THD Flexi-50

Instruction Manual

Thank you for your purchase of the THD Flexi-50 amplifier! The Flexi-50 is a precision hand-built 50-watt Class-AB amplifier with foot-switchable overdrive/boost, foot-switchable master volume control and the ability to use almost any preamp and power tubes in any combination, including 6L6, EL34, 6V6, 6CA7, 8417, 6550, KT66, KT77, KT88, KT90, KT100, EL84 (with Yellow Jacket adaptor), 6K6, 6F6, 12AX7, 12AY7, 12AU7, 12AT7, 12AZ7, 12DW7, 12BH7, ECC83, ECC82, ECC81 and many more, giving the user a huge pallet of available sounds simply by changing tubes. The amplifier has a fat, clear, full clean sound reminiscent of late 1950s to early 1960s American combos, and overdrive to rival the best British heads. Even at the highest overdrive settings, the amp still demonstrates dramatic touch sensitivity, cleaning up very well when the volume on the guitar is reduced. Additional features include external bias test points and individual bias controls, permitting the user to quickly and accurately set the output tube bias with any digital voltmeter. The dual bias controls permit the user to correctly bias even mismatched tubes, eliminating the need for matched power tubes.

The unique combination of our touch-sensitive input circuit and the wonderfully active and reactive tone control section (that we slaved a year to perfect) make for a front-end that really responds to subtle and not-so-subtle changes in the signal being fed into the amplifier either by the guitar or any effect that may be between the guitar and the amplifier.

TABLE OF CONTENTS

For People Who Hate Manuals—Quick Start Setting

We highly recommend you at least scan through the manual first to learn how the Flexi works. If you are itching to get started now and will read it later, here's a basic amp setting that will get you up and running. Keep in mind the following conventions:

• There are no numbers on the dials, so knob positions are expressed in "clock face" notation.
• "Full" means that the knob is turned clockwise to its limit. (Sometimes referred to as "dimed" since it represents a value of "10" on numbered dials).

Hot Rod Flexi

Input: Hi
Volume: 1:00 O'clock
Treble: Full
Middle: Full
Bass: 10:00 O'clock

Bright: ON
Boost: ON
Gain: Full
Tone: Full

Master: OFF
Master Vol: N/A
Cut: Full
Power Mode: 50W

Notes: Use your guitar's volume knob to control amp breakup. For example, to clean up the sound, roll back your guitar's volume knob. To get a thick, hot rodded British distortion sound, turn your guitar's volume knob completely up.

Flexi-50 Controls

Front Panel

First, let's go through the various control options on the front panel:

1. Input: This jack fits a standard 1/4" mono instrument cable. If you use a stereo cable, the sleeve signal will be ignored. Do not use speaker cable into this input.

2. Input Lo/Hi switch: This switch toggles the Input gain from low to high. With the input on *Lo* (sometimes called "normal") the input signal is not boosted. You may prefer this setting for higher output pickups or less high gain tones. Switching the input gain to *High* raises the input gain, which boosts the volume of the pickup slightly. You may prefer this setting for lower output pickups, or to drive the Flexi input slightly harder. The yellow LED above the Input jack will light when High gain mode is engaged.

3. Volume: This knob controls the input volume into the preamp tubes.

4. Treble: This knob can be used to boost or cut the high frequency response of the Flexi.

5. Bright Switch: If the bright switch is on, an upper high frequency boost will be added to the signal. This boost is independent of your Treble knob setting, so you could, for example set the treble knob to roll of the high end for a darker overall sound, but turn on the Bright switch to add some upper brilliance.

6. Middle: The middle control offers a very musical mid-range adjustment over a narrow frequency range.

7. Bass: This knob can be used to boost or cut the bass frequency response of the Flexi. You'll find that the Flexi has bass to spare!

8. Boost Gain: A special feature of the Flexi is that the boost circuit is voiced differently than the main channel, so when the Boost circuit is engaged, this control adds both an additional gain stage and a more "British" EQ voicing, with thicker low and lower-midrange frequencies.

9. Boost Tone: A unique Flexi feature is its full-frequency sweeping Tone knob. This control can completely change the texture and tone of the boost from dark and woody to searing and open.

10. Boost ON/OFF: This switch engages or disengages Boost circuit. The red LED above the Boost controls will light when the Boost is engaged. The Boost can also be toggled with the included footswitch.

