

UA-16

Record Changer

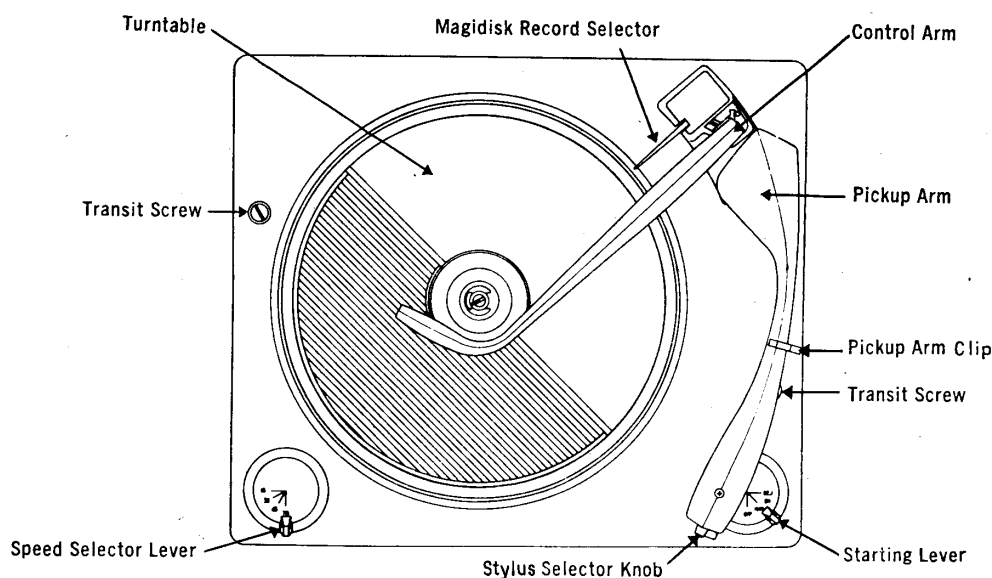


- PLAYS AT ALL SPEEDS, 16-33-45 AND 78 R.P.M.
- PLAYS AUTOMATICALLY OR MANUALLY
- INTERMIXES 7"-10" AND 12" OF THE SAME SPEED
- SWITCHES OFF AFTER THE LAST RECORD HAS PLAYED

UA-16

Operating instructions

Operating Instructions



Preparing for Operation

1. This Record Changer will operate only on A.C. Mains. Before connecting to the supply, check that it is of the correct voltage and frequency.
2. Screw Transit Screws fully down into the mainplate until the unit floats freely on its Mounting Springs.
3. Unclip the Pick-up Arm.
4. Select the correct speed for the type of record to be played.
5. Select the correct Stylus for the type of record to be played.
The Stylus is correctly set for 78 r.p.m. records when the Stylus Selector Knob is positioned so that the number '78' is uppermost.
For Long Playing records the letters 'L.P.' must be uppermost.

AUTOMATIC OPERATION.

Loading. — Grasp the Control Arm at the rear, lift it fully and swing to the right. Place up to a maximum of 10 records, which must be of the same speed and have the same type of groove (Standard or Long Playing), on the Centre Spindle. The first record being located carefully on the ledge of the Centre Spindle and held there while the remaining records are loaded. Swing the Control Arm back to the centre and lower it gently on to the records.

Note: — Should the Control Arm be difficult to lift it means that the unit is not in the neutral condition. To correct this the Turntable should be rotated five times in a clockwise direction while the unit is in the horizontal position.

Starting. — Move the Starting Lever fully to the right (REJ), hold there momentarily and release when turntable revolves.

Rejecting. — Move the Starting Lever fully to the right (REJ) and release.

MANUAL OPERATION.

Lift the Control arm fully and swing to the right. Place the record on the Turntable and replace the Control Arm to its operating position. Select the correct speed and Stylus.

To start, move the Starting Lever to MAN/ON position. Place Stylus in position on record, the record will now play, and when completed, the Pick-up Arm will return to the Rest and the unit will switch off in the normal manner.

To remove records. — Lift the Control Arm fully, swing to the right and lift records gently off the Centre Spindle.

