Sustainer "squeals", pulsates or makes guitar signal "grungy" ("static" or "dirty" sound mixed with signal)

- Pickup switch not wired properly. *Only the bridge pickup must function when sustainer is **ON***. Check this by tapping on other pickup polepieces. If any other pickup functions when the sustainer is ON, check wiring of 10-pin connector. Make sure that one pole of the guitar pickup selector switch is dedicated only to the bridge PU (and also white wire, 10-pin connector). This is to insure that no other PU signal can be mixed with the bridge pu signal when the sustainer is ON.
- Metal foil or conductive coating located near driver and/or bridge pickup. This must be removed from the pickup area, or the sustainer will not function properly. Magnetic "null" adjustment of tab will not be possible. FOIL-COVERED PICKGUARDS MUST BE SCRAPED CLEAR. "Mirror" or metallic pickguards also cause this problem.
- Make sure gray/violet wires from 10-pin connector are not too close to any pickup signal wire or to the white input wire. Also, the brown/gray wires on the 8-pin connector. If moving these wires to a particular location eliminates the grunge/squeal or makes it go away, you should fix them in that place. You might have to shield them if the electronics cavity is packed full of wires and circuitry.
- Driver (transducer) shield not grounded. See hookup diagram.
- Driver red and black wire shield must be maintained until last 1 in. (25mm).
- Make sure all grounds are properly connected.
- GAIN is set too high. Set GAIN trimpot to lower level by turning counterclockwise.
- Magnetic field cancellation tab not properly positioned for magnetic "null"

Sustainer in harmonic mode when control is set for FUNDAMENTAL mode

- Make sure HARMONIC/DRIVE pot (or toggle switch) is wired correctly. If YES, then…….
- Reverse driver polarity by swapping red and black wires. (Control ***must*** be rotated clockwise for FUNDAMENTAL mode, counterclockwise for HARMONIC mode, even if you prefer the other way around. Otherwise, neither mode will function properly.)
  NOTE: EMG and some other pickup types are reverse polarity from normal. These pickups will require that you reverse the driver polarity from that shown in your hookup diagram.

Sustain is weak

- Raise **both driver and bridge pickup** closer to strings. Especially close to smaller strings. Both have a *profound and equal* effect on the sustainer gain.
- Guitar cord has partial short, which reduces the signal level but still allows some to pass
- Tone control turned to "bass" setting. Tone control might be wired wrong.
- HARMONIC/DRIVE pot on front of guitar turned to midpoint setting

Increase setting of GAIN trimpot on the circuit board. If too high a setting is entered, then uncontrolled squeal or pulsation might occur. In this case, review adjustment procedure for magnetic field cancellation tab and other squeal preventive suggestions.

No neck pickup function

- Neck pickup stops working when battery voltage goes down to about 7.5 volts. Replace battery.
- Trimpot (near 8-pin connector) turned down. Adjust this to proper pickup volume level.
- Neck pickup preamp input (orange on 8-pin connector) must connect to driver black wire by ON/OFF switch when sustainer turned OFF.



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2-7-07



# SUSTAINIAC® *STEALTH PLUS* ™ SUSTAINER

# INSTALLATION GUIDE

## SYSTEM OVERVIEW:

All of our **Sustainiac**® ***Stealth PLUS***™ sustainers are pretested in an electric guitar before shipping.

The **Sustainiac**® ***Stealth PLUS***™ ***Sustainer*** is an electromagnetic sustain system. It produces infinite sustain of the string vibrations of electric guitars. The driver functions as an active neck pickup when the sustainer is off. The driver output level (when it is being used as a pickup) has a trimpot adjustment so you can match the output to your other pickups. The combined HARMONIC/GAIN switch/pot control provides three operating modes: NORMAL, HARMONIC, and MIX modes. With this powerful feature, sustained string vibration can be controlled to make cool-sounding harmonics.

