

G

Garrard MODEL 3000

4 SPEED RECORD CHANGER AND PLAYER

This unit has been engineered as a precision instrument and incorporates an ultra light weight Pickup Arm of exciting modern design and performance to which only high compliance cartridges should be fitted.

FEATURES

- ★ Plays automatically up to 8 records of 7", 10" or 12" diameter at the same speed and stylus setting.
- ★ Selects correct record size with records mixed in any order.
- ★ May be stopped and restarted without rejecting the record being played.
- ★ Fitted with brush for cleaning stylus manually.
- ★ Plays with ultra light stylus pressure.
- ★ May be used manually as a single record player.
- ★ Plays large centre hole 7"-45 r.p.m. records using spindle type L.R.S.10 (optional extra).

TO OPERATE

1. Set stylus to suit records and free pickup arm on rest.
 2. Set speed control to correct speed.
 3. Place records horizontally on record spindle step and swing overarm fully inwards.
 4. Switch on by moving control to 'Auto'.
- After playing all records, pickup arm will return to rest and unit will switch off.

To unload:

1. Lift overarm and swing to right.
2. Lift records clear of spindle, even if replaying same records.

Manual operation:

1. Place record on turntable by threading over record spindle. Swing overarm fully inwards.
 2. Switch on by moving control to 'Manual'.
- After playing record, pickup arm will return to rest and unit will switch off.
- The record spindle may be replaced by the short manual spindle for manual operation.

INSTALLATION

When your equipment is installed, check that the 2 transit screws are screwed down clockwise allowing the changer to float freely on its suspension springs. For transporting, screw the transit screws counter-clockwise to lock the unit plate against the motor board.

See reverse for Maintenance,
Service and Accessories.

Reject:

A record being played may be rejected by moving control to 'Auto'.

Stop:

Move control to 'Off' and motor will stop with pickup remaining on record. Restart by moving control to 'Manual' and same record will continue playing.

Note:

To prevent stylus damage avoid switching to 'Auto' until records are loaded on record spindle.

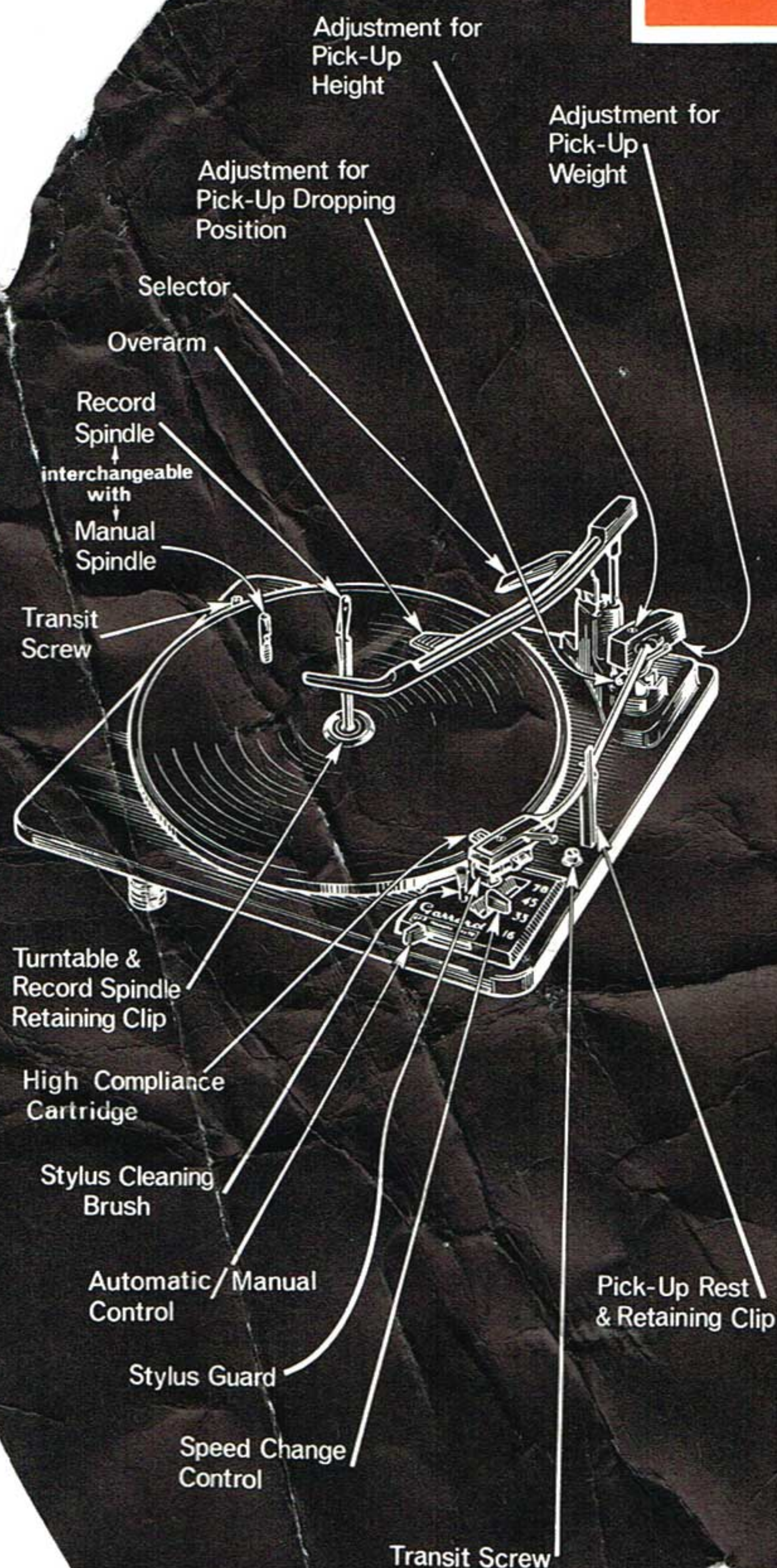
To obtain best results, store and clean records as recommended by the record manufacturers.

Do not leave records on unit when not in use.

If you require advice not covered by this leaflet, please write to our Technical Service Department; for spare parts and service returns write to our Service and Spares Department.

Address: 50-54 Radnor Street,
Swindon, Wilts. (Swindon 22606).

Factory Address: Newcastle
Street, Swindon, Wilts.
(Swindon 5381).



THIS IS YOUR SERVICE
SHEET AND SHOULD
BE CAREFULLY RETAINED



Garrard

MODEL 3000

MAINTENANCE

The motor, turntable spindle and rubber intermediate wheel bearings are of the oil retaining type and rarely need lubricating. When the need for oil is apparent, remove the turntable and lubricate these bearings with a fine grade oil. Remove any excess oil, particularly from the motor pulley, rubber intermediate wheel and inside turntable rim by wiping these driving surfaces with a clean cloth. Oil pivot points if stiffness becomes noticeable.

To remove turntable:

Pull out the record spindle then prise out the turntable name plate, slide off the retaining clip, noting its position for reassembly, and lift the turntable with equal pressure on diametrically opposed sides.

The Overarm:

When swung fully inwards the overarm must drop freely in its location. If stiff, remove circlip on overarm spindle (beneath unit), withdraw overarm and clean and oil its spindle.

SERVICE ADJUSTMENTS

See that the unit is mounted horizontally in its cabinet by checking with a spirit level on the turntable.

Speed:

Speed variation may be caused by warped records slipping. If this is so, play singly or put adhesive tape on record labels

to improve drive. Oil on unit driving surfaces may cause speed variation (see Maintenance).

Should the turntable run fast or slow consistently, check that the motor and motor pulley match the power supply. The motor end cover is stamped with its power supply details and the motor pulley, if the removable type, is colour finished, nickel for 50 cycles and brass for 60 cycles power supply.

Check that the rubber intermediate wheel runs in the centre of the appropriate step on the motor pulley and is not rubbing the side of the adjacent step. If necessary adjust the intermediate wheel height setting blade.

This blue spring steel blade is found beneath the unit plate and adjusts the position of the spindle on which the rubber intermediate wheel is mounted.

Pickup dropping position:

This position may be adjusted if necessary by turning the horizontal tapered head screw beneath the pickup arm. Clockwise rotation moves arm in and counter-clockwise rotation moves arm out.

Pickup Height:

The degree of lift is adjusted by the vertical screw set in the rear top surface of the pickup arm. Turn clockwise to decrease and counter-clockwise to increase height. The stylus point should be set $\frac{3}{4}$ "

above one record on the turntable mat as the arm returns to its rest. Switch to 'Off' at the appropriate point in the changer cycle to adjust pickup dropping position and height.

Pickup Pivots:

Pivots for horizontal pickup arm movement are greased and vertical movement pivots operate dry. These pivots should require no attention.

Stylus Pressure:

This is preset to the pressure recommended by the pickup cartridge manufacturer. Check occasionally, preferably with a Garrard Stylus Pressure Gauge. To adjust the stylus pressure, turn the knurled nut on the underside of the pickup arm clockwise to decrease and anti-clockwise to increase stylus pressure (pickup weight).

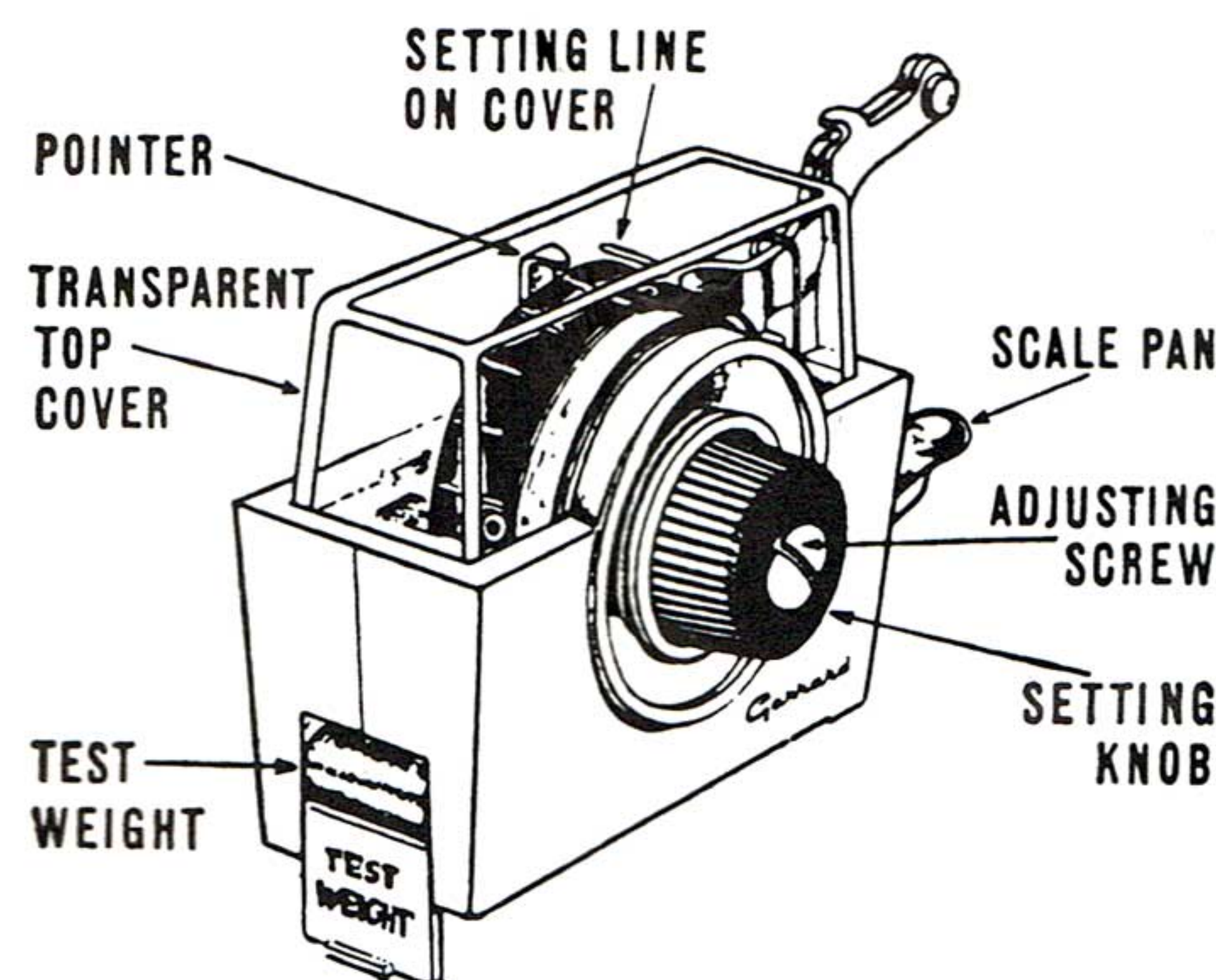
Pickup:

When in 'Off' position, occasionally swing pickup arm over brush, so that the stylus point is cleaned of dust build up. Replace stylus when worn. Some units are fitted with a flexible pickup lift restrictor which must be turned aside to raise the pickup arm when examining the stylus.

GARRARD STYLUS PRESSURE GAUGE MODEL SPG3

AN INDISPENSABLE ACCESSORY FOR THE ENTHUSIAST

- Easily readable scale, visible through a clear plastic window, reading 0-12 grammes, with $\frac{1}{2}$ gramme indications
- Accurate through the entire scale, 0-12 grammes
- Plastic Scale Pan—no damage to delicate stylus
- Will accommodate all current Pickup Arms and Heads
- Supplied complete with a 5 gramme checking weight.



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LARGE RECORD SPINDLE LRS 10

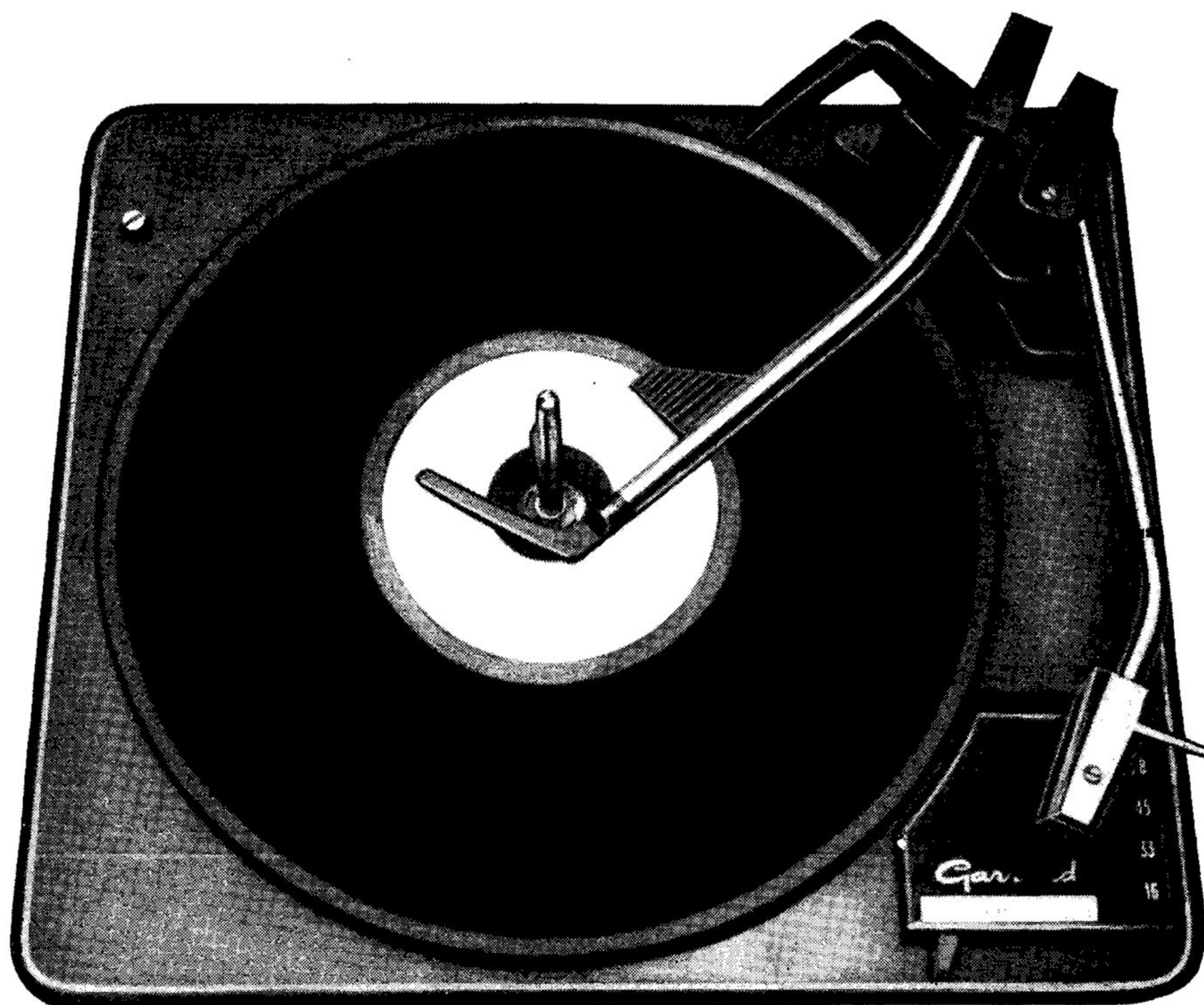
For use when playing records with large centre hole



Short spindle for manual operation

Garrard

MODEL 3000



SERVICE NOTES AND SPARE PARTS LIST

GARRARD ENGINEERING LIMITED
NEWCASTLE STREET - SWINDON - WILTSHIRE - ENGLAND
Telephone: Swindon 5381

SERVICE NOTES

The Garrard Model 3000 has the same operational features and uses the same mechanism as the Garrard Models 50 and 1000 and appropriate servicing details in the Model 50 service manual apply to Model 3000. The Model 3000, however, has a low mass pickup arm whose adjusting points are different from those of the Model 50. A brush unit is also fitted for manually cleaning dust from the stylus by swinging the pickup arm through the brush occasionally.

The Model 3000 is designed for use with high compliance cartridges and only cartridges of this type must be used.

PICKUP ARM ADJUSTMENTS

Pickup Dropping Position

Adjust if necessary by turning screw (24) beneath the pickup arm clockwise to move arm in and counterclockwise to move arm out.

Pickup Height

The degree of lift is adjusted by the vertical screw (6) set in the rear top surface of the pickup arm. Turn clockwise to decrease and counterclockwise to increase height. The stylus point should be set $\frac{3}{4}$ " above one record on the turntable mat as the arm returns to its rest.

Switch to 'Off' at the appropriate point in the changer cycle to adjust pickup dropping position and height.

Pickup Pivots

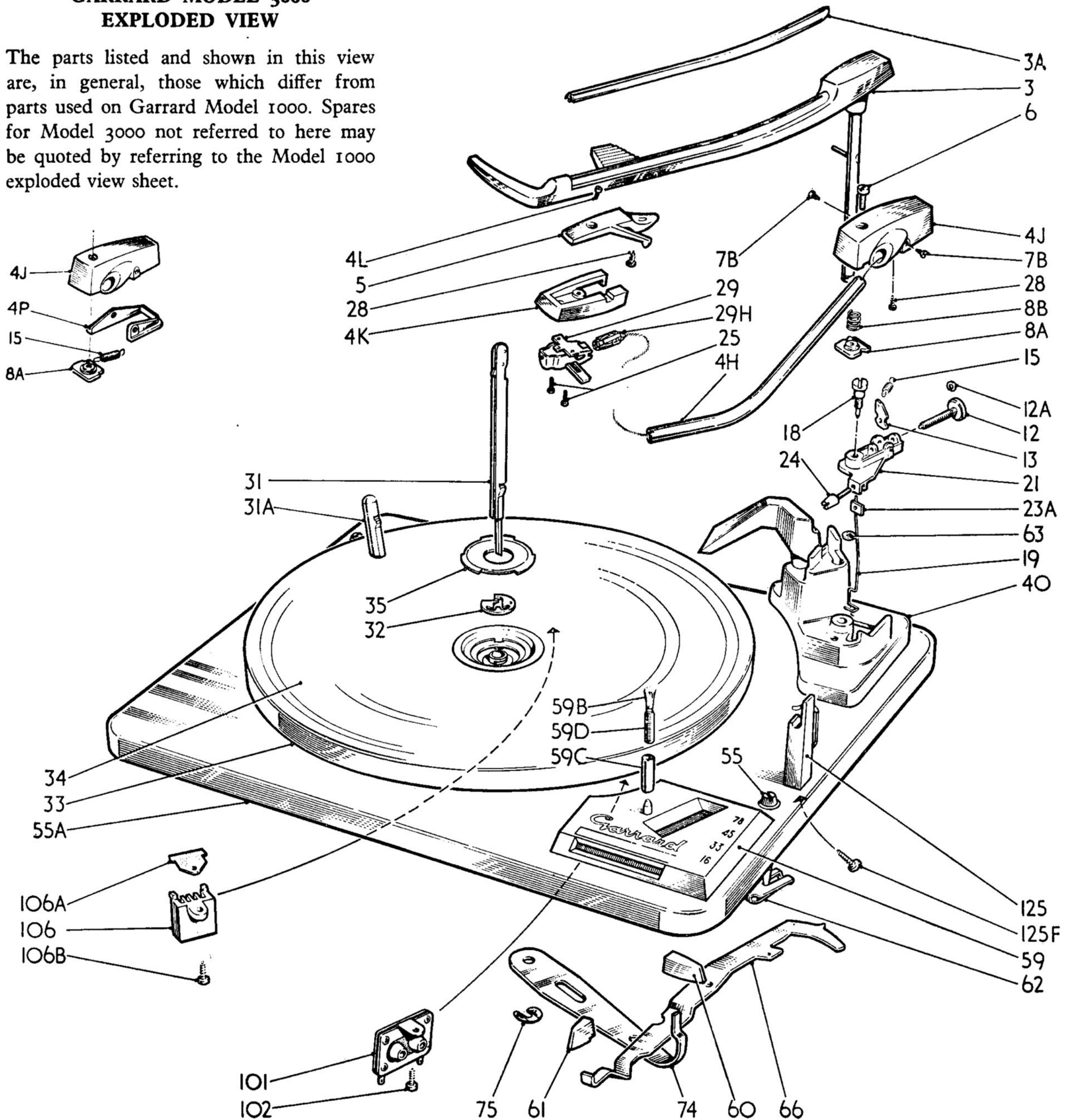
Pivots (18) for horizontal pickup arm movement are greased and vertical movement pivots (7B) operate dry. These pivots should require no attention.

Stylus Pressure

This is preset to the pressure recommended by the pickup cartridge manufacturer. Check preferably with a Garrard Stylus Pressure Gauge. To adjust stylus pressure, turn the knurled nut (12) on the underside of the pickup arm, clockwise to decrease and counterclockwise to increase stylus pressure.

GARRARD MODEL 3000 EXPLODED VIEW

The parts listed and shown in this view are, in general, those which differ from parts used on Garrard Model 1000. Spares for Model 3000 not referred to here may be quoted by referring to the Model 1000 exploded view sheet.