Stopping. — The Record Changer may be stopped at any time by moving the Starting Lever to the 'OFF' position. If the Record Changer is stopped during the 'change cycle' it must be allowed to complete that cycle before attempting to lift the Control Arm or remove the records.

What to do and what not to do

1. Never force the Pick-up Arm. This unit is robust but due to the featherweight action of the Pick-up and the delicate balance required, any force will upset the adjustment.
2. When playing new records a certain amount of fluff will gather on the Stylus point. This should be removed gently from time to time.
3. Always remember to use the correct Stylus on the Pick-up. If the wrong one is in use it may not be apparent from the music. However, the Stylus itself may get somewhat damaged by continuous playing on the wrong point.
4. After loading always see that the Magidisk Record Selector Arm is BELOW the records, and not stuck in a vertical position.

5. Some very old 78 r.p.m. records have no "run-in" groove on the outside edge. Such records can be played but it will be necessary to move the Pick-up inwards to the first grooves manually **AFTER** it has descended of its own accord.

The Pick-up. — This is normally of the Crystal type and must be connected to an impedance of between $\frac{1}{4}$ and 2 megohms. Too high an impedance will over-accentuate the bass response and vice versa.

USING THE RECORD CHANGER WITH RADIO RECEIVERS.

Crystal Pick-ups are capable of really high fidelity results but they must be used correctly. Being high impedance devices they must not be connected to impedances below 250,000 ohms.

Unfortunately, some radio receivers have Pick-up input sockets designed only for Magnetic Pick-ups. Such receivers as they stand are quite unsuitable for Crystal Pick-ups. The input circuit impedance of these receivers is usually 20,000 ohms, or lower. Such relatively low impedances can sometimes be removed and higher values substituted but this requires some technical knowledge. A Transformer (Type Af. 333) is available to match the Crystal Pick-up to a low impedance input. If you find the reproduction from your set thin and weak then almost certainly the input of your receiver is unsuitable for use with a Crystal Pick-up. Your Radio Dealer can supply you with the Transformer that will correct this.

Dismantling

1. **Centre Spindle Assembly.** Compress the looped end of the Retaining Clip (Item 47) and lift the Spindle out of the Turntable Bearing.

To replace the Centre Spindle place it into the Turntable Bearing, ensuring that the projection on the Spindle locates in the slot at the top of the Turntable Bearing, and press downwards until Spindle snaps on to the Retaining Clip.

2. **Turntable Assembly.** Remove Circlip (Item 26) and carefully lift Turntable Assembly off its bearing. When replacing Turntable Assembly push the Jockey Pulley Assembly (Item 16) in towards the Turntable Centre, this allows the Turntable to drop in position without damaging the Jockey Pulley.

3. **Control Arm Assembly.** Before attempting this, make sure that the Unit has completed its cycle and the Pick-up has returned to rest. Remove the Circlip (Item 115) from the bottom of the Control Spindle. The Control Arm Assembly can then be removed from the top of the Unit.

4. **Pick-up Assembly.** The Unit should be disconnected from the Mains before attempting to remove the Pick-up Assembly. The Pick-up leads should be detached from the Tags on the underside of the Unit, and Pick-up Spindle Nut (Item 87) should be unscrewed, the Pick-up may then be lifted clear. The Pick-up lead should be withdrawn from the hole in the diecasting.

5. **Operating Plate.** The Operating Plate Assembly (Item 52) should only be removed or replaced with the Unit in the 'Switched-off' condition: when Screw, Washer and Circlip (Items 56, 55 and 54) have been removed, the Operating Plate Assembly may be detached from the Unit. When replacing this, the Toggle Assembly (Item 49) should be replaced as shown in Diagram 'C'.

6. **Support Casting Assembly and Selector Housing.** This may be detached by removing the three screws (Items 131, 134 and 148).

7. **Selector Assembly.** Remove Selector Cover Assembly (Item 76) by lifting the front end slightly and sliding it forward (towards the Centre Spindle), remove Screw (Item 77) and Selector Clamp (Item 78). The Selector Assembly may now be withdrawn from the housing.

8. **Cartridge.** The Cartridge is removed by taking out Screw (Item 111). The leads are removed by gently pulling the Tags (Item 105) off the Cartridge Contacts.

