

**MARCONIPHONE****AUTOMATIC RECORD  
CHANGER****BASIC TYPE 45000****SERVICE  
MANUAL****CONTENTS**

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THE GREATEST NAME IN RADIO

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# AUTOMATIC RECORD CHANGER

## OPERATING

Although the mechanism is robust and non-critical in adjustment, it must be handled with care. The record changer must be installed in such a manner that the turntable is level (test on turntable). Force is not necessary when operating the mechanism, and warped or damaged records should not be used. The

operating instructions below are in sequence and should be performed in the order given.

Any salient points are shown in heavy type and the most important of these, which should be emphasised to the customer when the Instrument is installed, are listed separately.

### TO PLAY A PROGRAMME OF RECORDS

The record-changing mechanism will play one side of each of up to ten 10-inch or 12-inch records, with a finishing groove of not more than  $3\frac{5}{8}$  inches diameter. **Only records of one size, 10-inch or 12-inch may be played at one loading. Not more than 10 records may be loaded at a time.** If fewer than 10 records have been loaded, others may be added whilst a record is being played. The total of 10 records must not be exceeded.

needle, pushing the needle fully home. The needle should not be disturbed until it has to be changed. **(It is normal for the needle to feel loose when correctly inserted. Damage will result if force is used or a larger needle inserted.)**

#### To Reject a Record.

A record can only be rejected after it has started to be played. To reject, simply turn "Start-Reject" control in a clockwise direction and release. The pick-up will automatically lift from the record and move aside while the next record is dropped.

#### To Play a Single Record.

Place a record on the turntable. Lower the Record Retaining Arm, lift the pick-up and gently feed needle into the record groove.

At the end of the record, the pick-up is returned to its rest and the mechanism stops.

#### To Unload the Mechanism.

1. Lift the Record Retaining Arm, and remove the cranked Spindle.
2. Lift the records straight off the turntable.
3. Replace the Cranked Spindle. Rotate until it locates and drops into position.
4. Lower the Record Retaining Arm.

1. Lift the Record Retaining Arm, and adjust the position of the 10-inch Record Support Plate to suit the size of records, i.e., for 10-inch records, the Record Support Plate must be down, for 12-inch records the plate must be fully raised. **The 10-inch Record Support Plate must not be lowered whilst 12-inch records are being played.**

2. Fit the Cranked Spindle into the Pusher Tube, rotate until it locates and drops into position. Place the records on the spindle so that they are supported by the "shelf" in the spindle and by the appropriate record support plate at one side.

3. Gently lower the Record Retaining Arm on to the top record.

4. Lift the pick-up arm to an almost vertical position and insert a Columbia No. 99 or Permanent Sapphire miniature type

## To Stop Mechanism.

To stop the mechanism before a programme of records has been completed, proceed as follows:-

1. Lift Record Retaining Arm.
2. Remove unplayed records from Cranked Spindle.
3. Lower Record Retaining Arm.
4. Turn "Start Reject" control clockwise.

The pick-up arm will then lift from the record being played and the mechanism will

automatically switch "off" when the pick-up arm is returned to its rest.

## Important Operating Points.

All movements of the pick-up arm during record changing are entirely automatic and must not be interfered with.

The 10-inch Record Support Plate must not be down when playing 12-inch records.

Ensure that the Cranked Spindle is in position before loading records.

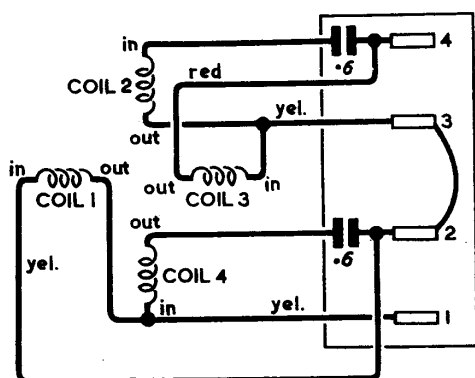
See that needle is in position before starting mechanism. Do not rotate turntable by hand.

The red-headed motor transit screw and the tapes securing the pick-up etc., must be removed before operating.

## No. 2 RIM DRIVE MOTOR

### Principle of Operation.

The motor is a synchronous A.C. motor consisting of two pairs of coils (1 and 4, 2 and 3).



The individual coils of each pair are in parallel, with a condenser in series with one coil, i.e., coil 3 is in parallel with coil 2 and its series condenser, coil 1 is in parallel with coil 4 and its series condenser. Thus the combined fields of these coils, being out of phase, produce a rotating field causing the rotor to turn at

3,000 r.p.m. The motion is transmitted to the turntable by means of a rubber tyred pulley fitted directly to the rotor spindle, the pulley engaging on the inside of the turntable rim and driving the turntable at a constant speed of 78 r.p.m.

### Bearings.

The two bearings are of phosphor-bronze surrounded by oil-soaked felt washers. These washers contain sufficient oil for many years' service, it is advised therefore, that no further lubrication be added. If a fault develops in the bottom bearing it can easily be replaced - see below. If in the top bearing, the complete motor should be returned to E.M.I. Sales and Service Ltd., Sheraton Works, Wadsworth Road, Middx., unless the special tool needed to remove the pulley from the motor spindle is available.

### Coils.

The resistance of each coil should be approximately 860 ohms. The insulation resistance between the coils and laminations should be not less than 50 megohms when measured with a 500 volt Insulation Tester. If any coil is found to be faulty, proceed to dismantle (see below).

### Condensers.

If an electrical fault is suspected, or a new coil has been fitted, the capacity and insulation resistance (50 megohms) of both condensers should be checked.

### To remove Motor from the Mechanism.

1. Disconnect the instrument entirely from supply.
2. Unsolder the mains lead from tags on condenser block.
3. Remove the turntable (3 screws).
4. Remove two screws securing motor mounting bracket to mechanism plate.
5. Lift off motor.

### To Replace Motor Bearings or Coils.

1. Remove the motor from the mechanism plate (see above).
2. Remove the two screws securing the motor to the mounting bracket and withdraw the motor.

3. Remove the two screws securing the bearing brackets to the laminations. The top bearing bracket complete with rotor, and the bottom bearing bracket can now be withdrawn. Care should be taken not to damage the rotor and its spindle.

4. The bottom bearing may now be stripped down for replacement.

5. To remove a coil, press out the stator ring in the centre of the laminations, unsolder the leads from the coil tags and push the coil off the laminations, taking careful note of the disposition of the tags and leads to the remainder of the assembly.

### TO RE-ASSEMBLE.

For re-assembly reverse the procedure given above, paying particular attention to the air gap between rotor and stator.

Insert four 0.014 inch feelers in the gap at equal distances round the rotor, tighten the screws securing the bearing brackets and then withdraw the feelers. If the bearings feel tight on the rotor spindle, tap lightly the flat surface at each end of the bearing bracket and the bearings should free themselves.

