



RCA VICTOR



HI-FIDELITY RECORD CHANGER

MODEL COLLARO STUDIO C60 SERVICE DATA

GENERAL INFORMATION

DIAGNOSIS OF FAULTS AND SUGGESTED REMEDIES

1. GENERAL INFORMATION

Apart from faults arising directly from the Pickup, the satisfactory reproduction of gramophone records is basically dependent upon the maintenance of correct and uniform speed. In order to achieve this, it is necessary to maintain correct and uniform speed of the Turntable itself, but it is important to remember that uneven speed of the record track as it passes the stylus may arise from other causes such as:—

1. Enlarged centre holes in records resulting in eccentric rotation, causing excessive sideways swing of the Pickup Head.
2. Warping of records causing excessive up and down movement of the Pickup Head.
3. High spots on records or distortion, resulting in failure of the records to drive each other when used more than one at a time.

Before proceeding to investigate any faults on the basis of the information which follows, it is essential to eliminate the above three possible sources. For this purpose the Service Engineer is recommended to select and carefully preserve a set of test records in which these defects are known to be wholly absent. It is also important to make sure that the drive to the Turntable is not slipping, due to the presence of grease or oil on the driving surfaces of the Pulleys or the inside rim of the Turntable. (See instructions for cleaning Sections 1 and 2).

It will be of great assistance to the Service Engineer when tracing the source of "wow" to remember that defects in the Turntable itself will, in general, cause "wow" to occur regularly at Turntable speed, whilst defects in the Idler Wheel will generally cause it to occur at approximately four times Turntable speed. These are not invariable rules; for example, the Turntable bearing may have tight spots in two diametrically opposite positions, thus causing "wow" at twice Turntable speed.

CONDITIONS ESSENTIAL FOR SATISFACTORY OPERATION OF MOTOR UNIT

The information given in the following table is based on the tolerances and precautions actually observed in manufacture and assembly. While the Service Engineer may not always have means for checking all the tolerances quoted, the information will, nevertheless, give a useful indication of the degree of accuracy considered necessary to ensure satisfactory reproduction of records, and so help him in the diagnosis of any faults encountered.

Condition	Defect Produced by Non-compliance with Condition	Probable Cause of Defect
MOTOR		
1. Motor must spin freely and quietly.	Slow running. Uneven speed. Noisy running. Background rumble.	Bearings out of alignment (Tap Motor lightly on all sides whilst running, to line up bearings).
TURNTABLE		
2. Inside of rim must run concentric within .006" and be free from all irregularities.	Wow.	(i) Distorted Turntable (REPLACE). (ii) Foreign matter adhering to inside of rim (CLEAN).
3. Face (near rim) must run true within .010". (Test with truly flat disc 10" diameter on Turntable.)	Wow.	(i) Distorted Turntable (REPLACE). (ii) Displacement of Rubber Mat (RE-FIT).
4. Turntable bearing, with Circlip in place, must have small amount of end play (.015" max.).	Slow running. Noisy running. Wow.	Extra steel or neoprene washers, or incorrect washers, fitted under turntable bearing. (If from this cause, fault will disappear if wire circlip is removed from centre of turntable).
5. Turntable must spin freely without any trace of a tight spot (a tight spot is indicated by a tendency to come to rest predominantly in one position—to test mark edge of Turntable with chalk or gummed paper).	Background rumble. Wow. Slow running. Noisy running.	(i) Dirty or dry bearing. (ii) Damaged steel thrust washer. (iii) Damaged ball in thrust. (iv) Ball binding in Thrust Cage. (v) Damaged ball cage contacting thrust washer or binding on spigot. (vi) No end play in bearing (see Condition 4).
6. Bearing must run silently and smoothly.	Rumble.	(i) Dirty or dry bearing. (ii) Damaged steel thrust washer. (iii) Damaged ball in thrust race. (iv) Ball binding in thrust cage. (v) Omission of neoprene cushion washer. (vi) Damaged ball cage, contacting thrust washer or binding on spigot. (vii) No end play in bearing (see Condition 4).

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MONTREAL, CANADA

—1960 No. 15—

COLLARO STUDIO C60

MOTOR PULLEY

- | | | |
|---|--|--|
| 7. Driving surface must run concentric within .002" and be free from flats or other irregularities. | Flutter.
Cross Modulation. | (i) Bent Motor spindle.
(ii) Enlarged bore in pulley.
(iii) Burr on Motor Spindle. |
| 8. Must be close sliding fit on Motor Spindle without perceptible play. | Noisy running.
(Probably in form of intermittent light rattling.) | (i) Enlarged bore in pulley.
(ii) Undersize Motor Spindle. |
| 9. Must be set at correct working level and must engage Idler Wheel correctly (see Condition 15). | Wow.
Slow running. | (i) Upper face of Idler Wheel overlapping step of Motor Pulley.
(ii) Lower face of Idler Wheel contacting flange of Motor Pulley. |

IDLER WHEEL

- | | | |
|---|---|--|
| 10. Rim must run concentric within .002" and be free from flats or other irregularities. | Wow.
Noisy running.
(Probably in form of regular low thumping.) | (i) Distorted Idler Wheel.
(ii) Rubber damaged at Rim.
(iii) Boss loosened in Idler Wheel.
(iv) Foreign matter adhering to rim. |
| 11. Face (near rim) must run true within .005". | Wow (caused by rim overriding edge of step of Motor Pulley or intermittently touching face of next lower step). | (i) Distorted Idler Wheel.
(ii) Boss loosened in Idler Wheel. |
| 12. Wheel must spin freely without trace of tight spots (with retaining washer and screw in place). | Wow.
Slow running. | (i) Bush tight on spindle.
(ii) Dry Bearing.
(iii) No end play in bearing (see Condition 13). |
| 13. Bearing must have end play (.005" max.) (with retaining washer and screw in place.) | Wow.
Slow running. | (i) Washer omitted (above or below bearing) causing excessive end play, permitting rim of wheel to override flange of Motor Pulley.
(ii) Extra washer or incorrect washer fitted, causing lack of end play and possibly tightness. |
| 14. Plane of Wheel must be square to Motor Spindle. | Slow running (accompanied by scuffing of the rubber rim). | Distorted Idler Swivel Arm. |
| 15. Wheel must be set at correct working level (i.e. centrally disposed relative to each driving diameter of Motor Pulley). | Slow running.
Wow.
Failure of drive to engage on 78 r.p.m. | (i) Rim of Idler Wheel overriding edge of step of Motor Pulley.
(ii) Lower face of Idler Wheel touching face of next lower step of Motor Pulley when operating on 33½ or 45 r.p.m. Correct above faults by adjusting screw, after first checking that Motor Pulley is at correct level. |

