

NRD-525 IC2 EPROM MODIFICATION, CBO V1.5 [REDACTED] version.

⇒ **5 filters IF selection and 11 tuning steps.**


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<https://nrd525.qrvradio.fr/NRD525En.htm>
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DESCRIPTION, INFORMATION AND PRECAUTIONS

(This EPROM is a modification of the 7DEJD0072B version, including RS232, RTTY functions).

All functions of the V1.4 version are included:

- You can use the 5 filters with the original WIDE BAND (>12KHz) when all optional filters are installed. ("BANDWIDTH" lit alone when this filter is selected).
- There is a read/write instruction "B4" for use this filter with RS-232 interface.
- A "J1" RS-232 command displayed your personal parameters on the RS-232 (version, JRC serial number and name).
- The **MEMO**  function indicates the EPROM version and the JRC serial number.

New V1.5 version functions:

- You can use 11 tuning steps by pressing the **RUN**, **<DOWN** and **UP>** keys:

10Hz - 100Hz - 1KHz - 5KHz - 6,25KHz - 9KHz (or 8,33KHz) - 10KHz - 12,5KHz - 15KHz - 25KHz - 50KHz.

- The speed rotation of the central tuning knob is proportional for the 10Hz and 100Hz fine steps, as before. The speed is linear for the 9 others steps.
- Now, the central tuning knob, the **<DOWN** **UP>** keys and SWEEP function works with the same tuning steps, in all modes.

⇒ *This unique EPROM is a copy protected and you have advantages for the news upgrades.*

Check the package content:

- This notice (8 pages),
- A ½ page questionnaire,
- CPU 2764 EPROM labeled **CBO V1.5** [REDACTED] (this EPROM is tested OK before sending).
- A 28 pins socket for EPROM,
- Fine wire.
- 2 jumpers.

If you encounter technical problems, contact a qualified technician or a professional assistance.


Some interventions are delicate.

The author does not assume any responsibility about the following procedure, neither for any consequent damage or problem. You make this modification on your risk and responsibility.

Before starting work, be sure to remove the power cable and all cables.

Do not remove any part which does not need to be removed.

Use adapted tools.

 Warning! This symbol indicates a particular precaution, or component sensitive to electrostatic discharge.
⇒ Before handling any components, be sure to wear an anti-static wrist strap or touch a grounded object.

⇒ WARNING : the contents in the preset memory may be lost after these operations.

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1- REMOVING COVER

- Disconnect all cables.
- Remove the upper cover slowly by loosening 4 screws, taking care not to break the speaker wires.
- Remove the speaker connector (on the IF-AF AMP CAE-182 card).

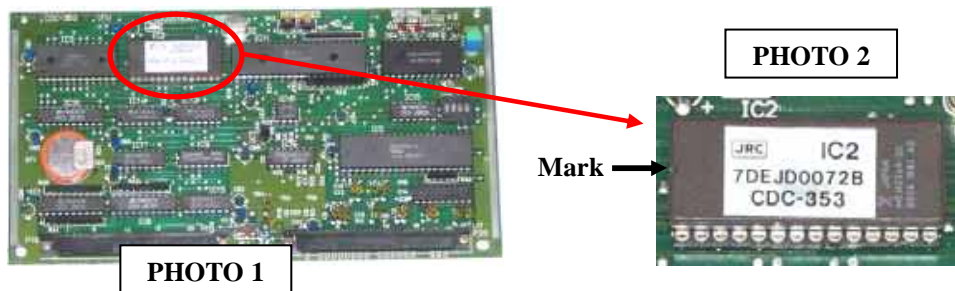
2- CPU CDC-353 CARD MODIFICATIONS

2.1- Removing

- Locate the CPU CDC-353 card and remove it (insert the removal lever or a small screwdriver into the holes at both corners of the card).

2.2- IC2 CPU EPROM

Locate the 2764 IC2 EPROM on the CPU CDC-353 card:



⚠ If the EPROM is already on a socket, carefully extract it and go to the chapter 2.4.

2.3- Installing the CPU EPROM socket

- ⚠ Carefully unsolder the EPROM, pin by pin with a fine soldering iron and a good unsolder pump.
- Before extracting this component, be sure all the pins are correctly unsoldered, using small pliers.
- ⚠ Extract this component without force.
- Place the 28 pins socket in the correct orientation. Orient the mark to the left (near the IC3 RAM, see PHOTOS 1 and 2). Solder cleanly the 28 pins.
- Be sure there is no short-circuit between pins.

