

THORENS TD 146 and TD 166 MKII Owner's Manual

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Links

Here are links to some other pages with information about Thorens turntables and other vintage equipment.

[The Analog Dept.](#) is a very comprehensive site about Thorens (and other) turntables. In particular, if you own a TD-160, you need to visit this site.

[Vinyl Asylum](#) is also a great source of information about turntables, old and new, including Thorens. Just search the archives.

[Retro Hi-fi](#) is a nice site about vintage audio equipment in general.

The [Tuner Information Center](#) is a wonderful source of information about vintage tuners. It's great for researching tuners that show up at eBay and other auction sites.

If you own a Tandberg 3011 or 3011A, or are just curious about these tuners, I also have a [3011 manual](#) online.

Congratulations!

You are now the proud owner of a THORENS turntable.

You have purchased a high-quality component that has been designed to afford many hours of listening pleasure.

The THORENS TD 146 and TD 166 MkII Turntables are precision instruments which, with reasonable care, will deliver optimum reproduction quality and protect your records for years to come. The auto-stop feature and the lifting mechanism of the TD 146 enable faultless reproduction to be combined with the convenience of automatic end-of-play shutoff.

In order to prevent improper operation, which could impair reproduction quality or lead to damage of the turntable or of a valuable record, we wish to advise you to read this instruction manual completely before unpacking the turntable and putting it into operation.

This recommendation is of particular importance when the unit has been purchased with an empty cartridge wand and a pickup cartridge must therefore be installed.

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I. Unpacking



Figure 2

The arrangement of the packed turntable is shown in Figure 2. The upper styrofoam packing may easily be removed by grasping the opening on either side and lifting straight up.

The turntable can now be taken out of the lower styrofoam packing.

Do not use the tone arm assembly as a handle!

The top styrofoam packing enclosure (Figure 3) contains the dust cover and the following turntable components:

- a hinged storage case containing the TP 63 cartridge wand (5) with all accessories including (if delivered with the turntable) the

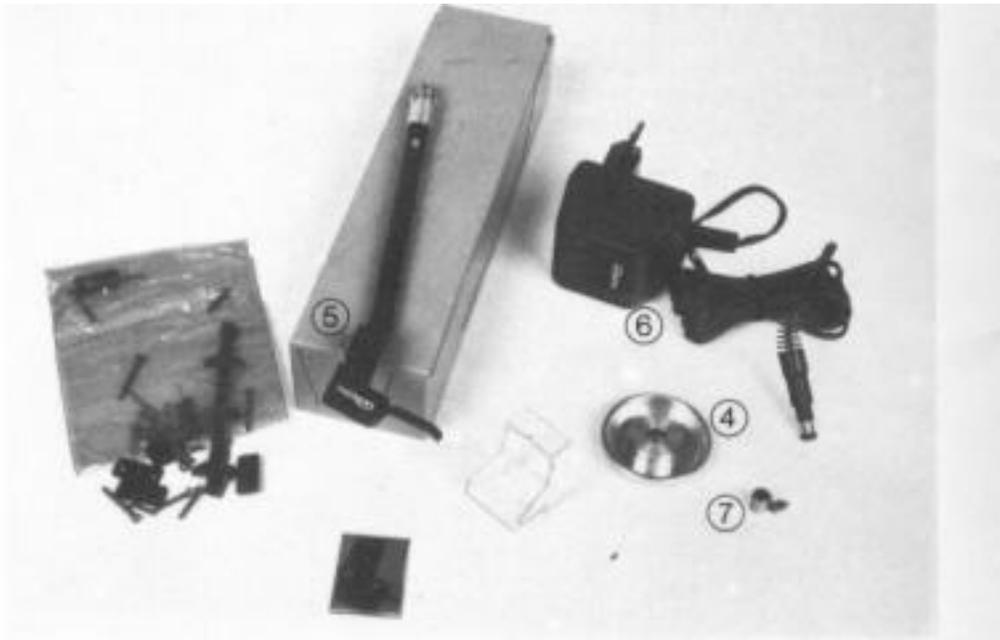


Figure 3

- mounted cartridge pickup.
- the AC mains adapter (6)
- antiskating weight

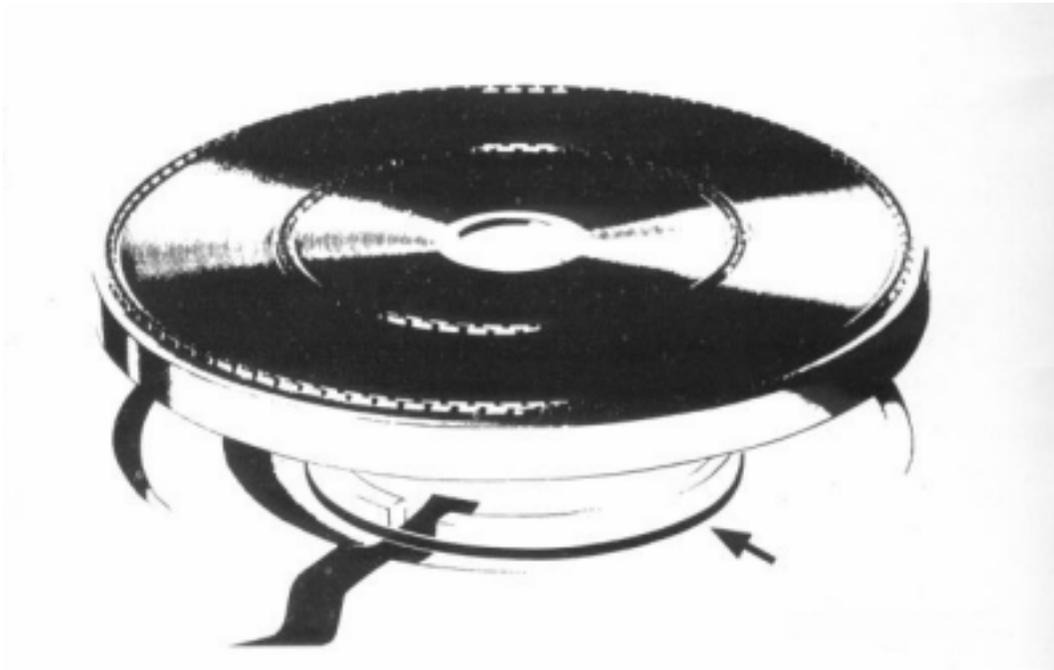
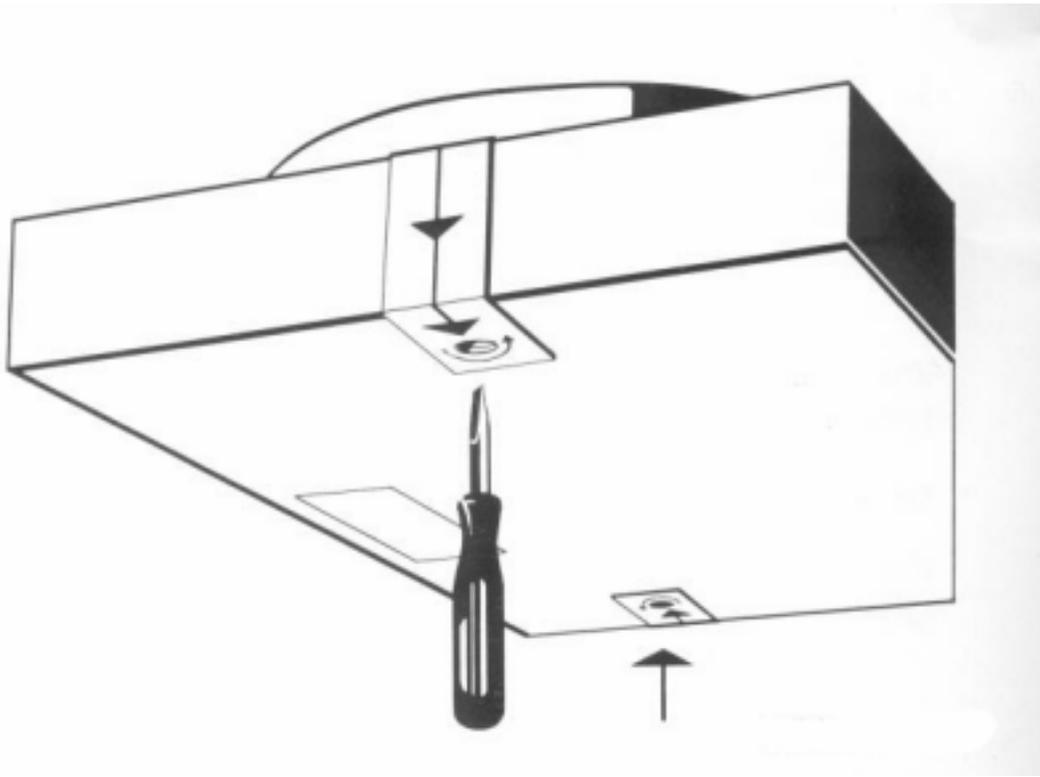


Figure 4

The lower styrofoam packing contains the outer turntable platter with rubber mat, the tone arm counterweight, and the center-hole adapter (4) for 45 RMP records. The rubber drive belt is packed underneath the turntable platter (Figure 4). Since the envelope of moisture absorbing material loses its effectiveness upon contact with the open air, it should be discarded.