IDLER SWIVEL ARM

- | | | |
|--|--|--|
| 16. Must pivot absolutely freely (end play should not exceed .005"). | Low or uneven Turntable speed. Turntable does not rotate (due to Idler Wheel failing to engage). | Remove Arm from Spindle and lightly oil. |
|--|--|--|

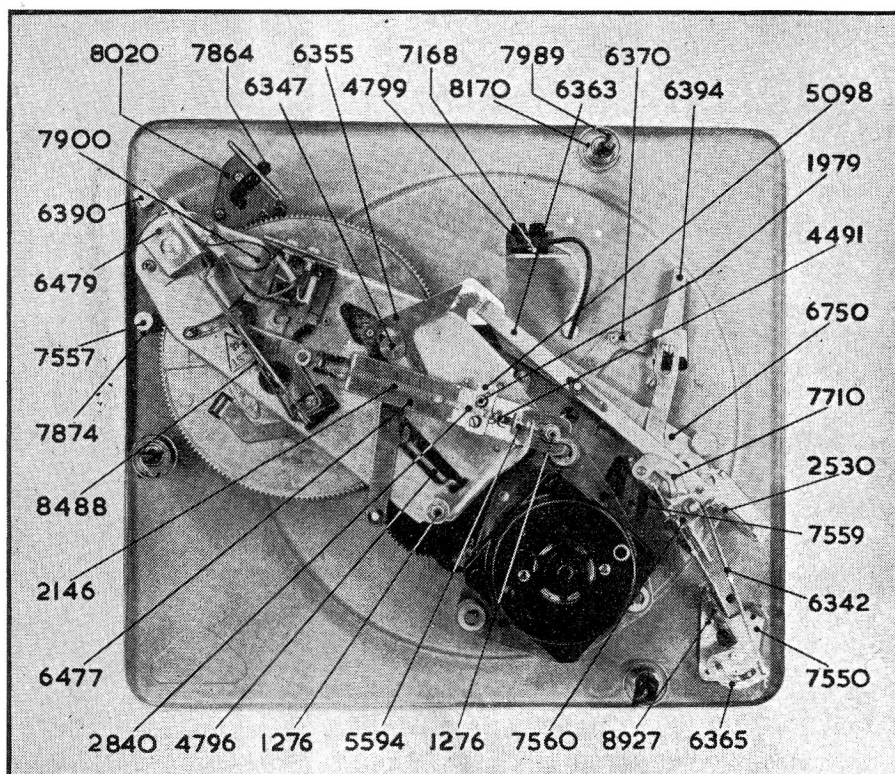


FIG. I

INSTRUCTIONS FOR DISMANTLING, SERVICING AND RE-ASSEMBLING

1. TURNTABLE REMOVAL

Remove wire circlip from centre of Turntable. Turntable should then be lifted right off spindle with a small to and fro rotary movement.

2. TURNTABLE REPLACEMENT

- Check that Ball Thrust Cage and Washers are free from foreign matter and lubricated with a small quantity of light grease. Ball Race Cage must be replaced open side downwards with steel thrust washer immediately below and another immediately above it. Resilient washers of neoprene are fitted below and above the steel thrust washers, the upper neoprene washer having a larger centre hole and locating in the recessed end of the turntable boss to which it should be fitted before replacing Turntable.
- Check that the Motor Pulley is correctly located on the Motor Spindle in accordance with instructions given in SECTION 12b.
- Check that the Idler Wheel (9027) also the rubber wheel which drives the change mechanism are in their retracted positions clear of the turntable rim.
- Replace Turntable on spigot, fit the retaining wire circlip and check that Turntable spins quite freely.

Important Note:

Take great care to avoid depositing grease or oil on the Motor Pulley the Idler Wheel (9027), or the inside rim of the Turntable, as even a minute trace will cause the drive to slip. As a precaution against this, it is advisable to wipe these parts with a clean petrol-moistened rag immediately prior to re-assembly. Also avoid depositing grease or oil on the sliding member in the top of the record spindle, as this may prevent it falling freely under its own weight, causing records to drop more than one at a time.

3. IDLER WHEEL REMOVAL

- Remove Screw (126) and Fibre Washer (2514).
- Withdraw Idler Wheel (9027) upwards from its spindle.

4. IDLER WHEEL REPLACEMENT

- Reverse procedure given in Section 3 taking care that all Washers are correctly in place.
- Check that Idler Wheel spins freely and runs true within the limits specified in the tabulated information given in Paragraphs 10-15 of conditions section.
- Make sure that Idler contacts Motor Pulley correctly, and adjust by turning screw G (Fig. 4). (Not shown in picture but visible with knob turned to "ON" position.)

Important Notes:

Most machines have one or two Fibre Washers (2473) fitted under the Idler Wheel (9027), but some have no washers in this position. When fitted, these Washers generally adhere to the boss of the Idler Wheel when it is withdrawn. Be sure to replace Washers exactly as found when dismantling. Do not confuse Washer (2514)—small hole, with Washer (2473)—large hole. Do not over tighten Screw (126) as this may distort Fibre Washer (2514), causing the Idler Wheel to be stiff on its bearing.

5. MOTOR REMOVAL

- Remove Turntable see SECTION 1.
- Remove Switch Cover by first removing 6 B.A. Nut and Shakeproof Washer.
- Undo Earth Lead (Green wire).
- Remove Contact Separator 7674 and foremost Contact (take careful note of Contact position before removal).
- Pass wires through Unit Plate.
- Remove 3 Circlips and plain Washers.
- Lift motor from studs complete with suspension grommets, sub plate and pulley.

6. MOTOR REPLACEMENT

Reverse procedure given in SECTION 5 making sure that contact springs are in their correct position (see Fig. 6).

7. TO REMOVE MAINS SWITCH

- Undo nut on top cover and lift off cover.
- Lift contact strip separator and lift out contacts.
- Remove end fixing screw.
- Remove centre screw (from underside).

