NRD-525 IC2 EPROM MODIFICATION, CBO V1.4 _____ version.

5 filters IF selection : *NARR - INTER - WIDE – 12 KHz - AUX*.
(© CBO December 2003)

(This EPROM is a modification of the 7DEJD0072B version, including RS232 and RTTY, RUN key tuning speed and SSB +/-1,5KHz offset with MEMO 0 function).

- **With this new version, you can use the 5 filters with the original WIDE BAND (>12KHz) <u>when all optional filters are installed</u>. ("BANDWIDTH" lit alone when this filter is selected).**

- **There is a new read/write instruction "B4" for use this filter with RS-232 interface.**

- **A new "J1" RS-232 command displayed your personal parameters on the RS-232.**

- **The MEMO 9 function indicates the EPROM version and the serial number.**

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

Check the package content:

- ☐ This notice (6 pages),
- ☐ A ½ page questionnaire,
- ☐ CPU 2764 EPROM labeled **CBO V1.4 _____**   (this EPROM is tested OK before sending),
- ☐ A 28 pins socket for EPROM,
- ☐ Fine wire.

If you encounter technical problems, contact a qualified technician or a professional assistance.
Some interventions are delicate.
The author doesn't assume any responsibility about the following procedure, neither for any consequent damage or problem. You make this modification on your risk and responsibility.

<u>Before starting work, be sure to remove the power cable and all cables.</u>

<u>Do not remove any part witch does not need to be removed.</u>

<u>Use adapted tools and a fine soldering iron.</u>

⚠ **<u>Warning !</u>** 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.

<u>=> WARNING : the contents in the preset memory may be lost after these operations.</u>

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:

PHOTO 2

Mark →

PHOTO 1
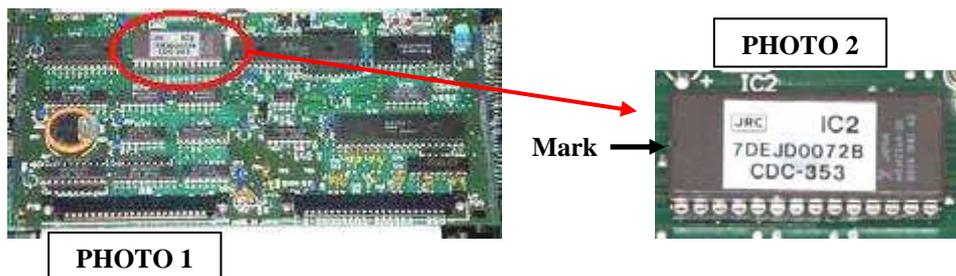
⚠ If the EPROM is already on a socket, carefully extract it and go to the 2.4 chapter.

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-circuits between pins.

2.4- Installing the new CPU EPROM :

☐ ⚠ Carefully insert the new CBO V1.4 _____ 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:

NARR FILTER   AUX FILTER

W2 JUMPER OPEN
(NARR filter present)

PHOTO 4

P30 connector

PHOTO 3

If the W1 jumper is solder between B and C points, you must unsolder it.

74LS145 IC1 circuit
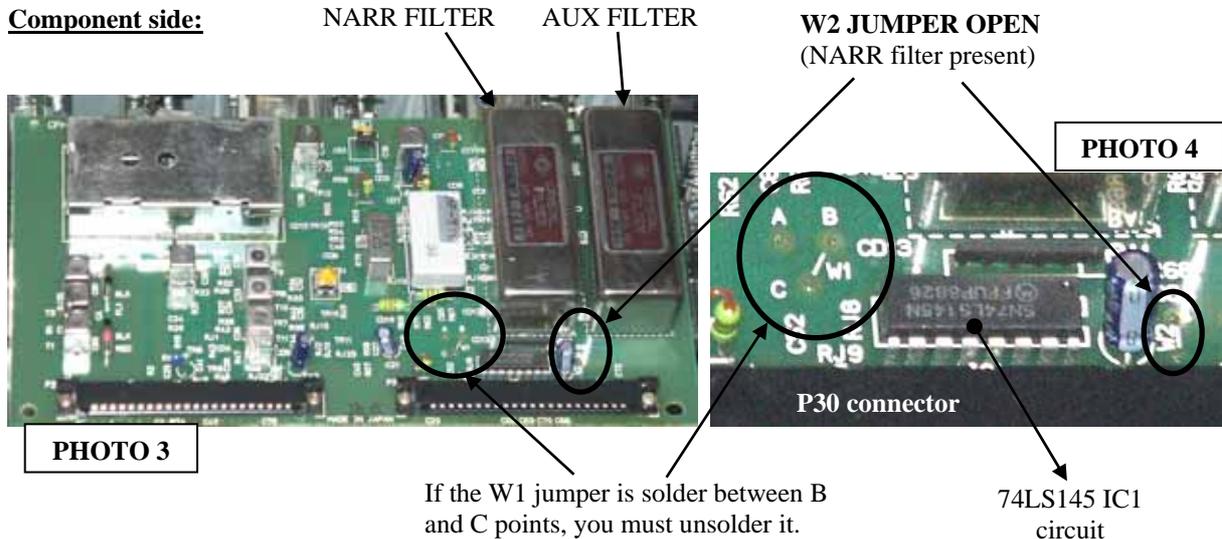
IC1 circuit and W1 jumper on the printed circuit board side:

