



DITCHBURN ORGANISATION

TRAINING PROGRAMME



T100 Service Engineers Manual Tonomat Telematic 100



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TELEMATIC 100. Key to Mechanism Photographs at back of Instruction Manual.

1. Record lift arm and stop.
2. Turntable.
3. Record bow.
4. Record lift arm.
5. Lift arm spring.
6. Tipper.
7. Selector drum.
8. Lift arm push rod.
9. Selector push rod.
10. Chassis control cam.
11. Positioning spring.
12. Lift arm control cam.
13. Contact cam No. 2.
14. Contact cam No. 1.
15. Main shaft.
16. Record holder shaft.
17. Flange screw.
18. Changer motor.
19. Contact plate.
20. Contact wiper.
21. Selector plate.
22. Selector pin.
23. Stop.
24. Record bow brush.
25. Record holder.
26. Return rod.
27. Lift arm angle.
28. Plastic plate.
29. Switch off spring.
30. Switch off bolt.
31. Tone arm stop.
32. Curved plate.
33. Clutch lever.
34. Magnetic brake.
35. Control plate.
36. Control plate stop.
37. Turntable chassis.
38. Control arm.
39. Chassis shaft.
40. Tone arm mounting.
41. Tone arm screw.
42. Chassis stop rod.
43. Chassis stop.
44. Control bolt coupling.
45. Turntable shaft.
46. Clutch lever bearing.
47. Control bolt.
48. Control plate spring.
49. Moving chassis stop.
50. Control rod.

- 51 Lift arm bearing plate.
- 52 Tipper bearing.
- 53 Tipper stop.
- 54 Friction wheel spring.
- 55 Turntable motor.
- 56 Friction wheel.
- 57 Guide plate.
- 58 Moving rod.
- 59 Angle bolt.
- 60 Needle bearing.
- 61 Tone arm plate.
- 62 Raised screw.
- 63 Return stop.
- 64 Push arm.
- 65 Tension plate.

DESCRIPTION OF ELECTRICAL SEQUENCES DURING SELECTION.RELAYS
IN CIRCUIT.SEQUENCE.Coin Insertion.

MK The coin closes coin contact MK which pulls in the MK relay.

MK Through the MK.II contact, the MK relay switches on the "WAIT" lamp and at the same time brings into circuit the J relay through contact Mk.1.

J The J relay turns contact J II. Simultaneously contact J III switches out MK relay and thus the red "WAIT" lamp while contact J I brings in the green "SELECT" lamp. When the MK relay is out of circuit, the J relay is held in by contacts nsi - x ll-we i l.

Selection of first figure (Tens).

J By the movement of the dial the dial-impulse contact X nsi is interrupted and through this the J relay is also interrupted. Contact j ll transfers the impulses to the rotary selector DZ which rotates accordingly. During the pulsation of the J relay, V the V relay is pulled in through contact i ll and held in during the impulse period.

J At the end of the impulse period the J relay stays in circuit and the V relay switches out after a slight delay. X Thus relay U comes in through contacts Vll and dz 2 DZ and prepares for the selection of the second figure. U Relay M comes in at the same time and switches on the M record holder motor through contact i ll

Selection of second figure (Units).

J U Relay J receives impulses via contact nsi transmitting X (DE) these to rotary selector DE, (via contacts i ll - X lll- (DZ) M U ll) which rotates accordingly. During this selection U WE relay V comes into circuit again through contact i ll. DE At the end of the impulse period, relay V pulls out V again. through contact i ll and switches in relay WE M through contacts de ll and Vll l X Contacts we l.1 switches out the green "SELECT" lamp DZ and contact WE lll. 1 outs out relay J.

Pushing up selector pin.

DZ The positions of contact arm de 1 and dz 2 1 of the (DE) two rotary selectors are transmitted from the contact plate to the rotating contact (20). When de 1 and M dz21 are connected by the rotating contact, relay S pulls WE in and contacts SI 1 switches in, the magnet of the S Selector striker. Relay U switches out through contact S III l which breaks the circuit to the selector striker magnet through contact Ull.

Pushing up the selector pin/Continued.....

At the same time relay X is shorted out by contact S 111 2. The rotary selectors can now return to zero position through contacts X11 and X 111 1.

