MESA/BOOGIE®

SUBWAY® D-350™

Owner's Manual

Greetings from the Home of Tone®

…You, smart player and intuitive human, have put your trust in us to be your amplifier company. This is something that we do not take lightly. By choosing this instrument to be part of your musical voice, you have become part of the Mesa family… WELCOME…and to those of you who are already part of the Mesa family, we thank you for returning to your roots.

Our goal is to never let you down. Your reward is that you are the new owner of an amp, bred of fine heritage, benefitting from the many pioneering and patented Mesa circuits as well as fresh cutting edge research and development efforts, leading to this new and exciting model. We feel confident that this amp will inspire many hours of musical satisfaction and lasting enjoyment. It was built with you in mind by players who know the value of a fine musical instrument and the commitment it takes to make great music. The same commitment to quality, value, and support we make to you… our friends.

SUBWAY® D-350™

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IMPORTANT SAFETY INSTRUCTIONS

1. Before attempting to use this apparatus, read and follow these instructions for proper use.
2. Keep these instructions.
3. Heed all warnings.
4. Do not use this apparatus near water.
5. Clean only with a dry cloth, do not use any solvent such as benzene, naphtha or paint thinner on apparatus.
6. Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
7. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including other amplifiers) that produce heat. Avoid placing the apparatus in direct sunlight.
8. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong (protective earth connection). The wide blade or third prong is provided for your safety. If the provided does not fit your outlet, consult an electrician for replacement of obsolete outlets.
9. Be sure that the amplifier's rated power supply voltage and frequency matches the voltage and frequency of your power source BEFORE connecting amplifier to the power source. The amplifier's rated power supply voltage and frequency are clearly indicated on the back panel near the power inlet, and the power cord's plug should match the power source in your region.
10. Protect the power cord from being walked on, pinched, or from excessive stress, particularly at the plug and attachment point of the apparatus.
11. Only use attachments and/or accessories specified by the manufacturer.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as the power plug or cord is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally or has been dropped.
13. To ensure proper ventilation, ensure that there is a minimum of 4" (10cm) of space at the rear of the apparatus. The ventilation should not be impeded by covering the ventilation openings with items such as newspapers, cloth, tapestries, curtains, etc. Do not impede ventilation by placing objects on top of the apparatus which extend past the rear edge of the cabinet.
14. No naked flame sources, such as lighted candles or oil lamps, shall be placed on the apparatus.
15. The apparatus shall not be exposed to dripping or splashing, and insure that no objects filled with liquids, such as vases or beverages, are placed on the apparatus.
16. The AC plug is the mains disconnect, the plug shall remain accessible after installation.
17. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
18. **WARNING:** Do not defeat the safety grounding pin on the power cable, it is there for your safety.
19. **WARNING:** Do not open or perform any internal modifications on this apparatus.
20. **WARNING:** Do not attempt to repair the apparatus, or replace parts within it (except where this manual provides specific instructions directing you to do so). Refer all servicing to your retailer, the nearest authorized Mesa Boogie Service Center, or authorized Mesa Boogie distributor in your region.
21. **WARNING:** Always disconnect the apparatus from the power source before changing fuses, tubes or removing the chassis for service. Use only the same type and rating as specified on the back of the apparatus when replacing a fuse.
22. **WARNING:** Disconnect apparatus from the power source during a lightning storm or when unused for long periods of time.
23. **WARNING:** This apparatus is heavy. Insure that the apparatus remains stable after installation.
24. **WARNING:** In areas where children may be present, use additional precautions as needed to protect the children from the hazards presented by the unit. This includes risk of electric shock, burns and toppling over.
25. **CAUTION:** This apparatus contains hot components and surfaces. Avoid direct contact with heated tubes and other components. Insure that any factory installed guards remain installed.
26. **CAUTION:** Avoid contact with moving fan blades that may be present within the apparatus or cabinet.
27. **CAUTION:** Tube envelopes are glass and can present a hazard if broken. Always turn apparatus off, disconnect from the power source, and allow to cool before changing tubes.
28. **CAUTION:** To avoid damaging your speakers and other equipment, turn off the power of this and all connected equipment before making or changing connections. Power apparatus up with the volume levels set to minimum, and slowly increase to desired level.
29. **CAUTION:** Always insure that the proper speaker load is connected to the apparatus before operating the apparatus. Failure to do so may cause damage to the apparatus.
30. **CAUTION:** Do not use excessive force when handling cords, jacks, buttons, switches and controls. Never unplug the apparatus from the power source by pulling on the wire, use the plug body.
31. **CAUTION:** This apparatus, in combination with speakers and/or headphones, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at high levels, or at a level that is uncomfortable, without hearing protection. If you experience any hearing loss or ringing in the ears, you should immediately stop using the apparatus and consult an audiologist.

[rev. 12/18/2020]

PRODUCT COMPLIANCE INFORMATION

NOTICE: This device complies with Part 15 of FCC Rules and with Industry Canada license exempt RSS standard. Operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that cause undesired operation.

Suppliers Declaration of Conformity for SUBWAY D-350

Responsible Party

Gibson Brands Inc.
209 10th Ave S Ste 205,
Nashville, TN 37203
United States

Telephone: + 1 615 933 6000

SUBWAY® D-350™

Operating Instructions

OVERVIEW

Congratulations on your choice of the SUBWAY D-350™ and welcome to the MESA/Boogie® family! First, we would like to thank you for choosing us as your amplifier company and trusting us to help create your musical voice. This is something we never take for granted and you'll find that we are here and ready to assist you should you ever need help. Our goal is to help you always sound your best! We feel confident that your new amplifier will bring you many years of reliable service, rewarding inspiration, and create for you newfound freedom to express your music.

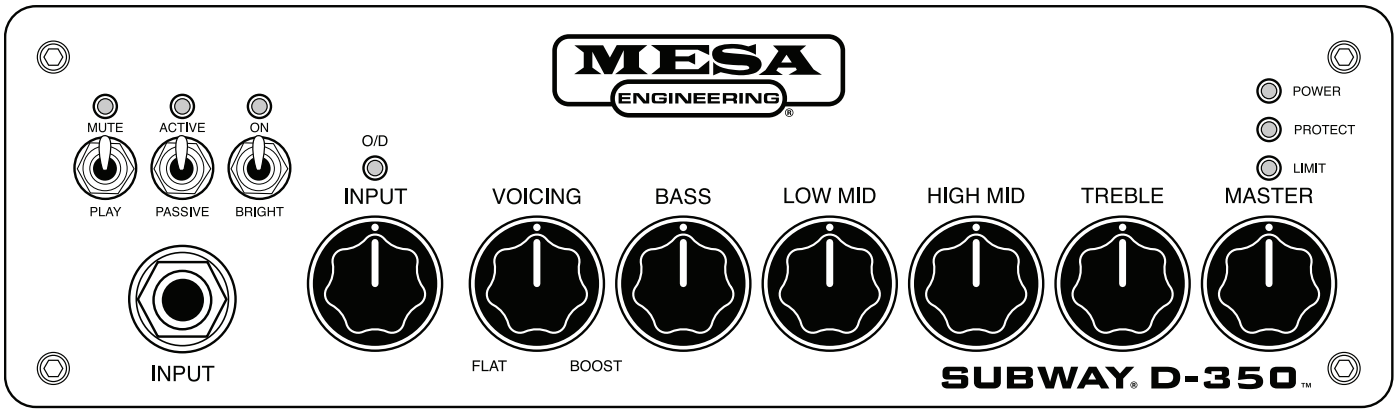
You have chosen an amplifier bred of a fine heritage, and this model is our testament to our legacy of tone. Its ancestors can be traced back to the very first MESA amplifier ever built, the MESA 450 Bass Head. In fact, the first 5 MESA amplifiers built in the Lagunitas mountain shack were bass amps... a piece of trivia little known and overshadowed by our overwhelming notoriety for guitar amplification. But we've always loved the bass, and have—since day one—been committed to elevating its stature through our art form. The bloodline for MESA bass continued with the first rack-mount chassis bass amplifier in 1980, the D-180. The mid-eighties saw the introduction of the BASS 400 and later in 1988, the BASS 400+ with its stunning pitch, punch, and power delivered by an additional 6 x 6L6s to bring the total to 12 x 6L6 power tubes in the mighty power section.

The 400+ went on to become a classic used by the world's most talented bassists for two decades. Paul McCartney, Mark King, Stanley Clark, Jack Blades, Michael Anthony, Blasko, and Bootsy Collins, are but a few of the international stars that put the 400+ center stage to anchor the band during its 20-year build cycle. Those iconic amps still bring top dollar when you can find one changing hands on the pre-owned market.

