Enco
COMPACT DISC SPECIALISTS

4-in-1 Update Kit

Updates CDM-4/53 Jukeboxes to CD Pro

The Enco Systems 4-in-1 update kit for CD jukeboxes will convert the electronics of the CD player system of a jukebox loaded with a CDM-4/53 Industrial player into electronics to work with a state-of-the-art CD-Pro 2 player. *This kit is not designed to work with CDM-3 or CDM-4/36 Heavy Duty.*

Philips CDM-4/53 Industrial players were installed as original equipment by most jukebox manufacturers. This kit was designed to convert machines made by any of the four major manufacturers:

Rowe

ROCK-OLA

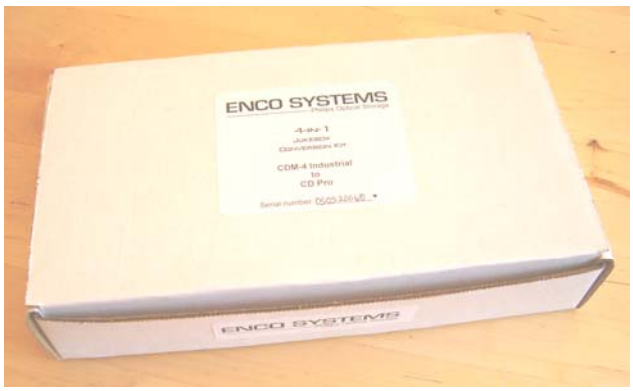
WURLITZER
A Member of the Gibson Family of Companies

NSM

KIT CONTENTS:

The update kit consists of the following items:

1 CDM-4/53 Industrial to CD Pro 2 update board
1 wire harness



Closed box with serial number

Opened box with packing material and parts

Note: *Work clean and ESD safe. The electronics of the update board are sensitive to electrostatic discharge like any other printed circuit board. Use a wrist strap with safety grounding to drain away charges that might cause damage to the electronics.*

Step 1: PREPARE FOR UPDATE

To perform the update three main items need to be changed:

Original Philips servo/decoder board	replace with	4-in-1 update board
Wire harness for CDM-4/53 Industrial	replace with	provided new wire harness
CDM-4/53 Industrial	replace with	CD-Pro 2

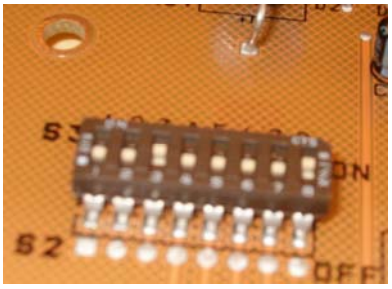
The 4-in-1 update board included in this kit is designed to replace the Philips OSDA servo/decoder board (also referred to as the "monoboard") that is installed in jukeboxes originally manufactured with a CDM-4/53 Industrial CD player. The dimensions, mounting holes and connections on the 4-in-1 update board match those on the Philips monoboard.

IMPORTANT NOTE

It is highly recommended that the control software of the jukebox be updated to the latest manufacturer's control software. Check the manufacturer's web site and acquire the latest software version or EPROM that is appropriate for that model.

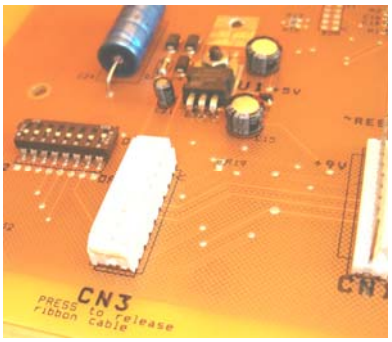
Before you install the 4-in-1 update board, set the DIP switches on the board to properly configure the system for the jukebox you're converting. There is a chart on the board that indicates the correct DIP-switch configuration for each type of jukebox. (Please note that *ON* is the up position and that switches 1 & 2 are always OFF.)

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
NSM	OFF	OFF	*ON*	*ON*	*ON*	*ON*	*ON*	OFF
Wurlitzer	OFF	OFF	*ON*	OFF	OFF	OFF	OFF	*ON*
Rock-Ola	OFF	OFF	OFF	OFF	OFF	*ON*	OFF	OFF
Rowe	OFF	OFF	OFF	OFF	OFF	*ON*	OFF	OFF



In the above picture only switches 3 and 8 are *ON*. This indicates that the board is set-up for a Wurlitzer jukebox.

Cable Note: Take careful note of the orientation of the 15-pin black ribbon band cable as it is installed in the monoboard. **It is critical that this cable be correctly oriented in the same way when installed in the new 4-in-1 board**. (Unfortunately, Rowe designed their machines with this cable installed backwards.)



IMPORTANT: This connector is located at CN3 on the 4-in-1 board. The small arrow at the top right hand side of the connector indicates the pin 1 position. Note that there is a gray stripe on the black ribbon cable. For Rowe jukes, this stripe should be oriented at pin 15. For all other manufacturers, the stripe is oriented at pin one.

