SPARTON MODEL 101

SCHEMATIC DIAGRAM AND VOLTAGE ANALYSIS

VOLTAGE ANALYSIS

Line Voltage 115 Position of Volume Control Full
Position of Voltage Compensator 100-115 With Antenna disconnected

TUBE	LOCATION	HEATER OR FILAMENT	PLATE	CONTROL GRID —	PLATE CURRENT (ma.)
485	Selector	2.9 - 3.0	120 - 150	3.0 - 6.0	6.0 - 10
485	1st. R. F.	2.9 - 3.0	120 - 150	3.0 - 6.0	6.0 - 10
485	2nd. R. F.	2.9 - 3.0	120 - 150	3.0 - 6.0	6.0 - 10
485	3rd. R. F.	2.9 - 3.0	120 - 150	3.0 - 6.0	6.0 - 10
485	4th. R. F.	2.9 - 3.0	120 - 150	3.0 - 6.0	6.0 - 10
485	5th. R. F.	2.9 - 3.0	120 - 150	3.0 - 6.0	6.0 - 10
485	Detector	2.9 - 3.0	110 - 135	7.0 - 9.0	0.5 - 2.0
27	Audio	2.3 - 2.5	130 - 160	8 - 12	3.0 - 5.0
26	Audio	1.3 - 1.5	200 - 240	16 - 20	6.0 - 10
26	Audio	1.3 - 1.5	200 - 240	16 - 20	6.0 - 10
50	Power	6.0 - 7.5	365 - 440	78 - 95	45 - 60
50	Power	6.0 - 7.5	365 - 440	78 - 95	45 - 60
81	Rectifier	6.0 - 7.5	650 - 690	-----	70 - 85
81	Rectifier	6.0 - 7.5	650 - 690	-----	70 - 85

