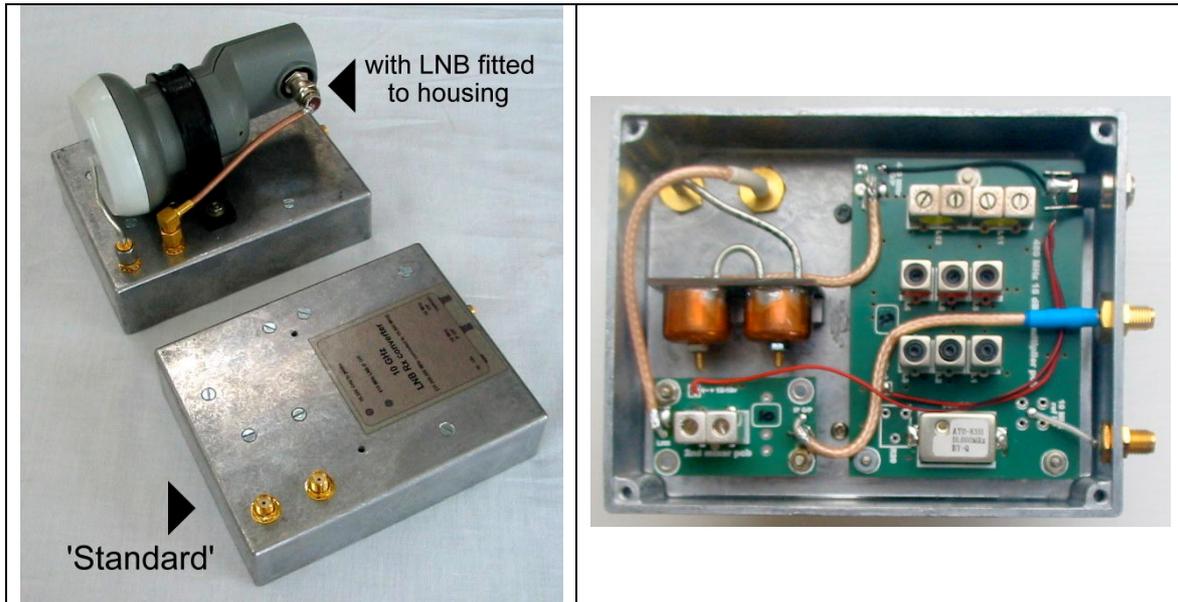


Unit assy



Die-cast box	Farnell 301530
Supply socket 2.5mm	Maplin JK09L
Pillars M2.6 (6 off)	
Countersunk screws M2.5 x 6 (6 off)	For pillars
Nuts M2.5 (8 off)	
Plastic clip	
Pan head screws M2.5x 10 (2 off)	For plastic clip
Steel washer M3 (2 off)	For plastic clip
M2.5 nut (4 off)	For plastic clip

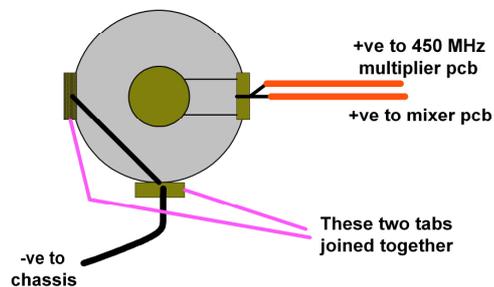
This is the easiest section...

Assembly is straightforward – **fit the pillars** to the box first, then the 450 MHz multiplier and the mixer pcbs. For the moment, leave the x23 multiplier unfitted.

Make up the dc leads to the supply socket and fit to the box. Solder the negative lead to the 450 MHz multiplier pcb as shown in the opening picture (rh side) – just use one of the ground holes provided for the 450 MHz O/P connector (which is never fitted).

The two positive leads can be pushed into the +ve supply holes on the two pcbs.

[Note that the drawing has been updated](#)



Solder the coax leads to the mixer pcb. The one with the white sleeving goes to 'LNB', and the one with blue sleeving to 'IF O/P'. Solder the inner wire into the appropriate hole first, then the screen to the groundplane, taking note from the picture of which direction the coax has to depart from the board. Finally fit the socket end of the cables to the appropriate housing holes. With a finger on the connector rear, tighten up the nut using a 5/16" spanner. Tighten really well.

X23 multiplier pcb

Just sit the board assembly into the unit housing, but don't screw the fixing countersunk screws in yet. Bend the quick-form coax output lead to shape, and fix the sma connector to the box (fitting to the hole nearest the corner of the housing), Again, tighten up the nut using a 5/16" spanner.

Now solder the ptfе clad input coax to the 450 MHz multiplier pcb, soldering the inner connector first.

The x23 multiplier can now be aligned prior to screwing the board firmly into the housing.

x23 multiplier Board alignment

Since the 450 MHz multiplier pcb is already aligned, it is sufficient simply to apply 12v to the power socket and feed the x23 multiplier output into a spectrum analyser, however, you will to use the analyser on its most sensitive setting, and with the bandwidth reduced down to the minimum practical value. Even then, you may not initially see any component at 10.350 GHz. Fortunately, by the time either cavity screw is tuned through resonance, a trace should be seen. The second cavity can then be peaked. With both cavities re-tweaked for maximum, an about of approximately -40 dBm should be obtained.

Once aligned (and the lock nuts tightened), the board assembly can be screwed into the main housing.

Mixer alignment

If the accompanying LNB is not available, use a signal generator tuned to 618 MHz to feed a signal into the '618 MHz LNB IF I/P' port (be aware that there there will be 12v on this pin, so either fit a dc block or be sure that the generator is itself fitted with a dc block). With a spectrum analyser connected to the '18 MHz IF O/P' port, tune L51 (issue 1 pcb legend falsely states 'L50') for maximum signal at 618 Mhz.

If an LNB is fitted to the converter, either tune L51 for maximum noise out of a receiver tuned to 18 MHz connected to the '18 MHz IF O/P' port, or apply a signal to the LNB at 10 368.000 MHz and adjust L51 for maximum signal at 18 MHz.

Note: The 10 MHz TCXOs used in this converter tend to be 25 – 50 KHz high in their initial frequency when multiplied up to 10 GHz.

LNB fixing screws

If an LNB is going to be fitted as part of the unit assembly, fit the two M2.5 x 10 provided through the two non countersunk holes. Note that one nut per screw is used to secure the screw to the box – the 40mm mounting clip is a snug fit over this nut. The clip is secured using the second nut and the M3 washer