



WARNING
TO PREVENT ELECTRICAL SHOCK OR FIRE HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. BEFORE USING THIS APPLIANCE, READ BACK COVER FOR FURTHER WARNINGS.

TKO™ 65

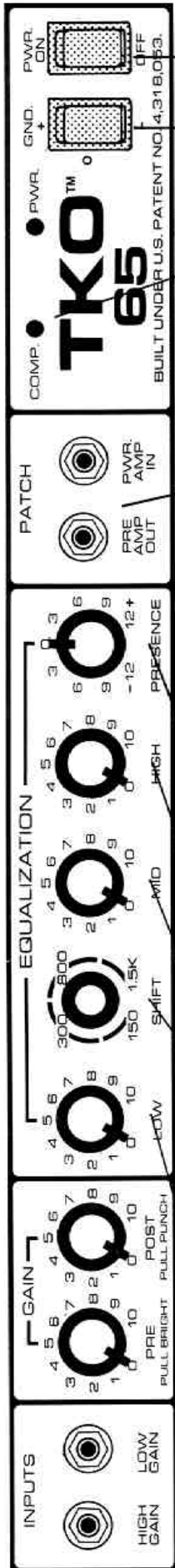
OPERATING GUIDE

INTRODUCTION AND GENERAL DESCRIPTION

Congratulations on your purchase of the TKO™ 65 bass amplification system. After reading this owner's manual you should have an understanding of the operating principles of the TKO™ 65. A thorough understanding of these instructions will also help you to achieve many varied tonal settings.

The TKO™ 65 is an advanced, medium powered single unit bass amp designed primarily for studio and club applications and is equally effective as a medium powered keyboard amplification system. The TKO™ 65 utilizes flexible input circuitry and gain (volume) controls as well as a unique system of active/passive equalization. Both the bassist and keyboardist will benefit from the unique and highly versatile circuitry employed in the TKO™ 65.

As with any sophisticated piece of equipment, there are some operating principles concerning the inputs, gain controls, equalization and patching facilities which **must** be understood to obtain the best tonal results. Please read this owner's manual and keep it handy for reference.



THE FRONT PANEL

ON/OFF SWITCH: The on/off switch is a rocker-type switch and should present no problems in operation. In the on position, a red LED will illuminate showing that power is being supplied to the unit. **NOTE:** WHEN THE UNIT IS TURNED ON, THE COMPRESSION LED INDICATOR (DDT) WILL MOMENTARILY ILLUMINATE.

GROUND SWITCH: The ground switch is a 3-position rocker-type switch which, in most applications, should be operated in its center or "zero" position. You may encounter some situations where an audible hum and/or noise will come from the loudspeaker. If this situation arises, position the ground switch to either positive or negative until the noise is minimized. **NOTE:** SHOULD THE NOISE PROBLEM CONTINUE, CONSULT YOUR AUTHORIZED PEAVEY DEALER, PEAVEY FACTORY OR QUALIFIED SERVICE TECHNICIAN. DO NOT, UNDER ANY CIRCUMSTANCES, REMOVE THE GROUND PIN ON THE MAIN (POWER) CABLE.

DDT™ COMPRESSION LED: The TKO™ 65 utilizes our patented DDT™ (Distortion Detection Technique) compression circuit to effectively minimize the possibility of distortion (square waves) from entering the loudspeaker. (U.S. Patent #4,318,053).

As mentioned in the on/off switch section, the DDT™ LED will sometimes illuminate when the unit is first turned on and this should be considered normal. The DDT™ LED will also occasionally illuminate to indicate that the DDT™ circuit is automatically engaging to prevent distortion. **NOTE:** IF THE DDT™ LED REMAINS CONTINUOUSLY LIT WHILE YOU ARE PLAYING, THIS IS AN INDICATION THAT THE GAIN (VOLUME) CONTROLS AND/OR EQUALIZATION CONTROLS ARE SET AT POSITIONS THAT IS MAKING THE POWER AMP OVERWORK. ALTHOUGH THE DDT™, IN MOST CASES, WILL PREVENT SPEAKER DAMAGE AND/OR FAILURE WE WOULD RECOMMEND THAT THE GAIN AND EQUALIZATION CONTROLS BE READJUSTED UNTIL THE DDT LED WILL ILLUMINATE PERIODICALLY.

