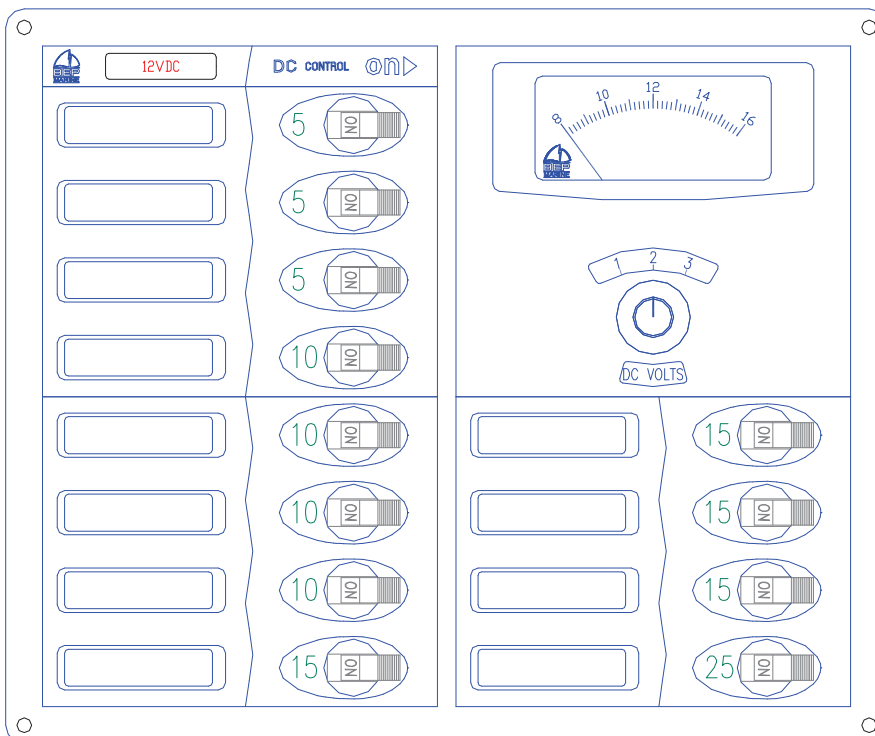




## DC CIRCUIT BREAKER PANELS

[WITH ANALOGUE METERS]

### INSTALLATION & OPERATING INSTRUCTIONS



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THANK YOU FOR PURCHASING A BEP MARINE AC CONTROL PANEL

BEP Marine uses the highest quality materials in its range of Control Panels, from the marine grade aluminium base plates to the Airpax magnetic hydraulic circuit breakers.

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# 1 CIRCUIT BREAKERS

It is very important to note that the primary function of the circuit breaker is to prevent the cabling from overloading and therefore catching fire. In the event of an electrical short, fault or overload, the circuit breaker is designed to protect the boat's electrical system not necessarily the appliance.

Different appliances require different circuit breakers with the manufacturer of the appliance certifying the load, and therefore the size of the circuit breaker required.

All BEP panels are supplied complete with a standard set of circuit breaker sizes and labels. Owners or electrical installers therefore need to choose the most appropriate panel for each application.

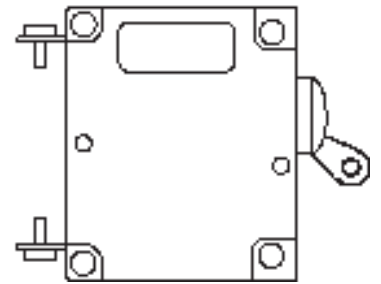
Should you require a custom made current rating or label layout these are available for an additional charge. Contact your BEP Marine representative for more details.

Note: breakers must be sized in accordance with cable size.

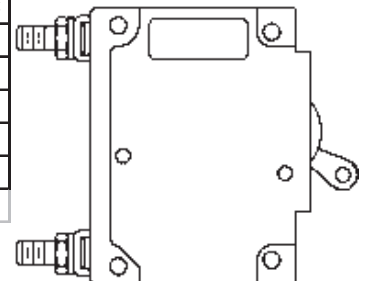
BEP Marine uses Airpax IEG Magnetic circuit breakers.

SINGLE TOGGLE 1-2 & 3 POLE SMALL FRAME CB'S		
Single pole	Double pole	Triple pole
CBS-2.5A-SP 2.5Amps	CBS-2.5A-DP 2.5Amps	CBS-30A-TP 30Amps
CBS-5A-SP 5Amps	CBS-5A-DP 5Amps	CBS-50A-TP 50Amps
CBS-10A-SP 10Amps	CBS-10A-DP 10Amps	D/pole Trip Coil
CBS-15A-SP 15Amps	CBS-15A-DP 15Amps	CBS-15A-DP-TC230 230VAC
CBS-20A-SP 20Amps	CBS-20A-DP 20Amps	CBS-20A-DP-TC230 230VAC
CBS-25A-SP 25Amps	CBS-25A-DP 25Amps	CBS-20A-DP-TC110 110VAC
CBS-30A-SP 30Amps	CBS-30A-DP 30Amps	CBS-30A-DP-TC230 230VAC
CBS-40A-SP 40Amps	CBS-40A-DP 40Amps	CBS-30A-DP-TC110 110VAC
CBS-50A-SP-IG 50Amps	CBS-50A-DP 50Amps	CBS-50A-DP-TC230 230VAC
		CBS-50A-DP-TC110 110VAC
SINGLE TOGGLE 1-2 & 3 POLE LARGE FRAME CB'S		
Single pole	Double pole	Triple pole
CBL-50A-SP 50Amps	CBL-50A-DP 50Amps	CBL-50A-TP 50Amps
CBL-60A-SP 60Amps	CBL-60A-DP 60Amps	CBL-80A-TP 80Amps
CBL-75A-SP 75Amps	CBL-80A-DP 80Amps	CBL-100A-TP 100Amps
CBL-100A-SP100Amps	CBL-100A-DP100Amps	

