

INSTRUCTIONS FOR INSTALLING THE 198693, 304739, 306708,  
AND 306709 MODIFICATION KITS TO CONVERT MOTOR UNITS  
FROM LMU14 TO LMU39, LMU6 TO LMU41, LMU10 TO LMU47,  
AND LMU4 TO LMU41, RESPECTIVELY

CONVERSION CHART

Modification Kit	Converts	Converts to
198693	LMU14 (Bell 28D) Series Governed Motor	LMU39 Series Governed Motor
304739	LMU6 (Bell 28B) Series Governed Motor	LMU41 Series Governed Motor
306708	LMU10 Series Governed Motor	LMU47 Series Governed Motor
306709	LMU4 Series Governed Motor	LMU41 Series Governed Motor

1. GENERAL

a. The principle improvement that installation of the 198693, 304739, 306708, and 306709 kits offers is the greatly reduced heating in the motor cradle compartment housing the governor resistors, R.F. noise suppressor filters and spark suppression capacitor.

b. With the 304739 kit, converting an LMU6 motor unit to an LMU41 motor unit, change is made from a motor unit without R.F. filter to a motor unit with R.F. filtering. This is in addition to the heat reducing feature.

c. When the converted motor unit LMU39 (kit 198693) is used to drive a Multiple Mounted Typing Reperforator Base LMRB, a 195185 modification kit must be ordered separately and installed in order to adapt the LMRB Base to use the LMU39 Motor Unit. Otherwise the motor will be damaged by heat.

d. The contents of the kits are given on the check list to be found with each kit.

e. For parts ordering information see appropriate Teletype Parts Bulletin (Bell System refer to standardized information).

## 2. INSTALLATION (Figures 1 to 12 and conversion chart on page 1).

### a. Disassembly of the motor unit.

(1) For LMU4 and 14 only, perform the following:

(2) Remove and retain four 151630 screws, four 2191 lockwashers and 152044 governor cover assembly. (See Figure 5)

#### CAUTION NOTE

Care must be exercised when removing or replacing the 152044 governor cover (LMU4, 14, 39X and 41X) or 153956 governor cover (LMU10 and 47X) so that the fingers do not bend the screened surfaces inward. The LMU6 does not have a governor cover.

(3) For LMU4, 6 and 14 only, perform the following:

(4) Remove and retain two 98712 screws and 150879 governor target cover.

(5) Remove and retain 151659 screw, 2191 lockwasher and 150845 governor assembly.

(6) For LMU10 only, remove and retain parts as follows: (See Figures 11 and 12)

(7) Loosen four 151152 screws, four 125011 screws and remove 153952 cap, 153987 slide bracket and two 153958 guide plates.

(8) Remove four 111017 screws, four 2191 lockwashers, four 8330 washers and 153959 cover plate.

(9) Remove 151659 screw, 2191 lockwasher and 154628 governor assembly.

(10) Remove 153956 cover.

#### CAUTION NOTE

See caution note in Paragraph 2.a.(2).

(11) For LMU4, 6, 10 and 14, perform the following: (See Figure 5)

(12) Loosen two 151658 screws and remove black wires with terminals. (See Figure 2)

(13) Remove and retain 151642 screw, two 151661 screws, three 2191 lockwashers, 150873 collar, 150846 left brush holder assembly and 150847 right brush holder assembly.

(14) Loosen, remove and retain two 122207 strap assemblies (See Figure 4) that hold 161577 motor (for LMU14) or 150701 motor (for LMU4, 6, 10) on 152046 motor mounting bracket (for LMU4, 10 and 14) or 150976 motor mounting bracket (for LMU6).

(15) Remove and retain 151152 screw and 110743 lockwasher that fastens 152040 lid to 152039 container (LMU4, 10 and 14 only).

(16) Remove and discard 152040 lid w/insulator from 152039 container (LMU, 10 and 14 only).

(17) Cut five wires from 152067 nipple assembly at end of shielding (LMU4, 10 and 14 only). Cut four wires from the 153031 bushing (LMU6).

(18) Remove motor from 152046 mounting bracket (LMU4, 10 and 14 only). Remove motor from 150976 mounting bracket (LMU6).

(19) Remove and retain 150949 serial number plate and discard two 111640 screws which mount it to 152037 cover (or 150976 motor mounting bracket for LMU6). Remove and discard 150950 code plate and two 111640 mounting screws (Figure 9).

(20) Remove and discard the 152037 screened cover and seven 151152 screws mounting it to the 152046 mounting bracket (LMU4, 10 and 14 only) (Figure 5).

(21) Remove and discard the 150976 motor mounting bracket with all contained parts (LMU6 only) (Figure 4).

(22) Remove and retain 152046 mounting bracket (LMU4, 10 and 14 only) (Figure 4).

(23) Discard 152039 container and all parts attached (LMU4, 10 and 14 only) (Figure 4).

(24) Remove and retain one 153103 screw; loosen other 153103 screw; remove and retain 153405 nameplate from 122200 end shield (Figure 4).

(25) Remove and retain two 122204 motor brush caps (each includes a 151448 insulation Disc cemented in) and two 122205 motor bushes (Figure 1).

#### CAUTION NOTE

The position of each 122205 motor brush should be noted or marked so that each brush may be reinserted in the same holder and with the same side up.

(26) At pinion end of motor, remove and retain two 151453 nuts and two 98642 lockwashers that fasten 122253 end shield assembly.

(27) Remove and retain the 122253 end shield assembly from 122221 stator (for LMU4, 6 and 10) or 161576 stator (for LMU14).

(28) For LMU6 only, remove and discard 153031 leads bushing from 122200 end shield.

(29) Remove and retain 122210 armature (LMU4, 6 and 10) or 161575 armature (LMU14) associated 122208 flat washers and 71999 motor thrust spring from motor housing.

(30) Remove and retain two 122202 studs from motor stator.

(31) Spread apart 122200 end shield and 122221 stator (LMU4, 6 and 10) or 161576 stator (LMU14) in preparation for the following:

(32) Inside 122200 end shield; remove yellow lead spring terminal, red and yellow spring terminal, and black motor winding lead spring terminal from motor brush holders. This leaves the 153114 wire assembly (black lead spring terminal) in place. Retain 91837 insulating washer.

(33) Cut off 151626 terminal from motor winding black lead for governor connection and slide wire thru 153101 grommet.

(34) Cut all wires inside 122200 end shield at entrance into 152067 nipple assembly. Unscrew and discard 152067 nipple assembly.

(35) Remove and retain 125143 flathead screw, 92260 lockwasher, and 6345 nut that grounds 122233 capacitor.

(36) Discard 122221 stator (LMU4, 6 and 10) or 161576 stator (LMU14) and attached 122233 capacitor assembly.

b. Reassembly of the motor unit.

(1) For LMU39, 41 and 47; do the following (Figure 1):

(2) Screw 152067 nipple assembly into 122200 end shield.

(3) Assemble 122200 end shield to 122221 stator (for LMU41X and 47X) or 161576 stator (for LMU39X) as follows:

(4) Attach 111062 terminal of the 122233 capacitor assembly to the 122200 end shield using 125143 flathead screw, 92260 lockwasher, and 6345 nut previously retained.

(5) Place the 151455 spring on black lead from stator and 151455 spring with red and yellow leads on it on the motor brush holder having no spring on it. Place the 151455 spring with one yellow lead on the other motor brush holder.

