

Hughes & Kettner
TECHNOLOGY OF TONE



Switchblade TSC

Head 100, Combo 100, Combo 50

Manual 1.0

english

deutsch

français

español

italiano

Foreword

The installed Tube Safety Control (TSC) safeguards your tubes, amp, and sound. Beyond that, for the first time it puts into your hands a tool that helps you manage and check your old and new EL34 and even 6L6GC tubes at any time. Players have long wished for a tube amp that is as low-maintenance as a solid-state amp, and TSC has made that wish come true.

Best wishes from the Hughes & Kettner® team. We hope you enjoy playing your SWITCHBLADE TSC as much as we enjoyed designing and refining it!

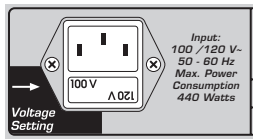
Things to Do Before Operating the Amp

Please read the safety instruction on page 64!

A word of warning before you fire up your SWITCHBLADE TSC: It's loud! High volume levels can cause hearing damage. Ensure plenty of air can circulate around your amp's ventilation surfaces. Place the amp on a sturdy, secure base and avoid exposing it to mechanical shocks and extreme temperatures that could endanger the device or your and others' safety. The manufacturer disclaims any liability or responsibility whatsoever for any damage or defect to this and other devices resulting from misuse.

Powering Up

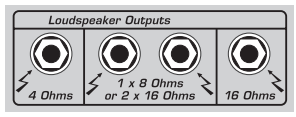
Ensure SWITCHBLADE TSC's MAINS and STANDBY switches are off (with the toggle switch pointing down) and that the voltage rating indicated next to the Voltage Setting arrow as depicted the illustration) matches your local Mains current before you plug the amp in.



The illustration shows the 100/120 volt version as an example. The voltage rating 100V is indicated next to the arrow, meaning that the amp may be powered with 100V Mains voltage only. If the rating indicated next to the arrow does not match

the local Mains voltage, do not plug your SWITCHBLADE TSC's Mains cord into an outlet! More on this in chapter 9.

Head Only



First plug the speaker cord into the appropriate output on the Head. Do not use more than one of these outputs simultaneously! That is, use either 1x4 Ω, 2x16 Ω, 1x8 Ω, or 1x16 Ω. Don't mix and match cabinets either, say by plugging a 4-Ω cabinet into the 4-Ω output and a 16-Ω cabinet into the 16-Ω output. For more on this, see chapter 6.5.

Plug the other end of the cord into the speaker cabinet's Input. This is vital to every all-tube amp's life! Power amps may be damaged when tube amps are operated without a connected speaker load or at an insufficient impedance level!

Combo Only

Check to ensure the wire to the internal speaker is connected properly to the power amp (see figure). Note that on the 50W Combo, the internal speaker is connected to the 8-Ω output. On the 100W Combo, it is connected to the 16-Ω output.



Head and Combo

To avoid very unpleasant surprises, make a habit of always twisting the MASTER knob to the far left-hand position before turning on the amp.

Input

Connect your guitar to this Input. Please use suitable shielded cords only – no speaker cords allowed.

Mains

This switch opens the flow of main current supply, and the blue PILOT LAMP lights up. Ensure the STANDBY switch is set to OFF and allow the tubes plenty of time to warm up. They'll thank you for your patience with a longer service life.

Standby

The STANDBY switch breathes life into those glowing tubes. It controls the anode voltage, not the heating. When taking a short break from playing, please use STANDBY rather ON/OFF so the tubes remain at operating temperature.

If you can't wait to get to it, go ahead and play your SWITCHBLADE TSC now. The patient reader is well advised to continue reading before letting it rip. Particularly chapters 1 (Handling) and 7 (Programming) are mandatory, even for seasoned players.

Standard Setup and Cable Connections

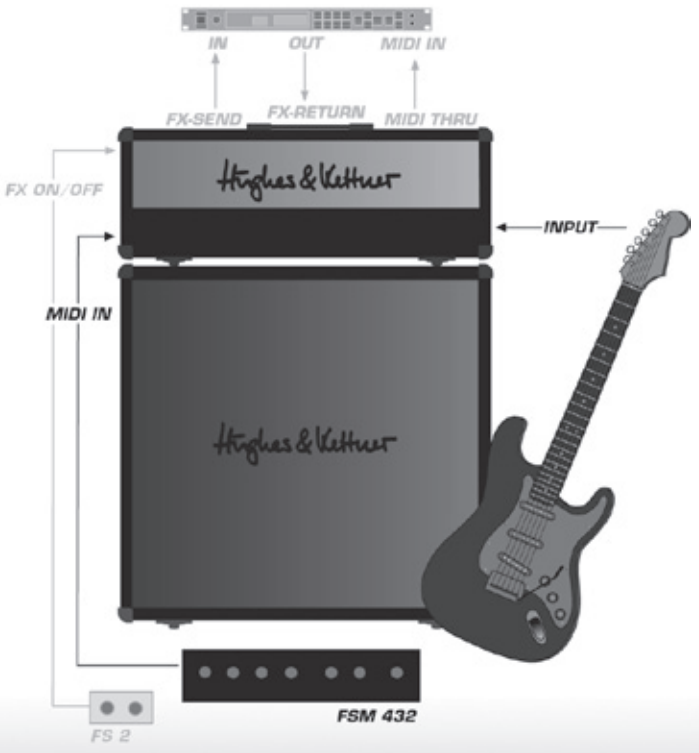


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1 The Fundamentals of Handling

SWITCHBLADE TSC is a tube amp and, as such, works as a tube amp. Nevertheless, the handling concept is rather advanced, so time spent familiarizing yourself with it is time well spent.

At first glance, the knobs look and feel like standard-issue gear: Control range 300 degrees; 0-10 clockwise; left and right stops. At second glance, though, you'll discover that there is just a single set of knobs to serve all four Channels. One GAIN, one Channel VOLUME, one three-band EQ – that's it. The selected Channel determines if the GAIN knob addresses the CLEAN, CRUNCH or LEAD Channel.

The great advantage of this concept is that Channels are independent and do not share the Gain, VOLUME or voicing knobs; even Presence is separately adjustable for every Channel and every setting can be programmed individually to each of the 128 Presets!

Apart from the MASTER knob (and of course MAINS and STANDBY), this applies to all of SWITCHBLADE TSC's control features, that is:

- the Channels: CLEAN, CRUNCH, LEAD, ULTRA
- the Channel settings: GAIN+BOOST, BASS, MID, TREBLE, PRESENCE, VOLUME
- the effect parameters: MOD FX, TIME, FEEDBACK, VOLUME, REVERB VOLUME
- the effect routing options for external devices: FX ON/OFF, SERIAL/PARALLEL



You won't find any control features for managing the 128 Presets on SWITCHBLADE TSC. The included FSM 432 MIDI board or another MIDI-enabled controller serves to select Presets and assign memory slots. More on this in chapter 7.

Note: A knob setting programmed in a Preset and the knob's actual setting are not necessarily the same. They are independent: When you switch from one Preset to another, the knob's actual position may not reflect the setting programmed in the Preset. This means you may well hear something other than what you're seeing would suggest. As soon as you touch the knob, it will

respond like any other conventional knob. The ORIGINAL VALUE LED in the MASTER section tells you the Preset setting. It lights up as soon as the position of the knob corresponds to the Preset setting. More on this in chapter 4.3.

Note: You may hear a soft background sound when you twist the knobs. This is a switching noise made the programmable resistor matrix located behind each knob.

2 The SWITCHBLADE TSC's Channels

SWITCHBLADE TSC offers four Channels with markedly different sonic characters. Courtesy of SWITCHBLADE TSC's programmability, you enjoy more and more powerful sound-shaping options: The knobs are not hardwired to the internal circuits, so we were able to tweak their control ranges and performance to make the most of each Channel's characteristic sound. A chickenhead knob is sited at the far right of the CHANNEL section– that's the Channel Selector. Use it to switch among the four Channels along with their GAIN, BASS, MID, TREBLE, PRESENCE and VOLUME settings.

