Dual

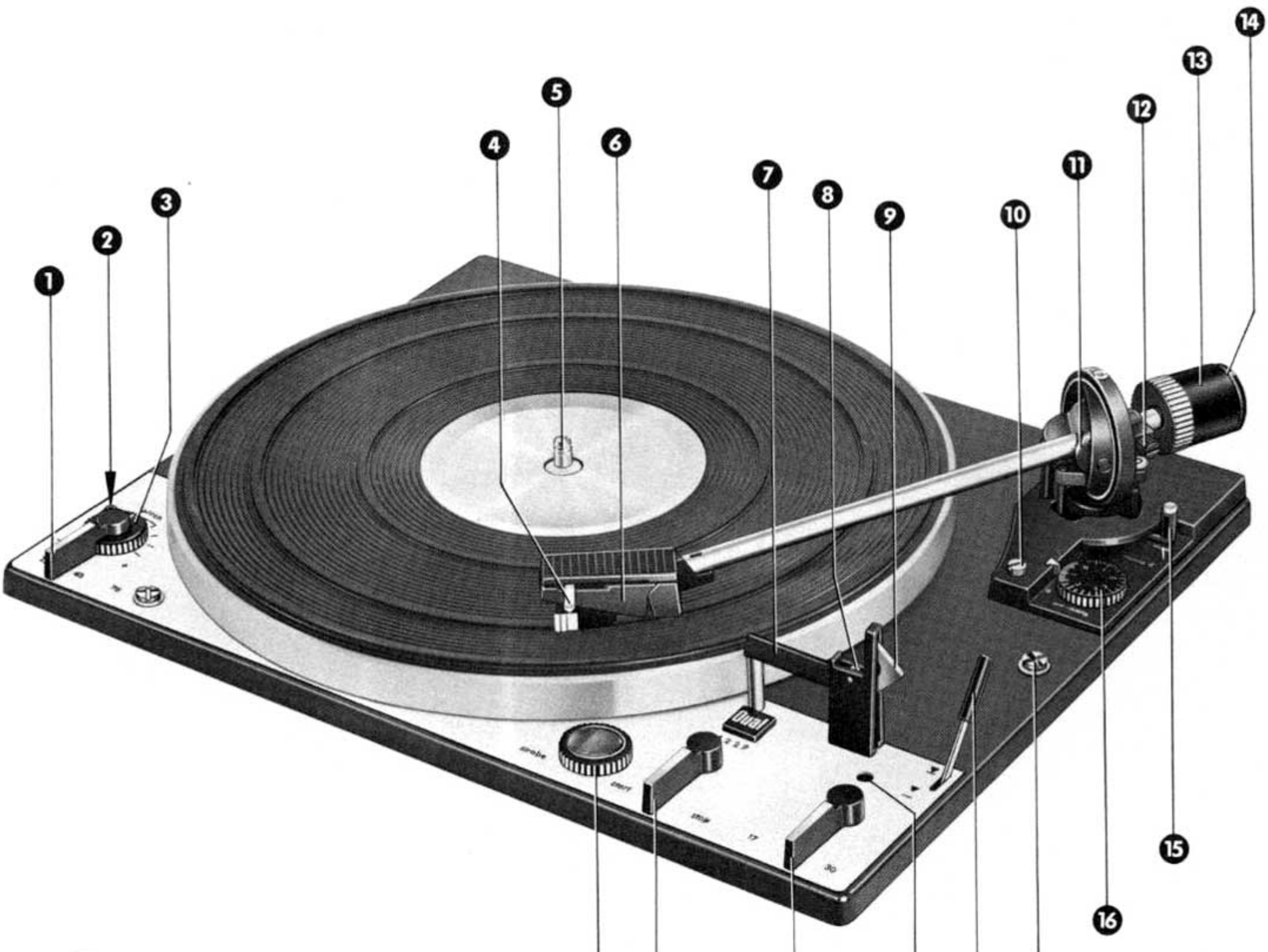
1229

Hi-Fi automatic turntable

Operating instructions

Dual

1229



Dear record lover,
please read through these instructions carefully before you operate your new automatic turntable for the first time. By doing so, you will avoid possible malfunction because of incorrect connection or improper operation.

Unpacking and installation

These instructions apply only if you have purchased the turntable as a separate component

Begin by unpacking the base and putting it in the place you have selected for the player. If you plan to install the player in a custom cabinet or an existing piece of furniture without using its special base, the necessary cutout must be made according to the template furnished with the turntable.
When you unpack the automatic turntable, set aside the styrofoam container with the turntable and all the accessories. Now install the turntable chassis on the base as follows.

First feed the power cord and audio cable through the top of the base, then out through the openings in the bottom of the base. Then press the left rear transport safety screw to the side, and insert the player chassis in the base, rear edge first, so that both rear spring cups fit into the appropriate holes in the base.
Move the other two transport safety screws inward in a similar fashion, and locate the left and right front spring cups in their holes. Then turn the transport safety screws clockwise to the right. The chassis is now spring-mounted.
After installing the chassis in the base, lower the turntable slowly and carefully onto its shaft. As you place the turntable on the shaft, an oil-socked felt washer will be pushed out of the turntable bearing, thus oiling the bearing. Discard the felt washer. Secure the turntable to the shaft with the spring ring, according to Fig. 23 B.
Install the tonearm counterweight at the rear of the tonearm and balance the tonearm. For instructions, read Balancing the Tonearm on page 10. Instructions for setting stylus force and anti-skating compensation are described on pages 10 and 11.

Caution. After initial installation, or after being moved, the player should be run once through its cycle with the tonearm locked on its rest (push operating switch to "start" and rotate turntable by hand until switch returns to its neutral position.)

Future transport

To prevent damage to the player during transport, we strongly recommend removing the turntable. In addition, turn the transport safety screws counterclockwise (upward) as far as they will go, until the chassis is held firmly against the base (Fig. 1 C).

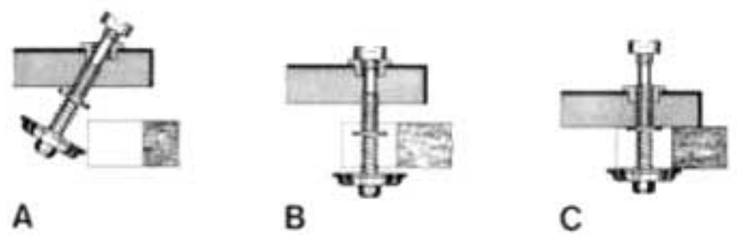


Fig. 1

Connection to power line

For units already installed in console or compact systems, consult the instructions for the system

The unit can be operated from alternating current at 50 or 60 Hz, 110 or 220 volts. It is normally supplied ready for use on 220-volt, 50 Hz current.

