Owner's Manual

OT-600
70 Volt
Output
Transformer

QSC®
AUDIO

TD-000600-00

INSTRUCTIONS FOR
OT-600 70 VOLT OUTPUT TRANSFORMER

I. PACKING LIST

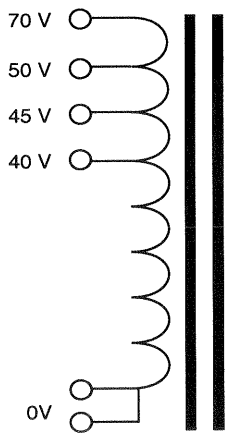
Items/Description	QSC Part No.	Qty.
OT-600 Output Transformer	XF-000601-00	1
Transformer Label	LB-000050-00	1
Owner's Manual, OT-600	TD-000600-00	1

II. DESCRIPTION

The QSC OT-600 is an audio output auto-transformer designed to convert the output of 350-625 watt amplifiers to 70 volts for sound distribution systems. The OT-600 may also be used, in a step down configuration, as a speaker transformer, for high-power applications.

III. SPECIFICATIONS

Frequency Response:	35 Hz–15 kHz (± 1dB)
Distortion —300W:	Less than 0.1% THD, 35 Hz–15 kHz
Power Capacity:	350-625 watts
Insertion Loss:	Less than 1 dB
Dimensions:	3.75" H x 4.50" L
	4.0" across coil
Mounting Centers:	3.0" x 3.75
Weight:	10 lbs.
Terminals:	1/4" male quick disconnect push-on terminals



IV. MOUNTING

The transformer may be mounted to a convenient surface, such as the side or rear of a rack cabinet, using the appropriate hardware (NOT supplied). Be careful not to create a mechanical or electrical safety hazard when choosing a location and mounting method.

The self-adhesive label provided should be applied to the core of the transformer so it is visible while installing or servicing.

V. TRANSFORMER WIRING

The OT-600 is an auto-transformer with voltage conversion ratios as shown by the sequence of terminals: "0" or common, "40", "45", "50" and "70".

A. Conventional Two Channel Step-up Operation

Connect wiring as follows, keeping each channel separate:

1. The "common" wire should connect the black "speaker" binding post to the "0" terminal of the transformer, using 14 ga. stranded wire.
2. The "speaker" wire should connect the red "speaker" binding post, using 14 ga. wire, to transformer terminals "40", "45", or "50" as follows:
    a) The "40" terminal is used for QSC amplifier models MX 1000a, EX 1250 or any other amplifier having a 4-ohm power rating of 350-450 watts per channel.*
    b) The "45" terminal is used for QSC amplifier models 1700, MX 1500a and USA 1300 or any amplifier having a 4-ohm power rating of 450-550 watts per channel.*
    c) The "50" terminal is used for QSC amplifier models MX 2000a, EX 1600 or any amplifier having a 4-ohm power rating of 550-650 watts per channel.*

    **20Hz–20kHz, 0.1%THD*

3. The 70V speaker line should be connected to the "0" and "70" terminals. An additional "0" terminal is provided for ease in making this connection.

***CAUTION:* Since the OT-600 is a non-isolated auto-transformer, neither side of the 70V line should be separately grounded.**

B. Bridged Mono Step-up Operation

Connect wiring as follows, keeping each amplifier separate:

1. The "common" wire should connect the RED "speaker" binding post of Ch. 2 to the "0" terminal of the transformer.
2. The "speaker" wire should connect the RED "speaker" binding post of Ch. 1 to transformer terminals "40", "45", or "50" as follows:
    a) The "40" terminal is used for any amplifier having a bridged 4-ohm power rating of 350-450 watts or a bridged 8-ohm power rating of 175-225 watts.*
    b) The "45" terminal is used for any amplifier having a bridged 4-ohm power rating of 450-550 watts or a bridged 8-ohm power rating of 225-275 watts.*
    c) The "50" terminal is used for any amplifier having a bridged 4-ohm power rating of 550-650 watts or a bridged 8-ohm power rating of 275-350 watts.*

    **20Hz–20kHz, 0.1%THD*

3. The 70V speaker line should be connected to the "0" and "70" terminals.

***CAUTION:* Since the OT-600 is a non-isolated auto-transformer, neither side of the 70V line should be separately grounded, in order to avoid shorting the amplifier outputs.**

C. Speaker Transformer Operation

For higher-power speakers, the OT-600 can be used to convert 70 volts back to 4 or 8-ohm speaker levels.

1. As above, connect the 70-volt line to the "0" and "70" terminals.
2. Connect the speaker negative (black) to the "0" terminal, using 14 ga. wire.
3. Connect the speaker positive (red) terminal as follows, using 14 ga. wire:
   a) The "40" terminal gives 200W/8-ohm or 400W/4-ohm.
   b) The "45" terminal gives 250W/8-ohm or 500W/4-ohm.
   c) The "50" terminal gives 312W/8-ohm or 625W/4-ohm.
4. Use these values to determine System Loading.

