

\*INSTRUCTIONS FOR INSTALLING AND ADJUSTING THE 151400, 152336, 153040, OR 153251 ELECTRICAL MOTOR CONTROL ASSEMBLY ON A MODEL 28 ELECTRICAL SERVICE UNIT AND INSTRUCTIONS FOR CONVERTING THE 151400 ASSEMBLY TO A 153040 AND 153251 ASSEMBLY USING THE 153923 AND 152329 SETS OF PARTS RESPECTIVELY.

\*1. GENERAL

a. The 151400, 153040, (for LESU1, LESU2, LESU5, LESU6; Bell System 28A) or 152336, 153251 (for LESU7; Bell System 28B) electrical motor control assembly when installed on a Model 28 Electrical Service Unit and used in conjunction with a Model 28 Keyboard or Receiving-Only Base equipped with a time delay mechanism, stops the motor after the signal line has remained idle for a predetermined period of time. If the associated typing unit is equipped with either the 151798 (upper case H) or the 152052 (upper case M) set of parts for units with Serial Nos. 100 to 1499; either the 152718 (upper case H) or the 152719 (upper case M) set of parts for units with Serial Nos. 1500 and up, the 151400, 153040 or 153251 assembly stops the motor when the appropriate character (upper case H or upper case M) is selected. The 151400, 153040 or 153251 set of parts function in a like manner when installed on typing units equipped with the special parts required for stopping the motor on upper case BLANK H sequence.

b. The 151400 or 153251 assembly and the 153040 or 152336 assembly are the same except that:

(1) The 151400 assembly includes a 151409 armature and 151417 cable; the 153251 assembly includes a 151409 armature and 152329 set of parts. Either assembly restarts the motor when the signal line current is interrupted as by a depression of the keyboard break (BREAK) key and then restored to normal.

(2) The 153040 assembly includes a 152849 armature and 151417 cable; the 152336 assembly includes a 152849 armature and 152329 set of parts. Either restarts the motor immediately when the signal line current is interrupted by a depression of the keyboard break (BREAK) key or on an interruption (BREAK) in the signal line.

c. The 152329 set of parts converts the 151400 electrical motor control assembly to a 153251 assembly.

d. The 152329 set of parts consists of:

1	121245 Cable Clamp	1	153478 Cable Assembly
1	151632 Screw 6-40 x 3/8		

\*e. The 153923 set of parts converts the 151400 electrical motor control assembly to a 153040 assembly. Present 151400 assemblies contain the 252M magnet coil which replaces the 246M magnet coil previously used.

\*Indicates Change

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\*f. The 153923 set of parts consists of:

2	252M	Magnet Coil	1	152849	Armature Assembly
1	74882	Spring			

g. The wiring information included in the specification supplements the wiring diagram furnished with the Model 28 Printer Set.

h. Theory of operation for the electrical motor control mechanism, time delay mechanism, and motor stop function may be found in Teletype Model 28 Printer Description Bulletin.

i. Specification 5661S covers the 151230 or 152338 time delay mechanism, Specification 5665S covers the 151798 (upper case "H") and 152052 (upper case "M") motor stop functions (for units Serial Nos. 100 to 1499), and Specification 5671S covers the 152718 (upper case "H") and 152719 (upper case "M") motor stop functions (for units Serial Nos. 1500 and up), for typing units not originally equipped for motor stop.

j. For part numbers referred to, and for parts ordering information, see Teletype Model 28 Printer Parts Bulletin.

## 2. INSTALLATION

a. 151400 or 153040 Assembly for use with Electrical Service Units LESU1, LESU2, LESU5, LESU6, (Bell System 28A).

(1) Remove the cloth bag, that contains the two 151819 jumpers, which is tied to the electrical motor control assembly.

(2) Remove the Electrical Service Unit from the cabinet, if previously installed.

(3) Remove the 151411 terminal block and its mounting studs from the centrally located 151441 blank plate on the Electrical Service Unit. Remove and discard the 151441 plate and its mounting clamps.

(4) Mount and locate the electrical motor control in the space formerly occupied by the 151441 blank plate so that the terminal block will be toward the line shunt relay. Secure the assembly by tightening the mounting screws.

(5) Attach the terminal block assembly to the motor control assembly using the mounting studs previously removed.

b. 152329 Set of Parts to convert 151400 to 153251.

(1) Remove all connections to the 151411 Motor Control terminal block, if any.

