

PIONEER

RT-2022/2044



RT-2044

RT-2022

A Professional Open-Reel Tape System with Separate Tape Transport, Head and Record/Playback Amplifiers

The advanced tape enthusiast who desires versatility above all other factors in his choice of an open-reel tape system will quickly discover the multiple professional recording and playback advantages of the Pioneer RT-2022 (2-track, 2-channel) and RT-2044 (4-track, 4-channel) tape deck system. Simply by changing the unit combinations of this highly-advanced ensemble—in which

the tape transports, plug-in head assembly units and amplifier units are completely separated—it is possible to tailor the system for a variety of special uses and applications. Switchovers from two-channel to four-channel, for example, or from two-track to four-track, are eminently feasible with this exceptionally engineered and constructed system, as are such special applications as dub-

bing, air checks, live recording and recording and playback of all other sources. As would certainly be expected in a tape system of this unparalleled versatility, the RT-2022/RT-2044 is a marvel of technical superiority and true professional capability. Once again, for true tape deck value and innovation, Pioneer leads the field.

*Leather-like vinyl side panels and front cover are used in the construction of the cabinet.

RT-2022/2044 SPECIFICATIONS

RT-2022: Transport Unit (RTU-11/2T) + Amplifier (TAU-11)

RT-2044: Transport Unit (RTU-11/QT) + Amplifier (TAU-11) x2

RTU-11

| | |
|---|---|
| Operation: | 3-motor, 3-head system |
| Motors: | 4/8-pole hysteresis synchronous motor x1 (capstan drive) 6-pole inner-rotor induction motor x2 (reel drive) |
| Capstan: | Belt-drive (with 100mm ϕ flywheel) |
| Tape Heads: | 2-track 2-channel erasing head (ferrite) x1 |
| RTU-11/2T (JT-2022T): | 2-track 2-channel recording head (permalloy) x1 2-track 2-channel playback head (permalloy) x1 |
| RTU-11/QT (JT-2044T): | 4-track 4-channel |
| Tape Speeds: | 15 ips (38cm/sec.), 7-1/2 ips (19cm/sec.) \pm 0.8% |
| Fast Rewinding Time: | Approximately within 110 seconds (10-1/2-inch reel, 740m) Approximately within 90 seconds (7-inch reel, 370m) |
| Wow and Flutter: | No more than 0.04% (WRMS) (0.06% RMS, at 15 ips, 38cm/sec.) No more than 0.08% (WRMS) (0.09% RMS, at 7-1/2 ips, 19cm/sec.) |
| Equalizer: | NAB curve (15 ips, 38cm/sec., 7-1/2 ips, 19cm/sec.) IEC curve (15 ips, 38cm/sec., T=35 μ S) A selector switch to compensate high performance tapes is provided. |
| Bias Frequency: | 125kHz FIX: Reference tape (Fixed) VARIABLE: Low (-40% to -8%)* High (-15% to +38%)* *Variable range of bias current against FIX position. |
| Signal-to-Noise Ratio: | RTU-11/2T: More than 57dB RTU-11/QT: More than 55dB S/N ratio is further improved by 3dB over 5kHz at time of 15 ips (IEC) |
| Total Harmonic Distortion: | No more than 0.8% (15 ips, 38cm/sec.) No more than 1.0% (7-1/2 ips, 19cm/sec.) |
| Frequency Response: | 30Hz to 28,000Hz, \pm 3dB (at 15 ips, 38cm/sec.) 40Hz to 20,000Hz, \pm 3dB (at 7-1/2 ips, 19cm/sec.) |
| Crosstalk (RT-2044 only) | |
| Channel Separation: | More than 60dB (track interval) |
| RTU-11/2T: | More than 53dB (at 1kHz) |
| RTU-11/QT: | More than 50dB (at 1kHz) |
| Input (Sensitivity/Maximum allowable level/Input impedance) | |
| MIC: | 0.11mV to 100mV/27 Kohms (with 20dB attenuator switch) 6mm ϕ jack, unbalanced type, 2-channel |
| LINE: | 34mV to 25V/100 Kohms pin-jack (rear panel) x2 or 6mm ϕ jack (front panel), 2-channel Mixing control used for MIC and LINE input RT-2044 provides 2 sets of input terminals. |
| RTU-11/2T used only | |
| LINE: | 100mV/13 Kohms fixed pin-jack (rear panel) x2, 2-channel |
| RTU-11/QT used only | |
| LINE: | 100mV/13 Kohms fixed pin-jack (rear panel) x2, 4-channel |
| Outputs (Reference level/Maximum level/Load impedance) | |
| LINE: | 450mV to 930mV/50 Kohms pin-jack (rear panel) x2 or 6mm ϕ jack (front panel), 2-channel |
| PHONES: | 64mV (0.5mW) to 133mV (2.3mW)/8 ohms stereo 6mm ϕ stereo jack (front panel) RT-2044 provides 2 sets of line output terminals. |

