

TR-707 ROM Expansion

Installation Instructions

This kit includes:

- 1x Pre-assembled PCB
- 1x 10-way ribbon cable with IDC plug
- 1x 28-way turned-pin IC socket

You will need:

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

Read me first!

Fitting this kit requires a good level of skill in both soldering and desoldering. Unless you are absolutely sure of your abilities, have good quality tools and practice using them, I do not recommend that you fit it yourself.

The printed circuit boards 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.

If you are not comfortable performing the work yourself, I offer an installation service for customers in the UK; otherwise a local synth repair technician should be able to do this work.

Also importantly - your TR-707 needs to be fully functional before installing the kit. This should go without saying, but if your machine has voice issues, power issues, etc., the kit will not magically fix them for you.

Introduction

Thank you for purchasing the TR-707 ROM Expansion board.

It has now been updated to allow changing banks on-the-fly while the machine is running. This is done by holding down the ENTER key and pressing one of the first 8 step keys, or can be still be done by holding down one of these step keys while powering on the machine as before.

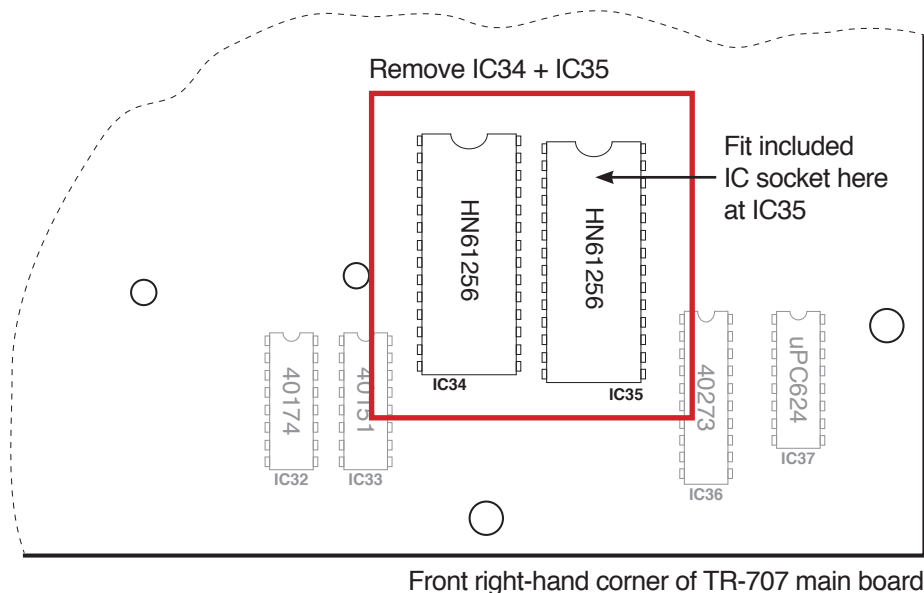
If you have a kit with a 9-way ribbon cable, you have the older version and you need the older instructions. If you have a kit with a 10-way ribbon cable (April 2022 onwards), you have the new version and this is the correct document for your kit.

The installation procedure for this new version is mostly the same as the old version, with just a slight change to the ribbon cable connections on the panel board.

Finally, this manual refers to the TR-707 throughout, as it's by far the more common machine, but the expansion board works fine in the TR-727, and the installation process is identical.

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 most easily 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**. The IC34 location is now unpopulated.

