

# DYNAKIT

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# DYNAACO

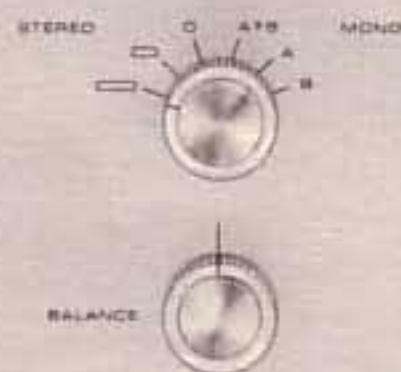
3912 POWELTON AVENUE, PHILADELPHIA, PA. 19104

140  
110  
250

DYNA FM TUNER



POWER OFF



DYNA STEREO PREAMPLIFIER

TAPE INPUT

LOUDNESS OFF

FILTER OFF

POWER OFF

# DYNAKIT

# DYNAACO

**HIGH  
FIDELITY  
COMPONENTS**

*For the audio perfectionist!*

Ceretti



- Precise alignment of every stage without instruments — optimum performance is always at your fingertips.
- Four IF-limiters, wide-band balanced-bridge discriminator, time-switching multiplex system.
- Logical control simplicity — critical "reference-grid" tuning eye, no drift, no dial cord backlash, no overloading on powerful signals. You just tune the station.
- Automated **stereomatic** multiplex circuit locks in and signals stereo automatically and silently. Never any problems with tape recording off the air.
- Rapid, foolproof assembly. Etched circuit boards precisely define parts placement, and eliminate the variations which can be so critical in achieving rated tuner performance.
- Self-contained multiplex integrator — included with the FM-3, or add it later to the FM-1.

## FM TUNERS

### assembled

FM-1/A	Mono tuner	\$119.95
FM-2/A	Mono receiver	169.95
FM-3/A	Stereomatic tuner	169.95

### in kit form

FM-1	Mono tuner	79.95
FMA-2	Insert amplifier	29.95
FMX-3	Stereo integrator	29.95
FM-3	Stereomatic tuner	109.95

**FM-1 and FM-3:** 4  $\mu$ v IHF sensitivity (noise and distortion 30 db below 100% modulation); 3 db less in stereo. Frequency response  $\pm$  0.5 db from 10 cps to 40 KC before deemphasis;  $\pm$  0.5 db from 10 cps to 15 KC in stereo. IM or harmonic distortion at 100% modulation less than 0.5% from 10  $\mu$ v to 100,000  $\mu$ v; less than 1% in stereo (including 19 KC and 38 KC residual). 300 $\Omega$  balanced, 75 $\Omega$  unbalanced inputs. 2 volts out at low impedance. Audio noise 73 db below 100% modulation. Signal to noise ratio 70 db at 100% modulation. 30 db stereo separation. Capture ratio 5 db. Selectivity (alternate channel) 54 db. Drift less than 0.03%. AM suppression greater than 63 db. Discriminator bandpass in excess of 900 KC. Switched AC outlet, charcoal brown baked vinyl coated cover. 55 watts.

**FM-1:** 6AQ8, 6AT8A, 6BA6 (2), 6AU6 (2), 12AX7, 1N542 diodes (2), EM84, 6V4. Tuning and volume controls, on-off switch. Panel 13" x 4", 8" deep. 12 pounds.

**FM-3:** 6AQ8, 6AT8A, 6BA6 (2), 6AU6 (2), 12AX7 (2), 6BL8, 1N542 diodes (2), 1N541 diodes (4), EMM801, 6V4. Tuning control, volume-control with stereomatic-mono push-pull switch, on-off switch. Panel 13½" x 4¼", 8" deep. 13 pounds.

**FMA-2:** 10 watts at less than 1% distortion within 1 db of full power from 30 cps to 15 KC. Frequency response  $\pm$  1 db from 12 cps to 35 KC. Fits in chassis cutout of FM-1 in place of multiplex adaptor. Uses tuner power supply. 12AX7, 6BQ5 (2), 2 silicon rectifiers.

