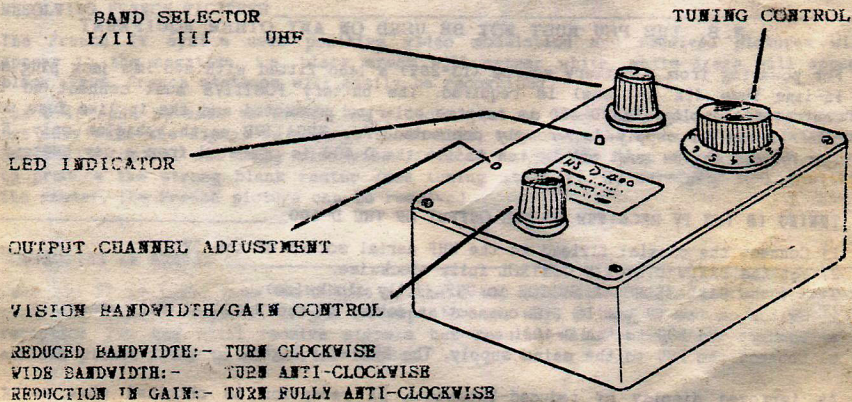


# HS D-400 SERIES

## DX-TV TUNING SYSTEM

with variable I.F. bandwidth



## INSTRUCTIONS

- DOUBLE SUPERHET DESIGN - USES THE TV RECEIVER AS A SECOND I. F.
- COVERS DX-TV CHANNELS IN BANDS I, II, III & UHF (21-50 approx).
- VARIABLE VISION I.F. BANDWIDTH. REDUCED SETTING LIFTS WEAK SIGNALS FROM THE NOISE.

Colour and sound reception is possible (on full I.F. bandwidth) provided the TV is equipped with the appropriate colour decoder and has a sound I.F. for the system you want to receive.

TUNING RANGE: BAND I/II: F21 (45.25MHz) - R4 (85.25MHz)

BAND III: CCIR E5-E12 OIRT R6-R12

UHF: E21-50 (approx)

VOLTAGE: 13-28V DC or 220/240V mains via the PSU.

OUTPUT: RF (adjustable between E50-E70).

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7 EPPING CLOSE

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**PLEASE READ THE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO OPERATE THE D-400**

**IMPORTANT:-** The twin core mains lead of the PSU must be connected to a suitable mains plug fitted with a 2A fuse. The following colour coding **MUST** be observed:-  
**BROWN = LIVE                      BLUE = NEUTRAL**

**WARNING:-** ALWAYS DISCONNECT THE PSU FROM THE MAINS BEFORE REMOVING THE D.C. PLUG FROM THE D-400. FAILURE TO DO THIS WILL RESULT IN THE PSU FUSE BLOWING OR EVEN DAMAGE TO THE UNIT. ALWAYS DISCONNECT FROM THE MAINS SUPPLY WHEN NOT IN USE.

**N.B. THE PSU MUST NOT BE USED ON ANY OTHER EQUIPMENT**

For powering from a battery source (13-28V) a lead fitted with a 3.5mm jack plug and in-line fuse (1A or less) is required. The battery POSITIVE must connect to the centre of the plug. The D-400 is reverse polarity protected and the in-line fuse will blow if the DC supply is wrongly connected. For NEGATIVE earth vehicles only. N.B. The vehicle engine must not be run whilst the D-400 is operated from a car battery.

**TUNING IN THE TV RECEIVER TO THE OUTPUT OF THE D-400**

- 1) Connect the coaxial flylead to the UHF aerial socket of the TV.
- 2) Set the BANDWIDTH/GAIN CONTROL fully clockwise.
- 3) Set the BAND SELECTOR SWITCH to UHF (fully clockwise).
- 4) Switch on the TV but DO NOT connect an aerial to the D-400 at this stage.
- 5) Connect the PSU to the D-400.
- 6) Connect the PSU to the mains supply. The LED will light.

An improved display of reduced-bandwidth DX reception is obtained when using a monochrome receiver (e.g. a portable TV) as a monitor. The *fixed-channel UHF output* of the D-400 is more easily found when using a receiver featuring a simple rotary tuner. The double-superhet design of the D-400 system (in which the TV performs as another IF) means fine adjustments to selectivity, etc, can be made more conveniently with this type of tuner (for receivers with electronic search-tuning see later).

7) Slowly tune the TV through UHF channels **60 to 70** starting at the lower end of the band, until the output of the D-400 is located. This shows as an increase in snow on the screen (between channels **60 and 70**).

Note:- Turning the TV tuning control further (approx 3-4 channels) should produce an unmodulated carrier, i.e. blank screen without snow. Tuning even further (approx 3-4 channels), a second noise peak should be located. Select the first peak.

8) To confirm that the output channel has been located, experimentally adjust the BANDWIDTH control. The amount of snow present will vary depending on the setting of the control. The reduced bandwidth setting (fully clockwise) produces the most snow.