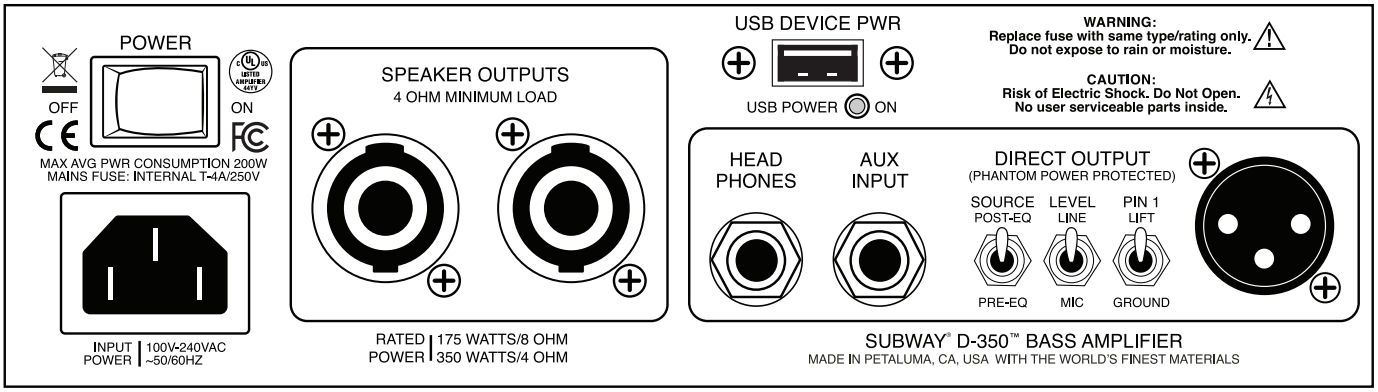
MESA has since pioneered an entire line of lightweight, high-performance amplifiers and speakers (the Subway series). Each subsequent model has been designed to address specific player preferences and feature requests. As the line has evolved, players have asked if we could offer something even smaller than the D-800, with mid-level power, a bit more open in the top end voicing, and able to run silently (i.e., with no fan). Remaining true to our longstanding heritage and tradition of tone, as well as listening to what players want, the Subway D-350 is the latest addition to the line. While bearing obvious similarities to the Subway D-800, the D-350 delivers 350 watts RMS into a 4 ohm load, substitutes a bright switch in place of the deep switch, and has no cooling fan - all of this while incorporating modern SW features like a USB charging port.

Tone Freaks Rejoice! The SUBWAY D-350 is the next step in the MESA Bass Amp Bloodline. A tone-dripping powerhouse that's both compact and lightweight, packaged to go the distance with features, packaging, and control over the entire bass spectrum makes it an iconic step forward in bass amplification. The SUBWAY D-350 is hand built in Petaluma, CA. with the world's finest materials.

FRONT VIEW: SUBWAY® D-350™



REAR VIEW: SUBWAY® D-350™



OVERVIEW: FRONT PANEL

The SUBWAY D-350 begins with the front panel input section, which is comprised of the INPUT jack, MUTE switch, ACTIVE/PASSIVE switch, and BRIGHT switch. The INPUT jack feeds a high impedance J-FET input "buffer amplifier" which provides appropriate loading for all active and passive pickups (including most piezo types). The MUTE switch silences the signal from the INPUT jack to the SPEAKER, HEADPHONE, and DI output for silent tuning with a tuner connected in line with the instrument. The ACTIVE/PASSIVE switch sets the gain of the input stage, reducing gain in the active position to prevent unwanted distortion from very high output basses or pedals. The BRIGHT switch adds sparkle and bite to the tone, opening up the top end a bit more. The preamp section also includes an INPUT GAIN control with an O/L (overload) LED to give visual indication of when the preamp is being overdriven, and an internal precision fixed HIGH PASS FILTER to block unwanted, non-musical, headroom robbing sub-sonic signals. Indicator (tally) LEDs are provided for all switched features, showing that the function is engaged.

Tone shaping on the SUBWAY D-350 includes a VOICING control just like the D-800/D-800+ models. This control modifies the amplifier's response from a flatter curve to a more vintage curve by modifying and varying levels and frequency response in multiple regions with a simple turn of the knob. There is also an active Baxandall EQ, the same as on the D-800, which consists of fixed frequency BASS and TREBLE shelving bands, plus fixed frequency LOW MID and HIGH MID peak/dip bands. It is suggested that you first experiment with the VOICING control to "rough in" the overall tone that you are looking for, and then use the 4 band EQUALIZATION to "polish up" (or fine-tune) your tone.

Finally, there is a MASTER volume control which sets the volume after the equalization. The combination of positions between the input GAIN and MASTER volume, along with the signal strength from your bass (which is also affected by your strings, playing style, and touch) allows for a wide range of tones, from shimmering clean to mildly overdriven and everything in between. MASTER STATUS LEDs are provided to monitor overall operations of the amp, including POWER, PROTECT, and LIMIT.

OVERVIEW: REAR PANEL

On the rear panel, you will find the power switch and the AC mains (power) inlet on a standard IEC "C14" connector. The SUBWAY D-350 contains an auto-ranging universal power supply that can accept and operate on any voltage between 100-120 volts & 220-240 volts AC, 50/60Hz without the need for any user adjustments or a fuse change. This feature makes these amps ideal for the international touring musician who plays in a variety of global regions. The only thing necessary to make the amp work is the correct power (mains) cable that matches the power outlet/receptacle of the region. It is important for the mains power to be grounded/earthed for safety and Electromagnetic Compatibility (EMC) reasons.

Next are parallel connected NL4 speakON™ connectors, which are wired with the amplifier positive to terminal "1+" and the amplifier negative to terminal "1-." This wiring standard is compatible with all NL2 and most NL4 type cables. The total minimum load that can be connected to these jacks is 4 ohms.

Player requests for a smaller Subway amp without a cooling fan were the inspiration for the Subway D-350. By approaching this amp's intended applications with lower-rated power output and 4 ohm minimum load support (compared with the larger Subway series amps), this amp fulfills the requirements of "silent operation" for applications such as recording with miked cabinets or acoustic instruments.

The SUBWAY D-350 is also equipped with a HEADPHONE output, which will drive all common headphones and IEM earpieces between 8 and 600 ohms (and can be used safely with no speaker cabinets connected to the head). Additionally, there is an AUX input that directly feeds the master volume control and mixes in with the bass signal for practice purposes. When operating the SUBWAY D-350 (or any Subway series) bass amp, no speaker load is required.

One feature that sets your new SUBWAY D-350 apart from the rest of the market is the inclusion of a studio-grade XLR balanced DIRECT OUTPUT, with a PRE/POST signal routing switch, MIC/LINE level switch, and PIN 1 GROUND LIFT switch. Circuit design attributes include full phantom power protection, high level radio frequency interference (RFI) immunity, and extreme tolerance to ground potential differences.

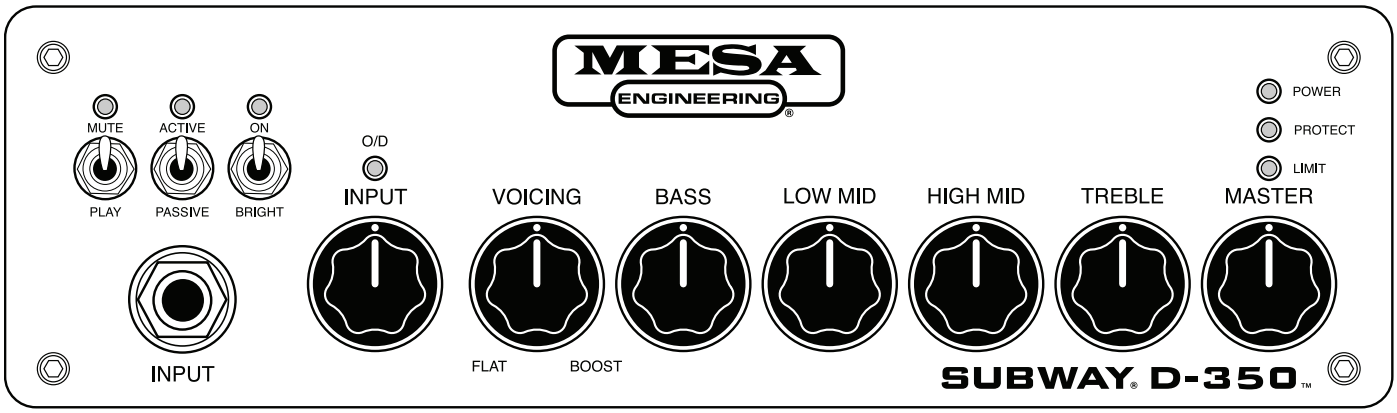
Another feature carried over from both the Subway WD-800 and TT-800 is the inclusion of a USB charging port, which allows you to charge most USB-connected devices. This can be handy when rehearsing with an MP3 player, tablet, or phone, as well as for powering pedals using a pedal adapter cable that boosts the output voltage to what your pedals use (9, 12, 15, or 18V). The USB power port has proven to be a very useful, player-friendly feature.