Small Frame



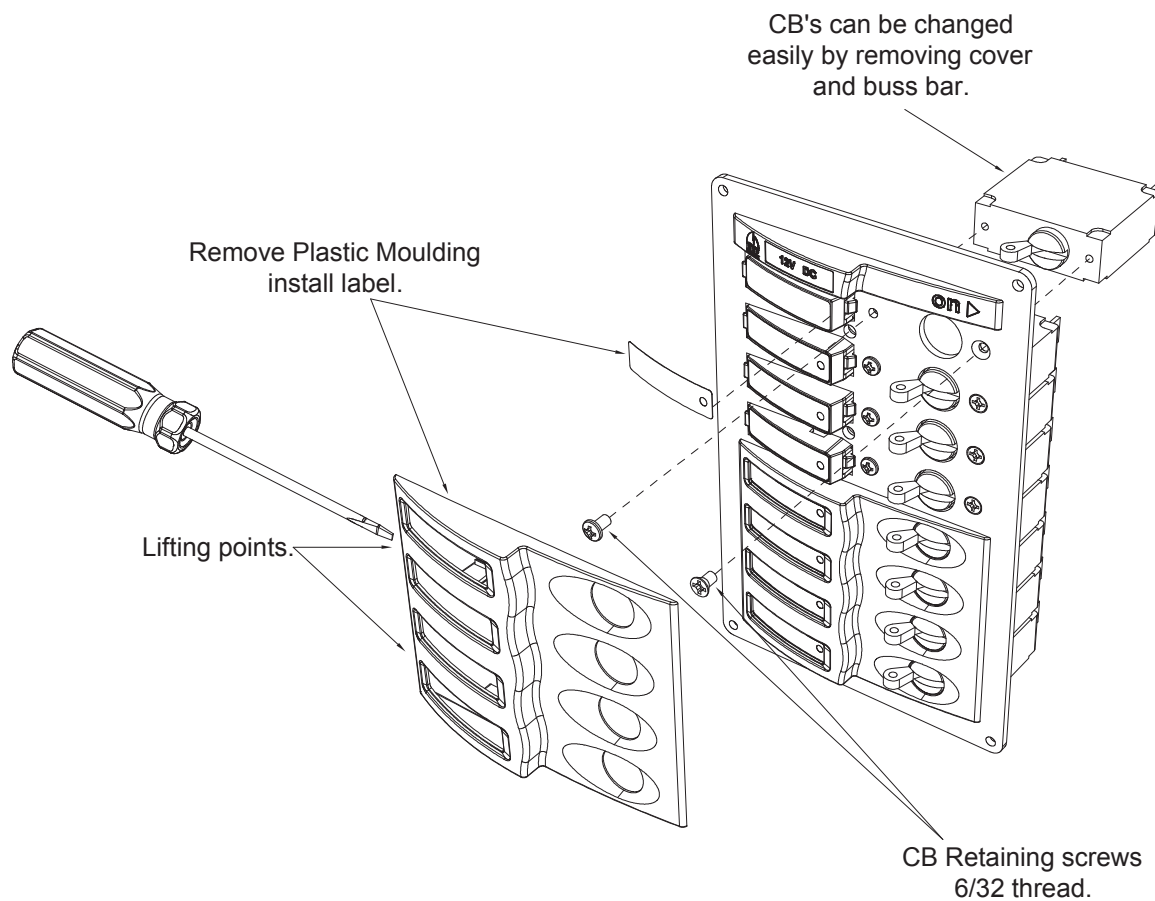
Large Frame



## 2 LABELLING AND REPLACING CIRCUIT BREAKERS

All BEP panels come with a comprehensive set of self-adhesive labels.

To refit or replace a label, unclip the front panel as shown and replace the appropriate label.

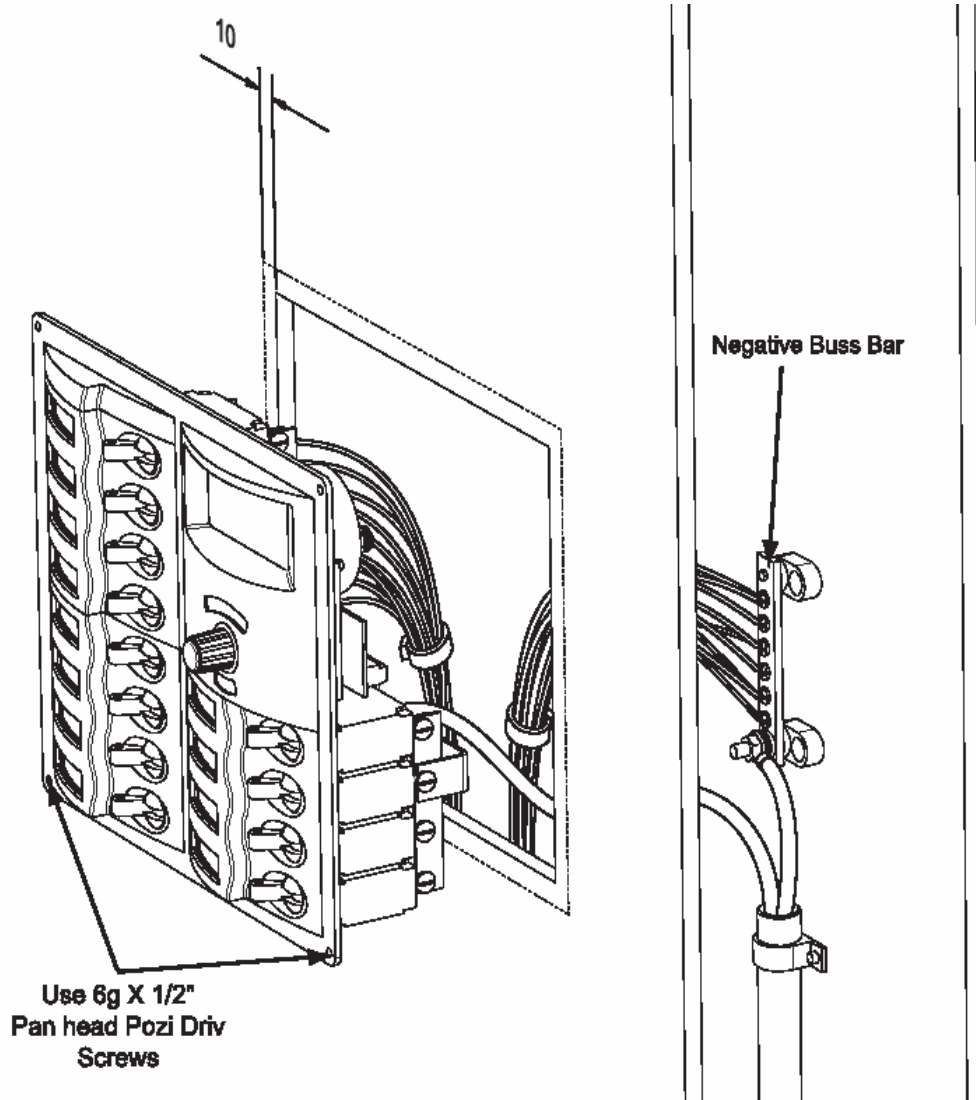


To replace a circuit breaker the front cover of the BEP panel must be removed. This is done by unclipping the front panel and unscrewing the two screws that hold the circuit breaker.