9. **Stylus (Needle) (From TC8H, TC8M or TC8S Cartridge).** To remove worn out Stylus slacken screw at rear of Stylus (do not remove this screw — it only requires one turn to slacken). Ease Stylus out in direction of arrow (see Diagram 'E'). Replace with new Stylus and when tightening the Fixing Screw, ensure that the Stylus is correctly seated and that the head is positioned centrally on the Stylus Coupler (see Diagram 'E'). Make sure that the worn Stylus is replaced only with a Stylus of the same type. The Stylus is clearly marked on the side of the cartridge and an arrow indicates the correct position of each one. If your Changer is fitted with any other type of Cartridge — see Manufacturer's own instructions for changing cartridge and Stylus.

Note: — The colour of the Stylus is indicated by a spot of paint immediately adjacent to the Stylus point. Any other spots should be ignored. The 78 r.p.m. Stylus, TC8G is coloured green, the L.P. Stylus TC8R is coloured red and the Stereo Stylus TC8RS is coloured yellow.

Lubrication

The Record Changer mechanism is well lubricated before leaving the factory: however, after prolonged use, it is advisable to re-lubricate certain parts, as follows:—

A medium grease should be applied to the following points:—

- The Raising Shoe (Speed Change) (Item 38).
- Jockey Arm Pivot (Item 37).
- Operating Plate operating surfaces.
- Gear teeth, Bearing and Cam Track.

A light oil should be applied at the following points:—

- The Pick-up Hinge Pivots.
- The Pick-up Raising Spindle Bearings.
- Turntable Bearing.
- Jockey Pulley Spindle. Take care not to get oil on the rubber Jockey Pulley Tyre or the inside of the Turntable rim.

No oil should be used on the Magidisc Record Selector Bearing.

Adjustments

Stylus Set-down. — The set-down position of the Stylus on the record is adjusted by means of the Stylus Adjusting Screw (see Diagram 'A'). This screw should be adjusted until the correct set-down of the Stylus on a 10" record is obtained. The correct position is $\frac{1}{8}$ " from the edge of the record. It is advisable to make this adjustment with a stack of 10" records on the Turntable. When correctly positioned for a 10" record, the 12" and 7" stylus set-down will also be correct.

Pick-up Arm Height. — The Pick-up Arm height is adjusted by the Pick-up Height Adjusting Screw (see Diagram 'A'). To raise the height of the Pick-up Arm, turn this screw anti-clockwise, and to lower it, clockwise. The Pick-up height should be adjusted so that when a stack of 10 average thickness records is on the Turntable, the point of the Stylus clears the top record by $\frac{1}{8}$ ". A check should then be made to ensure that the Pick-up Arm clears the underside of records ledged on the Centre Spindle and also clears the top of the Pick-up Rest.

Stylus Pressure. — Stylus pressure is adjusted by re-positioning the Pick-up Balance Spring in the Spring Anchor (see Diagram 'A') until the correct pressure is obtained.

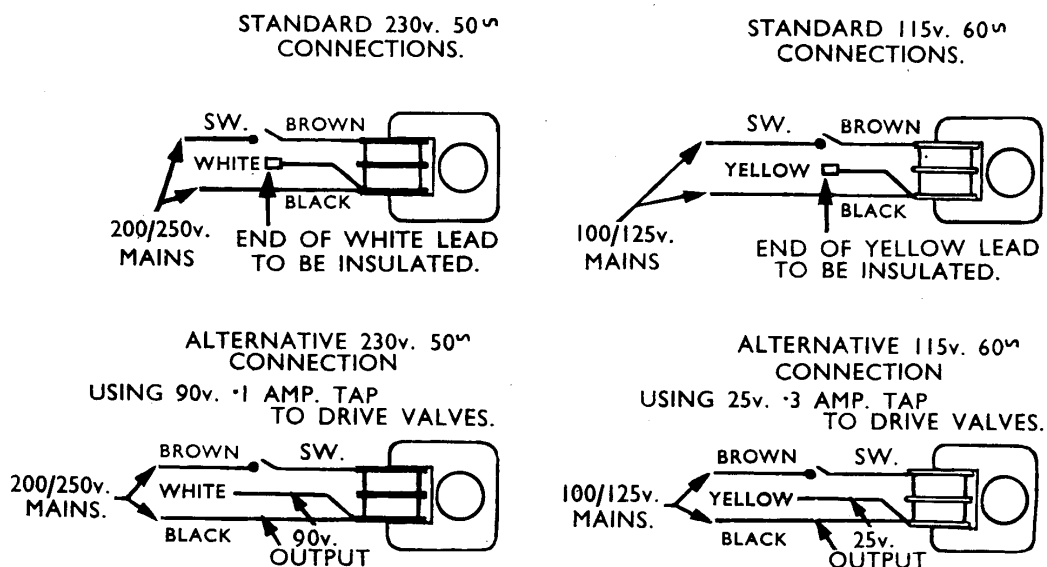
Speed Change.