**HOW IT WORKS**: First, the ***Stealth PLUS***™ ***Sustainer*** electronically amplifies and processes the pickup signal of your instrument. Then this amplified, processed pickup signal is sent to a patented *magnetic string driver transducer (**driver**)*, which replaces your existing neck pickup. The driver is available in either single-coil size or full humbucker size. The driver sends out a powerful, focused magnetic field that pulsates in synchronization with the musical string vibrations. This pulsating magnetic field adds vibrational energy back into the strings during each vibration. Vibration energy is normally lost as friction, causing the notes to die out. By adding energy during each string vibration, the vibrations are sustained indefinitely. A single, 9-volt alkaline battery powers the system for about 20 hours of combination sustaining/normal playing. More or less time, depending on how much you use the sustainer. When the battery dies, your instrument will not continue to function normally. **The neck pickup function will cease before the sustain function.**

**MAGNETIC STRING DRIVER TRANSDUCER**: This ***driver*** is the size of a single-coil pickup or a full-size humbucker pickup, depending on the model you select. Color choice is black or white. It *replaces your neck pickup*. When the sustainer is OFF, the driver functions as a humbucking active neck pickup. It is equalized for either humbucker or single-coil sound. The magnetic field that the driver produces can cause interference with nearby pickups. Therefore, the sustainer automatically selects the bridge pickup when the sustainer is on. Our unique ***Bilateral Driver*** design almost totally eliminates this undesired characteristic that is typical of all other sustainer drivers.

**SPACING**: The driver should be located at least 3.5 in. (90 mm) from the bridge pickup (center-to-center). The closer this spacing, the lower you must set the *gain trimpot* before squeal occurs. This decreases performance. Therefore, 22 fret guitars usually work better than 24 fret guitars. We don't recommend any guitar having more than 24 frets for any electromagnetic sustainer.

**ELECTRONICS**: The sustainer electronics consist of a single small, prewired circuit board. This measures 1.1 in. x 3.75 in. The board fits on edge into most electronics cavities. In Strats and many Ibanez guitars, it fits between the pickup selector switch and the pots. (See installation drawing.) Your existing electronics cavity must be rewired to accept the supplied circuit board and switches in order to install the **Sustainiac**® ***Stealth PLUS***.

**BATTERY**: A single 9-volt **alkaline** battery powers the Stealth PLUS. If you don't want to route a cavity into your guitar to mount a quick-change battery holder (optional), you can consider putting it in the tremolo cavity. Move the 3 tremolo springs over to one side. The battery will fit into this space on many guitars. Minor routing will probably be necessary. You can order a quick-open trem cavity cover from us for a fast battery change. (**Low battery indicator**: Neck pickup function will cease to function at about 7-7.5 volts.)

**BATTERY DISCONNECT**: A stereo output jack is supplied which disconnects the battery if your normal guitar cord is not plugged in. This stereo jack replaces your existing instrument jack. *The **green** wire on the 8-pin connector* connects to the jack ***ring*** terminal. When a mono guitar cord is plugged in, the green wire is connected to ground. If the sustainer POWER SWITCH is turned OFF, the sustainer is now in ***Standby mode***, and the driver preamp is ON so it can function as a pickup. The unit draws about 3-5 milliamperes (ma) in *standby* mode to run the driver preamp. You *must* have both the instrument cord plugged in, *and* the sustainer power switch turned on in order to activate the sustainer. This minimizes the chance of having accidental battery drain when you walk away from the instrument. You must remember to unplug the guitar when not using it, or the battery will slowly drain in about 100-200 hours due to the preamp being in standby. For those guitars that have active pickups (such as EMG's) or piezo preamps that run on their own 9-volt battery, an optional 9-pin jack must be ordered to insure that both units are completely off when no plug is inserted into the jack.

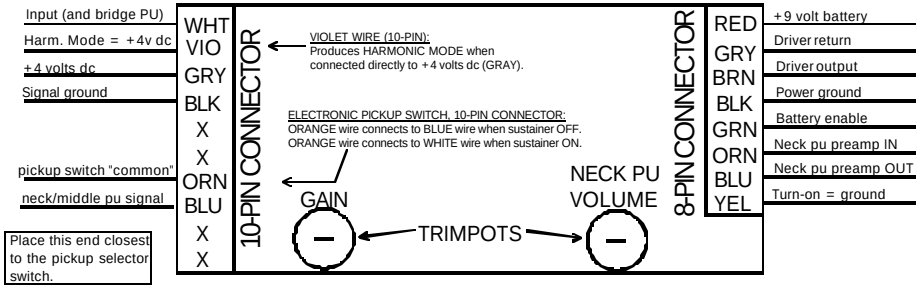
**OPTIONAL QUICK-CHANGE BATTERY CASE**: Since sustainers use up batteries quicker than other guitar effects, an optional quick-change battery case is available from Maniac Music. Routing required.