#### CAUTION NOTE

The 91837 fiber washer must be on each brush holder prior to assembly.

(6) Route the black lead that comes out of the stator winding at the same place as the red lead behind the 91837 fiber washer on the brush holder with the black, red, and yellow leads on it and insert thru the 153101 rubber grommet.

(7) Route the red lead from the 122233 capacitor assembly and two black and one red motor winding leads thru the 312530 leads support washer (for neoprene motor leads) or 312531 leads support washer (for cloth covered rubber motor leads).

(8) Feed two red and two black motor leads held together through 152067 nipple assembly.

(9) The 122200 end shield may now be assembled to stator.

#### CAUTION NOTE

Care should be taken to dress leads properly to prevent interference and prepare for insertion of armature.

(10) Install two 122202 bolts thru stator into end shield. Screw in finger tight.

(11) Install 122210 armature (for LMU41X & 47X) or 161575 armature (for LMU39X) with 122208 washers and 71999 spring on the commutator end thru stator and end shield; commutator end first.

(12) Install 122253 end shield assembly using two 151453 nuts and two 98642 lockwashers previously retained.

(13) Cut single black lead coming thru 153101 rubber grommet to the same length as adjacent lead. Strip end 1/8", affix 151626 terminal, and solder.

(14) Reinstall two 122205 motor brushes and two 122204 motor brush caps (each containing a 151448 insulation disc cemented in).

CAUTION NOTE

Recall position of each 122205 motor brush previously noted or marked so each brush may be reinserted in same holder and with same side up.

(15) Slip 198692 container assembly into 152046 bracket from top; 161579 capacitor end first so mounting holes line up.

(16) Install 198691 plate w/resistor assembly from top so resistor is next to 161758 suppressor and mounting holes line up. Use seven 139697 screws and seven 3640 lockwashers.

(17) Install 150949 serial number plate and 309432 code plate using four 75646 drive screws. (See Figure 9)

(18) Assemble motor to cradle compartment as follows: Slip two red and two black leads from motor thru hole in top of compartment. Thread wires and flexible shielding of nipple assembly thru cradle compartment until the resilient rings seat themselves on extensions. Locate motor governor to serial number plate end of cradle compartment. Clamp motor to cradle using two 122207 strap assemblies. Locate screw head on right as seen from governor end of motor.

(19) The motor leads enclosed in the 152067 nipple assembly shall be dressed in such a manner that the shield or wires shall not touch the body or terminals of the resistor in any way. Figure 8.

(20) Slide 179424 lid w/insulator into container and install 151152 screw and 110743 lockwasher.

(21) Install governor and associated parts as follows: Install 150846 left brush holder assembly and 150847 right brush holder assembly to end shield using 150873 collar, 151642 screw, two 151661 screw, and three 2191 lockwashers. (See Figure 4). Install two 151626 terminals of black leads beneath terminals of 150882 brushes by loosening two 151658 screws. Tighten screws.

(22) For LMU39X and 41X only, do the following: Install 150845 governor assembly using 151659 screw and 2191 lockwasher. Dress governor leads to prevent interference with fan. Governor contact adjustment required.

NOTES

Be careful to lift governor brushes, without damage, so governor slip rings may be mounted under their respective governor brushes properly.

Install 150879 governor target cover using two 98712 screws.

Install 152044 governor cover assembly using four 151630 screws and four 2191 lockwashers.

#### CAUTION NOTE

Care shall be exercised when installing the governor cover so that the fingers do not bend the screened surfaces inward.

(23) For LMU41X only; screw 152035 plug into 152044 governor cover assembly.

(24) For LMU47 only, do the following: Install 153956 governor cover assembly. Install 154628 governor assembly using 151659 screw and 2191 lockwasher.

#### CAUTION NOTE

Be careful to lift governor brushes, without damage, so governor slip rings may be mounted under their respective governor brushes properly.

Install 153959 cover plate, four 111017 screw, four 2191 lockwashers, and four 8330 washers.

Install 153952 cap, 153987 slide bracket, 153958 guide plates, tighten four 151152 screws, and four 125011 screws.

(25) Install 153405 nameplate to 122200 end shield using 153103 screw.

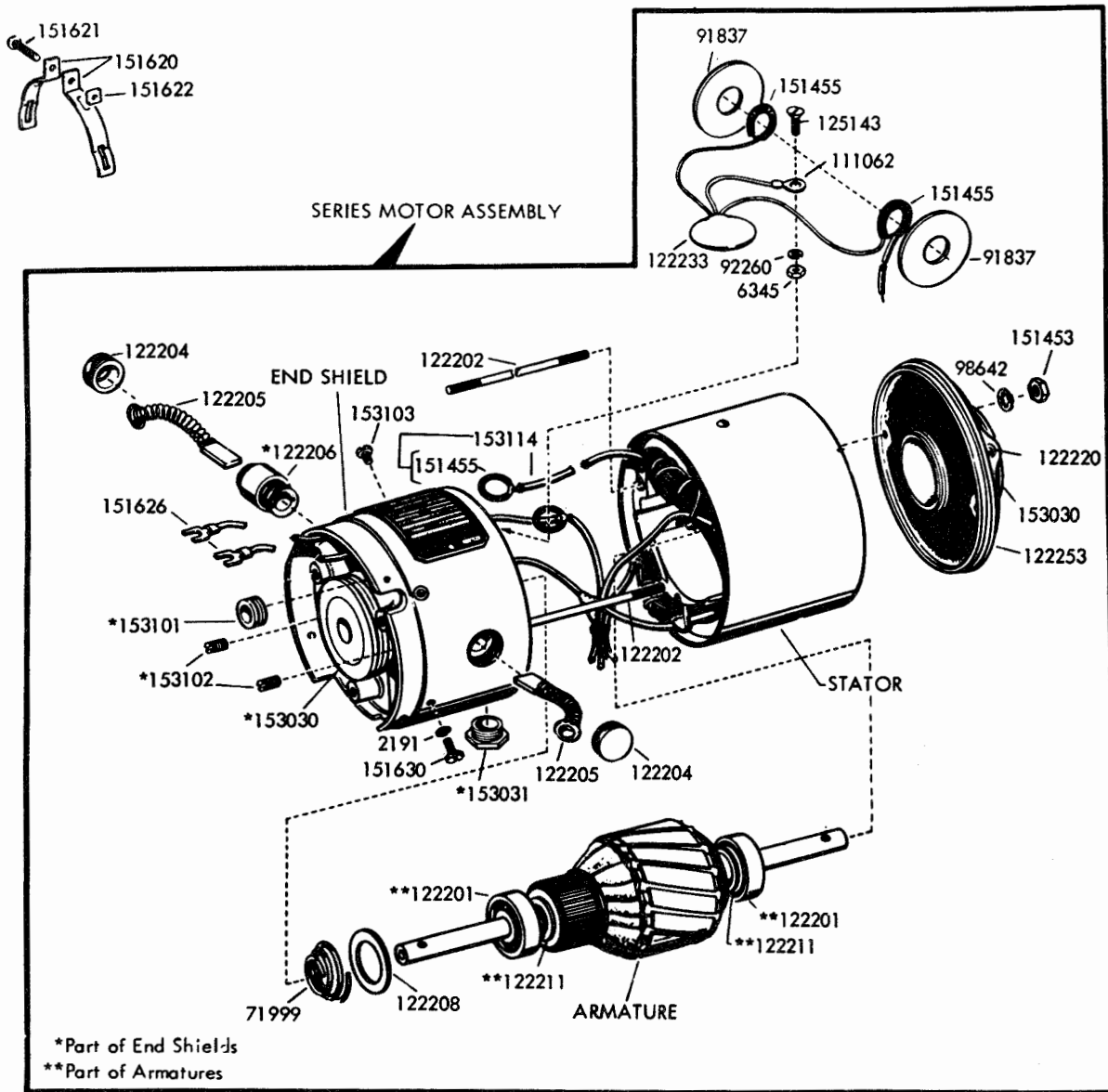
#### NOTE

Nameplate must be readable when pinion end of motor is on right.