REAR VIEW MODEL 101 CHASSIS

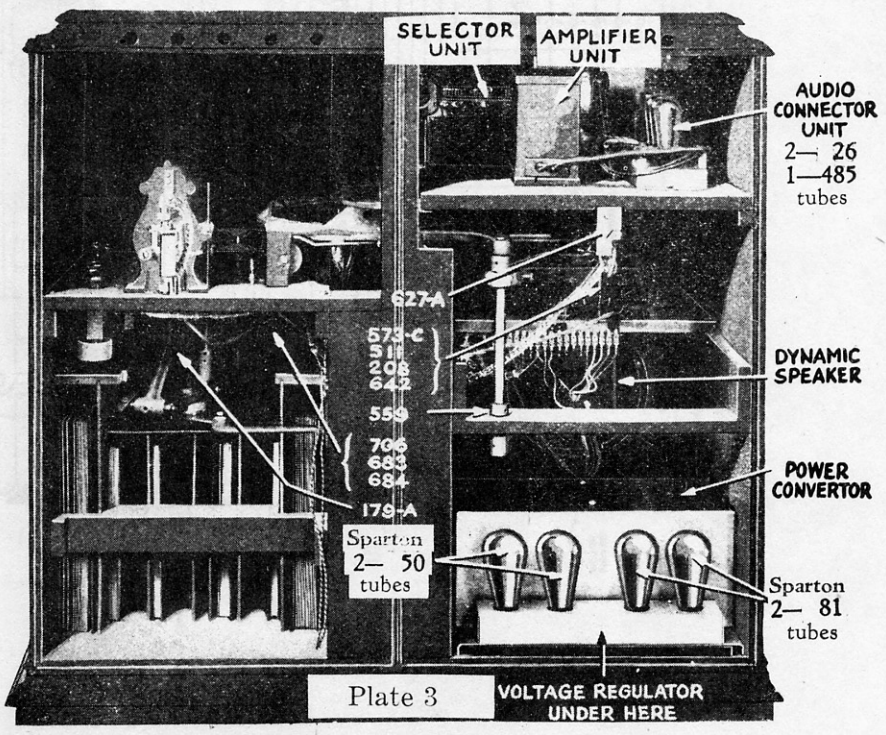
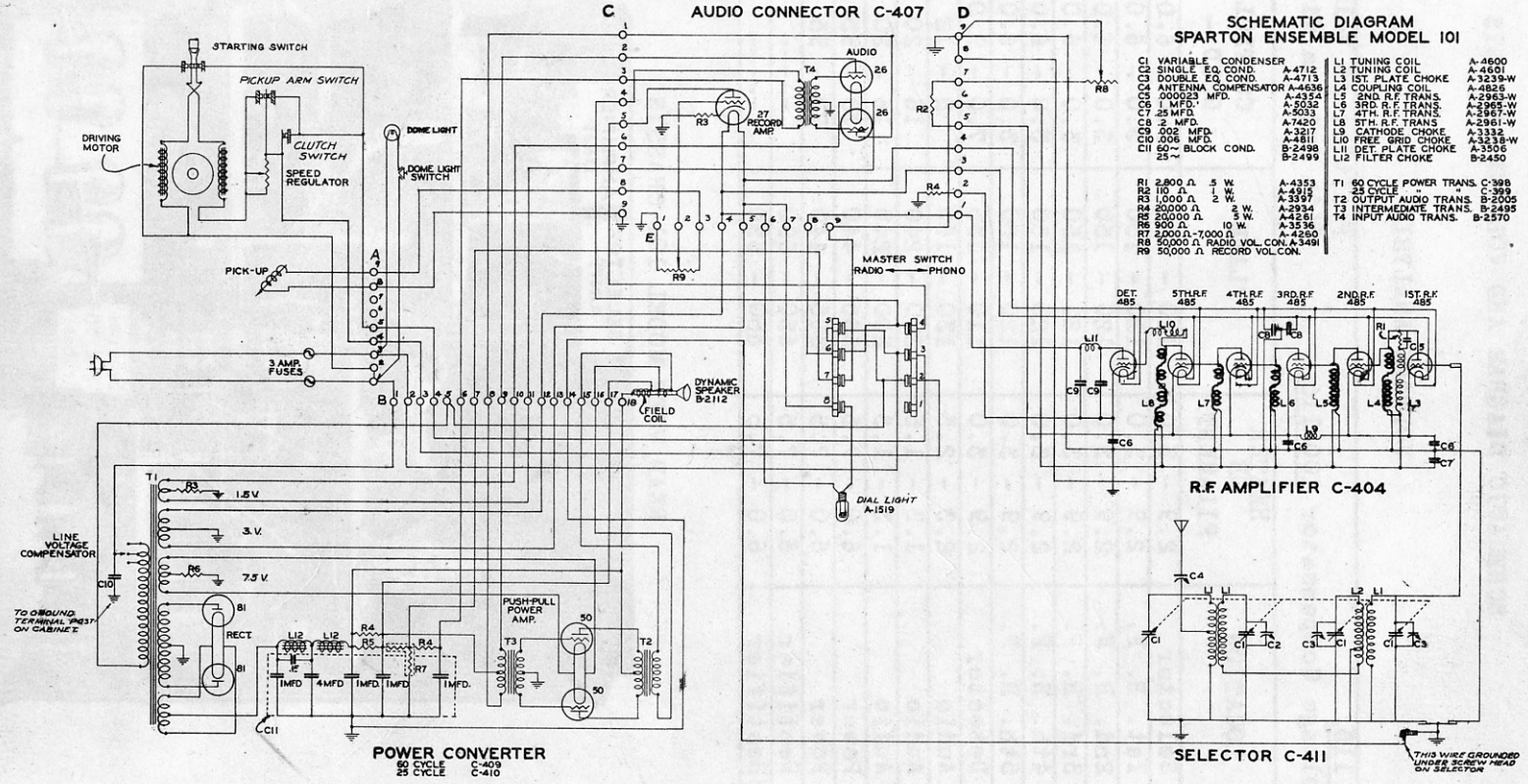