**POWER AND HARMONIC CONTROLS**: The **Stealth PLUS** has two main controls: The *ON/OFF* switch and the *HARMONIC/GAIN* control. Both of these are special push-pull switches that are attached to control potentiometers. These "*switch/pot*" controls then replace two of your normal guitar potentiometers. These controls make the sustainer practically invisible on the instrument, without having to drill new holes for the switches. Alternatively, if you are willing to drill holes in your guitar body, one or both of these controls can be replaced by *mini toggle switches* if you desire. No extra charge for this option.

**ON/OFF CONTROL**: The *POWER* switch, a potentiometer/switch combination part, turns the sustainer ON by pulling out on the knob (or can be optional toggle switch). The bridge pickup is automatically selected when sustainer is ON. A 250K pot is included in kits for guitars with single-coil pickups, 500K for humbucker guitars. The pot portion of the control can then be used for the original volume or tone function, since the control uses only the switch portion of the control (becomes master tone on a Strat or Ibanez).

**HARMONIC/GAIN CONTROL**: The *HARMONIC/GAIN* control is a 250K ohm pot/switch combination. When pushed in, it produces either FUNDAMENTAL or HARMONIC string vibration, depending on how it is rotated. Rotate it full right (clockwise), and you get mostly fundamental string vibration. Rotate it full left (counterclockwise), and you get intense HARMONIC string vibration. Rotate it toward center from either full setting, and the sustainer gain decreases toward zero. As the sustainer gain is decreased, slower fade-in of the sustain function will be realized. (Optionally, use a 3-position toggle switch, no extra cost.)

Pull the knob out, and you get two more modes: Full right (clockwise) = MIX mode (a maniac Music original), which is a more subtle mode. MIX produces mostly fundamentals on high notes, and mostly harmonics on low notes. Full left (counterclockwise) = MIX ENHANCED string vibration. This will produce yet another harmonic mode on some notes. This control uses both the pot and switch portions of the control. Or, you can use the optional 3-pos. toggle switch, with MIX mode in the middle position.




**CONNECTOR COLOR CODE AND WIRE FUNCTION DIAGRAM**



# SUSTAINER CHECKOUT AND ADJUSTMENT

7. For Strats and copies, insert the MAGNETIC ADJUSTMENT TAB between the driver and cavity to a position at the center as shown in the diagram. (You can try leaving it out first)
8. Turn the sustainer ON by pulling the power switch. Listen for squeal or "grunge" coming from the amplifier. (See step #11 below.) Make sure that *only the bridge pickup* (PU) functions when the sustainer is on by gently tapping the polepieces all of the pickups with a steel object like a screwdriver blade.
9. If you have a current meter to measure battery current, idle current should be about 3 or 4 ma. Full power sustain of most notes should be about 20 to 60 ma. after first shooting above 100 ma for a short time. Actual current depends on notes played. Higher notes and harmonics draw less current. Check troubleshooting guide if battery gets warm or if current remains above 60 ma.
10. Most notes should sustain in FUNDAMENTAL mode. (Some won't, particularly very high or very low notes.) If you don't get mostly strong fundamentals, make sure the violet/gray wires are connected as shown in the hookup drawing. If this is OK, than the driver leads (red, black) should be reversed. (For EMG pickups, leads MUST be reversed.) Harmonic mode occurs when the violet/gray wires are shorted together by the HARMONIC MODE control pot (or switch, if using a toggle control).
11. GRUNGE/SQUEAL TEST AND ADJUSTMENT OF MAGNETIC FIELD CANCELLATION TAB: If you have squeal and/or grunge in your guitar signal, you might need to add a tab. More likely, the problem will be due to poor wire placement. For Strats, place the tab in the best position to remove distortion, hiss, and squeal, with your instrument amplifier set to a *clean* setting. Check in both FUNDAMENTAL mode (clockwise), then in HARMONIC mode (counterclockwise). Start with the tab in the center position. The tab can be placed on either the neck or bridge side of the driver. Carefully and slowly slide the moveable magnetic field cancellation tab to the best position to minimize squeal and distortion. If you have a tap switch on a bridge humbucker, select the tap so you can hear the distortion better. Use trial and error to determine this. **Use only a plastic or wooden stick (or fingers) to move the tab. *Do not use metal,* because it will affect the setting of the tab.**

If you cannot make squeal go away then go to the TROUBLESHOOTING section, which follows. More troubleshooting details are on the Sustainiac website, Stealth PLUS page or INSTALLATION page.