8. SWITCH REPLACING AND ADJUSTING

- Re-fit by reversing procedure described in SECTION 7 (leave end fixing screw loose)
- Make sure contacts are positioned as shown in Fig.6.
- Turn switch in anti-clockwise direction to limit of travel.
- Turn Control Knob to "ON" position (with electric mains "OFF")
- Slowly turn switch body in clockwise direction until the contact strip (furthest from the actuator 7675 (Fig. 6) is lifted approximately 0.15" off its stop.)
- Whilst still holding in the position described above, tighten the fixing screw.
- Re-check that contact lifts from stop as described at 8e.
- Replace cover, lock Washer and Nut.

9. IDLER SPINDLE REMOVAL

The Idler Spindle is pressed into the Swivel Bracket in a special jig which ensures that it is absolutely parallel to the bore in the Bracket. It is, therefore, recommended that if a new Idler Spindle is deemed necessary a complete Bracket and Spindle Assembly (7559) are fitted in accordance with the following procedure.

- Remove Turntable (see Section 1).
- Remove Idler Wheel (see Section 3).
- Turn Control Knob to "ON". Remove "C" clip.
- Lift Bracket (7559) off Spindle.

10. IDLER SWIVEL ARM REPLACEMENT

- (a) Turn "Knob" to "ON".
- (b) Place new arm over Spindle. Before fitting "C" clip, make sure that arm is free to swivel.
- (c) Re-fit "C" clip, and once again make sure that arm is free to swivel.
- (d) Replace Idler Wheel (see Section 4).
- (e) Replace Turntable (see Section 2).
- (f) Re-set Idler height if necessary by turning Adjusting Screw "G" (Section 4c).

Note:

Correct height is for Idler to contact full diameter of motor pulley **without** touching face of lower diameter.

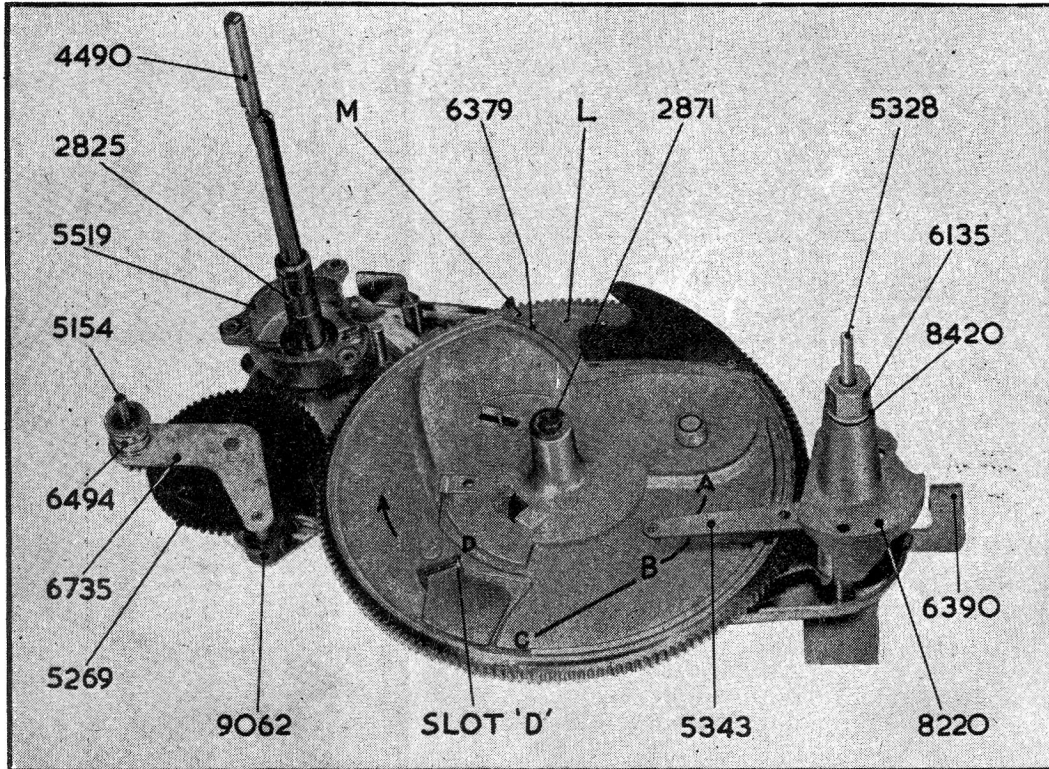


FIG. 2

11. REMOVING MOTOR PULLEY

- (a) Loosen grub screw at side of pulley.
- (b) By a direct upwards pull, remove pulley from spindle.

Note:

If the grub screw is completely removed be careful not to lose the captive ball as without it the pulley cannot be tightened.

12. REPLACING MOTOR PULLEY

- (a) Place pulley on spindle.
- (b) Set pulley so that 45 r.p.m. diameter (third diameter down) contacts mechanism drive wheel (large rubber wheel) without touching the upper face of the 78 r.p.m. diameter.

Note:

All pulley adjustments must be made with the motor in the suspended state and **NEVER** with the Motor touching the work bench.

13. CONTROL KNOB REMOVING

Hold knob between finger and thumb and give vertical lift. If the knob proves to be stubborn pass two turns of string under knob and lift. **NEVER** use screwdrivers or levers.

14. CONTROL KNOB REPLACING

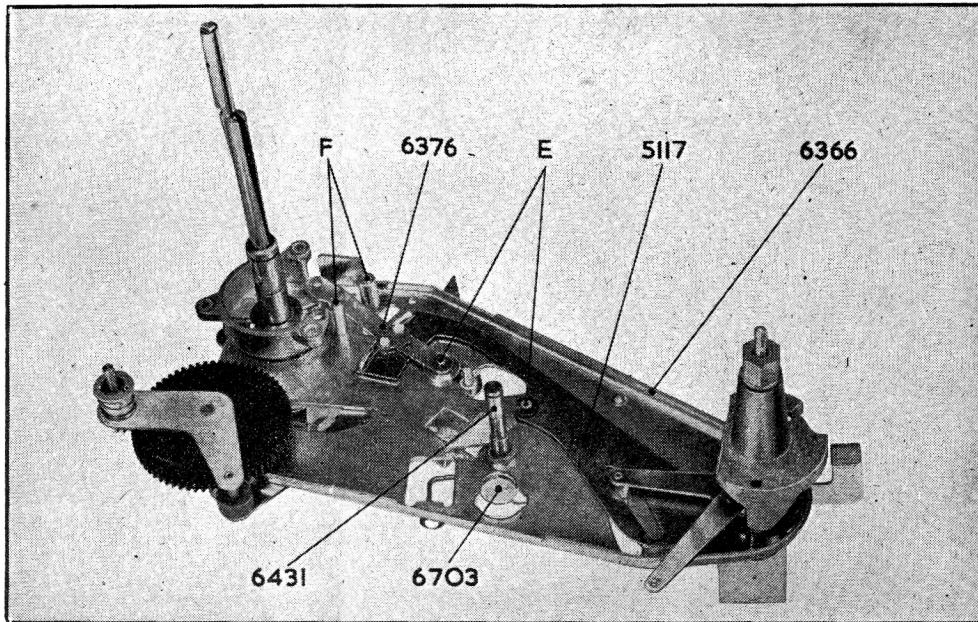
After checking that flats on spindle and in boss will coincide press knob down on spindle.

