STUDER REVOX 80

Welcome to Revox

Audiophiles throughout the world know that the Revox name is synonymous with high fidelity components of uncompromised quality. This enviable reputation is built on a solid foundation. Revox products all share the proud heritage of the Studer line of professional equipment, internationally acknowledged as the standard of excellence by recording, broadcasting, and TV studios, alike. The professionals have long known that if Willi Studer makes a product you can rely on it, year after year, even in the most demanding applications.

The following pages will introduce you to the full line of current Revox components. Revox has manufactured over one-half million A77 open-reel recorders, since its introduction in 1967. These units continue to give outstanding service in climates ranging from tropical rain forests to Antarctica. It is not surprising that many people think of Revox primarily as a manufacturer of superb tape decks. The same emphasis on technological leadership and on convenient, reliable operation however is to be found in every Revox product.

You will find it in the Revox B790 and B795 turntables, with their revolutionary new tangential tonearm; in the B760 digital synthesizer FM tuner; in the ultrasophisticated microprocessor controlled FM receiver B780; in our B750 integrated amplifier; and in our loudspeaker systems. Of course, nowhere is the Studer pedigree more apparent than in the B77 tape recorder, successor to the A77, and heir to Studer professional developments dating back to 1954 when the A36 set the standards for the developing magnetic recording industry.

All the STUDER REVOX products you will find described in these pages are designed in conformity with a specific engineering credo: sonic accuracy above all else. Some people claim to hear, or to know, or to see, things that cannot be verified by anyone other than themselves, and in terms of their private sense of fullfillment there can be no disputing their taste. STUDER REVOX, however, puts its faith in the proposition that there are objective standards for sound reproduction, though no one may be securely sure of knowing the best methods of measuring these verifiable laws. To reproduce as close a facsimile of the sound you would hear if you were there is the abiding concern at STUDER REVOX.

No words or engineering specifications can take the place of actually auditioning and using a component. We urge you to visit your authorized Revox dealer for a demonstration. He has the equipment and training, and is at your service.

Excellent quality, excellent service: that is our promise. Welcome to Revox!

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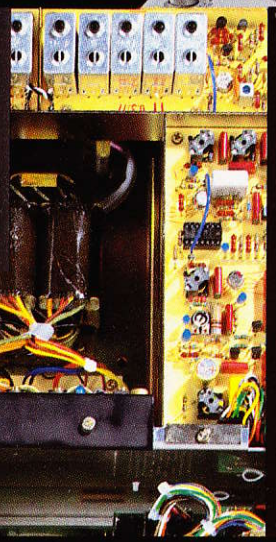
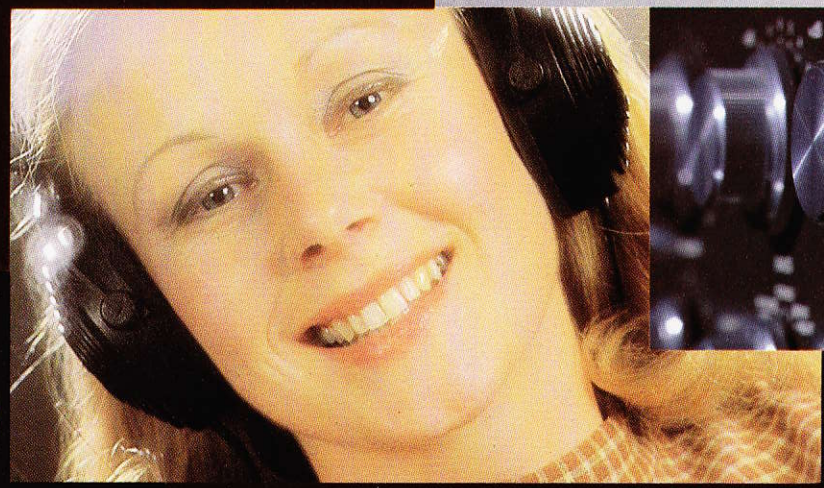




STUDER REVOX

The Revox B790 Turntable

Consummate Ease of Operation
Unequalled Clarity of Sound
Utter Reliability and Record Safety

When you first see the Revox B790 turntable don't ask what happened to the tonearm (Illustration 1). Just put on a record, turn the carrier assembly to its detended «play» position (Illustration 2) and press the pushbutton, as illustrated at the right (in picture 3). Then listen – and be prepared for an accuracy in record reproduction you have probably never heard before.

