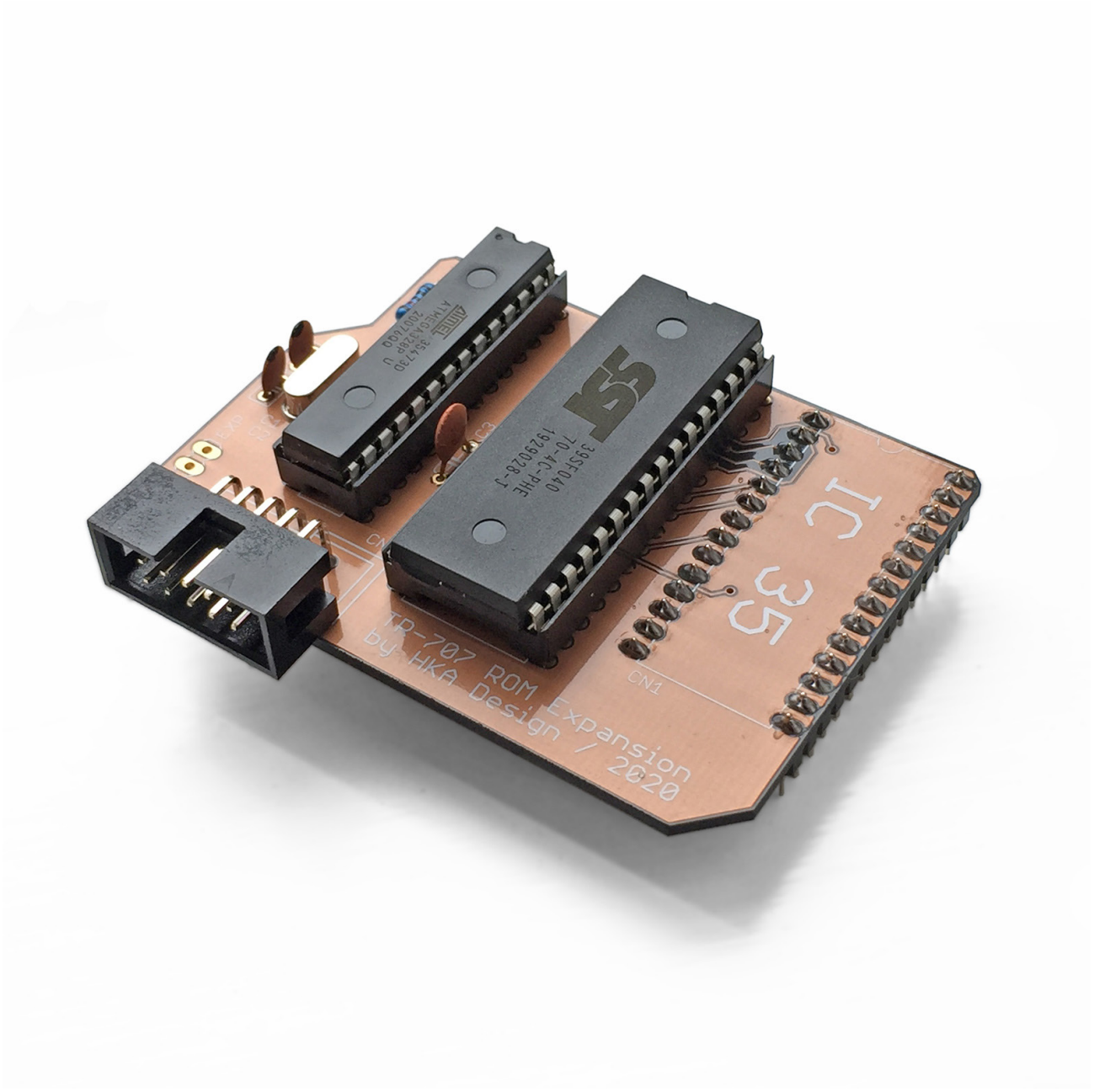
hka design



TR-707 ROM Expansion

Installation Instructions

This kit includes:

1x Pre-assembled PCB
1x Ribbon cable with IDC plug
1x 28-way IC socket

You will need:

- Fine tipped soldering iron & solder
- De-soldering pump or braid
- Phillips head screwdriver
- Wire strippers

IMPORTANT - READ ME FIRST!