## PICK-UP

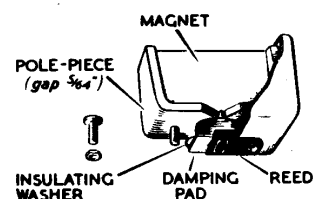
### NORMAL MAINTENANCE ADJUSTMENTS.

To carry out normal maintenance adjustments, it is not necessary to remove the pick-up from the mechanism plate, although it may be found more convenient to do so.

1. Take out needle. Unscrew the two nuts securing the reed plate. The reed plate may now be removed, and the coil may be lifted clear of the pole pieces. Note carefully the arrangement of the paper washer(s).
2. Insert a small screwdriver in the aperture revealed when the reed plate is removed and push out the top. The top is stuck in position with cellulose cement.

3. Examine the armature and air gap for dust, grit and iron filings, but do not dismantle further unless absolutely necessary.

A small piece of "plasticine" will be found very effective for clearing out iron filings.



4. Ascertain whether the damping pad has perished. Make sure that the armature is attached firmly to the reed plate and is not bent or damaged in any way. If any of the above parts is faulty, reject and fit a complete new assembly.

5. Check continuity of the coil. (Resistance 1.3 ohms).

6. If it is necessary to remove the coil, the leads may be unsoldered from the tags, just behind the pick-up head. These tags are protected by an insulator, which is fixed by means of a screw.

*NOTE.—Do not remove the magnet and pole-pieces unless this is absolutely necessary.*

#### **TO REPLACE THE COIL.**

1. Insert the coil and paper washer in the hole provided; with the inner lead lying on the side of the coil nearest the pole-pieces; care should be taken to see that this lead does not lie in the air gap.

2. Cut the leads to the correct length and clean the ends. Solder to the connecting tags.

3. Replace the insulator over the tags, and fix in position.

#### **To Re-assemble the Pick-up Head.**

1. Replace the coil as above.

2. Place the paper washer(s) on the coil and replace the reed plate.

3. Place the fixing nuts on the reed plate and adjust the plate until the armature lies centrally in the air gap. Tighten the fixing nuts until the damping pad is compressed slightly.

4. Replace the top and secure with cellulose cement.

#### **To Remove the Pick-up.**

1. Unsolder the pick-up leads from the tag panel under the mechanism plate.

2. Remove the knurled pin and withdraw the pick-up.

### **HOW MECHANISM OPERATES**

#### **1. Automatic Starting of Main Cam (P1) and Motor.**

On switching "Start Reject" Control, the Switch Lever (Z12) lifts the Switch Plunger thus closing switch contacts Z18 and Z17; the motor is now switched on and the rubber motor pulley, that engages on the inside of the turntable rim, causes the turntable to rotate. At the same time as the above is taking place, the pawl on Cam Starting Lever (Z15) rotates the Main Cam (P1) mechanically, so that the rubber Friction Band (P5) on main cam engages with the knurled drive on (Y4).

The main cam now performs three operations simultaneously whilst rotating.

#### **2. Dropping a Record.**

The Cranked Lever (Z10) and Link (Y12), which couple the Stud on the underside of the

main cam to the Clamp Block (Y11), are operated by the main cam. As the main cam rotates, the Pusher Tube (Y1) is turned (anti-clockwise, looking from top), so that the projection on the top end of the tube draws one record directly over the spindle, allowing it to drop on the turntable. As the record drops on to the turntable, the remaining records on the "shelf" of the cranked spindle, push down on to the pusher tube and depress the Pusher Tube Spring (Y13) so that as the main cam completes its cycle, the Pusher Tube (Y1) is turned (clockwise, looking from top) until the projection on top of the tube locates in to centre hole of next record, then the tension on Pusher Tube Spring (Y13) is released. The pusher tube is now back to its original position, that is, with the projection on top of tube directly under cranked spindle and facing towards record retaining arm.

### **3. Feeding Pick-Up on to Record.**

As the main cam starts to rotate, the Roller (Z9) engages with the inner cam or ramp on main cam, the Lifting Lever (Z8) then raises pick-up by means of Lift Rod (W4). The bakelite stud on the main cam pushes Feed-In Lever (Z22) to pillar on Link Lever (Z6). The pick-up arm is now drawn towards the record, by Link Lever (Z6) connected to the Free Clutch (W10) via Concentric Trip Lever (Z21) and as the main cam almost completes its cycle, the stud disengages from Feed-In Lever (Z22). The Roller (Z9) then follows down inner cam or ramp on main cam and the Lifting Lever (Z8) lowers pick-up by means of lift rod on to the record.

### **4. Teazing Pick-Up into Music Grooves.**

As the pick-up is lowered on to the record, the Teaze-In Lever (P2) bears on Feed-In Lever (Z22) the tension on the Teaze-In Spring (P3) is sufficient to draw the needle into the first groove but not beyond. The main cam has now completed its cycle and stops with the neutral position of cam disengaged from knurled pulley on Y4.

NOTE :- The above three operations are performed with one complete revolution of the main cam.

### **5. Automatic Tripping of Records.**

After the needle has been teazed into record groove, the pick-up travels across the record at its normal rate. The Concentric Trip Lever (Z21) which is connected to the clutch assembly is moved towards the main cam; also connected to the clutch assembly via a link is Eccentric Trip Lever (Z11), one end of Z11 being pivoted about the Main Cam Spindle (P6).

If the record is a short playing record with a large diameter eccentric finishing groove, the pawl on (Z11) engages with moulded teeth on main cam causing the main cam to be pushed in an anti-clockwise direction (looking from top).

The main cam is moved sufficiently from its neutral position so that the knurled pulley on Y4 engages with the rubber Friction Band (P5) causing the mechanism to operate, and the pick-up is lifted from the record.

If the record being played is a long playing record with a small quick run-in (concentric) finishing groove, the Concentric Trip Lever (Z21) engages on a flat on the underside of the main cam pushing it sufficiently so that the knurled drive on Y4 engages with the rubber friction band thus causing the mechanism to operate and the pick-up is lifted from the record.

*Note.- The pawl on the Eccentric Trip Lever (Z11) operates on records with a large diameter eccentric finishing groove. Concentric Trip Lever (Z21) operates on records with a small diameter, quick run-in (concentric) finishing groove.*

### **6. Returning Pick-Up over its Rest.**

As the main cam starts to rotate, the pick-up arm is lifted from record, by the Lifting Lever (Z8). The stud on the underside of the main cam then pushes on the scythe shaped end of Return Lever (Z7) until pick-up arm is directly over the pick-up rest. The main cam continues to rotate, until the bakelite stud again contacts Feed-In Lever (Z22).

This is the complete cycle for playing one record, and operations as described in sections 2, 3, 4, 5 and 6 are repeated until the last record is reached.

