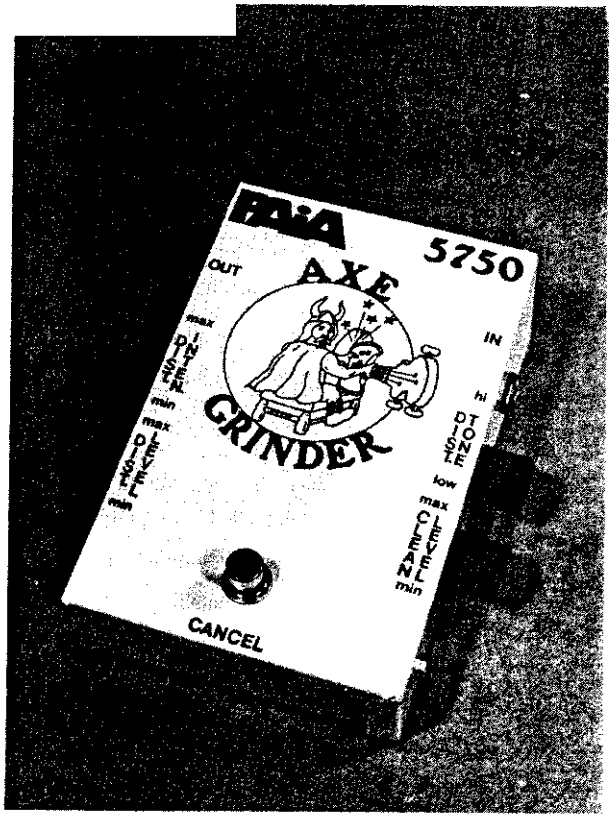
AXE GRINDER

Guitar Distortion

5750



BAiA Electronics, Inc.

!IMPOPTANT!

Prior to beginning assembly of your new kit, check the supplied parts with the following parts list. BE DILIGENT.

5750
MASTER PARTS LIST

QNTY	VALUE	DESC. (alternate markings)
		FIXED RESISTORS
1	1K	brown-black-red
1	4.7K	yellow-violet-red
9	10K	brown-black-orange
1	12K	brown-red-orange
1	100K	brown-black-yellow
1	220K	red-red-yellow
3	10 Megohm	brown-black-blue
		CERAMIC DISK CAPACITORS
		(alternate markings)
1	15pf	15
1	100pf	100
		POLYSTYRENE CAPACITORS
4	.1 MFD.	104
		ELECTROLYTIC CAPACITORS
5	1 MFD./10V.	Greater voltage ratings acceptable.
1	10 MFD./10V.	
1	100 MFD./10V.	
		SEMICONDUCTOR
2	1N4148 or 1N914	SIGNAL DIODE
1	4136	QUAD OP-AMP IC
1	4066	CMOS QUAD ANALOG SWITCH IC
		(MOS devices packed in antistatic material)

POTENTIOMETERS

1	5K	CONTROL POT
2	100K	CONTROL POT
1	500K	CONTROL POT WITH SWITCH

MISCELLANEOUS

2	14 PIN IC SOCKET
1	PUSH ON/PUSH OFF FOOT SWITCH
1	OPEN CIRCUIT 1/4 INCH PHONE JACK
1	STEREO 1/4 INCH PHONE JACK
1	BATTERY CONNECTOR
1	BATTERY HOLDER
4	CONTROL KNOB
1	5750 AXE GRINDER PC BOARD
4"	DOUBLE STICK FOAM TAPE
6"	BARE WIRE
30"	INSULATED WIRE

NOTE: If any parts appear to be missing or damaged, DO NOT begin assembly. Contact PAIA Electronics Inc.

INTRODUCTION

Thank you for buying the PAIA 5750 AXE GRINDER kit. We realize that you are anxious to get on with the assembly, but before you start, please take the time to read the hints and suggestions that follow.

-- BEFORE YOU BEGIN --

Familiarize yourself with this manual. It's not necessary to read the whole thing in detail, but at least go through and look at the illustrations. Get a feel for the parts and how they fit together. It is particularly important to check the parts supplied against the parts list in the front of this manual.
This is a relatively simple kit and it will not take long to assemble. Nevertheless, please do us all a favor - TAKE YOUR TIME. Time invested in careful assembly now will pay great dividends in the time saved trouble-shooting for careless errors when you're done.

SOLDERING

Successful operation of your kit, as well as it's longevity, is probably more dependent on how the components are soldered in place than any other one thing that the assembly involves. There are three key rules to go by, these are as follows:

TYPE OF SOLDER: Use ONLY ROSIN CORE SOLDER. Acid core solder or paste flux should never be used to assemble electronic circuitry, and the use of either on this kit will VOID THE WARRANTY. Good 60/40 rosin core solder is expensive, but it may be considered a long term investment, and well worth it.

