How to install your DVDupgrade®

The list of DVD players we have a modification for is growing everyday. We are already counting hundreds. As some chips do not depend on the *dvd player model* but instead on the *package (number of pins, size etc) of the chip itself*, we are describing this here. We are trying to give you some *additional* knowledge how to install our kits. What we can not do is giving basic soldering knowledge.

We are trying to keep the instruction manuals brief. You will not find in our instructions:
- How to open a DVD player
- How to find the mainboard
  DVD players only have about three boards!
- How to use your soldering iron
  We are telling you how to do SMD soldering later on but standard soldering experience is a must.
- What you should not do that could destroy your DVD player
  Like not doing short circuits when soldering…
- That the player should not be connected to the current if opened and what parts you should not touch because of an electrical shock

If you think that you need such information, *we strongly suggest not to do the modification by yourself!* Please get a professional to do the job for you. Of course we could write a book giving you all this information but this would still not give you the experience you need to do the soldering itself!

Below you will find frequently asked questions, additional soldering knowledge and instructions how to install those parts that are the same for a lot of players.
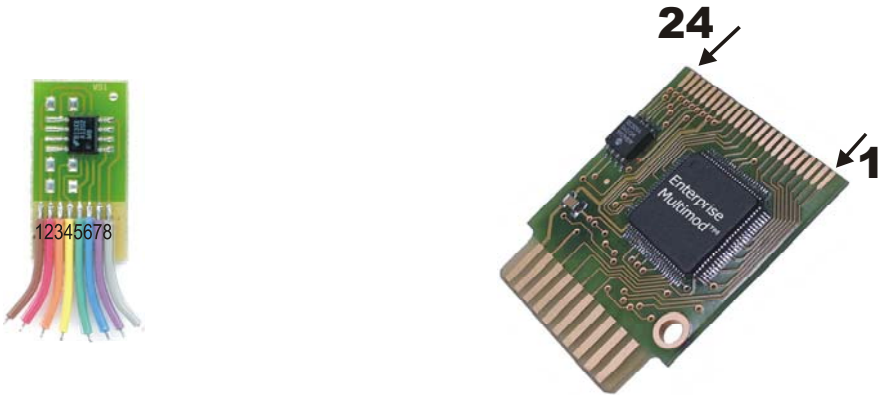
Cables and Microcontrollers

Microcontroller without cables	Microcontroller with cables
Microcontroller board without cables	Microcontroller board with cables

Most of our modifications require a microcontroller. Most microcontrollers we use have 8 pins. *Always keep the cables as short as possible!*

Pins are counted from the spot anticlockwise. *This applies to all different packages, sizes and pincounts!*


Spots
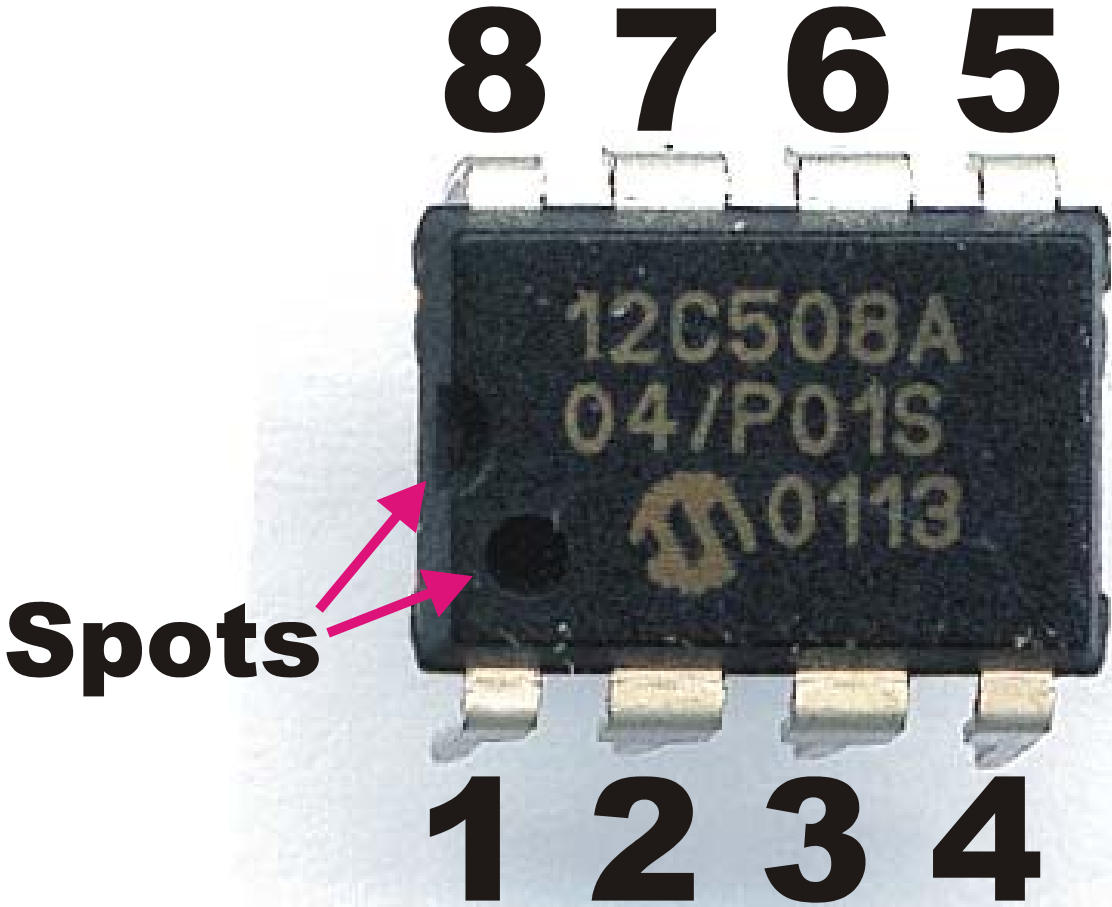
If the chip is installed on a PCB, we are counting the pads from left to the right. Due to the fact that cable is sold with each wire glued to the next one, some wires are not connected depending on the modification and player. There are different PCB versions of the modifications shown below.