RTU-11/2T used only

LINE:

100mV/40 Kohms fixed, pin-jack (rear panel), 2-channel

RTU-11/QT used only

LINE:

100mV/40 Kohms fixed, pin-jack (rear panel), 4-channel

Test-Oscillator:

Switchable (OFF/1kHz; for bias adjustment/10kHz; for head azimuth adjustment with Test OSC signal output terminals (316mV/50 Kohms fixed) 6mm ϕ jack (front panel)

Other Features:

- 1) A tape selector switch (RTU-11)
- 2) A built-in test oscillator for individual channels (RTU-11)
- 3) A mechanical cue lever with a lock button (RTU-11)
- 4) Full-remote control mechanism (RTU-11)
- 5) Pause lever switch (Locking and Play timing canceller) (RTU-11)
- 6) Wide-range meter (-40 to +6dB) (RTU-11)
- 7) Level memory marker for both input and output (TAU-11)
- 8) Versatile line input and output terminals (RTU-11)
- 9) Recording mode switch with synchronized recording monitor device (TAU-11)
- 10) Cord storage pocket (TAU-11)
- 11) Carrying handle and deck cover (TAU-11, RTU-11)
- 12) Mounting clamps (RTU-11, TAU-11)

Notes:

- 1) Reference tape: Scotch No. 206
- 2) Reference recording level is meter 0dB level (NAB standard reference level)
- 3) Reference signal is 1kHz.
- 4) Wow and Flutter: NAB (3kHz, weighted RMS)
- 5) Frequency response is measured at -10dB level (15 ips) and -20dB level (7-1/2 ips) against the reference recording level.
- 6) Signal-to-noise ratio is measured at +6dB level against the reference recording level.
- 7) Total harmonic distortion is measured at the reference recording level.
- 8) Channel separation is measured at the reference recording level (JIS).
- 9) Sensitivity: Input level (mV) required for the reference recording level measured with input (recording) level control set at maximum position. With the level meter set at 0dB.
- 10) Maximum allowable input level is measured at the point where the output signal wave starts to clip while gradually increase the input level to the terminal at the same time, turning down the input level control to keep OVU on the meter.
- 11) Reference output level: meter 0dB level.
- 12) Maximum output (Playback) level: Output level to the reference recording level measured with an output (Playback) level control set at maximum position.

Power Requirement:

120V/60Hz only

Power Consumption:

135 watts (Max.)

Dimensions:

Without package:

RTU-11:

18-1/8(W) x 16-3/16(H) x 10-13/16(D) inches
460(W) x 411(H) x 274(D) mm

TAU-11:

18-1/8(W) x 5-9/16(H) x 10-13/16(D) inches
460(W) x 141(H) x 274(D) mm

Weight:

Without package:

RTU-11:

51 lb, 4 oz./23.3 kg

TAU-11:

11 lb, 5 oz./5.2 kg

NOTE: Specifications and design subject to possible modification without notice.



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RT-2022

2-CHANNEL, 2-TRACK, 3-MOTOR, 3-HEAD
TAPE DECK SYSTEM



RTU-11/2T + TAU-11

RT-2044

4-CHANNEL, 4-TRACK, 3-MOTOR, 3-HEAD
TAPE DECK SYSTEM



RTU-11/QT + TAU-11 x 2

RTU-11/2T(QT)