### 3. ADJUSTMENTS AND LUBRICATION

For standard adjustments and lubrication procedure refer to the appropriate Teletype adjusting and lubrication bulletins. Bell System refer to standardized information.

\* \* \*

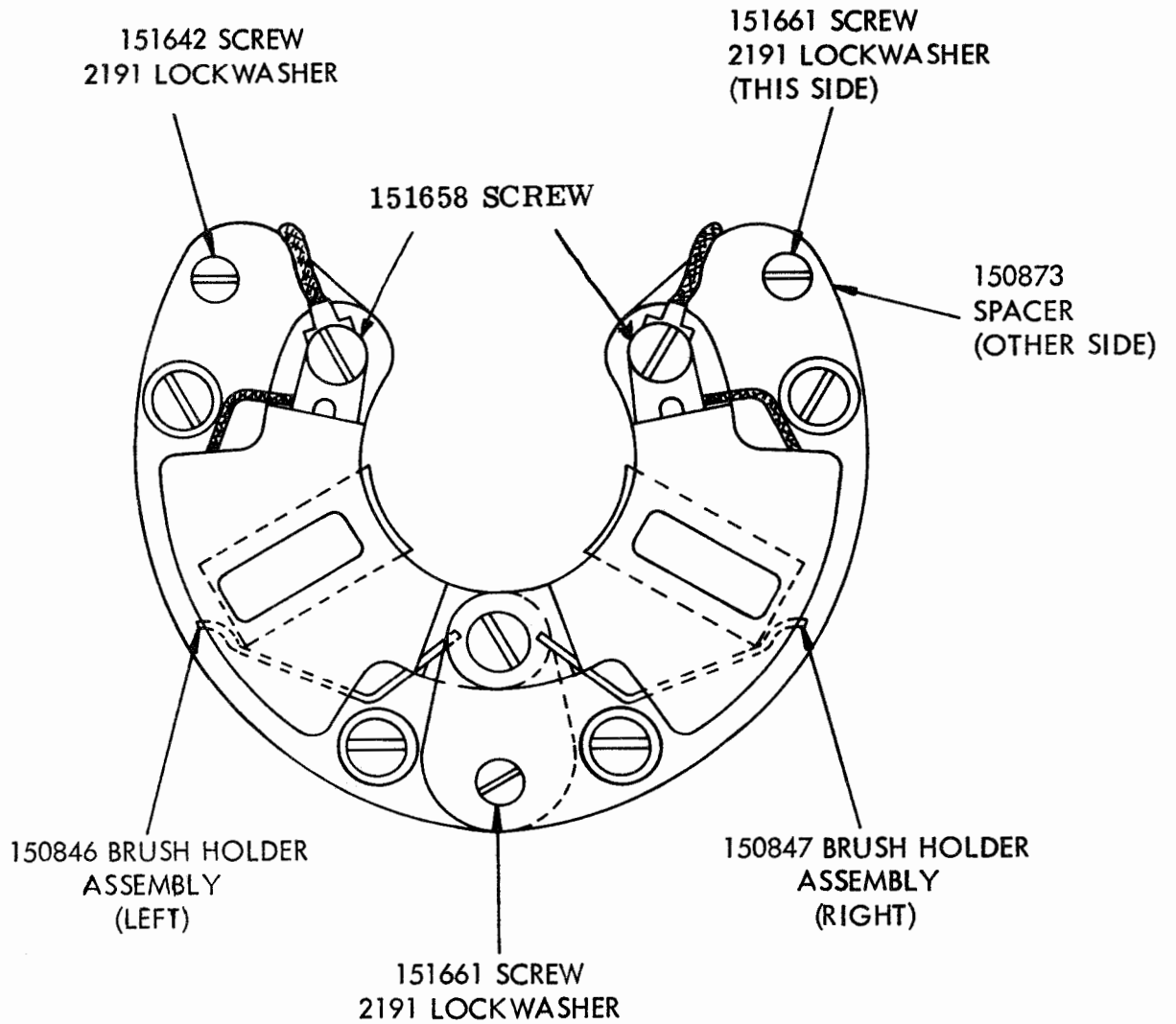


SERIES MOTORS STANDARD OR HEAVY DUTY					MOTOR DATA
	MOTOR ASSEMBLY	STATOR	ARMATURE	END SHIELD	
Standard	150701	122221	122210	122200	Series, 1/20 HP, 115V: 60 Cycle, 3600 RPM
Heavy	161577	161576	161575	122200	Series, 1/15 HP, 115V: 60 Cycle, 3600 RPM
Heavy	+163272	161576	161575	163273	Series, 1/15 HP, 115V: 60 Cycle, 3600 RPM
Heavy	+164753	154756	164757	163273	DC Series, 1/15 HP, 48V: 3600 RPM
Standard	179100	122221	122210	179101	Series, 1/20 HP, 115V: 60 Cycle, 3600 RPM
Heavy	179190	164756	164757	122200	DC Series, 1/15 HP, 48V: 3600 RPM
Heavy	+194060	161576	161575	194062	Series, 1/15 HP, 115V: 60 Cycle, 3600 RPM

