

## MODEL 20 ALTERNATOR INSTALLATION INSTRUCTIONS

With propeller removed, and old alternator/generator bracket off, position the new alternator bracket over the (4) holes on the bosses on the right case. Bolt on with the (4) 5/16-18 X 1" bolts provided, using a lockplate under each pair. Do not over-tighten; the aluminum case threads don't have heli-coil inserts. Use care bending the lockplate tabs; the bracket is also aluminum and is easily damaged. Lockplates are Lyc. P/N 73383 or Superior SL 73383.

Install adjusting arm on case; tighten bolt finger tight at this point. Install drilled metric bolt through slot into alternator, rotate alternator all the way up in slot and snug metric bolt.

Hang belt from engine pulley, and position ring gear assembly on crank flange, snagging alternator pulley as you do so. This may not be simple the first time, as the belt which is the correct length is barely long enough to allow the ring gear to be positioned on the flange. Note position of arm, remove ring gear, and tighten arm pivot bolt and safety wire bolt to arm. Now you can put the ring gear back on for good. Tension belt and tighten and safety wire metric bolt. Re-install prop any time after this. Tighten alternator pivot bolts last.

Belts will last indefinitely but should be replaced every few years even if they look good. Particularly with a constant-speed prop, where prop removal is a hassle, a spare can be wired on the engine before the prop is installed, so prop wouldn't have to be removed to change belt. 7-1/2" pulley uses GATES #7300, 9-3/4" uses #7350.

Pulley alignment factor is set up for standard pulley/ring gear assemblies which are 2-3/8" from inside (against flange) to pulley centerline. If yours doesn't line up (not likely), you have an odd-ball assembly and you'll have to trade it for a standard one.

Every time you change oil or have your cowl off for any reason, carefully check bolts for tightness, and check belt for tension and condition.

In the unlikely event you wear your alternator out or it fails, it is better to have yours repaired than to exchange it, because these alternators aren't the same in overall length, and so an exchange wouldn't be the same and the precision rear spacer would be wrong.

## MODEL 20/30 WIRING INSTRUCTIONS

To wire, use the best wire and terminals. There are 2 wires coming from the plug; the third has been removed as its purpose was only for factory installations in cars. The "E" terminal (earth), is to be connected to any ground with 14 gauge wire. The "F" terminal, is to be connected to the "F" of the voltage regulator with an 18 gauge wire. The "B" terminal is the output to the battery, typically to the bus bar on aircraft. Use a 35-amp breaker in this circuit. If replacing an alternator or generator of a different amperage, replace the existing breaker with a 35-amp one. 10-ga. wire

It is recommended you use both a switch and a 5-amp breaker in the voltage regulator hot wire. Label the breaker "Alternator". See wiring diagram.

The little component on the back of the alternator connected to the case (ground) from the "B" terminal is a spike guard diode. Electrical systems have high voltage, but very low amperage "spikes" going through them from nobody-knows-where. This diode grounds them out before they can wipe out your radio. It is a 39-volt, 5 watt zener diode. If it fries, replace it, but don't not fly the airplane because of it. It is not over-voltage protection. If you desire an over-voltage relay, use one. If you only use an ammeter, occasionally verify charge voltage with a hand-held voltmeter while the engine is running, by connecting the leads to any ground and any hot. Stay away from the prop; do this in the cockpit.

