MITSUBISHI AUDIO SYSTEMS

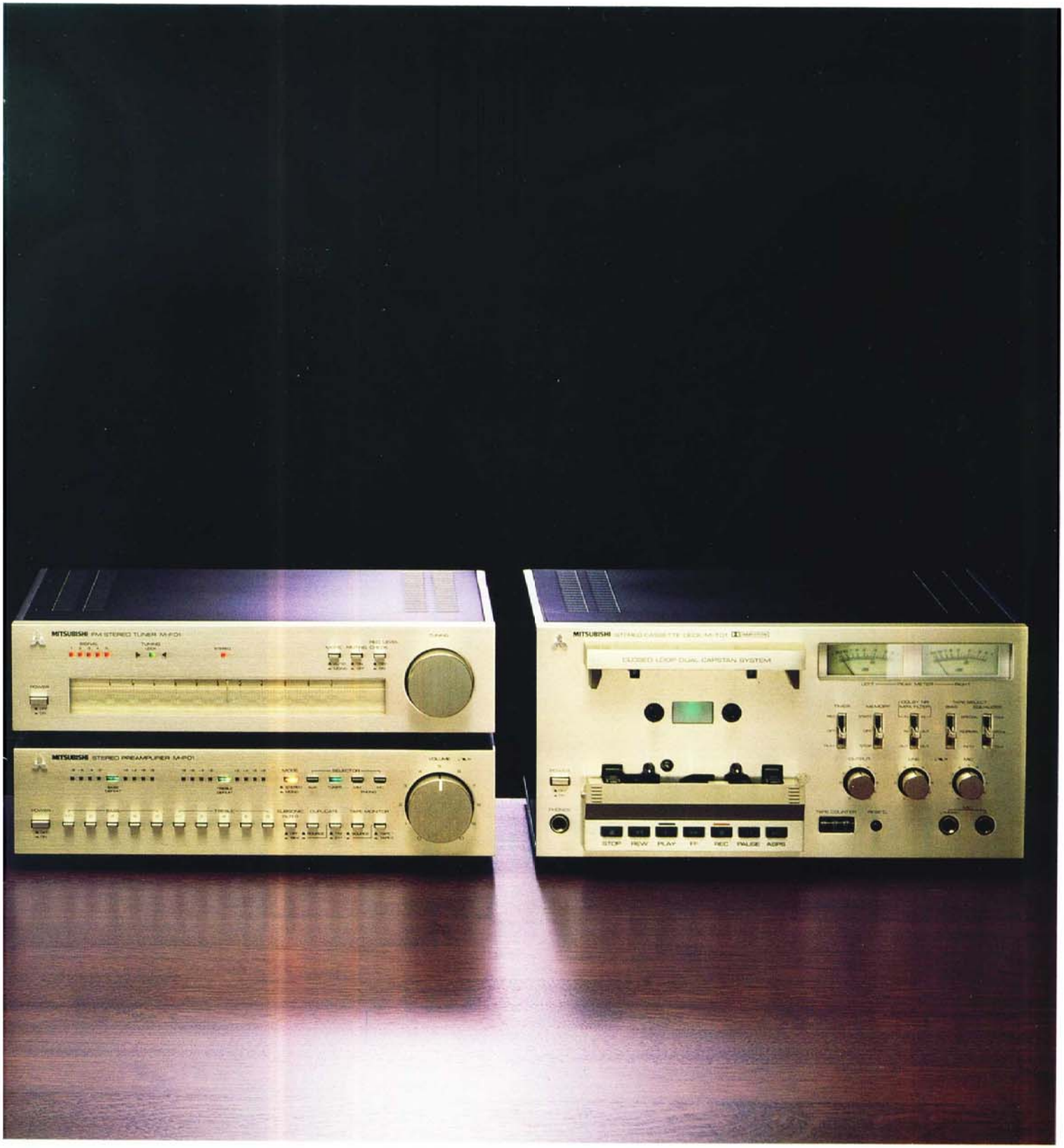
Microcomponents

M-P01 Preamp, M-A01 Power Amp, M-F01 FM Stereo Tuner, M-T01 Cassette Tape Deck

A TOTALLY NEW CONCEPT IN HIGH-QUALITY HIGH-PRECISION MINIATURES

AUDIO COMPONENTS

With their warmly attractive champagne-gold hairline finish, their ultracompact but uncrowded design, and their superb sound quality and unusual, innovative features, the Microcomponent series is destined to win a special place in audio history... and in the hearts of audio fans and music lovers.



M-PO1

AN EXCITING NEW PREAMPLIFIER WITH UNUSUAL FEATURES AND EXCELLENT PERFORMANCE

All the sophistication of a high-precision miniature with performance to match.