+Arranged for Inverted Mounting

FIGURE 1 SERIES MOTOR ASSEMBLIES

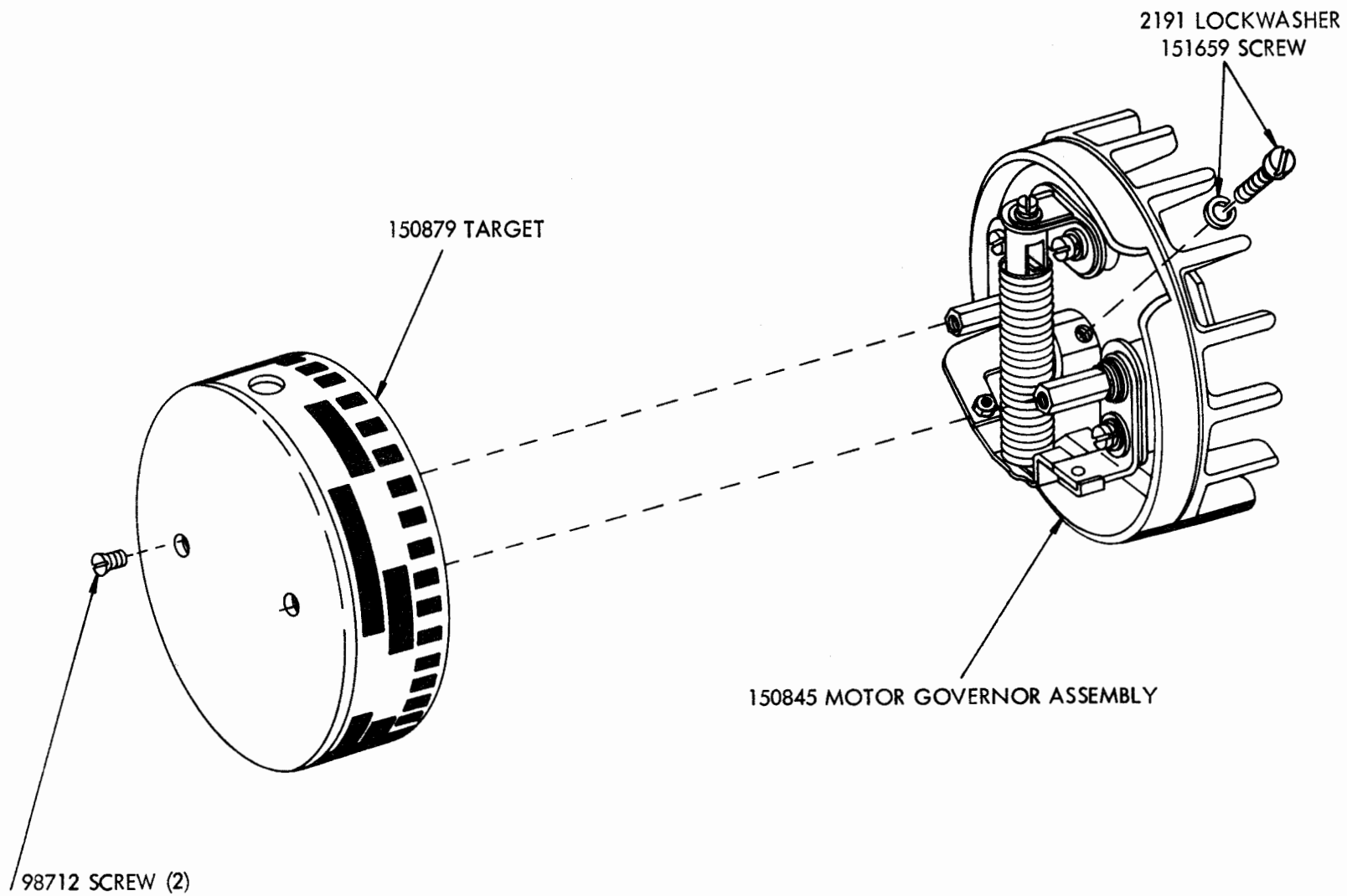




ALL PARTS RETAINED  
AND REUSED

GOVERNOR BRUSH ASSEMBLIES

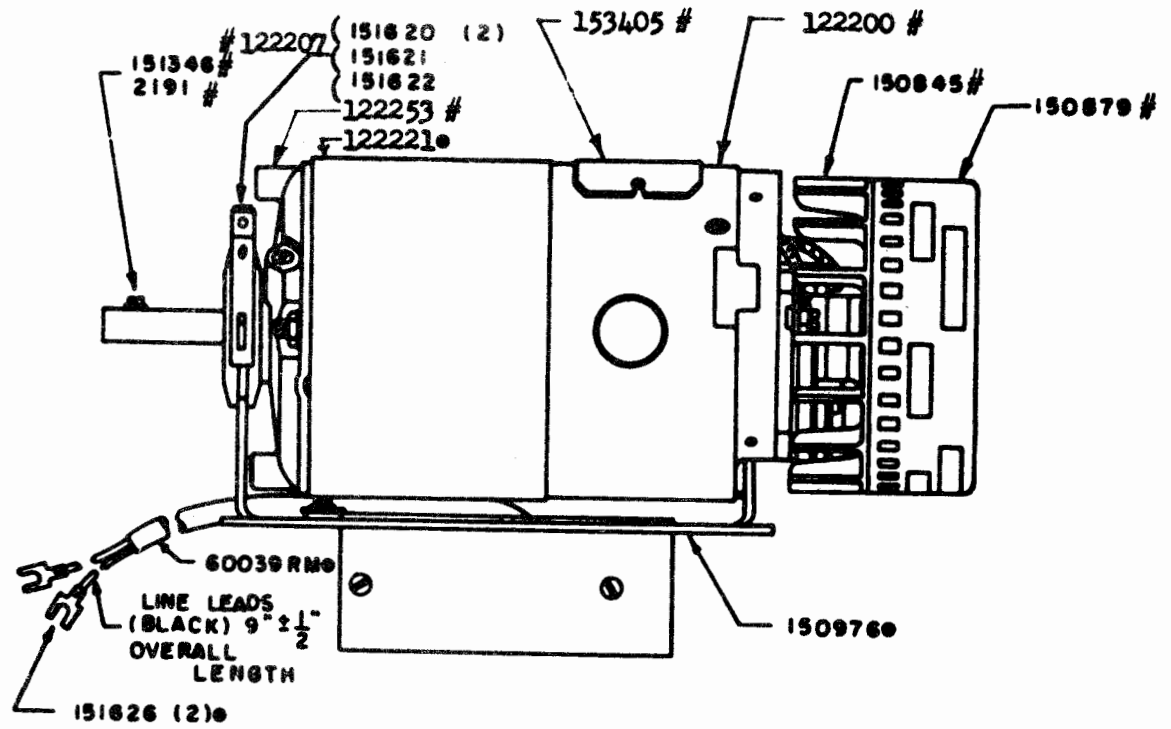
FIGURE 2



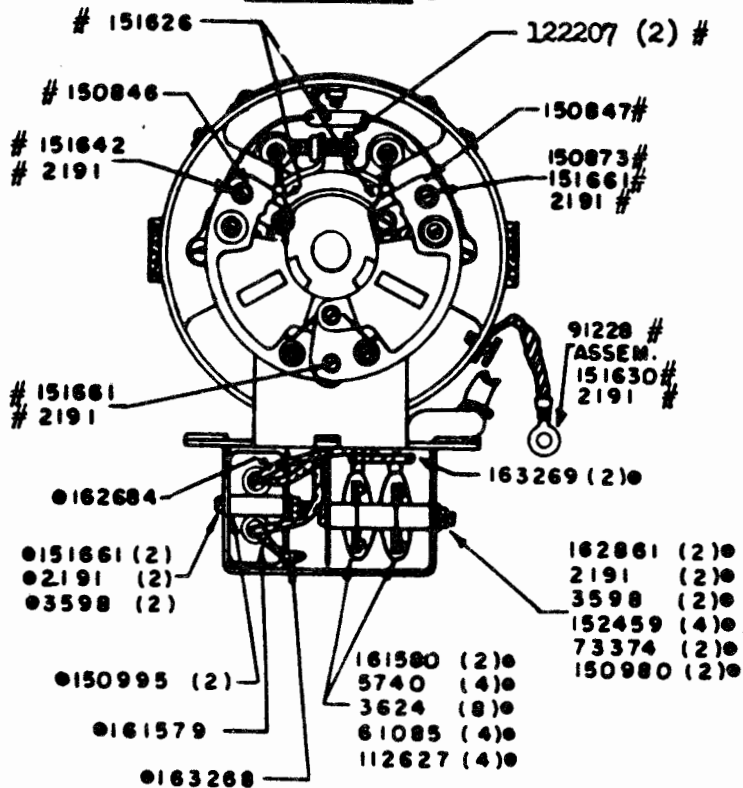
GOVERNOR W/TARGET AND SCREWS

FIGURE 3

