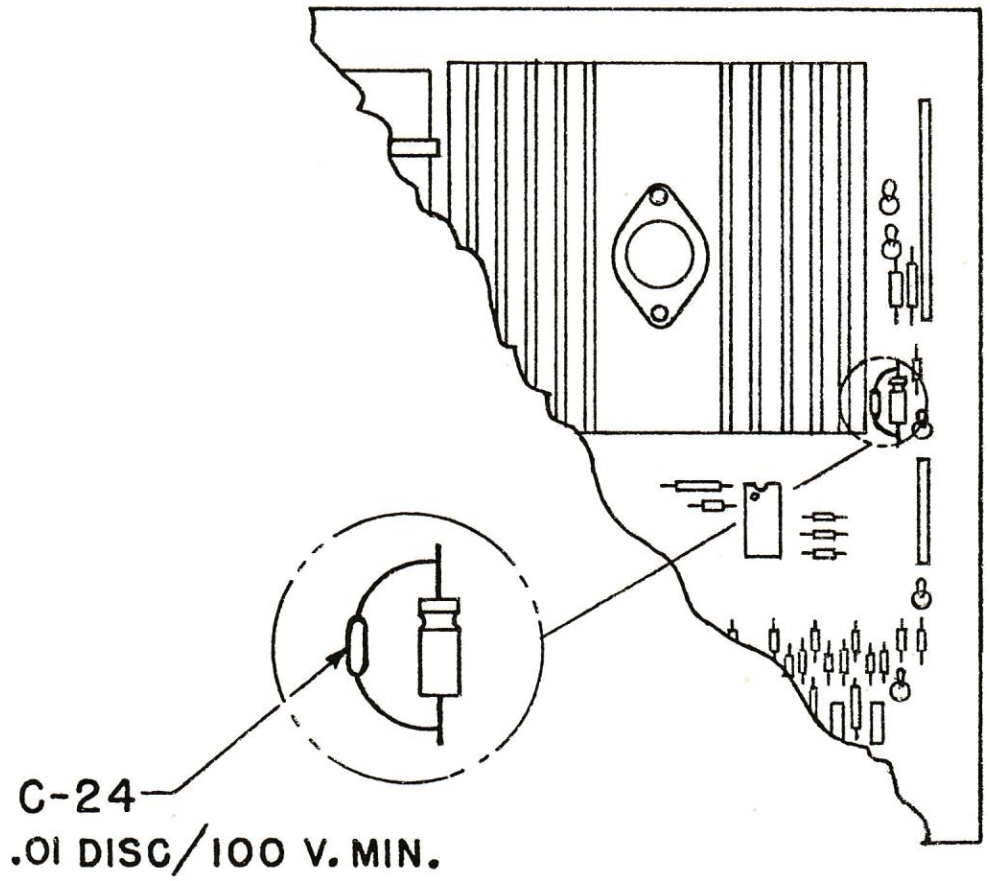
PARTS CATALOG

STERN

STERN ELECTRONICS, INC.

1725 Diversey Parkway, Chicago, Illinois 60614
(312) 935-4600, Telex 25-4657

PINBALL SERVICE BULLETIN #1
CHANGE ON SOLENOID DRIVER BOARD



TO PREVENT POSSIBLE 5 VOLT D.C. SUPPLY OSCILLIATION INSTALL .01 DISC/100V. (MIN) AT C24 IN PARALLEL WITH 2 MFD @ 25 VOLT CAPACITOR.

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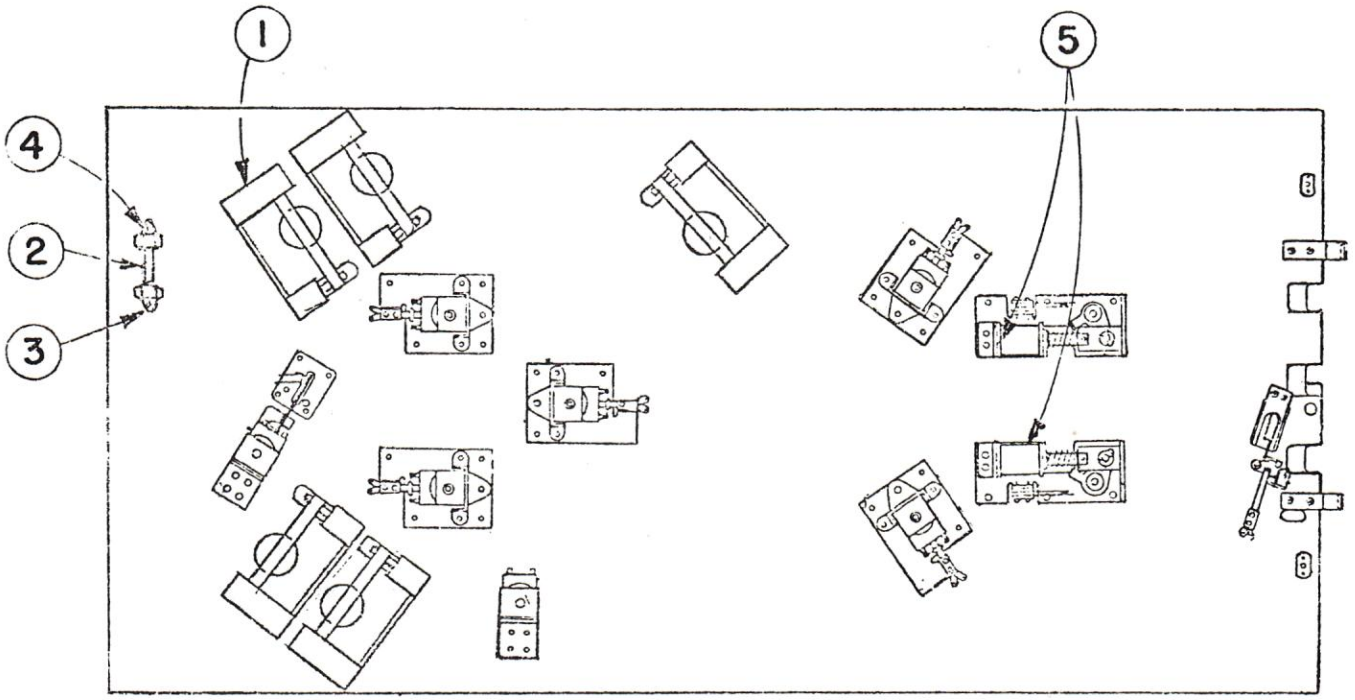
PINBALL SERVICE BULLETIN #2
PROTECTION OF PLAYFIELD COILS



1. Un-Solder 18 GA. (Heavy) Yellow Wires From Drop Target Coils As Shown in Diagram (No. 1).
2. Install Single Fuse Clip in General Location (No. 2).
3. With a Continuity Tester Determine Which 18 GA. (Heavy) Wire Comes From Pin 6 of the 10 Point Connector on the Power Supply Board, Solder This Wire to One End of Fuse Clip (No. 3).
4. Solder Both, Jumper Wire From Other End of Fuse Clip (No. 4) and 18 GA. (Heavy) Yellow Jumper Wire Removed in Step 1, to Drop Target Coil (No. 1).
5. Un-Solder, Tape & Bury 18 GA. (Heavy) Yellow Wire From Flipper Coils (No. 5).
6. Solder New Wire From Fuse Clip (No. 2) With 18 GA. (Heavy) Yellow at (No. 3), Run Along Cable to Flipper Coils and Solder (No. 5). (IF ONLY ONE WIRE ADDED, ADD JUMPER BETWEEN THE FLIPPER COILS).
7. Power-Up Game, Put Game Into Self Test — Solenoid Test. Holding Flipper Buttons in Only the Flipper Coils Should Work on Playfield if Fuse Clip, Jumper, and New Wires Are Installed Correctly.
8. Put in 2 AMP Slo-Blow Fuse Repeat Self Test. All Coils Should Work.

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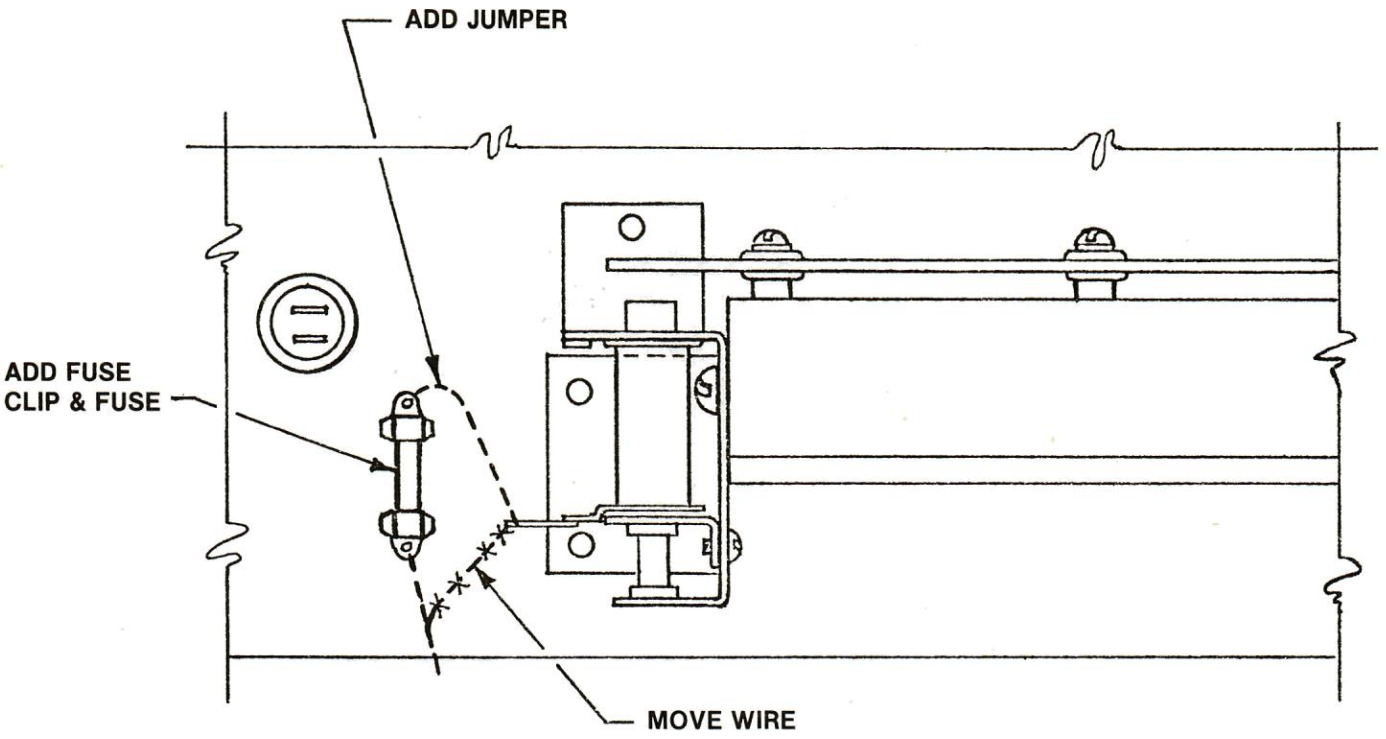
PINBALL SERVICE BULLETIN #3
PROTECTION OF CHIME COILS



1. Install Fuse Clip in Approximate location as Illustrated.
2. Un-Solder The (Harness) Green Wire From The Chime Coil & Solder to One End of The Fuse Clip.
3. Solder Jumper Wire From Other End of Fuse to Terminal of Chime Coil Where Green Wire Was Removed.
4. Install 1/4 AMP Slo-Blow Fuse.

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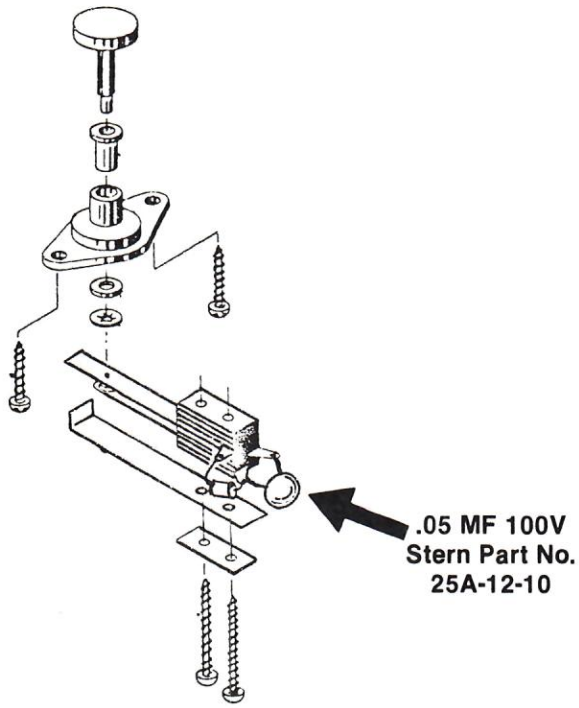
SERVICE BULLETIN #4
CHANGE ON PLAYFIELD



ON STINGRAY, TO INCREASE THE BONUS BUILD UP IT IS SUGGESTED THAT A CERAMIC DISC CAPACITOR BE ADDED TO THE LOWER ROLL-OVER BUTTON.

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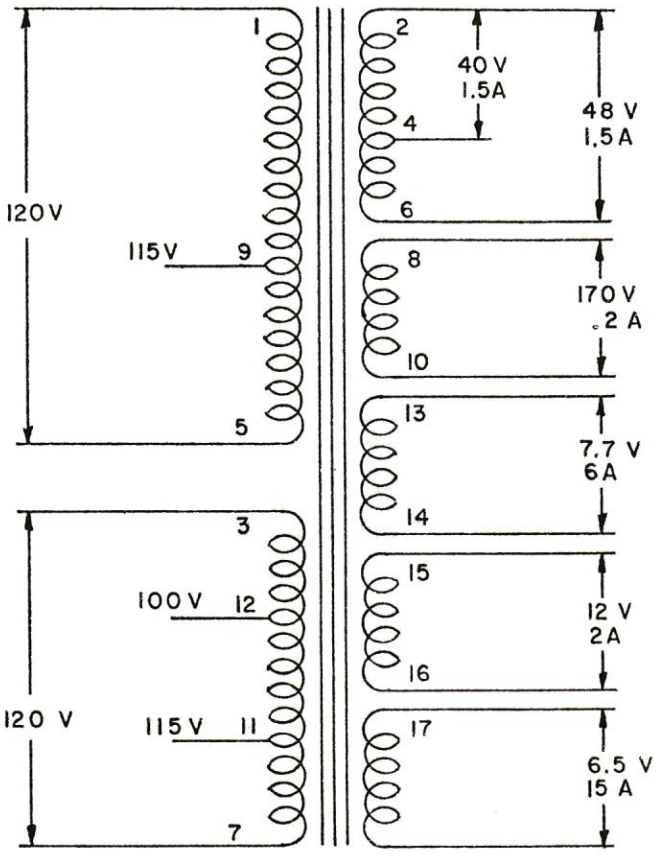

LINE VOLTAGE	STRAP TER.	APPLY VOLT
115	1 TO 3 9 TO 11	1 AND 9
120	1 TO 3 5 TO 7	1 AND 5
215	3 TO 9	1 AND 12
220	3 TO 5	1 AND 12
240	3 TO 5	1 AND 7

NOTE

STERN GAMES ARE ABLE TO BE OPERATED ON 215 VOLTS. BY USING THE TABLE ABOVE AND CHANGING THE STRAP BETWEEN TERMINALS, THE GAME WILL PERFORM EXCELLENTLY.

STERN ELECTRONICS, INC.

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SERVICE BULLETIN

RE: DISPLAY PROBLEMS

IN REVIEWING OUR FIELD COMPLAINTS, AS WELL AS OUR INTERNAL QUALITY CONTROL REPORTS, THE MOST COMMON CAUSE OF FAILURE IN THE DA-100 MODULE HAS BEEN NARROWED TO TWO (2) COMPONENTS.

25-5-04-104	100K	5%	¼W Resistor
25-5-04-304	300K	5%	¼W Resistor

THEREFORE IT IS SUGGESTED BEFORE ATTEMPTING TO REPAIR ANY FAULTY DA-100 MODULE, THESE COMPONENTS BE INSPECTED FIRST AS THIS IS THE MOST LIKELY TO HAVE CAUSED THE PROBLEM.

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SERVICE BULLETIN
#7

JUNE 7, 1978

BOARD LESS ROM'S C-433
BOARD WITH ROM'S C-433 & MODEL NO.

LOC.	GAME					
	101 PINBALL	102 STINGRAY	103 STARS		104 MEMORY LANE	
U2	25A-ROM-P1	25A-ROM-P1	25A-ROM-P3	25A-ROM-P3A	25A-ROM-P5A	25A-ROM-P5B
U6	25A-ROM-P2	25A-ROM-P2	25A-ROM-P4	25A-ROM-P4A	25A-ROM-P6A	25A-ROM-P6B

NOTE: ROM'S MUST BE USED IN SETS AS SHOWN FOR PROPER GAME OPERATION. IF EITHER 25A-ROM-P3 OR 25A-ROM-P4 FAILS BOTH ROM'S SHOULD BE REPLACED WITH 25A-ROM-P3A & 25A-ROM-P4A AS 25A-ROM-P3 & 25A-ROM-P4 ARE NOT AVAILABLE.

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SERVICE BULLETIN
#7A

OCTOBER 16, 1978

BOARD LESS ROM'S C-433
BOARD WITH ROM'S C-433 & MODEL NO.

LOC.	GAME					
	105 LECTRONAMO	105 WILD FYRE	108 NUGENT	109 DRACULA	110 TRIDENT	111 HOT HAND
U2	25A-ROM-P7	25A-ROM-P9	25A-ROM-P7	25A-ROM-P9	25A-ROM-P11A	25A-ROM-P13
U6	25A-ROM-P8	25A-ROM-P10	25A-ROM-P8	25A-ROM-P10	25A-ROM-P12A/U	25A-ROM-P12A/U

NOTE: ROM'S MUST BE USED IN SETS AS SHOWN FOR PROPER GAME OPERATION.

STERN ELECTRONICS, INC.

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SERVICE BULLETIN #8

"STARS"

SWITCH 27 ON THE MPU BOARD MUST BE IN THE "ON" POSITION IF IT IS IN THE "OFF" POSITION, THE GAME WILL ONLY PUT ONE PLAYER UP.

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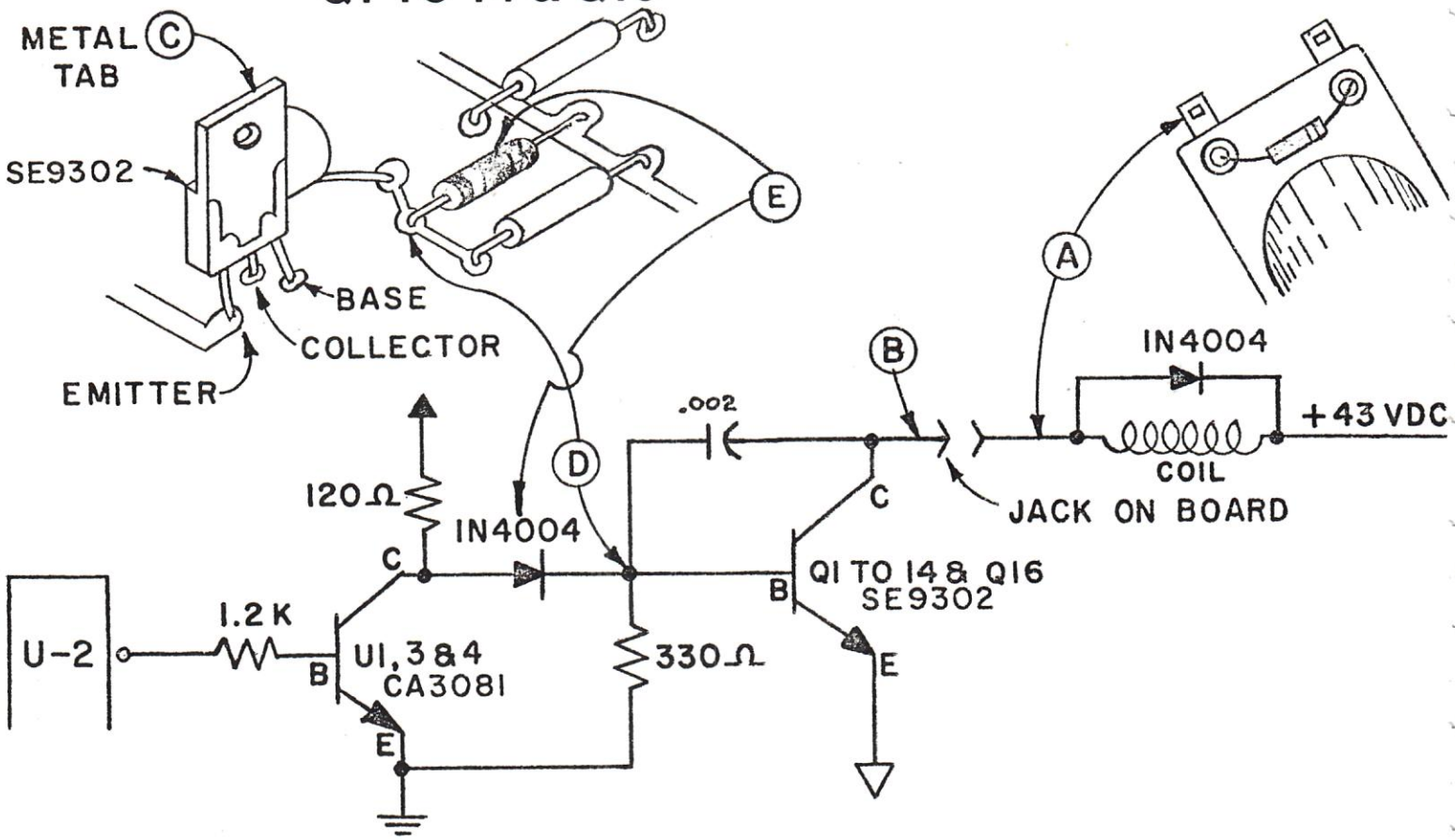
MOMENTARY COIL INFORMATION
Q1 TO 14 & Q16

ENG. BULLETIN #'s



1. Momentary ground selected coil (Point A), coil should energize.
2. Momentary ground selected terminal on jack J1, J2 or J5 (Point B) coil should energize.
3. Using game schematic, momentary ground metal tab on selected Q1 to 14 or 16 (Point C), coil should energize.
4. Locate TP6 (right side of Q19 on SDU Board). Clip one end of test cord to TP6 and momentary touch point D of selected Q1 to Q14 or 16 coil (see game schematic), Coil should energize, if not replace "Q" transistor being tested.
5. U1, U2 & U4 (CA3081) is a transistor array chip.

   Using the game schematic to locate coil and corresponding Q1 to Q14 or 16 transistor, the chart can be used.

   From the chart go to the correct transistor chip and ground base pin no. Coil should energize. If coil does not energize with base grounded and collector does not have 5 VDC, replace ship. If 5 VDC is present replace IN4004 diode (Point E) in circuit.

Q1 to 14 or 16	CA3081	Base Pin No.	Collect Pin No.
Q1	U1	16	1
Q2	U1	3	2
Q3	U1	6	4
Q4	U1	8	7
Q5	U1	13	14
Q6	U1	11	12
Q7	U1	10	9
Q8	U3	16	1
Q9	U3	3	2
Q10	U3	8	7
Q11	U3	6	4
Q12	U3	10	9
Q13	U3	11	12
Q14	U3	13	14
Q16	U4	8	7

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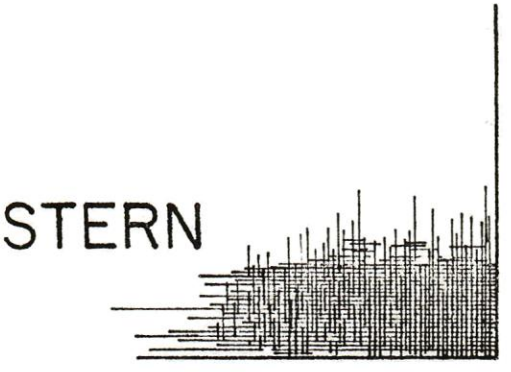
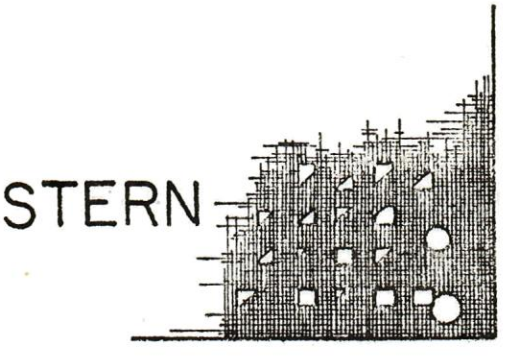
SERVICE BULLETIN #10



MPU BOARDS WITHOUT GRID PATTERN USE ROM'S ONLY



MPU BOARDS WITH THIS GRID PATTERN USE "E" PROMS ONLY

"E" PROMS WILL NOT PERFORM SATISFACTORLY IN NON PATTERN MPU BOARDS

ROM'S WILL NOT PERFORM SATISFACTORLY IN GRID PATTERN BOARDS

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SERVICE BULLETIN #10A

2716 MPU BOARD MEMORY USE

For use with 2716 E-PROMS Gird Pattern Boards Have:

1) E13 jumper to E12 instead of E11
   (connects U18 pin 4 to U2 pin 18 and U6 pin 18)

2) E16 jumper to E14 instead of E15
   (connects + 5 volts to U2 pin 21 and U6 pin 21)

For use with 2316 ROMS The Following Jumper Changes Must Be Made:

1) E13 jumper to E11 instead of E12
   (connects U18 pin 5 to U2 pin 18 and U6 pin 18)

2) E16 jumper to E15 instead of E14
   (connects U18 pin 15 (A9) to U2 pin 21 and U6 pin 21)

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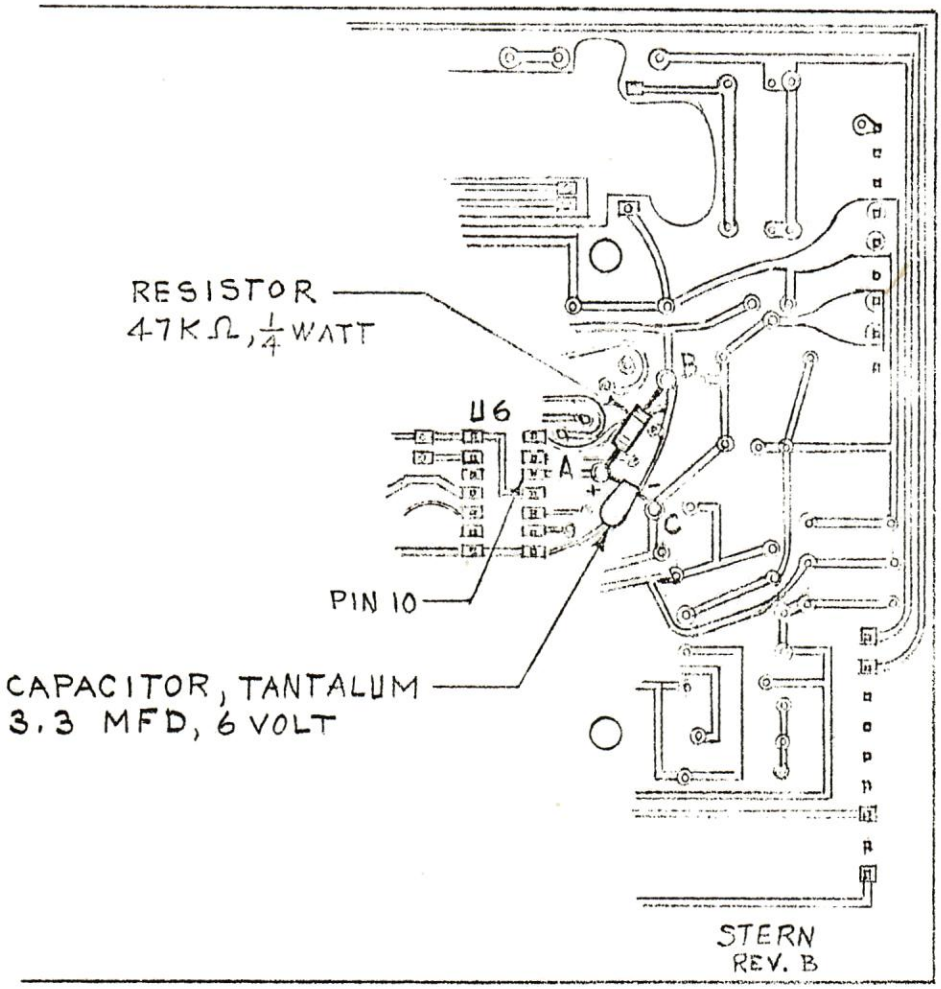
SERVICE BULLETIN #11



NOTE:

OBSERVE POLARITY:

1. Point A is the foil connected to Pin 10 of U6
2. Point B is the "+" lead of C-50
3. Point C is the "–" lead of C-52

REMEDY:

Modification to SB-100 REV A and SB-100 REV B.

1. Remove the wire between pin 25 of J1 on the Sound Board and pin 25 (RESET) of J5 on the MPU board. (or clip pin 25 on J1 Connector on the Sound Board).
2. On the bottom of the board solder a 47K OHM, 1/4 watt resistor between points A and B as shown in Fig. 2.
3. On the bottom of the board solder a 3.3F, 6 volt tantalum capacitor between points A and C as shown in Fig. 2.

This will correct bookkeeping errors resulting from mischievous multiple toggling of the power switch.