Note: When you first power up your amp and change Channels, you will dial up factory settings (see chapter 7.3.2 to learn more). As soon as you begin dialing in sounds to your taste, it will adopt your Channels settings. And it recalls your most recently configured sound for each Channel. You'll find this to be a tremendous help when programming. More on this in chapter 7.

2.1 Clean Channel

Tuned to rival classic Californian tone, SWITCHBLADE TSC's Clean Channel delivers a spectrum of sweet sounds ranging from crystal-clear to remarkably responsive Crunch tones. The programmable Presence control adds silken warmth as well as sparkling shimmer to the sonic equation.

2.2 CRUNCH Channel

Classic British overdrive à la carte! The CRUNCH Channel covers the diverse tonal spectrum from Clean to mean, and all points in between. The Gain control's integrated Boost function transforms tight rhythm tone into a throaty growl perfect for rockin' riffs.

2.3 LEAD Channel

The LEAD sound is the first choice for hard-rockin', classic British high-GAIN tone to fuel Leads, power chords and riffs. Courtesy of its fine-tuned compression, this Channel delivers the lubricant that makes those slick riffs and licks fly off your fingertips.

2.4 ULTRA Channel

American high-Gain sound with sumo-sized low end and snarling top end. The ULTRA Channel delivers the kind of merciless performance that is sure to delight metal meisters and dropped tuning aficionados. Ultra is also an alluring alternative for guitarists seeking to super-size their sound with a high-calorie topping of rich tone.

2.5 GAIN

The GAIN knob determines Input sensitivity and thus the Level of saturation and distortion. SWITCHBLADE TSC's GAIN offers a special feature: Just before the knob arrives at the far right position, a BOOST stage kicks in (and the red LED lights up). Now, when you see Boost on other amps, this usually means all frequencies are boosted. But SWITCHBLADE TSC's Boost amplifies selected frequency ranges for each Channel to attain creamier tone.

2.6 BASS, MID, TREBLE

The voicing section is tweaked to accomplish the best, most efficient sound-shaping for each Channel. Getting right to the heart of the sonic matter, every knob addresses each Channel's characteristic frequency ranges. Like on every tube amp, the knobs of a Channel influence each other. That is, if you boost the Treble, the midrange is cut and vice versa. This puts a much greater range of subtle tonal variations at your fingertips.

2.7 PRESENCE

This knob determines the overtone content. Unlike a TREBLE knob, which boosts whatever high frequencies are available, PRESENCE actually determines the amount of harmonic overtones generated by the amp. Usually a PRESENCE knob controls the overtone content of the overall amp rather than of individual Channels. Courtesy of SWITCHBLADE TSC's programmability, you can define PRESENCE settings not only for each Channel, but also for each Preset.

2.8 VOLUME

Use the Channel VOLUME knob to adjust the given Channel's Volume and balance it out with the other Channels' Levels. On SWITCHBLADE TSC this knob serves another vital purpose: It lets you store the same sound at different Volumes to any of the 128 Presets, for example, a softer version for rhythm and a louder setting for Leads.

Note: The Channel VOLUME is a different breed of knob. It adjusts the Channels' relative levels, and is tweaked to help you quickly dial in the best balance. Unlike a conventional Volume knob, it can't be turned all the way Down; it merely boosts or cuts the given Level. This design makes musical and practical sense: The Clean Channel normally requires a much higher Volume Level than a distorted Channel, which is why it is about as loud as the other Channels when the knob is set to the center position. That's why the 12 o'clock position is always the best starting point for adjusting Volume.

3 Digital Effects

SWITCHBLADE TSC offers three independent digital effect sections that can be used simultaneously. Like Channel settings, all effect settings are programmable.

Note: The internal effects are added to the signal via an intelligent analog circuit. Effect routings in no way compromise the integrity of SWITCHBLADE TSC's tube tone, which remains intact in all its quality.

3.1 REVERB VOLUME

SWITCHBLADE TSC's Reverb is modeled to match the warmth and musicality of classic spring Reverbs. A genuine improvement over its analog forebears, it automatically adjusts the Reverb tail to suit the setting: The more REVERB VOLUME you add to the signal, the longer the REVERB time.

3.2 DELAY

The Delay section's VOLUME, TIME and FEEDBACK knobs afford you total control over all parameters. This lets you dial in everything from rockabilly style slap-back echo to U2-inspired Delay extravaganzas and Queen-like bombast.

3.2.1 VOLUME

Adjusts the volume of the repetitions, sweeping from all the way off to just as loud as the original signal.

3.2.2 FEEDBACK

Adjusts the number of repetitions from one to infinite.

3.2.3 TIME

Adjusts the time to the next repetition from 80 ms to 1.4 s.

TIP: TIME can be remote-controlled via the included FSM 432 using the TAP function. This lets you respond quickly and conveniently to timing changes. You'll find TAP to be a very helpful feature, particularly on stage! More on this in chapter 6.1.3

3.3 MOD FX

The three most important modulation effects are CHORUS, FLANGER and TREMOLO, and they're all on board, readily activated via a single knob. CHORUS is active in the first third, FLANGER in the second third, and TREMOLO in the final third of the control range. You can shape the effect within its assigned third of the control range using this knob. The parameters were tweaked to make musical sense: A twist of the knob is all it takes to get the desired effect. Twisting clockwise adjusts the rate of the modulation effects. Modulation depth is adjusted automatically according to the rate so that every knob position gives you the best effect sound. To switch modulation effects off, simply twist the knob to the far left-hand position.

3.3.1 CHORUS

At slow settings, the CHORUS sounds thick and lush, providing a great sound for buoyant ballads. And because effect depth is adjusted automatically, fast CHORUS settings don't evoke that dreaded seasick tone.

3.3.2 FLANGER

Slow FLANGER settings yield a stately sweeping whoosh effect, while faster settings give you swirly effects often heard in contemporary rock and pop tunes.

3.3.3 TREMOLO

The classic TREMOLO effect is great for dialing in typical sounds of the '60s as well as contemporary effect sounds.

4 Master

The Master section lets you adjust the amp's overall Volume, route external effects, and store Presets.

4.1 MASTER

As its name would suggest, this knob puts the power to control the amp's overall volume at your fingertips. Exercise restraint when handling this knob to make music a pleasant rather than a painful experience.

Handling: Unlike the Channel and effect knobs, the MASTER knob is not programmable! It works like any standard knob, and the position of the knob indicates the actual setting.

Caution: High volume levels can cause hearing damage. Spare yourself a nasty surprise and twist the MASTER knob to the far left-hand position before powering the amp up.

4.2 STORE

Use the STORE button to save your Presets. See chapter 7.4 for more info.

4.3 ORIGINAL VALUE

This LED tells you which knob setting is stored in the given Preset. To this end, select a Preset, grab the knob and twist it to the left or right until this LED lights up. The setting at which the LED lights up corresponds to the setting stored in the Preset.

4.4 FX LOOP

SmartLoop™ is a special effects routing circuit offering a switchable Parallel/Serial effects loop for patching in external effect devices. Its status is stored in each Preset, that is, whether it is on or off and configured in a parallel or serial circuit.

4.4.1 SERIAL

Switches the effects loop from Parallel (LED does not light up) to Serial (LED lights up).

4.4.2 FX ON

Switches the effects loop on (LED lights up) and off (LED does not light up).

Tip: If you have not inserted an effect device into the FX Loop, you can use this circuit for other purposes and store the configurations individually in each preset:

- In parallel mode, you can use the RETURN jack to connect a second instrument or any other audio source. You can also route the amp's signal to a second power amp.
- In serial mode, the effects loop lets you control the amp's volume remotely by simply connecting an analog Volume pedal to SEND/RETURN.

Caution: The signal chain is severed if the effects loop is configured serially and no effect device is connected. Send is not the best to-mixer routing option because it accesses the preamp signal only. Patch the power amp signal to a mixing console via the Hughes & Kettner Red Box® and the speaker outputs.