11. Master: The Master knob controls the overall output volume by limiting the amount of signal to the power amp tubes. Some classic amplifiers did not have a master volume, and their volume and gain were both a function of the single input volume. The Flexi allows you to switch the Master completely out of the circuit to better emulate the signal path of those amplifiers.

12. Master Switch: This switch engages or disengages the Master control. If the green LED above Master control is lit, the Master is engaged. The Master can also be toggled with the included footswitch.

13. Cut: This control functions much like a presence control in other amplifiers, but with a significant difference. A Presence control uses negative feedback from the amplifier to simultaneously adjust both gain and brightness. The Cut knob on the Flexi adjusts the overall brightness, but not the gain.

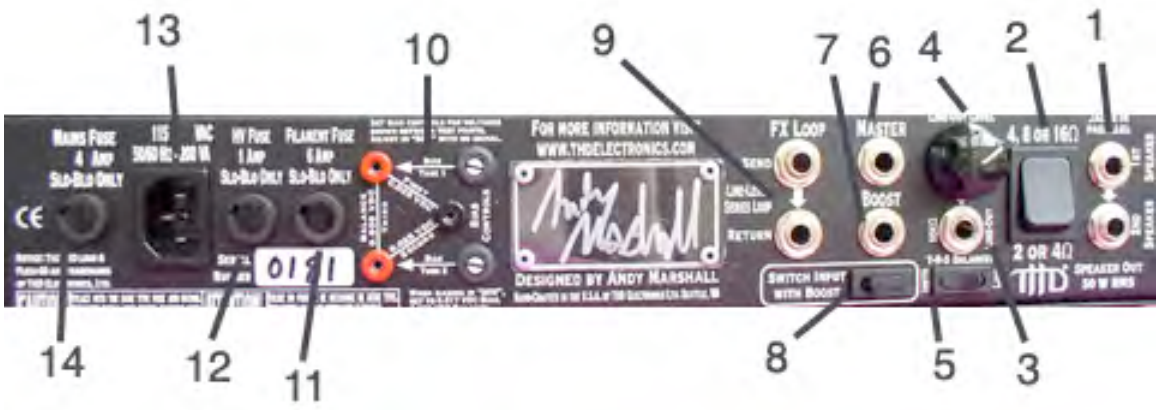
14. 50W/20W switch: The 50W/20W switch toggles the Flexi's plate voltage to the power tubes from 475v (50W) to 325v (25W). Lowering the Flexi's plate voltage both reduces the volume of the amp slightly and changes its character. In 50W mode, the Flexi is slightly tighter and more aggressive; in 20W mode it is a bit warmer and smoother.

15. Standby Switch: Standby mode keeps the power tubes powered and the amplifier itself off. Always power up in Standby mode and allow the tubes to heat up for at least two minutes before switching to Play.

16. Power On/Off: The Power switch turns the amplifier on or off.

Back Panel

Now lets go through the Flexi's back panel jacks and controls:



1. Output jacks: You can connect either one or two speaker cabinets to the Flexi using these two output jacks. Only use speaker (not instrument) cable. The outputs are wired in parallel, so two 16 ohm loads result in an 8 ohm total load, two 8 ohm loads result in a 4 ohms total load, and two 4 ohm loads result in a 2 ohm total load.

2. Impedance switch: This switch allows you to set your Flexi for the proper impedance of your speaker cabinet load. Most speaker cabinets and combinations of cabinets will use the "4, 8 or 16 ohm" setting. However, if you use 4 ohm loads you will find the "2 or 4 ohm" setting to be slightly louder, and has a bit more low mids. Of course, this side should be used for 2 ohm loads. One of our innovations is that the Flexi always uses 100% of the transformer windings all of the time. This assures you a full, even output sound, regardless of the impedance setting. The power and output transformers are fully shielded to assure that hum and noise are kept to an absolute minimum, and that pickup-feedback from transformer coupling is all but eliminated.

3. 10K ohm Line Out jack: This output jack delivers a line level signal from the power amp. Use a 1/4" instrument (not speaker) cable with this output. You can use this output to slave to another amp or to go direct to a mixing console or recording system. Keep in mind that you will need a speaker simulator in between the line out and your recording equipment if you want to record the Flexi from the line out. When using the line out, *you must have a speaker or dummy load connected to the speaker outputs, as the Flexi does not have a built-in Hot Plate like the THD Univalve and THD Bivalve*. You may, however, purchase a THD Hot Plate, set it to "Load" and then use the line out from the Flexi.