Fitting this kit requires a good level of skill in soldering and desoldering. The printed circuit boards found in the TR-707 are not as robust as modern ones and cannot take much abuse. Overheating solder joints can very easily cause tracks and pads to lift, requiring time-consuming rework to put right.

Unless you are absolutely sure of your abilities, and have good quality tools, I do not recommend that you fit it yourself. If you are not comfortable performing the work yourself, I am able to offer an installation service for customers in the UK; otherwise a local synth repair technician should be able to to this work.

Installation

1. Remove the batteries from their compartment.
   Back up your patterns first if you don't want to lose them!

2. Remove all of the slider caps (an IC puller works really well for this), putting them somewhere safe, and remove the 7x screws on the underside of the case.

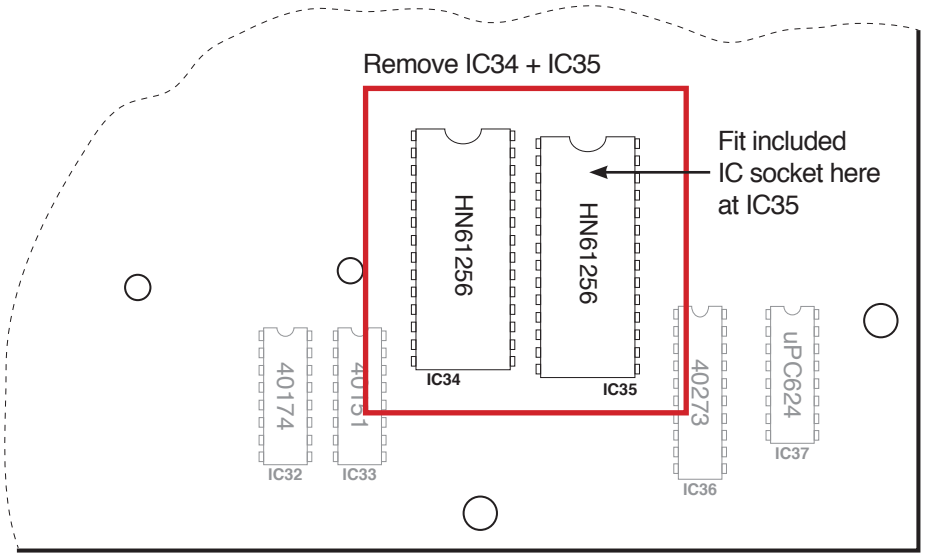
3. With the machine face down on a soft surface, lift off the bottom cover. Desolder or clip the wires going to the battery compartment, noting the positive and negative connections. Set the bottom cover aside for now.

4. Carefully disconnect the flat flex ribbon going from the main board off to the cartridge connector. To do so, pry the retaining clip away from the body of the connector, and the ribbon will slide out. Temporarily remove the cartridge connector (2x screws) for better access to the main board.

5. Remove the screws that secure the main PCB assembly into the top case :
   - 2x screws either side of the MIDI sockets on the back panel
   - 2x screws in opposite corners of the circuit board assembly (top right and bottom left)
   - 1x screw holding the ground wire to the panel board (2x screws + wires on early units)

6. Lift the main PCB assembly out of the case, while disconnecting the two cables that join it to the panel board. This is easiest done by holding the machine on end, with sockets facing downwards, and the power button pressed in.

7. With the main board assembly out of the case, locate IC34 and IC35 in the front right-hand corner of the PCB (both marked HN61256P). Carefully de-solder and remove them, and solder the included chip socket in place of **IC35**.