### **7. Switching off after Last Record has been Played.**

After the last record has been played, the main cam continues to rotate and the stud on the main cam pushes Last Record Lever (Z19) which releases Last Record Rod, (X11); the weight of the Record Retaining Arm (X1) on top of the Last Record Rod (X11) causes it to push down on the platform at rear end of Feed-In Lever (Z22). The front end of the feed-in lever is now raised sufficiently, so that, as the main cam continues to rotate, the Feed-In

Lever (Z22) cannot engage with the stud on the cam or the Teaze-In Lever (P2).

The Roller (Z9) engages with the inner cam or ramp of main cam thus operating Lifting Lever (Z8) so that pick-up arm is lowered on to the switch plunger. The switch contacts (Z18) and (Z17) are then opened and the motor is switched off.

## 8. Operation of Pick-Up Arm Safety Clutch.

If the pick-up arm is inadvertently forced inwards towards the centre spindle, or outwards past the switch plunger, the safety clutch comes into operation to prevent damage to the mechanism. The two sections of the Clutch (W9 and W10) are retained under tension by Spring (W11) and Collar (W12).

## SERVICING

In the event of faulty behaviour, the mechanism should be watched carefully to ascertain at what point the trouble occurs.

If the mechanism is to be operated from its cabinet, it is recommended that the mechanism should be supported on workshop mechanism stand or support pillars (See dealer's equipment).

**WARNING.** Do not use force when making adjustments, and do not attempt to retard or hurry the pick-up arm during the record changing cycle - serious damage may result.

**The Company cannot hold themselves responsible for any damage caused by faulty or unauthorised adjustments.**

## ADJUSTMENTS

Two test records TB11 and TC14 are available to facilitate the adjustment of this mechanism.

### To Adjust so that Pick-up lands in Correct Position on 10-inch and 12-inch Records.

With either TB11 or TC14 test record on the turntable, the needle must descend on the appropriate modulated groove for 10-inch or 12-inch records. Should the pick-up lower at the wrong point in either case, disconnect the supply and adjust as follows:-

(a) 10-INCH RECORD - With the 10-inch test record on the turntable, raise the record retaining arm and lower the 10-inch record support plate.

Turn Start/Reject control and rotate turntable by hand until the pick-up is within about  $\frac{1}{4}$ -inch of the surface of the record. Note position at which needle will land on record.

(b) 12-INCH RECORD - Repeat the above instructions, but with 12-inch record, and with the 10-inch record support plate fully raised as well as the record retaining arm. Note position at which needle will land on record.

If needle drop is too far in on both 10-inch and 12-inch records, slacken the right hand screw (W8) (looking from top of mechanism plate), and adjust the left hand screw (W8) until the needle adopts the desired position.

Switch on the supply and check the adjustment before and after re-tightening the screw. If the needle drop is out, or landing off the records, reverse the adjustments, i.e. slacken left hand screw (W8) and adjust right hand screw.

**To Adjust Needle Drop if Correct in the 10-inch Position but Dropping too far in on 12-inch records.**

1. Check that the 10-inch record support plate is fully raised.
2. Push Rod (X5) out of adjustment. Slacken lock nut then turn push rod in anti-clockwise direction until needle adopts desired position (carry out this adjustment from top of push rod, directly under the record retaining arm). Re-check needle drop on 12-inch record, then re-tighten lock nut.
3. Spring (Z2) weak or disconnected, adjust or replace.

**To Adjust Pusher Tube so that Mechanism Drops Records Correctly.**

- (a) Slacken screw in Clamp Block (Y11).
- (b) With cranked spindle in position, rotate the Pusher Tube (Y1) in a clockwise direction, until the leading edge of its shaped end projects 1/64" beyond the edge of the centre portion of the cranked spindle.
- (c) Raise Y1 until the upper edge of the tube is slightly above the "shelf" in the cranked

spindle. A gap of approximately  $\frac{1}{32}$  inch between the lower edge of the tube Y1 and the top of the sleeve Y2 should result.

*Note: The projection on top of the Pusher Tube (Y1) and the top of the cranked spindle should be facing towards the record retaining arm.*

- (d) Re-tighten screw in Y11.

**To Adjust Record Support Plates.**

1. Remove cranked spindle and lower 10-inch record support plate.
2. Hold a 10-inch record horizontally so that the Pusher Tube (Y1) just passes through the centre hole.
3. Slacken Pedestal Fixing Bolts (X10) and adjust pedestal until a clearance of  $\frac{1}{32}$ " is obtained between 10-inch Record Support Plate (X6) and the edge of the record.
4. Raise fully the 10-inch record support plate.
5. Using a 12-inch record, adjust clearance for best compromise with 10-inch support plate.
6. Re-tighten fixing bolts.

**TIMING OF AUTO MECHANISM**

The main sequence of operations is governed by a precision Main Cam (P1); this eliminates the necessity for critical timing adjustments as

the operating stops and pins are accurately located in the cam moulding.

**NOTES ON RE-ASSEMBLY**

**Main Cam (P1) or Pusher Tube (Y1).**

If the main cam or pusher tube has been replaced, the procedure below should be followed :-

1. Place pick-up arm on its rest.
2. Main cam to be positioned with the

neutral position to knurled drive on Y4.

3. Fit one end of Cranked Lever (Z10) to stud on underside of main cam, the link Y12 to be correctly located in Clamp Block (Y11).
4. Adjust Pusher Tube (Y1) (see above).



### Pick-Up Arm Safety Clutch.

1. See that the main cam is in the neutral position.
2. With the pick-up arm on the switch plunger the Concentric Trip Lever (Z21) should be almost parallel with the side of the mechanism plate.
3. Position the Clutch Clamp (W7) so that the Adjusting Screws (W8) are facing towards the rear corner of the mechanism plate, and the Fixed Clutch (W9) is correctly located in the Free Clutch (W10). The lug on Fixed Clutch (W9) should be centrally positioned between Adjusting Screws (W8) of the clutch clamp.
4. Tighten the nut and bolt on the Clutch Clamp (W7). When tightening clutch clamp ensure that there is a slight up and down movement between the P.U. Pivot (W2) and Pivot Bearing (W5).
5. Assemble Spring (W11), Collar (W12) and P.U. Lifting Lever (Z8).

6. Check pick-up drop on 10-inch and 12-inch records; if the pick-up drop is a long way out proceed as follows:-

**PICK-UP DROPPING OFF RECORD** - turn fixed clutch and associated parts slightly in an anti-clockwise direction (looking from front).

**PICK-UP DROPPING TOO FAR IN ON RECORD** - turn fixed clutch slightly in a clockwise direction (looking from front). If the pick-up drop is only slightly out, adjust screw W8 as given on page 6.

**Note: Ensure that the Pivot Assembly (W2) is not binding against Pivot Bearing (W5).**

### Clamp block (Y11).

If clamp block has been removed at anytime, see that position is correct before refitting. Looking from front of mechanism plate, that is, with Start Reject Switch knob on the R.H. Side. The clamp block fixing screw head, should be towards front of mechanism. (If clamp is reversed, difficulty will be experienced in tightening the screw).