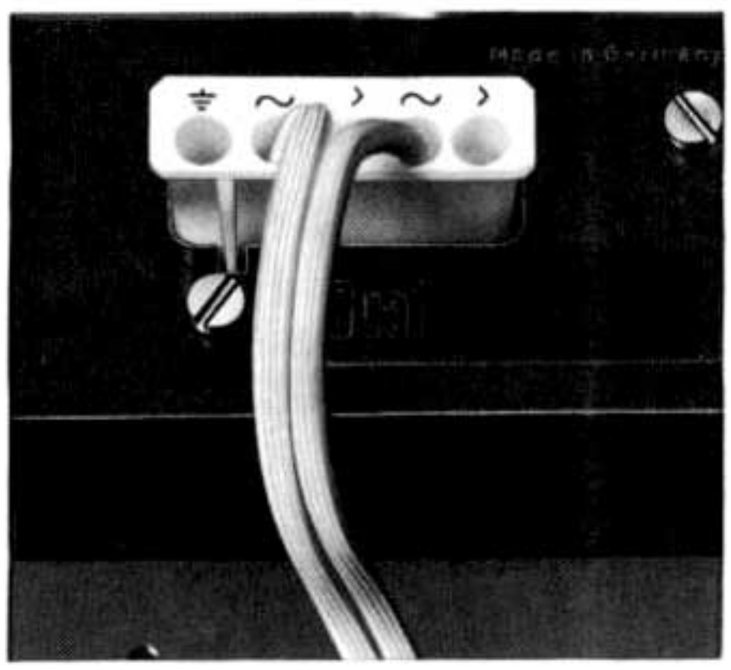


Fig. 2

If a different voltage supply and/or frequency becomes necessary please consult your dealer or an authorized Dual Service Station.
To change over the voltage, remove the power switch cover.
Changeover is carried out according to model by switching over or reconnecting the motor supply leads using the connection diagram in the power switch cover.

Fig. 3

The power switch is designed to accommodate preamplifiers or power amplifiers so that they will be switched on and off with the turntable. This arrangement is usually used only with transistor amplifiers, which require no warmup time.
Connections for utilizing this feature are made to contacts on the plug of the power switch. For this application, the line cord should be fitted with one fo the following connectors:
for 5-contact line-cord connector, part no. 213 982, AMP plug no. 160 565/1 (Fig. 2)
for 4-contact line-cord connector, part no. 209 458, AMP plug no. 42859/1 (Fig. 3)

Connection to amplifier

In combination units e. g. hifi stereograms, connection of the turntable to the amplifier has already been made.

The player can be fitted with miniature connectors to DIN 41 524 (Fig. 4) or with RCA-type phono plugs (Fig. 5).

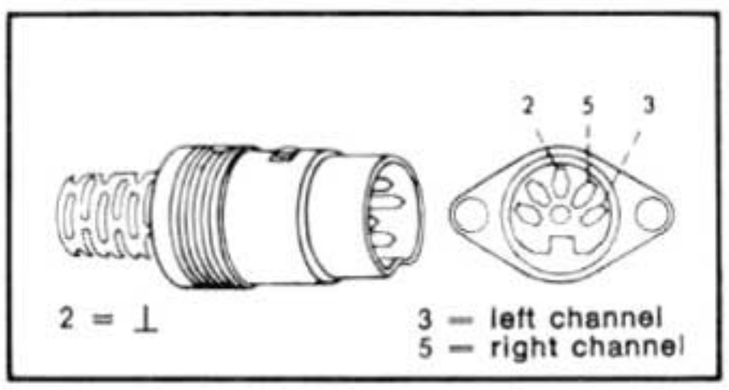


Fig. 4

If your amplifier or receiver has some other type of connector, use appropriate adapters. Your dealer can advise you.

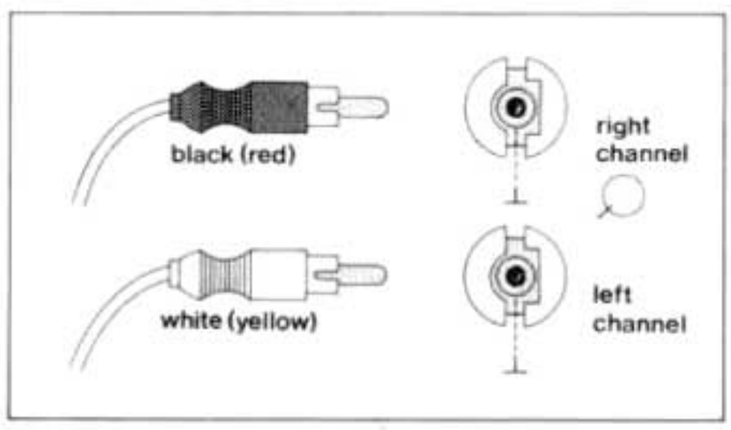


Fig. 5

Preamplifier

An equalizer-preamplifier is necessary if your stereo amplifier or receiver does not have a direct input for a magnetic cartridge. We recommend the Dual TVV 47, which has plug-in connections and fits into the base of the player unit.

This player meets international safety standards for radio and related equipment (IEC 65) and is approved by the various national safety organizations (VDE, SEV, SEMKO, CSA, UL, etc.).

Operation

① **Speed selector**
② **Speed fine adjustment knob**
③ **Pitch control**
④ **Tonearm lift and cartridge holder lock**
⑤ **Single-play spindle**
⑥ **Cartridge holder**
⑦ **Tonearm rest**
⑧ **Tonearm support**
⑨ **Tonearm lock**
⑩ **Cue control adjustment**
⑪ **Stylus force adjustment**
⑫ **Setscrew for tonearm counterweight**
⑬ **Tonearm counterweight**
⑭ **Stylus force dial, 3 to 5 grams**
⑮ **Mode Selector**
⑯ **Anti-skating adjustment**
⑰ **Transport safety (hold-down) screw**
⑱ **Cue control**
⑲ **Tonearm set-down-point adjustment**
⑳ **Record indexing selector**
㉑ **Automatic start-stop switch**
㉒ **Stroboscope timing aperture**
㉓ **Record-changing spindle AW 3**
㉔ **Center-hole adapter for 45-rpm (17 cm diameter) records**
㉕ **Changer column AS 12 for 45-rpm (17 cm) records (optional accessory)**

Single play operation

Set the Mode Selector ⑮ in **"single"** position.