**FMX-3:** Multiplex integrator for FM-1. 6BL8, 12AX7, EMM801, 1N541 diodes (4).

**PK-40:** Accessory deluxe panel and knob kit with mounting brackets for FM-1. \$9.95.



FM-1



FM-3

## THE REMARKABLE DYNATUNER

The Dynatuner's modest exterior conceals an impressive 9 tube, 2 diode circuit (11 tubes and 6 diodes with multiplex) which develops FM's full potential. In low noise, low distortion and effective sensitivity it rivals the finest "monitor" tuners. Verified records of 125 separate stations received with a 9 element outdoor antenna, and 60 stations on a simple indoor folded dipole are available on request.

The Dynatuner evidences several engineering innovations. Its unique design, plus the inherent uniformity of etched circuits, has evolved a unit so non-critical, so accurately reproducible, and so conveniently aligned that you can meet all specifications without instruments. No sections are pre-built or prealigned, yet this circuit provides precise home alignment of every stage from the front end (including dial tracking) through the IFs, discriminator and multiplex circuits using the tuning eye alone. No other design, kit or wired, provides this assurance of sustained performance.

The cathode-coupled tuned RF input and oscillator-mixer use slug-tuned coils for easy alignment. The 4 IF stages function as

progressive limiters (so effective that they limit on noise alone) and provide superior suppression of impulse noise such as auto interference. A balanced wide-band discriminator is critically aligned by a unique bridge-balancing circuit. The exclusive time-division multiplex circuit eliminates troublesome oscillators, and is easily peak-aligned. A front panel volume control facilitates tape recording, and allows direct connection to power amplifiers.

The mono FM-1 is readily converted to a quality 10 watt receiver by installing the FMA-2 right on the chassis. Alternatively, the FMX-3 slips into the chassis cutout for stereo. The FM-3 is a multiplex tuner identical to the FM-1 plus FMX-3 in circuitry, plus the additional convenience of a "stereomatic-mono" switch on the volume control. With outstanding limiting, superior AM rejection and freedom from cross-modulation, Dynatuners excel in multiplex reception of weak signals and in bad multipath locations. If you have not experienced the Dynatuner's fully automated stereomatic tuning system, you don't know how enjoyable FM listening can be!

A comprehensive report on the Dynatuner is available on request.



## PREAMPLIFIERS

### assembled

PAM-1/A	Mono preamp	\$ 59.95
PAS-2/A	Stereo preamp	99.95
PAS-3/A	Stereo preamp	109.95

### in kit form

PAM-1	Mono preamp	34.95
PAS-2	Stereo preamp	59.95
PAS-3	Stereo preamp	69.95



- All-feedback design for unmeasurable distortion, low noise, complete freedom from overload, and consistent performance at all settings of the volume control.
- Functional design provides full flexibility for all input sources without undue complexity.
- Exclusive Dyna feedback tone controls provide necessary correction at the extremes without altering the natural balance of the midrange.
- Preassembled etched circuit modules make assembly just a matter of 6 to 8 hours, and assure consistently superior performance.
- Equalization accurately controlled with 1% components. Low noise resistors used in all critical stages.

**PAM-1, PAS-2 and PAS-3:** Frequency response  $\pm 0.5$  db from 10 cps to 40 KC. Harmonic distortion unmeasurable. IM distortion less than 0.05% at 2 volts output. Tone control range  $\pm 20$  db at 20 cps,  $\pm 14$  db at 20 KC. 60 db gain (PAM-1 is 54 db) at 1000 cps on RIAA input. 20 db gain 20 to 20,000 cps on high level inputs. Less than 2 microvolt equivalent noise input on RIAA (PAM-1 less than 3 microvolts); less than 1.5  $\mu$ v on mike connection; 70 to 74 db below level of 10 millivolt cartridge. Low impedance audio output; tape output ahead of volume and tone controls. Passes square waves without deformation or ringing from 20 cps to 20 KC at any volume control setting. No overshoot or bounce on pulsed signals.