15. SPEED CHANGE KNOB REMOVAL

- (a) Remove Control Knob (see SECTION 13).
- (b) Remove "C" clip inside Knob well.
- (c) Lift Knob off spindle.

16. SPEED CHANGE KNOB REPLACEMENT

- (a) With one hand holding Spindle up to Unit Plate replace knob over Spindle. Make sure that peg locates in slot in lever below.
- (b) Replace "C" clip.
- (c) Replace Control Knob.

**FIG. 3****17. PICKUP ARM REMOVAL**

- (a) Unsolder Leads from Muting Switch or Tag Panel.
- (b) Remove screw holding earth wire.
- (c) Slacken two screws in Swivel Bracket and lift Arm complete.

Note:

Special care should be taken to ensure that Leads are re-soldered in correct positions.

18. PICKUP ARM REPLACING

- (a) Place Swivel Bracket over hexagon head of pivot (with machine switched "OFF" Pickup Arm should reach its rest when pulled in an anti-clockwise direction).
- (b) Tighten two screws in Swivel Bracket.
- (c) Thread Leads through hole in Unit Plate.
- (d) Clip Leads by means of earth screw Tag.
- (e) Re-solder Leads.
- (f) Check set down position (see SECTION 19)
- (g) Check height to which Pickup lifts (see SECTION 21).

19. PICKUP SET DOWN POSITION

The pickup stylus should normally contact the record approximately $\frac{1}{16}$ " in from the outer edge, if this position is not correct it may be adjusted by means of the screw H provided forward of the pickup pivot (Fig. 5). This adjustment must be carried out by "Trial and Error" methods. It should be noted that as one half turn of the screw covers the entire adjustment range, it should therefore only be moved a very small amount at a time.

20. PICKUP DEPTH

When in the "Play" position the front end of the Pickup Arm (not stylus) should just be able to contact the Turntable Mat. This position is adjustable by turning the foremost of the two adjusting screws (J, Fig. 5) seen through holes in the pickup arm. (In later models only one screw is fitted.) Turn clockwise to raise and anti-clockwise to lower.

21. PICKUP HEIGHT

Before adjusting for height the pickup depth (Section 20) must be set. Switch on machine and when feeler bar of Arm contacts the records to feel size, switch off. The bottom of the stack should now touch half way up the feeler bar. This position may be adjusted by turning the adjusting screw (K, Fig. 5) in a clockwise direction to lower and anti-clockwise to raise the Arm.

22. PICKUP WEIGHT AT STYLUS

Pickup playing weight is adjusted to suit the requirements of the cartridge fitted before leaving the works. Should a different cartridge be fitted at any time, the makers recommendations should be followed and the playing weight adjusted as follows:—

- (a) Put machine into playing condition and switch off. Check weight at stylus point.
- (b) Lift Arm, when adjusting screw can be seen to right of swivel bracket.
- (c) Turn clockwise to decrease, and anti-clockwise to increase weight.

Note:

On earlier models the adjusting screw is the rearmost of the two on the top of the Pickup Arm. This screw should be treated as explained for the later type.

23. PICKUP MUTING

The pickup is muted during the change cycle by the lift lever lifting away from the muting lever and allowing the muting switch leaves to contact each other and thus short out the pickup circuits. This procedure occurs as soon as the cam begins to turn.

To check that the muting switch is breaking properly proceed as follows:—

- (a) Switch on machine with records in position and when the pickup is in the playing position, switch off.
- (b) Make sure that a strip of newspaper or a metal feeler .003" thick can be inserted between the contacts (this is the minimum gap).
- (c) If there is no gap, the tag end of the switch operating lever may be slightly bent away from sub plate.

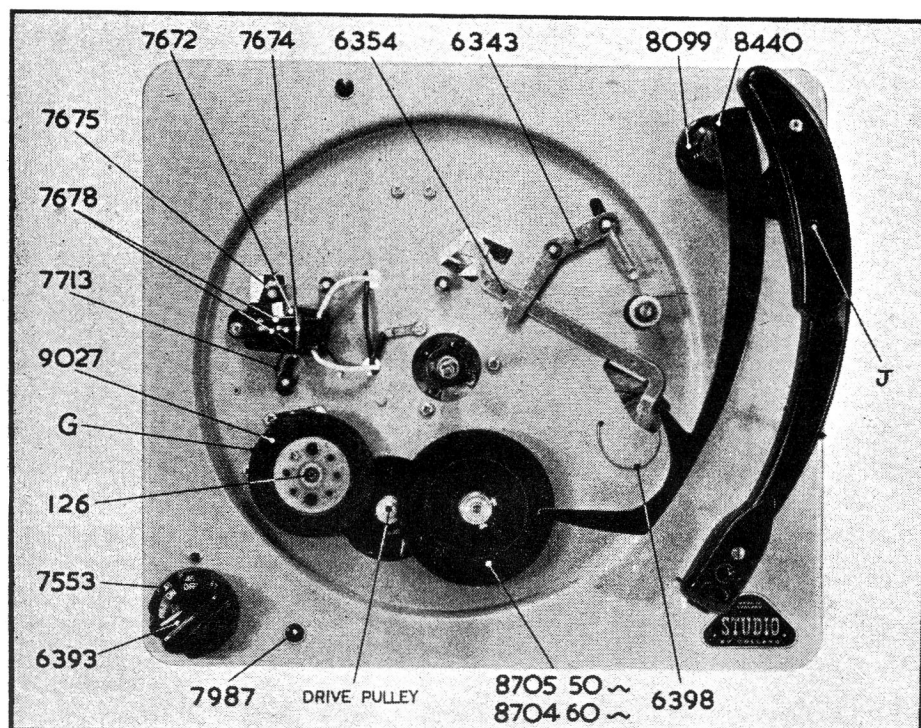


FIG 4.