Plate 3

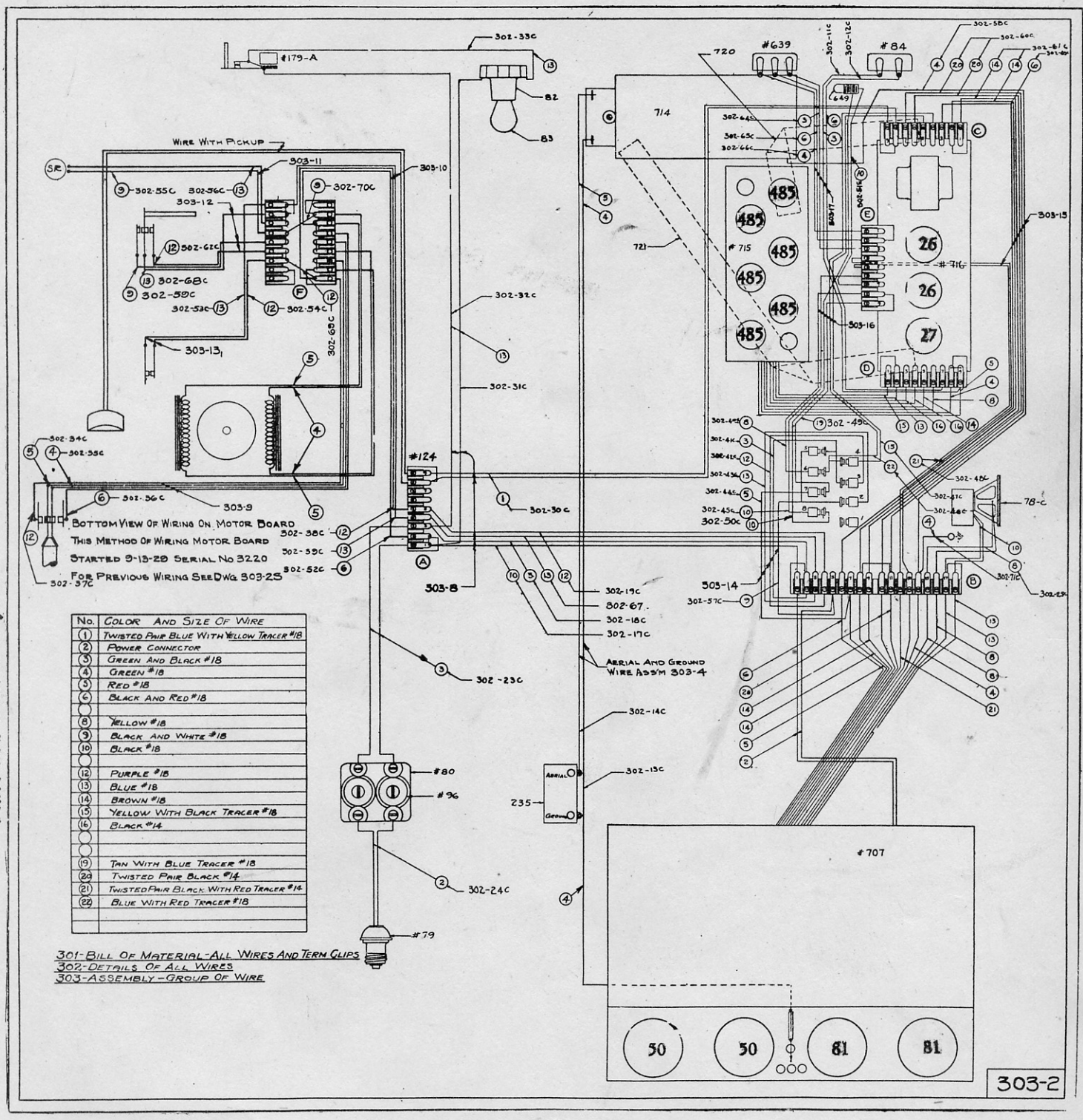
THE SPARKS-WITHINGTON COMPANY
Jackson, Michigan, U. S. A.



ALIGNMENT INSTRUCTIONS — MANUAL 1 BULLETIN 6—3

SPARTON MODEL 101

GRAPHIC DRAWING AND COLOR CODE



No.	Color And Size Of Wire
(1)	Twisted Pair Blue With Yellow Tracer #18
(2)	Power Connector
(3)	Green And Black #18
(4)	Green #18
(5)	Red #18
(6)	Black And Red #18
(8)	Yellow #18
(9)	Black And White #18
(10)	Black #18
(12)	Purple #18
(13)	Blue #18
(14)	Brown #18
(15)	Yellow With Black Tracer #18
(16)	Black #14
(19)	Tan With Blue Tracer #18
(20)	Twisted Pair Black #14
(21)	Twisted Pair Black With Red Tracer #14
(22)	Blue With Red Tracer #18

301-Bill Of Material-All Wires And Term Clips
302-Details Of All Wires
303-Assembly-Group Of Wire

Place this Bulletin in your SPARTON Radio Service Manual

Printed in U. S. A.