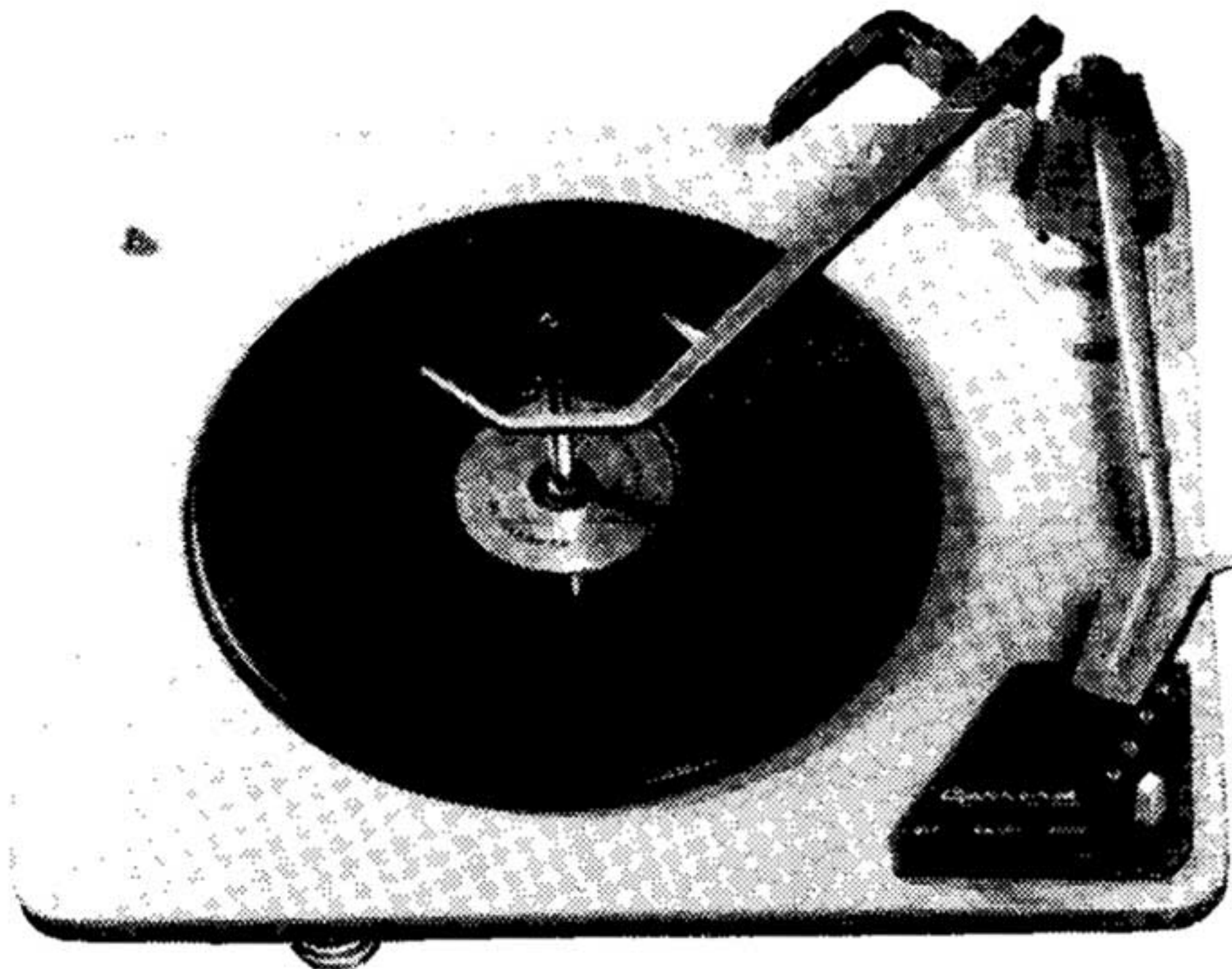


SPARE PARTS LIST FOR MODEL 3000

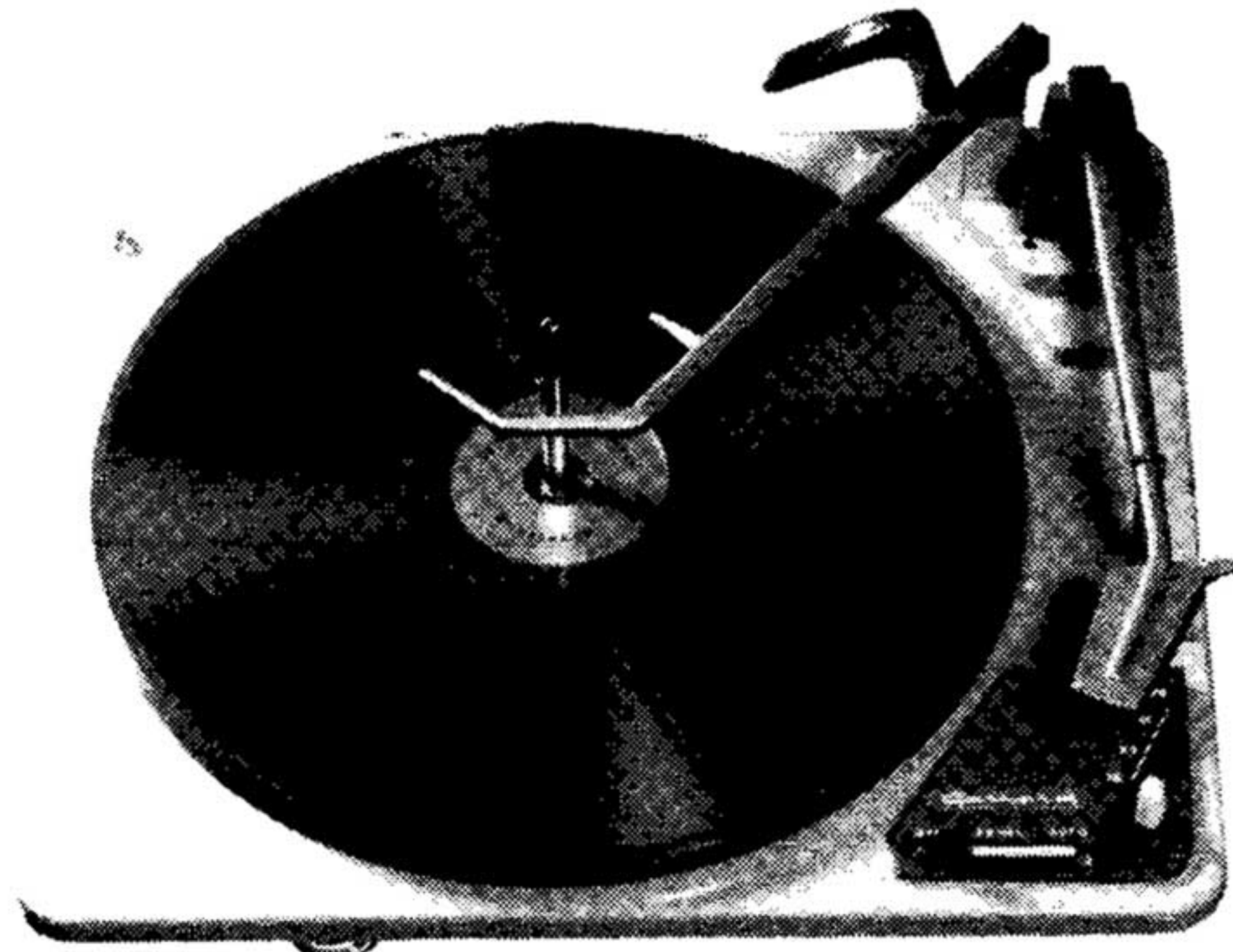
Exploded View No.	Part No.	Description	No. off	Exploded View No.	Part No.	Description	No. off
3	71056	Overarm Unit	I	34	71061	Turntable Mat, Rimmed (not shown)	I
3A	70435	Overarm Trim	I	34	70953	Turntable Mat, Rimmed; for Trim Ring (not shown)	I
4	71460	Pickup Arm (State Cartridge Type)	I	35	70222	Centre Disc. 1 1/4", for Mat 57422	I
4H	71455	Pickup Arm Tube	I	35	71846	Centre Disc. 4" (not shown)	I
4J	70348	Pickup Body	I	35	71638	Centre Disc. 1 1/4", for Mat 70953 (not shown)	I
4J	71453	Pickup Body for 4P. (See Inset Diagram)	I	36	70952	Turntable Mat Trim Ring. 6 3/4" (not shown)	I
4K	70412	Pickup Head Extension	I	40	70223	Upper Casting Assembly	I
4L	44184	Screw for Pickup Head Extension	I	47	71357	Tension Lever for Interwheel Spring (not shown)	I
4P	71386	Bracket for Pickup Body. (See Inset Diagram)	I	54	44819	Interwheel Spring (not shown)	I
5	71457	Pickup Head	I	55	44120	Transit Screw	I
6	40130	Adjusting Screw	I	55A	71520	Unit Plate Assembly	2
7B	44178	Pivot Screw	2	59	70955	Control Moulding	I
8A	70354	Nylon Lifting Plate	I	59A	70396	Brush Unit	I
8A	71723	Nylon Lifting Plate for 4P. (See Inset Diagram)	I	59B	70397	Brush	I
8B	41693	Spring	I	59C	70398	Tube, P.V.C.	I
12	70361	Counterbalance Screw	I	59D	44781	Spring	I
12A	41868	Spring Clip	I	60	70407	Speed Control Knob	I
12B	40589	Washer for 12 (not shown)	I	61	70410	Control Knob	I
13	70296	Spring Anchor	I	62	43855	Transit Screw Clip	I
15	44782	Counterbalance Spring	I	63	40504	Washer	2
15	44823	Counterbalance Spring for 4P. (See Inset Diagram)	I	66	70408	Control Lever Unit	I
18	59003	Pivot Screw	I	74	70405	Speed Control Lever Unit	I
19	44711	Overload Spring	I	75	43821	Spring Clip for Speed Control Lever	I
21	71567	Pickup Bracket Assembly	I	85	70329	Pickup Lever Unit (not shown)	I
23A	40906	Nylon Pad	I	101	58356	Pickup Connector Tag Strip (not shown)	I
23A	70555	Restrictor (not shown — alternative to 40906)	I	101	59611	Twin Phono Socket Assembly	I
24	44180	Adjusting Screw	I	102	44126	Screw Fixing Phono Socket	I
25	44185	Screw holding Pickup Cartridge	2	103H	52677/51	Red Lead (not shown)	I
28	44159	Screw for 4H	3	103J	52677/52	Brown Lead (not shown)	I
29	71458	Pickup Cartridge (State Type)	I	106	59001	Amplok Plug	I
29H	70932	Pickup Lead with Connectors (not shown)	I	106A	59310	Amplok Insulation Plate	I
31	59830	Automatic Record Spindle	I	106B	44154	Screw Fixing Amplok	I
31A	43834	Manual Record Spindle	I	112	70218	Speed Cam (not shown)	I
32	71692	Spring Clip holding Turntable and Record Spindle	I	115T	53110/09	Earth Lead Assembly (not shown)	I
33	70873	Turntable with Mat-retaining Eyelet	I	115V	43000	Earth Tag, Motor (not shown)	I
33	70873	Turntable without Mat-retaining Eyelet (not shown)	I	125	71559	Pickup Rest Assembly	I
33A	71181	Turntable with Rimmed Mat and 6 3/4" Trim Ring (not shown)	I	125A	44772	Pickup Rest Clip (not labelled)	I
34	57422	Turntable Mat, Flat	I	125B	44159	Pickup Rest Clip Pivot Screw (not labelled)	I
				125C	70401	P.V.C. Sheath (not labelled)	I
				125D	40543	Washer for Pivot (not labelled)	I
				125F	44125	Screw Fixing Pickup Rest	I

When ordering spares quote the model type, code (from inspection label), part number, colour if part is enamelled or plastic, and voltage range for motor parts. The exploded view number is for identification only.
Items 4 and 59A are exploded on diagram.

Garrard



MODEL 1000



MODEL 2000

EXPLODED VIEW AND SPARE PARTS LIST

GENERAL INFORMATION

Garrard Models 1000 and 2000 differ basically only in turntable size and trim. Both feature the mechanism used on the Garrard Model 50 and AT60 series and servicing information will be found in the Engineers' Service Manual for these units.

This exploded view sheet also shows the parts used on Garrard Model 3000 which are not covered by the Model 3000 exploded view sheet.

GARRARD ENGINEERING LIMITED

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Unfold

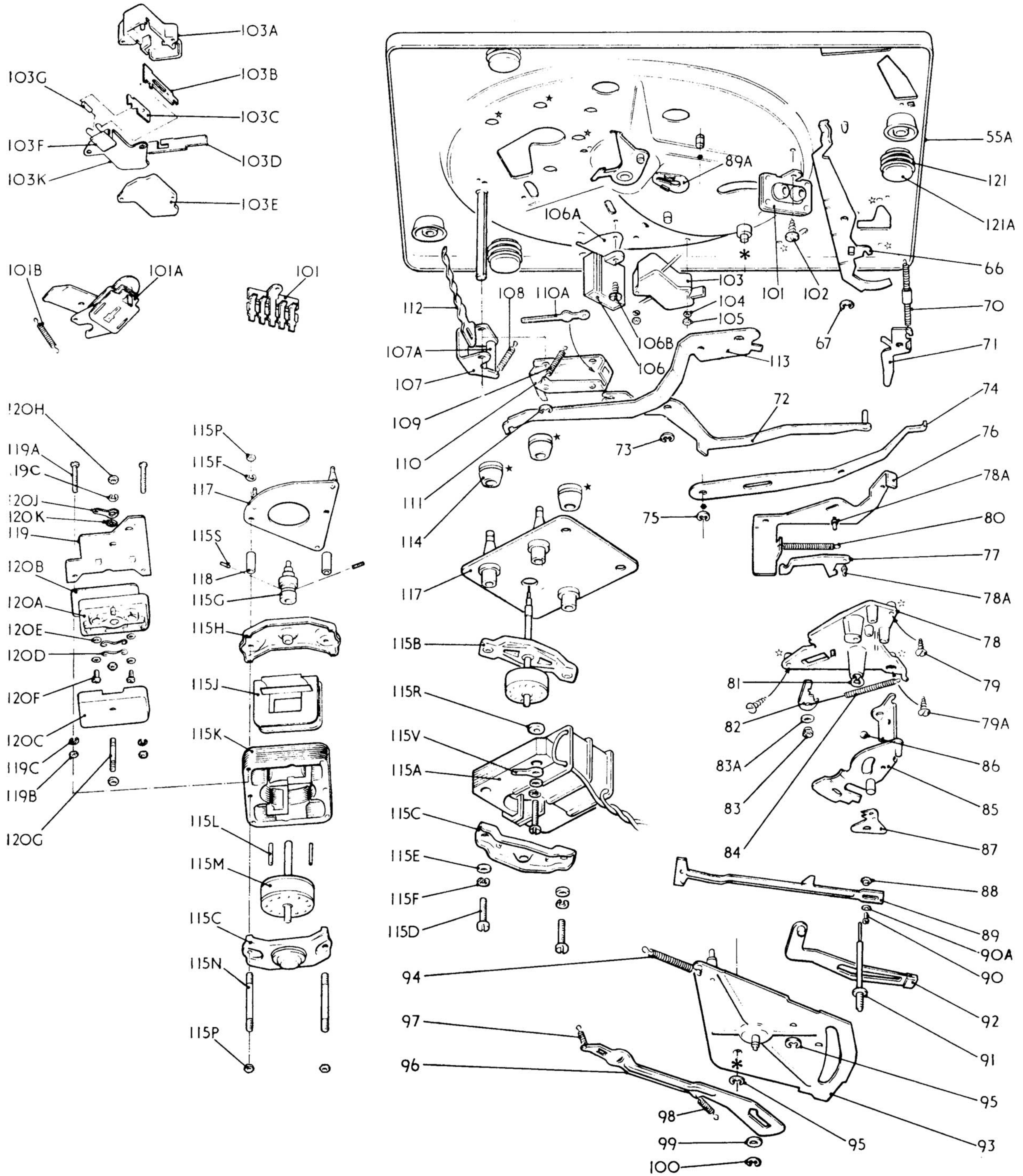
LIST OF PARTS ABOVE UNIT PLATE

Exploded View No.	Part No.	Description	No. off	Exploded View No.	Part No.	Description	No. off
1	70936	Selector	1	34	70909	Turntable Mat (Model 1000)	1
2	70938	Selector Extension	1	34	71061	Turntable Mat, Rimmed (Model 2000)	1
3	70899	Overarm Assembly	1	34	57422	Turntable Mat, Flat (Model 2000, not shown)	1
3B	44855	Spring (not shown)	1	35	70916	Centre Disc (Model 1000)	1
3C	40967	Washer (not shown)	1	35	71053	Centre Disc, 4" diameter (Model 2000)	1
4	70950/07	Pickup Arm complete less cartridge	1	35	58011	Centre Disc, 1½" diameter (Model 2000, not shown)	1
4	70930	Pickup Arm Unit	1	35A	70940	Turntable Trim Disc (Model 2000 not shown)	1
4K	71033/01	Pickup Arm Shroud—Black	1	37	40894	Thrust Washer	2
4L	44213	Screw Fixing Shroud	1	38	58229	Ball Race Assembly	1
4M	40942	Washer for 44213	1	39	58749	Cushion Ring	1
6	44188/01	6 BA Screw—Bright Nickel	1	40	58284	Upper Casting	1
7	59993	Pivot Spindle	1	40	70223	Upper Casting Assembly (D.G. Unit)	1
7B	70155/01	Pivot Bush Unit	1	40A	71477	Button (not shown)	1
8A	71247	Lifting plate M/C	1	41	58328	Cam Assembly	1
8B	41693	Lifting spring	1	42	41788	Spring Clip	1
13	59988	Index Plate	1	43	58335	Trip Pawl	1
15	44718	Counterbalance Spring	1	44	41723	Spring Clip	2
16	43809	Spring Clip	1	45	58331	Pivot Plate Unit	1
16A	40928	Presspahn Washer	1	46	71824	Tension Link	1
16B	43836	Spring Clip Fixing Pickup Leads	1	47	71357	Tension Lever	1
17	40322	Screw (for Restrictor)	1	48	41723	Spring Clip	1
18	44207	Pivot Screw Top	1	49	41503	Tension Spring	1
18	70954	Pivot Screw Assembly (D.G. unit)	1	50	58220	Interwheel unit	1
19	44711	Overload Spring, shaped wire (not shown)	1	51	43818	Circlip	1
19	44748	Overload Spring, as shown	1	52	40826	Presspahn Washer	2
20	44705	Spring (for Restrictor)	1	53	71545	Support Lever Unit	1
21	70929	Pickup Bracket Unit	1	54	44819	Interwheel Spring	1
22	70918	Restrictor Blade	1	55	44120	Transit Screw	2
23	71217	Tension Nut	1	55A	71520	Unit Plate Assembly	1
24	44210	Grub Screw	1	56	41723	Spring Clip	3
25	40350/01	Screw (Fixing Cartridge)	2	56	43863	Spring Clip, for 2 pole motor with plug-in wiring loom	3
25A	71244	Distance Piece	2	57	40695	Washer	3
26	State	Cartridge Bracket	2	58	40228	Screw	3
	Cartridge			59	70902	Control Cover Assembly	2
	Type			60	70924	Speed Control Knob	1
29	State		1	61	70924	Auto/Manual Control Knob	1
	Type			62	43855	Transit Screw Clip	1
29H	71458	Cartridge (not shown)	1	63	40504	Washer	2
31	70932	Pickup Lead Assembly (not shown)	1	64	43200	Steel Ball	1
31A	59830	Automatic Record Spindle	1	65	41987	Spring	1
32	43834	Manual Record Spindle	1	69	40105/01	Screw (Fixing Pickup Rest)	1
33	43834	Turntable Clip	1	69A	42526	Spring Washer	1
33	59832	Turntable (Model 1000 8")	1	69B	40643/01	Washer (Under Pickup Rest)	1
33	70873	Turntable (Model 2000 10½")	1	125	70915	Pickup Rest Assembly	1
33	71692	Turntable with Mat-retaining Eyelet (Model 2000, not shown)	1	125A	70914	Pickup Rest Clip	1
33A	70941	Turntable & Mat Assembly (Model 1000)	1	125B	44204	Screw (Pivot)	1
33A	71039	Turntable & Rimmed Mat Assembly (Model 2000)	1	125C	70401	P.V.C. Sheath	1

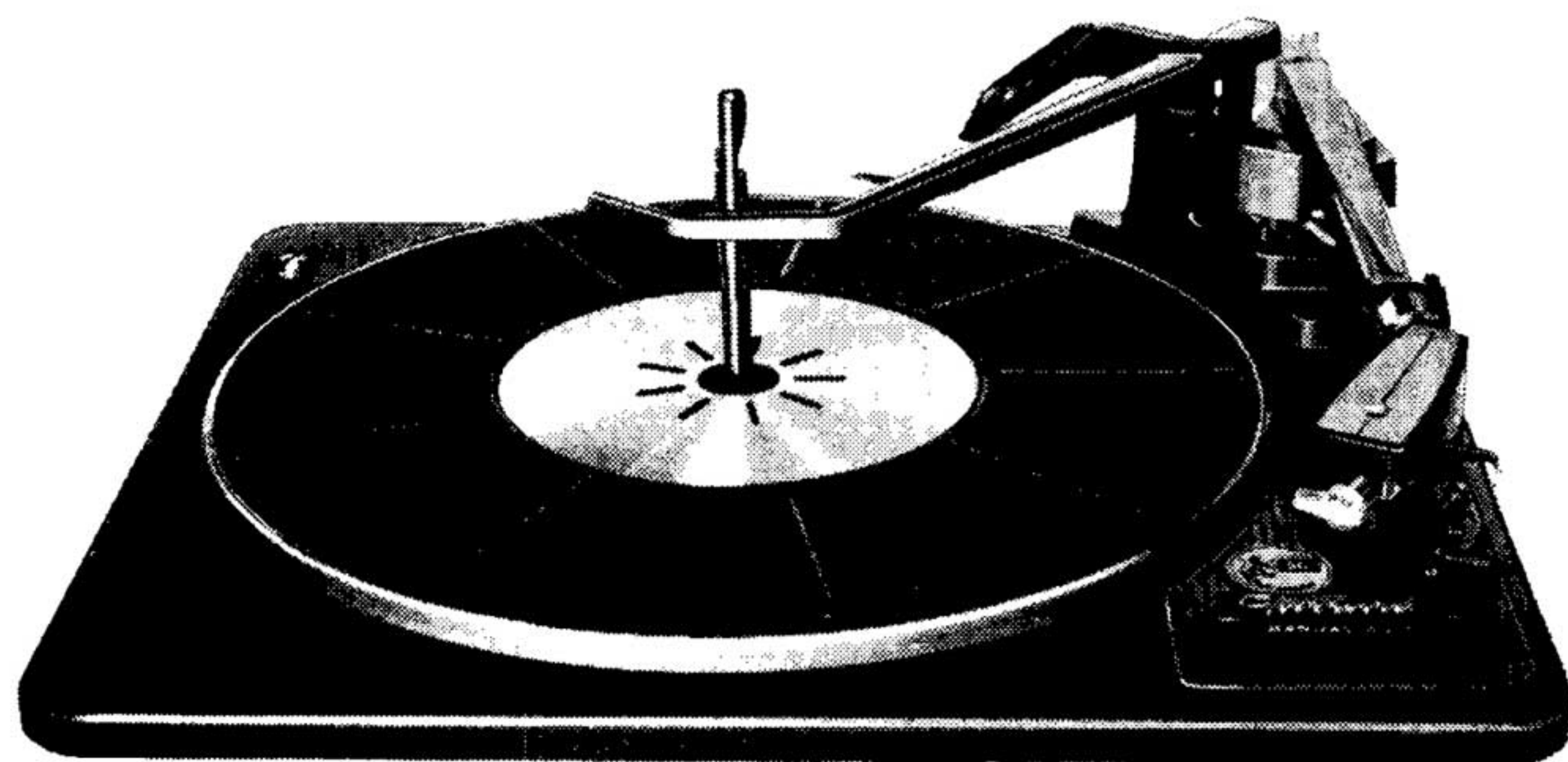
When ordering spares, quote the model type, code (from inspection label), part number, colour if part is enamelled or plastic, and voltage range for motor parts.

GARRARD MODEL 1000 AND MODEL 2000 EXPLODED VIEW

EXPLODED VIEW OF PARTS BENEATH UNIT PLATE UNFOLD FOR PARTS LIST



Garrard



MODEL 50

A.T.60



ENGINEERS SERVICE MANUAL AND SPARE PARTS LIST

GARRARD ENGINEERING LIMITED

NEWCASTLE STREET - SWINDON - WILTSHIRE - ENGLAND

Telephone: Swindon 5381

Service and Spares Department:

RADNOR STREET - SWINDON - WILTSHIRE - ENGLAND

Telephone: Swindon 22606

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General Information

This manual serves for Garrard Models 50 and A.T.60. These units have the facility to play records automatically, or they can be used manually to play single records.

Model 50 has a large-diameter steel turntable. Its pickup arm is diecast aluminium, with a fixed counterbalance weight. Pickup leads terminate at a tag strip or muting switch. A two or four pole motor may be fitted.

A.T.60 has a diecast turntable and tubular counterbalanced pickup arm with bias compensator. Pickup leads terminate at a muting switch and a four pole motor is fitted.

Both models will play up to eight mixed records automatically of 7", 10" or 12" diameter. A short manual spindle is supplied for single record play and large centre hole records may be played automatically using adaptor L.R.S. 10 (optional extra). A single play adaptor is also available for use with large centre hole records.

These units also feature plastic foam damped spring suspensions and a plug-in pickup head, designated M7, which will accept a wide range of cartridges.

Both units are made in a number of different colour finishes and with differing turntable mat trims. They can be supplied to run on 100/130 volts A.C. or as dual range models for 100/130 volts or 200/250 volts A.C. The latter version is fitted with a voltage changeover block attached to the motor.

The 4-pole motor is suitable for 50 or 60 cycles according to the motor pulley fitted. The 2-pole motor does not have a removable pulley and a different motor is required for

50 or 60 cycle supply.

These units play automatically when the records are of the same speed and record groove type. They can be stopped and started without rejecting the record being played, or records can be rejected as desired. Switch off is automatic after playing the last record.

Before using these record changers make sure that the power supply is as stamped on the motor bearing cover. If the unit is connected to an amplifier whose wiring is not isolated from the power supply, isolating components, either condensers or transformers, should be incorporated in the pickup circuit, otherwise the pickup circuit can become live.

Always disconnect the power supply and protect the pickup, when servicing a unit.

In some cases such as those associated with pickup and power connections, components for these models may vary (other than as illustrated) due to the wide variety of customers' specifications. Therefore, when referring to these models, obtaining spares etc., always quote the code stamped on the inspection label, unless a full description can be given.

The information in this manual applies to both Model 50 and A.T.60 except where otherwise stated or illustrated.

Garrard units are made to play records complying to B.S. 1928:1965 and I.E.C. Publication 98, also similar standards.

Operating Instructions

Automatic Operation

1. See that the correct stylus is in position for the type of record to be played and free the pickup arm on its rest.
2. See that the speed control is set to the correct speed.
3. Place records horizontally on the record spindle step and swing the overarm fully inwards, on to the top record.
4. Switch on by moving the control to 'Auto', pause and release.
After playing all the records, the pickup arm will return to its rest and the unit will switch off.

To Unload

1. Lift the overarm and swing it to the right.
2. Lift the records clear of the spindle, even if replaying the same records.

Manual Operation

1. Place the record on the turntable by threading it over the record spindle. Swing the overarm fully inwards to its operating position.
2. Switch on by moving the control to 'Manual' and place pickup on the record.

After playing the record the pickup arm will return to its rest and the unit will switch off.

The record spindle may be replaced by a short manual spindle for manual operation.

Reject

A record being played may be rejected by moving the control to 'Auto'.

Stop

Move the control to 'Off' and the motor will stop with the pickup remaining on the record. Restart by moving the control to 'Manual' and the same record will continue playing.

Note:

To avoid damage to the stylus, do not move the control to 'Auto' until records are loaded on the record spindle.

Do not leave records on the unit when not in use.

Keep the stylus point free from dust.

To obtain best results from records, store and clean them as recommended by the record manufacturers.

Installation and Wiring

Cabinet Space

The size of these units is $13\frac{1}{4}$ " side to side x $11\frac{3}{8}$ " back to front. Model 50, however, has a maximum counterbalance weight overhang of $\frac{3}{16}$ " to the right hand side of the unit. Similarly A.T.60 has a maximum counterbalance weight overhang of $1\frac{13}{16}$ " to the right hand side and $1\frac{1}{8}$ " behind the unit, depending on the cartridge fitted. Therefore cabinet space should allow for these overhangs and also give $\frac{5}{16}$ " clearance all round either unit for free movement.

Model 50 requires $4\frac{5}{8}$ " space above the top of the motor board, $2\frac{7}{8}$ " space below the top of the motor board if a 4-pole motor is fitted, or $2\frac{1}{8}$ " if a 2-pole motor is fitted. A.T.60 requires $4\frac{3}{4}$ " space above the top of the motor board and $2\frac{7}{8}$ " space below the top of the motor board.

Unpacking

When unpacking a unit received from the factory, withdraw it from its carton by lifting the inner cardboard liner; never lift the unit by its pickup arm or overarm. Carefully remove all packing ties, rubber bands, polythene sleeves and cardboard fittings — including the wedge between the motor and unit plate. Accessories are stapled or tied to the side of the liner.