50376S



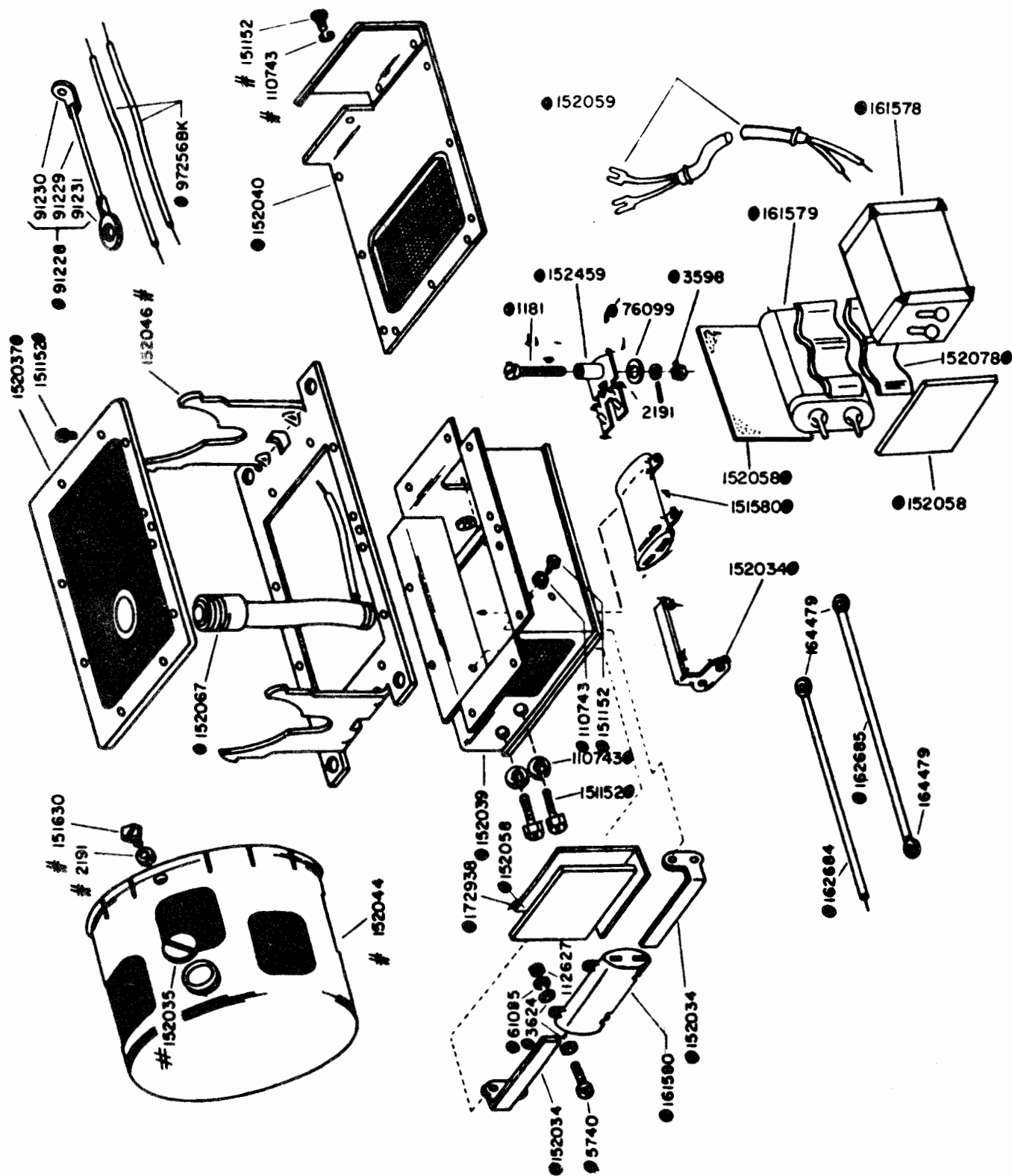
END VIEW WITH GOVERNOR ASSEMBLY OFF



LMU6 MOTOR UNIT (SERIES GOVERNED) (PRIOR TO CONVERSION)

- Parts to be discarded.
- # Parts to be retained.

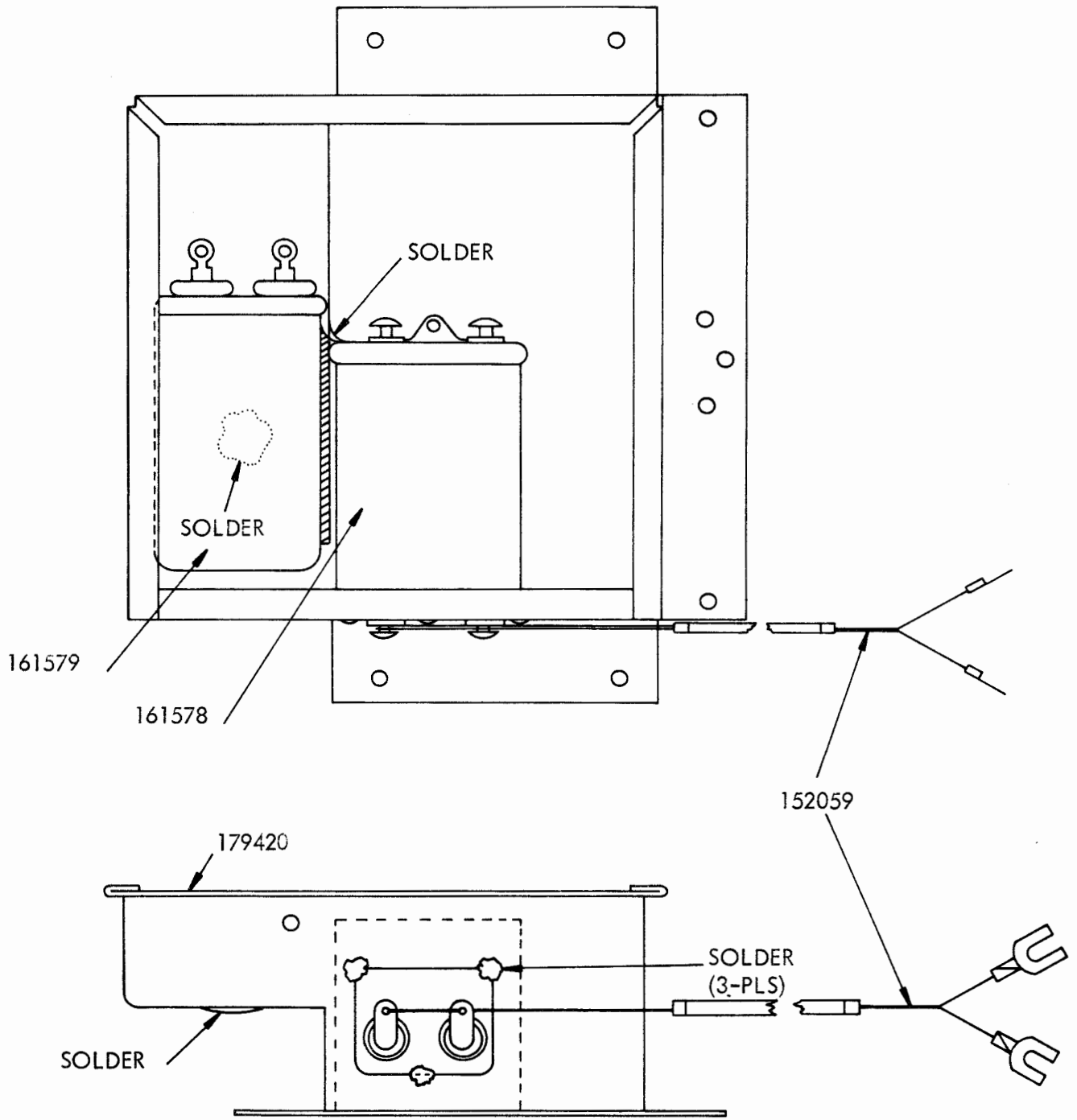
FIGURE 4



LMU4, 10 & 14 SERIES MOTOR UNITS (PRIOR TO CONVERSION)