SOLDERING TOOL: Use a soldering iron with a power rating of about 25 watts to 35 watts, and a small pointed tip. Soldering guns are completely unacceptable for soldering solid state components, as the large magnetic fields they generate can easily damage some components.

Be sure to keep your soldering iron tip clean. Before soldering a connection, wipe the tip on a damp sponge. This will aid in heat transfer and prolong tip life.

SOLDERING TECHNIQUE: We recommend looking at the solder connections on commercially available amps and effects units and try to imitate them as closely as possible. A proper circuit board solder joint has just enough solder to cover the soldering pad and about 1/16" (2mm) of the component lead passing through it.

To solder, hold the tip of the iron against both the wire to be soldered and the circuit board trace (or jack lug, switch lug, or whatever). Hold it there for a second or two to let things heat up, then feed a small amount of solder onto the connection. Do not simply feed the solder onto the tip of the iron and expect it to run down onto the connection. Continue holding the iron against the connection until the solder melts fully and flows freely over the connection. Then remove the iron and let the joint cool. Do not move any of the wires while the solder is cooling; if this happens, re-heat the connection, feeding in a tiny bit more solder.

There are two types of improper connections to watch out for; using too little solder (or too little heat) will result in a connection which will appear to be soldered when actually there is a layer of flux or oxidation insulating the component lead. To cure this, re-heat the connection and flow a small additional amount of solder on the joint. Using too much solder can lead to excess solder flowing between adjacent terminals or traces of a circuit board, causing a short circuit. Unintentional solder bridges of this type can be cleaned off onto the tip of a CLEAN, hot soldering iron while holding the board upside down. Another problem with using too much solder is that it can flow over to an adjacent hole, blocking it with solder. If this happens, again hold the board upside down and flow solder away from the blocked hole and onto the tip of a clean hot iron. Use a pin to poke through any remaining solder left in the hole.

Finally, avoid using too much heat or leaving the iron on a connection for too long. Excessive heat can damage many types of electronic parts, and in extreme cases can cause the foil conductors to lift from the circuit board.

CIRCUIT BOARD ASSEMBLY

CIRCUIT BOARD PREPARATION

() Prepare the 5750 circuit board for assembly by thoroughly cleaning the conductor side with a scouring cleanser (rinse completely with clean water and allow to dry) or Scotch Bright (R) or a clean steel wool pad. DO NOT USE PRE-SOAPED PADS. The board must be bright and shiny to accept the solder and failure to clean the board will result in poor solder joints and will VOID THE WARRANTY on the kit.

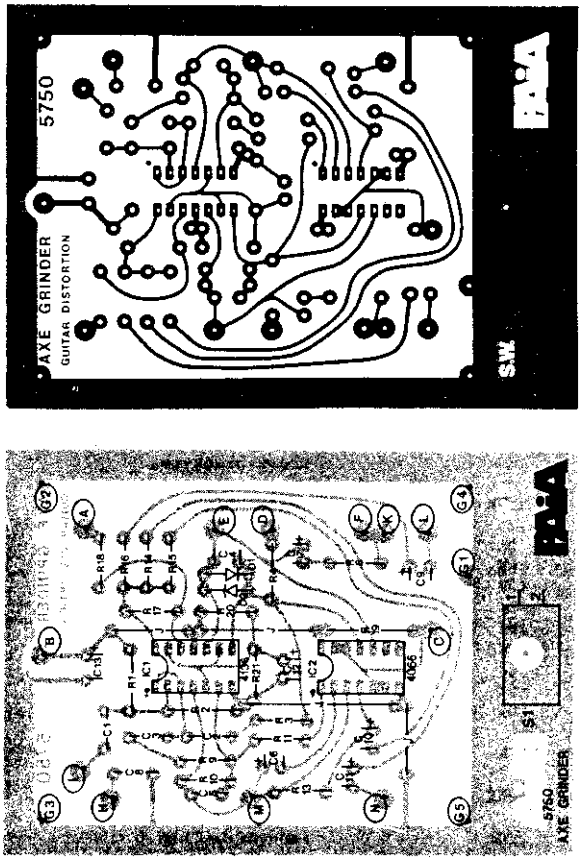


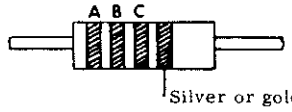
FIG.1
Parts Placement and Printed Circuit

JUMPER WIRE INSTALLATION

() Using the BARE wire provided, form and install the 4 wire jumpers on the circuit board. The designator for the jumpers are the solid lines broken with the letter "J" printed on the component side of the board and in the parts placement drawing figure 1. Note that the wire supplied can be straightened by pulling it between your pinched thumb and forefinger several times.

