

# SERVICE MANUAL

## PROFESSIONAL

4 TRACK STEREOPHONIC

# 400

# 455



MODEL

# 400

# 4000D

MODEL

# 455

# 4550D

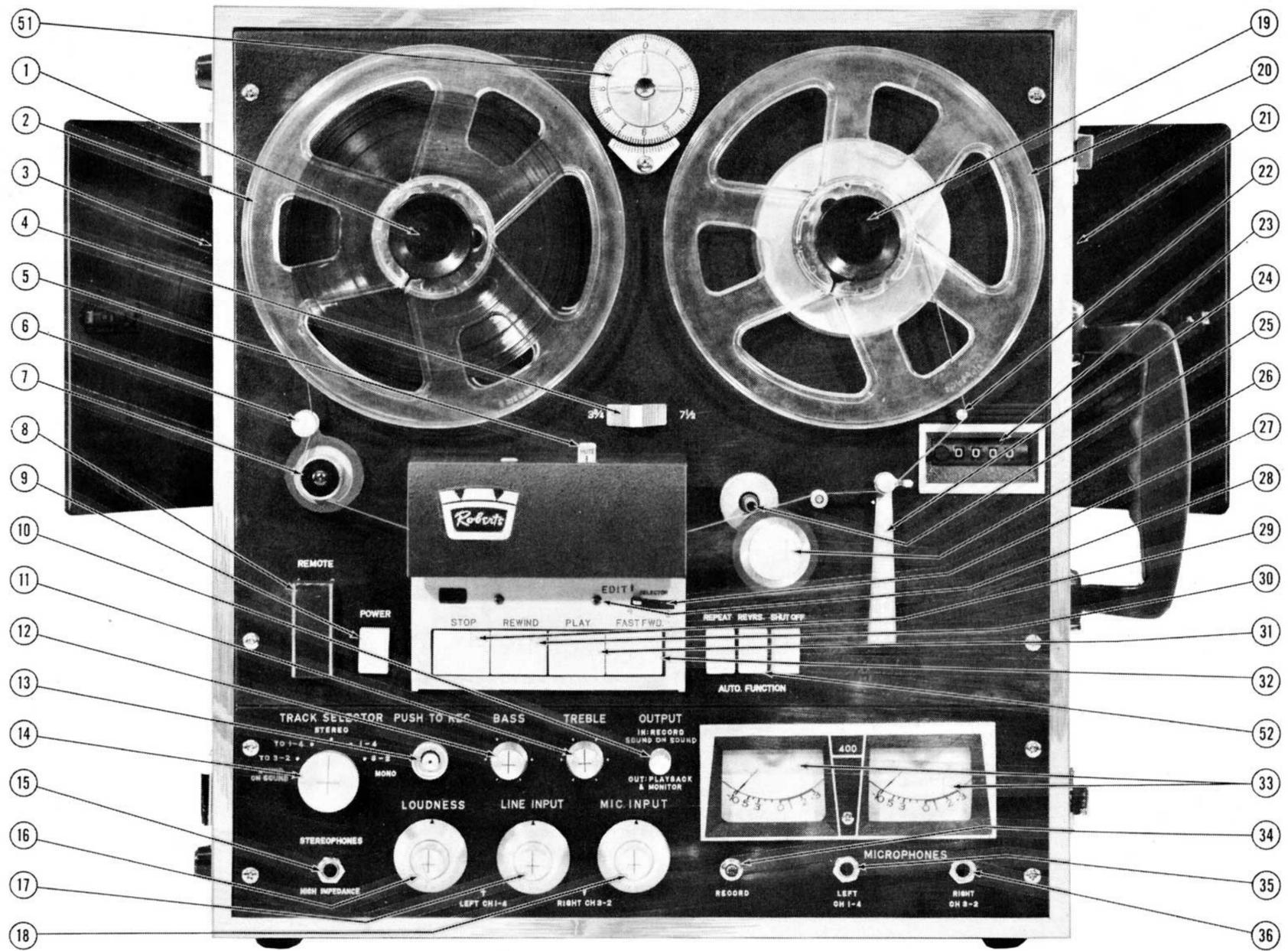


## ROBERTS ELECTRONICS

DIVISION OF RHEEM MANUFACTURING CO.