(2) Remove the two 3598 nuts and 2191 lock washers that mount the studs to the 151401 base. Remove and discard the studs and the terminal block parts mounted thereon. (The removed parts may be used in the conversion of an LESU5 into an LESU7; see Specification 5790S).

(3) Remove and retain the two 110435 nuts, 3640 lock washers, 2034 flat washers, and one 151414 sensitive switch located in the inner portion of the assembly. Unsolder and discard the 151417 cable.

(4) Install the 153478 cable assembly as shown in wiring diagram 2949WD. Reassemble parts retained in paragraph (3) above to the motor control and be certain the 151414 sensitive switch (just installed) is pushing the 151432 stop armature.

(5) Install the 121245 cable clamp and the 151632 screw in place of the 151630 screw farthest away from the resistor.

(6) To distinguish the converted assembly from a 151400 assembly write "153251" on the side of the unit. Use black paint, marking crayon, or other form of durable marking.

\*(7) Follow procedure outlined in paragraph 2.d.

\*c. 153923 Set of Parts to convert 151400 to 153040.

(1) Remove the four 151630 screws, four 2191 lock washers and four 7002 washers used to mount the frame to the base and slide frame off the base.

(2) Remove one 246M coil by removing the 2201 nut, the 151402 core and the 121125 washer.

NOTE: The 151400 assemblies presently manufactured contain the 252M magnet coil.

(3) Remove leads from the 246M coil and solder to the 252M coil, respectively.

(4) Insert the core thru the 121125 washer, the 252M coil, assemble to the base and assemble the 2201 nut to core friction tight.

(5) Repeat operations (2), (3), and (4), to install the second 252M coil.

(6) Remove 151410 clip, 45104 spring and 151409 armature from the frame.

(7) Assemble 74882 spring to the 152849 armature and frame and assemble the armature to the frame with the 151410 clip.

(8) Assemble the frame to base with the four 151630 screws, four 2191 lock washers and four 7002 washers.

(9) To distinguish the converted assembly from a 151400 assembly write "153040" on the side of the unit. Use black paint, marking crayon, or other form of durable marking.

(10) Follow procedure outlined in paragraph 2.a.

\*d. 152336 or 153251 Assembly for use with Electrical Service Unit LESU7 (Bell System 28B).

(1) Follow procedure in paragraph 2a (1).

(2) Remove and discard the blank plate assembly located adjacent to the end plate that mounts the fuse holder and convenience receptacle.

(3) Mount the 153251 motor control assembly in place of the plate removed in the preceding step so that the feet of the motor control assembly fit into the cut-outs provided in the 153462 plate. When viewed from the front of the electrical service unit, the stop magnet of the motor control assembly should be to the left of the assembly.

(4) Tighten the mounting screws so that the 151427 clamp plates secure the assembly in position.

### 3. WIRING

a. 151400 or 153040 Assembly (Figure 1).

For actual and schematic wiring information, refer to wiring diagrams 2868WD and 2869WD for various accessory combinations that include the motor control assembly.

(1) Connect the main motor control leads and two 151819 jumpers to the 151411 motor control terminal block as shown in Figure 1. Move A-39-G lead from terminal 7 to terminal 6.

(2) If the line shunt relay is to be operated directly by the power switch, move the black jumper from terminal 3 to terminal 4.

(3) If the line shunt relay shunts only the selector magnets and is to be operated by the electrical motor control contacts, move the black jumper from terminal 3 to terminal 4 and the red jumper from terminal 2 to terminal 3; and on the cabinet terminal block, when the electrical service unit is installed move the white lead from terminal 10 to terminal 7.

NOTE: Motor control assembly is wired for 0.060 ampere operation; stop magnet for 110 V A.C. only. For 0.020 ampere operation, remove black strap from terminal 7 and attach to terminal 8. Remove black strap from terminal 6 and attach to terminal 9. Unsolder black strap from one end of 400 OHM resistor and solder both ends to one terminal.

\*b. 152336 or 153251 Assembly (Figures 2, and 3)

(1) Remove the black strap from between terminal 2 and 3 of the E terminal block. Route and connect the 153478 cable as shown in Figure 2.

(2) Connect straps, utilizing if necessary the strap removed from terminal block E, on terminal block D, as indicated in Figure 3. Retain surplus straps by placing in parallel with other straps, as by putting both lugs under the same terminal screws.

(a) The strap connections for the basic LESU7 electrical service unit with no motor control is given in Figure 3a.

(b) The strap connections for a unit with a motor control, 0.060 ampere signal line, and an A.C. power input is given in Figure 3b.