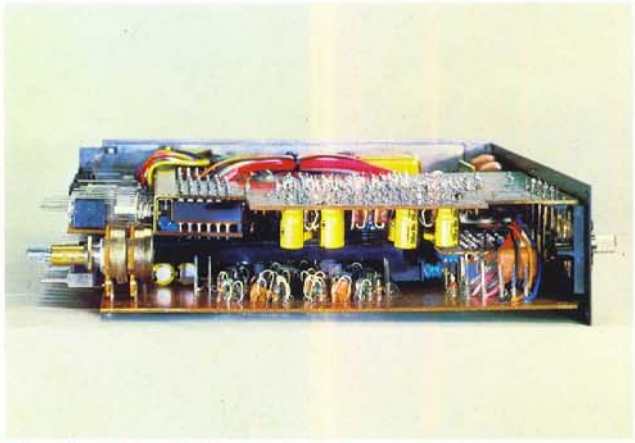
An Attention-Gatherer for Both Sight and Sound

The unusual and exceptionally compact styling of our new microcomponent series will make you want to hear them...and we are sure that once you have, delight with the Microcomponent format will be replaced with astonishment at the performance.

Digital Tone Controls with LED Indicators

Perhaps the greatest initial impression on seeing the M-PO1 is the almost complete absence of control knobs: only the volume control remains.

This unique approach to switching will be appreciated after familiarization with the extremely accurate and easy-to-use tone controls. Precisely graduated steps of boost or cut to both treble and bass are controlled by pushing the ±2dB, ±4dB, ±6dB or ±8dB-buttons. There is a separate button to decide whether boost or cut is applied, and the setting is immediately indicated by the tone-control button LEDs. Press the central defeat LED button and it will light up to show that the tone control has been completely by-passed. This is useful not only to evaluate the precise effect of each degree of tone control against a truly flat reference standard, but also to obtain the full inherent performance of the preamplifier.



The 4-level printed-circuit-board construction

A Preamplifier with Built-in MC Head Amp

The best of moving-coil (MC) cartridges offer advantages of increased clarity and dynamic range over conventional moving magnet (MM) types, but all too often their low outputs mean that the fan who wants to use them has to buy an extra step-up transformer or head amp.

A head amp for MC cartridges is built into the M-PO1. This superb unit has a signal-to-noise ratio of 77dB even for a 100μV (0.1mV) input, with only 0.005% total harmonic distortion. It effectively outperforms step-up transformers in distortion and frequency response.

Ultrawide Dynamic Range

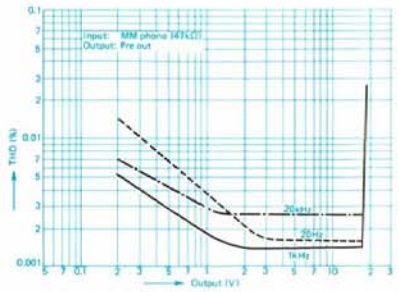
With direct-cut records and rapid advances in audio technology increasing the dynamic range of program sources—the range of sounds from the loudest to the softest—the extremely wide range of the M-PO1 is an important advantage. The equalizer amp has a full 90dB signal-to-noise ratio for 10mV input, with typical distortion only 0.003% and RIAA deviation within ±0.2dB. The tone amp does even better: 110dB S/N and similar 0.003% distortion. The whole range of signals from the softest whisper to a thundering orchestral crescendo are handled with effortless ease and accuracy.

Tape Duplication and Monitoring Facility

Two tape decks can be connected, and duplication is possible from either one to the other while listening to another program source and monitoring progress from time to time at the touch of a switch.

Gold-Plated Phono-Input Terminals

MM, and particularly MC, phono inputs carry very small signals that can easily be seriously affected by the slightest amount of contact resistance. Gold plating on the phono-input jacks gives excellent contacts that do not deteriorate with time.



Output vs. THD (for MM phono input)

M-FO1

A MINIATURE FM STEREO TUNER WITH MIGHTY PERFORMANCE AND QUARTZ-PLL SYNTHESIZER TUNING

A modern marvel of high performance electronics and superb FM stereo quality.

Quartz-PLL Synthesizer for Perfect Tuning Every Time

The M-FO1 FM stereo tuner not only guarantees absolutely accurate tuning, it is completely free from tuning drift thereafter. Unlike conventional FM tuners, whose performance depends very largely upon how well they are tuned in, the M-FO1's quartz-PLL tuning system ensures that it can always, without exception, give its very best performance.