Save all packing materials, including the cardboard spacers, for possible reshipment or transport at some later date.



Important notice!
The apparatus incorporates a transport lock for the subchassis. This must be unscrewed before the turntable is used (Figure 5). Unscrew the two screws until the subchassis is freely suspended.

Figure 5

II. Assembling the turntable

The motor spindle, motor pulley, turntable bearing and tone arm assembly are designed to very close tolerances. As precision parts, they should be protected against shock and strain. Exercise particular care in fitting or removing any part of the turntable assembly.

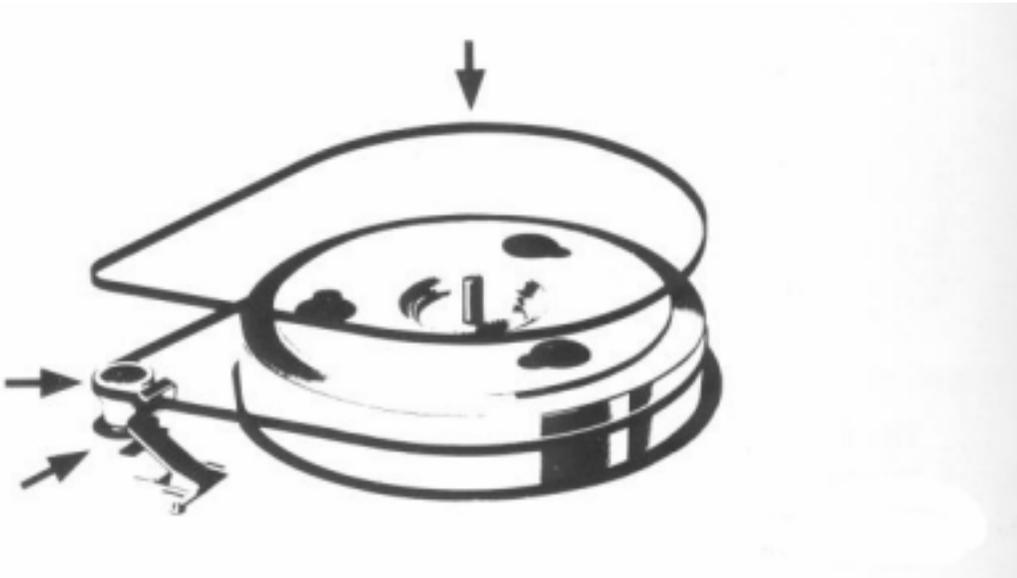


Figure 6

For shipping or transporting, always remove the large outer platter, the TP 63 cartridge wand and the tone arm counterweight from the turntable.

Loop the drive belt around the inner turntable platter and motor pulley as shown in Figure 6.

Center the outer turntable platter on the inner one and set the rubber mat in place.

The belt, motor pulley and the periphery of the inner turntable should be entirely free of any trace of oil or grease. If necessary clean them with a lintfree cloth dampened with denatured alcohol or methylated spirits.



Figure 7

The TP 11 Mk III tone arm consists of the bearing assembly and the TP 63 cartridge wand, illustrated in Figure 7. The cartridge wand with pickup cartridge is plugged into the bearing assembly and secured by tightening the knurled collar.

Instructions for mounting a pickup cartridge are given in Section VIII.

Tighten the counterweight temporarily into position at the rear end of the tone arm (see Figure 10 in Section IV).

Remove the dust cover from the upper packing enclosure and fit it into the hinges (3) of the turntable base (Figure 1).

III. Electrical connections and installation

1. The turntable may be powered from any line voltage by using the appropriate THORENS AC Adapter (6). Verify that the line voltage of the adapter delivered with your turntable corresponds to the line voltage intended for use.
2. The stereophonic signal cable is terminated with RCA (Cinch) phono plugs, coded as follows: L for left channel, and R for right channel. They are to be connected to the appropriate phono input of an amplifier or receiver.

The separate wire should be attached to the grounding screw at the chassis of the amplifier. It establishes a common ground and thus prevents hum introduction (Figure 8).

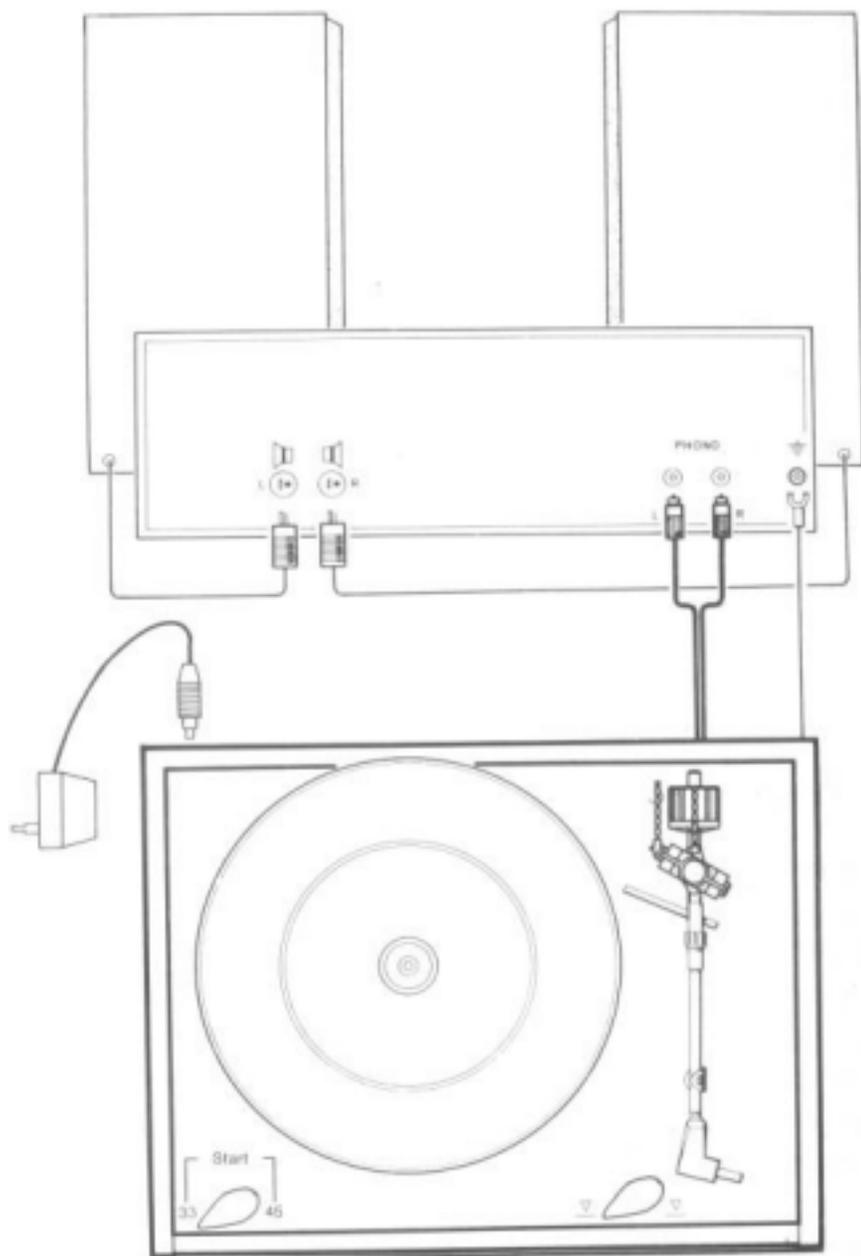


Figure 8

Amplifiers with a 5 pin DIN input connector require an adapter cable (RCA female to DIN male), available at your dealer.