Insert the rotating center spindle into the turntable, and, for 45-rpm records, the 17-cm adapter. Put a record on the turntable.

Select the correct turntable speed ①, set the record-size selector to match the diameter of the record on the turntable (17, 25 or 30 cm, or 7, 10 or 12 inches), and unlock the tonearm (Fig. 7).

The unit is now ready to play.

Fig. 6

1. Automatic tonearm setdown
Move the operating switch to "start". The tonearm will gently lower onto the record and the stylus will find the run-in groove smoothly.

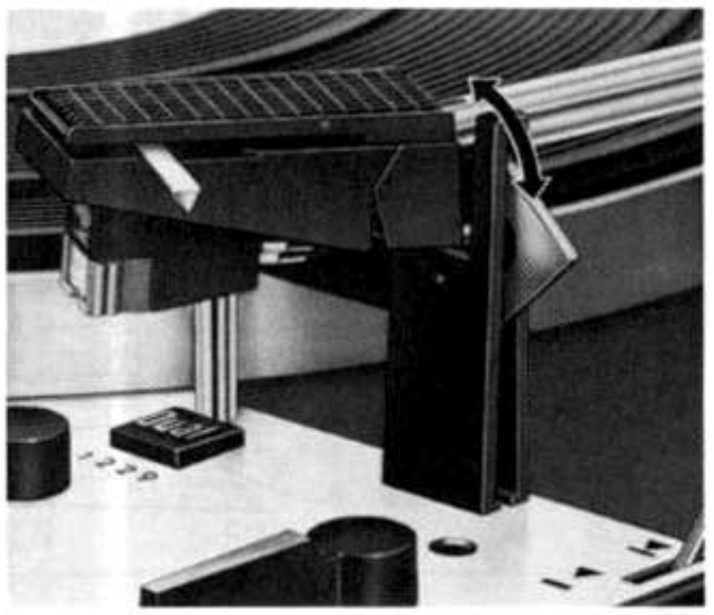


Fig. 7

2. Manual operation
a) Move the cue control to ▼.
b) Place the tonearm by hand over the desired point on the record.
c) Gently move the cue control lever back to ▼.

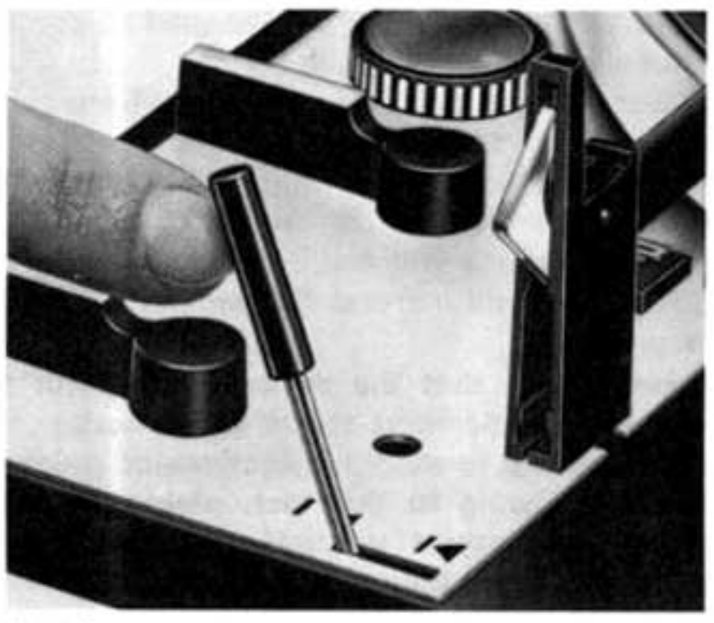


Fig. 8

3. To play a record again from the beginning:
Push the operating lever to "start".

4. To interrupt play
Move the cue control lever to position ▼. When the tonearm is returned to playing position, the last few measures of music already played will be repeated.

5. Turning off:
Push the control key to "stop". The tonearm will move onto the rest, and the unit will turn itself off.

Note: At the end of a record, or at the end of the last record of a stack, the return of the tonearm and switch-off are automatic. It is advisable to lock the tonearm in place (Fig. 7) after turning off the system.

Automatic record change

Set Mode Selector ⑮ in **"multi"** position.

Insert the changer spindle or the changer column* so that the pin fits into the slot in the shaft.

Secure the spindle or column* in place by pressing down on it and turning it to the right until it stops.

Load up to 6 records of the same size and speed on the spindle or column*.

Move the operating switch to "start". This will cause the first record to drop and the tonearm to be set down in the run-in groove. Should you want to interrupt any record and cause the next to drop, move the operating switch to "start".

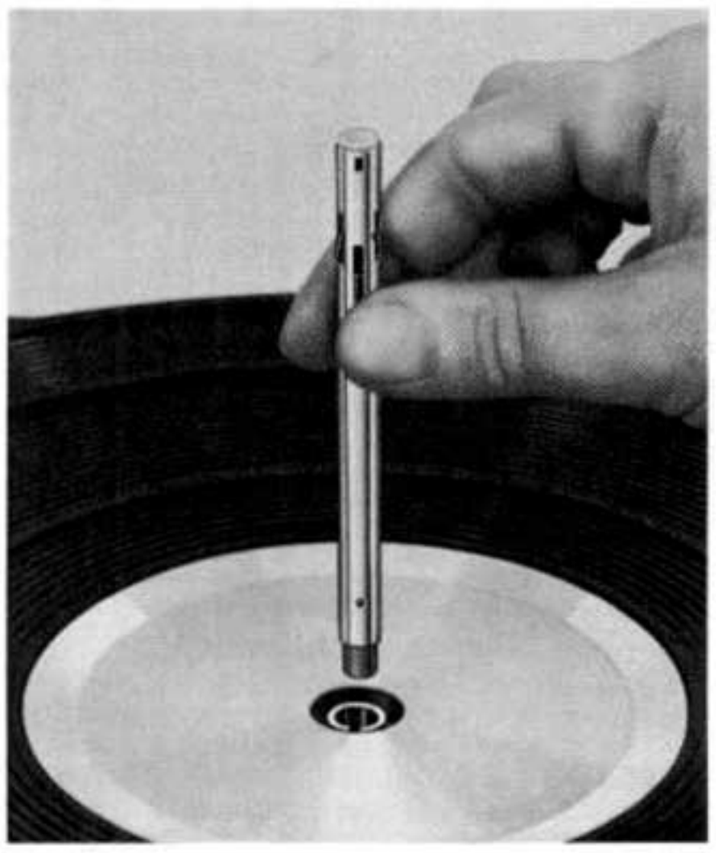


Fig. 9

Note: Records already played can be lifted back onto the spindle platform for replay or removed entirely. The spindle need not be removed.