2.4- Installing the new CPU EPROM

- ⚠ Carefully insert the new CBO V1.5 EPROM into the socket with the mark in the correct orientation (near the IC3 RAM, see PHOTOS 1 and 2).

⚠ **The EPROM fits only in one correct orientation.**

⚠ **Other orientation or incorrect installation damage EPROM or CPU card !!**

2.5- Replacing the CPU card

- Put back the card to the original position by securely inserting it along the rails.

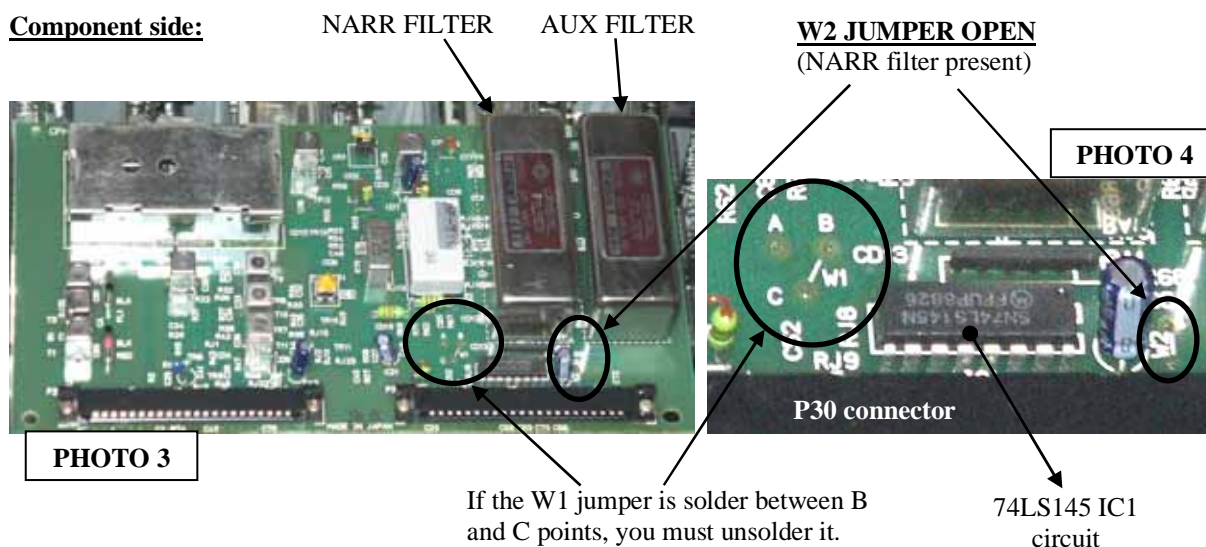
3- IF-FILTER CFH-36 CARD MODIFICATIONS

3.1- Removing

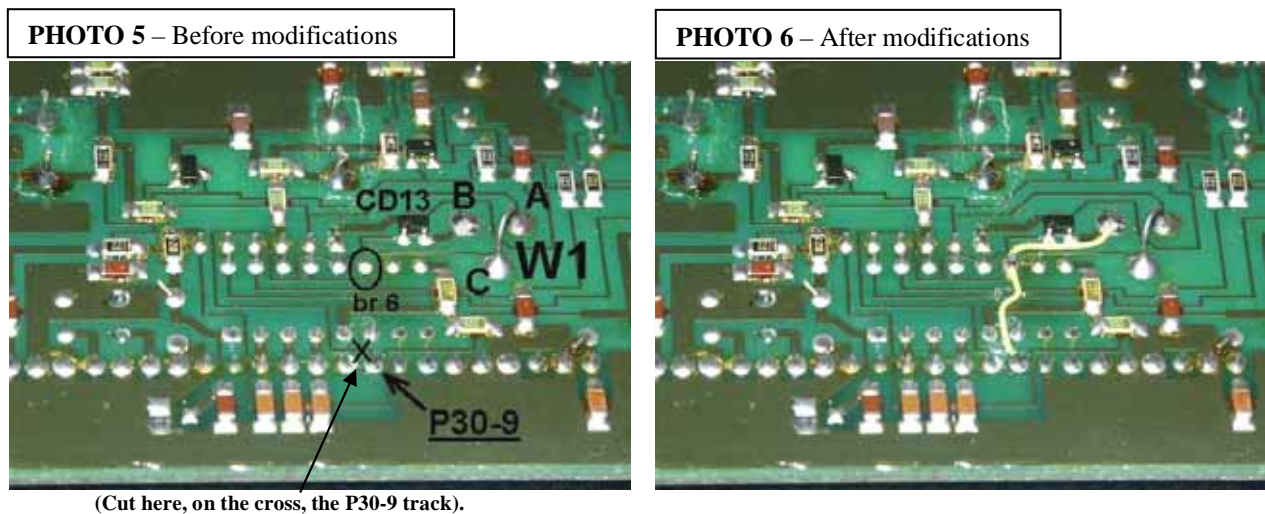
- Locate the IF-FILTER CFH-36 card and remove it (insert the removal lever or a small screwdriver into the holes at both corners of the card).