Return of rotary selectors to zero.

On the return run, the rotary selectors operate through their own self interruptor contacts sude and sudz respectively. When the rotary selectors have pulled in, they interrupt themselves through their contact su and the armatures cut out again. In the stationary position of the armatures the contacts su close the circuit to the armatures again. In this rhythm, the rotary selectors return to the zero position, where contacts de 11 and dz 11 split the positive current.

Relay WE holds in until both rotary selectors are at zero. The two windings of relay WE are then also switched out by de 11 and dz 11.

Relay M is switched out by contact dz 11 also in relay S by return of de 1 and dz 1.

Description of electrical sequence during record change.

Relays
in Circuit

Mechanical Sequence of Changer positions.

Changer at rest.

A Relay A energised through contact cam 11 (KN 2)

After completed selection or completed return of played record.

A Time relay F has come in and receives current after
F opening of u 111 2 respectively a 1 1 from condenser
G C5 through resistance E. Through relay F, relay G
(main relay) is brought into circuit and switches on record
holder motor, turntable motor and lighting motor.

Record holder stop (MSK) strikes selector pin.

A C Relay C pulls in through MSK and switches in relay
F B. Relay B switches on forward running of changer
G motor.

Record lift taking record to turntable.

A C Contact cam 1 (KN1) brings in relay D which prepares
F B for the later return run of the changer motor.
G D Relay C now held in through KN1 and rectifier Gr 3.

Turntable chassis on playing position.

F B Contact cam 2 (KN 2) breaks current to relay A, thus
G D switching off forward run of changer motor.
C

MECHANICAL SEQUENCE OF CHANGER POSITIONS

Relays
on circuit.

Tone - arm switches off record.

F Tone arm contact TK shorts out relay C.

G With the relay C, relay B also comes out of circuit,
D and the backward running of the changer motor is
E switched on.

At the same time relay E pulls in through contact C 111.1 which with e 111 prevents relay C from being switched on again during the backward run.

Changer Motor begins backward run.

A G D Cam contact 11 (KN 11) closes again and relay A pulls in
F E preparing for the later forward run of the motor.

Record lift again at rest.

A Cam contact 1 (KN 1) breaks circuit to relay D which
F switches off backward run of motor. Relay D in turn
G breaks circuit to relay E through d 111 so that relay C is again ready to be switched in through e 111.
With relay D out of circuit, the record holder motor is switched in again.

Changer at rest.

A As long as the changer has not taken up the playing position relay A is in circuit so that when contact a 11 opens, relay F is held in only through condenser C. The current through relay F then collapses after about 15 - 20 seconds and relay G (main relay) cuts out resulting in the switching out of the record holder motor, turntable motor and lighting motor.

RECORD CENTERING

The upward movement of the arm is limited by the lift stop 1. The centre hole of the record is then in a position somewhat below the centre cone of the turntable 2, so that the record can later be lifted, for centering by the centre cone, over the front edge of the lift arm.

As the main shaft 15 turns further it takes with it the chassis control cam 10 which in turn moves control arm 38 with control rod 50. The control rod now, through control plate 35, control bolt 47 and control bolt coupling 44, moves the turntable shaft 45 and turntable forward until the control rod 50 contacts the chassis stop 49 and then tips back the turntable chassis.

Meanwhile the record is taken onto the turntable cone and held fast by the turntable against the foremost plastic plate. In the first phase of the tipping motion, control plate 35 meets the control plate stop 36 so that the control plate is forced downwards and the control bolt 47 springs back into the recess of the control plate a distance of 2 mm. Together with the control bolt the turntable shaft also springs back 2 mm, so that the turntable can now rotate freely with its record.

RECORD PLAY

In the second phase of the tipping motion there are two simultaneous occurrences. The clutch lever 33 moves in a curve and, as the chassis tips, moves the guide plate 57 of the friction wheel 56 so that this is pulled by the friction wheel spring 54 against the turntable and the gearing of the turntable motor 55 and the turntable commences to rotate,

At the same time the chassis stop rod 42 meets the fixed screw 41 of the tone arm mounting 40 which is pushed onto the chassis shaft 39, so that the tone arm mounting tips back with the turntable chassis. When the tone arm mounting 40, with the tone arm tips back, the raised screw 62 of the tone arm slides on the curved plate 32 which is fixed to the chassis shaft.