Step 2: INSTALL THE UPDATE BOARD

To install this update system, locate the Philips monoboard inside the jukebox and replace it with the 4-in-1 update board. (For example, in a Rowe jukebox the Philips monoboard is found inside the Mechanism Control housing mounted to the right of the changer mechanism. In an NSM jukebox it's mounted underneath the top of the changer assembly.)

Unplug all wire harnesses that are connected to the CDM-4/53 Industrial. Unplug the 15-pin black flat cable **ONLY** from the Philips monoboard side (**leave the other end connected**). Remove the Philips monoboard and then use the same fasteners to secure the 4-in-1 update board in its place.

Connect the 15-pin flat cable **in its original orientation** (see note above) into the 15-pin connector on the 4-in-1 update board, as noted above.

IMPORTANT NOTE: The 15-pin connector on the 4-in-1 update board works in the opposite way as the connector on the Philips monoboard. The 4-in-1 update board connector is a Molex spring connector – **both ends must be held down while inserting the leads**. The leads are locked in place when the spring is released.

Connect the provided new wire harness to the 12-pin connector on the 4-in-1 update board.

Step 3: INSTALL THE CD PRO 2 CD PLAYER

For Rowe and Rock-Ola jukeboxes, install using the following procedure. Use a #10 torx screwdriver bit to remove the leg assemblies from the CD Pro 2. Remove the springs from the CD Pro 2 leg assembly and reattach the legs. Remove the CDM-4/53 Industrial from its rubber grommets, leaving the grommets in the mounting deck of the jukebox. Orient the CD Pro 2 so that the clamping magnet will engage the turntable. Finally, press the CD Pro 2 legs into the existing grommets. There are some exceptions:

Rock-Ola: Jukebox models 5500-6000, including the Rocket, Legend, Anniversary Legend and CD8 Bubbler, may require a modification to the clamper arm assembly. This is the piece that contains the magnet and clamps the disc to the CD player's turntable. The clamper arm assembly may need to be bent slightly to allow the arm to engage the turntable squarely. NOTE: For the Rock-Ola model 5000 Gala, this modification may NOT be required. Go to www.encosystems.net for more details.

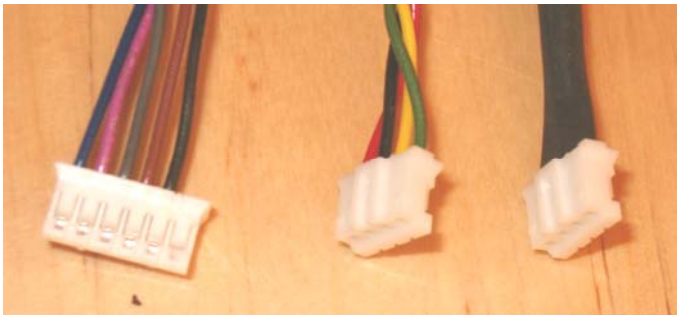
NSM: An additional kit of parts is required for proper mounting of the CD Pro 2. This kit includes a special centering hub for the turntable, four M3 metric screws, and four nylon spacers. This kit is available at an additional cost. Please contact ENCO direct to obtain this additional kit for NSM updates only.

Wurlitzer: For mounting the CD Pro in a Wurlitzer jukebox please refer to our application note. Please contact ENCO direct if you have questions regarding any of these modifications or visit www.encosystems.net to check for installation notes and updates.

Step 4: CONNECT THE WIRE HARNESS TO THE CD PRO 2

The last step is to connect the new wire harness to the CD Pro 2's circuit board. There are four connectors on the harness.

One large connector (pictured at left) plugs into the 4-in-1 update board. It orients only one way to the male connector located at CN1.



On the other end of the harness there are three connectors (pictured at left). These three JST connectors plug into connectors on the CD Pro 2's circuit board.

The 6-pin connector is for communication and plugs into the connector labelled "DSA."

The 4-pin connector at the end of the lead with the red, black, yellow and green wires is for power and plugs into the connector labelled "POWER."

The 4-pin connector at the end of the wire encased in gray tubing is for audio and plugs into the connector labelled "AUDIO."

EXTREMELY IMPORTANT:

The 4-pin connectors not be plugged into the wrong connectors. You can seriously damage the CD Pro 2 if you power up with the power lead plugged into the audio port.

ABOUT THE ON-BOARD LED INDICATOR:

There is a small LED at position D5 on the update board. As you install this system the LED will tell you several things. The LED will emit a fast flicker when it's booting at power up – so you know the board is getting power. If the LED is lit, but the system isn't working, it indicates that either a connector is not plugged in correctly or that there is some other problem with the jukebox. The LED will emit a steady, slow blink when the board is running. The LED will emit a fast flicker when the board is communicating with the host (similar to the LED on a personal computer).

For updates and service bulletins, please visit www.encosystems.net

Software v 0.2.2 for ver 1.2 can be burned into a 27C010 or equivalent EPROM:

package: 32 pin 600 mil DIP
size: 128kB (128k x 8)
speed: 90 ns or faster