**PAM-1:** Inputs: low level and high level magnetic cartridge, radio, tape, TV, "special" (optional second phono, tape head, or microphone). RIAA, 78, original LP equalization. Controls: selector and equalization, bass, treble, volume; loudness and tape monitor switches; hum balance. 12AX7 (2), selenium rectifier. Requires 200 to 400 vdc at 4 ma, and 6 vac at .75 amps (from socket on Mark III, Mark IV, Stereo 70, or from Dyna PS-1 power supply kit — \$11.95). Integral DC heater supply. 4 AC outlets. Choice of bone white or charcoal brown baked vinyl coated cover. 12" x 6" x 3". 7 pounds. PM-1 panel mount kit \$2.95.

**PAS-2 and PAS-3:** Identical circuitry. Inputs: RIAA phono, NAB tape head, "special" (optional second phono, tape head, or microphone), FM multiplex, FM-AM, tape, spare. Controls: selector, volume, balance, blend, separate bass and treble controls for each channel; tape monitor, loudness, scratch filter and power switches. 12AX7 (4), 12X4, selenium rectifier. Self powered with DC heaters. 30 watts. 4 AC outlets. Panel 13½" x 4¼", 8" deep. 11 pounds.

**PK-30:** Accessory deluxe panel and knob kit with mounting brackets for PAS-2. \$13.95.

## UNEQUALLED QUALITY AND RELIABILITY

Dynakit is the finest performing high fidelity components available — they are unmatched by any others regardless of the fact that Dynakits cost substantially less than other quality components. Their superlative performance has been amply demonstrated before thousands of critical listeners in concerts where the "live" music of the Fine Arts Quartet has alternated with the "recorded" reproduction of the same program via Dynakit ampli-

fiers and AR speakers. This is the truest test of audio quality, and the vast majority of listeners were unable to detect any differences.

Dynakit quality stems from unique engineering combined with the very best components in a kit arrangement which makes it easy for the novice constructor to duplicate the performance of factory assembled and tested equipment. Dynakit guarantees that every properly assembled kit will meet all of its specifications.

### EASIEST TO BUILD

Heavy duty XXXP and epoxy etched circuit boards cut wiring time by 2/3 and assure correct assembly.

Step by step instructions, plus pictorial diagrams and photos.

Functional internal arrangement gives complete accessibility for construction and service.

### QUALITY THROUGHOUT

Heavy gauge plated steel chassis, close tolerance parts, low noise resistors, pretested and matched output tubes, exclusive patented DYNACO output transformers.

Conservative operation and proper consideration of heat dissipation with covers installed.

### LONGEST WARRANTY

All Dynakits carry a full one year warranty on all parts with the exception of tubes (standard EIA 90 day warranty on tubes).

Factory assembled units also include a full one year labor warranty.

Factory service and technical assistance are always available.



## STEREO AMPLIFIERS

### assembled

Stereo 35/A	35 watts	\$ 79.95
Stereo 70/A	70 watts	129.95

### in kit form

Stereo 35	35 watts	59.95
Stereo 70	70 watts	99.95

Stereo 35



Stereo 70



● This amplifier's components are operated more conservatively than those in any other commercial amplifier we have tested. . . . Its power and distortion ratings are completely conservative. Its listening quality is unsurpassed. ● From a report on the Stereo 70 by Hirsch-Houck Laboratories in December 1959 issue of High Fidelity Magazine. Complete report on request.

- Full utilization of the performance capabilities of patented Dynaco output transformers.
- Firm, perfectly defined bass and smooth, natural highs. Absolute stability provides a transparency which delineates the most subtle orchestral nuances.
- Fast, easy assembly . . . three hours for the Stereo 35, five hours for the Stereo 70.
- The Stereo 70 is noteworthy for ultra-conservative operation: output tubes operated at only 65% of capacity, and filter capacitors at less than 85% of rated voltage.

**Stereo 35:** 35 watts continuous, 45 watts IHF Music Power, 80 watts peak (both channels). Harmonic distortion less than 1% from 20 cps to 20 KC within 1 db of 17.5 watts (each channel). IM distortion below 1% at 17.5 watts (each channel). Below 0.1% at average listening levels. Frequency response  $\pm 1$  db from 10 cps to 40 KC. 1 volt input for 17.5 watts out (each channel). Hum and noise inaudible; more than 80 db below 17 watts. Damping factor 10, 20 cps to 20 KC. 8 and 16 ohm output. 7247 (2), 6BQ5 (4), 2 silicon diodes. Power consumption 100 watts. Cadmium plated chassis, charcoal brown baked vinyl coated cover. 13" x 5½" x 4" high. 16 pounds.

