

# DYNAMIC



MODEL: 2040

Player's Manual

Serial number: \_\_\_\_\_

Purchase date: \_\_\_\_\_

## **Welcome**

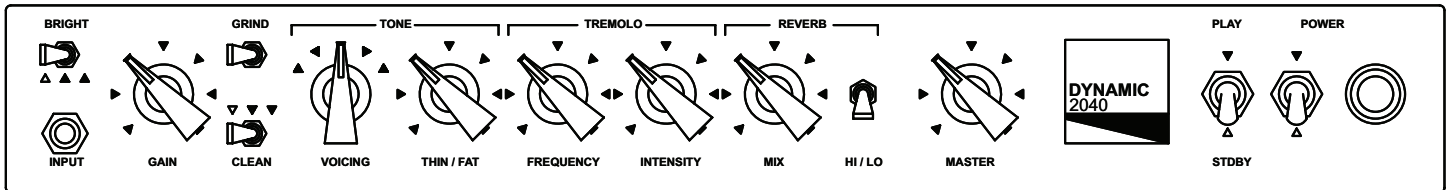
Thank you for purchasing a Dynamic guitar amplifier from DMT, Inc. Our carefully hand crafted amplifiers are the product of decades of experience as designers and players. Every player that has been on the quest to find their sound knows that this pursuit as it evolves is frequently frustrating, which makes finding the right tools to get there to be immensely rewarding....and at times inspiring. We sincerely hope you to have found these with DYNAMIC.

To get there, good design has to be followed by careful attention to quality parts, thoughtful layout and useful features. Combining these elements we have created for you a versatile creativity-enhancing extension of your instrument, that will prove reliable for many years of “hard miles”.

As some of the features we have included are unique and therefore not typically found in other amplifiers, please take time to read this short manual so you can wring the most “juice” from the 2040.

In choosing Dynamic, you join the ranks of a small but growing group of discerning musicians who choose to go beyond the mundane in search of extraordinary sound. We invite you to read about the amp, then plug in and enjoy getting to know the amplifier.

# FRONT PANEL CONTROLS



**INPUT:** High impedance guitar input.

**BRIGHT:** Accentuates top frequencies. Particularly useful with hum-bucking pickups. (Three levels)

**VOLUME:** Preamp gain control. Start at 10 o'clock, with the Master set at 12:00 o'clock for starters.

**GRIND:** Gain booster. This switch increases gain by 6db approximately, makes getting a saturated sound easier to achieve. Especially useful when using single-coil guitars, or when playing at low volumes, where more preamp grind is desirable.

**CLEAN:** Preamplifier gain control. *This is a three-way switch.* This controls the level of signal hitting the power amp at the Phase Inverter (PI). The switch set to the Left produces no reduction, the middle is moderate reduction and the right position is the most reduction. The amplifier will be cleaner sounding in the middle or right position, however, the overall volume is also reduced, so Master volume compensation might be needed. Experiment with different levels of Gain, Clean and Master, and see the subtle and not-so-subtle changes in tone that occur.

**VOICING:** This five position rotary switch controls the tone modification options. **Left to right: (each mid-dip affects a different center frequency)**

Position 1- Mid-frequencies dip (tone control enabled)

Position 2- Mid-frequencies dip (tone control enabled)

Position 3- Mid-frequencies dip (tone control enabled)

Position 4- Tone control only, enables brightening hum-bucking pickups.

Position 5- Tone stack *bypass*. Fattest sound, highest gain (great for single coil)

**TONE:** This knob functions as a full-bandwidth tone control, where the full left rotation has the low-end rolled off, (thin), and as the knob is rotated clockwise, the low-end tilts up (fattens) until it is rotated to about 90% at which point the top-end rolls off when fully rotated to the right.

**TREMOLO: FREQUENCY & INTENSITY:** This popular retro-feature is presented here with the typical frequency and intensity controls, what is unusual, is the degree of intensity it will adjust to, and the extreme range from slow to fast frequency that can be selected. This effect is foot-switchable from a jack in the back panel.

**REVERB Mix & Hi / Lo:** The Hi / Lo switch determines the *intensity* of the reverb drive (input) & the Mix knob controls the *amount* of reverb-processed signal blended with the original signal. **Hi** might recall vintage “surf” reverb, and **Lo** is more of an ambience enhancer, less intense. The Reverb effect can be controlled (on or off) by a footswitch plugged into the REVERB jack in the back panel.