Thus the tone arm descends and its sapphire needle sits on the record. As the chassis tips back further the raised screw 62 leaves the curved plate 30 and the tone arm is free to move inwards. In this position contact cam 2 (13) which is fixed on the main shaft switches off the changer motor 18 through relays and the changer motor thus ceases forward motion.

RECORD RETURN

When the record has been played through, the switch off bolt 30 strikes the switch off spring 29 which thus receives positive current and, through relays, the changer motor 18 is again switched in but now runs backwards.

The mechanical sequences now follow as before only now in reversed order until the record is again in the holder.

The turntable chassis again tips forward until the chassis stop rod 42 strikes the stop pin 43 in the chassis shaft. The rod 58 takes the tone arm to the tone arm stop 31. The turntable shaft with the turntable is pulled fully back by the turntable spring so that the record falls again onto the record lift arm.

The control plate spring 48, works together with the positioning spring 11 to push the control bolt back again to the under edge of the reses in switch plate 35. The record lift arms return to their rest position and the angle arm 27 sweeps the tone arm over the brush. When the record lift arms are in their rest position cam contact 1 (14) opens and switches out through relays the changer motor 18 and switches in the record holder motor again.

A D J U S T M E N T S

Some of the following adjustments are best checked and carried out when the mechanism is in the following neutral position. The changer motor should be switched out, by removing its fuse, at the moment when a record lift arm has carried a record to its highest position but before the turntable has commenced its forward movement. This neutral position is named below as "TEST POSITION".

RECORD LIFT AND RELEASE.

1. Record Bow.

The record bows 3 should stand vertically on the record holder 25 and always spring back to a vertical position. They should lie back slightly.

Adjustment:- Correct position forwards or sideways with pliers.

2. Rest Position of Turntable Chassis.

When the turntable chassis 37 is in its vertical rest position, the centre of the gap between the front and back plastic plates 28 should line up exactly with the centre of the record holder shaft 16. (Reference point:- fixing screw of tipper bearing 52).

Adjustment:- Position the top screw of the chassis stop 43 or turn the entire chassis shaft 39.

After making this adjustment check adjustments 4 & 9.

3. Positioning of Selector Drum.

When the record holder stop 23 is hard against a raised selector pin 22, the selected record should be parallel to plastic plates 28. Looking from above, the record should be in the centre of and parallel to the gap between the front and the rear plates 28.

Before making this adjustment check adjustments 1 & 2.

Adjustment:- Release flange screw 17 on the traverse and turn the whole record holder shaft and selector drum suitably.

4. Lateral position of record lift arm. - (Check in Test Position).

When the rotation of record holder 25 is stopped by pushed up selector pin 22, the record lift arm should be so positioned to move exactly between two record bow bushes 24 and should in its upward movement align itself exactly with the centre of the gap between the two plastic plates. It should not be possible to take the lifted record with the hand over the edges of the lift arm.

This adjustment is to be checked at the lift arm spring.

Before making this adjustment check Nos. 2 & 3.

Adjustment:- Move lift arm shaft laterally after loosening both nuts. The arms separate.

This adjustment should only be made when there is a noticeable misalignment in the down or up position of one lift arm.

If both lift arms are misaligned in either up or down position this can be corrected by making adjustment 2 or 3.

After making this adjustment check Nos. 6, 7 & 9.

5. Tipper bearing.

This tipper bearing should be parallel with the front plastic plate.

Before making this adjustment check with No. 3.

Adjustment - Loosen its holding screw and turn tipper bearing 52 on the record holder shaft 16.

After making this adjustment check No. 9.

6. Equal movement of lift arm.

In the rest position the distances of both lift arms from the record holder 25 should be equal.

a) When a lift arm is halfway between rest position and playing position its control cam 12 should be horizontal.

b) In the rest position the distance of both lift arms from the record holder should be equal.

Adjustment - Adjust spring locks of both lift arm push rods 8.

After making this adjustment check No. 7.

7. Rest position of lift arms.

Contact cam 1 14 should just be breaking the circuit when the front edges of the lift arms are 1-2 cm. from the edge of the record holder 25. While the changer motor is running down the lift arm may in any event run a little further back.