Front right-hand corner of TR-707 main board

8. Plug the expansion board into the socket at IC35, ensuring that the pins are lined up correctly.

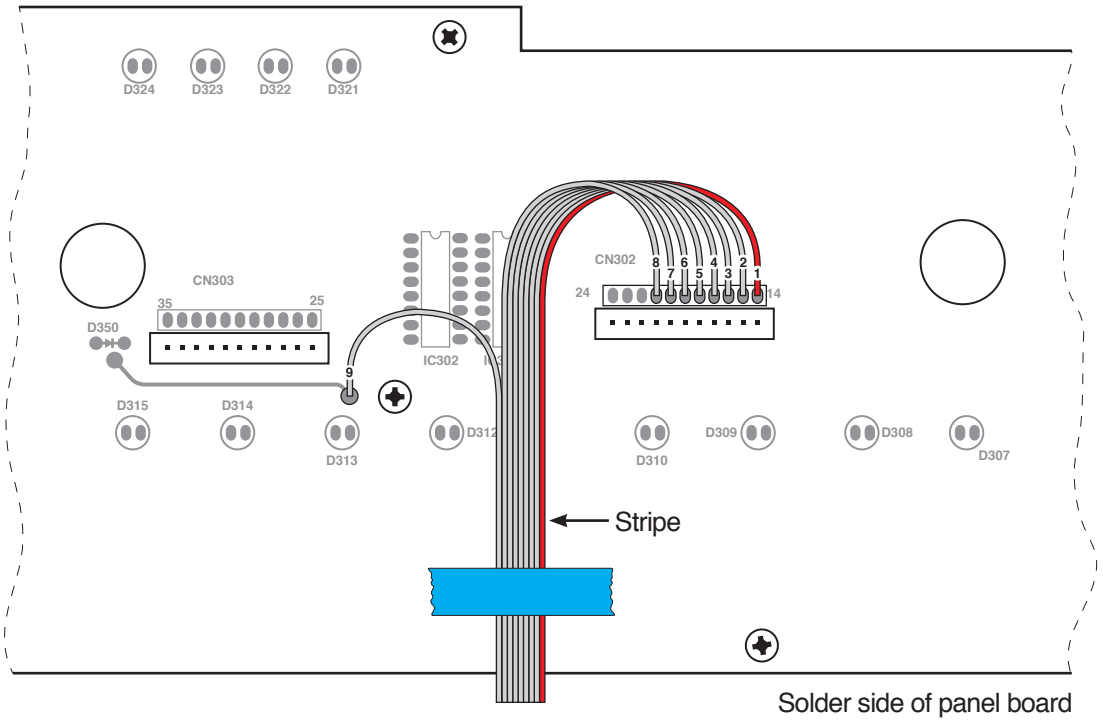
9. Separate, strip and tin the wires of the included ribbon cable (red striped wire = 1) :
   - Wires 1 to 8 should be separated to 3cm
   - Wire 9 should be separated to 9cm

10. On the panel board, locate the through-hole via directly above D313, and to the left of a mounting screw (see diagram for Step 11).

    Notice that the copper track joins to the via with a small triangle-shaped region. Using a sharp knife, carefully scrape away the green solder mask on this triangular area to reveal the copper underneath. Apply a blob of solder to it.

    (Note that earlier revisions of this manual instructed to solder to the via itself. This is fine to do also, but copper triangle is easier to solder to than the via, which is also quite easily damaged with excessive heat)

11. Solder the wires from the ribbon cable to locations on the panel board as shown below. Once this is done, secure the ribbon cable down with a piece of insulation tape.