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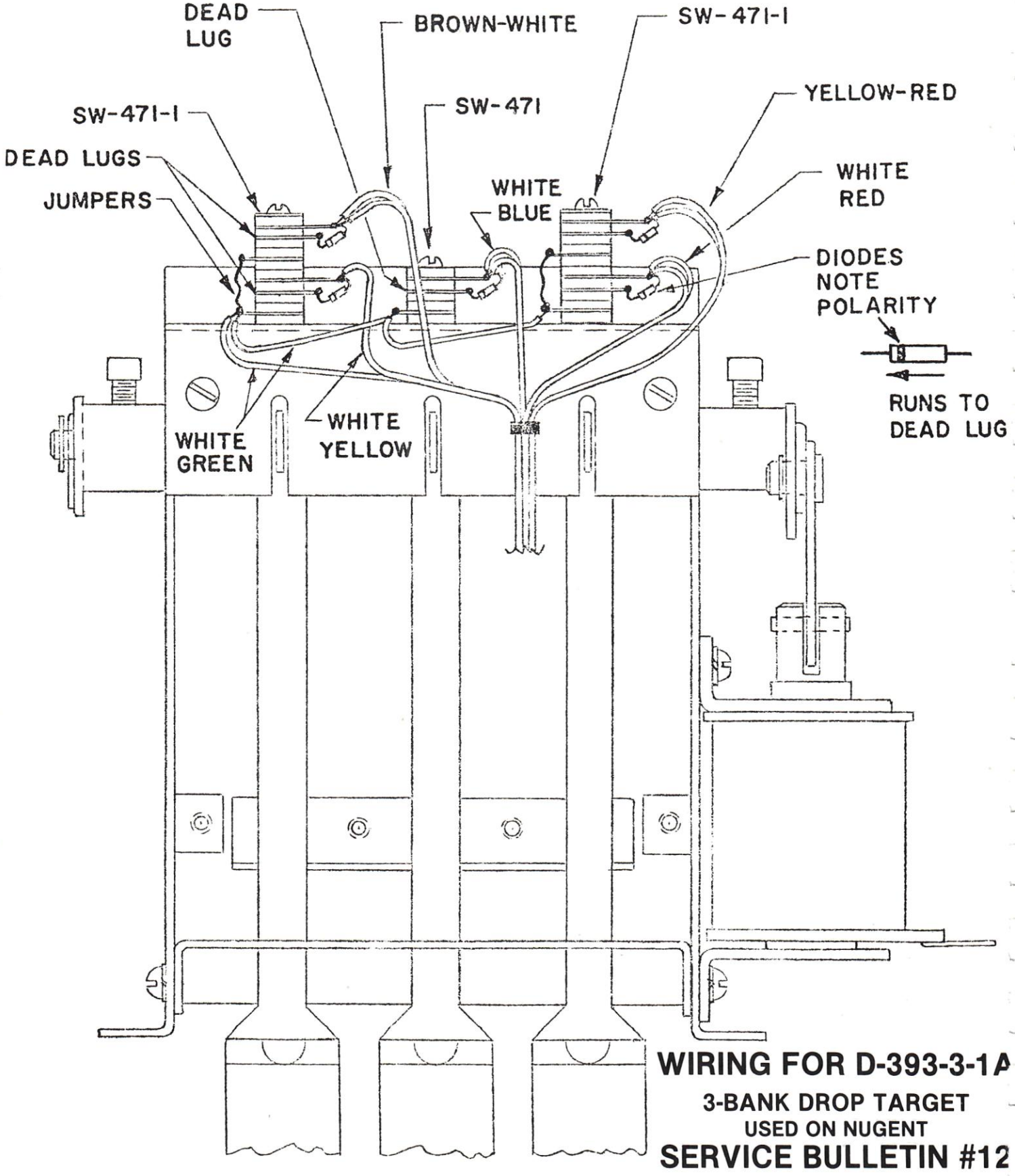

WIRING FOR D-393-3-1A

3-BANK DROP TARGET
USED ON NUGENT
SERVICE BULLETIN #12

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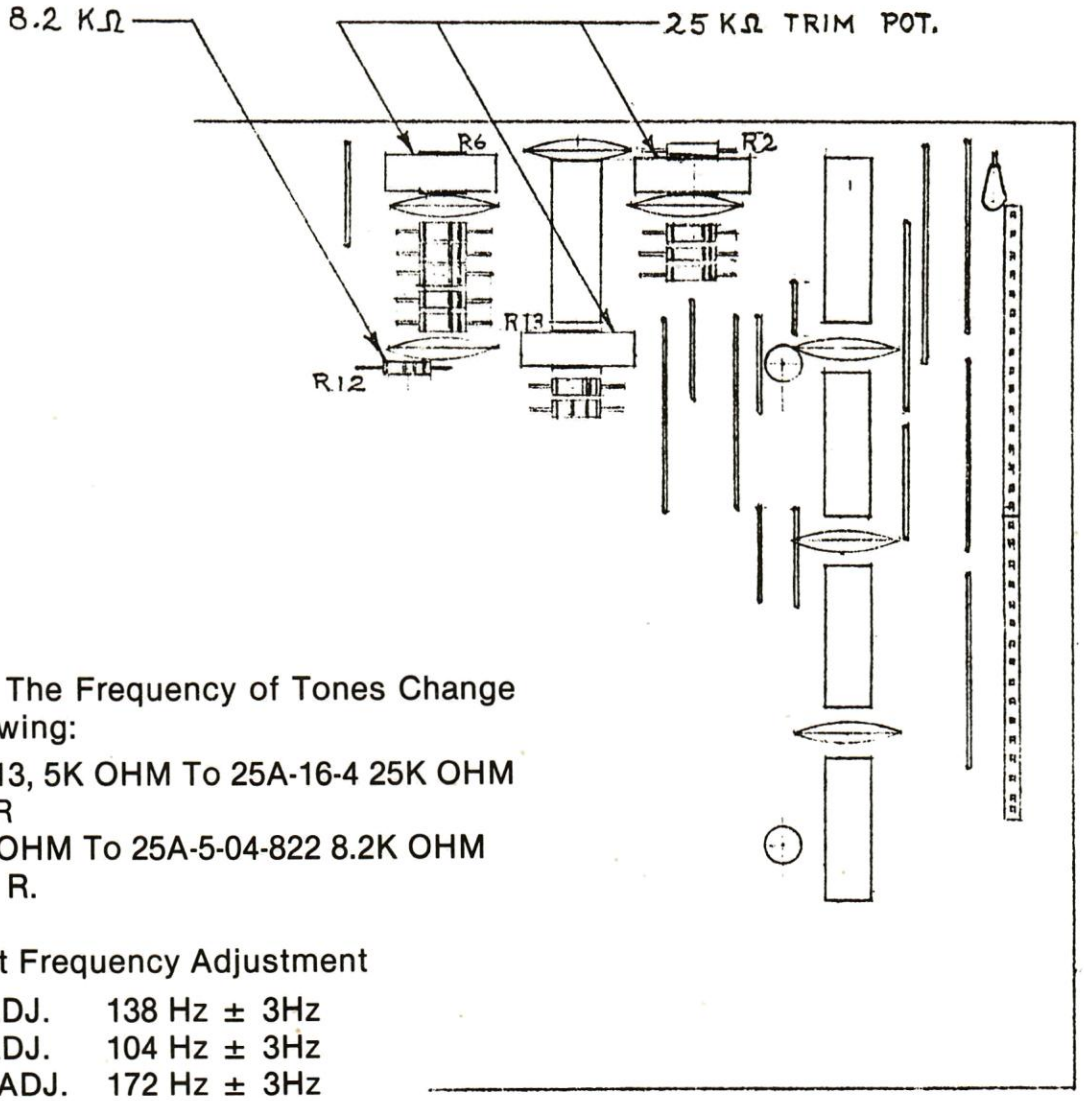
SERVICE BULLETIN #13



To Lower The Frequency of Tones Change The Following:

R2, R6, R13, 5K OHM To 25A-16-4 25K OHM Trim Pot R
R12 2.2K OHM To 25A-5-04-822 8.2K OHM 1/4 WATT R.

Test Point Frequency Adjustment

TP2- R6 ADJ.	138 Hz ± 3Hz
TP3- R2 ADJ.	104 Hz ± 3Hz
TP5- R13 ADJ.	172 Hz ± 3Hz

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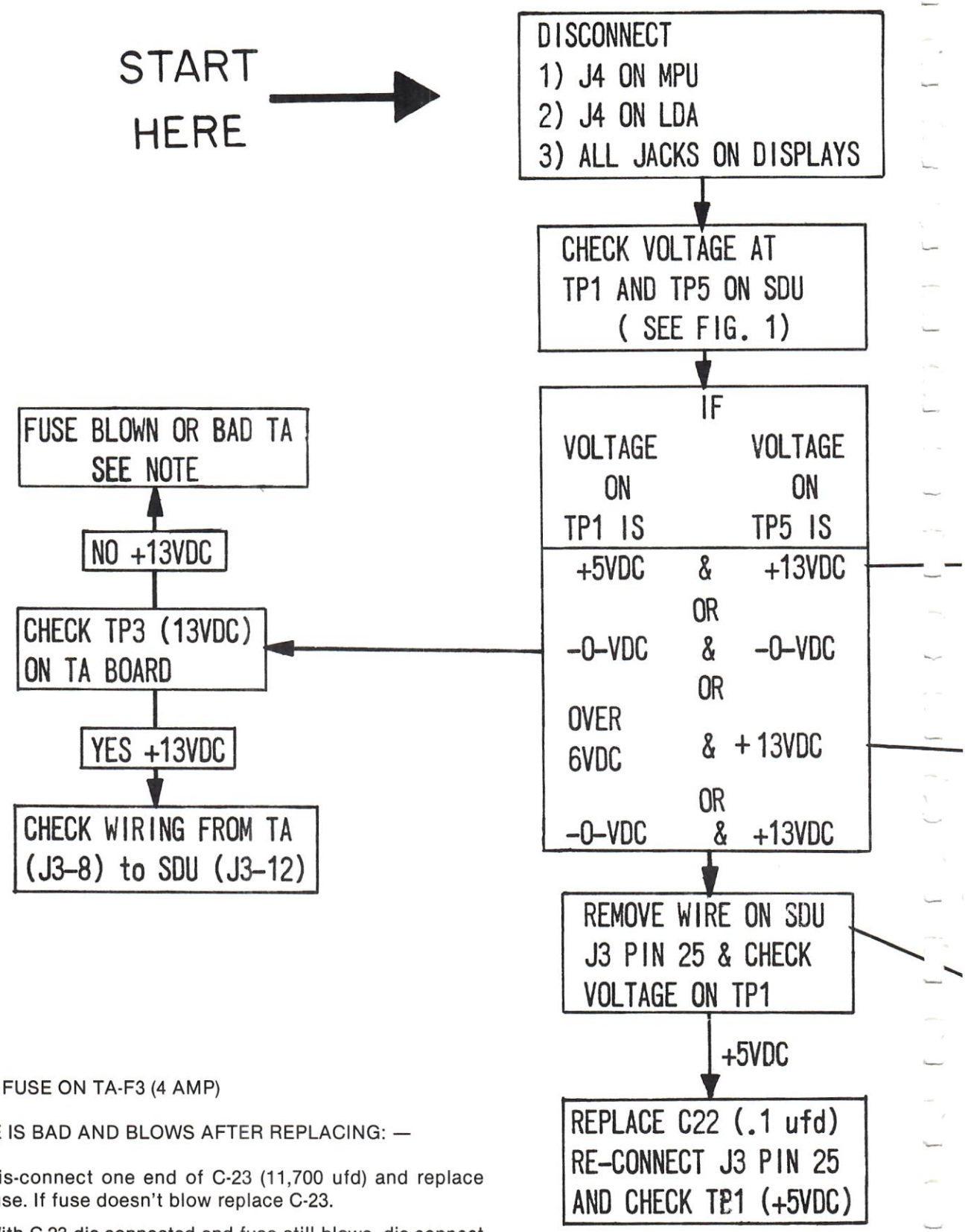
SERVICE BULLETIN #14

5 VDC REGULATOR



NOTE:

CHECK FUSE ON TA-F3 (4 AMP)

IF FUSE IS BAD AND BLOWS AFTER REPLACING: —

1) Dis-connect one end of C-23 (11,700 ufd) and replace fuse. If fuse doesn't blow replace C-23.
2) With C-23 dis-connected and fuse still blows, dis-connect C-29 (.01 ufd) and C-24 (2 ufd 20 WVDC) with OHM-meter check if C-29 BY ITSELF reads shorted replace it. If C-24 BY ITSELF does not read approx. 100,000 replace it.
3) With C-23, C-24 & C-29 dis-connected and fuse still blows replace Q-20 (+ 5 VDC) voltage regulator.

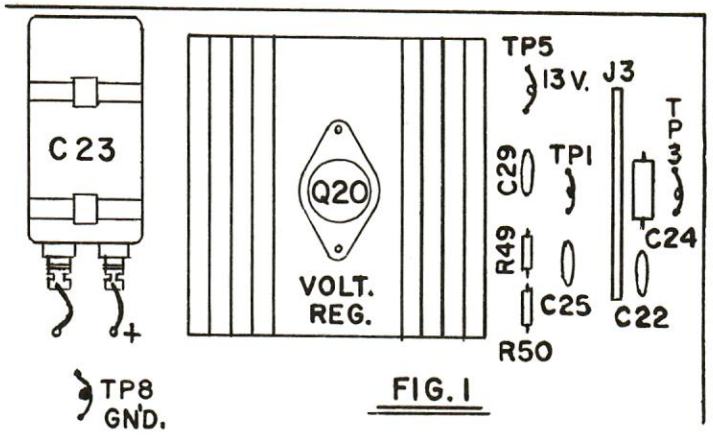


FIG. 1

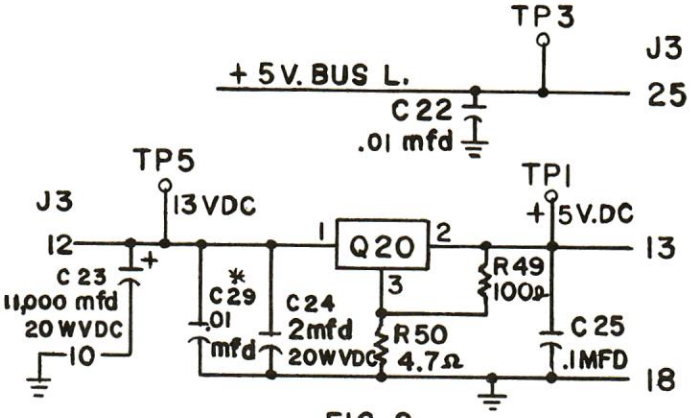


FIG. 2

Q-20 (+ 5 VDC) REGULATOR.

* ON EARLY SDU BOARDS, C-29 IS SOLDERED ON TOP OF C-24.

PLUG MPU, LDA & DA BOARDS BACK IN ONE AT A TIME WHILE READING THE +5VDC LINE TO FIND WHICH BOARD IS CAUSING THE PROBLEM.

CHECK RESISTANCE OF R50 (4.7Ω) -IF HIGH, REPLACE.

IF O.K.

REPLACE Q20 (VOLTAGE REGULATOR & CHECK TP1 +5VDC

CHECK TP1 (+5VDC)

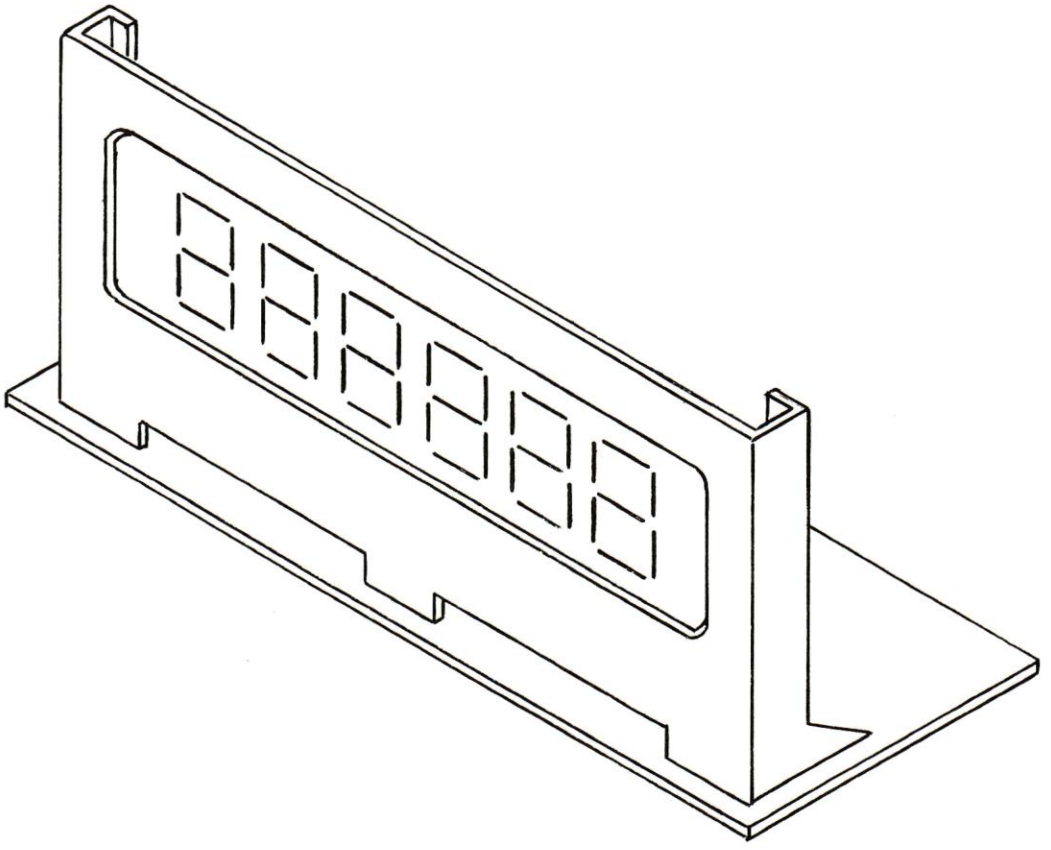
-0-VDC

REPLACE C25 (.1 ufd) AND CHECK TP1 (+ 5VDC)

IF TP1 IS STILL -0-VDC

REPLACE Q-20 (+5VDC) VOLTAGE REGULATOR AND CHECK TP1 (+5VDC)

STERN'S



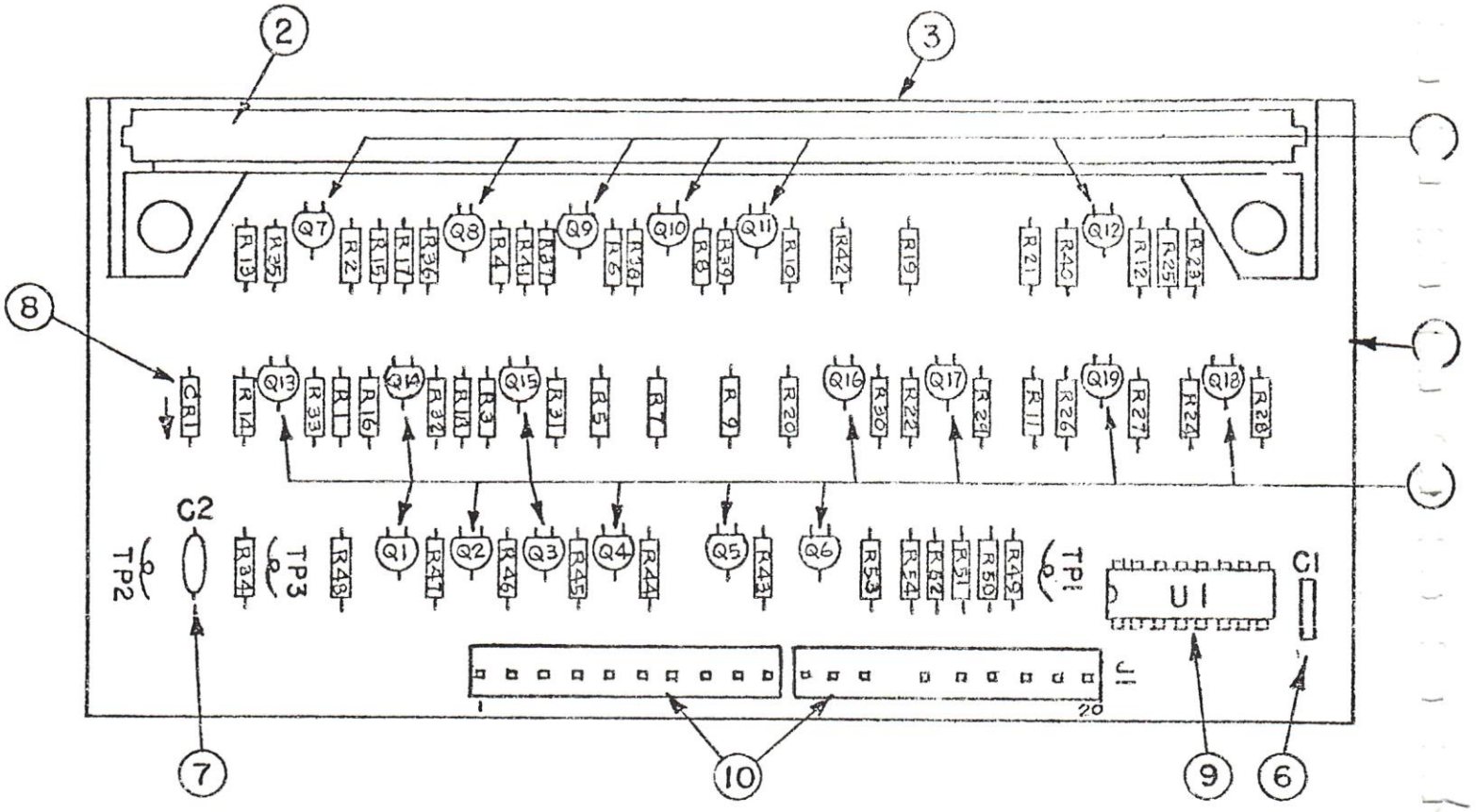
SOLID STATE DIGIT DISPLAY

REPAIR PROCEDURES

SERVICE BULLETIN #15

STERN ELECTRONICS, INC.
1725 Diversey Parkway, Chicago, Illinois 60614
(312) 935-4600, Telex 25-4657
Toll Free Service Assistance (800) 621-6424

A-434 DISPLAY DRIVER MODULE



COMPONENT PARTS LIST

ITEM	REFERENCE DESIGNATION	STERN PART NO.	DESCRIPTION
1	A1	A-434	DISPLAY DRIVER MODULE, COMPLETE
2	DS1	25C-17-1	DIGITAL DISPLAY PANEL
3		4C-226	DISPLAY MOUNTING
4	Q7 THRU Q12	25A-2-5401	TRANSISTOR, 2N-5401
5	Q1 THRU Q6 Q13 THRU Q19	25A-2-1	TRANSISTOR, MPS-A42 OR 7613
6	C1	25A-261	CAPACITOR, AXIAL .01 MFD, 50V.
7	C2	25A-12-7	CAPACITOR, 01. MFD, 500V.
8	CR1	25A-1-1	ZENER DIODE, 110V., 1W, IN3045
9	U1	25A-MC14543B	I.C. DECODER, 14543B
10	J1	4B-215-10	(2) 10 PIN WAFER CONNECTORS
	R1, R3, R5, R7, R9, R11, R34	25A-5-104-104	RESISTOR, 100K, 1/4 WATT
	R2, R4, R6, R8, R10, R12	25A-5-04-222	RESISTOR, 2.2K, 1/4 WATT
	R13, R15, R17, R19, R21 R23, R25	25A-5-04-912	RESISTOR, 9.1K, 1/4 WATT
	R14, R16, R18, R20, R22, R24 R26, R35, R36, R37, R38, R39, R40	25A-5-04-304	RESISTOR, 300K, 1/4 WATT
	R27, R28, R29, R30, R31, R32 R33	25A-5-04-102	RESISTOR, 1K, 1/4 WATT
	R41	25A-5-04-393	RESISTOR, 39K, 1/4 WATT
	R42	25A-5-04-244	RESISTOR, 240K, 1/4 WATT
	R43 THRU R48	25A-5-04-822	RESISTOR, 8.2K, 1/4 WATT
	R49 THRU R54	25A-5-04-203	RESISTOR, 20K, 1/4 WATT

		100,000's	10,000's	1,000's	100's	10's	UNITS
		DIGIT #6	DIGIT #5	DIGIT #4	DIGIT #3	DIGIT #2	DIGIT #1
TRANSISTOR							
7613-OR-MPSA42	LEVEL SHIFTER	Q6	Q5	Q4	Q3	Q2	Q1
2N 5401	DIGIT DRIVERS	Q12	Q11	Q10	Q9	Q8	Q7
100 KΩ (BRN-B-Y)	COLLECTOR RESISTOR	R11	R9	R7	R5	R3	R1
8.2 KΩ (GREY-R-R)	BASE RESISTOR	R12	R10	R8	R6	R4	R2

Fig.1

MPSA42 OR 7613 } LEVEL SHIFTER

2N 5401 DIGIT DRIVER

E = EMITTER
B = BASE
C = COLLECTOR

Fig.2

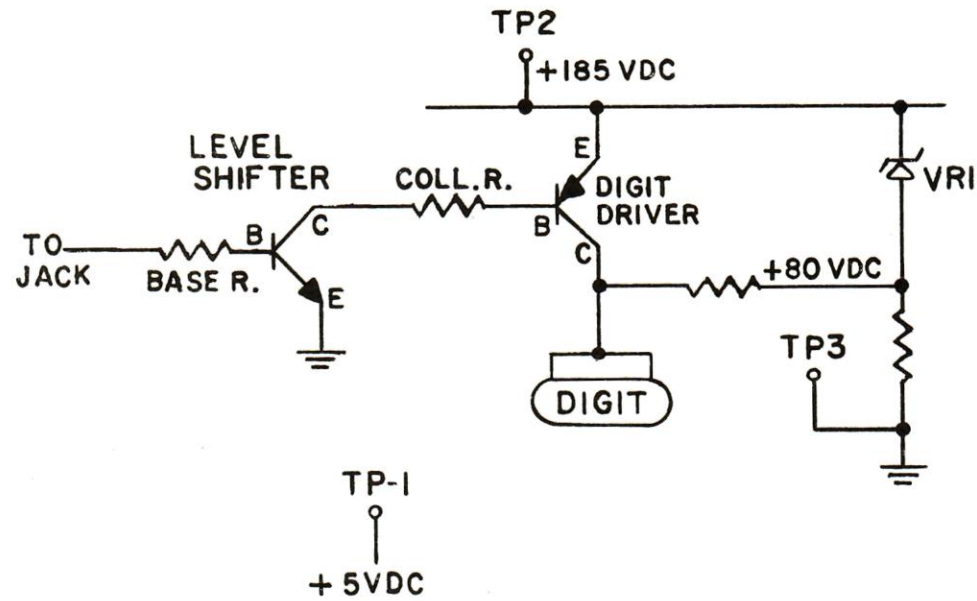


Fig.3

CHECK TEST POINTS :-

TP-1 + 5 VDC

TP-2 + 185 VDC (SEE PAGE 6)

TP-3 GROUND

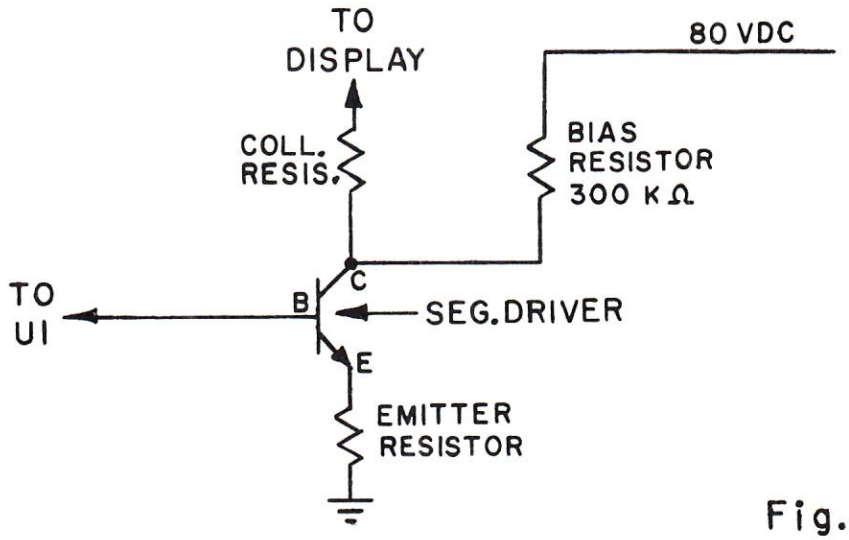


Fig. 4

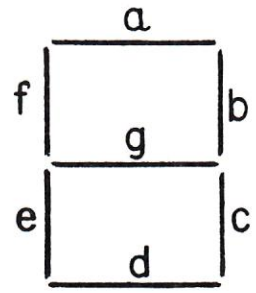


Fig.5

SEGMENT	SEGMENT DRIVER TRANSISTOR	EMITTER RES.	COL. RES.
a	Q13	R33	R13
b	Q14	R32	R15
c	Q15	R31	R17
d	Q16	R30	R19
e	Q17	R29	R21
f	Q18	R28	R23
g	Q19	R27	R25

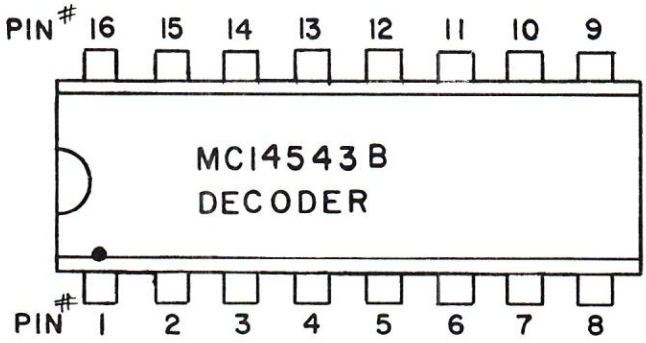


Fig.6

ONE DIGIT ALWAYS ON

GO TO DIGIT DRIVER CORRESPONDING WITH DIGIT THAT IS ON (SEE FIG. 1 or SCHEMATIC)