4. Line out Level: This control adjusts the output of the Line Out jack.

5. Line Out Switch (Instrument/Line): This toggles the Line Out between –10dB "instrument level" output for use with guitar-level signals, or +4dB "line level" output for use into professional sound reinforcement or recording equipment.

6. Master: Connecting a 1/4" mono instrument cable between this jack and the THD Footswitch allows the THD footswitch to the toggle the Flexi's Master control.

7. Boost: Connecting a 1/4" mono instrument cable between this jack and the THD Footswitch allows the THD footswitch to the toggle the Flexi's Boost control.

8. Switch Input with Boost: This is another unique Flexi feature. With this feature engaged, the Input level is switched to High whenever you engage the Boost. The effect of this is to make the boost effect a little more pronounced. Engaging this control bypasses the front panel Input Lo/High switch (see Front Panel section #2).

9. FX loop: Using 1/4" instrument (not speaker) cables, you can connect line level (+4 dB) effects to the Flexi. The FX loop is after the preamp section, and before the power amp. Connect the Flexi's Send jack to your line level device's input, and your device's output to the Flexi's Return jack. You can also use the send to connect the Flexi's preamp to the return of any other amp with an effects loop in order to use the preamp of the Flexi with the power section of that amp. *Keep in mind, however, that you must always keep a load attached to the speaker out of the Flexi.*

10. Bias Controls: Basically, these controls allow you to match the output of the Flexi to the tubes being used. The main purpose of putting these controls on the back panel for you to access them easily is to allow you to change power tubes easily. How to bias the Flexi using these controls is explained in the next section.

11. Filament Power Fuse: If you need to replace the Filament Fuse, use a 6 Amp Slo-Blo fuse only.

12. HV Fuse: If you need to replace the HV Fuse, use a 1 Amp Slo-Blo fuse only.

13. Power Cable jack: Use a standard universal VAC power cable with your Flexi.

14. Mains Fuse: If you need to replace the Mains Fuse, use a 4 Amp Slo-Blo fuse only.

Example Settings

Now that you know what the controls on the Flexi do, you're ready to go ahead and experiment with various settings. In case you'd like some example settings as launching points for your own explorations, here are some settings contributed from experienced Flexi users. As mentioned in the Quick Start section above, please keep the following conventions in mind:

• There are no numbers on the dials, so knob positions are expressed in "clock face" notation.
• "Full" means that the knob is turned clockwise to its limit. (Sometimes referred to as "dimed" since it represents a value of "10" on numbered dials).

Dark and Smooth

Input: Lo
Volume: 3:00 O'clock
Treble: 8:00 O'clock
Middle: Full
Bass: 12:00 O'clock

Bright: OFF
Boost: OFF
Gain: Full (see below)
Tone: 12:00 O'clock

Master: OFF
Master Vol: N/A
Cut: Full
Power Mode: 20W

Notes: To switch between this dark and smooth setting, and a punchy tone with rich breakup, turn on the Switch Input with Boost switch on the back of the Flexi.

Less Compressed

Input: Hi
Volume: 2:00 O'clock
Treble: 12:00 O'clock
Middle: Full
Bass: 10:00 O'clock

Bright: OFF
Boost: ON
Gain: Full
Tone: 3:00

Master: OFF
Master Vol: N/A
Cut: 3:00 O'clock
Power Mode: 50W

Notes: Turning the Treble to "full" and the Cut down thickens the sound.

Heavy Bass

Input: Lo
Volume: 1:00 O'clock
Treble: 3:00 O'clock
Middle: 4:00 O'clock
Bass: 3:00 O'clock

Bright: OFF
Boost: ON
Gain: Full
Tone: Full

Master: OFF
Master Vol: N/A
Cut: 11:00 O'clock
Power Mode: 50W

Notes: Use guitar volume knob to control amp breakup.

Smooth Upper Mids

Input: Hi
Volume: 1:00 O'clock
Treble: 9:00 O'clock
Middle: Full
Bass: 3:00 O'clock

Bright: ON
Boost: ON
Gain: 1:00 O'clock
Tone: 1:00 O'clock

Master: OFF
Master Vol: N/A
Cut: 7:00 O'clock
Power Mode: 20W

Notes: Use guitar volume knob to control amp breakup.