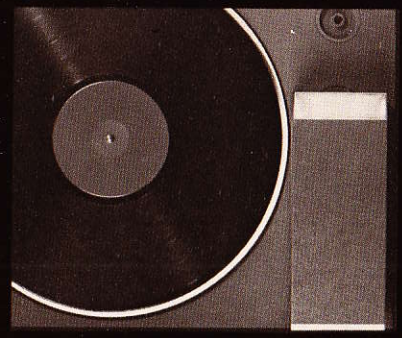
In less time than it takes to describe, you've automatically cleaned the cartridge stylus, turned on the direct-drive, quartz-crystal controlled drive motor and brought it up to speed (as shown on the 4-digit electronic display), activated a sensing system that automatically locates the beginning of the record and gently lowers the stylus into the first groove, and only then turns on the music without any pop or click, and in plenty of time for the first note.

You never have to touch – much less accidentally drop – a tonearm. Operation of the Revox B790 is so safe, both for records and for delicate cartridges that even a child can be trusted with it. If you wish to locate a specific passage or inner cut, contact buttons silently lift the stylus, move it in either direction, and then lower the stylus into the exact groove you have selected. At the end of the record, photo-optical sensors lift the stylus and automatically return the cartridge to its rest position.

Operation of the B790 is so foolproof that even if you try to damage a record by moving the carriage assembly while the disc is playing the stylus will lift immediately and no harm will be done.

The floating chassis suspension system is also designed specifically to prevent transmission of shocks and vibrations – whether from loose floorboards or nearby loudspeakers – that might muddy the quality of the music. Most important to the astonishing clarity of the music reproduction, is the exclusive Revox Linatrack® tonearm system, which needs no anti-skating controls, because it tracks the record the way it was cut. The unique tonearm-that-isn't-a-tonearm will not allow damage to the stylus if accidentally lowered when a record is not present.

The dustcover of the B790 has been designed so that when raised it does not require any additional shelf depth (Illustration 4), and when lowered it leaves the operating controls fully accessible.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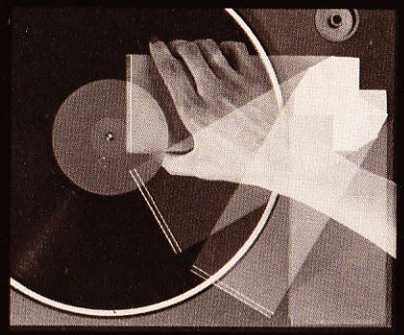
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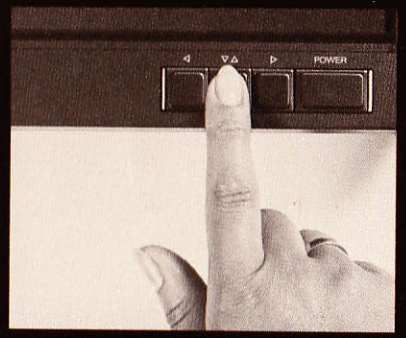

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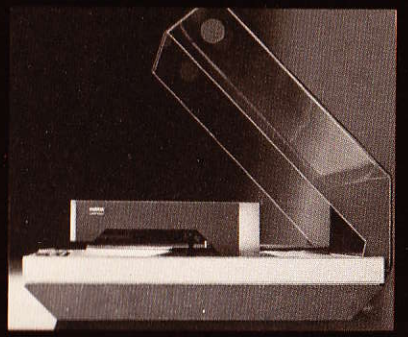
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STUDER REVOX

Revox B790.

The New Revox B795 Turntable: The Classic Design Principle At a More Modest Price

Touch-button Operation and Linatrack® Tangential Tonearm
Mean Scratch-Free Records for Years to Come

The essential design features embodied in the Revox B790 Tangential-Tracking Turntable (pp. 4/5/8/9 above) are all retained in the B795. The B795 eliminates the arcane features needed by other turntables and simply reproduces the music on the disc.

