

**Sea-Dog Master Control Panel W/ Battery Test**

**Model Number 423410**

**Sea-Dog Master Control Panel W/ Battery Test**

**Model Number 423412**

**Sea-Dog AC Panel Pack**

**Model Number 423420**

**Sea-Dog Master Control Panel W/ Gauge**

**Model Number 423421**

**Sea-Dog Master Control Panel W/ Gauge**

**Model Number 423423**

**Assembly and Installation Instructions**

**Read these instructions completely before starting assembly or installation.**

The installation of this panel should be in accordance with the most current revision of U.S. Coast Guard 33CFR 183-1 and ABYC Standard E-9, Direct Current (DC) Electrical Systems on Boats or E-8, Alternating Current (AC) Electrical Systems on Boats. Standards may be obtained from:

Superintendent of Documents  
Government Printing Office  
Washington, D.C. 20402

American Boat and Yacht Council  
3069 Solomon's Island Road  
Edgewater, MD 21037

33CFR 183 Subpart I

Standards and Recommended Practices  
For Small Craft

If these standards are unavailable or the installer is otherwise unsure of proper practice, seek competent professional assistance.

**EVIDENCE OF FAULTY CONNECTION RESULTING IN COMPONENT DAMAGE WILL VIOLATE WARRANTY PROVISIONS.  
REVIEW INSTALLATION INSTRUCTIONS BEFORE STARTING INSTALLATION.**

### **INSTALLATION:**

Select an area that is as centrally located as possible to the functional operation of the craft.

**DO NOT** locate on a bulkhead backing up to a fuel or engine compartment.

**DO NOT** locate in an exposed area which receives direct water spray. (This principle applies to all electronic equipment).

Normally the panel is mounted on a bulkhead whose rear is accessible for wire installation. Where rear access is not possible, emphasis must be placed upon the use of flexible cables and conductors to permit the panel to be wired from the outside of the bulkhead. (For this you will need four #6 x 3/4" self tapping screws to mount the panel).

Locate and drill the mounting holes and make the cutout for installation of the panel (see Fig. 1). Then secure the panel in place with four #6-32 x 1-1/4" machine screws and #6-32 hex nuts. When installation is being made in fiberglass, a backup strip of wood should be used.

**CAUTION:** Your A.C. Main Breaker is the primary link between the power inlet and the breaker panel. For safety always disengage the main breaker if you are working on the breaker panel or a branch circuit.

Using wire sized in accordance to the main breaker rating, connect power inlet feeder lines to the line terminals, following wire diagram. Run jumper wires of proper size (see Fig. 3) from the main breaker to the breaker panel. If any possibility of personal contact with rear of panel exists, provide a suitable cover or enclosure to guarantee safety.

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## OPERATION:

### D/C APPLICATION WITH BATTERY TEST

This panel gives you a complete control center for your D/C operation. It comes with the ability to have seven circuit breakers for your branch system, a dual battery test monitor and a D/C amp meter for a complete control and monitoring of your system in one convenient package.

Once the panel is installed, connect the branch circuits as shown in Fig. 2. After branch circuits have been checked, connect panel to power supply as shown in Fig. 2 either directly to battery or through a battery selector switch. Refer to Fig. 3 to determine proper wire size. All battery systems must be protected by an over-current protection device located in accordance with ABYC recommendations.

**D/C ammeters must be used in conjunction with a shunt (For 50 amp: 50 mv, part #421205 and for 100 amp: 50 mv, part #421210, both available from Sea-Dog Line). Mount the shunt on the bulkhead near the back of the cutout for the panel, and wire per Fig. 2 using #14 gauge wire.**

Once all of the connections have been made and checked, switch on the power to the panel and check each branch circuit for proper operation. An overload in the branch circuit will trip the circuit breaker. The breaker can only be reset after the fault has been corrected. Correct all faults immediately for your own safety. When all circuits are working properly, you can use the self-adhesive labels to identify the circuit.

Your Master Panel with Battery test is supplied with a three position switch. The center position is "OFF", the up position is "TEST Battery 1" and the down position is "Test Battery 2". The switch may be left in either test position to constantly monitor one of the battery banks or it can be left in the off position and then switched to a test position to check the condition of either battery bank.

#### Following is a guide of approximate voltage range interpretations:

Engine not running or running at idle:

12 Volt:	24 Volt:	32 Volt:	
8-11	16-22	21.3-29.3	Very low battery charge
11-12	22-24	29.3-32	Low battery charge
12-13	24-26	32-34.6	Well charged battery

Engine running above idle:

13-13.5	26-27	33.6-36	Low charge rate
13.5-15.5	27-31	36-41	Alternator and voltage regulator OK
15.5-16	31-32	41-48	Voltage regulator out of adjustment

### A/C APPLICATION, 30 AMP

This panel with 30 amp double pole main breaker gives you the opportunity to combine a main breaker with branch circuits. It also includes an ammeter and voltmeter for complete control and monitoring of your system in one convenient package.