If hum should be heard in the loudspeakers when the turntable is in use, check that the cartridge wand is firmly attached to the bearing assembly and that the connections to the pickup cartridge are secure. Hum may also be produced by the close proximity of amplifiers or other appliances. Your THORENS dealer or service representative should be consulted if hum-free performance cannot be achieved.

One should avoid a position such as shown in Figure 9.

When connecting the turntable to other hi-fi equipment, care

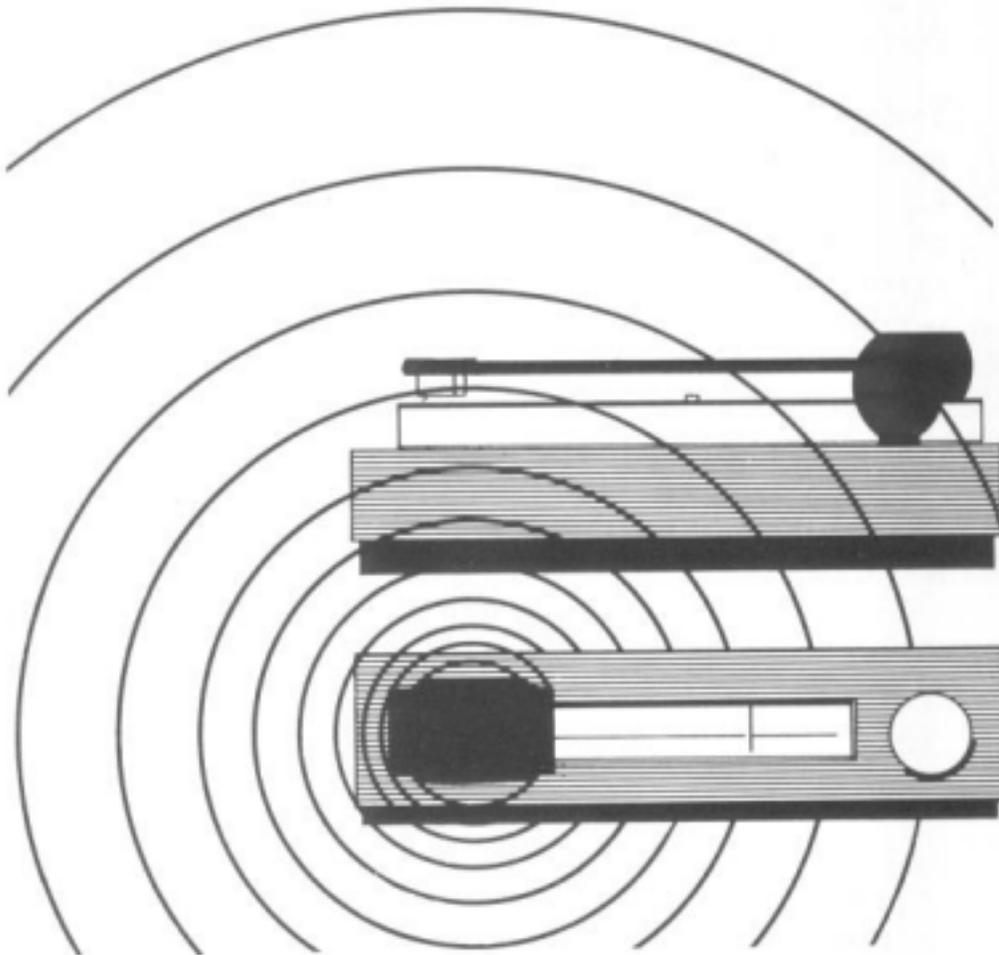


Figure 9

should be taken that mains transformers incorporated within any ancillary units be not situated too close to the pickup cartridge. Magnetic cartridges are sensitive to the influence of magnetic fields of mains transformers and may produce hum as a result.

The turntable should be installed in a location allowing the dust cover to be opened freely. Avoid the immediate vicinity of heating units. Placement of the turntable on a solid cabinet and out of direct line with the loudspeakers will minimize the possibility of acoustic vibrations impairing reproduction quality.

IV. Tracking force adjustment



Figure 10

10 mN (milliNewton) . = 1
p (pond) = 1 g (gram
weight)

Before the tracking force can be set, the tone arm with the cartridge must be balanced as follows.

Turn on the turntable (see Section VI or VII). Turn the lift knob to the play position  thus lowering the tone arm lift platform. Position the arm between the arm rest and the turntable platter.

Hold the arm with the left hand to avoid damaging the stylus.

Move the counterweight AB, Figure 10, by turning it along the tubular arm extension until the arm balanced in a horizontal position. For the following adjustment, clamp the arm in its arm rest.

Turn the black dial ring B at the counterweight until its zero graduation corresponds to the marker line on the tone arm tube. Hold counterweight A to prevent turning. The

counterweight scale is now calibrated for the pickup to be used. The counterweight scale is graduated in grams.

To apply the desired tracking force, turn the entire counterweight AB towards the tone arm bearing until the appropriate point on the scale corresponds to the marker line on the tone arm tube. In Figure 10, a tracking force of 1 gram is shown.

The tracking force may be initially chosen according to the recommendation of the cartridge manufacturer. This settings will often be correct; however, it should be noted that such prescribed tracking forces are frequently based on ideal playing conditions, i. e., using records containing only moderate signal modulations and exhibiting no surface warps.

In practice, the conditions for accurately tracking a record groove are often more demanding. The presence of audible distortion in both reproduction channels during loud passages may

indicate the presence of tracking distortion, which can be eliminated by increasing the tracking force by 0.25 or 0.5 grams. This measure will actually extend the life expectancy of the record played, since tracking distortion is invariably accompanied by groove deformation and hence premature wear.

Distortion in only one channel may be caused by an incorrectly adjusted antiskating force, treated in Section V.

It is necessary that the stylus tip be kept free of residues to insure optimum tracking performance; use only a stylus brush made for cleaning purposes.