RESISTOR INSTALLATION

Solder each of the fixed resistors in place following the parts placement designators printed on the circuit board and shown in the assembly drawing figure 1. Note that the fixed resistors are non-polarized and may be mounted with either of their leads in either of the holes provided. Insert both leads in the mounting holes and push the resistor FULLY against the board. On the conductor side of the board, bend the leads outward to about a 45 degree angle to help hold the component in place while soldering. AFTER SOLDERING, clip off each lead end flush with the top of the solder joint.



Silver or gold - disregard this band.

DESIGNATION	VALUE	COLOR CODE
() R18	1K	brown-black-red
() R16	4.7K	yellow-violet-red
() R3	10K	brown-black-orange
() R6	10K	brown-black-orange
() R9	10K	brown-black-orange
() R14	10K	brown-black-orange
() R15	10K	brown-black-orange
() R17	10K	brown-black-orange
() R19	10K	brown-black-orange
() R20	10K	brown-black-orange
() R21	10K	brown-black-orange
() R11	12K	brown-red-orange
() R4	100K	brown-black-yellow
() R10	220K	red-red-yellow
() R1	10 Megohm	brown-black-blue
() R2	10 Megohm	brown-black-blue
() R13	10 Megohm	brown-black-blue

SOCKET INSTALLATION

Install each IC socket by inserting its pins into the holes provided from the COMPONENT side of the board and then soldering each pin to its respective pad on the CONDUCTOR (foil) side of the board. BE SURE THE SOCKET IS PRESSED FIRMLY DOWN ON THE BOARD AND THAT ALL THE PINS ARE PROTRUDING THROUGH TO THE CONDUCTOR SIDE. Some sockets may bear orientation markings on one end. While there is no electrical significance to the orientation of the socket, it is good practice to acknowledge these markings and orient the socket accordingly. Normally the marked end will correspond to the semi-circle notch at one end of the parts placement designator drawn on the circuit board.

DESIGNATION	TYPE
() IC SOCKET 1	14 PIN
() IC SOCKET 2	14 PIN

CAPACITOR INSTALLATION

Install the CERAMIC DISK capacitors. Like the resistors, these components are non-polarized. The value of the capacitor will be marked on the body of the part. Solder in place and clip the excess leads.

DESIGNATION	VALUE	ALTERNATE MARKING
() C4	15pf	15
() C5	100pf	100

Install the POLYSTYRENE capacitors in the same manner as above. These capacitors are also non-polarized and the value will be marked on the body of the part. Solder in place and clip the excess leads.

DESIGNATION	VALUE	ALTERNATE MARKING
() C1	.1 MFD.	104
() C2	.1 MFD.	104
() C3	.1 MFD.	104
() C8	.1 MFD.	104

Up to this point, all components have been non-polarized, (i.e. either lead can go into either hole). Elecrtrolytic capacitors are polarized; just like a battery they have a (+) and a (-) end; and like a battery, if installed incorrectly the circuit won't work. The capacitors supplied will have either the (+) or the (-) lead marked on the body of the part. The (+) lead must go through the circuit board hole which has been labeled positive (+). In the event that the capacitors have their negative (-) leads marked, this lead should go through the unmarked hole in the circuit board.
NOTE THAT THE SPECIFIED VOLTAGE RATING IS A MINIMUM RATING. CAPACITORS SUPPLIED WITH CERTAIN KITS MAY HAVE A HIGHER VOLTAGE RATING THAN THAT SPECIFIED.

DESIGNATION	VALUE	ALTERNATE MARKING
() C6	1 MFD./10V.	Greater voltage ratings acceptable.
() C7	1 MFD./10V.	
() C9	1 MFD./10V.	
() C10	1 MFD./10V.	
() C11	1 MFD./10V.	
() C12	10 MFD./10V.	
() C13	100 MFD./10V.	

DIODE INSTALLATION

Install the diodes on the circuit board. Like all semiconductors, the diodes are heat sensitive. To be on the safe side, heat sink each diode lead by grasping the lead with a pair of needlenose pliers or a small copper alligator-type clip at a point between the body of the component and the circuit board. Be sure to orient the diodes as shown in the adjacent drawing.

DESIGNATION	TYPE
() D1	1N4148 or 1N914
() D2	1N4148 or 1N914

FOOT SWITCH INSTALLATION

Install the foot switch S1 by inserting the mounting shaft into the large hole in the circuit board from the COMPONENT side. Thread one of the hex nuts provided onto the shaft of the switch and tighten it against the conductor side of the board. Orient as shown in figure 2.

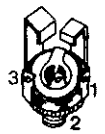
IC INSTALLATION

Install the integrated circuits. Note that the orientation of the IC is keyed by a circular indentation or notch at one end of the component. This aligns with the semicircular key drawn on the circiut board graphics. Carefully insert the pins of each IC into the receptacles of the sockets installed earlier and press the device firmly into place. Be sure all the pins go into the sockets and do not get bent up under the IC.

