fully, measure current flow, and assure proper sequence. The 100-hour inspection duplicates the 50-hour and adds a thorough check and cleaning of the slip ring and carbon brushes.

Troubleshooting

Troubleshooting the de-icing system is a relatively simple task; you either get the WHUMP or you don't. There is very little you can do once airborne, and the ammeter is the key to virtually everything. If it reads zero, check the circuit breaker; on the ground, with the engine not running, it also may be the battery master. If the ammeter reads normal during part of the cycle and zero during another part, you've got trouble. With partial de-ice capability, rotational imbalance is likely to occur, which could be severe enough to cause structural failure of the prop. Deactivate the system.

Normal reading during part of the cycle and low current during the other part probably means that inner and outer elements are heating simultaneously. That produces a hefty current draw, but probably nothing more serious. If the ammeter always reads low, you have low system voltage, an indication of generator or voltage regulator problems. A constant high reading indicates a de-icer power lead shorted to ground, warranting a system shutdown.

In systems where the ammeter flickers, if it flicks more frequently than every 34 seconds, there probably is a loose connection. If it flicks less frequently, it's an indication of an inoperative timer and incomplete de-icing. The potential, again, is rotational imbalance. If the propeller isn't shedding ice at all, there could be a short in the wiring harness, worn out carbon brushes, even gas or oil on the slip ring and brushes. If there is oil on the slip ring, have your prop seal checked; it could be worn out.

Radio static appearing only when propeller de-ice is turned on probably indicates arcing brushes, loose connections, or a wiring harness that's too close to the radio equipment. If you can't stand the popping for another flight, turn this aeronautical Gordian knot over to your mechanic and make sure you set a maximum dollar amount allowable in the effort to unravel it!

PNEUMATIC DE-ICING SYSTEMS

If ice will adhere readily to a propeller, it will collect massively on a wing or horizontal stabilizer. Because the wing is so large, electrothermal heating really isn't practical. While more sophisticated aircraft have weeping wings, hot wings, and other expensive equipment, most of us live with pneumatic de-icing systems that we affectionately call "boots."

Here, the principle and practice are relatively simple. As ice accumulates on the leading edge, you mechanically expand it and break the ice loose. This requires inflatable rubber de-ice boots, a pneumatic system, timer, and relay switches for inflation sequencing, an on/off switch, and a pressure gauge or indicator. Actually, it is more straightforward and simple, as a look at the schematic in Figure 13-3 will illustrate. The heart of the pneumatic system is the pump. Its pressure side inflates the boots and its vacuum side deflates and holds them down. Other components include tubing, which seems to run endlessly