UNPLUG JACK (J1) AND DISCONNECT BASE (SEE FIG. 2) OF DIGIT DRIVER. PLUG JACK (J1) BACK IN

DIGIT STILL ON

UNPLUG JACK (J1) AND REPLACE DIGIT DRIVER PLUG JACK BACK IN

DIGIT STILL ON

BAD DIGITAL DISPLAY PANEL

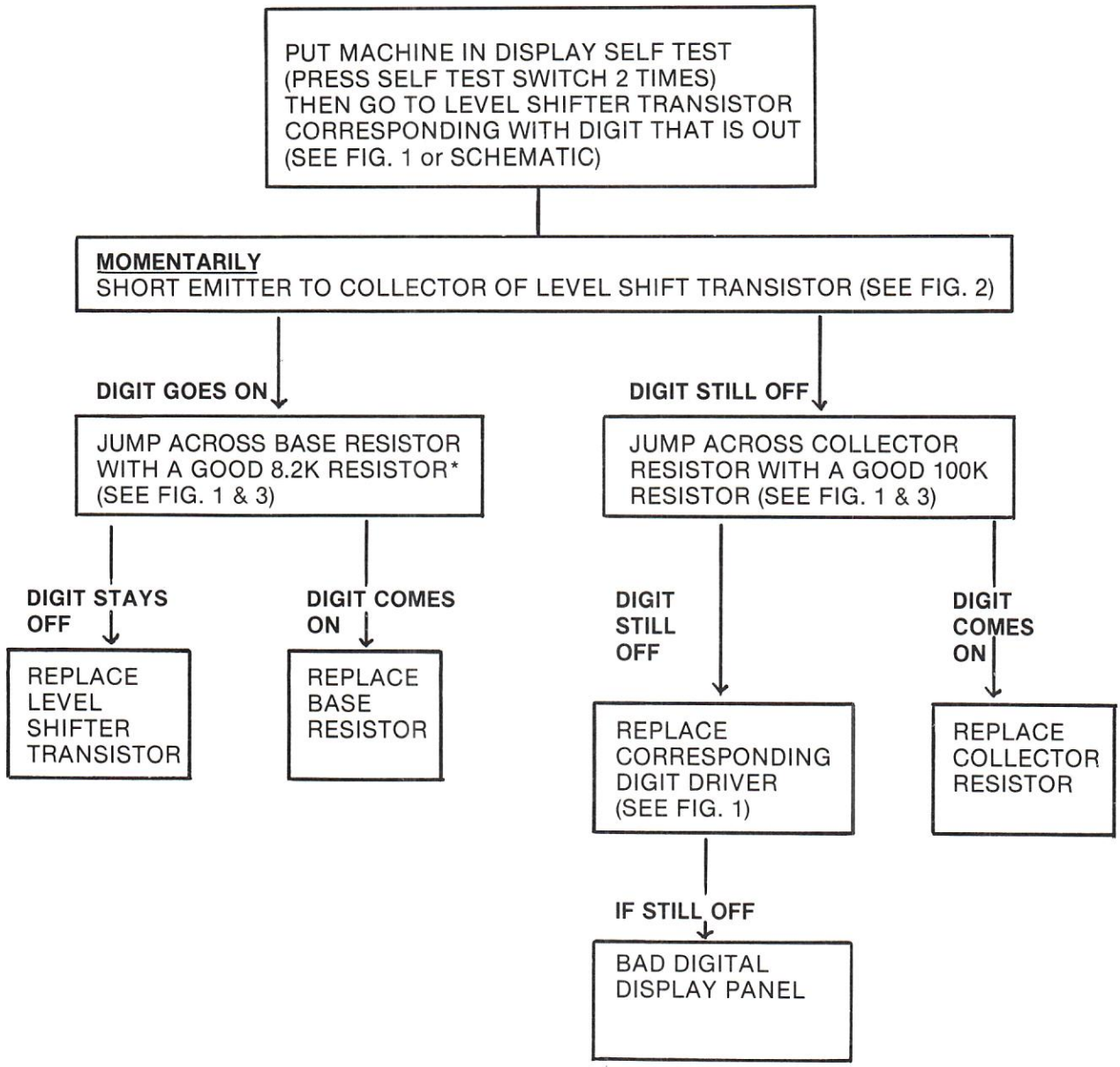
DIGIT OFF

REPLACE CORRESPONDING LEVEL SHIFTER (SEE FIG. 1 or SCHEMATIC)

IF STILL ON

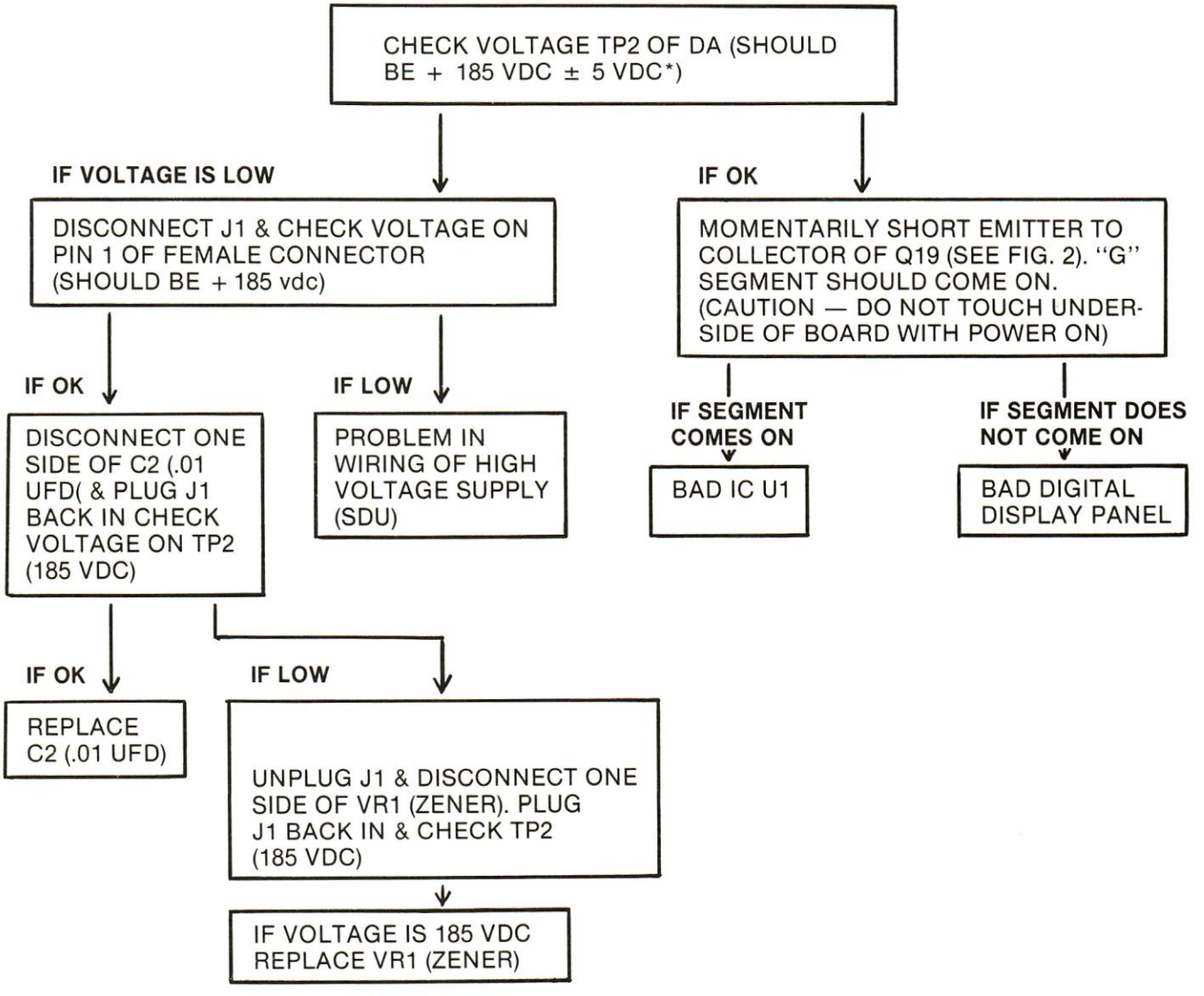
BAD U1

ONE DIGIT ALWAYS OFF OR WEAK



***NOTE:** EARLIER SCHEMATICS MAY HAVE 9.1K CALLED OUT

ALL DIGITS OFF



***NOTE:** EARLIER SCHEMATICS MAY HAVE CALLED OUT 175 VDC

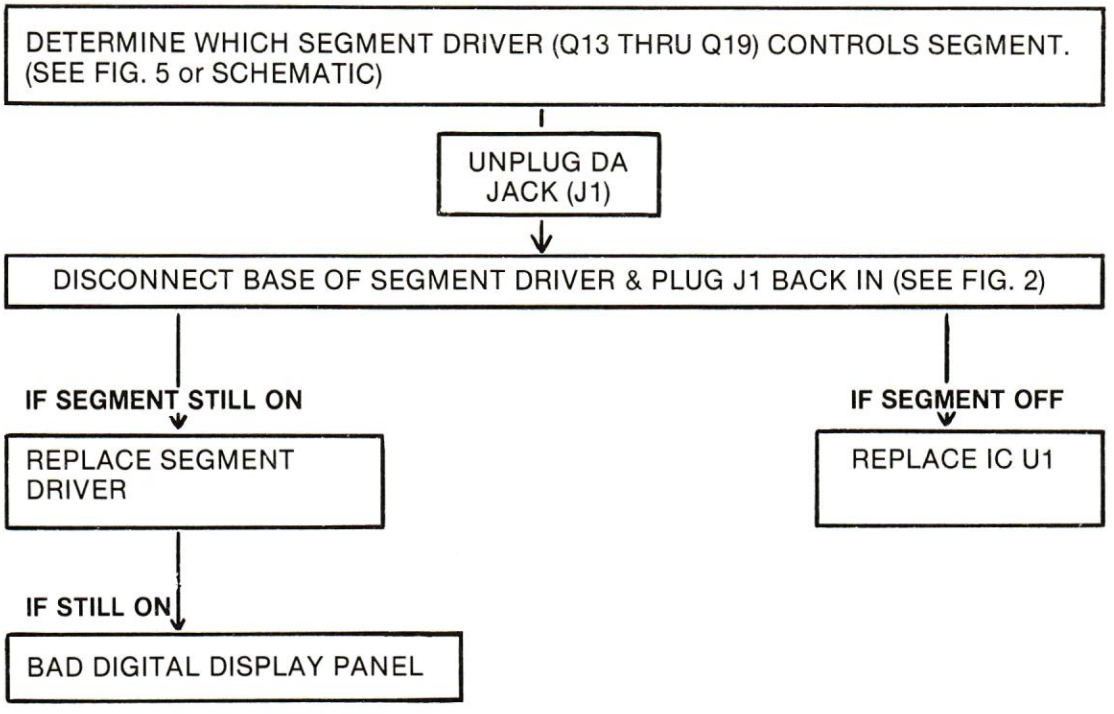
ALL DIGITS WEAK

1) CHECK 185 VDC (TP2 ON LDA)

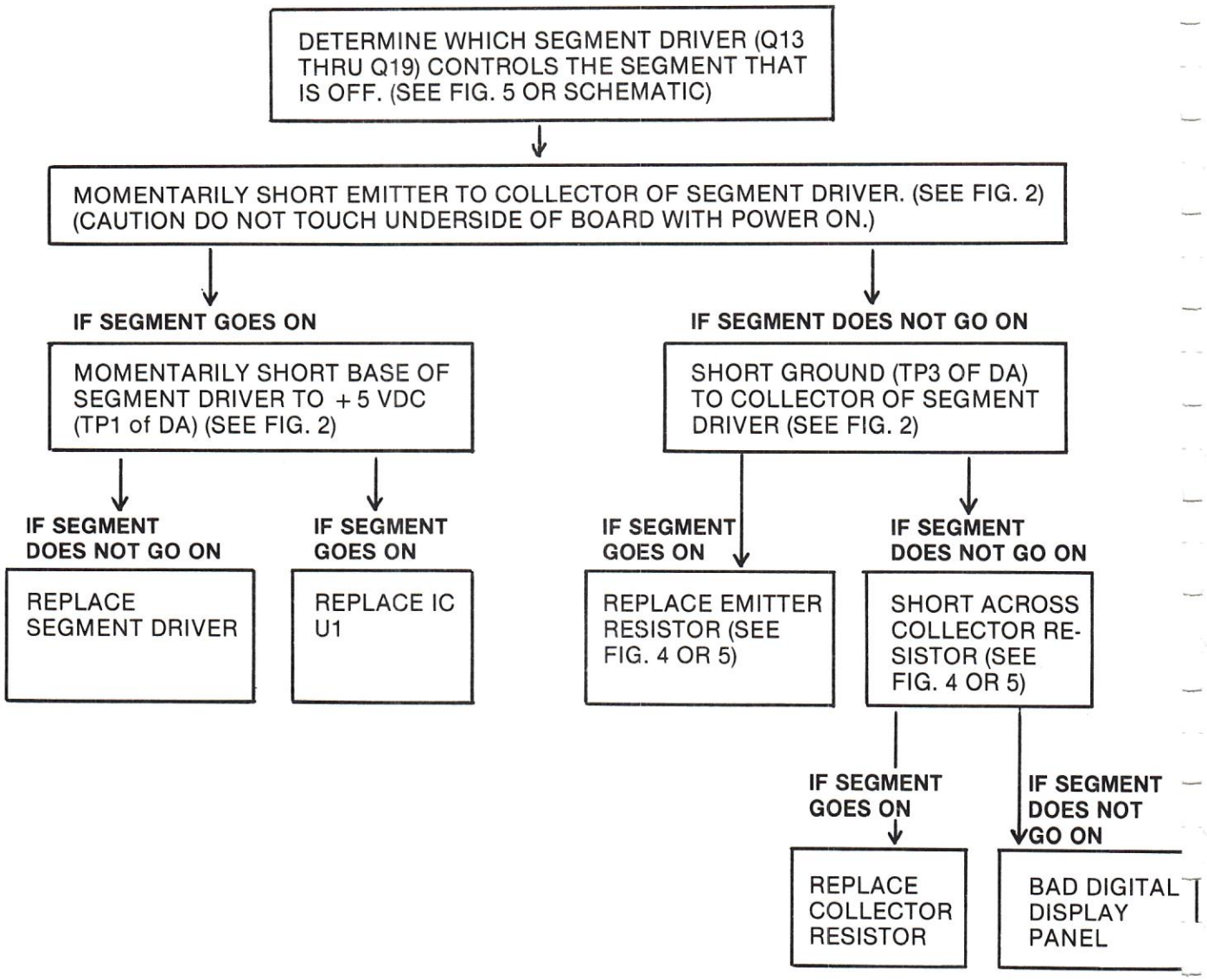
2) IF OK REPLACE VR1

3) IF ALL DIGITS STILL WEAK, BAD DIGITAL DISPLAY PANEL

ONE SEGMENT ALWAYS ON



ONE SEGMENT ALWAYS OFF OR WEAK



DA COUNTS WRONG

CHECK + 5 VDC ON PIN 16 OF IC U1

IF WRONG

TURN POWER OFF AND CHECK CONTINUITY BETWEEN PIN 20 OF J1 CONNECTOR & PIN 16 OF IC U1 SEE DWG. BELOW

IF OK

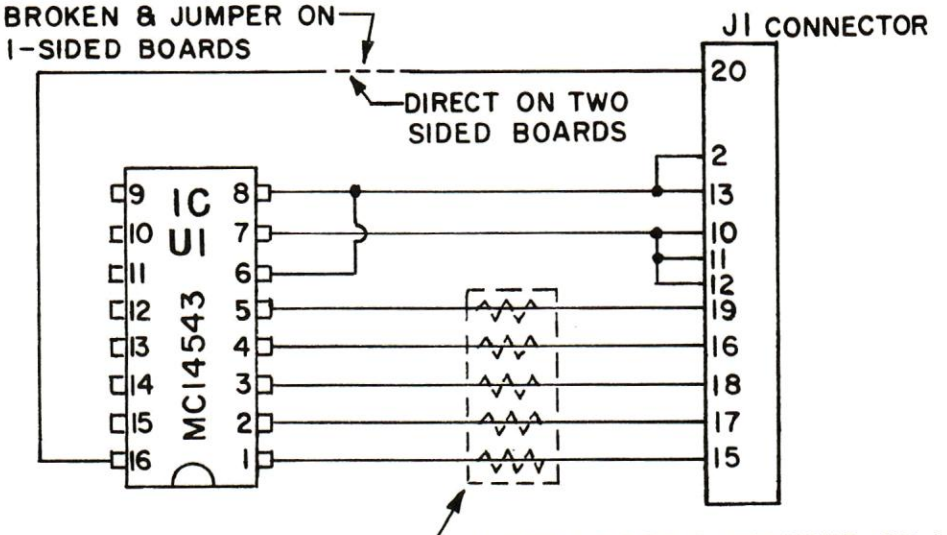
TAKE RESISTANCE READINGS BETWEEN IC U1 PINS 1 THRU 5 & RESPECTIVE PINS OF J1 CONNECTOR (-0-Ω ON TWO SIDED BOARDS — COPPER ON BOTH SIDES. 20,000 Ω ON ONE SIDED BOARD — COPPER ON ONE SIDE ONLY) SEE DWG. BELOW

IF OK

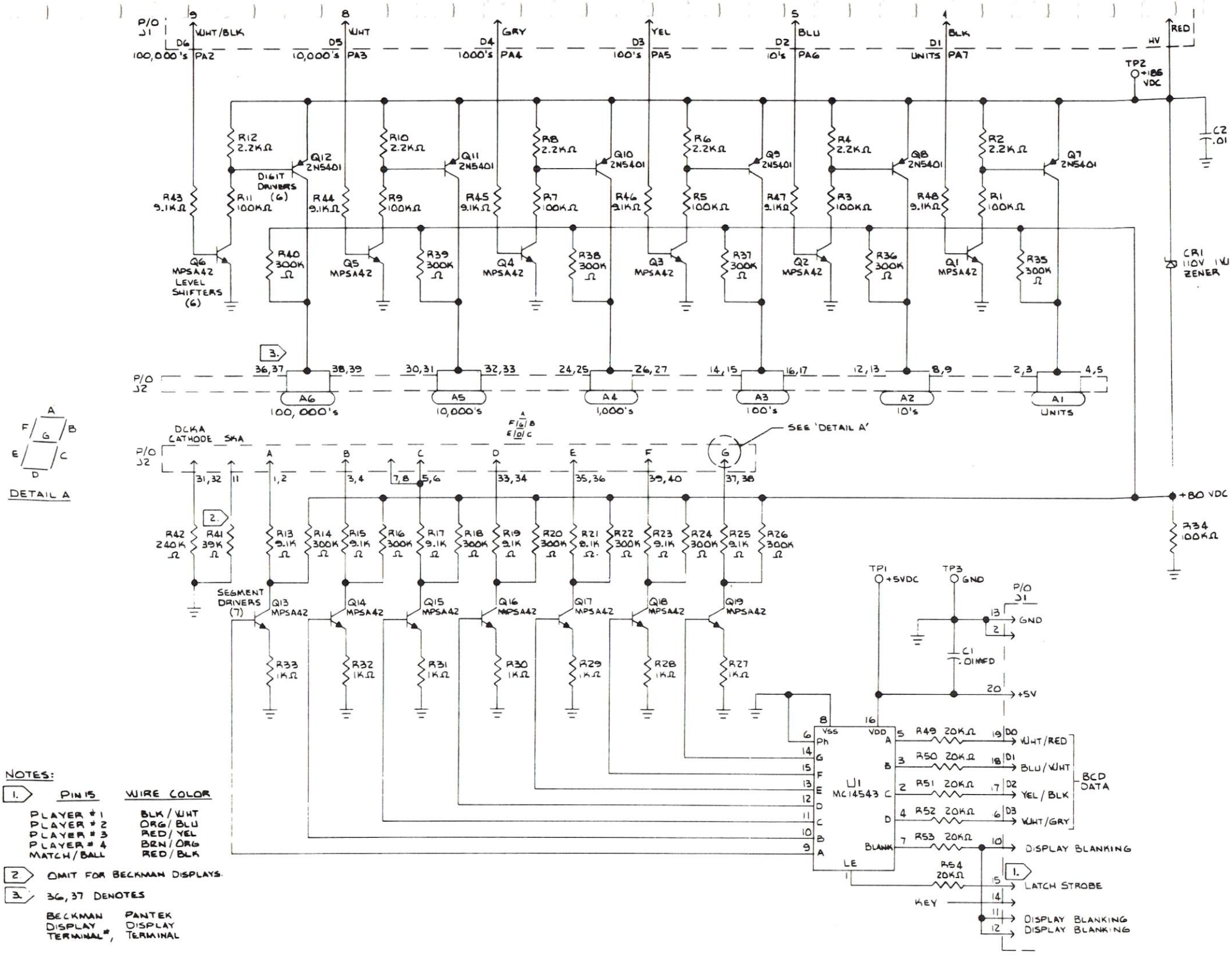
REPLACE IC U1

IF NOT CORRECT

CHECK FOR OPEN COPPER FOIL OR BAD RESISTOR (RESISTOR ONE SIDED BOARD ONLY) SEE DWG. BELOW



ADDED 20,000 Ω RESISTOR ON 1-SIDED BOARDS (COPPER ON 1-SIDE ONLY) TO PREVENT BAD I.C.(U1) FROM AFFECTING OTHER DISPLAYS.


P/O J1
WHT/BLK
WHT
GRY
YEL
BLU
BLK
RED
D6
D5
D4
D3
D2
D1
HV
100,000's PA2
10,000's PA3
1000's PA4
100's PA5
10's PA6
UNITS PA7
TP2 +186 VDC
C2 .01
R12 2.2KΩ
Q12 2N5401
DIGIT DRIVERS (6)
R11 100KΩ
R43 9.1KΩ
R44 9.1KΩ
R10 2.2KΩ
R9 100KΩ
Q11 2N5401
R45 9.1KΩ
R8 2.2KΩ
R7 100KΩ
Q10 2N5401
R46 9.1KΩ
R6 2.2KΩ
R5 100KΩ
Q9 2N5401
R47 9.1KΩ
R4 2.2KΩ
R3 100KΩ
Q8 2N5401
R48 9.1KΩ
R2 2.2KΩ
R1 100KΩ
Q7 2N5401
Q6 MPSA42 LEVEL SHIFTERS (6)
R40 300KΩ
Q5 MPSA42
R39 300KΩ
Q4 MPSA42
R38 300KΩ
Q3 MPSA42
R37 300KΩ
Q2 MPSA42
R36 300KΩ
Q1 MPSA42
R35 300KΩ
CR1 110V 1W ZENER
3.
P/O J2
36,37
38,39
30,31
32,33
24,25
26,27
14,15
16,17
12,13
8,9
2,3
4,5
A6 100,000's
A5 10,000's
A4 1,000's
A3 100's
A2 10's
A1 UNITS
DETAIL A
DCKA CATHODE SHA
SEE 'DETAIL A'
31,32
11
1,2
3,4
7,8
5,6
33,34
35,36
39,40
37,38
+80 VDC
2.
R42 240KΩ
R41 39KΩ
R13 9.1KΩ
R14 300KΩ
R15 9.1KΩ
R16 300KΩ
R17 9.1KΩ
R18 300KΩ
R19 9.1KΩ
R20 300KΩ
R21 9.1KΩ
R22 300KΩ
R23 9.1KΩ
R24 300KΩ
R25 9.1KΩ
R26 300KΩ
R34 100KΩ
SEGMENT DRIVERS (7)
Q13 MPSA42
Q14 MPSA42
Q15 MPSA42
Q16 MPSA42
Q17 MPSA42
Q18 MPSA42
Q19 MPSA42
R33 1KΩ
R32 1KΩ
R31 1KΩ
R30 1KΩ
R29 1KΩ
R28 1KΩ
R27 1KΩ
TP1 +5VDC
TP3 GND
P/O J1
13 GND
2
C1 .01MFD
20 +5V
U1 MC14543
8 VSS
16 VDD
6 Ph
14 G
15 F
13 E
12 D
11 C
10 B
9 A
LE 1
R49 20KΩ
R50 20KΩ
R51 20KΩ
R52 20KΩ
R53 20KΩ
R54 20KΩ
19 D0 WHT/RED
18 D1 BLU/WHT
17 D2 YEL/BLK
6 D3 WHT/GRY
BCD DATA
BLANK
10 DISPLAY BLANKING
1.
15 LATCH STROBE
KEY
14
11 DISPLAY BLANKING
12 DISPLAY BLANKING
NOTES:
1. PINS WIRE COLOR
PLAYER # 1 BLK/WHT
PLAYER # 2 ORG/BLU
PLAYER # 3 RED/YEL
PLAYER # 4 BRN/ORG
MATCH/BALL RED/BLK
2. OMIT FOR BECKMAN DISPLAYS.
3. 36,37 DENOTES
BECKMAN DISPLAY TERMINAL#, PANTEK DISPLAY TERMINAL

STERN ELECTRONICS, INC.

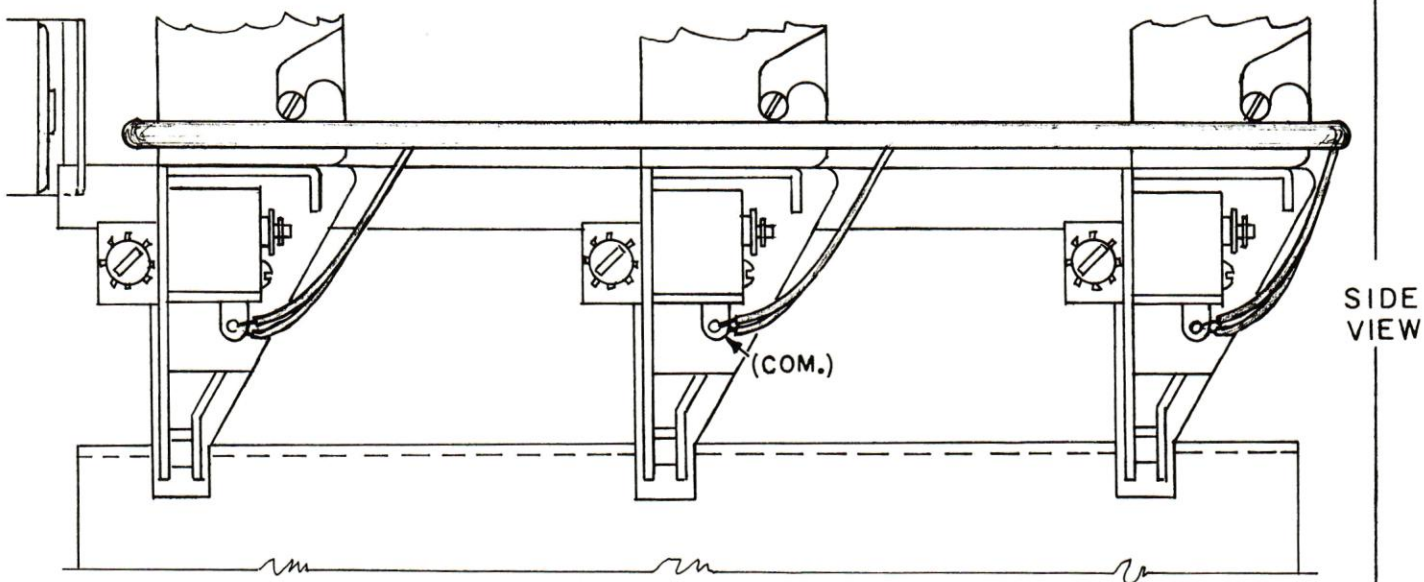
1725 Diversey Parkway, Chicago, Illinois 60614
(312) 935-4600, Telex 25-4657

SERVICE BULLETIN No. 16

"HOT HAND"

It is recommended that a 1.5 M.F.D. - 250 Volt Non Polarized Capacitor be added across the terminals of the motor to reduce a possible Inductive Load.