SPARTON ENSEMBLE MODEL 101 PHONOGRAPH MECHANISM

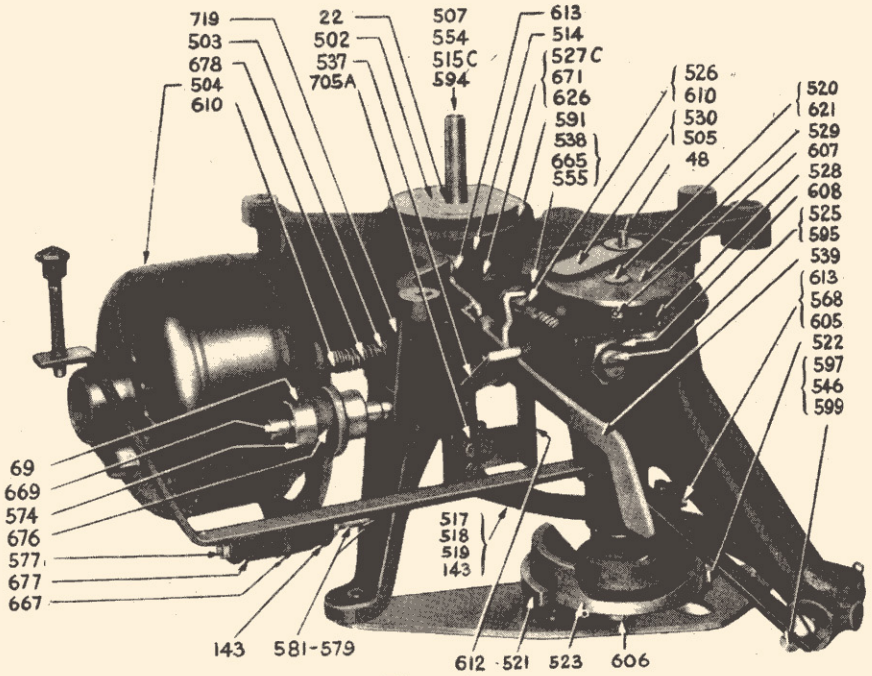


Plate 1

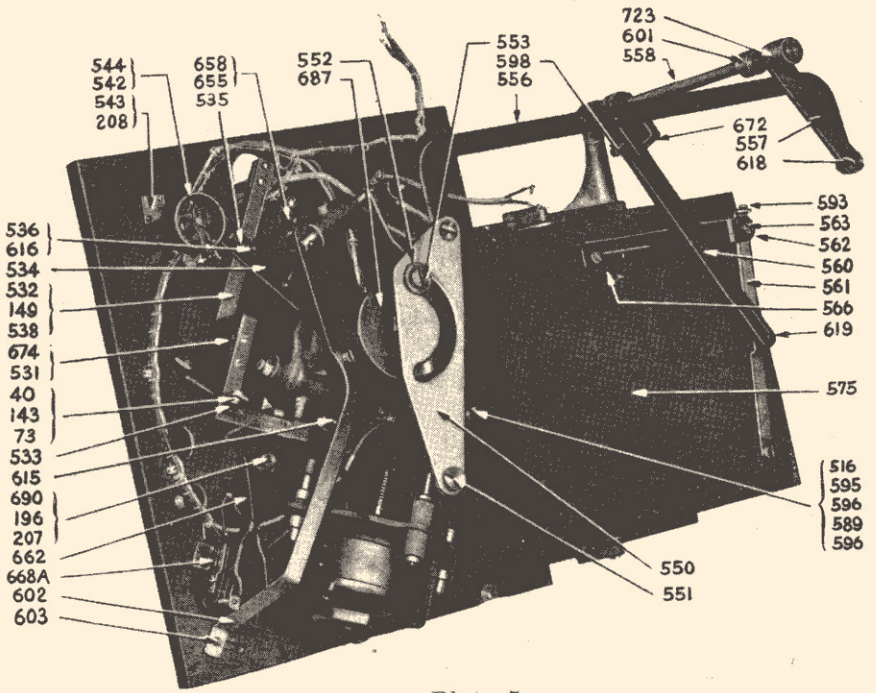


Plate 5

Printed in U. S. A.

SPARTON ENSEMBLE MODEL 101 PHONOGRAPH MECHANISM (Continued)