5922 BOWCROFT STREET,  
LOS ANGELES, CALIF., 90016

# OPERATING FEATURES 400

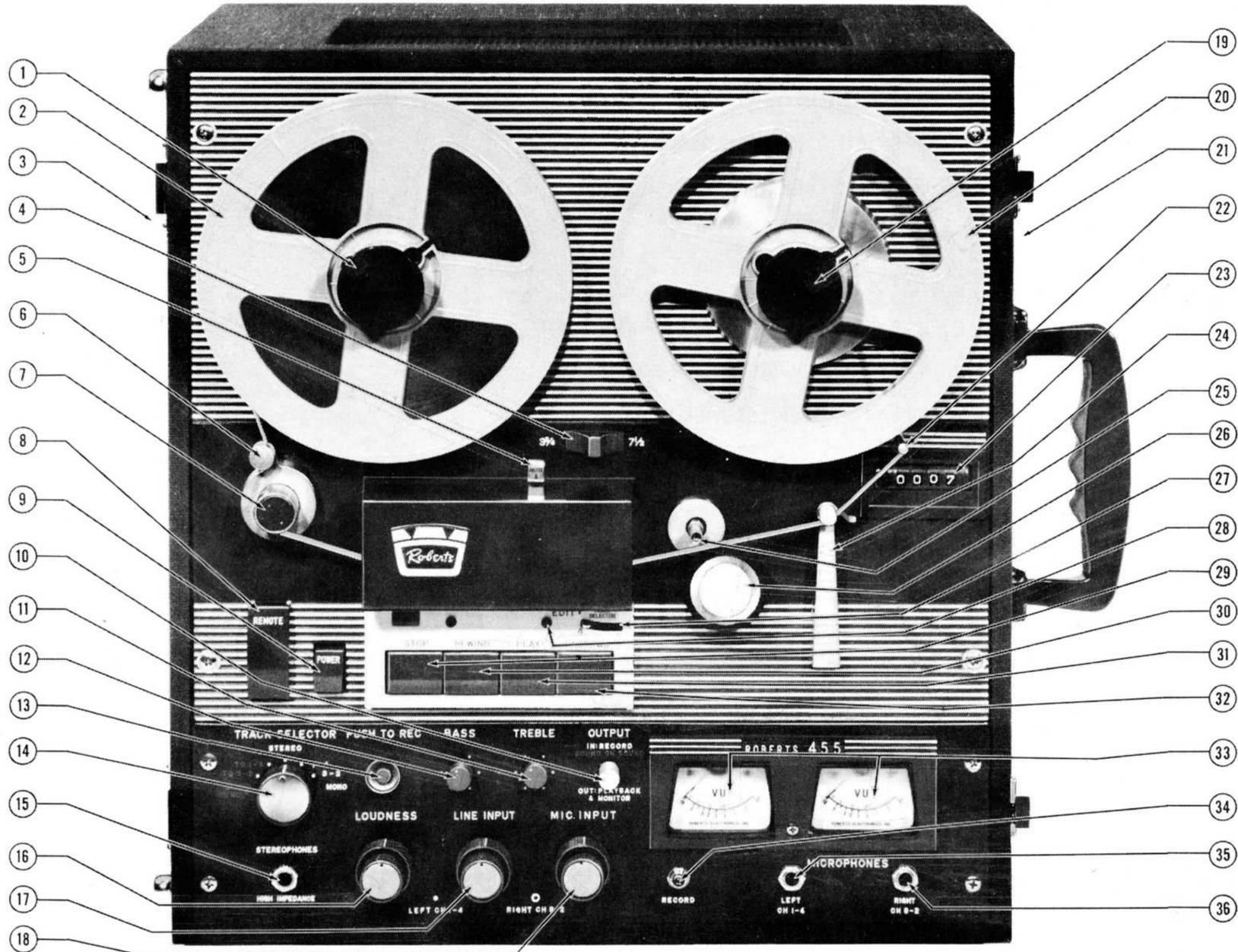


## OPERATIONAL FEATURES

(These Key Numbers apply to all instructions in this manual)

- |       |                                 |    |                                |
|-------|---------------------------------|----|--------------------------------|
| 1, 19 | Reel Holders                    | 21 | Right Speaker                  |
| 2     | Supply Reel                     | 22 | Tape Guide Post                |
| 3     | Left Speaker                    | 23 | Index Counter                  |
| 4     | Speed Change Switch             | 24 | Automatic Shutoff              |
| 5     | Mute Control                    | 25 | Drive Capstan                  |
| 6     | Tape Tension Roller             | 26 | Pinch Wheel                    |
| 7     | Tape Guide Roller               | 27 | Track Selector                 |
| 8     | Remote Control Jack             | 28 | Edit Guide                     |
| 9     | Power On-Off Switch             | 29 | Stop Switch                    |
| 10    | Monitor Control                 | 30 | Rewind Switch                  |
| 11    | Treble Tone Control             | 31 | Play Switch                    |
| 12    | Bass Tone Control               | 32 | Fast Forward Switch            |
| 13    | Record Button                   | 33 | VU Meters                      |
| 14    | Track Selector Switch           | 34 | Record Warning Light           |
| 15    | High Impedance Stereophone Jack | 35 | Left Channel Microphone Input  |
| 16    | Dual Loudness Control           | 36 | Right Channel Microphone Input |
| 17    | Dual Line Input Control         | 51 | Automatic Dial                 |
| 18    | Dual Microphone Input Control   | 52 | Automatic Function Button      |
| 20    | Takeup Reel                     |    |                                |

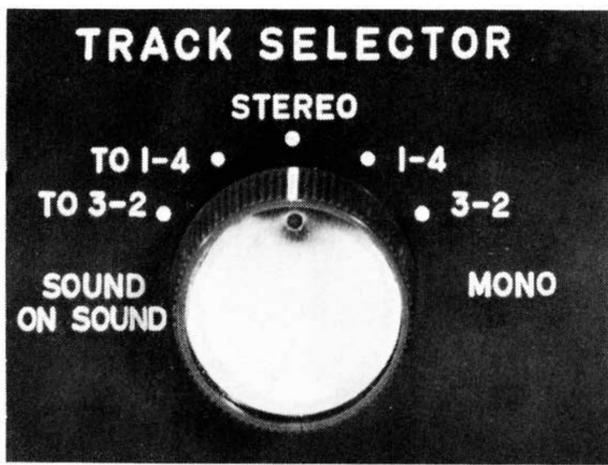
# OPERATING FEATURES 455



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| 18    | Dual Microphone Input Control   |    |                                |



**TRACK SELECTOR SWITCH**—serves an important function in every operation of your Roberts; stereo record/play, monaural record/play, and sound-on-sound transfer. For stereo record or play it is turned to the "stereo" position. For monaural record/play it is turned to the desired track (1-4 or 3-2) as shown by the white figures. For sound-on-sound recording or whenever it is desired to transfer a recording from one track to another, it is turned to the selected track number in the red figures. The white designations are used for playback of sound-on-sound recording.