## SERVICE EQUIPMENT

Test Records TB11, TC14 and a special Adaptor Q/D 3031 which can be used for securing the mechanism to the Auto Mechanism Stand Q/D 303 are available from

*E.M.I. Sales and Service Ltd., Dealers' Service Development Division, 100 Blyth Road, Hayes, Middlesex.*

## FAULT CORRECTION

Symptom.	Cause.	Cure.
Record not dropping.	(1) Pusher Tube (Y1) out of alignment. (2) Clamp (Y11) loose. (3) Record Support Plates out of adjustment.	See under <b>ADJUSTMENTS</b>

Symptom.	Cause.	Cure.
<p>Pick-up drop out of adjustment.</p> <p>12-inch position only.</p>	<p>(1) Adjusting screws W8 loose.</p> <p>(2) 10-inch support plate not fully raised.</p> <p>(3) Push Rod (X5) out of adjustment.</p> <p>(4) Spring (Z2) weak or disconnected.</p>	<p>See under</p> <p><b>ADJUSTMENTS</b></p>
<p>Cannot turn Start/Reject control after playing one record.</p>	<p>(1) Main cam has not completed cycle.</p>	<p>Raise pick-up arm from rest then lower again.</p>
<p>Motor will not run.</p>	<p>(1) Switched contacts not making (Z18 and Z17).</p> <p>(2) Switch Plunger sticking.</p> <p>(3) Lead disconnected from switch to motor.</p> <p>(4) Motor coil open-circuit.</p>	<p>Adjust.</p> <p>Adjust.</p> <p>Re-connect.</p> <p>Replace coil.</p>
<p>Motor runs but mechanism will not operate.</p>	<p>(1) Motor pulley not engaging with turntable.</p> <p>(2) Rubber Friction Band (B5) damaged.</p> <p>(3) Start/Reject control damaged, locating pips sheared off and will not operate Switch Lever (Z12).</p> <p>(4) Pawl on Starting Lever (Z15) not engaging with main cam.</p>	<p>Adjust.</p> <p>Replace.</p> <p>Replace.</p> <p>Adjust.</p>
<p>Mechanism slowing down or stopping during changing cycle.</p>	<p>(1) Return Lever (Z7) bent and fouling main cam.</p> <p>(2) Last Record Lever (Z19) binding.</p> <p>(3) Spring (Z20) weak or disconnected causing (Z19) to foul stud on cam.</p>	<p>Adjust.</p> <p>Adjust.</p> <p>Adjust and inspect rubber Friction Band (S5) and if damaged replace.</p>

Symptom.	Cause.	Cure.
Wavering reproduction.	(1) Warped records. Skidding on each other.	Test with the suspected record only on the turntable.
	(2) Fixed Inner Spindle (Y14) bent and Sleeve (Y2) binding on Pusher Tube (Y1).	Replace.
	(3) Flat on motor pulley.	Replace.

**Note:** The sleeve (Y2) rotates with the turntable by means of a Special Screw (Y3), this screw is partly threaded and prevents (Y2) binding on the Pusher Tube (Y1), on no account, therefore, should any other screw be used.

Symptom.	Cause.	Cure.
Pick-up arm not lifting to clear ten records.	(1) Lift Rod (W3) bent.	Adjust or replace.
	(2) Lifting Lever (Z8) bent.	Adjust or replace.
Needle jumping record groove and repeating same section of record.	(1) Record groove damaged.	Scrap, and replace needle.
	(2) Concentric Trip Lever (Z21) bent and fouling main cam in wrong position.	Adjust.
	(3) Eccentric Trip Lever (Z11) incorrectly fitted and binding on Cam Spindle (S6).	Slacken off fixing nut of Cam Spindle (S6) re-adjust Trip Lever (Z11) and re-tighten nut.
	(4) No clearance between P.U. Pivot Assembly (W2) and Pivot Assembly (W5).	Adjust Clutch Clamp (W7) to give clearance.
Turntable still revolving after last record has been played.	(1) Lever (Z12) bent and binding and still engaged on switch plunger.	Adjust.
	(2) Spring (Z14) very weak or disconnected.	Adjust or replace.

