

Sony Model TC-366 Three-Head Stereo Tape Deck

MANUFACTURER'S SPECIFICATIONS:

Speeds: $7\frac{1}{2}$, $3\frac{3}{4}$, and $1\frac{7}{8}$ ips. **Maximum reel size:** 7 in. **Motor:** One, vibration-free induction. **Heads:** Three—erase, record, play; quarter-track. **Semiconductors:** 27 transistors, 4 diodes, 1 Zener. **S/N:** 55 dB (with SLH tapes), 52 dB (with standard tapes). **Frequency Response:** 20-25,000 Hz at $7\frac{1}{2}$ ips; 30-17,000 Hz at $3\frac{3}{4}$ ips; 30-9,000 Hz at $1\frac{7}{8}$ ips. **Wow and Flutter:** .09% at $7\frac{1}{2}$, 0.12% at $3\frac{3}{4}$, 0.17% at $1\frac{7}{8}$. **Inputs:** Microphone, low impedance, 0.19 mV; **Auxiliary,** 100k ohms, .06V. **Outputs:** Line, 0.775 V, 100k ohms impedance; headphone, 8 ohms, 30 mV. **Dimensions:** 16 $\frac{7}{8}$ " wide, 8 $\frac{5}{16}$ " high, 14 $\frac{3}{16}$ " deep. **Weight:** 22 $\frac{1}{2}$ " lbs. **Price:** 229.95.

The new model TC-366 replaces the well-known 355, which has long been a popular deck. The new features of the 366 should ensure even greater acceptance than its predecessor. Among these



features are its ability to accommodate both microphone and line inputs simultaneously with mixing between them, an automatic total-mechanism shut-off, tape-equalization selector switch, faster forward and rewind spooling, and the absence of pressure pads—always a decided advantage. Another of its plus features is the unique cabinet which provides for either vertical or horizontal mounting of the chassis to the user's choice.



Fig. 1—The 366 remounted in its cabinet for horizontal operation

Physically the TC-366 is in a slant-front case which can be used in the vertical position, or if the user wants to place in the horizontal position he removes it from the case and turns the deck around and remounts it, with a slanting front panel in a position which makes it easily accessible in addition to being attractive in appearance. The upper section of the molded plastic panel is fitted with the two reel hubs flush with the satin-finished aluminum surface. The panel is stiffened on all four sides by extruded aluminum trim strips. An aluminum strip across the center of the front serves as a divider, and accommodates the four-digit counter at the left. Centered on this strip is the removable head cover, finished in dark gray trimmed with aluminum. The base of the head assembly is finished in polished chrome. To the left of the head cover are the pause lever (which can be operated momentarily, or locked in the stationary position), and to its right the speed-control knob. On the other side of the head cover is the operating control with its REWIND, STOP, FORWARD, and FAST FORWARD positions.

Below this section to the far left is the noise reduction switch, followed by two RECORD levers in a bright red, the left channel record-level controls—one for microphone and one for the auxiliary input. Next comes the two VU meters, with a red indicator light showing when recording, or when setting levels before starting the tape motion. To their right are the two record-level controls for the right channel. Next comes the tape selector switch and then the two monitor

You pay for what Thorens leaves out.

And you'll never miss them. Like rumble. Or wow and flutter. Irregular turntable speed. Damaged records, chipped stylus.

The Thorens TD-150 Mark II is for people who take their music seriously. People who refuse to accept the many imperfections of ordinary sound reproduction. This is how Thorens has championed their cause.

Record wear reduced . . . Stylus life extended

Several Thorens features provide this. Positioned at the front is the Cueing Synchronizer. It lowers the tonearm gently and precisely into the groove. The Anti-Skate Control then makes certain the stylus is positioned exactly on both walls of the groove. And when you change turntable speeds (33 $\frac{1}{3}$ and 45 rpm) the Speed Glide Adjustment does it rapidly and smoothly without jolting the stylus.

Rumble, wow and flutter are eliminated

The flywheel action of the 12-inch, precision balanced, non-magnetic platter absorbs the slightest variations in speed and eliminates wow and flutter. The long and resilient drive belt system of the synchronous motor in combination with a unified suspension system for the

tonearm mount and turntable assembly routs rumble effectively.

Constant Turntable Speed

Dance of the Hours never sounds like Danse Macabre. The double 16-pole synchronous motor always maintains its speed regularity, providing constant, smooth, in-phase precise speed.

