



Support

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DRAWMER 1960 OPERATORS MANUAL

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SAFETY CONSIDERATIONS

CAUTION - MAINS FUSE

TO REDUCE THE RISK OF FIRE REPLACE THE MAINS FUSE ONLY WITH A FUSE THAT CONFORMS TO BS EN 60127-2:1991 SHEET III. 250 VOLT WORKING, TIME DELAY TYPE AND BODY SIZE OF 20mm x 5mm.

THE MAINS INPUT FUSE MUST BE RATED AT 250mA WHERE THE MAINS INPUT VOLTAGE SWITCH IS SET TO 230 VOLTS AC. AND 500mA WHERE THE MAINS INPUT VOLTAGE IS 115 VOLTS AC.

THE REAR PANEL H.T. FUSE MUST ALWAYS BE RATED AT 50mA, IRRESPECTIVE OF THE MAINS VOLTAGE SETTING.

CAUTION - MAINS CABLE

DO NOT ATTEMPT TO CHANGE OR TAMPER WITH THE SUPPLIED MAINS CABLE.

CAUTION - SERVICING

DO NOT PERFORM ANY SERVICING. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

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INTRODUCTION

The 1960 is a hybrid vacuum tube/semi-conductor, dual-channel compressor which has numerous applications in studio recording, live sound, location recording, post-production and as part of a musician's rack system. A major

advantage of the hybrid approach is that it combines the reliability and stability of modern solid-state designs with the warm, detailed sound of vintage classic tube designs. In addition, the 1960 incorporates two low-noise microphone preamplifiers with provision for phantom powering, plus a versatile instrument preamplifier with passive EQ and brightness switch. The instrument preamplifier may be routed through either compressor channel (or both) and is suitable for a variety of signal sources, from electric guitars and basses to electronic keyboards. It incorporates the same type of passive equalisation circuitry used in traditional tube guitar amps, while the Bright switch emulates the voicing of a typical guitar amplifier. This stage may be deliberately overdriven if required to add tonal coloration to an instrument, and with the addition of an external speaker simulator, overdriven guitar sounds may be Directly Injected ("DI'd") into the mixing console.

There are four, dual-stage tubes in the audio signal path and the compressor section is designed to provide a soft-knee characteristic which contributes both to the sweet sound of the unit and to its ease of use. Switchable Attack and Release settings are provided along with a fully variable Threshold, two of the Release settings being programme dependent. Traditional moving coil meters are used to monitor either the gain reduction or the output signal level while an output Gain control provides up to 20dB of make-up gain. The microphone input stages feature extremely low noise, balanced input circuitry with additional tube amplification, enabling modern microphones to take on the characteristics of older tube models. Phantom power is individually switchable on the two channels and a peak overload LED warns when clipping is imminent. Two sets of insert points on the rear panel allow additional effects to be added either before or during compression.

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APPLICATIONS

Further to its more conventional applications as a general studio compressor, the 1960 is also particularly effective when used to treat complete stereo mixes. The subtle tube colorations add warmth and depth to the sound, while at the same time emphasising mid-range and high-frequency detail. For high quality location recording, the 1960 makes the perfect partner for a DAT machine, as it combines the functions of stereo mic preamp with that of a compressor. The mic inputs provide up to 60dB of gain while maintaining a noise figure comparable with the better 'in-desk' mic preamps. Soft-knee compressors are generally preferable for unobtrusive level control and the system used in the 1960 provides firm control without the side-effects of a fixed, hard-knee design. As an instrument amplifier, the 1960 provides gain, EQ and compression making it ideal for DI'ing guitars, basses and even keyboards. The tube gain stages are versatile enough to provide a clean, punchy sound or the gain may be increased to provide the type of overdrive sound associated with tube guitar amplifiers. Furthermore, when the compressor is deliberately overdriven, it can be used creatively to produce level 'pumping' effects which can be useful both on electric guitar or rock vocal sounds. The Aux input may also be used for processing the output from a dedicated guitar preamplifier, where the EQ can be used to further tailor the sound before it is compressed. By adding compression to an overdriven sound, the degree of sustain can be maintained at a lower overdrive setting while the tube circuitry will add warmth and punch.

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INSTALLATION

The 1960 is designed for standard 19" rack mounting and occupies 2U of rack space. Avoid mounting the unit directly above power amplifiers or power supplies that radiate significant amounts of heat and always connect the mains earth to the unit. Fibre or plastic washers may be used to prevent the front panel becoming marked by the mounting bolts. Because the tube circuitry generates more heat

than an equivalent solid-state design, it is advisable to leave space above the unit to allow the heat to dissipate.