24. PICKUP TRACKING ADJUSTMENTS

Should the pickup at any time fail to track correctly it may be due to one of the following causes:—

- Pickup lead trapped or tight.
- Cam follower pin touching bottom of cam groove
- Striker feed lever resting on sub-plate (Fig. 3).
- Chipped or damaged pickup stylus.
- Insufficient stylus pressure.

To cure any of the above possible faults proceed as follows:—

- Check that pickup lead is not trapped and that there is sufficient slack when connected to muting switch or connecting strip.
- Make sure that the cam following pin (on Arm 5343, Fig. 2) is not fouling the bottom of the cam when in the "playing recess". To adjust the pin away from the cam turn screw No. 2103 in a clockwise direction at the same time holding nut No. 4998 (Fig. 7). Do not give too much clearance otherwise the follower pin may jump out of the cam groove while the cam is rotating in cycle. The correct setting is for the pin to touch half-way up ramps A and C yet be clear of the cam in position "B" (see Fig. 2). Clearance at "B" .014"-.024".
- The striker feed lever 5117, (Fig. 3) must be perfectly free on its pivot "E" and should be in contact with the sub plate 6366 at its forward end i.e. under the striker arm 6376. At the same time it should be clear of the sub plate at its rear end by about $\frac{1}{16}$ ". Should the clearance at this rear end be insufficient, it may be increased by inserting a screwdriver between the lever and plate and exerting a slight upwards pressure.
- Fit new stylus bar.

Warning:

- To avoid damaging the cartridge always remove sockets before attempting to resolder leads.
- See Section 22.

25. RECORD DROPPING CHECK

Adjustment of the mechanism should not normally be necessary unless the machine has been dismantled to make replacements. To check adjustment operate "start" control and turn cam gear in direction of arrow (see Fig. 2) until large diameter post on the cam gear pushes the record dropping bar (No. 6477) to its extreme position. The record selector pawl (No. 4491) should now rise .056" above the step on the spindle and the pushing portion of the pawl should protrude slightly beyond the outer edge of the shelf.

Note:

The front of the pawl (except the pushing point) must not protrude beyond the diameter of the record spindle.

Warning:

Damage will occur if cam gear is turned in wrong direction.

The two following operations must be carried out with the sub plate removed as Fig. 2.

- To fit a new record spindle and turntable spigot assembly (No. 5519 and 4490, Fig. 2) four socket head screws must be removed, when the assembly may be lifted clear of the dropping pawl. Place the new assembly over the pawl, replace screws and tighten down. Re-adjust as described in Section 26.
- To fit a new record dropping pawl assembly (Part No. 4491) unclip the spring (2840, Fig. 1) from end of pawl, remove retaining split pin from pawl, carry out operation 25 (a) and lift pawl assembly clear. Reverse procedure to re-fit and re-adjust as described in Section 26.

26. RECORD DROPPING ADJUSTMENT

The following explanation is for a complete re-adjustment with the sub plate removed from the unit plate.

- Release mechanism lock by moving lever 6355, Fig. 1, and turn cam in a clockwise direction until cam follower pin can drop into slot D, Fig. 2. With cam in the above position slacken two 6 B.A. screws Part 1979, Fig. 1, and move pawl adjustment plate Part 5098, Fig. 1, until it just contacts the bottom ends of the record release pawls. Re-tighten 6 B.A. screws to secure plate.
- Lift follower pin from slot D and rotate cam in direction of arrow until follower pin can drop into hole L, Fig. 2. With the cam in this position turn self locking nut 1276, Fig. 1, until the record dropping pawls rise .056" above the record spindle ledge.
- Lift follower pin again, rotate cam until pin can drop into hole M, Fig. 2. Adjust pawl stop 5594, Fig. 1, toward pawl ends until there is approximately .003" clearance between them (thickness of an average piece of newsprint). Tighten lock nut. Repeat releasing action.

27. AUTOMATIC TRIP

This machine is provided with an extremely light velocity type trip, failure may be due to the following causes:—

- (a) Tightness or dirt at pivots "E".
- (b) Grease or oil on pins "F".
- (c) Striker feed lever resting on sub plate at rear end.

To cure proceed as follows.

- (a) Remove circlips from pivots "E" and lift levers 5117 and 6376, Fig. 3. Clean levers and pivots, replace levers, refit circlips and make sure that levers will move their full extent when sub plate is tilted to 45°.
- (b) Clean pins marked "F", Fig. 3.
- (c) Proceed as described in Section 24 (c).

Note:

The chief enemies of the automatic trip are oil, grease and dirt.

28. METHOD OF REMOVING OPERATING MECHANISM SUB-PLATE

- (a) Unsolder pickup leads from muting contacts or tag plate on underside of Unit Plate, or remove Muting Switch.
- (b) Remove turntable as described in Section 1.
- (c) Remove Drive Wheel (No. 8704, Fig. 4) (the larger of the two rubber pulleys) by loosening two 6 B.A. cheese headed screws in Drive Wheel Boss and lifting wheel off spindle (Part 5154, Fig. 2).
- (d) Remove pickup see Section 17.
- (e) Remove three self-tapping screws (No. 1650) from round Turntable spigot housing and two from round the pickup base.
- (f) As the entire mechanism sub-plate and its components will now fall away from the unit plate a hand should be placed below to avoid any damage occurring. The sub-plate now appears as shown in Fig. 2.

29. TO RE-FIT OPERATING MECHANISM SUB-PLATE

- (a) Check record dropping and adjust if necessary (see Section 26).
- (b) Place complete mechanism in position from the underside, insert three self-tapping screws (No. 1650) around the Turntable Spigot Housing. Two round pickup base.
- (c) Tighten all five screws.
- (d) Re-fit drive wheel and adjust to contact the 45 r.p.m. diameter of motor pulley and yet give ample clearance between bottom of rubber and top face of 78 r.p.m. diameter.
- (e) Re-fit Turntable (see Section 1).
- (f) Re-fit pickup (see Section 18).
- (g) Adjust pickup for height (see Section 21) and set down (Section 19).

