

Bally Space Flight

Owner's Manual - Solid State Sound (S³) Replacement Unit

Model # S³-01

www.GameRoomRepair.com

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INTRODUCTION:

Thank you for purchasing this Solid State Sound unit (or "S³" for short). It is designed as a "drop-in" replacement for the original 8-track tape deck and requires no modifications to the original game or its internal wiring. This sound unit contains all 42 audio messages (eight full minutes of audio) from the original 8-track tape. The S³-01 unit also replicates all functions of the original tape deck assembly, including:

Initiating the start of each lunar module decent (each landing attempt), every 18.5 seconds. Each landing attempt is initiated when the "CUE" output signal (located on the violet wire of the 6-pin Jones connector) gets pulled to ground by the S³-01 unit. This "normally floating" output goes low to energize the "CUE" relay on the game's main relay logic assembly, located inside the cabinet.

Monitoring the "OK" input signal (located on the blue wire of the 6-pin Jones connector). A successful landing causes 13VDC (approximately) to be placed onto this wire and is received by the S³-01 unit.

Synchronizing audio playback during each landing attempt. A "Decent" message is played, followed by either the "Abort" message or the "Landing OK" message, as appropriate.

Volume Control of message playback.

It should be noted that this sound unit, like the original 8-track deck, only controls the start of each landing attempt and the playing of the audio files. All other game functions are controlled by the game's main relay logic assembly, located inside the cabinet. These other functions must be working properly before the S³-01 unit is installed. Examples of functions not controlled by S³-01 include:

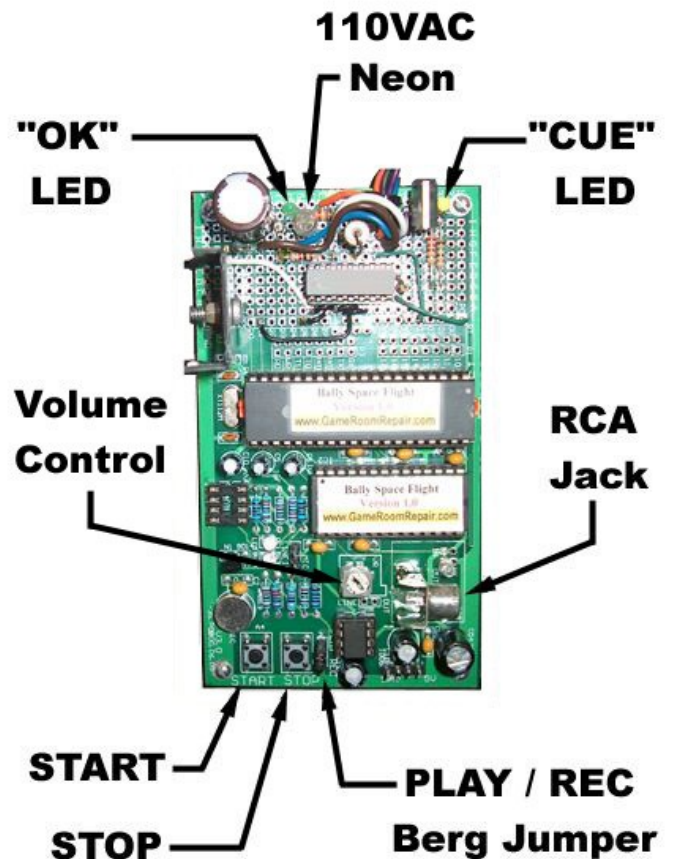
The number of landing attempts per game, and the number of extra landings awarded.
The speed at which the lunar module descends towards the moon's surface.

IMPORTANT:

The original Bally Space Flight Owner's Manual states that the lunar module "decent time" must be adjusted so that it takes between 8.5 and 9.0 seconds from the time that the module starts to decent towards the moon's surface, until the motor reverses and starts to "*reel in*" the lunar module strings. The S³-01 also requires this "decent time" to fall between 8.5 and 9.0 seconds. A potentiometer located on top of the lunar module's carriage, will set this time.

CAUTION: - ELECTRICAL SHOCK HAZARD !!!

110VAC is sent to the 8-track tape player while a game is in progress. This voltage is used to power the tape deck motor. The S³-01 monitors this same 110VAC to determine when a game is in play. Therefore, 110VAC is present on the black and white wires of the wiring harness and is sent to the S³-01 printed circuit board (PCB). Extreme caution must be used to avoid getting shocked. Do not touch the S³-01 while the game is in operation.



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NEW FEATURES:

The S³-01 includes new features that are not found in the original 8-track tape deck assembly. They are:

A "Power-On" message plays when the game is turned on. This indicates that the S³-01 is working properly.

When the first game is played after the machine is turned on, the S³-01 selects a random "Decent" message to start its playback with. This feature, causes more messages to be heard if the game is operated in an environment where only a few games are played each time the machine is turned on.

An "Attract Mode" plays a random message every few minutes. This feature can be disabled.

A diagnostic routine that plays all 42 messages in order, when activated.

The ability to play each individual message, when the game is not being played.