- *No pulleys and weights, no three-way bias-compensation scales, no anti-skating mechanism required. Precisely because the ultra-short Linatrack® tonearm eliminates any skating force to contend with, no anti-skating compensation methods (which always involve sonic compromises) are needed.*
- *The Revox Linatrack® tonearm and cartridge-mounting kit make installation of your choice of cartridge no more difficult than with conventional tonearms.*
- *The pivot action of the Linatrack® arm eliminates the lengthy return cycling time of conventional automatic tonearms.*
- *The solid-state logic and control mechanisms of the Revox B795 eliminate manual fumbling and give you true one-finger operation.*
- *Disc damage from imprecise hand manipulation of the tonearm is eliminated by the B795 design. Awkward handling cannot damage your treasured LP's, because no tonearm handling is required.*

Operational Ease

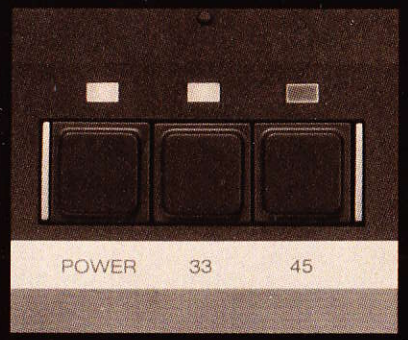
Each selected motor speed has a red-illuminated area (Illustration 1) that alerts the user when the crystal-controlled reference signal has been successfully locked in. Motor and arm control are not precluded even when the dust cover is closed (Illustration 2). The chassis construction, though thin line in height, is designed to prevent the vibrations of nearby footsteps from finding their way into the music reproduction. The low moment of inertia and short length of the Linatrack® arm help eliminate undesirable resonances. This helps not only to purify the sound, but to preserve your record collection as well.

Revox Direct-Drive Motor

The slow-speed, high-torque motor in the Revox B795 also contributes to the sonic excellence of the turntable. The new direct drive "hall effect" motor is manufactured in Studer Revox's own facilities, and incorporates a specially designed 100 pole tacho generator to produce the smoothest possible platter rotation.

When Cost Demands Consideration

While many manufacturers "cut corners" to achieve a particular "price point", Revox does not compromise engineering in order to "meet the competition". Rather, simplification of manufacturing details and the vast experience gained in designing and building the B790 turntable have enabled us to achieve economies – without sonic loss – and have enabled us to offer audiophiles, via the B795, the heart of the B790, at a far lower cost. If your records are important to you, we are confident that your choice will be Revox.



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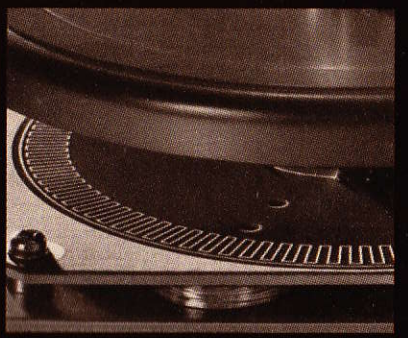
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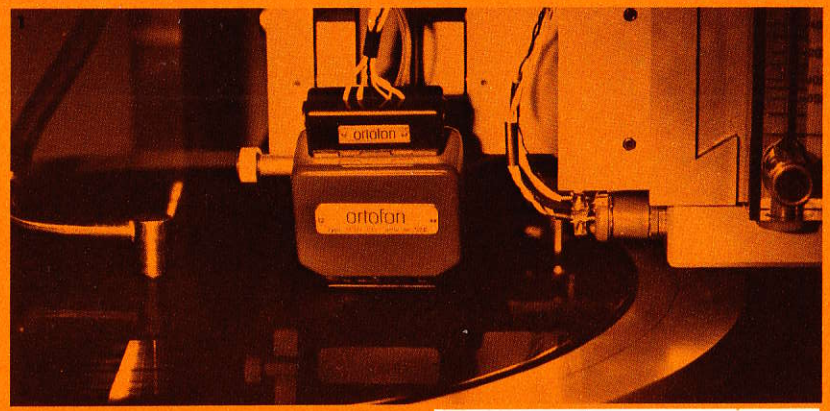
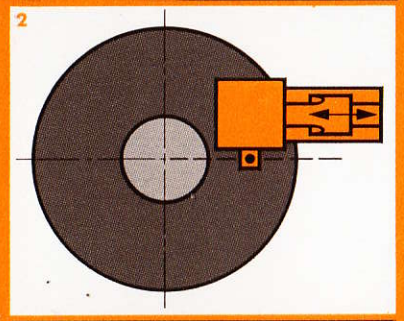
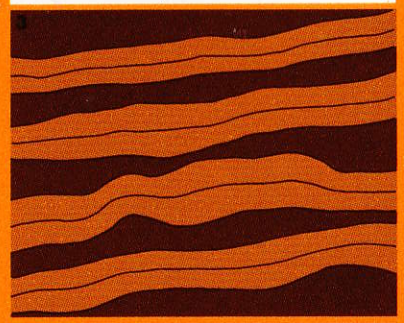
The Revox Linatrack® Tangential Tonearm