V. Antiskating adjustment

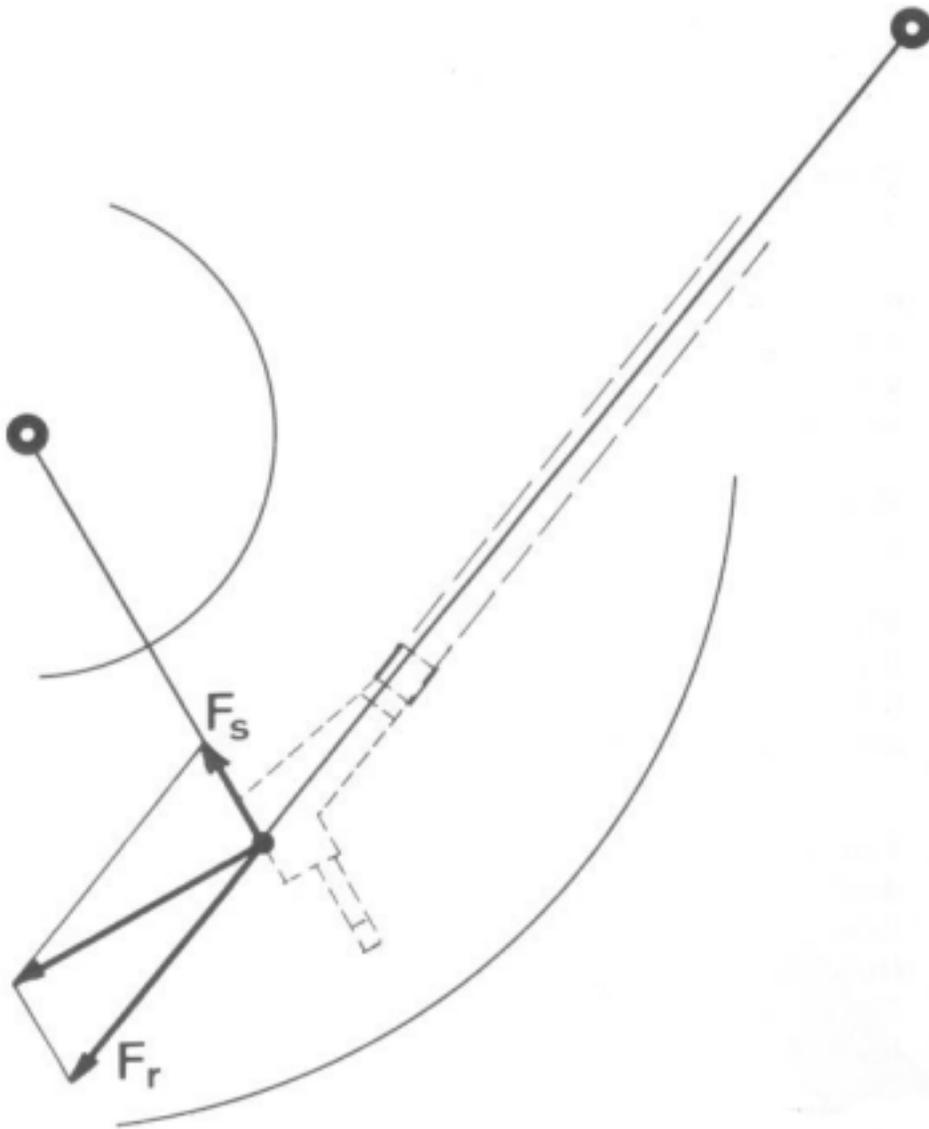


Figure 11

The friction of the stylus in the moving record groove produces a force which may be resolved into a component F_r pulling longitudinally on the tone arm and a component F_s pressing perpendicularly on the inner groove wall (Figure 11).

F_s is designated as the skating force; it can lift the stylus out of the groove and send it skating across the record surface toward the center of the turntable.

To counteract this tendency, an additional weight on the THORENS TP 11 MkIII Tone Arm applies an antiskating force directed outward.

The required antiskating force is indicated in Figure 12 and Table I.

If the record surface is entirely covered by a film of liquid (for liquid groove cleaning), the required antiskating force is reduced. The column in Table 1 labeled "liquid" consider this condition.

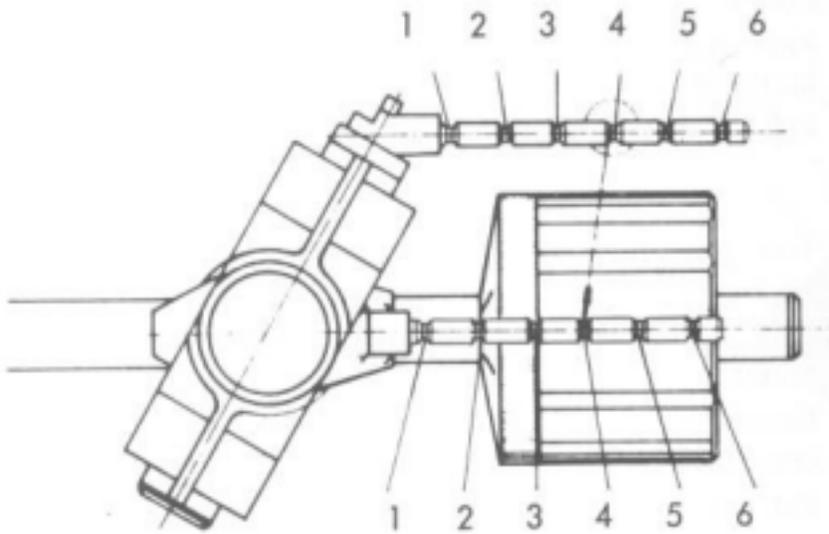


Figure 12

Small Weight							
Stylus Force(g)	0.50	0.75	1.00	1.25	1.50	1.75	2.00
dry: notch	1	2	4	5	6		
wet: notch		1	2	3	4	5	6
Great Weight							
Stylus Force(g)	1.50	2.00	2.50	3.00	3.50	4.00	
dry: notch	1	2	3	4	5	6	
wet: notch			1	2	3	4	

Table 1

The figures of Table I are applicable for both spherical and elliptical styli for tracking forces of up to 2.5 grams. For elliptical styli, tracking forces greater than 2.5 grams should be avoided to prevent excessive record wear.

If distortion should occur even though the stylus force recommended by the cartridge manufacturer has been set (with corresponding antiskating force), a corrective adjustment is necessary.

To determine the proper antiskating setting, select a good stereo recording containing loud, fortissimo passages near the end of the record.

- If distortion is clearly audible in both channels, increase the tracking force by small amounts until the distortion ceases or diminishes to a minimum in one channel.
- Set the antiskating force to a low position (e.g., 0.5) and observe the effect. Gradually

increase the antiskating setting until the distortion ceases in both channels.

If the distortion moves to the other channel, the antiskating force is too high and must be reduced.

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VII. Operation of the TD 166 MkII

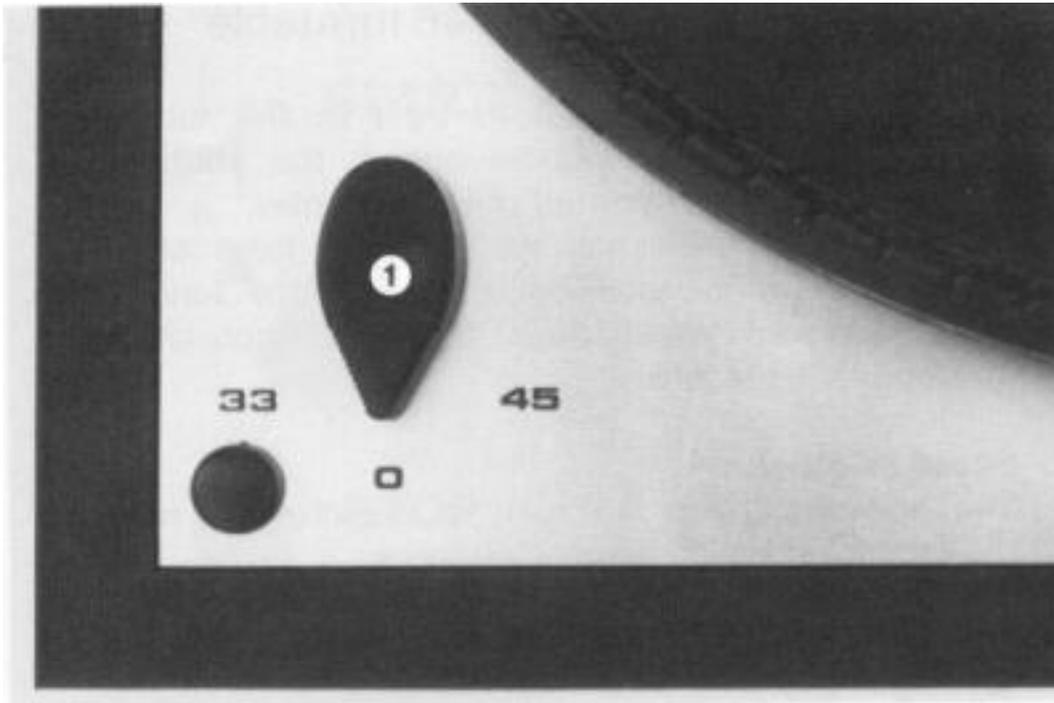


Figure 16

The knob (1) to the left in of the turntable platter is used to turn on the unit and select the speed simultaneously.

Turning the knob (1) to "33" selects 33 1/3 RMP, turning to "45" selects 45 RPM.