5 Tube Safety Control (TSC)

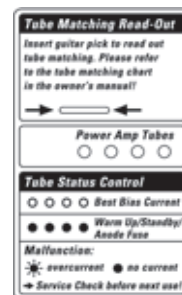
TSC biases your power output tubes, ensuring they last longer and sound better. It does this by setting their idle current to the correct value. Best of all, TSC does this automatically, so there is nothing for you to do.

It also offers some more hip features for dealing with different power output tubes that are likely to interest you. If not, simply handle the amp as you would any conventional tube amp. But on issues concerning tube replacement, please do read and heed chapter 8, Replacing tubes, preventive maintenance, and service as well as section 5.3.2, Checking for matching ratings when swapping tubes.

5.1. Why did Hughes & Kettner develop TSC?

We developed TSC to satisfy the demands of discerning guitarists like you who aim to attain and sustain the best tube-driven tone, enhance tubes' stability and extend their lifespan, and enjoy the services of even more reliable amp.

Caution: We developed TSC exclusively for power output tubes, and this chapter addresses only this type of tube.



5.1.1 What's up with bias, ratings, and matching?

The basics briefly explained. Bias is the amount of idle current flowing in the tube grid when it receives no AC signal. So, biasing is the practice of setting the idle current in an output tube. Tubes and their component parts are delicate, and every tube's tolerances vary somewhat. Conventional amps must be biased to match the given combination of power output tubes. If several tubes share the same bias point or rating, we say they are matched. The golden rule is to always use matched tubes in a guitar amp. This has the advantage that the tubes bear an equal load, which reduces wear and extends tube life. What's more, it yields better tone. Unmatched tubes in conventional amps don't operate at the optimum bias point, so they wear faster, must be replaced sooner, and causes your amp to generate undesirable noise such as crossover distortion, which degrades its tone.

5.1.2 The benefits of TSC:

No more manual biasing: If you swap out all tubes in conventional amps so that their characteristic curve changes, you have to get a technician to re-bias the amp. Not so with SWITCHBLADE TSC, because it biases the amp on its own. So the amp always runs at its optimum operating point, which has both tonal and technical advantages.

Best possible sound from tubes that no longer match: Tubes are very sensitive. Even minor knocks can change their characteristics so they no longer match. But thanks to TSC, tubes always run at their optimum operating point, even if outside influences such as vibrations and the like change the bias point. If this happens to a conventional amp, you will experience undesirable crossover distortion. TSC minimizes this noise by automatically adjusting the bias to achieve the best possible sound.

Less tube wear: Unmatched tubes in a conventional amp wear faster and must be replaced earlier. TSC nips this problem in the bud by adjusting the bias of every power output tube to the optimum operating point, sparing you and the amp in further technical problems.

It indicates faulty tubes, yet allows you to keep playing the amp: In all but very few cases, the amp remains operational despite a defective tube. All you have to do afterwards is analyze the problem by simply looking at the Tube Status Control LED to see if it flashes or lights up continuously (see section 5.2).

It lets you check power output tubes: You can check the tubes' status, characteristics, and rating at any time (see chapter 5.3.1).

It lets you use EL34 and/or 6L6GC tubes: As an alternative, you can also use 6L6GCs, even in combination with EL34 tubes (see sections 5.3.2 and 5.3.3)

5.2 What TSC's Tube Status Control tells you:

The LEDs are key components of TSC. They tell you if:

- the amp is operating normally (see section 5.2.1)
- current is actually flowing to the power output tubes (see section 5.2.2)

- a tube is receiving insufficient power and the amp is running on one less than a full set of tubes (see section 5.2.3)
- an overload has damaged a tube and TSC has switched off the affected tube pair (see section 5.2.4)
- tubes are (still) matched (see 5.3)

Heads up: LEDs are arrayed side by side in the same order as the power amp tubes, with each LED indicating the status of the tube occupying the same position.

5.2.1 All LEDs off:

Power output tubes are operating normally.



5.2.2 All LEDs light up and stay on:

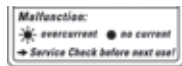
When you switch on the amp: All LEDs remain on for as long as the amp is in standby mode to indicate tubes are heating up but no current is flowing to them. If you wait long enough – about 30 seconds – and switch from standby to on, the LEDs must extinguish. If you don't allow the tubes enough time to heat up before you begin playing, the LEDs will continue to light up until the tubes have reached the proper operating temperature and the optimum current flow has been achieved.



While playing: All LEDs light up the current flow to tubes is interrupted. The most likely cause is a defective anode fuse. Change it. If the problem recurs any time soon, or replacing the anode fuse doesn't do the trick, take the amp to an authorized service technician for a checkup.

5.2.3 One LED lights up continuously:

The tube assigned to this LED is producing under-voltage. Causes can include a malfunctioning tube heater, a vacuum fault, or other defect such as a broken filament within the tube.



TSC adjusts the current for as long as possible. The tube will definitely work longer than in a conventional amp and the defective tube will not cause the amp to immediately generate undesirable crossover distortion. TSC ensures the best possible sound under these conditions. Even if this is a major defect and TSC can no longer adjust the current, you can continue playing the amp. If the LED fails to extinguish after a few minutes, replace the power output tube. But before you do, be sure to read section 5.3.2 and chapter 8. If the problem recurs soon, have an authorized service technician check the amp.

5.2.4 One LED flashes, another lights up continuously:

The tube assigned to this flashing LED is generating over-voltage. It's defective, has been disabled, and must be replaced. Before you do so, read and heed section 5.3.2 and chapter 8. In this kind of power amp, it takes a pair of tubes working together to produce the best sound. TSC switches off the defective tube's partner so it doesn't degrade the other pair's tone. This tube's LED lights up to indicate it is also switched off, but there's no need to replace it. Switchblade 100 TSC sports four power output tubes, so you can continue playing, though output is halved from 100 to 50 watts for as long as the LED remains illuminated. Switchblade 50 TSC comes with two power output tubes, so it will of course be muted. If this occurs in a conventional amp, its fuse usually trips and you can't operate it until you replace the tube and fuse.



Exception: In very rare cases, the anode fuse may trip for safety reasons despite TSC's best efforts. This may take place in response to serious tube defects such as a short-circuit caused by the anode and cathode making direct contact, or the voltage spikes when using older tubes and fuses. If you experience one of these rare events, have a technician replace the tubes and fuses (see the chapter 8 and 5.3.2).

5.3 Matching tubes with TSC:

Experience has taught us that even minor outside influences can have a major impact on a power output tube's characteristics. In conventional amps, they can change a tube's bias point so it no longer matches its partner and the other output tubes. Tubes running at other than the proper load cause undesirable noise such as crossover distortion, which adversely affects the amp's tone. They also wear faster and must be replaced sooner.



TSC can help in three ways:

1. TSC minimizes undesirable crossover distortion and achieves the best possible sound.
2. TSC cuts down on tube wear by adjusting bias, automatically and continually.
3. TSC lets you check and match the current status of every old or new tube's characteristics (see chapter 5.3.1).

5.3.1 Checking power output tube matching

Insert a pick into the slot in the panel labeled Tube Matching Read-Out while the amp is on (as opposed to in standby mode). Then all of the Tube Status Control's LEDs will flash and indicate Hughes & Kettner ratings as shown in the tables in section 5.3.3. You can buy tubes with the same ratings from your local dealer. The original Hughes & Kettner rating (S1-S3) is labeled on the tube. Ideally, all tubes will share the same ratings or diverge by no more than five flashes. If the rating deviates upward or downward by six or more flashes, replace the given power output tube. Again, be sure to first read and heed section 5.3.2 and chapter 8. Unlike conventional biasing solutions, there's no risk that tubes will wear faster because TSC automatically adjusts the idle current to prolong tube life. However, matched tubes will yield the best tone.

5.3.2 Checking for matching ratings when swapping tubes

If you replace all tubes, make sure they all have the same ratings. The choice of rating is up to you. Different ratings won't cause technical problems because TSC ensures the tubes run at their optimal operating point. However, you will enjoy the best tonal results with matching ratings.

If you swap out a single power output tube, ensure the replacement tube's rating matches the other tubes' ratings. And if the ratings of the tubes in the amp vary slightly, ensure the replacement tube's rating is the average of the other tubes' ratings. Please read also the paragraph below, Reference examples for replacing tubes.

