

MITSUBISHI LT-5V

A unique, well engineered turntable that delivers great performance. Why didnt someone think of this sooner?

Every few years we get another "breakthrough in the state of the art" and yet another linear-tracking turntable is introduced, with the usual assortment of learned papers supporting the advantages of high pivot, low-pivot, long tonearm, short tonearm, spring compensated VTF (Vertical Tracking Force) non-spring compensated VTF etc., etc., etc. Occasionally, one system proves viable as a high fidelity device, but either fails to win sufficient consumer acceptance or proves to be somewhat delicate in terms of mechanical adjustment and reliability.

The latest entry in the linear-tracking turntable Sweepstakes is the Mitsubishi LT-5V, which just might get con-



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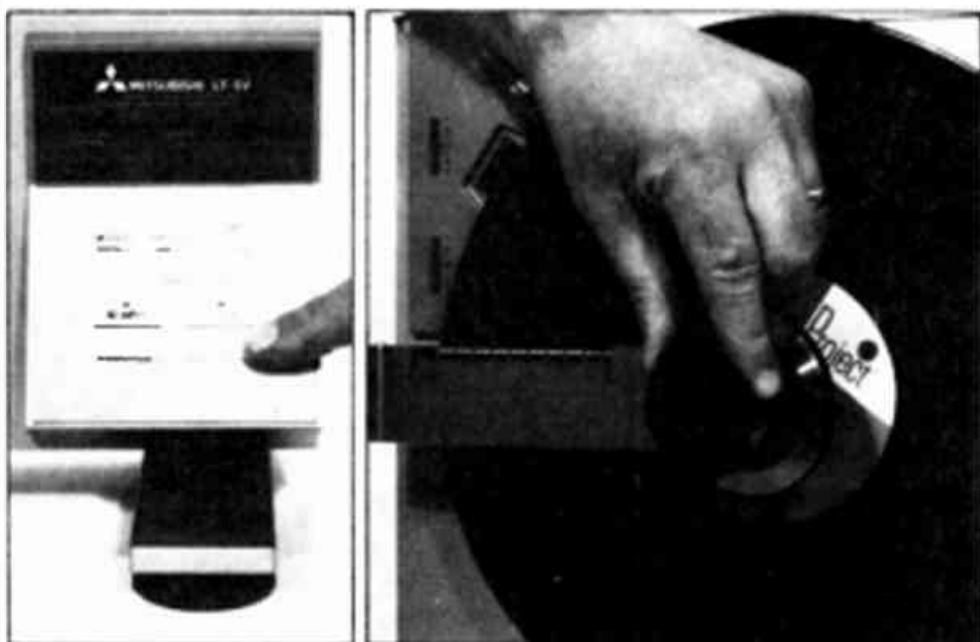
on the platter) the tonearm will not swing into the platter under any condition. When a 7-inch record covers one sensor the player shifts to 45 rpm and the tonearm indexes at 7-inches. When both sensors are covered by a 12-inch record the player shifts to 33 rpm and the tonearm indexes at 12-inches. A speed selector will over-ride the automatic speed selection; i.e., to play one of the 45 rpm 10-inch records, or 33 rpm 7-inch discs.

At the end of play the tonearm cycles to the rest and the motor turns off, or the player can be programmed for repeat play. Switches provide tonearm lift, track left or right when lifted, stop (reject) and start. A positive lock on the tonearm rest also serves as the master power switch. Turn the power off and the tonearm is automatically locked into the rest; or lock the tonearm and the power is turned off.

Because the player is vertical the record must be secured to the platter. This is done by a swing arm with a rotating pressure pad at its end. The pad presses the record against the platter until deliberately released by the user.

