ARC Technical Help:
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ARC 6001Z Control System Instructions

Features

- Relay board features nine 40 Amp replaceable relays with fuse protection for *Start, Oil Pressure Controlled Ignition, Ignition, Fuel Pump, Water Pump, Fan, Taillight, Auxiliary and one User Controlled Relay*.
- Dual function switches for ***Water Pump/Fan*** and ***Taillight/Interior Light***.
- Dedicated computer/data Logger circuit controlled by the ignition switch with a 6 second shutoff delay.
- Automatic low oil pressure shutdown for ignition.
- Built in neutral safety circuit.
- Built in bump start circuit.
- Interior lights built in to switch panel.
- Output LED indicators on relay board outputs.
- Backlit Kill Button for safety.
- Two auxiliary fused power take offs.
- Colored and labeled wire for every circuit.

Wiring Instructions

Switch functions and installation notes

Roll bar mount switch panels mount to roll bar with 3 hose clamps through slots on rear of switch panel. Panel mount versions use screws through mounting holes on each corner of the switch panel.

Starter switch - The starter switch must only be used to operate the starter solenoid. When the starter switch is pressed it will activate the **START** relay and initiate the oil pressure hold cycle for the ignition circuit (if the neutral safety switch is closed). Connect the relay terminal marked **START** to the starter solenoid. Please note this switch will be dimly lit or not at all if the car is not in neutral. The switch will only be lit and active when the neutral safety switch is closed.

Ignition switch - This switch activates the ignition relay and the data logger power terminal marked **D/L** on the green 4 terminal connector. Connect the relay output marked **IGN** to any component you want to turn on and off with the ignition switch. This **IGN** output does NOT have oil pressure shut down protection. For oil pressure shut down protection of the ignition, connect the included red jumper wire from **IGN** terminal to the **IGN IN** terminal. Connect **IGN OUT** to your ignition system turn on lead.

Fuel switch - Connect relay terminal marked **FUEL** directly to fuel pump. This is a 40 Amp circuit; additional fuel pump relays are not necessary or recommended.

Water Pump/Fan switch - This is a dual function switch. One press activates the water pump. Press a second time to activate fan and water pump together. Or press and hold the switch for two seconds to activate both water pump and fan with one press. Connect relay terminal marked **WTR PUMP** directly to the water pump and connect terminal marked **FAN** directly to the fan.

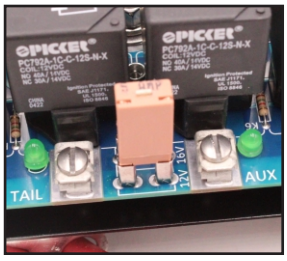
Aux - This switch can be used to power any accessory. This circuit has a 40 Amp capacity, wire relay terminal marked **AUX** to your component.

Tail/Int - This is a dual function switch. Press once for taillights. A second press will shut off the taillights and turn on the interior lights built into the bottom of the switch panel. Alternatively, if the switch is off, pressing the switch and holding for two seconds will turn just the interior lights on. Connect the relay terminal marked **TAIL** to your taillights.

Kill Button - This switch will shut off all switches on the control panel. The Data Logger circuit will remain powered after hitting the kill switch for 6 seconds and then shut off as well. This will allow data processing to complete.

Relay board functions and installation notes

12V/16V circuit breaker - The relay board comes set for 12V battery operation. If running a 16V battery move the tan colored circuit breaker to the 16V terminals. (See wiring Diagram on last page) This setting has no effect on the output of the relays, it is there to protect the LEDs and electronics of the switch panel from the additional voltage of 16V batteries.



The 12V/16V breaker will protect the ribbon cable from accidental short circuits. If this 5 Amp circuit breaker trips, shut the battery disconnect off immediately and check the ribbon cable for damage.

Do not replace this circuit breaker with any value larger than 5 Amps.

Ribbon Cable - Connect the ribbon cable from the plug on the switch board to the red labeled connector on the relay board. Make sure the red marker tape on the ribbon cable lines up with the red marker tape on the switch panel and relay board. *See Diagram on page 5 for more detail.*

GND Terminal - Connect the terminal marked "**GND**" to a good steel chassis ground.

Red #6 Cable - Connect the heavy red cable to battery +

Relay Output Screw Terminals - Relay outputs marked ***START, IGN, FUEL, WTR PUMP, FAN, AUX, TAIL*** all correspond to switches on the control panel. Please reference the *"switch functions and information"* section for info on wiring these connections.

+BAT1, +BAT2 - These two terminals are fused constant power take offs which can be used for any purpose where a constant power source is needed.

USER TRIGGER - This female terminal is the control trigger for the USER relay. A ground trigger from a switch, ECU, Autoshift, etc. will activate the USER relay.

OPS OUT, OPS IN - Connect these wires to a **Normally Open** oil pressure switch. Do not use a three terminal oil pressure switch or a single terminal oil pressure switch. Use only a normally open two terminal switch. See the *Oil Pressure Shutdown* section for more info.

