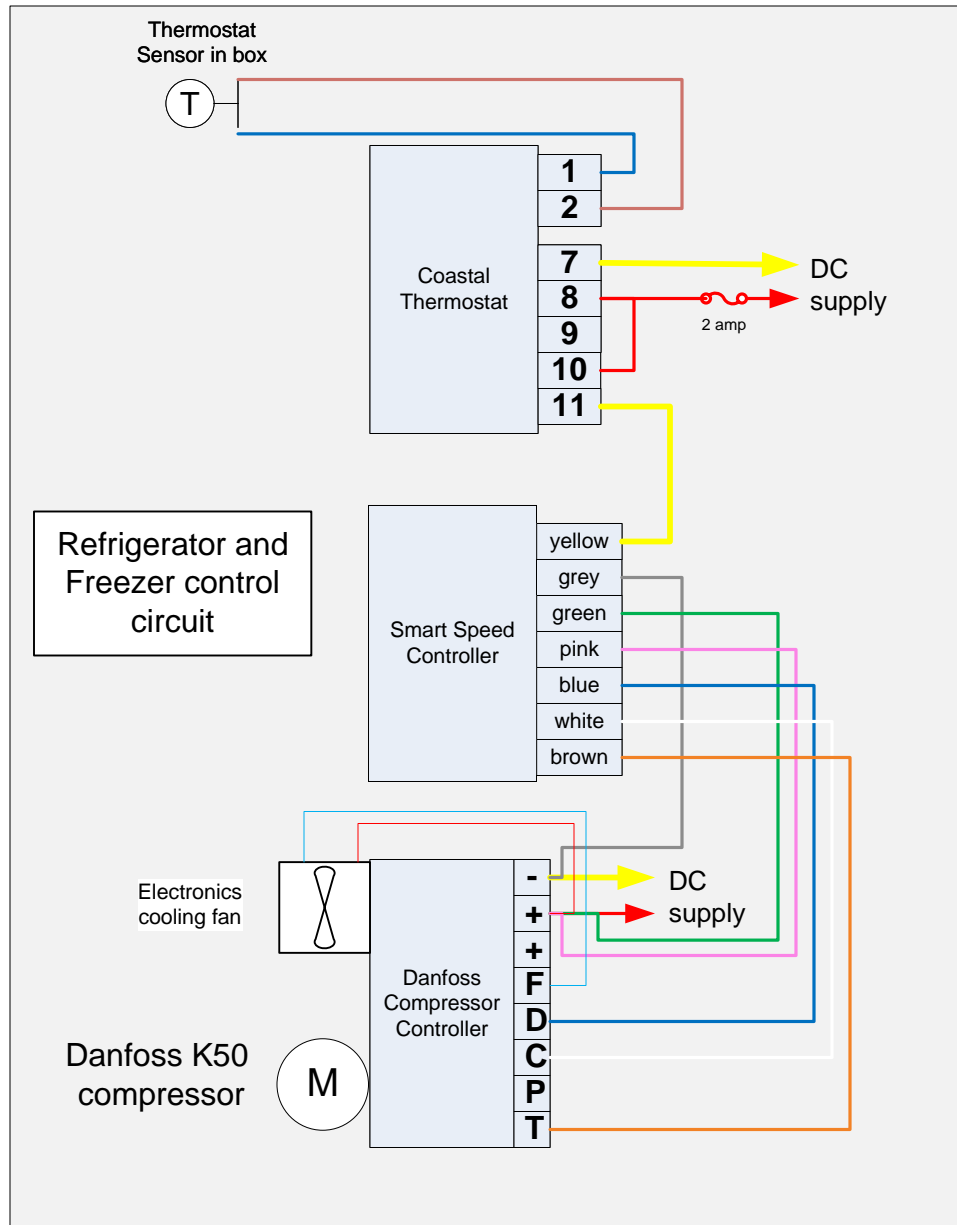
Anchor control box cable:

- black lead is common (to yellow negative lead)
- white lead is "up"
- green lead is "down"