* The optional accessory changer column AS 12 can be obtained at your dealer's.

Continuous automatic play

Fig. 10

Insert and lock the changer spindle in the turntable shaft, and, after placing the desired record on the turntable, place the 45-rpm adapter disc on the spindle. If necessary, weigh it with a 7-inch record. Set the record-size selector ⑳ and start the unit manually or automatically. The record will be repeated until you shut the unit off.

Technical Information

Cartridge

The following instructions apply only if your automatic turntable was purchased without a cartridge installed.

Fitment of the cartridge should be done by an authorized Dual service dealer. When fitting the cartridge, use the built-in cartridge holder or another cartridge holder (Dual TK 14, article No. 215 430).

Fig. 11

This model will accept any cartridge weighing from 1 to 12 grams and having 1/2" spaced mounting holes.

1. To release the cartridge holder, move the tonearm grip toward the rear. While you do this, hold the cartridge, because it will fall when you unlock it.

2. Fasten the cartridge with the help of the accessories supplied with the cartridge holder Dual TK 14 and the cartridge. Be sure it is located correctly (Fig. 12).

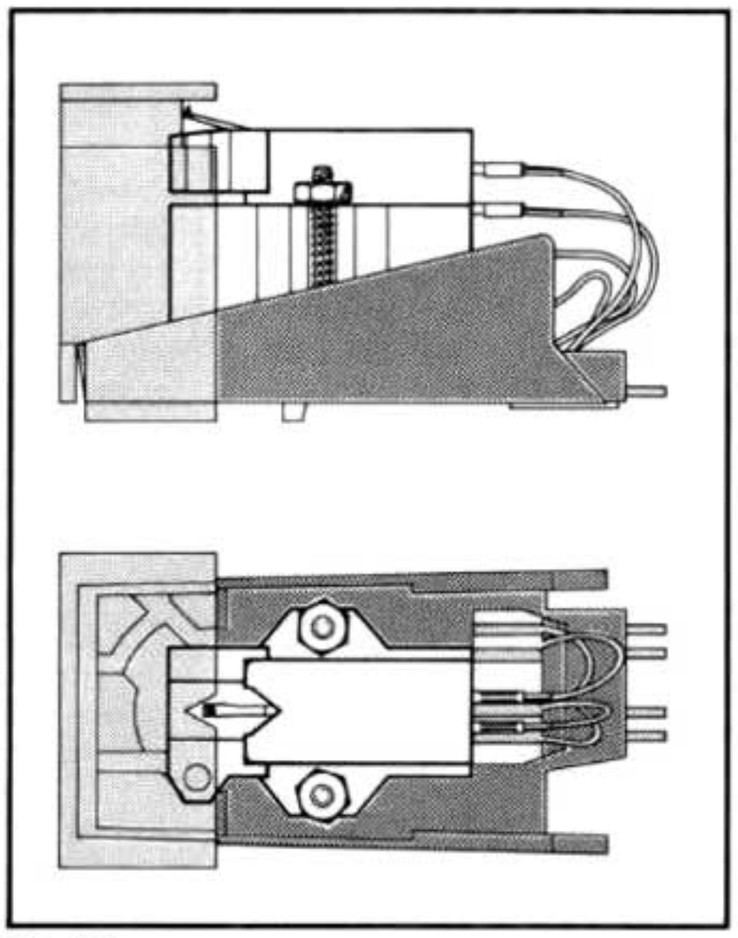


Fig. 12

3. The connections on the cartridge holder are marked and the wire leads are color-coded (Fig. 13). Connect the leads to the appropriate terminal pins on the cartridge.

4. Re-insert the cartridge holder in the tonearm head from underneath, and secure it by moving the tonearm grip forward.

After completing the installation, check the height of the stylus above the record in the ▼ position, and also the set-down position at the edge of the record. (See the section titled Cue Control on page 11, and the section Adjusting the Tonearm Set-down Point on page 12).

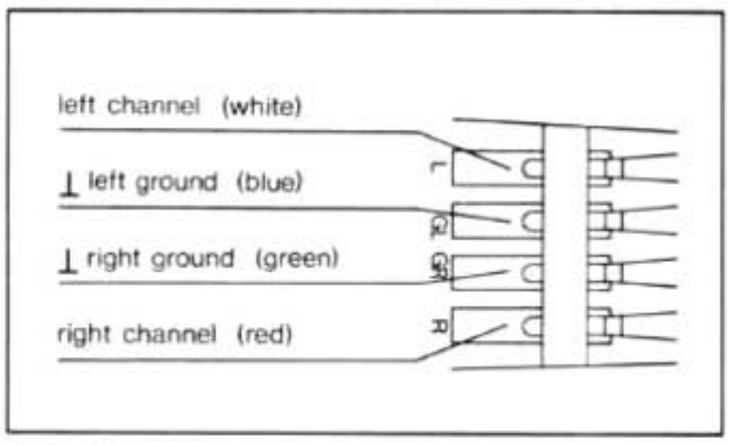


Fig. 13

Stylus

The stylus is subject to natural wear during play. We recommend that the diamond stylus should be checked after playing about 300 playing hours and a sapphire stylus should be checked after playing about 30 working hours. Your authorized dealer will be glad to check your stylus free of charge.

A worn out or damaged stylus chisels the modulation in the grooves and damages the record. Replace the worn out stylus with one that meets exactly the cartridge specifications. Imitations will result in a loss in sound quality and will increase the damage on your records.