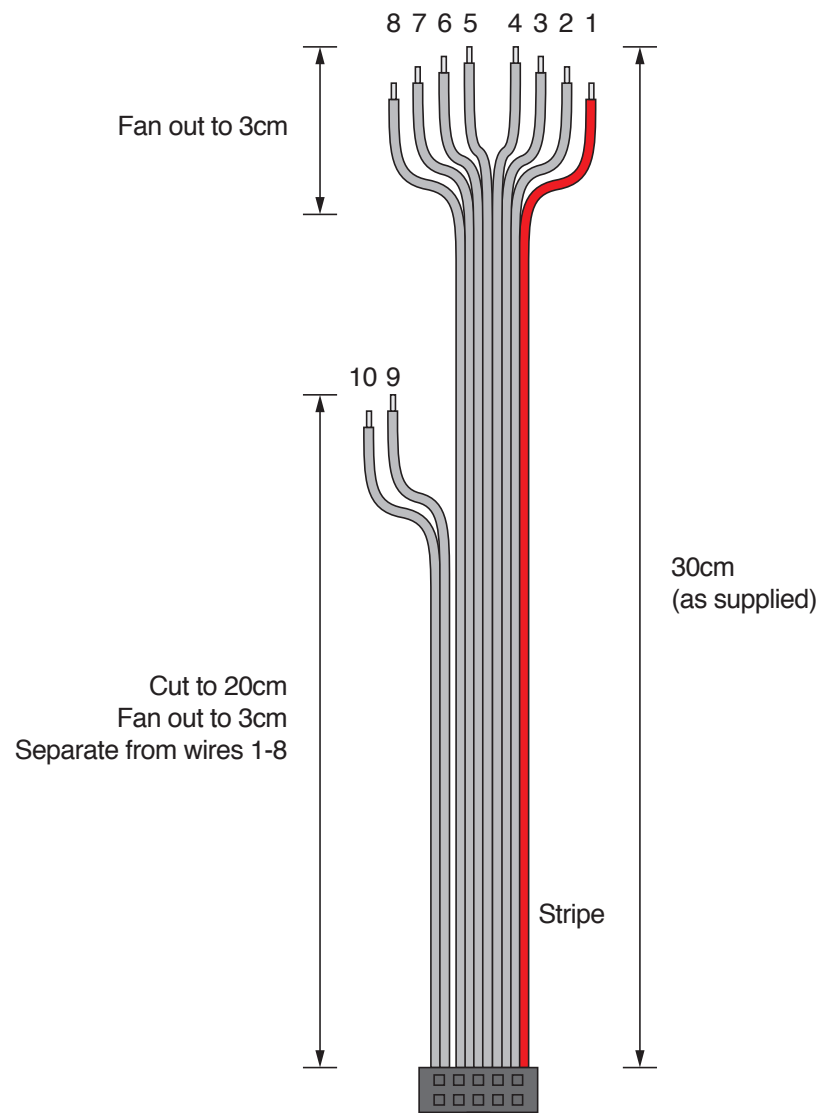


8. Plug the expansion board into the socket, ensuring that the pins are lined up correctly. You will probably need to adjust the two flat cables going to the mixer board to make room - the left-hand cable marked 'F201' can be folded down behind the rear edge of the expansion board, and the right-hand cable marked 'F202' can overhang the top.