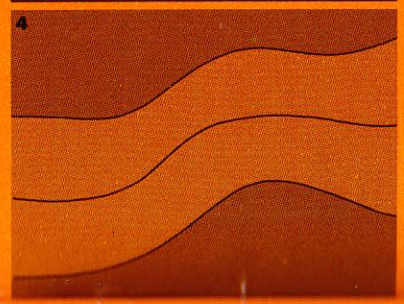
1
The disc-cutting lathes that make the master records, from which commercial discs are subsequently produced, always cut the groove tangentially.



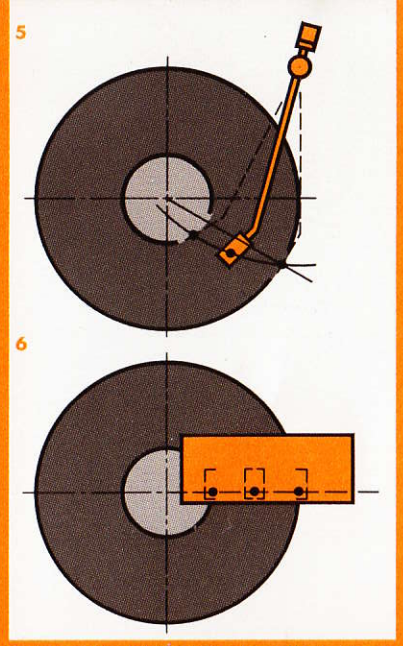
2
That is to say, while the cutting stylus itself responds vertically and horizontally to the vibrations ("modulation") of the music, the recording head in which this stylus is mounted tracks a precise radius of the blank disc. This results in a spiral groove in which there is no angular error.



3
Since the music was cut into the master disc at a tangent, it can only be reproduced without error if the playback stylus also tracks the record tangentially, along its radius. Because the originally-cut groove spacing is not constant, but varies with the volume of the music (allowing more music to be recorded on a single side), sophisticated electronic circuits are required to sense the variable spacing in a tangential playback system.



4
As this photomicrograph shows, frequently different undulations, both in volume and in content, are cut into the left and right channels of the groove.

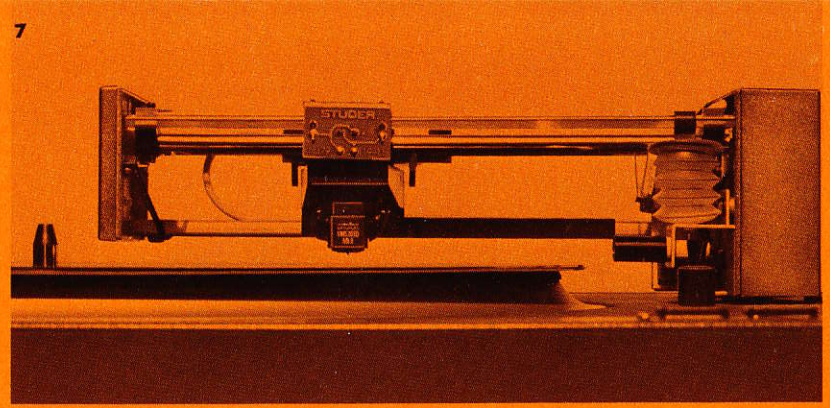


5
As a matter of geometry, a conventional playback tonearm can only be tangent to the record at two points. Because conventional tonearms are pivoted at a single point, the tracking angle of the playback cartridges they carry constantly varies across the surface of the record. This error in tracking angle results in distortion, since the stylus does not exactly follow the original cutting path. Additionally, the «offset» of conventional playback tonearms, combined with friction between the stylus and the groove, creates an inward pressure ("skating force") that further distorts the proper relationship between the stylus and groove wall.