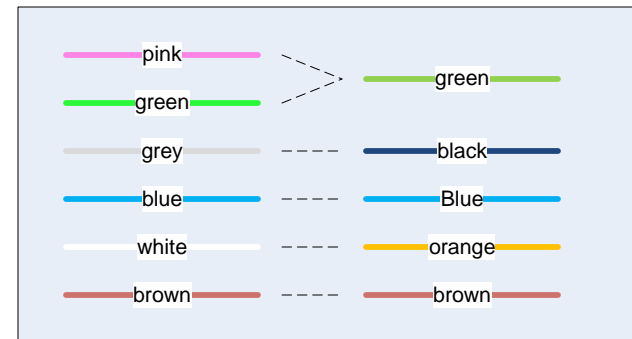


Refrigerator and Freezer

Wednesday, March 8, 2023



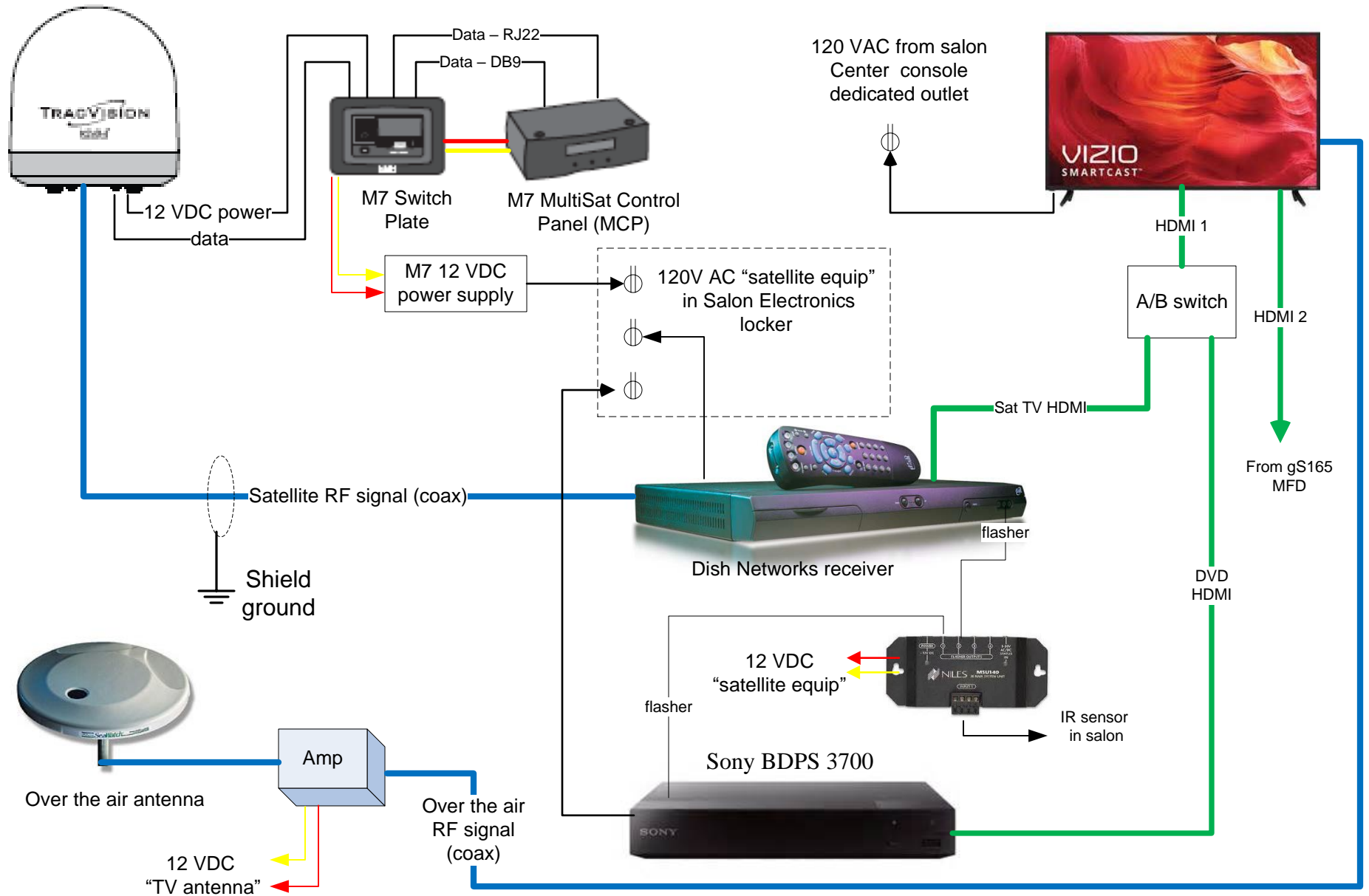
Cable from SSC