### 3 INSTALLATION (PANEL MOUNTING)

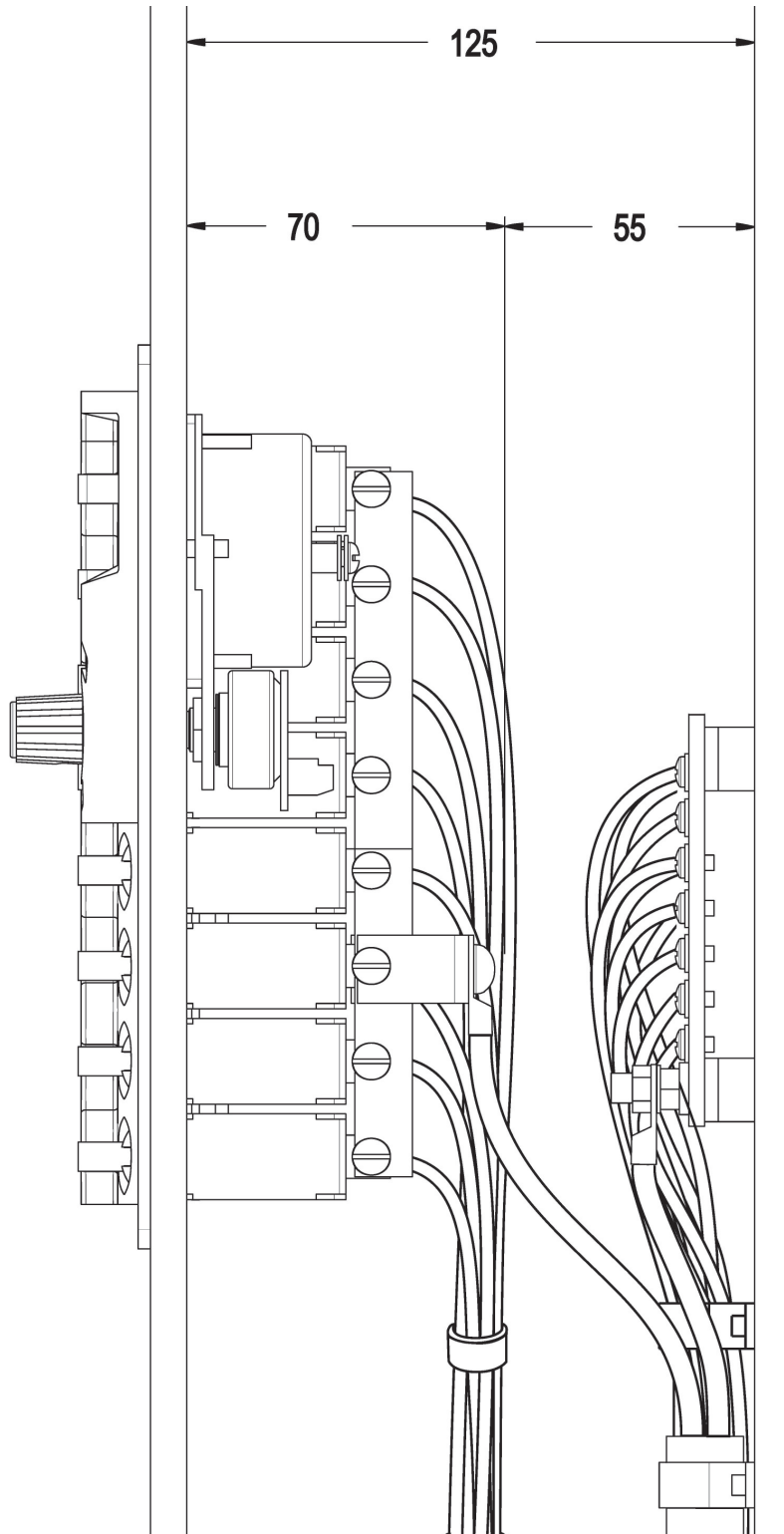
All BEP panels require a 10mm inset on all external edges.

Panels are also supplied with negative bus bars to allow the tidy connection of negative cables at the back of the panel.



Be sure to allow plenty of space behind the panel for wiring connections and looms. A minimum of 55mm of extra space is strongly recommended.

For example: If the distance to the back of the panel brackets is 70mm be sure to allow at least 125mm ( $70 + 55 = 125$ ).