Before making this adjustment check Nos, 6 and 27.

Adjustment - Loosen grub screw of contact cam and turn suitably.

8. Record holder drive.

With the record holder motor running hold the outside edge of the record holder with the hand and check that the turning force on the outside edge is 50 - 150 Gramms. This force can be checked at different positions on the holder with a spring balance.

Adjustment - Tighten leather drive belt.

After making this adjustment check that the drive belt is not tightened so much that when the record holder is held fast the record holder motor is stopped.

TIP UP OF RECORD BY TURNTABLE.

9. Centering of record - (check in test position).

The lifted record should be taken up by the centre of the turntable 2 and when the turntable chassis tips it should be taken over the front edge of the lift arm with a clearance of 1 mm. It is essential to make this adjustment so that the record is taken not vertically but obliquely from the lift arm.

Before making this adjustment check Nos 2 & 5.

Adjustment:- a) Position lift arm stop 1.
b) Position eccentric tipper stop 53.

This adjustment should be made separately for records lifted from the left and from the right.

10. Backward movement of the turntable on tipping -(Check in Test Position)

When the turntable chassis 37 is tipped back about 10 - 20° the turntable shaft with turntable should spring back the prescribed distance of 2 mm.

This is permitted when the flat face of the control plate stop 36 is parallel to the under edge of the control plate 35, and immediately after the backward movement of the turntable the distance between the control plate 35 and control plate stop is 1 mm.

Adjustment:- a) Loosen the grub screw of the control plate stop 36 and turntable
b) Position the moving chassis stop 49.

After this adjustment check No. 11.

11. Playing Position of Turntable.

In its playing position the record should be in the middle, of the gap between the front and back plastic plates 28.

Before making this adjustment check with No. 10.

Adjustment:- Move the turntable shaft backwards or forwards in the control bolt coupling after loosening fixing screw. A similar correction can also be made with adjustment 10 b. It is also necessary to check that the record can definitely be pressed against the front plastic plate by the three rubber stops on the turntable.

STONE ARM ADJUSTMENT.

Adjustments to the tone arm should be carried out in the following order.

12. Tone arm bearing housing.

The tone arm shaft should be free to rotate with the minimum axial play.

Adjustment:- Loosen the fixing screw on the side of the tone arm base 40 and push the tone arm bearing housing up or down as required.

After making this adjustment check adjustment No. 16.

13. Tone arm needle bearing.

The tone arm must be free to move in the needle bearing 60 without lateral play.

Adjustment:- Tighten one bearing screw after loosening locking nut

After making this adjustment check Nos. 16 & 17.

14. Position of tone arm shaft relative to turntable shaft during play

In the playing position the tone arm shaft should be parallel to the turntable shaft.

Adjustment:- Tighten screw 41 on tone arm mounting 40.

After this adjustment check Nos 16 - 21

15. Rest position of tone arm base.

The tone arm plate 61 should come to rest 6 to 8 mm. behind the front edge of the lift arm angle 27.

Adjustment:- After loosening the fixing screw turn the curved plate 32 on the chassis shaft 39. If necessary move sideways to allow sufficient lateral play in the tone arm base 40.

After making this adjustment check Nos 16 to 21 and 36.

16. Position of tone arm on the record. - (Check in Test Position).

By manual operation of the control arm 38 move the turntable chassis back until the chassis stop rod 42 strikes the tone arm screw 41 on the tone arm mounting. The distance then between the tone arm needle and record should be 5 to 8 mm.

Before making this adjustment check Nos. 12 to 15 and 36.

Adjustment:- Tighten raised screw 62.

After making this adjustment check Nos. 17 to 22.

17. Position of needle on record.

$5\frac{1}{64}$ " to $9\frac{1}{64}$ "

The needle should meet the record 2 to $3\frac{1}{2}$ mm. in from the

Before making this adjustment check Nos 12 to 16.

Adjustment:- Adjust fixing screw of tone arm stop 31.

After making this adjustment check Nos 18 to 22.

