

# 7

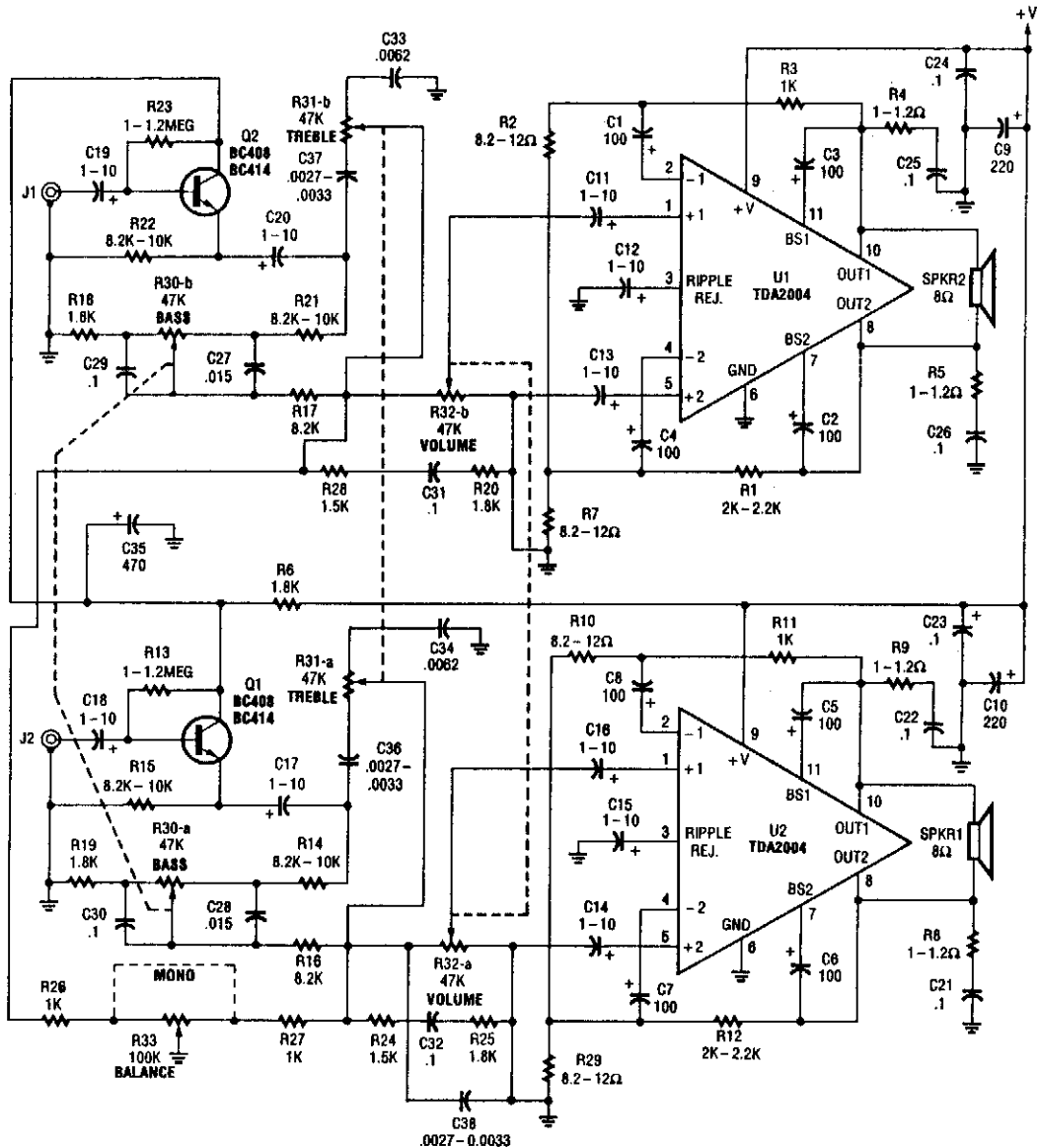
## Audio Power Amplifiers

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The sources of the following circuits are contained in the Sources section, which begins on page 661. The figure number in the box of each circuit correlates to the entry in the Sources section.