(c) The strap connections for a unit with a motor control, 0.060 ampere signal line, and a D.C. power input is given in Figure 3c.

(d) The strap connections for a unit with a motor control, 0.020 ampere signal line, and an A.C. power input is given in Figure 3d.

(e) The strap connections for a unit with a motor control, 0.020 ampere signal line, and a D.C. power input is given in Figure 3e.

(3) The actual wiring of the 153251 Electrical Motor Control Assembly is shown in wiring diagram 2949WD.

#### 4. ADJUSTMENTS

Refer to Figure 4 attached.

#### 5. LUBRICATION

Refer to Teletype Model 28 Printer Adjustment Bulletin.

\* \* \*

MOTOR CONTROL TERMINAL BLOCK

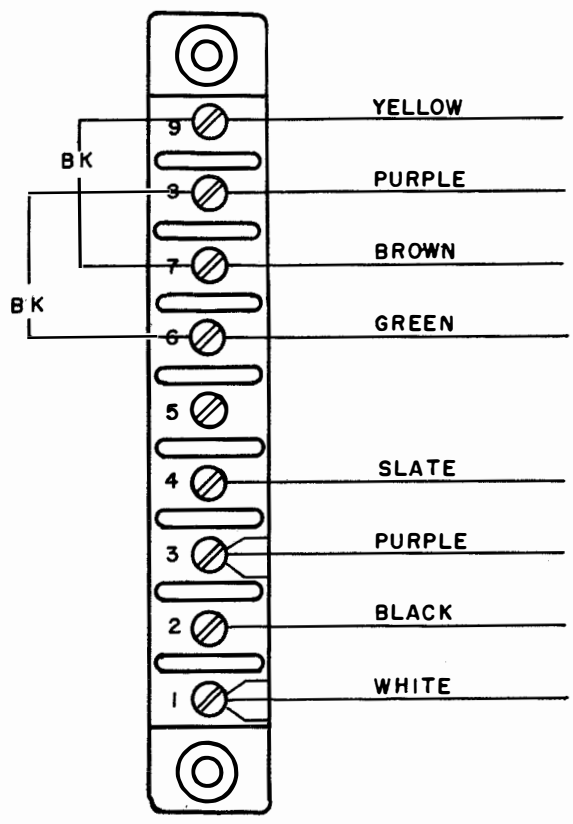
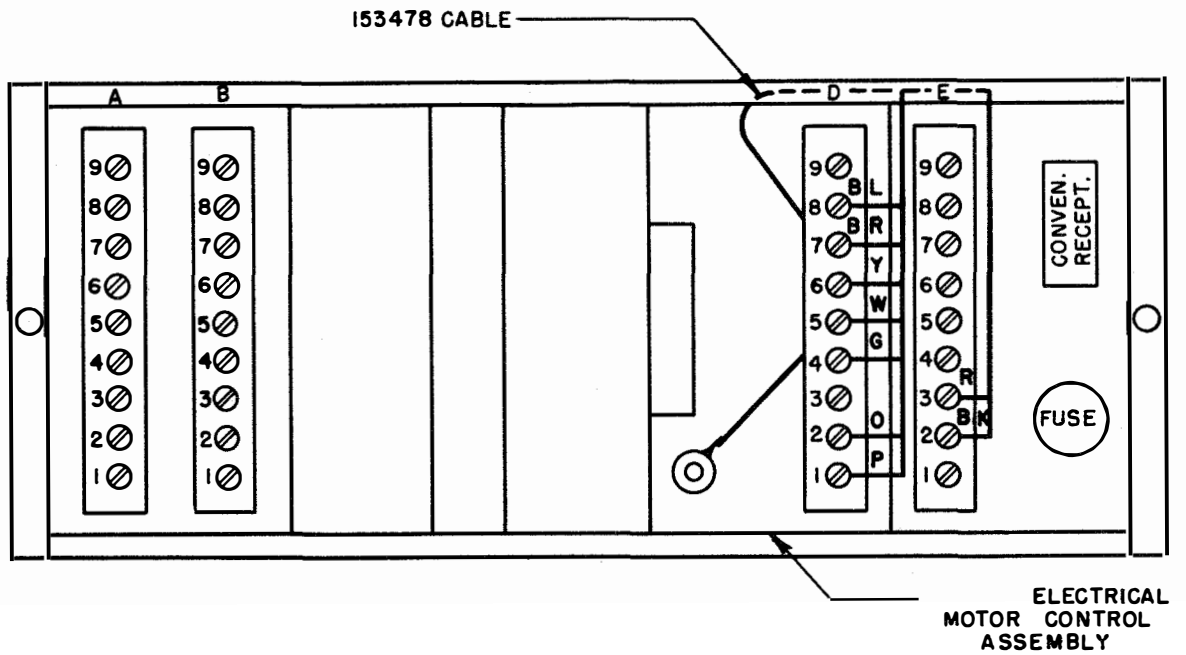