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AUDIO CONNECTIONS

The inputs and outputs are electronically balanced on conventionally wired XLRs (pin 1 screen, pin 2 hot, pin 3 cold and XLR shell is connected to chassis). The 1960 fully conforms to the EMC standards, if you propose to use the unit where it maybe exposed to high levels of disturbance such as found close to a TV or radio transmitter we suggest that the screen of the signal cable is connected to the chassis connection on the XLR type connector. The operating level is nominally +4dBu. If earth loop problems are encountered, do not disconnect the mains earth but instead, try disconnecting the signal screen on one end of the cables connecting the outputs of the 1960 to the patchbay. Balanced operation is recommended. The side-chain access point and the two different level insert points are unbalanced. The intended use of the audio insert jacks would be to patch in EQ (eg 1961), reverb or similar processing. Connection is via stereo 1/4" jacks, the wiring convention being: ring is signal send, tip is signal return and sleeve ground.

POWER CONNECTION

The unit will have been supplied with a power cable suitable for domestic power outlets in your country. For your own safety it is important that you use this cable. The unit should always be connected to the mains supply earth using this cable. If for some reason the unit is to be used at a mains input operating voltage which is different to that as supplied, the following procedure must be carried out.

1. Disconnect the unit from the mains.
2. Using a number 1 size pozidrive screwdriver, remove the two self-tapping screws holding the voltage selection switch cover plate on the rear panel.
3. Remove the cover plate and slide the switch fully to its opposite end.
4. Rotate the cover plate one half turn, (180) and refit the two screws.
5. Replace with a correctly rated fuse for the selected operation voltage.
6. Re-connect to mains power source.

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CONTROL DESCRIPTION

With the exception of the Aux preamp section, both channels of the 1960 are identical and may be used independently or linked for stereo operation. In linked mode, the compressor controls should, ideally, be set to the same settings (as the control-circuitry for both channels responds to the average between the two channel settings). In Stereo Link mode, both channels track together to avoid the inevitable image shifting that would occur if the two channels of a stereo signal were treated independently.

COMPRESSOR

Source Select: This rotary switch selects the compressor input source. The Line and Mic inputs are via the rear-panel XLRs while the Aux input is available on the front panel. The two Mic positions offer a choice of Mic input with or without +48V phantom powering; a red LED indicates that phantom power is active.

Note: if the Aux input is to be used at the same time as a Mic input, it is recommended that the Mic input be processed through the upper channel and the Aux input through the lower channel as this minimises crosstalk between tube amplification stages sharing the same envelope.

High-pass: The signal path incorporates a switchable high-pass filter which may

be set to 50Hz, 100Hz or Off. Its use is to attenuate low frequency signals that might otherwise prove troublesome, eg. traffic rumble or stage vibration.

Threshold: Determines the input level above which gain reduction will be applied and may be set in the range -24dB to infinity. Because the compression system is based on the Soft Knee principle, the onset of compression is progressive, so no Ratio control is necessary.

Attack: Three switchable Attack settings are provided giving Fast, Medium and Slow attack times. The actual attack time is further modified by the release setting chosen.

Release: There are four fixed Release times and a further two which are programme dependent. Switch settings 1 through to 4 provide progressively increasing release times, while positions 5 and 6 cause the release times to vary in a manner which automatically adapts to the dynamics of the incoming signal.

Output: (Gain) The Output level may be amplified or attenuated by up to 20dB to compensate for level changes caused by compression and limiting.

VU Meter: A moving coil VU meter monitors either the level of the output signal (over the range -10dB to +10dB with reference to the +4dBu operating level) or the amount of gain reduction taking place. Because the meter has VU characteristics, it closely reflects what is actually being heard, though will not respond quickly enough to register short signal peaks.

VU / GR: Switches the meters to show either the output level (VU) or the amount of gain reduction (GR).

Norm/Bypass, S/C Listen: In Normal mode, the signal is passed through the compressor. Bypass only takes the compressor out of circuit leaving the vacuum tube warmth in the circuit path; the output signal is taken from the signal insert return point. S/C Listen routes the side-chain signal directly to the output allowing the effects of any additional side-chain processing, such as equalisation, to be monitored.

Stereo Link: Averages the left and right channel control settings when the unit is used for processing a stereo signal. The same degree of gain reduction is applied to both audio channels to prevent image shifting which would otherwise occur whenever the left and right signal dynamics varied from each other by any significant degree.

MICROPHONE PRE-AMPLIFIER

Mic Input Gain: This fully variable control sets the mic input gain over the range 0 to 60dB. The adjacent Clip LED illuminates when excessive mic gain has been applied and there is a danger of clipping.

AUXILIARY INPUT

The Auxiliary Input feeds a specialised instrument input stage which provides both gain and equalisation. The passive Bass and Treble controls are based on those used in classic tube guitar amplifiers while the Bright switch puts a peak in the frequency response at around 2kHz to simulate the voicing of a typical guitar amplifier. A two position high or low gain switch provides an additional 10dB of gain when required for level matching or for creating overdrive effects.