Support the unit on its mountings and fit the counter-

balance weight to the rear extension of the pickup arm. On Model 50 its fixing screw is already fitted in this extension. On Model A.T.60 make sure the counterbalance weight has its clamping screw forward as in diagram 16. Instructions for setting stylus pressure and connecting A.T.60 bias compensator are found under 'Service Adjustments'.

Model A.T.60 diecast turntable is packed separately in the carton. Take care not to damage the unit mechanism when unpacking it and fit it as described under 'Maintenance'. The turntable retaining clip must be fitted as shown in diagram 1.

Record spindles for both models are located in the turntable spindle by the retaining clip; therefore take care to position record spindles correctly when fitting.

Preparing Motor Board

If it is necessary to prepare a motor board, do so by drilling and cutting out the board to the paper template supplied with each unit. Do not moisten the template, but fix it to the motor board with adhesive tape. Recommended board thickness is between $\frac{5}{16}$ " and $\frac{1}{2}$ ". Should a thicker board be used, it may be necessary to recess the $\frac{9}{16}$ " diameter holes from the underside to $1\frac{1}{8}$ " diameter, to clear the transit screw clips.

TO FIT TURNTABLE CLIP
 1. ENGAGE CLIP IN TURNTABLE
 SPINDLE SLOT WITH HOLE
 IN CLIP AT REAR
 2. PRESS CLIP DOWN HERE
 THE SPRING LEVER CHAMFER
 FITS TURNTABLE SPINDLE

TO REMOVE LEVER THIS FACE
 BACK TO POSITION SHOWN
 OPPOSITE

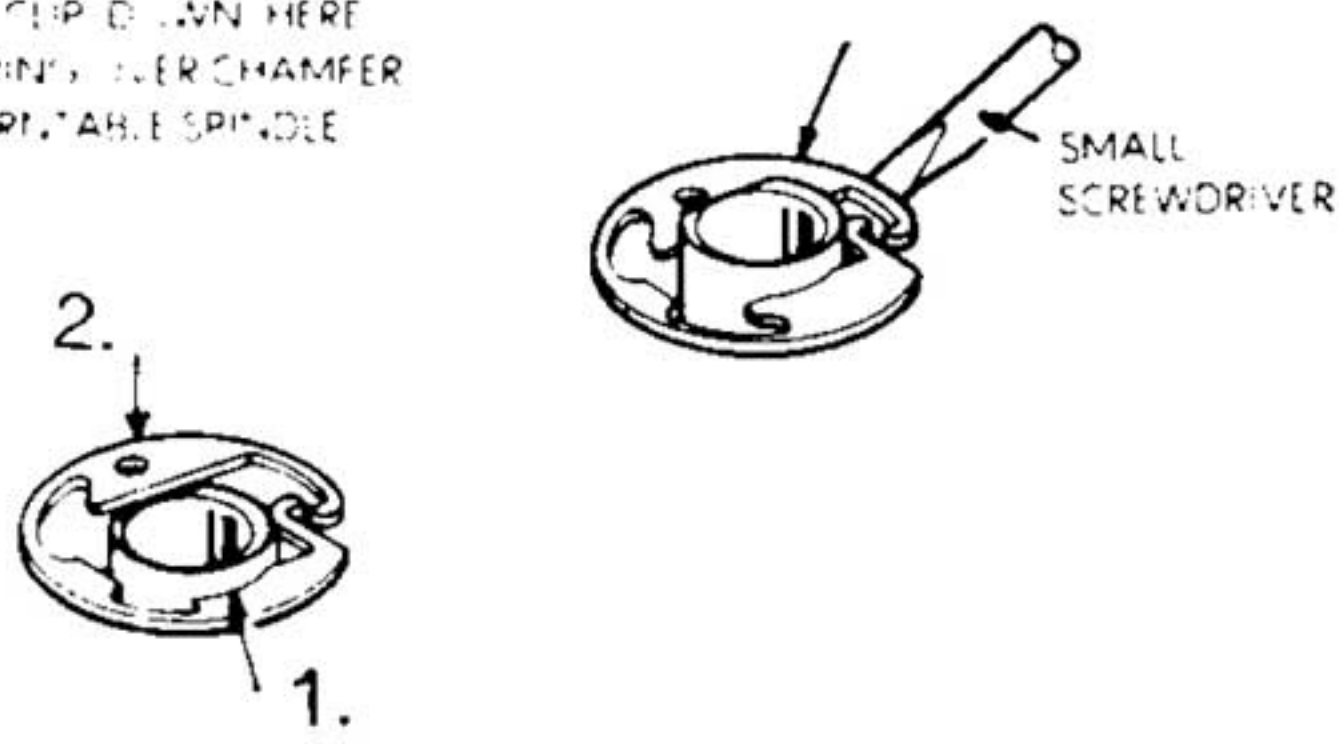


Diagram 1

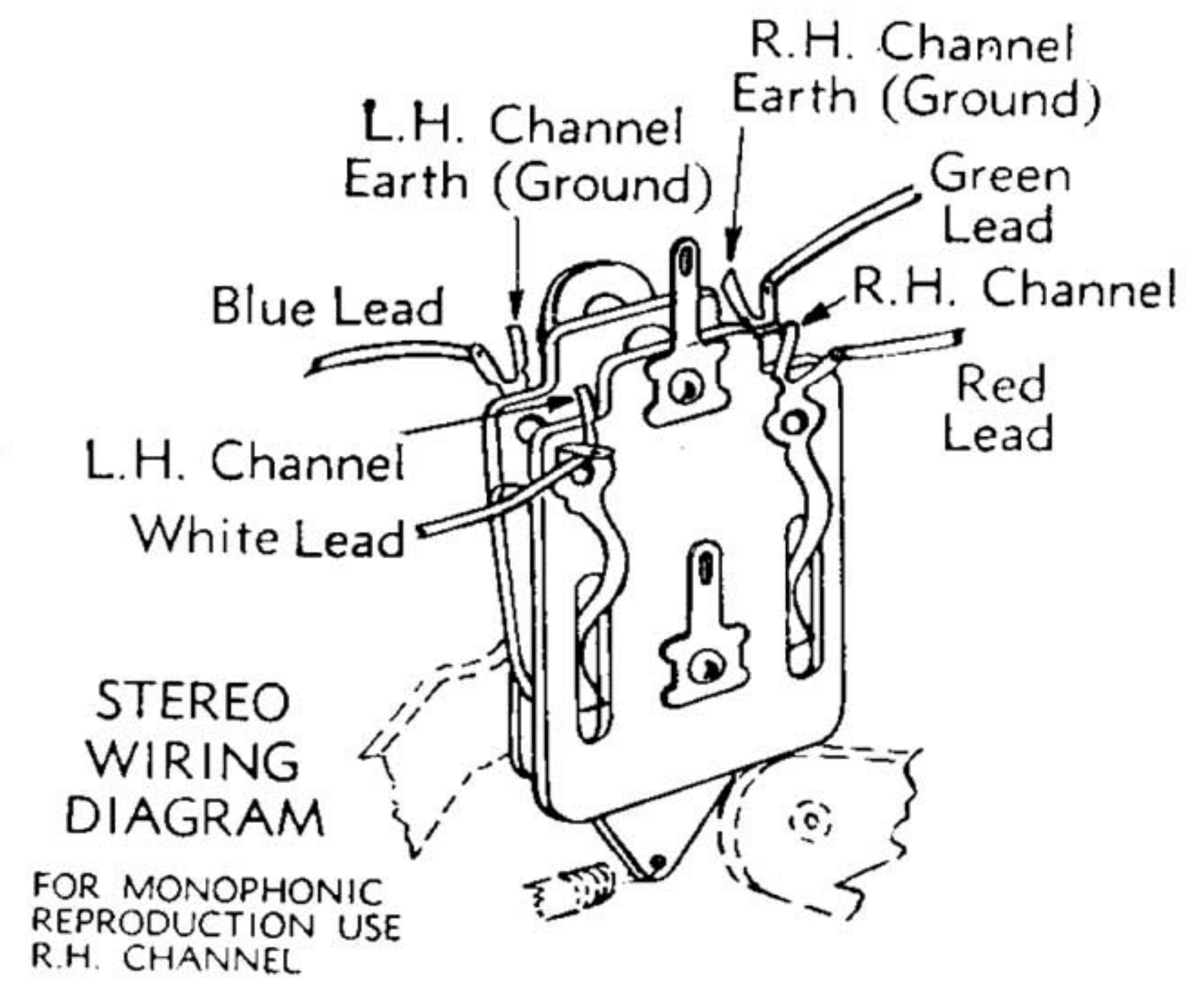


Diagram 2

Wiring

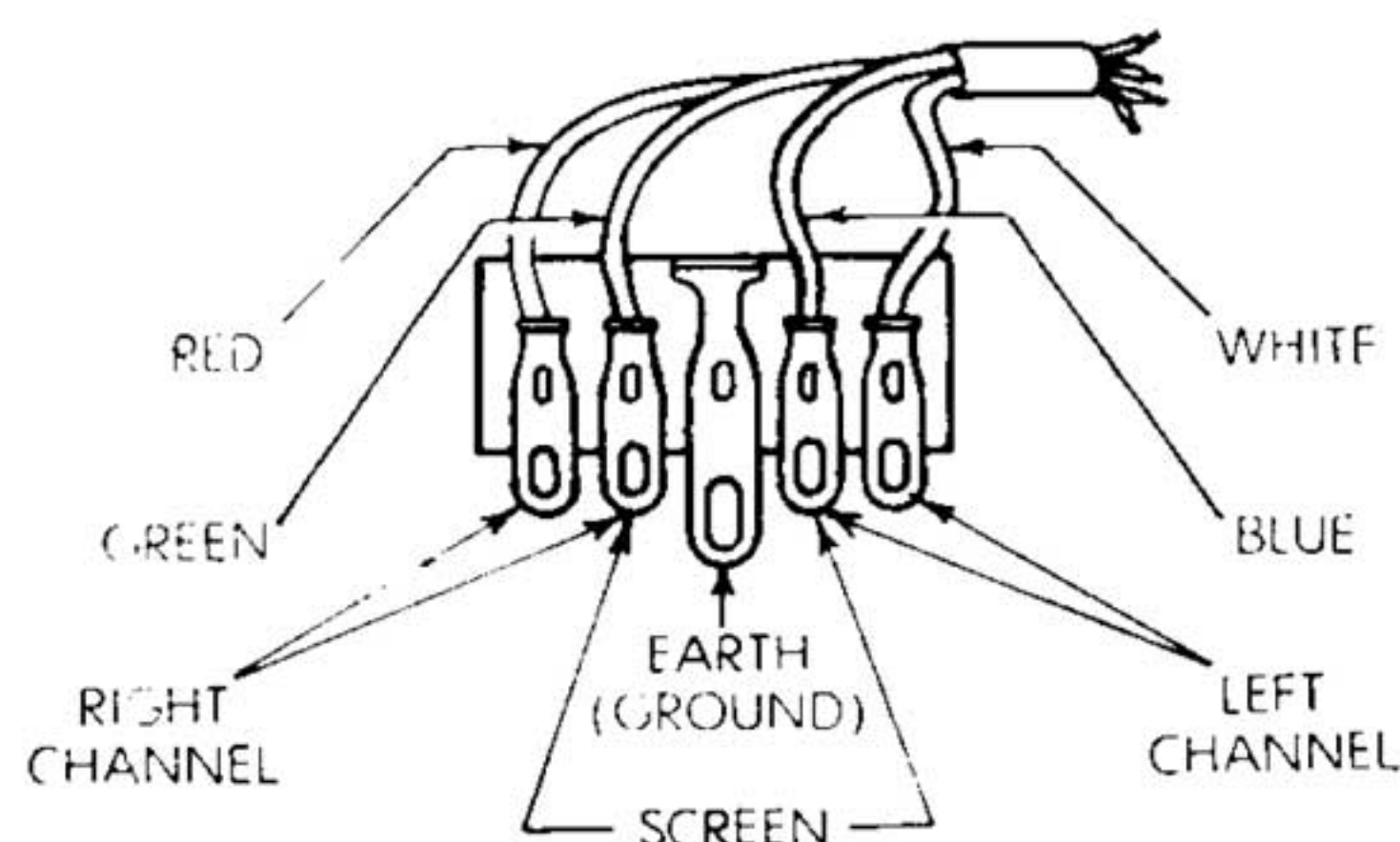
Before assembling the unit into the cabinet, connect a power supply lead to the motor, or voltage changeover block if a dual voltage motor is fitted. Connect an earth lead to the earthing tag on the motor. A connecting plug and socket may already be fitted on certain units.

Some 2-pole motors have an extra yellow motor lead. When black and white leads are connected to 230 volts A.C. mains supply, the yellow and white leads give an 80 volt, 0.1 amp. tap for a valve heater chain. Similarly, 2-pole motors with an extra red lead give a 105 volt 0.1 amp. tap. Insulate the end of the extra lead if not used, and tape out of the way.

Screened leads should also be connected to the pickup tag

strip, or on some units the muting switch, suitable for connection to the amplifier as shown in diagrams 2 and 3. Certain units have phono sockets fitted to them to which phono leads may be connected, see diagram 4.

Before connecting the record changer to the amplifier, make sure that the pickup circuit of the radio set or amplifier to which it is to be connected, is isolated from the power supply. If it is not, then it is essential for isolating components, condensers or transformer to be incorporated in the pickup circuit. The pickup lead should be kept as short as possible and its screening connected to a good earth.



STEREO PICKUP CONNECTIONS

(For Monophonic Cartridges use Right Hand Channel)
 For Monophonic Reproduction when a Stereophonic Cartridge is fitted, parallel the two channels.

Diagram 3

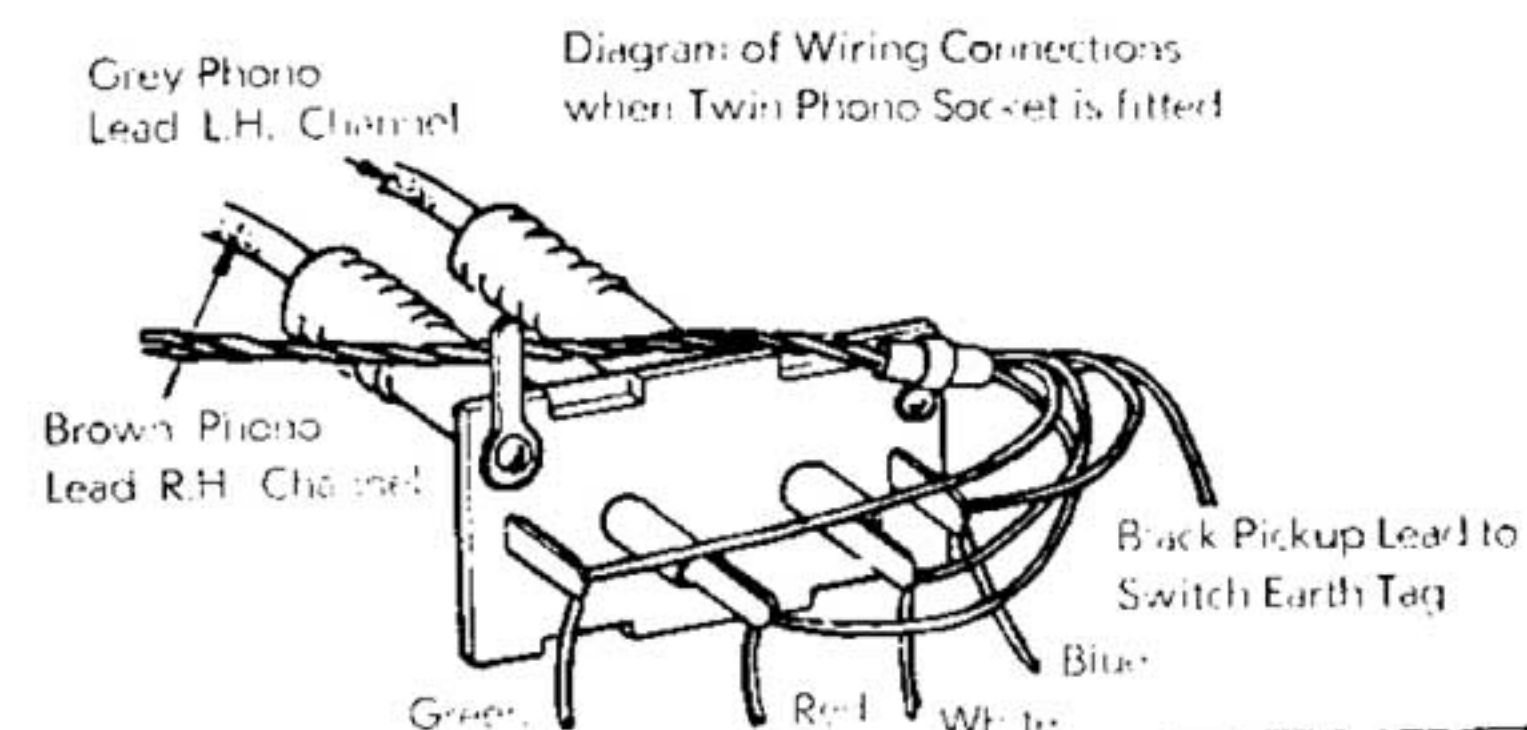


Diagram 4

Fitting Cartridge

A plug-in pickup shell designated M7 is used on Model 50 and A.T.60. This may be supplied with or without a pickup cartridge. The pickup shell kit, less cartridge, part number 59048, contains a set of fixing accessories comprising:

Alternative mounting plates

Two 6 BA x $\frac{1}{16}$ " screws

One 6 BA x $\frac{1}{8}$ " screw

These parts allow most types of cartridge to be fitted without difficulty by screwing the cartridge to the mounting plate which has the most suitable length of stand off and securing the assembly to the pickup shell with the $\frac{1}{8}$ " screw. Cartridges having a single fixing hole may be fitted directly to the pickup shell using the $\frac{1}{8}$ " screw.

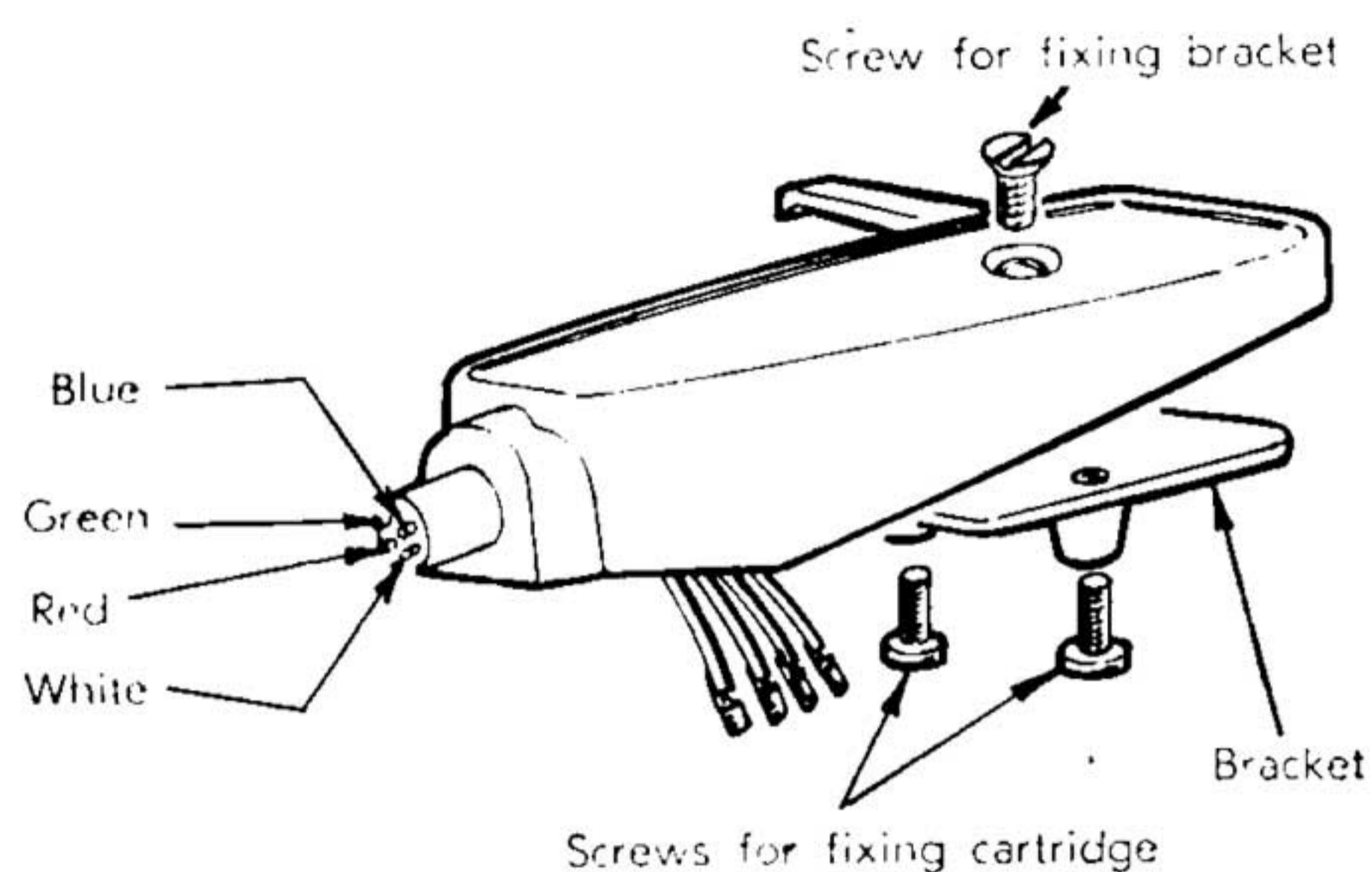


Diagram 5

Connect the colour coded leads in the pickup shell to the connection tags on the cartridge. Do not solder leads to the cartridge. If the cartridge terminations are sockets a special connector must be used. Lead connections should be made as follows:—

Red to Right Channel Signal

Green to Right Channel Ground

White to Left Channel Signal

Blue to left Channel Ground

Information on its connections are usually supplied with the cartridge. For cartridges having three connections, use the green lead as the common connection or join the green and blue leads together and use these as the common connection. For monophonic cartridges use the red and green leads. Insulate and tuck away any leads not required.

Switch Click Suppressor

Some units may have a switch click suppressor incorporated in the motor switch, consisting of a capacitor and resistor wired in series across the switch blades. See diagram 6.

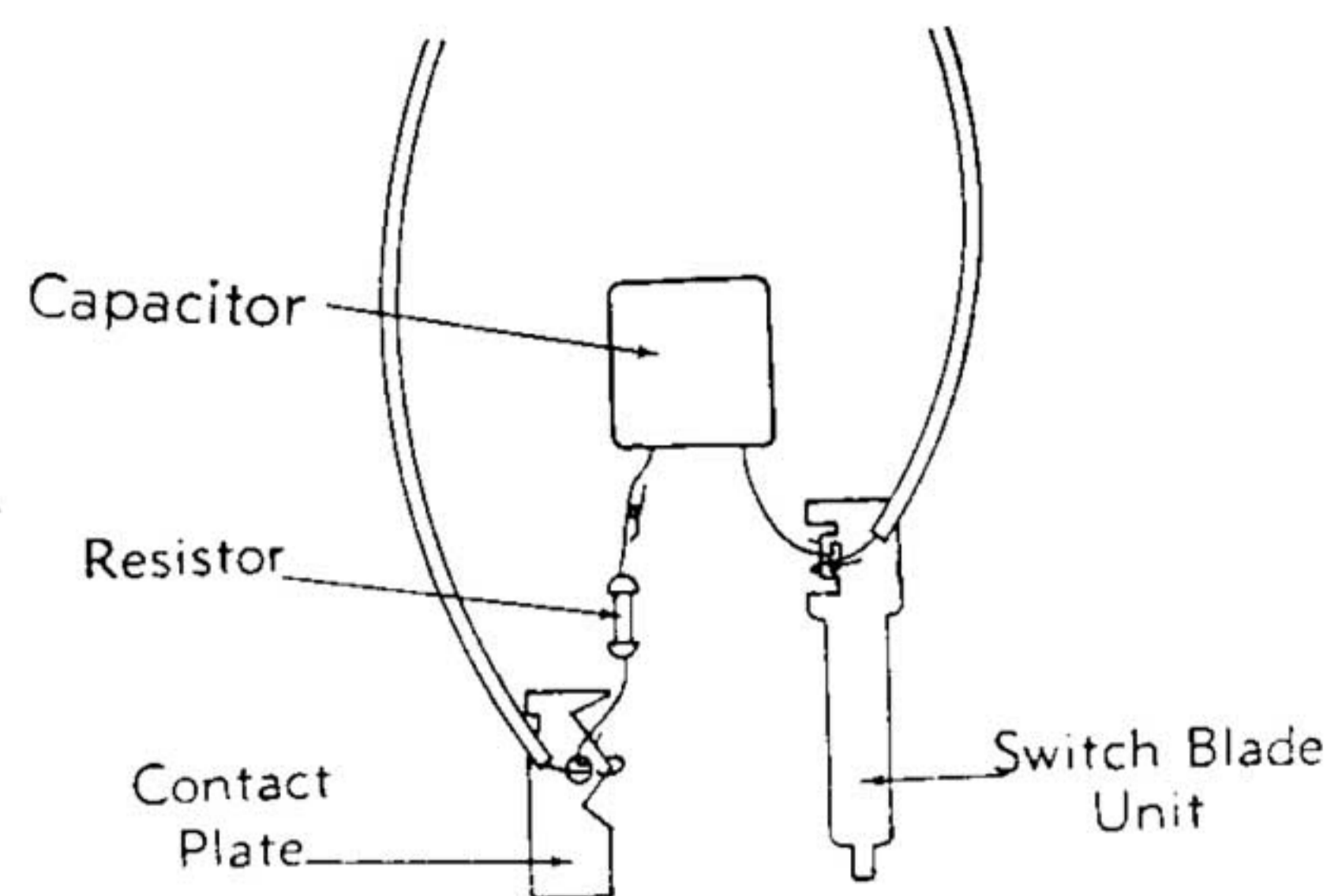


Diagram 6

Details of resistor: 220 ohms $\pm 20\%$ $\frac{1}{4}$ watt composite carbon

Garrard Part No. 58959

Details of capacitor: Erie type K 7002/CP 3 E 20,000 PF — 2% +80% Isolator Plate Ceramicons, or equivalent

Garrard Part No. 58960

Fitting in Cabinet

The unit should be placed on the board so that the spring mountings locate correctly and the transit screws go through their respective holes. When in position, the spring locks on the ends of the transit screws should be turned through 90° so that they lie parallel to the motor board as in diagram 7.