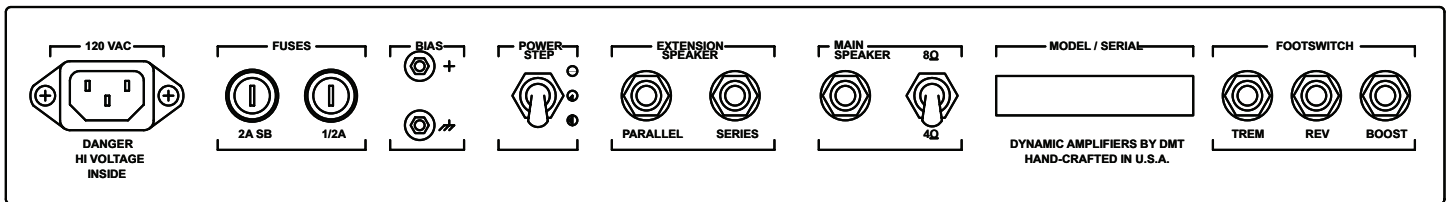
**MASTER:** This post PI master volume is an excellent way of controlling volume while preserving *most* of the desirable qualities of overdrive at lower volumes. Truly, the best characteristics of a good tube amplifier are usually heard with the Master set from 2 to 4 o’clock. But in real life, amps need at times to be turned down. More on that later. See **PowerStep**, on rear panel.

**STANDBY:** When the switch is down, Standby mode is ON. Every time the amplifier is turned on, this switch should be down or “on” for 15 seconds or more to let the tubes warm up.

**INDICATOR LAMP / POWER SWITCH:** When the power switch is turned on, the indicator lamp will glow, which indicates there is AC power, and the amplifier is beginning to warm up.

**NOTE:** ALL TOGGLE SWITCHES ORIENTED HORIZONTALLY ARE ON WHEN THROWN TO THE RIGHT. THE VERTICAL HI/LO SWITCH IS THE EXCEPTION BECAUSE IT IS EITHER HI OR LO, NOT ON OR OFF.

# Rear Panel Features



**AC POWER CORD INPUT:** This amplifier operates only with power from a 120VAC source, 60HZ. (Standard USA outlet) Any other source will damage this amplifier.

**FUSE:** 2A-Slow Blow (T2A Littlefuse type) This is the primary power supply fuse.

**FUSE:** 1/2A Fast Blow (AGC Littlefuse type) Protects amplifier from catastrophic output tube failure. NOTE: if high volume playing causes this fuse to blow, it is safe to use a 1/2A Slow Blow fuse.

**TEST:** When setting output tube bias, the black test point is where the black VOM (voltmeter) probe is inserted, and each of the red test points is for the red probe is inserted alternately to set bias average for both output tubes (see Appendix section: Setting Output Tube Bias)

**POWER STEP:** This feature is a very useful and novel way to reduce power in such a way as to maintain tone quality at lower power levels by reducing plate voltage, while maintaining bias levels, which a Variac cannot do.

Positions are:

Top: Full power, whatever the output tube power rating is in this amp.

Middle: Lowest power, typically 10% of the output tubes' rated output in this amp.

Bottom: Half-power, or 50% of the tubes' rated output in this amp.

For example, the 2040 is sold with EL34 output tubes. In this amp, the rating for these tubes is 40Watts, so the switch would deliver **40, 5** and **20** watts, *top position to bottom* with these tubes. This rounds out the ability of the Dynamic 2040 to provide the best power-to-room match, from a good-sized club to a smaller lounge, to your own living-room. By manipulating the Volume, Clean, Master and PowerStep controls, the right mixture of clean, distortion and overall volume can be had without sacrificing the tone qualities you spend a good amount of cash to purchase. What is still missing from the equation are the final components in the audio chain: Loudspeaker cone distortion & cabinet loading, characteristics that go away *proportionally, as output is reduced*. Still, *great* sound can be obtained with this amp at modest loudness levels.