INSTANT GRATIFICATION

The SUBWAY D-350 is about the easiest amp on the planet to get great sound from... it really is "plug and play." Start with the MUTE switch up (mute on), the ACTIVE/PASSIVE switch down (passive

pickup), VOICING control in the “flat” (fully CCW) position, the BASS, LOW MID GAIN, HIGH MID GAIN, & TREBLE controls in the “flat” (12:00 straight up) position and the MASTER volume control in the 1:00 position. Plug your bass in, flip the mute switch down (play position) and turn the GAIN control up until you reach your desired volume. Now, gradually rotate the VOICING control clockwise towards the vintage position and stop when you achieve the basic amp voicing that you are looking for. The more clockwise, the greater the low end boost, mid cut (the frequency also shifts as the control is rotated), and mild treble boost. Now, EQ to taste.

FRONT PANEL: (CONTROLS & FEATURES)



INPUT JACK
This 1/4” (6.35mm) TS (tip-sleeve) jack is the instrument INPUT that feeds the input preamp stage of the SUBWAY D-350. This stage is inherently transparent and directly feeds all remaining circuitry.

MUTE SWITCH
This switch (and its associated red indicator/tally LED) mutes the audio signal being sent to all outputs for silent tuning with a tuner connected to the instrument cable and then through to the amp’s input. When the switch is in the up position, the red LED will illuminate, and NO audio will be present at the DIRECT OUTPUT jack, HEADPHONE jack, or the SPEAKER OUTPUT jacks. This switch can also be used to place the amp into standby mode before and between sets without adjusting any of the controls. As a safe practice, it is recommended (not required) that you mute your amp prior to powering it up and before shutting it down just in case the input gain and master controls are inadvertently/unexpectedly set to high levels.

ACTIVE/PASSIVE SWITCH
This switch (and its associated blue indicator/tally LED) sets the internal sensitivity of the input amplifier stage. Often (though not always), an active bass may have a signal level higher than that of a typical passive bass. If you find that you are operating the input gain control near the low end of the control’s rotation in order to prevent the O/L LED from flashing, switching this switch up (into the ACTIVE position) will reduce the input sensitivity, allowing greater control range and freedom from overload with high output active basses. Simply choose the position that gives you the desired results. This control does not change or lower the input impedance of the amplifier, nor does it “suck tone” like the input pads can do on some other amps.

BRIGHT SWITCH
This switch (and its associated blue “tally” or “indicator” LED) engages the BRIGHT filter, which causes

a rising response at higher frequencies, much like the switches found on many popular classic tube amps. Engaging this filter can bring some “shimmer, sizzle, & bite” into the tone and help to open up the top end.

HIGH PASS FILTER

While not a physical control, it is an important feature in maintaining control over the extreme low end (especially under high drive conditions) by removing non-musical subharmonics. While HPFs have been standard fare within the pro audio industry for decades, this feature has only appeared in bass guitar amplifiers within the past few years (with some notable exceptions). This filter provides additional mechanical protection to the speakers from over-excursion by reducing the power to the speaker below the frequency range that the speaker cabinet provides adequate acoustic loading to the drivers. This is one of the primary (and preventable) causes of premature speaker failure, especially with compact speaker cabinet products that are driven very hard.

INPUT GAIN CONTROL & O/D LED

This control determines the input gain (and drive level) of the J-FET gain stage. Overdriving this gain stage may be a desirable tonal characteristic of your playing style. The amber O/D LED provides a visual indication of the status of the drive signal level and how much preamp overdrive is occurring. When using significant overdriven tones, you may find it helpful to back down on the TREBLE EQ a little bit to reduce harshness and also to reduce the BASS EQ to increase the clarity and impact. When employing heavier overdrive, it’s generally more pleasing to reduce the tweeter level if your cabinets have tweeters. Note that the GAIN control operates linearly, an increase in gain continues linearly throughout the entire rotation of the control. The amount of overdrive is increased by turning the GAIN CONTROL up beyond the clean area of operation, and the overall volume will be controlled by turning the MASTER VOLUME down as needed. The MASTER VOLUME control also operates in a linear fashion, an increase in volume continues linearly throughout the entire rotation of the control.

VOICING CONTROL

This active EQ control modifies the amplifier’s response from a flatter curve (in the counterclockwise position) to a more vintage curve (in the clockwise position) by modifying and shifting the frequency response in all regions with a simple turn of the knob. As the control is rotated clockwise, the low end and the high end increase while the midrange decreases and shifts upward. Common uses for the more vintage positions are old-school funk and slap tones and rock tones where a rounder bottom and a little bite are needed. Experimentation is an important part of discovering the potential of this powerful tool. Unlike many simple “mid scoop” knobs, this control has more going on in the circuit to keep things musical and useful in terms of not losing key mids that help define the bass in a mix.

BASS CONTROL

This active EQ control is a shelving filter that is responsible for the amount (or volume) of low frequencies present in the signal relative to the rest of the spectrum. Low frequencies (<80Hz) are responsible for the “depth,” “bottom,” “roundness,” and “feel” of the tone. This is an active control with boost and cut, the amount of boost proportional to the clockwise rotation to the right of the “flat” (12:00 straight up) position and the amount of cut proportionate to the counter-clockwise rotation to the left of the “flat” (12:00 straight up) position. As with everything related to EQ, generally, a little bit goes a long way. Use enough to get the job done and no more. Note that if you have very compact cabinets and need high volumes, you will want to be aware that it is possible to overdrive speakers with excessive bass boost (350 Watts can be a lot for many cabs at extreme EQ settings, potentially

resulting in damage to the speakers). If your speaker system is not giving you enough low end, it's possible that you do not have enough "rig for the gig," and "more speaker" is needed. This is a shelving-type filter.

LOW MID/HIGH MID EQ CONTROLS

These controls are responsible for the level (or volume) of low/high midrange frequencies present in the signal relative to the rest of the spectrum. These are active controls with boost and cut, where the amount of boost is proportional to the clockwise rotation to the right of the "flat" (12:00 straight up) position, and where the amount of cut is proportional to the counter-clockwise rotation to the left of the "flat" (12:00 straight up) position. Remember that a little EQ goes a long way; use just enough to get the job done and keep your tone nicely balanced. These are peak-dip (or bell) type filters.

TREBLE CONTROL

This active EQ control is a shelving filter that is responsible for the amount (or volume) of high frequencies present in the signal relative to the rest of the spectrum. High frequencies (>2.5kHz) are responsible for the "bright," "airy," "clarity," "shimmery" character of the tone. This is an active control with boost and cut, the amount of boost proportional to the clockwise rotation to the right of the "flat" (12:00 straight up) position and the amount of cut proportionate to the counter-clockwise rotation to the left of the "flat" (12:00 straight up) position. This is a shelving-type filter.

MASTER VOLUME CONTROL

This control is responsible for the level of the signal being sent to the internal power amp and determines the overall playing volume of the SUBWAY D-350. Using the MASTER VOLUME along with the INPUT GAIN control allows optimal control over playing volume. For example, if you are using high input gain to achieve an overdriven tone, it will likely be necessary to adjust the master volume down to obtain the desired playing volume and to avoid excessive overdriving of the power amp. Likewise, if you are looking for a very clean tone, you may wish to start with a lower INPUT GAIN control setting and use a higher MASTER VOLUME control setting to obtain the desired playing volume. The MASTER VOLUME control operates in a linear fashion; an increase in volume continues linearly throughout the entire rotation of the control.

POWER LED

This blue LED indicates that the amplifier is connected to a power source and is switched on and operating correctly. If this LED is not on when the POWER SWITCH is engaged, double-check the power source, and ensure the power cable is firmly inserted into the IEC power inlet socket.

PROTECT LED

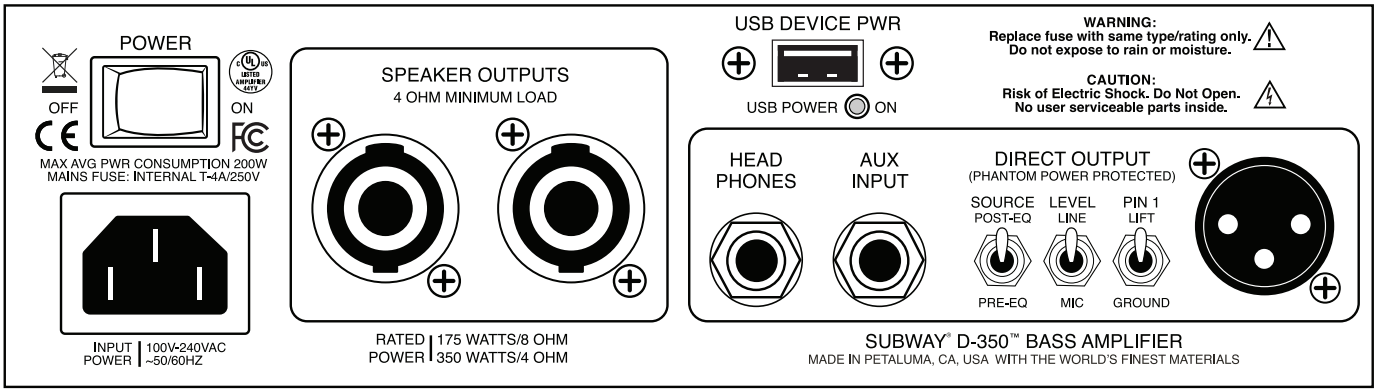
This red LED indicates that the amplifier has entered protect mode and is either protecting itself from an external fault (such as a shorted speaker cable or defective speaker) or that there is an internal fault within the amp itself. There are some simple troubleshooting steps on page 13 of this manual that can help you quickly figure out if the problem is with the amp itself or the speaker cable(s) or cab(s) you are using.