TAPE TRANSPORT
MECHANISM WITH
2-CHANNEL, 2-TRACK
(4-CHANNEL, 4-TRACK)
HEAD UNIT



TAU-11

2-CHANNEL AMPLIFIER UNIT



JT-211

REMOTE CONTROL UNIT
FOR RT-2022, RT-2044



*Optional

JT-2022T

2-CHANNEL, 2-TRACK HEAD
ASSEMBLY UNIT



JT-2044T

4-CHANNEL, 4-TRACK HEAD
ASSEMBLY UNIT



INDEPENDENT RECORDING AMPLIFIER CIRCUIT FOR LINE AND MIC INPUT/OUTPUT

The independent recording amplifier circuit employed in the LINE/MIC has a high S/N ratio and wide dynamic range. The mic amplifier features a dynamic range of more than 55dB and is designed for high sensitivity with the use of a low impedance microphone, the most commonly recommended for professional recording purposes. The MIC ATT can be switched in two steps of 0dB and 20dB, independently in left/right channels, so input level is easily set when an on-mic recording is made or a highly sensitive microphone is used. In addition to the independent LINE/MIC input circuit, a level control is also provided independently to permit effective mixing, SOS (sound on sound), SWS (sound with sound) and echo recordings. A level sorter is another feature of the amplifier unit, which permits monitoring of the wide dynamic range between -40dB and +6dB. The interval between the scales before and after 0dB is widely spaced to facilitate optimum bias control. The OUTPUT volume has a center click that constantly obtains a standard output level. Also provided is a memory marker which enables you to preset the optimum level for INPUT/OUTPUT volume.

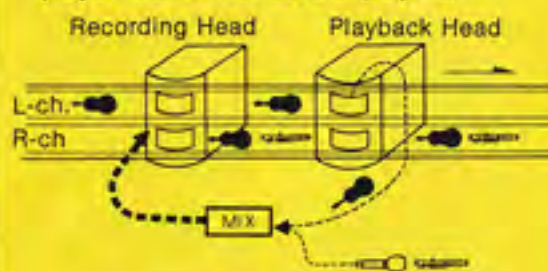


SYNCHROMONITOR MECHANISM FOR VERSATILE RECORDING TECHNIQUES

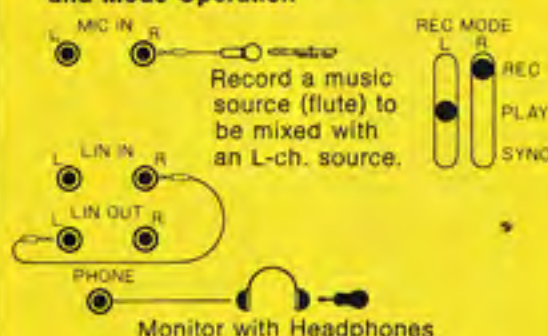
This unusual mechanism adds immense versatility to all recording techniques. For SOS (sound on sound) recording, as an example, the L track playback can be recorded on the R track while mixing with a mic input. An echo effect can also be created by line recording as you feed back a portion of the playback head output signal to the recording head by a simple external connection on the rear panel. When the 4-channel system (RT-2044) is used, the second, third and fourth tracks can be synchronized and recorded to the music of the first and subsequent tracks, and with the use of the synthesizer other sophisticated and multi-performance techniques are possible.

S.O.S. Recording (Sound on Sound)

For example, if you can play both guitar and flute, you record the accompaniment by guitar on a left channel in advance and play a solo with flute, monitoring the recorded accompaniment. Then, flute solo mixed thru a microphone with the guitar accompaniment is recorded on the right channel. This enables you to enjoy one-man multi-performance as if you played music with several players.



S.O.S. Recording Terminal Connection and Mode Operation



S.W.S. Recording (Sound with Sound)

S.W.S. recording is the way you record different music sources on the left and right channels respectively, using a synchromonitor function. Take the S.W.S. recording of guitar and flute for example. Record guitar accompaniment on the right channel first and then record flute solo on the right channel, while monitoring the recorded guitar music. Furthermore, if you conduct S.W.S. recording with RT-2044 (4-tr. 4-ch.), you can enjoy one-man quartet, synchro-recording 4 musical instruments such as guitar, flute, bass and vocal, etc.



Mode Operation of S.W.S. Recording



*The feature of S.W.S. recording is to record only one music source on one track and thus, if you elaborate sound localization, using a mixing amplifier, you can enjoy S.W.S. recording music in stereo.

