

# KLH MODEL TWENTY



The KLH Model Twenty is a newly developed, high-performance stereophonic music system. It offers, in a compact and tasteful format, the basis of a complete home entertainment center. It is scaled to fit into any living room, including one in which space is too limited for a conventional console or sound system. And it is designed to provide, both initially and after many years of use, a level of performance far beyond any limits suggested by its size and price.

The Model Twenty is the latest product of KLH's conviction that the advantages and quality associated with special-purpose components can be offered in less technical and less complex form — and in an instrument more convenient and flexible than the traditional console. Already applied to such products as the KLH Model Eight FM receiver and the Models Eleven and Fifteen phonographs, and approved by thousands of critical listeners, this idea has been extended in the Model Twenty to allow the incorporation of every feature of specialized sound equipment felt to be of real advantage to the listener.

The Model Twenty is a powerful and versatile instrument. It can reproduce in a living room — in essentially undistorted form — the frequency and dynamic range of a symphony orchestra. It can accommodate records, conventional and multiplex FM broadcasts, and (through inputs for associated equipment) tape recordings, AM broadcasts, or the sound-portion of television transmissions. It has a full complement of effective controls to adjust mono and stereo program material to the requirements of the listener and the acoustics of a living room.

The design of advanced, all-transistor circuitry is responsible for the Model Twenty's compactness. Full use of the transistor's potential also helps to account for the Model Twenty's very wide frequency range and very high peak-power capabilities. Most important, however, is the atten-

tion that has been given to realizing the transistor's promise of long life with no deterioration of performance. Every important electronic component of the Model Twenty has been chosen to reinforce the potential of long, trouble-free operation. With the exception of the turntable, which is subject to the wear of all mechanical systems and may require occasional parts replacements, there is nothing in the Model Twenty that can be expected to wear out or cause a gradual decline in performance.

The features and technical capabilities of the Model Twenty are detailed elsewhere in this folder. The usual facts and figures, however, do not fully describe or fully account for the Model Twenty's overall sound quality. This quality is distinctive for the absence of any audibly "electronic" exaggeration, and for the presence in its place of an octave-to-octave musical balance across the frequency range. It is this balance — a characteristic of all KLH equipment — that provides the all-important supplement to the Model Twenty's wide range, low distortion, and audibly unstrained power capacity.

In the Model Twenty, both musical balance and overall performance are due in great part to carefully and thoroughly integrated design. The components of the Model Twenty are not simply matched, in the conventional sense, to operate together. They have been designed to complement each other to a degree we believe to be unprecedented. The Model Twenty has been conceived from the outset as a single, high-performance unit, and its degree of integration is perhaps the most important advantage a manufacturer can offer in the design of a sound system. It helps to achieve a level of performance in the Model Twenty that equals or surpasses that of considerably more expensive groups of components — a level we feel will be considered remarkable by any standards for many years to come.



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## THE COMPONENTS

***The Loudspeakers*** — The Model Twenty Speaker systems are new, two-way acoustic-suspension designs capable of smooth and extended response with very low distortion. Each bookshelf enclosure houses a 10-inch high-compliance woofer and a 1-3/4-inch direct-radiator tweeter. The ability of the woofer's cone to move without restriction over a very long distance helps to provide excellent bass response, with low harmonic distortion even at very high listening levels. The design of the tweeter enables it both to respond precisely to the highest musical frequencies and to disperse these frequencies with remarkable uniformity over a wide area — achieving extremely accurate musical definition and an open, uncolored sound quality. A carefully designed crossover network helps achieve a smooth transition between the operating ranges of woofer and tweeter, and incorporates a 3-position switch that adjusts the high-frequency level to suit any listening environment.

The bookshelf size of the speaker enclosures permits them to be placed unobtrusively wherever they provide optimum sound quality and fullest stereo coverage. The cabinets are finished on four sides to allow horizontal or vertical placement. Snap-out grille-cloth panels facilitate changing cloths to match a particular decor. The speakers are provided with 40 feet of easily-concealed cable.