1. Remove Turntable (see 'Dismantling').
2. Set the Speed Selector Lever to 45 r.p.m.
3. Using screwdriver slot provided in Item 37 (see Diagram 'B'), adjust the height of the Jockey Pulley until it is just below the second shoulder of the Motor Spindle as shown in Diagram 'B'. The Jockey Arm Pivot (Item 37) must be turned clockwise to lower the Jockey Pulley and anti-clockwise to raise it.
4. Replace Turntable.

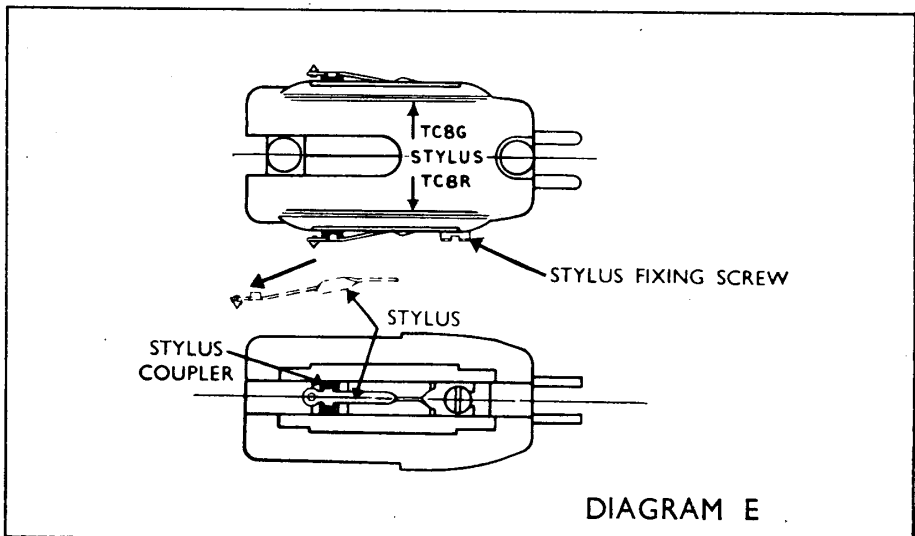
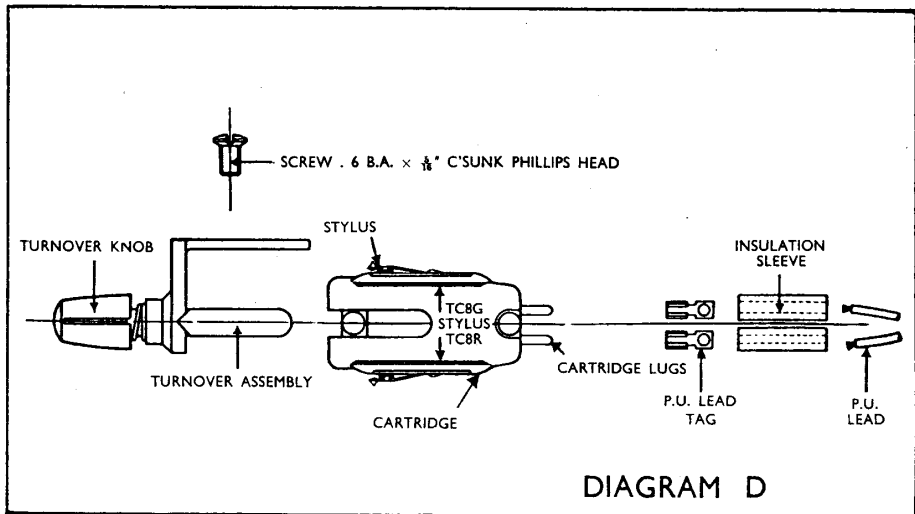
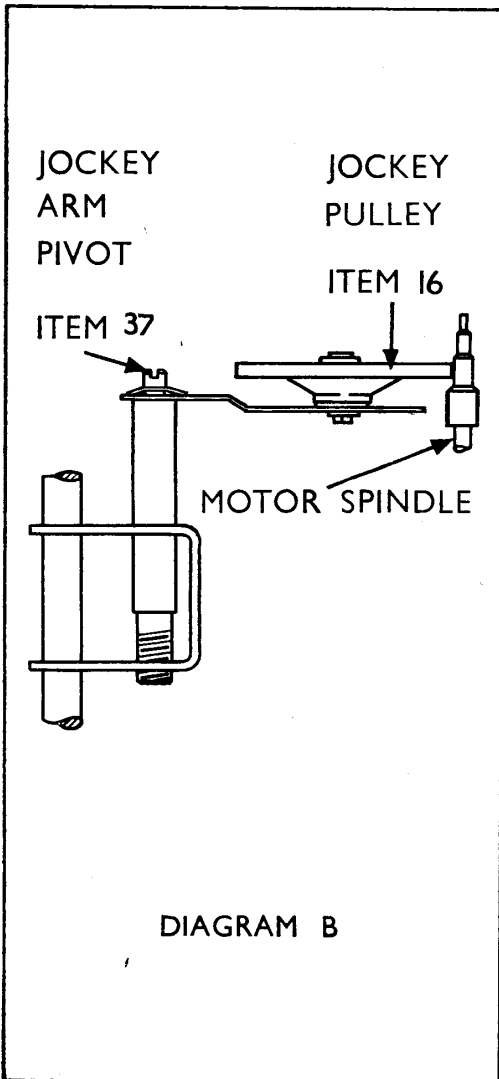
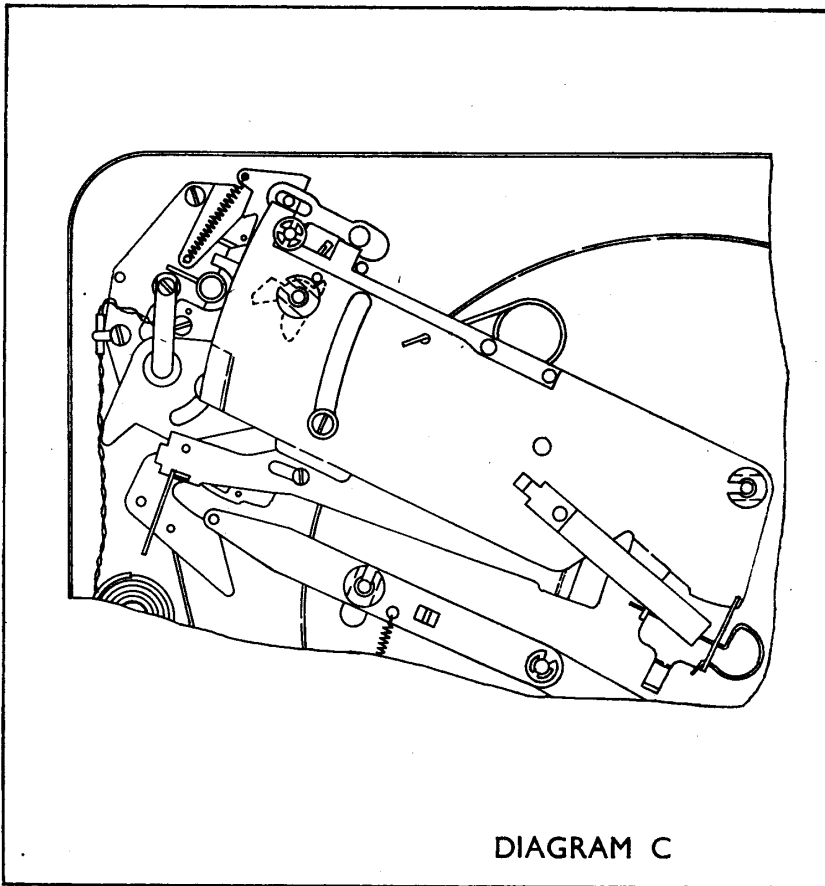
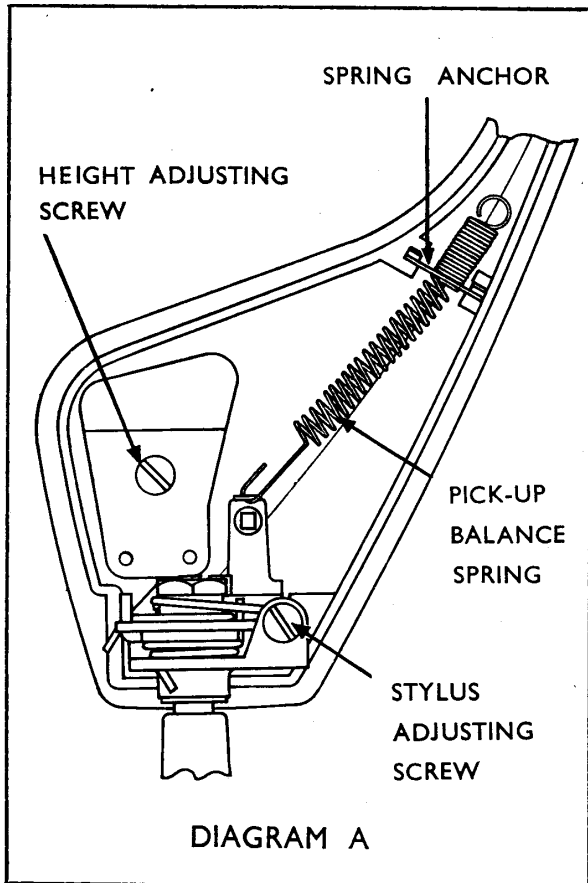
Voltage connections