Please notice that the stylus carrier with a sapphire or diamond stylus, due to size, is very sensitive to shocks, vibrations or sudden impacts. Owing to this fact, please do not replace the stylus yourself. To have your stylus changed take the complete cartridge (with stylus) and have it done by your nearest authorized dealer.

Balancing the tonearm

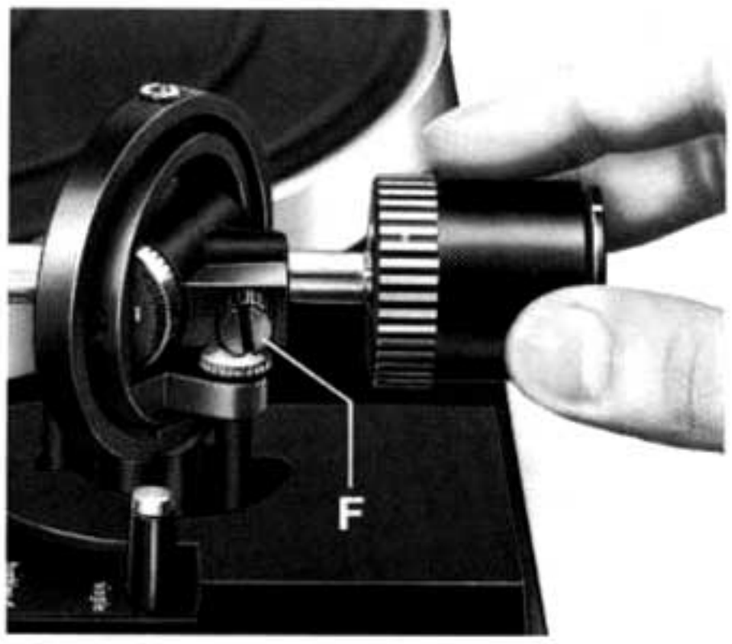


Fig. 14

Coarse balancing of the tonearm is accomplished by sliding the counterweight on its shaft; fine balancing is done by locking the shaft, then turning the counterweight.

1. Set the stylus force dial at "0" (zero).

2. Unlock the tonearm and lift it off the rest.

3. If the tonearm does not come to rest horizontally, loosen setscrew (F) and slide the weight with its shaft until you achieve approximate balance. Then retighten the setscrew.

4. Now find the exact balance by turning the counterweight. The tonearm is exactly balanced when edge "A" on the side of the tonearm is at precisely the same height as edge "B" on the tonearm rest (Fig. 15), or when the tonearm, moved lightly up or down, returns by itself to a horizontal position.

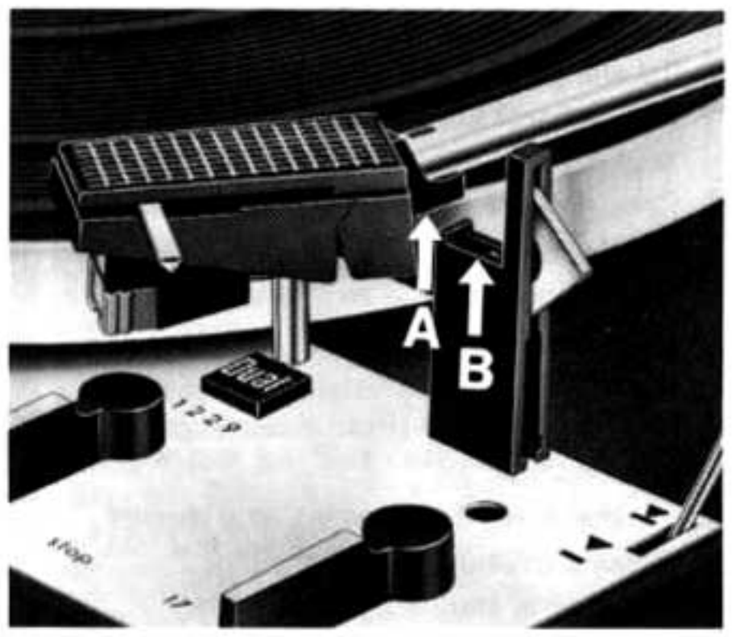


Fig. 15

During this operation the operating switch must be in its neutral position so that the tonearm is disengaged from the automatic mechanism. This can be checked simply by turning the turntable by hand clockwise until the operating switch returns to its neutral position.

Precise tonearm balance is most important for cartridges with low stylus forces. Balancing need be done only once, unless the cartridge is changed.

Setting stylus force

Once the tonearm is balanced, stylus force is set to the recommended value for the cartridge by turning the stylus force dial. Stylus force can be set to any value from zero to 3 grams.

From 0 to 1.5 grams:
1 scale division = 0.1 gram

From 1.5 to 3 grams:
1 scale division = 0.25 gram

The Dual 1229 is designed to operate with stylus forces from 0.25 gram upwards.

Fig. 16

Every cartridge will give optimum reproduction at a particular stylus force.

See the instruction sheet supplied with your cartridge.

Too low a stylus force will cause distortion in loudly recorded passages. If the force is too high, needless wear to the stylus and record can be caused.

If stylus forces greater than 3 grams are required they can be obtained by turning the counterweight. One full turn of the counterweight counterclockwise (viewed from front) increases the stylus force by 0.5 gram.

Example: desired force is 4-1/4 grams

1. Balance the tonearm
2. Turn the washer ⑭ on the rear of the tonearm counterbalance until the mark is on top.
3. Turn the counterbalance 3 full turns counterclockwise until the mark is once again on top.

Check: the tonearm, previously balanced, should now sink toward the rest or the record surface.

4. Set the stylus force dial to 2-3/4 grams.

Anti-skating

To compensate for skating force, an equal and opposite force must be applied to the tonearm. The anti-skating mechanism of the Dual 1229 fulfills this requirement.
The adjustment knob on the chassis allows changing the skating compensation force even while a record is playing, which is useful when changing from a dry record surface to one that has been wetted.
Two different sets of calibrations are provided for the two types of styli commonly in use today.

Red scale: for spherical (conical) styli with 15 μm tips according to DIN 45 500.

White scale: for biradial (elliptical) styli with radii of 5 to 8 μm by 18 to 22 μm.