PATCH SECTION: The patch section consists of two jacks labeled preamp out and power amp in. Primarily the preamp output and power amp input jacks are used for patching effects devices and signal processing equipment "in-line" with the TKO™ 65. Most of devices such as flangers, chorus, tape/analog/digital delays or gain devices such as external compressors can be used within this effects loop. The preamp output level is approximately 1 volt RMS and is of relatively low impedance - 1000 ohms. To utilize the effects loop, use a high quality, shielded patch cord and plug one end into the preamp output and the other end into the external device input. To return the processed signal to the TKO™ 65, use a second high quality, shielded patch cord and plug one end into the external unit output and the other end of the patch cord into the power amp input.

Since this method of using an effect places the device **after** the preamp/ equalization and before the power amp you will have a greater degree of control over the sound quality of the device or signal processing unit. The preamp output can also be used to send the signal of the instrument/ preamp to mixing and recording consoles. For this method use a high quality, shielded patch cord and make the connection from the TKO™ 65's preamp output to the desired channel of the mixer or to an auxiliary device where the signal is not to be returned to the power amp input of the TKO™ 65. With this method of sending your instrument's signal to a mixer or auxiliary device, you **do not** have to utilize the power amp input as the signal will automatically feed the power amp section. (For further uses of the preamp output/power amp input see bi-amping the TKO™).

EQUALIZATION SECTION

The equalization controls (presence, high, mid, shift and low) are a unique combination of active and passive circuits to enable you to achieve a multitude of tonal colors. By design, with the exception of the presence control, the tonal capabilities of the low, mid and high controls **will** slightly interact with each other.

PRESENCE CONTROL: The presence control should be used to adjust the **extreme** high end (treble) of the bass guitar or keyboard signal. This is an active control and, as such, will cause no effect on the other controls when placed at its **12 o'clock** or **zero** position. For **less** high end response, rotate the presence control counterclockwise (zero to -12 dB) until achieving the desired high end roll off. To **boost** the high end response of the preamp, rotate the control clockwise (zero to 12 dB). The boost portions of this control are extremely effective for enhancing neck slapping/string popping techniques (see tone setting charts for further examples).

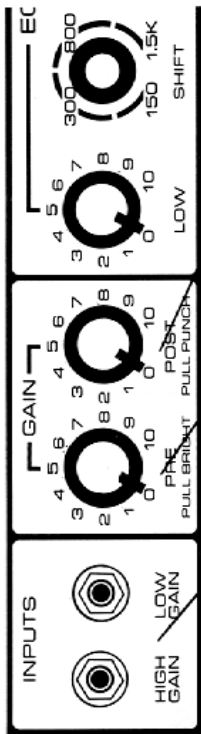
HIGH CONTROL: The high control is conventional and should present no problem in operation. Clockwise rotation will increase the systems treble response while counterclockwise rotation will reduce the high end. In conjunction with the presence control, the high control will further enhance many contemporary bass playing techniques (see the tone setting charts for further examples).

MID AND SHIFT CONTROLS: The mid and shift controls will enable you to have complete control over the **vital** mid-band frequencies. The mid control is a equalization circuit allowing superb tailoring of the mid-band and the shift control allows the bassist and keyboardist to determine at what frequency the mid control will operate. To get you acquainted with these two very flexible controls, do the following experiment:

1. Plug the instrument into the high or low gain jack.
2. Adjust the pre gain control to #2 or #3, making sure that the pull bright switch is **off**.
3. Adjust the post gain control **above** its 12 o'clock or #5 position making sure that the pull **punch** switch is in its off position (not pulled out).
4. Place the mid control somewhere **between 2 and 5**.
5. Play your open first (G) string (or strike a note in the middle of the keyboard range) and allow it to sustain.
6. As the note sustains, manually sweep the **shift** control from its 150 position to its 1.5K position.