**TWO-FOUR TRACK SELECTOR** — The track selector switch is used to adjust and realign your playback heads to accommodate either ¼ track stereophonic or monaural pre-recorded tapes, (4 position) or 2 track (½ track) stereophonic or monaural pre-recorded tapes, (2 position).

Be sure that the track selector position switch is in the "4" position for all record functions and for all playback functions of ¼-track tapes.

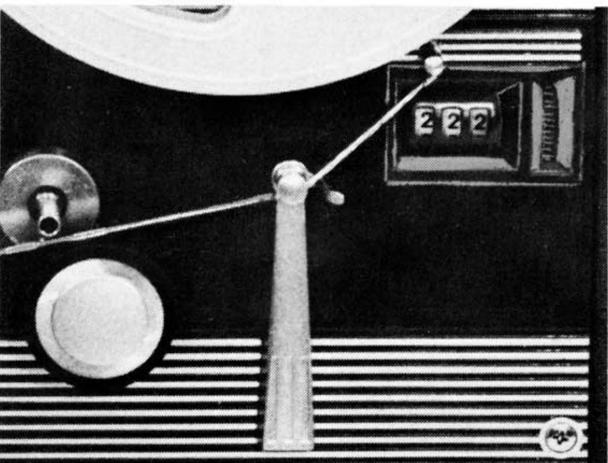
Place in the "2" position for all ½-track (or 2-track stereophonic monaural playback tapes).



**MUTE CONTROL** — is used to push the tape from the erase, record and play heads during fast forward or rewind. This eliminates wear which could result from super fast motion of the tape across the heads.

**EDIT GUIDE** — The edit guide indicates the exact position of the play head. All cutting and editing is done from this point to insure accurate location for splicing.

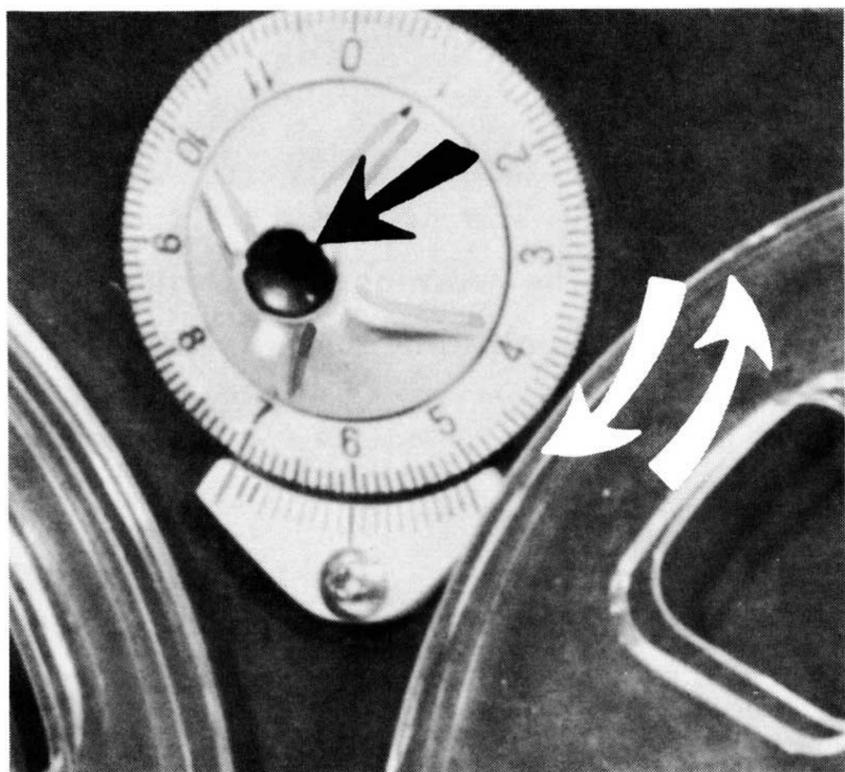
**REMOTE JACK** — Located on the front panel, the "REMOTE" jack is provided as a convenient method for attaching the Remote Control. Merely raise the cover and insert the plug end of the remote control cord. All connections are thereby automatically made.



**INDEX COUNTER** — This counter provides reference numbers for locating individual selections on the tape. It is always advisable to turn the counter to the zero position before starting to record. Then all, or a portion of the selections can be keyed by number position on an index sheet.

**AUTOMATIC SHUT-OFF** — The Automatic Shut-Off lever stops reel motion when the end of the tape is reached. The loss of tape tension causes the lever to drop and release the pressure of the pinch wheel against the drive capstan. It does not turn off the power.

