

## **SEAWARD PRODUCTS PANEL DEPARTMENT**

### **UPGRADES TO ENGINE CONTROL SYSTEMS**

The term UPGRADE refers to making functional improvements to the UNIVERSAL DIESEL engine control system, to make it compatible with a STANDARD that was introduced in the 1993 model year by Seaward & Catalina Yachts. This applies to UNIVERSAL DIESEL ENGINES ONLY! Westerbeke and Yanmar Diesel engines already have these improvements in place.

ENGINE PANELS built to this Standard have been identified with the words "TYPE A HIGH EFFICIENCY SYSTEM". In 1993, when this standard was introduced, ALL Catalina boats from C-27 to C-38 used the rectangular shaped engine control panel. Then in 1996, Seaward introduced a TRAPEZOIDAL version for the C-28, C-30, C-320 and the Morgan 38, and a SQUARE version for the C-400. In 1999, the NAVPOD engine control pod was introduced for the C27 through the Morgan 380 and a "new" rectangular engine control panel was added for the C400 thru C470. All wiring and components are basically the same as in the earlier rectangular version.

#### **The "Type A High Efficiency System" STANDARD (1993 model year to the present)**

ENGINE - 2, 3, or 4 Cylinder UNIVERSAL or WESTERBEKE Diesel Engine. Some early boats had Atomic 4 GAS engines (circa 1977-1979).

CHARGING OF BATTERY DIRECTLY FROM ALTERNATOR - Wiring located ON THE ENGINE. Not present prior to 1993. Early systems sent charging current through the entire harness up to the AMMETER and back down through the entire harness to the battery, very IN-EFFICIENT.

HARNESS - 9 Wires, TINNED copper, TERMINAL STRIPS on the ends, 16 feet long. Prior to 1993, bare copper, 8 wires, with molded rubber plugs, or "hot glue" plugs. 10 feet long on (C27-C32) or 15 feet long (C34-C36).

WATER TEMPERATURE SENDER - Mounted on the engine thermostat housing. Present on all years and engines.

OIL PRESSURE SWITCH - Mounted on the engine block next to the oil filter. Present on all years of DIESEL engines.

HIGH WATER TEMPERATURE SWITCH - Mounted on the engine thermostat housing. Not present prior to 1993, but CAN BE RETROFITTED. Ask for/see sheet D-33.

ENGINE CONTROL PANEL - White with black engraving, ABS Plastic, 13.5 x 5.625. GAS Engine panels were made of brown Masonite, with white engraving, 9.0 x 5.5 (circa 1977-79).

## UPGRADE & HISTORY INFORMATION

The next panels were tan Masonite, with black printing, 13.5 x 5.625 (1980-82). Later panels were silver plastic with black engraving, 13.5 x 5.625 (1983-89). Recent panels were white plastic with black engraving, 13.5 x 5.625 (1990-92).

All earlier panels had lettering that was different from the present version.

CONTROL PANEL LOCATION - mounted in a fiberglass BOX, on the port side aft, at the seat level. Gas panels were in a SMALL frame, NOT A BOX, and were down by the cockpit floor (1977-79). Later panels were in a standard size frame, and were located down by the cockpit floor. (1980-82). Next panels were in a standard size frame, but aft on the port side, up at the seat level (1983-92).

NOTE! The fiberglass box that is presently being used can be purchased from Catalina Yachts and CAN BE RETROFITTED to older boats. Ask for/see sheet D-15.

STARTER INDICATOR LIGHT - NO LONGER BEING USED. Some early panels (1985-89) had an UN-LABELED light to the right of the ignition key to indicate that you were activating the starter switch.

HIGH WATER TEMPERATURE LIGHT - A large red incandescent lamp with a wide viewing angle. Not present prior to 1993.

HIGH WATER TEMPERATURE ALARM - The constant tone of the 2-tone alarm, on the FACE of the panel. Not present prior to 1990. The 1990 through 1991 models used an ALARM CIRCUIT BOARD mounted on the BACK of the temperature gauge. This alarm was not very loud, and it was discontinued in 1992.

LOW OIL PRESSURE LIGHT - A large red incandescent lamp, with a wide viewing angle. A small incandescent light with a narrow viewing angle was used from 1977 to 1989. This light was DELETED 1990 to 1991, because it WOULD NOT WORK WITH THE ALARM CIRCUIT BOARD that was being used then.

LOW OIL PRESSURE ALARM - The pulsating tone of the 2-tone alarm, on the face of the panel. Prior to 1990, a small mechanical buzzer was mounted BEHIND the panel. 1990 through 1991 models used an ALARM CIRCUIT BOARD mounted on the BACK of the temperature gauge. The circuit board concept was discontinued at the 1993 model year.

AUDIO ALARM VENT (1" Dia. black plastic plug, with holes in it) - NO LONGER BEING USED. 1988 through 1991 used warning alarms mounted on the BACK of the panel. This vent was in the panel face next to the alarm, making it easier for the sound to be heard by the operator.

