

Fernandes Sustainer Installation Manual for FSK-401

Sustainer Kit Component Checklist

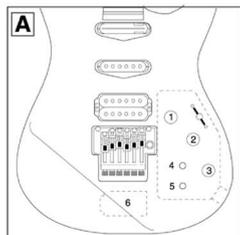
1. Sustainer Driver
2. Sustainer Circuit Board
3. VH-1 Humbucker (Optional Bridge Humbucker)
4. Stereo Input Jack
5. Battery Box
6. 9-Volt Battery
7. Pickup mounting screws and springs
8. Battery wire/connector
9. Sustainer wires and clips
10. 5-way Pickup Selector Switch

Sustainer Installation Requirements

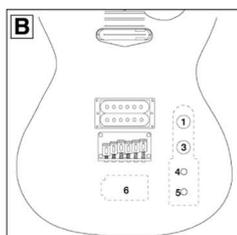
- The Fernandes Sustainer should only be installed by a professional Luthier or technician who has the ability to read a meter and follow signal paths, to use a soldering iron at a professional level and to use a router.
- Sustainer Driver must be placed in the neck position in order to function properly, it also requires that the Bridge pickup be a Humbucker. Full sized humbuckers work best, single coil sized humbuckers will also work but will not drive the strings with as much intensity as a full sized humbucker.
- Distance between bridge pickup and Sustainer driver must be at least 2 inches, otherwise Sustainer wont operate correctly.
- Make sure enough room inside the guitar is available to fit the circuit board (3" long x 2" wide x 1" deep), and a 9-volt battery.
- Battery box is provided for convenience, but it is not required.

Fernandes Sustainer Installation Procedures:

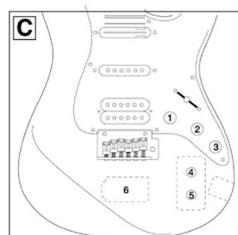
1. Select the location for the sustainer controls and battery box. Listed below are some possible locations for the Sustainer circuit board, these are only suggestions, custom installations are also possible. The Sustainer On/Off switch and Sustainer Mode selector are attached to the circuit board, this should be taken into account when selecting the location for these controls. Route both holes accordingly and make sure circuit board fits comfortably before wiring the system. The battery box position should be chosen last and should be placed in a location on the back of the guitar that will not interfere with the guitar's functions.



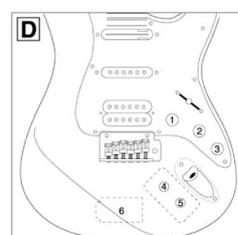
A. Modern style guitar with no pickguard.



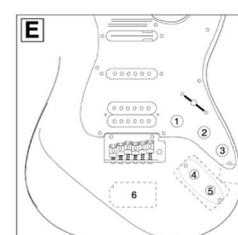
B. Vintage style guitar with no tone control.



C. Vintage style guitar with a side mount jack.



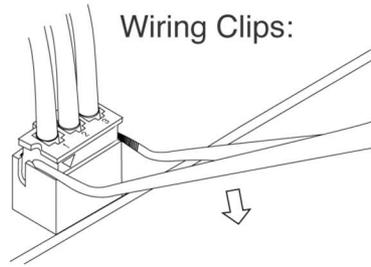
D. Vintage style guitar with a face mount jack (most common).



E. Vintage style guitar with the Sustainer controls mounted to a plate that replaces the jack.

- Listing of Sustainer controls:
1. Master Volume.
 2. Master Tone.
 3. Sustainer Intensity.
 4. Sustainer Mode Selector.
 5. Sustainer On/Off Switch.
 6. Battery Box