***The Amplifier*** — The Model Twenty's amplifier is a new all-transistor, direct-coupled design conservatively rated at 40 watts IHF stereophonic music power. Its equivalent EIA peak-power rating is in excess of 100 watts. Employing neither output nor driver transformers, the amplifier's circuitry is designed for wideband frequency response and accurate handling of transient waveforms; the full power of the amplifier is available at high and low frequencies with very low distortion. The preamplifier section is carefully matched to the characteristics of the phonograph cartridge (the Pickering V-15), and overall gain and other factors have been carefully calculated to prevent damage to amplifier or speakers from momentary overloads or other disturbances.

The amplifier is powerful enough to drive the Model Twenty's speakers to very high listening levels with no audible sense of strain or compression. More important, its output is precisely shaped to the requirements of the speakers, providing the exact proportion of power they need — octave by octave across the frequency range — for smooth, musically balanced response. The thoroughgoing use of this technique, pioneered by KLH, has been extended in the Model Twenty to the point where the loud-

speakers can be considered virtually a part of the amplifier's circuitry.

***The FM Multiplex Section*** — The Model Twenty's all transistor tuner section, identical except for control features to the KLH Model Eighteen Tuner, is capable of excellent mono and multiplex stereo FM reception under even the least favorable conditions. Sensitive and drift-free, the tuner receives and holds very weak signals from distant stations, and achieves a noise-free background for signals of barely more than minimum strength. Both the tuner's effective sensitivity and its performance in metropolitan reception areas are heightened by its excellent selectivity, which enables it to separate the most closely-spaced stations on the FM dial and to bring in distant stations whose signals otherwise would be blanketed by local broadcasts and spurious images.

Although it employs a full complement of standard circuit requirements for excellent reception, including a 3-gang tuning capacitor, four IF stages, and a wideband detector, the tuner section is a fraction of the size of conventional tuners and receivers. One reason is the use of radically new, miniaturized IF and multiplex transformers (designed and manufactured by KLH). These transformers not only help achieve extreme compactness but also are designed to remain in alignment during shipment and in continuous use — eliminating the need for service adjustments over many years of operation.

The Model Twenty is supplied with two FM antennas: a short-wire antenna and a folded dipole. These will be fully adequate under most reception conditions.

***The Automatic Turntable and Cartridge*** — Manufactured to KLH specifications by Garrard of England, the Model Twenty's automatic turntable is a new four-speed design combining precise, reliable operation with gentle treatment of records. Driven by a balanced 4-pole motor, the turntable is quiet and free of annoying speed inconsistencies. Its low-mass tone arm assembly will track even severely warped records, and combines with a special turntable suspension to minimize acoustic feedback and to prevent groove-jumping and record damage when the Model Twenty is accidentally jarred.

The pickup is a Pickering V-15 magnetic cartridge with a diamond stylus. Its low tip mass provides superior sound quality and helps reduce record and stylus wear. It conforms to the 15° vertical tracking angle now established as the record industry's standard.

# CONTROLS AND FACILITIES

## On the Control Panel

**Selector Switch:** Offers two positions for external music sources (tape recordings, AM broadcasts, sound-portion of TV broadcasts) as well as for records and FM broadcasts.

**Bass and Treble Controls:** Provide full range of boost and cut to match the acoustic character of a room, compensate for hearing losses at frequency extremes at low listening levels, and improve inferior program material.

**Balance Control:** Equalizes output levels of speaker systems under all conditions.

**Vernier Tuning Control:** Provides easy and precise tuning. Planetary tuning dial and direct connection to tuning capacitor prevent slippage or gradual change of apparent station locations on the dial.