VOLTMETER - Present since 1988, BUT various bezel styles were used over the model years. Earlier panels had an AMMETER instead, requiring a long, charging system harness.

## UPGRADE & HISTORY INFORMATION

**GLOW PLUG PREHEAT** - Uses the spring-loaded position of the KEY switch. Earlier panels used a PUSH BUTTON (1983-87), a TOGGLE SWITCH, or a PULL SWITCH (1980-82).

**STARTER SWITCH** - A push-button that WORKS WHENEVER THE KEY SWITCH IS ON. Earlier panels required that the key switch be HELD in the spring-loaded GLOW PLUG PREHEAT position for power to be available at the starter push button. This was designed to prevent engaging the starter when the engine was running. Boat owners objected to it taking both hands to start the engine, and they requested that this be changed. Catalina Yachts and the engine manufacturer agreed, and allowed the change to be implemented.

**BLOWER SWITCH** - A small rocker switch with a clear moisture-proof cover. The blower is used to evacuate any fumes from the bilge prior to starting the engine. It receives power from the PUSH-TO-RESET circuit breaker. Some earlier panels used a TOGGLE SWITCH, and later panels had a ROCKER, but neither switch style had a WATER-PROOF COVER on it.

**PUSH-TO-RESET CIRCUIT BREAKER** - On the face of the panel, protects the gauges, and blower. Not present on panels prior to 1993. The audio alarm and the warning lights are NOT powered through the circuit breaker. If the blower motor overloads and trips the breaker, the engine will still start and run, but the gauges and gauge lights will not work. This feature is intended to alert the operator to a problem with the blower system, without preventing engine operation.

### **UPGRADES TO AC-DC CONTROL PANELS**

**HISTORY** - Prior to 1990 ALL C-27 through C-38 boats used one size of AC/DC electrical control panel, although that size varied depending on the model year. A series of AC/DC panels sized at 19 x 8.5 starting with the PB2644, used rocker switches with push-to-reset circuit breakers. It was soon replaced by the MID-LINE panel PB2709, using TOGGLE CIRCUIT BREAKERS replacing the old design of "rocker switches and circuit breakers". That in turn was replaced by various panels utilizing MAGNETIC CIRCUIT BREAKERS. PB3084, PB4259, PB4332 & PB4393.

In 1990, Catalina introduced a new panel to be used ONLY for the C-42. It was black plastic with white engraving, and had black plastic handles on the ends. In 1992, the panel size was increased and the plastic faceplate was changed to fiberglass painted a beige color, with black silk-screened letters. In 1994, an engraved plastic version of the same size was introduced. The PB2653 was almond color ABS plastic material with engraved black letters. It used rocker switches with PTR circuit breakers. In 1997, that panel was replaced by the PB2902 HIGH-LINE PANEL, which used all TOGGLE CIRCUIT BREAKERS. Catalina intended to use the PB2902 on C-380, M-38, C-400, and C-42. Currently we are producing PB4335 for these models.

Current Electrical panels vary in size from standard 19 x 8.5, mid-line 19 x 8.5, and high-line 29.25 x 9.187. On some models, the AC and DC panels have been separated because of space and ABYC requirements.

## UPGRADE & HISTORY INFORMATION

The present 120 VAC US panel is white, and the 240 VAC EURO is pewter gray. Both panels have black engraving.

### **PANELS FOR C-27 THROUGH C-36**

AC-DC CONTROL PANEL - White w/ black engraving, 19 x 8.5, 19 circuits. NOT backlit, using rectangular ROCKER switches in 1 x 1/2" holes, combined with push-to-reset CIRCUIT BREAKERS.

Very Early AC/DC panels were brown Masonite, 26 x 10.5 high, with fuses, using black TOGGLE switches mounted in 1/2" round holes.

Next panels were gold colored aluminum, 26 x 10.5 high, w/ fuses and gloss black PADDLE switches that fit into 1 x 1/2" rectangular holes.

Next panels were gold colored aluminum, NOW ONLY 19 x 8.5 HIGH, w/ fuses and PADDLE switches in 1 x 1/2" rectangular holes.

Next generation panels were engraved black plastic 19 x 8.5, BACKLIT, with 1 x 1/2" rectangular ROCKER switches combined with push-to-reset CIRCUIT BREAKERS.

Next generation panels were the same black material, but used SMALL 3/4 x 1/2 rocker switches in TWO GROUPS. Each GROUP was mounted in a SINGLE LARGE CUTOUT, and SEALED with BLACK SILICONE. Panels used PTR Circuit breakers.

Next generation panels used the same black material, but had SMALL 3/4 x 1/2 rocker switches, with each switch mounted in it's own cutout. PTR Circuit breakers.

Next generation panels used white material, NOT backlit. SMALL 3/4 x 1/2 rocker switches, mounted individually in cutouts. PTR Circuit breakers.

Current panels use MAGNETIC CIRCUIT BREAKERS, whether the panel is backlit or not. All AC breakers have white toggles and DC breakers have black toggles. Each breaker location is individually marked as to the function it controls. The C470 panel is currently the only one that uses Seaward's unique day/night backlighting system.