YOU MAY RECALL THE recent review in **R&EW** of the DNT M40 mobile CB set and that our conclusions were that its performance left more than a little to be desired. The failings were almost all to do with the receiver performance which was, frankly, absolutely atrocious. Although it can sometimes be very useful to have a receiver which allows you to listen to all of the 40 channels simultaneously, it is much more practical to be able to select them one at a time like everybody else. The problem is basically a design fault and to quote from our original review 'a delightfully sensitive first stage is followed by a simple bi-polar mixer of quite indescribably bad performance'. An engineering error of this kind is even more surprising because DNT have such a high reputation for CB sets produced to other European specs. (Although one never knows of course how much this is attributable to natural Tutonic nationalistic

DNT M40S

Supertuned for your protection Review by J L Forrest BSc.

fervour for a home grown product, DNT being a German company which designs its equipment in the Fatherland, but uses Hong Kong production facilities to keep the prices of its products competitive).

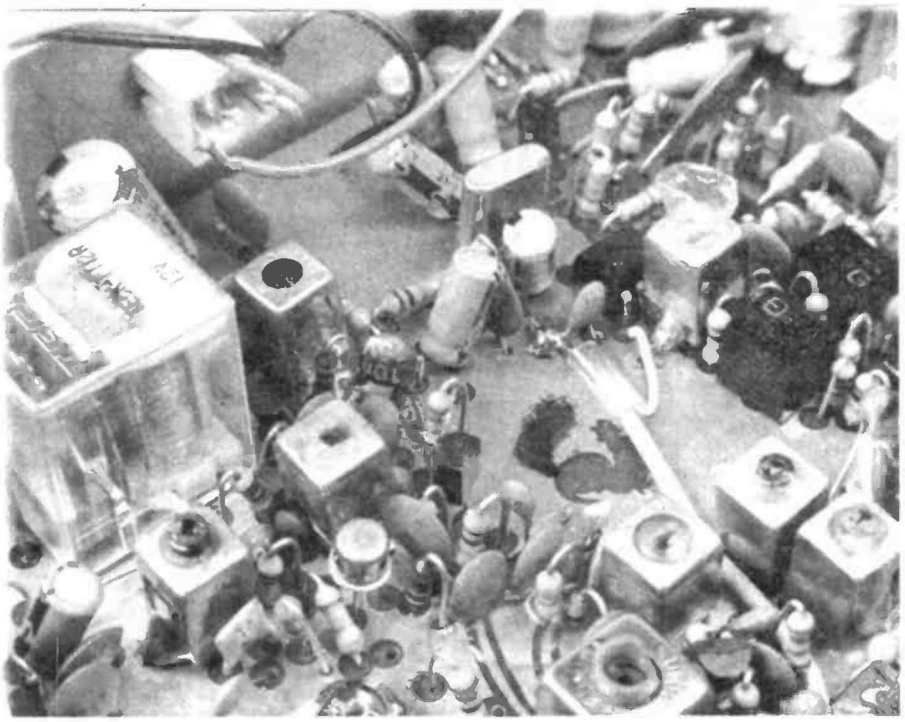
The British importers of the DNT equipment, Radiotechnic of Jersey, were aware of the problems with this set almost from day one of legal CB back in November and they immediately set about effecting a cure. The redesigned version, called the DNT M40 Special supertuned by Radiotechnic recently appeared on the UK market. The long delay between identification of the problem and its solution being due partially to the large amount of work that was necessary in a complete front-end redesign of the receiver, and then to the long wait for the specially designed crystal filters to arrive from Japan. The modifications are carried out in the UK by Cleartone,* a company with an extremely high reputation in private mobile radio equipment. Both they and Radiotechnic, are to be congratulated on an extremely successful modification which has certainly been well worth the wait. We have always had a preference for the laid-back European design style typified by the DNT sets. The rather garish appeal of the more extrovert Far East origin products is presumably designed for those customers who judge a piece of equipment's performance by the number of dials and lights it's got. For mobile use particularly the number of controls on the panel should be kept to an absolute minimum since driving a car these days is difficult enough without also trying to work one's way through the front panel of a 'guess which knob does what?' CB set. SMC's OSCAR 1 is a fine example of how excellent performance can be obtained from a set with only three main front panel controls.

The M40 Special also falls into the category of functional rather than impressive in looks. The set is physically identical externally to the original product except that it now has several aluminium self-adhesive stickers attached announcing its Supertunedness by Radiotechnic. A few brief measurements were performed initially in the laboratory to check the function and performance of the set and frankly the results were surprising, since the receiver performance is now nothing short of quite exceptional. Briefly, the receiver sensitivity was found to be better than 90 nanovolts for 10dB quieting with adjacent channel rejection and intermod performance both better than 70dB. These are figures of which a very expensive private mobile radio set would be extremely proud and certainly better than most other CB sets currently available (unless of course YOU know better).

The set was then installed in a car to test its performance under normal operating conditions, which was where the original set had been previously found to be so inadequate. Unfortunately, to a certain extent the modifications appear to have gone from one extreme to the other in that with the new super-duper crystal filters the receiver bandwidth is so narrow that even slightly over-deviated signals cause considerable audio distortion, to the point where breakers using some of the grottier power mics are almost totally unreadable.