PHOTO 5 – Before modifications

(Cut here, on the cross, the P30-9 track).

PHOTO 6 – After modifications
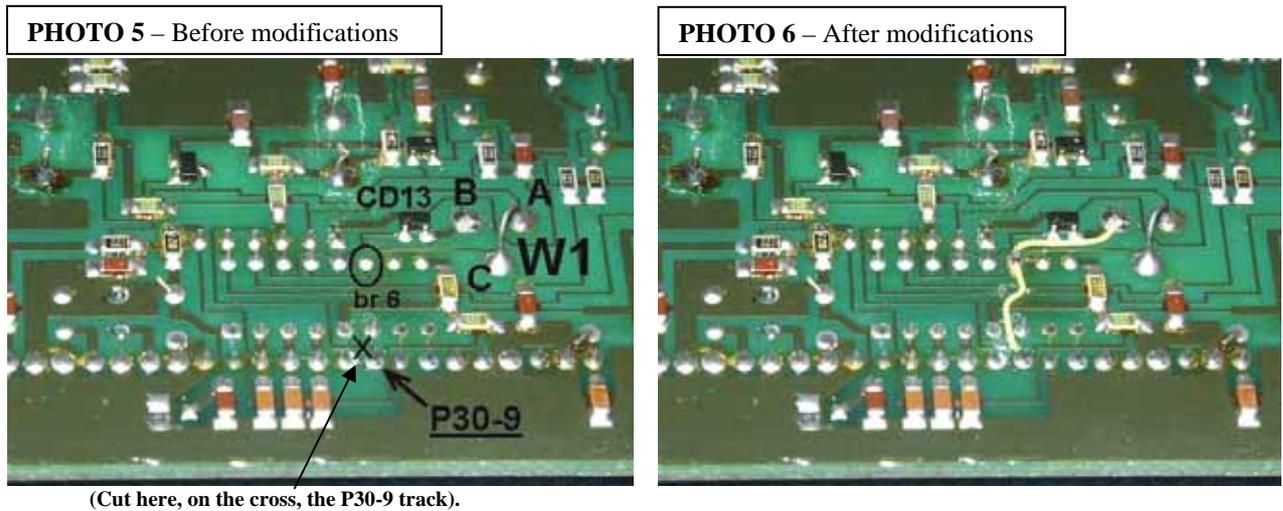
3.3- W1 jumper wire :
(SEE PHOTOS 3 and 4)

☐ 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.

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).

☐ Pin P30-9 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- Replacing the IF-FILTER card :

☐ If it's 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 theirs 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 the solders and all procedures. Make sure the cards are seated properly in theirs 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		74LS145
P30 connector =>	**P30-11**	**P30-12**	**P30-13**	**jumper**	**BCD**	Output
IC1 74LS145 (BCD) Pins =>	Br 13 (C)	Br 14 (B)	Br 15 (A)			(0V)
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**
NOT USED	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 :

=> 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- 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

7.2- MEMO 9 FUNCTION :

This new function indicates the EPROM version and the serial number.

☐ Press the numerical key 9 with the MEMO key depressed.

The display indicates: **14 ▬ ▬**

CBO V1.4 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 :

7.3- 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 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 :**

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CBO V1.4            EPROM Version
NRD-525
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☐ 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).