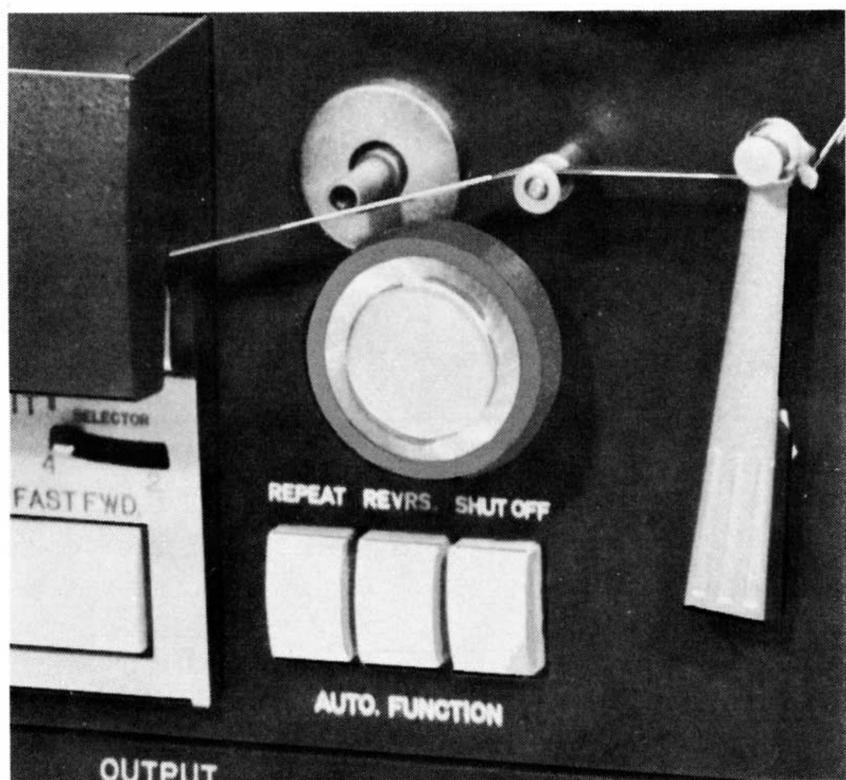
# PUSH-BUTTON CONTROL OF SOLENOID-OPERATED 'REVERSITILE' AUTOMATIC FUNCTION-400



**AUTO DIAL** consists of three parts: The Stationary Marker, the red line of which is the forward starting point for all automatic operations. The Rotating Pointer, the red arrow of which determines the stop and reverse positions. The Moving Dial, the red line of which rotates during operation between the stationary-red-line-forward-starting-point and the preset position of the red arrow on the Rotating Pointer.

**CENTER CHROME BUTTON** will immediately activate the "Repeat" or "Reverse" action, depending upon which button has been depressed, without waiting for the moving dial, red line, to reach the rotating pointer.

**EXAMPLE:** Set the red line of the Moving Dial directly opposite the red line of the Stationary Marker. Move the red arrow of the Rotating Pointer to any position around the dial. Press the Auto Control Button marked "Reverse", then press the "Play" Control Button. While the tape is playing in the forward direction, the red line of the moving dial will move until it reaches the red arrow of the Pointer. The tape will then stop and begin playing in reverse until the red line of the moving dial is back to the red line of the Stationary Marker where, once again, the tape will stop and begin playing forward. This playing forward and playing in reverse will continue indefinitely until manually stopped. (FOR MORE INFORMATION ON AUTO OPERATIONS, SEE NEXT SECTIONS.)



**AUTO FUNCTION CONTROLS (REPEAT REVERSE SHUT-OFF)** — The "Repeat" Button causes the tape to play forward, stop, fast rewind and play again, repeating the forward play over and over until manually stopped. The stop/rewind position is determined by the setting of the Auto Dial.

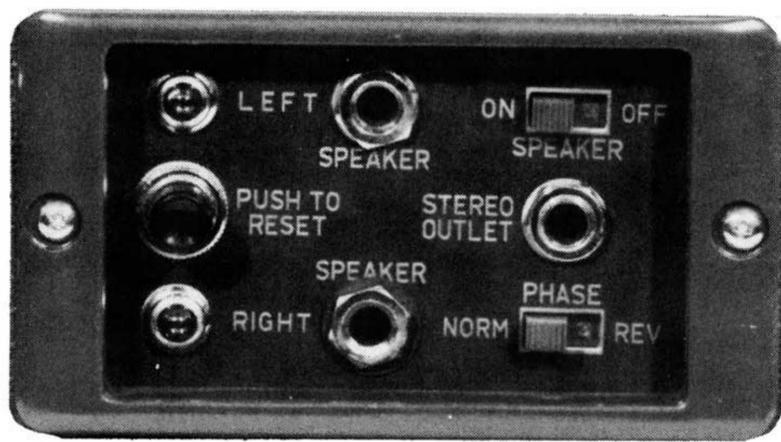
**THE REVERSE BUTTON** causes the tape to play forward, stop, play in reverse, stop, play forward, etc., until manually stopped. The stop/reverse functions are controlled by the settings of the Auto Dial.

**THE SHUT-OFF BUTTON** cancels the second repeat or reverse. Thus, if the Shut-Off Button is pressed at the same time as either the Repeat or

Reverse, the tape will play forward, stop, and either play in reverse or rewind until the tape has run out causing the Auto Stop Lever to fall, shutting off the unit.

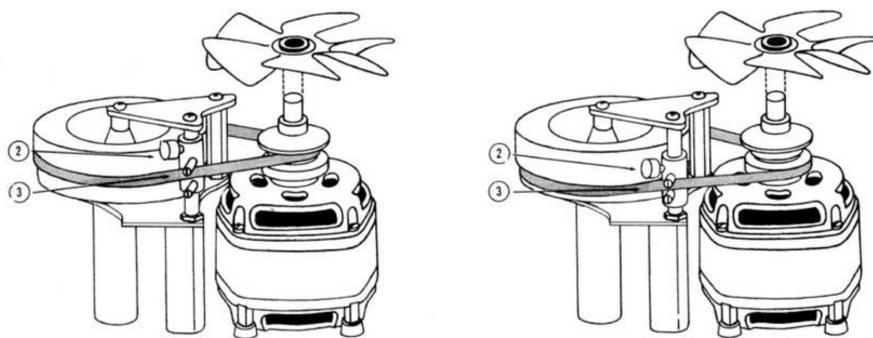
**NOTE:** When playing forward, the recorder is playing tracks #1 and #3. When playing in reverse, it is playing tracks #4 and #2. By using the reverse, it is not necessary to turn a reel of stereo tape over to hear all four tracks.