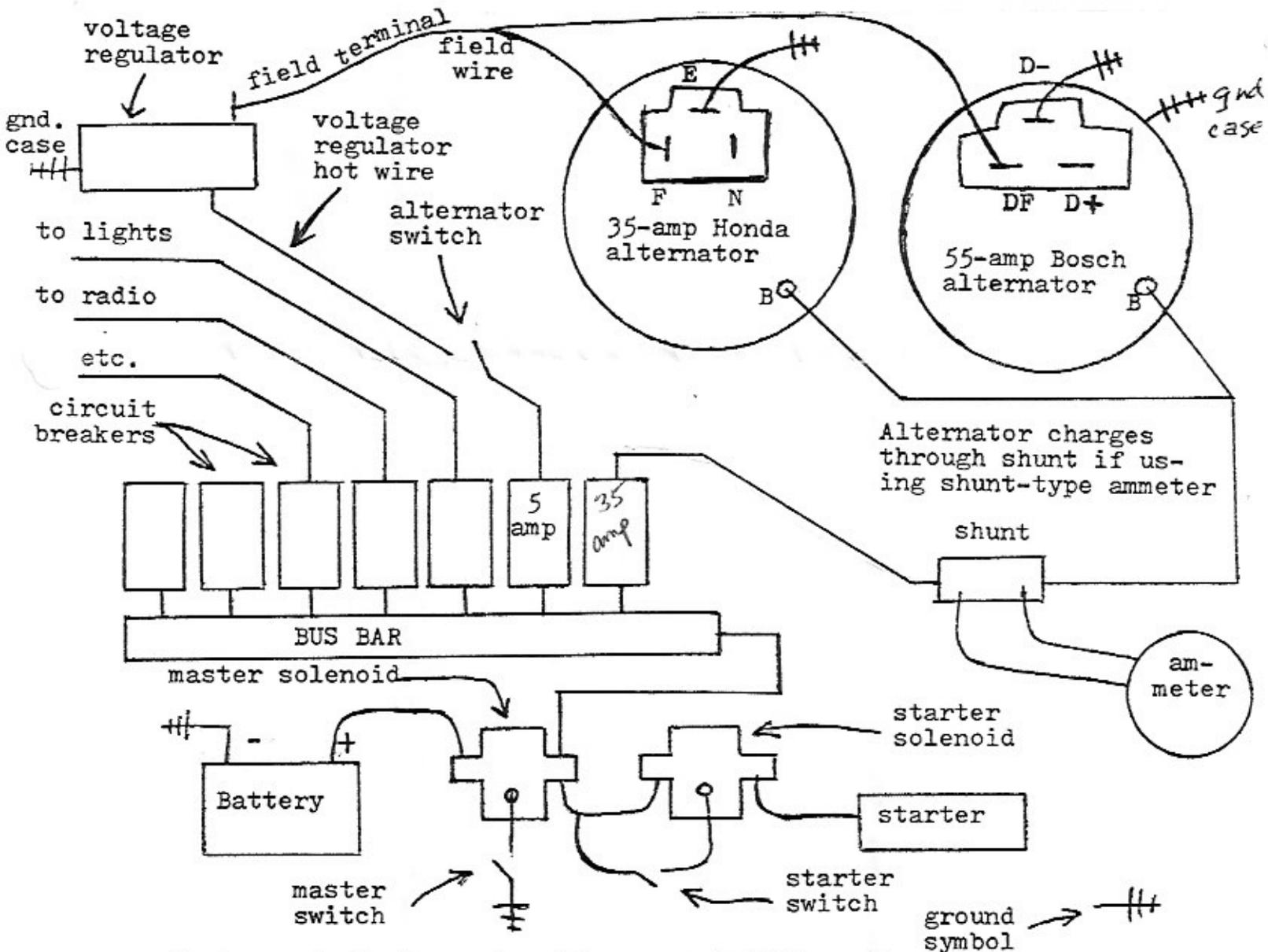
Provide a duct for cooling airflow unless the alternator is in the pressure air (a la Cessna 172 with vertical front baffle). About a 1-1/2" duct to the rear of the alternator will be fine. Take it from any convenient place on the baffling.

Its not necessary to spend hundreds of dollars for a voltage regulator. Any good electronic (and it doesn't have to be "linear") voltage regulator will work fine; just besure the terminals are clearly marked, and ground the case.

Regarding noise filters, you probably won't need one. If you have noise, try Cessna P/N S1915-1.

This wiring diagram is included as a convenience, as some builders have had trouble "picturing" the charging system, as it relates to the rest of the electrical system, working just from written instructions. No one is claiming that this is the best way, or even a good way, only that it is A way, to wire up an aircraft. As with everything else you do in the construction of a homebuilt, it up to You to educate yourself in every phase of construction, to be certain what you do is airworthy.

Regarding noise, it is difficult to predict. Many aircraft have been wired simply, using similar schematics such as this one, and have no noise problems. Other builders tear their hair out trying to eliminate it. If you experience it, start with a noise filter, then to shielding if necessary, in the charging or other circuits, as required. You're on your own!



Master and starter solenoids connect differently but may look identical. Starter solenoids aren't continuous duty, also. See ACS catalog; buy by part#.

It has come to our attention that in rare cases, interference exists between our alternators and external prop governor oil lines on constant-speed O-320s and O-360s. Sometimes the alternator contacts the line before enough upward rotation is achieved for the belt to reach around both pulleys. We provide this arm because it allows the tightest possible cowling, which is often necessary, and because most engines aren't constant-speed anyway.

If you encounter this interference and can't move the oil line a little, you could use the new Lycoming flexible line for the tightest possible cowl. If the installation could stand a little bit longer arm, we have one we'll trade you for. Send short arm and belt to:

Pelican Aviation  
1835 Whittier, D-5  
Costa Mesa, CA 92627

#### VOLTAGE REGULATOR INSTALLATION INSTRUCTIONS

Case of regulator should be mounted to grounded structure, or should be grounded with a wire if wood or composite aircraft. Connect field terminal (F) of regulator to field terminal of alternator. The other wire is the hot wire, or positive, and connects to the battery positive, typically through the bus bar on aircraft, preferably through a switch (labeled "Alternator"), and a 5-amp breaker. Use 1/4" female blade-type terminal for this. Provide strain relief for this wire; obviously the wire exiting the encapsulated electronics needs protection. 18-gauge wires.

Regulator is set for 14-14.2 volts. Verify with testmeter if aircraft doesn't have panel voltmeter. If adjustment is necessary, clockwise increases voltage. Do not adjust with engine running. DO NOT run engine with ground connection on voltage regulator interrupted.