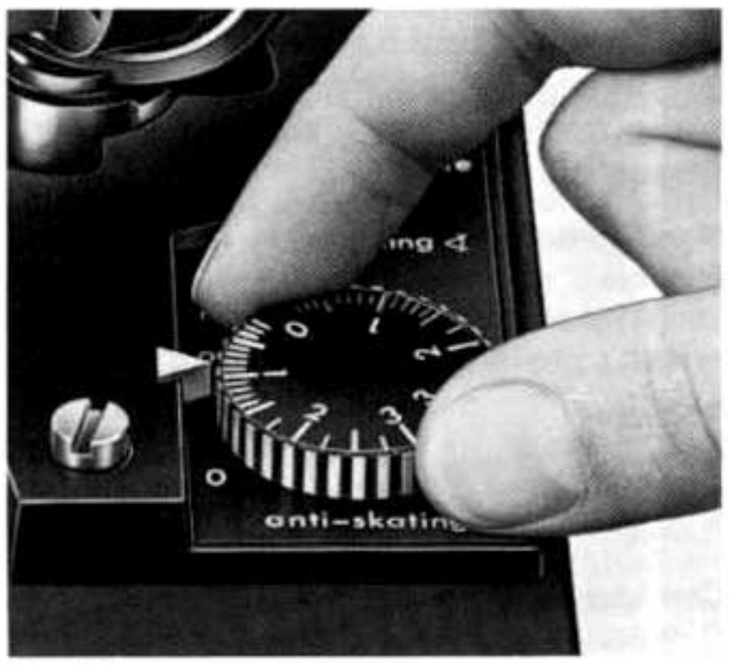


Fig. 17

When playing records wet, skating force is reduced by approximately 10 %. We recommend, therefore, a corresponding 10 % decrease in anti-skating compensation.

Set the anti-skating knob to the number on the appropriate scale which corresponds to the stylus force you have set. That is, for a stylus force of 1.2 grams, set the knob at "1.2". For other stylus tip diameters, choose the correct anti-skating setting from this table.

Tracking force "p"	Anti-skating compensation for stylus radii in microns 9	11	13	15
0,5	0,70	0,60	0,55	**0,5**
1,0	1,15	1,10	1,05	**1,0**
1,5	1,75	1,65	1,55	**1,5**
2,0	2,30	2,15	2,05	**2,0**
2,5	2,90	2,65	2,55	**2,5**
3,0	3,45	3,20	3,05	**3,0**
3,5	4,10	3,75	3,55	**3,5**
4,0	4,80	4,30	4,10	**4,0**
4,5	5,50	4,90	4,60	**4,5**
5,0	—	5,50	5,15	**5,0**

Tracking force "p"	Anti-skating compensation for stylus radii in microns 17	19	**elliptical** 5-6x18-22
0,5	0,45	0,40	**0,5**
1,0	0,95	0,90	**1,0**
1,5	1,45	1,40	**1,5**
2,0	1,95	1,90	**2,0**
2,5	2,45	2,40	**2,5**
3,0	2,95	2,90	**3,0**
3,5	3,45	3,35	
4,0	3,95	3,85	
4,5	4,40	4,30	
5,0	4,90	4,80	

Mode Selector

Knob at **"single"**
(single = normal setting for playing single records)
Knob at **"multi"**
(multi = setting for automatic record changer operation)

Fig. 18

Through the "Mode Selector" design, the Dual 1229 provides a technically perfect solution to the problem of maintaining the correct vertical tracking angle during operation as a single-play turntable or as a record changer.

When the unit is set for single-play operation, the tonearm is perfectly horizontal.
When the "mode" is changed for changer operation, the entire tonearm assembly, and the tonearm itself, are lifted by 5 mm.
In this way, the unit is adapted for record changer operation and the tracking angle is correct at the center of a stack of 6 records.

To prevent operation in the wrong mode, changer operation is possible only with the Mode Selector in **"multi"**. That is, with the Mode Selector in the **"single"** position, a record will not be dropped from the spindle, nor will the tonearm lift off the rest and onto the record.

Cue-Control

Your Dual player is equipped with a high precision, silicone-damped tonearm lift device (cue control) that can be operated smoothly and without vibration. With it, the tonearm can be set to the desired point on the record more gently than by hand. The rate of descent of the tonearm is unaffected by temperature changes.

The cue-control lever has two positions:
▼ playing position
▼ selecting position (tonearm raised)
—

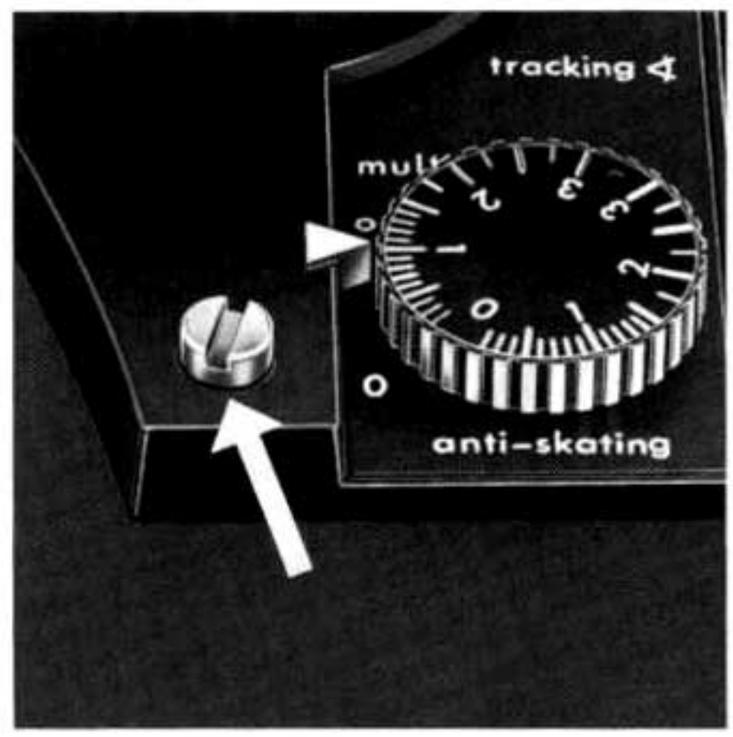


Fig. 19

A light touch on the lever starts the controlled descent of the tonearm. The height of the stylus tip over the record in the raised state ▼ — can be varied from 0 to 6 mm by turning the adjustment screw ⑩.