Once the panel has been installed, connect the branch circuits as shown in Fig. 4.

The main breaker is the primary link between the power inlet and the branch circuits. For safety, always disengage the breaker if you are working on the breaker panel or branch circuit. Using wire sized in accordance to the main breaker rating, (see Fig. 3) connect incoming lines to the main breaker. Be sure to connect the green ground wire to all grounding terminals. **A/C amp meters must be used in conjunction with a current transformer, available from Sea-Dog Line, part #421305 for the 50 amp and part #421310 for the 100 amp. Mount current transformer on the back of the bulkhead near the cutout for the panel being installed. Use #14 gauge wire to connect transformer per Fig. 4.**

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With the main breaker in the "OFF" position, no power is supplied to the branch circuits. If you are using shore power, you must check for the proper polarity before you engage the main breaker. If you find that you do not have proper polarity, reverse the shore leads. If polarity is still incorrect, the services of a competent technician should be engaged to correct the fault.

Once all connections have been made, switch on the power to the panel and check each branch circuit for proper operation. An overload in a branch circuit will trip the circuit breaker. The breaker can only be reset after the fault has been corrected. All faults must be corrected immediately for your own safety.

A main breaker trip indicates that a load combination which demands more power than can be permitted by the system is on line. Turn off all nonessential circuits, or time share as required, to permit the main breaker to be reset.

When all circuits have been checked and are working properly, use your self-adhesive labels to identify each circuit.

#### **A/C APPLICATION**

This panel includes the ability to have seven branch circuits, plus an ammeter and voltmeter for the expansion of your system to a complete control and monitoring station.

Once the panel has been installed, connect the branch circuits as shown in Fig. 5. Then connect the panel to the A/C power supply. (We recommend Sea-Dog #423132 Main Breaker). Refer to Fig. 3 to determine proper wire size.

**A/C ammeters must be used in conjunction with a current transformer, part #421305 for the 50 amp and for the 100 amp part #421310. Mount the current transformer on the back of the bulkhead near the cutout for the panel. Using #14 gauge wire, connect the current transformer per Fig. 5.**

Once all connections have been made, switch on power to the panel and check each branch circuit for proper operation. An overload in a branch circuit will trip the circuit breaker. The breaker can only be reset after the fault has been corrected. All faults must be corrected immediately for your own safety.

A main breaker trip indicates that a load combination which demands more power than can be permitted by the system is on line. Turn off all nonessential circuits, or time share as required, to permit the main breaker to be reset.

When all circuits have been checked and are working properly, use your self-adhesive labels to identify each circuit.