DESIGNATION	TYPE
() IC1	4136 QUAD OP-AMP
() IC2	4066 QUAD ANALOG SWITCH

POINT TO POINT WIRING

Locate the four control potentiometers and the two 1/4 inch phone jacks. Before beginning the following wiring steps, be sure you can identify each of the jacks and pots as one of the types shown in the adjacent drawings. Note the lug numbers.



J1
Stereo Jack

J2
O.C. Jack

R7, R8 & R12
Potentiometer

R5
Pot. with switch

It is good practice to tin the solder lugs on the jacks and controls before soldering the wire to it since the heat required to tin the lug may well be enough to melt the insulation on the stranded wire. Hold the component in a small vise during this operation. If no vise is available, a pair of needlenose pliers held closed with a rubber band will help.

Tin the lugs by holding your soldering iron against them for a few moments to allow the lugs to heat up. After a few seconds, feed solder to the point where the lug and iron meet. If the solder does not flow out onto the lug, it is an indication that oxidation is interfering with the solder bond. Break down the oxidation by rubbing the soldering iron around while applying firm pressure until the solder adheres smoothly to the lug. Tin all the metal surface you can near the hole, but leave the hole open. should the hole fill with solder, reheat the solder to melting and then "rap" the component on the work surface to knock the excess solder off the lug. Use a pair of pliers to hold the HOT component. After the lugs have been correctly tinned and cooled, prepare the 500K pot as follows.

() Prepare a 1 1/2 inch (3.8cm) piece of insulated wire as described in the following paragraph and connect one end to lug 3 of R5, (500K pot with switch). Connect the other end to lug 4 of R5, (one of the switch lugs on the back of the pot). Solder both connections.

In the following steps the insulated wire provided with this kit will be used to make the connections between the controls and jacks, and the circuit board. At each step, prepare the wire by cutting it to the specified length and stripping 1/4 inch (.7cm) of insulation from each end. "Tin" each end of the wire by twisting the strands together and melting just enough solder into the wire to hold the strands together. To be sure you will have sufficient wire for all steps, "rotate" through the strands available. At each step solder both ends of the wire. Refer to figure 2.