LIMIT LED

This amber LED indicates that the power amp is nearing maximum power and is entering the soft clip/limit output tube emulation mode. Soft clip/limit output tube emulation mode mimics many of the desirable characteristics of tube amp output stage overdrive while eliminating the common, often

harsh solid state clipping artifacts. There is approximately 6dB of range on this circuit, driving beyond this, of course, will cause gradual output stage clipping. It's acceptable for this amplifier to operate in output stage overdrive mode (if that's the tone you are after) with the LED flashing on roughly 25% of the time.

REAR PANEL: (CONTROLS & FEATURES)



POWER SWITCH

This switch is used to turn your amp on and off by disconnecting the amplifier from the power source (mains). This amplifier complies with the new EU Eco-design directive by providing a switched "0.00 watt power consumption off-mode." ***Note that there is protection circuitry built in that prevents the amp from starting up multiple times within a 20 second window. If you turn the amp on, then off, and on again, there may be a ~20 second delay in the power-up sequence.*** It's generally good practice to select mute on when powering up your head just in case the gain and volume controls were inadvertently bumped a little too high while transporting.

IEC POWER INLET

This power inlet conforms to the IEC C-14 type standard and is to be used with a cord set containing a matching connector and appropriate plug for the intended market.

OPERATING POWER REQUIREMENTS

The SUBWAY D350 is designed with a universal, auto-ranging power supply that automatically adjusts to line voltages between 100-120V and 220-240V, 50 or 60Hz. The power supply is internally monitored by supervisory protection circuits and thus contains a non-user replaceable fuse that opens in the unlikely event of a major failure. The amplifier is designed to be used with grounded or earthed power, meaning that the chassis is always maintained at ground/earth potential even in the event of a gross failure within (or external to) the amplifier. Never remove the grounding/earthing pin from the power plug, or alter the power cable in any way.

SPEAKER OUTPUTS

The SUBWAY D-350 is rated to drive a minimum 4 ohm load, meaning either 2 x 8 ohm cabinets or 1 x 4 ohm cabinet. The amplifier incorporates a pair of speakON™ NL4FC connectors wired in parallel that mate with either NL2MP or NL4MP plugs.

Cables using NL2 plugs contain only 1+/1- terminals and will always be correctly wired for use with the amplifier, but cables using NL4 connectors come with different wiring configurations. If using

cables with NL4 connectors, they may be constructed with standard 2 wire cable which must be wired 1+ to 1+ and 1- to 1-. If the cable contains 4 wires, that's ok because terminals 2+ and 2-, which are connected to the second pair, are simply not used.

The cables to avoid are what are called NL4 bridge mode cables, which are typically 2 wire, and wired 1+/1- on the speaker end and 1+/2+ on the amplifier end (used for pro audio power amps that support this specific bridged termination). These cables SHOULD be clearly marked but sometimes they are not, so be aware of the possibility when buying or troubleshooting cables.

Why speakON™ cables and not the "old favorite" ¼" (6.35mm) connector? There are several important reasons; the first being that with updates to global safety regulations, amplifiers like the Subway D-350 benefit from "touch-proof connections." A second reason is that the power amplifier's internal topology is BTL (bridge tied load). This means that neither output terminal is at ground potential, so touch-proof connectors provide an added layer of safety to the system. A third reason is the all too frequent poor quality of the 1/4" (6.35mm) connection. While this is not much of an issue at low power, it becomes a potential failure point at higher power levels. A fourth reason is that one common failure mode of amplifiers is when the 1/4" (6.35mm) speaker cable works loose at the speaker cabinet. The tip gets shorted to the sleeve within the speaker jack's bushing, applying a short circuit to the amplifier's speaker output. While this amplifier is protected against such faults, it's not good practice to test this protection on a regular basis.

Never connect the speaker output to anything except a speaker. This especially means not to a DI, even a speaker level DI, because the Subway D-350 utilizes a BTL (bridge tied load or "bridged") output power amplifier. On a bridged amplifier, the minus terminal that is normally at ground is actually a driven output that swings above and below ground at peak currents of up to 20 amps. Using a DI, the normal shell or ground terminal of the DI is not at ground potential at the amplifier's end but is connected to the console (mixer) circuit ground bus at the console's end. This would cause the amplifier to drive dangerous currents into circuitry that does not expect to see such currents, nor is it generally protected from this kind of fault. **So, in addition to possibly damaging your amp, you could also damage a potentially very expensive console.**

SPEAKER IMPEDANCE

All speakers have a "rated nominal impedance." Impedance is the resistance to AC electrical signal that the amplifier is tasked with delivering. The lower the speaker's impedance, the greater the current that the power amplifier must provide. The lowest impedance that the SUBWAY D-350 amplifier can safely drive is 4 ohms. Note that measuring speaker cabinets using an ohmmeter will not give accurate results because ohm meters read DC resistance, not AC impedance (technically called "reactance"). AC impedance will always be greater than the DC resistance. An 8 ohm speaker will typically measure between 5 and 7 ohms, and a 4 ohm speaker will typically measure between 2.5 and 3.5 ohms when measured with an ohmmeter (or digital multi-meter). The following chart shows combinations of cabinets that are an acceptable load for this amplifier:

SPEAKER COMBINATION	CALCULATED LOAD	TOTAL POWER AVAILABLE	POWER DISTRIBUTION PER CABINET
1 x 8 ohm cabinet	8 ohms	175 Watts (RMS)	100% to the single cabinet
2 x 8 ohm cabinet	4 ohms	350 Watts (RMS)	50% to each cabinet
1 x 4 ohm cabinet	4 ohms	350 Watts (RMS)	100% to the single cabinet

SPEAKER POLARITY (OR PHASE)

All speakers have "polarity." A speaker that is wired according to the current industry standard will move forward (towards the front of the cabinet) when a positive DC voltage is applied to the speaker's positive terminal. While there are well established standards, there are also deviations from standards, by legacy (for example early JBL drivers), by faulty repair (incorrectly wired cabinet or defective recone parts) or a manufacturer choosing to ignore the standard. If a multi-driver speaker cabinet or a pair of speaker cabinets does not appear to have the expected output or low end, it's always a good idea to double-check that all drivers move forward when positive DC voltage is momentarily applied to the speaker terminals. Using no more than a 9 volt battery, momentarily touch the + terminal of the battery to + terminal of the speaker (this will be the 1+ terminal on a speakON™ connector or the tip on a 1/4" [6.35mm] connector), while the – terminal of the battery is connected to the – terminal of the speaker (this will be the 1- terminal on a speakON, or the sleeve on a ¼" [6.35mm] connector). If you find that on a multi-speaker cabinet, one speaker moves out while the other does not move, it's likely that the non-moving driver has either failed or has become disconnected. If one driver moves out while the other driver moves in, it's likely that the driver moving in is wired incorrectly (or in a sealed cabinet, has failed or is disconnected, and is merely being moved in the opposite direction by coupling to the air mass inside the cabinet itself). Being aware of these possibilities can often help quickly troubleshoot something that doesn't appear to be performing quite right..

HEADPHONE OUTPUT

The SUBWAY D-350 includes a 1/4" (6.35mm) TRS tip-ring-sleeve headphone output jack, which will drive all common headphones and IEM earpieces between 8 and 32 ohms (and most well above 32 ohms). **It is not necessary to have a speaker connected to the amp when using headphones, it is completely safe to operate the amp without a speaker load.** It's advisable to use caution whenever sticking a sound source in your ear, as damaging volume is possible, especially with "bass player accidents" (such as a cable partially unplugged), and when volume is factored over a long period of time. This output contains additional cabinet emulation circuitry. ***This output should not be connected to anything but headphones, earbuds, or IEM earpieces.***

AUX INPUT

This amplifier is provided with a 1/4" (6.35mm) TRS AUX input. This TRS stereo jack properly sums left and right channels from an MP-3 player, i-device, or laptop, as many of these new devices do not contain adequate circuitry for proper summing. Note that for best performance, a 1/8" (3.5mm) TRS to 1/4" (6.35mm) TRS cable (also called a stereo cable) should be used, as this will always match between devices and allow the amplifier's automatic summing circuitry to work properly. For upright players, this input can be used to plug the output of your upright's outboard preamp (such as our Rosette, Subway, or Subway Plus PRE-DI) into the power amp. The level of this input is controlled by the MASTER VOLUME control, as well as the volume control on the external device such as the MP-3 player or outboard preamp. This signal will not be present in the DI output.