Plays records the way they were recorded

Records are cut at a 15° tracking angle. The best performance is achieved when they're played back at this angle. The low-mass plug-in shell permits you to adjust the tracking angle of a cartridge accordingly. You're always assured perfect tracking force since the tonearm can be adjusted to track as low as $\frac{1}{2}$ gram, and is always in perfect balance.

So you see, when you pay for what Thorens leaves out, you receive superb performance and reliability. But then you expect unexcelled quality from Thorens. And you get it.

TD-150 Mark II, complete with tonearm and walnut base . . . Only \$130.00. For more details, see your Thorens dealer, or write to:

ELPA MARKETING INDUSTRIES, INC.
New Hyde Park, New York 11040



THORENS

switches, one for each channel, which permit monitoring on either channel from the source or the tape. To the far right is a power indicator light just above the white rocker-type power switch. At the far left corner is the stereo headphone jack.

The auxiliary input and line output phono jacks are accessible through an opening on the left side of the wood case, and the power cord comes out a similar opening on the right side. The microphone(s) are plugged into miniature phone jacks located just below the two record levers. When the tape is stationary, the deck can be put in the record mode in either or both channels to permit setting levels before starting the recording. This operation requires that the monitor switches be in the source position. After starting the recording, both monitoring and VU meter indication can be furnished by source or tape, at the operator's discretion. Headphone monitoring is fed from an emitter follower through a step-down transformer which matches the transistor to 8-ohm phones—the ones most likely to be readily available to the user of the machine.

The transport mechanism is of the proven type used in many of the Sony models. The resiliently mounted induction motor drives the capstan by an idler between the three-step motor shaft and a two-step flywheel. The highest speed uses the largest diameter of motor pulley and the smaller diameter on the flywheel. For the two slower speeds, the idler contacts the larger diameter of the flywheel, thus ensuring a larger motor-shaft diameter. The take-up spindle is driven from the flywheel by a rubber belt, and for fast forward and rewind, the spindles are driven by idlers, one of which gets its power from a pulley on the motor shaft. The motor is resiliently mounted to eliminate vibration, and the effectiveness of this mounting is shown by the low flutter-and-wow figure. There is a brake on the feed spindle which is released by tape tension across an arm in the tape path.

The tape passes under the brake release arm and under a tape guide fitted with a tapered entryway which directs the tape into the guide accurately, then past the automatic shutoff lever which actuates a switch for the motor as well as a trigger which releases the operating knob unless the tape is threaded through the machine. The tape then passes over the erase head and the scrape-flutter filter—which is a precision idler roller that eliminates modulation distortion. It then passes the non-magnetizing record head, the tape lifter bar, then the well-shielded play head and finally the capstan. Before being wound onto the takeup reel, it

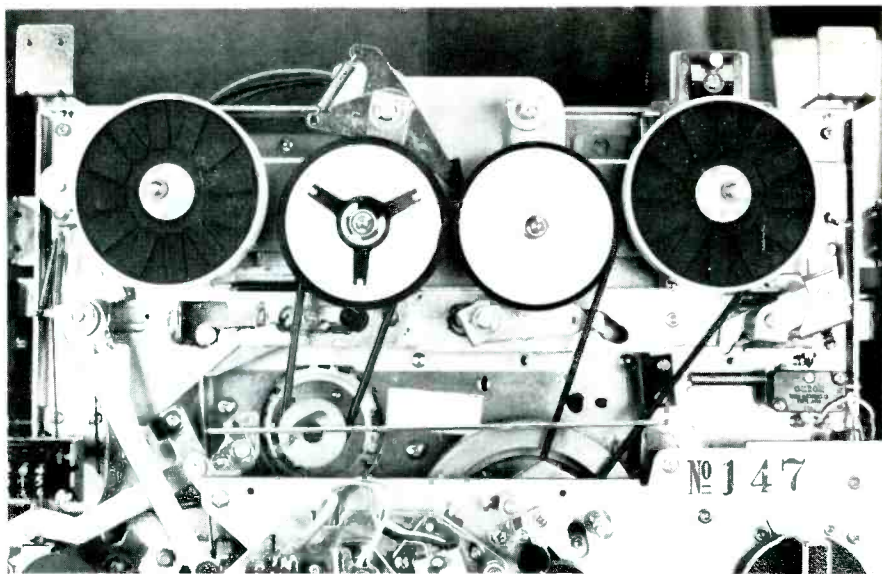


Fig. 2—Drive Mechanism. Lever at left controls drag on feed reel, applies brake on runout or tape breakage. Note two-stepped flywheel.