In use, check that the two screws are screwed down clockwise and that the unit is floating freely on its mounting springs. Before transit, turn the transit screws counter-clockwise so that the unit is held against the motor board as in diagram 7.

Units mounted on Garrard B8 Mk. II Base do not have transit screws or spring mountings as illustrated, since the base itself is mounted on springs.

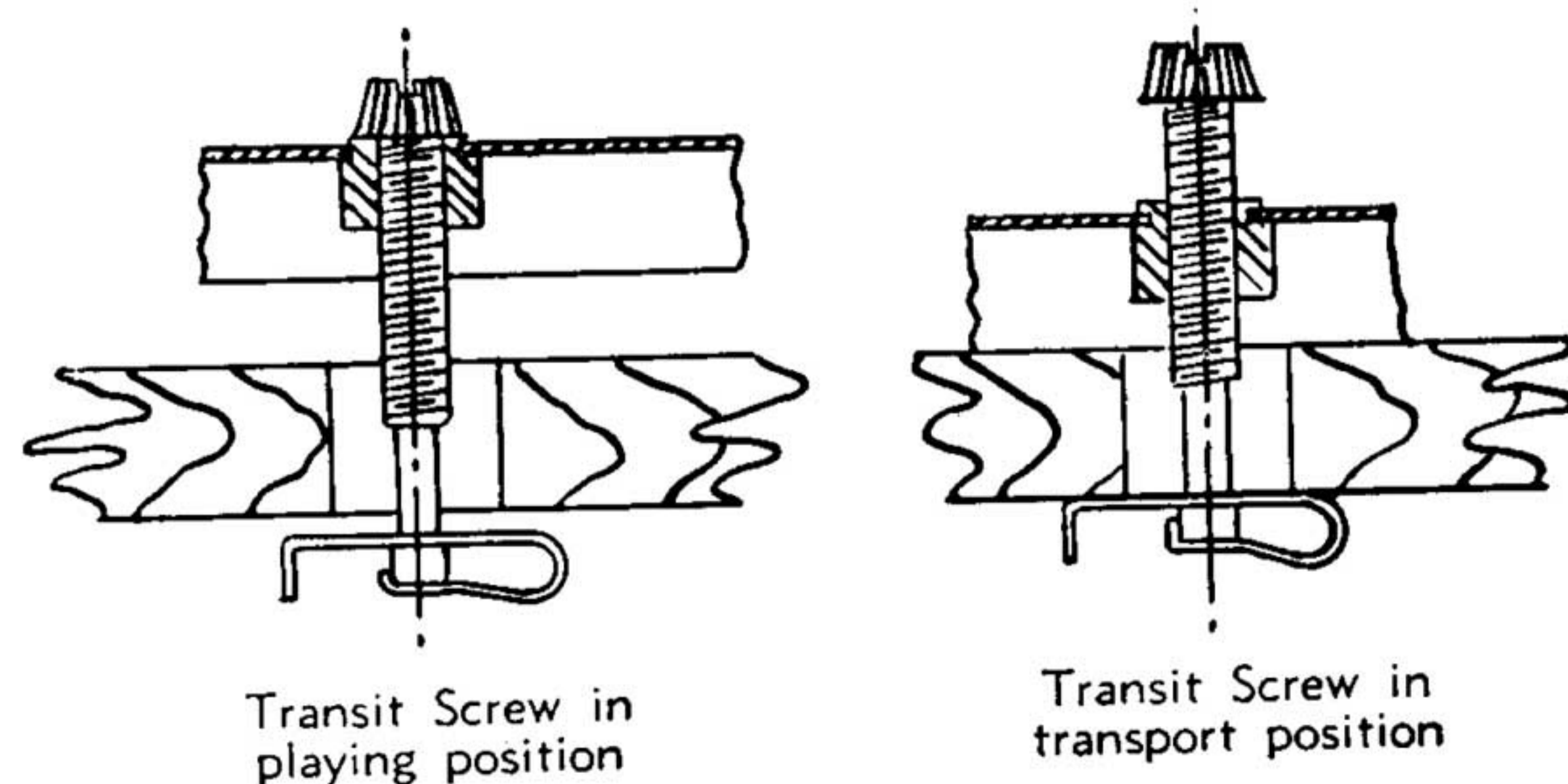


Diagram 7

Maintenance

Disconnect the power supply and protect pickup before carrying out maintenance.

To remove turntable

Pull out the record spindle (31) from its location, then if A.T.60 mat is fitted, prise out the nameplate from the centre of the turntable — taking care not to damage the turntable mat. Remove the turntable retaining clip (32) using a small screwdriver (diagram 1), and noting the clip's location for correct reassembly, then lift the turntable with equal pressure on diametrically opposite sides.

When replacing the turntable, check that the tooth gap on the cam gear (41) is adjacent to the turntable spindle and that the automatic trip pawl (43) is pushed clear of the turntable spindle. Replace the turntable retaining clip (32) taking care that the clip and record spindle (31) locate correctly. See diagram 1. When fitting the turntable nameplate in the A.T.60 type turntable mat, take care not to damage the mat. Using a screwdriver, gently stretch the mat to sandwich in position the 3 locating segments of the nameplate.

The overarm

When swung fully inwards, the overarm must drop freely in its location. If stiff, remove circlip on overarm spindle (beneath unit), withdraw overarm and clean and oil its spindle.

Lubrication

The bearings of the motor, turntable spindle and rubber intermediate wheel (50) are of the oil retaining type and rarely need lubricating. When the need for oil is apparent, remove the turntable and lubricate these bearings with a fine grade of machine oil. Carefully remove excess oil, particularly from the motor pulley, rubber intermediate wheel (50) and inside turntable rim by wiping these driving surfaces with a clean cloth.

Other pivots or working faces may need oil or grease from time to time. They are:—

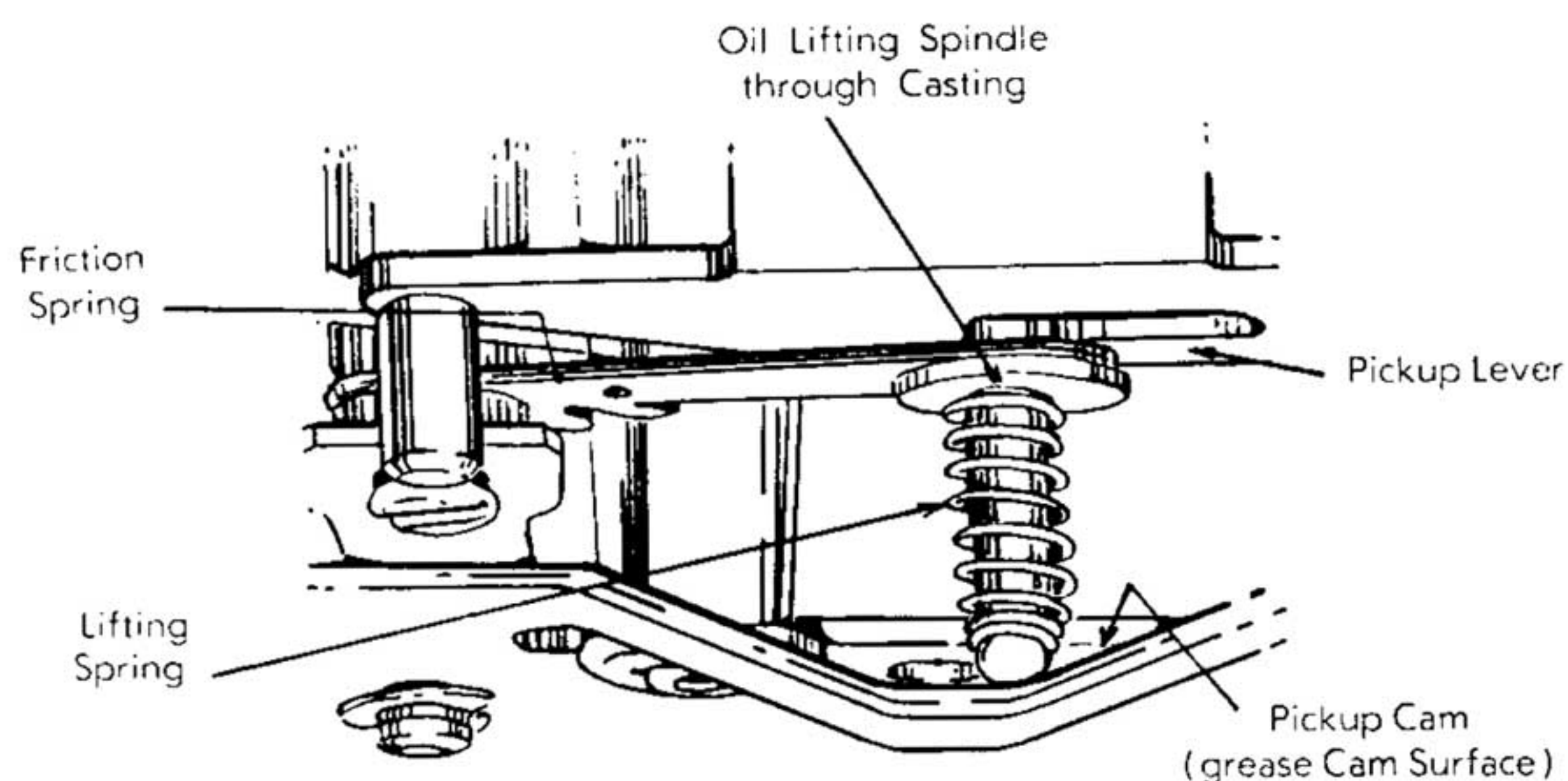


Diagram 8

1. Pivots for vertical movement of Model 50 pickup arm — a spot of thin oil.
2. Pivots for horizontal pickup arm movement — a spot of thin oil.
3. Oil overarm lever (77) where it contacts overarm spindle (3).
4. Oil overarm spindle (3) through hole in lower casting (78) so that the overarm drops freely when in its inward position.
5. Oil spindle of cam (41).

A smear of grease may be applied occasionally at the following points:—

1. Friction link (92), working face as on diagram 9.
2. Control lever (66), working face against pin in switch lever (72).
3. Unit plate where switch lever pin (72) rubs.
4. Pickup cam (93), working area and end of lifting spindle (91) as in diagram 8.
5. (a) Pillar in pickup cam (93), running in unit plate slot.
(b) Washer on lower casting (78), where it rubs pickup cam (93), see diagram 11.
(c) Face of pickup cam (93) operating switch off lever (76), see diagram 11.
6. Release lever (96), operating face against pin in pickup cam (93).
7. Track of cam (41).
8. Speed cam (112), top and side faces.
9. Support lever pin (110), operating face.
10. Switch off lever (76), slot, ends of lever and underside of unit plate.
11. Automatic trip lever (89) slot and underside of lever as in diagram 10. Note that grease is not required on later models where bearing pad (89A) is fitted.

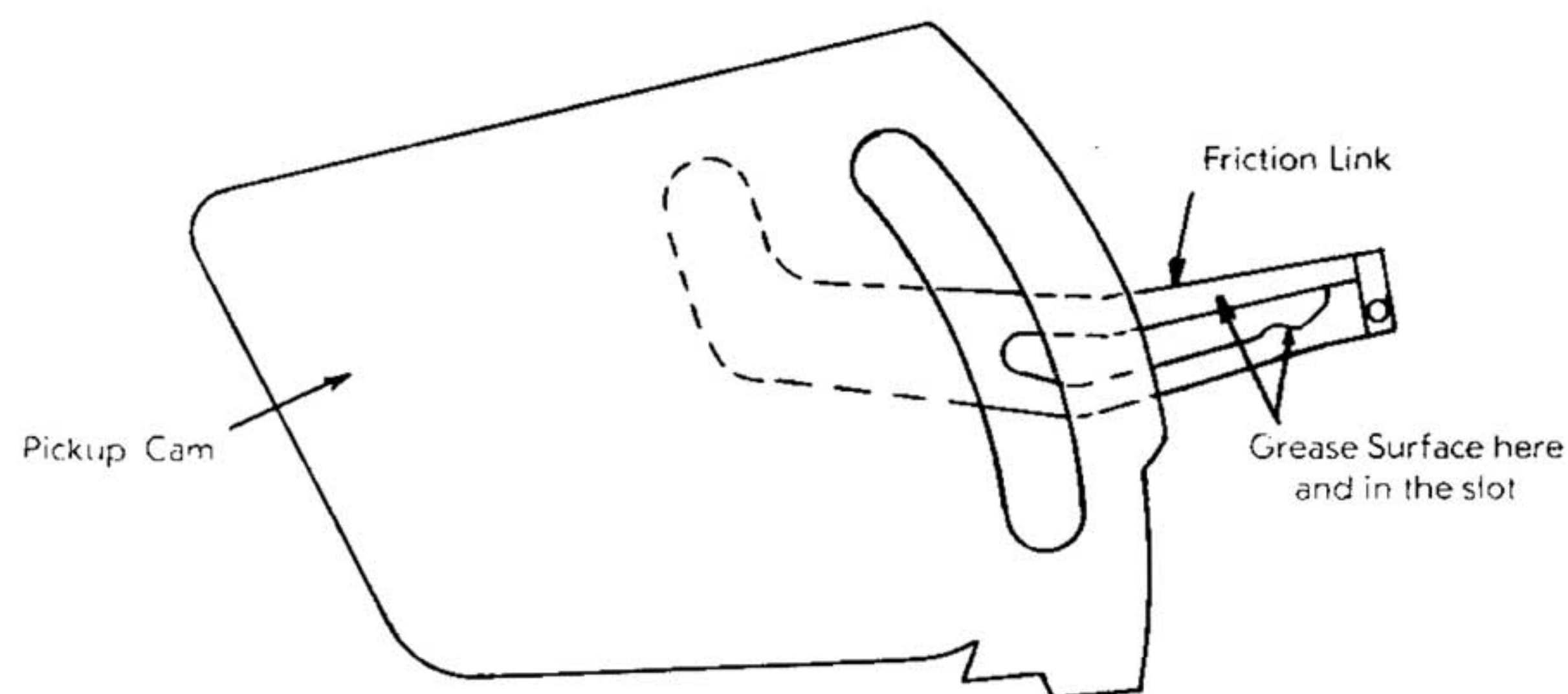


Diagram 9

Grease here on underside of lever and on unit plate

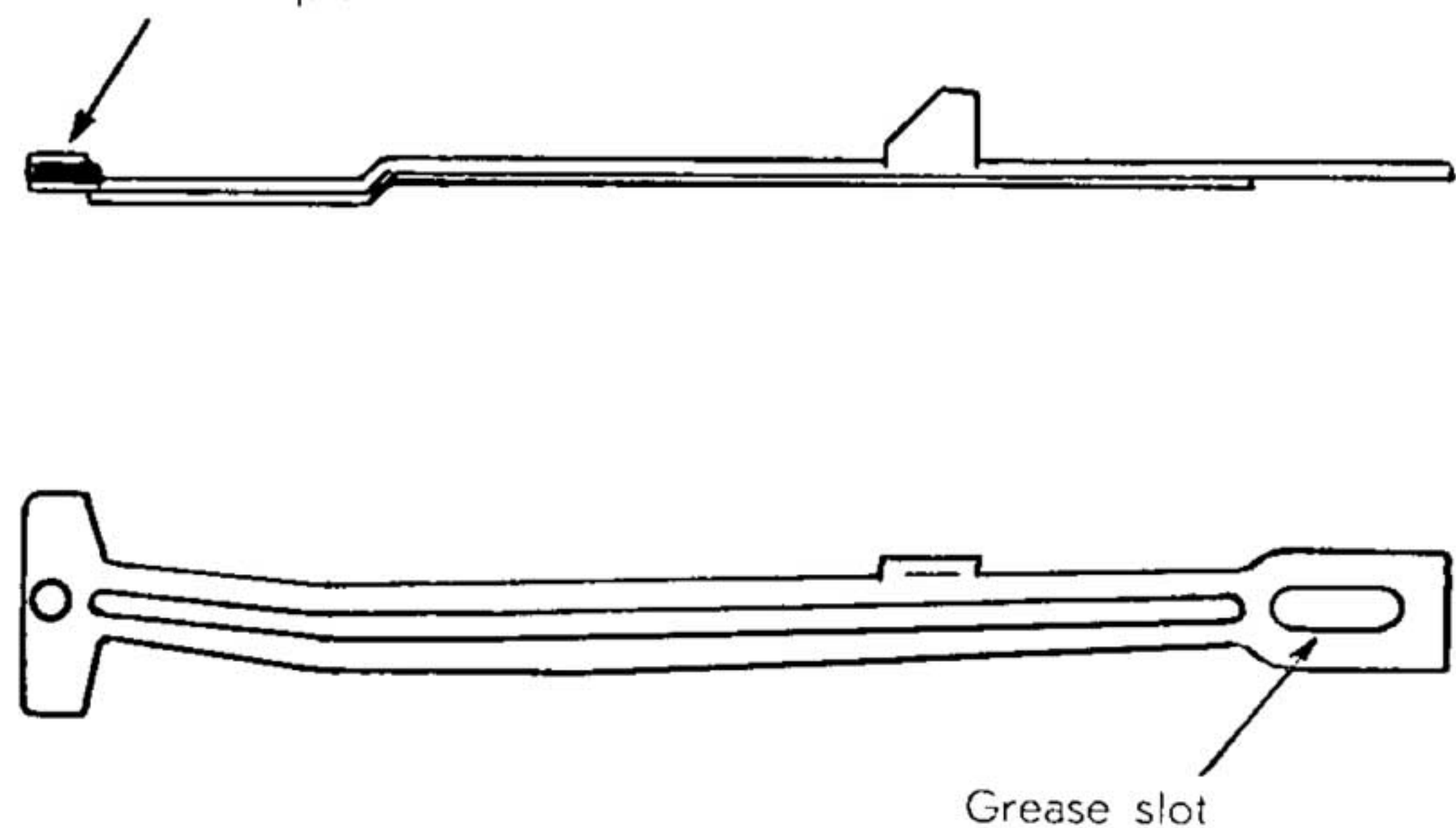


Diagram 10

Service Adjustments

Speed

If the turntable speed varies other than because of warped records slipping, remove the turntable and clean the driving surfaces as stated under 'Maintenance'. Should the turntable run fast or slow consistently, check that the motor and motor pulley match the power supply. The motor is stamped with its power supply details on its end cover and the motor pulley, if the removable type, is colour finished for identification, nickel for 50 cycle and brass for 60 cycle power supply. If a 4-pole motor pulley (115G) check that the grub screws (115S) are tight. The 2-pole motor pulley is integral with the shaft (115B) and is not removable.

Check that the rubber intermediate wheel (50) runs in the centre of the appropriate pulley step and is not rubbing the side of the adjacent step. If necessary adjust the intermediate wheel height setting blade. This blue spring steel blade (110A) adjusts the position of the spindle on which the rubber intermediate wheel (50) is mounted. See diagram 12.

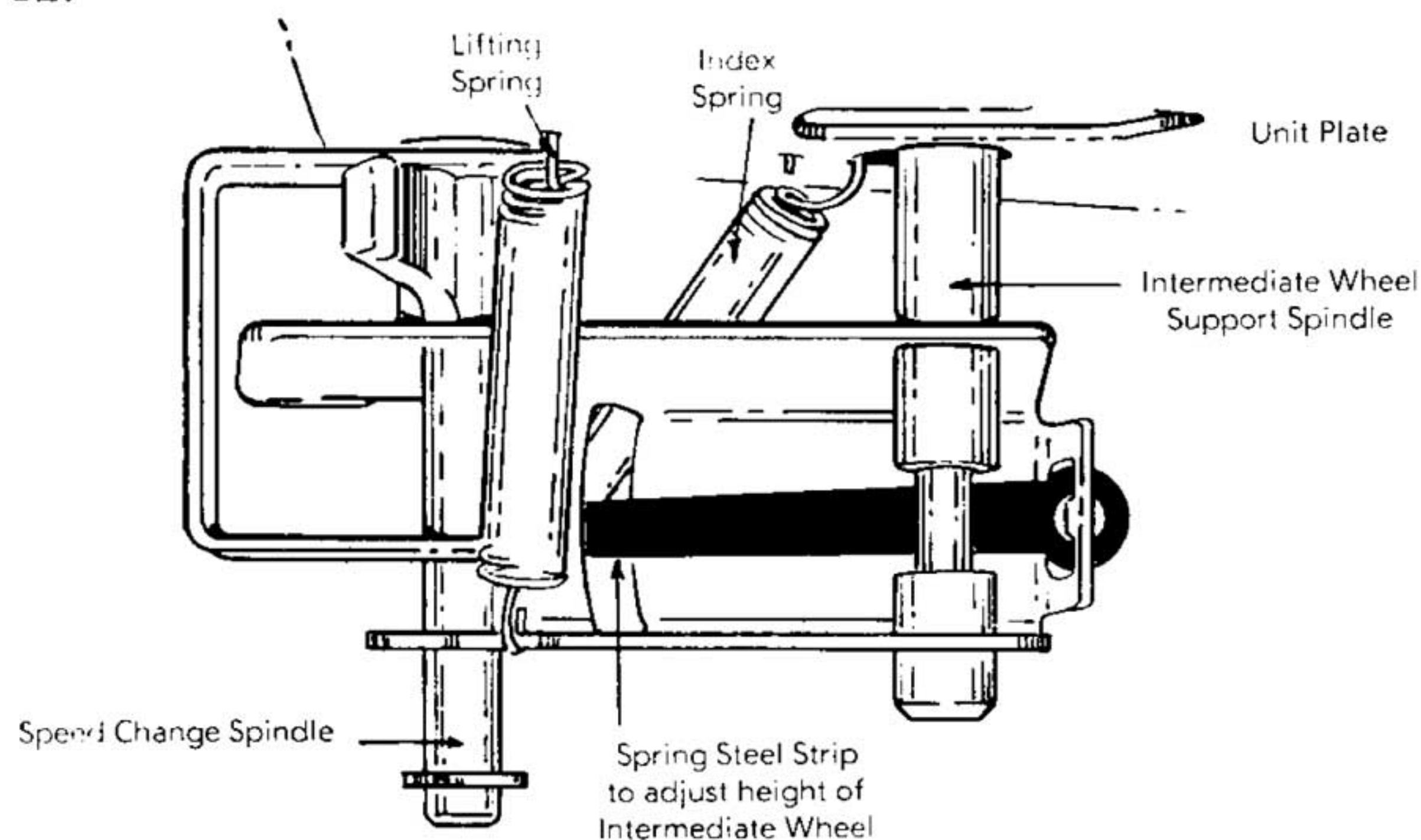


Diagram 12

Pickup Dropping Position

This position is preset but may be adjusted by turning screw (24) clockwise to move the dropping position in and counterclockwise to move the dropping position out on Model 50. For A.T.60 models, grub screw (24A) adjusts the dropping position in a similar manner. See diagrams 13 and 14.

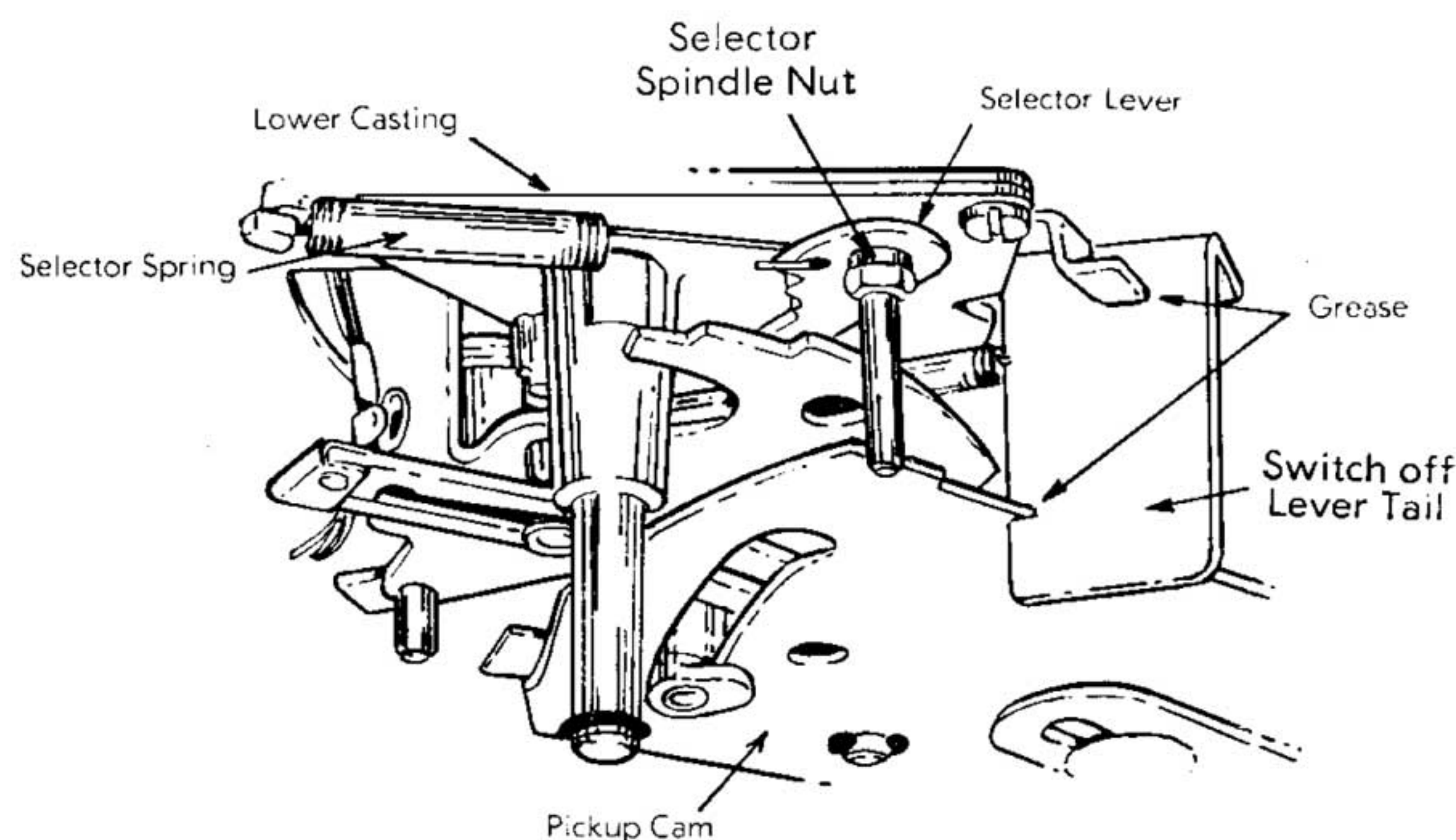


Diagram 11

Pickup Height

Pickup arm lift on automatic cycle can be adjusted on Model 50 by turning screw (6) set vertically in the rear of the pickup arm, clockwise to decrease and counterclockwise to increase pickup height. A.T.60 models are adjusted by screw (6A) turned clockwise to increase and counterclockwise to decrease pickup height. For both models the stylus point should be set $\frac{3}{4}$ " above one record on the turntable mat, as the arm returns to its rest. See diagrams 13 and 14. The settings given may need to be reduced if cartridges of a greater overall height than the normal range are fitted. Reducing the setting decreases the number of records that can be played in automatic sequence.