● Parts to be discarded  
 # Parts to be retained

FIGURE 5



198692 CONTAINER ASSEMBLY

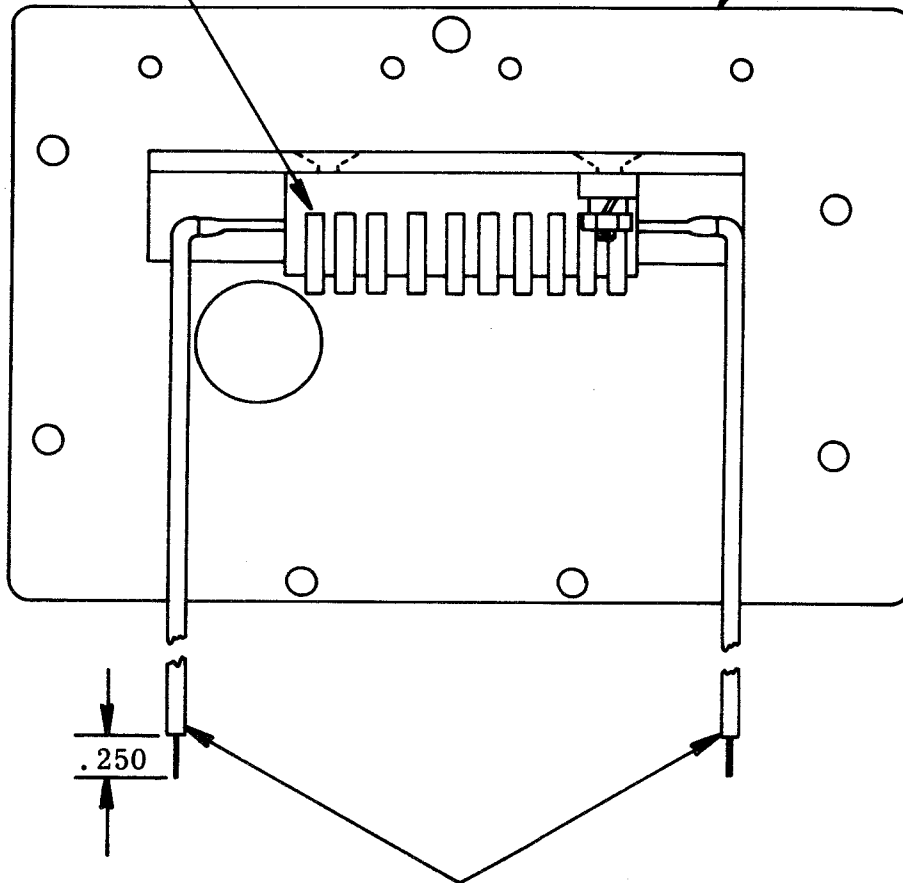
LOCATIONS FOR SOLDERING OF NOISE SUPPRESSOR AND CAPACITOR TO FRAME

FIGURE 6

50376S

179103 RESISTOR  
76834 SCREW (2)  
3640 LOCKWASHER (2)  
110435 NUT (2)

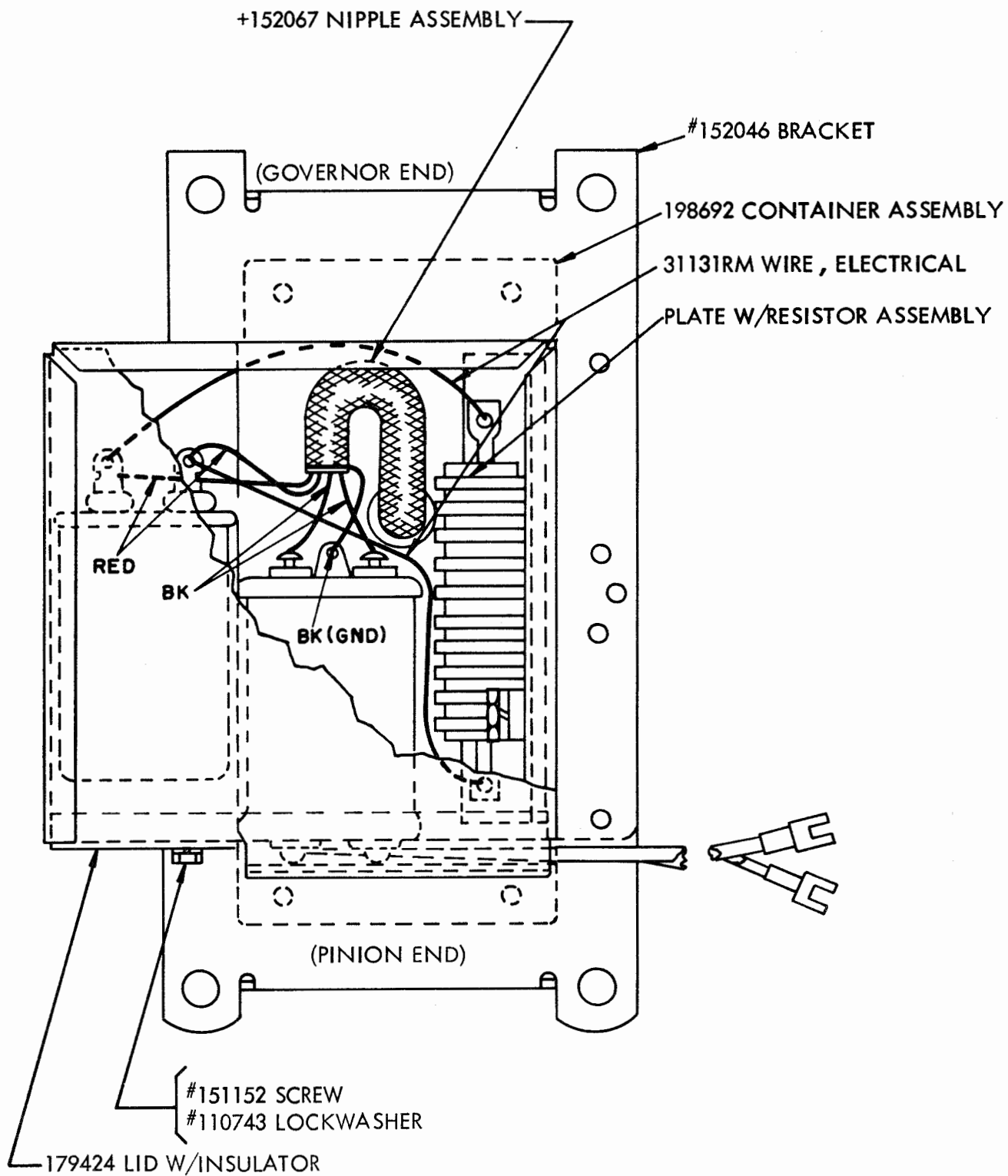
179423 PLATE W/BRACKET



31131RM  
(2 PIECES 6" LONG)