The "biggie," of course, is the linear-tracking tonearm. What's interesting is that it's neither short nor long, and the pivots are about where they would be if it were a standard "horizontal" tonearm. The pickup mounts in a plug-in *universal* carrier. It would be hard to come up with some new theory for this tonearm because it's sort of a vertical version of

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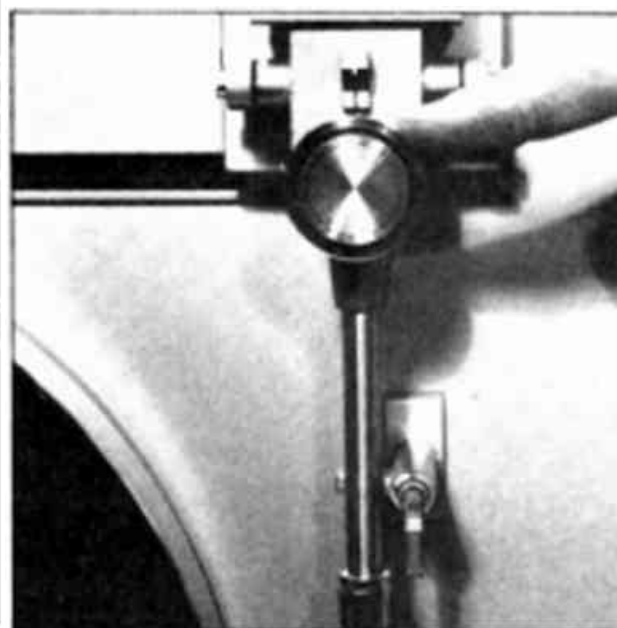


Left • Five pushbuttons control the operation. Small indicators above the switches show the operating mode and whether the tonearm has stabilized and is operating tangent to the record. Right • A rotating pad at the end of a swing-arm presses the record against the platter to help maintain a steady operation.

sumer acceptance (which it deserves) because it incorporates a totally new concept that appears to work well, and because it is one magnificent piece of machinery.

First, the LT-5V plays records while standing on end and the tonearm hangs straight down. Thanks to this the weight of the pickup itself has no effect on the VTF (We were tempted to call it HTF [Horizontal Tracking Force], but since the force is still vertical with respect to the record disc, we'll stick to VTF). If the user were to change to a pickup having a different weight it would have no significant effect on the tonearm balance. (The tonearm's VTF adjustment applies a rotating force that unbalances the tonearm towards the record.) because of this balanced condition, the *very* same adjustment that provides, say, 1.5 grams VTF, would apply about 15 to 20 grams if the record player was placed flat on a table. In short, the turntable must be used vertically.

The LT-5V is a two-speed record player with individual strobes and pitch controls for the 33 and 45 rpm speeds. A prism beams light rays at two photocell sensors via smaller prisms buried in the turntable mat. When both sensors receive the light rays (because there's no record



• The tonearm hangs down from a pivot. An unbalancing force, which is dialed in directly, causes the tonearm to move towards the record and apply the tracking force. The stylus force range is 0 to 2.5 grams in 1 gram increments.

SPOTLIGHT ON: MITSUBISHI LT-5V

what's in a "hundred" different high fidelity turntables.

As you would imagine there are a lot of somewhat critical tolerances when it comes to setting the overhang and stylus position so that you can enjoy the benefits of this design. The whole problem is resolved with a notably excellent combination overhang,/stylus-position gauge that leaves no room for guesswork; both "high" and "low" limits for the stylus position are engraved on the gauge. It's a beautiful set-up procedure; time consuming, but not difficult. The only problem is that Mitsubishi provides only two sizes of pickup mounting screws, neither of which were correct for many popular U.S. pickups. You might have to dig up the hardware that came with your pickup.

The tonearm is driven across the platter on a steel rail. Optical sensors determine when the tonearm has been insignificantly shifted from true vertical, and apply power to a motor that corrects the tonearm to true vertical. More or less this is the same system used in most modern linear tracking

turntables. It's essentially foolproof. The difference in the LT-5V is that the mechanism appears to have no weaknesses-it looks like a piece of machinery made to impress the boss.

At \$450 the LT-5V is lowest priced linear tracking turntable now in production and as such is a real bargain. But, let's be honest, just about any \$450 turntable is likely to be pretty good. On the other hand, the LT-5V is better than many far more expensive machines. Differences in sound quality become apparent at the inner record diameters, particularly if the grooves were cut closer to the label because the extra time was needed. The vertical tracking of the LT-5V delivers lower distortion from the inner grooves.