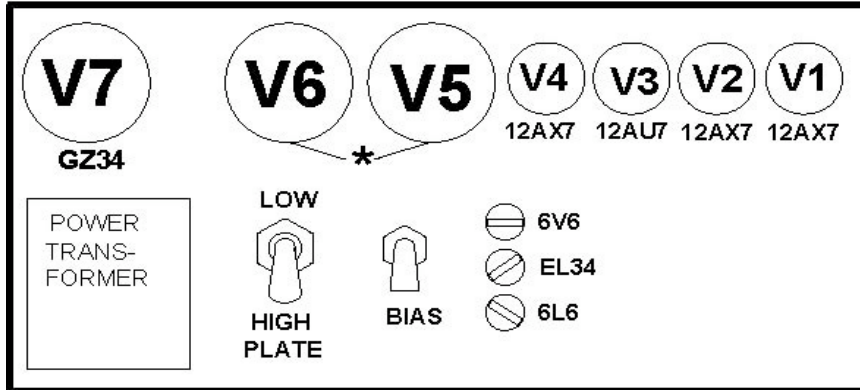
**SPEAKER OUTPUT JACKS:** There are three speaker output jacks labeled: Parallel, Series and a jack that has a toggle switch labeled 4 $\Omega$  and 8 $\Omega$ . The **Main** speaker jack is where you plug in the combo speaker or separate speaker cab, in case of an amp head. The toggle switch should be flipped up in case of an 8 $\Omega$  load or down in case of a 4 $\Omega$  load. With Dynamic amplifiers and extension cabs, the loudspeakers themselves are normally 8 $\Omega$  each. So with one speaker driver, the switch should be flipped up. If the combo or the extension cab has two speakers, they are wired in parallel, so the load will be 4 $\Omega$ , and the switch will be flipped down. Parallel: If an additional cabinet is required, keep in mind that the load of that cabinet must be known, because that load, whether 4 $\Omega$  or 8 $\Omega$  or 16 $\Omega$  will determine Whether it will work best in the Series or Parallel jack. The idea is to match as closely as possible the speaker load (impedance) to the output transformer load.

**MODEL/SERIAL:** This space is where your model and serial number will appear. Please keep this recorded elsewhere in case of theft or if service is needed.

**FOOTSWITCH JACKS: TREM, REVERB, BOOST.** These are RCA type jacks and any on/off footswitch using this type of connector will work.

Usually players will not operate the **Reverb** from a footswitch, the level will be set and used that way most the time, however, **Tremolo** is mostly not used, and a footswitch is very desirable, so is the **Boost** function. ***This feature will engage and disengage only when the Voicing rotary switch is not on the 5<sup>th</sup> or fully rotated (clockwise) position. All other positions it is engaged and provides up to 6 db of fat, thick boost.***

## TUBE CHART



- V7:** GZ34 (Rectifier)
- V6/V5:** EL34, 6L6, 6V6 (Power Tubes)
- V4:** 12AX7 (Phase Inverter)
- V3:** 12AU7 (Reverb, send & recovery)
- V2:** 12AX7 (Tremolo send & recovery)
- V1:** 12AX7 (Preamp gain)

Note: The power tube options allow for use of three, and possibly more output tube types. Caution!

When experimenting with output tubes, **remember they get hot**, and remember that there are two switches that need to be attended.

The **Low/High** switch is the plate voltage switch, and **for the 6V6 it needs to be set to Low!** Otherwise, premature tube failure is likely will occur. The bias switch is important too, so remember to set the switch in accordance to the tube type.

## CHOOSING PREAMP AND OUTPUT TUBES

Part of the enjoyment of a tube amp (some would say- vexation) is that differences in tubes are *more* apparent with a well designed and built amp.

NOS (new original stock) tubes are relatively expensive, but can yield surprising results. New/old Mullards, Phillips, RCA, Sylvania etc., can add tonal character and texture to your sound, although the more common and affordable ones do a great job as well, as long as they're selected properly.

**Preamp tubes:** V1, V2 are generally 12AX7, 9 pin tubes. The 12AX7 is the highest gain preamp tube you can readily find. They are usually Chinese, Russian or Czech made. Because these are high gain, it is important to get tubes that are quiet and low-microphonic. These two attributes are not easy to get in the typical musical instrument store. If you install these tubes, crank the amp to 3 O'clock (no instrument plugged in), then tap the uncovered tube with the eraser end of a pencil and the sound you hear is mild, the tube is probably OK. Also avoid tubes that sound like eggs frying when turned up.

Some might like the sound of a *lower gain preamp tube* in V1, such as a 12AT7 (a real one, not a 12AX7 substitute), which specs out at just 70% of a 12AX7. Another alternative is a 12AU7, with only 1/5<sup>th</sup> gain of a 12AX7. Feel free to experiment with preamp tubes. **V3 needs to be a 12AU7**, it is the reverb tube, where we don't want as much gain, and "quiet" is a good thing, hard to get with higher gain tube.