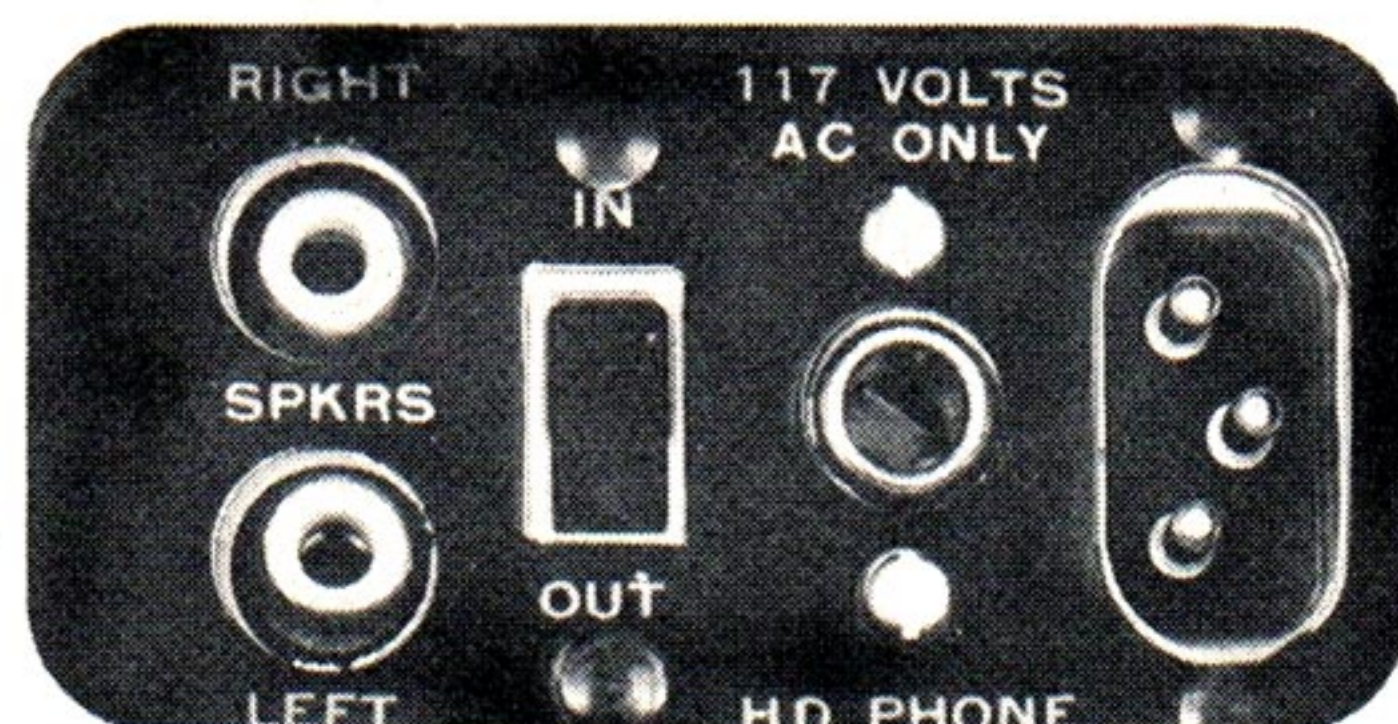
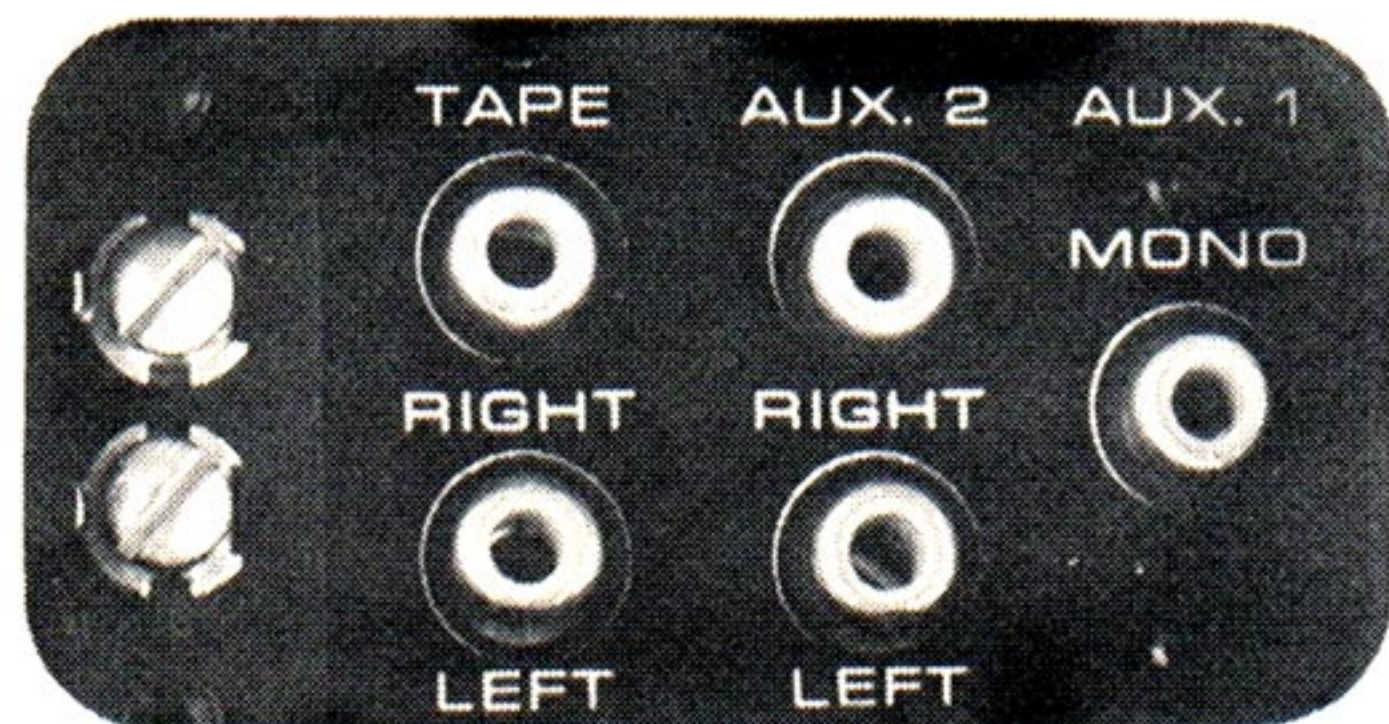
**Zero-Center Tuning Meter:** Indicates exact tuning position for the best reception of a station, with minimum noise and distortion.