DIRECT OUTPUT (DI OUT)

A feature that sets your new SUBWAY D-350 apart from the rest of the market is the inclusion of a studio-grade XLR balanced direct output. This output is capable of driving balanced analog lines as long as 500 feet, is fully phantom power protected, noise-resistant, and stability compensated for a reliable, low noise floor, high-quality signal. This output follows the pro audio standards of pin 2=non-inverting, pin 3=inverting and pin 1=ground. Every known (correctly wired) console in the world follows this wiring standard.

DI OUT SOURCE SWITCH
This switch selects the signal source routing that is used to derive the direct output signal. In the PRE position, the signal is sourced directly from the input buffer. Muting the amplifier by the front panel mute switch mutes this output to allow for silent tuning. In the POST position, the signal is sourced from the output of the equalizer section and before the master volume control. Generally, for PA use, the FOH (front of house) engineer will probably prefer a PRE EQ send because the capability of the PA system may be significantly different from your stage rig. The EQ that you use to sound good on stage may not work well on a bigger system and in a larger acoustic space out front, or in the context of the mix. If you use the overdrive capability of the amp, then the post position is a better choice, but you will need to work with your FOH engineer to ensure that the EQ you use on stage will work for the house mix.

DIRECT OUTPUT LEVEL
This switch configures the level of the direct output to either mic level or line level. While many audio engineers prefer mic level, always be sure to ask which level they would like you to send them.

DI OUT PIN 1 LIFT
This switch connects or lifts the circuit ground/earth/common connection from pin 1 on the XLR DI OUT connector. Balanced outputs do not rely on the pin 1 or shield connection to transmit the signal to the console. While pin 1 is always connected to the console's master ground bus, sometimes (due to differences in the potential of a building's ground/earth system), currents will flow between grounds if there is a common connection, resulting in hum. Lifting the ground at the source (bass amp) end allows the shielding to the console's input to remain in place while breaking the ground current flow that is responsible for inducing hum into the audio signal-carrying pair of conductors. One thing that complicates this is that at very high frequencies (radio frequencies), ground is not "really" ground, so additional techniques are incorporated within this network that allows 2 simultaneously functional grounding spectrums within the same network, providing added RFI (radio frequency interference) rejection. The general rule is to start with pin 1 lifted, and if there is noise, try connecting it and see if the noise level drops. It should also be noted that there are a lot of other possible causes for noise. This switch is only one solution for ground loop noise between the PA and the bass amp.

USB DEVICE POWER
This connector provides power to USB devices that might be used in conjunction with practicing, recording, jamming, or even performing. It may also be used to recharge phones, MP-3 players, iPods, and any number of devices. This port follows the PC USB 2.0 standard. Rated current is 500mA maximum, and it conforms to the Apple USB charge current standard. While this charge port will work with most devices, some do not conform to any current demand/limit standards or must be operated from a high current (or proprietary) USB charge port only. These devices will either charge more slowly or possibly not at all. Due to the lack of uniformity in the market following standards and continual evolution/changing of the standards, this port is offered as a convenience only. Note that when charging some cell (mobile) phones, the phone can emit strong bursts of RF energy as it communicates with the towers. This is a potential source of randomly appearing noise which can be eliminated by placing the phone in airplane mode or shutting it off entirely.

This USB device power can also be used to drive any number of USB devices, including power converters that provide 9 volt pedal power. Because pedal power devices step up the voltage, the available current becomes ~300 mA at 9V.

DISCUSSION ABOUT SMPS & CLASS D FROM THE DESIGN TEAM

QUESTION: What makes this new amplifier so lightweight?

ANSWER: This amplifier uses new technology, both an SMPS (Switch Mode Power Supply) and a Class D power amplifier to decrease the size and weight. These designs are carefully implemented and fully tested to insure robust, reliable performance in real-world conditions night after night.

QUESTION: How can such a lightweight amplifier deliver solid bass? I thought an amp had to be heavy to produce deep bass.

ANSWER: By operating in a non-linear fashion (with power devices that are either fully on or fully off) the output stage no longer has to accommodate reactive load inefficiencies, overly sensitive protection of “safe operating areas,” and dissipate waste heat from output devices operating within their linear region. This means more power and better low frequency control with less heat. The pro audio industry has been using this technology almost exclusively in the large-scale touring market for about 20 years, driving massive arena and stadium subwoofers night after grueling night on the road. In fact, much of the technology in our power amplifiers comes from the high reliability touring pro audio world.

QUESTION: How do I know that this amplifier will be reliable?

ANSWER: A five-year factory warranty should inspire confidence that every aspect of design and manufacturing reflects the highest quality in the industry and decades of successful experience producing professional touring grade products. The designer of the Subway amplifiers project has over 20 years of SMPS/Class D amplifier experience, in bass amplifiers as well as in touring pro audio. We have worked closely with the power module’s European engineering team on the development of these new power modules, including extensive testing on real-world stages with real musicians and real audiences, night after night, as proven by the reputation of the entire Subway bass amp line. This engineering relationship goes back over 20 years when class D amplifiers were in their infancy.

QUESTION: Why is the power supply so small and lightweight?

ANSWER: An SMPS is just like any other power supply, except for the fact that it operates at a much higher frequency (~100kHz) than a traditional power supply (either 50Hz or 60Hz). A high operating frequency reduces the size of the transformer’s core, which in turn reduces the length of the wire wound around the core. Since most of the weight of a power transformer is in the core and the copper wire, reducing the core reduces size, weight, and the amount of copper needed to wrap around the core, which improves the performance of these smaller transformers under the highest load conditions.

QUESTION: How does the SMPS work?

ANSWER: Without getting too technical, a switch-mode power supply takes the incoming AC mains (50-60Hz) power, rectifies it to a high voltage direct current (HVDC). This HVDC is then filtered/stored in the input filter capacitors as reserve energy for discharge as needed into dynamic loads. This HVDC is then chopped/switched at about 100kHz into high voltage, high frequency alternating current (HVHFAC), which is fed through a high frequency transformer which converts the HVHFAC into low voltage, high frequency alternating current (LVHFAC) which is then rectified and filtered into low voltage direct current (LVDC) that the power amplifier's circuitry uses.

QUESTION: Why is the Class D power amplifier so small and light weight?

ANSWER: A Class D amplifier operates its output stage non-linearly, meaning that the output devices are switched either fully on or fully off at a switching frequency of about 500kHz. This "cutoff-saturation" switching minimizes waste heat by avoiding operation in the wasteful "linear range," and without the heat, there's no need for the large, heavy aluminum heatsinks.

QUESTION: How does the Class D amplifier work?

ANSWER: In Class D amplifiers, the analog audio signal is converted into a PWM (pulse width modulated) pulse train representation of the analog audio signal (similar to the A/D converter in a PWM digital audio recorder) at +5 volts conventional logic level. This PWM signal is level shifted upwards by large switching power MOSFET transistors (that operate non-linearly to avoid waste heat) to high voltage and current. The resulting high level PWM signal then passes through a high power "low pass reconstruction filter" that extracts the original but level shifted (amplified) audio signal from the PWM signal which feeds your speakers. Class D is not "digital," it is a non-linear analog technology, sharing some fleeting similarities with its digital counterpart. (Disclaimer: This is a simplified description. There are many details omitted, but the basic operational function is accurate. There is a lot of engineering that goes into making a high performance, robust, safe, and reliable design.)

TROUBLESHOOTING

In the event that your amplifier appears not to work correctly, often enough the problem is not with the amp, but a related piece of equipment, so it's necessary to take a deliberate, systematic approach to troubleshooting in order to effectively identify and correct the problem. Yes, believe it or not, we have seen all of these things many times.

SYMPTOM: No audio output:

Is the power LED lit and do the tally LEDs over the function switches work?

NO: Possible causes to check in this order are

1. Verify the power source. Verify that the IEC power cable is not damaged and is fully inserted into its socket.
2. Verify that nobody unplugged your amp or turned off your power strip when you weren't looking. (If so, blame the guitar player, turn on and play.)
3. If these do not solve your problem, it's possible that your amplifier has failed so call our customer service department and we will help you get this resolved.

YES: Possible causes to check in this order are:

1. Defective speaker cable or cabinet (test with a known good speaker cable and cabinet).
2. Defective bass or cable (test with a known good bass and instrument cable).
3. Defective pedals/effects/pedalboard (plug the bass directly into the amplifier input, bypassing all devices in front of the amp).
4. Gain or Master controls turned down (turn the controls up).
5. Will the amp play with a signal fed into the AUX INPUT jack? If so, the problem is with the preamp or something before the amp (signal source).
6. There is indeed a problem with the amp; call our customer service department and we will help you get this resolved.