***Oil Pressure Bypass Switch* -** Move this switch in the direction of the arrow to bypass the oil shutdown feature. Use this to troubleshoot a bad oil pressure switch.

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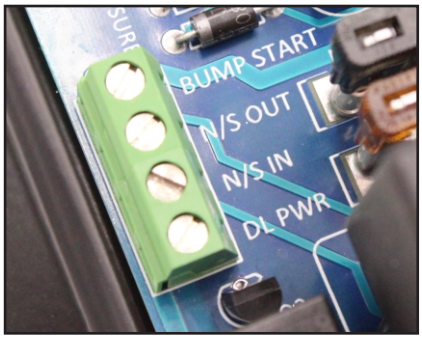
Green 4 position terminal



Bump Start - Connect this to a grounded bump start switch. When this terminal is triggered with a ground signal from a bump switch the starter relay will engage

N/S Out & N/S In - these two terminals connect to a neutral safety switch. The neutral safety switch should be closed only when the shifter is in park or neutral. Connect N/S out to one side of the switch and the other side of the switch to N/S in. The starter switch will not light up and function if these terminals are not connected through a closed neutral safety switch. The neutral safety fuse is 1 Amp MAX. Do not replace this fuse with anything higher than 1 Amp or damage to the relay board will occur and the warranty will be voided. If this fuse blows check all wiring to and from the neutral safety switch for short circuits.

DL PWR - this terminal is turned on with the ignition switch. When the ignition switch is turned off, this terminal will stay on for approximately 6 seconds longer to allow data to finish downloading. Note that this circuit has a maximum capacity of 5 Amps. Replacing the 5 Amp fuse with a larger value could damage the relay board and will void the warranty.

Oil Pressure Shutdown

The ARC oil pressure shutdown with controlled startup override allows the engine to be started by momentarily bypassing the oil pressure switch while cranking. When the engine starts the oil pressure rise is monitored and the yellow LED will light during this time. If the oil pressure minimum requirement is not met within approximately 5 seconds the yellow LED marked OP DLY will go out and the engine will shut off. If the pressure is correct the yellow LED will go off, but the engine will continue to run if the minimum pressure is maintained. The ignition switch can still manually shut the ignition off also. With this system the oil pressure switch never carries more than one tenth of an Amp to assure it doesn't fail from excessive current load, while still maintaining a forty Amp ignition circuit capacity.

Manufacturer	Part Number	Activation Pressure
Stewart Warner	SW76051	2 PSI
Stewart Warner	SW76575	4 PSI
Stewart Warner	SW76576	10 PSI
Stewart Warner	SW76052	15 PSI
Stewart Warner	SW76053	35 PSI
Longacre	52-43600	12 PSI
Manufacturer	**Part Number**	Description
ARC	OPH-3	3" Braided Isolator Hose
ARC	OPH-4	4" Braided Isolator Hose
ARC	OPH-5	5" Braided Isolator Hose
ARC	OPH-6	6" Braided Isolator Hose
ARC	OPH-7	7" Braided Isolator Hose
ARC	OPH-8	8" Braided Isolator Hose
ARC	OPT-03B	-03 AN Tee – On the run
ARC	OPT-03S	-03 AN Tee
ARC	OPA-03	-03 AN to 1/8" NPT Adapter

Oil Pressure Switches are not sold by ARC
Hoses and Fittings are sold by ARC

To avoid nuisance tripping make sure to select an oil pressure switch with a setting low enough to account for the lower oil pressure at idle with hot oil. In bracket race situations sometimes hitting brakes near the finish line will result in lower oil pressure levels as well.

This system will not work with three terminal oil pressure switches or single terminal oil pressure switches. Use only two terminal normally open oil pressure switches.

Wiring the oil pressure shut down system

Connect the supplied red jumper between the terminal marked **IGN** and **IGN IN**. Any accessories you wish to turn on with the ignition switch but not be controlled by the oil pressure switch can also be connected to **IGN**.

Connect **IGN OUT** to your ignition system turn on lead.

Connect the **OPS OUT** to one terminal of the oil pressure switch. Connect **OPS IN** to the other terminal on the oil pressure switch.

If a bad oil pressure switch is suspected the bypass switch can be moved in the direction of the arrow to bypass the oil pressure switch.

When the system is functioning correctly with adequate oil pressure the **IGN, IGN IN** & **IGN OUT** green LEDs will all be lit when the car is running. If the car shuts off and the green **IGN OUT** LED is out but the **IGN** and **IGN IN** LEDs are still, lit that indicates that the engine was shut off by the oil pressure shutdown circuit.

General Troubleshooting

Starter switch is not lit and will not work - shifter is not in park or neutral or the neutral safety switch is not connected or is defective. A neutral safety switch must be connected to the terminals marked N/S for the starter switch to light up bright and work.

Some switches won't turn on/switches randomly shutting off - tan circuit breaker must be set to correct battery voltage position for the car. Move the breaker to the correct terminals for the battery in the car (12V terminals for 12V battery 16V terminals for 16V battery).