**MX Stereo Indicator Light:** Signals presence of FM Stereo broadcasts.

**Mono-Stereo Slide Switch:** Insures proper reproduction of mono recordings and FM broadcasts, with minimum background noise.

**Master On-Off Switch:** Works in conjunction with Operating Lever of automatic turntable to provide automatic or manual shut-off. Turntable may be used as timer for automatic shut-off of FM broadcasts.

## On the Rear Panel



**Auxiliary Inputs:** One pair of standard phono jacks for stereo or mono sources; second single jack for mono source.

**Tape Recording Outputs:** Permit recording from records, FM, or external music source.

**Headphone Output:** Accommodates standard stereo headphone plug.

**Speaker In-Out Switch:** Allows speakers to be turned off when headphones are in use.

**Speaker Outputs:** Standard jacks for simple and positive connection of speaker cables.

**Antenna Terminals:** For connection of either of the two indoor antennas supplied with the Model Twenty, or of a 300-ohm outdoor antenna cable.



## SOME FINAL FACTS

*Semiconductor Complement:* 32 transistors, 13 diodes

*Speaker Cabinet Dimensions:* 23-1/8"H x 11-3/4"W x 9"D

*Control Center Dimensions:* 18-1/4"W x 4"H x 14"D

*Cabinet Finish:* Oiled Walnut Veneer

*Standard Accessories Supplied:* Two indoor FM antennas; automatic spindle for 45-rpm records; tracking-force gauge; stylus-cleaning brush.

*Optional Accessories Available:* Matching hinged cover of walnut and smoked plexi-glass; stylus for 78-rpm records.

*Guarantee:* Two years free parts and labor in normal use, excluding only normal wear to stylus and turntable mechanism.

Suggested Price for Continental United States: \$399.95  
Slightly Higher in Alaska and Hawaii

## AND A FINAL WORD

With the exception of the turntable and cartridge mechanisms, every part of consequence in the performance of the Model Twenty is of KLH's own manufacture. By going to the unusual lengths of designing, manufacturing, and testing in its own plant all critical parts used in all its products, KLH not only is able to assure uniformly high quality but also is free to make radical departures from conventional ideas and techniques that rely on parts commonly available in the electronics industry.

There are many important innovations in the Model Twenty. It is the product of the most imaginative design and careful manufacture we have been able to bring to bear. It reproduces the lowest (32 cps) and the highest (above 16 kc) frequencies of musical interest in such proportion as to insure full musical enjoyment. It is a high-performance instrument that can stand comparison with far more expensive sound equipment. We commend it to your critical attention.