12-V/20-W Stereo Amplifier  
General-Purpose 5-W Audio Amplifier with ac Power Supply  
Bull Horn  
Receiver Audio Circuit  
Audio Amplifier  
8-W Audio Amplifier  
Simple Op Amp Audio Amplifier

## 12-V/20-W STEREO AMPLIFIER

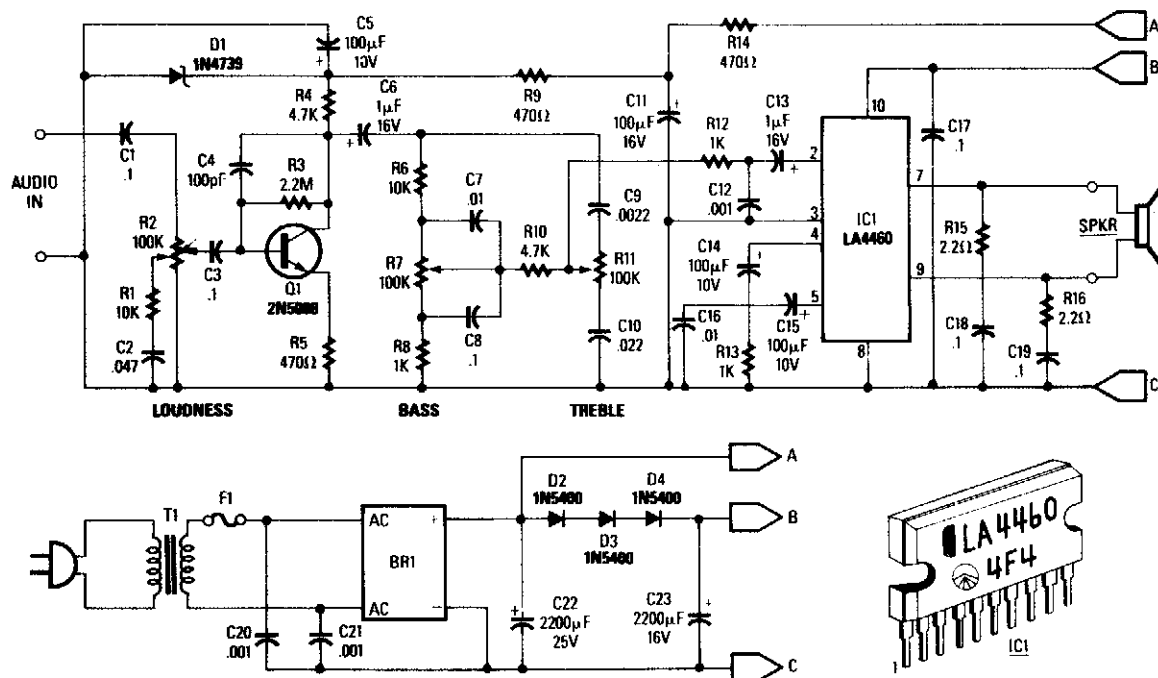


POPULAR ELECTRONICS

Fig. 7-1

This amplifier delivers 20 W per channel. Input sensitivity is about 300 mV into 47 k $\Omega$ . Notice that a bridged output is used, so the speakers are operated with both wires above ground. A +12-V supply is used. U1 and U2 must be heatsinked.

## GENERAL-PURPOSE 5-W AUDIO AMPLIFIER WITH ac POWER SUPPLY



RADIO-ELECTRONICS

Fig. 7-2

This general-purpose low-power (5 W) audio amplifier is suitable for driving a speaker of approximately 8 to 12 inches. A Sanyo LA4460 IC is used as the audio output IC. The circuit consists of a loudness control, driver amplifier Q1, and bass and treble controls of about  $\pm 10$  dB boost/cut. It should be useful in a wide variety of situations. Either the ac supply shown can be used, or a 12 Vdc supply can be connected to points A&B (positive) and C (negative). Two of these circuits, using ganged potentiometers at R2, R7, and R11 can be used for stereo applications. T1 is a 12-V 1-amp plug-in transformer. Notice that IC1 must be heatsinked. Power output is about 5 W. A  $4'' \times 2'' \times 0.050''$  aluminum heatsink should be adequate.