18. Return of tone arm after play. - (Check in Test Position).

When the turntable chassis comes to rest the moving rod 58 of the tone arm should have returned to the tone arm stop 31. In this position there should be no tolerance between the moving rod 58 and the angle bolt 59 which is positioned under the front of the tone arm plate. The tone arm should be hard against the front of the tone arm stop.

Before making this adjustment check nos. 12 to 17.

Adjustment:- After loosening the nut turn the angle bolt in the required direction. Tighten up the nut again.

After making this adjustment check Nos. 19 to 22.

19. Switch off point of tone arm.

The tone arm should switch off when the needle is $1\frac{3}{8}$ " from the edge of the record.

Before making this adjustment check Nos. 12 to 18.

Adjustment:- By moving position screw of switch off spring 29.

20. Turntable chassis push rod.

In the rest position the chassis control cam 10 should be in its topmost position. It should not, however, have sprung over the upper dead point.

Adjustment:- Position the spring lock of chassis push rod.

After making this adjustment check No. 21.

21. Turntable chassis spring position.

Contact cam 13 No. 2. should switch off changer motor 18 when the turntable chassis with record is tipped back in such a position that there is tolerance of 1 - 2 mm. between the raised screw 62 and curved plate 32.

before making this adjustment check Nos. 12 - 22.

Adjustment :- Turn contact cam 13 after loosening grub screw.

22. Speed of records-changer.

When two records are selected which are next to one another in the holder, the lapse of time between the end of play of the first record to the fall of the tone arm on the second record should be 5 to 6 seconds. The speed of the changer motor can be suitably regulated.

Adjustment:- There is a variable resistance parallel to the armature of changer motor 18. The smaller the resistance the slower the changer motor runs.

After making this adjustment check Nos. 6 and 21.

TURNTABLE DRIVE.

23. Working movement of friction wheel clutch lever -(Check in test position)

With the turntable chassis in its rest position the friction wheel 56 should be touching the shaft of turntable motor 55. When clutch lever 33 is slowly moved by hand the friction wheel spring 54 should bring friction wheel 56 also into contact with the edge of the turntable motor. It should now be possible to move the clutch lever upwards a further 3 ~~to~~ 5 mm. without pulling the friction wheel against its guide plate 57.

Adjustment:- This sequence depends on the distance of the turntable motor from the clutch lever bearing and the turntable. The player motor can be repositioned after loosening its 3 fixing screws.
 $\frac{1}{8}'' - \frac{3}{16}'' \times$

After making this adjustment check No. 24.

24. Functioning of friction wheel.

With the turntable chassis in its rest position there should be a good clearance between the friction wheel 56 and the turntable. The friction wheel should only make contact with the turntable when the turntable chassis is tipped back and the record is about 10 mm. from the tone arm. It should also be checked that the clutch lever 33 when in playing position can be lifted at least 1 - 2 mm. from the curve with the hand, without disturbing the friction wheel.

Before making this adjustment check Nos. 21 and 23.
 $\frac{3}{16}'' - \frac{5}{16}'' \times$

Adjustment:- Slacken off fixing nut of clutch lever 33 and turn

25. Turntable Speed.

The turntable should run at 45 R.P.M.

Adjustment:- Adjust magnetic brake 34 of turntable motor. If the range of the magnetic brake is not sufficient the 700 Ohm resistance controlling the player motor, situated in the lower part of the selector mechanism can be increased.

PICK UP AND RETURN OF SELECTOR PIN.

26. Contact Wiper.

The front roller of the contact wiper 20 should turn up slightly and should make contact at the same time with the inner and outer rows of contacts on the contact plate 19. Contact pressure should be 150 - 200 gramms.

After making this adjustment check No. 27.

27. Selector Plate Drive.

~~With~~ ^{With} WITH the record holder motor running, hold the outside edge of the selector plate with the hand. The turning force should be measured at 150-200 gramms.

Before making this adjustment check no. 26.

Adjustment:- Adjust drive belt tension.

After making this adjustment check No. 28.

28. Speed of rotation of Selector Plate.

With the holder motor running whether or not the record holder is turning or has been stopped the selector plate should make one revolution in approx. 5 seconds.

Before making this adjustment check Nos. 8, 26 and 27.

Adjustment:- Make the necessary adjustments to centrifugal brake of record holder motor.

After making this adjustment check No. 32.