DIRECT CHANGE FEATHER TOUCH OPERATION BUTTONS WITH BUILT-IN TAPE PROTECTION SYSTEM

The direct change control lets you switch modes from fast forward, rewind or other modes by a single touch. The very smooth operation of this control is enhanced by a built-in tape protection logic system that works after the tape comes to a complete stop and operates with perfection even when a large 10-1/2" reel is used. Tape editing has never been easier on a professional-quality deck, thanks to this flawless system, which includes an indication lamp (with light-emitting diode) to permit ease of checking the playback and recording conditions during hunting. Another feature is a device that eliminates waiting time after the tape transport comes to a complete stop when you change modes from fast forward and rewind to PLAY. After the unit comes to a stop it is possible to switch to ON and then by switching quickly to OFF, you may immediately go into the PLAY mode.



CONVENIENT CUEING DEVICE FOR EASY TAPE EDITING

Free-wheeling tape editing is accomplished with ease with the convenient lock-type cueing device. The



tape may be manually wheeled to a desired position and undesired tape portions can be skipped.

FULL-FUNCTION REMOTE CONTROL

A full-function remote control unit, designated the JT-211, is provided as an optional accessory. Among the features of this unit are functions such as FAST FORWARD, REWIND, PLAY, REC, STOP AND PAUSE (ON/OFF), as well as indicator lamps that light during playback, and recording that may be accomplished by remote control operation.

stan, and special alloy bearing metal, keeps wow and flutter to new low levels — 88cm/sec less than 0.04% (WRMS), 19cm/sec less than 0.08% (WRMS). Reel drive is accomplished by a 6-pole inner rotor special induction motor, which means that characteristics of both the eddy current type with an ideal torque curve and the induction type with excellent initial torque are provided. The small inertia and solenoid driven differential type hand brake help lessen tape tension while ensuring stable braking, with the combination of these factors helping minimize tape damage at all times.

JT-2022T AND JT-2044T PLUG IN HEAD ASSEMBLY UNITS FOR FREE SWITCHOVER BETWEEN 2-CH. AND 4-CH.

The 2-track, 2-channel head assembly, JT-2022T, and the 4-track, 4-channel head assembly, JT-2044T, are designed for free plug-in replacement so you can enjoy unlimited sources and versatile recording techniques with this unique Pioneer system. The special control of level, bias and equalizer in 2 and 4 channel operation is provided to enable complete control and adjustment from outside the head assembly unit.

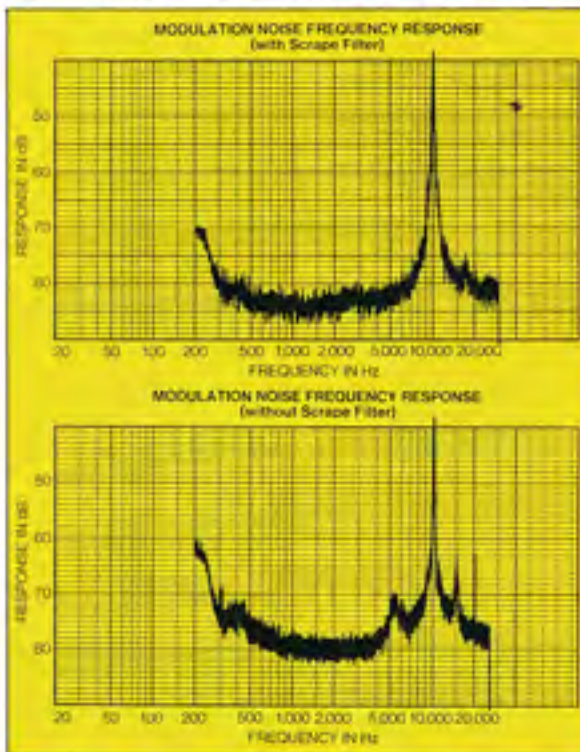
3-HEAD SYSTEM WITH CONTOURLESS HYPERBOLIC TYPE PERMALLOY HEAD FOR SUPERB TONAL QUALITY AND STABILITY

The 3-head system (erase/recording/playback) of each of the head assembly units boasts of excellent contactability, thanks to the use of a contourless hyperbolic type permalloy head with first-quality in-line properties. The playback head is distinguished by superb phase characteristics, frequency response characteristics, S/N ratio, and crosstalk characteristics. (A high sensitivity, high S/N ratio, and channel separation of more than 53dB for the RT-2022 over 100Hz—10kHz; and 50 dB over 100Hz—10kHz for the RT-2044). The recording head also delivers excellent sensitivity, bias characteristics and magnetic properties. Because of this 3-head system, it is possible to accurately monitor on the spot the reproducing tape recorded sound from the playback head.