## BULL HORN

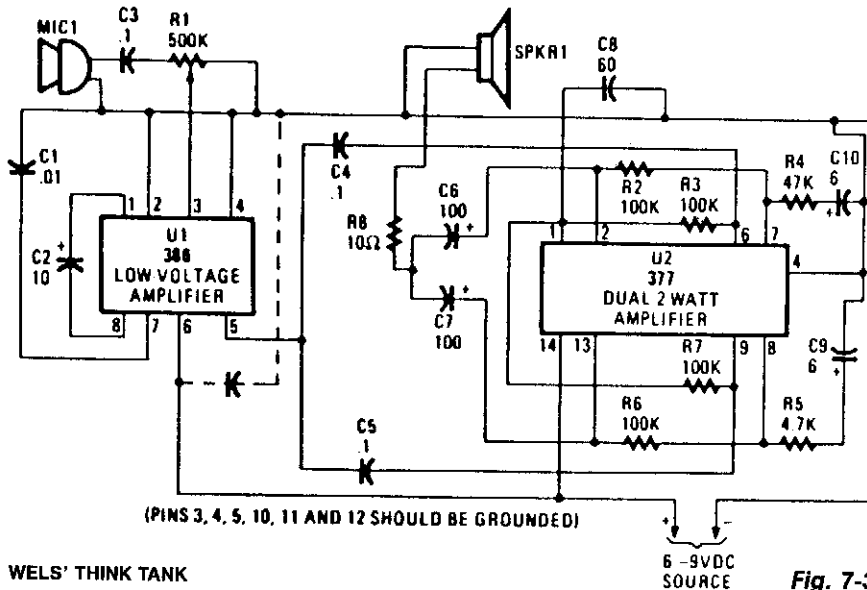


Fig. 7-3

This bull horn uses U1 as a driver stage and U2 as an output driver. U1 is set up for a gain of 200. The microphone should have about 200-mVpp output. The two sections of U2 produce about 4-W of output power. Use shielded cable for all audio leads. Power is a 6-to 9-V battery or other source.

## RECEIVER AUDIO CIRCUIT

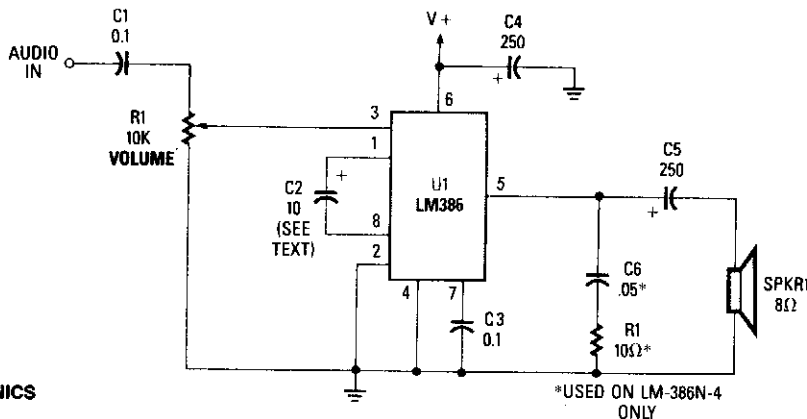
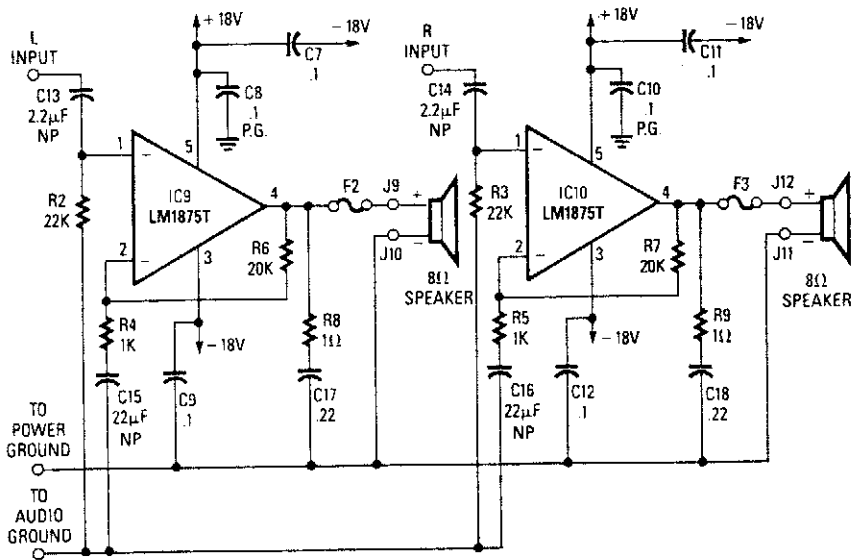