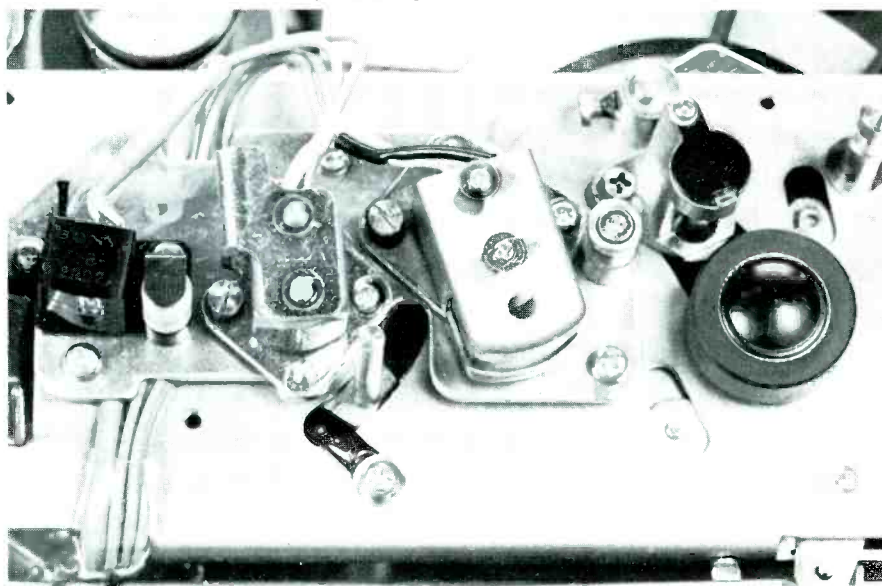


Fig. 3—Close-up of head assembly.

passes another guide, ensuring clean wind.

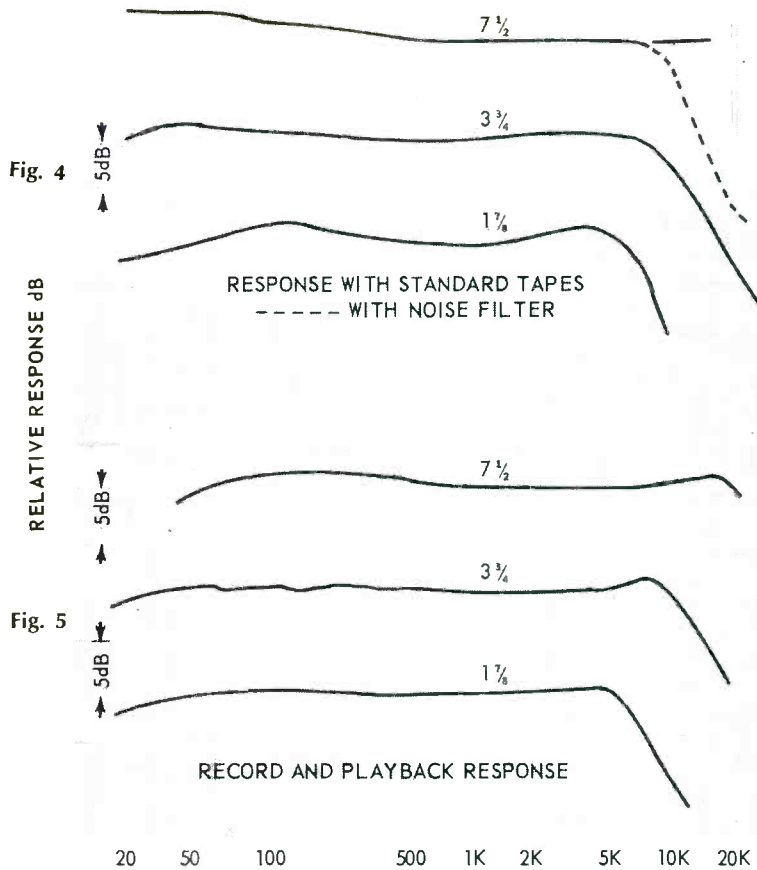
Circuit Description

The electronics of the 366 are relatively simple. The record amplifier uses five transistors per channel—two as a feedback pair for the microphone preamplifier, followed by the *MIC* level control. The *AUX* input level control and the *MIC* level control feed an emitter follower through isolating resistors, and the output of the follower is fed to the source/tape monitor switch, and to the equalized two-stage record amplifier. Bias and erase current are supplied by a self-balancing push-pull oscillator. Supply voltage to the oscillator is fed by the channel record switch to the selected record and erase heads, and through two additional switches actuated by the operating lever for safety. Oscillator output builds up slowly due to a delay network in the supply circuit, and bias is adjusted by a variable capacitor and an

equalizer switch which reduces the bias in two steps for the lower speeds.