SCRAPE FILTER ELIMINATES MODULATION NOISE BY VERTICAL VIBRATION OF TAPE WITHIN THE HEAD HOUSING



Although the guide rollers play important roles in their function of guiding the tape precisely into the head, this mechanism also can cause vertical tape vibration through physical friction or modulation noise. To avoid these adverse effects, a newly-developed scrape filter that excels at the moment of inertia is provided between the erase head and recording head. Tape transport stability is further enhanced by the combination of a high performance head that has good tape contactability, a special alloy bearing metal that reduces wow in the low frequency range, and the super precision finished capstan.

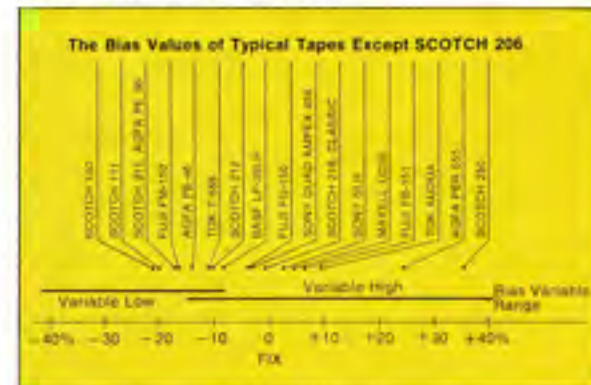


CONTINUOUSLY VARIABLE TYPE BIAS, 2-STEP TYPE EQUALIZER AND TAPE SELECTOR WITH TIME CONSTANT SWITCH MECHANISM FOR USE WITH ALL TYPES OF TAPE



The bias employs the 3-step switchover method, including FIX, VARIABLE LOW and VARIABLE HIGH. The FIX step is set at its optimum bias value (0.5 dB over bias) of SCOTCH 206 tape, and it is designed to be able to obtain flat

characteristics at the position of recording equalizer (LH). When bias is set at positions VARIABLE LOW and HIGH, optimum bias can freely be set for all tapes now available, from standard to LH, with the result being recording with minimal distortion. Use of the equalizer means it is possible to switch the time constant of NAB standards (50μS) and IEC (35μS) at the 38cm/sec tape speed and also ensures a high S/N for recording and playback. Additionally, STD and LH can be selected with the equalizer set at its optimum bias, and thus the ideal frequency response for the tape being used can be obtained.