	RIGHT CHUTE	CENTER CHUTE	LEFT CHUTE
PRESENT	COM R-Y N.O. R-W N.C.	COM R-Y N.O. BLU-B N.C.	COM R-Y N.O. BRN-W N.C.
CHANGE TO	COM R-W N.O. JUMPER #1 N.C. JUMPER #2	COM R-Y N.O. BRN-W N.C.	COM R-Y N.O. JUMPER #2 N.C. JUMPER #1

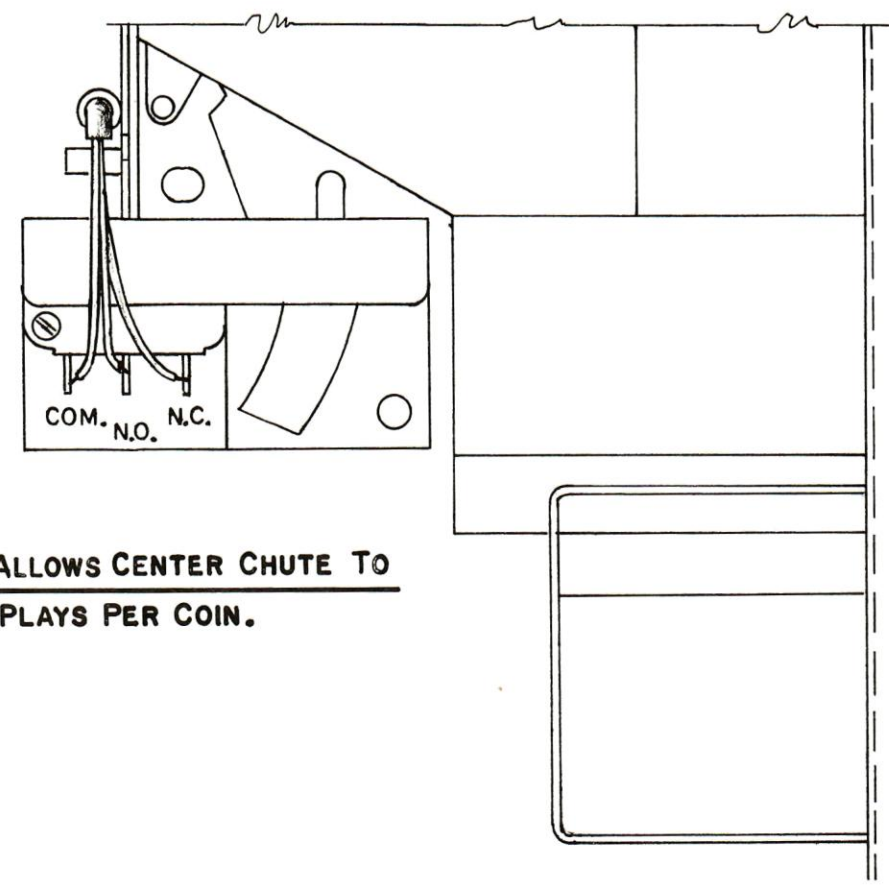


R-W CONTROLLED BY SWS 9-14 ON MPU

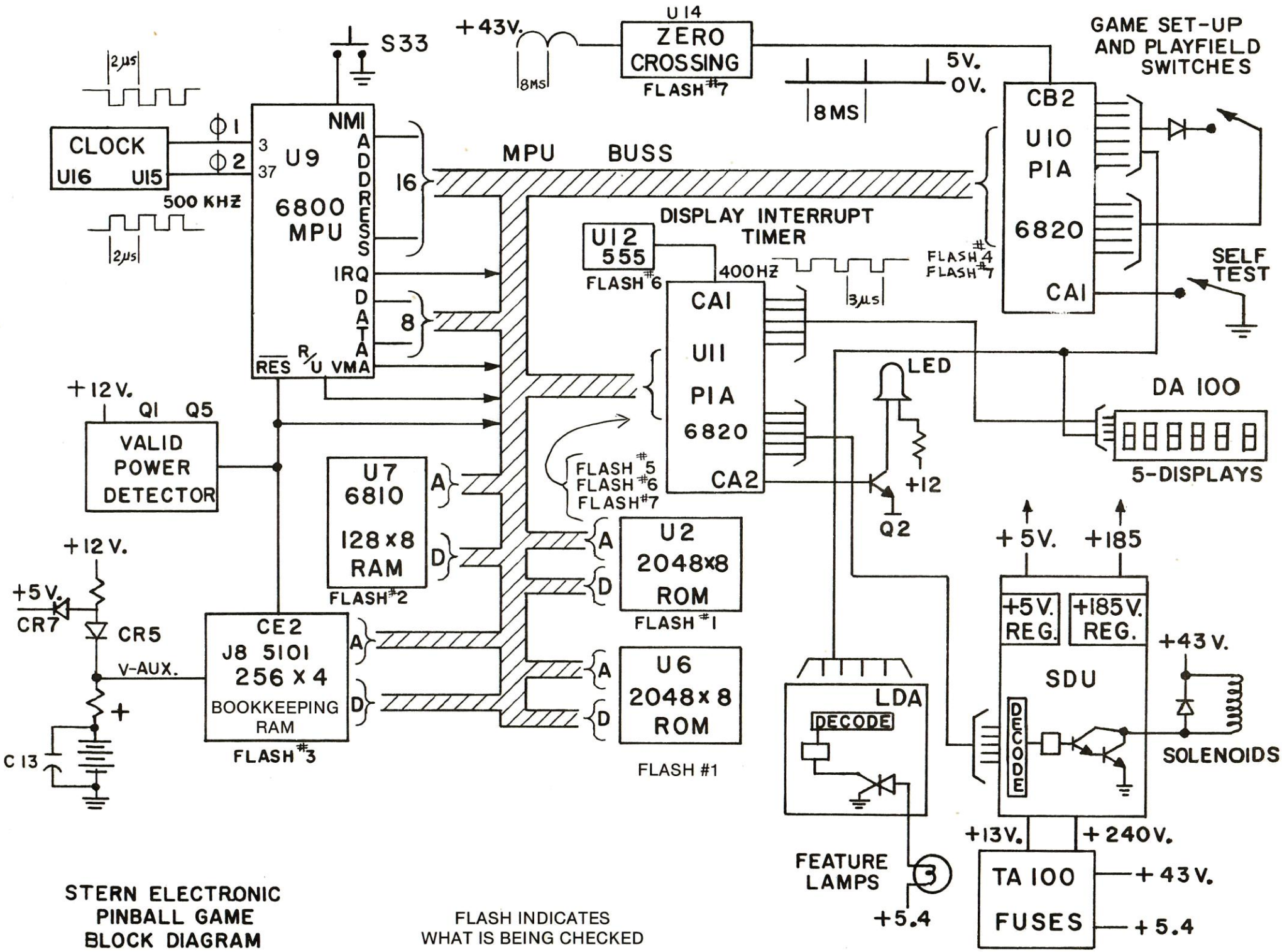
BRN-W CONTROLLED BY SWS 1-5 ON MPU

SEE RIGHT CHUTE

SIDE VIEW



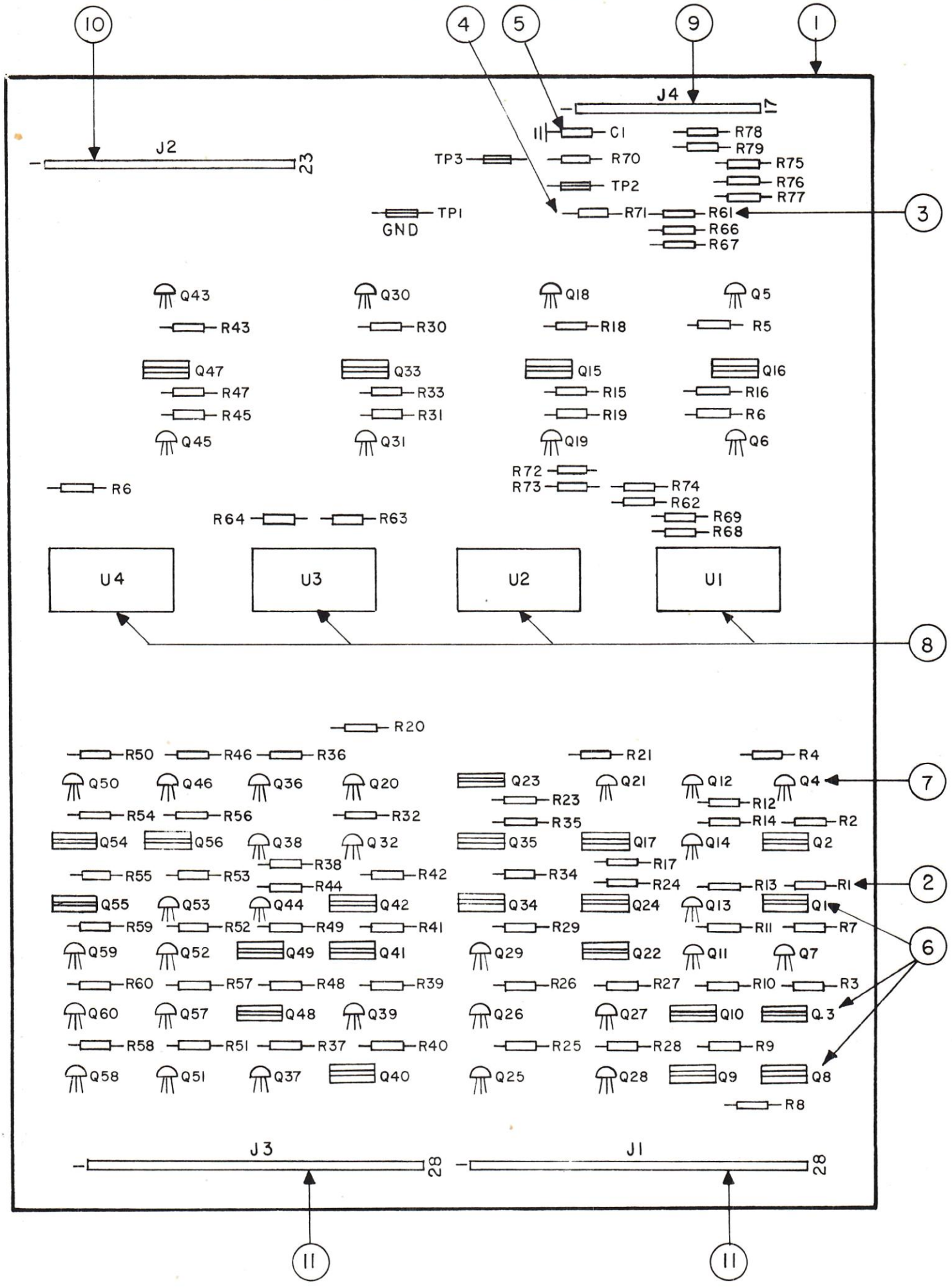
THE ABOVE CHANGE ALLOWS CENTER CHUTE TO HAVE A MAX. OF 15 PLAYS PER COIN.



STERN ELECTRONIC
PINBALL GAME
BLOCK DIAGRAM

FLASH INDICATES
WHAT IS BEING CHECKED

B-431 LAMP DRIVER MODULE

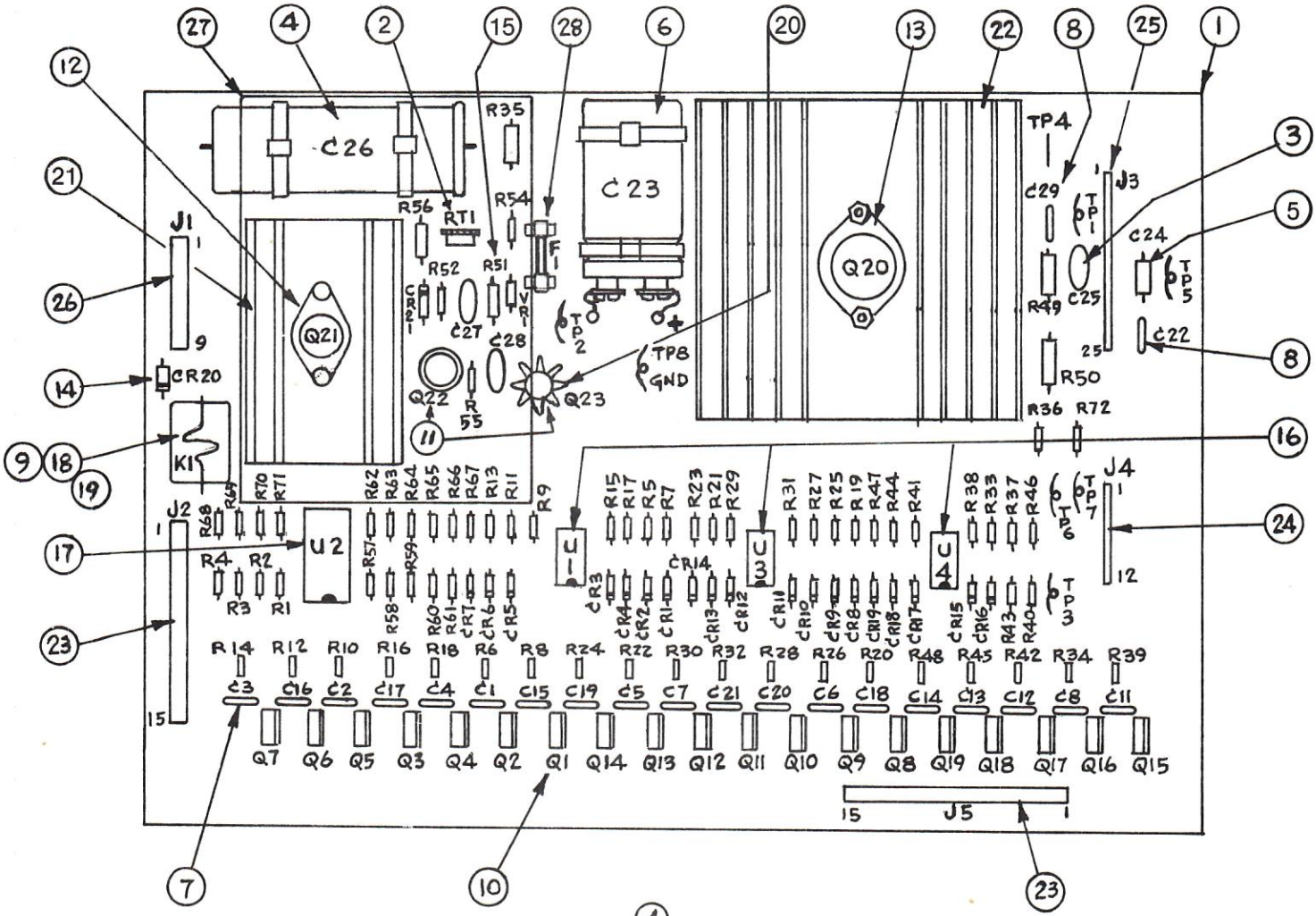


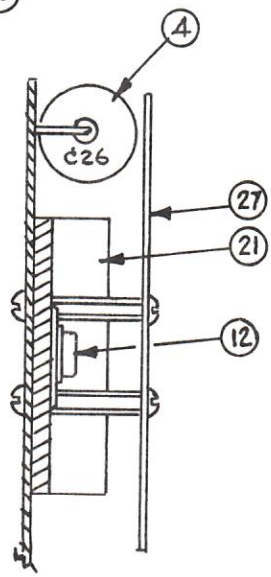
B-431 LAMP DRIVER MODULE

PARTS LIST

ITEM	REFERENCE DESIGNATION	STERN PART NO.	DESCRIPTION
1	A	B-431	LDA-100 REV. "B" 1-SIDED P.C. BOARD COMPLETE
2	R-1 THRU R-60 & R-70	25A-5-04-222	2.2K OHM 1/4 WATT RESISTOR
3	R-61 THRU R-69	25A-5-04-225	2.2M OHM 1/4 WATT RESISTOR
4	R-71 THRU R-79	25A-5-04-203	20K OHM 1/4 WATT RESISTOR
5	C-1	25A-26-1	.01 MFD. 50V. AXIAL CAPACITOR
6	Q1-Q3, Q8-Q10, Q15-Q17, Q22-Q24, Q33-Q35, Q40-Q42, Q47-Q49, Q54-Q56	25A-2-3	MCR-106-1 THYRISTOR (SUB. C106Y1)
7	Q4-Q7, Q11-Q14, Q18-Q21, Q25-Q32, Q36-Q39, Q43-Q46, Q50-Q53, Q57-Q60	25A-2-5060	2N5060 THYRISTOR
8	U1 THRU U4	25A-MC 14514B	MC 14514B 10F 16 DECODER
9	J4	4B-212-17	17 PIN WAFER CONNECTOR KK-100 SERIES
10	J2	4B-212-23	23 PIN WAFER CONNECTOR KK-100 SERIES
11	J1 & J3	4B-212-28	28 PIN WAFER CONNECTOR KK-100 SERIES

B-432 SOLENOID DRIVER VOLTAGE REGULATOR MODULE





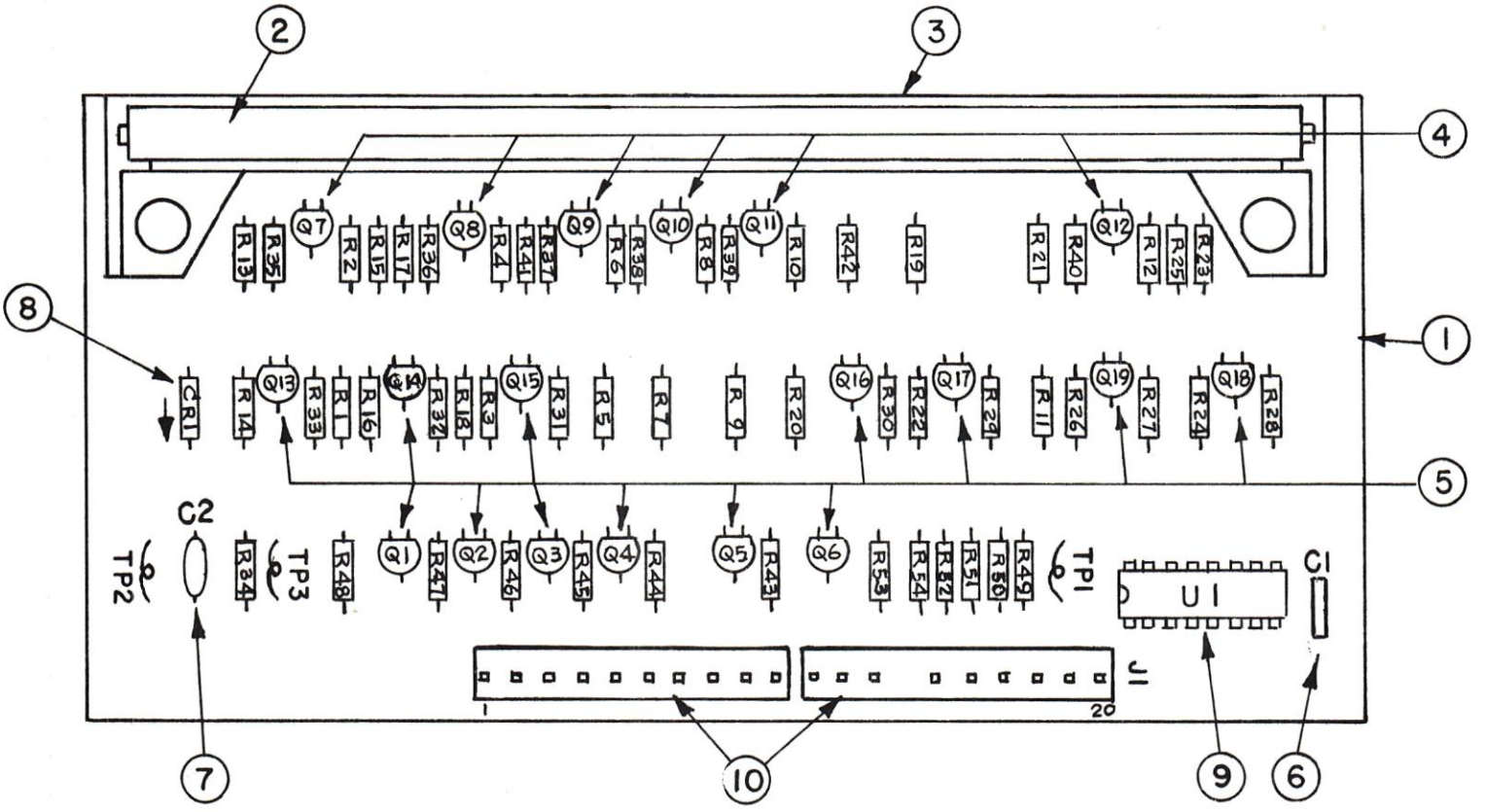
NOTE:

FIND RESISTOR LOCATION ON P.C. BOARD & IT'S VALUE ON SCHEMATIC.

B-432 SOLENOID DRIVER VOLTAGE REGULATOR MODULE
PARTS LIST

ITEM	REFERENCE DESIGNATION	STERN PART NO.	DESCRIPTION
1	A3	B-432	SOLENOID DRIVER/VOLTAGE REGULATOR MODULE, COMPLETE
2	RT1	25A-16-1	POT. (LINEAR) 25K
3	C25	25A-12-11	(CERAMIC) CAPACITOR, .1 MFD, 50V.
4	C26	25A-13-3	CAPACITOR, 160 MFD 350V.
5	C24	25A-13-2	CAPACITOR, 2 MFD 50V.
6	C23	25A-13-4	CAPACITOR, 11700 MFD, 20V.
7	C1-C8, C11-C21	25A-12-4	CAPACITOR, .002 MFD, 1KV
8	C22, C27, C28, C29	25A-12-7	CAPACITOR, .01 MFD, 500V.
9	K1	25A-7-1 or 25A-7-2	RELAY
10	Q1-Q19	25A-2-2	TRANSISTOR, SE9302
11	Q22, Q23	25A-2-3440	TRANSISTOR, 2N3440
12	Q21	25A-2-3584	TRANSISTOR, 2N3584
13	Q20	25A-LM-323-K	+ 5V REGULATOR, LAS1405 or 78H05KC or LM323K
14	CR1-CR21	25A-1-4004	DIODE (IN4004)
15	VR1	25A-1-5275 A	DIODE, ZENER 140V, IN5275 A
16	U1, U3, U4	25A-70-1	I.C. TRANSISTOR, ARRAY CA3081
17	U2	25A-DM74L154	I.C. BINARY TO 1/16 DECODER, 74L154
18	FOR K1	25A-8-1	RELAY SOCKET
19	FOR K1	25A-8-C1	RELAY CLIP
20	USED ON Q23	25A-2H-2	HEAT SINK T018
21	USED ON Q21	25A-2H-3	HEAT SINK T066
22	USED ON Q20	25A-2H-1	HEAT SINK T03 CASE
23	J2	4B-215-15	15 PIN WAFER CONNECTOR
24	J4	4B-212-12	12 PIN WAFER CONNECTOR
25	J3	4B-212-25	25 PIN WAFER CONNECTOR
26	J1	4B-215-9	9 PIN WAFER CONNECTOR
27		4A-201	SHIELD-PLEXIGLASS
28	F1	8A-178-P25	FUSE 1/4 AMP, 250V.

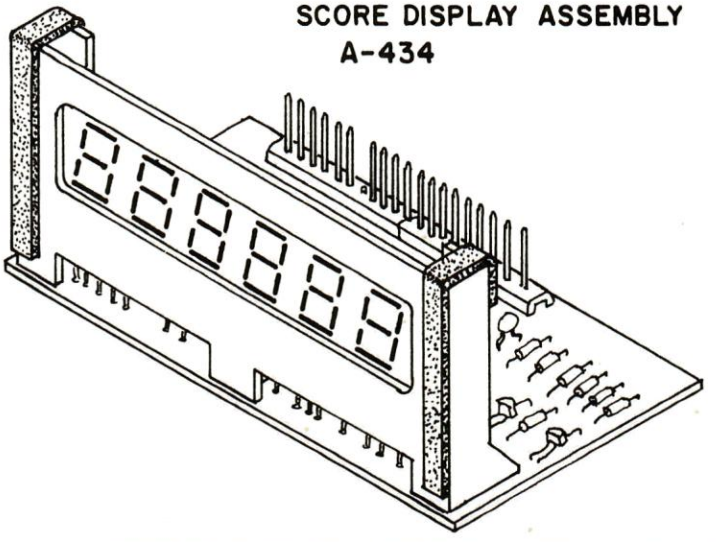
A-434 DISPLAY DRIVER MODULE



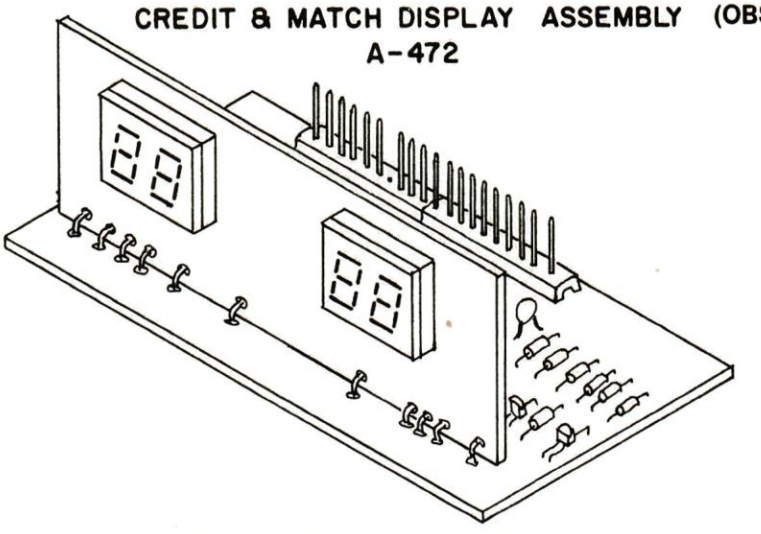
COMPONENT PARTS LIST

ITEM	REFERENCE DESIGNATION	STERN PART NO.	DESCRIPTION
1	A1	A-434	DISPLAY DRIVER MODULE, COMPELTE
2	DS1	25C-17-1	DIGITAL DISPLAY PANEL
3		4C-226	DISPLAY MOUNTING
4	Q7 THRU Q12	25A-2-5401	TRANSISTOR, 2N-5401
5	Q1 THRU Q6 Q13 THRU Q19	25A-2-1	TRANSISTOR, MPS-A42
6	C1	25A-26-1	CAPACITOR, AXIAL .01 MFD, 50V.
7	C2	25A-12-7	CAPACITOR , 01. MFD, 500V.
8	CR1	25A-1-1	ZENER DIODE, 110V., 1W, IN3045
9	U1	25A-MC14543B	I.C. DECODER, , 14543B
10	J1	4B-215-10	(2) 10 PIN WAFER CONNECTORS
	R1,R3,R5,R7,R9,R11,R34	25A-5-04-104	RESISTOR, 100K, 1/4 WATT
	R2,R4,R6,R8,R10,R12,	25A-5-04-222	RESISTOR, 2.2K, 1/4WATT
	R13,R15,R17,R19,R21, R23,R25	25A-5-04-912	RESISTOR, 9.1K, 1/4 WATT
	R14,R16,R18,R20,R22,R24, R26,R35,R36,R37,R38,R39,R40,	25A-5-04-304	RESISTOR 300K, 1/4 WATT
	R27,R28,R29,R30,R31,R32, R33,	25A-5-04-102	RESISTOR, 1K, 1/4 WATT
	R41	25A-5-04-393	RESISTOR 39K, 1/4 WATT
	R42	25A-5-04-244	RESISTOR, 240K 1/4 WATT
	R43 THRU R48	25A-5-04-822	RESISTOR,8.2K, 1/4 WATT
	R49 THRU R54	25A-5-04-203	RESISTOR, 20K, 1/4 WATT