The playback amplifier utilizes six transistors—the first three as a feedback-equalized preamp ending up with an emitter follower which feeds a level-adjusting pot that balances source and tape levels.

Following the source/tape selector switch is a two-stage amplifier which accommodates the noise suppressor circuit—simply a roll-off, with the effect shown in Fig. 3—and a compensating adjustment for the type of tape used, normal or low-noise-high-level. Additional compensation is provided in the record amplifier to ensure flat response on either type of tape. If you record on low-noise tape with the normal setting, you will have a response which rises in the upper mid-range frequencies. The equalized two-stage amplifier is followed by another emitter follower which drives the headphone transformer and the record-level meter.



The power supply provides a 2-volt winding for the indicator lights, as well as a center-tapped 52-volt winding feeding a full-wave diode pair, followed by a three-transistor regulating circuit to supply 25 V to the amplifiers and the bias oscillator.

Performance

Figure 4 shows the response to standard tapes for the three speeds, and Fig. 5 shows the record/replay response, using the sample of Sony Low-Noise-High-Output tape that is furnished with the machine. We measured wow-and-flutter at .07 per cent at 7½ ips, with most of the contribution in the 6- to 250-Hz region. At 3¾ ips, wow-and-flutter measured 0.1 per cent, and at 1¼, it was 0.14 per cent, all being below specifications. Bias frequency was noted as being 160 kHz, common to most recent Sony models, and an excellent assurance of complete absence of any interference with pilot or switching frequencies when recording from FM stereo. Distortion measured 1.0 per cent at indicated 0 VU at 1000 Hz, 0.4 per cent at 10,000, 5000, and 100 Hz, with an increase to 0.8 per cent at 50 Hz. The 3 per cent distortion point was reached at an indicated recording level of +4.5 dB, resulting in a signal-to-noise ratio of 54 dB with standard tape and 57 with the low-noise product.

An input signal of 0.1 mV at the microphone jack was sufficient to give a 0-dB recording level, as was an auxiliary input of 0.32 V at the maximum settings of the record-level controls. Line output for a 0-dB recording level was 0.78 V, and the level difference between source and tape was less than half a dB. Rewind time was a very fast 110 seconds for 1800 feet of tape, and fast forward was clocked at 115 seconds, both extremely fast for a consumer-type machine. Channel separation was almost identical with the signal-to-noise figure—54 dB with standard tapes, and 56 with low-noise tape.

There is no question that the TC-366 is a worthy successor to the long accepted 355, and after several hours of various types of recording, we found no tape spillage and no broken tapes, no matter how hard we tried. The enforced delay between fast wind and ordinary recording or playing with the capstan drive prevents any of these undesirable happenings. The "retractomatic" pinch roller, which rises and moves toward the capstan as the machine is started makes it exceptionally easy to thread the tape, since the roller is well out of the way during this operation. We could sum up by saying that the 366 is simple and uncluttered, but that it has all the functions necessary to the average recordist.

C. G. McP.

ADC: WORLD'S MOST PERSNICKETY SPEAKER MAKER.



We make 303AX speakers for fussy audiophiles. Each one is crafted by hand and contains a two-way acoustic suspension system that's accurate enough to please even the most discriminating listener. The ADC 303AX lacks the distortion and coloration often found in speakers in its price range. Which makes it a superb value in a full-sized bookshelf speaker.

Of course, there's only one way to find out how really accurate our speaker system is. Go to your nearest ADC dealer and compare it to other models. After all, hearing is believing!

SPECIFICATIONS

- Type . . . Bookshelf.
 - Cabinet . . . Oiled Walnut.
 - Dimensions . . . 23¾" H x 13" W x 11¾" D.
 - Weight . . . 37 lbs. each.
 - Frequency Response . . . 33Hz—20kHz ± 3 db (measured in average listening room).
 - Speakers (2) . . . High accuracy, wide dispersion tweeter with Hi Flux Magnet and 10" high compliance woofer.
 - Nominal Impedance . . . 8 ohms.
 - Power Required . . . 10 watts min.
 - Price . . . \$100 suggested resale.
- Write for details about other ADC speaker systems. From \$55-\$350.



AUDIO FOR AUDIOPHILES

Check No. 53 on Reader Service Card