**Note :-** Start/Reject control should always return to its original position when released.

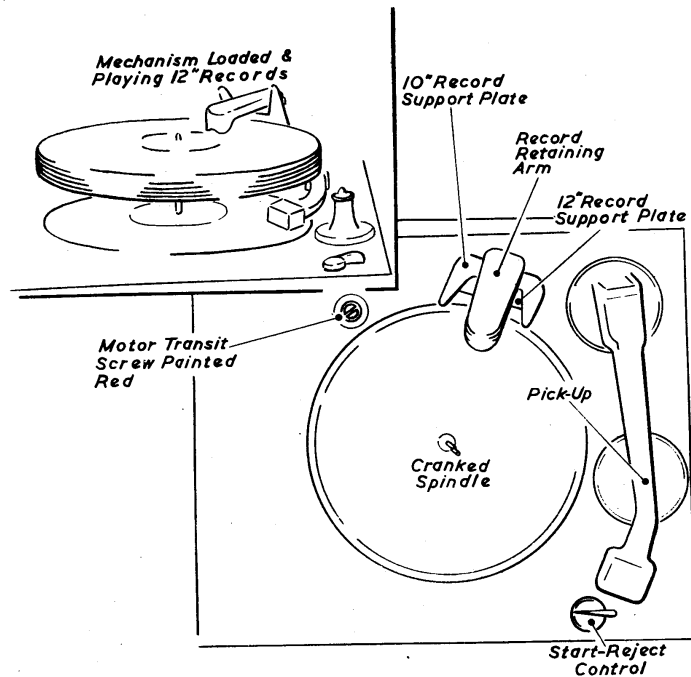


FIG. R

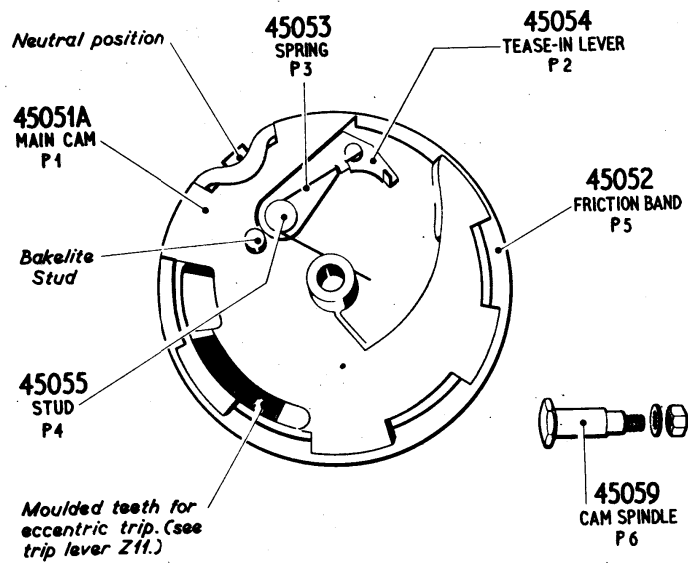


FIG. P

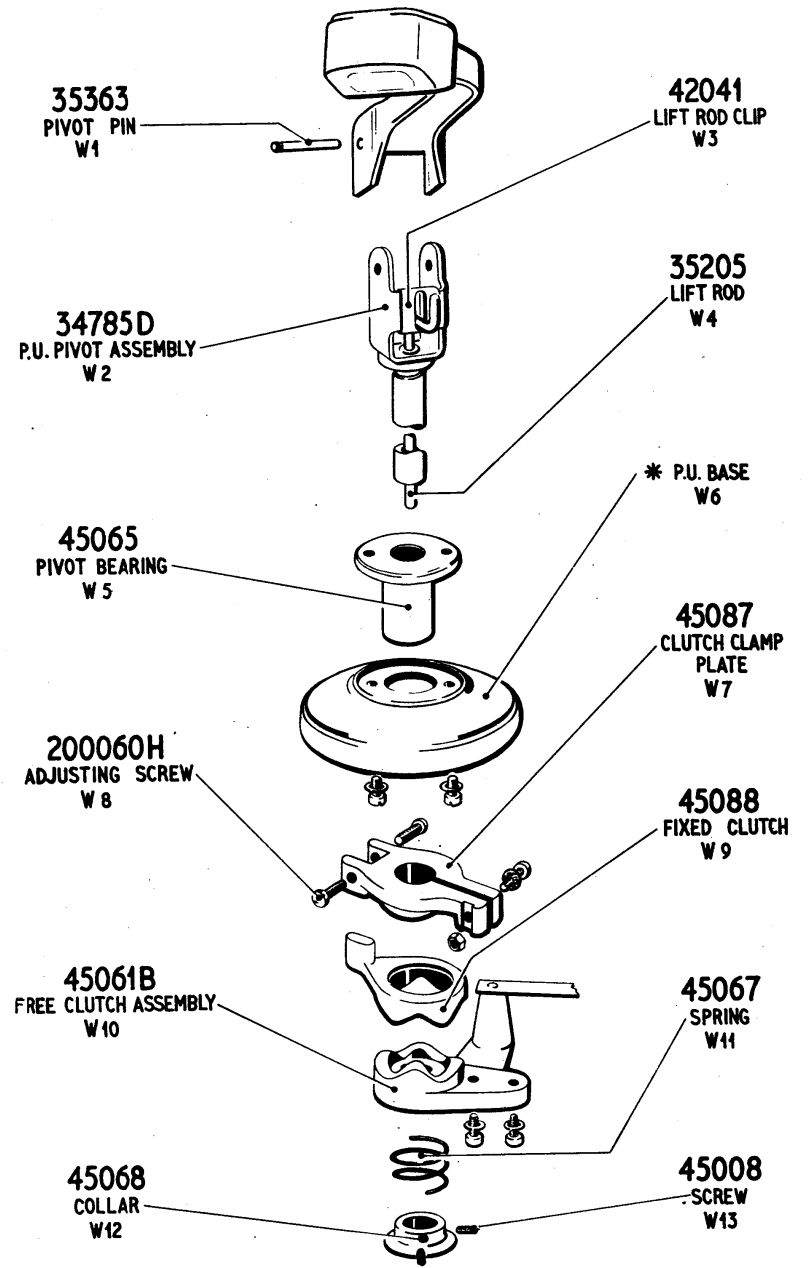


FIG. W

\* Refer to SPARE PARTS LIST when ordering.