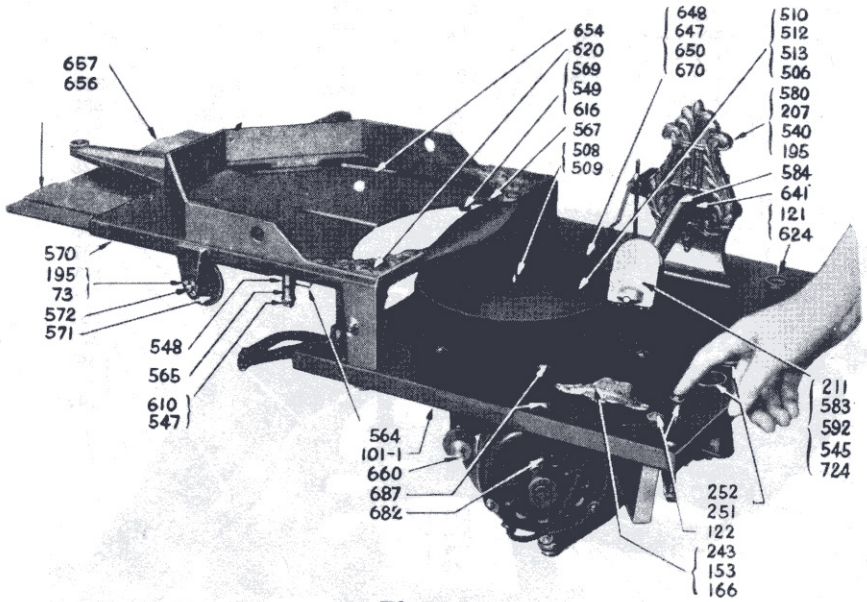


Plate 6

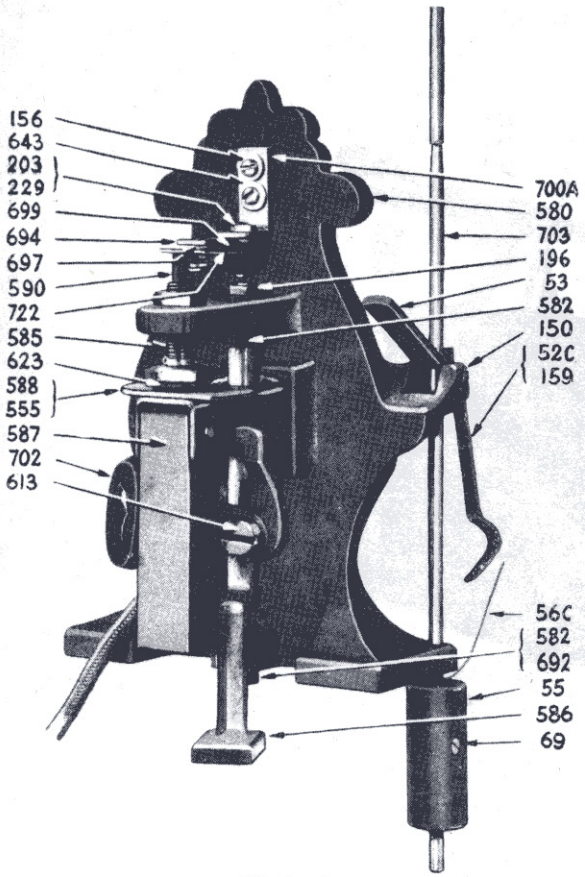


Plate 4

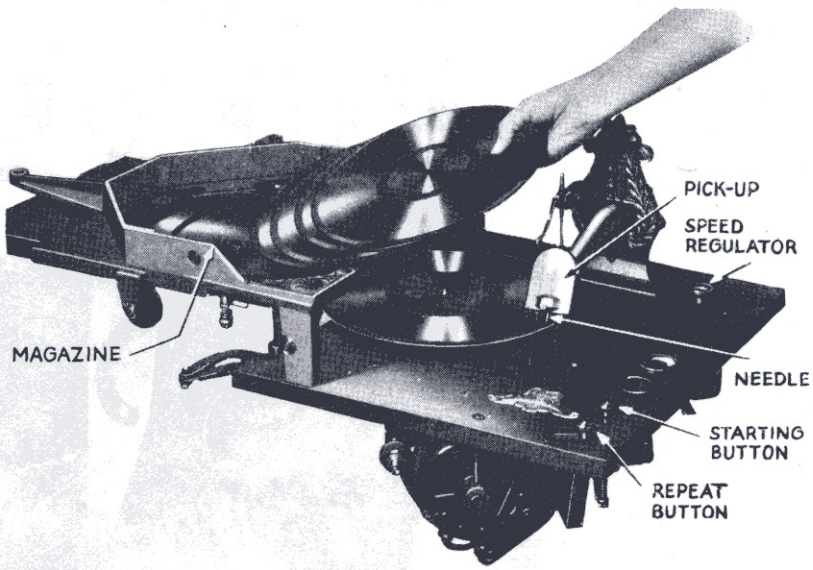


Plate 9

SERVICE DATA FOR SPARTON ENSEMBLE MODEL 101 PHONOGRAPH MECHANISM

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 as a guide to 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.

GENERAL OPERATION OF PHONOCRAFT AUTOMATIC.

First: Place needle (either tungsten or steel) in pick-up. Place either ten or twelve inch records or both in magazine not to exceed fifteen in number. You are now ready to start mechanism in operation. Make sure that the source of current is the correct voltage and cycle as specified on nameplate; also see that 110 volt cable is attached to current supply and that 3 amp. fuse are screwed into the receptacle under cabinet. Turn the master switch (plate two) to record and if machine does not start to operate press starting button (plate six). (Note: your starting button has two functions; first, to release clutch engaging mechanism; second, the paralleling of motor fields for starting only) The first function of your starting button at this time causes trip lever No. 662 (plate five) to trip throw out lever trip No. 537 (plate one), releasing throw out lever No. 539 (plate one), allowing it to drop and move clutch lever No. 538 (plate one) causing clutch No. 526 (plate one) to engage in clutch collar No. 527 (plate one). (When clutch lever No. 538 (plate one) moves forward to engage clutch No. 526 (plate one) clutch switch No. 705-A (plate one) is also closed completing electrical circuit to motor) Clutch switch No. 705-A (plate one) is mounted on bracket No. 612 (plate one), this bracket in turn is mounted on main body casting No. 501 (plate one) with two screws for adjusting same. This switch should close immediately when clutch is engaged. In case motor stops when pick-up leaves record, this switch undoubtedly is not properly adjusted. Bearing No. 527 (plate one), is interval with worm gear No. 514 (plate one) this worm gear is driven by drive shaft No. 503 (plate one) causing clutch worm No. 524 (plate one) to revolve, this worm being in mesh with cam worm gear No. 528 (plate one) causes cam shaft to revolve.