Installation

9. The first 8 wires of the ribbon cable need to be fanned out to 3cm, stripped to 2mm and tinned with solder.

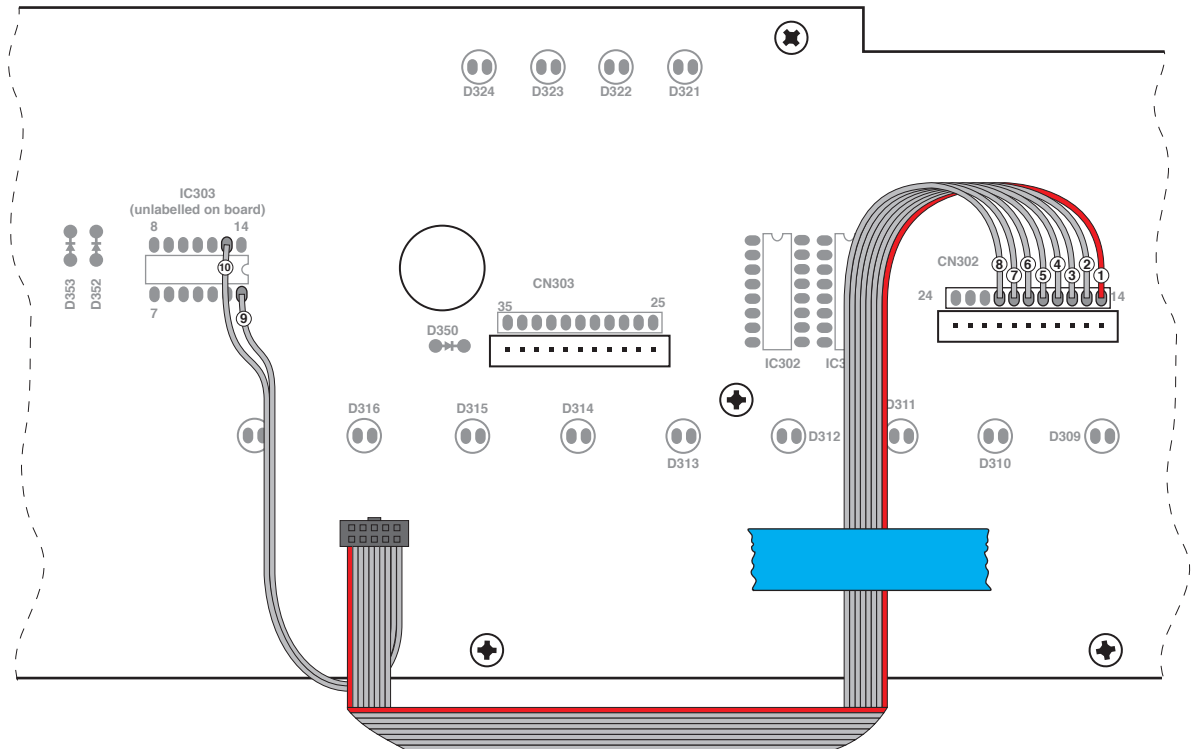
Wires 9 & 10 should be separated from the first 8, all the way back to the connector, and cut to 20cm total length. As with the others, these should be fanned out to 3cm, stripped to 2mm and tinned.



Drawing not to scale!

Installation

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



Ribbon cable wire	Connect to	Signal
1 (with red stripe)	CN302-14	Data bus bit 0
2	CN302-15	Data bus bit 1
3	CN302-16	Data bus bit 2
4	CN302-17	Data bus bit 3
5	CN302-18	Data bus bit 4
6	CN302-19	Data bus bit 5
7	CN302-20	Data bus bit 6
8	CN302-21	Data bus bit 7
9	IC303-1	Row select 1 (step keys 1-8)
10	IC303-13	Row select 3 (row with ENTER key)

Installation

11. 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. Plug the ribbon cable into the expansion board.

Replace the screws that secure the PCB assembly in the top case, which you removed in Step 5, also replacing the ground wire(s).
12. Replace the cartridge connector and reconnect the flat flex ribbon.
Re-solder the wires to the battery compartment.
13. Replace the bottom cover, 7x case screws, and slider caps, and put the two AA cells back in the battery compartment.
14. 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.

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 connections between the expansion board and the IC35 socket. Check that it is seated properly in the socket, and check for any solder bridges, dry joints, damaged tracks or pads where you soldered the socket.

If the sounds are playing normally but the bank selection is not working as intended, check the connections from the ribbon cable to the panel board. Check that the wires are fitted in the correct sequence and are connected to the right locations.

If the machine crashes at startup, you probably have a short between two or more of the locations where wires 1-8 connect to the panel board, as these are the TR-707's data bus.

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! :-)

Selecting banks

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

The bank is selected either by holding down the ENTER button and pressing one of the first 8 step keys; or 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. These are stored on separate ROMs and accessed with their own circuitry. A separate add-on board, which is in development, would allow these to be switched with the rest of the sounds.