Bear in mind that you can use one or several 6L6GC tubes as replacements. The 6L6GC table in section 5.3.3 lists their ratings. You can even opt for a combination of EL34 and 6L6GC tubes. Please make sure they share the same ratings. Be aware, though, that we tweaked the amp and factory presets specifically for EL 34 tubes.

Caution: Use 6L6GC tubes only! 6L6 tubes have different specifications and are unsuitable for use in this amp. Check the label on the tube to make sure because 6L6GC are often referred to as 6L6s.

Reference examples for replacing tubes: (This applies Switchblade 100 TSC with four power output tubes.) To achieve the best sound, make sure the center two tubes share the same ratings. The same goes for two tubes on the outside.

Example 1: Four tubes rated 6, 6, 7, and 7 are best arranged 6, 7, 7, and 6 or 7, 6, 6, and 7, and not 6, 7, 6, and 7 or 6, 6, 7, and 7.

Example 2: You have three tubes rated 5, 7, and 8. The fourth tube's rating should be roughly the average of the other tubes' ratings – in this case, 6. However, the two center and outside tubes, respectively, should have the same ratings, so a tube with a rating of 5, arrayed 5, 7, 8, and 5 or 7, 5, 5, and 8, is the best solution.

5.3.3 Tube ratings tables

To ascertain the rating, insert a pick into the slot to initiate read-out (see section 5.3.1). Then count the flashes and look for that number in the table below.

EL34 power output tubes		6L6GC power output tubes	
flashes	rating	flashes	rating
1	S3	1	--
2	S2	2	--
3	S1	3	--
4	0	4	--
5	1	5	S4
6	2	6	S3
7	3	7	S2
8	4	8	S1
9	5	9	0
10	6	10	1
11	7	11	2
12	8	12	3
13	9	13	4
14	10	14	5
15	11	15	6
16	12	16	7
17	13	17	8
18	14	18	9
19	--	19	10
20	--	20	11
21	--	21	12
22	--	22	12
23	--	23	13
24	--	24	13
25	--	25	14
26	--	26	14
27	--	27	14

6 Rear Panel Connections and Control Features

6.1 EFFECTS ON/OFF

This port accepts the two-way Hughes & Kettner® FS-2 footswitch. Button 1 switches internal effects; button 2 the external effects loop. The FS-2's LED lights up to indicate effects are active and the FX ON button is engaged. It does not light up if the internal effects are bypassed or the FX ON button is switched off. Note: The footswitch deactivates the FX ON button on the front panel! When a footswitch is connected, it always has priority. The current status of the footswitch is valid when switching Channels, irrespective of the switching status stored in the preset! The front panel FX ON button now serves as an LED display indicating the status of the footswitch.

6.2 CHANNEL SELECT

If you ever leave your MIDI board behind, this flexible fall-back connector for footswitches will help get you through the gig. It lets you switch remotely between two Channels, say CLEAN and ULTRA, using standard one-way footswitches such as the Hughes & Kettner® FS-1. A two-way footswitch such as the Hughes & Kettner® FS-2 may also be connected. In this case, button 1 is responsible for the Channels, and button 2 is disabled. SWITCHBLADE TSC even accepts the four-way Hughes & Kettner® FS-4 footswitch that ships with Hughes & Kettner® Trilogy and Attax amp. It lets you switch all four Channels.

Note: The footswitch changes the Channels only, and not presets. That is, it activates the most recent Channel settings and it does not switch effects.

6.3 FX LOOP

If you wish to use an external effect device, you can insert it into the FX LOOP.

6.3.1 FX SEND

Connect this jack to your effects processor's input jack.

6.3.2 FX LEVEL

This button cuts the FX SEND's output level by 10 dB and boosts the FX RETURN's input sensitivity by 10 dB to match the FX Loop to the effect device's input level. Press this button when using processors designed to handle instrument levels.

6.3.3 FX RETURN

Connect this jack to your effects processor's output.

6.4 MIDI

SWITCHBLADE TSC is MIDI-enabled, meaning that it communicates with other MIDI devices.

6.4.1 MIDI IN

Connect the included Hughes & Kettner® FSM 432 or any other MIDI sender to this port so that you can select and switch Presets remotely. Though this is a seven-pin port, you can connect a standard five-pin MIDI cable. The two additional terminals serve to supply phantom power to the FSM 432.

Note: The FSM 432 comes with a 7-pin MIDI cable. You do not need a power source for the FSM 432 because phantom power is provided. If you wish to use a 5-pin MIDI cable, you will however need a wall-wart. This innovative mains port lets you connect any AC or DC adapter rated for 9 to 15 volts.

6.4.2 MIDI THRU

This port forwards signals patched into the MIDI IN port to other devices. You can connect any external MIDI-enabled signal processor or any MIDI receiver that you wish to switch synchronously with SWITCHBLADE TSC.

6.5 SPEAKERS

SWITCHBLADE TSC offers separate outputs for all standard impedances: You have 1 x 4-Ω, 1 x 8/2 x 16-Ω, and 1 x 16-Ω outputs at your disposal. Always ensure the impedance (that is, the Ω value) is correct. Mismatches can corrupt the sound (high-impedance speaker connected to a low-impedance output) and harm the amp (low-impedance speaker connected to a high-impedance output).

Note: You may of course connect several cabinets to one port, even if they have different impedances. Usually speaker cabinets are connected in Parallel. Two cabinets of the same impedance connected in Parallel have half the impedance of a single cabinet. For example, if you have two 8-Ω cabinets, you must connect these to the 4-Ω output. If you connect two cabinets with different impedances (R1, R2) in parallel, the resulting resistance (R) is calculated by multiplying the two individual resistances and dividing their product by the sum of the individual resistances. Use the following formula to do this:

$$R = (R1 \times R2) / (R1 + R2)$$

Take as an example a one 8-Ω and one 16-Ω cabinet:

$$R = (8 \times 16) / (8 + 16)$$

$$R = 128 / 24$$

$$R = 5.33$$

The cabinets' impedance may never be lower than the amp's output impedance, so this combination must be connected to the 4-Ω output. However, we strongly advise against configuring setups with mismatched cabinets, and highly recommend using combinations of cabinets with the same impedance!

7 MIDI Control and Programming

7.1 FSM 432

The included Hughes & Kettner® FSM 432 MIDI board is a remote control serving to select the 128 memory slots conveniently arranged in 32 Banks of four presets each. You can easily configure setups any way you wish, say by assigning the four presets of a bank to a song. Section 6.4.1 explains how to properly connect the FSM 432.

7.1.1 PRESET A B C D

Presets within a bank can be activated directly, that is, switching from A to B within the same bank occurs immediately. The LED above the A,B,C,D buttons indicates the preset.

7.1.2 BANK UP/DOWN

If you want to call up a preset in another bank, you can select the bank via UP and DOWN while continuing to play using the current preset. The number of the bank is indicated in the display, and it flashes until you select a preset via A,B,C,D. Not until then will SWITCHBLADE TSC load the new preset.

DIRECT MODE is available if you wish to trigger a direct program change via bank Up/Down. In this mode, the FSM 432 will not wait for your input, instead switching immediately, for example, from preset B in bank 16 to preset B in bank 17 (UP) bank or 15 (DOWN). Direct Mode is activated as follows:

- Press and hold TAP, and then press PRESET A
- First release PRESET A, and then TAP: The decimal point in the display lights up

Follow the same sequence to deactivate DIRECT MODE. Volatile rather than permanent, DIRECT MODE is automatically deactivated when you power SWITCHBLADE TSC down!

7.1.3 TAP

The TAP function gives you a very fast and convenient option for changing the Delay's TIME parameter. TAP comes in particularly handy on stage: Simply tap your foot on the TAP button in time with the groove to match delay time to the tempo. The effect adopts the new time after the second tap. The TAP LED flashes for about five seconds in time with the beat to give you a visual indication of the delay time.

Note: The TAP function works only when the DELAY is active. If the DELAY is off, the effect will not adopt your TAP tempo.