29. Stroke of Selector Push Rod.

The selector push rod should have a stroke of 6 to 7 mm. ^{1/4" to 9/32"}

Adjustment:- Loosen fixing screw and adjust return stop 63.

After making this adjustment check No. 30.

30. Rest Position of Selector Push Rod.

In its rest position the selector push rod should coincide with the upper face of the selector plate.

Before making this adjustment check No. 29.

Adjustment:- Correctly position push arm 64 after loosening its two fixing screws.

After making this adjustment check Nos. 31 & 32.

31. Inertia of Selector Push Rod.

a pressure of 80 - 90 gramms should be necessary to cause upward movement of the selector push rod. 9.

Adjustment:- After loosening it's holding screws, tension plate 65 can be moved backwards or forwards.

Care should be taken that push arm 64 exerts no sideways pressure on the selector push rod 9. The push rod can be adjusted into a perfectly neutral position by sideways bending.

After making this adjustment check No. 32.

32. Contact Plate.

Push rod 9 should cleanly push up the selector pin of the chosen record without disturbing the adjacent pin.

Before making this adjustment check Nos. 26 - 31.

Adjustment:- Turn contact plate lift arm rod as necessary.

33. Stroke of Return Rod.

Return rod 26 should have a stroke of 9 - 10 m.m. ($\approx 3/8$ IN) ($\approx 3/8$ IN)

Adjustment:- See No. 29.

After making this adjustment check No. 34.

34. Rest Position of Return Rod.

When selector pin No 22 is pushed right up by hand there should be a gap of 1 - 2 m.m. between the return rod and the selector pin.

Before making this adjustment check No. 34. ($1/16$ IN)

Adjustment:- See No. 30.

After making this adjustment check No. 35.

35. Inertia of Return Rod.

A pressure of 40 - 50 gramms should be necessary to cause an upward movement of the return rod.

Before making this adjustment check Nos. 33 and 34.

Adjustment:- See No. 31.

BRUSH OF TONE ARM SAPPHIRE.

36. Height of Brush

The brush should be set at such a height that when the tone arm swings the sapphire runs through the bristles to a depth of 1 - 2 m.m. ($1/16$ IN).

Before making this adjustment check Nos. 15 and 16.

Adjustment:- After loosening the brush holder fixing screws suitably adjust its position, or alternatively loosen the clamping screw of the brush and position the brush.

37. Swing of the Tone Arm over the Brush.

On the return of the tone arm the sapphire should swing 1 - 2 cm. over the brush.

Before making this adjustment check No. 7.

Adjustment:- After loosening its fixing screw swing lift arm angle backwards or forwards as required.

FAULT FINDING AND CORRECTION.

Before Selection.

After coin insertion
select lamp does not
light

Defective lamp or no contact Replace.
Selector mechanism fuse defective. Replace.
Coin contact failing to operate because it is defective or because of break in wiring Replace if necessary.
Split contacts of the housing flap not operating. Adjust.

Select lamp stays on
and machine can be
played without coin
insertion.

Coin is hanging up
on coin switch.
Coin switch constantly
closed.

After selection

Heavy vibration when
selector pin is pushed
up because this selector
push rod is also moving
the adjacent pin.

Contacts or contact
slide dirty
One of the selector
adjustments incorrect

Clean with "Tetra"
(degreasing fluid)
and lightly grease.

Check adjustments 26.

Selector push rod fails
to push selector pin
right up.

Defective contact to
selector push rod
magnet.

See 'Electrical
Faults'.

Record lift arm does
not rise, although stop
is hard against
selector pin.

Break in connection
to stop.
Earth on tone arm
switch off spring or
connection to this.)

See 'Electrical
Faults',

During Record Change.

Record sticks in
player chassis

Record not correctly
centered.
Record Lift arm is
not central at top or
bottom of its run
Record fall from
tipper during lifting
Record lies behind rear
plastic plate on lifting

See Adjustment
No. 9.

See adjustment
No. 5.

See adjustment
2 and 4.

See adjustment
1 to 3.

Record returns to wrong position in record holder

Record sticks to turntable at end of play because centre hole of record is too small.

Clean Out.

Two records jam in player chassis

Record very badly worn

Replace.