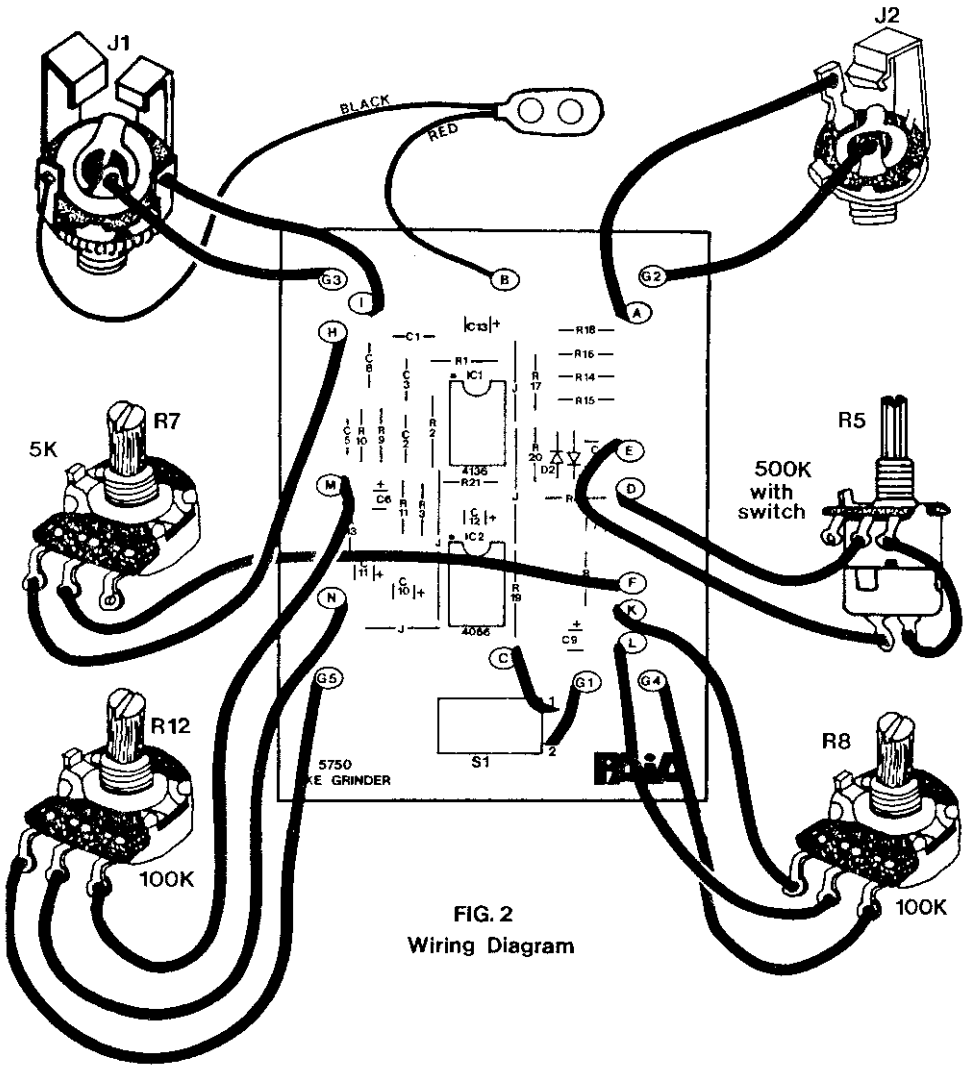


FIG. 2
Wiring Diagram

LENGTH	FROM	TO
() 1 1/2" (3.8cm)	J2 lug 1	A
() 1 1/2" (3.8cm)	S1 lug 1	C
() 1" (2.6cm)	S1 lug 2	G1
() 1 1/2" (3.8cm)	R5 lug 2	D
() 1 1/2" (3.8cm)	R5 lug 5	E
() 3 1/2" (9cm)	R7 lug 2	F
() 1 1/2" (3.8cm)	R7 lug 1	H
() 1 1/2" (3.8cm)	J1 lug 1	I
() 1 1/2" (3.8cm)	R8 lug 1	K
() 1 1/2" (3.8cm)	R8 lug 2	L
() 2" (5.1cm)	R12 lug 3	M
() 1" (2.6cm)	R12 lug 2	N
() 1 1/2" (3.8cm)	J2 lug 2	G2
() 1 1/2" (3.8cm)	J1 lug 2	G3
() 1" (2.6cm)	R8 lug 3	G4
() 1" (2.6cm)	R12 lug 1	G5

() Install the battery connector. Connect the RED wire to the circuit board hole labeled "B" and connect the BLACK wire to lug 3 of the input jack J1. Solder both connections.

This completes assembly of the 5750 PC board. Set the board aside momentarily and prepare the case.

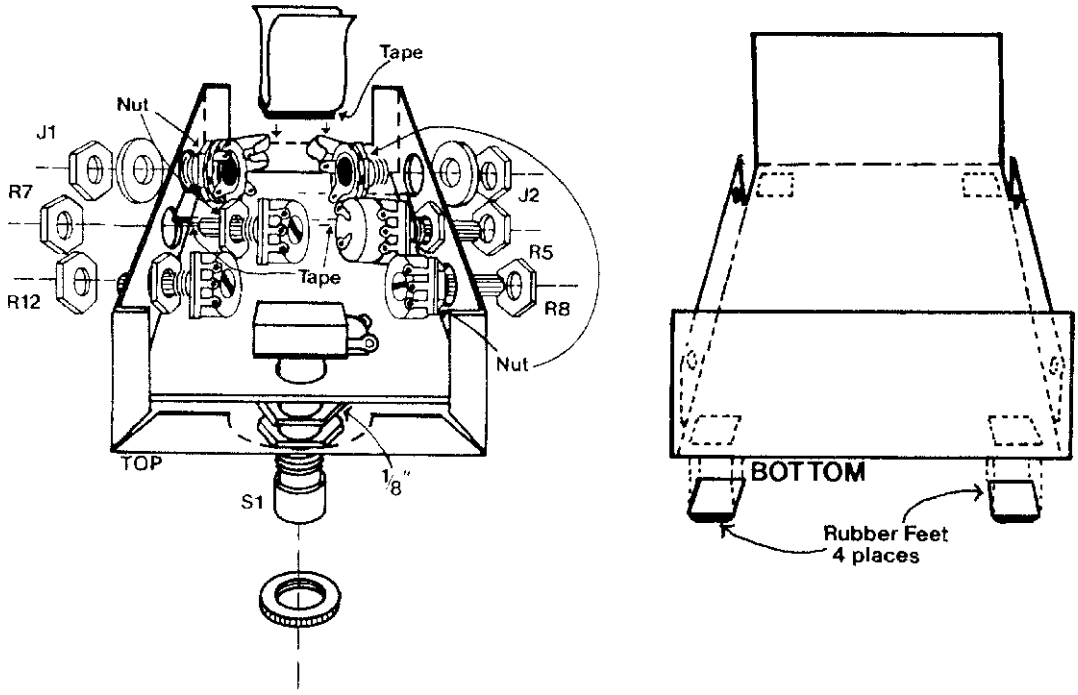


FIG. 3

OPTIONAL CASE ASSEMBLY

() Locate the foam tape and cut off 1/2" (1.3cm) from the length provided.