7.1.4 Switching External Devices via the FSM 432, Setting the MIDI Send Channel

If you wish to switch devices connected to SWITCHBLADE TSC MIDI THRU – say, a MIDI effect device – using the FSM 432, ensure the effect device is set to the FSM 432's MIDI Channel or to OMNI. Consult the device's manual for more info.

To set the FSM 432's MIDI Send Channel, proceed as follows:

- Turn SWITCHBLADE TSC on while pressing the FSM 432's PRESET A button. The display flashes.
- Release button A. Use UP/DOWN to view and set the MIDI Channel to a number between 1 and 16.
- Quit and store by pressing the PRESET A button.

Caution: If SWITCHBLADE TSC and FSM 432 are not set to the same MIDI channel, the amp will not respond to program changes! Activating OMNI solves the problem in the event of an “emergency.” See chapter 7.2 to learn more.

Note: If an external effect device is connected to MIDI THRU and you want

to switch SWITCHBLADE TSC and the effect device simultaneously with the same program change command, you must configure SWITCHBLADE TSC's Store function and program this device accordingly.

Note: The table below should be big help if you wish to switch the Presets of a device connected to the MIDI THRU directly via the FSM 432. It shows the program changes sent by the bank/preset combination. Please bear in mind that some MIDI devices switch program 1 via program change command 0. If this is the case with your outboard gear, simply add a 1 to each value indicated in this table to activate the desired program.

Bank	Preset	Program change Number	Bank	Preset	Program change Number	Bank	Preset	Program change Number	Bank	Preset	Program change Number
1	A	0	9	A	32	17	A	64	25	A	96
1	B	1	9	B	33	17	B	65	25	B	97
1	C	2	9	C	34	17	C	66	25	C	98
1	D	3	9	D	35	17	D	67	25	D	99
2	A	4	10	A	36	18	A	68	26	A	100
2	B	5	10	B	37	18	B	69	26	B	101
2	C	6	10	C	38	18	C	70	26	C	102
2	D	7	10	D	39	18	D	71	26	D	103
3	A	8	11	A	40	19	A	72	27	A	104
3	B	9	11	B	41	19	B	73	27	B	105
3	C	10	11	C	42	19	C	74	27	C	106
3	D	11	11	D	43	19	D	75	27	D	107
4	A	12	12	A	44	20	A	76	28	A	108
4	B	13	12	B	45	20	B	77	28	B	109
4	C	14	12	C	46	20	C	78	28	C	110
4	D	15	12	D	47	20	D	79	28	D	111
5	A	16	13	A	48	21	A	80	29	A	112
5	B	17	13	B	49	21	B	81	29	B	113
5	C	18	13	C	50	21	C	82	29	C	114
5	D	19	13	D	51	21	D	83	29	D	115
6	A	20	14	A	52	22	A	84	30	A	116
6	B	21	14	B	53	22	B	85	30	B	117
6	C	22	14	C	54	22	C	86	30	C	118
6	D	23	14	D	55	22	D	87	30	D	119
7	A	24	15	A	56	23	A	88	31	A	120
7	B	25	15	B	57	23	B	89	31	B	121
7	C	26	15	C	58	23	C	90	31	C	122
7	D	27	15	D	59	23	D	91	31	D	123
8	A	28	16	A	60	24	A	92	32	A	124
8	B	29	16	B	61	24	B	93	32	B	125
8	C	30	16	C	62	24	C	94	32	C	126
8	D	31	16	D	63	24	D	95	32	D	127

7.2 Setting SWITCHBLADE TSC's MIDI Channel and Switching OMNI ON/OFF

Press the SERIAL button longer than two seconds when SWITCHBLADE TSC is in normal operating mode, and the ORIGINAL VALUE LED will start flashing. This assigns special programming functions to the amp's LEDs and buttons:

FX ON: Now serves as a +1/UP button for setting the MIDI Channel.

Serial: Now serves as a -1/DOWN button for setting the MIDI Channel.

Store: OMNI ON/OFF switches. If the STORE button (OMNI On) lights up, SWITCHBLADE TSC responds to all incoming program changes, irrespective of the MIDI Channel over which they are sent. If the light on the button is extinguished (OMNI OFF), it responds only to messages sent via the defined MIDI Channel.

FACTORY SETTING: MIDI CHANNEL = 1, OMNI = ON

Note: OMNI ON is helpful if you are unsure via which channel a connected MIDI device sends its messages.

During the MIDI setup routine, the LEDs that normally indicate the preamp Channel indicate the MIDI Channel. The following table MIDI Channel lists the MIDI Channel settings in what is called binary code:

MIDI-Channel	Boost	Clean	Lead	Ultra
1	●	●	●	●
2	●	●	●	☀
3	●	●	☀	●
4	●	●	☀	☀
5	●	☀	●	●
6	●	☀	●	☀
7	●	☀	☀	●
8	●	☀	☀	☀
9	☀	●	●	●
10	☀	●	●	☀
11	☀	●	☀	●
12	☀	●	☀	☀
13	☀	☀	●	●
14	☀	☀	●	☀
15	☀	☀	☀	●
16	☀	☀	☀	☀

Press and hold SERIAL for a few moments to quit the MIDI setup routine and store the settings. The amp returns to its most recent operating status (normal mode).

7.3 Factory Settings and Factory Reset

A factory reset is a seldom needed feature. Nevertheless, be sure to read the explanation carefully to ensure you don't accidentally delete your presets.

7.3.1 Triggering a Factory Reset

If you press STORE and FX SERIAL simultaneously while powering the amp, all settings are reset, including the 128 MIDI-switchable presets and the basic MIDI configuration.

7.3.2 Factory Presets and Basic MIDI Configuration

The SWITCHBLADE TSC is delivered ex-factory with 64 different presets (memory slots 1-64). In the memory slots 65-125 you will find copies of the first 64 presets. You may find a list of all the presets on the accompanying sheet. The basic MIDI configuration is:

- OMNI ON
- MIDI Channel: 1
- FX ON is switched off
- SERIAL is deactivated

Caution: This procedure is a last-resort option! It irrevocably wipes out all stored settings.

7.4 Storing Settings/Programming

You have two options for storing a preset to one of the 128 memory slots: Select a new memory slot via MIDI (7.4.1) or overwrite the preset directly at the device (7.4.2).

7.4.1 Selecting a New Memory Slot via MIDI Learn

- Press the STORE button briefly; it lights up to signify that it is armed (MIDI Learn).
- Select a MIDI bank from 1 to 32 on the FSM 432; it flashes to signify that the FSM 432 is waiting for input via one of the four preset buttons A to D.
- Engage preset button A,B,C or D; the board stops flashing, the light on the STORE button extinguishes, and the preset is stored.

Caution: When the FSM 432 is in DIRECT MODE (see chapter 7.1.2), a BANK UP/DOWN command also triggers the storage process! We recommend deactivating Direct Mode when programming to prevent inadvertent overwriting of presets.

Note: Here's how to proceed for other manufacturers' MIDI boards and MIDI-enables devices: Arm SWITCHBLADE TSC by engaging the STORE button and selecting the desired memory slot. As soon as SWITCHBLADE TSC receives a valid program change command, the STORE button extinguishes and the preset is stored.

If an error occurs (the amp remains armed), you can cancel the storage process by pressing STORE again.

7.4.2 Overwriting Presets Directly at the Device

There is an easier way to overwrite the most recently selected preset than going from the amp to the MIDI board and back after every edit: Press and hold the STORE button until its light extinguishes (after about two seconds). The ORIGINAL VALUE and the Channel LEDs also flash to confirm. Then you can release the STORE button and your settings are stored.

8 Replacing Tubes, Service and Preventive Maintenance

SWITCHBLADE TSC is factory-loaded with EL34 and 12AX7 tubes. Once they've been burned in—that is, operated continuously under a load—they are subjected to a rigorous selection process. Their electrical specs and mechanical status (microphonics) are checked, and then they are installed in an amp and their sonic performance is auditioned. One of the most important steps in this process is tube matching, whereby tubes with the same characteristics are teamed up in matched sets of power tubes.