Record falls from table after play

See adjustments 2 and 4

Tone arms sits too heavily on record

One of the tone arm adjustments incorrect.

See adjustments 14 - 18.

During Play

Record badly worn

Replace.

Record is not playing in the centre of the gap between front and rear plastic plates.

See adjustments 10 and 11.

Tone wanders although record is sitting correctly on turntable

Faulty turntable drive

See adjustments 23 and 24

Drive wheel sticking in bearing

Replace if necessary.

Drive wheel tension spring too weak

Shorten or replace.

Grease on drive wheel rubber edge of turntable and extended shaft of turntable motor.

Clean well.

Tone wanders because record is not taken up correctly by turntable

turntable does not push record hard against front plastic plate when centering.
a) Because switch plate does not return to rest position.

Probably the chassis push rod or switch levers are sticking.

b) Because there is not sufficient forward movement on the turntable.

Adjustment II,

Heavy bass noise during play

Transport fastenings on mechanism not removed.

Remove.

Bass control too high in relation to volume

Adjust.

Tone arm ceases to move across record during play.

Defective record.

Replace

Tone arm jamming

See adjustments 12 and 13

Raised screw 62 on tone arm too high

See adjustment No. 21.

Turntable makes a few revolutions and stops.

Chassis tips too far back so that cam contact 13 remains open.

See adjustment No. 21.

After Play.

Record continues to run.

Switch off spring incorrectly positioned.

See adjustment 19.

Earth on record holder stop or leads. Open circuit.

Changer motor does not switch on.

See "Electrical Faults".

Record partly returns but then goes back

Intermittent break on cam contact 13 through dirt

Clean and lightly grease

ELECTRICAL FAULTS.

We recommend that checks be made in the following order:-

1. Check the troublesome component such as motor or magnetic coil for mechanical jamming.
2. Check troublesome component such as motor or magnetic coil for break in circuit or earth.
3. Check the relative leads particularly screw connections, sliding contacts and pin connections for intermittent contact, break in wiring and earth.
4. Check the description of "Electrical Sequence During Selection and during Record Change" to see that the relays described function in the correct order.
5. Check that the working contacts of the operating relays close correctly and the idle contacts open sufficiently.
6. Check that the working contacts of the relays not in the circuit open sufficiently and that the idle contacts of these relays close properly.

SOUND PRODUCTION.

Tone arm.

The following normal crystal systems with sapphire needle can be used with the ELAC tone arm.

- ELAC system KST 8A (green) with Monosapphire for micro grooves.
- ELAC system KST 11 (red) with monosapphire for Micro grooves.

When using monosapphires the system must be permanently set to position 'N'. With system KST 8A (green) however, double sapphires can also be used, in this case the system must be set to position 'M'.

The sapphire needle should be changed after 2,000 - 2,500 plays. If desired a diamond needle with a much higher life can be supplied.

Amplifier.

The Telewatt amplifier has an output of 30 - 35 watt.

Provision is made for connection of additional loud speakers though these must be of a suitable low ohm type.

DESCRIPTION OF THE ELECTRICAL FUNCTIONS OF THE RECORD CHANGER

Raising of a Record

When the selection of the required record (raising of selector pin) has been completed, the magazine motor has already commenced to run, controlled by contact - m I 2. - Mounted on the record magazine is contact M S K which is situated adjacent to the cancellator plunger. At the moment of contact between the M S K contact on the record magazine and the raised selector pin, W relay is closed and is held in by its own contact - w III 2 -. At the same time M relay is released by the opening of contact w III 1 - so switching off the selector motor. The magazine motor is switched off through contact - w I 1 - and the Changer motor switches on through contact -w I 2 -. so allowing the lift arm to take the record up into the playing position.

During the raising of the record to the playing position the following electrical connections are made by means of the cam contacts N 1 to N 6 on the Gear changer unit.

- N1. I Prepares "M" relay in main relay unit for further operation.
II Controls "H" relay through M III contact in main relay unit.
- N2 I Prepares Changer motor for reverse running.
II Breaks supply to Carousel motor.
- N3 I Controls forward run of Changer motor.
II
- N4 I Controls H.T. cut in amplifier.
II
- N5 I D.C. supply to N6.
II Controls Centering magnet.
- N6 I
II Controls Cancel magnet.