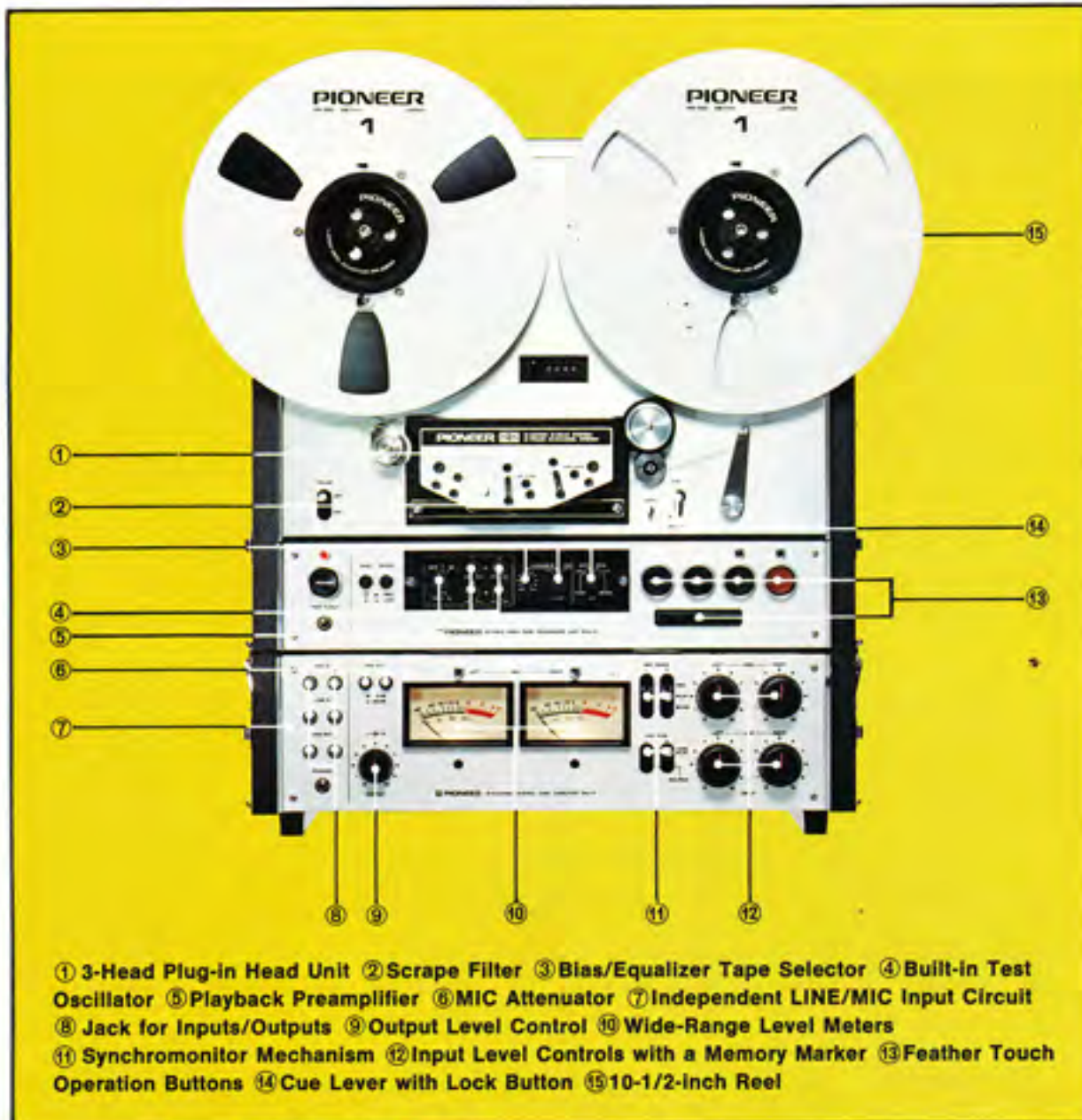


WIDE DYNAMIC RANGE PLAYBACK AMPLIFIER CIRCUIT

The 3-stage direct-coupled playback amplifier circuit, featuring low noise silicon transistors, delivers a wide dynamic range from 0dB to some 20dB or more. It is built in for 4-channel reproduction, permitting playback of 2-track 2-channel master tapes. Also built-in is a test oscillator that permits easy checking of recording and playback conditions by taking out 1kHz and 10kHz signals. Detection of optimum bias is made by the 1kHz signal and frequency response characteristics can be checked by the use of the 10kHz signal. The latter can also be applied to the selection of STD LH positions of the recording equalizer. Click noise, caused by mechanical switches, is eliminated by the use in the playback/recording equalizer circuit of an electronic circuit utilizing FET switching. Furthermore, the bias OFF time-delay circuit works to prevent head magnetization.



RT-2022/2044

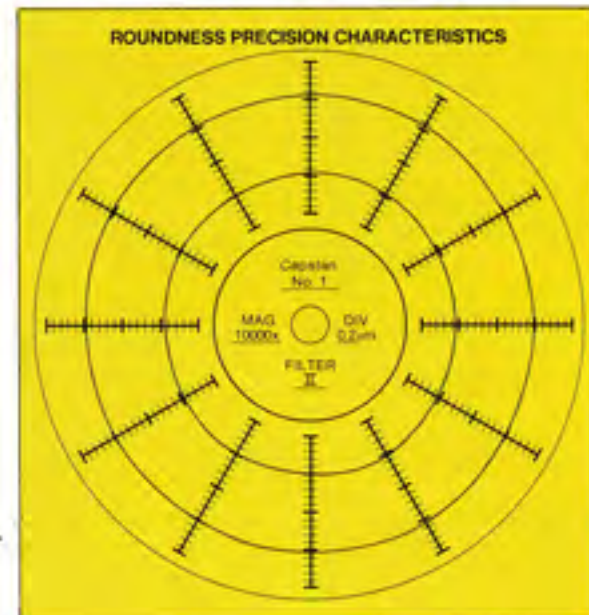


SEPARATE TAPE TRANSPORT, HEAD, AMPLIFIER FOR VERSATILE LAYOUT ARRANGEMENT AND 2 CH./4 CH. RECORDING AND PLAYBACK

The major units of this professional deck, such as the tape transport, head and amplifier, are totally separate units, providing the listener with an immensely versatile layout for all taping and playback uses. In essence, this Pioneer tape unit is actually a stereo tape deck system. Changeover from two-channel to 4-channel or from 2 TR to 4 TR are freely made by the addition or conversion of the units, so that dubbing, air check, live recording and recording and playback of all sources may be enjoyed.