30. REMOVING CAM GEAR ASSEMBLY

- (a) Lift pickup positioning lever No. 5343 clear of Cam Gear edge.
- (b) Remove circlip 2871, Fig. 2.
- (c) Lift Cam Gear Assembly 6379, Fig. 2, clear of spindle 6431.

31. REFITTING CAM GEAR ASSEMBLY

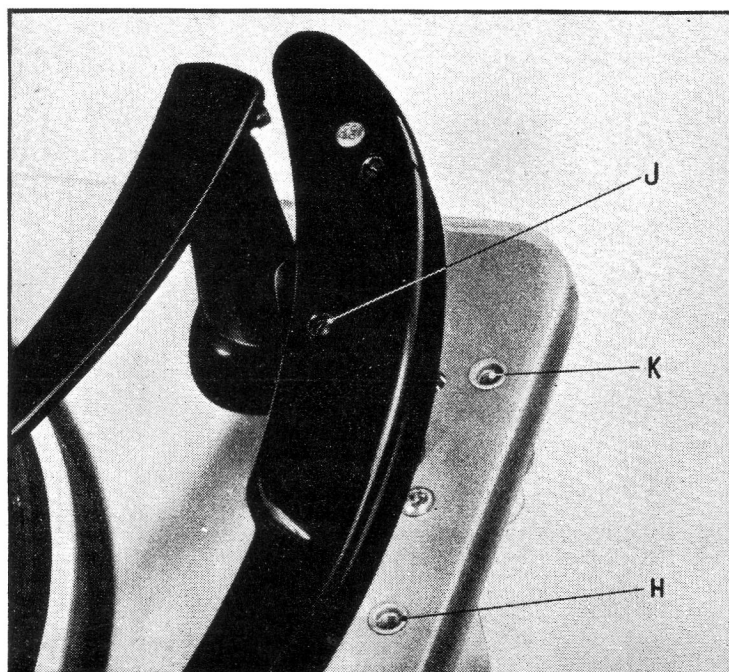
- (a) Place Cam Gear assembly 6379 over Pivot 6431, Fig. 3, at the same time push Record Dropping Slide No. 6477, Fig. 1, towards record spindle, turn cam until Locating Roller No. 6703, Fig. 3, locates in slot.
- (b) Replace washer and circlip.
- (c) Place positioning lever back on Cam.

32. REMOVING INTERMEDIATE GEAR

- (a) Remove nut No. 1276, Fig. 1.
- (b) Remove circlip holding gear operating lever and rubber buffer.
- (c) Intermediate gear complete with carrier and drive pinion may now be lifted clear

33. RE-FITTING INTERMEDIATE GEAR

- (a) Fit intermediate gear to spindle.
- (b) Re-fit rubber buffer.
- (c) Pass spindle through boss.
- (d) Place operating lever over pin and fit circlip.
- (e) Re-fit washer and locknut making sure that gear has .005" end play between gear boss and sub plate.
- (f) Check that there is reasonable backlash between each gear.

**FIG 5.**

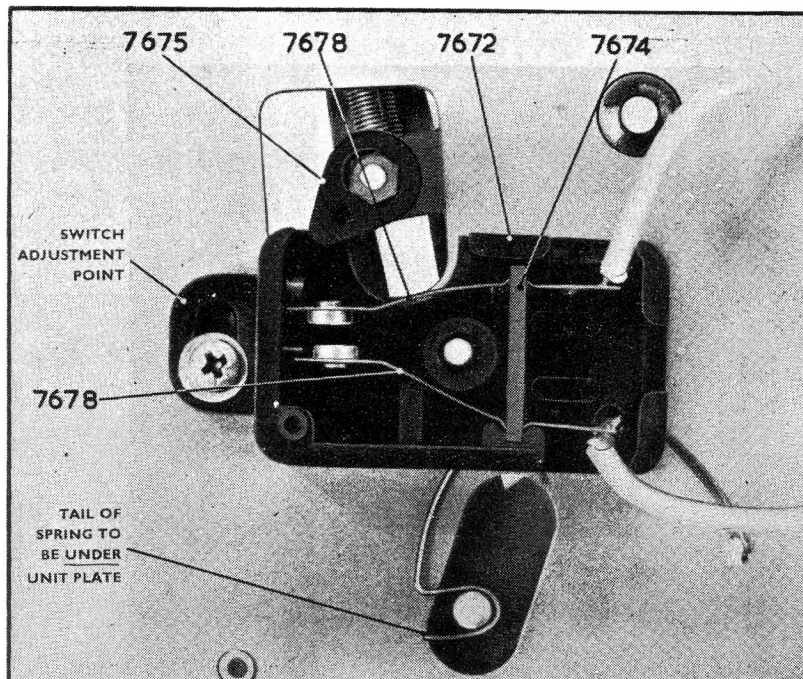


FIG 6.

34. REMOVING PICKUP PIVOT

- (a) Remove sub plate assembly, Section 28.
- (b) Remove Cam Gear assembly, Section 30.
- (c) Undo two self tapping screws on underside of sub plate.
- (d) Lift Pivot clear.

35. REFITTING PICKUP PIVOT

- (a) Place pivot in position making sure that levers are in position as shown in Fig. 3.
- (b) Replace and tighten two screws.
- (c) Replace Cam Gear Section 31.
- (d) Replace Sub Plate Section 29.

36. PICKUP POSITIONING CLUTCH

This component (Fig. 7) is a rivetting assembly and should not be dis-assembled. It may be removed and a replacement fitted as follows:—

- (a) Remove Pickup Pivot, Section 34.
- (b) Slacken two screws in clutch boss when clutch assembly may be removed.

37. REFITTING PICKUP POSITIONING CLUTCH

- (a) Place clutch assembly over pivot spindle.
- (b) Pinch up screws lightly and give .005" end float to spindle.
- (c) Replace pivot on sub plate, Section 35.
- (d) Replace Cam Gear, Section 31.
- (e) Replace Sub Plate, Section 29.
- (f) Refit Pickup, Section 18.

At this stage pull pickup outwards until it will just lay on its rest.

- (g) Tighten two screws in clutch boss.
- (h) Recheck .005" end float (b) above.

