

PLESSEY MULTISPEED AUTO-CHANGER



Fig. 1

THE changer (Fig. 1) is a self-contained unit assembled on a diecast aluminium baseplate and requiring a minimum cabinet fitting space 15½ ins. wide, 14 ins. deep with 6½ ins. clearance above and 2¼ ins. below. A moulded plastic 9½ in. diameter turntable, and the changing mechanism, are driven by a constant-speed shaded pole induction motor.

Control is by a rotary knob adjusting the

The Plessey multispeed automatic record changer plays up to eight mixed 10 and 12 in. standard 78 rpm records, eight 7 in. 45 rpm, ten 7 in. 33½ rpm, or ten mixed 10- and 12 in. 33½ rpm records. Besides versatility and the handling of mixed records, the changer is notable for simple construction, easy loading and foolproof control by one rotary knob and two push-buttons. A lightweight crystal pickup head having a double-pointed sapphire stylus, which is replaceable by the retailer or user, is fitted. For 200-250V 50c/s AC. Manufactured by the Plessey Co. Ltd. and distributed by the wholesale and retail trades solely by The Edison Swan Electric Co., Ltd., 155 Charing Cross Road, London, WC2

mechanism to suit the type of record to be played and two push-buttons, one marked "On/Rej." the other "Off."

The motor drives the turntable through a spring-loaded intermediate rubber tyred wheel 37 (Fig. 2). In the off position the wheel is disengaged to prevent formation of flats. A pinion gear 51 (Fig. 3), on lower section of turntable hub collar, transmits the drive to main cam gear wheel 52

on underside of baseplate.

Three turntable speeds of 78, 45 and 33½ rpm are obtained by engaging intermediate drive wheel 37 with three stepped drive surfaces cut on motor shaft, the wheel being engaged with the appropriate surface by operation of speed selector knob. The knob, through a system of levers, etc., also adjusts pickup dropping position for 7, 10 or 12 in. records.

Records are stacked on a straight spindle incorporating a latch for dropping each record in turn on to the turntable.

With speed selector switch in either 33½ or 78 rpm 10 and 12 in. positions, the mechanism is normally set so that pickup lowers on to a 10 in. record. When a 12 in. record is released from the stack its outer edge displaces a small signal arm 27 projecting through slot on inside of steady-arm support and this causes pickup to be lowered in 12 in. position. At end of record, when changing cycle of operations commences, the signal arm is reset to its 10 in. position.

At any time the record being played may be rejected by pressing the On/Reject button.

When the last record on stack is released the steady arm drops, swings outwards to the rest position and cocks the auto-stop mechanism in readiness for automatic switch off at end of record.

Pickup arm is fitted with a lightweight crystal

head with a replaceable twin-sapphire stylus for standard or long playing records. Appropriate stylus is brought into use by moving a small lever at front of arm.

The crystal cell is a Cosmocord GP15. The lever which rocks the whole cell to bring the appropriate sapphire tip into playing position registers with white and red lines set into the head of the moulded pickup arm. The red position is for playing 33½ and 45 rpm records and the white position for 78 rpm records.

The cell provides an output of 0.5V at 1,000c/s, which is suitable for input to most domestic receivers and radiograms, and has a rising bass characteristic that generally obviates the need for equalisers. The pickup may be connected directly across a 0.5 megohm potentiometer acting as load and volume control.

When using a wide-band high-fidelity amplifier, a "top" equalising circuit may be required to

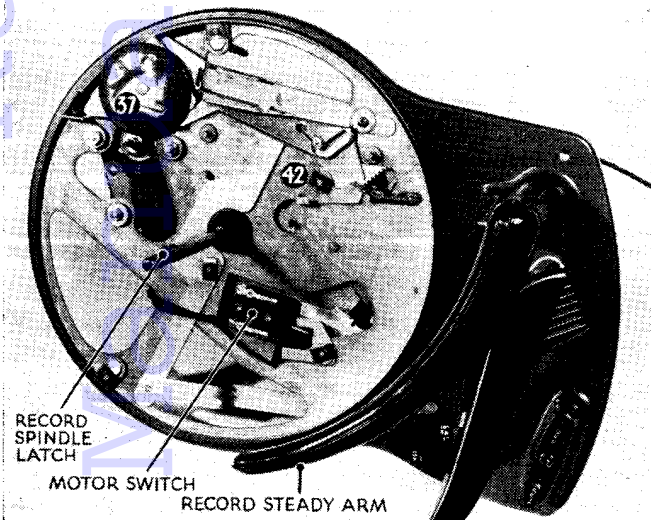


Fig. 2. The unit seen from above with turntable removed. Rubber-tyred wheel (37) drives turntable from the motor