In revolving, the first position the cam No. 523 (plate one) is brought to, is the pick-up arm swinging back position. While this cam is in this position stud No. 48 (plate one) is brought in contact with end of slot in index lever No. 534 (plate five), moving pick-up to the right to a position where record when discarding will clear the same. Pick-up is moved back to this position by pick-up lever No. 532 (plate five), when pick-up lever has reached nearly its maximum travel it comes in contact with throw-out lever No. 539 (plate one), raising this lever to a position where notch in throw-out lever trip No. 537 (plate one) engages a lug on throw-out lever No. 539 (plate one) thus holding throw-out lever in the correct location, so that clutch No. 526 (plate one) can disengage collar for worm gear No. 527 (plate one), if this lever does not function in this way and is permitted to drop before it is released by either the spiral trip or the eccentric trip, the machine will not stop after the change mechanism has completed its cycle, but will continue to discard and replace record on turn table. Also, while the pick-up is being carried back driving lever No. 550 (plate five), is being moved by driving lever roller No. 552 (plate five), causing eject slide No. 575 (plate five) to move out with a record to a position where turn table will receive the record. While this has been taking place, slide has been coming out, cam has continued to revolve to the discard position lowering turn table to a position where record would be brought in contact with discard rubber No. 650 (plate six), raising record above receiving stub No. 508 (plate six), and discarding record in record receiving drawer. Cam continues, raising turn table to the record receiving position, (turn table just clearing eject slide so there is no friction between slide and turn table. The turn table is held in this position while eject slide moves back leaving record on turn table). Cam now lowers turn table to a position where pick-up which is brought back into playing position by index lever No. 534 (plate five), can swing in over record. Turn table is now raised by the cam to the playing position. When pick-up is engaged with record, pick-up switch No. 700-A (plate four), at the rear of pick-up arm is closed completing the same circuit that cam switch No. 705-A (plate one), carries. When cam has reached playing position, it continues to revolve until clutch control No. 529 (plate one), at the upper most end of cam shaft has been brought to such a position that notch in said plate allows clutch lever No. 538 (plate one), to drop into notch, thus disengaging clutch and opening Clutch Switch No. 705-A (plate one). Current is now passing through pick-up switch. This completes the operation of changing a record.

REPEAT MECHANISM

The repeat mechanism is of very simple construction and should require very little attention. In normal operation when the automatic record changing is taking place cam No. 523 (plate one) drives through drive dog No. 522 (plate one) eject drive arm No. 521 (plate one), to which the mega-

SERVICE DATA FOR SPARTON ENSEMBLE MODEL 101 PHONOGRAPH MECHANISM **(Continued)**

zine mechanism is attached. When operating eject slide repeat button which can be found in the front right hand corner of phonograph compartment is in the right hand end of slot, when it is desired to repeat record, push repeat button to the left hand end of the slot. This engages lift lever roller stud No. 519 with driving dog No.522 (plate one), holding driving dog in so that it does not contact with eject driving arm No. 521 (plate one). In this position cam No. 523 is free to rotate without driving magazine mechanism, therefore after record has been played through and automatic trip mechanism has tripped clutch, permitting cam shaft to start rotating eject drive arm No.521 (plate one) does not rotate with cam. Cam rotating lowers turn table to the first position where pick-up swings back clearing record. Lift lever roller No. 518 (plate one) is now supported by eject driving arm No. 521 (plate one) not permitting it to drop into discard position on cam, therefore, the record is not discarded from turn table, but is carried up with turn table and returned to position where pick-up swings back over record. Cam now raises turn table to playing position and record is repeated. Record will continue to repeat as long as repeat button is left in the repeat position.

PICK-UP ADJUSTMENTS.

There are two adjustments of the pick-up; the first being engaging the record at the proper place; the second the height pick-up is set when machine is empty and needle comes to rest, not on a record. The first adjustment is made with adjusting screw No. 535 (plate three). Loosen locknut and move screw in or out as the occasion may require. When proper adjustment has been obtained tighten locknut. In case the pick-up has become so badly out of adjustment it cannot be corrected through the above mentioned adjustment, two screws will be found at the extreme end of pick-up lever No. 532 (plate five) connecting same with Lyre bracket No. 586 (plate four). By loosening these any amount of adjustment that is necessary can be made (Note: Never use the last method of adjustment until you are sure that adjustments cannot be made with the adjusting screw No. 535 (plate five). After you have made the adjustment for pick-up it may be necessary to readjust the spiral trip No. 674 (plate five), it will be found on the upper side of pick-up lever No. 532 (plate five held in place by two screws which may be loosened for the proper adjustment, to engage it with spiral kick-off lug found on throw-out lever trip No. 537 (plate one). This should be set so that when needle on record reaches a position approximately one-eighth inch from its inner most travel, throw out lever trip will be released. This adjustment applies to spiral groove records only such as Columbia, Brunswick etc.

