
Sparks Ensemble Service Bulletin No. 2

Foreword

The object of this bulletin is to give the service man all the essential information he should have, so that he will be capable of rendering the same type of service to this machine that would be obtained at the factory. We suggest that the service man using this bulletin and bulletin No. 1 as a guide acquaint himself with the described adjustments before attempting to service machines. The manner in which the timing adjustments are described is identical with the steps employed in assembling machines in the factory.

MOTOR ARMATURE

The motor armature should set in the exact center of the space between the motor field coils. It is fastened to the motor shaft by a set screw that goes through the hub on its lower side.

Adjustment is made by loosening this set screw and moving the armature up or down as the case demands. If the armature is properly spaced in the rear coil and rubs on the front one, adjustment can be made by loosening the mounting screws (97); this will allow the field coil to be moved up or down.

NOTE: There are three mounting screws—one is opposite the one numbered shown in Bulletin No. 1 and the other is at the extreme top center of the coil.

GOVERNOR

The Governor shaft should have end play (approximately .010"). This end play can be adjusted by loosening set screws holding governor bearings (95) on either end of the governor shaft and moving either bearing in or out as required.

TIMING

Set the upright pin located in the top of the cam gear assembly (14-C) so that the outside edge of the pin is flush with the end of the teeth at the rear or tone arm bearing side of the intermediate gear assembly (12-C).

You are now ready to set and adjust clutch dog base assembly (18-C) and clutch (17).

Place clutch dog base assembly (18-C) on motor shaft (21-C) with clutch dog finger resting on and against the clutch dog stop (20).

Now place clutch (17) on motor shaft (21-C) with a .010 thickness gauge inserted between clutch dog base assembly and clutch. Tighten two set screws in clutch (17).

The clutch and gearing is now in the correct position for setting the cams. Start by setting discard cam (4) with cam follower on hold-out lever (33) inserted in exact center of notch in discard cam.

To determine the proper height to set discard cam (4) on cam shaft, set so that when cam follower on hold-out lever (33) has been raised to the continuous dwell on said cam, clutch dog stop (20) is held back so that clutch dog finger of assembly (18-C) has ample clearance between its end and clutch dog stop during the complete revolution of the discard cam (4).

If clutch finger does not clear clutch dog stop, move the cam down on the shaft until the proper clearance is obtained. When this condition has been reached the cam follower on lever (33) will now drop into notch in discard cam (4), permitting clutch dog stop (20) to engage finger on clutch dog base assembly (18-C), thus disengaging clutch (17), which will place mechanism in normal running condition.

We are now ready to set engaging cam (5). In setting this cam there are two types of tone arm to be considered. On the earlier models the tone arm used had no adjustment for height of pick-up to give correct clearance of needle over record; this was taken care of entirely by setting of the engaging cam (5).

When the earlier type of tone arm is used, in regard to setting of this cam in relation to rotation set as follows. With clutch dog finger against clutch dog stop, as previously mentioned, engaging rod (49) should be set into lower portion of track of engaging cam (5) about 1/16" from the rise on cam so that immediately upon the mechanism starting to operate the tone arm will be lifted clear of record. This clearance between needle and record should be from 1/8" to 3/16".

NOTE: The pick-up should be adjusted to the proper running position before cam height adjustment is made. This position is, bottom parallel, with record, angle 30 degrees for Erba, and 90 degrees for Pacent.

On the later model tone arm where an adjustment is provided for setting clearance between needle and record, the cam should be set in regard to rotation as described above. The height of the cam on its shaft should be set so that there is from 1/2" to 5/8" space between hub and cam (5) and cam shaft bearing in (9-C).

NOTE. After these adjustments have been made, be certain that the drag spring is also properly adjusted (see paragraph No. 6 in Service Bulletin No. 1.)

The next operation is the receiving cam adjustment. Insert a .004 thickness gauge between hub of cam (3) and cam shaft bearing in (9-C) to determine the proper end play for the cam shaft.

In regard to rotation of this cam the mechanism should be operated by hand until cam follower on discard lever (34) reaches its maximum travel (peak of rise) on discard cam (4). In this position cam follower on receiving lever (38) should just be starting on the rise of receiving cam (3).

Before placing body assembly on motor board, needle engaging adjustment should be made. In normal operation the machine plays 10" records. This is obtained by tone arm lever (44) coming in contact with the boss on cam gear assembly (14C), which in its travel carries tone arm lever (44) into a position where pin traveling in slot in this lever is engaged in the short slot. Inasmuch as the trip regulator assembly has not yet been assembled at this time, it will be necessary to hold up weight on engaging regulator cable (56-C) or tone arm will come in for a 12" record. (Pin in longest portion of slot in lever (44)).

NOTE: For further side-way needle engaging adjustment see (Paragraph 3 on Bulletin No. 1).

After proper needle engaging adjustment has been obtained, mount body assembly on motor board. When doing this care should be taken to see that speed regulator stud (121) (Plate No. 1) turns freely and that discard lever (34) does not bind in slot in motor board. Put in place and tighten the six mounting screws, turn motor board over replace turn table (1) and receiving plate assembly (28-C).

You are now ready to assemble carrier arm (7). Be sure when replacing the three screws in base that the proper screw is replaced in right hand side of carrier arm, (looking at carrier arm from the front), and that there is clearance between its head and tone arm lever (44). Before tightening these screws, carefully center magazine rod (29-C) with receiving plate stud (24).

The travel of receiving plate assembly should now be adjusted by rotating turn table (1) until cam follower on receiving lever (38) has reached its maximum travel on cam (3). Adjust, adjusting screw (25) until receiving plate stud (24) comes firmly in contact with trigger on the lower end of magazine rod assembly (29-C) then tighten lock nut (143) to maintain this adjustment.

Revolve turn table until arm comes to its normal position with needle at rest on switch button, continue to revolve turn table until reject button (122) comes up. Next operation is to set the engaging regulator assembly (52-C), which is set as follows; Insert engaging rod (54) in its proper place in carrier arm (7) extending rod through motor board and through engaging regulator weight on cable assembly (56-C) with engaging regulator trip assembly in place, press reject button (122) and revolve turn-table (1) in a clock-wise direction until tone arm has reached its maximum travel to the right, thus placing trip regulator weight at its uppermost position; now raise engaging regulator rod until notch in same is approximately 1/16" above dog on engaging regulator trip assembly (52-C), tighten set screw in weight to secure it in this position.

This completes all important adjustments.

(Instructions for setting attachments for discarding records having a spiral groove for discardment, such as the Columbia and Brunswick. When setting, use Columbia record with 3 $\frac{5}{8}$ " diameter circle where spiral groove terminates.)

For this purpose a wedge shaped clamp, which is the attachment, has been provided. It is secured to the vertical portion of the clutch top lever (42) in such a position that it is engaged by throw-out lever (49) when the needle has followed spiral groove on the record to about 1/16" of the groove's maximum travel in.

When the needle has reached this position throw-out lever (39) should have pushed clutch stop lever (42) down disengaging clutch, which in turn will place automatic mechanism in operation and discard record.