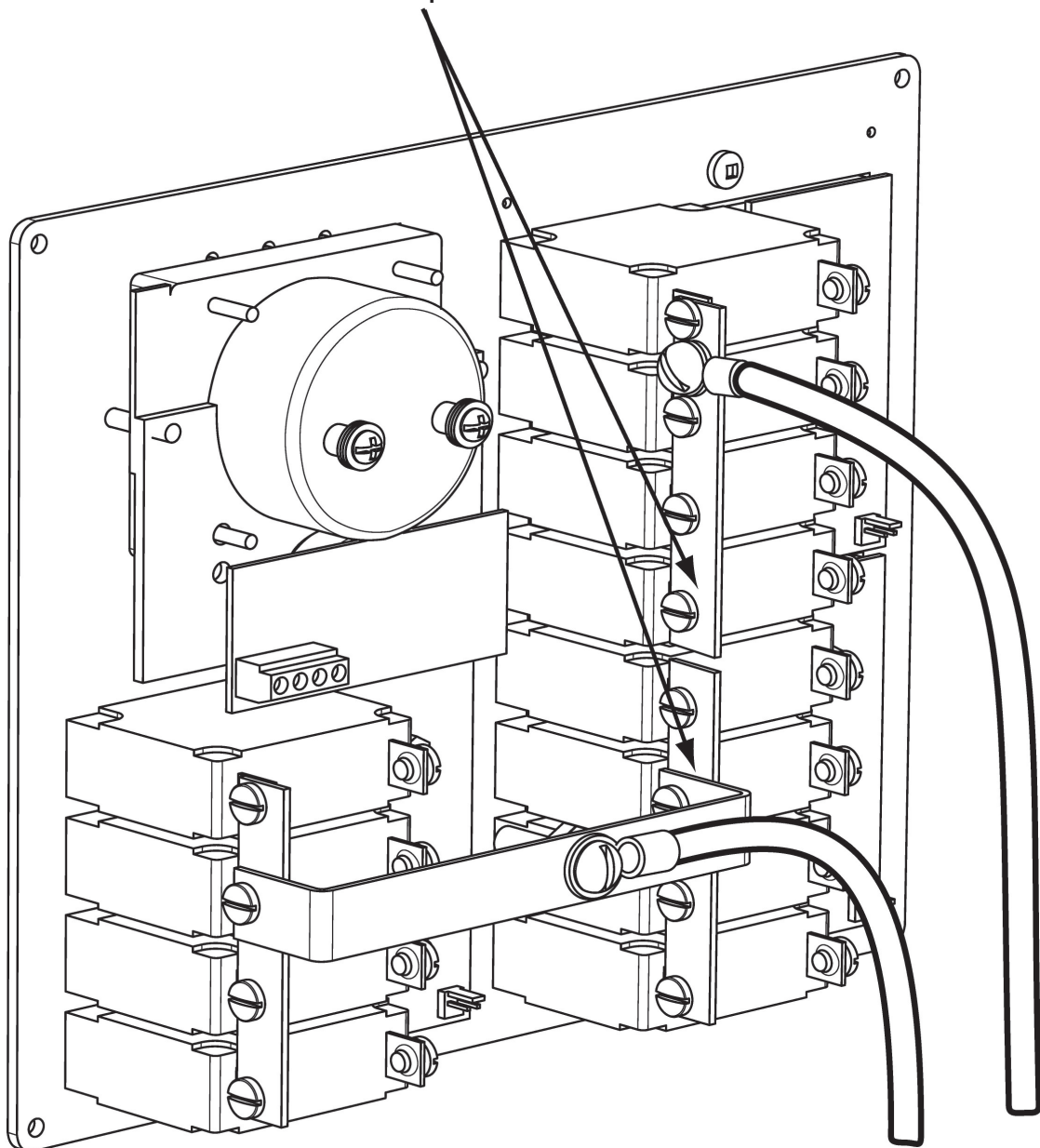


## 4 DC BUS BARS

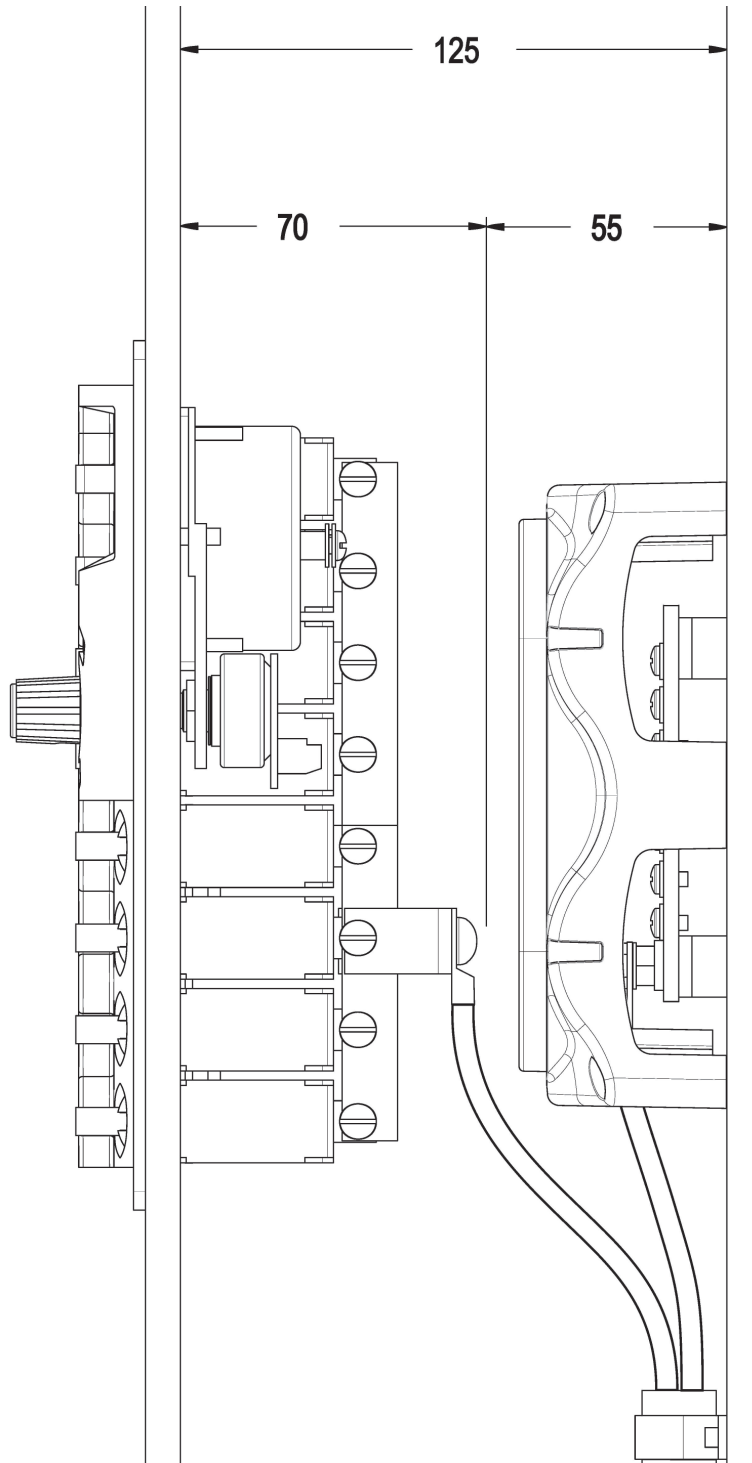
At various times it may be necessary to bring either a 24-volt supply or a mixture of 12-volt, 24-volt and 24-hour supplies to parts of the panel back.

To accommodate this, BEP uses a copper bus connection bar along the inputs of the circuit breakers. The different voltages can therefore be simply separated by cutting the bar to separate the different supplies on the panel back.

Remove Buss bar, Cut and re-fit to provide separate feeds to panel.



Please note: If negative bus bars are not safely enclosed, it is advisable to use a BBC-1 or BBC-2 cover to ensure that any stray objects cannot fall onto the electrical system. (This is also advised by ABYC).



NEGATIVE BUS BARS AVAILABLE FROM BEP

- Part No: BB-6W (6 way)
- Part No: BB-12W (12 way)
- Part No: BB-24W-2S (24 way)

## 5 BACK LIGHTING

All BEP AC and DC panels come with 12 volt DC back lighting. On 24-volt systems, a dropping resistor will be required for the back lighting

Note: The Red Systems On indicators will work on both 12 and 24 volts so therefore do not require a dropping resistor.

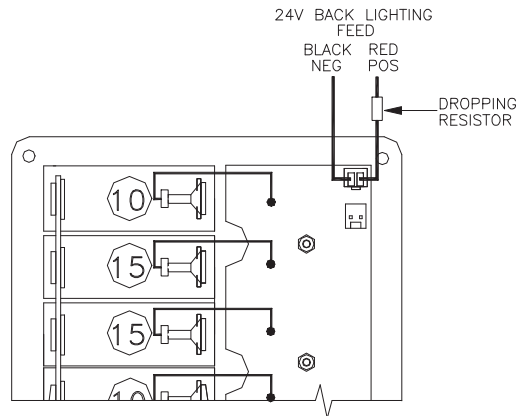
## 6 DROPPING RESISTORS

Dropping resistors are used for changing back lighting on 12V panels to 24V

Note: Use ½ watt resistors, select as close to the above sizes as possible.

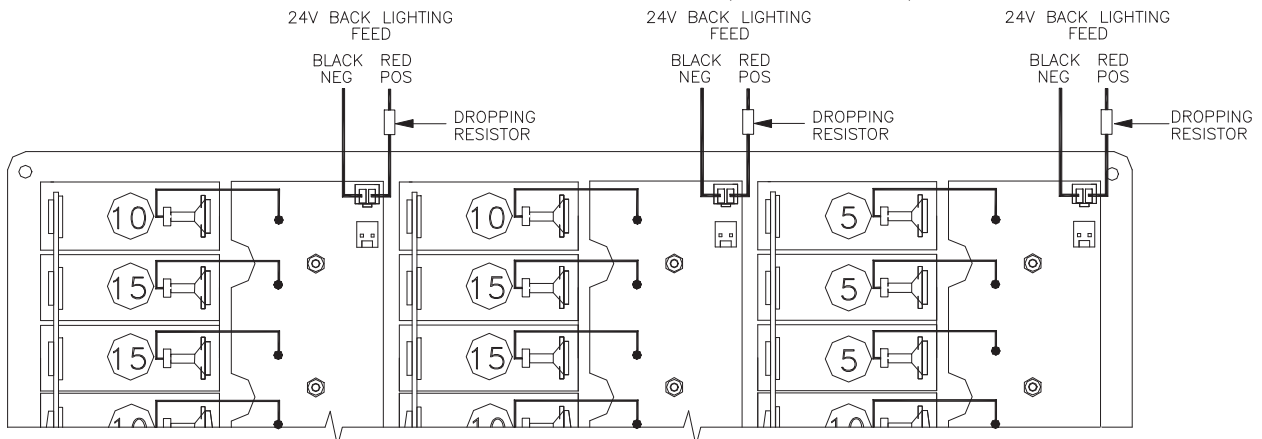
Panel size	Resistor size
4 way	1K8Ω
8 way	1KΩ
12 way	680Ω
16 way	470Ω
20 way	390Ω
24 way	330Ω
28 way	270Ω
32 way	220Ω
36 way	200Ω