ADJUSTMENT FOR ECCENTRIC GROOVE RECORDS:

This is made through dog No. 533 (plate five) which is mounted on eccentric stud No. 40 (plate five). It is rarely necessary to change this adjustment (Note: All Columbia records have the termination of their spiral groove at three and five-eighth inches in diameter. Occasionally a Victor record is found that the re-producing groove extends nearer the center than three and five-eighth inches in diameter. This may cause machine to trip or try to trip before the re-production has been completed, however, nothing can be done to remedy this inasmuch as the fault lies in the record. Records of this type are so rare that the difficulty encountered from them is of no serious consequences). The second adjustment; the height to set pick-up when machine is empty and pick-up comes to rest with the needle not on a record. This adjustment is made through break adjusting screw No. 585 (plate four), Pick-up should be adjusted, so that with a long 3/4 inch needle in pick-up, needle just clears record on turntable when cam is in swing back position.

After the above adjustment has been made, it may be necessary to readjust pick-up switch No. 700-A (plate four). The function of this switch is to cut in and out the speed regulator resistor No. 544 (plate five). This switch should be set so that when needle comes to rest on record in playing position, the movable contact No. 722 (plate four), is making contact with the lower stationary contact, with ample clearance between movable contact and switch opener No. 590 (plate four), so that any irregularity in the record will not cause this contact to be broken, In the other position, with pick-up not resting on a record, make sure that movable contact is making contact with upper stationary contact.

If this adjustment is not properly followed out so as to cut out the speed regulator resistor No.544 (plate five), which is only to be in circuit while the record is playing, the motor will not have sufficient power to carry the record changing mechanism through the changing cycle.

ADJUSTMENTS OF ENGAGING REGULATOR ROD No. 703 (plate four.

This rod supports engaging regulator cable assembly No. 56-C (plate four) cable being attached to pick-up index lever No. 534 (plate five). In the normal operation of the machine, 10 inch records are always played, but when a 12 inch record is deposited on turn table, record in its downward movement, with the turn table contacts engaging regulator trip No. 52-C (plate four), releasing regulator rod No. 703 (plate four) allowing it to drop, carrying the long slot in pick-up index lever No. 534 (plate five) to a position where it will engage drag link stud No. 48 (plate one), on drag bracket No. 530 (plate one) bringing pick-up in to a correct

SERVICE DATA FOR SPARTON ENSEMBLE MODEL 101 PHONOGRAPH MECHANISM (Continued)

position to play a 12 inch record. The regulator weight No. 55 (plate four), on regulator rod No. 703 (plate four) should be set in such a position that when cable attached to pick-up index lever No. 534 (plate five) carries it to its upper most position, groove in regulator rod No. 703 (plate four), is carried approximately 1/16 inch above engaging regulator trip (plate four) on engaging regulator assembly No. 52-C permitting engaging regulator trip to drop into groove on rod, thus holding rod up so that weight is carried on pick-up index lever, only when released by 12 inch record. This covers the principal adjustments required for pick-up.

MAGAZINE ADJUSTMENT.

All levers on eject slide mechanism are pinned in position. This slide is set at the factory so that all adjustments that are found necessary to be made can be made through two set screws No. 598 (plate five), found in adjusting yoke No. 672 (plate five) by loosening one of these screws and tighten the other the eject slide advances or retards, as the occasion may require. It will be found when adjusting eject slide, in order to take care of the variation in diameter, between Columbia and other records, that it will be necessary to adjust slide on a Columbia record, so that receiving stud No. 508 (plate six) enters hole in record nearer the back, and not exactly in the center. When a smaller diameter record such as Victor is ejected, the receiving stud No. 508 (plate six) will enter nearer the front of hole.

ADJUSTMENTS ON CENTERING LEVERS IN MAGAZINE ON TOP OF EJECT SLIDE.