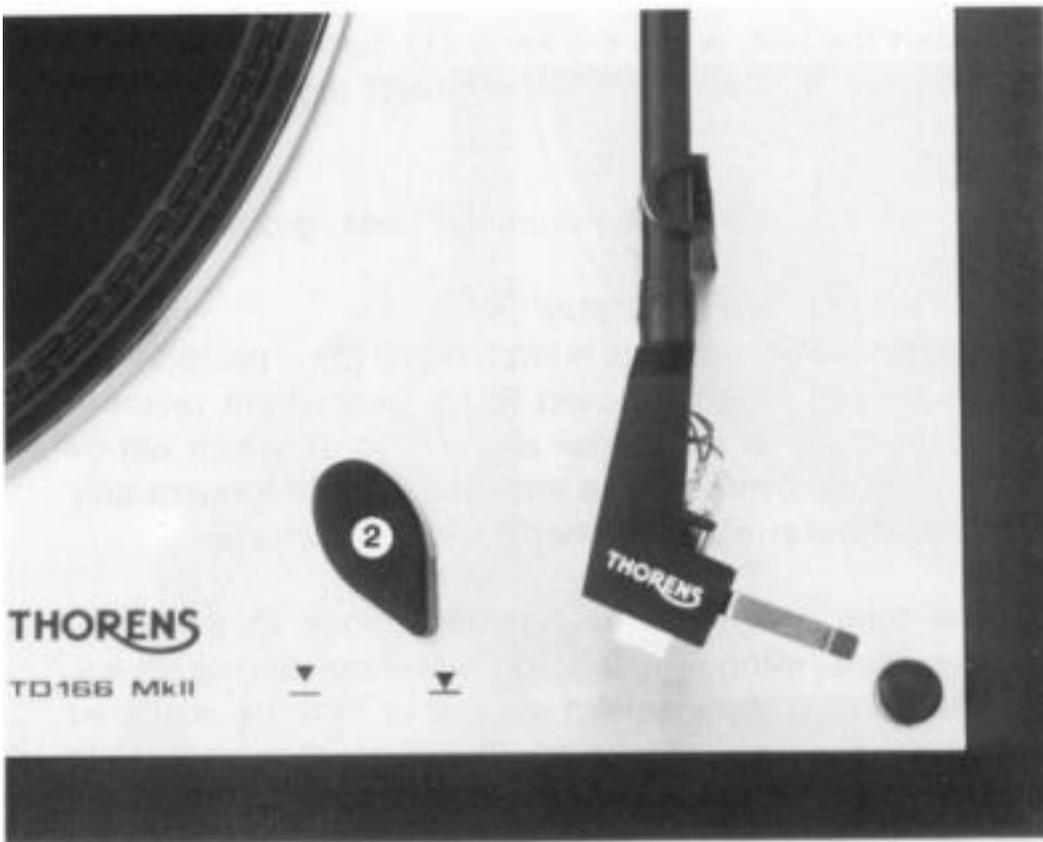


Figure 17

The lift knob (2) at the right allows the tone arm to be lowered onto, or raised from, any desired point on the record.

Turning the lift knob (2) to the play position  lowers the tone arm onto the record.

Turning the lift knob (2) to the rest position  raises the tone arm.

The adapter (4) at the center of the turntable platter may be reversed for playing 7 inch records with large center hole.

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VI. Operation of the TD 146 turntable

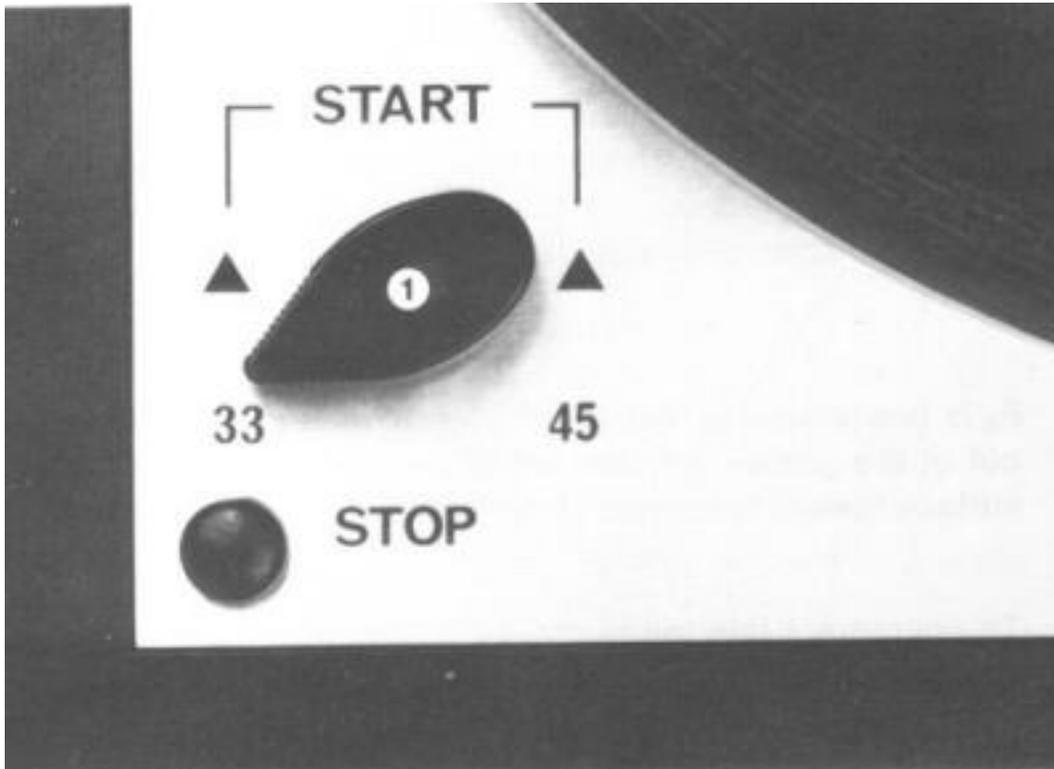


Figure 13

The knob (1), situated left in front of the turntable platter, controls the turntable speed, the starting of the turntable and the interruption of record play. Turning the control knob on the right hand side of the unit (2) to the position  lowers the tone arm onto the record. When turned to  the knob lifts the tone arm off the record.

Speed selection

The speed ($33 \frac{1}{3}$ or 45 RPM) is selected by turning the knob (1) to the corresponding figure. The adapter (4) is employed at the center of the turntable platter for records with a large center hole.



Figure 14

Start

To start the unit, press the knob (1) further on against a loading spring towards the arrow START (Figure 14).

Tone arm lift

Position the tone arm over the first groove of the record.

Move the lift knob (2) to "play" ▼.

When the lowering device is lifted (knob 2 in position —), the tone arm may be moved to any record cut (even to grooves close to the center of the record), which will be played, after lowering. The auto stop switch triggers only after the tone arm has reached the lead-out groove.

If the tone arm is to be operated close to the lead-out groove without using the lowering device -- e.g., for cueing purposes -- the auto stop may be triggered inadvertently. To prevent this, press the knob (1) to the starting position (Figure 14).

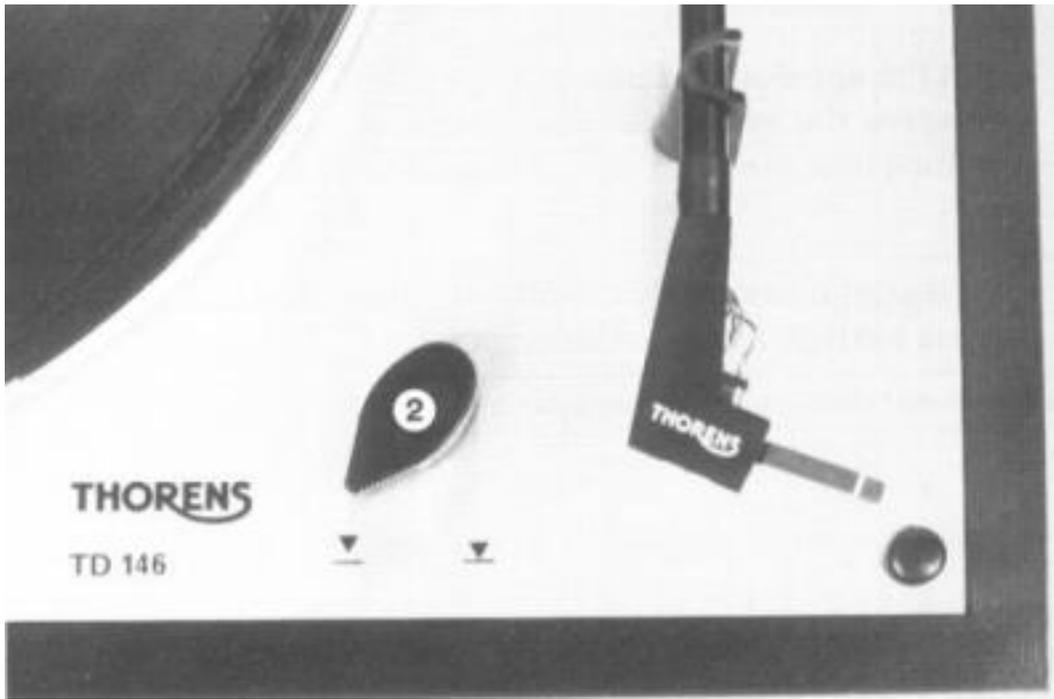


Figure 15

Auto-Stop

When the tone arm reaches the inner groove, the auto-stop lift the tone arm and stops the turntable platter. The lift knob (2) returns to its position  and the unit will be switched off. The knob (1) remains in its speed position (33 1/3 or 45 RMP). There is no need to move this knob to the STOP position even for complete termination of record play.