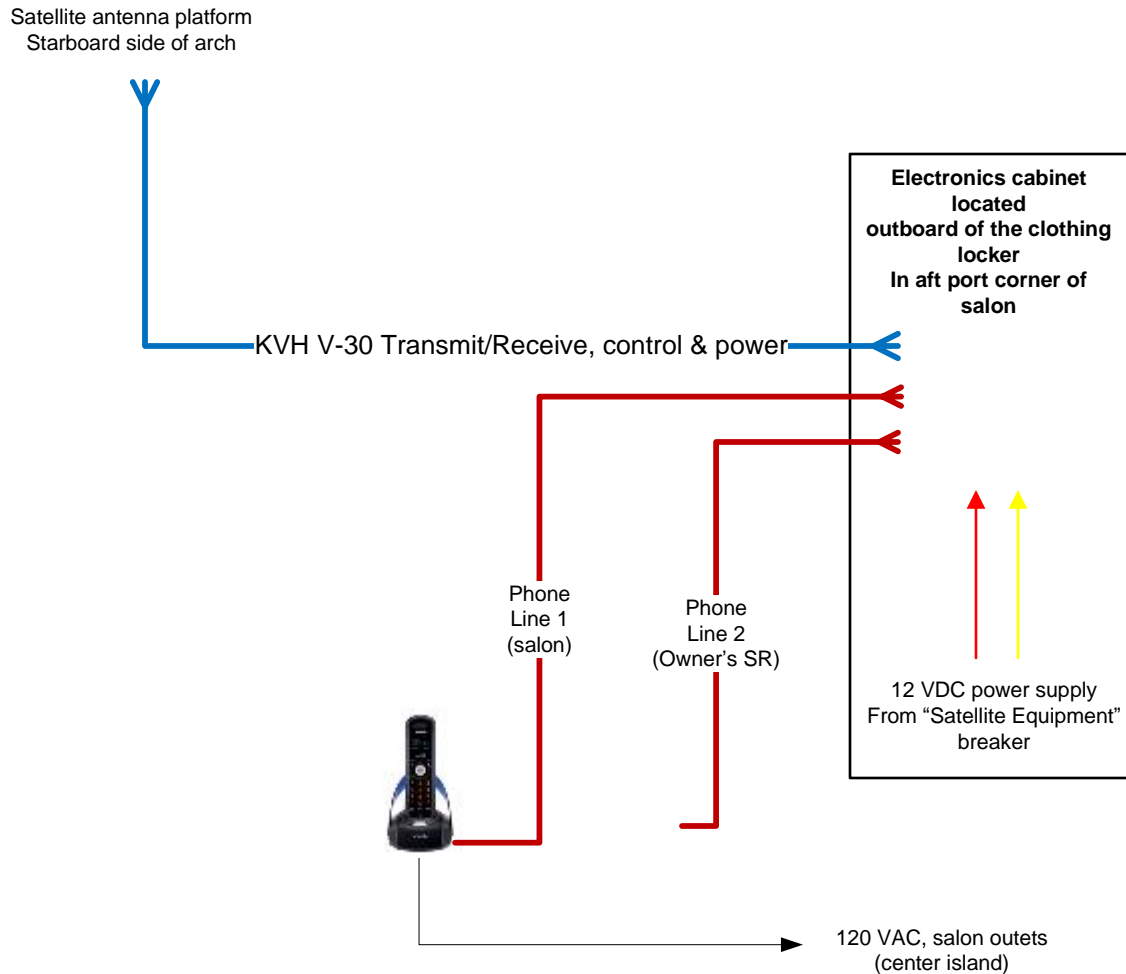
Cable to compressor

KVH M7 Satellite TV

Wednesday, March 8, 2023



Satellite data (internet & VoIP)