198691 PLATE W/RESISTOR ASSEMBLY

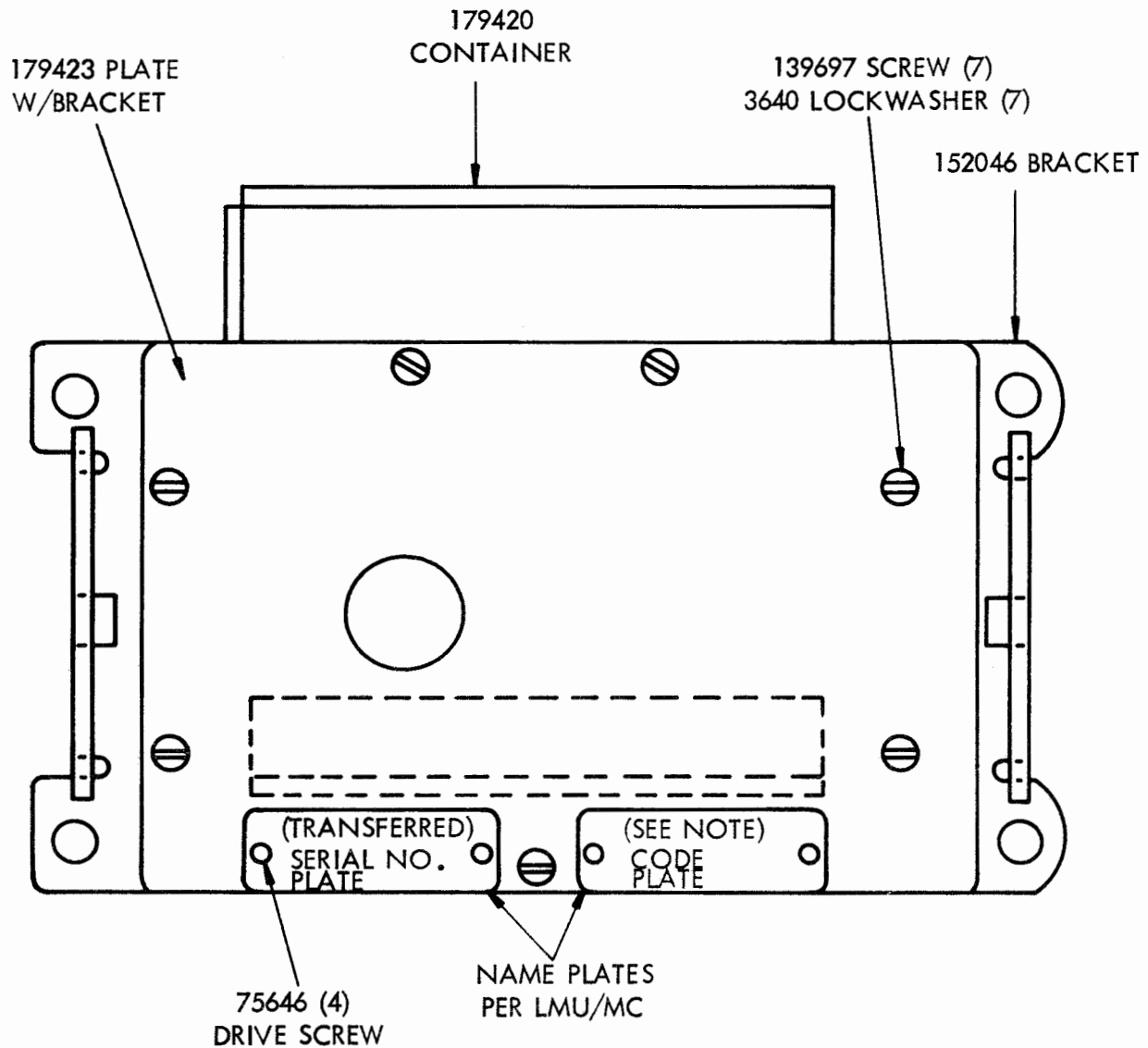
FIGURE 7



BOTTOM VIEW CRADLE ASSEMBLY

#PARTS RETAINED FROM ORIGINAL MOTOR UNIT  
+PARTS REPLACED

FIGURE 8

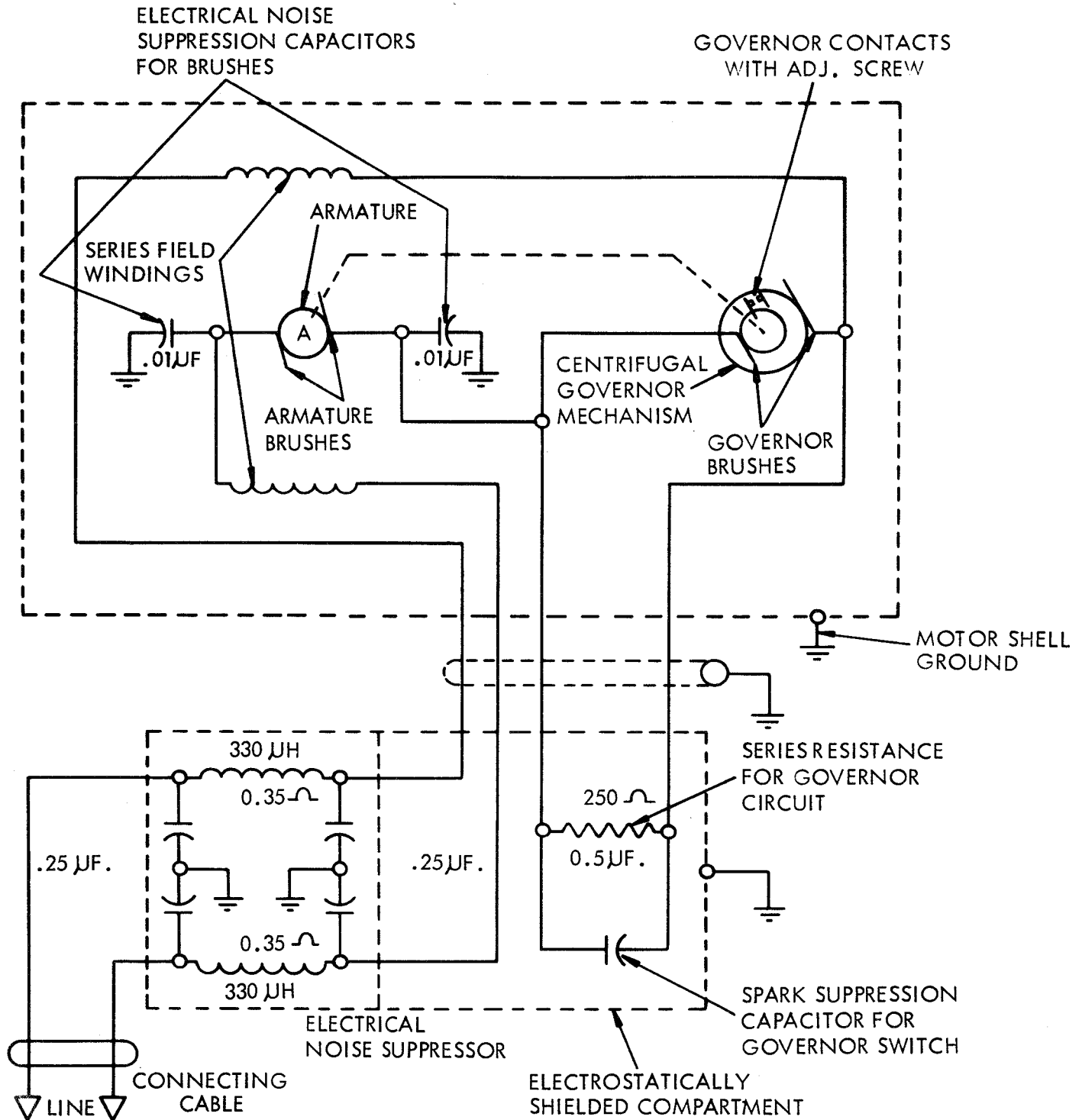


TOP VIEW CRADLE ASSEMBLY

NOTE: CODE PLATE STAMPED LMU39X (FORMERLY LMU14) MOTOR UNIT  
 CODE PLATE STAMPED LMU41X (FORMERLY LMU4 OR 6) MOTOR UNIT  
 CODE PLATE STAMPED LMU47X (FORMERLY LMU10) MOTOR UNIT