The quartz-PLL tuning system is the secret of how this exceptional performance is obtained. The quartz crystal gives an extremely accurate 6.4MHz signal that is divided by 128 to give a basic 50kHz frequency. Comparing this reference frequency with one-half the local oscillator frequency enables any phase difference between them to be eliminated, effectively locking them together: this circuit is the phase-locked loop (PLL). Under its action, the local oscillator is limited to frequencies that are exactly 100kHz apart—e.g., 98.7, 98.8, 98.9MHz, etc.

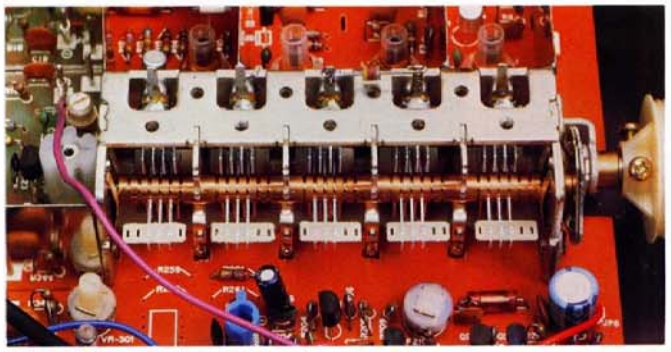
The graph shows how smoothly turning the tuning knob causes the tuning to jump from frequency to frequency and —since FM stations only broadcast at intervals of 200kHz (0.2MHz) across the dial—from station to station.

The total harmonic distortion is completely independent of detuning frequency over wide limits, unlike conventional tuners.

Unmistakable Tuning Indicators

Like other members of the Microcomponent series, the M-FO1 features unusually clear LED-type indicators. Here the locktune indicator is linked with the dial illumination: normally the dial numbers are edge-lit in white, but as soon as a station is tuned and locked, this is replaced by a gentle green glow. The five LEDs on the left indicate signal strength. The pointer lights on either side of the tuning-lock indicator go on to show which way the tuning knob should be turned for perfect tuning. As soon as only the tuning lock LED is lit, tuning has been completed...and the stereo LED will go on if the FM station is broadcasting in stereo. Of course, you can switch over to mono listening if the station is too far away for good stereo reception—although the M-FO1 is so sensitive that this shouldn't happen too often!

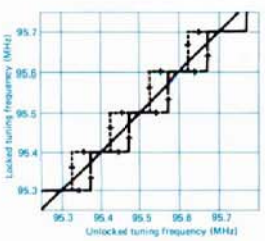
Another useful control lets you mute out interstation noise and stations too weak for good reception, so that you only receive stations capable of top-quality reception.



The high-precision FM tuning capacitor

Wide, Flat Frequency Response

Most FM tuners have a filter to get rid of the unwanted pilot signal (at 19kHz), but these also affect the musical signal with frequencies below 19kHz.



Tuning with the Quartz-PLL synthesizer

In the M-FO1 the pilot signal is cancelled out completely without the use of a filter, so that frequency response is flat to within ±1dB at 16kHz.

High Performance Front End

The all-important front end, that captures and processes the signal, uses the same high-precision five-ganged tuning condenser as the prestigious DA-F20, Mitsubishi's top tuner, making for great accuracy and stability. The M-FO1 rejects spurious signals very effectively thanks to dual-gate MOS-FETs in the RF amplifier and mixer stages, and utilizes four-pole linear-phase LC filters for low distortion. Outstanding temperature and humidity stability are ensured by the use of aluminum-cored coils and teflon trimmer-capacitors in the local oscillator, and glass-epoxy printed-circuit boards... all representative of the state of the art.

Recording-Level Check Signal

A test signal at 440Hz corresponding to 50% modulation of the FM signal is provided for easy level setting when tape recording FM broadcasts.

M-TO1

A CLOSED-LOOP, DUAL-CAPSTAN DRIVE TAPE DECK WITH FEATHER-TOUCH CONTROLS

Everything to make cassette recording simplicity itself and a continuing pleasure.

Just the Right Size

In designing the cassette tape deck for our microcomponent series we have not been too concerned with reducing the size: instead, while maintaining the same attractive, warm champagne-gold hairline finish, we have designed it to the same dimensions as the M-AO1 power amplifier.

Convenient Front-Loading Format

Rather than adopt the horizontal-insert type of cassette loading often used on compact cassette formats—inconvenient for tape-head cleaning and subject to tape snarl-ups—the M-TO1 features frontal loading, with full tape visibility and a hinged tape-head cover that protects the head assembly from dust and hinges down for easy access.