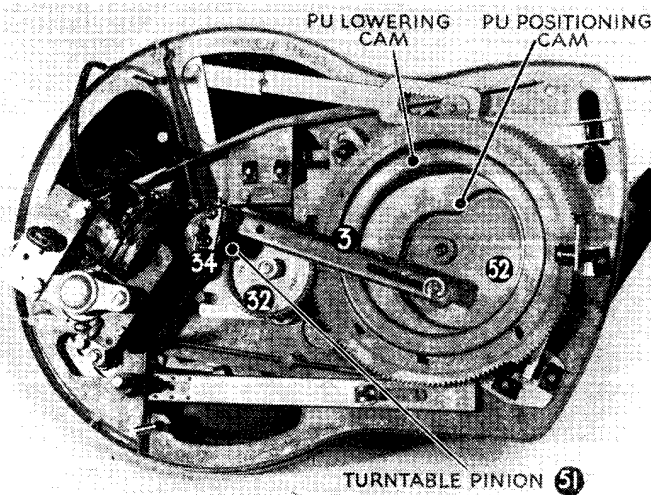


Fig. 3. Underneath view reveals the turntable pinion and the PU lowering and positioning cams

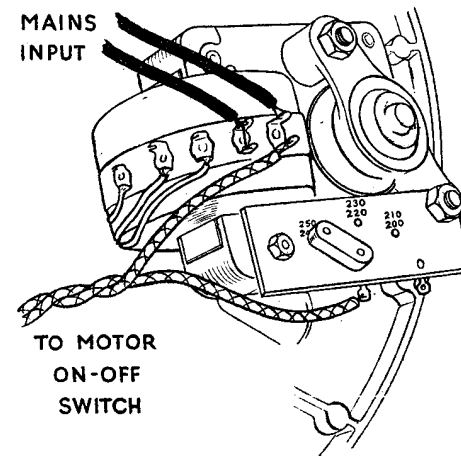


Fig. 6. The motor, showing in black the mains connections

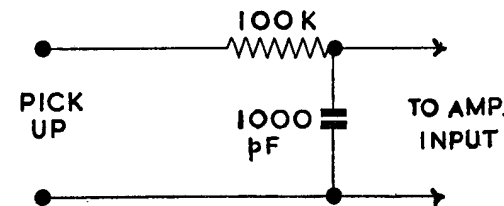


Fig. 5. A top equalising circuit for use with a high fidelity amplifier on microgroove recordings

compensate for the rising characteristic of micro-groove records above 100c/s. See Fig. 5.

PRINCIPLE OF OPERATION

Starting. On depressing On/Reject push-button lever 13 (Fig. 4) moves pivoted ON/OFF lever 7 in a clockwise direction. Other end of 7 bears against tongue on switch lock lever 104 which seats in a larger tongue A on main operating link 5 and both 104 and 5 are moved over and knock into the 'on' position the fibre toggle arm of ON/OFF switch, thus starting motor. At same time tongue B on 7 engages with tongue C on pawl carrier plate assembly 8 which is moved anti-clockwise to disengage tongue D from step on face of E of gear carrier plate 21. This allows intermediate gear 32 to engage with pinion gear 51 on turntable hub and with teeth of main cam gear 52 to commence a cycle of operations.

Record dropping. When main cam 52 (Fig. 3) commences to rotate link 3 attached to cam pulls over crank 34 at base of record spindle and raises inner shaft which operates record release latch to allow lowest record on stack to drop to the rotating turntable.

Pickup Positioning. While record is being dropped pickup arm is held in its rest position by roller F (Fig. 4) on drive plate 16 following the even portion of raised cam track on main cam 52. Roller is held firmly against cam face by spring tensioning of teasing lever 20 which is imparted to drive plate 16 through tongue G. Immediately after record has settled on turntable shaped contour of rotating main cam 52 allows drive plate 16, to the hollow spindle of which is attached pickup arm, to move inwards to position pickup over edge of record.

Pickup lowering. Bottom of spring-loaded push rod 18, located in hollow spindle of drive plate 16, rests in formed up cam groove in main cam 52. The top of this push rod protrudes above hollow spindle and bears against spring blade on underside of pickup arm.