**Stereo 70:** 70 watts continuous, 90 watts IHF Music Power, 160 watts peak (both channels). Harmonic distortion less than 1% from 20 cps to 20 KC within 1 db of 35 watts (each channel). IM distortion less than 1% at 35 watts (each channel). Less than 0.05% at 1 watt average level. Frequency response  $\pm 0.5$  db from 10 cps to 40 KC. 1.3 volts in for 35 watts out (each channel). Hum and noise inaudible; more than 90 db below 35 watts on each channel (choke filtering). 4, 8 and 16 ohm output. EL-34 (4), 7199 (2), GZ-34, selenium rectifier. Damping factor 15. Bright nickel chassis, charcoal brown baked vinyl coated cover. Dual Dyna Biaset adjustments. Provision for powering two preamps. Stereo-mono switch; on-off switch. Ultra-conservative operation of output tubes and filter capacitors. 13" x 9½" x 6½" high. Power consumption 175 watts, 32 pounds.

## WHY DYNAKITS SOUND BEST

Specifications are important, but present measurement standards do not fully define how equipment sounds. In the final analysis, you must listen. Dyna components exhibit a natural clarity with a minimum of the stridency, boominess and extraneous noises too often associated with "hi fi" sound. Dynakits have very wide response and very low distortion, but there are other attributes difficult to quantify, and these contribute to their audible superiority.

Good transient response is paramount. This ability to reproduce percussive sounds with a single sharp pulse is the direct result of Dyna's wide frequency response, minimum number of low frequency couplings, wide stability margin, good power supply regulation, and excellent square wave performance.

Distortion in Dynakits is below the threshold of audibility. Because low total distortion, or low distortion at one frequency, does not ensure that the individual components are inaudible, typical specs inadequately measure their effects on the ear. Distortion in Dynakits is so low over the entire range that the high order components (those most offensive to the ear) can be detected only with

the most sensitive specialized laboratory equipment.

Amplifiers must operate with a variety of loudspeakers of varying characteristics. They must be stable, and perform optimally under the wide variations in speaker impedance with frequency. Dynakits can deliver adequate power at very low distortion into a wide range of impedances, due largely to the quality of the patented Dynaco output transformers. To illustrate, the frequency of phase reversal of Dynaco transformers is above 300,000 cycles — sufficiently far from the audio spectrum to avoid undesirable effects on the stability of the amplifier regardless of load.

Equipment has value only if the user is assured of getting the performance of which the design is capable. Dyna technique, through design, components, and adjustment methods, assures this. For example, the operating precision of Dyna phase inverters is independent of tube condition, being solely dependent on the balance of certain resistors — which Dyna matches within 1%. This critical portion of the circuit has been designed to avoid problems, and the components used assure optimum performance.



## CONTROL AMPLIFIER

### assembled

SCA-35/A Stereo 35 watts \$139.95

### in kit form

SCA-35 Stereo 35 watts 99.95

- Performance previously unavailable in a combined amplifier and preamplifier in this price range.
- A blend of quality, flexibility and dependability which outperforms similar control amplifiers of substantially higher power ratings.
- Ingenious Dyna design (on which patents are pending) eliminates several stages, with consequent reduction of distortion and noise and increased stability.
- Specially engineered Dynaco output transformers — a quality level usually reserved for much more costly amplifier designs.
- Functional, easy-to-understand controls make it easy for the whole family to use, with sufficient flexibility for the enthusiast's subtle adjustments.
- Exclusive bandpass filter eliminates rumble and scratch without destroying the musical balance.
- Three preassembled etched circuit boards reduce assembly time to 8 hours. No adjustments of any kind are required.