N.B. Always initially tune the TV for maximum snow on the screen. This is the correct tuning point for reduced bandwidth operation and you should familiarise yourself with being able to obtain it.

Fine tuning the TV slightly can often improve adjacent channel rejection on reduced or wideband I.F. settings. The use of a TV receiver with a simple rotary tuner will therefore be more suitable for DX-ing in this respect.

For colour reception:-

- 1) Tune in the signal with the unit set to reduced bandwidth.
- 2) Adjust the bandwidth for maximum - at this point the picture may still lack colour.
- 3) Adjust the TV fine tuning until the colour appears (slightly h.f. of the narrow bandwidth setting).

**SHOULD DIFFICULTIES BE EXPERIENCED WHEN INSTALLING THE UNIT, OR IF IT DOES NOT APPEAR TO FUNCTION CORRECTLY, PLEASE CONTACT YOUR SUPPLIER FOR ADVICE.**



## USING A SEARCH TUNE TV RECEIVER AS A MONITOR

Some TV receivers employing search tuning require an off-air signal of adequate strength to be present before the tuning will stop and "lock". In such cases it will be necessary to tune the D-400 into a broadcast first but this can only be done by initially setting it up by using a TV with a conventional rotary or push-button tuner. Once a local signal has been tuned on the D-400, transfer its output to the search-tune TV and tune in according to the receiver handbook.

## RESOLVING FRENCH PICTURES

The French TV system uses positive video modulation and received pictures will appear in the negative, i.e. black areas will appear white, white areas will appear black. Thus, French stations will easily be recognised.

The D-400 can be made to invert the video signal so that the picture appears normal but only when the signal is strong. To do this, tune into the French station with the BANDWIDTH control set fully clockwise (reduced bandwidth) then alter the TV tuning to produce the strong blank raster (see tuning stage 7). By carefully tuning within the raster, the French picture can be resolved.

## CONNECTING AN AERIAL

Once the TV is tuned into the output of the D-400 connect an aerial designed for the band you wish to explore. If you attempt to use, say, a Band I aerial for Band III reception you may still receive signals but results will be inferior. For suitable aeriels please refer to our aerial leaflet.

## VIDEO RECORDINGS

The D-400 may be connected to a video recorder to enable reception to be recorded. To do this, the coaxial lead of the D-400 should be plugged into the aerial socket of the video recorder. The video recorder is connected to the TV in the normal way with the appropriate TV tuning position selected for viewing the tape. Select a spare tuning position on the video recorder and tune into the output of the D-400 by following steps 1 to 8 on the opposite page.

Note that in some cases, the VCR modulator output channel might coincide with the D-400 output and produce patterning. Adjust either the VCR modulator (and retune the TV slightly) or adjust the D-400 oscillator (and retune the VCR slightly).

## VISION MODULATOR OSCILLATOR ADJUSTMENT

Should patterning appear on the local channels, the output channel of the D-400 can be shifted by adjusting the trimmer screw which is accessible via the hole in the lid (use a copper bladed trim tool). Only a minimal adjustment should be made - just enough to remove the patterning. Finally, retune the TV to the new output channel.

*N.B. It is normal for the oscillator output frequency to appear somewhere within the UHF band. A compromise setting may have to be found which will cause the least patterning on DX signals around this particular frequency.*

## AUTO BANDSCAN (Model D-450 ONLY)

The bandscan facility allows the preview of the following channels:-

Band I: NZ1-A4 Band III: M5-E9 approx. UHF: E21-E45 approx.

The LED indicator remains lit when ascending channels are scanned. The LED indicator is extinguished when descending channels are scanned.



### CHANNEL CALIBRATIONS

The numbers around the tuning dial correspond approximately to CCIR channel numbers.

#### BAND I CHANNELS

For E2, E3 and E4 set the dial so that the number appears against the BLUE dot.

#### OTHER CHANNELS IN BAND I/II (Set dial to BLUE dot):-

- R1/E2a vision..... just above 2
- 1A vision..... just below 3
- R2 vision..... between 3 and 4
- R3 vision..... just below 7
- 1C vision..... 8
- R4 vision..... between 8 and 9

#### BAND III CHANNELS

For E5 to E10 set the dial so that the number appears against the YELLOW dot. Channels E11 and E12 will appear further round the dial.

#### UHF CHANNELS

For UHF channels 21 to 50 use the Channels versus Dial Number graph below.

#### DIAL NUMBER

10  
9  
8  
7  
6  
5  
4  
3  
2  
1

21 25 30 35 40 45 50

UHF CHANNELS

SERIAL NUMBER..... 04036

OP CH = 63 APPROX

Output channel has been changed  
to 57 APPROX

MANUFACTURED IN THE UNITED KINGDOM

Due to Int FROM BBC2