## SAFETY CIRCUIT:



The Amplifier is equipped with a Safety Circuit, which is designed to protect the Power Transistors from an electric surge in the A.C. line or from excessive ambient temperature. In the case of an abnormal occurrence mentioned above, the Safety Circuit will automatically disconnect the Power Amplifier from the speaker systems. The indication will be no sound or a high cracking sound. The warning Lamp will come on. In this case, reduce the volume and push the Reset Button.

## 50-60 CYCLE CONVERSION



ROBERTS Tape Recorders travel all over the world. In many places outside of the United States, the standard frequency of electric current is 50 cycles, in contrast to the American standard of 60 cycles, for which your Roberts Recorder is designed.

As it is presumed that you will eventually bring your Roberts Recorder back into a 60 cycle region, and also because you will undoubtedly be playing standard 60 cycle pre-recorded tapes on your recorder, Roberts has provided for a simple conversion so that the tapes which you record in the 50 cycle areas will match in tape speed with your 60 cycle-recorded tapes.

REMEMBER, when you return to a 60 cycle area, your Roberts Recorder must be changed back to its original arrangement.

1. Remove rear panel to expose the main drive motor and flywheel.
2. Loosen screw (2) on belt guide. (Finger pressure is sufficient.)
3. Move belt (3) from outer surfaces of motor pulley and flywheel pulley to inner surfaces as shown in figures a and b above.
4. Adjust belt guide to new position and tighten screw.
5. Replace rear panel.

## VOLTAGE CHART

### Models 400 & 455

(use VTVM only.) (All voltages positive in relation to ground)

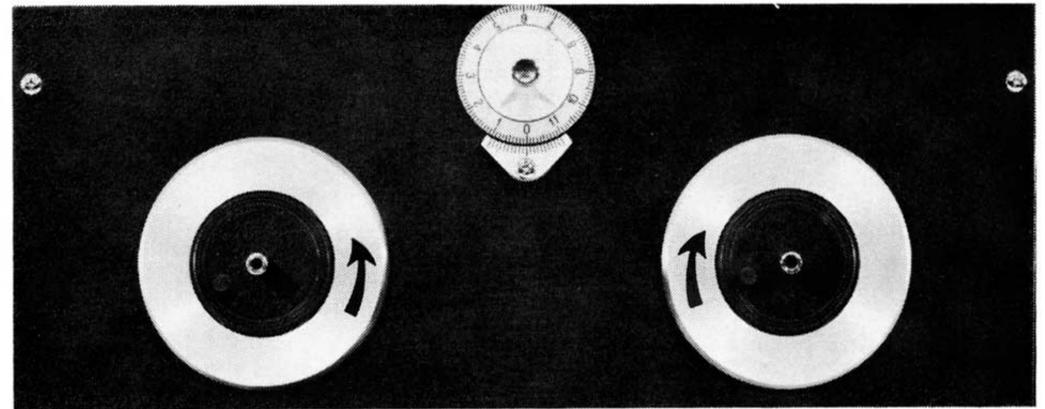
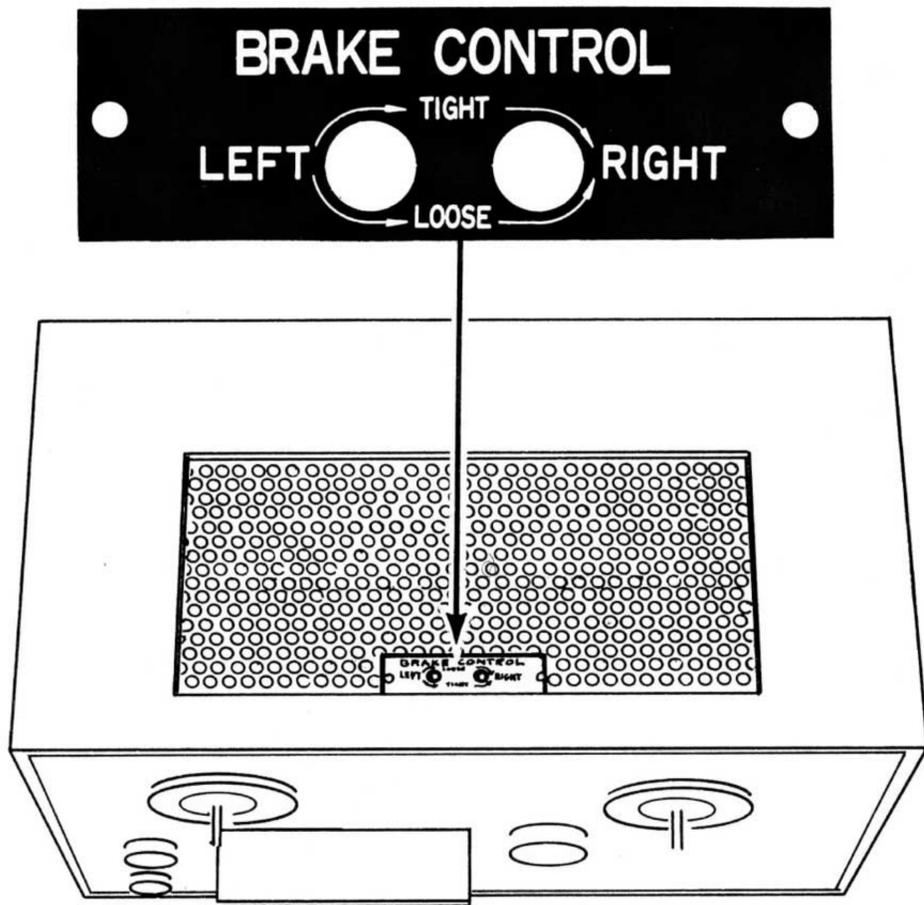
PREAMP	PIN #	V1	V2	V3	V4	V5	V6
PLAY.....	#6	105v	#6 100v	#6 130v	#6 70v	#6 180v	#6 0v
RECORD.....		120v	110v	140v	70v	200v	300v
PLAY.....	#1	105v	#1 90v	#1 250v	#1 0v	#1 180v	#1 0v
RECORD.....		120v	90v	270v	160v	200v	300v
PLAY.....	#8	1.0v	#8 1.0v	#8 2.5v	#8 2.0v	#8 100v	#8 0v
RECORD.....		1.0v	1.0v	2.5v	2.0v	105v	*20v
							*Only in mono and sound-on-sound.
PLAY.....	#3	1.0v	#3 0v	#3 130v	#3 0v	#3 100v	#3 0v
RECORD.....		1.0v	0v	140v	55v	105v	*20v