Changer units are fitted with 200-250 volt, 50 cycle, or 100-125 volt, 60 cycle Motors. Care should be taken to ensure that you have the correct voltage unit before connecting to the Mains supply. Motors fitted to the Changer are normally provided with a tapped winding from which may be drawn current to supply the filaments of the amplifier valves. It should be noted that this tap is connected to the Mains through the motor windings and should therefore be suitably insulated.

The Voltage Connection Diagram given below shows the different ways in which these motors may be connected.



ON EARLY UNITS THE BROWN LEAD SHOWN ABOVE WAS GREEN.



SERVICE

SYMPTOMS	CAUSE	REMEDY
I. Turntable does not rotate when starting lever is turned to 'ON'.	(1) No current to motor. (2) Defective motor. (3) Jockey Pulley (Item 16) not engaging turntable rim. (4) Jockey Pulley not driving.	(a) Check that current is reaching external mains lead. (b) Check that switch box is functioning correctly. (c) Check all wiring and contacts to and from switch box assembly. Remove the Turntable and allow the motor to operate without load. If motor spindle is not rotating and main supply is reaching the motor, the motor is faulty. Repair or replace. (a) Check that jockey arm is free to pivot. (b) Make sure that spring (41) has one tensioning turn around pillar. Carefully clean the inside rim of the turntable and the rubber tyre of the jockey pulley (Item 16) to ensure that they are free from oil and grit. Ensure that starting lever is moved fully to the right. This does not apply when operating the changer manually.
II. Turntable revolves when starting lever is operated but P.U. remains stationary on its rest.	(1) Incorrect manipulation of control. (2) P.U. arm clipped to rest (Item 119). (3) Actuating Slide (57) trapped under friction link.	Rotate P.U. Arm Clip clear of P.U. arm, lift P.U. arm clear and replace lightly on top of rest. Revolve gear (Item 11) by hand to free lever.
III. Turntable Speed too slow.	(1) Tightness in motor bearings. (2) Binding in T.T. bearings. (3) Jockey Pulley Slip. (4) Mains voltage too low. (5) Operating Temperature too low.	Tap lightly the side of motor laminations to free self-aligning bearings. Check Turntable Bearing for freedom. If it does not turn easily when Jockey Pulley (Item 16) is disengaged, remove turntable and clean off foreign matter and lubricate with light mineral oil. (a) Check that Jockey Arm pivot (37) is free in raising bracket (40). Check that end of Jockey Arm (18) is not jammed on unit plate. (b) Make sure that spring (41) has one tensioning turn around pillar. The Mains Voltage should not be less than 200 V. when the unit is wired for 200/240 Volts, and not less than 100 V. when the unit is wired for 100/125 Volts. If the unit has been standing in a cold place or operated in surroundings at a temperature of less than 45°F., the turntable speed may be slow initially.
IV. Turntable stops in middle of changing cycle.	(1) Jockey Pulley slip. (2) Insufficient tension on Jockey Pulley Spring.	Clean the inside rim of the Turntable and the rubber tyre of the Jockey Pulley (16) to ensure that they are free from oil and grit. Make sure that spring (41) has one tensioning turn around pillar.
V. Pick-up fails to move in to play last record. Pick-up returns to rest and unit switches off.	(1) Control lever (136) sticking. (2) Control lever spring (135) strained.	Free Control lever by moving backwards and forwards several times. Replace.
VI. After playing last record Pick-up returns to 7" position and changer switches off.	(1) Control lever (136) sticking. (2) Control lever spring (135) strained or detached.	Free Control lever by moving backwards and forwards several times. Replace.
VII. Two records drop together.	(1) Hole in record too large. (2) Record Keeper not fully down (possibly due to incorrect loading of records). (3) Record Control Arm (75) not holding records level.	Replace record. Carefully clean and remove burrs. Do not oil, it should fall under its own weight. Gently twist Control Arm until it will hold record stack parallel to the top face of turntable.
VIII. Record does not drop when changer cycles.	Strained record feed lever.	Replace Centre spindle (3).
IX. Pick-up does not locate correctly on records.	(1) Pick-up arm not adjusted correctly. (2) Stylus not located correctly on coupler (see Diagram 'E').	See Adjustments. Reposition as detailed.
X. Pick-up does not move in when set down on record.	No run-in groove on record.	Check that the record is of the standard type which has a run-in groove from the outside edge of the record to the recorded section. Some old type records and home recordings do not have this run-in groove.
XI. Pick-up does not track correctly across record.	(1) Stylus may be clogged with an accumulation of dust or be worn. (2) Pick-up leads too tight. (3) Changer not level. (4) Binding or friction in the Pick-up spindle. (5) Insufficient stylus pressure. (6) Actuating slide (57) sticking. (7) Worn record or records with damaged groove.	(a) Clean the foreign material from around the stylus. (b) Check stylus to see if tip is broken and replace if necessary. (To replace, see instructions.) Give Pick-up leads enough slack to allow tone arm to move freely across record. Ensure that changer is level before use. Ensure that all moving parts and bearing surfaces in this assembly are free and lightly oiled. Check as under Adjustments. This lever must be absolutely free to slide on its bearing surfaces. Check for distortion, rust, fray, etc. Replace record.