When to Replace Tubes

The tubes in SWITCHBLADE TSC are exemplary in terms of quality, workmanship and long service life. What's more, the TSC module ensures that even well-worn power output tubes always run at the proper load, thus prolonging service life and yielding the best possible sound. Nonetheless, tubes show definite signs of wear when their service life is nearing its end. Telltale signs are increased microphonics, noise and hiss, muddier tone through loss of high-end frequencies, degraded performance, etc. Take these indications seriously and replace old tubes. Not only do these side effects take their toll on sound quality, they also indicate the aging tube will soon fail!

Note: We tweaked the amp and factory presets specifically for EL 34 tubes, but thanks to TSC you can use one or several 6L6GC tubes. Read sections 5.3.2 and 5.3.3 to learn more. Trying out tubes other than these two types may sound like fun, but we strongly recommend you refrain from experimenting. Installing the wrong tubes will damage the amp and cost you a lot more than you bargained for in repair costs.

Before you start swapping tubes, ask yourself these questions:

- Was the fault or failure of the tube caused by the tube itself or by a flawed peripheral device or component, perhaps a defective speaker cable? If you don't get to the bottom of the problem and remedy it, it may crop up again even after you replace the tubes.

Note: In most cases, TSC will identify an over-voltage at the tube and switch it off before the fuse blows. You can then continue using the amp (unless it's a Switchblade TSC 50 Combo). Read section 5.2.4 to learn more. In a few cases, for example sudden short-circuits in the tube, there's no way of preventing the fuse from tripping.

- Did the Mains voltage fluctuate or spike while the amp was on? In all-tube amps, over-voltage surges in the Mains net can certainly cause drop-outs. Over-voltages are often caused by generators and faulty high-current power circuits.
- Perhaps a fuse blew even though none of the tubes is actually defective? An old fuse, tube de-ionization or Mains voltage power surges may have triggered the fuse.

Things to Bear in Mind When Replacing Tubes

Replacing tubes is a job best left to qualified professionals! Accordingly, the following guidelines are addressed and apply to qualified service technicians only: Pull the power plug on the back of SWITCHBLADE TSC and wait at least two minutes for power to dissipate! Then remove the rear panel. With TSC, there's no need to adjust bias, so there's no reason to remove the chassis. Now you can carefully pull out the tubes while gently pressing down on the clamps that hold them in place.

Caution: Tubes can remain very hot for quite some time and cause burns for several minutes after shutting the amp down!

If you replace all tubes, make sure they all have the same ratings. The choice of rating is up to you. If you are replacing a single tube, please read section 5.3.2. TSC adjusts the idle current in both cases, so there's no need for manual adjustment.

Carry out hum balance basic setting: Switch the amp to CLEAN, turn VOLUME, TREBLE and MID to the left-side stop, and turn BASS to the right-side stop. With the help of the trimmer HUM BALANCE, look for a setting in which the lowest humming emerges.

How to Prolong the Life of Switchblade TSC

- Never operate SWITCHBLADE TSC without connecting a load (loudspeaker)!
- Never connect speaker cabinets with an impedance that is too high or low!
- Always use high-quality, heavy-duty speaker cords that won't crimp!
- Use the STANDBY switch for short breaks!
- Avoid exposing the amp to vibrations, especially when it's powered up.
- Switch the amp off well before transporting it to allow tubes to cool off completely.
- Make sure all peripheral devices and connecting cords are in a state of good repair!
- Ensure air can circulate freely around the amp's ventilation slots at all times!
- Never expose SWITCHBLADE TSC to extreme heat or cold!
- Prevent the intrusion of dust and moisture!
- Always check peripheral gear's specs to ensure these accessories are suitable for the amp.
- Never connect devices with high output signal Levels to SWITCHBLADE TSC's Input.
- Never operate the amp with Mains power that is too high or too low. When in doubt ask the venue's sound technician or facility engineer.
- Refrain from DIY repairs! Also have a qualified technician replace internal fuses.

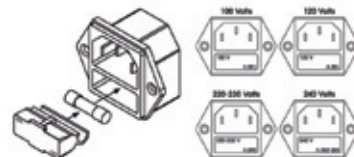
9 Troubleshooting

Mains connection: SWITCHBLADE TSC won't power up when you switch it on.

- It's not getting AC power. Check the Mains cord to see if it is connected and firmly seated.
- The Mains fuse is defective. Ensure it is replaced with another fuse bearing the same rating.
- The local Mains voltage does not match SWITCHBLADE TSC's operating voltage

Available Voltages and How to Adapt Them

SWITCHBLADE TSC ships in two versions rated for 110/120V and 220-240V. You will find the rating indicated on the housing above the Mains socket. Both models offer two operating voltages that are selected



<p>Input: 220 - 230 V - 240 V - 50 - 60 Hz Max. Power Consumption 440 Watts Setting: 220 - 230 V → Fuse: 250 V/T 1.8 A Setting: 240 V → Fuse: 250 V/T 1.8 A</p>	<p>Replacing fuses only to be carried out by qualified service personnel! Replace fuses only with type and rating shown below: Setting: 220 - 230 V → Fuse: 250 V/T 1.8 A Setting: 240 V → Fuse: 250 V/T 1.8 A</p>
<p>Switchblade TSC 100 Head & Combo</p> <p>Input: 100 / 120 V - 50 - 60 Hz Max. Power Consumption 440 Watts Setting: 100 V → Fuse: 250 V/T 1.8 A Setting: 120 V → Fuse: 250 V/T 1.8 A</p>	<p>Replacing fuses only to be carried out by qualified service personnel! Replace fuses only with type and rating shown below: Setting: 100 V → Fuse: 250 V/T 1.8 A Setting: 120 V → Fuse: 250 V/T 1.8 A</p>
<p>Input: 220 - 230 V - 240 V - 50 - 60 Hz Max. Power Consumption 280 Watts Setting: 220 - 230 V → Fuse: 250 V/T 1 A Setting: 240 V → Fuse: 250 V/T 1 A</p>	<p>Replacing fuses only to be carried out by qualified service personnel! Replace fuses only with type and rating shown below: Setting: 220 - 230 V → Fuse: 250 V/T 1 A Setting: 240 V → Fuse: 250 V/T 1 A</p>
<p>Switchblade TSC 50 Combo</p> <p>Input: 100 / 120 V - 50 - 60 Hz Max. Power Consumption 280 Watts Setting: 100 V → Fuse: 250 V/T 2 A Setting: 120 V → Fuse: 250 V/T 2 A</p>	<p>Replacing fuses only to be carried out by qualified service personnel! Replace fuses only with type and rating shown below: Setting: 100 V → Fuse: 250 V/T 2 A Setting: 120 V → Fuse: 250 V/T 2 A</p>

using the voltage selector integrated in the Mains socket. Ensure that the Mains voltage matches the voltage rating appearing in the voltage selector window. This value is legible when the amp is in the standard operating position, that is, placed right side up. The upright number indicates the currently selected voltage, and the inverted number indicates the alternative voltage. Check also the fuse ratings to ensure they match the ratings indicated on the rear panel.

Voltage selection and fuse replacement may be performed by experienced service technicians only. Accordingly, the following notes are addressed exclusively to service technicians:

- Use a small flat screwdriver to remove the voltage selector from the Mains socket.
- If the fuse is defective, replace it with a fuse bearing the specified rating.
- Turn the voltage selector and insert it back into the port so that the desired Mains voltage rating is legible and appears at the top left (next to the "Voltage Setting" arrow).

SWITCHBLADE TSC is connected properly, but no sound is audible.

- The guitar's VOLUME knob is turned all the way down.
- The amp is set to STANDBY.
- The amp's MASTER knob is turned all the way down.
- The effects loop is active and set to SERIAL, but no effect device is connected.
- The anode fuse has blown. Ensure that it is replaced with a fuse of the same rating.
- The fuse for the tube heating tripped (the tubes don't glow). Ensure that it is replaced with a fuse bearing the same rating.

The amp makes ringing noises when played and tends to Feedback.