REAR VIEW OF STANDARD PANEL



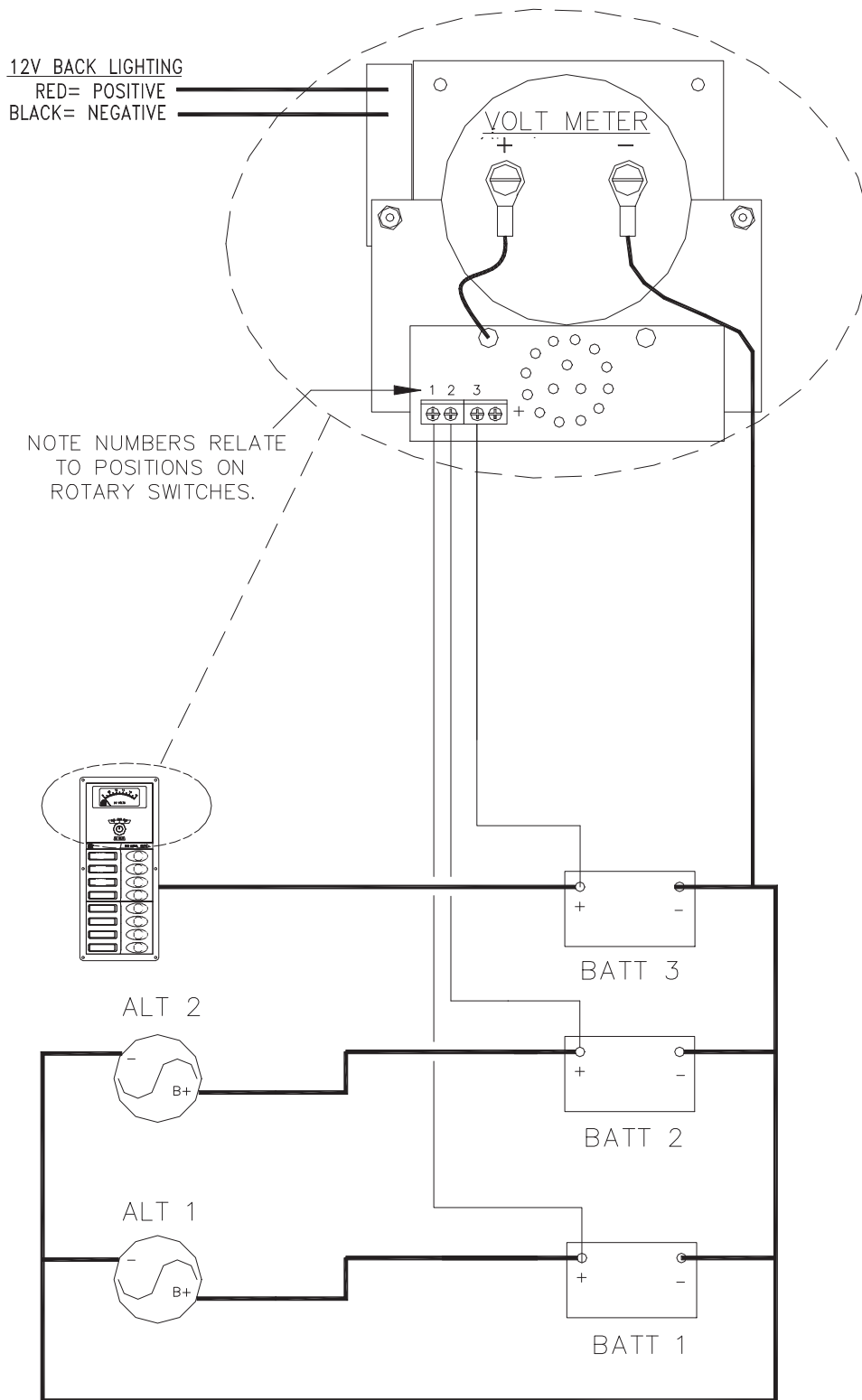
REAR VIEW OF STANDARD PANEL (LARGER THAN 36 WAY)

\* FOR PANELS LARGER THAN 36 WAY USE INDIVIDUAL DROPPING RESISTORS FOR EACH BANK OF BACKLIGHTING. (AS SHOWN BELOW)