FIGURE 1



BOTTOM VIEW  
FIGURE 2

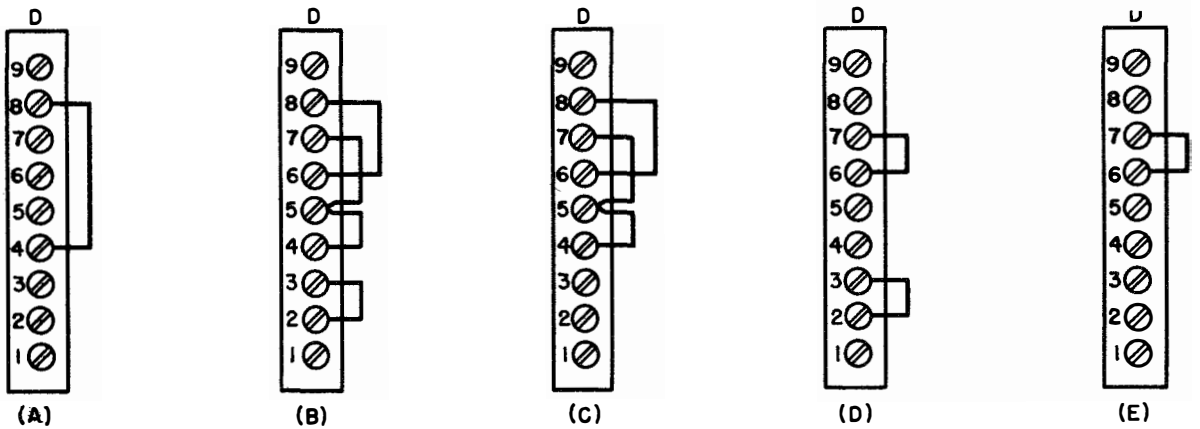


FIGURE 3

STOP ARMATURE SPRING TENSION REQUIREMENT

STOP ARMATURE LATCHED ON START ARMATURE. STOP ARMATURE SPRING UNHOOKED  
 MIN. 4½ OZS.  
 MAX. 6 OZS.  
 TO PULL SPRING TO INSTALLED LENGTH

INTERMEDIATE LEVER SPRING TENSION REQUIREMENT

WITH THE STOP AND START ARMATURES HELD AGAINST THEIR CORES, APPLY A GRAM SCALE TO THE UNDER SIDE OF THE INTERMEDIATE LEVER JUST TO THE RIGHT OF ITS DOWNWARD EXTENSION AND PUSH UPWARD  
 MIN. 10 GRAMS  
 MAX. 20 GRAMS  
 TO START THE LEVER MOVING UPWARD

START MAGNET CORE REQUIREMENT

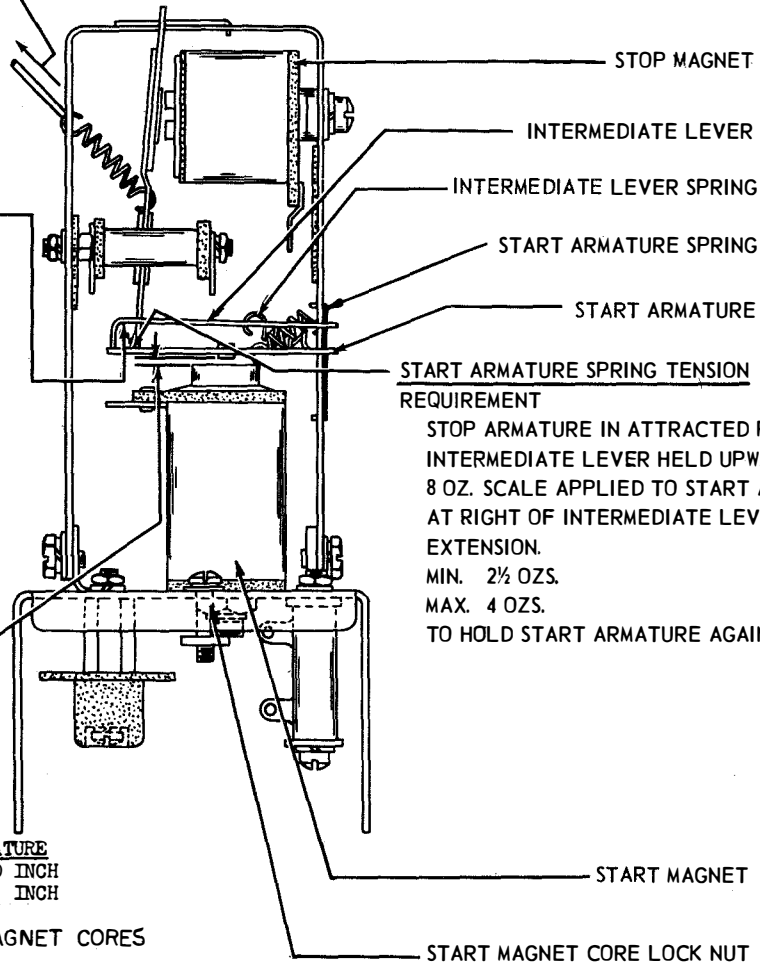
STOP ARMATURE IN UNATTRACTED POSITION. CLEARANCE BETWEEN THE START MAGNET CORE AND ANTI-FREEZE RIVET ON THE START ARMATURE.