- One or several tubes are microphonic. Replace the defective tube with another of the same type. Please also read section 5.3.2 for more about this.

The sound is washed out or muddy when you switch an effects processor on.

- The signal processor provides a wet signal that is blended with the dry or original signal. Depending on the type of effect, the processor may be returning a dry signal back along with wet signal, which causes phase cancellations when mixed to the dry signal in SWITCHBLADE TSC's Parallel loop. To prevent this, set the effects loop to SERIAL or turn the dry signal all the way down on the signal processor.

10

Technical Specifications

All level indications relate to 0 dBV (1V RMS).

10.1 Inputs		
INSTRUMENT Input	Input	6.3 mm (1/4") jack
	Type	unbalanced
	Input impedance	1 M Ω
	Sensitivity	- 50 dB (Clean Channel)
	Max. Input Level	0 dB
FX Return	Input	6.3 mm (1/4") jack
	Type	unbalanced
	Input impedance	48 k Ω
	Max. sensitivity	-10 dB button engaged: - 21 dB, disengaged: - 11 dB
	Max. Input Level	-10dB button engaged: + 0 dB, disengaged + 10 dB
MIDI IN	Port	DIN 45 329 (7-pin)
	Data reception	Program change data, Tap Delay function
	Channels	16, Omni mode
	Power supply	15V DC max. 200mA, pin 6 = positive, pin 7 = negative

10.2 Outputs		
FX Send	Output	6.3 mm (1/4") jack
	Type	unbalanced
	Output impedance	2.2 k Ω
	Output Level	+ 3 dB
	Max. output Level	-10dB button engaged: - 2 dB, disengaged: + 8 dB
MIDI THRU	Port	DIN 45 328 (5-pin)
	Data handling	All data sent to MIDI IN are patched, out unchanged.
Speaker Outputs	6.3 mm (1/4") jacks	1 x 4 Ω , 2 x 16 Ω / 1 x 8 Ω , 1 x 16 Ω
Speaker	100 TSC Combo	2 x 12" Eminence Rockdriver 60
	50 TSC Combo	1 x 12" Eminence Rockdriver 60

10.3 General Electrical Data	Switchblade 100 TSC Head	Switchblade 100 TSC Combo	Switchblade 50 TSC Combo
Max. current consumption	440 Watts	440 Watts	290 Watts
Max. power consumption	1,75A @ 240 Volts	1,75A @ 240 Volts	0,97A @ 240 Volts
	1,89A @ 220-230 Volts	1,89A @ 220-230 Volts	1,07A @ 220-230 Volts
	3,50A @ 117-120 Volts	3,50A @ 117-120 Volts	2,00A @ 117-120 Volts
	3,95A @ 100 Volts	3,95A @ 100 Volts	2,15A @ 100 Volts
Mains voltage tolerance range: +/- 10 %	+/- 10 %	+/- 10 %	+/- 10 %
External fuses (anode)	1 x T 630 mA	1 x T 630 mA	1 x T 400 mA
Internal fuses	1 x TT 10 A super slow blow	1 x TT 10 A super slow blow	1 x TT 10 A super slow blow
	1 x T 1 A	1 x T 1 A	1 x T 80 m A
Mains fuse (5 x 20 mm)			
Europa (variable 220-230 V/240 V)	1 x 250 V / T 1,6 A	1 x 250 V / T 1,6 A	1 x 250 V / T 1 A
USA/Canada/Asien (variable 100 V/120 V)	1 x 250 V / T 4 A	1 x 250 V / T 4 A	1 x 250 V / T 2 A
Ambient operating temperature range	0 °C bis + 35 °C	0 °C bis + 35 °C	0 °C bis + 35 °C

10.4 General Mechanical Data	Switchblade 100 TSC Head	Switchblade 100 TSC Combo	Switchblade 50 TSC Combo
Dimensions (including corners, handles, feet)			
Width	750 mm	647 mm	600 mm
Height	280 mm	500 mm	500 mm
Depth	258 mm	285 mm	285 mm
Weight	17.6 kg	30.3 kg	22.8 kg

IMPORTANT ADVICE ON SAFETY! PLEASE READ BEFORE USE AND KEEP FOR LATER USE!

• The unit has been built by Hughes & Kettner in accordance with IEC 60065 and left the factory in safe working order. To maintain this condition and ensure non-risk operation, the user must follow the advice and warning comments found in the operating instructions. The unit conforms to Protection Class 1 (protectively earthed).

HUGHES & KETTNER ONLY GUARANTEES THE SAFETY, RELIABILITY AND EFFICIENCY OF THE UNIT IF:

- Assembly, extension, re-adjustment, modifications or repairs are carried out by Hughes & Kettner or by persons authorized to do so.
- The electrical installation of the relevant area complies with the requirements of IEC (ANSI) specifications.
- The unit is used in accordance with the operating instructions.
- The unit is regularly checked and tested for electrical safety by a competent technician.

WARNING:

- If covers are opened or sections of casing are removed, except where this can be done manually, live parts can become exposed.
- If it is necessary to open the unit this must be isolated from all power sources. Please take this into account before carrying out adjustments, maintenance, repairs and before replacing parts.
- The appliance can only be insulated from all power sources if the mains connection is unplugged.
- Adjustment, maintenance and repairs carried out when the unit has been opened and is still live may only be performed by specialist personnel who are authorized by the manufacturer (in accordance with VBG 4) and who are aware of the associated hazards.
- Loudspeaker outputs which have the IEC 417/5036 symbol (Diagram 1, below) can carry voltages which are hazardous if they are made contact with. Before the unit is switched on, the loudspeaker should therefore only be connected using the lead recommended by the manufacturer.
- Where possible, all plugs on connection cables must be screwed or locked onto the casing.
- Replace fuses only with IEC 127 type and specified rating.
- It is not permitted to use repaired fuses or to short-circuit the fuse holder.
- Never interrupt the protective conductor connection.
- Surfaces which are equipped with the „HOT“ mark (Diagram 2, below), rear panels or covers with cooling slits, cooling bodies and their covers, as well as tubes and their covers are purposely designed to dissipate high temperatures and should therefore not be touched.
- High loudspeaker levels can cause permanent hearing damage. You should therefore avoid the direct vicinity of loudspeakers operating at high levels. Wear hearing protection if continuously exposed to high levels.

MAINS CONNECTION:

- The unit is designed for continuous operation.
- The set operating voltage must match the local mains supply voltage.
- Caution: The unit mains switch must be in position OFF before the mains cable is connected.
- The unit is connected to the mains via the supplied power unit or power cable.
- Power unit: Never use a damaged connection lead. Any damage must be rectified by a competent technician.
- Avoid connection to the mains supply in distributor boxes together with several other power consumers.
- The plug socket for the power supply must be positioned near the unit and must be easily accessible.

PLACE OF INSTALLATION:

- The unit should stand only on a clean, horizontal working surface.
- The unit must not be exposed to vibrations during operation.
- Place the product always in a way that the mains switch is easily accessible.
- Keep away from moisture and dust where possible.
- Do not place the unit near water, baths, wash basins, kitchen sinks, wet areas, swimming pools or damp rooms. Do not place objects containing liquid on the unit - vases, glasses, bottles etc.
- Ensure that the unit is well ventilated.
- Any ventilation openings must never be blocked or covered. The unit must be positioned at least 20 cm away from walls. The unit may only be fitted in a rack if adequate ventilation is ensured and if the manufacturer's installation instructions are followed.
- Keep away from direct sunlight and the immediate vicinity of heating elements and radiant heaters or similar devices.
- If the unit is suddenly moved from a cold to a warm location, condensation can form inside it. This must be taken into account particularly in the case of tube units. Before switching on, wait until the unit has reached room temperature.
- Accessories: Do not place the unit on an unsteady trolley, stand, tripod, base or table. If the unit falls down, it can cause personal injury and itself become damaged. Use the unit only with the trolley, rack stand, tripod or base recommended by the manufacturer or purchased together with the unit. When setting the unit up, all the manufacturer's instructions must be followed and the setup accessories recommended by the manufacturer must be used. Any combination of unit and stand must be moved carefully. A sudden stop, excessive use of force and uneven floors can cause the combination of unit and stand to tip over.
- Additional equipment: Never use additional equipment which has not been recommended by the manufacturer as this can cause accidents.
- To protect the unit during bad weather or when left unattended for prolonged periods, the mains plug should be disconnected. This prevents the unit being damaged by lightning and power surges in the AC mains supply.