SYMPTOM: Distorted audio output:

1. Defective battery in an active bass causing the instrument's onboard preamp to distort (replace battery).
2. With very hot 18V basses, it may be possible to overdrive the amp's first stage preamp when in high gain mode (switch to low gain mode).
3. Slightly intermittent cable in system (this can be an instrument cable, patch cable, or loose speakON plug screw).
4. Defective or blown speaker(s) in the cabinet (test with a known good cabinet, repair the cabinet as needed).
5. There is indeed a problem with the amp; call our customer service department and we will help you get this resolved.

SYMPTOM: Noise (low frequency hum) in audio:

1. If the noise goes away when the instrument cable into the amp is unplugged, the cause of the noise is external to the amp. (Possibly interference picked up by the bass, missing or incorrect grounding of the bass, or ground loops if using pedals.)
2. Defective instrument cable or problem with bass wiring (unplug instrument cable from amplifier; if hum goes away, this means that the noise is entering from outside the amplifier. Try a known good instrument cable and/or bass).
3. Power source wiring is not grounded/earthed (check all wiring for missing grounding/earthing pins, have a qualified electrician check building power wiring for missing ground/earth connections and correct as necessary).
4. External stray magnetic field present coupling into the pickups, especially single coils. (One clue that this may be the cause is when the volume level of the hum changes with the position of the bass. Possible causes include large power transformers or high-power electrical equipment like lighting controllers located near the performance area. If this occurs when you get close to another instrument amp or lighting controllers, it may be due to stray field from its power supply.)
5. Some cell (mobile) phones can emit strong bursts of RF energy as they communicate with the towers. This is a potential source of randomly appearing noise. (Move the phone farther away from the bass and/or amp, switch the phone to airplane mode, or shut it off entirely.)

SYMPTOM: Noise (high-frequency hiss and hash) in audio:

1. If the noise goes away when the instrument cable into the amp is unplugged, the cause of the noise is external to the amp (possibly an active preamp with the treble turned all the way up, a failing battery, or defective onboard preamp).
2. If there is neon or fluorescent lighting close by, it's possible that EMI is radiating into the pickup wiring. (Try turning off such lighting to see if the noise goes away. If it does, it could be arcing secondary wire on neon lighting, failing ballast or tube on fluorescent lighting, or radiated EMI getting into the instrument pickup.)
3. Some cell (mobile) phones can emit strong bursts of RF energy as they communicate with the towers. This is a potential source of randomly appearing noise. (Locate the phone farther away from the bass and/or amp, switch the phone to airplane mode, or shut it off entirely.)
4. Power source wiring is not grounded/earthed. (Check all wiring for missing grounding/earthing pins, have a qualified electrician check the building power wiring for missing ground/earth connections, and correct as necessary.)
5. Tweeter turned all the way up in a quiet room (may need to turn tweeter down under such conditions, especially if the sensitivity of the tweeter greatly exceeds that of the low frequency drivers with tweeter turned up).

SYMPTOM: Noise (popping) in audio:

1. Popping while playing, especially one string. (Check bass set-up to be sure there is adequate clearance between the string and pickup pole pieces.)
2. Popping while just sitting there, or when touched. Under dry environmental conditions, it's possible that electrostatic discharge is the cause. (Try an antistatic mat on the floor, or a humidifier in the room - drier winter air will exacerbate this problem.)

SYMPTOM: Protect LED turns on:

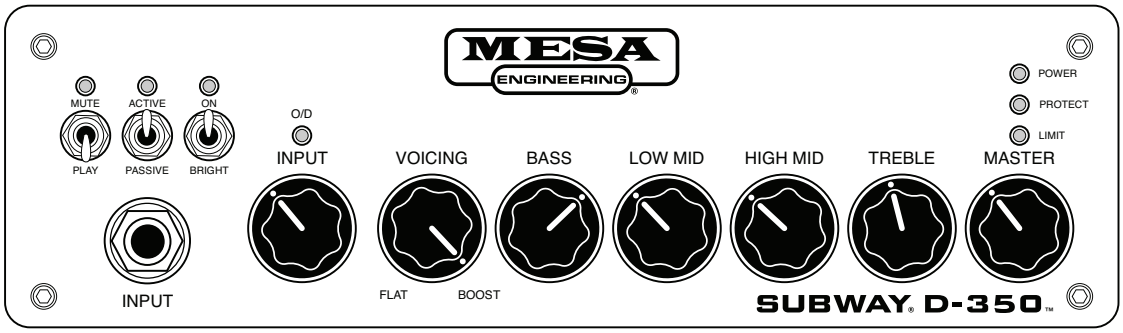
1. Disconnect all cables except the power cable. If the amp is no longer in protect, try plugging in just the speaker cable. If the amp goes immediately into protect, there is likely a fault with the speaker cable. Then, plug the speaker cable into the speaker(s). If the amp goes immediately into protect, one possible cause is a defective driver, but another possible cause is a defective or damaged crossover (and/or high frequency driver) that is presenting an illegal load to the amplifier and the protection circuit is working correctly. (Try a known good speaker cabinet from another manufacturer to rule this possibility out. If the amp works correctly with another speaker cabinet, call customer service for assistance. This is more common with "do it yourself" speaker projects with incorrectly designed/built crossovers. ALL amps with PWM carriers are sensitive to stored reactive energy in defective/faulty crossover tank circuits.)
2. Protect circuit shuts down amp while playing at low to moderate volumes. (Possible shorted speaker cable; try a known good speaker cable.)
3. Protect circuit shuts down amp at moderate to high volumes. Verify that total load to the amplifier has not fallen below 4 ohms. (Possible causes are incorrect pairing of multiple speaker cabinets, incorrectly labeled speaker cabinets that were repaired or modified without relabeling, or a defective driver that has shorted voice coil turns as the voice coil warms up.)
4. Power source voltage falling dangerously low due to improper wiring or extension cable that is too long for its wire size/gauge. (Correct problems as needed with the help of a qualified electrician.)

SYMPTOM: No (or slow) USB charging of connected device:

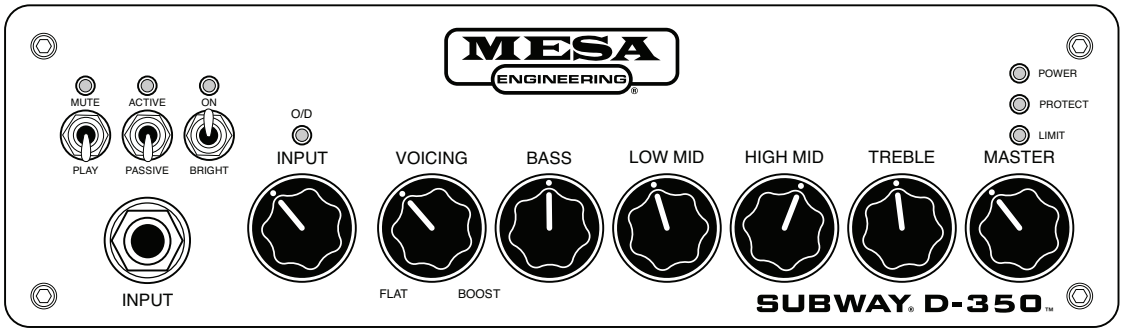
1. Is this an Apple device? There are several program controlled charge rates available for Apple products, varying from 100mA all the way up to 2.1A. The charge port will support the 500mA standard, which will charge the larger devices more slowly than higher-powered dedicated chargers.
2. Is this an Apple iPad or other large tablet? When operating an iPad or tablet, the current draw of the screen alone will be close to 500mA so the charging rate will be very low. Operating with a charged battery while connected to the charge port on the amp will greatly extend the battery life under use, however.
3. Is this an Android phone that Qualcomm QC enabled? This charger does not support QC and will charge at the slower 500mA rate if the device software allows it.
4. Does your device use a USB-C connector? While it won't charge at the higher rates supported by this standard, it should be backward compatible with the 500mA standard.