Return of Record after Playing.

Situated at the rear, opposite the pick-up is the tone arm switch off contact. When the record has been played the T A contact closes, so releasing W relay. By the releasing of W relay, contact - w III 1 - operates M relay. Due to the positions of cams N 1 to N 6 and the closing of contact - w I 2 - the Changer motor is reversed. With the motor reversed the gear unit is engaged and the record and cams are returned to their original positions. The reverse running of the Changer motor is switched off by cam N 2, which at the same time switches on the Magazine motor through contact - m I 2 - and the Selector Motor through contact - m I 1 -. During the running of the record magazine the cam contact N K 7 is opened so releasing M relay (Selector Motor switched off). After a further complete revolution cam contact N K 6 is opened and H relay is released (Magazine Motor switched off).

If further records have been selected the cycle of operation is repeated after the record has been returned to the record magazine by the M S K contact striking against a raised selector pin and operating W relay as before.

TELEMATIC 100. Key to Mechanism Photographs at back of Instruction Manual.

- | | | | |
|-----|-----------------------|-----|------------------------|
| 1. | Record lift arm stop. | 38. | Control arm. |
| 2. | Turntable. | 39. | Chassis shaft |
| 3. | Record bow. | 40. | Tone Arm Mounting |
| 4. | Record lift arm. | 41. | Tone arm screw |
| 5. | Lift arm spring. | 42. | Chassis stop rod |
| 6. | Tipper | 43. | Chassis stop |
| 7. | Selector Drum. | 44. | Control bolt coupling |
| 8. | Lift arm push rod. | 45. | Turntable shaft |
| 9. | Selector push rod. | 46. | Clutch lever bearing |
| 10. | Chassis control cam. | 47. | Control bolt |
| 11. | Positioning spring. | 48. | Control plate spring |
| 12. | Lift arm control cam. | 49. | Moving chassis stop |
| 13. | Contact cam No. 2 | 50. | Control rod. |
| 14. | Contact cam No. 1. | 51. | Lift arm bearing plate |
| 15. | Main shaft | 52. | Tipper bearing |
| 16. | Record holder shaft | 53. | Tipper stop. |
| 17. | Flange screw | 54. | Friction wheel spring |
| 18. | Changer motor | 55. | Turntable motor |
| 19. | Contact plate | 56. | Friction wheel |
| 20. | Contact wiper | 57. | Guide plate |
| 21. | Selector plate. | 58. | Moving rod. |
| 22. | Selector pin | 59. | Angle bolt |
| 23. | Stop | 60. | Needle bearing |
| 24. | Record bow bush | 61. | Tone arm plate |
| 25. | Record holder. | 62. | Raised screw |
| 26. | Return rod | 63. | Return stop |
| 27. | Lift arm angle | 64. | Push arm |
| 28. | Plastic plate | 65. | Tension plate |
| 29. | Switch off spring | | |
| 30. | Switch off bolt | | |
| 31. | Tone arm stop. | | |
| 32. | Curved plate | | |
| 33. | Clutch lever. | | |
| 34. | Magnetic brake. | | |
| 35. | Control plate | | |
| 36. | Control plate stop | | |
| 37. | Turntable chassis. | | |

TRANSLATION.

ATTENTION BEFORE RUNNING MACHINE.

1. Unscrew this angle on left and right and refix in position indicated by painted marks.
2. Screw this nut hard against the end of the shaft and screw the under wing nut fully back.

The mechanism must be able to swing freely in its rubber bushes.

TRANSLATION

"TELEMATIC 100"

ATTENTION, BEFORE INSERTING NEW RECORDS.

Before the insertion of new records it is essential to be certain that the centre hole of each new record is completely clean and free from roughness or blobs of lacquer.

It is advisable in all cases to clean the centre hole of each record with a knife or file or similar tool before putting it in the machine so that the record does not stick to the cone of the turntable after play is effected.

T R A N S L A T I O N

ATTENTION BEFORE RUNNING MACHINE

1. Unscrew this angle on left and right and refix in position indicated by painted marks.
2. Screw this nut hard against the end of the shaft and screw the under wing nut fully back.

The mechanism must be able to swing freely in its rubber bushes.