6
The Revox Linatrack® tonearm is only about 2.5 inches in total length, and rides on rails, like an overhead crane trolley, tracks tangentially, just as the cutter stylus. Since there is no "offset" at the end of a fixed pivot with the Linatrack® arm, no skating force is generated, and thus no anti-skating compensation is required.

7
The housing for the carrier assembly contains the servo-assisted, electronically guided mechanism that carries the cartridge across the record.

8
The 2,5 inch tonearm itself, shown in its lowered position in this illustration, is mounted on a unipivot watchmaker's jewel bearing. The tonearm is positioned laterally by a (patented) magnetic guidance system. This reduces friction and the moment of inertia to extraordinarily low levels. Further, because the arm is so short, its resonance is easily damped and its dynamic balance is far superior to that of conventional tonearms, making it more resistant to the effects of jarring and vibration.



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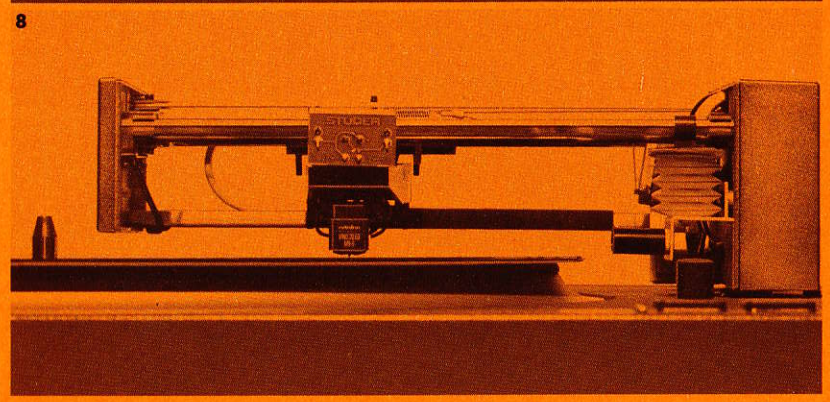


8

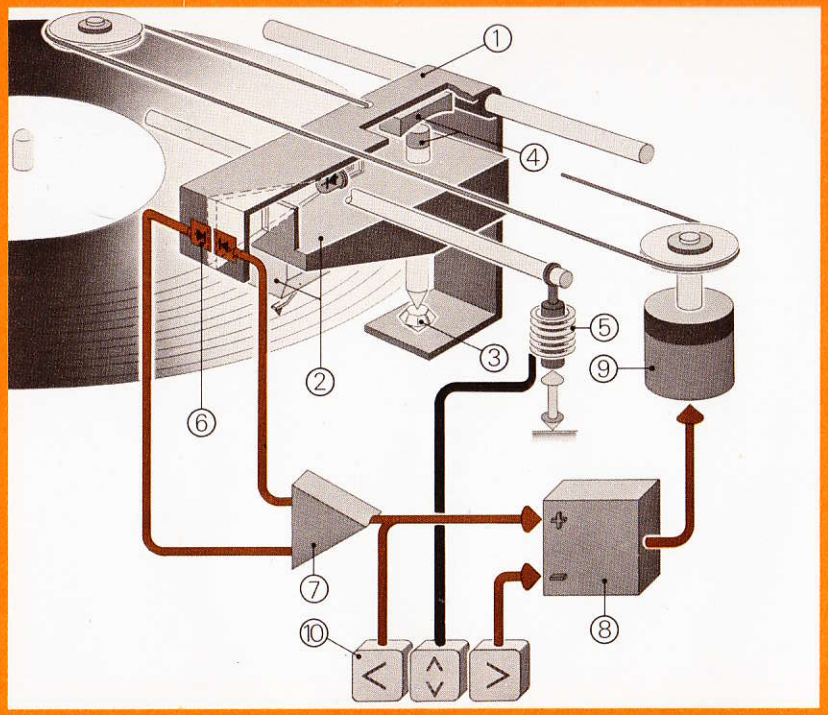
The Tangential Revox Linatrack® Plays your Records As They Were Cut, for Faultless Sound Reproduction.