FIGURE 9





LMU39X, 41X OR 47X SERIES, (GOVERNED) MOTOR UNIT, SCHEMATIC WIRING DIAGRAM

FIGURE 10

50376S

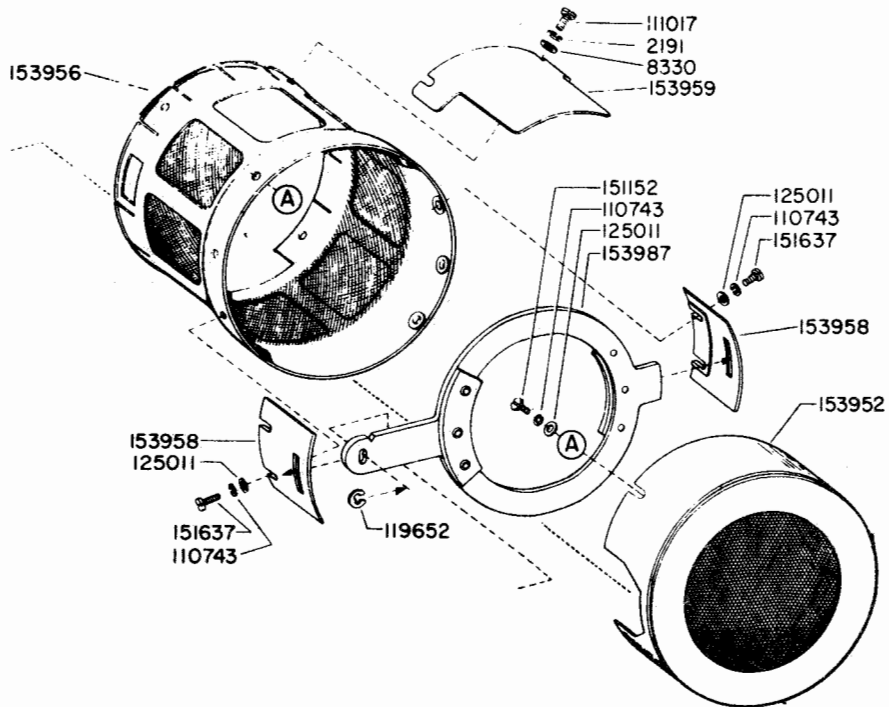
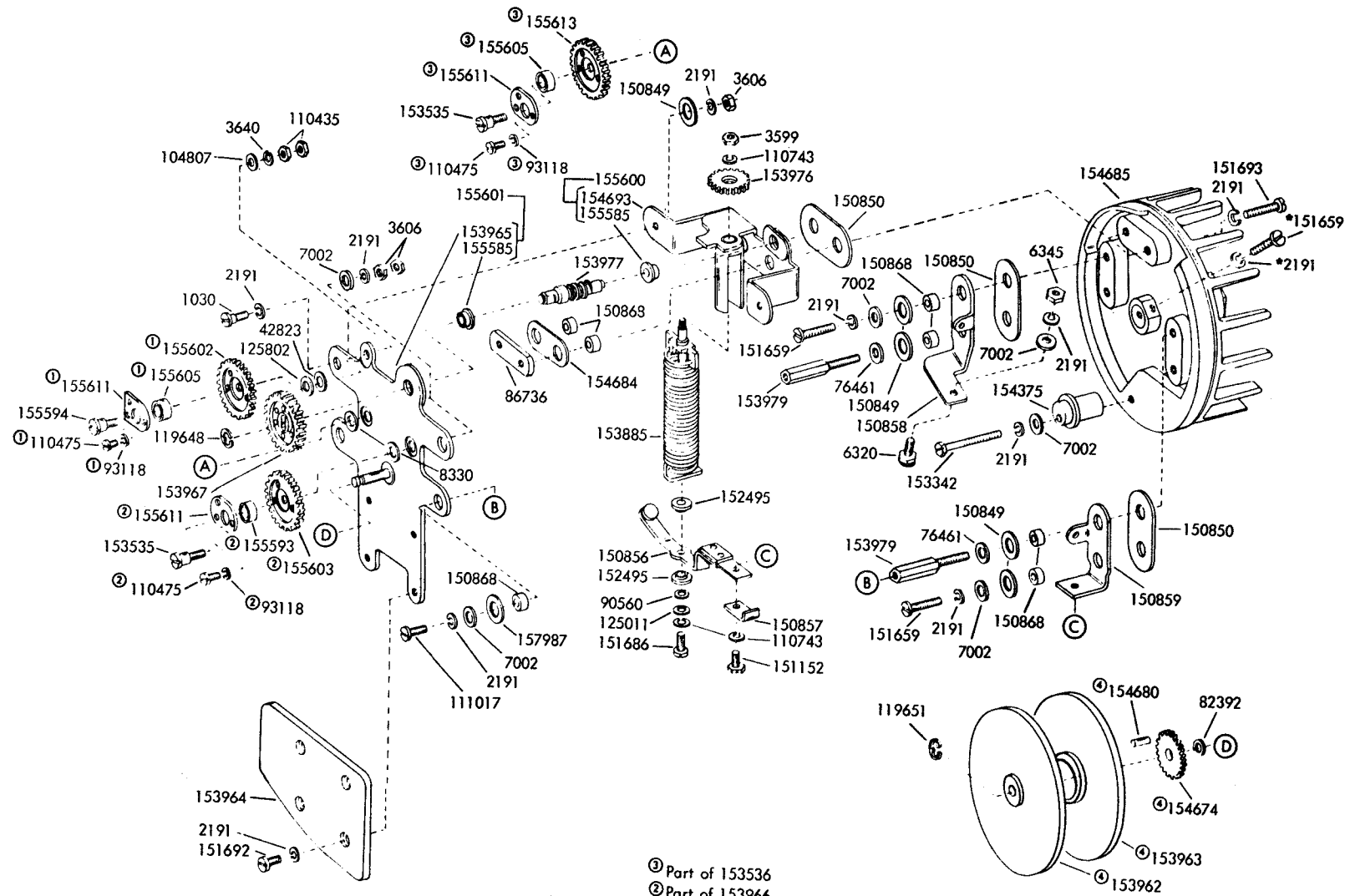


FIGURE 11

FIGURE 12

154628 GOVERNOR ASSEMBLY



- Ⓐ Part of 153536
- Ⓑ Part of 153966
- Ⓒ Part of 153968
- Ⓓ Part of 154676
- \*Not part of 154628

50376S