Pickup dropping position and height are best adjusted with the unit switched off. Load a single record on the record spindle step, switch on to 'Auto' and operate the changer cycle by revolving the turntable clockwise by hand.

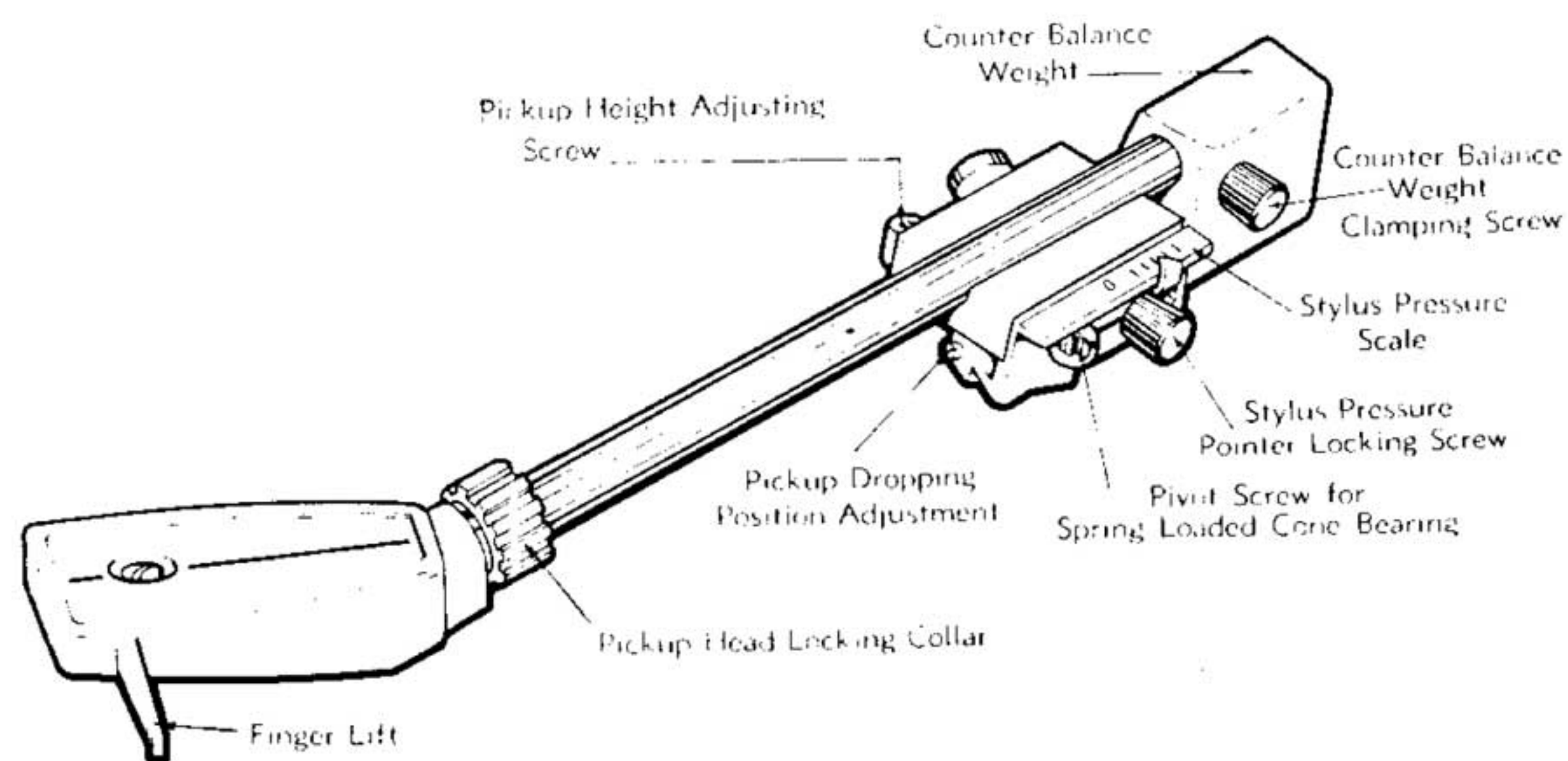


Diagram 13

Pickup Tracking

Should there be a tendency for the pickup to track incorrectly, check that the correct stylus is in use and clean any dust build-up from the stylus. Make sure the stylus pressure is correct for the cartridge fitted and see that the leads from the pickup are free and not fouling any mechanism. Also see that the unit is reasonably level. The unit mounting board may need packing. If a Model A.T.60 pickup tracking should not be affected by the level of the unit because

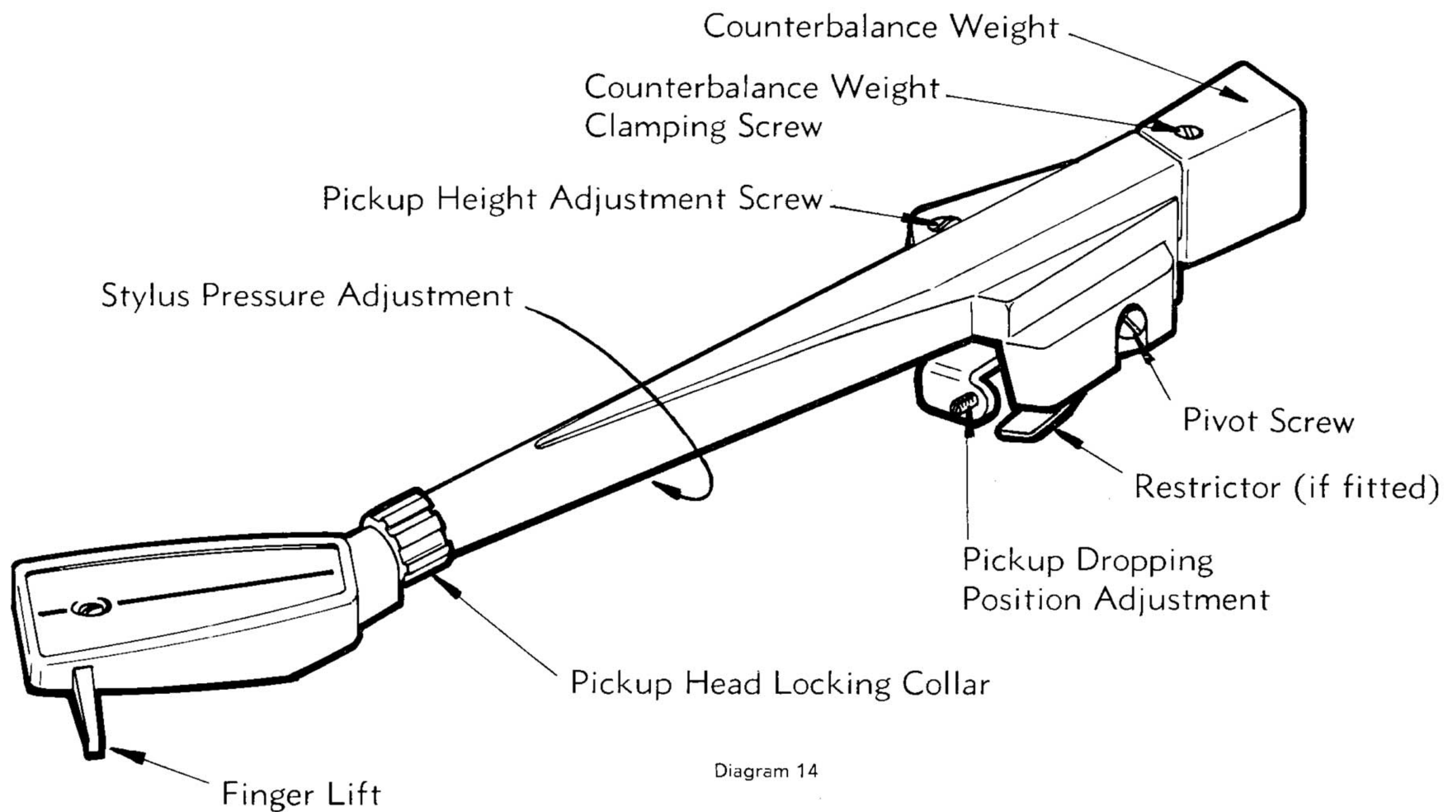


Diagram 14

the pickup arm is counterbalanced. Check, however, that the A.T.60 bias compensator is connected and pivots freely, unless tracking at very low stylus pressures, in which case it may be found preferable to disconnect the compensator.

Stylus Pressure

This should be set to the pressure recommended by the pickup cartridge manufacturer. If a Model 50, check occasionally, preferably with a Garrard Stylus Pressure Gauge, adjusting the stylus pressure by turning the knurled nut (12) on the underside of the pickup arm clockwise to decrease and counterclockwise to increase pressure (viewed from front). A.T.60 models have a built-in stylus pressure gauge. To set, unscrew the knurled screw (14), holding pointer (14A) on the stylus pressure scale (21A), slide the pointer to zero on the scale and leave the screw loose. Now loosen the screw (123) holding the counterbalance weight (122) on the rear of the pickup arm. With the pickup arm off its rest, slide the weight along the arm until the weight balances the pickup arm (the arm will lie horizontal), then tighten the counterbalance weight screw (123). To set the required stylus pressure, slide the pointer along the scale — marked in approximately one gramme divisions — and tighten its locking screw (14) at the desired pressure. See diagrams 13 and 14.

A.T.60 Bias Compensator

Model A.T.60 may be supplied with its bias compensator disconnected. If this is the case then the pin bracket (129) should be swung from the position shown in diagram 15a to the position shown in diagram 15b so that its pin will carry the compensator weight as the pickup arm tracks.

Pickup Muting Switch

On some models a muting switch (101A) is fitted, which short circuits the pickup connections during the time that the changing mechanism is in action. If this fails to operate, check that the contacts are making and breaking correctly

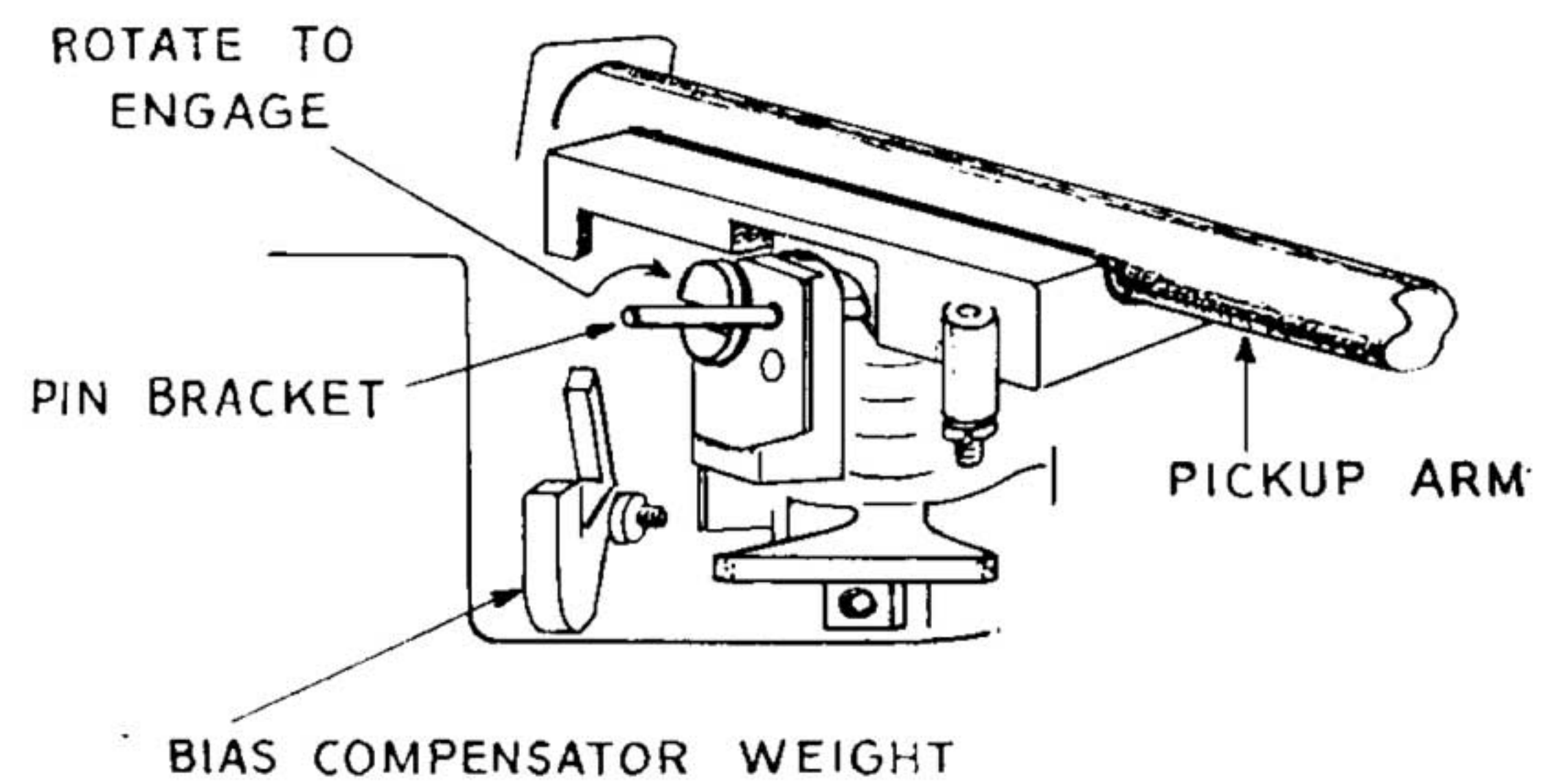


Diagram 15a

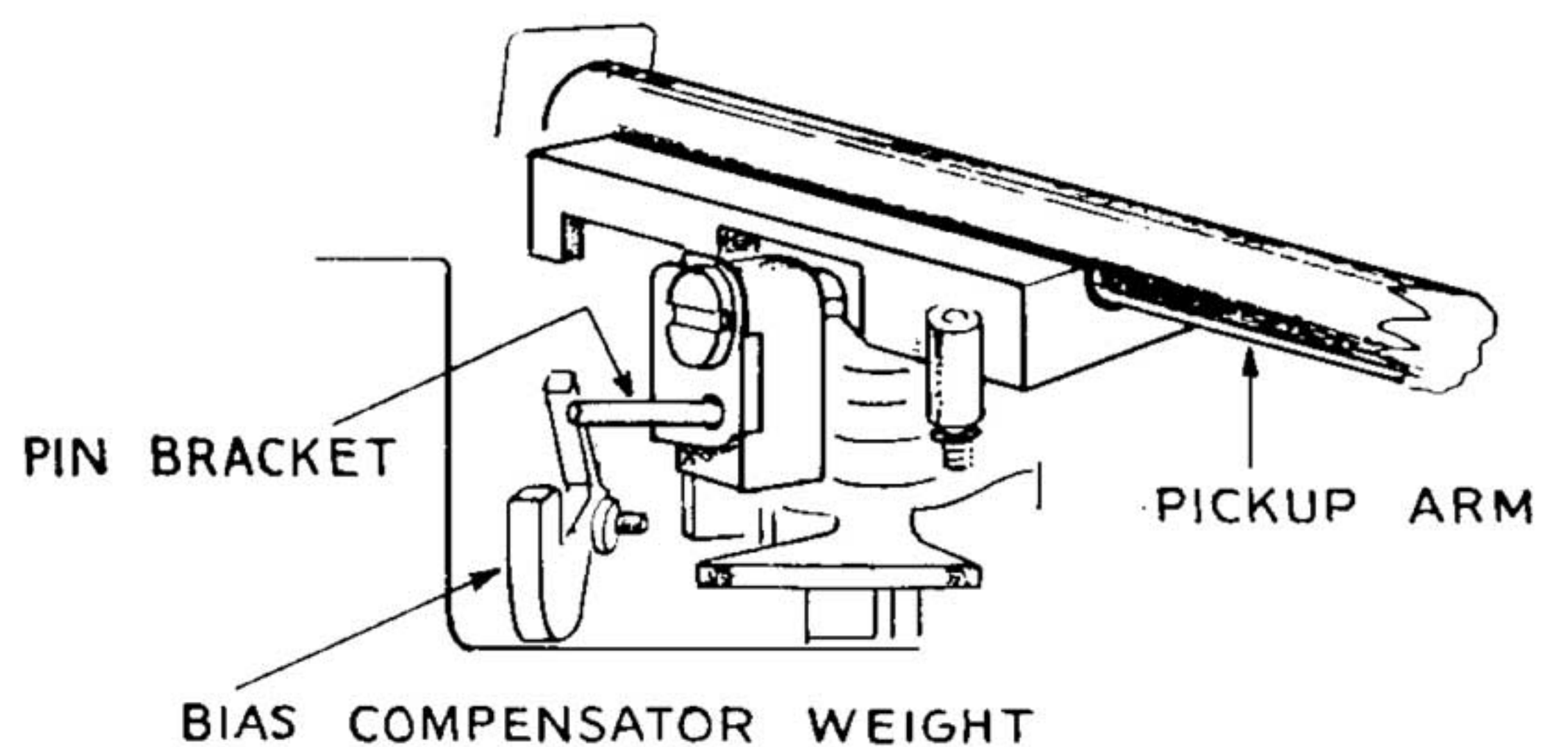


Diagram 15b

and that the wiring is secure. See that the bracket on which the muting switch is mounted is correctly positioned against the two small half-pierced lugs in the unit plate. If it is not, loosen the bracket fixing screw and position the switch correctly.

Removing and Replacing Plug-in Pickup Head

Unscrew locking collar (4A) clockwise and gently pull the head from the arm. To replace the pickup head, locate the pin on the pickup head in the slot of the pickup arm and slide the head in. Bring the locking collar forward, locating its slot over the pickup head pin and screw the collar up until tight.

Record Changer Cycle

Turntable Drive

The record changer cycle is commenced by moving control lever (66) to 'Auto' position, pausing and allowing it to spring back to the 'Manual' position.

The end of control lever (66) acts as a cam and pivots switch lever (72), the forked end of which holds tension link (46). The tension link (46) is pushed as switch lever (72) pivots, and slides forward, itself pivoting tension lever (47) to which one end of rubber intermediate wheel spring (54) is connected. The other end is connected to support lever unit (63) which carries rubber intermediate wheel unit (50). Thus as tension lever (47) pulls spring (54), rubber intermediate wheel (50) is drawn into engagement with motor pulley and inside of turntable rim.

A moment after rubber intermediate wheel (50) has taken up its driving position, a lug on switch lever (72) depresses the plunger (103D) which supplies power to the motor, thus revolving the turntable via its drive.

Trip Mechanism

The same control lever (66) movement which initiates the turntable drive also operates the trip mechanism.

Reject lever (71), attached to the manually operated control lever (66), slides automatic trip lever (89) towards the turntable centre. A pin in automatic trip lever (89) operates through the unit plate (55A) to push pivot plate unit (45), which in turn pushes trip pawl (43), pivoted from cam (41), towards the turntable centre. The lug on trip pawl (43) enters the path of the cast lug on the revolving turntable boss. The lugs collide and the trip pawl (43) is swept along so that the cam (41) to which it is attached, is moved sufficiently for its teeth to mesh with the teeth on the turntable boss, commencing a changer cycle.

It will be noted from the above that a pause after moving control lever (66) to 'Auto' is advisable to give opportunity for the trip pawl (43) to engage the turntable boss lug.

Pickup Arm Movement and Record Dropping

As cam (41) is driven round, its cam track guides the roller of pickup cam (93), causing pickup cam (93) to pivot towards the front of the changer. This movement lifts lifting spindle (91) up the inclined perimeter of pickup cam (93). Lifting spindle (91) raises the pickup arm.

At the same time, pickup cam (93) is pushing release lever (96) towards the turntable centre. Release lever (96) pivots the vertically mounted pawl in record spindle (31) which pushes the bottom record off the record spindle step.

The pickup arm dropping position is determined by the dropping record.

When a 7" diameter record drops, it does not touch selector (1), consequently selector lever (82), which selector (1) carries on its spindle, stays set to engage selector lever stop pin with its 7" notch. This positions the selector spindle to act as a stop for the 7" step of pickup lever (85).

When a 10" or 12" diameter record drops to the turntable, its edge strikes the selector (1) in falling. The selector arm movement pivots the selector lever (82) far enough for it to move in and engage the selector lever stop pin with its appropriate 10" or 12" notch. This positions the selector spindle to act as a stop for the 10" or 12" step of pickup lever (85).

At this stage in the cycle of cam (41) by means of its cam track, it reverses the movement of pickup cam (93) which now pushes friction link (92). The friction link (92) pivots the pickup arm inwards via pickup lever (85) until the appropriate step in the pickup lever (85) is stopped by the selector spindle (1).

The pickup cam (93) continues its reverse movement and lifting spindle (91) now drops back down the inclined perimeter of the pickup cam thus lowering the pickup arm on to the record. The continued movement of pickup cam (93) now brings it into contact with selector spindle (1) which it sweeps clear of pickup lever (85), thereby allowing the pickup arm to track the record freely. Cam (41) completes its cycle and comes out of mesh with its tooth gap adjacent to the turntable boss.

Starting New Cycle Automatically

As the pickup arm enters the lead-out record groove, pickup lever (85) comes up against and starts pushing automatic trip lever (89) which moves the trip mechanism towards the turntable boss as previously described. A premature change cycle is prevented by the turntable boss lug tapping away trip pawl (43) until the accelerated motion imparted by the lead-out groove causes the lug to trip the trip pawl (43) and commence a new cycle.

Since the pickup arm is now in the centre, however, when pickup cam (93) is first pivoted forward, the attached friction link (92) carries the pickup arm back to the pickup rest just after the lifting spindle (91) lifts the arm off the record. This positions the pickup arm to allow the next record to drop, or ready to switch off.

Automatic Switch Off

In a normal cycle, pickup cam (93) swings back and sweeps the switch off lever (76) with it, which returns under spring pressure to its playing position guided by overarm lever (77).

After the last record has dropped, however, overarm (3) drops to its bottom position and a notch in its spindle falls adjacent to overarm lever (77), allowing this lever some movement.

Therefore when switch off lever (76) returns with pickup cam (93), it moves overarm lever (77) into the overarm spindle notch and is pulled by its spring into a stop position for the 7" step of pickup lever (85), preventing the pickup arm from being carried into the 7" dropping position. Pickup cam (93) continues its movement and pushes switch off lever (76) along its new course.

Consequently, a cut-out in the end of switch off lever (76) pushes the pin in switch lever (72) holding switch lever (72) and control lever (66) in position. This action releases control lever (66) which is pulled to the 'Off' position by return spring (70). Control lever (66) resets switch off lever (76) which allows switch lever (72) to retract the intermediate wheel mechanism and also allows switch plunger (103D) to spring out, cutting out the power supply.

Speed Change Mechanism

A four-stepped pulley is used to drive the turntable via the rubber intermediate wheel unit (50). Speeds are selected by the speed change mechanism moving rubber intermediate
(continued on page 19)

wheel (50) to the appropriate driving step of the pulley. When the speed control lever (74) is moved to the desired speed, it pivots speed lever (113) which carries speed cam (112). Speed cam (112) lifts or lowers the rubber intermedi-

ate wheel mechanism and also motivates the index bracket (107) which retracts the rubber intermediate wheel (50) while it is changing pulley steps.

The following three diagrams illustrate A.T.60. They serve as a reference also for Model 50 when used with diagram 14, which shows the Model 50 pickup arm.