Of these two pieces of tape, the shorter will be used to attach the battery holder to the case top and the longer will be used as an insulator to prevent the unsupported end of the circuit board from touching the case top.

To get a feel for the location of the small tape section and the battery holder, trial fit the circuit board by passing the shaft of the foot switch through the hole while dropping the board in place. Notice that a small space must be allowed between the holder and the folded lip of the case to provide clearance for the case bottom when it is installed.

Remove the circuit board and proceed.

() Install the longest piece of tape on the inside TOP of the case as shown in figure 3. REMOVE THE PROTECTIVE PAPER FROM ONLY ONE SIDE OF THE TAPE.

() Locate the "U" shaped battery holder and stick the small piece of tape to the bottom of it. Remove the paper from the other side of the tape and position it to the inside of the case top as shown in figure 3.

() Install the extra hex nut on the shaft of S1 and run it down to about 1/8" to 1/4 inch from the body of the switch.

() Install the circuit board in the case by inserting the threaded shank of S1 up through the CANCEL hole from the inside of the case top. From the outside thread the knurled finish nut onto the shank of S1 and tighten firmly against the case top.

In the following steps, when the jacks and pots are installed, one of each of the pair of nuts supplied should be threaded onto it's shaft and used as a spacer. Adjust this nut so that when the part is installed as little of the shaft as possible extends outside the case. Refer to figure 3.

() Install J1 (with one nut in place) in the hole marked "IN" by inserting the threaded shank of the jack into the hole from the inside and threading the other nut onto it from the outside. If a washer is included, install it with the outer nut. Tighten securely.

() In the same manner, install J2 in the hole marked "OUT".

() In a similar manner, install control potentiometer R12 (with one nut in place) in the hole marked "CLEAN LEVEL". Orient the control pots so that the lugs point toward the front of the case where the foot switch mounts.

() In a similar manner, install control pot R7 in the hole marked "DIST. TONE".

() In a similar manner, install control pot R8 in the hole marked "DIST. LEVEL".

() In a similar manner, install control pot R5 in the hole marked "DIST. INTEN."

() Locate the four rubber feet and install them on the outside of the case bottom. Remove them from the carrier and stick them in place.

() Use the self-tap screws provided with the case to fasten top and bottom together.

NOTES

TESTING

Before installing the case bottom we will test the AXE GRINDER. Snap in a fresh 9 volt battery and plug your axe into the "IN" jack and patch the "OUT" to your amplifier.
Set the DISTORTION INTENSITY control to max (all the way past click), the DISTORTION LEVEL to max, the DISTORTION TONE to hi, and the CLEAN LEVEL to min. Play your instrument and push the CANCEL switch several times to turn the effect on and off.

With the effect in, turn the DISTORTION LEVEL control to min and bring up the CLEAN LEVEL control. You should get the unmodified sound of your instrument with a level boost that increases as the CLEAN LEVEL control is turned toward max. Note that if the volume control on your amp is set high enough, this clean pre-amp output can drive your amp into distortion.

Return the CLEAN LEVEL control to min and bring the DIST LEVEL control back to about 50%. Try adjusting the DIST INTEN control as you play and note that the intensity of the distortion is less toward min and more toward max. Turning this control to max, past the detent (click), produces the most extreme distortion possible.

Now adjust the TONE control and note timbrel changes in the fuzzed sound. The sound should get more trebly as the control is rotated toward hi.

Note that plugging your cord into the "IN" turns the power on, so you must keep the input unplugged when the unit is not in use to get long life from the battery.

COMPLETE CASE ASSEMBLY

() After testing is complete, install the case bottom by slipping it into place and inserting the four #8 machine screws through the holes in the sides of the case top. Thread them into the "J" clips and tighten securely.

() Install the knobs. Once the control knobs are pushed onto their shafts they will be dificult to remove. Before installing the knobs, set the controls to min and align the pointer on the top of the DIST. INTEN and DIST. LEVEL knobs so they are in about a 5:00 o'clock position, and align the CLEAN LEVEL and DIST. TONE knobs so that they are in about a 7:00 o'clock position. Push the knobs firmly into place.

THIS COMPLETES ASSEMBLY OF THE 5750 AXE GRINDER KIT

USING AXE GRINDER

Axe Grinder is used like any other guitar distortion device but you get more versatility than most such devices offer. For example, Axe Grinder is designed so that the actual signal distortion or "clipping", can take place in the distortion unit itself or in the preamp section of your amplifier or both.

The DISTORTION INTENSITY control is one that is found on most fuzz tone devices available on the market. It's obvious and necessary. But the DIST INTEN control on Axe Grinder has a wider range than most. The range covered between min and max settings is quite typical, but at the max setting you can twist the control just a little farther, past the "click", and the distortion intensity will go to an extreme that is not normally available on distortion devices with variable intensity.