CHART

SYMPTOMS	CAUSE	REMEDY
XII. Pick-up remains on record run-out groove or on last groove.	(1) No finishing run-out groove on record.	Check record for eccentric run-out groove in centre of record.
	(2) Stylus jumps out of groove in record.	Check that stylus pressure is correct. (b) Check that record is not defective. The run-out groove is often too shallow. (c) The stylus might be damaged or affected by excessive accumulation of dust. Replace or clean. (d) Ensure that all moving parts and bearing surfaces of P.U. spindle assembly are free and lightly oiled.
	(3) Faulty Actuating Pawl Assembly (10)	When Friction link has been moved towards centre of gear wheel and then slowly pushed outwards, it should also carry the actuating pawl outwards from the start of its movement. If the pawl does not move freely with the link it will not engage the Turntable Boss, to start the cycle. If the assembly sticks, remove assembly, clean and lightly oil pawl bush.
XIII. Changer does not shut off after last record has been played. Pick-up continues to play last record from 7" position.	(1) Control Arm (75) not dropping.	Make sure that control arm is in the operating position and drops freely. If necessary, oil spindle.
XIV. Changer continues to cycle with pick-up dropping on to record every cycle.	Operating plate spring (53) weak or detached.	Replace.
XV. Changer fails to switch off after Pick-up has played last record and returned to rest.	(1) Mains lead fouls switch slide.	Move leads clear of slide.
	(2) Faulty switch.	Disconnect from mains. Remove cover and check operation of contacts.
	(3) Tight cut-off lever.	Free Lever by moving backwards and forwards several times.
	(4) Cut-off lever spring (143) strained or detached.	Replace.
XVI. Pick-up does not locate on pick-up rest.	Toggle (49) loading too light.	Replace circlip (50).
XVII. Noise during playing of record.	(1) Motor rumble.	If a low pitched rumbling sound comes from the loudspeaker while the record is being played, check the motor rubber mounting to make sure the motor is freely suspended on them. The motor leads should have slack to allow the motor to float.
	(2) Defective turntable bearings.	Check for foreign matter in the bearings or on thrust washer (4, 6), check for defective balls or binding between balls and ball cage. Grease ball race (5) and lubricate Turntable Bearing with light mineral oil.
	(3) Defective Jockey Pulley.	A rapid thumping sound while the motor is running may indicate uneven wear of the jockey pulley (16). If the surface of the rubber tyre is found to be rough, the J.P. should be replaced.
	(4) Defective records.	Worn or defective records cause rumble, scratch and distortion of recorded sound. If the record is warped it may slip on the other records causing 'wow'. An enlarged hole in the record can also cause 'wow'.
	(5) Squeaks.	Squeaking sounds as the changer operates indicates a lack of oil. Lubricate.
XVIII. Pick-up arm strikes underside of record on spindle ledge when it rises, or stylus catches on top of last record when moving in.	(1) P.U. Arm Height not adjusted correctly.	See Adjustments.
	(2) Control arm not holding records level.	Gently twist control arm until it will hold record stack parallel to top face of Turntable.
XIX. Distortion of recorded sound.	(1) Defective record.	(See 4 under "Noise during playing of record".)
	(2) Defective Amplifier.	Check Amplifier and speaker.
	(3) Faulty Cartridge (106).	Replace. (See instructions.)
	(4) Dust on Stylus.	Remove dust.
XX. No sound during playing.	(1) Defective Cartridge (106).	Replace.
	(2) Defective Wiring.	Check P.U. Leads for short or open circuit condition.
	(3) Defective Amplifier.	Check Amplifier and speaker.
	(4) Loose Cartridge socket tags (105).	Remove, tighten slightly and replace.

THIS CHANGER IS ADAPTED FOR STEREOPHONIC USE

Two pairs of leads are fitted to this changer to enable Stereophonic Cartridges to be used.

CONNECTIONS TO CARTRIDGE.

Monaural. When a Monaural Cartridge (2 tags) is fitted, two leads only (red and black) are required. These are connected to two tags and the spare leads secured inside the pick-up head.

Stereophonic 3 Lead System. (3 tag Cartridge.) Normally three tag Cartridges have the two outer tags identified with the letters R and L indicating the right and left hand channels. When thus coded Cartridges should be connected as follows:

- Red lead to tag marked R.
- Lemon (yellow) lead to tag marked L.
- Black lead to centre tag.
- Blue lead is spare and should be left secured inside the pick-up head.

Stereophonic 4 lead System. (4 tag Cartridge.) A fourth blue lead is provided for use with four lead systems and in this case the Cartridge manufacturers' instructions must be followed when making the connections.

NOTE:— Units despatched from the factory with Cartridges fitted (either Monaural or Stereophonic) are already correctly connected as per the above instructions.

Monaural 2 Lead System. The amplifier is connected to the red and black tags only.

Stereophonic 3 Lead System: When facing the speakers, connections from the right-hand speaker amplifier (R/H channel), should be made to the red and black tags. Connections from the left-hand speaker amplifier (L/H channel) should be made to the lemon (yellow) and black tags.

Stereophonic 4 Lead System. Connections will again have to be made in accordance with the Cartridge manufacturers' instructions.

NOTE.— For AC/DC Sets, the Earth Bridge **MUST** be removed and also, in certain instances, on four-lead Stereophonic systems.



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