3.2- Locate these elements

Component side:




IC1 circuit and W1 jumper on the printed circuit board side:



(SEE PHOTOS 3 et 4)

- The W1 jumper wire should be solder between A and C points. If not, unsolder this jumper.
- The B point should be unused on any face of the card.
- The W2 jumper wire should be absent (open), if not unsolder it.

3.4- Old signal FM/ connection

-  Carefully cut the P30-9 (P30 connector pin 9, FM/ signal) track going to IC1 (74LS145) pin 5, as indicated on the PHOTO 5, on the cross.
(Use a small cutter and check your connections with a multimeter).
- The P30-9 pin is now isolated.

3.5- New signal FM/ connection

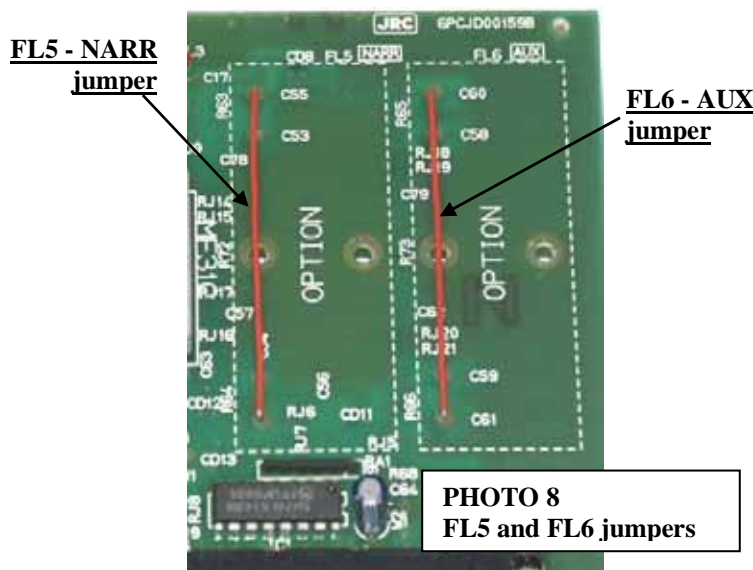
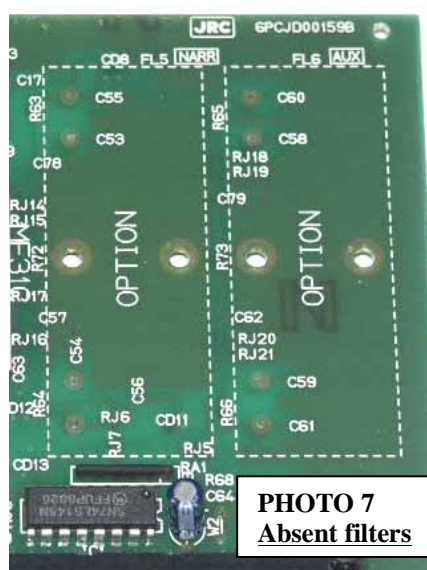
(Use the small wire)
SEE PHOTO 6.

- ⚠ Locate the IC1 (74LS145) pin 6 (br 6). Solder a small jumper wire between this pin and P30-9 point.
- ⚠ Solder a small jumper wire between this IC1 pin 6 and B point.