Fig. 7-4

This simple receiver AF amplifier can supply several hundred milliwatts to an 8-Ω speaker. The gain is about 200X. If high gain is not needed, C2 can be deleted and a gain of 20 will be obtained. R1 and C6 are musts, otherwise ultrasonic (30 to 60 kHz) oscillations might occur. C6 can be 0.1 μF on all LM386N versions for protection against these oscillations. The supply voltage is typically 6 to 12 V. No heatsink is necessary, but good grounding is a must.

## AUDIO AMPLIFIER

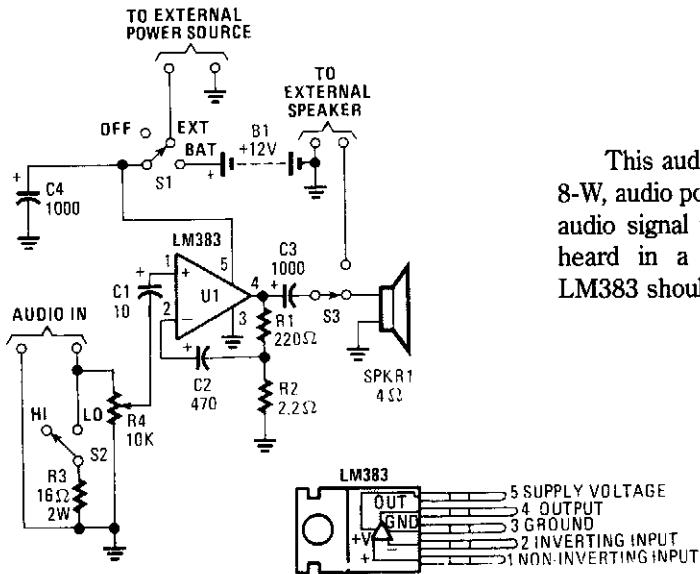


RADIO-ELECTRONICS

Fig. 7-5

This amplifier will deliver around 20 W to an 8-Ω speaker.

## 8-W AUDIO AMPLIFIER

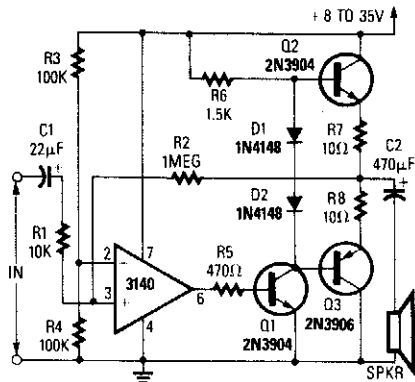


This audio power amp (built around an LM383 8-W, audio power amplifier) can be used to boost an audio signal to a sufficient level so that it can be heard in a high-noise environment. Note that LM383 should be heatsinked.

POPULAR ELECTRONICS

Fig. 7-6

## SIMPLE OP AMP AUDIO AMPLIFIER



A CA3140 drives a complementary output stage Q1, Q2, and Q3. Output power depends on supply voltage and limits on dissipations of Q2 and Q3, but it can be 1 or 2 W with a higher impedance speaker and a 30-V supply.

RADIO-ELECTRONICS

Fig. 7-7