

TRANSISTORIZED PREAMPLIFIER AND POWER AMPLIFIERS

An amplifying system consisting of the separate Dynaco PAT-4 preamplifier and Stereo 120 [or Stereo 80] power amplifier affords the optimum in flexibility, power, performance, maintenance convenience, and protection against obsolescence. Unhampered by space restrictions inherent in the one piece receiver, separate components allow the audio equipment designer to proceed without compromise in attaining perfectionist goals of performance and flexibility. When used with the new Dynaco Quadaptor™, this ultimate approach provides unexcelled four-dimensional stereo.

PAT-4 PREAMPLIFIER

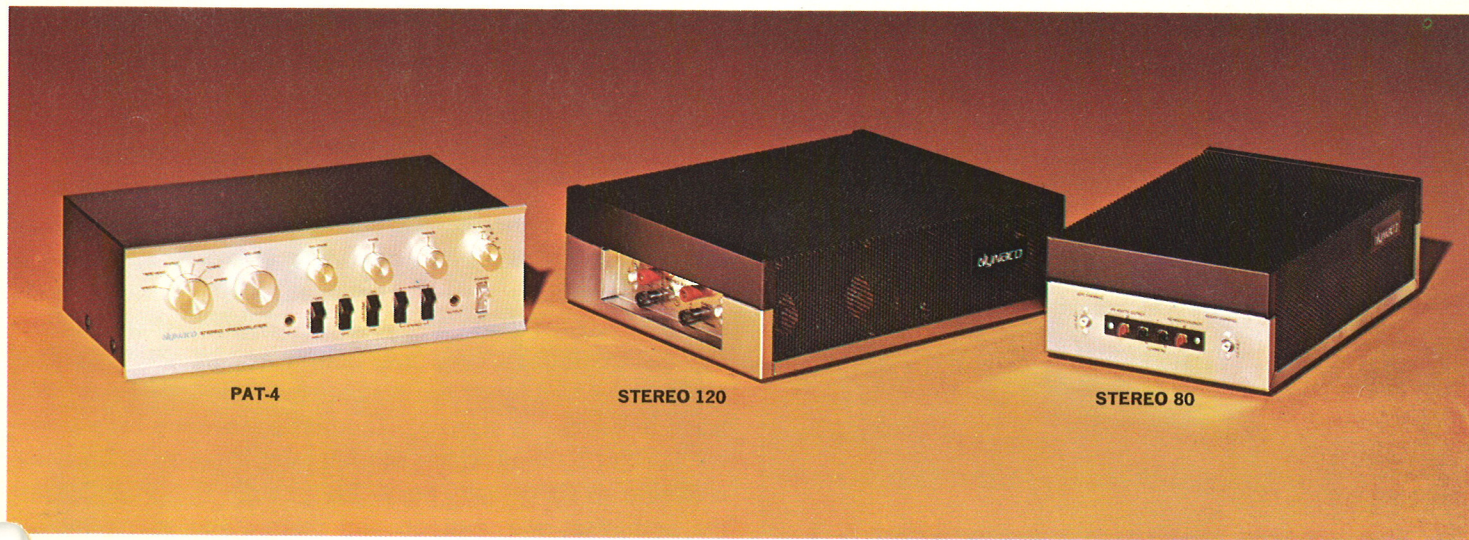
The PAT-4 can be used with any tube or transistorized Dynaco power amplifier or virtually any other power amplifier, tube or transistor. Available either as an easy-to-build kit for the hobbyist, or fully assembled and tested, the PAT-4

harmonizes with the Dynaco FM-5 stereo tuner and is directly interchangeable with all Dynaco PAS preamplifiers in cabinet installations.

In performance, the PAT-4 is characterized by a remarkably low level of noise and distortion—below the level which can be measured with commercial grade test equipment—through the use of carefully selected silicon transistors in a circuit utilizing both DC and AC feedback.

Frequency response is extremely wide to prevent deformation of square waves and other signals which depend on wide-band, low phase shift response for accurate reproduction.

Like all Dynaco products, the PAT-4 is the culmination of years of painstaking design. It has been acclaimed by renowned audio experts, like Julian Hirsch, who wrote in Stereo Review: "In sonic quality, we would unhesitatingly say that the Dynaco PAT-4 is unsurpassed by any preampli-



fier we have seen . . . a remarkable unit and unmatched at anywhere near its low price . . ." More emphatic was the Stereophile magazine comment on its sonic quality: ". . . we cannot see how any preamp, present or future, could surpass the PAT-4."