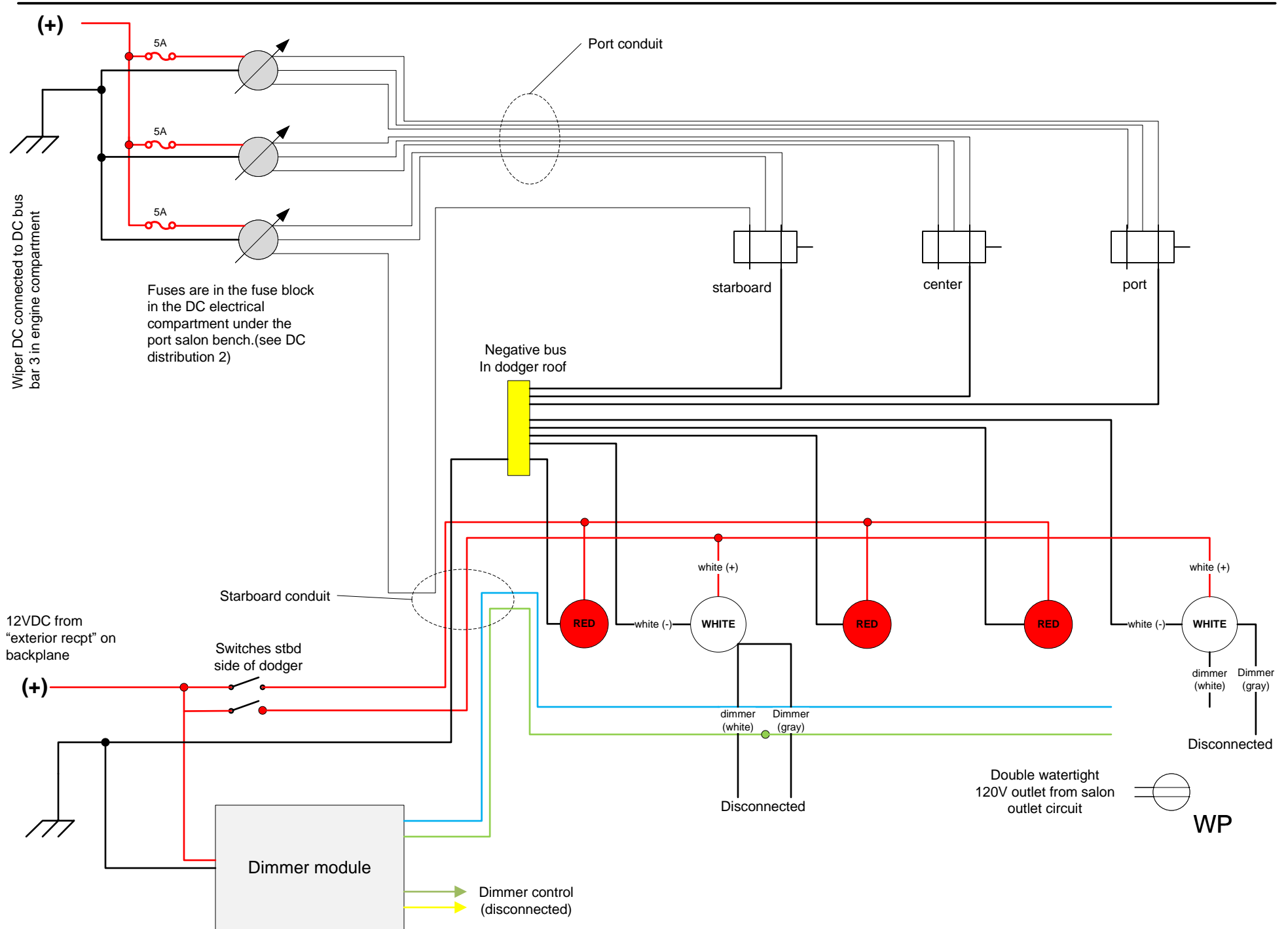


Sunflower is outfitted for the KVH TracPhone V30 system. The system is not currently installed.

Antenna: the round plate on the port side of the arch is drilled for the V30's antenna and the proper cable is in place to connect the antenna.

Hub: The hub which also serves as a wifi router is designed to mount at the top of the electronic equipment in the electronics cabinet in the salon. The wires are in place to connect power to the hub, a phone line, and the cable to the antenna.