Interruption of record play

If record play is to be interrupted before the tone arm has reached the lead-out groove, the knob is to be moved to the STOP position. The tone arm will then be lifted, the lift knob returned to position , and the unit switched off.

VIII. Mounting and adjustment of the pickup cartridge

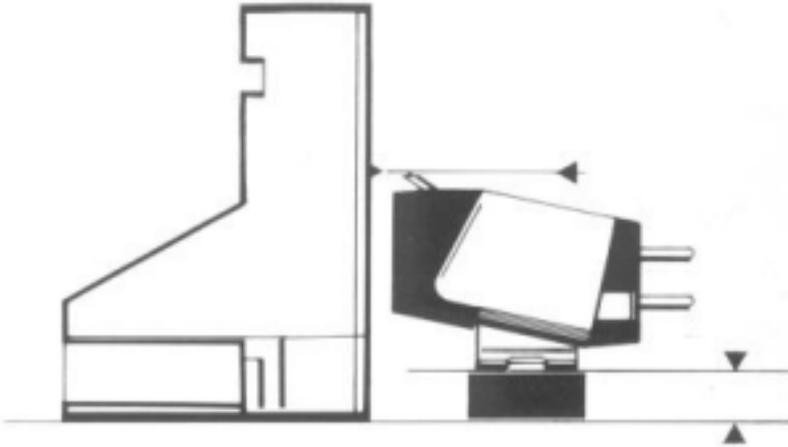


Figure 18

The TP 63 cartridge wand has been designed for low effective mass and for functional convenience in interchangeable use of more than one pickup cartridge with the turntable. It can be kept safely in the hinged storage case when not in use.

If the pickup cartridge intended for use is not already installed in the cartridge wand, it is to be mounted according to the following instructions:

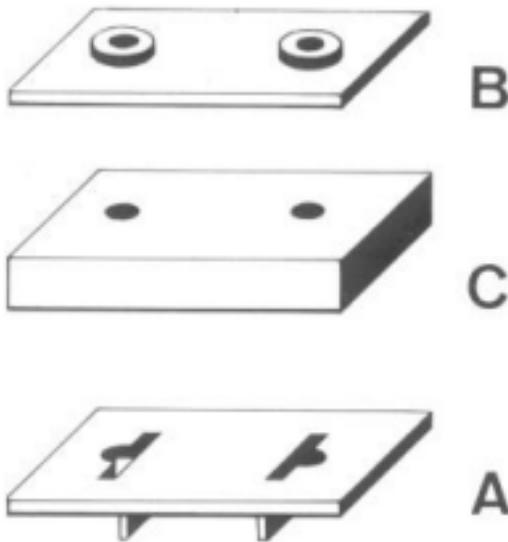


Figure 19

1. Place the pickup cartridge facing the transport mounting guide as shown in Figure 18.
2. Compare the height of the stylus tip with that of the sighting graduations on the front side of the guide. Select the appropriate spacer to bring the stylus in line with the marks. There are 5 different C-spacers available, from 1 to 3 mm thick.

3. Two of the spacers,

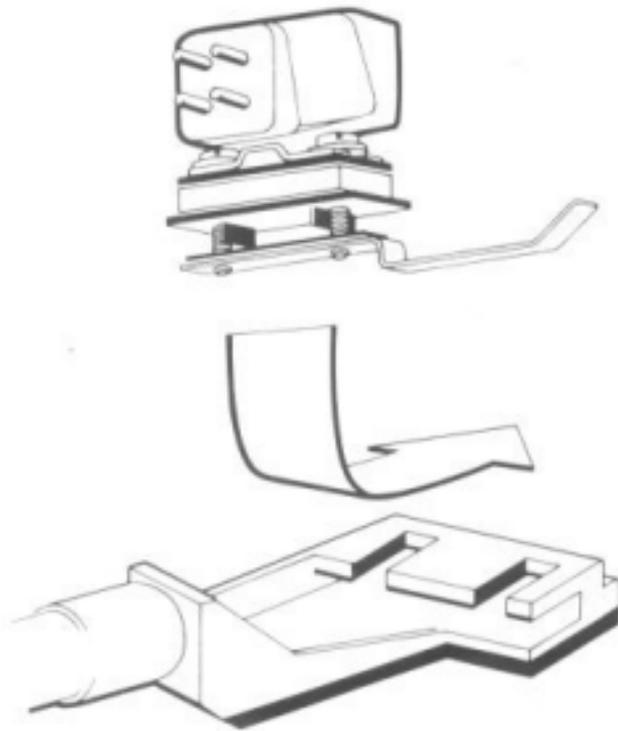


Figure 20

A and B, fulfill additional functions; as a consequence, the assembly scheme indicated in Figure 19 should be maintained.

The A-spacer is identifiable by the guiding ridge along each mounting hole. The shoulders fit into the mounting slits of the cartridge wand to prevent misalignment of the spacer assembly, and, therefore, this spacer must always be used.

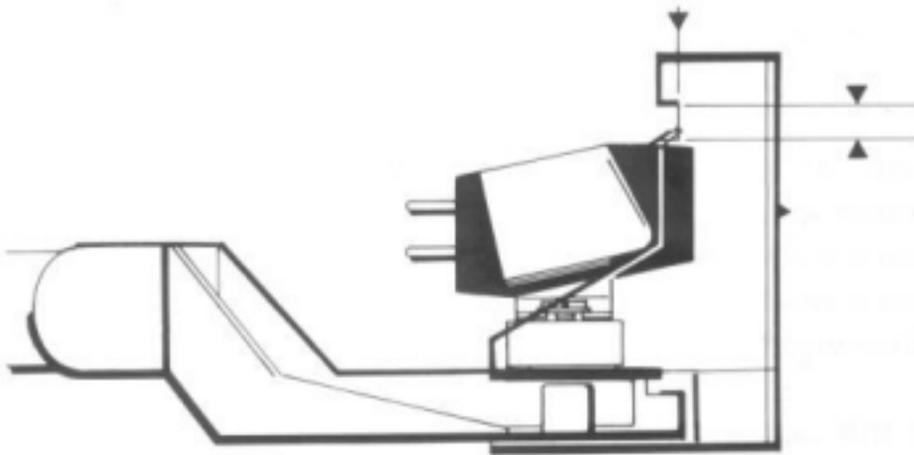


Figure 21

The B-spacer possesses an embossed 0.5 (mm) identification and a collar around each hole. This spacer is intended for pickup cartridges with large mounting holes only; the collars snap into the holes to prevent misalignment of the cartridge.

4. Remove the metal lifting handle assembly from the headshell. The following steps are performed outside

of the wand.

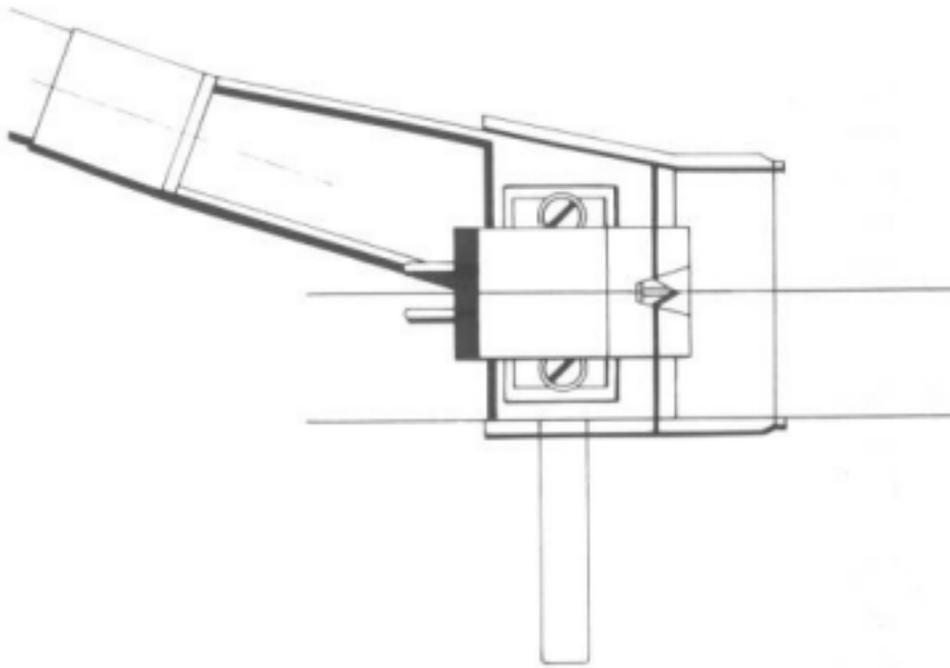


Figure 22

Disassemble it. Select two screws of appropriate length together with washers and insert them through the mounting holes of the pickup cartridge and the spacers. Secure the assemblage by screwing on the metal lifting handle with the attached insulating spacer. The screws employed should not now extend more than 1 mm out of the handle when fastened.