151409 ARMATURE  
 MIN. 0.003 INCH  
 MAX. 0.006 INCH

152849 ARMATURE  
 MIN. 0.010 INCH  
 MAX. 0.015 INCH

TO ADJUST

ADVANCE OR RETRACT THE START MAGNET CORES WITH A SCREWDRIVER (LOCK NUT LOOSENED)



START ARMATURE SPRING TENSION REQUIREMENT

STOP ARMATURE IN ATTRACTED POSITION. INTERMEDIATE LEVER HELD UPWARD  
 8 OZ. SCALE APPLIED TO START ARMATURE AT RIGHT OF INTERMEDIATE LEVER LOWER EXTENSION.  
 MIN. 2½ OZS.  
 MAX. 4 OZS.  
 TO HOLD START ARMATURE AGAINST CORES.

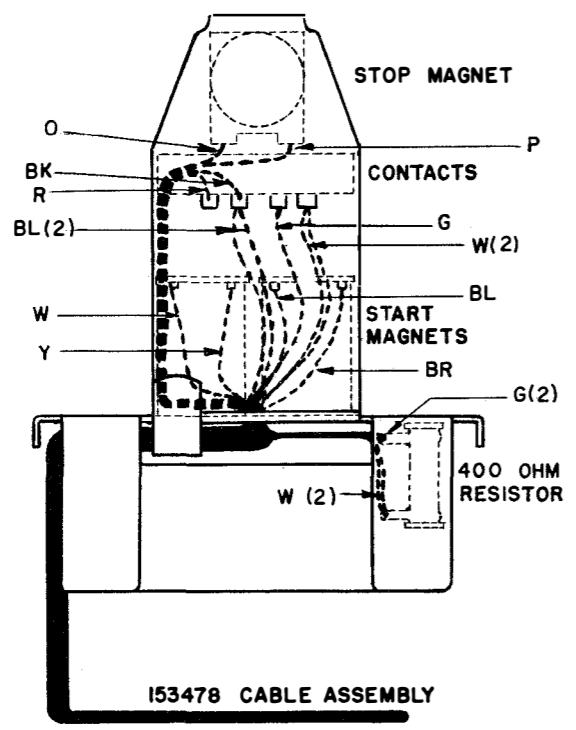
FIGURE 7-97, MOTOR CONTROL ASSEMBLY



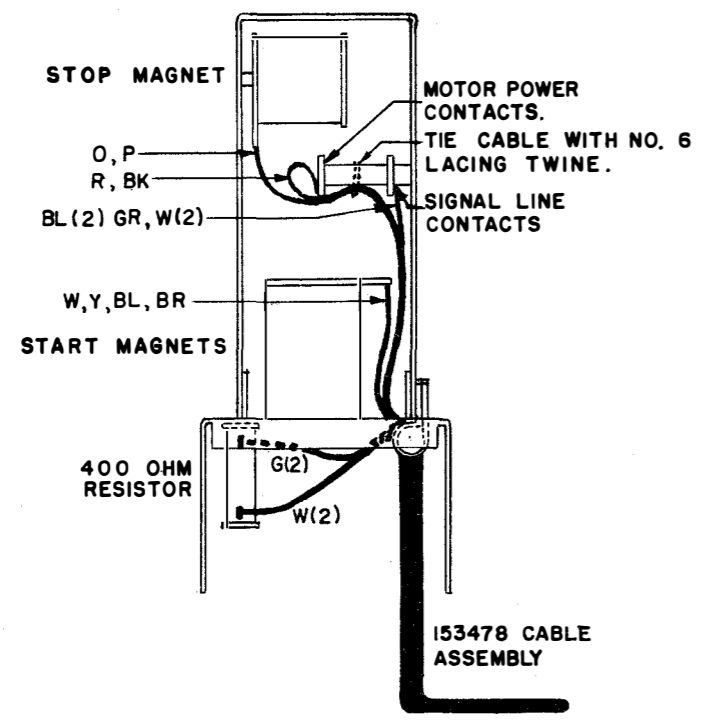