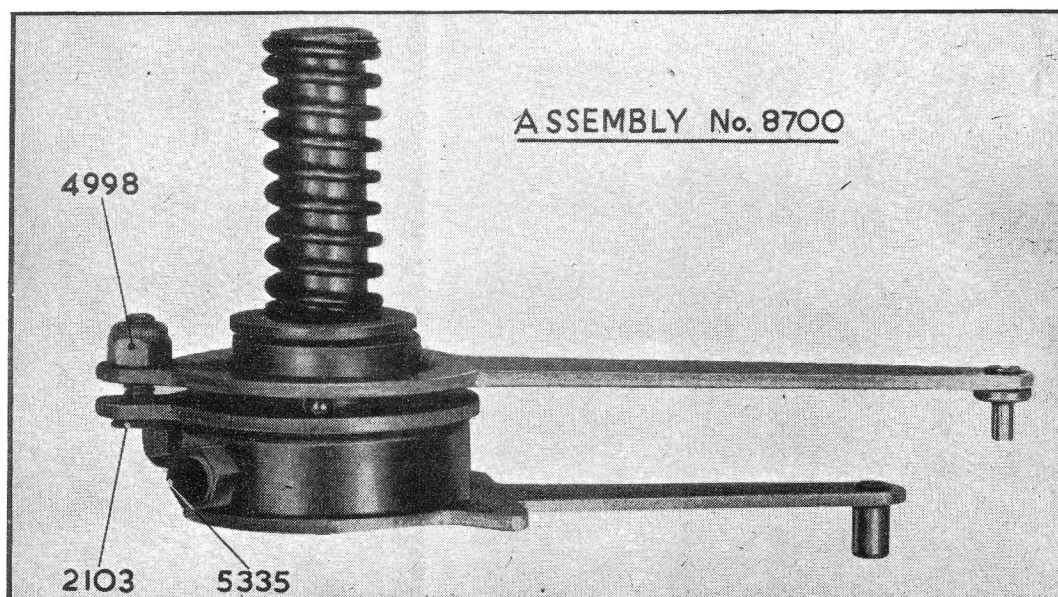


FIG 7.

REPLACEMENT PARTS LIST

Insist on Genuine Factory Tested Parts, which are readily identified and may be purchased from Authorized Dealers.

SYMBOL	STOCK NO.	DESCRIPTION	SYMBOL	STOCK NO.	DESCRIPTION
		<u>BALANCING ARM</u>			<u>PICK-UP ARM - Cont'd.</u>
2162	*63-24562	No. 6 x 1/2" S.T. Screw	9102		6 B.A. Self Lock Nut
7865		3 B.A. x 9/32" Hex. Hd. Screw	9163	*63-24591	Spring Adjustment Plate
9362	*63-24563	Balancing Arm Spindle	9164	*63-24592	Pick-up Arm Mounting Plate
9364	*63-24564	Balancing Arm Spring	9165	*63-24593	1/16" Fluon Washer
9363	*63-24565	Balancing Arm Locating Bracket	9186	*63-24594	6 B.A. Crinkle Washer
9361	*63-24566	Balancing Arm Column (Black)	9182	*63-24595	Pick-up Swivel Bracket
9361	*63-24660	Balancing Arm Column (Brown)	1196		6 B.A. x 3/16" Rd. Hd. Screw
8422	*63-24567	Balancing Arm (Black)	1251		4 B.A. Thin Nut
8422	*63-24661	Balancing Arm (Brown)	1648	63-21565	4 B.A. Shakeproof Washer
9365	*63-24568	Balancing Arm Spring Cup	2649	*63-24596	6 B.A. Spire Nut
			6297		4 B.A. x 3/4" Red. Csk. Screw
			6828	*63-24597	Counter Weight
			5475	*63-24666	Pick-up Arm (Black)
			5475	*63-24687	Pick-up Arm (Brown)
		<u>TURNTABLE</u>			<u>MECHANISM SUB PLATE</u>
2884	63-21164	Thrust Cage			
3144	63-21374	Damper Washer			
3894	63-21580	Thrust Washer			
5504	*63-24569	Self Aligning Washer	2825	63-22899	Spindle Locating Screw
4407	*63-24570	Turntable Assembly (Mushroom)	4490	*63-24598	Record Spindle/Slide Assembly
5131	*63-24571	Retaining Clip	5519	*63-24599	Turntable Spigot Housing Assembly
4368	63-22147	Turntable Cover (Black)	5255		No. 6 x 3/8" Self Tap Screw
4368	*63-24662	Turntable Cover (Brown)	4491	*63-24600	Selector Pawl Assembly
			2840	63-21177	Selector Pawl Tension Spring
			2146	63-21174	Drop Slide Tension Spring
		<u>MOTOR PULLEY</u>	6431	*63-24601	Cam Gear Spindle
8682	*63-24572	Yellow 50 cycle	5298	63-22209	1/4" Stamped Washer
8683	*63-24573	Black 50 cycle	5328	63-22427	Pick-up Life Spindle
8684	*63-24574	Self Colour (Silver) 50 cycle	6432	*63-24602	Cam Gear Spindle Collar
8685	*63-24663	Yellow 60 cycle	5172	63-22169	Drop Slide Assembly
8686	*63-24575	Black 60 cycle	8980	*63-24603	Pawl Adjustment Lock Plate
8687	*63-24576	Silver 60 cycle	5098	63-22158	Pawl Adjustment Plate
8688	*63-24577	Red 60 cycle	3636	*63-24667	Pick-up Life Comp. Spring
8689	*63-24578	Blue 60 cycle	1276	63-21597	4 B.A. Self Lock Nut
5147	63-22226	1/16" Ball	6366		Sub Plate Rivetted Assembly
8789	*63-24579	Motor Pulley Screw	5594	*63-24604	Selector Pawl Stop
			6379	*63-24605	Cam Gear Assembly
			2871	*63-24606	Cam Gear Retaining Clip
			5298		1/4" Washer
		<u>RUBBER IDLER WHEEL</u>	6842	*63-24607	Pick-up Pivot Cover (Black)
126	*63-24664	8 B.A. x 1/8" Ch. Hd. Screw	6842	*63-24668	Pick-up Pivot Cover (Brown)
2473	*63-24580	5/32" Fibre Washer	6355	*63-24608	Drive Release Lever Assembly
2514	*63-24581	3/32" Fibre Washer	9796	*63-24609	Drive Release Lever Spring
9027	*63-24582	Idler Wheel Assembly	9062	*63-24610	Buffer
			6735	*63-24611	Drive Wheel Carrier Assembly
			5154	63-22166	Drive Pinion
			2473		5/32" Fibre Washer
		<u>RUBBER DRIVE WHEEL</u>	2870		Pinion Retaining Clip
5538		6 B.A. x 1/4" Ch. Hd. Screw	3007		3/16" Washer
8704	*63-24583	Drive Wheel Assembly	1949	*63-24612	Compression Spring
			5269	*63-24613	Intermediate Gear
			5117	63-22163	Striker Feed Lever
			2870		Striker Feed Lever Retg. Clip
		<u>PICK-UP PIVOT</u>	6376	*63-24614	Striker Arm
3297	*63-24584	Pick-up Life Spindle Clip	3297		Striker Arm Retg. Clip
5335		8 B.A. x 7/16" Hex. Hd. Screw	6347		Striker Arm Pivot
6135	*63-24585	Pick-up Pivot Spindle	5328	63-22427	Pick-up Life Spindle
8220	*63-24665	Pick-up Pivot Housing	3297		Pick-up Life Spindle Clip
8420	*63-24586	1/4" Fluon Washer	6479		Guard and Support Bracket
8700	*63-24587	Pick-up Pivot Clutch Assembly	2162		No. 6 x 1/2" Self Tap Screw
			6390	*63-24615	Pick-up Height Adj. Lever
			6387	*63-24616	Pick-up Elevating Lever
			6386	*63-24617	Pick-up Elevating Lever Roller
		<u>PICK-UP ARM</u>	8488	*63-24618	Height Adjusting Spring
1034	*63-24588	6 B.A. x 3/4" Ch. Hd. Screw	7900	*63-24619	Muting Switch Assembly
4986	*63-24589	Horizontal Pivot Pin	7793	*63-24620	Muting Switch Lever
5000	63-22420	Lift Cantilever			
5003		Cantilever Pivot			<u>MOTOR</u>
5335		3 B.A. x 7/16" Hex. Hd. Screw			
6835	*63-24590	Tension Spring	8983	*63-24669	A.C. 60 cycle (3 lead) Complete with
6865		4 B.A. x 19/32" Grub Screw			Mounting Plate
6866		Tension Nut	2870		Motor Retaining Clip