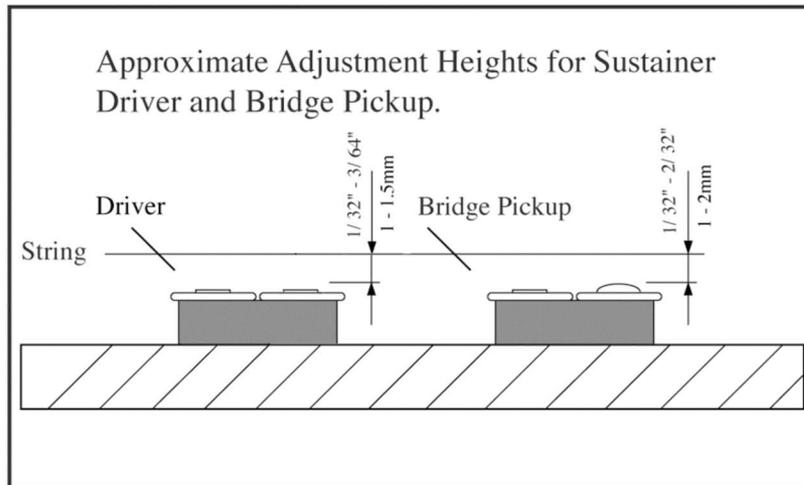
2. If the location you have chosen for the controls requires routing, disassemble the guitar and rout the cavity for the Sustainer circuit board.
3. If your installation is different from the diagrams in these instructions or you need additional diagrams or instructions visit support section at fernandesguitars.com
4. Using the wiring diagram that corresponds to your guitar and desired configuration, install the Sustainer in the guitar following these steps:
 - A. Remove strings and any other parts that may interfere with installation.
 - B. Place Sustainer Driver in Neck position using mounting screws and springs as needed, make sure it's connecting wire is accesible at control cavity.
 - C. Install all other pickups and make sure their wires are accesible at control cavity.
 - D. Connect all wires/clips as shown in the wiring diagram that corresponds to your setup, make sure clips are connected firmly into circuit board.



Wiring Clips:

Most of the wires for the Sustainer are mounted to the circuit board using wiring clips to make installation as quick and easy as possible. Installing and removing the clips must be done by grabbing them with either your fingers or a fine tool. Removing the clips by pulling the wires may damage the clips and wires.

- E. Solder necessary pickup connections, such as Bridge pickup wires into Sustainer clips/wires or directly into circuit board if needed.
- F. Connect desired Volume and Tone potentiometers as shown in the wiring diagrams in next page.
- G. Connect pickup selector switch according to the specific switch being used. Switch wiring shown in wiring diagrams is an example for your reference, there are many different types of pickup selector switches, please refer to your switch specifications and connect according to guidelines provided by these diagrams.
- H. String guitar, tune and adjust pickup height as described below.



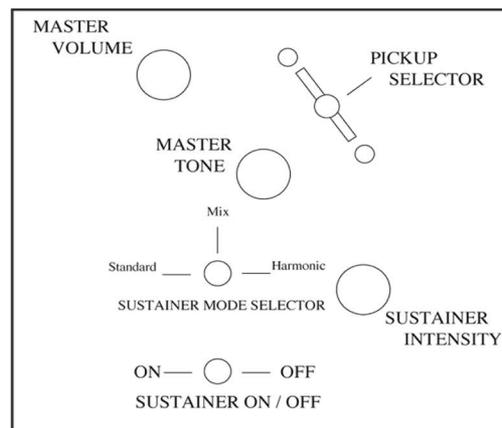
Sustainer Driver and Pickup Height Adjustment:

For the Sustainer to work properly, it is necessary to set the driver and the bridge pickup to the approximate heights of:
 Sustainer Driver: 1/32" to 2/32"
 Bridge pickup: 1/32" to 1/8"

Setting the Driver this close to the strings will cause the Driver to have more output (volume) than the middle and bridge pickup

The Driver's output can be adjusted by the FGC trim pot on the back of the Sustainer circuit board. Set this output to match the volume of the bridge and middle pickup.

- I. Before attaching circuit board into cavity, check all connections and insert a plug into input jack, Sustainer indicator light should come ON.
- J. Set all circuit board trim pots to 50% level.
- K. Turn Sustainer ON by selecting the UP position on the Sustainer On/Off Switch and test the system in both modes by switching Mode Selector Switch while Sustainer remains ON. If a problem is detected, proceed to troubleshooting section in this manual.



Sustainer Controls

ON/OFF Switch: The ON position activates the Sustainer and automatically selects the bridge pickup while deactivating the pickup selector and the neck pickup. The OFF position deactivates the Sustainer, reactivates the pickup selector and allows the Sustainer Driver to function as a normal pickup.

Mode Selector Switch: The UP position is the Standard mode, MIDDLE is Mix mode, and the DOWN position is the Harmonic mode.

Sustainer Intensity Control Knob: Controls the intensity of the Sustain effect, at 0 level there is no sustain, at maximum level there is best effect with fastest attack and longest sustain.

- L. Attach circuit board into guitar cavity by carefully inserting it's switches through their holes and securing them firmly with their washer and nuts.
4. Follow the Sustainer setup tips explained in next section. The guitar must be set up properly in order for the Sustainer to work.

