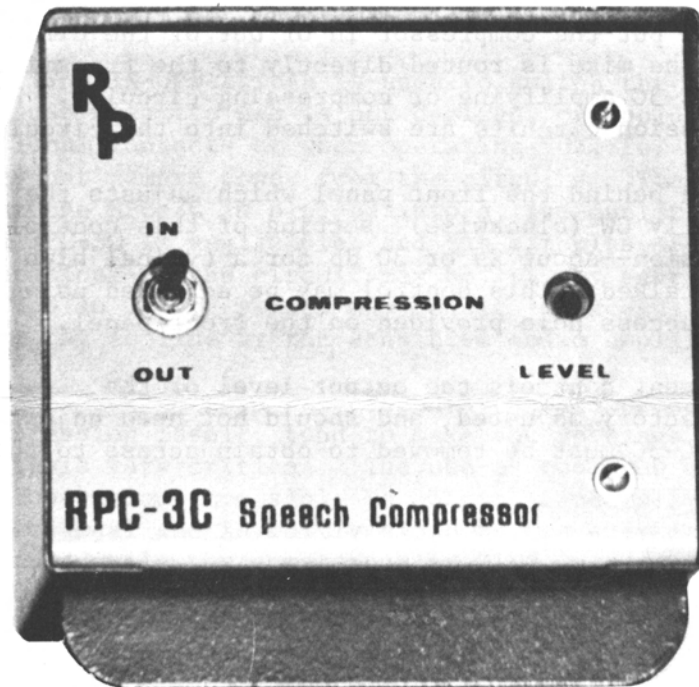


RPC-3C SPEECH COMPRESSOR

INSTRUCTIONS FOR THE RPC-3C SPEECH COMPRESSOR

The RPC-3C speech compressor is intended for use in the mike circuit of an SSB transmitter. It can also be used with AM and FM transmitters. It is compatible with high impedance crystal, ceramic, or dynamic microphones.



The RPC-3C is equipped with IN and OUT jacks of the same type used with Collins, Drake, Galaxy, and other popular brands of Ham equipment. Also available (as options) are IN and OUT jacks which match Swan, Yaesu, etc., and also Heath type IN and OUT jacks are available.

A shielded patch cable is required to connect the RPC-3C to the transmitter. The RPC-3C end of this cable should be wired as below. The transmitter end of the cable should be wired in accordance with the manufacturer's directions.

The "standard" RPC-3C is equipped with .206" dia. (nominal) IN and OUT jacks. A suitable plug is the Switchcraft type S-260. For the models of RPC-3C equipped with 1/4 inch (nominal) jacks to match Swan, Yaesu, etc., a suitable plug is the Switchcraft type 260. These plugs should be wired as follows:

TIP-----Push to talk circuit
RING-----Microphone audio (high impedance)
SLEEVE-----Ground (shield of the cable).

In most cases, these connections will also be correct for the transmitter end of the cable--however, in case of doubt be sure to check with the manufacturer's wiring instructions.

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For models of RPC-3C equipped with 80PC2F Amphenol (to match Heath and others) IN and OUT jacks, the connections are as below:

PIN 1-----Microphone audio (high impedance)
 PIN 2-----Push to talk circuit
 Shell-----Ground (shield).

Mating plugs for all models of RPC-3C are available from RP, as well as special RP patch cords for some types of plugs.

OPERATING INSTRUCTIONS

The RPC-3C has a switch to put the compressor in or out of the circuit. When this switch is at "OUT", the mike is routed directly to the transmitter, and does not go through any RPC-3C amplifying or compressing circuits. With the switch at "IN", the compression circuits are switched into the circuit.

A small control is located behind the front panel which adjusts the amount of compression. The fully CW (clockwise) setting of this control corresponds to MAXIMUM compression--about 25 or 30 db for a typical high impedance microphone, closely talked. This control may be adjusted using a small screwdriver through the access hole provided on the front panel.

A third (internal) adjustment controls the output level of the compressor. This control is factory adjusted, and should not need adjustment. The top cover of the RPC-3C must be removed to obtain access to this control.

Figure 2 shows the approximate amount of compression obtained for various settings of the compression level control, when an average output microphone, close talked, is used. The control is preset at the factory for most purposes, and may not need to be adjusted. If your mike is unusually high or low in output, you may want to adjust the control accordingly. Too much compression only brings up the background noise excessively, so use only as much compression as room conditions, etc. permit. The adjustment is very non-critical and may be set once and then forgotten.