# TROUBLESHOOTING GUIDE

**CAUTION: Remove battery before soldering any connections to the circuit.**

Your SUSTAINIAC® ***STEALTH* PLUS**™ sustainer has been completely tested for proper operation. Since installation in your instrument requires that you solder numerous connections, it is possible that one or more tiny solder "bridges" can occur which short adjacent connections. Check your work under a strong light, using a magnifier. Double check each wire with the color-coded drawing.

**SYMPTOM**

Sustainer dead

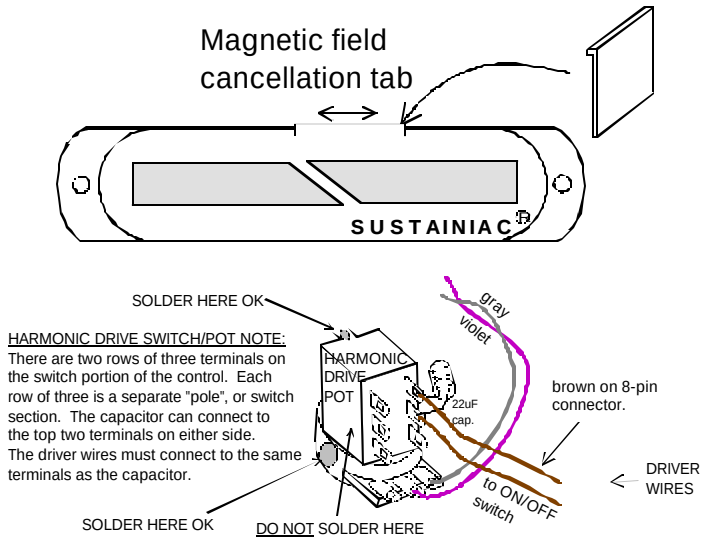
- Make sure **both** sustainer ground (black) wires are connected to pot bodies.
- Battery (-) wire connected to same pot body as 8-pin connector black wire
- Make sure output jack terminals not shorted to jack housing or to each other.
- Check to make sure battery is good (+8 volts or greater) and is wired in properly.
- Check driver shielded wires for solder short.
- Check circuit board connectors for pulled-out or improperly connected wire. Also, check for correct insertion of the connectors.
- Mono guitar cord must be plugged into guitar jack (not stereo). (3-5 ma Standby)
- Green wire must be connected to stereo output jack "ring" terminal
- Yellow wire is connected to ground when sustainer switch set to ON position.
- If the circuit board is physically pressed tightly against the pickup selector when you install a pickguard, the insulation on the board can be punctured, causing internal connections to be shorted to guitar ground or other electrical contacts.

# PRELIMINARY INSTRUMENT CHECKOUT

NOTE: **Don't install a battery yet.**

1. Set sustainer GAIN trimpot on the circuit board (next to 10-pin connector) to 11-12 o'clock position. Set HARMONIC/DRIVE pot on the guitar body to maximum right (clockwise) for maximum gain in FUNDAMENTAL mode. Make sure this switch is PUSHED IN. (OPTIONALLY, set toggle MODE switch to FUNDAMENTAL position.) Set neck pickup trimpot (near 8-pin connector to a 12-1 o'clock setting.
2. Set your guitar amplifier on CLEAN setting, with the treble control advanced and midrange control reduced. This will allow you to better hear grunge and distortion that might be picked up from the sustainer.
3. ***Before installing a battery***, make sure that the battery wires are not reversed. Make sure the power switch is pushed IN (off). Make sure the connectors are plugged in correctly. If you have a meter to measure current, set it to 1-ampere full scale and put it in series with the battery (+) terminal.
4. Now, install a 9-volt ALKALINE battery. Don't use Nicad, which only has 7.2 volts.
Feel the battery. **If it gets warm or current meter "pegs", remove it immediately, and recheck wiring.**
5. Plug in a mono guitar plug. With the ON/OFF switch pushed in (**sustainer OFF position**), make sure that the instrument functions normally. Exercise the pickup selector switch to make sure the pickups work OK. The driver should function as a pickup when the sustainer is off. It needs to be set for proper level by adjusting *NECK PICKUP TRIMPOT* if necessary. Also, test the instrument volume and tone controls for proper operation. Standby current should be 3-5 ma (milliamperes).
6. If you have a Strat (with slanted bridge pickup), insert the MAGNETIC ADJUSTMENT TAB between the driver and cavity to a position at the center as shown in the diagram. We don't supply one for other guitar types unless you specifically request one.