PROFESSIONAL-CLASS TAPE TRANSPORT UNIT (RTU-11) EMPLOYING 10-1/2" REELS AND OFFERING HIGH RELIABILITY

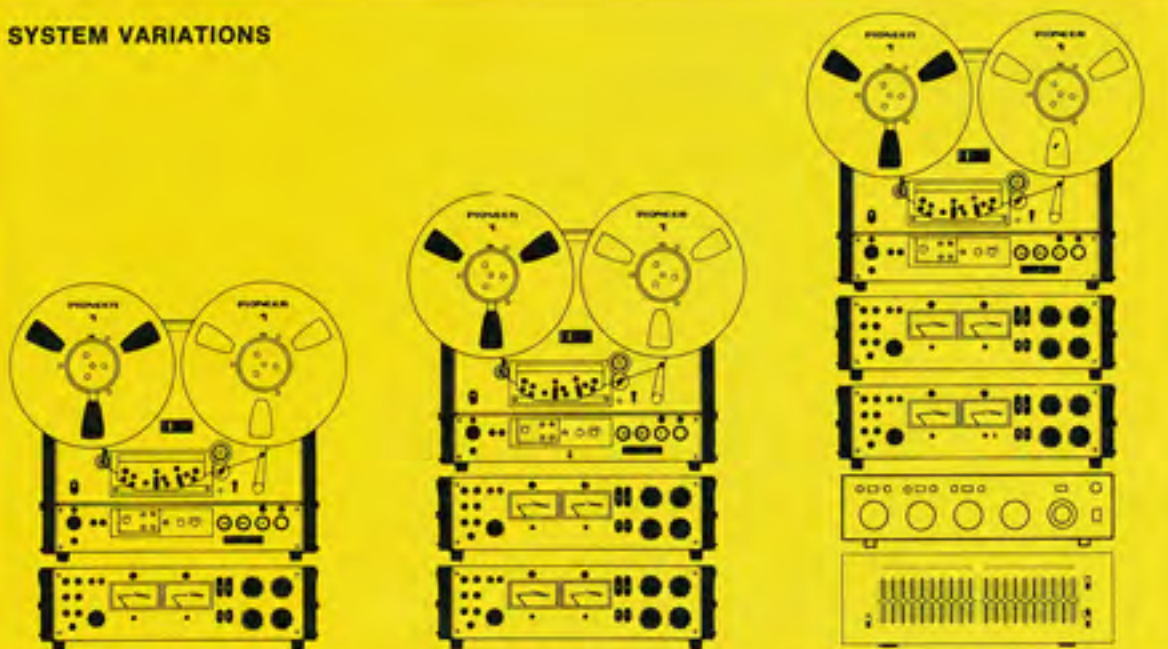
The chassis of the RTU-11 tape transport unit uses 3/16-inch (5mm) thick aluminum sheet with high surface precision, and this is combined with a strong die-cast frame and heavy block mechanism for additional durability. The unit accepts professional-class 10-1/2" reels, for ease of live recording and playback of all sources, and for extra long-life.



EXCLUSIVE, INDIVIDUAL MOTORS FOR DRIVING UNITS AND HIGH STABILITY TRANSPORT MECHANISM

A 4/8 pole switchover type two-speed hysteresis synchronous motor with extra torque is employed to drive the capstan. This motor, combined with a 4-inch (100mm) diameter large flywheel, a super precision finished straight cap-

SYSTEM VARIATIONS



In Case of 4-tr. 2-ch.:
Change head unit from JT-2022T to JT-2044T.

In Case of 4-tr. 4-ch.:
(1) Change head unit from JT-2022T to JT-2044T.
(2) Add another TAU-11 to RT-2022.

In Case of Upgrading RT-2022 to RT-2044:
Add a Mixing Amplifier (MA-62) and an Equalizer Amplifier (SG-9500) to RT-2022.