SCORE DISPLAY ASSEMBLY
A-434

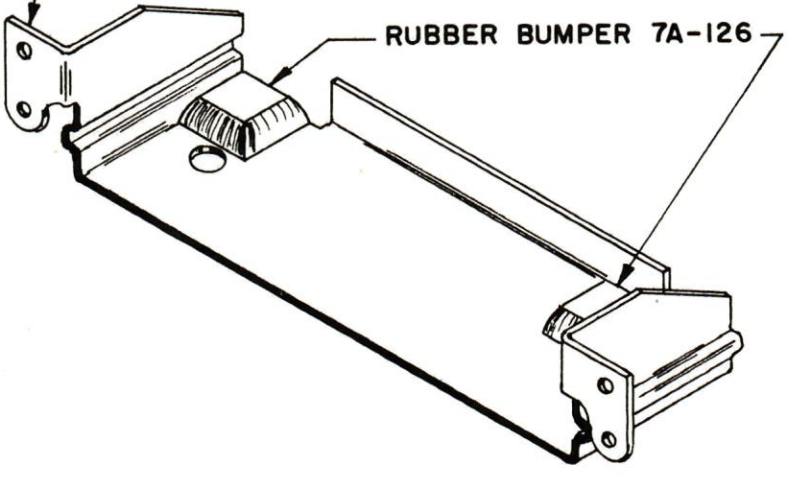


CREDIT & MATCH DISPLAY ASSEMBLY (OBSOLETE)
A-472



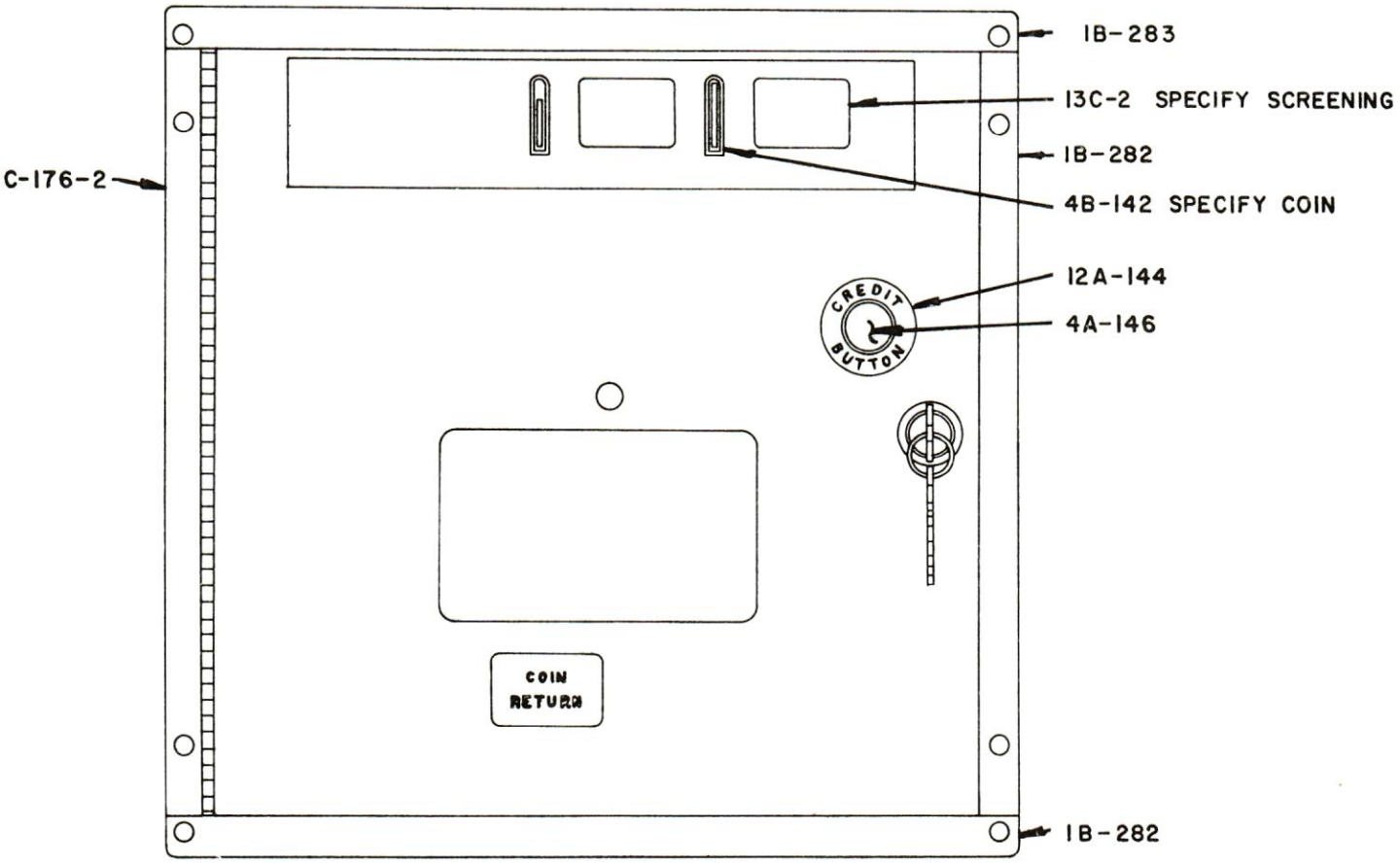
DISPLAY UNIT MOUNTING SHELF IB-533

RUBBER BUMPER 7A-126

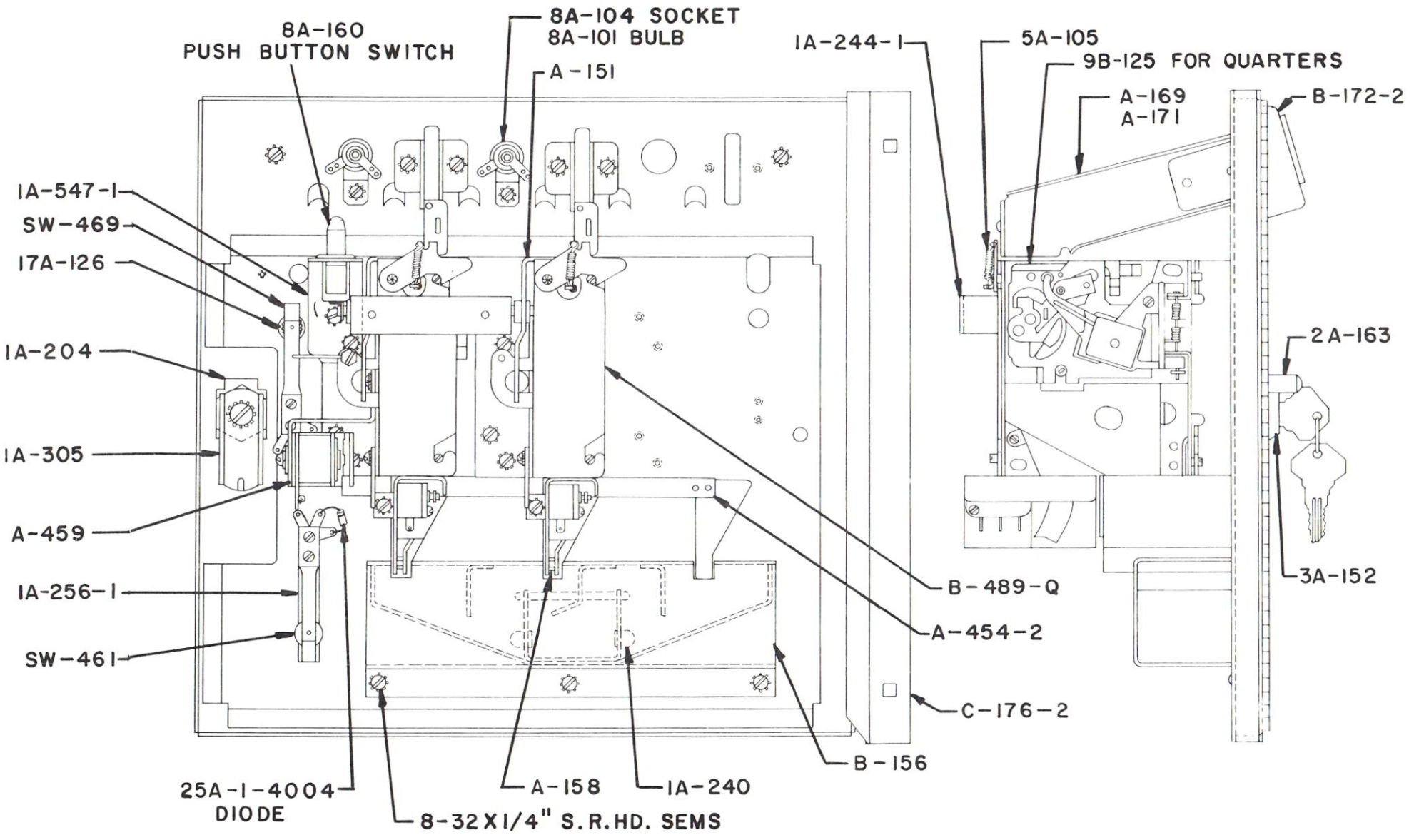


PIN GAMES

COMPLETE FRONT DOOR ASSEMBLY D-490-2

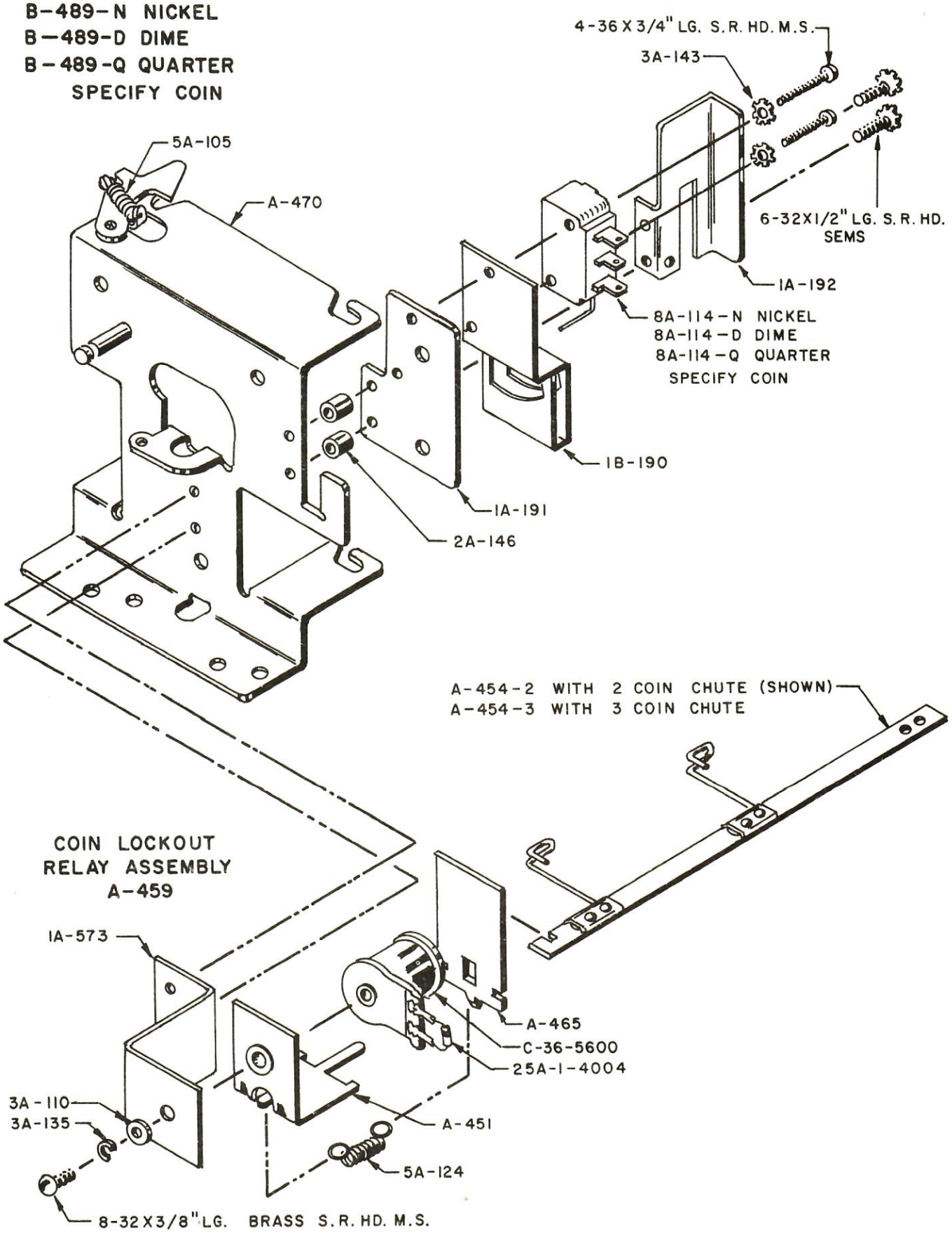


COMPLETE FRONT DOOR ASSEMBLY D-490-2

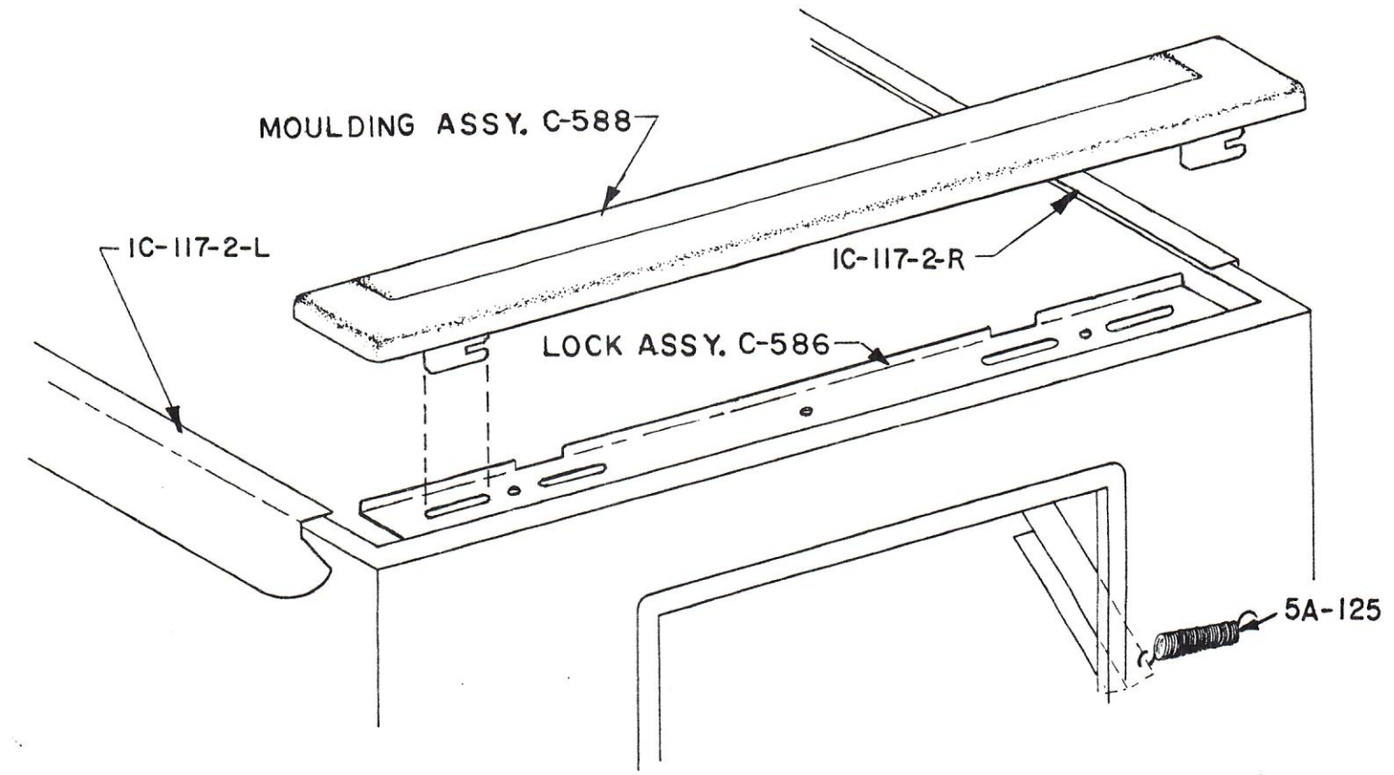


COIN CHUTE HOUSING ASSEMBLY

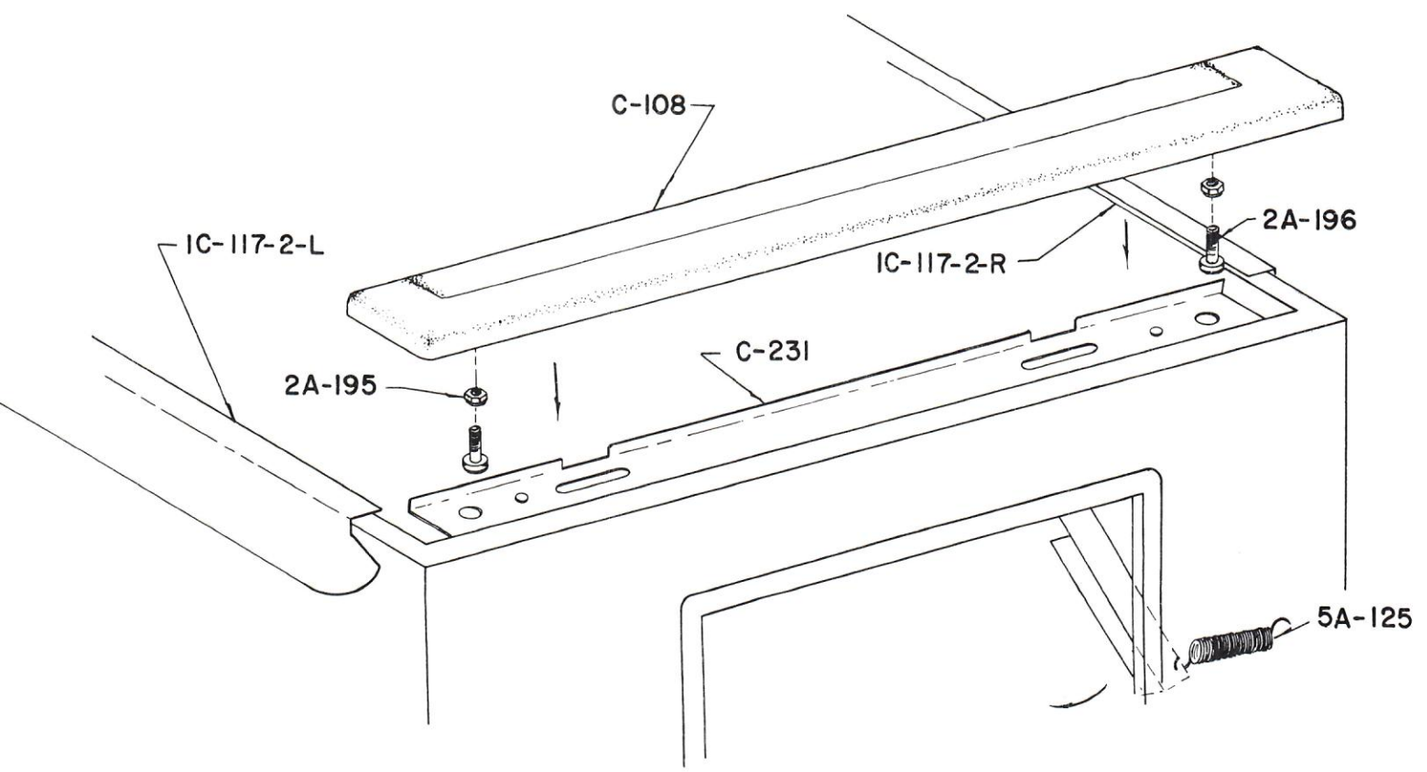
B-489-N NICKEL
B-489-D DIME
B-489-Q QUARTER
SPECIFY COIN



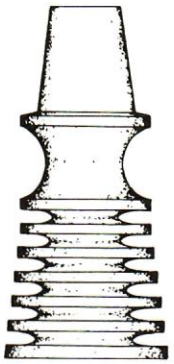
NEW TYPE FRONT MOULDING



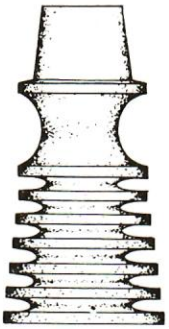
OLD TYPE FRONT MOULDING



4A-259
RED OR
AMBER

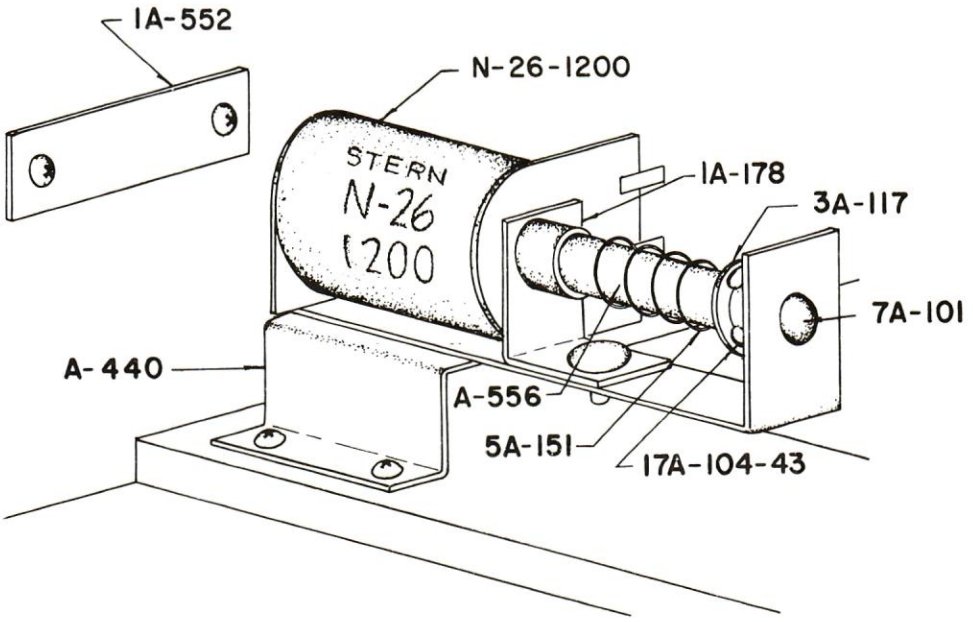


4A-258
RED OR
AMBER

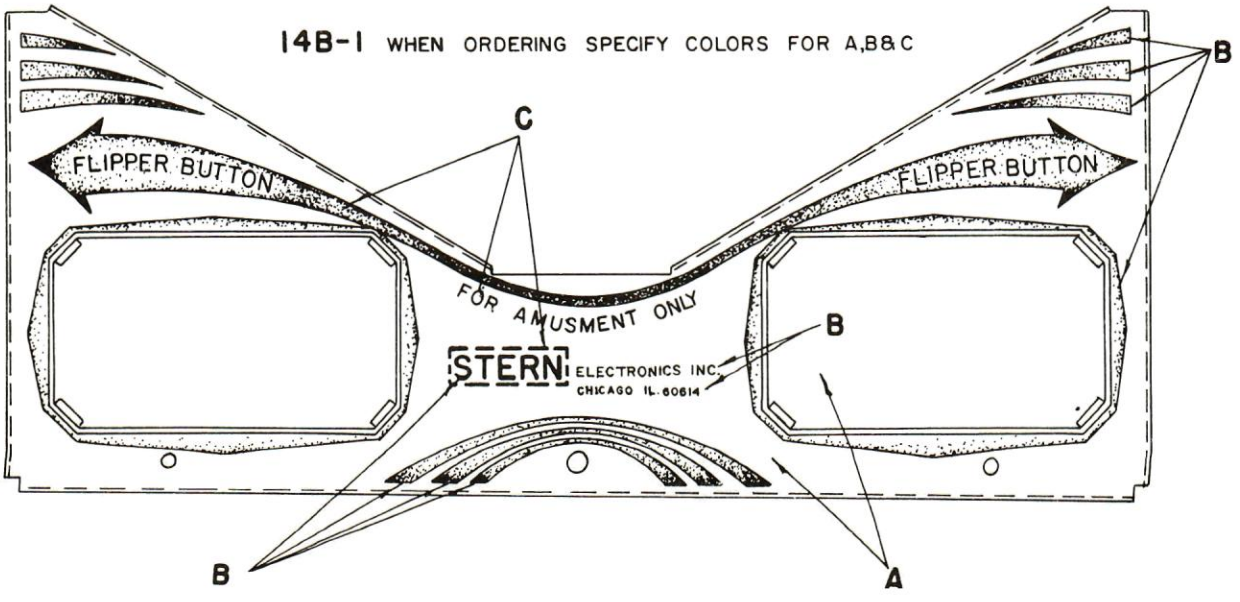


4A-119
RED OR
WHITE

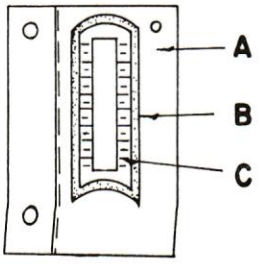
2A-200



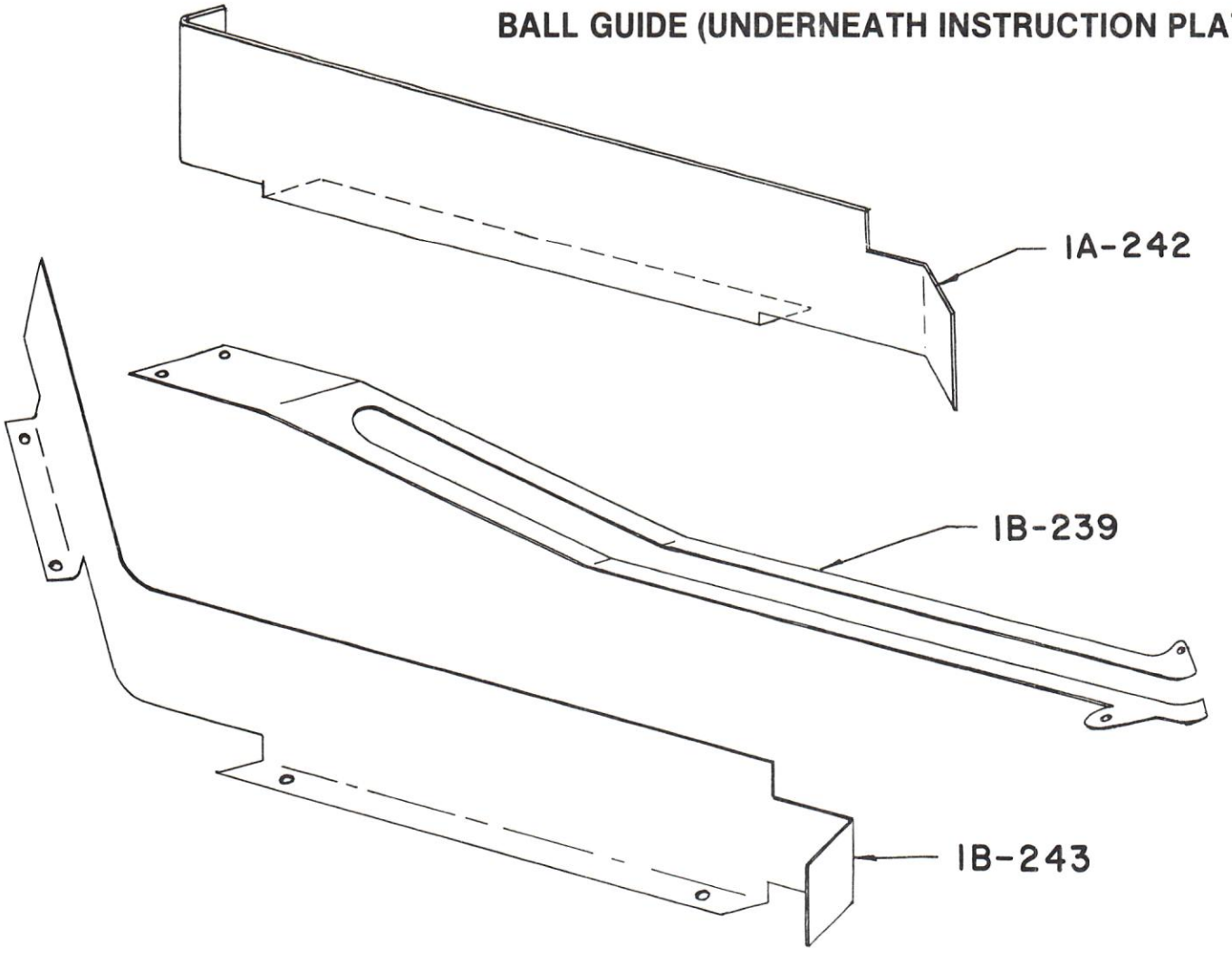
14B-1 WHEN ORDERING SPECIFY COLORS FOR A,B&C



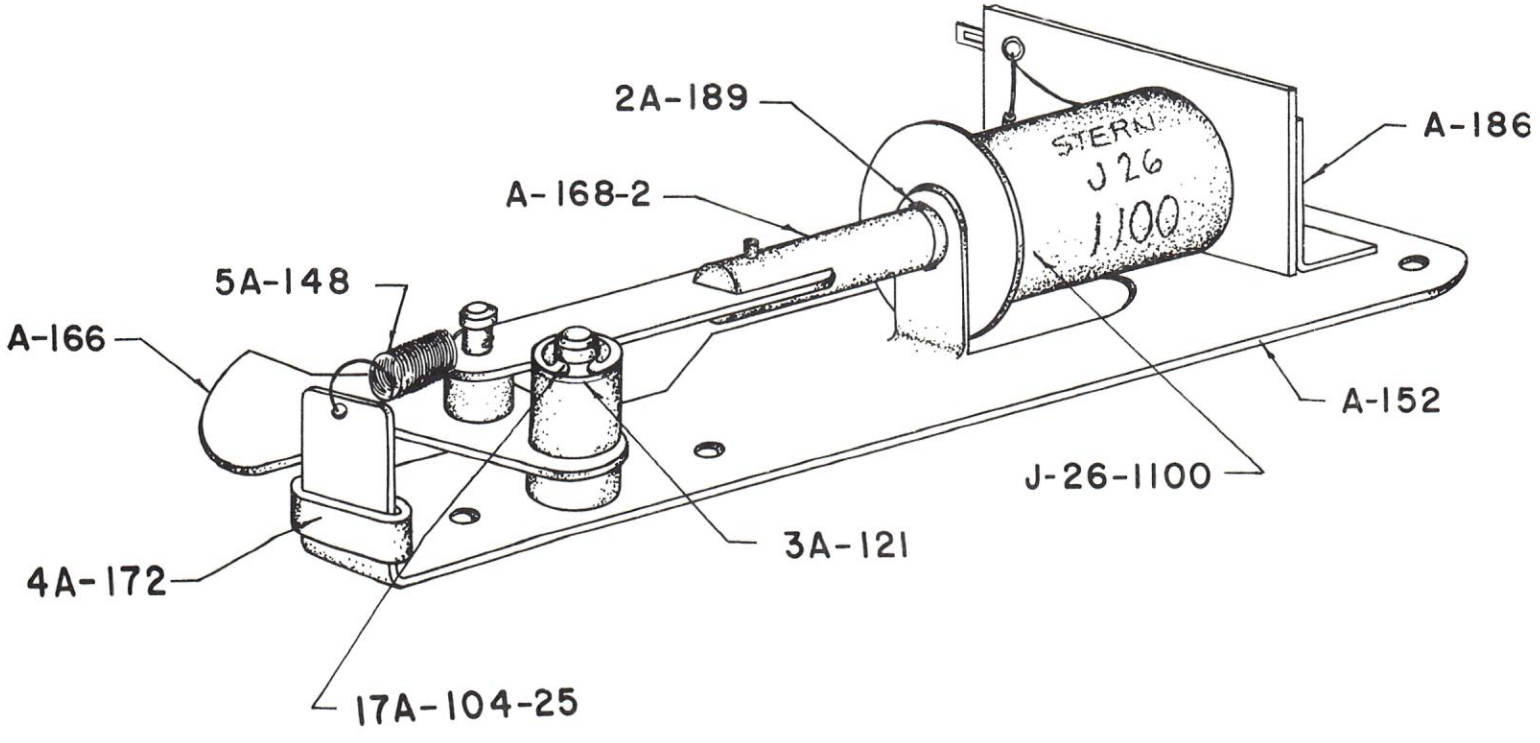
14A-2



BALL GUIDE (UNDERNEATH INSTRUCTION PLATE)