**Phase Inverter:** This is V4, and usually a 12AX7. This is the driver stage that feeds the power tubes.

This tube is part of the circuit that divides the music waveform into halves, the plus or positive half, and the minus or negative half (The line that divides the two is the crossover line). If less output power is desired, use a 12AT7 instead.

**Output Tubes:** Your Dynamic 2040 is so named because it can produce conservatively rated outputs ranging from 20Watts to 40 Watts, depending on which of three types of tubes are used (and how good they are.

**6V6** : 20 to 25 Watts. (American vintage, breaks up smooth and creamy)

**6L6**: 30 to 40 Watts. (more American vintage tonality, more punch, cleaner)

**EL34**: 30 to 40 Watts. (more British tonality, sparkly crunch when overdriven)

These three types of octal base tubes each have a specific bias setting for which there is a three-way mini toggle located on top of the chassis near the power transformer. Each position is labeled. Right next to the bias switch is the plate voltage switch, a large two position toggle switch. This needs to be set according to output tube installed. **High is for 6L6 and EL 34, Low is for 6V6.**

**Caution! High position will shorten the life of 6V6, and may cause catastrophic failure of the tubes....**probably in the middle of an important gig, so pay attention and set this one correctly.

Your amplifier has had the bias setting carefully calibrated to the output tubes you received with the amp, the other settings are set to average settings that will work fine with any matched pair of the other two alternate tubes you can employ. If you want to have them set precisely, you can have a technician use an oscilloscope and tone generator to set them.



## ON OUTPUT TUBES

(À la carte with the D2040)

Quite a lot has been written about the virtues of certain kinds and brands of output (power) tubes, and in the mix we find a lot of mystery, hype and plain BS. The reality as we see it, is that modern tubes are less consistent in quality than they were in their heyday, and yes, there are sonic differences, some subtle and some not so subtle, but the importance of these differences is for you to determine. At Dynamic, we are more concerned with reliability and consistency knowing that a good circuit will sound good with most tubes it was designed for.

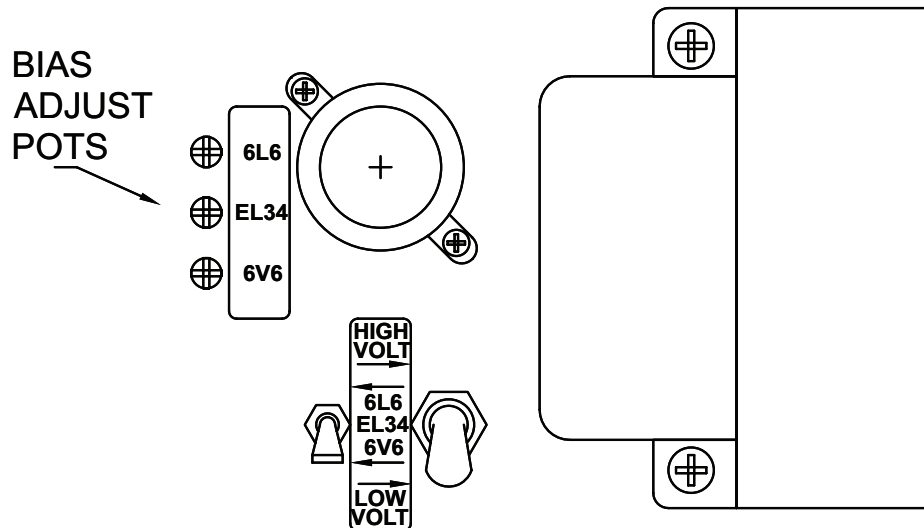
Every type of octal socket, (8 pin) output tube, has its own sonic qualities that will rate high or low with the user/listener. It is generally agreed, though, that the 6V6, 6L6, and EL34 represent the bulk of output tubes used in the amp industry manufactured in just a few factories. Reasons for this range from availability, sonic characteristics and power output, just to name a few. It is also arguable that all three types have been part of the reason why some of the most famous amps in electric guitar history have produced legendary tones. Otherwise put, some of the most famous guitar players in guitar history have made their legendary sound with amps sporting these tubes.