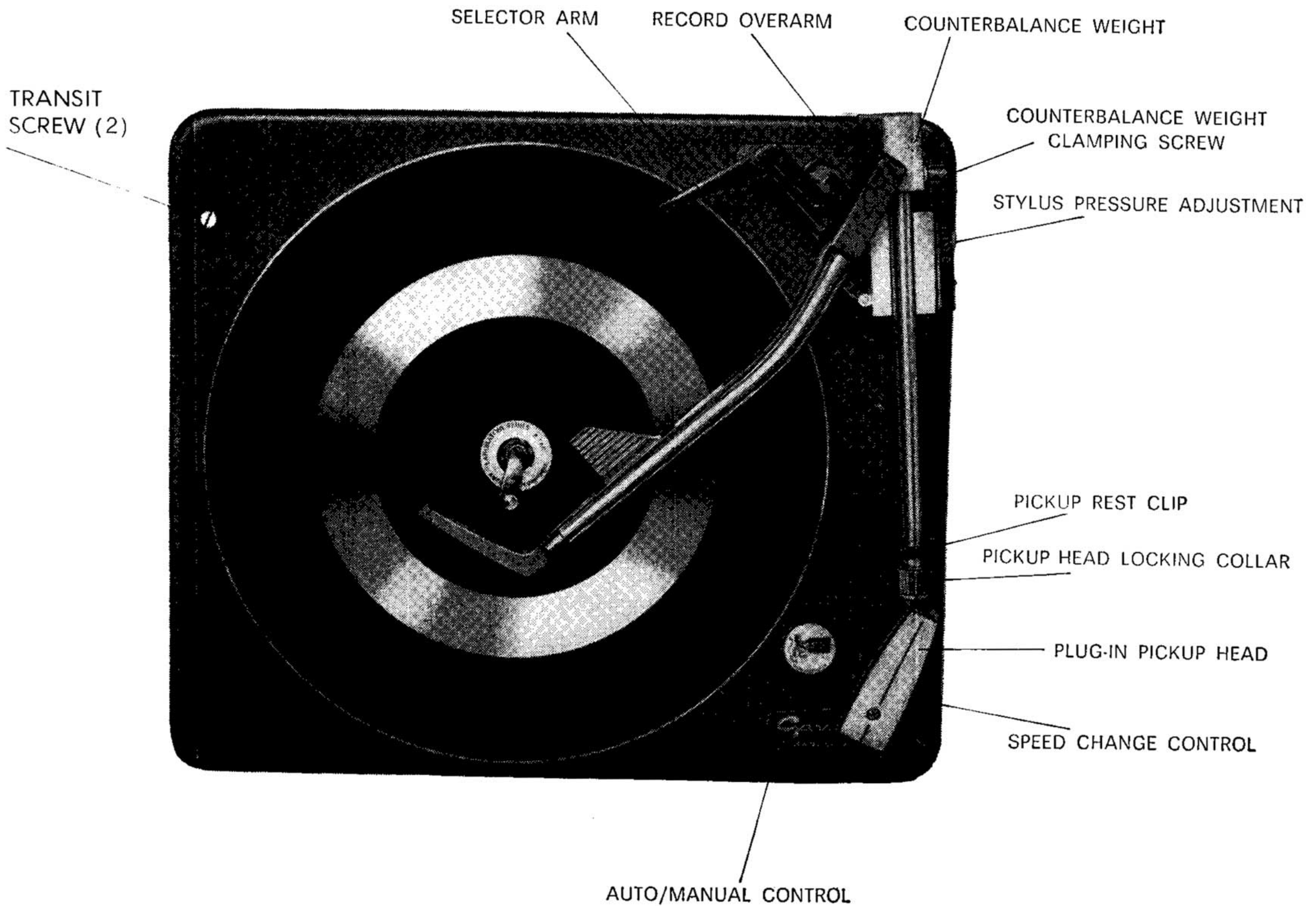


Diagram 16

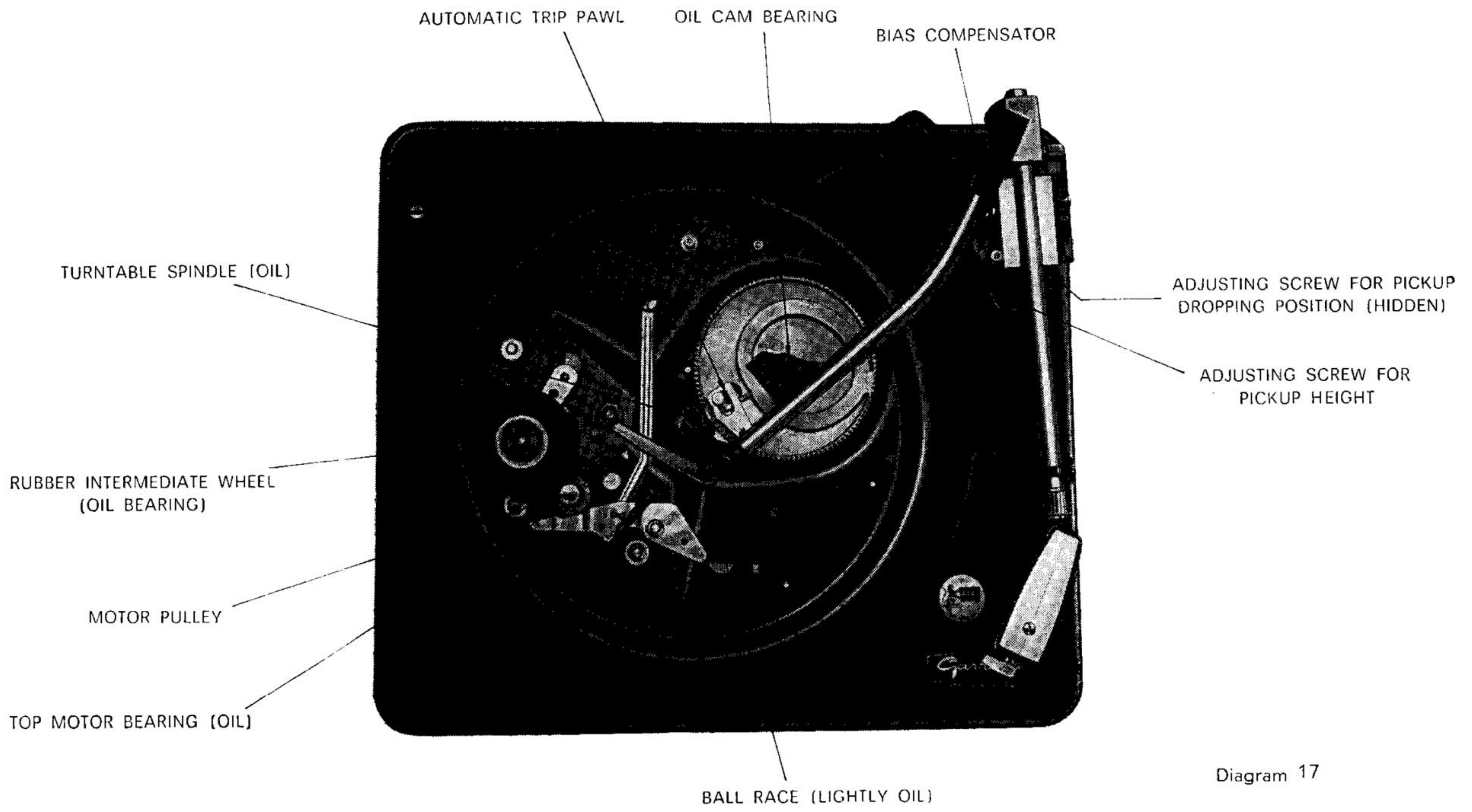
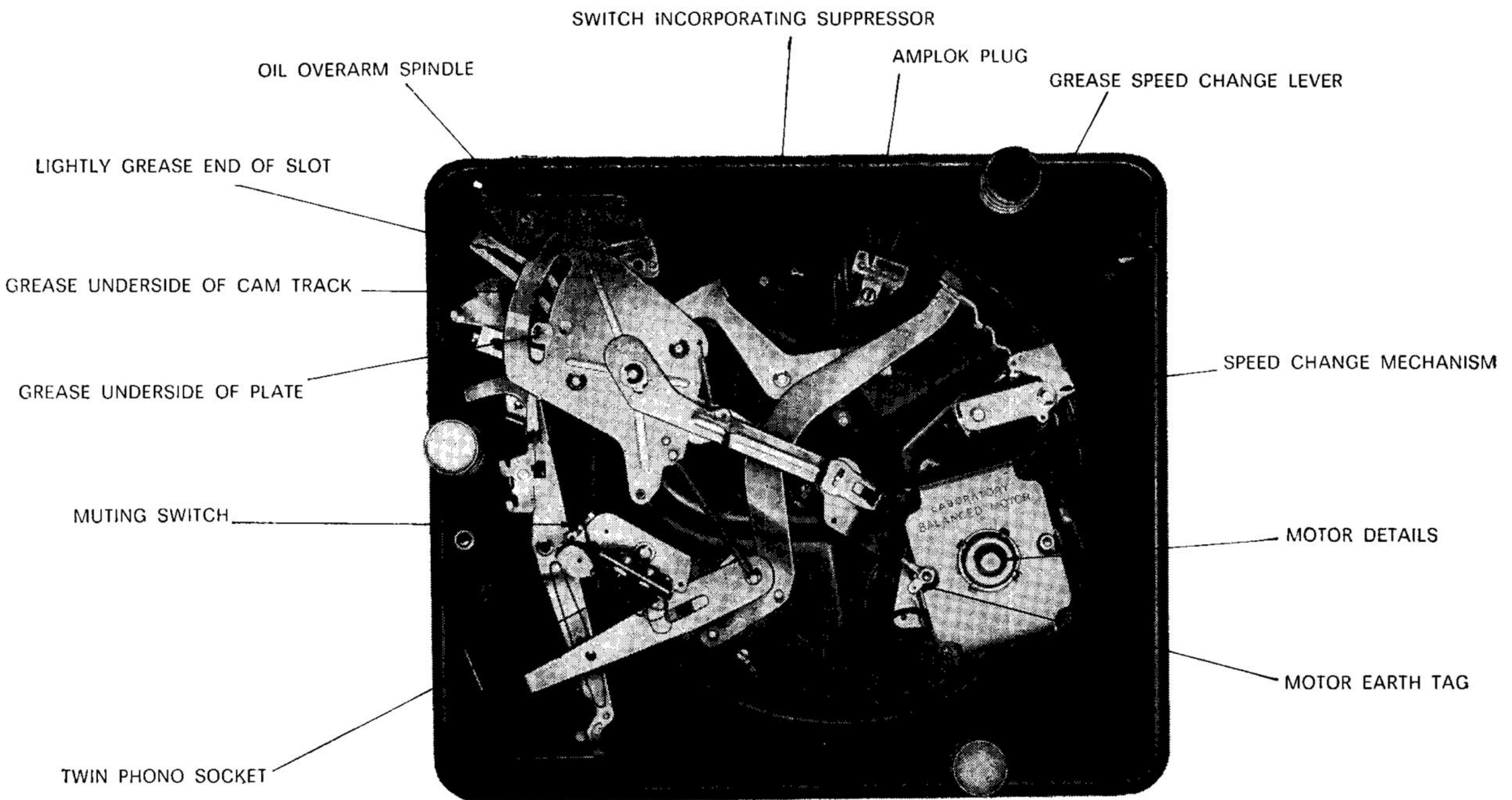


Diagram 17

LIGHTLY OIL ALL PIVOT POINTS



LIGHTLY OIL ALL PIVOT POINTS

DISCONNECT THE POWER SUPPLY BEFORE SERVICING A UNIT

FAULT	CAUSE	CORRECTION
Pickup remains in centre of record, or repeats in record groove when nearing centre of record.	1. Stylus pressure too light.	Make sure that vertical movement pivot spindle (7) is free on Model 50. If necessary, lubricate with a spot of light machine oil. If Model A.T.60, make sure that ball races bearing pivot screws (7B and 7C) are clean. Check stylus pressure on both models and adjust as described under "Service Adjustments".
	2. Accumulation of dust on stylus or worn stylus.	Remove dust. Check stylus with magnifying glass. Replace it if worn.
	3. Pickup leads not free.	See in "Pickup Tracking" under "Service Adjustments".
	4. Pickup cartridge case (29) touching on record or record label.	Check that cartridge fixing screws (25) are tight. Then make sure that the stylus bar is not damaged.
	5. Too much friction on automatic trip links.	Guard stylus and move pickup arm slowly inward by hand. Should any stiffness be felt, check associated levers for freeness. Lightly grease automatic trip lever (89) as shown on diagram 10, unless bearing pad (89A) is fitted, in which case keep clean.
Turntable runs excessively fast or slow.	1. Voltage range of motor set incorrectly.	Disconnect power supply and check all voltage connections. Make sure that specification on motor end cover matches power supply. If dual voltage range model, check changeover block connections against the information on the changeover block cover. Make sure links (120D) are tight and making good contact.
	2. Incorrect motor pulley (115G) 4-pole motor only.	Remove turntable (see Maintenance) and check pulley (115G) by colour finish, nickel for 50 cycles and brass for 60 cycles power supply. If incorrect, replace it. When ordering, quote model type and frequency of power supply. Note: 2-pole motor pulley is not removable, therefore replace with new motor or top cover and rotor assembly.
	3. Tight rubber intermediate wheel (50) bearing.	Spin the rubber intermediate wheel (50) to see if it runs freely. If not free, remove it, clean its spindle, lubricate with light machine oil and reassemble. Check that one presspahn washer (82) is in place above and below the wheel.
	4. Motor pulley (115G), or rubber intermediate wheel (50) height incorrect.	See "Service Adjustments" under "Speed". Note: If a 4-pole motor pulley (removable), check that it is set with the top of the pulley (115G) level with the top of the rubber intermediate wheel stop pin in the unit plate. Adjust by loosening grub screws (115S), if necessary to permit movement.
Speed slightly fast or slow.	1. Wrong size pulley (115G) — 4-pole motor only.	If the turntable fails to run within reasonable limits even after following the preceding instructions, time the speed of the turntable while playing a record. Send the existing pulley (115G) stating model type and turntable speed, to our Technical Service Department and your pulley will be replaced. Note: 2-pole motor pulley is not removable.

FAULT	CAUSE	CORRECTION
Speed varies erratically.	1. Oil on driving surface.	Remove turntable and clean driving surfaces (see Maintenance).
	2. Motor pulley (115G) loose or height incorrect — 4-pole motor only.	Check that grub screws (115S) are tight. See “Turntable runs excessively fast or slow” — Cause 5.
	3. Motor shaft tight.	If the motor shaft is tight in its bearings it will not spin freely when spun with the fingers. This condition may be caused by too heavy a lubricating oil, or mis-aligned motor bearings. See “Motor runs slowly” — Causes 1 and 2 — for correction.
	4. Warped records slipping.	Warped records may slip if placed one on top of another. This may be overcome by sticking a small strip of adhesive tape on the offending record labels.
Speed varies consistently (Wow and Flutter).	1. Tight turntable spindle.	Revolve the turntable by hand without engaging the record changer mechanism; it should turn freely. If rough or sticky, remove the turntable (see Maintenance) and clean its bearing and spindle with a clean cloth. Oil the spindle and ball race (38) with light machine oil. Remove surplus oil.
	2. Dirt on inside of turntable rim.	Remove turntable (see Maintenance) and clean inside of turntable rim with a clean cloth.
	3. Loose motor pulley (115G) — 4-pole motor only.	See “Speed varies erratically” — Cause 2.
	4. Flats on rubber intermediate wheel (50).	Slight flats can be removed by running the unit continuously for a few hours. If this does not suffice, replace the rubber intermediate wheel (50). Avoid flats by allowing the unit to switch off automatically, for if the power point is used as a switch, the mechanism may remain in engagement, forming a flat on the rubber intermediate wheel (50).
	5. Bent shaft or unbalanced rotor.	Should the motor shaft with pulley removed (if the removable type) be more than .0005” out of alignment or the motor vibrates badly, the rotor and shaft assembly (115B) or (115M) should be replaced. The rotor and shaft are integral and no attempt should be made to separate them.
Turntable does not revolve when motor is running.	1. Oil on driving surfaces.	Remove turntable and clean driving surfaces (see Maintenance).
	2. Rubber intermediate wheel spring (54) not functioning.	Check that this spring (54) is still in place. Move the Control to “Manual” and watch to make sure that the spring (54) goes into tension. If not, it means that the spring has stretched and should be replaced.
	3. Rubber intermediate wheel support bracket (110) not free.	Check that this bracket (110) is free to move in the slot in the unit plate. The rubber intermediate wheel (50) should engage the motor pulley firmly on switching the Control to “Manual” and retract freely when switching to “Off”. If the bracket (110) is tight, check the speed change mechanism underneath the unit plate. See that none of the mechanism is damaged and lubricate the rubber intermediate wheel support spindle and speed change spindle with light machine oil.

FAULT	CAUSE	CORRECTION
Fails to switch off when last record has played, or switches off without playing a record.	<ol style="list-style-type: none"> 1. Record overarm spindle (3) not free. 2. Excessive friction on control lever (66). 3. Switch off lever (76) stiff. 	<p>Check that the record overarm (3) when in its innermost (i.e. operating) position will drop freely under its own weight when lifted up. If not, remove spring clip (81) and spring, if fitted, and pull out the overarm (3). Clean it, oil its spindle and replace it, checking for freeness. To reset the overarm (3) check that the rubber washers at the top of the spindle are right against the upper casting (40). Then with the overarm in its operating position and no records on the record spindle (31), check that the end of the overarm (3) is not more than $\frac{7}{32}$" below the record spindle step. Make sure the record spindle (31) is located properly.</p> <p>Check that the movement of the control lever (66) is not restricted and its associated levers are not damaged. Should any lever be damaged, repair or replace it. Grease the end of control lever (66) that operates switch lever (72).</p> <p>Check that this lever (76) moves freely between unit plate and lower casting (78). When the tail of this lever (76) is moved away from the pickup arm, it should return under spring pressure. For the switch off mechanism to work properly, the switch off lever tail must be square with the unit plate. If it has been bent in transit, carefully bend it square again. Apply grease as stated under "Maintenance" and in diagram 11.</p>
Pickup consistently lands too far in or out.	<ol style="list-style-type: none"> 1. Pickup dropping position requires adjustment. 2. Selector lever nut (83) loose. 3. Selector moulding (1) damaged or out of position. 	<p>See "Pickup Dropping Position" under "Service Adjustments".</p> <p>Check that nut (83) is tight to ensure that selector lever (82) is securely held.</p> <p>Check that the selector (1) arm moulding is not damaged. Check its position thus:— With no record on spindle step (31) and power turned off, switch control to "Auto" and revolve the turntable clockwise by hand. Watch record spindle pawl as it moves across the record spindle step. Stop revolving the turntable when the pawl reaches its outermost position. Then with the overarm (3) in its operating position, check that the tip of the selector arm is between $4\frac{21}{32}$" and $4\frac{3}{4}$" radius from the turntable centre. Also, move separately a 10", then a 12" record slowly down the record spindle and make sure that the selector lever (82) catches into its 10" and 12" selecting positions. If the selector (1) is faulty, it should be replaced.</p>
Erratic selection of records.	<ol style="list-style-type: none"> 1. Selector lever nut (83) loose. 2. Selector spring (84) weak or incorrectly assembled. 3. Friction link (92) requires lubrication. 	<p>Tighten nut (83).</p> <p>Move overarm (3) to operating position, then move selector arm (1), by hand, away from the turntable centre; it should return by light spring pressure. If it does not, check that selector spring (84) is correctly assembled to lower casting (78) and selector lever (82). If it has stretched, replace it.</p> <p>Make sure that the friction link (92) is not damaged; grease it along its slot.</p>

FAULT	CAUSE	CORRECTION
Records do not drop.	1. Damaged record spindle (31).	Press the record spindle pawl into the spindle (31) against its spring tension. It should readily return. If it sticks, the spindle has been damaged and should be replaced.
	2. Top of record spindle pawl rough.	Lightly polish with fine emery paper, if rough, to prevent sticking.
	3. Record overarm (3) tight.	Oil overarm spindle (3) so that the overarm follows a stack of records downwards as dropping occurs.
	4. Non-standard records.	Records conforming to B.S. 1928:1965 and I.E.C. Publication 98 should be used on these units. Records with oversize centre holes or over .090" thick around the centre hole may fail to drop. Remove label flash from new records if obstructing hole.
	5. Release lever spring (98) off or weak.	Check that this spring (98) is connected from the release lever (96) to the pickup cam (93). If stretched, replace it.
	6. Pawl spring (97) off or weak.	Check that this spring (97) is connected from the release lever (96) to the unit plate. If stretched, replace it.
Two or more records drop together.	1. Record spindle latch not free.	The latch must move up and down freely. If it sticks up while playing records, then two or more may drop together. Remove noticeable burrs from the latch with a fine file. If necessary, remove latch by driving out cross pin at top of spindle (31). Make sure that latch and its slot are smooth and that latch is flat. Lightly clinch hole to retain pin when reassembling. Carefully support record spindle (31) during this operation.
	2. Non-standard records.	Records conforming to B.S. 1928:1965 and I.E.C. Publication 98 should be used on these units. If records under .053" thick around centre holes are played, then two may drop together.
Pickup jumps first few grooves of record.	1. Stylus pressure too light.	See "Service Adjustments".
	2. Worn or wrong size stylus.	Check that the stylus is correct for the type of record being played. Examine the stylus under a magnifying glass and replace if chipped or worn.
	3. Changer not level.	Check level as described in "Pickup Tracking" under "Service Adjustments". The fully counterbalanced pickup arm on Model A.T.60 will not be affected by the level of the unit.
	4. Pickup leads not free.	See "Pickup Tracking" under "Service Adjustments".
	5. Groove guard on record.	Some records are made with a raised rim around the edge of the record to guard the record surface. If the stylus drops too far out on the slope of this rim, it may jump across the first few record grooves. Therefore set the Pickup Dropping Position — see "Service Adjustments" — so that the stylus lands well inside the raised rim.
	6. Too much friction in friction link (92).	Grease friction link (92) along its slot.

FAULT	CAUSE	CORRECTION
Pickup arm does not lower on to record.	<ol style="list-style-type: none"> 1. Lifting spindle unit (91) sticking. 2. Pickup arm pivot not free. 	<p>With pickup arm raised, pull up lifting spindle (91) and watch for it to return readily under spring pressure. If sticking, examine beneath changer to see that no leads or mechanism foul it. Check that lifting spring (91B) has not slipped over its retaining shoulder. Lubricate lifting spindle (91) with light machine oil.</p> <p>Check pickup arm vertical movement pivots as described under "Pickup remains in centre of record" — Cause 1.</p>
Pickup begins to lower, then swings in.	<ol style="list-style-type: none"> 1. Pickup leads not free. 2. Lifting spring (91B) or friction spring (87) not working. 	<p>See "Pickup Tracking" under "Service Adjustments".</p> <p>Check that lifting spring (91B) has not slipped over its retaining shoulder and is not damaged or obstructed. Check that blue spring steel friction spring (87) is working; with the lifting spring held clear, deflecting it away from pickup cam (93) it should spring back. Replace either of these springs if faulty.</p>
Stylus fails to track.	<ol style="list-style-type: none"> 1. Dust build-up on stylus. 2. Stylus pressure too light. 3. Pickup arm pivot not free. 4. Worn or wrong size stylus. 	<p>Remove accumulated dust from stylus.</p> <p>See "Service Adjustments".</p> <p>Check pickup arm vertical movement pivots as described under "Pickup remains in centre of record" — Cause 1.</p> <p>Check that the stylus is correct for the type of record being played. Examine the stylus under a magnifying glass and replace if chipped or worn.</p>
Rumble.	<ol style="list-style-type: none"> 1. Motor pulley (115G) height incorrect — 4-pole motor only. 2. Lack of lubrication. 3. Faulty mounting. 4. Dirt on rubber intermediate wheel (50). 5. Rubber intermediate wheel (50) perished. 6. Out of true motor pulley (115G) — 4-pole motor only. 7. Incorrect pickup match with amplifier. 	<p>See "Turntable runs excessively fast or slow" — Cause 5.</p> <p>Remove turntable (see "Maintenance"), clean turntable spindle, bearing and ball race (38); lubricate them with a light oil. Remove any excess oil.</p> <p>Check that the spring mountings (121) hold the unit free of the cabinet surround and that if plastic foam damping pads (121A) are used, they are fitted correctly. See that the motor is free in its suspensions and not affected by the attachment of a heavy power supply cable.</p> <p>Clean the rubber intermediate wheel (50) with a cloth, or scrape the driving surface lightly to remove any impregnated dirt.</p> <p>Should the rubber intermediate wheel (50) have hardened, showing cracks on its surface, replace it.</p> <p>Make sure that the two fixing grub screws (115S) are equally tightened. See "Turntable runs excessively fast or slow" — Cause 5.</p> <p>Make sure that pickup matching circuit is to manufacturer's recommendations.</p>

FAULT	CAUSE	CORRECTION
Interference on reproduction.	<ol style="list-style-type: none"> 1. Bad switch (103 etc.) contact. 2. Loose power supply lead connections. 3. Loose pickup cartridge connections. 	<p>Switch off the power supply and remove cover from switch. Check leads are securely soldered, contacts are clean and close when the control is moved to "Manual". To do this, it may be necessary to screw temporarily the switch to the unit plate without the cover on.</p> <p>Examine all connections to make sure of good electrical contact. If a dual voltage model, check that the voltage changeover links (120D) are tight on their studs. Scrape any tarnish causing bad contact from the studs. See the links (120D) are set to the correct voltage as shown on the changeover block cover (120C).</p> <p>Check that the pickup leads are securely soldered to the pickup cartridge tags and tagstrip (101). See appropriate diagrams 2, 3, 4 or 5. Also check the continuity of the leads by removing the tags from the cartridge and checking the circuit from the tags to the tagstrip. Do not solder direct to the cartridge as heat may damage the elements.</p>
Mechanical noise.	<ol style="list-style-type: none"> 1. Lack of lubrication. 2. Flats on rubber intermediate wheel (50). 3. Loose lever. 	<p>See "Rumble" — Cause 2.</p> <p>See "Speed varies consistently (Wow and Flutter)" — Cause 4.</p> <p>Eliminate buzz or chattering noise by checking each lever in turn, damping it with a finger. A spot of light oil on pivots and points of contact should remedy the trouble when the offending lever is found.</p>
Motor will not start.	<ol style="list-style-type: none"> 1. No power supply. 2. Loose connections. 3. Bad switch contact. 4a. Open circuit coils—4-pole motor. 4b. Open circuit bobbin coil — 2-pole motor. 	<p>Check that the current is reaching the motor.</p> <p>See "Interference on reproduction" — Cause 2.</p> <p>See "Interference on reproduction" — Cause 1.</p> <p>Check coils (115J) for continuity. Total resistance for high voltage range should be 780 ohms and for low voltage range 195 ohms. If continuity check is not satisfactory, disconnect power supply and motor leads, noting their connections, particularly for a dual voltage model. Remove turntable (see Maintenance) and withdraw motor from its suspensions. Dismantle motor and tap out 2 pins locating pole piece on which coil (115J) is assembled, remove faulty coil and replace it with spare. On many units the coils may be linked together and if either is faulty, a new pair should be fitted.</p> <p>Check bobbin for continuity as before. The correct readings are given in the table at the end of this fault-finding chart. If the continuity check is not satisfactory, remove the motor from its suspensions as for a 4-pole motor and dismantle the motor to replace the stator pack assembly (115A) which includes the coil.</p>
Motor runs slowly.	<ol style="list-style-type: none"> 1. Motor lubrication. 2. Motor bearings out of line. 	<p>The rotor shaft should spin freely by hand. If not, a too thick or congealed oil may have been used. Dismantle the motor and clean bearings and rotor shaft. Lubricate with thin machine oil and reassemble.</p> <p>If rotor shaft will not spin freely, although properly lubricated, tap the body of the motor with a piece of wood such as a screwdriver handle, to shock the self-aligning bearings into line and free the rotor shaft. Should a faulty bearing or ineffective retaining spring be found, replace the appropriate cover assembly (115C or 115H). Note: If a 2-pole motor, replace top cover and rotor assembly (115B) if necessary.</p>

(continued)

FAULT	CAUSE	CORRECTION
	3. Motor coils (115J) incorrect polarity — 4-pole motor only.	The polarity of the poles on which the coils (115J) are assembled should be the same. If the motor runs slowly, check polarity and if necessary change over the leads to one coil.
	4. Motor coil(s) open circuit.	The two coils (4-pole motor) or two windings of the single bobbin (2-pole motor) are connected in parallel to run on low voltage on the dual voltage model. If one coil or winding becomes open circuit, the motor will still run, but slowly. Check coil continuity as stated under "Motor will not start" — Cause 4a or 4b. On single voltage range models, the coils are connected in series.
	5. Motor frequency wrong.	Check motor pulley colour finish, see "Speed" under "Service Adjustments". A motor running on a frequency lower than the correct motor frequency will run slow and a motor running at a frequency higher than the correct motor frequency will run fast.