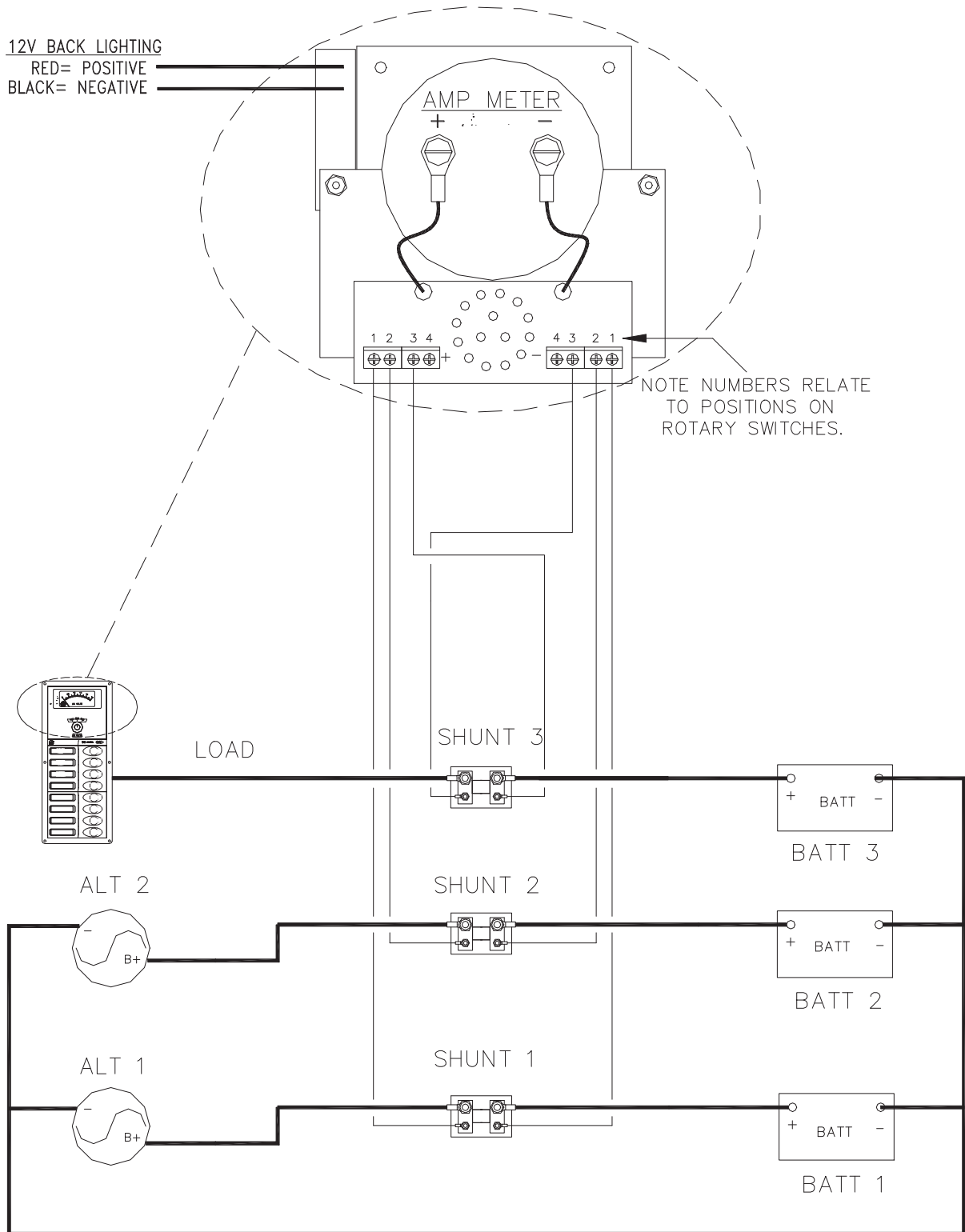
## 7 VOLTMETER WIRING DIAGRAM

*Note: The circuit below is an example only, its purpose is to show the meter connections.*



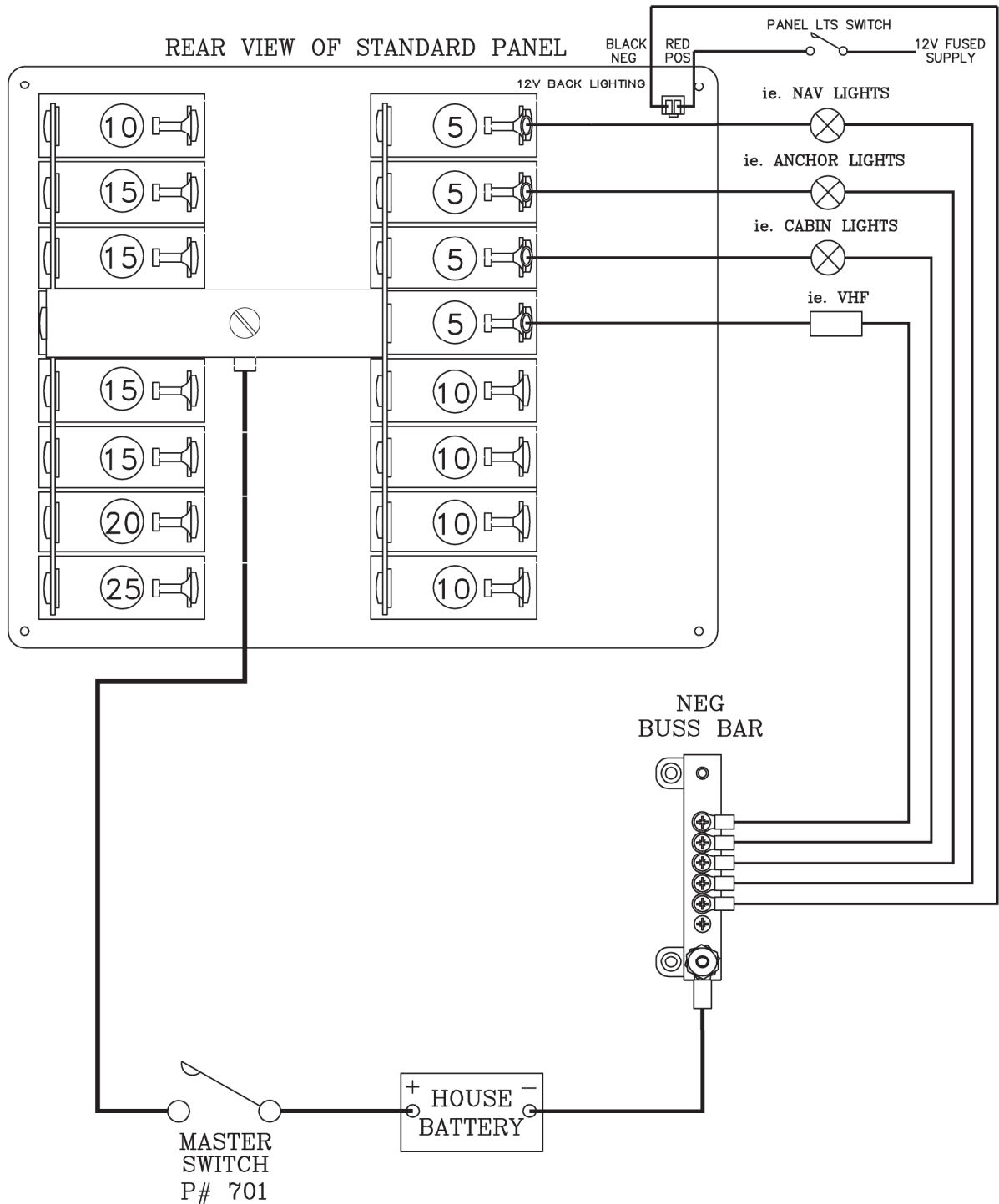
## 8 AMMETER WIRING DIAGRAM

Note: The circuit below is an example only, its purpose is to show the meter connections.



## 9 PANEL WIRING DIAGRAM

Note: The circuit below is an example only, its purpose is to show the meter connections.