SPECIFICATIONS

Frequency Response: High Level inputs ± 0.5 dB from 10 Hz to 100 kHz.

Low Level inputs ± 1 dB from 20 Hz to 20 kHz (equalized)

Distortion at rated 2 volt input: THD less than 0.05% 20 Hz to 20 kHz; IM less than 0.05% with any combination of test frequencies.

Hum and Noise: Magnetic Phono: 70 dB below a 10 mV input signal. High Level: 85 dB below a 0.5 volt input signal.

Gain: Magnetic Phono: 54 dB at 1000 Hz (3 mV for 1.5 V out)

High Level: 20 dB (15 V for 1.5 V out).

Phono overload point: 80 mV.

Tone Control Range: ± 16 dB @ 50 Hz ± 12 dB @ 10 kHz.

Maximum Output: 10 volts into high impedance. 5 volts into 600 ohms.

Impedance: Magnetic Phono: 47,000 ohms To Tape: from low level inputs, 600 ohms

Tape Head: 100,000 ohms

High Level: 100,000 ohms To Tape: from high level inputs,

Audio Output: 600 ohms same as source

Amplifier Input: Nominal load 10,000 ohms or higher

Inputs: Low level or high level RIAA magnetic phono or ceramic phono; NAB $7\frac{1}{2}$ " tape head; Special (normally microphone); Tape amplifier; Tuner; Spare high level for TV, etc.; Front panel high level.

Outputs: Tape output ahead of controls; 2 Audio outputs (one switched front panel jack); Front panel output.

Front Panel Controls: Selector switch; Volume control; Balance control; 2 Bass controls; 2 Treble controls; High Filter switch @ 15 kHz, 10 kHz and 7 kHz; Loudness Compensation switch; Tape Monitor switch; Low Filter switch; paired Stereo-Mono switches to provide A or B channels independently or combined (A+B) with 6 dB blend for 3rd channel output, or stereo; illuminated power switch

Semiconductor Complement: 8 transistors; 2 diodes.

Dimensions: $13\frac{1}{2}$ " x 9" x $4\frac{1}{4}$ " high (same as FM-5 and PAS-3x).

Shipping Weight: 10 lbs. (4.5 kg).

Power Consumption: 5 watts, 120/240 V, 50/60 Hz AC.

PRICE: Kit \$ 89.95 East; \$ 94.95 West
Assembled \$159.95 East; \$164.95 West

TRANSISTORIZED POWER AMPLIFIERS STEREO 120 AND STEREO 80

The essential difference between these two stereo power amplifiers is in their power supplies—that of the Stereo 120 is fully regulated so that its power supply voltages are the same at full rated output as they are under quiescent conditions even with varying line voltage. In this way, the Stereo 120 can deliver 50% more rated power than the Stereo 80, which has a more conventional power supply.

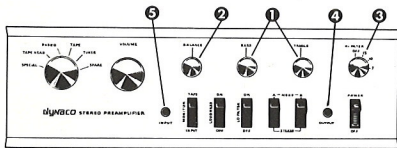
The unique biasing system (patents pending) of both amplifiers sharply reduces the inherent non-linearities of their solid state devices, markedly reducing distortion at low power without any need for periodic adjustments. The biasing arrangement is an integral part of the automatic protection circuit—a Dynaco exclusive.

The highly reproducible circuits used in these amplifiers have made them particularly suitable as kits. Rated performance can be obtained without adjustments of any kind.

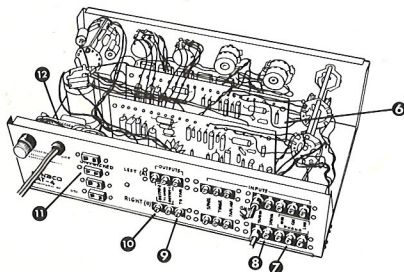
Unlike many high power amplifiers, both the Stereo 120 and Stereo 80 use no interstage or output transformers which may compromise performance. The output sections use series connected push-pull transistors driven by a direct-coupled complementary-symmetry driver, biased by Dynaco's unique circuit, and containing its own DC feedback connection to stabilize the operating characteristics.