First of all, the B790 and B795 "sees" the groove...
Just as the "preview head" in a master disc-cutting system varies the groove spacing in accordance with the demands of the music, so in the Linatrack® tonearm an LED scanning system tracks the disc and reports to the minicomputer the variations in groove spacing. The minicomputer, in turn, controls a servomotor which correspondingly increases or decreases the speed of the carrier assembly as it carries the cartridge along the record radius. Thus, tracking error is eliminated as it was when the master disc was cut and the position of the playback stylus is always optimized.

...then it plays the record with unsurpassed accuracy.
By eliminating tracking error, a serious source of distortion is eliminated. Anti-skating adjustments also become superfluous, since tangential tracking eliminates any skating force. For users who wish to install their own favorite cartridge, ample instructions are supplied for mounting and stylus force adjustment.

High precision, quartz-referenced direct drive
Naturally, a high class turntable which incorporates so many new concepts, features a correspondingly advanced high precision drive. The quartz-referenced hall effect direct drive slow-speed motor of the B790 ensures exceptionally smooth running and eliminates pole hunting interference. No drive belts, no couplings, and no mechanical speed selector all mean exceptional long-term stability. In contrast to conventional direct drives, the B790 has an 8-pole (16-coil) drive motor which is equipped with a separate 200-pole tacho generator and sophisticated servo-assisted electronics.

B790: speed control and digital display
The accuracy of the 33.33 and 45 rpm speeds is crystal controlled. Each is reached very quickly and is indicated on a 4-digit LED display. Variable speed control with visual display is available at the press of a button; the desired rpm speed is continuously adjustable over a ±7% range. The accuracy of these variable rpm speeds is also referenced to a crystal-controlled oscillator and is indicated on an illuminated digit display. This enables individual rpm speeds to be reproduced very accurately as required.



Basic functional principles of the LINATRACK® electronically guided tangential tonearm

1. The tonearm carriage moves along one radius of the record with the stylus always at the tangent of the groove.
2. The ultra short 2,5 inch (6,5 cm) tonearm system means that its resonance lies within the ideal range.
3. The tonearm shaft rests in a watchmaker's jewel bearing in order to minimize friction.
4. The tonearm shaft has a patented magnetic lateral guidance system.
5. The tonearm is lowered by means of an electronically controlled electromagnet.
6. Two photodiodes sense the light which is emitted by an infrared diode (LED) via a slit in the tonearm. With the slightest lateral displacement of the tonearm the photodiodes are illuminated asymmetrically and transmit variable signals to the servomotor.
7. These signals are received by a pre-amplifier and routed to the power circuit of the servomotor.
8. The servomotor power amplifier controls the motor which guides the tonearm. The signals from the photodiodes or from the operator keys cause the servomotor power amplifier to control the motor accordingly.
9. The servomotor and drive gear guide the tonearm carriage
10. There are operator keys for rapid forward and reverse movement of the tonearm.

Revox B790./B795.