## 10 LABEL SETS

SET 1N	SET 2N	SET 3N	SET 4N	SET 5N	SET 6N	SET 7N
Accessories	Bait Tank Pump	12V Outlets	Aft Lights	AC Mains	AC Mains	Aft Peak Light
Anchor Light	Bilge Pump Aft	24V Outlets	Bedroom/Converter	AC Outlets	Accessories	Deck Flood Lights Aft
Auto Pilot	Bilge Pump Forward	Aft Deck Light	Davit Winch	AC Outlets	Anchor Wash	Deck Flood Lights Fwd
Bilge Pump	Bilge Pump Mid	Bilge Auto Man.	Engine Alternator	Air Conditioning	Automatic	Deck Lights
Cabin Lights	Bilge Pump Port	Bow Lights	Fire System	Battery Charger	Autopilot	Deck Lights Aft
Cabin Lights	Bilge Pump Starboard	Docking Lights	Fish Finder	Cook Top	Auxiliary	Deck Lights Forward
Cockpit Lights	Blower	Emergency Parallel	Fishing Light	Dishwasher	Bilge Auto Manual	Deck Lights Port
Compass Lights	Boarding Light	Engine Alarm	Galley/Bath	Dive Comp	Bilge Lights	Deck Lights Starboard
DC Outlets	Cabin Lights Aft	Engine Blowers	Heater Fans	Dryer	Boom Furl	Fish Room Lights
Depthsounder	Cabin Lights Fwd	Extraction Fan	House Alternator	Frequency	Bridge Lights	Fish Room Pump
Freezer	Cabin Lights Mid	Flood Lights	Intercom	Genset	Burglar Alarm	Fishing Lights
Freshwater Pump	Cabin Lights Port	Fore Deck Light	Load	Heater	Cabin Fan	Fishing Lights Green
GPS	Cabin Lights Starboard	Galley Lt	Locker Light	Hotwater Cylinder	CB Radio	Fishing Lights Red
Instruments	Deck Wash Pump	Generator Lights	Mid Lights	Ice Maker	Cell Phone	Fishing Lights White
LPG Control	Electric Toilet	Holding Tank Pump	Mid Wiper	Inverter	Computer	Fore Deck Light
Mast Light	Engine Room Lights	House Batteries	Mizzen Spreader Light	Inverter Outlets	DC Mains	Fosole Light
Navigation Lights	Fridge	Lazarette Light	Plotter	Microwave	Fuel Transfer	Mast Flood Lights Aft
Saltwater Pump	Horn	Port	Port Wiper	Oven	Galley Fan	Mast Flood Lights Fwd
Shower Drain	Nav Lt's Port	Radio Battery	Preheat	Refrigeration	Hatch Controls	Net Recorder
Spare	Nav Lt's Starboard	Search Light	Sole Light	Reverse Polarity	Hydraulics	Not Under Command
Spotlight	Panel Lights	Starboard	Starboard Wiper	Ships Power	Loud Hailer	NUC Lights
Spreader Light	Radar	Start Batteries	Sub Main	Shore Power	Macerator	Plotter
Steaming Light	Saloon Lights	Step Light	Sump Pump	Trash Compactor	Manual	Port Flood Lights
Stereo	SSB	Strobe Light	Tank Room Lights	TV	Night Lights	Shower Lights
Trim Tabs	Start	Toilet Lt	Toilet Pump	Video	Peimel Lights	Stbd Flood Lights
VHF	Stern Light	Weather Fax	Towing Light	Washing Machine	Solar Panel	Toilet Fan
Winch	Stop	Windex Light	TV/Stereo	Waste Master	Stove	Toilet Light
Wiper	Tri Light	Window Washers	Walvac	Water Maker	TV Anetma	Winch Flood Lights

SET 8N	SET 9N	SET 10N	SET 11N	SET 12N	SET 13N	SET 14N
Anchor Light	Boiler / Heater	Air Compressor	Black Tank Pump	24-12V Reducer	Aft Bilge Alarm	210Khz TX
Baragraph Power	Bow Thruster	Air Con Galley	Block Heater	Aerator	Bilge Alarm	33Khz TX
Cabin Fans	DC/DC Converter	Air Con Guest Room	Block Heater Port	Ballast Aft	Bilge Alarm Test	Aft Hold Light
Cabin Fans Aft	Deck Lights Forward	Air Con Master State	Block Heater Starboard	Ballast Control	Bilge Auto	Cockpit Freezer
Cabin Fans Fwd	Decklights Aft	Air Con Pilot House	Central Vacuum	Ballast Fwd	Bilge Lights	Engine Controls
Courtesy Lts	Decklights Mid	Air Con Salon	Compactor	Black Tank Aft	Bilge Manual	Fire Pump
Courtesy Lts Aft	Decklights Upper	Air Con Saloon	Cupboard Heaters	Black Tank Fwd	Bilge Pump Auto/Manual	Fluxgate Compass
Courtesy Lts Fwd	Defroster	Air Con State Room	Engine Heater	Black Water Pump	Fwd Bilge Alarm	Flybridge Freezer
Courtesy Lts Mid	Galley Lights	Air Con V-Berth	Entertainment Centre	Boom Light	High Water Alarm	Fridge/Freezer
Diesel Heater	Grey Water Pump	Air Conditioning	Fresh Water Pump	Bridge Lights	Mid Bilge Alarm	Fuel Gauge
Fire System	Guest State Lights	Air Conditioning 1	Garburator	Bridge Supply	Port Aft Bilge Alarm	Fuel Transfer Port
Fuel Pump	Head Pump 1	Air Conditioning 2	Generator 1	Dining Lights	Port Aft Bilge Auto	Fuel Transfer Stbd
Hailer	Head Pump 2	Air Conditioning 3	Generator 2	Fire Alarm	Port Aft Bilge Manual	Fwd Hold Light
Lectrasan	Master State Lights	Central Vacuum	Heat/Defroster	Flow Alarm	Port Fwd Bilge Alarm	Gantry Lights
Lectrasan Fwd	Nav Lights	Charger Generator	Hot Circ Pump	Flow Alarm	Port Fwd Bilge Auto	Holding Tank Port
Lectrasan Stbd	Oil Pump	Charger House	Ice Maker Lower	Interior Lights	Port Fwd Bilge Manual	Holding Tank Stbd
Port Engine Controls	Pilot House Lights	Charger Inverter	Ice Maker Upper	Luff Light	Port Mid Bilge Alarm	Masthead Light
Port Ignition	Saloon Lights	Compactor	Ignition	Modem	Port Mid Bilge Auto	Pilot Light Red
Sat Corn	Search Light	Engine Room Fans	Inverter 1	Nav Area Fan	Port Mid Bilge Auto	Pilot Light White
Shower Light	Spare	Hot Circ Pump	Inverter 2	Outlets Aft	Port Mid Bilge Manual	Port Fuel Filter
Spare	Spare	Ice Maker Lower	Lazer Plotter	Outlets Fwd	Stbd Aft Bilge Alarm	Rudder Indicator
Spare	Stereo	Ice Maker Upper	Lighting Inverter	Outlets Mid	Stbd Aft Bilge Auto	Stbd Fuel Filter
Stabilizer	Trim Tab Control	Outlets Engine Room	Range Sub Panel	Outlets Port	Stbd Aft Bilge Manual	Steering
Stbd Engine Controls	V-Berth Lights	Outlets External	Refrigerator	Outlets Stbd	Stbd Fwd Bilge Alarm	Toilet Aft
Stbd Ignition	VHF Lower	Outlets Galley	Telephone System	Port Engine	Stbd Fwd Bilge Auto	Toilet Fwd
Toilet Light	VHF Upper	Outlets Lower Deck	TV/Video	Riding Light	Stbd Mid Bilge Alarm	Towing Light Amber
Waste Treatment	Wash Down Pump	Outlets Upper Deck	Water Circ Pump	Stbd Engine	Stbd Mid Bilge Auto	Towing Light White
	Windlass	Water Heater	Zone Valves	Step Lights	Stbd Mid Bilge Manual	Tuna Tubes
				Strobe		