The amplifiers are exceptionally stable with all loads and they easily handle all conventional loudspeakers including electrostatics. They are both electronically protected against overload by strain or abuse (such as shorted speaker leads or excessive signals). The biasing circuits have inherent current limiting which will not permit power to be delivered into an abnormally heavy load. Under these conditions, the amplifiers will shut off and restore the sound instan-

PAT-4



- ① Four bass and treble controls use independent, concentric knobs. Patented tone control circuit provides smooth, continuous adjustment with a true "center-flat" position without requiring disabling switches.
- ② Balance control provides critical adjustments of small differences through first 90° rotation from center, yet allows complete cancellation of either channel at its extremes.
- ③ Rotary high frequency filter switch has a "flat" position plus three $\frac{1}{2}$ octave steps (at 15 kHz, 10 kHz, and 7 kHz) of 12 db/octave.
- ④ 600 ohm output for headphones or tape recorder which provides more gain than the conventional back panel tape recorder output, and enables full use of all controls when making a tape recording.
- ⑤ Front panel stereo input for high level source such as guitar amplifier or tape recorder. A mono input here can be combined with other mono program material from another source on the other channel if desired.



- ⑥ Two identical in-circuit tested etched boards contain all active circuitry, simplifying kit construction and assuring optimum operation of assembled unit.
- ⑦ Separate input for ceramic cartridge.
- ⑧ "Special" low level input provides optional equalization choices (second phono, second tape head, or microphone).
- ⑨ Conventional tape output unaffected by front panel controls other than input selector.
- ⑩ Second audio output (in parallel to main output) for use when it is desired to silence loudspeakers while listening to headphones. This second audio output can also be used for tape recording whenever higher gain and all front panel controls are desired.
- ⑪ Top two AC outlets are always live; bottom two AC outlets are controlled by PAT-4 power switch.
- ⑫ Standard power transformer has dual primary windings for either 120/240 V, 50-60 Hz AC.

taneously when the load is lightened, without the use of fuses, circuit breakers, or thermal cutouts.

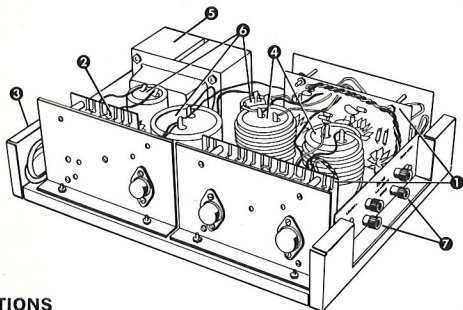
Dynaco did not rush its transistorized designs. The result, as expressed by Stereophile Magazine, is "... we are finally forced to do an about-face on our long-held conviction that transistor amps are not for the perfectionist. Not only does this one [Stereo 120] seem to have no sound of its own, it also makes loudspeakers sound better than do tube amplifiers. This kind of performance, finally, justifies switching from tubes to transistors."

STEREO 120 PRICE: Kit \$159.95 East; \$164.95 West
Assembled \$199.95 East; \$204.95 West

STEREO 80 PRICE: Kit \$119.95 East; \$124.95 West
Assembled \$159.95 East; \$164.95 West

STEREO 120

- ① Individual left and right channel etched circuit boards are pre-assembled and in-circuit tested at factory.
- ② Regulated power supply circuit board, also preassembled and in-circuit tested at factory.
- ③ Heavy gauge, nickel-plated steel chassis.
- ④ 3300 μ fd output-coupling electrolytic capacitor used in each channel.
- ⑤ Oversize standard power transformer has dual primary windings for 120/240 V, 50/60 Hz AC.
- ⑥ 4800 μ fd total capacitance in regulated power supply.
- ⑦ Color coded speaker terminals are spaced to accommodate double banana plugs as well as spade lugs or stranded wire.



SPECIFICATIONS

Harmonic Distortion: Less than 0.5% at any power level up to 60 watts rms per channel into 8 ohms at any frequency between 20 Hz and 20 kHz; both channels operated with out-of-phase signals. Distortion reduces at lower power levels. [Stereo 80—40 watts rms/channel].

Intermodulation Distortion: Less than 0.5% at any power level up to 60 watts rms per channel into 8 ohms with any combination of test frequencies. Distortion reduces at lower power levels. [Stereo 80—40 watts].