Centering levers No. 564 and 567 (plate six) (the rear lever No. 567 also known as 12 inch record trip lever). This lever has two functions, that of centering records on eject slide, and operating 12 inch regulating lever No. 562 (plate five) found on under side of eject slide. The first object of these levers is to hold record back and in the center, and to bring it in contact with front and rear V plates No. 656 and 657 (plate eight), found on top of eject slide. Tension is applied to these centering levers by centering lever springs No. 565 and 569, (plate six). In case record, when being pushed out by eject slide is not held back against V plates No. 656 and 657 (plate six), but is pushed either to the front or rear, and only comes in contact with one V plate, allowing the record not to be centrally located on eject slide, the spring on the side that the record is making contact with the V plate, is not set for sufficient tension to center record. (Example, if front spring No. 565 is set with more tension than the rear spring No. 569, when the record is advanced by eject slide, front spring will not compress and record will be pushed to the rear of slide, compressing rear spring No. 569, thus when the record is advanced to receiving position for turn table, it will be off center and too far forward to allow receiving stud No. 508 (plate six) to enter hole in record). The tension on either of these springs may be adjusted by loosening locknut on centering lever stud No. 548 or No. 549 (plate six), and moving tension spring bushing No. 547 (plate six), either to add or lessen tension on the spring, as the occasion may require. This adjustment should be made with 10 inch record. After this adjustment has been made, tighten locknut securely, so that adjustment may be maintained.

MOUNTING AND ADJUSTING MOTOR.

For quiet operation of the phonograph mechanism, it is essential that the motor be carefully lined with drive shaft No. 503-A (plate one). A great deal of time and attention has been given to adjustments for lining motor with drive shaft. In case it is necessary to remove motor, care should be taken to observe electrical connections carefully before removing from switch. There are two windings in this motor; one for running, and one for starting. When motor is operating under normal conditions, the field windings are in series and when operating through the starting switch, the field windings are in parallel. Should these connections be reversed and the motor allowed to run any length of time, with field paralleled, the motor windings would be burnt out. If you have any doubt of proper connections to motor, when replacing, consult wiring diagram 303-2 where proper connections are plainly shown. When adjusting motor for alignment, there are three adjustments for this purpose; one motor stud No. 669 (plate one), is stationary in main casting, the other No. 660 (plate six), is mounted in elongated hole, with a lock nut on the back for locking in position when proper adjustment is obtained. This adjustment is for bringing center line of motor to the same plane as drive shaft No. 503 (plate one). The second adjustment on motor mounting bracket No. 667 (plate one), will be found underneath motor. This adjustment is a horizontal adjustment, in other words, by loosening locknuts No. 143 (plate one) and moving either in or out, as the occasion may require, the motor shaft may be brought parallel with drive shaft No. 503 (plate one). The third adjustment will be found in four set collars No. 574 (plate one). Two on each mounting stud No. 660 (plate six), No. 669 (plate one). These set collars hold in place rubber motor insulating bushing No. 676 (plate one). In case it is necessary to make a sidewise adjustment, for lining motor armature shaft with drive shaft No.

SERVICE DATA FOR SPARTON ENSEMBLE MODEL 101 PHONOGRAPH MECHANISM **(Continued)**

503 (plate one), by loosening two of these set screws No. 69 (plate one) and moving collar No. 574 (plate one), and rubber bushing No. 676 (plate one), either in or out, where the occasion may require. Motor shaft may be lined perfectly sidewise. If the three above described adjustments are carefully followed out, the motor shaft can be perfectly aligned with drive shaft No. 503 (plate one).

ADJUSTING DRIVE SHAFT AFTER MOTOR HAS BEEN LINNED.

On the opposite end of drive shaft for motor, adjusting screw No. 706 (plate three) will be found. This screw should be adjusted, so that there is no end play in drive shaft No. 503 (plate one). Care should be taken when adjusting this screw to just take the end play out of drive shaft, and not compress drive spring No. 678 (plate one). If adjusting screw No. 706 (plate three), is set too tight, end thrust will be placed, both on the motor shaft and the thrust disc, between the adjusting screw No. 706 (plate three), and drive shaft No. 503 (plate one), causing motor to drag and run unevenly.

LUBRICATION.

The lubrication of the automatic mechanism has been carefully worked out. On the upper side of motor board in front of turn table two small brass threaded plugs will be found No. 687 (plate six), by removing these and using a light grade of oil, in tubes under plugs, both ends of armature shaft are lubricated. The motor has oil wells with wick oilers that provides sufficient lubrication for at least six months of normal operation. In the main body casting No. 501 (plate one), looking from the rear of cabinet, in the portion of the body casting No. 501, that houses turn table shaft No. 507 (plate five), and worm drive gear, a 1/8 inch pipe plug No. 687 (plate five), will be found, remove this pipe plug and inject a good grade of light grease about the consistancy of vaseline, if, a good grade of grease of this type can be secured containing graphite, it is desirable. This chamber is packed with sufficient grease when leaving factory to operate for one year under normal operation. It will not be necessary to renew this grease more than once a year. Also, when lubricating, all moving parts such as hopper roller bearing No. 572 (plate six), and edges of eject slide where they come in contact with hopper, all lever and shaft bearings should have a few drops of light oil applied. In such places, as the slot in drive lever No. 550 (plate five), where drive lever roller No. 552 operates, and the slot in top lever No. 560 (plate five), coat with the same grade of grease as used in worm gear chamber. In general all places where there is friction, should have lubrication.