Pin mapping of the microcontroller board

In order to speed up the wiring of cables to the microcontroller and the installation of resistors required by some modifications, we have decided to switch over to PCB. As we can not update all our instructions, we have made this section as an addendum to your player specific installation instruction. Please proceed like this: For all connected microcontroller (yC) pin numbers, look up the corresponding microcontroller PCB pad number. For example: instead of connecting the wire connected to yC pin number eight to the location described by your player specific instructions, use wire number one. Do not follow the colors, use numbers only! Cables/colors are shifted if a certain yC pin is not connected.


Microcontroller PCB	Microcontroller pinout as used in most manuals
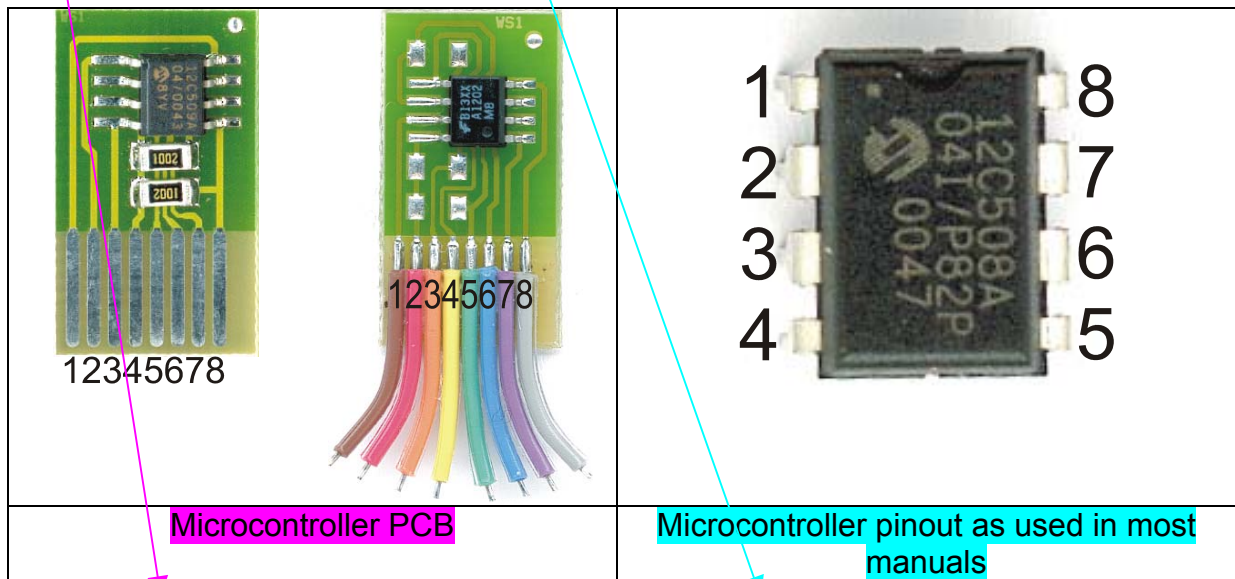
Pad # of yC PCB	Pad cable color	Pin # of yC	Pin cable color*
1	Brown	8	purple
2	Red	1	red
3	Orange	4	yellow
4	Yellow	3	orange / -
5	Green	2	orange / -
6	Blue	7	-
7	Purple	6	blue
8	Grey	5	green

* see text above

Parts to install

Our homepage is giving you detailed information about the parts you will have to install to get the modification to work. The installation of the microcontroller is described in the instructions for the correpsonding modification. Some additional parts might not be described there because the procedure is always the same for corresponding part. The chips marked with *replace* usually require advanced soldering knowledge. This is described in the next chapters. In order to find out what chip you will have to replace, please follow these rules