Feather-Touch Microswitch Controls

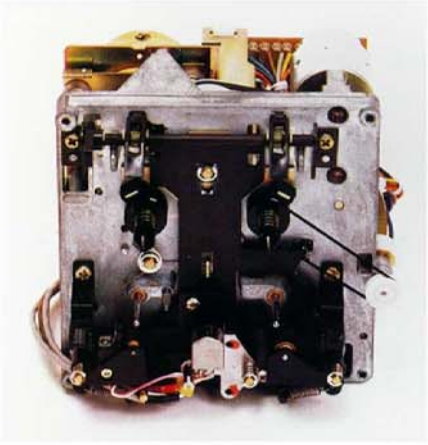
For smooth and rapid switching between different operating modes, the M-TO1 features safe and positive logically interlocked controls, using solenoids to operate the mechanism indirectly. To go from fast rewind into the play mode, just press the appropriate feather-touch microswitches: the changeover is almost instantaneous, with no tape spillage. All operations are just as simple and foolproof.

A New Type of Pause Control—ASPS

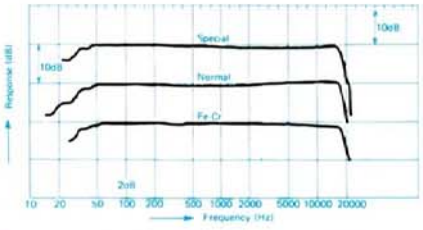
Mitsubishi's automatic spacing pause system (ASPS) puts a few seconds of silent spacing between different music selections without having to alter recording levels or go out of the recording mode.

Closed-Loop Dual-Capstan Drive

For the last word in stable tape drive, greatly reducing drop-outs and changes in level due to variations in tape tension over the heads, the tape is held between two capstans and their corresponding pinch rollers on the take-up and supply sides, unlike the normal single-capstan plus pinch roller combination. The mechanism itself is mounted on a high-precision die-cast metal base, and is highly resistant to vibration and other harmful influences. This, and a phase-locked loop (PLL) with a quartz-crystal oscillator as the standard for controlling the speed of the DC servomotor, bring wow and flutter down to a completely negligible 0.05% wrms. The recording/playback head is of sendust, with excellent magnetic and wear-resistant properties, and is largely responsible for the good frequency response.



The high-precision tape-transport mechanism



Frequency response characteristics

Peak Level Meters

The fast-response peak-reading meters on the M-TO1 make it easy to achieve recordings with the maximum of signal-to-noise ratio and the minimum of distortion by giving accurate indication of critical peak-signal levels.

Other Important Features and Functions

Three-way bias and equalization settings enable you to get the best from virtually all of the currently available tapes. The M-TO1 can be operated under timer control with an external timer unit to make recordings in your absence, or to wake you with pre-recorded music. And useful memory-stop and memory-play functions are provided. Separate microphone and line-input level controls let you mix your own disc-jockey comments, vocal, or musical contributions with your favorite performers. If you don't have a stereo microphone, plugging a mono mic into the left-hand channel jack will give center-balanced mic recording. Dolby* noise reduction is also featured.

M-P01 Preamplifier Specifications

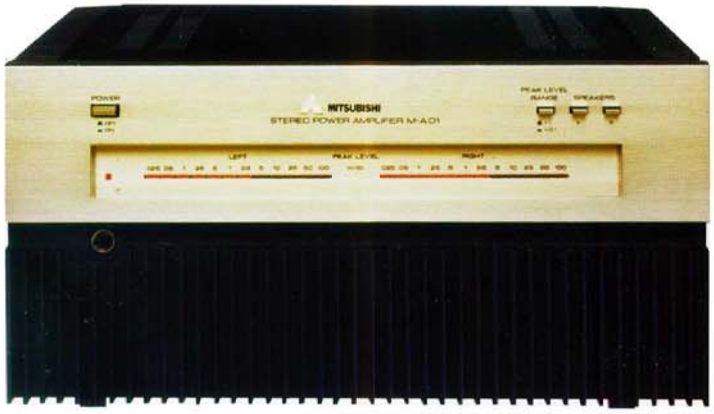
Input sensitivity/impedance	
Phono MC	100μV/10Ω
Phono MM	2.3mV/50kΩ/100pF
Tuner, Aux, Tape 1/2	150mV/50kΩ
Output level/impedance	
Preamp output (rated)	1V/600Ω
Preamp output (max)	18V/600Ω
Tape rec 1/2	150mV/600Ω
Equivalent input noise level (IHF-A network)	
Phono MC	−157dB (V) (47Ω)
Phono MM	−136dB (V) (closed circuit)
Others (high level)	−136dB (V) (closed circuit)
Signal-to-noise ratio at rated output (IHF-A)	
Phono MC	77dB (47Ω)
Phono MM	84dB (rated input)
	96dB (10mV)
Others (high level)	110dB (closed circuit)
Total harmonic distortion (1V output, volume −20dB, from 20~20,000Hz)	
Phono MC	0.005%
Phono MM	0.003%
Others (high level)	0.002%

