

716 Battery Distribution Cluster

DUAL BATTERY CHARGING MADE EASY! The 716 battery distribution cluster is the optimum battery management system for your single engined boat.

The 716 combines 3 of BEP's 701 battery switches and a 710-100A Voltage sensitive relay (VSR).

The 701 Battery Master Switch offers a number of unique features. The highlights being the contour lock system, allowing it to be locked together with other switches. The 701 also features a control knob which cannot be removed whilst in the On or Off position, however can be removed by switching to an anti-clockwise 45° position.

The 701 also features a removable rear cover insulating the rear terminals against any short circuits and ensures the switch meets ABYC requirements.

701 specifications

Continuous rating:	275 Amps DC
Intermittent rating:	455 Amps DC
Cranking rating:	1250 Amps DC
Voltage rating:	48 Volts DC
Operation:	On / Off
Mounting:	recessed or surface
Termination stud size:	2 x 3/8" (10mm)

BEP Marine Battery Switch Test Procedure (UL 1107)

Continuous (1 hour)

Intermittent (5 minutes)

Cranking (10 seconds)

The test is to determine the maximum current the switch can handle for the stated time, without the terminals exceeding 212°F (100°C) above the ambient temperature.

The continuous and intermittent ratings are tested 110% of specified ratings.

THE 716 SYSTEM INCLUDES dedicated battery switches for each bank and a 710-100A voltage sensitive relay (VSR). The VSR allows for two batteries to be charged at the same time. When the engine is started, and the start battery reaches 13.7 Volts, the relay closes, Combining the battery banks (start and house) and allowing them to be charged simultaneously.

When the engine is stopped and the voltage drops to 12.8 Volts, the relay will open separating the batteries.

This system eliminates the possibility of draining the wrong battery and protects sensitive electrical equipment powered from the house battery from harmful engine start up spikes.

The 716 cluster is designed for single outboard or inboard systems on power or sailboats with an alternator size up to 100A.

How to use

1. When boarding the boat switch both the START and HOUSE battery switches to ON. Only use the EMERGENCY PARALLEL battery switch if both batteries need to be combined for emergency starting.
2. Start the engine, when the start battery reaches 13.7 Volts the small red light on the VSR case will illuminate, indicating the VSR is engaged.
3. When the engine is stopped and the start battery voltage drops to 12.8 Volts the light will switch off, indicating the VSR is disengaged.

Special note:

After a long run the residual voltage of the battery may hold above 12.8 Volts for a period of time, this will hold the relay engaged. This is not a fault.

As soon as any load is applied the voltage will settle below 12.8 Volt, disengaging the VSR.

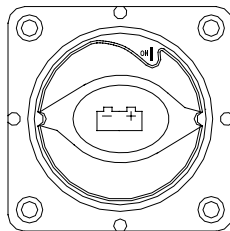
4. On leaving the boat switch both the START and HOUSE battery switches to off.

Trouble shooting

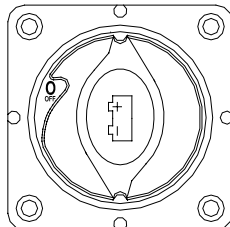
Fault	Possible solution
Engine wont start	-Ensure start battery switch is switched on
House battery is flat	-Ensure engine charging system is working. -Ensure the light on VSR case is on when engine is running and start battery voltage is above 13.7 Volts. If light is not on and voltage is over 13.7V on the start battery then there is possibly a fault with the VSR
House loads not working	-Ensure house battery switch is switched on
Start battery is flat	-Switch the Emergency parallel switch to on. Turn off once engine is started. <u>Note:</u> When starting the engine with the emergency parallel, the house loads will not be protected from engine spikes.
VSR chatters	-Increase RPM's of engine to increase alternator output. -Ensure alternator is not too small for the battery bank. Check with the table below

Alternator Vs Battery capacity

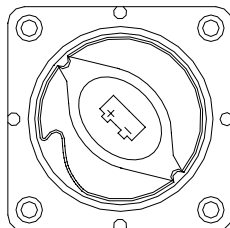
<u>Alternator Size</u>	<u>Second battery size</u>
10 Amp	60 Amp hours
16 Amp	85 Amp hours
25-35 Amp	85-105 Amp hours
50-60 Amp	130-210 Amp hours
80-90 Amp	130-220 Amp hours



