

COLECO VISION™

EXPANSION MODULE #2

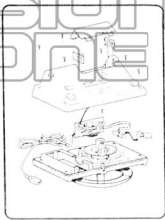


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Introduction

Coleco's Expansion Module #2 turns the ColecoVision game system into a high performance race car. The module is equipped with a tabletop console that includes an arcade-style steering wheel and a floor-operated accelerator foot pedal. The Coleco Vision controller mounts in the driving module console to become the gear shift.

In repairing Expansion Module #2, Coleco will require service centers to troubleshoot to the component level.

For ease in selecting important information this repair manual is separated into eight basic sections.

I. Table of Contents

II. Introduction

III. Theory of Operation—examines Expansion Module #2's three basic parts and their descriptions.

IV. Disassembly/Assembly Instructions—simple instructions for taking apart and putting together Expansion Module #2 along with three dimensional drawings of the three parts to assist in identifying component parts.

V. Schematics and Drawings—includes a parts list and detailed drawings of component locations.

VI. Testing and Troubleshooting—includes a list of required test equipment, description of the diagnostic cartridge, and how it pertains to turbo and flow charts, along with a description on how to follow the flow charts.

VII. ColecoVision Updates—will be an area to file modifications, parts changes or additional information as it becomes available to repair centers.

VIII. Notes—A place to keep personal notes which are helpful in servicing ColecoVision in efficient, professional methods. ColecoVision welcomes additions or changes from the service center personnel, so that they may be included in the ColecoVision updates.

Theory of Operation

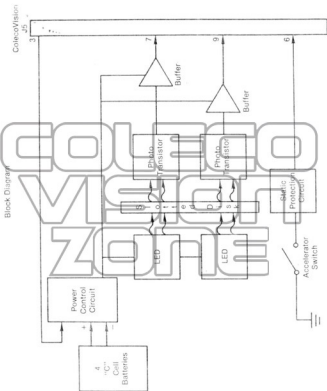
Expansion Module #2 consists of three basic parts; photo coupler, power control circuit and an accelerator circuit.

The photo coupler circuit converts rotational movements of the steering wheel into electrical pulses compatible with the basic ColecoVision. The circuit consists of two LEDs, a slotted disc, two photo transistors and Schmitt trigger buffer circuitry. The slotted disc is situated between the two LEDs and two photo transistors. The disk and fixture holding the LEDs and photo transistors are constructed to optimally produce 50-50 duty cycles and a 180° phase difference between the two pulses. Pulses are made by the slotted disk breaking the beam of light emitted by the LEDs. As this happens the photo transistor turns off. If the beam does not break, the transistor remains on. Four Schmitt trigger NAND gates (used as inverters), two diodes, and four resistors interlace the photo transistors to the ColecoVision handcontrol inputs.

The power control circuit extends battery life by disabling the power when the game is turned off. This is accomplished by using three transistors, biasing resistors, and a timer capacitor. To power the unit up, a signal (2.5v through 22K) is received from the ColecoVision which ultimately turns on all three transistors.

The accelerator circuit is simply a switch connected to ground. As the foot pedal is depressed a ground is outputted to ColecoVision by closing the switch. Two diodes and one capacitor are used to suppress static discharge.

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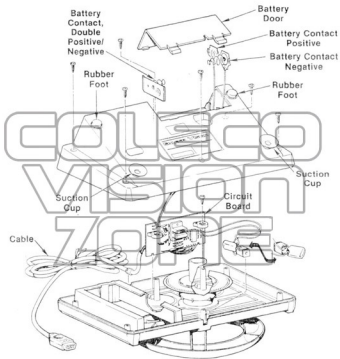
Disassembly

1. Turn unit over so that bottom is in an upright position.
2. Remove four screws to pull bottom housing off.
3. Remove single screw holding circuit board.
4. Gently remove board, without bending the slotted disk.

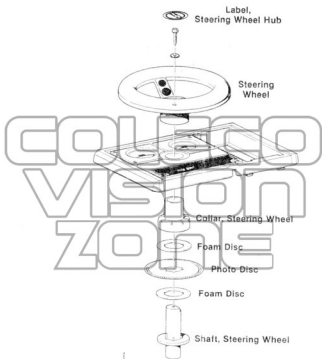
Assembly

1. Carefully replace the board, again do not bend the slotted disk.
2. Replace single screw holding circuit board.
3. Replace bottom housing and four screws.
4. Turn unit over and test.

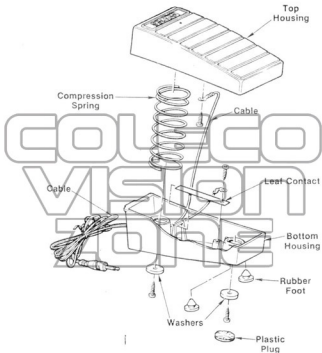
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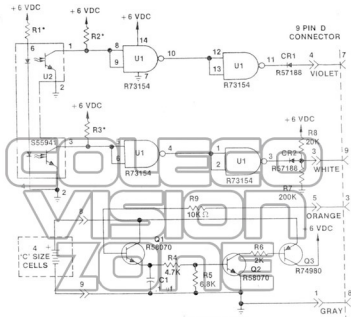
Complete Unit Exploded View



Top Housing Exploded View

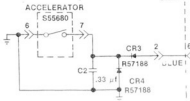


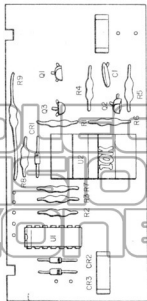
Foot Pedal Exploded View



*R1, R2 and R3 must be matched to photo coupler case color per chart

U ₂ case color	R1	R2	R3
Blue	82Ω	10K	10K
Black	82Ω	33K	33K
Yellow or yellow dot	100Ω	2.2K	2.2K





Circuit Board