Frequency response	
Phono RIAA deviation	±0.2dB (20Hz~20kHz)
Others (high level)	+0, −0.5dB (10Hz~100kHz)
Tone controls	
Bass (at 100Hz)	0, ±2, ±4, ±6, ±8dB
Treble (at 10kHz)	0, ±2, ±4, ±6, ±8dB
Subsonic filter	18Hz (−6dB/oct)
Phono overload level	
Phono MC	12mV
Phono MM	290mV
Dimensions	270×70×247mm
(W×H×D)	(10⅝×2¾×9¾")
Weight	3.2 kg (7 lb)

M-F01 FM Stereo Tuner Specifications

Usable sensitivity	
Mono	11.2dBf (2.0μV)
Stereo	22.7dBf (7.5μV)
50dB quieting sensitivity	
Mono	19.2dBf (5.0μV)
Stereo	39.2dBf (50μV)
Signal-to-noise ratio	
Mono	80dB
Stereo	77dB
Frequency response	±1dB 30~16,000Hz
Total harmonic distortion at 1kHz	
Mono	0.08%
Stereo	0.1%
Capture ratio	1.0dB
Alternate channel selectivity	70dB
Image response ratio	100dB
IF response ratio	100dB
Spurious response ratio	100dB
AM Suppression	65dB

Stereo separation	
1kHz	50dB
10kHz	40dB
Subcarrier product ratio	70dB
SCA rejection ratio	80dB
Output level/impedance	
Fixed	150mV/5kΩ
Variable	0~500mV/5kΩ
Power consumption	10W
Dimensions	270×70×247mm
(W×H×D)	(10⅝×2¾×9¾")
Weight	3.5 kg (7 lb 11oz)



M-A01
Power Amplifier Specifications

Minimum continuous rms output	70W per channel, both channels driven into 8 ohms from 15Hz to 20kHz, with no more than 0.01% total harmonic distortion:
Total harmonic distortion (8Ω, 15Hz~20kHz)	
At 30W per channel	0.004%
At 1W per channel	0.06%
Intermodulation distortion 70Hz:7kHz, 4:1, 8Ω	
At rated power	0.008%
At 1W per channel	0.01%
Power bandwidth (IHF, THD 0.05%)	10Hz~60kHz

Frequency response (8Ω)	
At rated power	±0.1dB 20Hz~20kHz
At 0.5W per channel	+0, −1dB DC~200kHz
Input sensitivity/impedance	1V/50kΩ
Damping factor (8Ω)	100, 20Hz~20kHz
Hum and noise	80μV (unweighted, closed circuit)
S/N at rated power	123dB (IHF-A closed circuit)
Slew rate	30V/μsec
Power consumption	200W (UL)
Dimensions (W×H×D)	270×130×243mm (10⅝×5⅛×9⅝″)
Weight	10kg (22lb)

M-T01
Cassette Tape Deck Specifications

Tape-speed accuracy	±1%
Wow and flutter (playback)	0.05% wrms
Fast forward, rewind time	80sec. (C-60 tape)
S/N ratio, +3dB, weighted	
Dolby out	56dB
Dolby in	64dB
Erasure ratio (1kHz)	70dB
Crosstalk	
Between channels	35dB (500~6,300Hz)
Between tracks	65dB (at 1kHz)
Harmonic distortion 400Hz, 160pwb/mm	1%
Frequency response (and recommended tape)	
Normal tape (TDK-AD)	40~13,000Hz ±3dB
Special tape (TDK-AS)	40~15,000 ±3dB
Fe-Cr tape (Sony Duad)	40~15,000Hz ±3dB
Sensitivity	
Microphone input	0.3mV
Line input	100mV

Bias frequency	85kHz
Dimensions (W×H×D)	270×140×246mm (10⅝×5½×9⅝″)
Weight	6.3kg (13lb 14oz)

"DOLBY" and the double D symbol "DD" are trade marks of Dolby Laboratories.

Specifications and design subject to change without notice for improvement.

MELCO SALES, INC.
3030 East Victoria Street, Compton, California 90221, U.S.A.
Tel.: (213)537-7132 Telex: 0673278
Toll Free: (800)421-1132 (Outside of California)

S-C0668-A KR-8003 Printed in Japan(BUN)

New publication, effective Mar. 1980.
Specifications subject to change without notice.