Diagram 1 Diagram 2



¡INDICACIONES DE SEGURIDAD IMPORTANTES! ¡LÉANSE ANTES DE UTILIZAR EL APARATO Y GUARDENSE PARA SU USO POSTERIOR!

• El aparato ha sido producido por Hughes & Kettner según el IEC 60065 y salió de la fábrica en un estado técnicamente perfecto. Para conservar este estado y asegurar un funcionamiento sin peligros el usuario debe tener en cuenta las indicaciones y advertencias contenidas en las instrucciones de manejo. El aparato corresponde a la clase de protección 1 (toma de tierra protegida).

LA SEGURIDAD, LA FIABILIDAD Y EL RENDIMIENTO DEL APARATO SOLO ESTAN GARANTIZADOS POR HUGHES & KETTNER CUANDO:

- el montaje, la ampliación, el reajuste, los cambios o las reparaciones se realicen por Hughes & Kettner o por personas autorizadas para ello;
- la instalación eléctrica del recinto en cuestión corresponda a los requisitos de la determinación del IEC (ANSI);
- el aparato se use de acuerdo con las indicaciones de uso.

ADVERTENCIA:

- Si se destapan protecciones o se retiran piezas de la carcasa, exceptuando si se puede hacer manualmente, se pueden dejar piezas al descubierto que sean conductoras de tensión.
- Si es necesario abrir el aparato, éste tiene que estar aislado de todas las fuentes de alimentación. Esto se debe tener en cuenta antes del ajuste, de un entretenimiento, de una reparación y de una sustitución de las piezas.
- Un ajuste, un entretenimiento o una reparación en el aparato abierto y bajo tensión sólo puede ser llevado a cabo por un especialista autorizado por el productor (según VBG 4) que conozca a fondo los peligros que ello conlleva.
- Las salidas de altavoces que estén provistas de la característica IEC 417/5036 (figura 1, véase abajo) pueden conducir tensiones peligrosas al contacto. Por ello es indispensable que antes de poner en marcha el aparato; la conexión se haya realizado únicamente con el cable de empalmes recomendado por el productor.
- Las clavijas de contacto al final de los cables conectores tienen que estar atorilladas o enclavadas a la carcasa, en tanto que sea posible.
- Sólo se pueden utilizar del tipo IEC 127 con la intensidad de corriente nominal indicada.
- El empalme del conductor de protección no se puede interrumpir en ningún caso.
- Las superficies provistas de la característica „HOT“ (figura 2, véase abajo), los paneles de fondo trasero o las protecciones con ranuras de ventilación, los cuerpos de ventilación y sus protecciones, así como las válvulas electrónicas y sus protecciones pueden alcanzar temperaturas muy altas durante el funcionamiento y por ello no se deberían tocar.
- Niveles elevados de la intensidad de sonido pueden causar continuos daños auditivos; por ello debe evitar acercarse demasiado a altavoces que funcionen a altos niveles. En tales casos utilice protecciones auditivas.

ACOMETIDA A LA RED:

- El aparato está proyectado para un funcionamiento continuo.
- La tensión de funcionamiento ajustada tiene que coincidir con la tensión de la red del lugar.
- Advertencia: el interruptor de la red del aparato tiene que estar en la posición OFF cuando se conecte el cable de red.
- La conexión a la red eléctrica se efectuará con la fuente de alimentación o con el cable de red que se entreguen con el aparato.
- Fuente de alimentación: una línea de conexión dañada no se puede sustituir. La fuente de alimentación no puede volver a ponerse en funcionamiento.
- Evite una conexión de la red eléctrica a distribuidores con muchas tomas de corriente.
- El enchufe para el suministro de corriente tiene que estar cerca del aparato y ser de fácil acceso.

SITUACION:

- El aparato debería estar situado en una superficie limpia y totalmente horizontal.
- El aparato no puede estar expuesto a ningún tipo de sacudidas durante su funcionamiento.
- Coloque el dispositivo de forma que el interruptor de la red quede accesible fácilmente.
- Se deben evitar la humedad y el polvo.
- El aparato no puede ponerse en funcionamiento cerca del agua, la bañera, el lavamanos, la pila de la cocina, un recinto con tuberías de agua, la piscina o en habitaciones húmedas. Tampoco se pueden poner objetos llenos de líquido - jarrones, vasos, botellas, etc. - encima de él.
- Procure que el aparato tenga suficiente ventilación.
- Las aberturas de ventilación existentes no se deben bloquear ni tapar nunca. El aparato debe estar situado como mínimo a 20 cm de la pared. El aparato sólo se puede montar en un rack, si se ha procurado la suficiente ventilación y se han cumplido las indicaciones de montaje del productor.
- Evite los rayos del sol directos así como la proximidad a radiadores, electro-radiadores o aparatos similares.
- Si el aparato pasa repentinamente de un lugar frío a otro caliente, se puede condensar humedad en su interior. Esto se debe tener en cuenta sobretudo en los aparatos con válvulas electrónicas. Antes de poner en marcha el aparato se debe esperar hasta que éste haya adquirido la temperatura ambiental.
- Accesorios: el aparato no se puede colocar encima de carros, estantes, trípodes, soportes o mesas inestables. Si el aparato se cae puede causar daños personales y se puede estropear. Coloque el aparato sólo en un carro, rack, estante, trípode o soporte recomendado por el productor o que se le haya vendido junto con el aparato. En la instalación se deben seguir las indicaciones del productor así como utilizar los accesorios recomendados por el mismo para colocarlo encima. El conjunto del aparato con el pedestal se debe mover con mucho cuidado. Un paro brusco, la aplicación de una fuerza desmesurada o un suelo irregular puede ocasionar la caída de todo el conjunto.
- Piezas adicionales: no utilice nunca piezas adicionales que no estén recomendadas por el productor, ya que se podrían provocar accidentes.
- Para proteger el aparato de una tormenta o si no se supervisa ni utiliza durante algún tiempo, se debería desconectar la clavija de la red. Así se evitan daños en el aparato a causa de un rayo y golpes de tensión en la red de corriente alterna.

Figura 1 Figura 2



This is to certify that

Hughes & Kettner

Switchblade TSC

complies with the provisions of the Directive of the Council of the European Communities on the approximation of the laws of the Member States relating to electromagnetic compatibility according to EMC directive 2004/108/EC and low voltage directive 2006/95/EC.

This declaration of conformity of the European Communities is the result of an examination carried out by the Quality Assurance Department of STAMER GmbH in accordance with European Standards EN61000-6-1, EN61000-6-2, and EN 60065 for low voltage.

Stamer Musikanlagen GmbH
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66606 St.Wendel



Lothar Stamer Dipl.Ing.
Managing Director
St.Wendel, August/2008

Für das folgend bezeichnete Erzeugnis

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wird hiermit bestätigt, dass es den wesentlichen Schutzanforderungen entspricht, die in der Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit 2004/108/EG und der Niederspannungsrichtlinie 2006/95/EG festgelegt sind.

Diese Erklärung gilt für alle Exemplare und bestätigt die Ergebnisse der Messungen, die durch die Qualitätssicherung der Fa. STAMER Musikanlagen GmbH durchgeführt wurden. Zur Beurteilung des Erzeugnisses hinsichtlich elektromagnetischer Verträglichkeit wurden folgende Normen herangezogen: EN61000-6-1, EN61000-6-2. Zur Beurteilung der Einhaltung der Niederspannungsrichtlinie wurde folgende Norm herangezogen: EN 60065

Diese Erklärung wird verantwortlich für den Hersteller
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abgegeben durch
Lothar Stamer Dipl.Ing.
Geschäftsführer
St.Wendel, August 2008



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