* Indicates New Stock Items. Only items listed under stock numbers are available as Replacement Parts.

All parts subject to change or withdrawal without notice.

REPLACEMENT PARTS LIST

Insist on Genuine Factory Tested Parts, which are readily identified and may be purchased from Authorized Dealers.

SYMBOL	STOCK NO.	DESCRIPTION	SYMBOL	STOCK NO.	DESCRIPTION
		<u>MOTOR</u> - Cont'd.			<u>UNIT PLATE AND CONTROLS</u> - Cont'd.
3007		3/16" Washer	6399	*63-24637	Cocking Lever Spring
7902	*63-24621	Motor Mounting Grommet	7713	*63-24638	Control Bar Spring
			7550	*63-24639	Speed Change Slide
		<u>UNIT PLATE AND CONTROLS</u>	7170	*63-24640	Safety Link
6375	*63-24688	Unit Plate (low Controls) (Brown)	8807	*63-24641	Safety Link Retg. Wire
6375	*63-24622	Unit Plate (low Controls) (Black)	6365	*63-24642	Control Lever (Short)
6843	*63-24623	Pick-up Rest (Black)	8271	*63-24643	Control Lever (Long)
6843	*63-24670	Pick-up Rest (Brown)	7560	*63-24644	Idler Swivel Bracket Assembly
75		4 B.A. x 3/8" Rd. Hd. Screw	7559	*63-24645	Idler Arm Assembly
1251		4 B.A. Thin Hex. Nut	7555	*63-24646	Idler Elevator Assembly
5094		Pick-up Rest Clip	7554	*63-24647	Idler Elevating Spindle
7987		Transit Screw	7710	*63-24648	Idler Aux. Arm Assembly
7989		Transit Screw Clip	7874		Tension Nut
8170	*63-24624	Mounting Spring	1252		4 B.A. Washer
8101	*63-24625	Unit Plate (Elevated Controls) (Black)	2870		Idler Elevator Spindle Retg. Clip
8101	*63-24689	Unit Plate (Elevated Controls) (Brown)	7714		Idler Elevator Spring
6393	*63-24671	Control Knob (Black)	7675	*63-24649	Switch Actuator
6393	*63-24672	Control Knob (Brown)	6370	*63-24650	Switch Control Lever Assembly
7553	*63-24626	Speed Control Knob (Black)	6750	*63-24651	Control Bar Assembly
7553	*63-24673	Speed Control Knob (Brown)	6363	*63-24652	Auto Operating Lever
2871		Control Spindle Retg. Clip	6394	*63-24653	Idler Withdrawal Link
8879	*63-24627	Control Knob (Elevated) (Black)	6359	*63-24654	Cocking Lever Assembly
8879	*63-24674	Control Knob (Elevated) (Brown)	7168	*63-24655	Mains Connector Bracket
7934	*63-24628	Control Indicator (Elevated) (Black)	4799		Terminal Block
7934	*63-24690	Control Indicator (Elevated) (Brown)	6019		Insulating Strip
7937		1/4" Washer	6413		6 B.A. x 5/8" Rd. Hd. Screw
7938		3/8" Washer	2649		6 B.A. Spire Nut
8273		Retaining Clip	6385		Washer
8274	*63-24629	Speed Control Knob (Elevated) (Black)	8737	*63-24656	Height Adj. Screw
8274	*63-24675	Speed Control Knob (Elevated) (Brown)	7678	*63-24657	Contact Strip Assembly
7874	*63-24630	Tension Nut	7673	*63-24658	Switch Cover
7557	*63-24631	Adjustment Cam	7672	*63-24659	Switch Base
6354	*63-24632	Auto/Off Lever	7674		Contact Separator
6398	*63-24633	Auto/Off Lever Spring	1034		6 B.A. x 3/4" Ch. Hd. Screw
6343	*63-24634	Auto/Off Aux. Lever	1102		6 B.A. Thin Hex. Nut
2870	*63-24635	Auto/Off Aux. Lever Clip	1103		6 B.A. Washer
6746	*63-24636	Auto/Off Spacer	7779		No. 4 x 3/8" Self Tap Screw
			1992		6 B.A. Shakeproof Washer
				*63-24676	45 RPM Adaptor Spindle (Black)

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