SCA-35



**SCA-35:** 35 watts continuous, 45 watts IHF Music Power, 80 watts peak (both channels). Harmonic distortion less than 1% from 20 cps to 20 KC within 1 db of 17.5 watts (each channel). IM distortion below 1% at 17.5 watts (each channel). Below 0.2% at average listening levels. Frequency response  $\pm 0.25$  db from 20 cps to 20 KC. Tone controls  $\pm 12$  db at 50 cps and 15 KC. Rated output sensitivity: 4 mv magnetic phono, 2.5 mv tape head, 1 volt on high level inputs. Hum and noise 70 db below rated output on low level inputs, 80 db down on high level inputs. Controls: selector, volume, balance, bass, treble; stereo-mono switch, loudness compensation switch, bandpass filter switch, power switch. Inputs for RIAA magnetic phono high and low level, ceramic phono, NAB tape head, radio, tape and spare. 8 and 16 ohm speaker outputs, tape output ahead of volume and tone controls, center channel speaker output, and provision for headphone connection. 12AX7 (2), 7199 (2), 6BQ5 (4), 2 silicon diodes. 110 watts. 2 AC convenience outlets. Dual hum balancing controls. Charcoal brown baked vinyl coated cover. Panel 13½" x 4¼", 10" deep. 20 pounds.

## SELECTING YOUR DYNA MUSIC SYSTEM

In choosing Dynakits, you need not be concerned that quality must suffer where cost is a factor. All Dynakits meet the same high standards. Choose according to your budget and power requirements, for within their power ratings, all Dyna amplifiers yield the same superlative sound, free from noise and distortion.

Measure Dyna performance against the most expensive alternatives. Using the finest speaker systems to avoid extraneous limitations, critically evaluate Dyna amplifiers without regard to price. Higher power Dynakits will always sound better because they can best accommodate the peak power demands of complex musical passages. Whether you choose the SCA-35, or select the more versatile PAS-3 with the Stereo 35, Stereo 70 or two Mark III's, you will find that Dyna amplifiers sound better than their power ratings would indicate.

Compare tuners on the same antenna under the most difficult reception conditions. Note how simple and enjoyable FM listening is, with fully automated Dyna tuning.

While stereo provides an extra dimension for added enjoyment,

it holds no patent on pleasureable listening. Don't overlook the savings possible with a fine mono system (PAM-1, FM-1, Mark IV) if good music is your chief concern. Later transition to stereo is easy if you start with the PAS-2 instead of the PAM-1. Use one channel now, and later install the FMX-3 in the tuner, and add another Mark IV. An excellent FM only system with any good speaker is the FM-1 plus the FMA-2 insert amplifier.

Afraid to build a kit? Don't be. We're specialists at making them easy. The amplifier is the simplest, so build it first. All you need is modest mechanical ability and a reasonable soldering technique. Of course, factory assembled Dynakits are also available.

For your convenience, all Dynakits include protective covers at no extra cost. To facilitate custom cabinet installations, and to enhance their appearance on the bookshelf, accessory deluxe panel and knob kits which include mounting brackets and are identical to the PAS-3 and FM-3 are available for the PAS-2 and for the FM-1.

For use outside of the U. S., you can order special dual voltage power transformers (120/240 volts, 50/60 cps) for \$5 additional.



## MONO AMPLIFIERS

### assembled

Mark III/A	60 watts	\$ 99.95
Mark IV/A	40 watts	79.95

### in kit form

Mark III	60 watts	79.95
Mark IV	40 watts	59.95



- Patented Dyna Biaset for simplified adjustment and assurance of continued peak performance, without the need for critical balancing systems.
- Minimum number of phase-shifting stages for lower distortion, outstanding overload characteristics, and absolute stability under all load conditions.
- 3 hour construction time.
- Preassembled etched circuit board for low level stages. Major components mount on heavy gauge plated steel chassis for unparalleled structural rigidity.

**Mark III:** 60 watts continuous, 140 watts peak. Harmonic distortion less than 1% from 20 cps to 20 KC within 1 db of 60 watts. IM distortion less than 1% at 60 watts; less than 0.5% at 50 watts; less than 0.05% at 1 watt. Frequency response  $\pm 0.5$  db from 6 cps to 60 KC;  $\pm 0.5$  db from 16 cps to 25 KC at 60 watts. Hum and noise 90 db below 60 watts (choke filtering). 1.6 volts input for 60 watts output. Damping factor 15. 4, 8 and 16 ohms output. KT-88 (2), 6AN8, GZ-34, selenium rectifier. Power consumption 150 watts. Bright nickel chassis with charcoal brown baked vinyl coated cover. 9" x 9" x 7" high. 28 pounds.