3.6- No optional filter

If you have not the optional FL5 (NARR) or FL6 (AUX) filter as show on PHOTO 7 (IF-FILTER card CFH-36), you can replace it with 1 or 2 jumpers. See PHOTO 8.

With this modification, the sound is not cut off when "NARR" or "AUX" is displayed on the JRC. (However, you must make the chapters 3.3, 3.4 and 3.5 modifications).



- Solder a jumper in each free location (FL5 or FL6 or the 2).

3.7- Replacing the IF-FILTER card

- If it is possible, check there is no short-circuits, with a multimeter.
- Put back the card to the original position by securely inserting it along the rails.

4- RE-ASSEMBLING THE RECEIVER

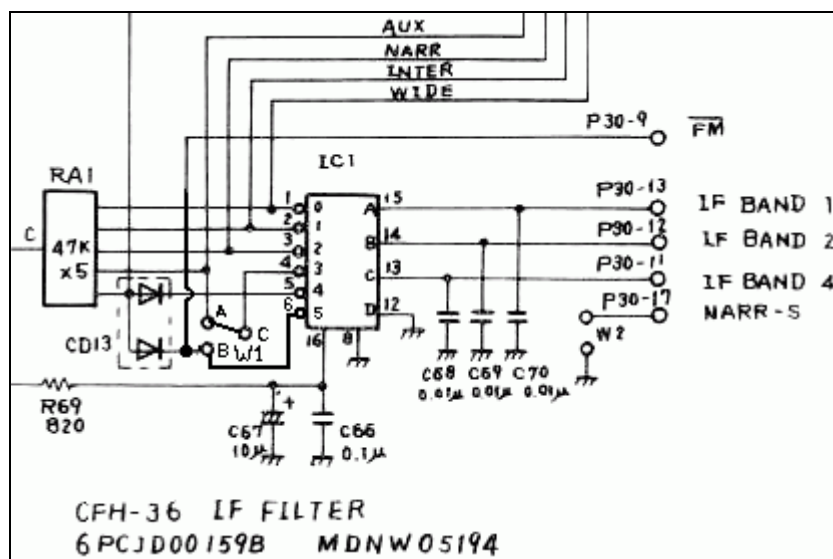
- Make sure all the cards are seated properly in their slots.
- Reconnect the speaker connector on the IF-AF AMP CAE-182 card.
- Mount the upper cover and the 4 screws.

- Connect the power cable and turn ON the power.

⚠ The receiver should instantly work, if not, SHUTDOWN THE RECEIVER AND DISCONNECT THE POWER CABLE.

Check all procedures. Make sure the cards are seated properly in their slots.

5- NEW SCHEMATIC DIAGRAM



6- EXPLANATIONS

6.1- IF filters addressing

On the IF-FILTER CFH-36 card, IC1 (74LS145) is addressed by three bits, and eight outputs can be controlled. Only five are used: WIDE, INTER, NARR, AUX and FM.

With this modification, a sixth output (Br 6) is selected and used for the FM/ signal selection.

Now, the original Wide Band filter is selected by the fifth output (Br 5).

New IF Filter selection, CFH-36 card.

Signal =>	IF BAND 4	IF BAND 2	IF BAND 1	W1 jumper	BCD	74LS145 Output (0V)
P30 connector =>	P30-11	P30-12	P30-13			
IC1 74LS145 (BCD) Pins =>	Br 13 (C)	Br 14 (B)	Br 15 (A)			
WIDE FL3	0	0	0		0	Br 1
INTER FL4	0	0	1		1	Br 2
NARR FL5 (with this option)	0	1	0		2	Br 3
AUX FL6 (with this option)	0	1	1	A-C	3	Br 4
Wide band - direct	1	0	0		4	Br 5
direct and FM/ signal	1	0	1		5	Br 6
<i>NOT USED</i>	1	1	x		6,7	Br 7,9

6.2- Addressed filter number

(In the CBO source code EPROM software)

\$24B9 (FI filtre) variable, IF filter number :

BEFORE : 0=WIDE, 1=INTER, 2=NARR, 3=AUX, 4=~~direct and FM/~~

AFTER : 0=WIDE, 1=INTER, 2=NARR, 3=AUX, **4=direct, 5=direct and FM/**

	NARR	INTER	WIDE	AUX	direct 12KHz	direct FM/
BEFORE	2	1	0	3	no	4
AFTER	2	1	0	3	4	5

7- TESTS AND USE

- => 11 tuning steps can be used with the **RUN** and **<DOWN>** - **UP>** keys.
- => The five filters are selected with the **BANDWIDTH +/-** key as before.
- => The **MEMO 9** command indicates the EPROM version and the serial number on the NRD-525 display.
 - ⇒ The "B4" RS-232 command selects the 12KHz wide band filter.
 - ⇒ The "J1" command displayed your personals parameters on the RS-232.