As the shift control is swept notice the dramatic changes occurring in the tonality of the mid-band. Through experimentation, you will be able to determine what settings are appropriate for your musical styles. A good rule of thumb for the operation of the mid and shift controls is: For a well defined, tight sound (country/jazz) more mid **cut** and lower operation of the shift control is desirable whereas, for rock, more mid **boost** and higher operation of the shift control is needed.

LOW CONTROL: The low control is a conventional EQ circuit designed to provide smooth, gradual increases in bass response over its entire range. Although the low control should present no problem in operation, it should be noted that "overboosting" of the low control may cause the TKO™ 65's DDT™ compression LED to activate prematurely — even at low volume levels. Usually, this occurrence can be corrected by cutting (reducing) the low control until the DDT™ LED activates periodically.



GAIN SECTION

POST GAIN CONTROL: In normal use, the **post** gain control should be operated above the 12 o'clock or #5 position. To obtain maximum power reserve, rotate the control fully clockwise to #10. **NOTE:** WITH THE POST GAIN CONTROL AT 10, THE PRE GAIN CONTROL SHOULD NORMALLY BE OPERATED AT OR BELOW ITS 12 O'CLOCK OR #5 POSITION TO AVOID UNWANTED DISTORTION. WHILE UTILIZING THIS MAXIMUM POWER SETTING **AND** EXTREME HIGH END BOOST IN THE EQUALIZATION SECTION, YOU MAY FIND IT NECESSARY TO BACK DOWN (CUT) THE POST GAIN CONTROL TO APPROXIMATELY ITS 8 POSITION TO AVOID UNWANTED HISS. The post gain control utilizes an integral pull switch call "**punch**". When activated, punch creates approximately a 6 dB boost of 120 Hz and adds dramatically and effectively to the low end response and projection characteristics of the TKO™ 65.

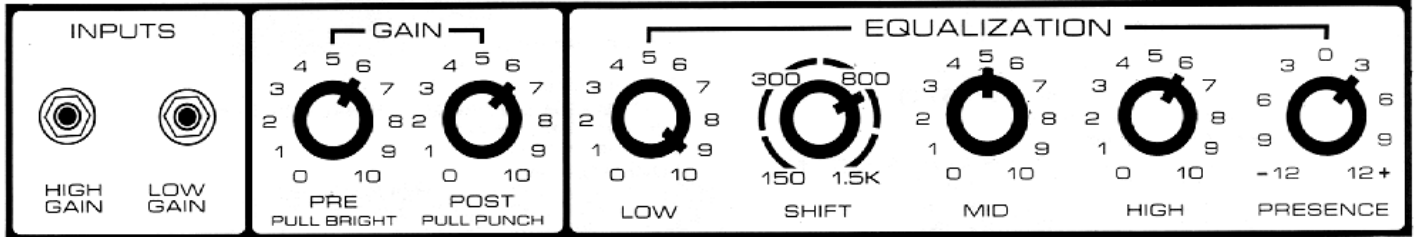
PRE GAIN CONTROL: The pre gain control is the first volume control of the system. As mentioned in the post gain control description, if the post gain control is set between its #8 and #10 positions for maximum power reserve, the pre gain control should be positioned somewhere in the middle of its range or lower. Placing the pre gain control higher than 5 may cause unwanted square waves (distortion) and result in premature clipping and/or undue activation of the DDT™ compression circuitry.

The pre gain control also employs a **pull bright** switch which adds approximately 8 dB of boost to the high end. Like the high and presence controls, the pull bright switch can be used to enhance many modern bass playing techniques.