POWER AMPLIFIER Pins #1 & #2 of Sc (socket) #1 -30 vdc

POWER SUPPLY: Pin #3 of SC #7 350 vdc  
Pin #4 of PG #8 35 vdc  
Large Pin Opening of SC #3 -30vdc

MOTORS: Take-Up Motor in Play, 45 vac . . . . . in Fast Forward, 100 vac  
Supply Motor in Play, 30 vac . . . . . in Rewind, 100 vac

# EXPLANATION OF BRAKE ADJUSTMENT



Depress the POWER BUTTON to shut off the unit.

Remove recording tape and take-up reel from the unit.

To increase brake tension, rotate both the right and left BRAKE ADJUSTMENT SCREWS clockwise, using a screw driver. To release brake, rotate the screws counter clockwise.

Turn the right and left reel spindles simultaneously by hand and finally set the adjustment screws to where brake tension of both sides of the reel shafts are well balanced or seems to be equal.

## TAPE SPEED CHART

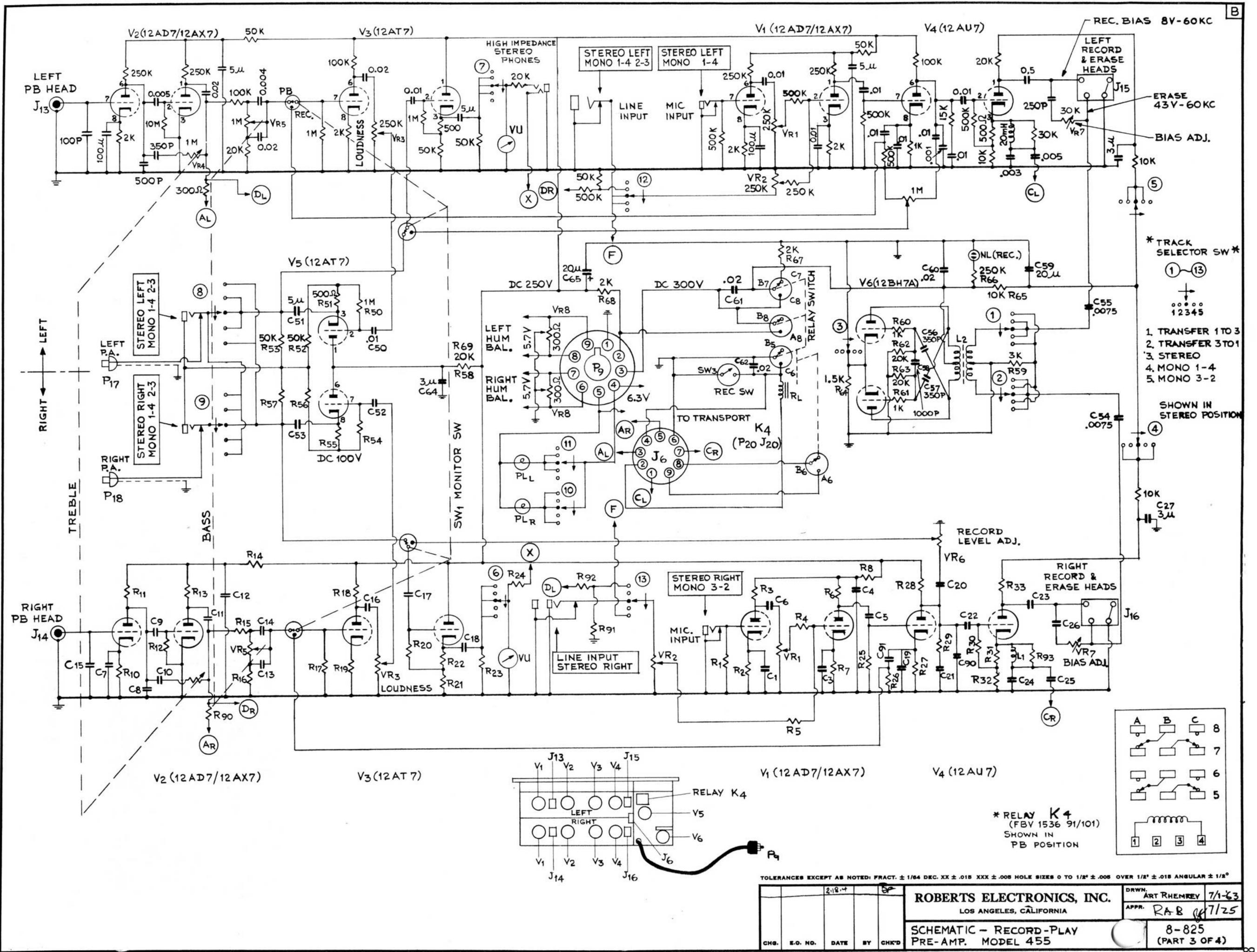
TAPE LENGTH	SINGLE TRACK		DUAL TRACK		4 MONAURAL TRACKS (1/4 TRACK)			
	3 3/4 I.P.S.	7 1/2 I.P.S.	3 3/4 I.P.S.	7 1/2 I.P.S.	3 3/4 I.P.S.	7 1/2 I.P.S.	3 3/4 I.P.S.	7 1/2 I.P.S.
225 ft.	11 1/4 min.	5 5/8 min.	2 1/2 min.	11 1/4 min.	45 min.	22 1/2 min.		
600 ft.	30 min.	15 min.	1 hr.	30 min.	2 hrs.	1 hr.		
1200 ft.	1 hr.	30 min.	2 hrs.	1 hr.	4 hrs.	2 hrs.		
1800 ft.	1 hr. 30 min.	45 min.	3 hrs.	1 hr. 30 min.	6 hrs.	3 hrs.		
2400 ft.	2 hrs.	1 hr.	4 hrs.	2 hrs.	8 hrs.	4 hrs.		