Further rotation of main cam 52 allows push rod 18 to follow gradual dip in cam groove thus lowering pickup on to record. At this point drive plate 16 becomes unlocked from teasing lever 20 and pickup arm is free to travel across record.

Main cam 52 continues to revolve until idler gear 32 drops into step in main cam gear. Idler gear swings out of mesh with pinion of turntable and main cam ceases to rotate. At the same time tongue E of gear carrier plate 21 re-engages tongue D on pawl carrier 8 thus resetting mechanism ready for change cycle at end of record.

Auto-trip 10 and 12in. records. Auto-trip operates only on eccentric run-off record grooves. As pickup oscillates to and fro in run-off groove tongue H of auto-trip pawl 10 engages with knurled edge of drive plate 16. This causes pawl and pawl carrier plate 8 to swing anti-clockwise disengaging tongue D from face E of carrier plate 21 and so engaging idler gear 32 with turntable hub gear and main cam 52 to commence a changing cycle.

Auto-trip 7in. records. With 7in. records operation is similar to above with the exception that when speed selector switch is placed in 33½ or 45rpm seven-inch positions, auxiliary trip lever 22 attached to pawl carrier 8 is brought into 7in. playing position by roller 23 on teasing lever 20.

Auto-stop. When last record of stack is released, record steady arm drops below level of "shelf" on record spindle and the wedge-shape lower end of steady arm 25 drops between faces I of

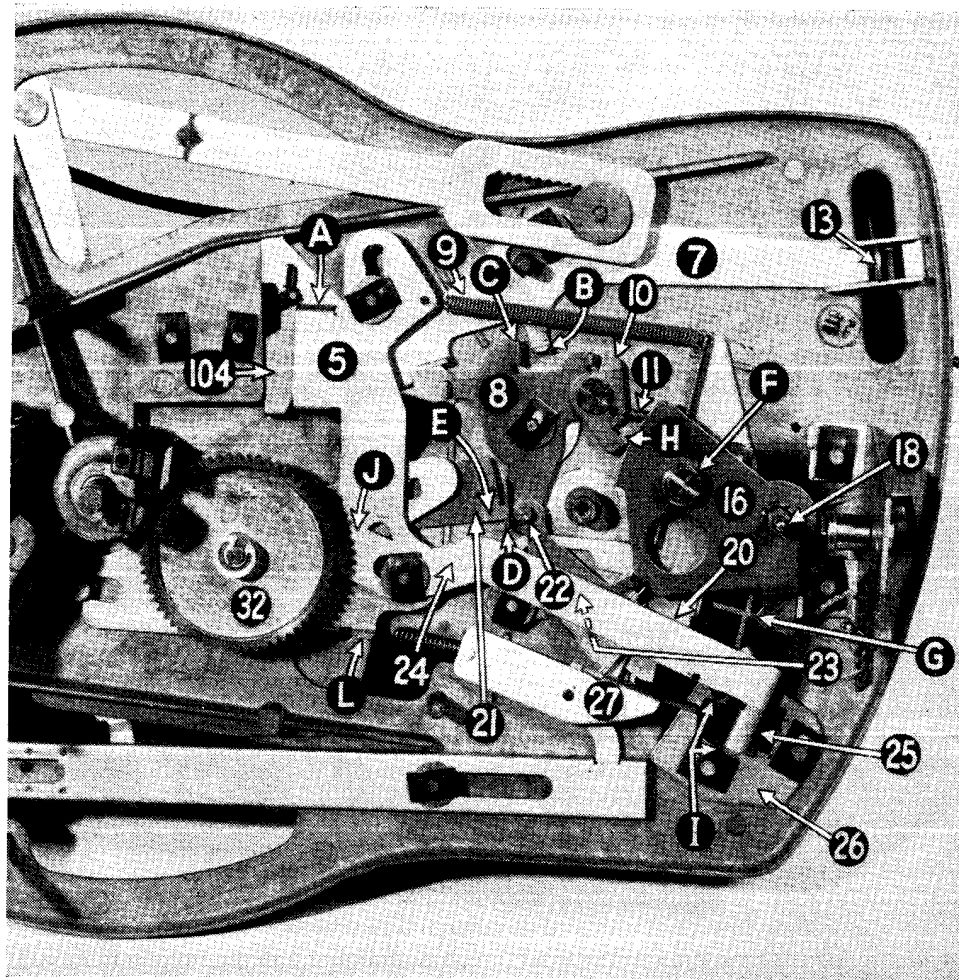


Fig. 4. The mechanism exposed when the main cam gear wheel (52 in Fig. 3) is removed

guide plate 26. This swings steady arm into its rest position, displaces auto-stop link 24 and, via tongue J, moves main link sideways. When final record is played through and changing cycle is commenced a tongue on main cam 52 engages with tongue L of main link 5 moving it to its fullest extent and pulling toggle of ON/OFF switch to 'Off' position.