Vintage Chime

Input: Hi
Volume: 3:00 O'clock
Treble: Full
Middle: 2:00 O'clock
Bass: 7:00 O'clock

Bright: ON
Boost: ON
Gain: Full
Tone: Full

Master: OFF
Master Vol: N/A
Cut: Full
Power Mode: 20W

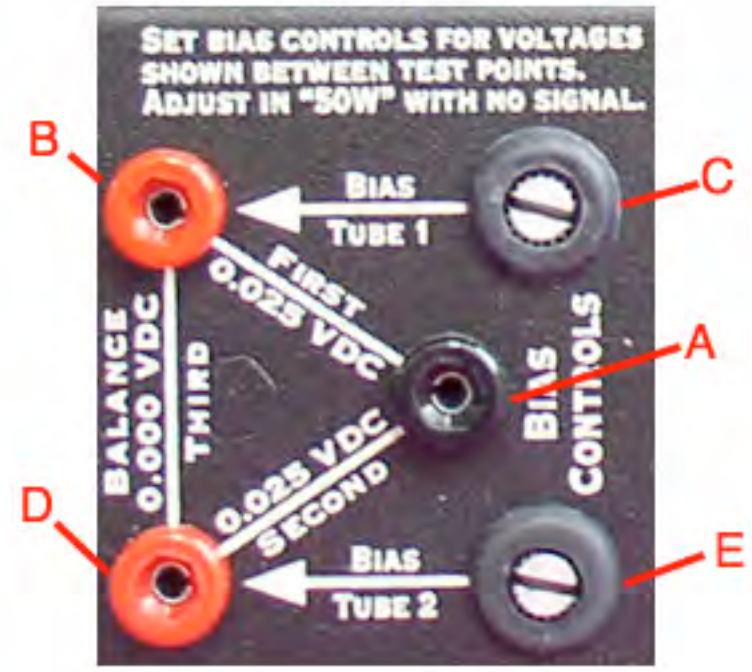
Notes: Use guitar volume knob to control amp breakup.

Biasing the Flexi-50 For Different Tubes

Power Tubes

One of the Flexi's most exciting features is that you can very easily rebias the amplifier for new power tubes—either of the same type, or of different types. The Flexi can be used with 6L6, EL34, 6V6, 6CA7, 8417, 6550, KT66, KT77, KT88, KT90, KT100, EL84 (with Yellow Jacket adaptor), 6K6, 6F6, and any other derivations of the above tube types. You can even mix and match different tube types together, eliminating the need for matched pairs!

Rebiasing the Flexi is simple. You'll need a digital multimeter, and then just follow the directions below:



1. With tubes installed, power up the Flexi. Leave it in standby until the tubes have heated up (at least two minutes).

2. Insert the black probe of multimeter into the black socket **(A)**.

3. Insert the red probe into the red socket for Tube 1 **(B)**.

4. Set your multimeter to read DC voltage. If your multimeter requires you to set a DC Voltage range, set it to the lowest single integer.

5. With no input to the Flexi, flip the Standby switch to Play.

6. Using a flat blade screwdriver, adjust the bias control for Tube 1 **(C)** — turn it slowly, the control is very sensitive. If you are in 50w mode, set it to 0.025; if you are in 20w mode, set it to 0.017.

7. Move the red probe of your multimeter from the Tube 1 socket **(B)** to the socket for Tube 2 **(D)**.

8. Adjust the bias control for Tube 2 **(E)** the same way you adjusted the bias control for Tube 1.

9. Leaving the red probe in the Tube 2 socket **(D)**, move the black probe to the red socket for Tube 1 **(B)**. If the two are power tubes are balanced properly, you will get a reading of 0.00.

10. If you do not get a reading of 0.00 in step 9, repeat steps 2-8 and adjust the tubes to identical values. Keep repeating this step until the reading is 0.00

11. Play the amp for a while, then repeat step 10. If the reading remains at 0.00, you're finished!

NOTE: You won't need to rebias the amp if you are using EL84 tubes in the THD YJS or YJ20 Yellow Jacket adaptors, as they are self-biasing. If you are using EL84 tubes in the THD YJUni Yellow Jacket adaptors, you *will* need to set the bias, since YJUni Yellow Jackets are for amplifiers that are already self-biasing, such as the THD UniValve and BiValve amplifiers.

Preamp Tubes

You don't need to rebias the amp to try out new preamp tubes—just pull out the current tubes and inset a new one! The Flexi can take any type of dual pentode preamp tube, such as 12AX7, 12AY7, 12AU7, 12AT7, 12AZ7, 12DW7, 12BH7, ECC83, ECC82, ECC81 and more. You can try any of the above tube types in any combination—remember, experimentation is the name of the game!