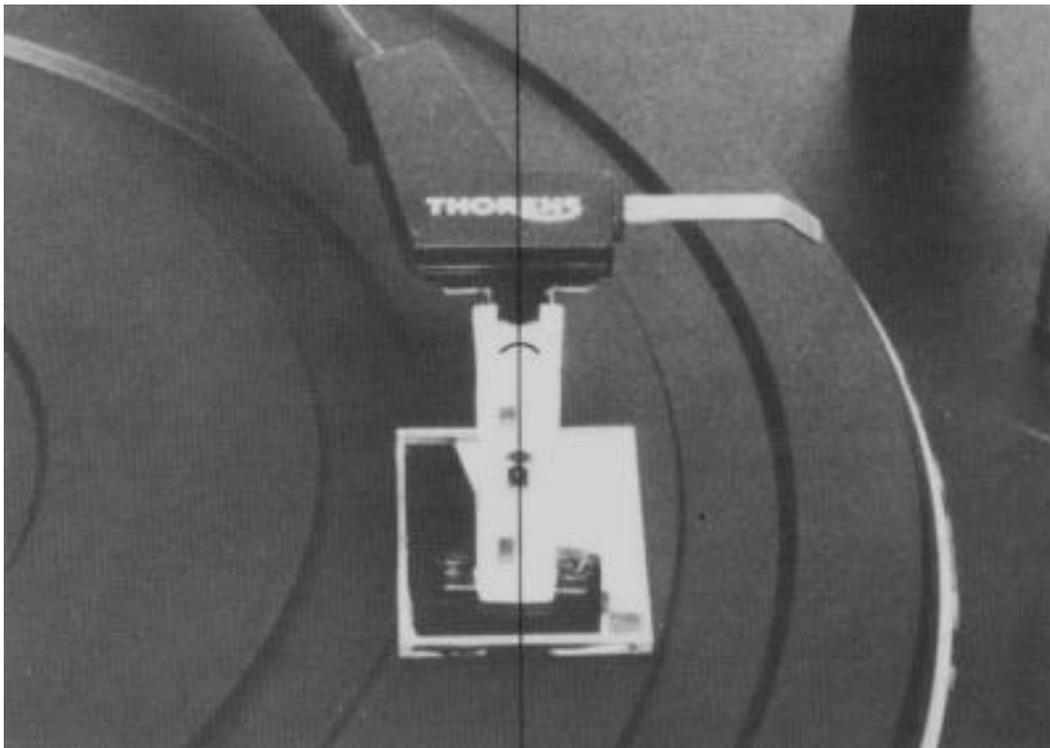


Figure 23

5. Slide the mounted pickup cartridge onto the cartridge wand (Figure 20).
6. Slide the cartridge wand as far as possible into the mounting gauge. Figure 21 illustrates the correct position of the stylus tip. The longitudinal position of the stylus can be varied by sliding the cartridge with respect to the arm. If the spacers have been properly

chosen, the stylus tip will lie within the sighting slits. After the correct stylus position has been achieved, the mounting screws are tightened. Thereafter, the pickup cartridge should be compared with the edge of the arm on the handle slide as shown in Figure 22. If the two are not parallel, a misalignment of the cartridge is indicated.

7. Using a pair of tweezers, push the contacts of the tone arm leads onto the connection pins of the cartridge. The leads are color coded in compliance with international standards, as follows:

White - Left
channel
signal lead

Blue - Left
channel
shield

These leads are also to be used when a monophonic pickup

cartridge is employed.

Red - Right channel signal lead (hot, positive)

Green - Right channel shield (cold, negative)

The second contact on the green lead is connected to the bare pin on the inner side of the cartridge wand to establish a ground connection between the shield of the right channel and the tone arm. The existence of hum may indicate poor grounding of the cartridge; should hum persist after the instructions in Section III have been followed, consult your THORENS dealer for assistance.

8. Insert the cartridge wand into the bearing assembly and tighten the knurled nut.

9. After the tone arm has been mounted and adjusted, it is necessary to verify the correct horizontal position of the cartridge with respect to the platter. Place a mirror on the platter and lower the pickup stylus onto its surface. When viewed from the front, the cartridge must be positioned symmetrically about its vertical axis. By comparing the cartridge and its mirror image, the correct position may be determined (Figure 23); if necessary, the cartridge can be adjusted by holding the wand and rotating the head part only, until symmetry is achieved.

IX. Technical specifications

Drive System	2-speed belt drive
Motor	low voltage 16 pole synchronous motor, with slip clutch for instantaneous start
Speeds	33 1/3; 45 RPM, mechanical speed selection
Motor speed control	synchronized by mains frequency
Turntable platter	2.7 kg, zinc alloy, dynamically balanced
Platter diameter	30 cm (12")
Wow and flutter according to DIN 45 507	≤ 0.05%
Rumble unweighted according to DIN 45 539	> 50 db
Rumble weighted according to DIN 45 539	> 70 db
Rumble measured with THORENS Rumpelmesskoppler (rumble measuring device) according to DIN 45 539	
unweighted	> 60 db
weighted	> 75 db
Power requirement	16 V ~ max. 140 mA
Mains voltage	may be connected to any line voltage using the appropriate THORENS AC adapter
TP 11 MkIII Tone Arm	
TP 63 cartridge wand	
Effective length	230 mm

Effective mass	7.5 g
Stylus overhang	14.4 mm adjustable
Offset angle	22 degrees
Lateral tracking angle	≤ 0.18 degrees/cm of radius
Skating-compensation	1 or 2 weights on nylon thread
Bearing friction	≤ 0.20 mN (20 mp) in both planes
Cartridge mounting	standard 1/2"
Capacitance of cable	190 pF +/- 10%
Auto-Stop (TD 146 only)	opto-electronic
Dimensions	
Turntable with base (W X D)	430 x 360 mm
Height with cover closed	150 mm
Height with cover open	415 mm
Depth with cover open	436 mm
Weight	8 kg

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X. THORENS factory warranty

We warrant that we shall replace free of charge every defective part of this unit or repair it free of charge in our factory in one of our authorized service stations should a defect occur within the period of the warranty. The warranty period is one year from the date of the original purchase.

The above warranty is valid only if the enclosed warranty card, duly filled out, be returned within 10 days after purchase to the THORENS General Representative in your country; his address will be provided by your dealer.

Should a defect appear within the warranty period, please contact your THORENS General Representative, describing completely the defective operation and quoting the Model and Serial Number of your unit. Defective parts which are user replaceable will be sent to you by mail. Otherwise you will be given the address of the service station nearest you or be requested to ship the unit directly to the representative.

In the latter case, please pack the unit using the original packing materials.

Shipping costs must be prepaid.

Any damage caused by failure to observe the instructions contained in this manual as well as damages incurred in transport or shipping are not covered by this warranty.

This warranty will be invalidated by repairs or modifications made by anyone other than THORENS authorized service personnel.

NB: Please observe possible complementary warranty conditions issued by our authorized general representatives.

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Mains voltage - Fuses

Check that the receiver is set to the correct mains voltage -- see figure on page 7.

230 volts, 50 Hz:

The receiver is set to 230 V +/- 10%, 50 Hz, at the factory and fitted with a 200 mA mains fuse for this voltage.