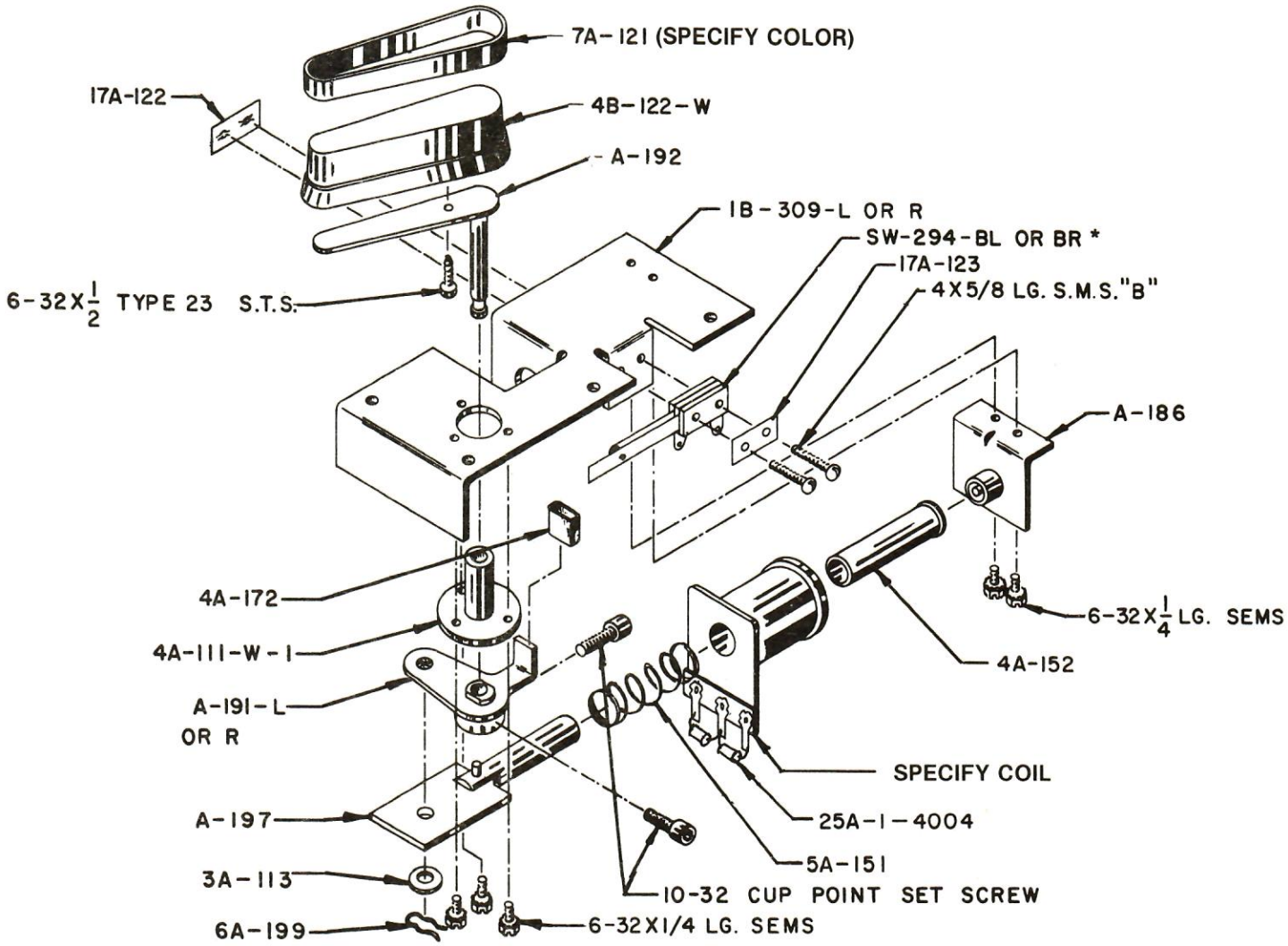


AUTOMATIC BALL RETURN



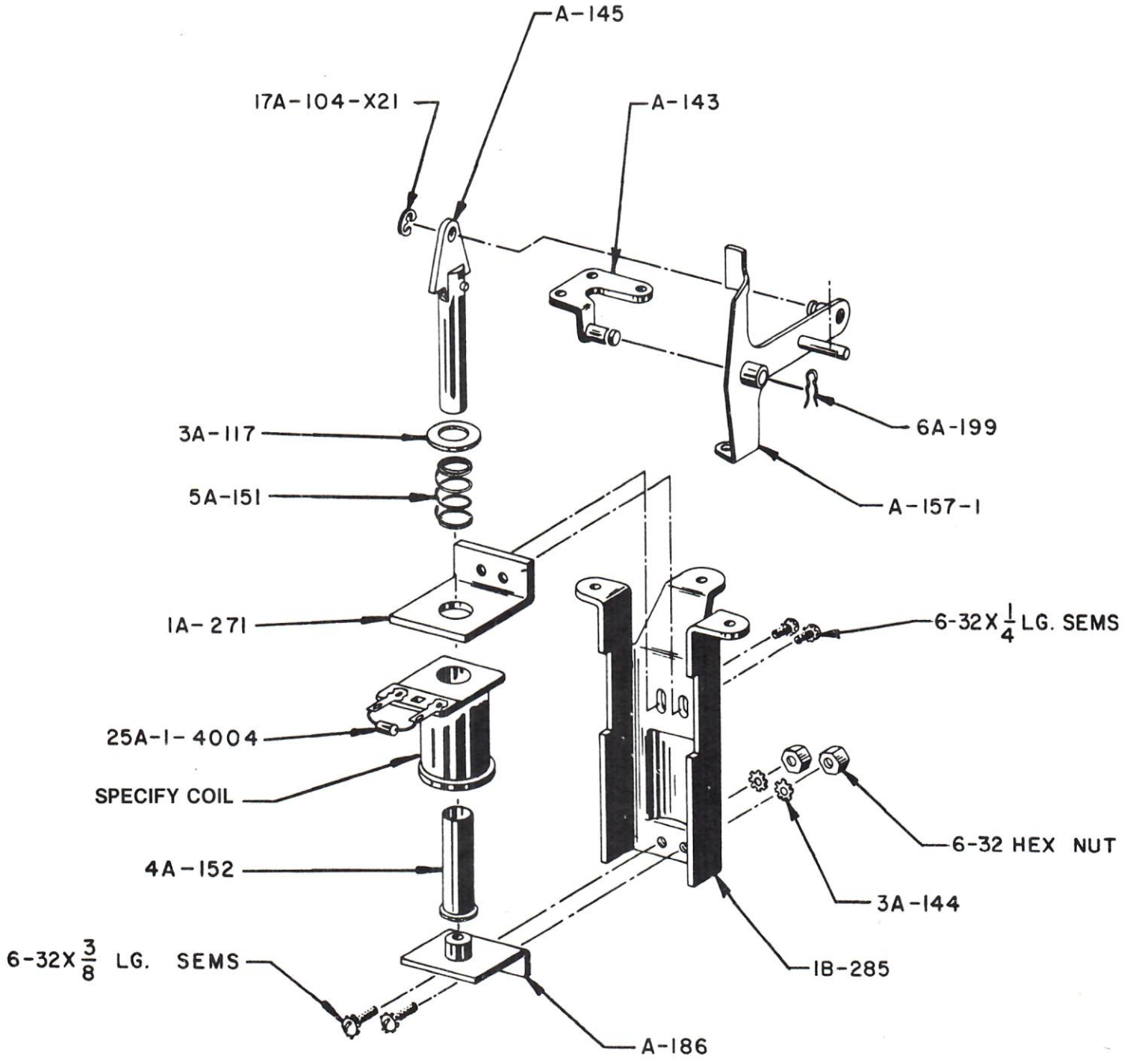
FLIPPER ASSEMBLY

B-195-L-1 LEFT
B-195-R-1 RIGHT



*SOME ASSEMBLIES USE ADDITIONAL SWITCH SW-481 (WITH PUSHER)

SLING SHOT ASSEMBLY

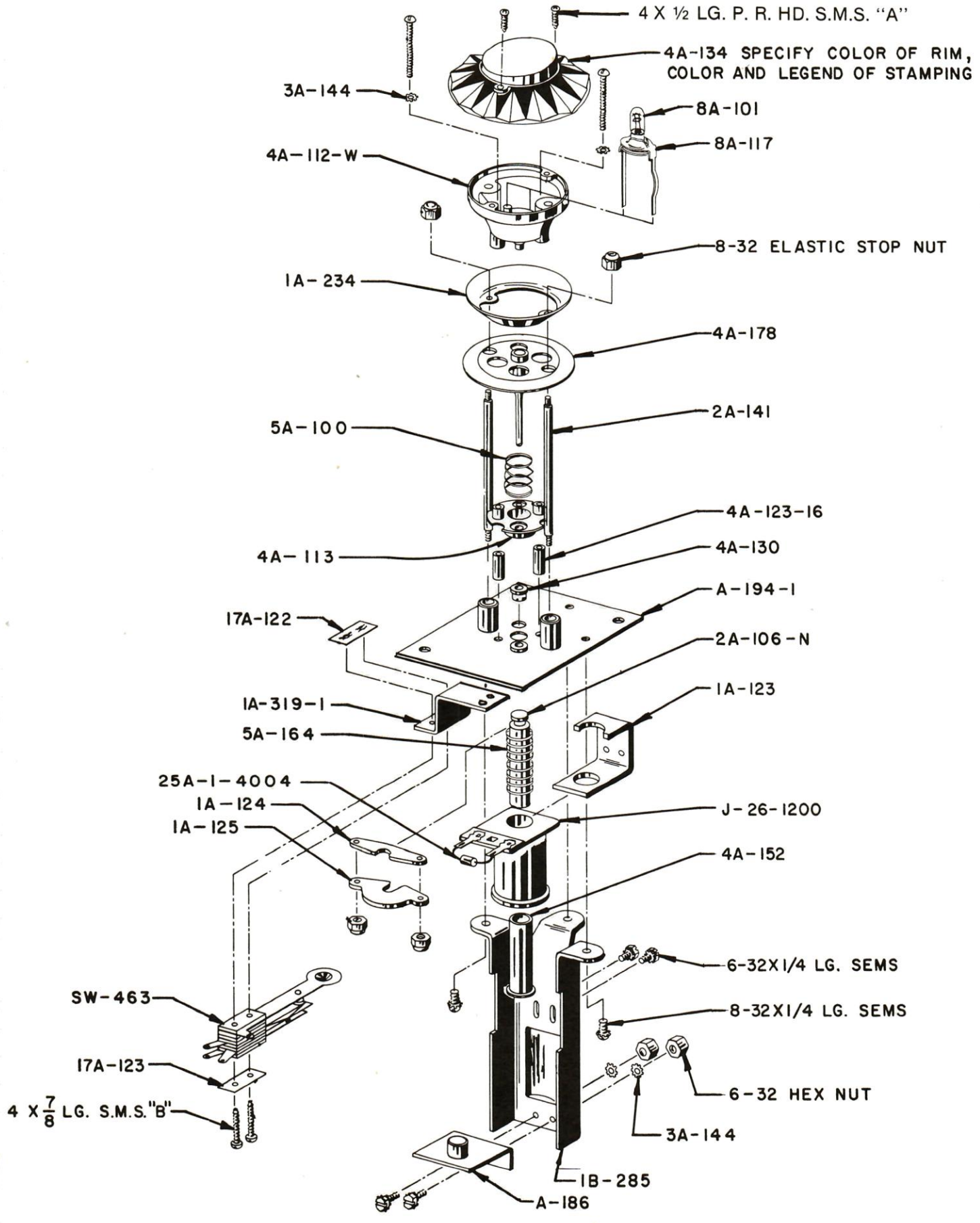


NOTE:

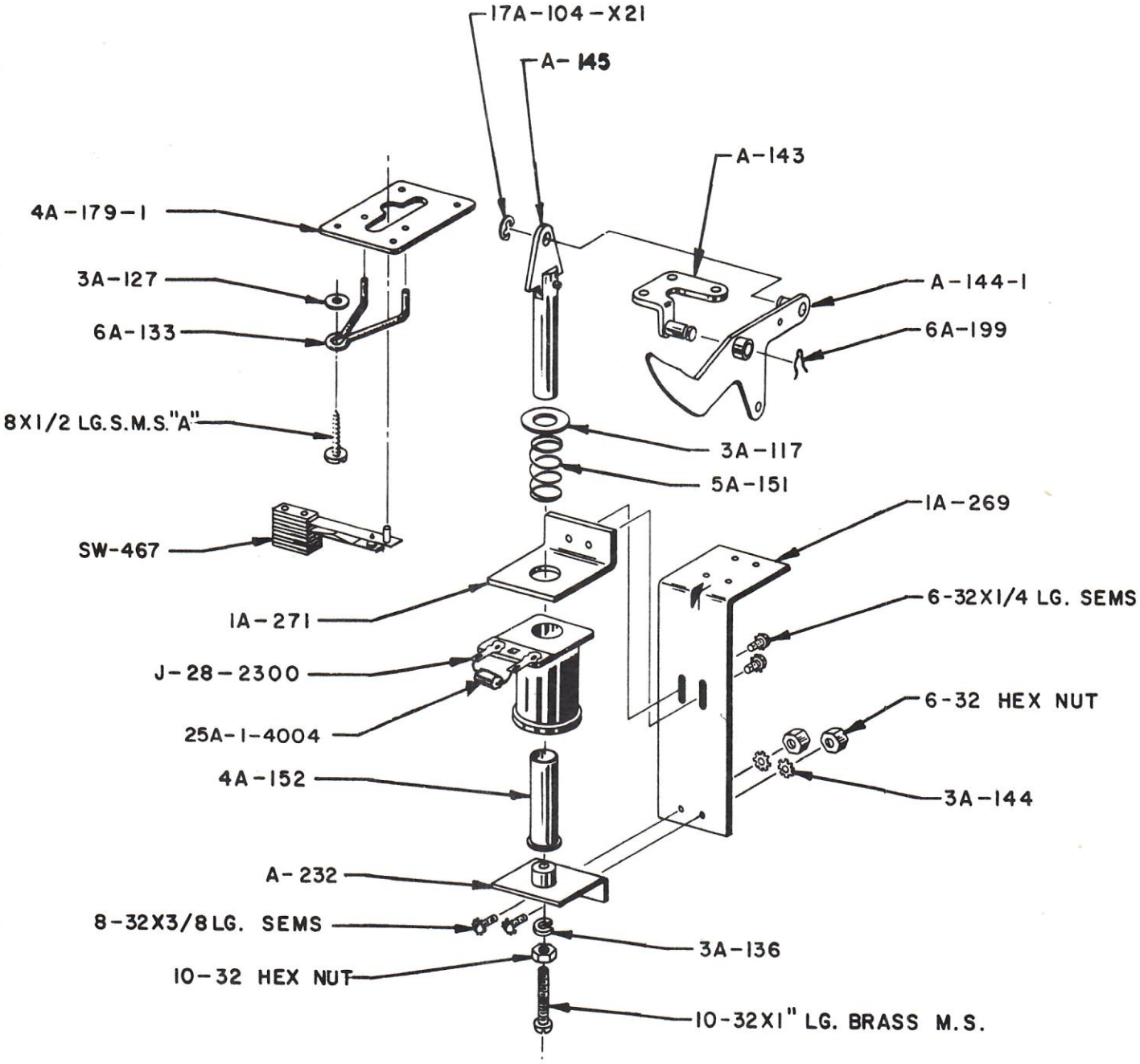
TWO A-184-1 CONTACT SWITCH & BRACKET ASSEMBLY USED PER SLING SHOT (CONTACT SWITCH PART NO. SW-462)

THUMPER BUMPER ASSEMBLY

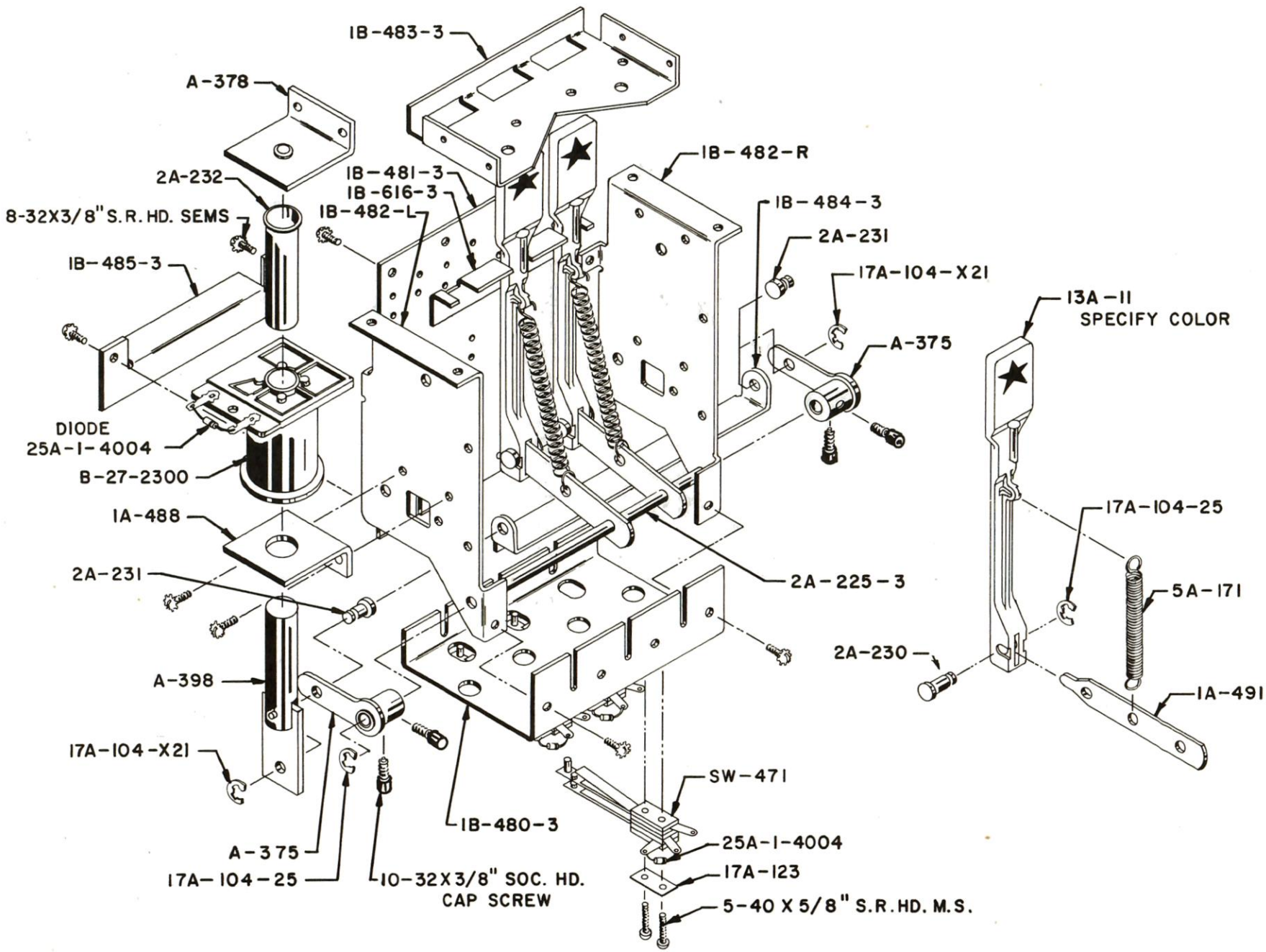
B-196-1



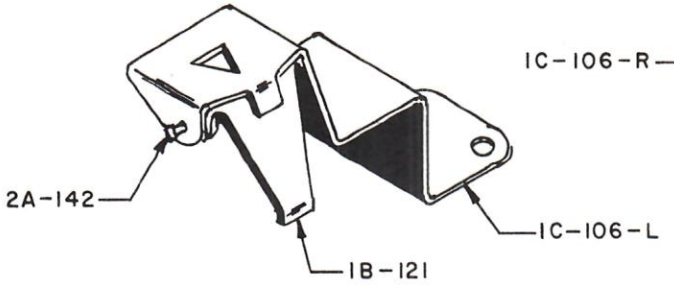
BALL KICKER ASSEMBLY



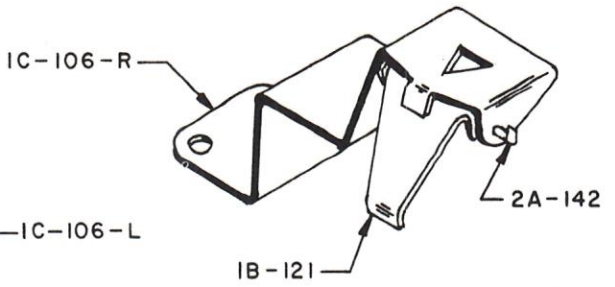
COMPLETE DROP TARGET ASSEMBLY D-393-3-L (SHOWN)
D-393-3-R WITH COIL MOUNTED ON OPPOSITE END