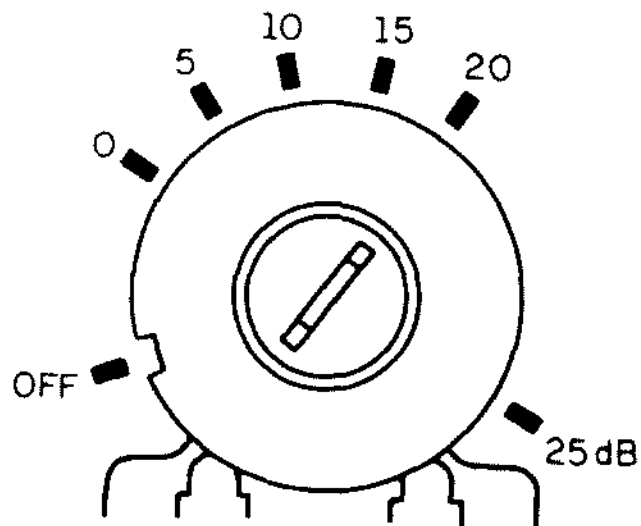


FIG. 2

When using the compressor, it is especially important to use GOOD MICROPHONE TECHNIQUE. Maximum talk power can only be obtained when the microphone audio is clear and undistorted and of sufficient strength to produce full compression. To this end it is important that you use a good microphone, and talk into it properly. Best results are obtained with a good microphone close talked. The mike should be no more than 1/2 to 1 inch from your lips. Speak directly into the mike in a normal voice. (Note: with a few mikes it is better to talk directly across the mike, rather than straight into it, but these are the exceptions rather than the rule.) Failure to observe good mike technique can result in poor results from the compressor, and will also cause room reverberation and echo to be apparent when the compressor is in use.

The IN-OUT switch is used to switch the compressor in and out of the circuit when its use is not desired, or would interfere with operation--as in local contacts or when operating VOX, for example. The IN-OUT switch does not remove power from the circuits. The circuits are energized whenever the RPC-3C is plugged into a live outlet. The power consumption of the RPC-3C is negligible, and the circuits are designed for continuous operation, so the circuit may be safely energized at all times. Attempts to add an ON-OFF switch may result in excessive hum level due to pick-up from the ac line by the sensitive audio amplifier in the RPC-3C.

The extra gain introduced by the compression amplifier, and the compression itself, tend to make the settings of the VOX and ANTI-VOX controls very critical. The use of too much compression may make proper VOX operation impossible to obtain, especially if the mike is not very directional and is fairly close to the speaker. If VOX operation is desired while the compressor is "IN", a good directional microphone is essential, and careful placement of the mike in relation to the speaker will be necessary. It will also be important that no more compression than needed be used.

The RPC-3C uses MOSFETs and JFETs which are easily damaged by static charges or other excessive voltages. We recommend that all repair work be performed at the factory if possible. If it is necessary to service the unit be sure to take precautions not to damage the circuit. One common source of damage is the residual ac voltage on the soldering iron tip--it is best to connect a clip lead between the tip and the ground foil of the circuit board before soldering on the unit. Q1 and Q2 are selected types. If they are replaced, it must be done at the factory with the proper selected transistors, and so that the necessary adjustments to the compressor can be made. Also, if R4 or R5 or R6 are replaced, it may be necessary to re-adjust the unit for proper current drain and internal voltage levels. The voltage across C5 should be between 21 and 24 volts dc and the voltage at the emitter of Q3 should be between 10 and 12 volts dc. With 1 volt peak to peak input, the compression level control at maximum, the output level control (R8) should be adjusted for 0.5 volts peak to peak output. For this adjustment use a sine wave input at approximately 1200 Hz.

PARTS LIST: RPC-3C

C1	150 pf disc ceramic	R1	100K linear potentiometer
C2	10 mfd @ 15 volts	R2	22K 1/4 w 10%
C3	10 mfd @ 15 volts	R3	100K 1/4 w 10%
C4	.01 mfd @ 16 volts	R4	3K (typical) 1/4 w 5% (selected)*
C5	.01 mfd @ 16 volts	R5	15K (typical) 1/4 w 10% (selected)*
C6	100 mfd @ 25 volts dc	R6	2.2K 1/4 w 10% (selected)*
C7	100 mfd @ 25 volts dc	R7	4.7 Meg 1/4 w 10%
C8	100 mfd @ 25 volts dc	R8	5K linear potentiometer
		R9	1.8K 1/4 w 10%
D1-D4	1N3064	S1	DPDT toggle switch
Q1	MFE3002 (selected)	T1	TMI-2P feedback transformer
Q2	2N3819 (selected)*	T2	power transformer, TF-121A (sec. 12 vac @ 0.1 a)
Q3	2N3704	F1	3AG 1/10 amp, SLO-BLO pigtail fuse
D5-D6	Al4F silicon rectifiers		

*IMPORTANT NOTE: If any of the items marked with * are replaced, the unit will have to be factory re-adjusted. Failure to do this may result in damage to the unit, or may result in poor performance, due to normal tolerance variations in any of the marked items.

WARRANTY

RP ELECTRONICS warrants its product for one year after shipment. Under this warranty, we will exchange or repair, free of charge, any defective unit returned prepaid within the warranty period, provided that in our estimation the unit was inoperative due to defective workmanship or materials. RP ELECTRONICS obligation is limited to such repair or replacement, and RP ELECTRONICS is not responsible under this warranty or otherwise for any consequential damage or other loss in connection with the use of any of its products, whether used in accordance with directions or otherwise.