The DIST LEVEL control sets the output level of the distorted signal. Setting this control all the way to min kills the distorted output signal completely, while rotating it toward max makes the fuzzed output louder.

The DIST TONE control only affects the distorted output. This control give a more trebly sound when set near hi, and removes the treble as it is rotated near low.

The CLEAN LEVEL control is one you sure won't find on most distortion boxes. Axe Grinder has a built in preamp that boosts the guitar signal considerably but doesn't do anything else to it. Between this control and the Distortion Level control you can "mix" the clean signal with the fuzzed signal to any ratio you wish. By setting the Distortion Level control to min, you can use Axe Grinder as a preamp to boost the guitar signal level without otherwise affecting it. This is handy for driving long cables to improve signal to noise ratio, or just to boost your volume for a lead ride. Another good use for this feature is as an overdrive. When the CLEAN LEVEL control is set near max the nondistorted output from Axe Grinder is very hot! This hot signal can be used to drive your amplifier into distortion (overdrive) provided the input volume or preamp volume control on your amp is set high enough (about 30% or higher is typical). The resulting distortion will usually be of a different texture than that produced in Axe Grinder's distortion circuitry. Combining this effect with some of the distorted output from Axe Grinder can produce sound textures and color not obtainable with most distortion devices.

Of course the CANCLE switch turns AXE GRINDER on and off. When the effect is canceled the audio signal from your instrument is allowed to pass unmodified.

REMEMBER THAT THE POWER (battery) TO YOUR AXE GRINDER IS TURNED ON AUTOMATICALLY WHEN A PLUG IS INSERTED INTO THE "IN" JACK. TO PRESERVE BATTERY LIFE, UNPLUG THE CORD FROM THE INPUT WHEN THE UNIT IS NOT IN USE.

PAIA also produces other quality special effects kits for electronic guitarists. Send for our FREE catalog.

DESIGN ANALYSIS

Inserting a mono plug into stereo INput jack J1 shorts the ring connector and the negative side of the battery to circuit ground providing power to the circuitry. Capacitor C13 filters the battery voltage. Resistors R20 and R21 form a voltage divider between supply and ground. The voltage at their junction is about 1/2 the supply voltage. This voltage is filtered by capacitor C12 and is used as a reference voltage for the op-amps.

The input signal is coupled by capacitor C1 to the noninverting input of op-amp IC1a. This input is held at a DC level equal to 1/2 the supply voltage by resistors R1 and R2. The op-amp itself is configured as a voltage follower buffer, which provides extremely high input impedance. This preserves fidelity. The op-amp output has plenty of drive capability to deliver a good strong unadulerated signal to the circuitry that follows.

The buffered audio signal from IC1a is coupled to 2 processing stages; the clipping amp, and the preamp. First let's discuss the clipping amp built around op-amp IC1b. This is really the heart of the unit as far as it's "fuzz tone" character is concerned. The signal is brought in via capacitor C2 and resistor R3 to the inverting input of the op-amp. The amplifier gain is set by the combined value of R4 and R5. Placing diodes D1 and D2 in the same feedback loop turns IC1b into a common clipping amplifier. As the gain of this amp is increased, the peaks of an audio waveform are clipped shorter. If the DISTortion INTENSity control is rotated past the detent, S2 will open, taking R4 and R5 out of the feedback loop, causing IC1b to run at maximum gain. Now even very small signal transits passing through this stage will undergo sever clipping. Capacitor C4 suppresses high frequency oscillation.