Bass EQ: Passive equaliser control, which can be set to provide up to 15dB of bass boost at 40Hz.

Treble EQ: Passive equaliser control, which can be set to provide up to 18dB of treble boost at 16kHz.

Gain: Provides up to 30dB of gain at the Low Gain switch setting or 40dB at the High Gain setting.

Low/High: Sensitivity selector switch. Adds 10dB of gain in the High position.

Flat/EQ: Switches the equaliser controls out of circuit when a flat response is required, or for 'A/B' comparison of EQ effectiveness.

Norm/Bright: Switches in 10dB of boost at 2kHz in the Bright position, (when 'EQ' has been selected on the Flat/EQ switch.)

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OPERATION

The unit should be connected in-line with the signal to be processed or via suitable insert points. For mono use, each channel may be considered as being completely independent and set up accordingly. For use with stereo signals such as complete mixes or submixes, the unit should be switched to Stereo Link mode and both sets of channel controls set to the same position. Setting up is simplified by the soft-knee compressor action which means that it is only necessary to adjust the Threshold control until the desired degree of gain reduction is achieved. This is judged partly by ear and partly by observing the gain reduction meter. In general, a maximum gain reduction of between 10dB and 15dB will be adequate. If more gain reduction appears necessary, it is worth considering applying a conservative degree of compression during recording and then further compression while mixing. The two auto release switch settings continually optimise the compressor action to suit the dynamics of the material being processed, setting 5 being optimised for percussive material and setting 6 for general purpose use. Compressing during a mix does increase the subjective level of tape and other background noises during pauses and quiet passages as maximum gain is applied when the signal level is minimum. For this reason, it is unwise to use more compression than is strictly necessary. The Gain control may be set to provide the required output level using the level meter as a guide. Avoid running at excessively high output levels as this reduces the available amount of signal headroom and could lead to distortion in extreme cases. The use of compression on complete mixes can cause a dulling of the sound but the 1960's tube circuitry combined with the soft-knee action helps maintain the clarity and transparency of transient sounds.

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QUICK SET UP

Select Stereo Link mode for use with a stereo signal, otherwise ensure this switch is off.

Select the appropriate signal source for each channel using the selector switch. Initially, set the Attack selector to the Medium position and set Release to 6 (Programme Dependent).

Set the Mode switch to Normal and the Meter switch to GR.

With the programme material playing, adjust the Threshold control until the desired amount of gain reduction registers on the meters.

Use the Output Gain control to restore any level lost due to compression.

If necessary, change the Attack and Release settings to suit the material.

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INSTRUMENT USE

The Aux input has a 470K Ω impedance and is suitable for use with both active and passive guitar pickup systems as well as with electronic keyboards. Because guitar sounds are so subjective, and because they vary so much with instrument and playing style, there are no hard and fast rules to setting up, but a good starting point is to switch Bright 'On' and set the compressor for 'Med' attack and '6' release. The threshold should be adjusted to give a gain reduction reading of around 5dB on signal peaks. By increasing the Gain control setting, the input stage can be made to overdrive in a manner similar to that of traditional valve guitar amplifiers.

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1960 TECHNICAL SPECIFICATIONS

(All measurements taken at +4dBu operating level)

INPUT IMPEDANCES

LINE 20K Ohm

MIC 150 Ohm to 600 Ohm

AUX 2.2M Ohm

MIC INPUT NOISE -128.5dB (@ +60dB gain)

MAXIMUM INPUT LEVEL +20dBu

OUTPUT IMPEDANCE 50 Ohm

MAXIMUM OUTPUT LEVEL +22dBm (balanced)

BANDWIDTH <10Hz to 22KHz -1dB

COMPRESSOR NOISE AT UNITY GAIN

	Wideband	22Hz - 22KHz	CCIR ARM	IEC A	Q-Pk CCIR
AV	-82dB	-88dB	-88dB	-91dB	-77dB
RMS	-81dB	-87dB	-87dB	-90dB	-

DISTORTION (THD & NOISE) @ 1KHz

Line Input with BYPASS selected < 0.1%

Line Input with NORMAL selected < 0.3%

POWER REQUIREMENTS 100-120Volt or 195-250Volt at 50-60Hz, 38 Watts

FUSE RATING 250mA for 240Volt, 500mA for 120Volt

CONFORMING TO BS EN 60127-2:1991 SHEET III

FUSE TYPE 20mm x 5mm, Class 3 Slo-Blo, 250Volt working

CASE SIZE 482mm (w) x 88mm (h) x 250mm (d)

WEIGHT (incl packaging) 6.0 Kgs

RELEASE TIMES

1 400 ms

2 1 sec

3 2 sec

4 4 sec

5 Automatic 400 ms to 2 sec signal dependant

6 Automatic 200 ms to 20 sec signal dependant