SET 15N	SET 16N	SET 17N	SET 18N	SET 19N	SET 20N	SET 22N
12v Outlet Flybridge	AC Outlets Aft	24 Hour Circuits	27 Meg	12V Battery Charger	12v Aux Horn	Alarms
24v DC Mains	AC Outlets Aft Cabin	Aft Bilge Pump Auto / Man	Aft Holding Tank	12V Battery Charger	Aft Fridge	CCTV
Arch Lights	AC Outlets Cockpit	Aft Head	Aft Water Heater	24hr Bilge Pump	Alternator	Cockpit Fridge
Bilge Pump Clutch	AC Outlets Deck	Alarm Mute	Cabin Outlets	24V Battery Charger	Anchor Winch	Communications
Bow Bilge High Water	AC Outlets Fwd	Depth / Speed	Cockpit Fridge	Bilge Pump Port Fwd	Bathroom Fan	Control Max 2.0
Cabin Heater	AC Outlets Fwd Cabin	Electronics	DC Mains 1	Bilge Pump Port Mid	Bathroom Outlets	Deck Lights
Compass	AC Outlets Galley	Engine Alarm	DC Mains 2	Bilge Pump Stbd Aft	Bridge Supply	Earth Leakage Lights
Demister	AC Outlets Guest Cabin	Fans	Dehumidifier	Bilge Pump Stbd Fwd	Docking Lights	Emergency Parallel
Dry Head Pump	AC Outlets Mid	Fwd Bilge Pump Auto / Man	DVD	Bilge Pump Stbd Mid	Engine Room Bilge Alarm	Engine Room Main
Engine Clutch Pump	AC Outlets Port	Fwd Head	Engine Blower	Boarding Platform	Fax	Equipment Room
Flybridge Hatch	AC Outlets Salon	Galley / Head Vent	Engine Room Outlets	Bulwark Lights	Fish Finder	Flybridge Lights
Flybridge Wipers	AC Outlets Saloon	Galley Fridge	Entertainment	Bunk Lights	Holding Tank Gauge	Fresh Water Pump Port
Freezer Clutch	AC Outlets Staterooms	Gas Stove	Flybridge Main	Cable Master	Icemaker	Fresh Water Pump Stbd
Fwd Stateroom Lights	AC Outlets Stbd	Gauges	FWD Holding Tank	Desalinator	Inverter/Charger	Genset Start
Greywater Pump 1	AC Outlets Wheelhouse	Head Pump	FWD Water Heater	Dishwasher	Lake Water	Genset Stop
Greywater Pump 2	Aircon Aft Deck	Level Indicator	Galley	Electric Windows	Master Head	Grill
Guest Cabin Stereo	Aircon Aft	Lights	Gas Solenoid	Engine Controls	RCD	Head/Galley Vent
Inmarsat	Aircon Cabin	Mid Bilge Pump Auto / Man	Generator	Macerator	Reset	HF Radio
Instrument Lights	Aircon Fwd	Nav & Inst Lights	GFCI Outlet	Oil Pump	Salon Lights	Ignition Start
Instruments Flybridge	Aircon Fwd Deck	Oil Pressure	Hatch Lifter	Pitch Control	Shaver Outlets	Mid Hold Lights
Instruments Pilothouse	Aircon Helm	Pt Engine	Helm Main	Port Air Con	Sounder	Radio Light
Master Head Lights	Aircon Port	Pt Engine Start / Stop	Hour Meter	Port Engine	Speed	Radios
Nav Area Lights	Aircon Pump	Stb Engine Start / Stop	Laundry	Sonar	Sum Log	Refrigerator
Overhead Lights	Aircon Stbd	Stbd Engine	LPG/Cooktop	Spa	Toilet Port	Reverse Polarity Test
Overhead Saloon Lights	Airhandler Fwd Stateroom	Sum Log	Navigation	Stbd Air Con	Toilet Stbd	UHF Radio
Saloon Wipers	Airhandler Mstr Stateroom	Synchronizer	Range	Stbd Engine	Trolling	VHF Radio
Security System	Airhandler Pilothouse	Water Temp	TV /DVD	Stateroom Lights	TV lift	Wheelhouse Lights
Underfloor Lights	Airhandler Saloon	Windshield	UHF	TV	Wind Instruments	Wine Cooler

<b>SET 23N</b>	<b>SET 24N</b>	<b>SET-25N</b>	<b>SET 26N</b>
Air Con Port	Bedroom Lights	12V DOOR	DC Fridge
Air Con Stbd	Ceiling Lights	12V SPARE	Deck & Courtesy Lights
Berth Lights	Deck Flood Lights	AFT FANS	Electronics overhead panel
Blower	Diesel Heater	AFT TOILET LIGHTS	Engine Room & Lazarette Lights
Cabin Lights Main	Discharge Pump	BLACK WATER DISCHARGE	Engine Room Sump Pump
Cooling Pump 1	Extract Fan	ENGINE ROOM EXHAUST	Genset Charger
Cooling Pump 2	Flybridge Clutch	ENGINE ROOM INTAKE	Head Vent
Discharge	Flybridge Stereo	FWD FANS	High Exhaust Temp Port
Discharge	Fwd Cabin Stereo	FWD TOILET LIGHTS	High Exhaust Temp Stbd
Discharge	Fwd Spot Light	HELM DECK LIGHTS	Lower 12V Mains
Discharge	Gas Heater	HELM FRIDGE	Lower 24V Mains
Emergency Lights	LPG/Cooktop	HIGH WATER BILGE PUMP	Port Electric Head
Gallery Fridge	Macerator Pump	PORT BILGE PUMP AUTO/MANUAL	Port Engine Fault
Helm Lights	Network	PORT ENGINE IGNITION	Port Engine Maintenance
Macerator	Outside Lights	PORT ENGINE START	Port Engine Start/Stop
Master Cabin Lights	Port Cabin Stereo	PORT HEAD	Port & Stbd Cabin Lights
Port Engine Controls	Port Macerator	PORT TOILET LIGHTS	Stbd Electric Head
Port Engine Controls	Reading Lights	PORT VENT	Stbd Engine Fault
Port Engine Controls	Running Lights	SATELLITE	Stbd Engine Maintenance
Quartz Lights	Salon Stereo	SLOW VESSEL MODE	Stbd Engine Start/Stop
Stbd Engine Controls	Stbd Cabin Stereo	STBD BILGE PUMP AUTO/MANUAL	Stereo Inverter
Stbd Engine Controls	Stbd Macerator	STBD ENGINE IGNITION	Upper 12V Mains
Stbd Engine Controls	Underwater Lights	STBD ENGINE START	Upper 24V Mains
Stereo Memory	Wardrobe Lights	STBD HEAD	Vacuum Flush
Storage Bin Pump	Water Gauge	STBD TOILET LIGHTS	Vacuum Pump
Waterblaster	Accommodation	STBD VENT	Wait To Start Port
Air Con Flybridge	Accommodation Lights	SUNROOF	Wait To Start Stbd
Air Con Fwd	Aft Spot Light	TOILET LIGHTS	Windsheid Lift

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