FACTORY SAMPLE SETTINGS

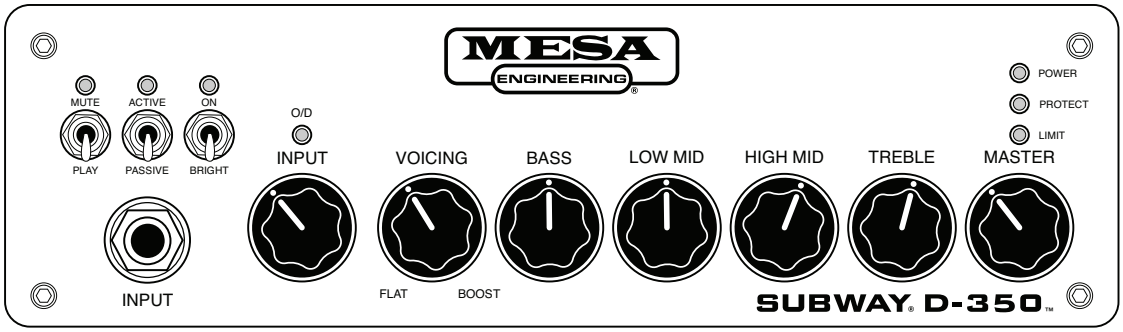
CLASSIC SLAP



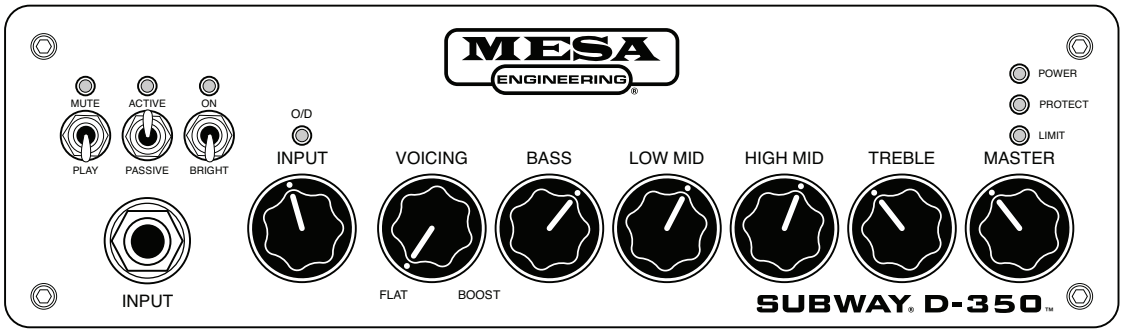
ROCK AUTHORITY



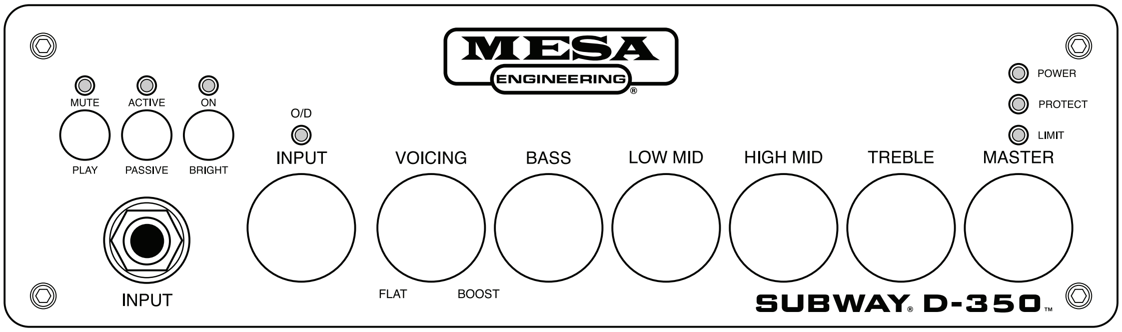
J BASS FUNK

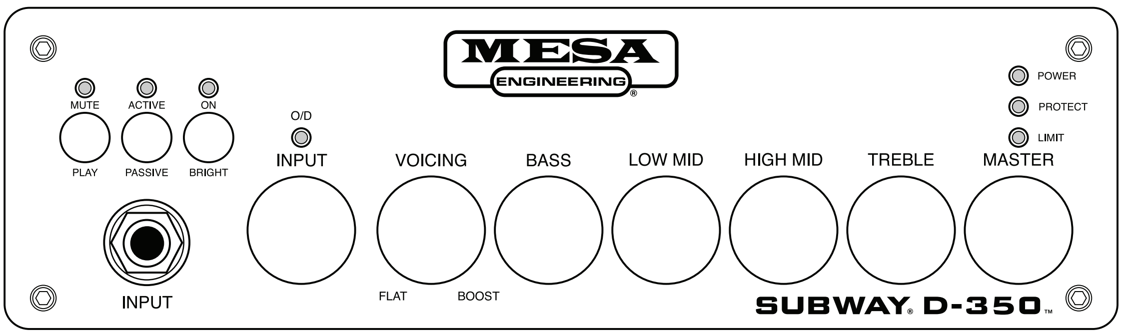


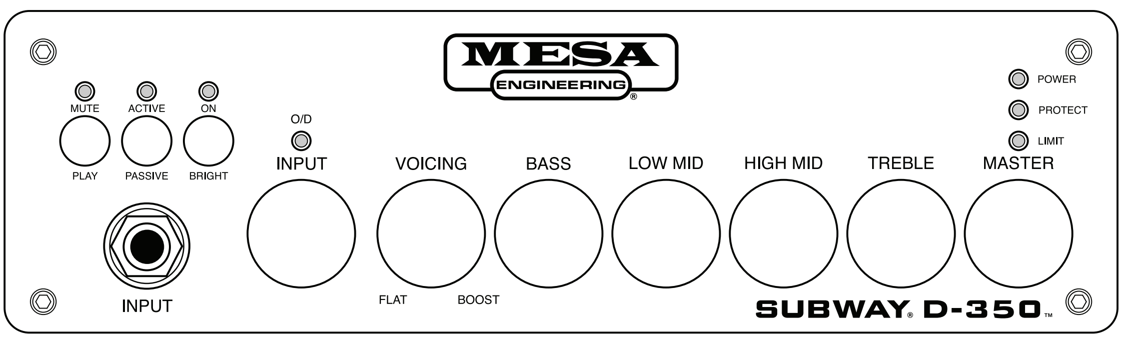
FRETLESS

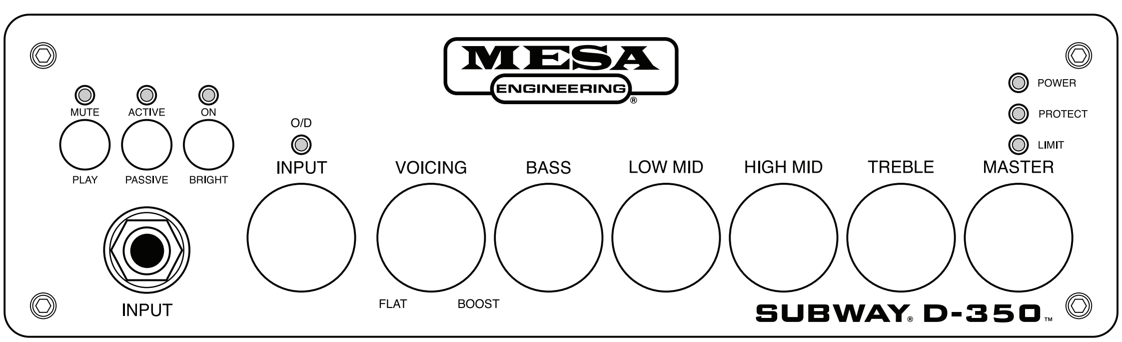


USER SETTINGS









SUBWAY® D-350™

SPECIFICATIONS

Output Power Rating:	175 Watts RMS @ 8 ohms, 10% THD (includes preamp O/D THD) [note 1] 350 Watts RMS @ 4 ohms, 10% THD (includes preamp O/D THD) [note 1]
Signal to Noise Ratio:	-77dB (20Hz-15kHz, unweighted, all controls at 12:00 positions)
Available Gain (nominal):	41dB (passive position), 32dB (active position) [note 2a]
Maximum Undistorted Input Level:	2.8V (passive position), >7V (active position) [note 2b]
Switched Tone Shape Filter:	BRIGHT: +2.5dB at 2kHz (moderately interactive with Mid and Treble EQ)
High Pass Filter:	4 pole fixed, 24dB/octave, 30Hz
Equalization:	Bass: +14dB/-14dB @ 40Hz [note 3] Low Mid: +14dB/-14dB @ 200Hz High Mid: +14dB/-14dB @ 480Hz Treble: +11dB/-14dB @ 4kHz [note 3]
Instrument Input Impedance/Sensitivity: Aux Input Impedance/Sensitivity: DI Output Impedance/Sensitivity: Power Amp Damping:	>1 Meg ohm, >-10dBu nominal, (gain & master at 12:00, passive position) 10 K ohm, +4dBu [note 4] (post master volume controls) <1 K ohm, -28dBu mic position, -10dBu line position [note 4] ~500 at 4 ohms, ~1000 at 8 ohms [note 5]
Power Requirements:	100-120/220-240 VAC, 50/60Hz, 250W, auto-ranging power supply
Size:	9.00” (229mm) wide x 7.5” (191mm) deep x 2.75” (70mm) high [note 6] 9.00” (229mm) wide x 8.25” (210mm) deep x 2.9” (74mm) tall [note 7]
Weight:	approx. 3.1 lbs (1.4 kg)

[note 1]: area under the curve, with preamp harmonics management, >25% duty cycle
[note 2a]: gain/volume controls set to the 12:00 position
[note 2b]: gain control set to the 9:00 position
[note 3]: measured approx. 1 octave from knee
[note 4]: nominal levels, there’s typically a min. of 12dB of addl. gain for signals below, and 12dB of headroom above nominal levels
[note 5]: < 1kHz
[note 7]: chassis only, not including feet and controls
[note 8]: overall dimensions, including feet and controls

Mesa Boogie continually develops new products and improves existing ones. For this reason, specifications and information in this manual are subject to change without notice.