VI. POLARITY

The transformer maintains the same polarity for all terminals with respect to "0". In other words, the polarity of the amplifier speaker output will be preserved at the "70" terminal.

VII. SYSTEM LOADING

There is no need to calculate impedance when using 70-volt systems. Simply add up the total wattage of the individual speaker-transformer taps in use, and ensure that this number does not exceed the power rating of the amplifier. It is wise to allow 20-30% extra amplifier power, for reduced stress, insertion loss and to permit the addition of a few extra speakers if ever required.

VIII. AMPLIFIER PROTECTION

The QSC OT-600 output transformer is designed to avoid excessively low impedance at low frequencies; however, the same may not be true of the individual speaker transformers. Thus, it is common to roll off the amplifier input below 40 or 50 Hz. This will avoid amplifier overheating and stress, and will reduce speaker and transformer distortion below these frequencies.

IX. 70, 100, and 140 VOLT DIRECT SYSTEMS

Any QSC amplifier rated at 600-650W at 8Ω or 1100-1300W 4 at 4Ω, will drive a 70V system directly, without the need for a step-up transformer. For example, the QSC Model 1400 will provide 600W, bridged mono, into a 70V line, without the need for an output transformer. The EX 4000, in stereo, may be used to drive 70V lines directly with 1100W per channel.

Higher voltages may also be used for long lines and/or high power systems. Two common values are 100V and 140V lines. Because power varies as the square of the voltage, a 100V line will produce twice the power and a 140V line will produce four times the power into a speaker transformer tap that is referenced to 70V. However, it is important that the total power rating of a transformer IS NEVER EXCEEDED BY USING A HIGHER INPUT VOLTAGE. A 10W transformer at 70V is still a 10W

transformer at 100V or 140V. The power capacity of a transformer is primarily determined by the core size and does not change just because a higher input voltage is applied.

For example, a 10W transformer has taps at 10, 5, and 2.5 watts, referenced to 70V. When using a 100V line, it is necessary to multiply the power of the taps by two when determining system loading and proper connection of the 100V line. When connected to the 5W tap, the 100V line delivers 10 watts to the speaker. The 10W tap must not be used, as the speaker attempts to draw 20 watts, thus exceeding the 10W limit of the transformer.

An example of 140V lines will use the same 10W transformer with taps at 10, 5, and 2.5 watts, referenced to 70V. When using a 140V line, it is necessary to multiply the power of the taps by four when determining system loading and proper connection of the 140V line. When connected to the 2.5W tap, the 140V line delivers 10 watts to the speaker. The 5W tap must not be used, as the speaker attempts to draw 20 watts, thus exceeding the 10W limit of the transformer. The 10W tap also must not be used, as the speaker attempts to draw 40 watts.

Any QSC amplifier rated at 1000-1300W at 8Ω will drive a 100V system directly, without the need for a step-up transformer. For example, the QSC MX 2000a will provide 1300W, bridged mono, into a 100V line, without the need for an output transformer. The MX 2000a may also be used in stereo to drive 50V lines directly with 650W per channel.

Any QSC amplifier rated at 2200-2400W at 8Ω will drive a 70V system directly, without the need for a step-up transformer. For example, the QSC EX 4000 will provide 2200W, bridged mono, into a 140V line, without the need for an output transformer. The EX 4000 may be used in stereo to drive 70V lines directly with 1100W per channel.

The OT-600 may be used as the speaker step-down transformer in applications using 100V lines and 8Ω speaker loads. The following table shows the power available at each transformer tap, when the 100V line is connected to the 0V and 70V taps. The use of 4Ω speaker loads with 100V lines or 140V lines with the OT-600 is NOT recommended, as the power rating of the transformer will be exceeded.

OT-600 SPEAKER STEP-DOWN MODE

100V line, 8Ω speaker

TAP	Power
40V	400W
45V	500W
50V	600W

X. WARRANTY AND DISCLAIMERS

QSC Audio Products, Inc. is not liable for any damage to speakers, amplifiers, or any other equipment that is caused by negligence or improper installation and/or use of the OT-600.

Product Warranty

QSC Audio Products, Inc. guarantees the OT-600 to be free from defective material and/or workmanship for a period of three years from date of sale, and will replace defective parts and repair malfunctioning products under this warranty when the defect occurs under normal installation and use—provided the unit is returned to our factory via prepaid transportation with proof of purchase (sales receipt). This warranty provides that examination of the returned product must disclose, in our judgement, a manufacturing defect. This warranty does not extend to any product which has been subject to misuse, neglect, accident, improper installation, or where the date code has been removed or defaced.

Warranty and Service Repair Instructions

1. Pack the product safely making sure to include a copy of the sales receipt, your name, return address, and phone number. Mark the package: Attention Service Department.
2. Ship the product prepaid to QSC Audio Products. We recommend UPS.
3. We will determine if the product is under warranty:
    a. If it is, we will repair and ship it back to you at no charge.
    b. If it is not, we will contact you and inform you of the charges. Upon your approval, we will repair the product and ship it back freight and services charges collect (COD).

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