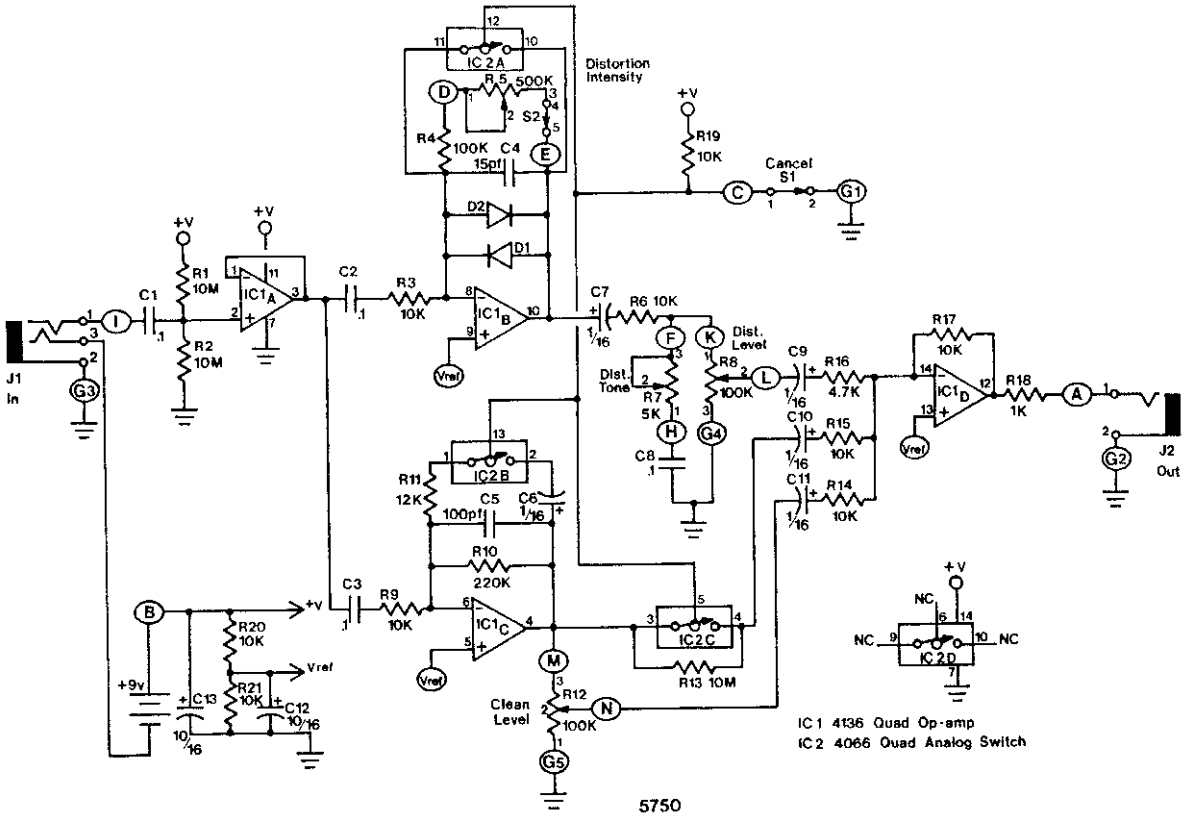
The signal leaving the clipping amp is coupled by capacitor C7 and resistor R6 to the DISTortion TONE control comprising potentiometer R7 and capacitor C8, and to the DISTortion output LEVEL control pot R8. The desired level is picked off by the wiper of R8 and coupled by C9 and R16 to the output summing amplifier IC1d.

The other processing stage is the preamp built around IC1c. The signal is brought in via C3 and R9. IC1c is configured as a simple inverting amplifier with a gain of about 20V/V. Capacitor C5 is included in the feedback loop to suppress RF oscillation.

The output signal from IC1c is dropped across CLEAN LEVEL control pot R12. The wiper of R12 picks off the desired signal level and delivers it to the input of the summing amp IC1d via C11 and R14.

IC1d is also a simple inverting amplifier. Since both the clipping amp and the preamp invert, this will be a second invertion for these signals, putting the output back in phase with the input.Signals presented to the input by way of R14 or R15 will undergo unity gain (gain = 1), while signals entering through R16 will be amplified by a factor of about 2. The output of IC1d is coupled to OUTput jack J2 by resistor R18.

IC2 is a quad analog switch. Only three of the switches in the package are used. One switch is connected between the output and the inverting input of IC1b, the clipping amp. When this switch is closed the op-amp cancels it's output. At the same time the other two electronic switches are closed. The switch connected in the feedback loop of IC1c along with R11 and C6, when closed, causes this op-amp to assume a state of unity gain. The closing of IC2c bypasses R12 so that no attenuation will take place and the signal can pass through the unit at very near unity gain. Resistor R13 keeps the DC potential on either side of this switch equal so that no popping will occur when the switch is thrown. Each of the three switches has a control input which, when made high (= to +V), closes the switch, and when held at ground opens the switch. All three of these control lines are tied together and pulled up by resistor R19. Cancel switch S1 pulls this line to ground when closed, causing the electronic switches to open, (effect in). When S1 is open, R19 can pull the control line high, which closes all three switches and cancels the effects.


IC 2A
Distortion Intensity
R5 500K
S2
R4 100K
C4 15pf
D2
D1
+V
R19 10K
Cancel S1
R1 10M
C1
IC1A
C2
R3 10K
IC1B
C7
R6 10K
Dist. Level
R8 100K
C9
R16 4.7K
R17 10K
IC1D
R18 1K
J1 In
R2 10M
Dist. Tone
R7 5K
C8
C10
R15 10K
C11
R14 10K
J2 Out
IC2B
R11 12K
C5 100pf
C6
R10 220K
C3
R9 10K
IC1C
IC2C
R13 10M
R20 10K
R21 10K
C12
C13
+9v
Vref
Clean Level
R12 100K
NC
IC2D
IC 1 4136 Quad Op-amp
IC 2 4066 Quad Analog Switch
5750
Axe Grinder
Guitar Distortion