This is perhaps not a fair criticism in that the set should not expect to have to received overmodulated copies assuming that all the other sets transmitting to it conform to the Government's specification. However, in a real world, these things do tend to happen and a small army of rig doctors through the length and breadth of the UK have been responsible for considerable tweaks to many many rigs resulting in at least 50% of the copies on the DNT being somewhat distorted. This is more than compensated for, however, by the sensitivity of the set which seems to pull tiny signals out of almost nowhere and of course emphasises the exceptional advantages of the noise muting inherently obtained from the MC3357 IF decoder, although DNT appear to be one of the only companies using that circuit in the mode for which it was intended. Some rigs noticeably the Cobras going to considerable lengths to effect 'conventional' (i.e. like it used to be done in the days of REAL AM) carrier sensitive squelch control using the 3357 with substantial extra external circuitry. A significant extra benefit of very narrow receiver filtering is that substantial rejection of unwanted AM CB signals and single-sideband signals is obtained since their 3.5kHz frequency offset is enough to put them well down the shoulders of the filter characteristics.

The improvements to the receiver have also highlighted some of the other inadequacies of the set which were completely masked by our preoccupation with the appalling receiver performance previously, for example, the squelch control range is really inadequate for mobile use in that even when it is set fully shut, considerable noise is allowed to come through with quite weak signals. If like me, you like to keep the squelch reasonably shut



Open view showing internal layout.

when running (for example) long journeys on the motorway, so that you only receive the strong signals relevant to your own area for traffic information, you will find the DNT Special's squelch range inadequate. This is really quite a trivial criticism however, but a more major failing is in the microphone supplied as standard with the set. Although light, comfortable to hold and to use, and supplied with an extra-long curled lead terminated in a DIN plug which fits into the front rather than into the side of the transceiver (which is far more useful especially for in-dash mobile mounting) the microphone is of a type designed to be noise cancelling mechanically rather than electronically. This is achieved by mounting the microphone capsule in the bottom half of the microphone and feeding the sound pressure to it from the actual orifice in the front via a very narrow slit. This does indeed have the effect of cancelling substantial amounts of vehicle background noise, but it also has the effect of removing any trace of bass particularly from male voices, while making the received audio very punchy. The overall effect is to make the received audio quality from this transmitter unpleasant to listen to for the chap with whom you are trying to converse. The problem is completely cured however, by fitting a conventional hand-held microphone, and is particularly easy to fit in this case because due to the relay transmit/receive switching within the set wiring up the plug is relatively simple.

Radiotechnic have arranged to retro-fit free of charge the new crystal IF filters to any DNT set obtained in the UK with which the customer is dissatisfied, and if you are one of these all that you need to do is to despatch your set (suitably packaged to cope with the Post Office's ravages) with a cheque or postal order for £1.20 to cover return post, packing and insurance to: Interservice Electronics, 87 Park Street, Southend, Essex who will modify the set and return it to you as soon as possible. Hopefully this is within 48 hours, but certainly you should have your modified rig back within 7 to 10 days, a wait which is most certainly worthwhile in view of the exceptional increase in performance.

The free modification is only of the IF filters and if you wish to have the full Supertune mods then a charge of £11.45 including post and packing is made for fitting the JFET mixer transistor, improved front-end, and the various other modifications, again this must be considered an exceptionally reasonable charge.

Summarising, the new supertuned DNT M40 FM Special is now among the top handful of UK legal CB rigs, with a receiver performance which is quite exceptional and well ahead of the rest in its class albeit with problems of distortion when receiving overmodulated signals. The transmitter quality is good when the supplied microphone is replaced with a more conventional one unless of course you happen to like sounding like a Dalek on the radio, and the controls and functions operate smoothly and very effectively, which combined with the set's compact dimensions makes it ideal for mobile use. At a typical retail price of around £85.00 this must now be considered very good value for money indeed and can be strongly recommended.

Two final quick points: firstly, the B40 (which is the home-based version of the M40 and has a sort of benign growth on the back containing the mains power supply) has always been fitted with the improved supertuned circuitry since legal day, so if you possess one of these you should not be having problems and therefore it is not worth sending it to Interservice for any expected improvements. We have not had the opportunity of trying one of these but look forward to perhaps confirming this in the future, with perhaps additionally the big DNT home-base unit when it eventually reaches the UK market. Secondly, the DNT sets come equipped internally for Selcall facilities, there is an edge-connector on the PCB which accepts an add-on Selcall decoder which is now readily available from DNT dealers for under £25.00 per unit. The system uses the conventional PMR 5-tone calling system and has the unusual facility that it allows the called rig to transpond, in other words it retransmits the calling tone so that an 'acknowledge' light illuminates on the calling and on the called receiver so that both users know that contact has been established.

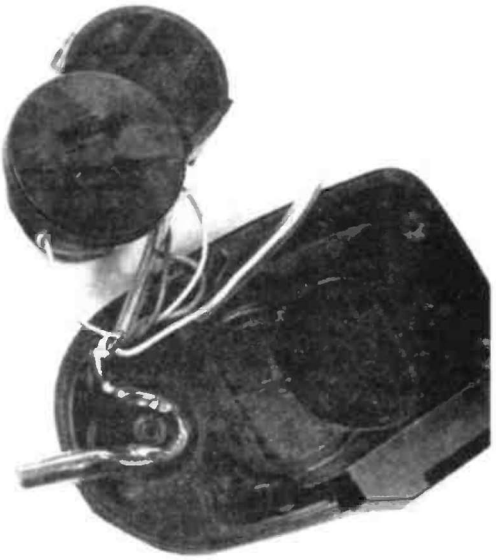


Photo of disassembled mike showing internal construction.

*Since this article went to press Radiotechnic have made other arrangements for the supertuning of the M40S, but they assure us that similar high quality will be maintained. We will keep you informed.

■ R & EW

Your Reactions.....	Circle No.
Immediately Interesting	92
Possible application	93
Not interested in this topic	94
Bad feature/space waster	95