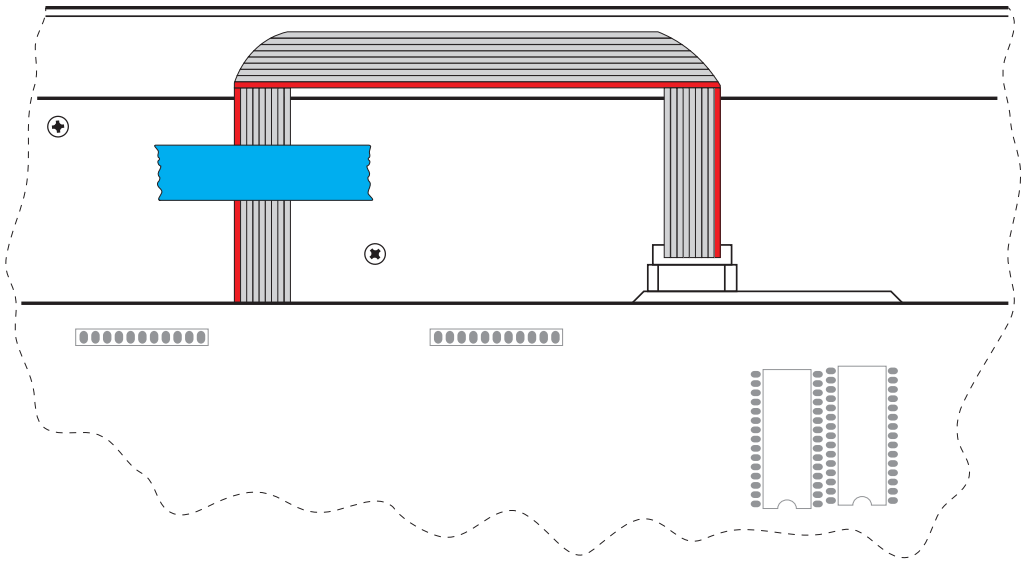


Solder side of panel board

12. Reinstall the main PCB assembly in the top case, reconnecting the two cables that join it to the panel board. Like the disassembly, this is easiest done with the machine on end.

    Replace the screws that secure the board assembly in the top case, that you removed in Step 5, also replacing the ground wire(s).

13. Route and fold the new ribbon cable to the expansion board, and plug it into the header connector. It is keyed and can only be inserted one way round.



View looking into top case

14. Replace the cartridge connector and reconnect the flat flex ribbon.
Re-solder the wires to the battery compartment.

15. Replace the bottom cover, 7x case screws, and slider caps, and put the two AA cells back in the battery compartment.

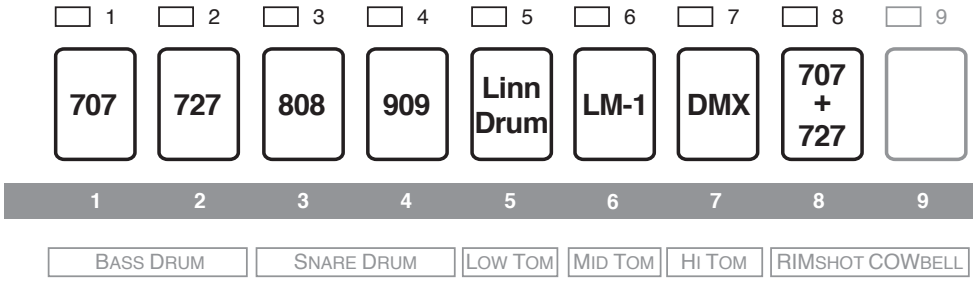
16. When powering up the machine for the first time after replacing the batteries, the pattern memory will be scrambled and the machine may behave strangely until you do a factory reset. To do so, power on the TR-707 while holding down the TRACK and PATTERN GROUP A buttons.

Sound Banks

The ROM Expansion has 8x sound banks, which are listed below.

The bank is selected by holding down one of the first 8 step keys while powering on the machine. The setting will be remembered and recalled at next power-on.

The ROM Expansion kit will replace all of the sounds, except for the last two: crash + ride on the TR-707, quijada and star chime on the TR-727. A future add-on board will allow these to be switched as well.



Troubleshooting

If the bank selection system appears to be functioning but the sounds themselves are playing back with digital distortion, or are scrambled, it is very likely that there is something wrong with the soldering on the chip socket installed in the IC35 location. Check for any hairline solder bridges, dry joints or damaged tracks / pads.

If the sounds are playing normally but the bank selection is not working as expected, check the connections from the ribbon cable made to the panel board. You *did* connect wire 9 to the correct via, didn't you?

Wires 1-8 are the data lines, and connect to the TR-707's data buss. These detect which of the 8 buttons are being pressed. Wire 9 is the row select line and detects when the TR-707 is accessing those eight buttons in its matrix-scanned panel.

If the machine crashes at start-up, you probably have a short between two of the pads where wires 1-8 connect to the panel board.

Otherwise, check that no wires are getting pinched in the case or by screws, and also that the various connectors inside the machine have been reconnected – especially the two that join the top case and panel board to the main board, it happens to the best of us! :-)