**Mark III-70:** 4, 8, 16 ohms and 70 volt line output. \$84.95 in kit form; \$104.95 assembled.

**Mark III-500:** 500 ohm or 125 ohm output only. \$89.95 in kit form; \$109.95 assembled.

**Mark IV:** 40 watts continuous, 90 watts peak. Harmonic distortion less than 1% from 20 cps to 20 KC within 1 db of 40 watts. IM distortion less than 1% at 40 watts; less than 0.05% at 1 watt. Frequency response  $\pm 0.5$  db from 10 cps to 40 KC;  $\pm 0.5$  db from 20 cps to 20 KC at 40 watts. Hum and noise 90 db below 40 watts (choke filtering). 1.35 volts input for 40 watts output. 4, 8 and 16 ohms output. Damping factor 15. EL-34 (2), 7199, GZ-34, selenium rectifier. Power consumption 115 watts. Bright nickel chassis with charcoal brown baked vinyl coated cover. 14" x 5" x 7" high. 20 pounds.

## DYNACO SUPER FIDELITY OUTPUT TRANSFORMERS



The performance of any high fidelity amplifier is only as fine as the output transformer employed. Patented Dynaco designs have achieved a world-wide reputation for excellence. They have been chosen for their ability to meet the most stringent requirements by design engineers and standards laboratories.

Advanced pulse techniques have been incorporated into the design and production of Dynaco transformers to make the phase characteristics suitable for amplifiers with high proportions of feedback. The increased stability margin which accrues makes an audible improvement in listening quality. All Dynaco transformers feature para-coupled windings—a patented design by David Hafler which provides an accurately balanced coil with tight coupling between sections, reducing

middle and high frequency distortion, while a massive core of thin gauge grain oriented steel provides distortionless transmission of high level, low frequency signal components.

To provide the finest possible performance under actual audio operating conditions as well as under steady state laboratory tests, a wide performance margin has been built into these transformers. One notable result is that the design is not critical of tube balance, eliminating balancing adjustments and thereby simplifying circuits, and minimizing maintenance.

Dynaco transformers are available for power ratings from 15 to 120 watts, 20 cps to 20 KC. They handle double their rated power between 30 cps and 15 KC at low distortion. Detailed information on request.

## ENGINEERING DISTILLATION MAKES THE DIFFERENCE

Every Dynakit evidences unique engineering. Most Dynakits have patented circuit features. Critical examination of any Dyna circuit will reveal unconventional techniques and engineering refinements with only one purpose: improved performance. Dyna engineers have not hesitated to "throw the book away" when intensive investigation has shown a better way.

"Distillation" is our term for the refinement process to which every design is subjected. It may be an output transformer which must be tailored to a new amplifier (the same Dynaco transformers supplied in Dynakits are often used in much more expensive equipment than our own); a power amplifier; a feedback tone control circuit; a tuner front end, discriminator or multiplex demodulator; or the novel application of positive feedback for increased gain in low-distortion stages. Each concept is subjected to months of cross-investigation before adoption. Once pace-setting performance is achieved, our sole concern is to reduce each circuit element to its

most refined form without impairing reliability.

A dedication to functional simplicity is evident—in the circuit, in the layout for construction, and in operation. You will find no special shielding—not even shielded cabling—inside any Dyna chassis. This is most significant in the Dynatuner, and yet this tuner design is stable with the cover and bottom plate on or off, with or without an antenna! It is Dyna's conviction that any hum or interference must be eliminated at the source, not simply controlled with shielding. Dyna engineers are specialists in the art of removing components and thereby improving the design.

The net result of these efforts is a simpler, easier unit to build, with fewer, but higher quality parts conservatively operated in an extremely sophisticated circuit. Conservative operation has long been a Dyna hallmark—a fact frequently commented on by critics and reviewers. Dyna's reputation for engineering excellence is without equal in its field.