## HEAD DATA CHART

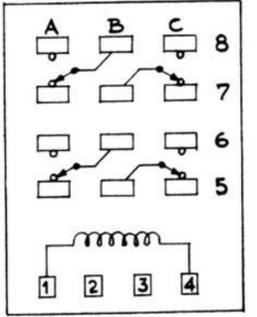
Head	Impedance	D. C. Res.	Volts A.C.	Current
Erase Head	300 ohm @ 60 KC	2.5 ohm	115	100 ma
Record Head	3 K ohm @ 60 KC	10 ohm	12	3.6 ma
Play Head	3 K ohm @ 1 KC	300 ohm	—	—

## MOTOR DATA CHART

Motor	Wow & Flutter @ 7 1/2 - 3 3/4	Type	Speed
Capstan Motor (forward)	0.08% 0.14%	Hysteresis Synchronous	3 3/4 - 7 1/2 I.P.S. (15 I.P.S. optional)
Capstan Motor (reverse)	0.085% 0.30%	Hysteresis Synchronous	3 3/4 - 7 1/2 I.P.S. (15 I.P.S. optional)
Rewind Motor	1800-1900 RPM @ 60 cycle	High Torque 4-Pole Induction	1200' in 36 secs.
Forward Motor	1800-1900 RPM @ 60 cycle	High Torque 4-Pole Induction	1200' in 36 secs.



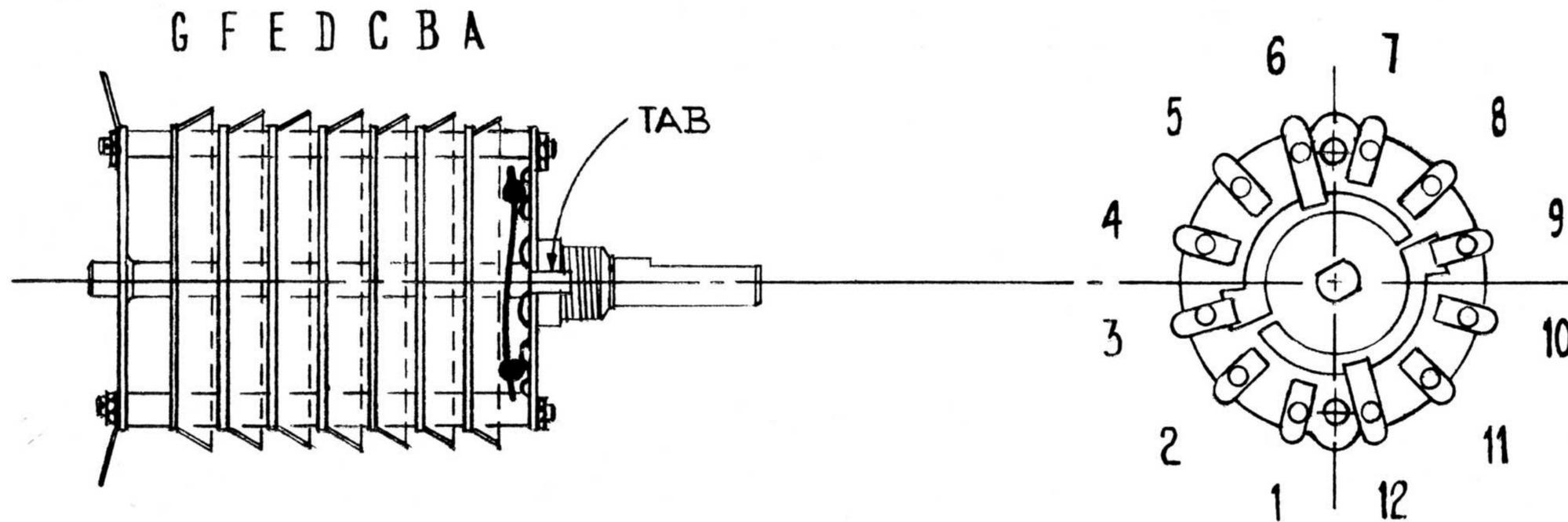
- \* TRACK SELECTOR SW \*
- ① ② ③ ④ ⑤
- 10000  
12345
1. TRANSFER 1 TO 3
  2. TRANSFER 3 TO 1
  3. STEREO
  4. MONO 1-4
  5. MONO 3-2
- SHOWN IN STEREO POSITION