The really big difference, on a dollar-for-dollar basis, comes from the vertical orientation. External shock and vibration is now in the same plane as the pickup, rather than at right angles, and the player can literally vibrate on a table with a short leg and the stylus will stay in the groove. It takes a direct strike on the player itself, and a rather

powerful strike at that, to cause stylus skipping. A sidewise vibration, an unusual condition, results in essentially average resistance to skipping.)

The record player mounts on two legs each of which have two adjustable feet. A sort of half dust cover is provided. It is hinged at the top sides and keeps dust out of the tonearm mechanism and the top half of a record. Actually, the cover is meant only to protect

the tonearm against dust and accidental contact.

Summing Up. Whatever you do, don't get touted off the Mitsubishi LT-5V because "it looks different." For a change, the difference really does some good, and overall, it works real well.

For additional information see the test report elsewhere in this issue and circle No. 105 on the reader's service coupon.

TURNTABLES

MITSUBISHI LT-5V VERTICAL, LINEAR TRACKING TURNTABLE \$450

Circle No. 105 On Reader Service Card



The Mitsubishi LT-5V is a somewhat unusual record player in that it normally operates in a vertical position with a linear tracking tonearm that hangs straight down. The unit has two speeds (33, 45 rpm), with individual 33 and 45 pitch adjustments and a full-time illuminated strobe for each speed. Optical sensors provide automatic tonearm indexing for 7 inch and 12 inch records. The sensors also protect the stylus from damage in that they do not allow the tonearm to "lower" unless there is a record on the platter. If there is no record the tonearm sweeps above the record and then returns to its rest. Operation is automatic. The start button causes the motor to start and the tonearm to cue. At the end of play the tonearm "lifts" and returns to its rest, and the motor is turned off. The system can be rejected at any point by pressing a stop switch. Alternately, it can be programmed for continuous repeat play. The pickup mounts in a universal shell for which an unusually accurate overhang elevation position gauge is provided. A 0 to 2.5 gram VTF adjustment calibrated in 0.1 gram increments is provided.

but because of the vertical mounting it is impossible to test for VTF adjustment accuracy with conventional gauges. The player cannot be placed "flat" (horizontal) for checking the VTF because doing so results in meaningless measurements. Since Mitsubishi turntables have consistently had accurate VTF adjustments, we will assume this one is also accurate. (Using a stylus displacement test procedure, we estimate the VTF is accurate to at least 0.25 gram—though 0.25 gram is the limit of the test procedure.) The tonearm rest not only has a positive locking tonearm clamp, the clamp also serves as the master power switch. The record player is a beautiful piece of machinery, and the sound quality actually does appear to be better from the inner record grooves. The system is unusually immune to external shock and vibration, and can take one heck of a beating before the stylus skips a groove. Overall, the LT-5V works and sounds as good as it looks. For more information, see "Spotlight on the LT-5V" elsewhere in this issue.

CONTROLS

- Speed select
- 33 pitch
- 45 pitch
- Start
- Stop (reject)
- Lift, Cue
- Repeat play
- Master power/tonearm lock

DIMENSIONS

- Width: 18.4 Inches
- Height: 17 inches
- Depth: 7.9 inches
- Weight: 27.5 pounds

TURNTABLE PERFORMANCE

Line voltage immunity (90 to 140 volts)	Total
Pitch control range at 33 rpm	+6.9!—2.3%
Pitch control range at 45 rpm	+7.9!—5.9%
Wow and flutter (average)	0.03%
Wow and flutter (peak)	0.12%

Tracking force calibration accurate to 0.25 gms (see text)
Output cable capacitance 260pF

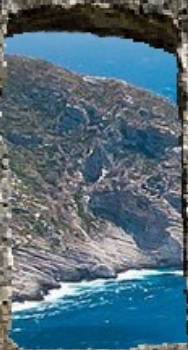
HI-FI JARGON: Wow and Flutter

Speed variations of a tape recorder or record player alter the pitch of the music: the speed is consistently slow or fast by a small amount most people are unable to detect the error; few of us have "perfect pitch." But if the speed changes—even slightly—we react immediately. Slow variations in speed cause a slow change in pitch called "wow." faster ones cause the music to flutter.



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