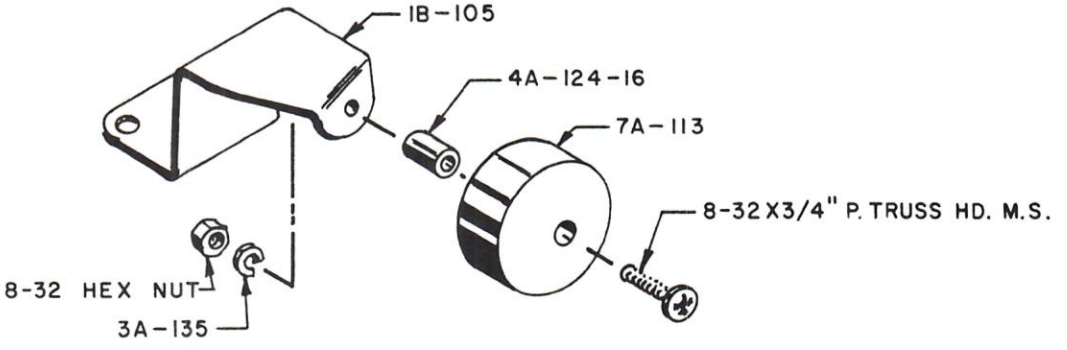
LEFT BALL GATE ASSEMBLY
A-104-L



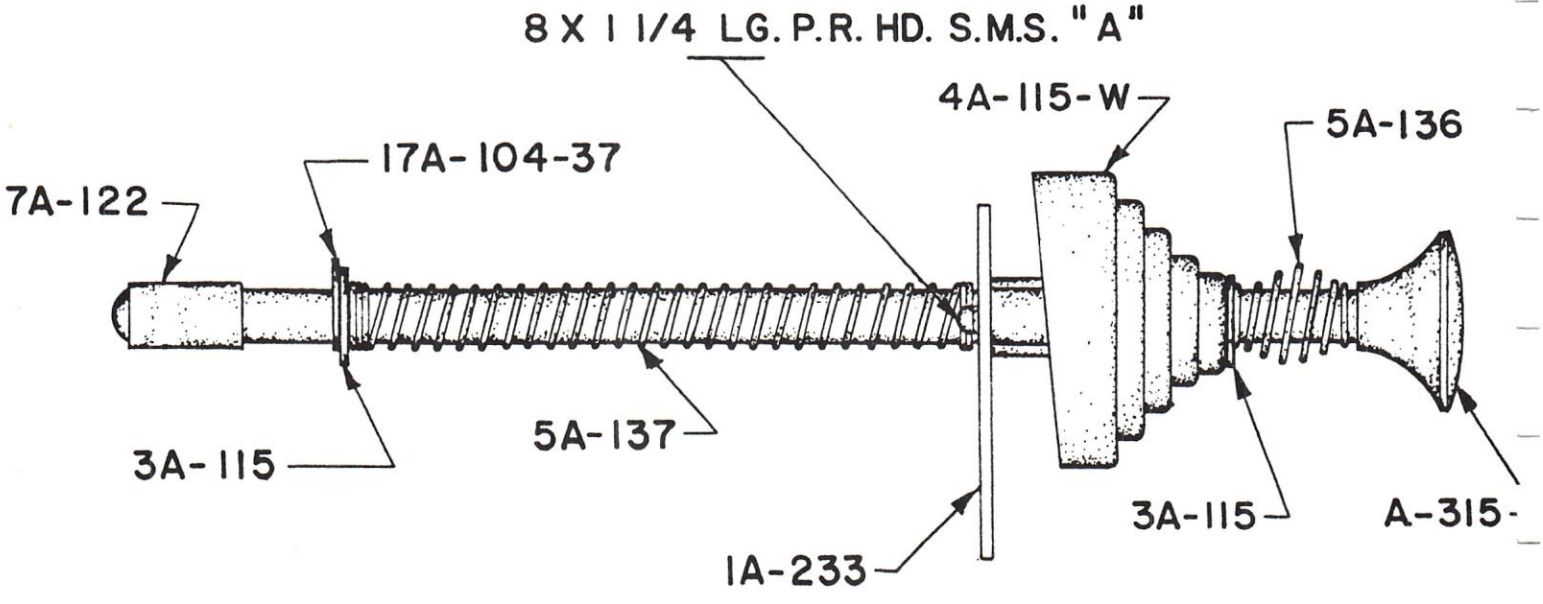
RIGHT BALL GATE ASSEMBLY
A-104-R



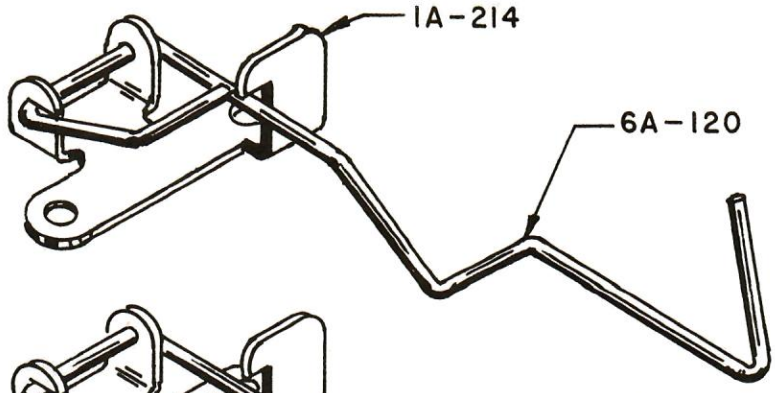
REBOUND RUBBER & BRACKET ASSEMBLY
A-105



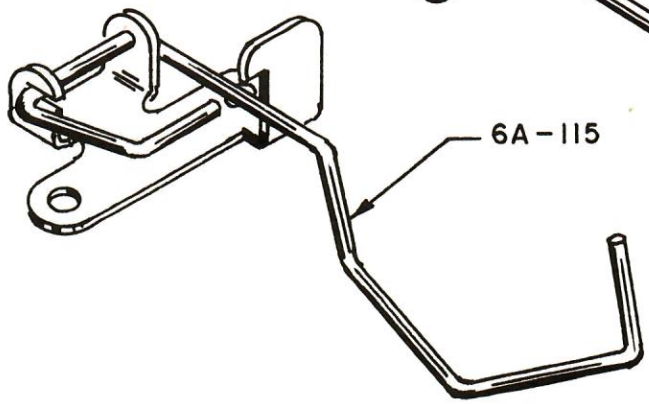
BALL SHOOTER ASSEMBLY



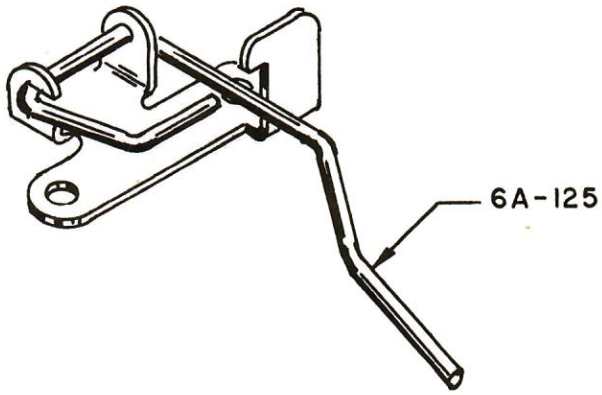
BALL EJECTOR
WIRE FORM ASSEMBLY
A-150



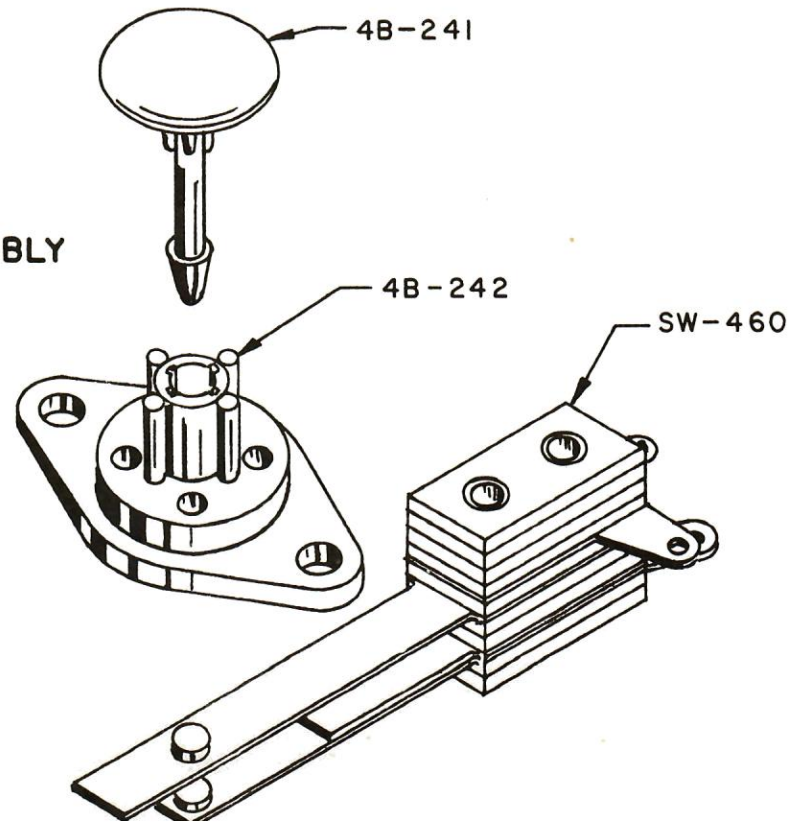
RETURN LANE
WIRE FORM ASSEMBLY
A-149



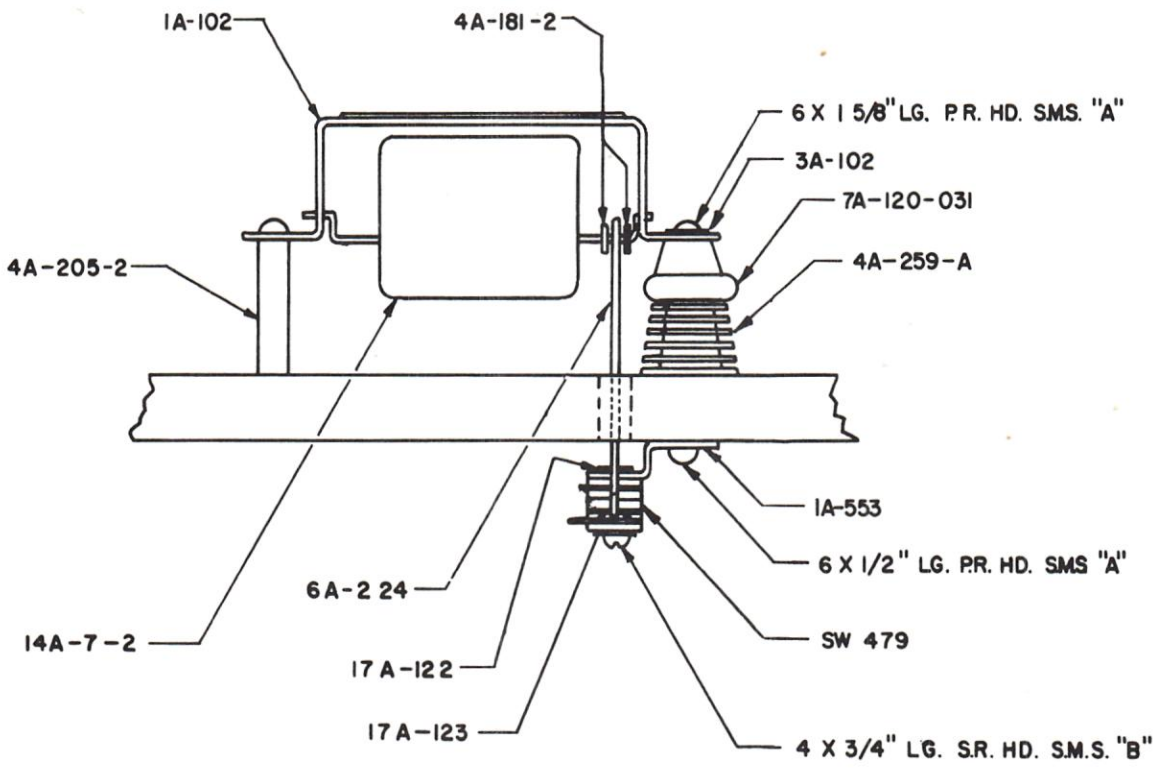
OUT LANE
WIRE FORM ASSEMBLY
A-383

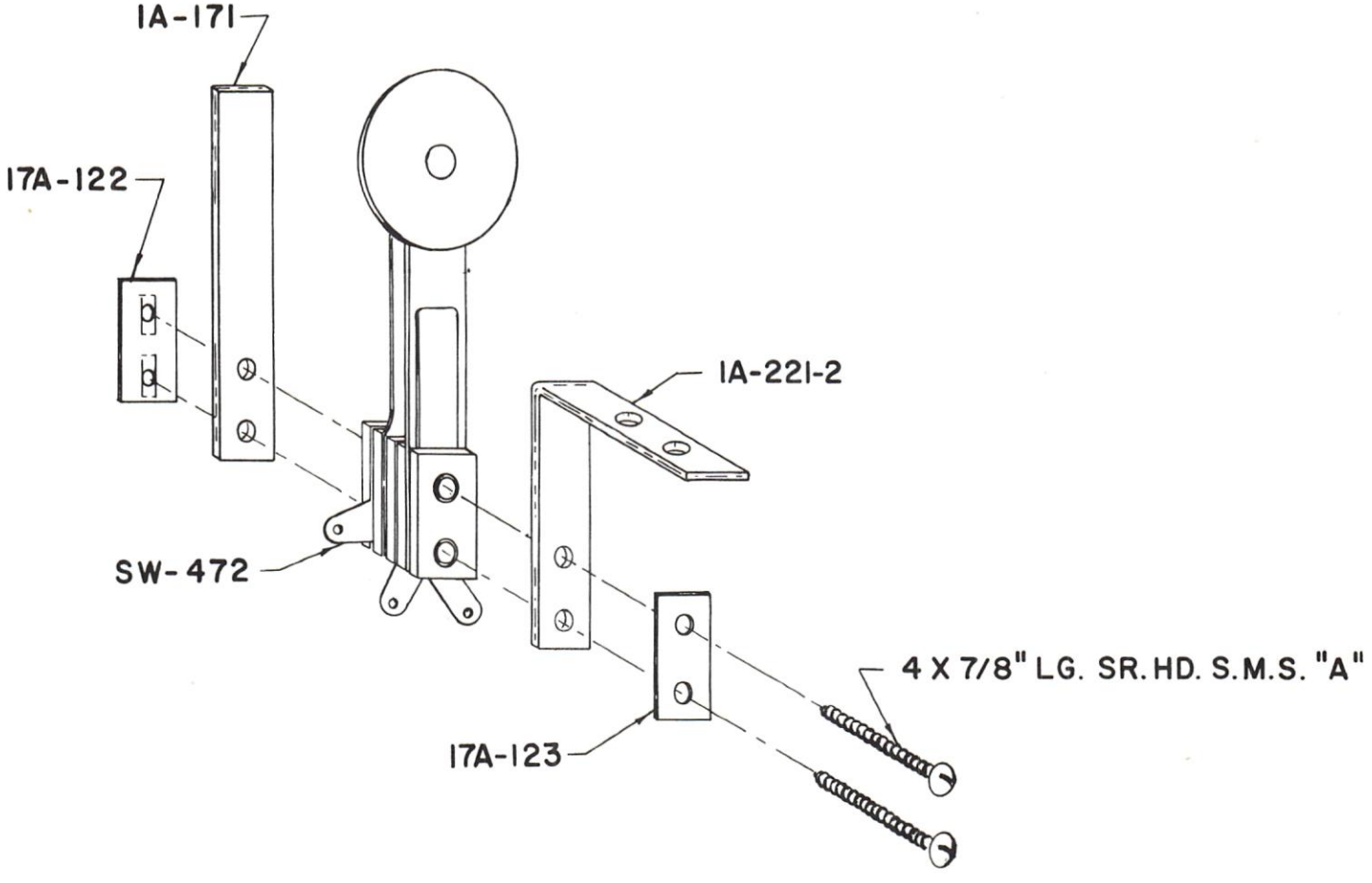


ROLL OVER BUTTON ASSEMBLY

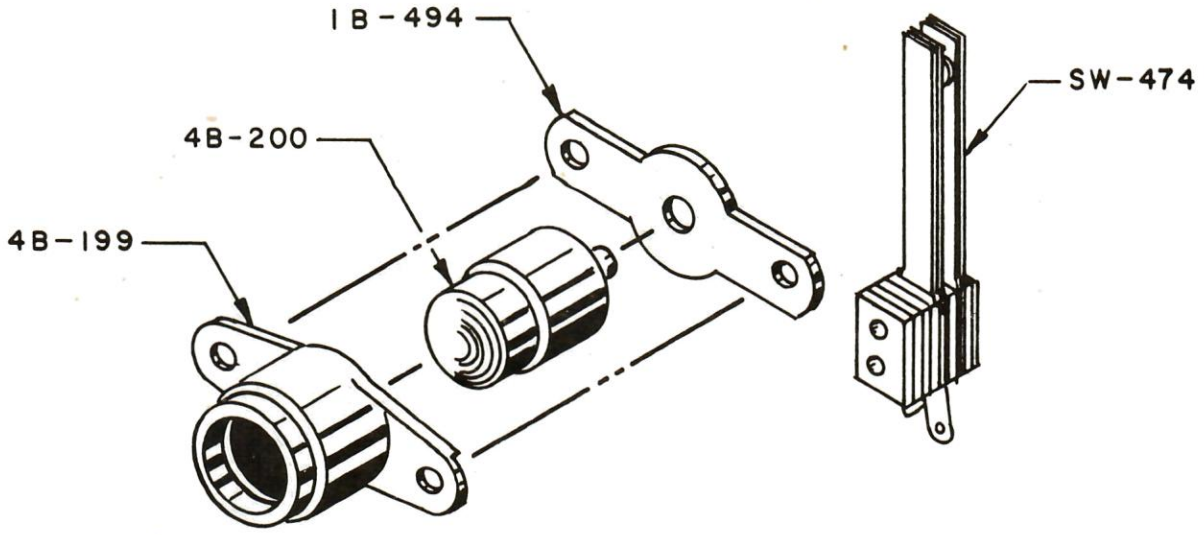


SPIN TARGET ASSEMBLY





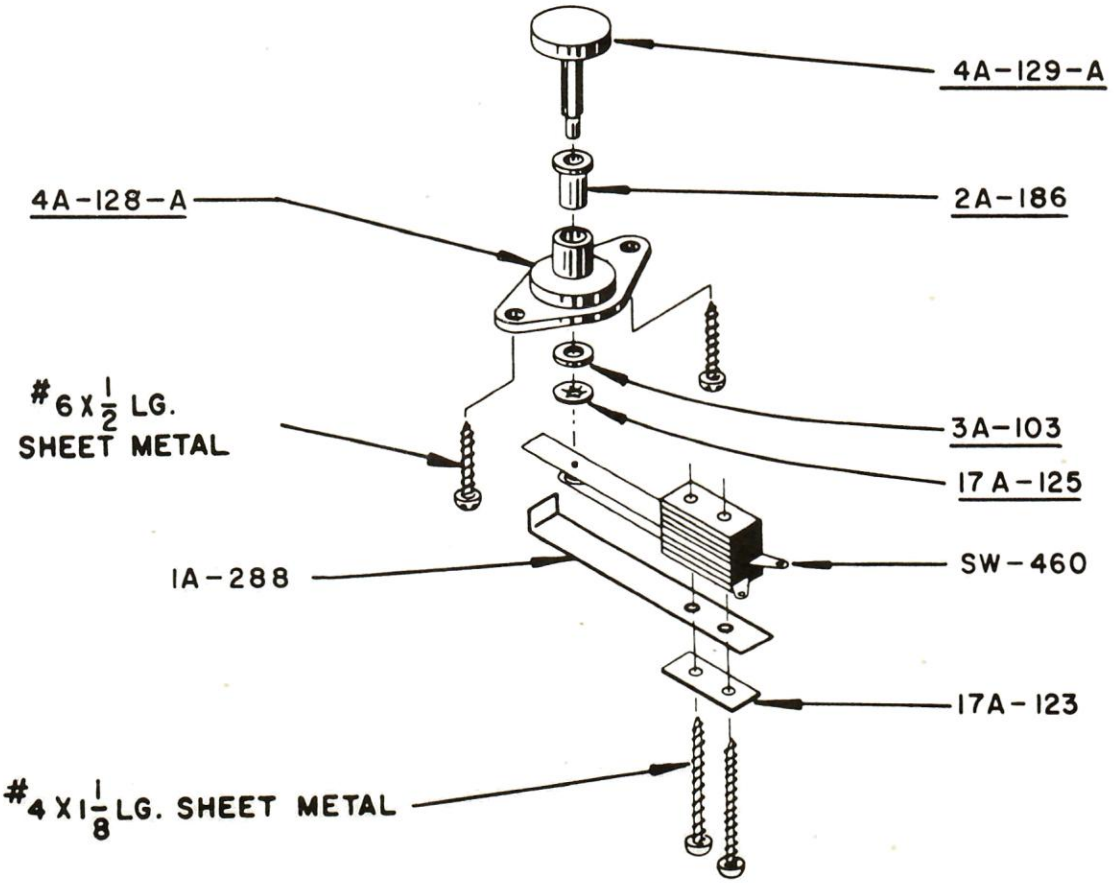
FLIPPER BUTTON ASSEMBLY



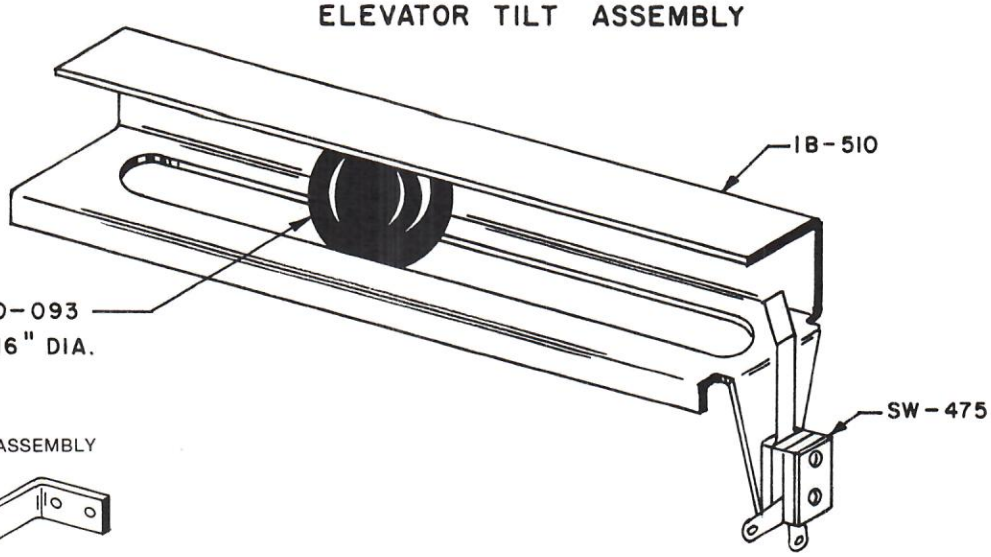
ROLL OVER BUTTON ASSEMBLY

A-181

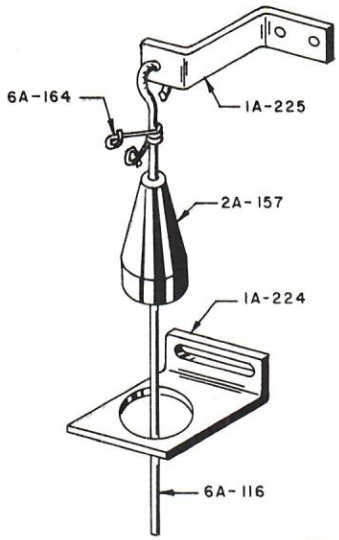
COMPLETE (INCLUDES 5 ITEMS UNDER LINED)