Pitch control

Each of the three standard speeds (33-1/3, 45 and 78 rpm) can be varied about 6 % (about a semitone) with the pitch control. This permits adjusting the pitch and tempo of recorded music.
The speed of the turntable can be adjusted even during play by observing the stroboscope.

Fig. 20

When the turntable rotates at exactly 33-1/3 or 45 rpm, the pattern of lines on the stroboscope appears stationary. If the pattern appears to advance in the same direction as the turntable, the turntable speed is too high. If the pattern appears to retreat, the speed is too slow.
Adjustment is made with the pitch control knob ③. The angle of view of the stroboscope can be altered by turning the rim of the stroboscope viewing window.

Calibration of Pitch Control

In setting up your player for the first time or after it has been shipped, the pitch control should be adjusted. Proper pitch control adjustment is indicated when the speed control knob is set to 33 1/3 r.p.m. and the stroboscope markings remain stationary with the pitch control knob within the enclosed null area.
Should the pitch control adjustment occur outside of the null area, a correction is required as follows:

1. Set the speed control at 33 1/3 and the pitch control knob to the middle of the null area.
2. Use the enclosed six-sided driver to regulate the speed until the stroboscope lines remain stationary. Compensating adjustment is required in the same direction that the strobe markings move; that is, if the marks drive to the left, corrective rotation is to the left.

50 or 60-Hz line (mains) frequency

Conversion to a different power line frequency is accomplished by exchanging the motor drive pulley and resetting the stroboscope. To do this, the turntable must be removed.

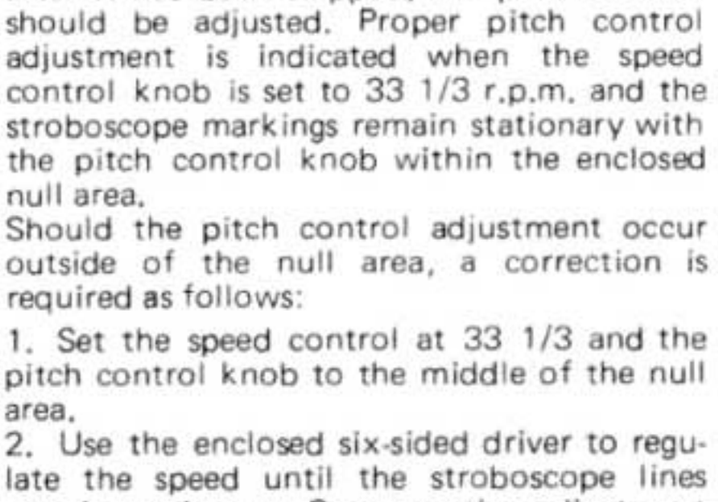


Fig. 21

The motor pulley (Fig. 21 A) can be pulled off after loosening its setscrew.

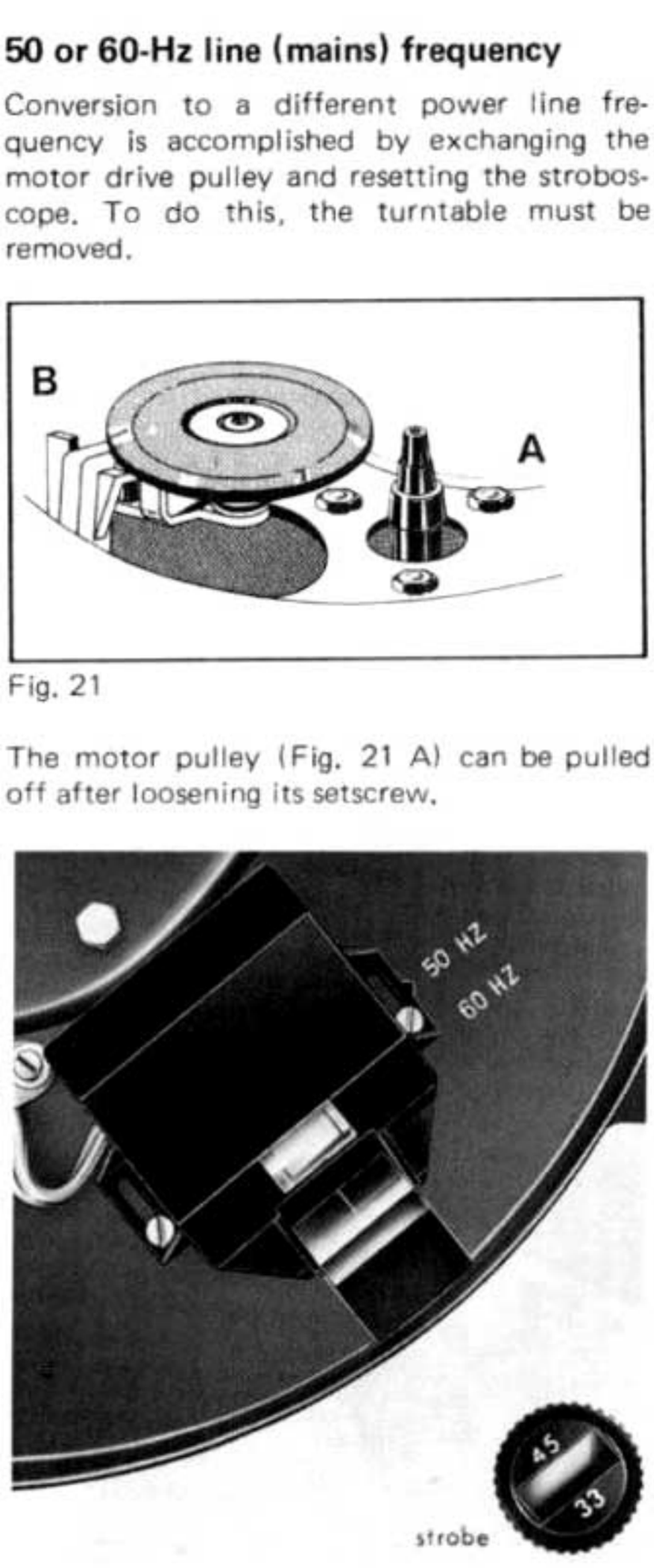


Fig. 22

Caution! Handle the pulley carefully. A damaged pulley causes rumble.
Part numbers for motor pulleys:
50 Hz, part no. 218 275
60 Hz, part no. 218 276
To reset the stroboscope, loosen the cylinder-head screws, turn the housing to "50" or "60" and retighten the screws.