Motor runs hot.	1. Normal running conditions.	<p>Provided the motor current does not exceed the following figures at the voltage stated, the temperature of the motor should not rise above its designed running temperature.</p> <p>4-pole motor:</p> <table border="0"> <tr> <td>115 volts, 60 c.p.s.</td> <td>0.1 amp</td> </tr> <tr> <td>240 volts, 50 c.p.s.</td> <td>0.06 amp</td> </tr> </table> <p>2-pole motor:</p> <table border="0"> <tr> <td>115 volts, 60 c.p.s.</td> <td>0.16 amp</td> </tr> <tr> <td>240 volts, 50 c.p.s.</td> <td>0.09 amp</td> </tr> </table> <p>Although Garrard motors are designed to run under un-ventilated conditions, as much ventilation as possible is beneficial.</p>	115 volts, 60 c.p.s.	0.1 amp	240 volts, 50 c.p.s.	0.06 amp	115 volts, 60 c.p.s.	0.16 amp	240 volts, 50 c.p.s.	0.09 amp
	115 volts, 60 c.p.s.	0.1 amp								
	240 volts, 50 c.p.s.	0.06 amp								
	115 volts, 60 c.p.s.	0.16 amp								
240 volts, 50 c.p.s.	0.09 amp									
2. Short circuit in coil(s).	Check the windings for short circuit with an ohmmeter; the correct resistances are given under "Motor will not start" — Cause 4a, for the 4-pole motor and in the table at the end of this fault-finding chart for the 2-pole motor.									
3. Incorrect voltage.	Check that voltage specification on motor end cover corresponds to voltage of the power supply. If supply voltage is too high, the coil may burn out. If a voltage change-over block (120A) is fitted, check that its links (120D) are set correctly.									
4. Insulation leakage to earth.	Test insulation between windings and frame with a 500 volt insulation test meter; it should not be less than two megohms. It is recommended that the motor be earthed from its earthing tag to a good earthing point.									

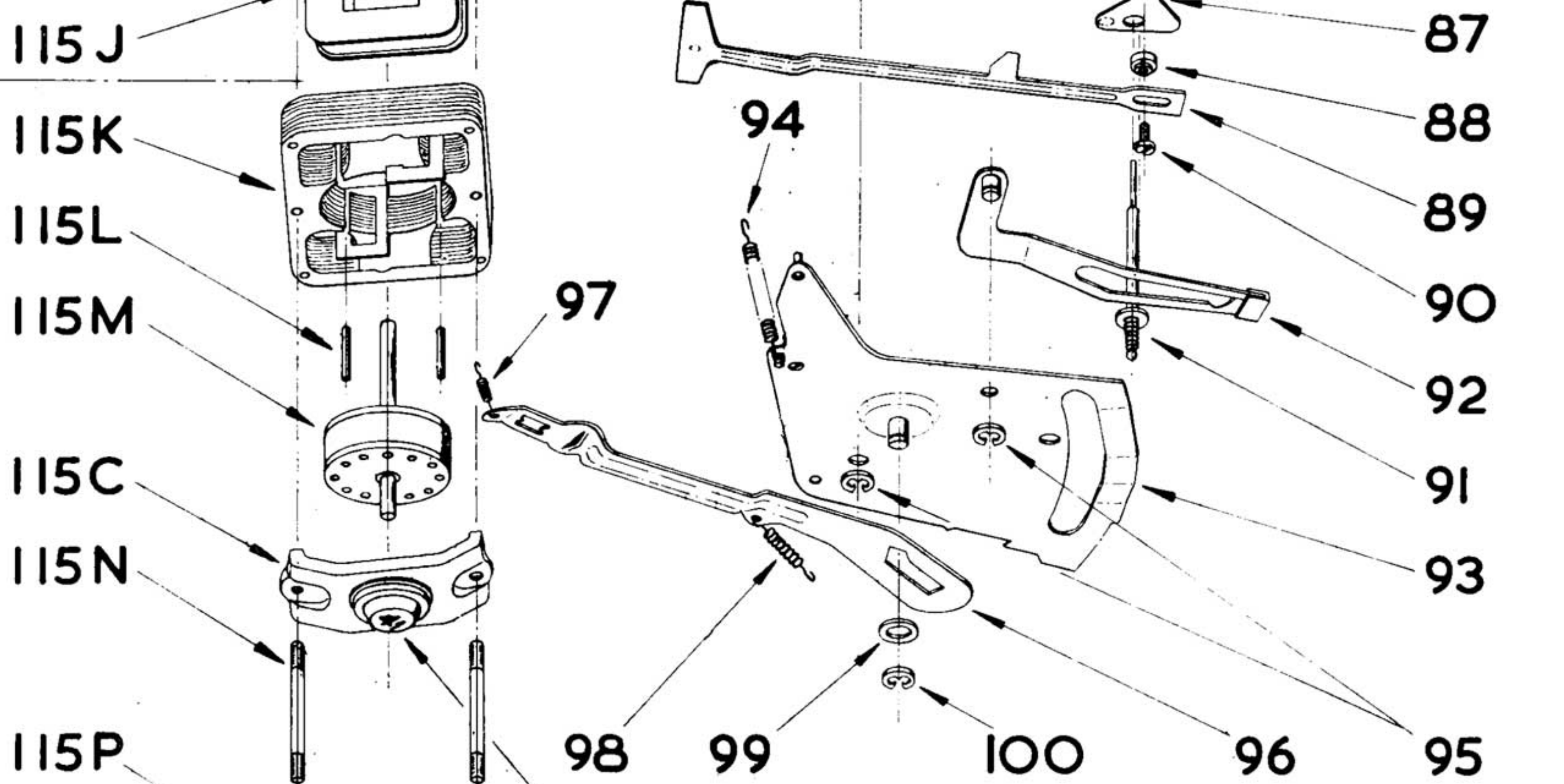
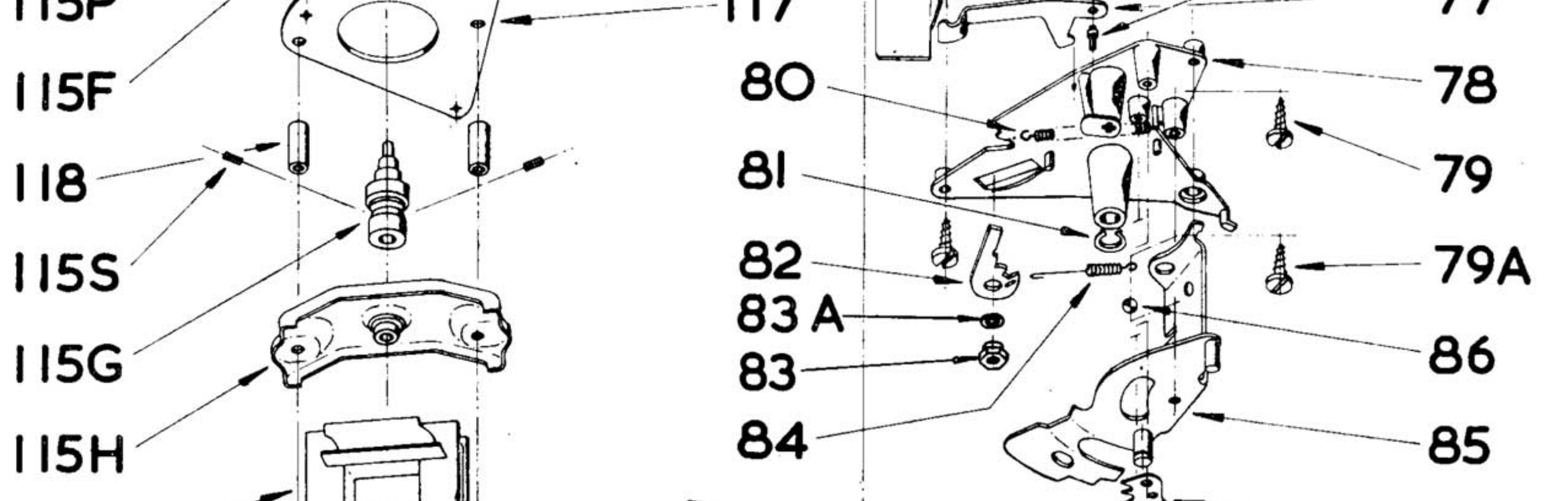
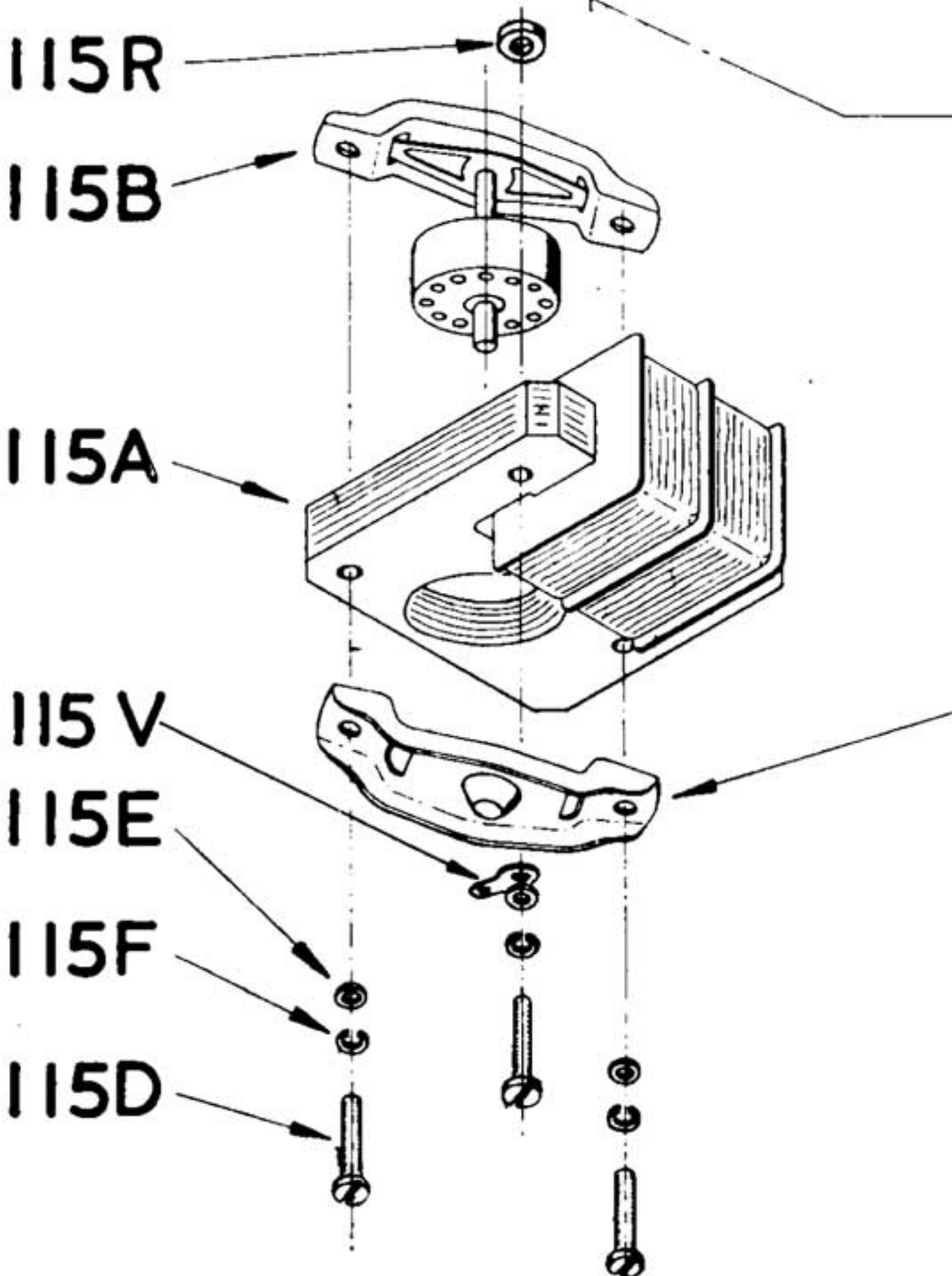
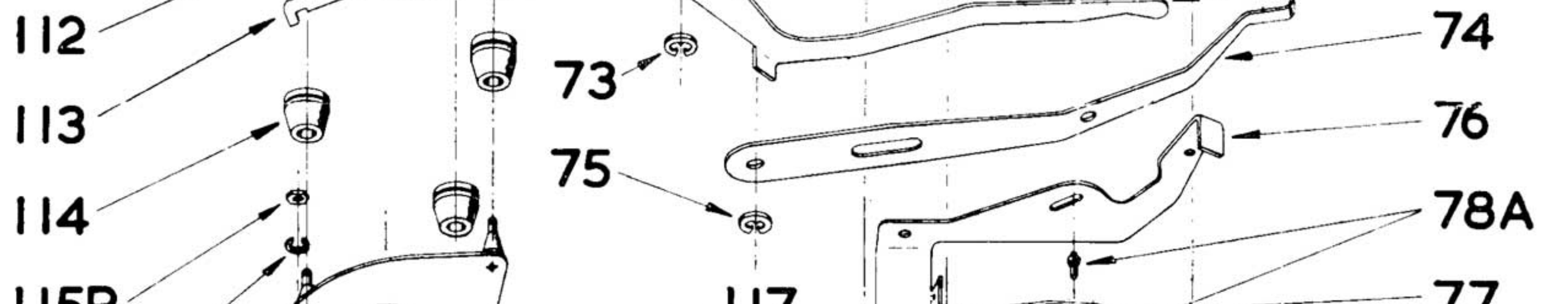
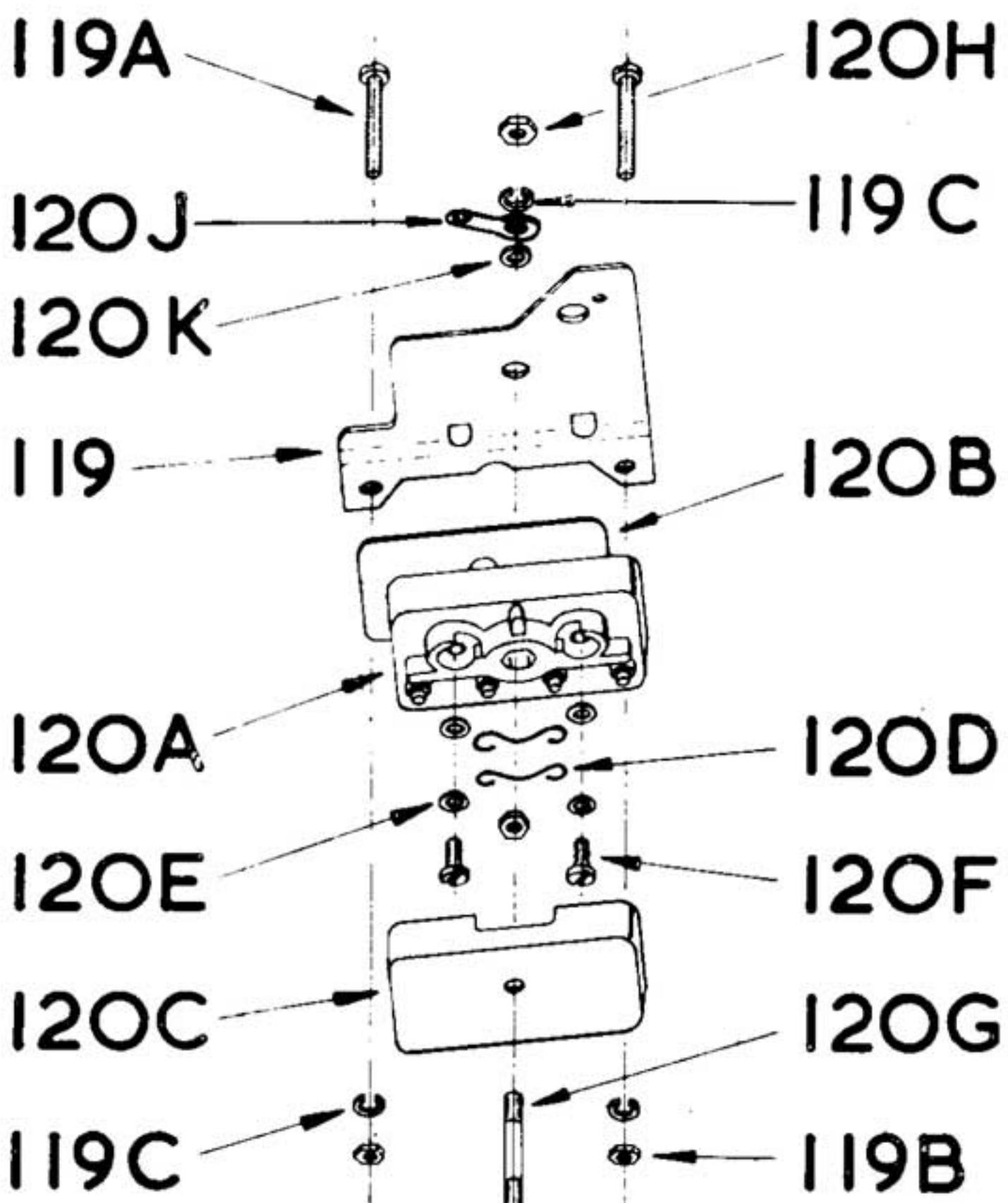
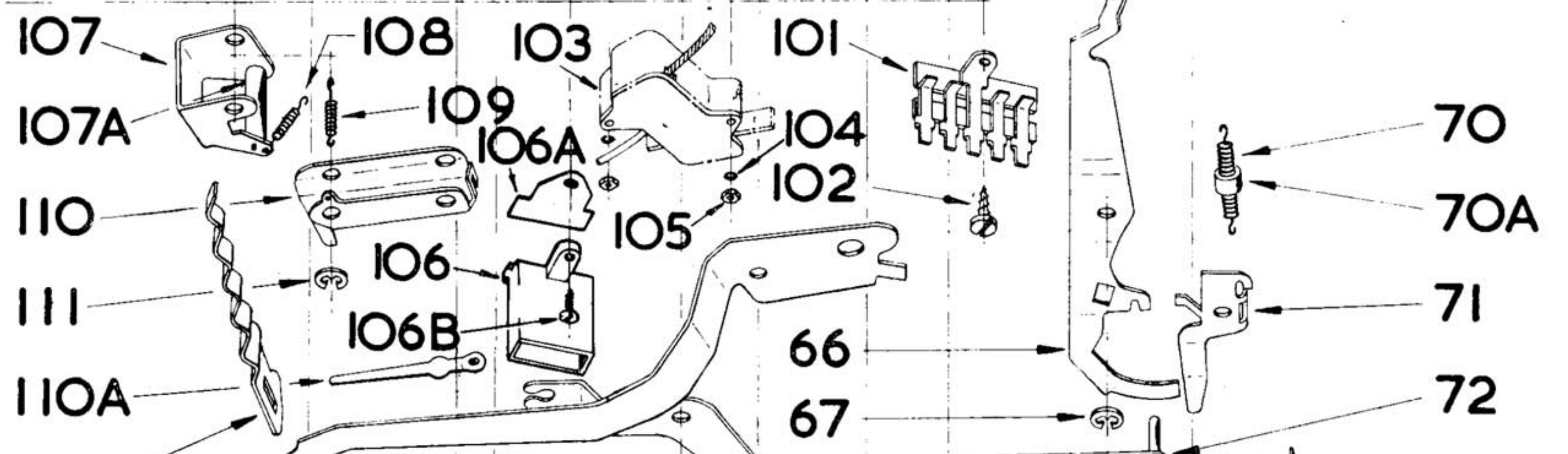
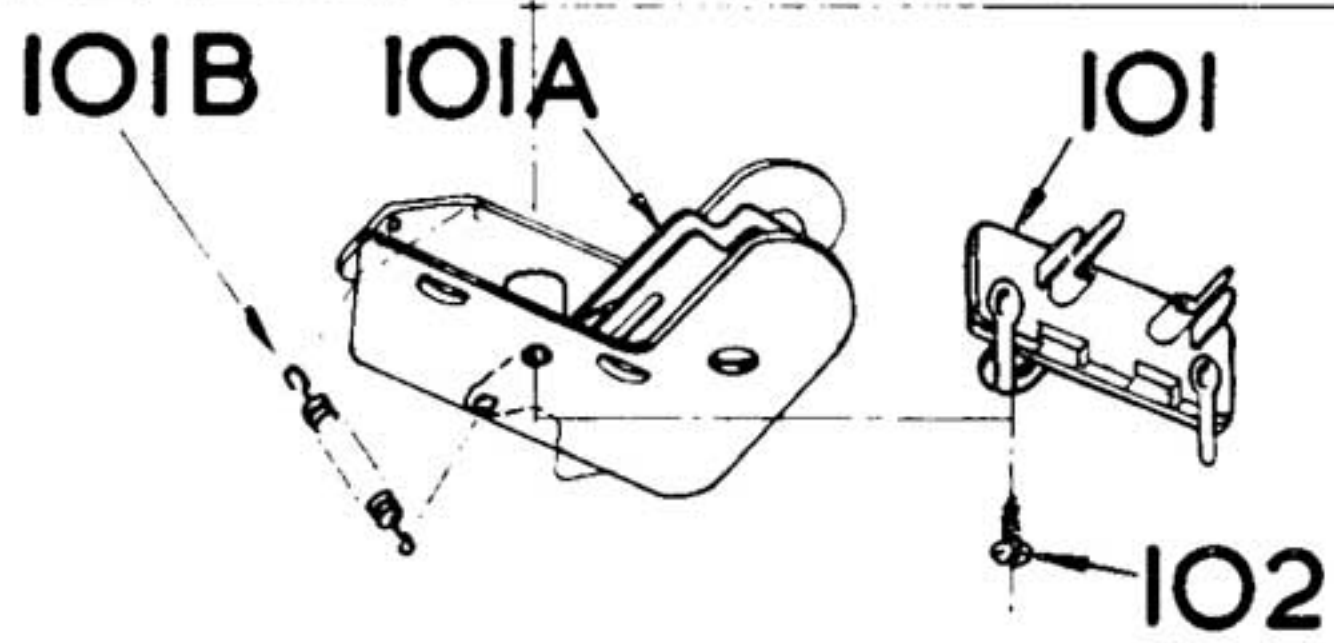
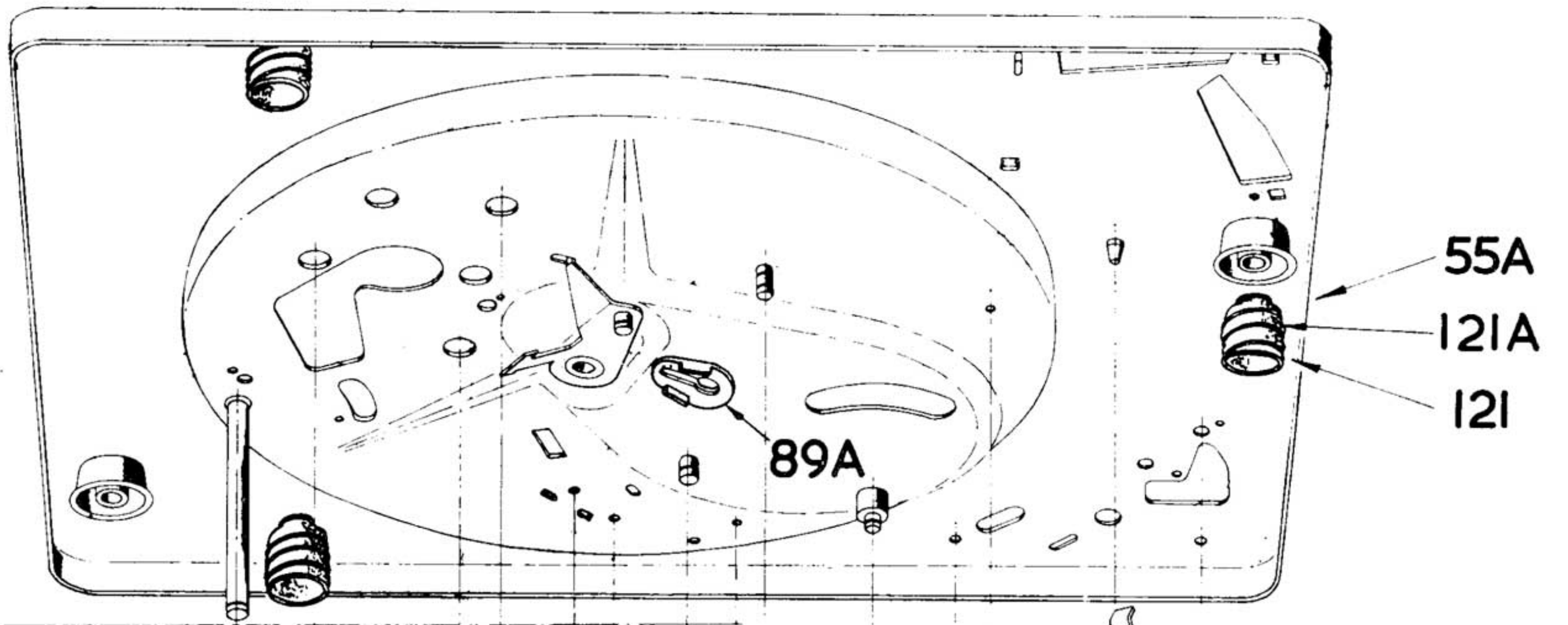
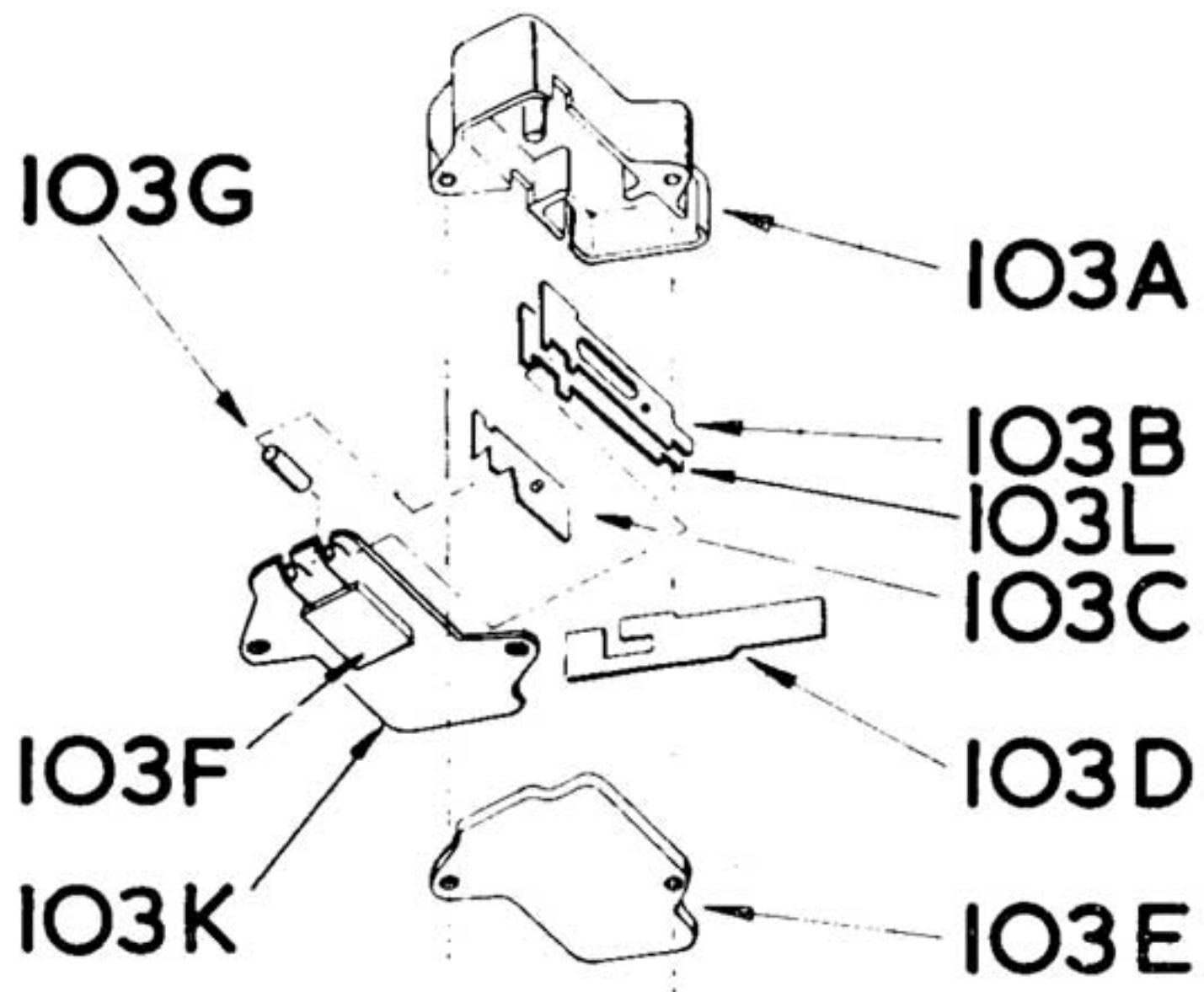
2 POLE MOTOR RESISTANCE CHART