Technical Data:		Revox B790 Turntable			Revox B795 Turntable
Turntable drive:		quartz-controlled direct drive			quartz-controlled direct drive
Turntable speeds:		33.33 and 45.00 rpm			33.33 and 45.00 rpm
Speed accuracy:		±0.01%			±0.01%
Manual speed variation:		±7% approx.			–
Speed indication:		4-digit LED readout, quartz-precise			separate LED for each speed, lights up when speed is locked to quartz crystal reference
Platter:		diameter 12.32 inches (313 mm) weight 2 lbs. 7 ozs (1.1 kg)			diameter 12.32 inches (313 mm) weight 4 lbs. 10 ozs (2.1 kg)
Run-up time:		less than 2 seconds at 33,33 rpm			less than 2 seconds at 33.33 rpm
Braking time:		less than 1.5 seconds from 45 to 33.33 rpm			less than 2 seconds from 45 to 33.33 rpm
Stopping time:		less than 0.5 seconds from 45 or 33.33 rpm to standstill			less than 10 seconds from 45 or 33.33 rpm to standstill
Wow and flutter:*	weighted: linear:	better than 0.05% better than 0.1%			better than 0.05% better than 0.1%
Rumble to signal ratio:**		better than 48 dB (DIN 45539 A weighting) better than 50 dB (DIN 45539 A weighting plus 20 Hz high pass) better than 68 dB (DIN 45539 B)			better than 48 dB (DIN 45539 A weighting) better than 50 dB (DIN 45539 A weighting plus 20 Hz high pass) better than 70 dB (DIN 45539 B)
Tonearm LINATRACK®:		linear tracking tonearm with servo-electronic follow-up control			
Tangential tracking angle error:		less than 0.5°			less than 0.5°
Skating compensation:		not required with a linear tracking system			not required with a linear tracking system
Tracking force:	adjustable from:	8 ... 20 mN (0.8 ... 2 gr)			8 ... 20 mN (0.8 ... 2 gr)
Tonearm lowering:		electronically controlled, pneumatically damped			electronically controlled, pneumatically damped
Muting:		electronically muted until stylus has contacted the disc			
Tonearm follow-up:		opto-electronic sensing with LED as light source, servo electronics and DC motor			
Run-out switch:		automatically activated via servo-electronics			automatically activated via servo-electronics
Operating controls:	Turntable drive: Tonearm:	1 power switch 3 tactile feedback keys for 33.33 and 45 rpm as well as for variable speed operation 3 tactile feedback keys for fast inward or outward movement plus lowering and lifting of the pick-up cartridge. Built-in stylus illumination.			1 power switch 2 tactile feedback keys for 33.33 and 45 rpm
Automatic functions:	Swinging the tonearm support in: Swinging the tonearm support out:	turntable starts to rotate at the selected speed a) immediate lifting of the cartridge b) tonearm returns to start position c) electronic braking of turntable			turntable starts to rotate at the selected speed a) immediate lifting of the cartridge b) tonearm returns to start position c) turntable stops, illumination switched off
Components list:		29 IC, 30 transistors, 24 diodes, 1 LED 4 7-segment displays, 3 bridge rectifiers			21 IC, 19 transistors, 29 diodes, 4 LEDs (3 signal lights, 1 infrared light gate), 3 bridge rectifiers
Electric current supply (solder connections):		100/110/120 V ±10%, 200/220/240 V ±10%, 50 ... 60 Hz, max. 30 watts			
Main fuse:		100 ... 120 V: 0.4 A slow-blowing type, 200 ... 240 V: 0.2 A slow-blowing type			
Weight:		24 lbs. 4 ozs (11 kg)			20 lbs. 1 oz (9.1 kg)
Dimensions (W x H x D):	closed: open:	17.8 x 5.6 x 15.03 inches (452 x 142 x 382 mm) height 13.6 inches (345 mm)			17.7 x 5.6 x 15.6 inches (449 x 142 x 395 mm) 13.4 inches (340 mm)
Phono cartridge (optional):		Ortofon VMS 20 EMK II	Ortofon M 20 E SUPER	AKG P8 ESR	Revox P20 MDR
Frequency response:		20 Hz ... 20 kHz	10 Hz ... 25 kHz	10 Hz ... 25 kHz	20 Hz ... 20 kHz +3/–1 dB
Channel balance (1 kHz):		<2 dB	<1,5 dB	<1dB	<2 dB
Channel separation:		>25 dB	>25 dB	>30 dB	>25 dB at 1 kHz
Compliance: (µm/mN):	horizontal: vertical:	40 30	40 25	– 33	– 40 (static, at recommended tracking force)
Trackability:	300 Hz:	70 µ	80 µ	85 µ	85 µm at 12.0 mN (1.2 grams)
Recommended tracking force:		15 mN (1.5 p)	12.5 mN (1.25 p)	12.5 mN (1.25 p)	12.0 mN (1.2 grams), factory set
Stylus tip radius:		elliptical	elliptical	elliptical	5 x 18 µm elliptical, nude diamond
Tip mass (weight):		–	–	–	15 µgr
Effective tip mass:		–	–	–	0.46 mg
Output voltage:		1.0	0.8	0.7	0.7 mV/cm/sec. +3/–0 dB at 1 kHz
Frequency intermodulation (Level –6 dB):		less than 1%, measured with wow and flutter meter –3 dB at 300 Hz			
Signal to noise ratio:		>65 dB	>65 dB	>65 dB	>65 dB
Recommended load:		47 kohms/400 pF (220 pF in cable)			47 kohms/470 pF per channel (220 pF in cable)

* measured with IEEE 193-1971 weighting and an optimally centered, direct cut laquer, L + R. ** all rumble measurements in position "mono" with statically discharged disc and "new" RIAA equalization.

All figures quoted are minimum performance values normally exceeded by all units.
Subject to change.