Check for a weak battery. A weak battery can have enough Voltage to light up the switch panel, but when switches are turned on, the load from accessories will cause the battery voltage to sag low enough to unlatch the relays. Make sure the battery is fully charged and have the battery load tested or try another known good battery.

Ignition shutting on and off - Oil pressure switch setting is too low, or oil pressure switch is defective. Set bypass switch to bypass position to test. Also check the wiring to the oil pressure switch for damage. If the wiring to the oil pressure switch is allowed to short to chassis ground an internal fuse will trip to protect the relay board. The fuse will automatically reset once the fault is corrected. Check the wires to the oil pressure switch and replace any damaged wiring.

Switch panel getting hot - Tan 12V/16V circuit breaker is in the wrong Voltage position. Move the breaker to the correct setting for the battery voltage in the car.

Switch panel not working correctly, and all/some lights are off - Make sure the ribbon cable is plugged into the relay board correctly. It is possible to plug the ribbon cable into the relay board connector off center. Unplug the connector and plug it back in making sure the pins are centered left to right on the connector.

Check the tan circuit breaker. If the tan 5 Amp circuit breaker is tripped, the ribbon cable insulation is damaged and is

shorting to ground. Inspect the ribbon carefully for faults. Do not change or alter the 5 Amp circuit breaker or damage to the board will occur voiding the warranty. If this breaker is tripping, there is a fault with the ribbon cable.

Check the terminal marked **GND** on the relay board. This terminal must go to a good chassis ground for proper operation.

Make sure the ribbon cable plug in the switch panel is oriented with the red tape marks aligned.

Switches working erratically, buzzing sounds - Do not use a battery charger as a power supply to operate the switch panel. Battery chargers can output a rippling DC voltage that will cause electronics to malfunction. The switch panel should only be operated when connected to a 12V or 16V battery. When charging the battery, the master disconnect switch for the car should be turned off.

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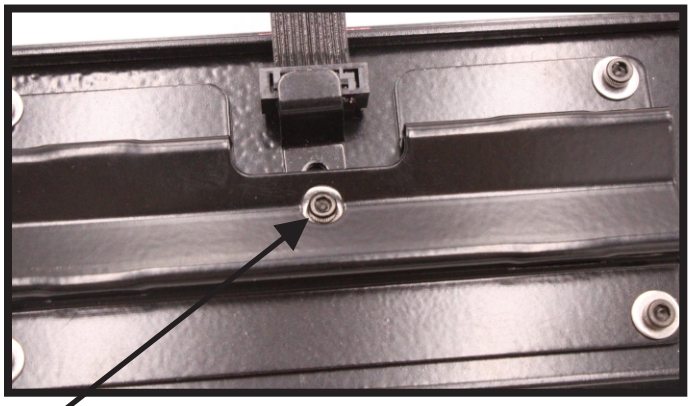
Ribbon Cable Installation

The 6001Z has a new Ribbon Cable Clamp. This clamp uses one small screw to hold a bracket which in turn holds the ribbon cable in place. Once installed you do not have to remove the clamp to remove the ribbon cable simply loosen the socket head screw as seen in the diagram below. Once loose, it will slide back allowing for removal of the cable.

Once replaced simply move the clamp forward towards the ribbon connector and tighten the screw.

There is no need to over tighten this screw.



Ribbon Cable Clamp Screw

Wiring Chart

Red 14 Gauge - Ignition
White 14 Gauge - Starter
Purple 14 Gauge - Auxiliary
Yellow 14 Gauge - Fuel Pump
Green 14 Gauge - Fan
Lt. Blue 14 Gauge - Water Pump
Blue - 14 Gauge - Transbrake

Brown 18 Gauge - Tail Lights
Lt. Green 18 Gauge - Neutral Safety
Pink 18 Gauge - Bump Start(s)
Lt Brown 18 Gauge - Oil Pressure Switch
Orange 18 Gauge - Data Logger

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Switch 1 must only be used as the starter switch.

Relay board provides power to your accessory, the accessory must be grounded for it to function.

The relay board must be grounded using the "**GND**" terminal on the relay board.

If you are running a 12 Volt battery then the circuit breaker must be in the12V terminals. If you are running a 16 V battery then move the circuit breaker to the 16V terminals.

DO NOT Zip Tie the ribbon cable to the roll bar. Only use supplied velcro straps or electrical tape.

Oil Pressure Switch must be Normally Open 2 prong switch. See instruction sheet for more info on switch

The Bump Start Switch will provide a Ground Signal to the relay board for operation.

If the Shifter is not in **"Park"** or **"Neutral"**, the Starter switch is not functional. The switch will not light unless the shifter is in the correct position.

The **"DL Power"** fuse is 5 Amps. *This is the Data Logger circuit, 5 Amps is the MAX value for this circuit.* If it blows a fuse do not put a bigger fuse in. Instead, find the issue that is causing the fuse to blow.