**Enter the D2040:** Your amplifier was designed for you to be able to experiment with output tubes to your heart's content. Built into the component board, a triple bias circuit allows the map to be pre-set for three types of output tubes, coupled to a selector switch. Although it was shipped with oscilloscope optimized EL34's, the other two bias controls have been pre-adjusted for 6V6 and 6L6 output tubes.

That's not all: There are many octal output tubes available, such as the 6550, 5881, KT66, KT88 etc. As long as the plate voltage and bias range falls within limits of adjustment, you can explore those also. Consult with your amp tech or call us for further info.

**SETTING BIAS:** It is always preferable to have a qualified tech work on your amplifier, who would probably use a 'scope and tone generator for best results. However, if you have the skill and inclination to DIY, follow these instructions.

**TOOLS:** Digital multimeter, small screwdriver. Refer to drawing below to locate Plate voltage and Bias preset switches, as well as bias adjustment ports.



1. Remove back cabinet plate and invert amplifier onto a workbench, secure so it will not tip.
2. Insert red probe into red jack on back panel (Bias Test), and black probe into black jack. Set to DC volts, lowest range.
3. With master and gain turned down (counterclockwise), turn amp on and allow to warm up for a couple of minutes. Set plate voltage to LO- if 6V6, or HI- if 6L6 or EL34 or KT88 (5881)
4. Now set mini-toggle (bias) to appropriate setting, and using a small screwdriver insert into bias trim-pot opening and watching your voltmeter, adjust as follows:

**6V6** ----- .070 Volts, (or 70mv)  
**6L6** ----- .100 Volts, (or 100mv)

**EL34**---- .130 Volts, (or 140mv)  
**5881**----- .100 Volts, (or 100mv)

**Caution!** *Settings higher than those in the range recommended may cause premature tube failure...might be in the middle of the best solo of your life!*

**Shocking Reminder!** *There are no user serviceable parts inside the chassis, and all that can be done with the amp by the user has been designed to be accessed from the outside. There are deadly voltages inside, and it is best to rely on a qualified tech.*

**Dynamic Guitar amplifiers** are brought to you by DMT, Inc., where we have endeavored to create amplifiers that will increase your range of expression, inspire you with the sound of your own music and do so with a minimum of effort. We have made no compromises in the quality of components, some custom made for our company, and have employed assembly methods that will lend a pride in ownership commensurate with the quality you expect from a small, specialty manufacturer of high-end products. We wish you years of enjoyment and satisfaction.

Should you have any questions not covered in this manual, feel free to call us during normal business hours: 9AM to 5PM EST, Monday through Friday.

**Address: Dynamic Amplifiers, 6285 High Pointe Circle,  
Kalamazoo, MI 49024.**

**Phone: 269 321 9330**

**Fax: 269 327 6158**

**Email: Dave@DynamicAmps.com**

**Website: DynamicAmps.com**

**Warranty:** This Dynamic guitar amplifier is guaranteed to the original owner for a period of one year from dated receipt or registration. Vacuum tubes, however, are guaranteed for 30 days from the date of purchase.

At Dynamic, we test all tubes to high standards, however, as we do not have control over quality beyond that of in-house testing, the warranty must follow our suppliers' warranty. This warranty covers manufacturing defects, not customer neglect or abuse.

# Dynamic 2040 Specifications

## Build Quality

- Aluminum, 1.25" welded and anodized chassis.
- Handmade fiberglass turret board, hand populated and wired.
- Custom wound transformers.
- Custom solid pine, finger joined cabinets & birch baffle, with high-grade coverings and hardware.
- Highest grade Eminence speakers, others optional.
- Engraved faceplates.
- Top quality switches and jacks.
- Special, acoustically transparent grille cloth.
- Illuminated logo plate.

## Amplifier

- Single channel, class: AB, all vacuum tube architecture.

Tube Complement: (All tubes tested & burned-in)

- 3-12AX7, (includes phase inverter)
- 1-12AU7
- EL34 (x2) are standard, also pre-biased for 6V6, 6L6.

## Effects (footswitchable)

- Tremolo
- Reverb: Long tank, 6 spring Accutronics
- Lead Boost

## Special Features:

- Unique single tone control coupled with rotary voicing switch.
- Three position bright switch.
- Three position negative switch, none and two levels.
- Two position reverb drive switch.
- PowerStep compensated output power attenuator.
- 8 & 4 Ohm speaker output switch, plus parallel and series jacks.
- Bias testing points, three bias setting potentiometers (external adjustment).