INPUTS

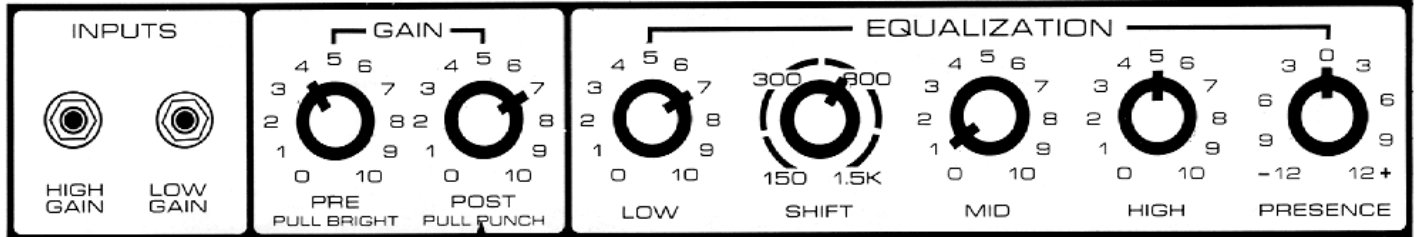
The TKO™ 65 has two inputs labeled high gain and low gain. The high gain input is the input which should normally be used and will deliver the highest signal level from the instrument to the preamp to the power amp. Sometimes, however, bass guitars that are equipped with very high output "hot" pickups will overload the high gain input. This will be apparent because you will hear some unwanted distortion at the loudspeaker. If this distorted sound does occur, plug the instrument into the low gain input, which has less gain (-6 dB) than the high gain input. When two instruments or signal sources are plugged into the inputs, the low gain input is automatically switched to the same level as the high gain input. **NOTE:** WHEN USING TWO INSTRUMENTS OR SIGNAL SOURCES WE STRONGLY RECOMMEND THE VOLUME CONTROL BE SET AT A REASONABLY LOW VOLUME LEVEL TO REDUCE THE POSSIBILITY OF UNDU E DISTORTION AND/OR SPEAKER DAMAGE.

ROCK



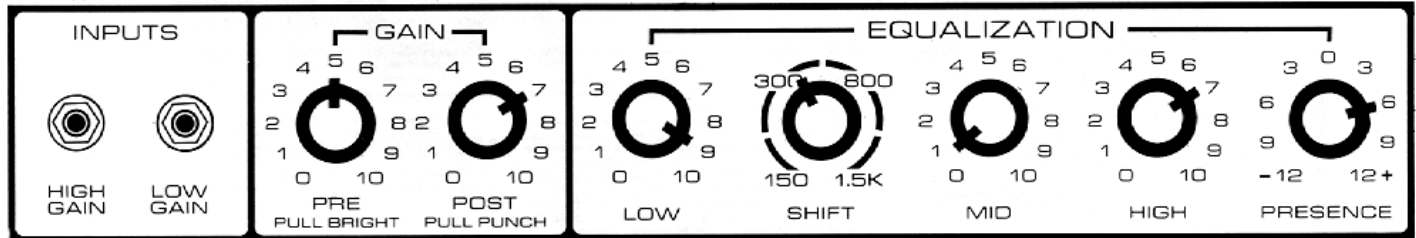
▲ACTIVATE▲

COUNTRY/BLUES



▲ACTIVATE▲

FUNK/THUMB SLAPPING TECHNIQUES



▲ACTIVATE▲

NOTE:

THE ABOVE TONE CHARTS ARE MEANT ONLY AS A GENERAL GUIDE AND ARE PROVIDED TO FAMILIARIZE THE PLAYER WITH THE FUNCTIONS AND CONTROLS OF THE TKO™ 65. ADJUSTMENTS TO THESE CONTROLS WILL BE NECESSARY DUE TO VARYING TYPES OF INSTRUMENTS, PICKUPS AND ACCESSORIES UTILIZED ALONG WITH YOUR STYLE OF MUSIC AND PLAYING TECHNIQUES. BE SURE TO READ ALL OF THIS OPERATING GUIDE TO UNDERSTAND FULLY ALL OF THE CONTROLS AND THEIR FUNCTIONS.

BI-AMPING THE TKO™ 65

Many bassists and keyboard players today utilize a technique called bi-amping to increase the efficiency (performance) of their amplification systems. This can be accomplished with the TKO™ 65, one external power amplifier, one additional speaker and enclosure, and a device known as a crossover. The crossover, such as Peavey's ECM™ (Electronic Crossover Mainframe) and PL™ Series plug in crossover modules, is the device used to divide the instrument's signal into two separate signals: low frequencies and high frequencies.