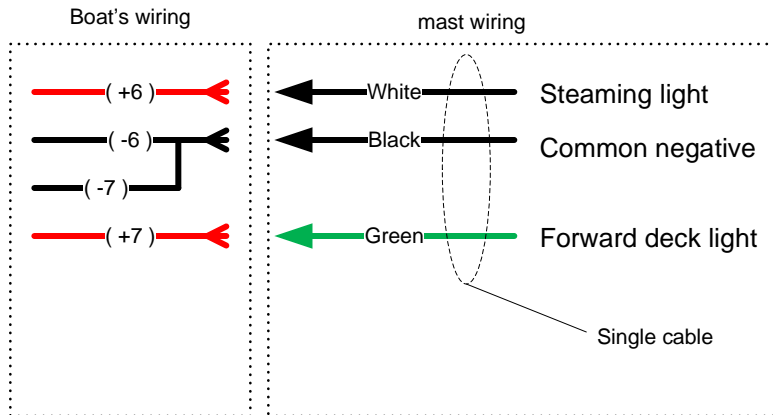
Dodger wiring



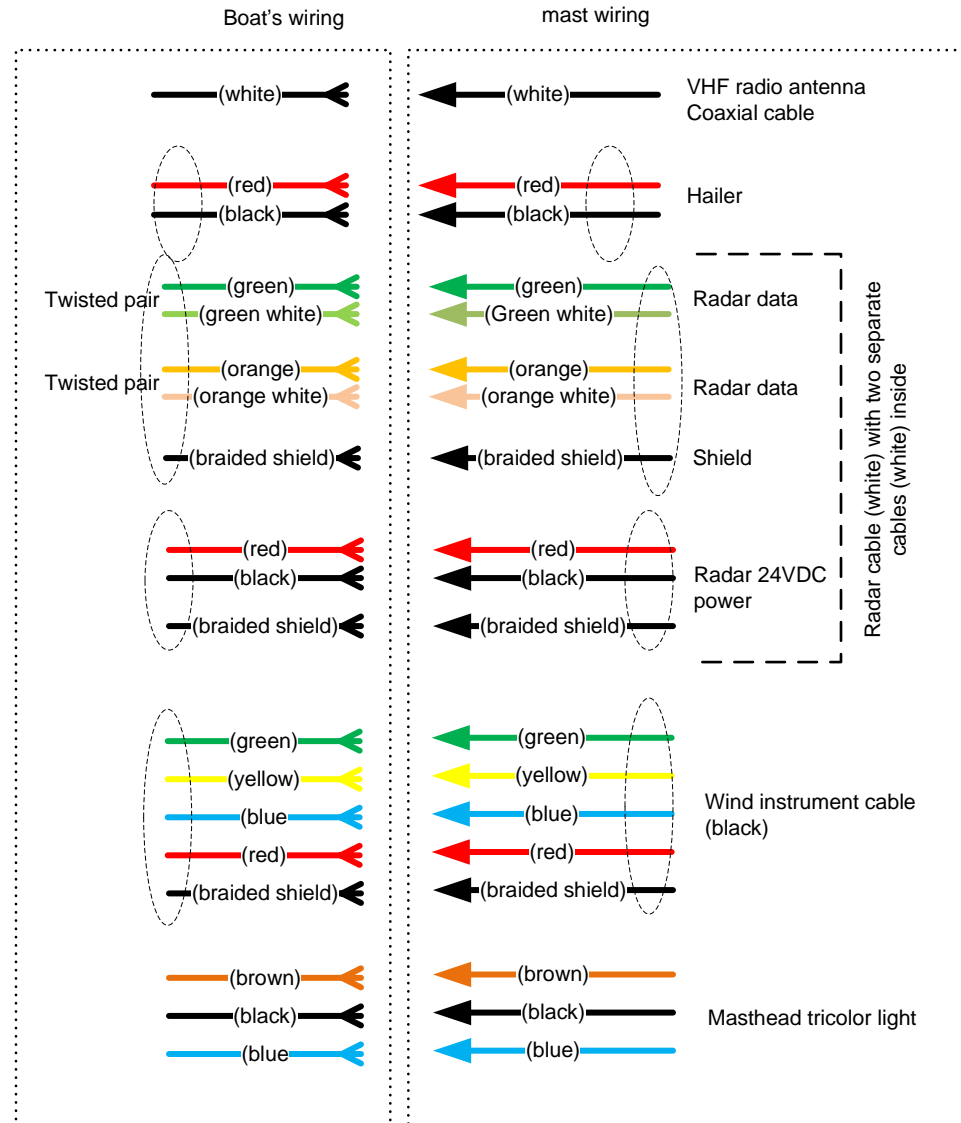
Mast Connections

Wednesday, March 8, 2023

Connections in mast well



Connections in stateroom bilge pocket



J1 Requires: DEUTSCH DTM06-12SB
 1 WEDGELOCK WM-12S
 12 PINS 0462-201-20141

J6, J9 Requires: YAZAKI
 1 HOUSING 7123-7484-40
 1 CLIP 7157-7817-80
 8 FEMALE PINS 7116-1472

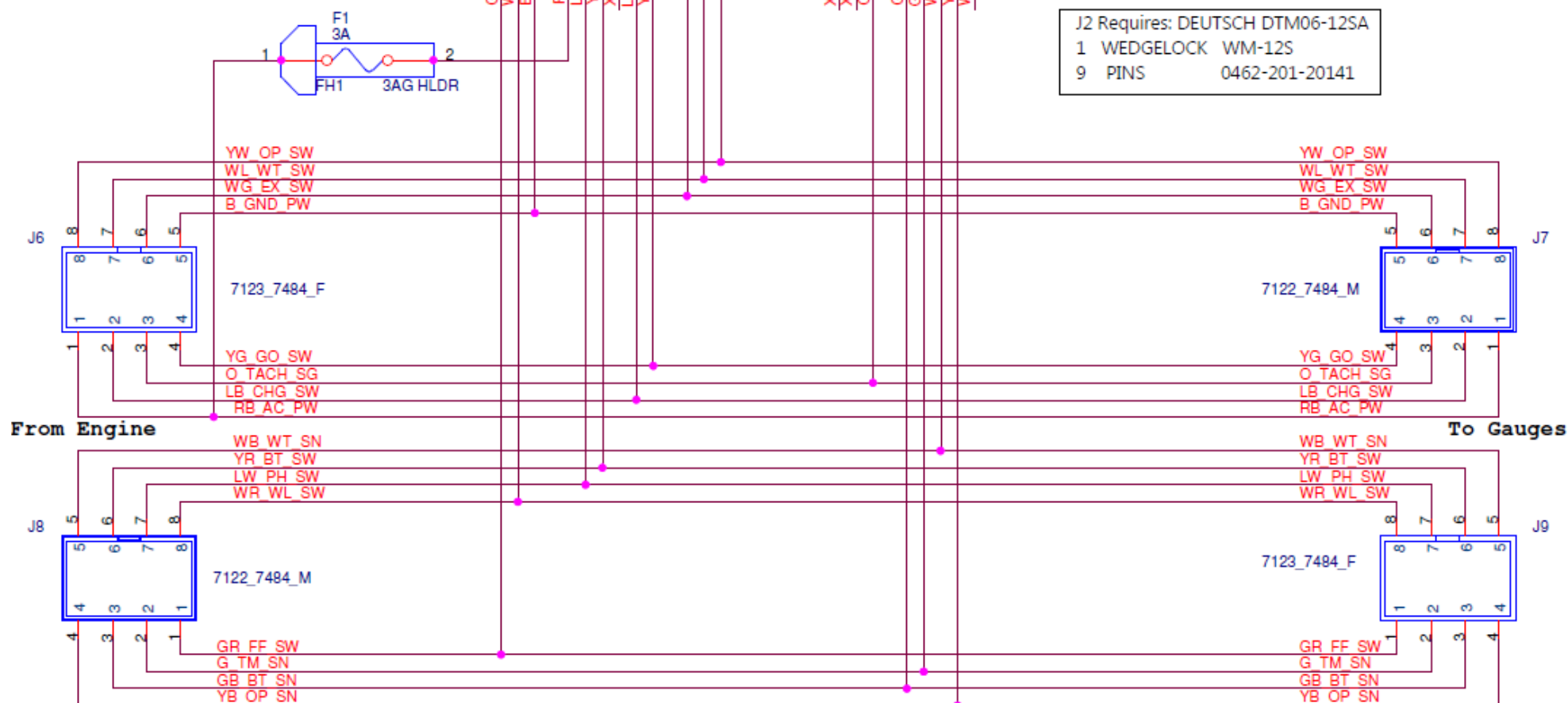
To EMS

DTM06_12SA

J3
 MDND02A-M020

**NOTE: ALL CONNECTORS
 SHOWN FRONT VIEW**

J2 Requires: DEUTSCH DTM06-12SA
 1 WEDGELOCK WM-12S
 9 PINS 0462-201-20141



J7, J8 Requires: YAZAKI
 1 HOUSING 7122-7484-40
 1 CLIP 7157-7817-80
 8 MALE PINS 7114-1472

<Core Design>

Title
 EMS : YANMAR C/D T CABLE

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Rev
 1.0.4

Date: Tuesday, November 13, 2007 Sheet 1 of 2