The Revox B750 Integrated Amplifier

75 Watts per Channel,
min. rms into 8 ohms from 20–20,000 Hz,
with no more than 0.05% total harmonic distortion

Ultra-low TIM design
Complete Flexibility and Ease of Operation

Power alone is not the real measure of an amplifier's performance: sonic clarity is. With the advent of transistor circuitry it became possible to use enormous amounts of "negative feedback" to reduce conventionally-measured types of distortion (harmonic and intermodulation) to the residual level of the finest test instruments. But the sound coming from many of these amplifiers just wasn't clean. Indeed, many sensitive listeners preferred their tube amplifiers.

Gradually it came to be recognized that the cold, even harsh "transistor sound" was a real, not imagined, form of distortion. It didn't show up in conventional distortion measurements because these used only steady, continuous test tones whose distortion was lowered by increasing the overall amount of negative feedback. Music, however, does not consist of steady tones, but of complex harmonics that are much harder to evaluate in the laboratory. Research in many countries all tended to confirm that the excessive use of negative feedback, which reduced steady-state distortion far below the level of human perception, actually increased the amplifier's distortion when it tried to reproduce "transient", music-like signals.

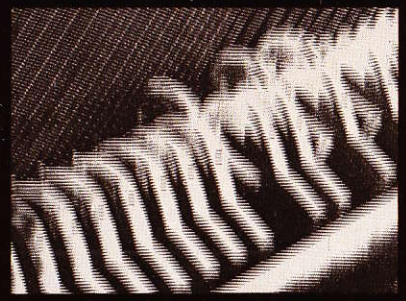
The B750, the clean, TIM-free amplifier

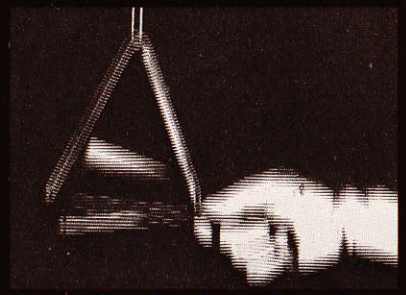
A "transient" is a fleeting, instantaneous, non-repetitive signal that occurs most obviously in music when a triangle or cymbal is struck, but which is actually present at the beginning of every musical note. Its harmonic structure is as complex as it is short-lived, and it is past before the corrective "negative feedback" signal generated in the amplifier catches up. The result is that momentarily the amplifier is overloaded, and the more likely this is to occur. The distortion generated by the amplifier's inability to respond accurately to transients is called "transient intermodulation distortion", or TIM.

Studer Revox solved the TIM problem with characteristic ingenuity and expertise. The crucial output stage, where the greatest signal fluctuations take place, was designed to be fully complementary and symmetrical. This simply means that the leading and trailing edges of the signal are amplified symmetrically by separate transistors, from input to output.

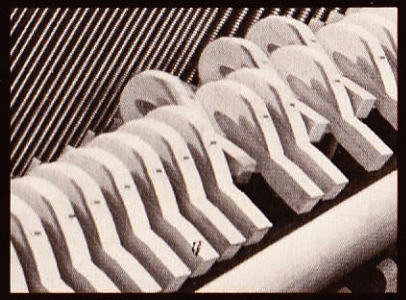
Further, rather than relying on large amounts of slow-acting overall negative feedback, each individual stage of the amplifier is equipped with its own negative feedback circuit, thus reducing the overall negative feedback requirement to only 26 dB.

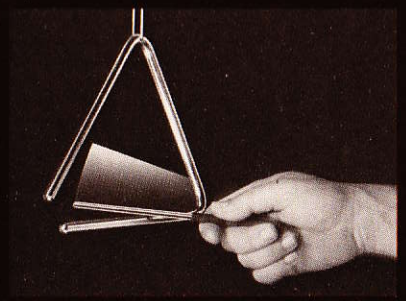
The result of these techniques were first embodied in the Model 740, a professional, heavy-duty power amplifier that was widely acclaimed by the professional community for its clean, TIM-free sound. The same design concepts are now available to the audiophile in the B750, which brings hi-fi reproduction a step closer to the goal of absolute musical realism.





Steep pulses place heavy demands on an amplifier... and cause distortion...





...which cannot occur in the TIM-free B750 amplifier: the B750 processes the most difficult passages with absolute purity.