To bi-amp the TKO™ 65, use a high quality, shielded patch cord and make the connection from the preamp output to the crossover device input. If the TKO™ 65 is to be used for the high frequency section, use another high quality, shielded patch cord and make the connection from the crossover's high output to the TKO™ 65's power amp input. The low frequency output of the crossover should then be connected to an external power amp (Peavey Model M-3000™ or XC-400™ recommended) and the output of the power amp connected to the speaker system with a high quality, unshielded patch cord. **NOTE: IF YOU ARE NOT FAMILIAR WITH THIS TECHNIQUE, CONSULT YOUR AUTHORIZED PEAVEY DEALER OR THE PEAVEY FACTORY TO OBTAIN PROPER CROSSOVER POINTS AND OTHER PERTINENT INFORMATION FOR YOUR BI-AMP SYSTEM.**

TKO™ 65 SPECIFICATIONS:

POWER AMPLIFIER SECTION:

RATED POWER & LOAD:

65 W RMS into 8 ohms with DDT™ compression

POWER @ CLIPPING: (TYPICALLY)

(5% THDI, 1 KHz, 120 VAC Line)

40 W RMS into 16 ohms

70 W RMS into 8 ohms

50 W RMS into 4 ohms

2 ohms not recommended

FREQUENCY RESPONSE:

+0, -1 dB, 60 Hz to 20 KHz @ 50 W RMS into 8 ohms

TOTAL HARMONIC DISTORTION:

Less than 0.2%, 100 mW to 50 W RMS,
60 Hz to 10 KHz, 8 ohms, typically below 0.1%

DDT™ DYNAMIC RANGE:

Greater than 20 dB

DDT™ MAXIMUM THD:

Below 0.5% THD for 6 dB overload

Below 1% THD for 20 dB overload

HUM & NOISE:

Greater than 90 dB below rated power

POWER CONSUMPTION: (DOMESTIC)

200 watts, 50/60 Hz, 120 VAC

PREAMP SECTION:

THE FOLLOWING SPECS ARE MEASURED @ 1 KHz

WITH THE CONTROLS PRESET AS FOLLOWS:

PRE GAIN PULL BRIGHT OFF (IN)

POST GAIN PULL THICK OFF (IN)

POST GAIN @ 10

LOW EQ @ 10

SHIFT @ 300 Hz

MID EQ @ 0

HIGH EQ @ 10

PRESENCE @ 0 dB

NOMINAL LEVELS ARE WITH PRE GAIN @ 5
MINIMUM LEVELS ARE WITH PRE GAIN @ 10

PREAMP HIGH GAIN INPUT:

Impedance: High Z, 220K ohms

Nominal Input Level: -26 dBV, 50 mV RMS

Minimum Input Level: -46 dBV, 5 mV RMS

Maximum Input Level: +6 dBV, 2 V RMS

PREAMP LOW GAIN INPUT:

Impedance: High Z, 44K ohms

Nominal Input Level: -20 dBV, 100 mV RMS

Minimum Input Level: -40 dBV, 10 mV RMS

Maximum Input Level: +12 dBV, 4 V RMS

PREAMP OUTPUT:

Load Impedance: 1K ohms or greater

Nominal Output: 0 dBV, 1 V RMS

POWER AMP INPUT:

Impedance: High Z, 22K ohms

Designed Input Level: 0 dBV, 1 V RMS

SYSTEM HUM & NOISE @ NOMINAL INPUT LEVEL:

(20 Hz to 20 KHz unweighted)

78 dB below rated power

EQUALIZATION:

Special Low, Shift, Mid & High Passive EQ

Presence: +12 dB @ 3 KHz (Active EQ)

Pull Bright: +6 dB @ 2 KHz

Pull Punch: Special EQ

Due to our efforts for constant improvement, features and specifications are subject to change without notice.