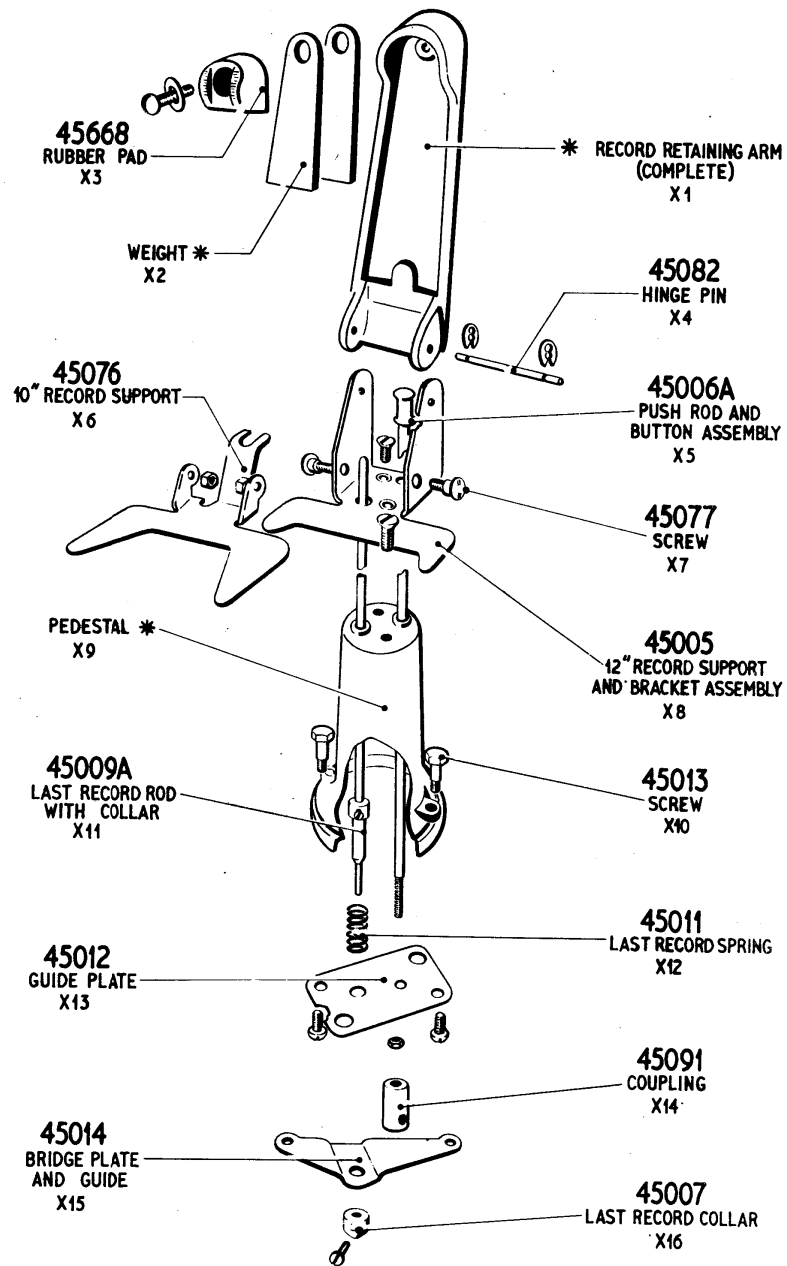


FIG. X

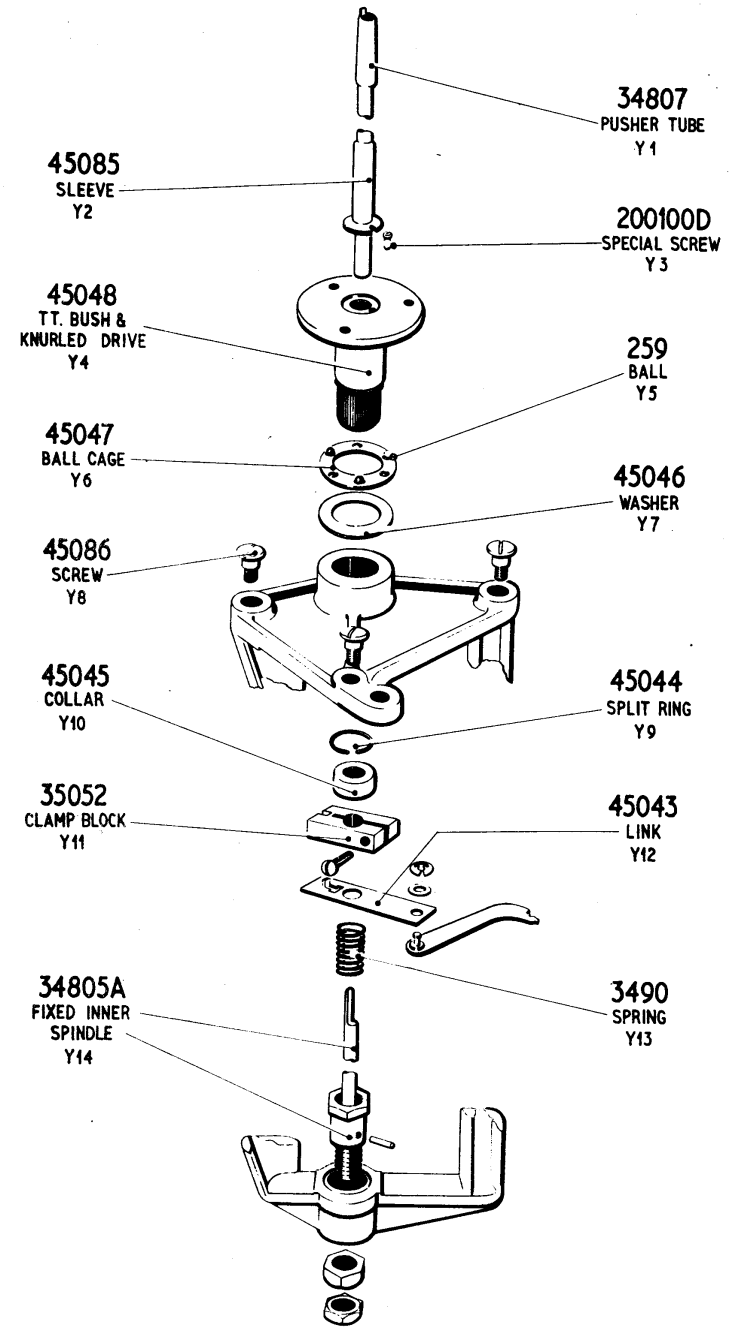


FIG. Y

\* Refer to SPARE PARTS LIST when ordering.

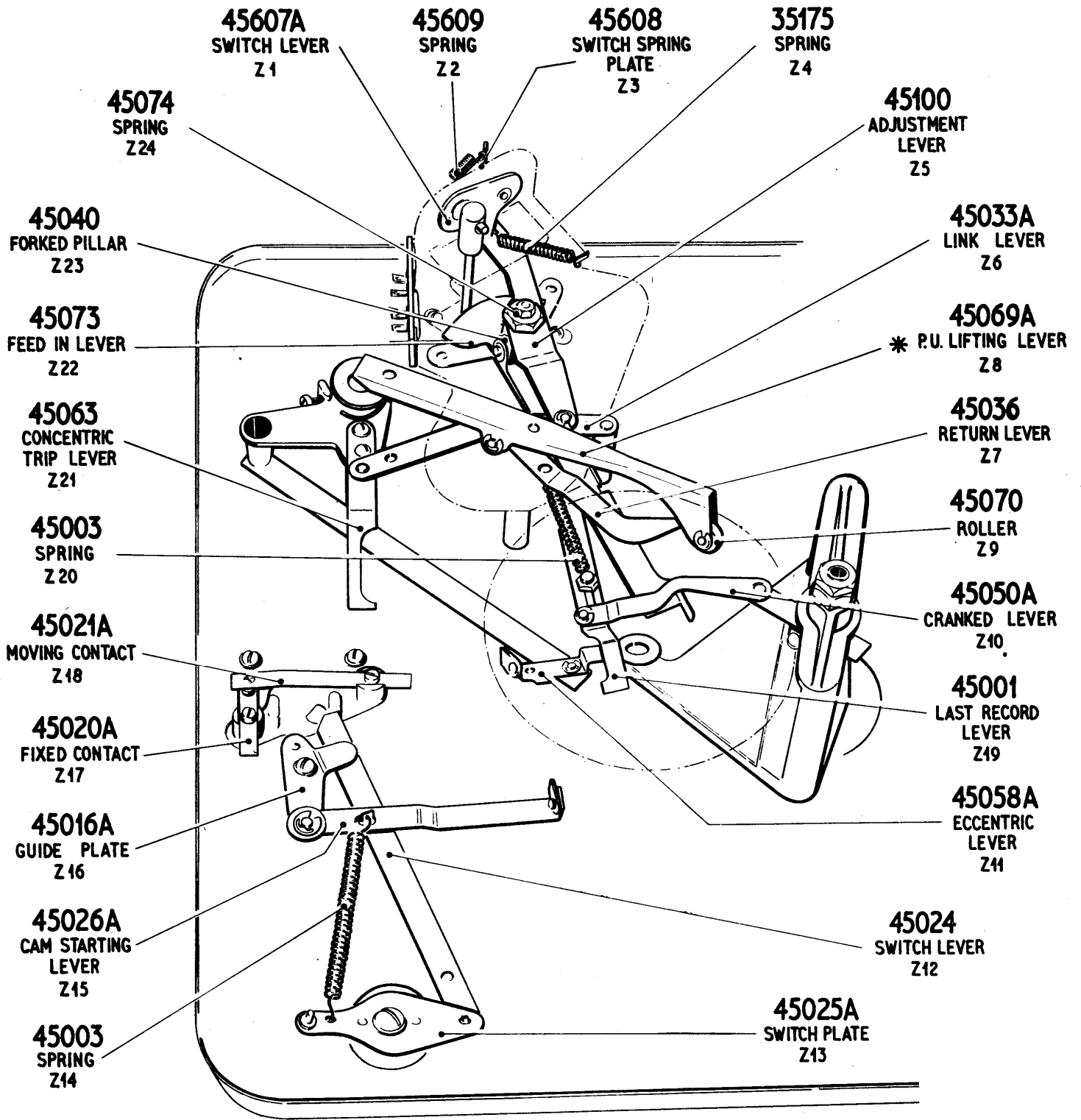


FIG.Z

\* Refer to SPARE PARTS LIST when ordering.