NO.	NOTES
1	COLOR CODE
	BR-BROWN                      R-RED
	BK-BLACK                      O-ORANGE
	W-WHITE                      Y-YELLOW
	G-GREEN                      BL-BLUE
	P-PURPLE

REVISIONS		
(A)	3-7-55	28-5089

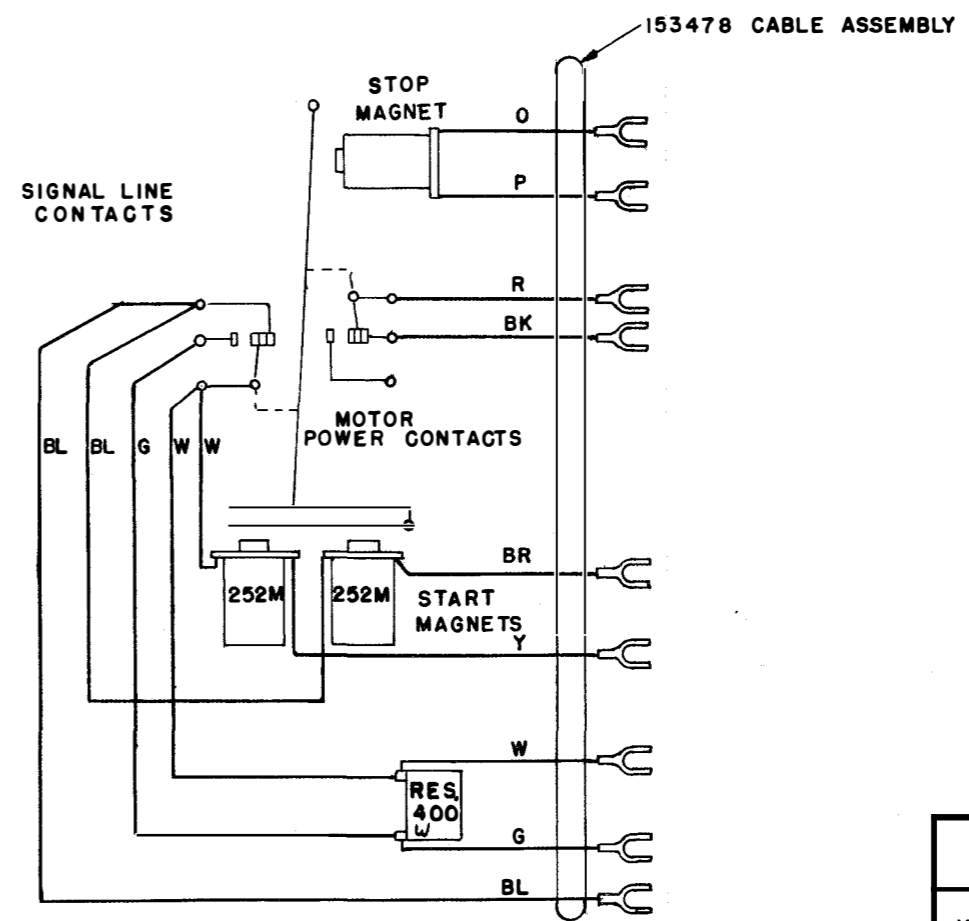
CABLE ROUTING



SIDE VIEW OF ASSEMBLY



FRONT VIEW OF ASSEMBLY



**2949 WD**  
DATE: 4-12-54

WIRING DIAGRAM  
FOR  
ELECTRICAL MOTOR  
CONTROL ASSEMBLY

153251

DRAWN: N.K.G.	APPROVED:
ENG'R'D: G.A.O.	<i>ETB</i>
CHECKED:	<i>[Signature]</i>
FILE: 2-30.65.165 A	

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