Removing the turntable

For removing and reinstalling the spring ring that secures the turntable, the accessories include a cone-shaped expander that is inserted in the turntable bearing hole.
Fig. 23 A Removing the spring ring
Fig. 23 B Replacing the spring ring

Important!
Be careful, when removing and replacing the turntable, not to touch its running surfaces or those of the idler wheel or the motor pulley. Fingermarks on those surfaces can cause slip, which in turn can case speed variations pitch variations).

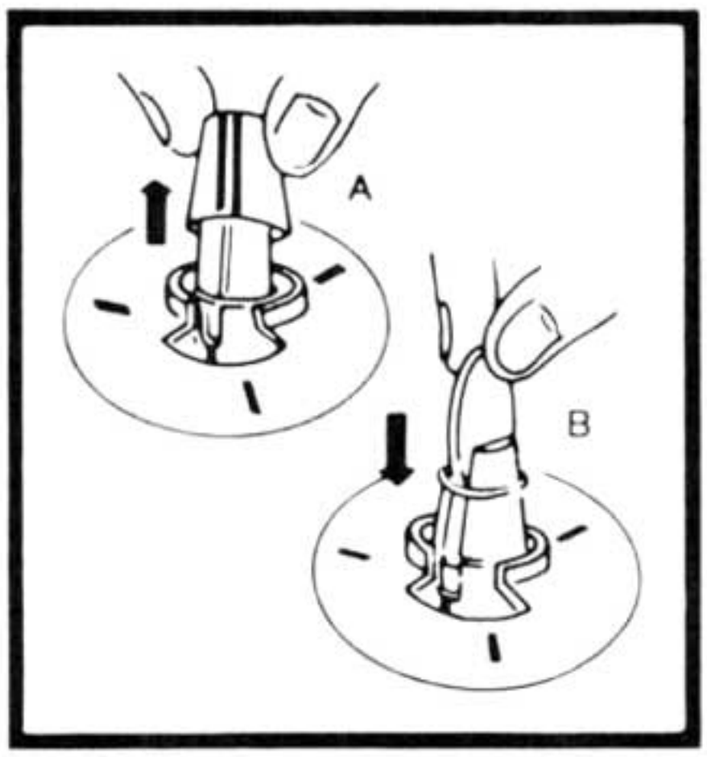


Fig. 23

Adjusting tonearm set-down point

When the operating switch is moved, the tonearm lowers automatically and the stylus enters the run-in groove on the record. Occasionally, with a cartridge fitted after the unit leaves the factory, the stylus may touch down too far into the record or outside the edge of the record.

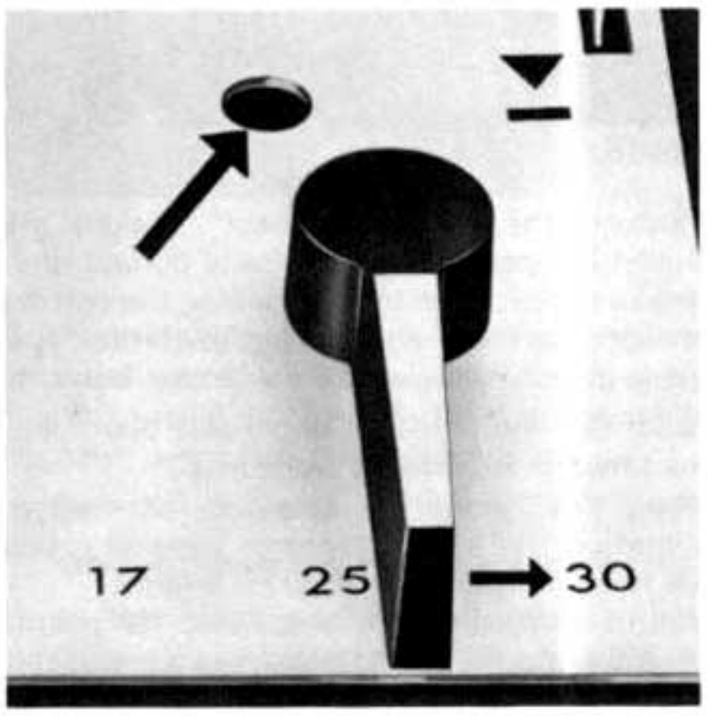


Fig. 24

In such a case, set the record size selector to 30 cm (12"). The adjustment screw ⑲ is next to the tonearm rest.
Place a 30-cm (12") record on the turntable and start the unit. If the stylus reaches the record too far in, turn the adjusting screw slightly to the left; if it falls too far out, turn the screw to the right.

Service

All lubrication points have been adequately supplied with oil. Under normal conditions, your player should function without trouble for many years. Do not oil any part of the player. Special lubricants must be used. Should your player ever require service, please take it to your dealer or ask him for the address of the nearest authorized Dual service agency. Please be sure that only genuine Dual replacement parts are used.
Ship your player only in the original container.

Technical data

Power supply:
alternating current, 50 or 60 Hz, changeable by changing motor pulley.

Power supply voltage
110 - 130 volts or 220 - 240 volts, switchable

Drive
Synchronous continuous-pole motor with radial elastic suspension

Power consumption
approx. 10 watts

Current drain
at 220 volts, 50 Hz, approx. 62 mA
at 117 volts, 60 Hz, approx. 115 mA

Turntable
non-magnetic, dynamically balanced, weighing 3,1 kg (6,8 lbs)

Speeds
33 1/3, 45 and 78 rpm

Pitch control variation
6 % an all speeds (approx, one semitone)

Speed accuracy deviation
less than ± 0.06 % measured according to DIN 45 507

Signal-to-noise ratio

Rumble	– 42 dB
Weighted rumble according to DIN 45 500	– 63 dB

Tonearm
extra-long, torsionally rigid metal arm, in 4-point gimbal suspension, with skeletal head design

Cartridge holder
Removable, accept all cartridges weighing from 1 to 12 grams and with standard 1/2" mount

Tracking error
less than 0,16°/cm

Tonearm bearing friction
(referred to stylus tip)
Vertical, less than 0.007 gram
Horizontal, less than 0.015 gram

Dimensions
376 x 308 mm (14 3/4" x 12") with 26 mm (1") tonearm overhang

Weight 7,2 kg (15.9 lbs)