DETAIL OF MAGNETIC TAB INSTALLATION: This tab is not needed unless grunge and/or squealing is present when you turn on the sustainer. (On Strats, it IS needed.) *We rarely use one on anything but Strats.* It can face the neck or face the bridge (see drawing). Set the instrument amplifier to a clean setting, and turn up the treble so you can easily hear distortion. **Move the tab is to the position where noise and squeal is minimum**. Don't use a metal object to move the tab because it interferes magnetically. A good way to do it is to move the tab with the fingers while sustaining the big E-string. The tab can be secured in place with small dab of silicone adhesive or double-stick tape after positioning. On some installations, there is sufficient friction to hold it in place.






# RETROFIT INSTRUCTIONS

**CAUTION #1:** ***Make sure that your body is discharged of static electricity before handling or working on the sustainer circuit board. Charge stored on the human body has sufficient energy to damage semiconductor components.***

1. ( ) Check to make sure you have received all of the parts necessary to install the sustainer.

(1) CIRCUIT BOARD (1.1 in. x 3.75 in.)
(2) DRIVER TRANSDUCER (black or white, SC or HB size, appropriate mounting screws, 2 springs, magnetic field cancellation tab, 0.5 x 0.85 in. Strats only (not needed on other guitars)
(3) MISCELLANEOUS PARTS BOX
WIRE HARNESS 10 pin connector (four positions are blank), 8 pin connector
TWO SWITCH/POTENTIOMETERS, one for *POWER* and one for *GAIN/HARMONICS*
OPTIONAL: Toggle switches can replace either pot/switch control at your option
STEREO OUTPUT JACK type dependent on original guitar jack, 9-pin for active pickups
SHIELDED WIRE for tone control hookup or output wire
EXTRA HOOKUP WIRES, to use as needed
WIRING ACCESSORIES: heatshrink tubing, nylon wire ties
9V BATTERY SNAP; or, *optional battery case*
(4) OPTIONAL ACCESSORY: EXTERNAL 9V BATTERY HOLDER (requires body routing)

# SUSTAINIAC CIRCUIT INSTALLATION

**CAUTION #2: Do not install a battery until the entire installation and steps 1-3 of *PRELIMINARY INSTRUMENT CHECKOUT* procedure are finished.**

**CAUTION #3: Never solder any wires of the sustainer with a battery installed!**

SOLDERING ADVICE:
Use a good quality pencil-type soldering iron, preferably of 25 to 50 watts capacity. The best is to use a controlled temperature iron, set at about 650°F (340°C). Do not use a clumsy "gun" type iron. NEVER use acid-core solder. Use only rosin-core solder, intended for electronic use.

2. ( ) Remove strings and pickguard (if any) from the instrument. Or, simply remove neck after loosening strings. First capo or tape strings to the neck near the nut to prevent a tangled mess.

3. ( ) Some pickguards or pickup cavities are covered with conductive foil to shield from hum pickup. This must be removed from the whole area around the neck pickup (driver) and also bridge PU. This shielding causes magnetic interference with the driver that causes squeal and grunge in the output signal. "Mirror" pickguards etc. will cause problems, *and should be replaced with non-metallic ones*.

**4. ( ) PLAN YOUR INSTALLATION BEFORE BEGINNING.** On Strats, Ibanez and Les Paul-type guitars, the circuit board placement should be exactly as shown on the hookup diagram. On Strats, be sure to wrap the wires coming from the 8-pin connector around the ON/OFF switch to keep the wiring short and neat. *Otherwise, it won't fit into the cavity*. For other guitar types, *plan the installation carefully*. In general, **the 10-pin connector should be oriented close to the pickup selector switch**.