1/2% Power Bandwidth (IHF): 5 Hz to 50 kHz half power output at less than 0.5% total harmonic distortion into an 8 ohm load. [Stereo 80—8 Hz to 52 kHz].

Clipping Point at 1000 Hz, one channel only: 60 watts rms minimum at 8 and 4 ohms; 35 watts rms minimum at 16 ohms. [Stereo 80—Same as SCA-80Q].

Noise: 95 dB below rated output unweighted with shorted input; 100 dB down by IHF standards.

Separation: In excess of 70 dB from 20 Hz to 10 kHz. [Stereo 80—60 dB].

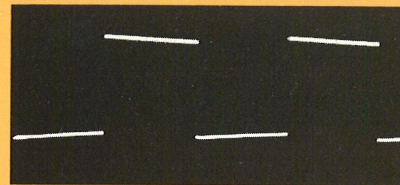
Input: 100,000 ohms; 1.5V for 60 watts rms output. [Stereo 80—1.3V].

Semiconductor complement: 15 diodes, 15 transistors. [Stereo 80—10 diodes and 12 transistors].

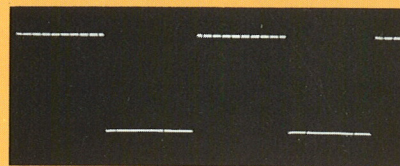
Dimensions: 13" x 10 1/2" x 4" high. Weight: 20 lbs. (9.1 kg). [Stereo 80—14" x 8" x 4" high; shipping weight 13 lbs. (6 kg)].

Power consumption: 35 watts quiescent; 400 watts maximum, 50-60 Hz, 100-120 or 220-240V AC. [Stereo 80—250 watts maximum].

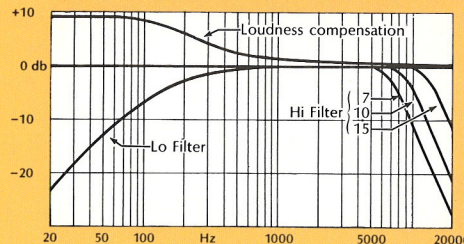
PAT-4



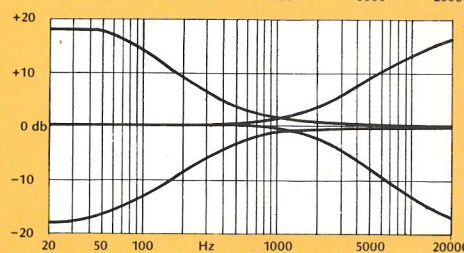
100 Hz Square Wave



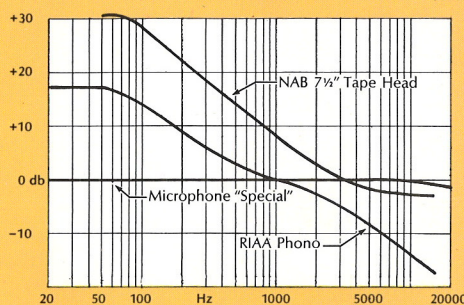
10 kHz Square Wave



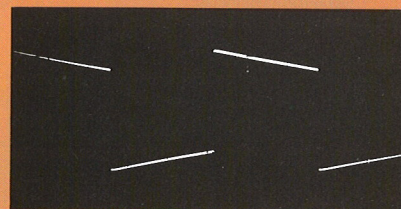
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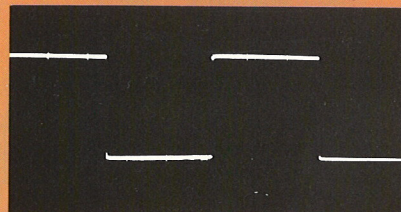
Tone Control Range



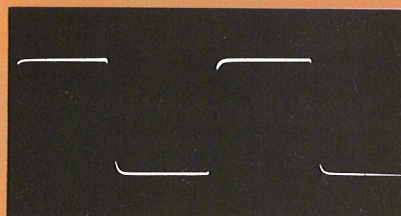
Equalization



100 Hz



1 kHz



10 kHz

STEREO 120 and STEREO 80

Square Wave Performance: This is a good indication of linearity from 10 Hz to 100 kHz, since good square wave reproduction requires bandwidth in excess of 1/10th to 10 times displayed frequency.