Symptom.	Cause.	Cure.
Motor not switching off.	(1) Switch contacts bent (Z18 and Z17).  (2) Switch plunger sticking.  (3) Pick-up arm binding on bracket and not free to drop on switch plunger.	Re-set.  Adjust.  Adjust.
Distorted tone.	Pick-up armature fouling magnet.	Replace pick-up reed plate.
Motor rumble.	(1) Motor pulley out of alignment with turntable rim and only engaging on small section of rubber pulley.  (2) Motor spindle bent or bearings out of alignment.	Re-align. (A test turntable with section cut away is necessary for this alignment).  Replace rotor and spindle or re-adjust.

**WARNING.** Do not rotate the turntable in an anti-clockwise direction when pick-up arm is off its rest, this may cause serious damage to the bakelite teeth on the main cam and also put undue strain on Return Lever (Z7) and bottom plate.

## SPARE PARTS LIST

It is **MOST ESSENTIAL** when ordering spare parts to quote the Part No. and Description, as given below. Never quote the Reference No. when ordering; it is given only for quick reference in this manual.

Ref.	Part No.	Description	No. Per		Ref.	Part No.	Description	No. Per	
			Inst.	Fin.				Inst.	Fin.
<b>PICK - UP</b>									
	35218A	Pick-Up Head and Arm Assembly with leads	1	—		36617	Condenser Bracket	2	689
	35218	Pick-Up Arm Moulding only	1			200060D	Screw } securing Condenser	4	689
	35215	Pole Piece, R.H.	1	312		200406	Nut } Bracket	4	689
	35216	Pole Piece, L.H.	1	312		32370G	Motor only	1	—
	34778	Magnet	1	—		36621A	Top Bracket and Rotor Assembly	1	—
	35361	Insulation	1	—		36637A	Bottom Bracket Assembly	1	689
	28811B	Coil	1	—		32378	Disc	1	—
	35364	Washer	1	—		32371A	Bush	1	—
	28808	Damper (Vinylite)	1	—		32372	Oil Washer	1	—
	35217B	Reed Plate Assembly	1	—		40463	Cover	1	689
	41109	Screw } securing Pole Piece	2	689		200080D	Screw } securing Cover to	2	689
	123994	Washer } Coil and Reed Plate	2	—		200408	Nut } Bottom Bracket	2	689
	35356	Nut } Assembly	2	256		32780H	Lamination and Coil Assembly	1	—
	35219	Cover Moulding (plain)	1			35384C	Coil	4	—
	35358	Lead Clamp	1	—		35301	Ring	1	689
	200060F	Screw } securing Clamp to	1	312		41654	Rubber Tube	4	—
	201306	Washer } Moulding	1	312		32382	Insulation (between Lamination and Bracket Assemblies)	1	—
	35214B	Lead and Contact Pin Assembly	2	—		3520	Ball, for Bottom Bearing securing Top and	1	—
	4102 x	Lead only	25"	—		200045Q	Screw } Bottom Brackets to	2	689
	1301		each			200404	Nut } Lamination Assembly	2	689
	41991	Pin Cover	1	—		200048G	Screw } securing Motor	2	822
	200060D	Screw } securing Cover	1	689		201804	S.P. Washer } Unit to Mechanism	2	—
	201306	Washer } securing Cover	1	689		35179	Nut Plate } Plate	2	689
<b>No. 2 RIM DRIVE MOTOR</b>									
	32370J	Motor and Condenser Plate Assembly Complete	1	—	<b>AUTOMATIC RECORD CHANGER</b>				
	35181A	Condenser Plate and Bracket Assembly	1	689		45051B	Main Cam Assembly complete	1	—
	41661	Pivot Screw } securing Motor	2	689			This assembly includes P1 to P6.		
	41662	Felt Washer } Bracket	2	—	P1	45051A	Main Cam (Moulding only)	1	—
	35185	Transit Screw Pillar	1	689	P2	45054	Teaze-in Lever	1	689
	201806	Spring } securing Transit Washer } Screw Pillar	1	689	P3	45053	Spring for Teaze-in Lever	1	—
	200506	Locknut } securing Transit Washer } Screw Pillar	1	689	P4	45055	Stud for Teaze-in Lever	1	—
	200060H	Transit Screw	1	689/843 Loc.	P4	2856	Circlip } securing Stud	1	03
	201306	Washer for Transit Screw	1	689		201302	Washer } securing Stud	1	689
	36630B	Condenser and Tag Assembly	1	514 & 544		45052	Friction Band	1	—
					P5	45059	Spindle for main cam	1	689
					P6	45060	Shim washer	2	—
						200502	Nut } securing spindle etc.	1	689
						201802	S.P. washer } spindle etc.	1	—
						35218A	Pick-up Head and Arm Assy. with leads	1	—