115 volts, 60 Hz

- Set the mains voltage selector for 115 V (use a screwdriver).
- Remove the 200 mA fuse and insert a 400 mA fuse. Open the fuse holder with a screwdriver or a coin.

Fuses:

230 V, 50 Hz: 200 mA, slow-blow, 5 x 20 mm.

115 V, 60 Hz: 400 mA, slow-blow, 5 x 20 mm.

Connections:

The illustration on page 15 shows alternative connections for the mains supply.

Connections

(A) Antenna 75 ohm:

FM antenna with 75 ohms down lead should be connected direct to this input.

FM antenna with 300 ohms down lead should be connected via an antenna transformer 300/75 ohms. A 75 ohms antenna plug with an antenna transformer will be supplied with receivers intended for the US market.

(B) Variable Output:

For connecting to a control amplifier/amplifier. Output voltage 0 to 1.5 V/470 ohms.

Layout for connections, see pages 14 and 15.

Output Level

The signal level from the Variable Output can be controlled by means of the Output Level control. The level can be adjusted to suit the input requirements of the following amplifiers.

De-emphasis

The selector marked De-emphasis at the back of the receiver has three positions:

25 microseconds: For receiving Dolbyized* FM programs.

50 microseconds: For receiving FM transmissions with 50 microseconds pre-emphasis (European standard).

75 microseconds: For receiving FM transmissions with 75 microseconds pre-emphasis (US standard).

* "Dolby" and the double-D-symbol are trademarks of Dolby Laboratories Licensing Corporation.

Mains switch

- Check that the receiver is set to the correct mains voltage (see instructions at back of receiver) and that the correct fuse is fitted.
 - Plug in the mains plug.
 - Press in the mains button marked Power.
 - When switched on the receiver goes over to manual station tuning, *F* .
-

Manual station tuning

If the Servo AFC circuit is connected, it will be automatically disconnected when you manually tune in to a station. This provides more accurate tuning. The display will show *F* .

Adjust the tuning knob (7) until you find the required station.

- Frequency: Read the main scale (6).
- Signal strength: Read the signal meter (3). The meter displays signal strength in microvolts.
- Centre-tuning: The Tuning/Frequency meter (4) shows deviation from the centre position when the Δf indicator (5) lights up. Tune in until the pointer is in the centre.

When you release the Tuning knob, the Servo AFC circuit will be automatically connected again after 1 to 2 seconds.

Storing station data

It is assumed that this is the first station data to be stored, and that the station data can be stored in any program memory.

Tuning in the station

- Tune in the station (centre-tune) as described under Manual station tuning, see above.

Storing

- Press in one of the Program Preset buttons (1), e.g. No. 8.
- The display (2) will change from **F** to **8**.
- Press the Store Program button (10).
- The display will now show **P** with a blinking dot which indicates that the receiver is in the programming mode. You will all the time listen to the tuned in station.
- The display will change from **P** to **8** and the Tuning/Frequency meter (4) will show the frequency of the station. The station is now stored in Program Preset 8 and can be recalled later whenever the Program Preset 8 button is pressed.

The same procedure should be used to store station data in Program Preset memories 1 to 7.

The operating procedure is the same, whether a program selector is vacant or you want to change the station data already stored.

Storage unit (Memory)

The electronic memory can store data on 8 pre-tuned FM stations for rapid selection later. The memory is powered by an internal battery so that the stored data is not lost when the receiver is switched off.

The battery is the NiCd type which is charged continuously when the receiver is switched on. If the receiver has been switched off for a long

time e.g. 1/2 year to 1 year, the battery could be discharged so that the data stored in the memory is lost. In this event, the programming must be done again. Also after this kind of interval, the receiver must be left switched on for a period to allow the battery time to charge.

Under normal conditions the battery will have a life of 10 years. The battery should be changed by a qualified serviceman.

FM-Stereo/Mono

The MPX indicator will light up when the receiver receives a program with a pilot tone from an FM stereo transmitter. If the stereo program is affected by noise, you can press in the Mono button. Then the stereo program will be reproduced in mono with less noise. The MPX indicator will continue to be on to indicate that the receiver is receiving a stereo program.

At low signal strength the receiver will automatically switch over from stereo to mono.

Servo (Automatic Frequency Control)

The Servo circuit ensures the automatic precision centre-tuning of a manually tuned station.

- Press the Servo button to bring in the Servo circuit. The light will come on.
- When you are tuning in a weak station which lies close to a strong station on the scale, it can be an advantage to disconnect the Servo to prevent the Servo from automatically locking itself on to the stronger of the two stations.

During manual tuning the Servo will be disconnected as soon as you touch the Tuning knob. Re-connection of the Servo circuit is automatic within 1 to 2 seconds after you release the knob.

Muting

The muting circuit blocks weak signals and thereby ensures noise-free manual tuning.

- Press the Muting button to bring in the muting circuit. The indicator light will come on.
 - To tune in a weak station, first release the Muting button to cancel the effect of the muting circuit. Otherwise the weak stations will not rise above the muting threshold.
-

Mounting the side panels (extra)

NOTE!

When fitting extra side panels you must use the long screws (A) which are supplied.

Take care of the short screws (B) originally used to hold the side panels because you will need them if you remove the extra side panels. **The long screws must not be used without the extra side panels because they will cause damage inside the receiver.**

Mounting the 19" rack mount kit (extra)

See figure.

Tandberg Programmable Tuner TPT 3011

Technical Data

Power requirements:	230/115 V +/- 10%, 50/60 Hz
Power consumption:	23 W
Dimensions:	Width: 17 1/8" (43.5 cm) Depth: 13 3/4" (35.0 cm) Height: 3 1/4" (8.3 cm) Weight: 12.6 lbs (5.8 kg)

Technical Data according to IHF-T-200, 1975

Tuning range:	87.5 - 108 MHz
Usable sensitivity:	Mono: 0.85 microvolts/75 ohms
50 dB quieting sensitivity:	Mono: 1.5 microvolts/75 ohms, Stereo: 20.0 microvolts/75 ohms
Signal to noise ratio:	Mono: 78 dB, Stereo: 75 dB
Muting threshold:	8 microvolts/75 ohms
Muting hysteresis:	6 dB
Stereo threshold:	7.5 microvolts/75 ohms
Stereo hysteresis:	8 dB
Frequency response 30 Hz to 15 kHz:	Mono: +0.5 dB -1 dB, Stereo: +0.5 dB -1 dB
Distortion at 50 dB quieting:	Mono: 0.3%, Stereo: 0.3%
Distortion at 65 dBf (0.5 mV/75 ohms at 1 kHz):	Mono: 0.2%, Stereo: 0.3%
Distortion at 65 dBf (30 Hz to 15 kHz):	Mono: 0.3%, Stereo: 0.4%
Intermodulation distortion:	Mono: 0.2%, Stereo: 0.2%
Capture ratio, selectively measured:	0.9 dB
Adjacent channel selectivity, +/- 200 kHz:	14 dB
Alternate channel selectivity, +/- 400 kHz:	> 100 dB
Spurious response ratio:	> 70 dB
Image response ratio, balanced:	> 95 dB
RF intermodulation:	> 70 dB
AM suppression ratio:	> 70 dB
Stereo separation (60 Hz to 10 kHz, selectively measured):	> 40 dB
Subcarrier product ratio:	60 dB
19 kHz suppression:	70 dB
38 kHz suppression:	60 dB
Dynamic range of signal meter:	0.5 microvolts - 100 microvolts/75 ohms

Technical Data according to DIN 45301 and DIN 45500

Sensitivity mono DIN 45301 at 26 dB signal/noise ratio RMS, dev. +/- 22.5 kHz:	0.8 microvolts/75 ohms
Sensitivity stereo DIN 45500 at 46 dB signal/noise ratio RMS, dev. +/- 40 kHz:	20 microvolts/75 ohms
Signal/noise ratio, weighted DIN 45500 quasi-peak dev. +/- 40 kHz:	Mono: 66 dB, Stereo: 62 dB
Unweighted DIN 45500 RMS, dev. +/- 40 kHz:	Mono: 68 dB, Stereo: 65 dB
Selectivity, carrier down:	80 dB at +/- 300 kHz
Total harmonic distortion, dev. +/- 40 kHz:	Mono: 0.15%, Stereo: 0.15%

Optional Extras

Black acrylic side walls for freestanding units.
Attachment set for installation in 19 inch racks.

TANDBERG

The European Alternative

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