**Some sustainer signal wires can radiate electronically into your guitar pickup signal wires. This is known as "*crosstalk*". The result is that a "*grunge*" (distortion) is heard in your guitar output signal. It can even cause oscillation, which is normally heard as a high-pitched squeal. In order to minimize crosstalk, remember the following**: ***CROSSTALK PREVENTION MUST DOMINATE YOUR ENTIRE INSTALLATION. So, please read the following notes carefully:***

Keep the driver wires (brown/gray wires on 8-pin connector) *short*. Keep the white wire on the 10-pin connector (bridge pickup signal) *short*. ********Keep **all pickup signal wires** away from the circuit board by at least ¼ inch. Especially, don't let the bridge pickup signal wire run along the circuit board.********

The violet/gray wires on the 10-pin connector should be twisted together, and kept away from the guitar pickup signal wires.

The circuit board itself should be placed on its edge. This keeps it from lying on top of the guitar signal wires and control. You should consider selecting another guitar for installation or enlarging the electronics cavity if the board cannot be positioned on edge. If the board *must* lie flat on top of guitar signal wires or the controls, consider shielding the board. To do this, you must first cover it with copper tape. Then, connect the copper tape to ground with a black wire. Finally, cover the copper with insulating tape.

***Some wires don't cause grunge or oscillation*:** Both BLUE wires and the ORANGE wire on the 8-pin connector only carry middle and neck pickup signals. These signals are not heard when the sustainer is running. The black (ground), red, yellow, green wires don't cause grunge problems, either.

5. ( ) STEALTH **PLUS** CONTROLS: Remove the controls from your guitar that will be replaced with Sustainiac switch/pot controls. On Strats, a single MASTER TONE control (attached to ON/OFF switch) will replace the original NECK TONE. This will control the tone of all the pickups on the instrument. TOGGLE SWITCH OPTION: On Strats, you won't have much room to use two toggle switch controls without removing at least one of the tone controls, unless you are willing to do some body routing.

6. ( ) For Strats and Ibanez with pickguard, mount the **Stealth-Plus** push-pull switch/pot controls to the pickguard exactly as shown in the diagram. The solder lugs on the two controls should face each other. For other guitar types, place them *in carefully chosen places*. *Arrange the contacts to provide maximum distance from the circuit board*. For Ibanez, consider adding a 3rd hole between volume and tone for Harmonic Mode control, so you don't have to lose your tone control. (In other words, make it like a Strat.)

7. ( ) If a tone control is replaced by the ON/OFF switch (as with Strats and 4-pot Les Paul types), transfer the tone capacitor from the original pot, and attach to the new one as shown. Guitars that only have two pots must give up either the VOLUME or TONE function, unless another control is added.

8. ( ) NECK PICKUP: Remove neck pickup, and replace with Sustainiac driver.

9. ( ) DRIVER: Route driver wires to the ON/OFF switch and 8-pin connector. Solder driver shield wire to ON/OFF pot body tab. *Do not try to solder to the switch body (upper square portion), because internal plastic parts will melt.*. **If you have EMG pickups (and some other types), you will have to reverse the red/black driver leads from the drawing, because these pickups have reverse polarity from normal.**

10. ( ) Attach the two wiring harnesses to the respective connectors. Keep the wires as short as possible to avoid electrical crosstalk which results in grunge in the pickup signal. *In Strats and Ibanez, the installation won't fit in the electronics cavity unless the wires are kept short.*

**11. ( ) BEGIN WIRING THE SUSTAINER AS SHOWN IN THE HOOKUP DIAGRAM. SUSTAINER WIRING CAUTIONS (grunge/oscillation prevention) : *READ STEP 4 AGAIN*.**

- Keep the Sustainiac signal wires as short as possible (brown, gray on 8-pin connector, Har./Gain, violet/gray on 10-pin connector)
- Keep guitar pickup signal wires away from sustainer signal wires and also away from the circuit board itself. Keep the bridge pickup signal input wire (white/10-pin con.) as short as possible, and away from the STEALTH PLUS circuit board and the violet/gray wires.
- Guitar pickup signal wires include any that are attached to the tone or volume controls, or the output jack.
- Where the driver red/black wires protrude from the shield, they must be kept away from guitar signal. Driver red/black unshielded length must not exceed 1 inch (25 mm).