Rejecting. When On-Reject button is depressed during playing of a record, lever 7 is displaced and tongue B engages with tongue C of pawl carrier plate 8 which is rotated, thus disengaging tongue D from face E of gear carrier plate 21 and allowing idler gear 32 to mesh with turntable pinion to start a change cycle.

INSTALLATION

A set of special spring mountings is supplied to attach unit to cabinet with a template drawing to give size and shape of cut-out required and position of mounting bolt holes.

Fixing bolts should have small fibre washers placed under head on top of unit plate, spiral spring immediately below plate with metal cup seated over lower end of spring. Unit should then be placed in position in cabinet so that cups on springs fit snugly into fixing holes. A large washer is placed on each bolt below mounting board or shelf and hexagon nut screwed on. Nut should be screwed up until large washers are just clear of bottom of mounting board and then circlip placed over end of each bolt.

Pickup screened lead should be soldered to tags on panel immediately below pickup arm pivot on underside of chassis ensuring that screen of connecting lead is soldered to tag to which screen of pickup arm lead is connected.

Normally the pickup screened lead will earth the unit but where this is not the case a separate earth lead should be employed.

Mains lead to motor should be soldered to tags M and L positioned on field coil (Fig. 6). The

M tag connects one side of mains through ON/OFF switch to voltage selector plug which should be inserted in appropriate voltage range.

MAINTENANCE AND ADJUSTMENT

Motor bearings are of the oil-retaining type with felt oil-reservoirs and, under normal operating conditions, should not require attention for approximately two years.

To lubricate bearings, drip 8 to 12 drops of Vaculene or very light grade mineral oil into cups forming bearing oil shield taking great care not to place any oil on motor pulley, drive wheel or turntable rim.

Approximately every six months lubricate mechanism as follows:—

Remove metal cover in centre of turntable and apply 3 or 4 drops of medium grade oil around base of centre spindle, one or two drops to release latch at top and one drop on top of pickup push rod and on pickup bearings, etc.

Renewal of sapphire stylus. Support pickup arm with one hand and withdraw stylus support blade from cantilever arm sleeve. Insert new stylus assembly taking care not to distort cantilever arm.

Removal of pickup cartridge. Unsolder wires from cartridge tags noting which tag is connected to outer screen. Care must be taken to avoid applying excessive heat to side of cartridge otherwise crystal may be damaged. Cartridge is held in place by shallow lugs on pivoted spring loaded cradle attached to selector lever on front of head and can be withdrawn easily if a screwdriver is placed under collar gently to lever cartridge out.

POSSIBLE FAULTS AND REMEDIES

Change cycle taking place but pickup arm not swinging into playing position—see if spring 9 is broken or weak. Replace by new one if necessary.

Change cycle takes place continuously or else no change cycle but pickup arm remains over record run-off groove—spring 11 may be weak or broken.

No drive to turntable—check spring 42 of idler trolley control lever.

No change cycle takes place and On/Reject button remains in very high position with occasional clicking from mechanism—spring 42 broken or weak.

Record dropping uncertain—check lower spindle spring inside record spindle.

Pickup not positioning correctly over run-in groove—check pick-up clutch spring (at rear of bracket under arm).

Pickup skidding across record—check pickup counterbalance spring on arm vertical pivot and adjust it as described below under "Stylus Pressure."

ADJUSTMENTS

Pickup dropping position. Adjust by screwing in or out the screw at inner end of clutch bracket under arm.

Stylus pressure. Using thin 4BA spanner adjust hexagon nut on pickup arm vertical pivot (positioned between pivot bracket and pickup arm) to give stylus pressure of 10-12 grammes. Turning nut in a clockwise direction decreases pressure and vice versa.

Pickup height. With pickup over record there should be 1in. between tip of stylus and top of turntable. Height is adjusted by turning nut holding spring blade in position below pickup arm. Tightening nut increases bow of spring and raises arm and vice versa.