DANGER

EXPOSURE TO EXTREMELY HIGH NOISE LEVELS MAY CAUSE A PERMANENT HEARING LOSS. INDIVIDUALS VARY CONSIDERABLY IN SUSCEPTIBILITY TO NOISE INDUCED HEARING LOSS, BUT NEARLY EVERYONE WILL LOSE SOME HEARING IF EXPOSED TO SUFFICIENTLY INTENSE NOISE FOR A SUFFICIENT TIME.

THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAS SPECIFIED THE FOLLOWING PERMISSIBLE NOISE LEVEL EXPOSURES:

DURATION PER DAY IN HOURS	SOUND LEVEL dBA, SLOW RESPONSE
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS OF THE ABOVE PERMISSIBLE LIMITS COULD RESULT IN SOME HEARING LOSS.

EAR PLUGS OR PROTECTORS IN THE EAR CANALS OR OVER THE EARS MUST BE WORN WHEN OPERATING THIS AMPLIFICATION SYSTEM IN ORDER TO PREVENT A PERMANENT HEARING LOSS IF EXPOSURE IS IN EXCESS OF THE LIMITS SET FORTH ABOVE. TO INSURE AGAINST POTENTIALLY DANGEROUS EXPOSURE TO HIGH SOUND PRESSURE LEVELS, IT IS RECOMMENDED THAT ALL PERSONS EXPOSED TO EQUIPMENT CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS SUCH AS THIS AMPLIFICATION SYSTEM BE PROTECTED BY HEARING PROTECTORS WHILE THIS UNIT IS IN OPERATION.

CAUTION

THIS AMPLIFIER HAS BEEN DESIGNED AND CONSTRUCTED TO PROVIDE ADEQUATE POWER RESERVE FOR PLAYING MODERN MUSIC WHICH MAY REQUIRE OCCASIONAL PEAK POWER. TO HANDLE OCCASIONAL PEAK POWER, ADEQUATE POWER "HEADROOM" HAS BEEN DESIGNED INTO THIS SYSTEM. EXTENDED OPERATION AT ABSOLUTE MAXIMUM POWER LEVELS IS NOT RECOMMENDED SINCE THIS COULD DAMAGE THE ASSOCIATED LOUSPEAKER SYSTEM. PLEASE BE AWARE THAT MAXIMUM POWER CAN BE OBTAINED WITH VERY LOW SETTINGS OF THE GAIN CONTROL IF THE INPUT SIGNAL IS VERY STRONG.

1. Read all safety and operating instructions before using this product.
2. All safety and operating instructions should be retained for future reference.
3. Obey all cautions in the operating instructions and on the back of the unit.
4. All operating instructions should be followed.
5. This product should not be used near water, i.e. a bathtub, sink, swimming pool, wet basement, etc.
6. This product should be located so that its position does not interfere with its proper ventilation. It should not be placed flat against a wall or placed in a built-in enclosure that will impede the flow of cooling air.
7. This product should not be placed near a source of heat such as a stove, heater, radiator or another heat producing amplifier.
8. Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
9. Never break off the ground pin on the power supply cord. For more information on grounding write for our free booklet "Shock Hazard and Grounding."
10. Power supply cords should always be handled carefully. Never walk or place equipment on power supply cords. Periodically check cords for cuts or signs of stress, especially at the plug and the point where the cord exits the unit.
11. The power supply cord should be unplugged when the unit is to be unused for long periods of time.
12. Metal parts can be cleaned with a damp rag. The vinyl covering used on some units can be cleaned with a damp rag, or an ammonia based household cleaner if necessary.
13. Care should be taken so that objects do not fall and liquids are not spilled into the unit through the ventilation holes or any other openings.
14. This unit should be checked by a qualified service technician if:
 - A. The power supply cord or plug has been damaged.
 - B. Anything has fallen or been spilled into the unit.
 - C. The unit does not operate correctly.
 - D. The unit has been dropped or the enclosure damaged.
15. The user should not attempt to service this equipment. All service work should be done by a qualified service technician.



PEAVEY ELECTRONICS CORPORATION
711 A Street / Meridian, MS 39301 / U.S.A.

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