7.1- TUNING STEPS SELECTING

- Set your receiver frequency at 10MHz, for example.
- With a first pressing on the **RUN** key, the actual tuning step is indicated on the display as below:

Pressing **RUN** key

STEP	Display on the NRD-525 :	
10 Hz or 100 Hz (x10)	- - . 0 0.0 1 KHz	1 0 . 0 0.0 1 KHz
1 KHz or 10 KHz (x10)	- - . 0 1.0 0 KHz	1 0 . 0 1.0 0 KHz
5 KHz or 50 KHz (x10)	- - . 0 5.0 0 KHz	1 0 . 0 5.0 0 KHz
6,25 KHz	- - . 0 6.2 5 KHz	Pressing <DOWN> or UP> key
9 KHz	- - . 0 9.0 0 KHz	
12,5 KHz	- - . 1 2.5 0 KHz	
15 KHz	- - . 1 5.0 0 KHz	
25 KHz	- - . 2 5.0 0 KHz	

(or 8,33 KHz)

- You can multiply by 10 the 3 first steps with a second pressing on the **RUN** key.
- By pressing the **<DOWN>** or **UP>** keys, you can decrease or increase the tuning step.
- This step display is cleared when you turn the tuning knob or if you press the **FREQ, CHANNEL, CLR, <MODE>, CLOCK, SCAN** or **SWEEP** key.

7.2- IF FILTERS SELECTION

- Set your receiver frequency at 10MHz CW mode and AUX filter.
the display indicates: **BANDWIDTH** **AUX**
- Press the **BANDWIDTH >** key. The display indicates: **BANDWIDTH** **NARR**
- Press the **BANDWIDTH >** key. The display indicates: **BANDWIDTH** **INTER**
- Press the **BANDWIDTH >** key. The display indicates: **BANDWIDTH** **WIDE**
- Press the **BANDWIDTH >** key. **The display indicates only:** **BANDWIDTH**
(the sound change, this is the 12KHz wide band filter selection).
- Press the **BANDWIDTH >** key. The display indicates: **BANDWIDTH** **AUX**

7.3- MEMO 9 FUNCTION

This function indicates the EPROM version and the serial number.

- Press the numerical key **9** with the **MEMO** key depressed.

The display indicates:

15 - [REDACTED] -
↙ ↘
CBO V1.5 EPROM version NRD-525 serial number

- To clear this indication, press **CLR** key.

ONLY IF YOU HAVE THE CMH-532 or CBO-232 RS-232 OPTION:

7.4- RS-232 COMMANDS

The new "B4" instruction selects the original wide band filter.

- Set your receiver frequency at 10MHz CW mode and AUX filter, on the NRD-525 front panel.
- Connect the NRD-525 RS-232 on an external device or computer and use a terminal program or other (300 or 1200 Bauds, 8 bits, 1 STOP bit, without parity, referring to the CMH-532 or CBO-232 manual).
- On the terminal, send "H1" string. The display on the NRD-525 indicates "REMOTE" and the **LOCK** LED is lit.
- If you sent B0 or B1 or B2 or B3 string, **WIDE**, **INTER**, **NARR**, **AUX** filters are displayed.
- If you sent B4 string, the original wide band filter is selected and only **BANDWIDTH** is displayed.**
- If you sent "J1" string, the NRD-525 responds on the terminal:**

```
CBO V1.5 [REDACTED] EPROM Version
NRD-525 [REDACTED]
```

- Send "H0" string. On the NRD-525, the indication of "REMOTE" disappears and the **LOCK** LED goes out.
- Send "I1" string. The display on the NRD-525 indicates "REMOTE".
- On the receiver, press several times the **BANDWIDTH >** key. The terminal indicates: ... B3, B2, B1, B0, **B4**, B3, ... (With B4, the new filter).

<https://nrd525.qrvradio.fr/NRD525En.htm>

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