12. ( ) HARMONIC/GAIN CONTROL WIRES (violet/gray): **(See drawing, page 6)** Twist these together before connecting to the HARMONIC/GAIN control. *These wires must not run near any guitar signal wire*. If this cannot be avoided, then you must shield the guitar signal wires. In some installations where the violet/gray wires must run a long distance, they themselves must be shielded. This requires replacing the gray/violet wires with a shielded pair. It usually isn't necessary, except for extreme cases.



First, pull the violet/gray wires "up" (not out) from the connector prongs. They are held by V-shaped prongs, which pierce the wire insulation, making contact with the inner conductor ("insulation displacement"). Then, carefully press the red/black wires from the shielded cable into the V-shaped prongs of the insulation-displacement connector using a thin screwdriver. The two prongs will cut into the insulation, making contact with the wire strands without soldering. *Be very careful not to damage the connector (or your fingers)*.

13. ( ) MASTER TONE POT: On Strats, the connection from the output on the volume pot to the tone pot runs parallel to the sustainer violet/gray wires. Therefore, the tone connection must be shielded. If you don't do this, you will get grunge in the output signal. Use the extra shielded wire provided as shown in the diagram.

14. ( ) OUTPUT JACK: Remove existing guitar jack, and replace with supplied stereo jack. For Strats, make sure that none of the jack terminals touch the conductive jack housing. You will have to bend them in to prevent touching. Connect a black wire (8-in. for Strats) to the jack ground terminal. The green LOCKOUT wire from the 8-pin connector connects to the ring terminal. The best way is to use part of the 2-conductor shielded cable supplied (shield to ground terminal, red to tip), and use the black wire to connect the ring terminal to a shortened green LOCKOUT wire.

15. ( ) GROUND CONNECTIONS: The ground wires are best attached to the pot bodies or the small tab on the switch housing. (***Don't try to solder to the square switch bodies*, because internal plastic parts will melt. This will destroy the switches**). All pot bodies must be grounded. Solder black ground wires to all pot bodies, and also to other guitar parts that need grounding. Make sure that both black wires from the 8-pin and 10-pin connectors are grounded. The black wire from the 8-pin connector should be grounded to the ***same exact place*** *as the battery (-) wire*. *If they are attached to different locations, grunge will appear in the guitar output signal.*

16. ( ) PICKUP SELECTOR SWITCH: For Strats and Les Paul type guitars, rewire pickup selector switch as shown, keeping all pickup signal wires near the pickguard surface.
**IMPORTANT:** On Strats and other guitars having a Strat-type pickup selector switch, note that the switch section (pole) having the **bridge pickup** connection *has no other pickups attached to it*. You can use any type of pickup selector switch you choose, but no other pickup must be allowed to connect to the bridge pickup when the sustainer is on. Since 3-position Gibson-type selector switches have only one pole, this is accomplished differently as shown on the appropriate hookup diagram. On guitars having individual pickup selector toggle switches, the bridge switch is separated from the neck and middle pickup switches. The ON/OFF switch is used to isolate the bridge pickup output from the other pickup output(s), in addition to turning the sustainer on. In operation the internal electronic switch on the sustainer circuit board connects the center pole (orange wire on 10-pin connector) to the bridge pickup (white wire) when the sustainer is ON, and to the blue wire when the sustainer is OFF.

17. ( ) TRIMPOT SETTINGS: Set the neck pickup trimpot (near 8-pin connector) to a rotation of about 12 o'clock. This will set the sustainer neck pickup volume to the correct levels for most normal output pickups. Set higher to match *hot* pickups. Set the SUSTAINER GAIN trimpot (near 10-pin connector) to about a 11 to 1 o'clock rotation. Too high a GAIN setting can cause squealing in Harmonic Mode.

18. ( ) **Do not install a battery until steps 1-3 of the PRELIMINARY INSTRUMENT CHECKOUT procedure is finished.**

19. ( ) **Check to make sure that you do not have any wiring mistakes.**

20. ( ) **The installation is now complete. Go to CHECKOUT section.**

Once everything is checked out, you can use some of the supplied wire ties to make the installation neat, and also to keep guitar signal wires away from sustainer signal wires.