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OTHER REPAIRS

RP ELECTRONICS maintains a repair and service facility which is qualified to handle any of its products. Should any repairs be required, it is advisable that the unit be returned for factory repair. Modern solid state circuits can be easily damaged by improper testing and repair techniques--and this type of damage is not covered by warranty. With this in mind, the RP repair facility is geared for the fastest possible service, and in the case of non-warranty repairs, at the lowest possible charge. Questions relating to repairs should be addressed to:

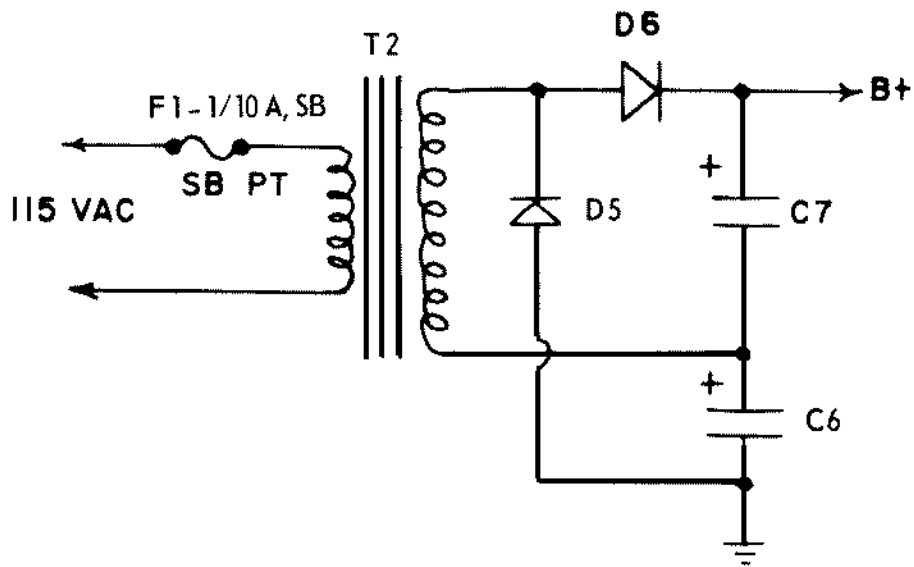
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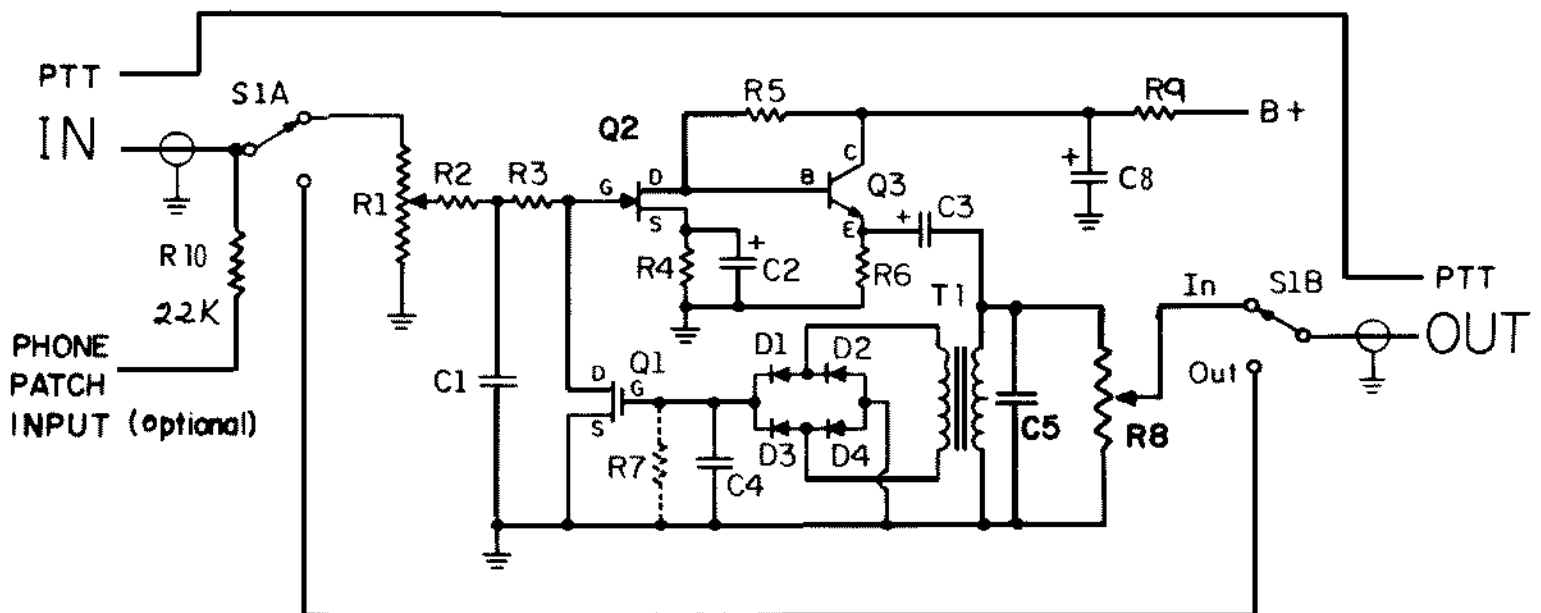
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RPC-3C ac power supply



RPC-3C compression circuit