TYPE OF MOTOR	50/60 ~ DUAL VOLTAGE			50 ~ HIGH RANGE WITH 80 VOLTS TAP			50 ~ HIGH RANGE WITH 105 VOLTS TAP			50/60 ~ LOW RANGE
	BLACK TO WHITE	YELLOW TO RED	TOTAL BLACK TO RED	BLACK TO YELLOW	WHITE TO YELLOW	TOTAL BLACK TO WHITE	BLACK TO RED	RED TO WHITE	TOTAL BLACK TO WHITE	TOTAL BLACK TO BLACK
HIGH RESISTANCE Ω	198	198	396	252	144	396	198	198	396	65
LOW RESISTANCE Ω	180	180	360	229	131	360	180	180	360	60

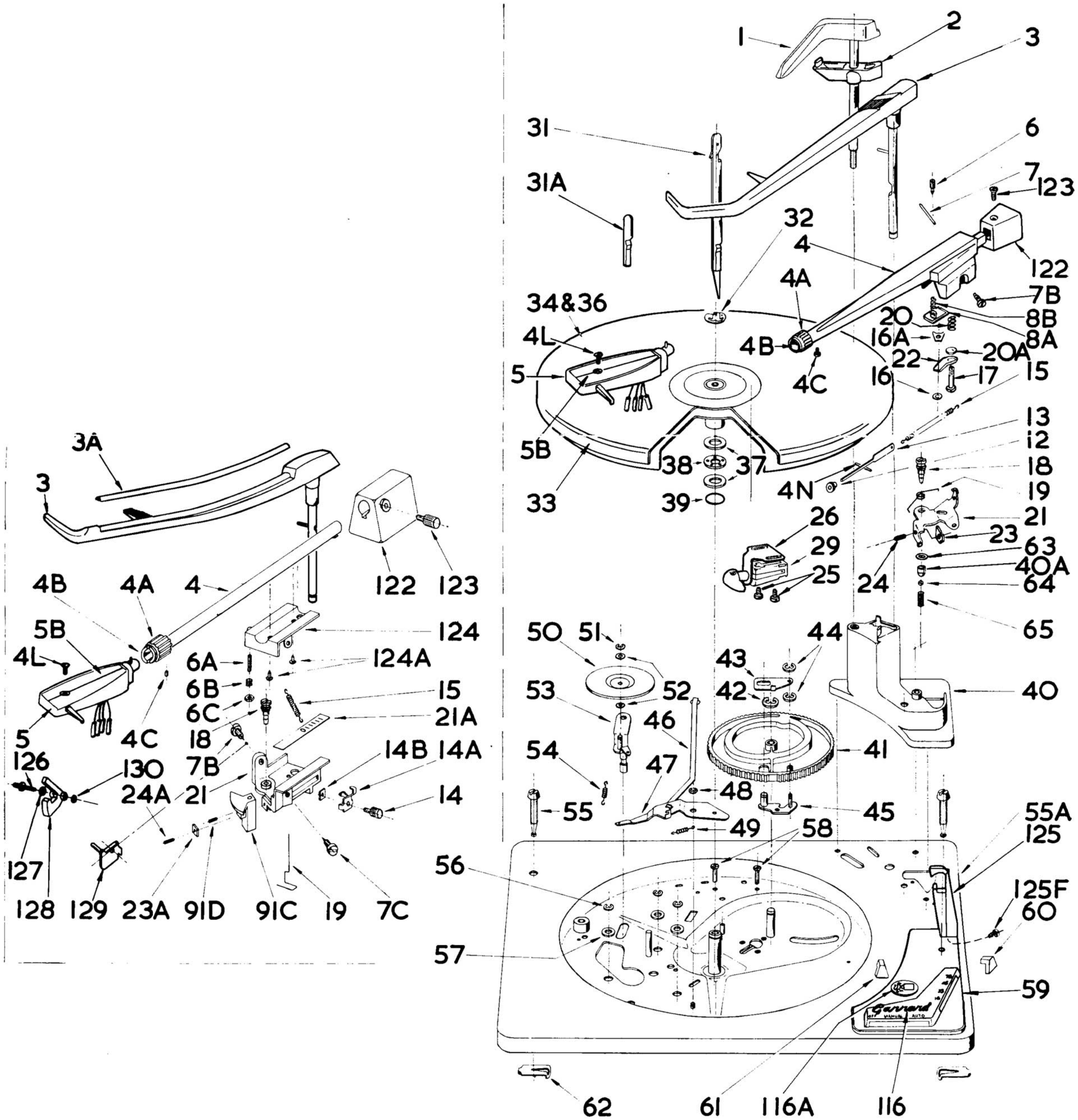
Diagram 19

The resistances in this chart are given for an ambient temperature of 70°F.





CODE N°



PARTS SHOWN BELOW UNIT PLATE

Ref. No.	Part No.	Description	No. off		Ref. No.	Part No.	Description	No. off	
			Model 50	A.T.60				Model 50	A.T.60
66	58325	Control Lever Unit	...	1	97	41759	Pawl Spring	...	1
67	41723	Spring Clip	...	1	98	41998	Return Spring, Release Lever	...	1
70	44797	Return Spring	...	1	99	40695	Washer, Release Lever	...	1
70A	52417	Rubber Sleeve	...	1	100	41723	Spring Clip	...	1
71	58327	Reject Lever	...	1	101	59611	Twin Phono Socket Assembly	...	1
72	58310	Switch Lever Unit	...	1	101	58356	Pickup Connector Tag Strip	...	1
73	41723	Spring Clip	...	1	101A	58863	Muting Switch Assembly	...	1
74	58271	Speed Control Lever Unit	...	1	101B	41503	Spring, Muting Switch	...	1
75	43821	Spring Clip	...	1	101C	59028	Grey Phono Lead (not shown)	...	1
76	58290	Automatic Switch Lever	...	1	101D	59029	Brown Phono Lead (not shown)	...	1
77	58289	Automatic Control Lever	...	1	101E	71536	Muting Switch and Phono Socket Assembly (complete)	...	1
78	72018	Lower Casting Assembly	...	1	102	44126	Screw, Phono Socket or Tag Strip	...	1
78A	58352	Pin for Lower Casting	...	2	102	44139	Screw, Phono Socket and Muting Switch	...	1
78B	43000	Earth Tag for Pickup Lead (not shown)	...	1	103	70548/02	Power Switch Assembly	...	1
79	44154	Screw, Lower Casting (Short)	...	1	103A	58277	Switch Body	...	1
79A	44125	Screw, Lower Casting (Long)	...	2	103B	59355	Switch Blade Unit (with Contact)	...	1
80	44825	Return Spring, Auto Switch Lever	...	1	103C	58398	Contact Plate Unit	...	1
81	43813	Spring Clip	...	1	103D	58280	Plunger	...	1
82	58303	Selector Lever	...	1	103E	58731	Switch Cover	...	1
83	41095	Fixing Nut	...	1	103F	58960	Capacitor	...	1
83A	40537	Washer, Selector Spindle	...	1	103G	58959	Resistor	...	1
84	44706	Selector Spring	...	1	103H	52677/51	Red Lead (not shown)	...	1
85	70329	Pickup Lever Unit	...	1	103J	52677/52	Brown Lead (not shown)	...	1
86	43200	Steel Ball	...	1	103L	59356	Switch Blade	...	1
87	41985	Friction Spring	...	1	103K	60126	Insulation Plate	...	1
88	58316	Collar	...	1	104	42526	Spring Washer, Switch	...	2
89	71051	Auto Stop Link Unit	...	1	105	41008	Nut for Switch	...	2
89A	70928	Bearing Pad	...	1	106	59001	Amplok Plug	...	1
90	44133	Screw, Auto Stop Link	...	1	106A	59310	Insulation Plate Amplok	...	1
91	58866	Lifting Spindle Unit	...	1	106B	44154	Screw, Amplok	...	1
91	70959	Lifting Spindle Unit	...	1	106C	71473	Line Cord and Strain Relief Assembly (not shown)	...	1
91A	41986	Spring, Lifting Spindle (not labelled)	...	1	106D	44126	Screw, Strain Relief (not shown)	...	1
91B	40514	Washer, Lifting Spindle (not labelled)	...	1	107	58211	Index Bracket Assembly	...	1
92	58348	Friction Link Unit	...	1	107A	71572	Roller, Index Bracket	...	1
93	58958	Pickup Cam Unit	...	1	108	41848	Index Spring	...	1
93	58317	Pickup Cam Unit	...	1	109	44708	Lifting Spring	...	1
94	44715	Index Spring, Pickup Cam	...	1					
95	41723	Spring Clip	...	2					
96	58324	Release Lever	...	1					

Ref. No.	Part No.	Description	No. off		Ref. No.	Part No.	Description	No. off	
			Model 50	A.T.60				Model 50	A.T.60
110	58208	Support Bracket Assembly	...	1	115M	54413	Rotor Assembly—4 Pole	...	1
110A	58210	Setting Blade	...	1	115N	58534	Stud—4 Pole	...	2
111	41723	Spring Clip	...	1	115P	41012	Nut—4 Pole	...	4
112	70218	Speed Cam	...	1	115R	40754	Packing Washer—2 Pole	...	1
113	58274	Speed Lever	...	1	115S	44052	Grub Screw, 4 Pole Motor Pulley	...	2
114	43129	Motor Mount	...	3	115T	53110	Earth Lead Assembly (not shown)	...	1
115	58640	4 Pole Motor	...	1	115U	43209	Thrust Ball, 4 Pole (not shown)	...	1
115	58570	2 Pole Motor	...	1	115V	43000	Earth Tag	...	1
115A	58571	Stator Assembly—2 Pole	...	1	117	58642	Screen Plate Assembly—4 Pole	...	1
115B	70493	Top Cover and Rotor Assembly	...	1	117	59107	Screen Plate Assembly—2 Pole	...	1
		—2 Pole	...	1	118	58533	Spacer—4 Pole	...	2
115C	57977	Bottom Cover Assembly, Screened	...	1	119	57548	Bracket, Changeover Block	...	1
		—4 Pole	...	1	119A	40085	Screw	...	2
115C	58373	Bottom Cover Assembly—2 Pole	...	1	119B	41012	Nut	...	2
115C	53963	Bottom Cover Assembly—4 Pole	...	1	119C	42501	Spring Washer	...	2
115D	40215/01	Screw—2 Pole	...	3	120A	54981	Changeover Block Assembly	...	1
115E	40793	Washer—2 Pole	...	3	120B	51333	Insulation Plate	...	1
115F	42501	Spring Washer—2 Pole	...	3	120C	58179	Cover	...	1
115F	42501	Spring Washer—4 Pole	...	2	120D	54926	Connector	...	2
115G	58921	4 Pole Motor Pulley—60 Cycle	...	1	120E	40854	Washer	...	1
115G	58920	4 Pole Motor Pulley—50 Cycle	...	1	120F	44054	Screw	...	1
115H	57978	Top Cover Assembly, Screened	...	1	120G	44043	Stud	...	1
		—4 Pole	...	1	120H	41012	Nut	...	3
115H	53962	Top Cover Assembly—4 Pole	...	1	120J	43000	Tag	...	1
115J	60039	Paired Coil Assembly—4 Pole	...	1	120K	40515	Washer	...	1
115K	58653	Stator Assembly—4 Pole	...	1	121	44752	Mounting Spring	...	3
115L	43366	Tension Pin—4 Pole	...	2	121A	70447	Foam Damping Pad	...	3

When ordering spare parts, quote the model type, code (from inspection label), part number and colour if part is colour finished, also voltage range for a motor part.

PARTS SHOWN ABOVE UNIT PLATE

Ref. No.	Part No.	Description	No. off Model 50 A.T.60		Ref. No.	Part No.	Description	No. off Model 50 A.T.60	
1	70936	Selector	I	I	19	44711	Overload Spring	I	I
2	70938	Selector Extension	I	I	20	44705	Spring, Restrictor Plate	I	-
3	71056	Overarm Assembly	-	I	20A	40690	Washer	I	-
3	70899	Overarm Assembly	I	-	21	58902	Pickup Bracket	-	I
3A	70435	Overarm Trim	-	I	21	70929	Pickup Bracket Assembly	I	-
3E	44855	Spring, for Overarm (not shown)	I	I	21A	58909	Stylus Pressure Plate	-	I
3F	40967	Washer, for Overarm (not shown)	I	I	22	70918	Restrictor Blade	I	-
4	71419/OI	Pickup Arm Complete (less Head)	-	I	23	71217	Tension Nut	I	-
4	58885	Pickup Arm Tube	-	I	23A	40906	Locking Washer	-	I
4	70869/OI	Pickup Arm Complete (less Head)	I	-	24	44210	Adjusting Screw	I	-
4	70594	Pickup Arm Casting	I	-	24A	40268	Grub Screw	-	I
4A	58962	Locking Collar	-	I	25	—	Screw (to suit type of Cartridge	2	2
4A	58887	Locking Collar	I	-	26	—	Bracket (to suit type of Cartridge)	I	I
4B	58886	Pickup Arm Bush	I	I	29	—	Cartridge (state type)	I	I
4C	40264	Screw, Locking Collar	I	I	29H	71449	Pickup Connector Assembly	-	-
4L	—	Screw (to suit type of Cartridge)	I	I			(not shown)	I	I
4N	59344	Cross Pin	I	-	29J	59048/16	Cartridge Fixing Kit (not shown)	I	I
5	70870/OI	Plug-in Head (less Cartridge)	I	I	31	70932	Record Spindle Assembly	I	I
5B	58906	Pickup Head Cover	I	I	31A	58484/05	Manual Spindle Kit	I	I
6	44188/OI	Lifting Screw	I	-	32	43834	Turntable Clip	I	I
6A	40240/OI	Grub Screw	-	I	33	71042	Cast Turntable	-	I
6B	44716	Spring, Lifting Screw	-	I	33	70872	Turntable and Mat Assembly	-	-
6C	41037/OI	Locknut	-	I			(spoked)	I	-
7	59993	Pivot Spindle	I	-	33A	71162	Turntable and Mat Assembly	-	I
7B	70585	Pivot Screw Assembly	-	I	34	71064	Turntable Mat	-	I
7B	70155/OI	Pivot Screw Assembly	I	-	34	70969	Turntable Mat (spoked)	I	-
7C	79756	Pivot Screw Assembly	-	I	35	71634	Turntable Name Plate (not labelled)	-	I
8A	71470	Lifting Plate, Nylon	I	-	35A	59392	Trim Disc (not labelled)	I	-
8B	41693	Spring, Lifting Plate	I	-	36	70952	Zone Ring (not shown)	-	I
12	41104	Adjusting Nut, Stylus Pressure	I	-	37	40894	Thrust Washer	2	2
13	58384	Index Plate	I	-	38	58229	Ball Race Assembly	I	I
14	44135	Screw, Stylus Pressure	-	I	39	58749	Cushion Ring	I	I
14A	58911	Pointer, Stylus Pressure	-	I	40	70848	Upper Casting Assembly	-	I
14B	41099/OI	Locknut, Stylus Pressure	-	I	40	70223	Upper Casting Assembly	I	-
15	44713	Counterbalance Spring	-	I	40A	59004	Bush	I	I
15	44826	Counterbalance Spring	I	-	41	71543	Cam Assembly	I	I
16	43809	Spring Clip, Retaining P.U. Lead	I	-	42	41788	Spring Clip, Cam	I	I
16A	40928	Presspahn Washer Retaining P.U. Lead	-	-	43	58335	Trip Pawl	I	I
17	40322	Screw, Restrictor	I	-	44	41723	Spring Clip, Trip Pawl	2	2
18	59003	Pivot Screw Top	-	I	45	58331	Pivot Plate Unit	I	I
18	70954	Pivot Screw Top	I	-	46	71824	Tension Link	I	I

Ref. No.	Part No.	Description	No. off Model 50 A.T.60		Ref. No.	Part No.	Description	No. off Model 50 A.T.60	
47	58298	Tension Lever	I	I	91D	44082	Grub Screw	-	I
48	41723	Spring Clip	I	I	116	70094	Garrard Motif	I	I
49	41503	Tension Spring	I	I	116A	71166	Name Plate	-	I
50	58220	Intermediate Wheel Unit	I	I	116A	70599	Name Plate	I	-
51	43818	Spring Clip	I	I	122	59080	Counterbalance Weight	-	I
52	40826	Presspahn Washer	2	2	122	71083	Counterbalance Weight	I	-
53	58215	Support Lever Unit	I	I	123	58919	Counterbalance Weight Screw	-	I
54	41992	Intermediate Wheel Spring	I	I	123	44188	Counterbalance Weight Screw	I	-
55	44120/OI	Transit Screw	2	2	124	58896	Body Assembly	-	I
55A	71520	Unit Plate Assembly	I	I	124A	44137	Screw	-	2
56	41723	Spring Clip	3	3	124B	43094	Tag (not shown)	-	I
57	40695	Washer	3	3	125	71040	Pickup Rest Assembly	-	I
58	40228/OI	Screws, Switch	2	2	125	70595	Pickup Rest Assembly	I	-
59	71165	Control Moulding Assembly	I	I	125F	44259	Screw Fixing Pickup Rest	-	I
60	58273	Speed Knob	I	I	125F	44154	Screw Fixing Pickup Rest	I	-
61	58273	Control Knob	I	I	126	70584	Pivot	-	I
62	41977	Transit Screw Clip	2	2	127	40649/02	Washer	-	I
63	40504	Washer	I	I	128	71961	Bias Compensator Weight	-	I
64	43200	Steel Ball	I	I	129	70845	Pin Bracket	-	I
65	44719	Spring	I	I	130	41868	Spring Clip	-	I
91C	58593	Lifting Platform	-	I					

When ordering spare parts, quote the model type, code (from inspection label), part number and colour if part is colour finished, also voltage range for a motor part.

PRODUCT SERVICE BULLETIN

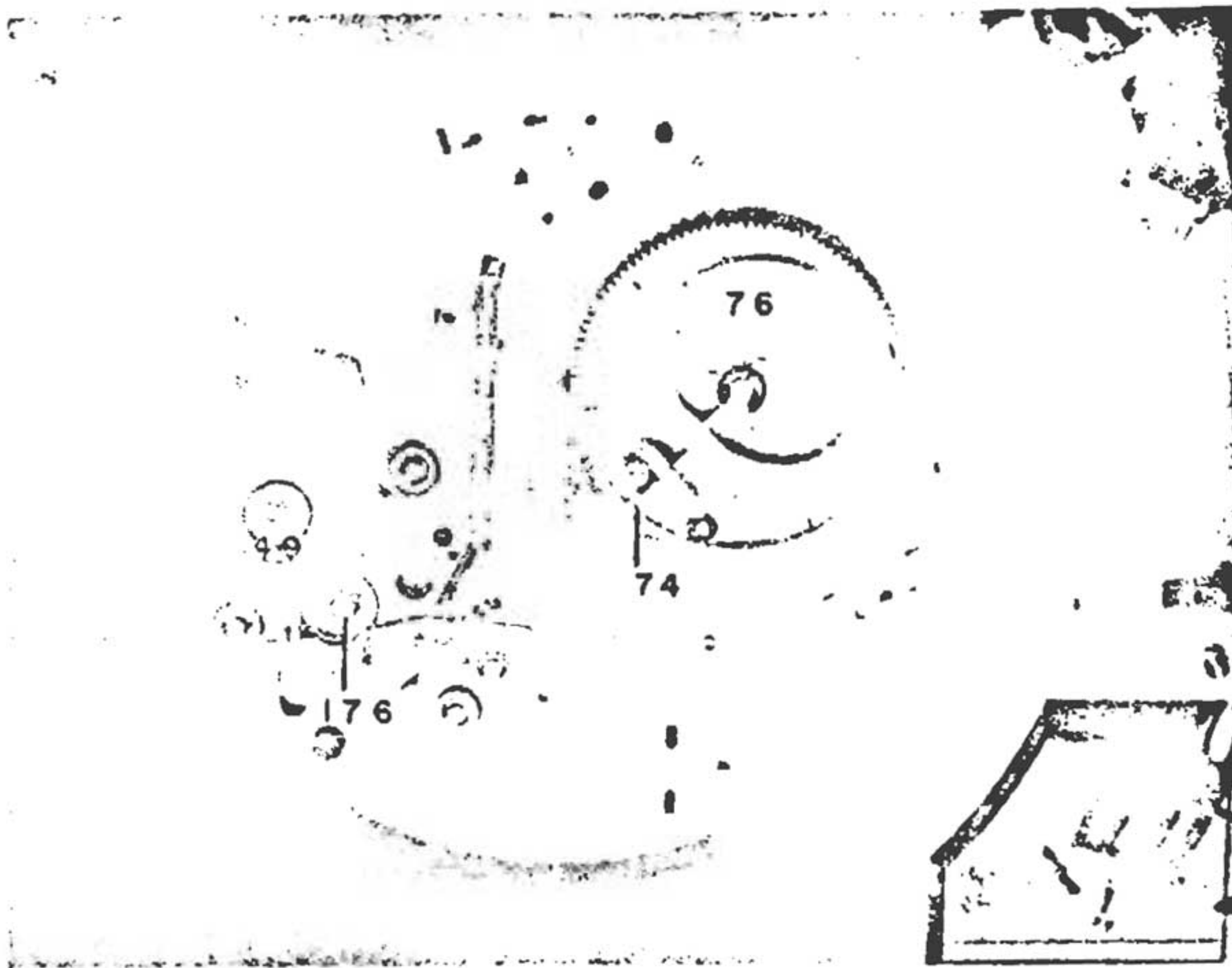
SFM Number 47

Product All Units Using the 3000C (Cueing) Changer

Date May 22, 1970

Subject Service Adjustments for the 3000C Changer.

Remarks KLH is presently using the 3000C changer with several of its models. The field has reported occasional servicing difficulties with this changer. The proper repair procedure for each of the three problem areas are outlined below:



1) The changer refuses to cycle at the end of the record. Ref. #74 in your changer manual shows a small metal plate with a perpendicular edge called the trip pawl assembly. When adjusted properly, this edge contacts the geared surface of the turntable assembly (Ref. #57) causing the cam to begin to rotate. By adjusting the trip pawl so that contact is made with the turntable sooner, turntable reject will be effected closer to the outside edge of the record.

NOTE: 1. When bending this edge make certain that your adjustment moves the entire edge in a horizontal plane not in a vertical plane. That is, do not change the perpendicularity of the trip pawl.

NOTE: 2. Be certain to check auto trip link (Ref. #205) for correct operation.

Related Changes

NONE

Effective

Date IMMEDIATELY

S/N ALL UNITS USING
3000C CHANGER