**THIS INSTRUCTION AND OPERATION DOCUMENT SHOULD BECOME PART OF THE BOAT OWNERS MANUAL OR SHIP'S PAPERS.**

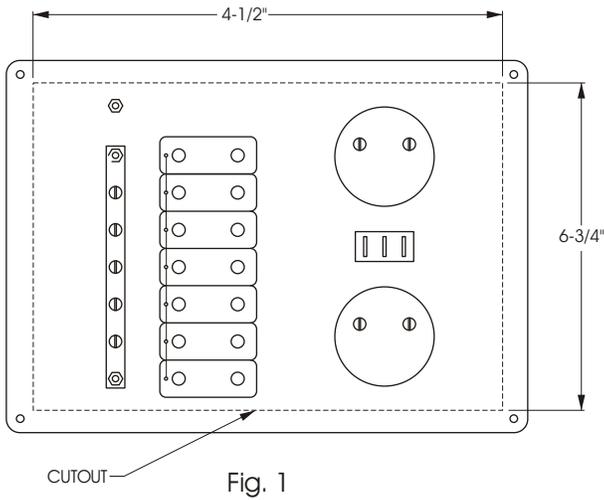


Fig. 1

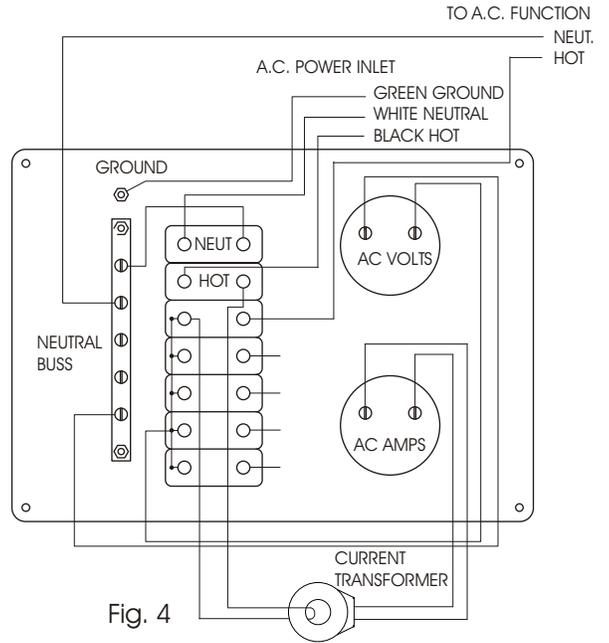


Fig. 4

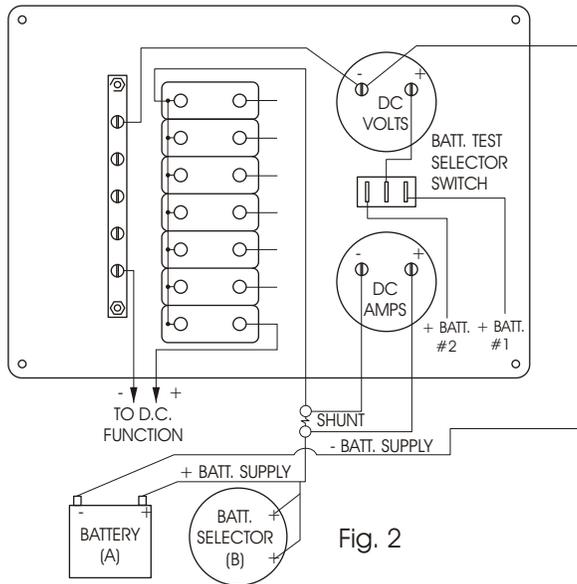


Fig. 2

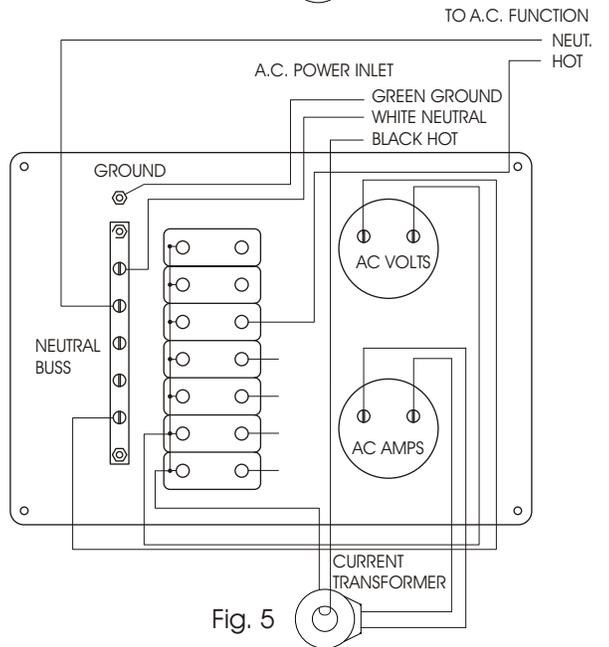


Fig. 5

CONDUCTOR SIZE ENGLISH(METRIC)	60 C 140 F		75 C 167 F		80 C 176 F		90 C 194 F		105 C 221 F		125 C 257 F		200 C 392 F	
	Outside	Inside	Outside	Inside	Outside	Inside	Outside	Inside	Outside	Inside	Outside	Inside	Outside	Inside
	Engine Spaces	Engine Spaces	Engine Spaces	Engine Spaces	Engine Spaces	Engine Spaces								
18 (8)	10	5.8	10	7.5	15	11.7	20	16.4	20	17.0	25	22.3		25
16 (1)	15	8.7	15	11.3	20	15.8	25	20.5	25	21.3	30	26.7		35
14 (2)	20	11.6	20	15.0	25	19.5	30	24.6	35	29.8	40	35.6		45
12 (3)	25	14.5	25	18.8	35	27.3	40	32.8	45	38.3	50	44.5		55
10 (5)	40	23.2	40	30.0	50	39.0	55	45.1	60	51.0	70	62.3		70
8 (8)	55	31.9	65	48.8	70	54.6	70	57.4	80	88.0	90	80.1		100
6 (13)	80	46.4	95	71.3	100	73.0	100	82.0	120	102.0	125	111.3		135
4 (19)	105	60.9	125	93.8	130	101.4	135	110.7	160	136.0	170	151.3		180
2 (32)	140	81.2	170	127.5	175	136.5	180	147.6	210	178.5	225	200.3		240
1 (40)	165	95.7	195	146.3	210	163.8	210	172.2	245	208.3	265	235.9		280
0 (50)	105	113.1	230	172.5	245	191.1	245	200.0	285	242.3	305	271.5		325
00 (82)	225	130.5	265	198.8	285	222.3	285	233.7	330	280.5	355	316.0		370
000 (81)	260	150.8	310	232.5	330	257.4	330	270.6	385	327.3	410	364.9		430
0000 (103)	300	174.0	360	270.0	385	300.3	385	315.7	445	378.3	475	422.8		510

Fig. 3

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