tial that you use NYLON 6BA bolts, otherwise there will be a DC short between the tabs and the sinks (these bolts are supplied with the kits), as well as the insulating washers. Heatsink compound is required between all mating surfaces.

Testing the PA

To test out the PA, it will be necessary to use the CIFPU as the drive source. Proceed as follows.

1. Connect up the CIFPU/VFO etc for normal operation but do not connect point U. Don't apply any power yet. Connect points Y and Z to earth and +12V to the +12V TX connection. Connect the preselector output to the CIFPU and the INPUT to the preselector to the INPUT of the PA, using miniature coaxial cable.

2. Connect the drive control, RV1 to the PA as shown, so that the earthy end is at anticlockwise travel. Set

Fig. 5 Winding T4.

RV2, 3 and 4 fully anticlockwise. Connect +12V to the PA and to the bias input (marked +12V TX on the PA layout). Connect a 50 ohm dummy load to the output of the PA, together with a power meter or SWR bridge to monitor the output.

4. Apply +12V to the PA ONLY, while monitoring the input current. Adjust RV2 so that the current increases by 200mA (thus setting the driver standing current to 200mA), and then adjust RV3 for an additional 100mA. The increase in current as these are adjusted should be smooth with no sudden jumps.

If there are sudden jumps the PA is almost certainly unstable and the fault will have to be found. Remove the dummy load. The PA should not take any additional current or give any output. If it does, then it is almost certain that T4 is wrongly connected.

5. Now connect +12V to the CIFPU unit etc, and wind RV1 (DRIVE) fully clockwise. Keying point L on the CIFPU should result in output from the PA. With the VFO on 29MHz, adjust the core (use the correct tool) of L1 on the PA for maximum output.

You should now find that the output power is reasonably constant across the 10 bands, with about four watts available from a 12V supply (this assumes the mods to T4 have already been made as detailed earlier). The drive control should vary the output power down to virtually zero watts. Total current consumption of units connected at this stage will be in excess of 1 amp. (PA board around 700mA at max output).

If you get very little power, check the transformer windings on the PA (especially T4!). A clue to the problem will be whether the PA is taking any current. If it is but there is little output, then the problem is in the PA. If no current is being taken (other than the standing current) then no drive is reaching the unit. Checking with a scope or diode probe should reveal where the problem lies.

Monitor meter

To set this up, connect the 100uA meter as shown, and apply power. Adjust RV4 so that the meter reads about 90% of FSD at 29MHz with full power output. Under normal operating conditions, the drive control can be set flat out for CW, but for SSB, the drive needs to be adjusted so that the meter reading just backs off a little from maximum. More details

when the SSB unit is published. An additional unit will be published for monitoring the actual output power.

Connecting up

Once you have correct output power, you can then interface the PA and CIFPU with the Logic Sequencing Unit. Later on in the series we will give a complete wiring diagram for the whole unit, but there is sufficient information here to connect it all together. At this stage the units will very likely be spread around the bench. This doesn't matter as long as you keep the connections between the Antenna switch and the PA as short as possible, and use coaxial cable where needed. Have all diecast box lids in place where required.

The output of the PA has two coaxial connections made to it — one
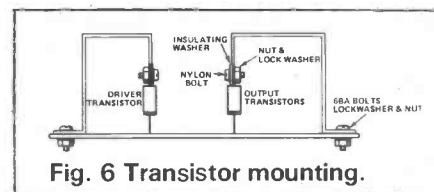

Fig. 6 Transistor mounting.

to the switching unit and the other to the output filters (next month).

Connection between the CIFPU keying input (L) and the switching unit (T) should be made with screened audio cable.

Important

PLEASE NOTE that the TX should not be put on the air until the output filters are in place (unless you make a temporary one for a particular band) as harmonics will be present from the PA (see next month's article).

However, a check on the break-in (QSK) operation can be made using an aerial with the drive backed right off to see that everything is OK. Keying at speeds up to 50wpm should be clean, with no clicks and thumps as the rig changes between RX and TX. The AGC Decay control on the CIFPU will normally be set around the ''fast'' end, but it can be adjusted to a setting which suits the strength of the incoming signal.

One of the problems occurs when the incoming signal is at the same strength as the sidetone — it then becomes difficult to hear what you are sending (if you need to). Under these conditions you should advance the AGC decay so that the receive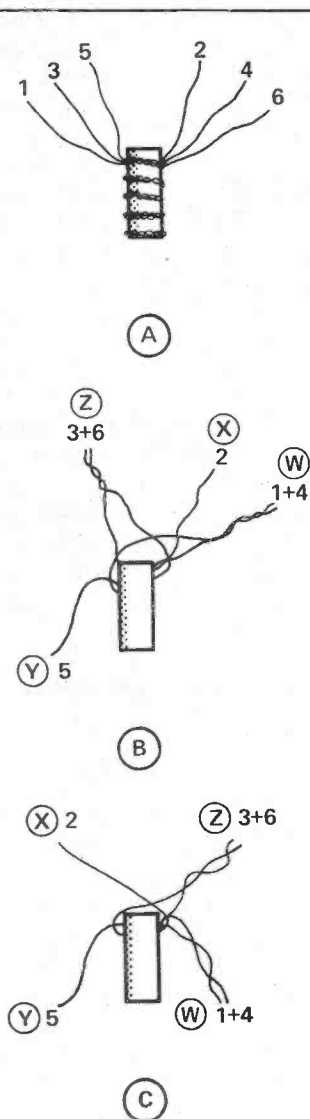r takes longer to return to full sensitivity.