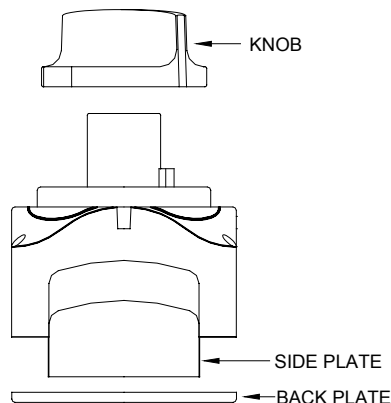
SWITCH IN ON POSITION



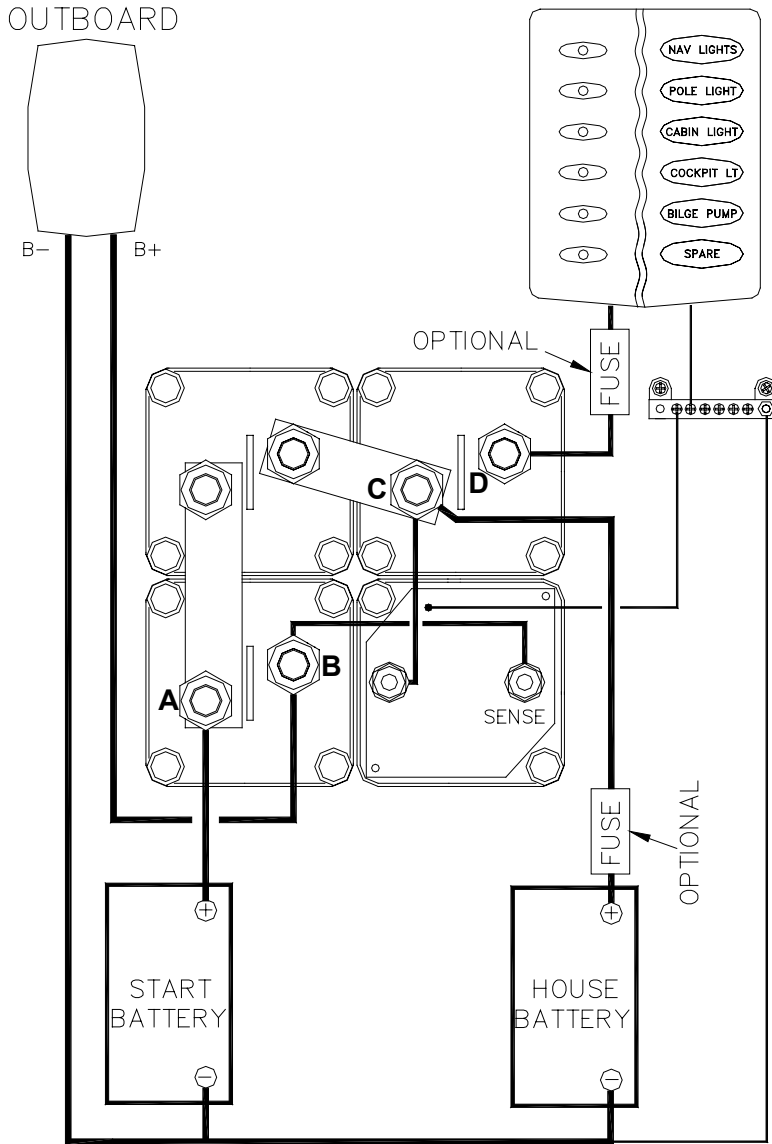
SWITCH IN OFF POSITION



SWITCH IN REMOVAL POSITION



716SQ INSTALLATION DIAGRAM



STUD A- CONNECT DIRECTLY TO THE POSITIVE TERMINAL OF THE START BATTERY.

STUD B- CONNECT DIRECTLY TO THE POSITIVE OF THE OUTBOARD MAIN.

STUD C- CONNECT TO THE POSITIVE TERMINAL OF THE HOUSE BATTERY VIA A FUSE.

STUD D- CONNECT TO THE POSITIVE TERMINAL OF THE HOUSE LOAD THROUGH A FUSE.

OPTIONAL ACCESSORY CONNECTIONS:

BATTERY CHARGER:

CONNECT THE BATTERY CHARGER POSITIVE OUTPUT TO TERMINAL A. THE HOUSE BATTERY SWITCH CAN BE OFF BUT THE ENGINE BATTERY SWITCH MUST BE ON WHEN LEAVING THE BOAT. THIS ALLOWS THE VSR TO ENGAGE AND CHARGE BOTH BATTERIES.

SOLAR PANEL:

CONNECT THE SOLAR PANEL POSITIVE OUTPUT TO TERMINAL A. THE HOUSE BATTERY SWITCH CAN BE OFF BUT THE ENGINE BATTERY SWITCH MUST BE ON WHEN LEAVING THE BOAT. THIS ALLOWS THE VSR TO ENGAGE AND CHARGE BOTH BATTERIES.

BOW THRUSTER:

CHECK MANUFACTURER'S SPECIFICATIONS TO ENSURE BOW THRUSTER IS WITHIN BATTERY SWITCH SPECIFICATIONS. CONNECT THE BOW THRUSTER TO THE START BATTERY SWITCH (TERMINAL B) TO PREVENT BOW THRUSTER LOADS RUNNING THROUGH THE VSR.

NOTE: THIS DIAGRAM IS NOT INTENDED TO BE A FULL SYSTEMS WIRING DIAGRAM. IT'S SOLE PURPOSE IS TO SHOW 716SQ CONNECTIONS

DATE	12/05/04	DWG No.	INST-716SQ OVERVIEW	
DRAWN	S PLAYER	TITLE:		
REV.	DATE	DESCRIPTION	DRAWN	APPRVD

INSTALLATION DIAGRAM FOR 716SQ

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