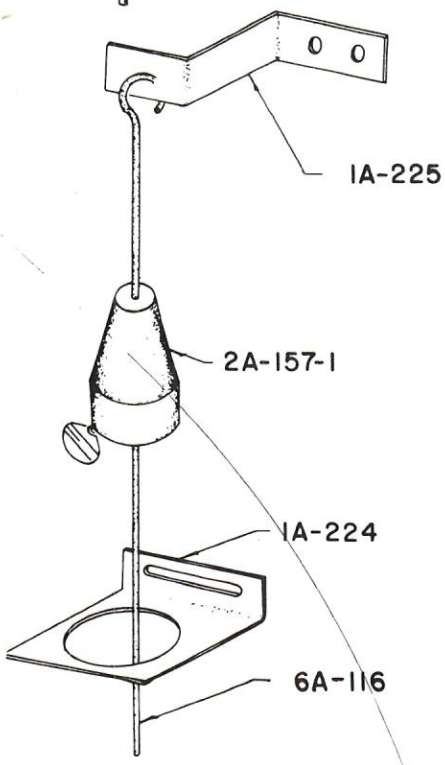


ELEVATOR TILT ASSEMBLY

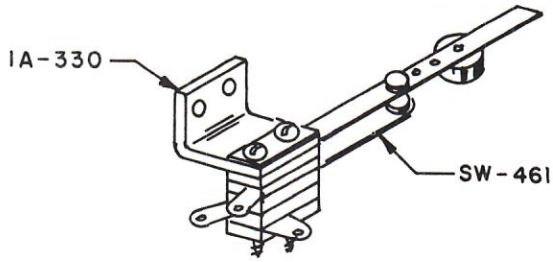


OLD TILT BOB ASSEMBLY

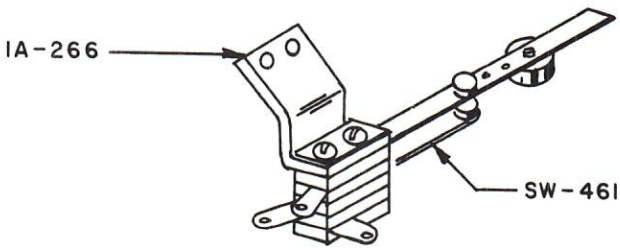




TILT SWITCH ASSEMBLY A-423

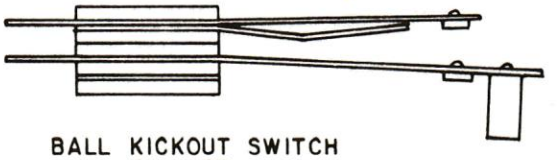


PLAYBOARD TILT SWITCH ASSEMBLY A-205-1



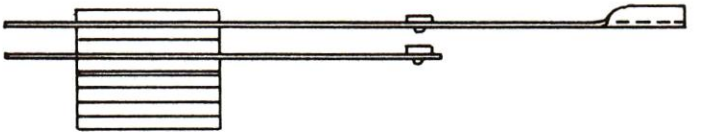
CONTACT SWITCH ASSEMBLIES

FLIPPER SWITCH
SW-294-BL
SW-294-BR

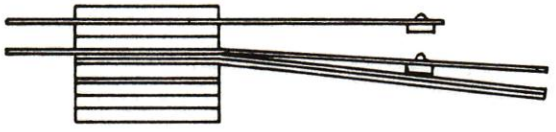


BALL KICKOUT SWITCH
SW-467

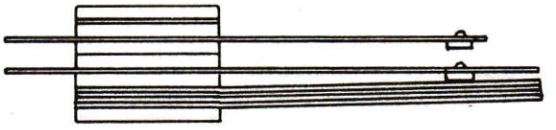
ROLL OVER WIRE FORM SWITCH
SW-458



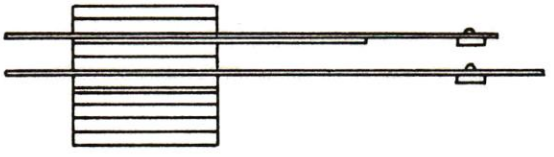
SPINNER SWITCH
SW-468



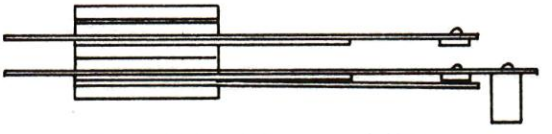
BALL EJECTOR SWITCH
SW-459



CREDIT BUTTON SWITCH
SW-469

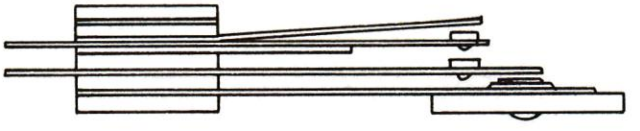


ROLL OVER BUTTON SWITCH
SW-460



DROP TARGET BANK SWITCH
SW-471

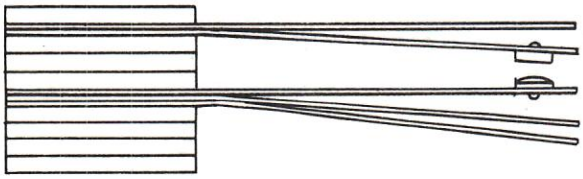
TILT SWITCH
SW-461



STAND-UP TARGET SWITCH
SW-472

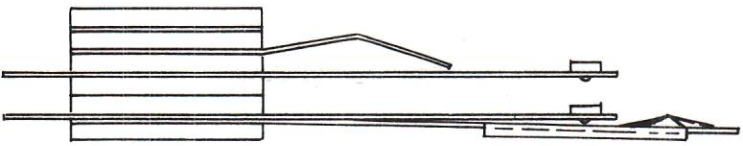
ACTION KICKER SWITCH
SW-462

DROP TARGET BANK SWITCH
SW-473

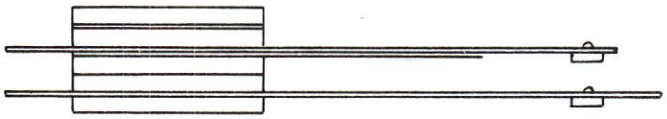


FLIPPER BUTTON SWITCH
SW-474

ELEVATOR TILT SWITCH
SW-475

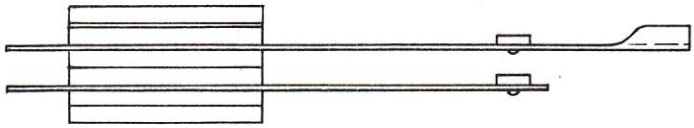


THUMPER BUMPER SWITCH
SW-476

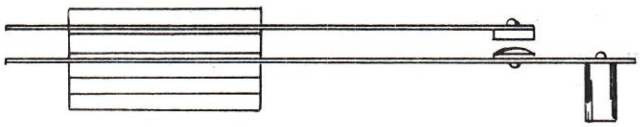


ROLL OVER BUTTON SWITCH
SW-477

ROLL OVER BUTTON SWITCH
SW-477-1

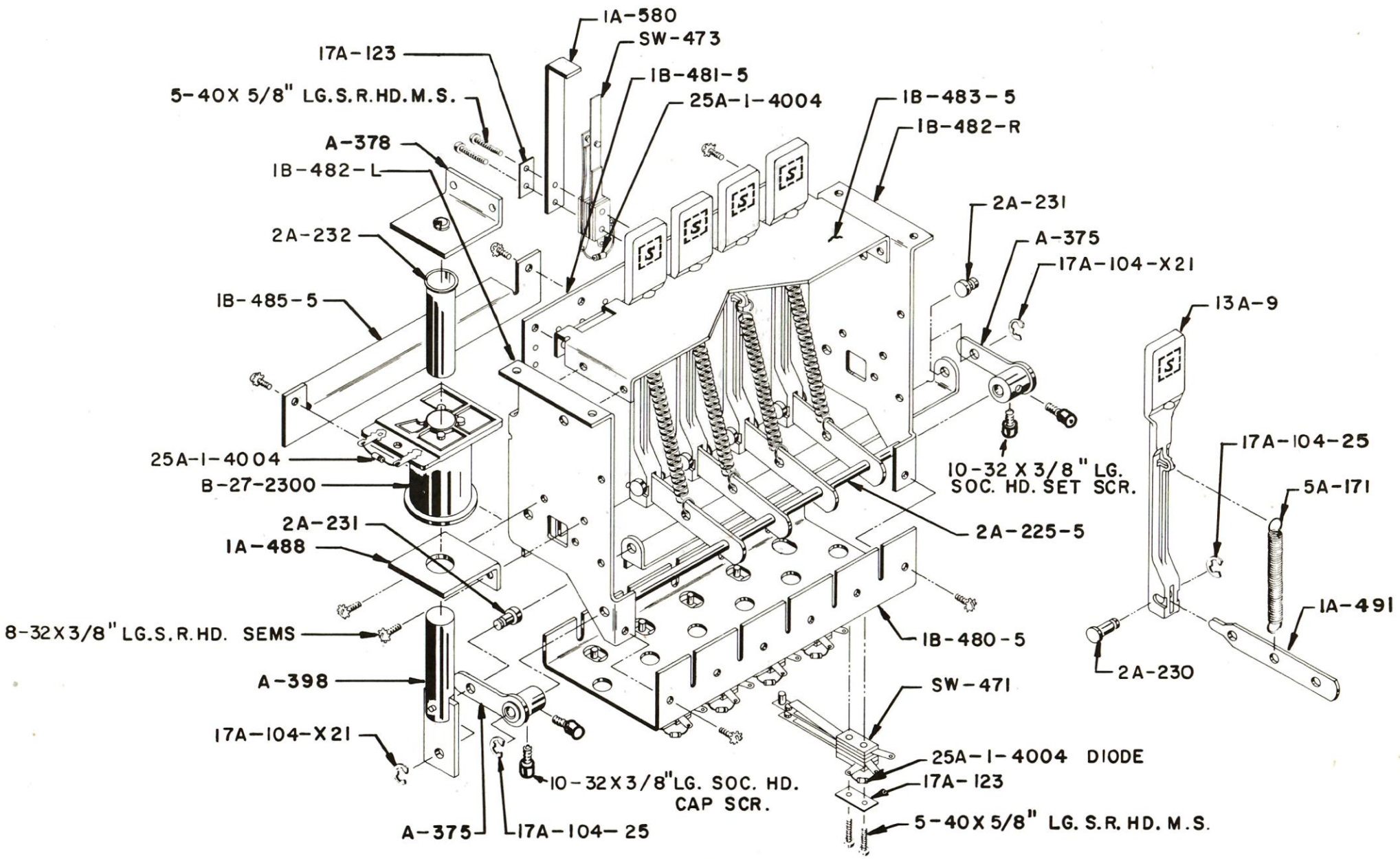


SPINNER SWITCH
SW-479

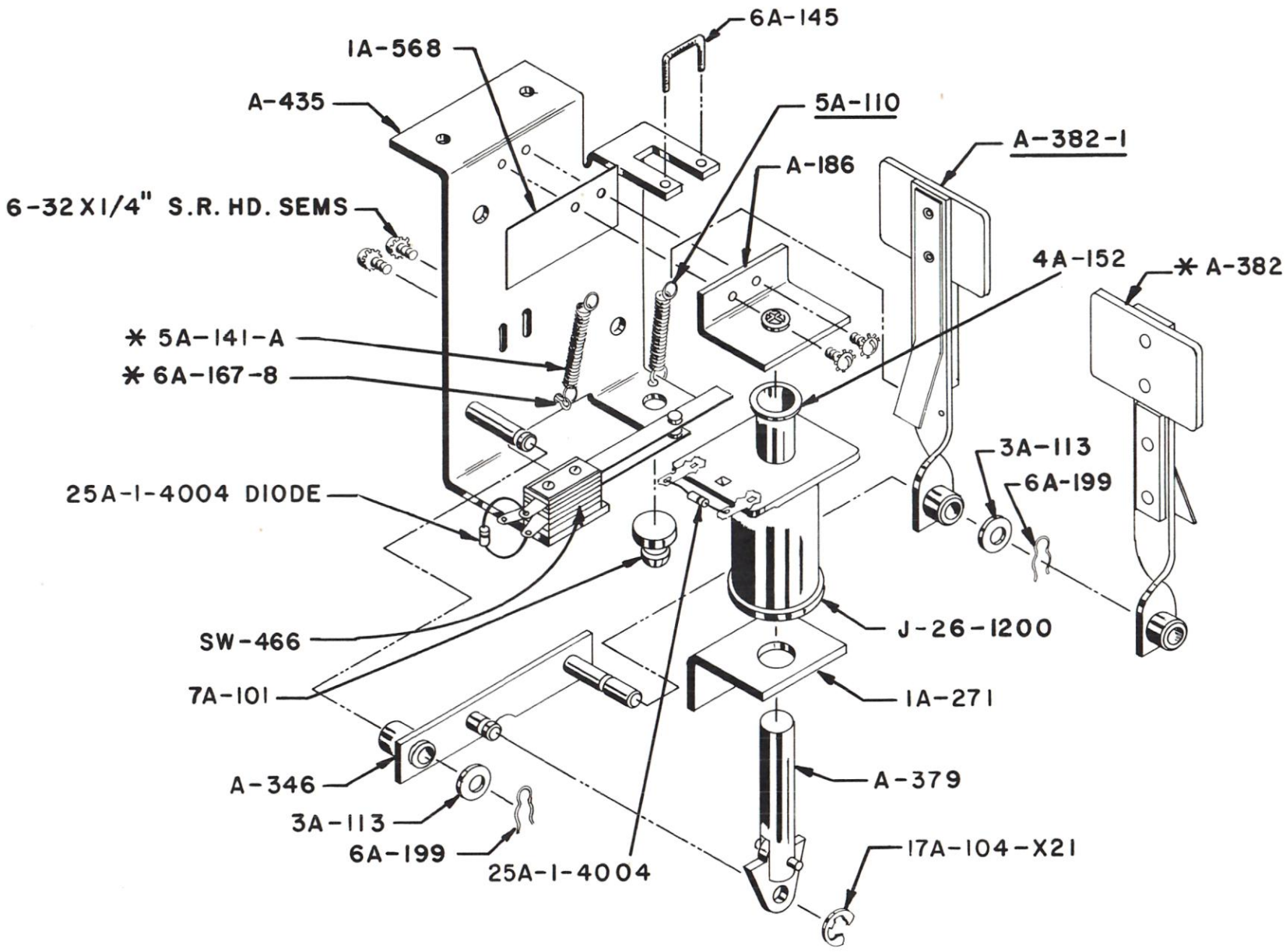


RIGHT FLIPPER (NUGENT)
SW-481

COMPLETE DROP TARGET ASSEMBLY D-393-5

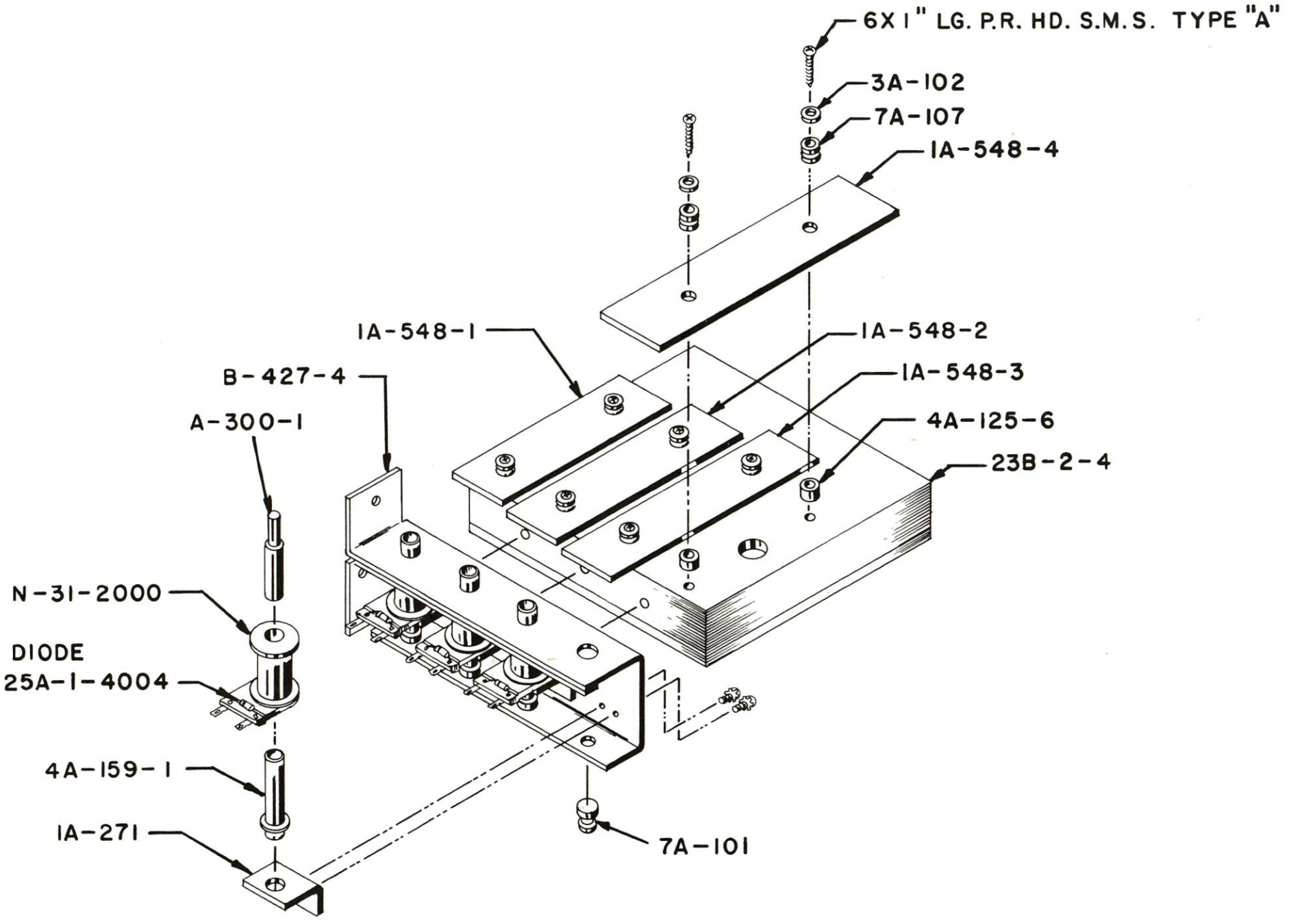


COMPLETE DROP TARGET ASSEMBLY C-387-2 & C-387-3

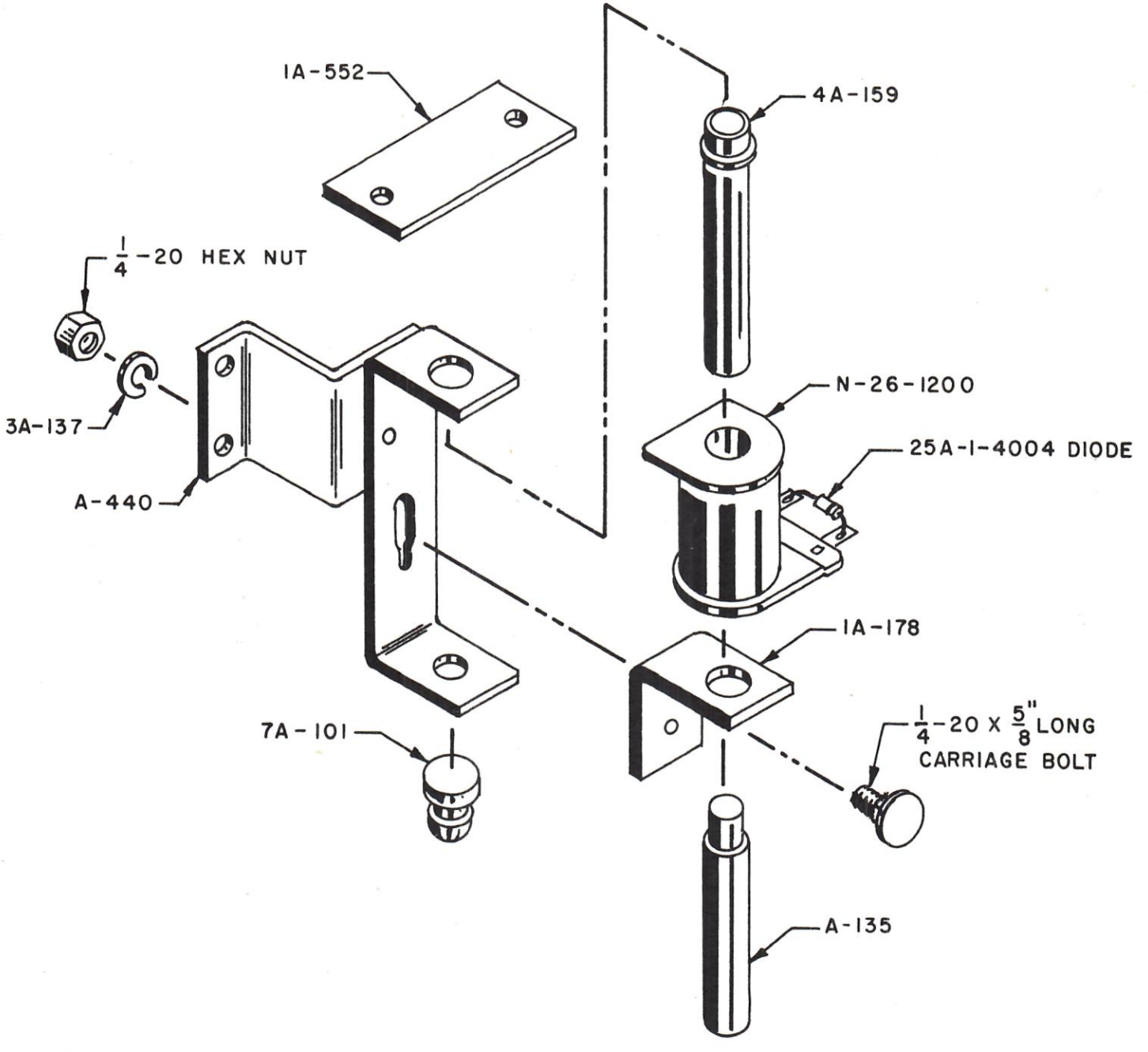


NOTE: * ITEMS USED ON C-387 ONLY
ITEMS UNDERLINED USED ON C-387-3 ONLY
ALL OTHER ITEMS ARE COMMON

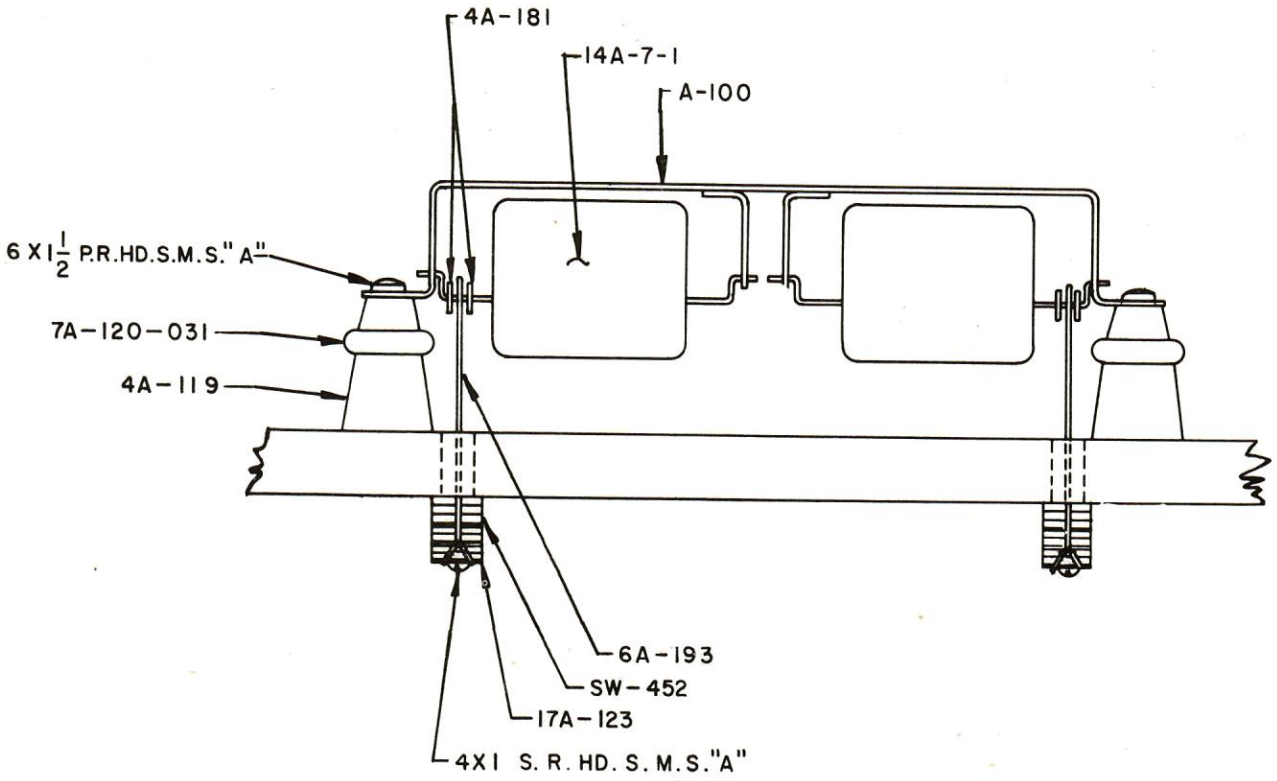
COMPLETE 4 TONE CHIME ASSEMBLY C-428-4



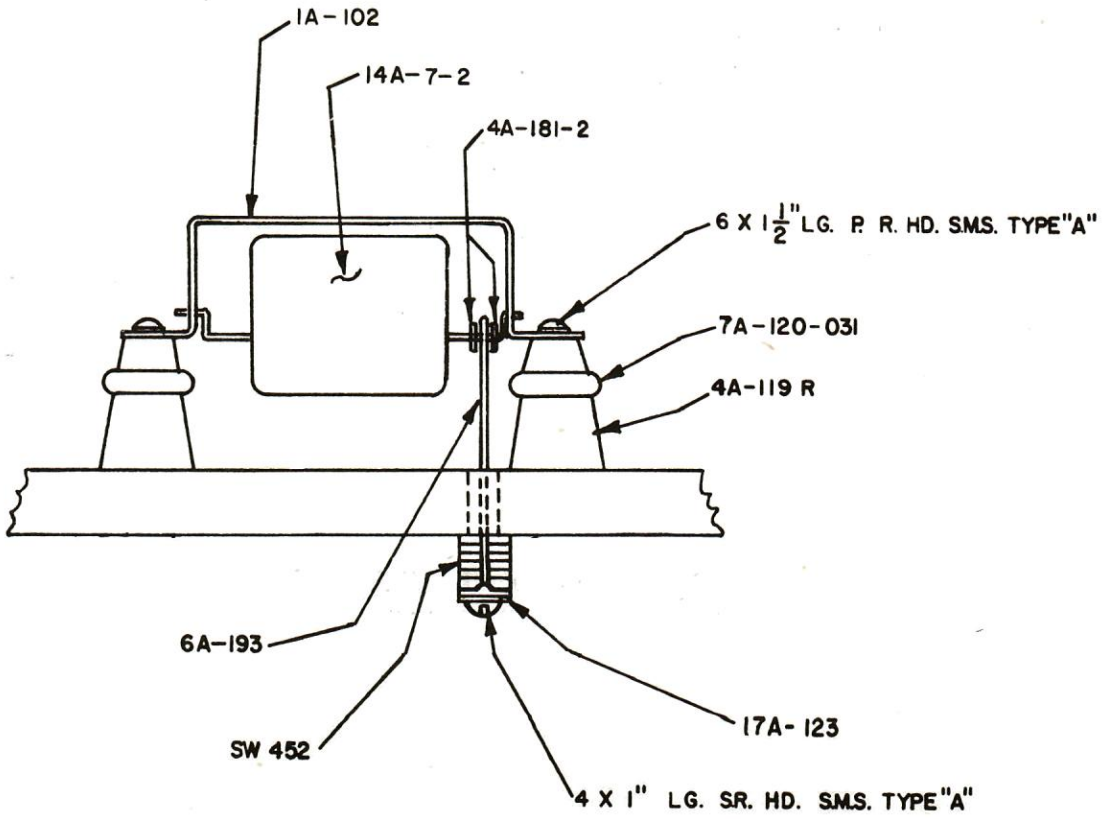
KNOCKER ASSEMBLY A-435



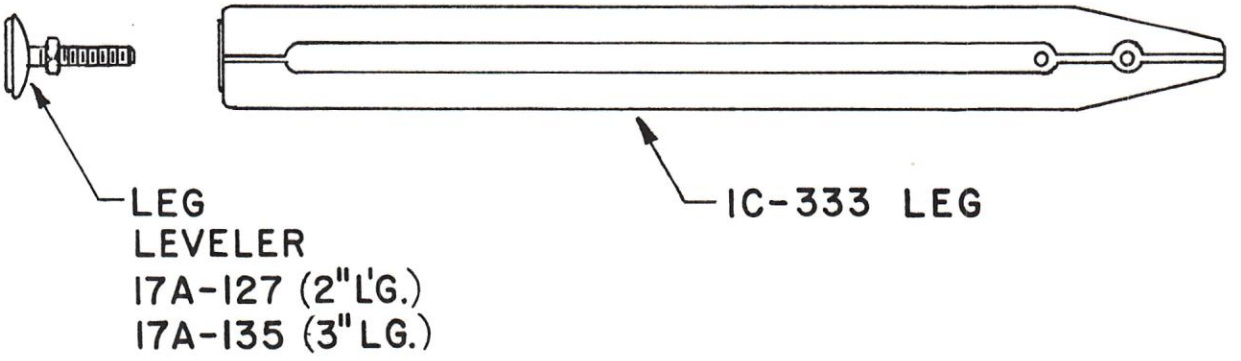
DOUBLE SPIN TARGET ASSEMBLY

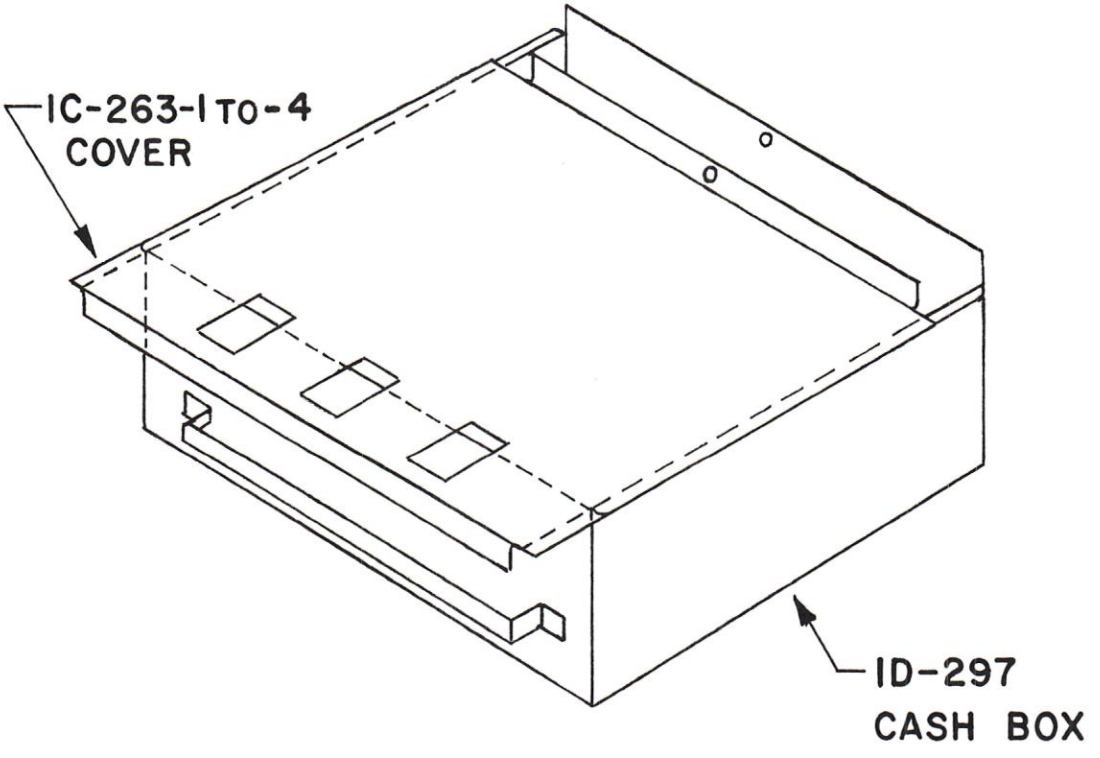


SPIN TARGET ASSEMBLY



LEG & LEVELER

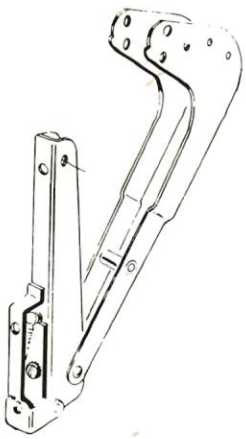




CASH BOX & COVER

SHUFFLES

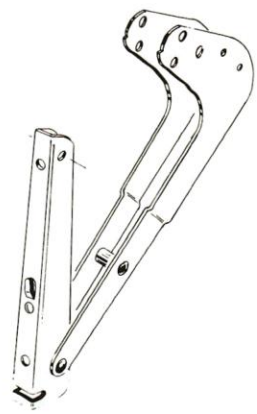
PIN UNIT ARM



COMPLETE
PIN UNIT LIFT ARM ASSEMBLY

PINS #1 THRU #10

B-485-C

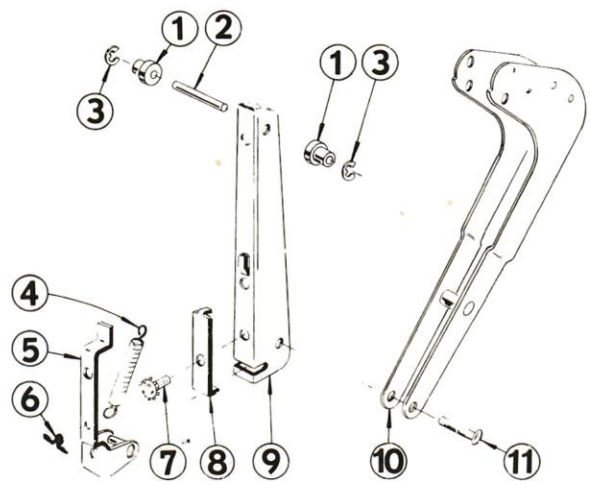


PIN UNIT LIFT ARM & HINGE ASSEMBLY

PINS #1 THRU #10

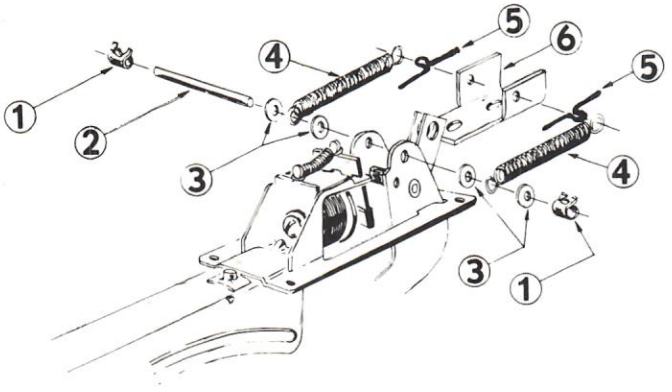
B-485

INDIVIDUAL BREAKDOWN

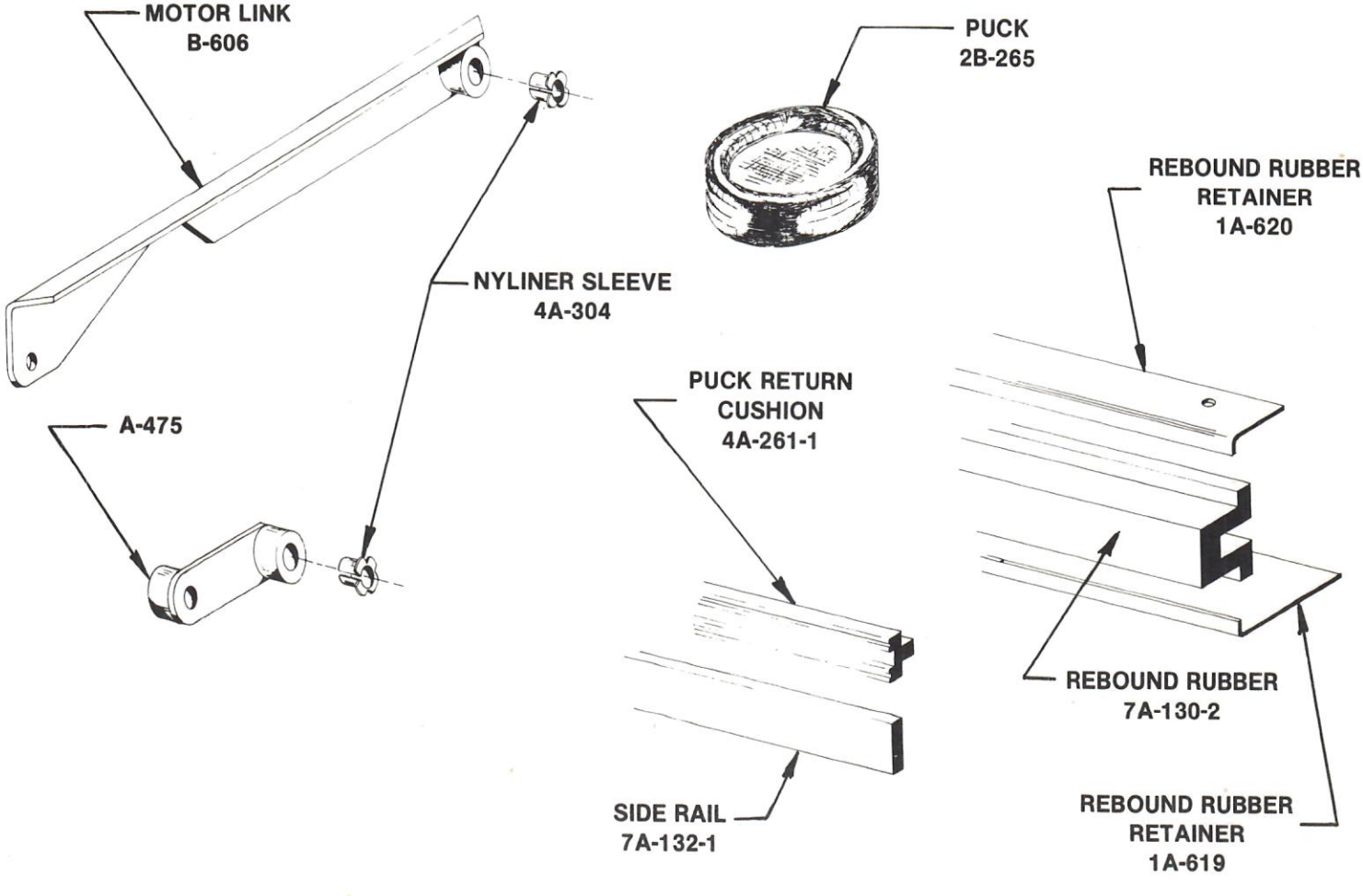


ITEM	PART NO.	DESCRIPTION
1	4A-151	NYLON ROLLER
2	2A-257	ROLLER PIN
3	17A-104-15	RETAINING RING
4	5A-130	SPRING
5	1A-609	PIN HINGE BRACKET
6	6A-166-6	1/16 DIA. × 3/8 LG. COTTER PIN
7		#6-32 × 1/4 LG. SEMS UNIT
8	1A-350	PIN RETAINER
9	A-479	PIN SWIVEL HINGE ASS'Y.
10	A-484	PIN LIFT ARM ASS'Y.
11	18A-123	BRASS RIVET

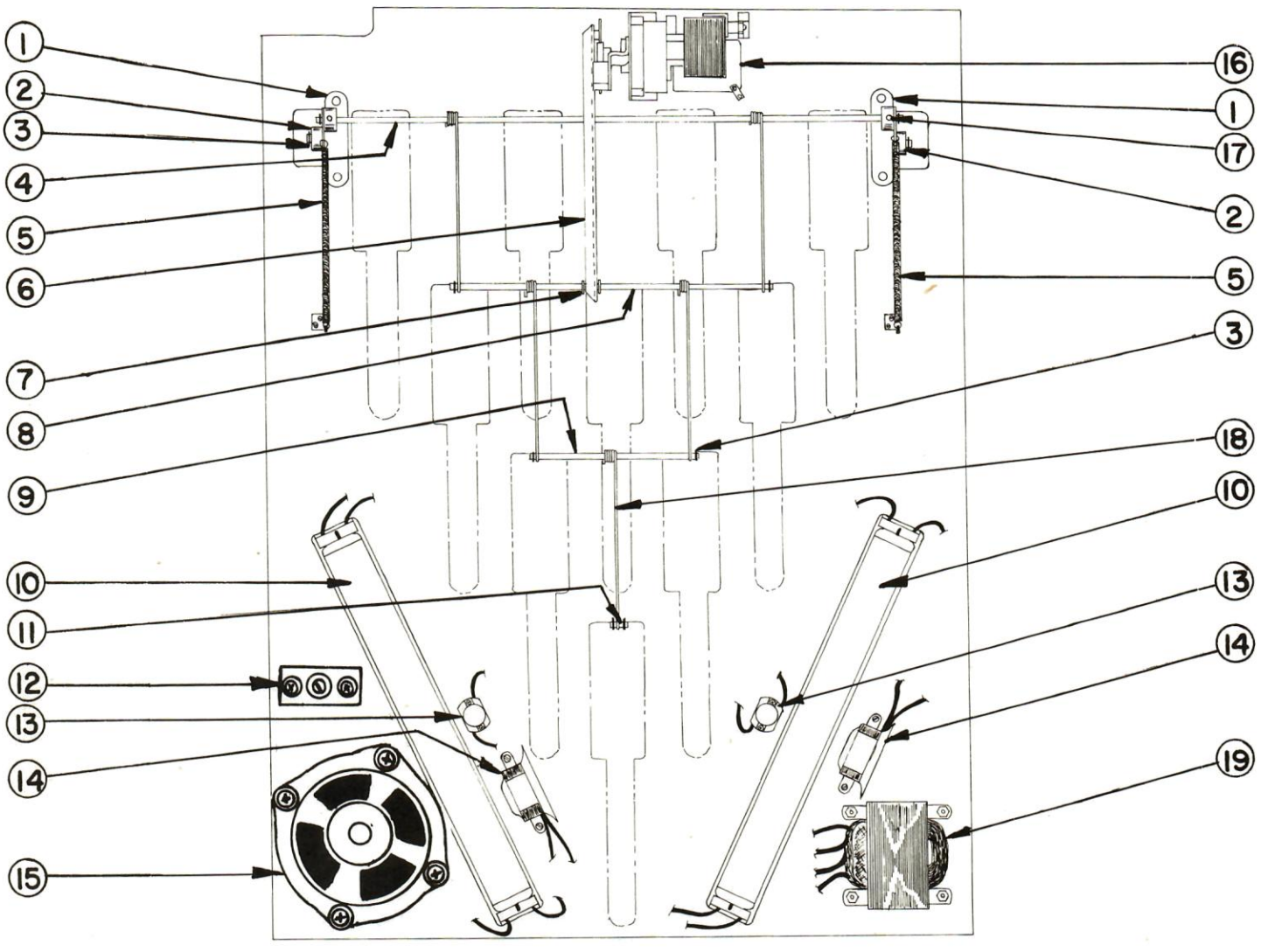
MISCELLANEOUS



ITEM	PART NO.	DESCRIPTION
1	17A-152	COMPRESSION RING
2	2A-306	SPRING RETAINER PIN
3	3A-108	WASHER
4	5A-125	SPRING
5	6A-167-8	COTTER PIN
6	1A-715	SPRING MTG. BRACKET

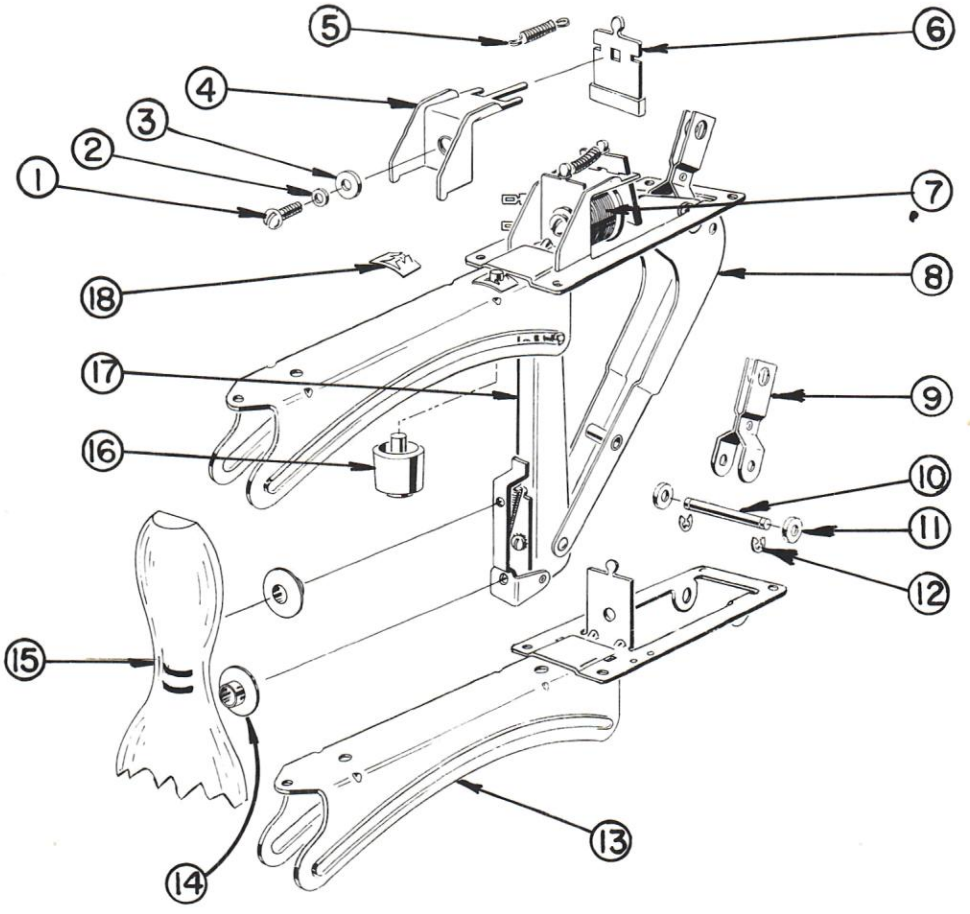


RESET BAR & LINK ASS'Y. — FLOURESCENT LIGHTS — SPEAKER & VOLUME CONTROL



ITEM	PART NO.	DESCRIPTION
1	A-476	STABILIZER BRKT. ASS'Y.
2	A-475	STABILIZER ARM ASS'Y.
3	17A-104-X31	RETAINING RING
4	2A-252	PIN RESET BAR (#7-8-9-10)
5	5A-155	SPRING
6	B-606	MOTOR LINK ASS'Y.
7	17A-153	RETAINING RING
8	2A-254	PIN RESET BAR (#4-5-6)
9	2A-255	PIN RESET BAR (#2 & 3)
10	8A-173	FLOURESCENT LAMP
11	2A-256	PIN RESET BAR (#1)
12	25A-16-2	POTENTIOMETER 25K LINEAR
13	8A-175	FLOURESCENT LAMP STARTER
14	8A-177	BALLAST
15	8A-172-1	SPEAKER
16	B-499	RESET MOTOR ASS'Y.
17		#8-32 × 5/16 LONG. SLOTTED HEX HD. SET SCREW
18	6A-165-1	RESET WIRE FORM
19	16B-5	RESET MOTOR TRANSFORMER

SLIDE ACTION PIN UNIT ASSEMBLY



ITEM	PART NO.	DESCRIPTION
	C-496	COMPLETE SLIDE ACTION PIN UNIT ASSEMBLY
1		#10-32 × 3/8" LG. R.H.M.S. (BRASS)
2	3A-136	SPLIT TYPE LOCKWASHER
3	3A-100	BRASS WASHER
4	A-478	FRAME AND EYELET SUB ASSEMBLY
5	5A-105	SPRING
6	A-477	ARMATURE AND SLEEVE ASSEMBLY
7	L-28-600	COIL
8	B-485	LIFE, SWIVEL HINGE BRACKET ASS'Y. (SEE OPPOSITE PAGE)
9	A-480	RESET BRACKET ASSEMBLY
10	2A-257	LIFT ARM HINGE PIN
11	3A-169	BRASS WASHER
12	17A-104-15	RETAINING RING
13	B-498	PIN FRAME ASS'Y.
14	18A-130	EYELET (USED AS REINFORCEMENT)
15	4B-247	PIN
16	4A-150	LIFT ARM STOP
17	B-485-C	COMPLETE LIFT ARM SWIVEL HINGE ASSEMBLY (SEE OPPOSITE PAGE)
18	17A-115	PUSH ON TINNERMAN UNIT