Ref.	Part No.	Description	No. Per		Ref.	Part No.	Description	No. Per	
			Inst.	Fin.				Inst.	Fin.
W1	35363	Pivot Pin	1	—	X9	45004	Pedestal moulding only	1	—
W2	34785D	P.U. Pivot Assembly	1	03	X10	45013	Screw securing pedestal	2	06
W3	42041	Lift Rod Clip	1	04	X11	45009A	Last record rod Assembly with collar and screw	1	—
W4	35205	Lift Rod	1	03		200060F	Screws securing collar	1	689
W5	45065	Pivot Bearing	1	06	X12	45011	Spring for L.R. rod	1	—
	200060G	Screw } securing bearing to	2	689	X13	45012	Guide Plate	1	689
	201306	Washer } P.U. base	2	689		200048D	Screw securing guide plate to Pedestal	2	689
W6	34771	P.U. Base Moulding	1	—	X14	45091	Coupling (push rod to switch)	1	689
	200048F	Screw } securing base to	3	689		200506	Nut for adjusting coupling	1	689
	201804	S.P. Washer } Mech. Plate	3	—	X15	45014	Bridge plate and guide for last record rod	1	689
W7	45087	Clutch Clamp Plate	1	—	X16	45007	Collar for adjusting L.R. rod	1	689
W8	200060H	Adjusting Screw	2	689		200060D	Screw for adjusting collar	1	689
	200060K	Screw } securing	1	—		45042C	Main Spindle assembly casting and Cam assembly		
	201806	S.P. Washer } clamp	1	—			This assembly includes :		
	200406	Nut } plate	1	689			Y1 to Y7, Y9, Y10, Y11, Y14, Z10, Z11 and P1 to P6.		
W9	45088	Fixed Clutch	1	—		45042B	Main Spindle casting only	1	—
W10	45061B	Free Clutch Assembly	1	—	Y1	34807	Pusher Tube	1	06
		This assembly includes Z21	1	—	Y2	45085	Sleeve	1	06
W11	45067	Spring	1	—	Y3	200100D	Special screw, securing sleeve	1	689
W12	45068	Collar	1	689	Y4	45048	T.T. Bush and Knurled Drive	1	307
W13	45008	Screw securing collar	2	689	Y5	249	Ball Bearing	6	—
	45004A	Pedestal Assembly complete (less Record Retaining Arm). This assembly includes X8, X9, X11, X12, X13 and X16.	1	—	Y6	45047	Ball Cage	1	03
X1	45080A	Record Retaining Arm Complete	1	—	Y7	45046	Washer	1	259
		This assembly includes X2, X3.			Y8	45086	Screw - securing main spindle casting to base plate	3	689
	45080	Retaining Arm (moulding only)	1	—	Y9	45044	Split Ring	1	—
X2	45669A	Weight	2	821	Y10	45045	Collar	1	689
X3	45668	Rubber Pad	1	—	Y11	35052	Clamp Block	1	689
	200048M	Screw } securing	1	689		200048H	Screw securing Clamp	1	689
		weight and			Y12	45043	Link - Pusher Tube to cranked spindle	1	689
	201304	S.P. Washer } Pad	1	—	Y13	3490	Spring	1	—
X4	45082	Hinge Pin	1	689	Y14	34805A	Fixed inner spindle	1	—
	2856	Spring Washer securing pin	2	03		200521	Nut } securing fixed	1	689
X5	45006A	Push rod and button assembly	1	689		200421	Locknut } inner spindle	1	689
X6	45076	10" Record Support	1	06		45000E	Baseplate Assembly	1	893
X7	45077	Hinge Screws for 10" Record Support	2	06		45030B	Plate, lever and 10" - 12" record adjustment unit complete		
	200404	Nut securing Hinge Screw	2	689			This assembly includes Z1 to Z7 and Z23	1	—
X8	45005	12" Record Support on bkt. assembly	1	06		200048F	Screw } securing plate assembly to	3	822
	200042F	Screw securing bkt. assembly to Pedestal	2	689		201804	S.P. Washer } baseplate	3	—
	45015	Pedestal switch base moulding	1	—		45030A	Plate and Pillar and Tag Panel Assembly	1	—
	45018	Pedestal switch plunger	1	—					
	45019	Pedestal switch plunger cap	1	—					
	200048F	Screw } securing base	1	689					
	200048G	Screw } moulding etc.	2	689					
	201804	S.P. Washer } to baseplate.	3	689					

Ref.	Part No.	Description	No. Per		Ref.	Part No.	Description	No. Per	
			Inst.	Fin.				Inst.	Fin.
	45032A	Tag Panel only	1	—	Z16	45016A	Guide Plate	1	689
	59007AC	Rivet securing tag panel	2	—		200048G	Screw } securing guide	1	—
Z1	45607A	Switch lever and stud	1	689		201804	S.P. Washer } plate & moulding	1	—
	2856	Circlip securing lever	1	03	Z17	45020A	Fixed contact	1	—
Z2	45609	Spring	1	—		200068F	Screw	1	689
Z3	45608	Switch spring plate	1	689		201806	S. P. Washer	1	—
	201302	Washer for spring plate	1	689	Z18	45021A	Moving contact	1	—
Z4	35175	Spring	1	—		200068F	Screw } securing contact	1	689
Z5	45100	Adjustment lever and fork	1	689		201806	S.P. Washer } to base moulding	1	—
	2856	Circlip securing lever	1	03	Z19	45001	Last Record Lever	1	689
Z6	45033A	Link lever and Pillar Assembly	1	689		45002	Special Screw (Guide for L.R. lever and spring anchor).	1	689
	2856	Circlip securing lever	1	03		200404	Nut securing	1	689
Z7	45036	P. U. Arm return lever	1	689		201804	S. P. Washer special screw	1	—
	45038	Screw } securing	1	689	Z20	45003	Spring for L. R. lever	1	—
	45037	Washer } P. U. lever to	1	689	Z21	45063	Record Trip Lever	1	689
	201804	S. P. Washer } plate assembly	1	—			(concentric) only		
	200404	Nut	1	689		200068F	Screw } securing lever	2	689
Z8	45069A	P.U. Arm Lifting lever and roller assembly	1	—		201806	S.P. Washer } to casting	2	—
		This assembly includes Z9	1	—	Z22	45073	Feed-in lever	1	689
Z9	45070	Roller	1	—	Z23	45040	Forked Pillar	1	689
	45071	Pivot for roller	1	689		201804	S. P. Washer } securing	1	—
	2846	Circlip securing pivot	1	03		200404	Nut } forked pillar	1	689
	45072	Pivot for P.U. Arm lifting lever	1	689		45039	Bush for forked pillar	1	—
	2856	Circlip securing pivot	2	03		33481	Nut securing bush	1	689
Z10	45050A	Crank Lever	1	689	Z24	45074	Spring for feed-in lever	1	—
	2856	Circlip } securing lever	1	03		45072	Pivot for feed-in lever	1	689
	201304	Washer } to link	1	689		2856	Circlip securing lever	2	03
	2856	Circlip securing lever to cam pin	1	03		45000E	Baseplate Assembly	1	822
Z11	45058A	Trip lever and pawl (eccentric)	1	—		35190AB	Turntable complete	1	821
	45022	Knob "START/REJECT"	1	—		35191	Felt top	1	—
	45023	Felt washers for knob	1	—		36633	Felt bottom	1	—
Z12	45024	Lever operating switch plunger	1	689		41995	Shim washer	as req'd.	—
Z13	45025A	Switch plate	1	689		34804	Cranked spindle	1	06
	200028F	Screw } securing switch	1	689		32487	Grommet for P.U. Lead	1	—
	201802	S.P. Washer } plate to knob	1	—		45083A	Switch lead	1	—
Z14	45003	Spring	1	—		4681	Cleat securing lead	2	689
Z15	45026A	Cam starting lever and pawl	1	—		45032A	Mains Panel	1	—
	45029	Washer securing lever	1	689		45075	Spacer for mains panel	2	689
	2856	Circlip to guide plate	1	03		200068M	Screw } securing mains	2	689
	21233D	Pin for retaining lever	1	—		201306	Washer } panel to motor	4	689
						200406	Nut } unit	2	689

**When ordering spare parts it is most essential that the following particulars are quoted.**

1. Model number and serial number.
2. Spare part number and description as given above.  
*(Do not quote reference number)*
3. Quantity required.

Unless full particulars are quoted, delay in execution of orders must inevitably result.

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