SERVICE INFORMATION

- **USA /CANADA Customer Support:**
  For technical support, troubleshooting, tone questions, settings help and more...
  707-778-6565 Monday-Thursday, 9 AM-5 PM Pacific Time
  NOTE: If a Product Specialist is not available when you call (helping other customers), PLEASE leave a voice message with a phone number and a good time to call and WE'LL CALL YOU BACK!

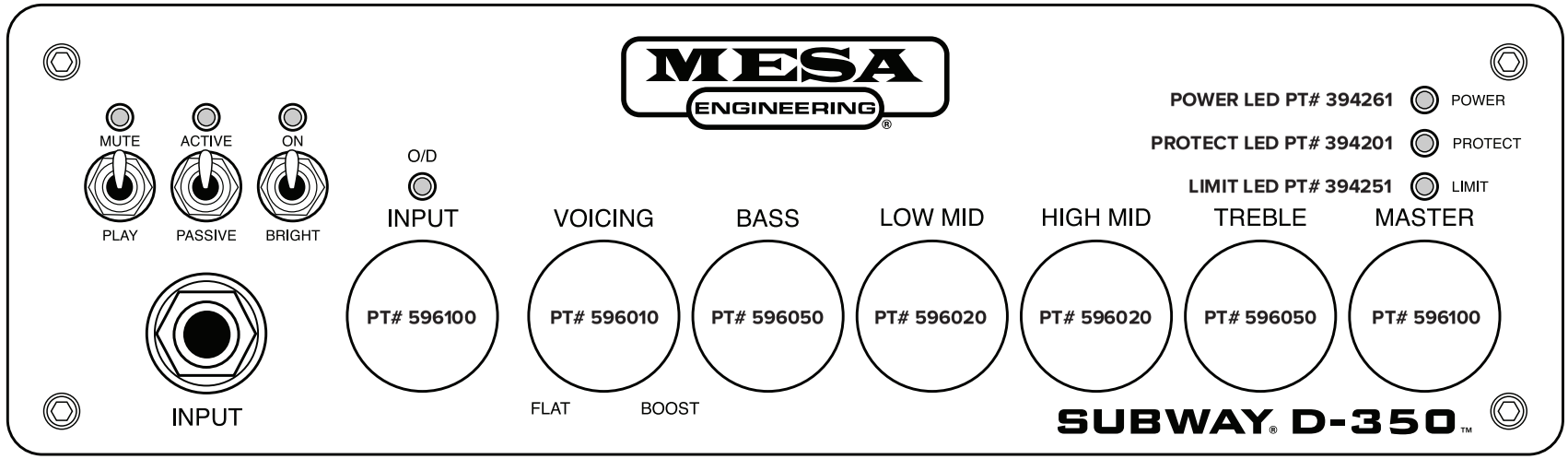
- **INTERNATIONAL Customer Support:**
  For warranty and technical support, please contact your LOCAL MESA DISTRIBUTOR.
  You may use this link to search the web for your local distributor's contact information:

www.mesaboogie.com/support/

PLAYER NOTES AND REMINDERS

MUTE LED PT# 394201
ACTIVE LED PT# 394261
BRIGHT LED PT# 394261
O/D LED PT# 394251

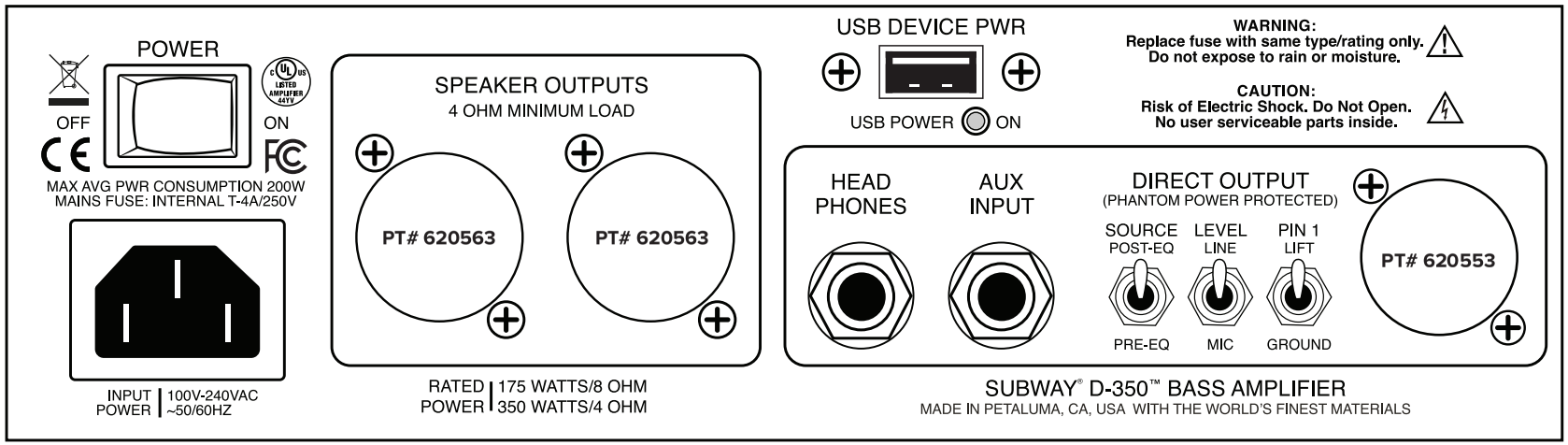
ALL FRONT PANEL KNOBS
PT# 408608



JACK PT# 619354 SWITCH x 3 PT# 607336

SCREW x 4 PT# 302177

USB JACK PT# 620100

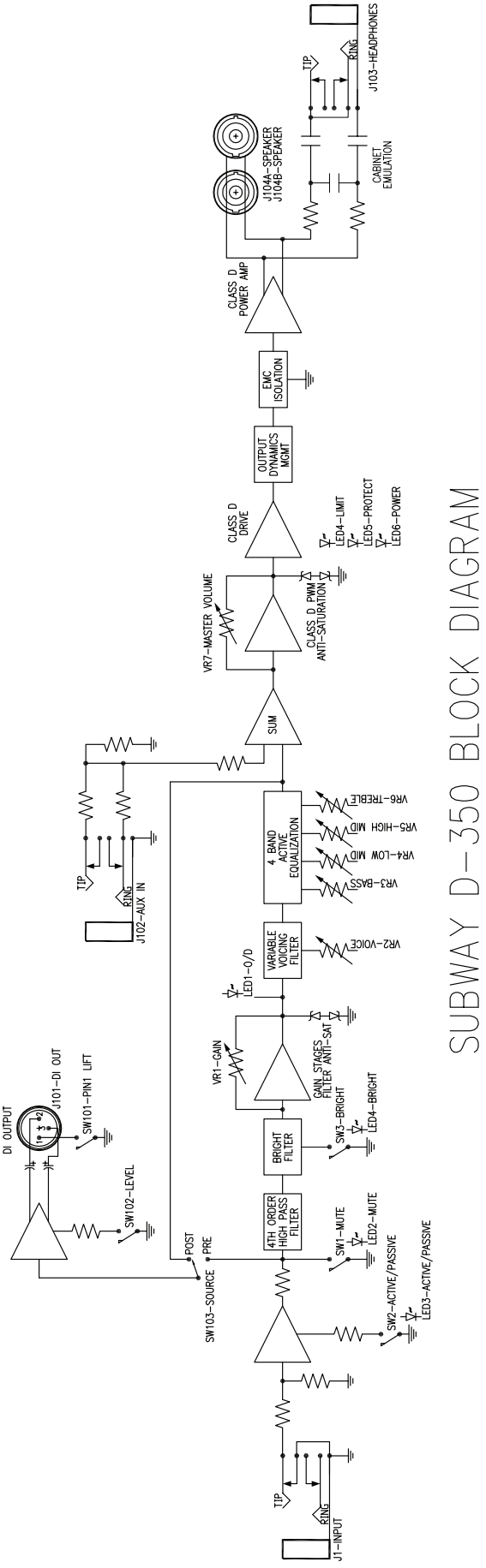


SWITCH PT# 600118

IEC JACK PT# 613713

JACK PT# 619354 JACK PT# 619354

SWITCH x 3 PT# 607334



SUBWAY D-350 BLOCK DIAGRAM

MESA/BOOGIE®

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22/03/29