Tips For Fernandes Sustainer Set-Up:

1. Fresh Alkaline battery.
2. Adjust the bridge pickup and Sustainer Driver as close to the high E string as possible.
3. Adjust VBC trim pot as high as possible without producing feedback.
4. Heavier string gauges tend to work best. This is because heavy strings have more mass for the magnetic field of the Sustainer to drive.
5. If bridge pickup is replaced, AGC trim pot may need to be adjusted, this will solve feedback/squeal..

Pickups:

The Sustainer will work with most common pickups in the market, including Seymour Duncan, Dimarzio and EMG, however we cannot guarantee it will work with all pickups due to inconsistencies in pickup manufacturing. Identify your bridge pickup Hot and Ground wires as instructed in their manufacturer's specifications and insulate all other wires.

Seymour Duncan 4-conductor pickups: Twist together White and Red wires, insulate with shrink wrap or electrical tape. Twist together Green and Bare and use as ground, Black is hot.

Dimarzio pickups: If standard wiring doesn't produce best sustain, reverse wiring may be used, using Green as hot, Red as ground, and insulate Black and White.

Active Pickups: One battery can be shared with Sustainer by joining battery connector's red wire with pickup's power (red) wire. 2 batteries can also be used, wired in parallel (pickup battery would be independent of sustainer system).

Sustainer circuit is not designed for 18 volt operation, wiring two 9 volt batteries in series may damage the unit.

For installation of EMG active pickups containing the solderless system, the wires that connect to the plastic connector need to be cut from this connector and spliced.

This way they can be properly connected into Sustainer circuit board as described in the wiring diagrams. Black is ground, White is hot, Red is Battery+.

EMG 25k pots should be used.

Coil Tap: In order to connect a standard coil tap feature, connect the main sustainer output (normally connected into volume pot) as the full humbucker hot, and connect the coil split wires coming from bridge pickup into the split switch (as normally done according to bridge pickup specifications). Push/Pull pots or toggle switches are commonly used for this feature.

Sustainer Troubleshooting

Each Fernandes Sustainer system is thoroughly tested before shipping, problems are generally caused by errors in wiring or incorrect Sustainer adjustment.

• The Sustainer sounds distorted.

A small amount of distortion is normal, replacing the battery and making sure connections are clean and solid usually help.

• Sustainer produces high pitch squaling sound

Adjust the AGC trim pot on the Sustainer circuit board.

• The guitar produces a high pitched squealing sound when Sustainer is Off

Adjust the FGC trim pot.

• Sustainer is not working, no sound

Make sure battery is good and properly connected, light indicator should be On when a plug is inserted into input jack, and VBC trim pot is set to 25% or more..

• Sustainer is weak

Set pickup height as close to the strings as possible, check battery, Sustainer Intensity Control Knob and VBC trim pot is set to a level higher than zero.

• Battery light comes on, but there is no sound

Recheck the wiring something is not connected properly

• One mode of the Sustainer works, while the other does not or is weak

Adjust MBC trim pot, if problem persists, rotate bridge pickup 180 degrees.

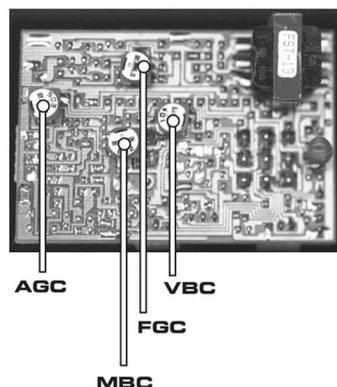
Warranty

This warranty policy refers to U.S. residents, for policies in other countries, please check with your distributor.

To validate the warranty, the warranty registration card must be completed and returned to Fernandes Guitars within ten (10) days of purchase. The Fernandes Sustainer is warranted against defects in material and workmanship for 1 year. While under warranty, all replacement parts and labor will be provided without charge. This warranty is to the original purchaser and may not be transferred.

Return Policy

Should your Fernandes Sustainer require service, you must contact the Fernandes dealer you purchased it from. The dealer will determine if the unit can be repaired at their location or if the unit needs to be returned to Fernandes Guitars or the official Fernandes distributor of the territory where the dealer is located.



Description of trim pot functions

Use a fine flat head screwdriver to gently adjust these pots.

FGC (474 Kohms):

Driver Output Control, set it to match the output of the middle and/or bridge pickup.

VBC (104 Kohms): Vibration Control. Turn clockwise to increase Sustainer's attack, keep in mind increasing this value will also shorten battery life.

AGC (503 Kohms): Sustainer Gain Control. Set to 10 if possible, if you get high-pitched feedback, turn it counterclockwise until the feedback stops.

MBC (203 Kohms): Balance Control. Usually set to 50%. Selects the output between the standard and harmonic modes.