- Search for a chip on the mainbaord that looks like the one we sent you (will work for 99%)
- If you find more than one matching chip, contact us or compare the inscriptions on the chips.
- If you can not find a matching chip, it is probably because your mainboard has different chip installed on the location you would have to install our chip. Examples:
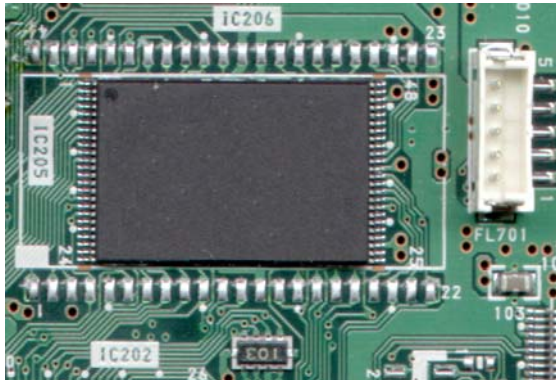
TSOP48 installed
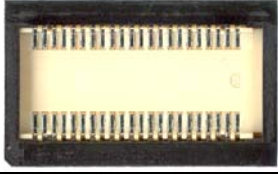

PSOP44 installed

The following possibilities exist:
- TSOP48 installed, PSOP44 received from us: Remove TSOP48, install new PSOP44
- PSOP44 installed, PSOP44 received from us: Remove PSOP44, install new PSOP44
- TSOP48 installed, TSOP48 received from us: Remove TSOP48, install new TSOP48
- PSOP44 installed, TSOP48 received from us: case does not exist because we do not do that

Here we have a TSOP48 installed. If you look closely at the long sides of the chip, you will see the bronzen pads for the TSOPII44 chip.

Here we have a TSOPII44 installed. If you short sides of the chip, you will see the bronzen pads for the TSOP48 chip.

Picture	Install / replace	Description
	replace	You lucky one! Your chip is in a socket and needs no soldering therefore. Open the socket by pushing down the holder and moving it in direction of the arrow. To close it, push it down and move it against the arrow.
	replace	Adapter PCB including PSOP44 chip. Advanced soldering experience required.
	replace	PSOP44 chip. Advanced soldering experience required.
	replace	TSOPII44 chip. Advanced soldering experience required.
	replace	TSOP48 chip. Advanced soldering experience required.
	replace	DIL32 chip.
	install	Plug mod. Look for the Service connector mostly on the back or on the side of your player.
	install	Microcontroller on PCB. Attach the cables to the locations pointed at by the corresponding arrows in the installation manual.
	install	Microcontroller with cables. Attach the cables to the locations pointed at by the corresponding arrows in the installation manual.
	install	Enterprise Modification. Attach the cables to the locations pointed at by the corresponding arrows in the installation manual.
	use once	Insert the disk and follow the instructions on your Monitor or as described in the manual.

Desoldering of SMD chips

Desoldering SMD chips is a dangerous job. Before trying it in real life, you need the right equipment:

-   Device creating hot air up to 400-900 degree fahrenheit or 300-500 degree celius. Costs about $100. Make sure you have or build an adapter creating an air flow that is not bigger than a few millimeters in diameter!
-   A very small screwdriver or something similar to lift the chip.

Procedure:

-   Make sure you remember where pin one is located! The spot on the chip should correspond with the spot or number one on the mainboard!
-   Gently insert the about 1mm of your screwdriver between the between PCB and chip on one of the pinless sides of the chip next to the side you want to desolder first.
-   By constantly rotating and blowing hot hair (put the air pressure to the lowest setting) to the pins on one side for about 15 seconds, you will see the solder iron getting shiny and melting.
-   If you are sure that all pins are loose, push the screwdriver a bit in order to lift the pins about 2mm on the hot side.
-   Now heat up the other side of the chip.
-   After melting all solder iron, you can lift the chip completely. Try not to get in contact with other parts on the board; they might fall off or move.

Before trying this on working equipment, use an old pc main board and try it there!

Soldering of SMD chips

A lot of people think they are in need of a very small soldering iron to solder such chips. This is completely wrong. The trick is to use a chemical called *flux*. Using flux, the tin will flow to the pads. If the tin is bridging the pads, you can use flux and your solder iron to remove some tin.

Equipment you need:

-   A solder iron with replaceable tops. Use a top having a so called tin deposit.
-   Either a flux pen and tin or syringe containing flux and tin

Procedure:

-   Correctly align (pin one of the chip to pin one of the pad, mostly marked by spots) the chip on the mainboard and fix it by applying some hot tin to one pin on each side.
-   Either use your flux pen or syringe to stroke all pins.
-   Stroke all pins on each side with your soldering iron. Make sure there are no short circuits. If you think there is not enough tin, apply more. If you think there is too much tin, clean the deposit and stroke the bridge. Eventually you will have to use some flux.

Before installing the microcontroller (if required), you should try wheter your player is still working. If there was a short circuit, you probably destroyed a low voltage / low current safety on the power supply. Measure all safeties with a short circuit tester. Usually safeties are described by a P and a number. *Do not short circuit a safety!*