Lamps that indicate:

- The presence of good +5VDC power from the S³-01 on-board voltage regulator (Red LED).
- The playing of an audio file from the solid state audio memory chip ("Busy" LED).
- The presence of 110VAC during game play (Neon lamp).
- The operation of the "CUE" output signal, to start the lunar module decent sequence (Yellow LED).
- The operation of the "OK" input signal, which indicates a successful landing (Green LED).

INSTALLATION and SETUP:

The S³-01 can be mounted in any location. One suggestion is the inside of the coin door, which allows for easy access to all S³-01 controls and indicator lamps. Mount the unit as follows:

Turn off the main power switch on the game.

Attach the S³-01 using the four supplied wood screws and standoffs.

Plug the speaker into the RCA jack on the S³-01.

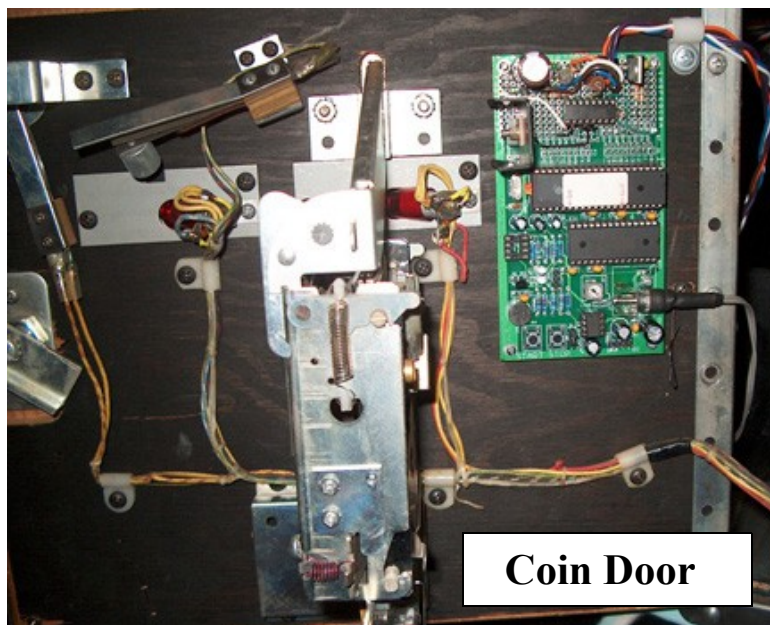
Insert the 6 pin Jones plug into the connector jack (where the original tape deck was connected).

To enable or disable the Attract Mode messages, find the 3 pin "Berg" style terminal on the S³-01 PCB that is marked "PLAY/REC". Install the Berg jumper in the PLAY position to enable the Attract Mode. Remove the jumper, or move it to the REC position (which is unused) to disable the Attract Mode messages.

Turn on the main power switch, the Power-On message will play.

Press the Start Button on the S³-01 PCB. A message will play. During playback, use a small screwdriver to adjust the audio volume level by turning the potentiometer on the S³-01 PCB.

Insert a coin and begin the game. Follow the instructions in the original Space Flight Owner's Manual to adjust the "Decent Time" of the lunar module for 8.5 to 9.0 seconds.



DIAGNOSTICS:

After installation and set-up, the S³-01 is ready to go! No further adjustments are required. Several diagnostic features exist, to verify that the unit is functioning properly. The following is an explanation of each feature:

Main +5VDC Power Indicator:

Two red LEDs on the S³-01 PCB will always be lit while the game is turned on. These LEDs indicate that the S³-01 is powered up and ready to operate.

Message Playing Indicator:

While a message is playing, the red "BUSY" LED on the S³-01 will flash. Audio playback is heard from the speaker whenever this LED is blinking.

Play All 42 Messages:

From a game "powered off" condition, press and hold the START button on the S³-01 while turning on the game's main power switch. A test announcement message will play, followed by 8 minutes of continuous audio in which all 42 messages will playback. The messages are arranged so that one "Decent" message plays, followed by its associated "Abort" message, and then followed by the corresponding "OK" message for that Decent message. Many of the messages reuse the same spoken words and phrases, but the combinations of these words and phrases are different from one message to the next. The playback of this entire 8 minute audio file can be terminated at any time by pressing the STOP button on the S³-01 PCB.

Play a Single Message:

At any time while the game is idle, the START button on the S³-01 PCB can be pressed to hear the next message in the solid state memory chip. The playback heard will either be a combined "Decent" and "Abort" message that plays for 17 seconds, or an "OK" message that plays for 5 seconds.

110VAC Power (input) Indicator:

The neon lamp located on the S³-01 PCB will illuminate whenever 110 volts AC is present. This indicates that a game is in play and the S³-01 is sending audio messages to the speaker.

CUE (output) Indicator:

As each Decent sequence begins, the yellow LED located on the S³-01 PCB will illuminate for 1.5 seconds. During this time, a low (zero volts, or ground potential) is placed on violet wire of the Jones plug and wiring harness. This energizes the "CUE Relay" in the main cabinet and starts the decent of the lunar module.

OK (input) Indicator:

Each time a landing is successful, voltage will be sent from the main cabinet to the S³-01 over the blue wire of the Jones plug and wiring harness. While this voltage is present, the green LED on the S³-01 PCB will illuminate to confirm that the "Landing OK" signal is being received. The audio playback is then changed to the appropriate message file in the solid state memory.