

mains connection to the built-in NiCad charger, and an SO239 socket for an external aerial, this being recessed rather a long way into the panel and hence making it difficult to tighten the plug up fully.

Inside the case most of the circuitry is mounted on two large PCBs and the construction is generally uncluttered, which, coupled with the simplicity of the circuit, should make for easy servicing. Connections to the boards are, for the most part, made by wire wrap pins (some of which, however, are soldered). All component positions are clearly marked on the component sides of the boards. The standard of construction is generally good, although, having said that, I did find two dry joints which prevented the rig from operating when first received.

The *SB-2X* comes complete with a good range of accessories, and in fact the only item which might be needed and is not supplied is a set of NiCads; however, this is normal practice with a rig of this type. I'm not sure, though, whether I feel it to be entirely honest to describe the carrying case as being made of leather — it is, in fact, made of the usual canvas-reinforced plastic! This case, incidentally, has the useful feature that it can be removed and refitted without having to remove the carrying strap from the rig. One further point about accessories; Mizuho supply a mounting clip for the rather large hand mic provided with the *SB-2X*, and the manual instructs that this "should be fixed to the side of the set using the screws and washers supplied". Unfortunately, inspection of the metal case reveals that no provision has been made for this, since no mounting holes have been provided, and if the clip were mounted using the long self-tapping screws supplied it would be impossible to return the set to its case until the protruding ends of these screws had been filed off inside! Furthermore, the plastic carrying case makes no provision for the mic clip, and it would be necessary to cut a large hole in it to allow the clip through. In the event, I decided not to bother with the clip as the plastic case has a large pocket in which the mic can conveniently be stowed.

Handbook

Mention was made earlier of the handbook; however, this is probably

rather a misnomer, since it consists of just three photocopied A4 sheets! However, it does seem to contain all the information required for the operation and maintenance of the set, even down to instructions on how to adjust the VXO 'tracking' (calibration linearity would probably be a better term), and although there are many examples of 'Japanese English' the meaning is usually clear. My main complaint concerns the quality of the printing (or should I say photocopying) of the circuit diagram. This has obviously been photoreduced from a much larger copy, and although the diagram itself is just about legible, most of the component references, which are in very small lettering, are not. A phone call to the suppliers, Lowe Electronics, produced a copy which was both larger (A3) and clearer, but even here some of the smaller print was difficult to read. There is obviously some room for improvement in this area!

In operation

I used the *SB-2X* in a variety of situations, both portable and base station, over a period of some weeks in order to get the feel of it. Not surprisingly, the plus and minus points are similar to those Frank found for the *MX-2*. One obvious criticism is the battery consumption — it seems amazing that it could not have been reduced below 95mA on receive, when you consider that far more complex synthesised rigs can keep it down to about 35mA. That said, it represents far less of a problem than with the *MX-2*, since the *SB-2X* uses standard AA size NiCads, which should give about 3½ hours operation with a fully charged set, assuming a transmit to receive time ratio of 1:3. Looking at the circuit one can see various factors contributing towards this consumption, such as the low value of the LED dropping resistors, and the use of several individual zener diode stabilisers in different parts of the circuit, rather than one centralised IC regulator. Fortunately, unlike the *MX-2*, the *SB-2X* is designed with NiCads in mind, and the supply voltage is a convenient 12 volts, making the use of an external power supply easy.

The overall performance of the *SB-2X* is good, and the speech quality, both on receive and transmit, was generally liked. The receiver was

reasonably good in terms of signal to noise ratio, but was rather lacking in overall gain. Although weak signals were not lost in the noise it was necessary to turn the volume up rather a long way to hear them, and quite strong signals, approaching S9, in fact, were needed before the AGC (and hence the S meter) began to operate. The addition of a preamp remedied this without having any significant effect on the actual signal to noise performance. It did, however, greatly improve the action of the noise blanker, which had previously seemed to be fairly useless; obviously the level of signal supplied to it had not been sufficient for it to operate effectively. The S meter calibration was, as might be expected, totally meaningless since, as mentioned above, it took about an S8 signal to even move the pointer off the zero stop! Even with a preamp it is fairly meaningless, since it is linear in terms of signal voltage whereas its scale is linear in terms of S units, which are proportional to the logarithm of voltage! It would be far less misleading if manufacturers of this type of equipment followed the example of the Trio *TR2300* and simply marked the meter with a 0 to 10 scale with no reference to S units.

The stability of the VXO, whilst adequate, was not brilliant. It probably met the manufacturer's specification for drift of "within 200 Hz in any 30 minutes after initial warm up", but in practice this meant that it was nearly always necessary to retune by a small amount at the end of each transmission. Whilst this sort of stability would not be adequate for HF, it is probably OK for the less crowded conditions on two meters. The drift is probably due to the fact that the VXO crystals are being pulled by rather larger amount than is generally recommended, and since it is the *SB-2X* that is drifting, the temptation to correct it by using the RIT rather than the main tuning should be resisted!

On transmit, the performance of the *SB-2X* was generally satisfactory. Despite the low power, it was rare for a station that could be heard, however weakly, not to be worked. Whilst not being able to equal Frank's "washing-up DX" record, I did receive a report of 5 by 9+ from a station 16 miles distant under similar conditions (yes, I was washing up too!), and since my QTH in north Brighton is surrounded by hills on all sides I was quite pleased about