\* RELAY K4  
(FBV 1536 91/101)  
SHOWN IN  
PB POSITION

TOLERANCES EXCEPT AS NOTED: FRACT. ± 1/64 DEC. XX ± .015 XXX ± .008 HOLE SIZES 0 TO 1/8" ± .008 OVER 1/8" ± .015 ANGULAR ± 1/8°

CHG.	E.O. NO.	DATE	BY	CHK'D	<b>ROBERTS ELECTRONICS, INC.</b> LOS ANGELES, CALIFORNIA SCHEMATIC - RECORD-PLAY PRE-AMP. MODEL 455	DRWN. ART RHEMREY 7/1-63 APPR. RAB 7/25 8-825 (PART 3 OF 4)
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SHOWN IN STEREO MODE  
(TYPICAL 7 WAFERS)

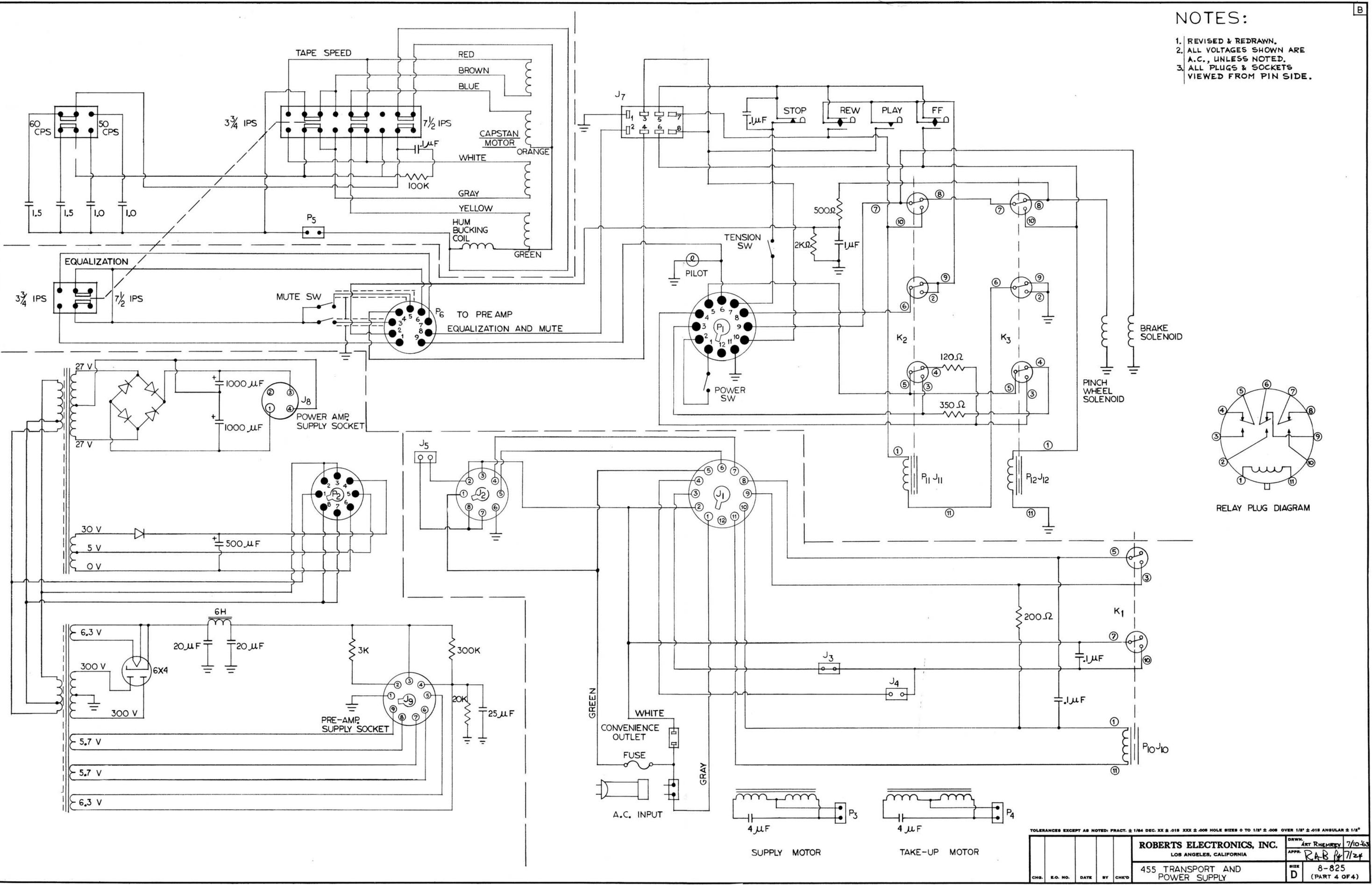
No. ON SCHEMATIC	WAFER LOCATION	DESCRIPTION
1	F-12	OSC. SW.
2	A-2	L. BIAS
3	A-11	R. BIAS
4	G-3	L. LINE IN
5	G-10	R. LINE IN
6	C-2	L. VU METER
7	D-11	R. VU METER
8	F-2	L. VU LAMP
9	F-7	R. VU LAMP
10	C-10	L. REC. B+
11	B-11	R. REC. B+
12	E-6	L. PRE. OUT
13	D-12	R. PRE. OUT

TRACK SELECTOR SWITCH MODEL 400, 455, 4000D, 4550D			DWG No
DWN BY A. W. STUART	DATE 9-8-4	APP'D BY	DAT
			SM-1001



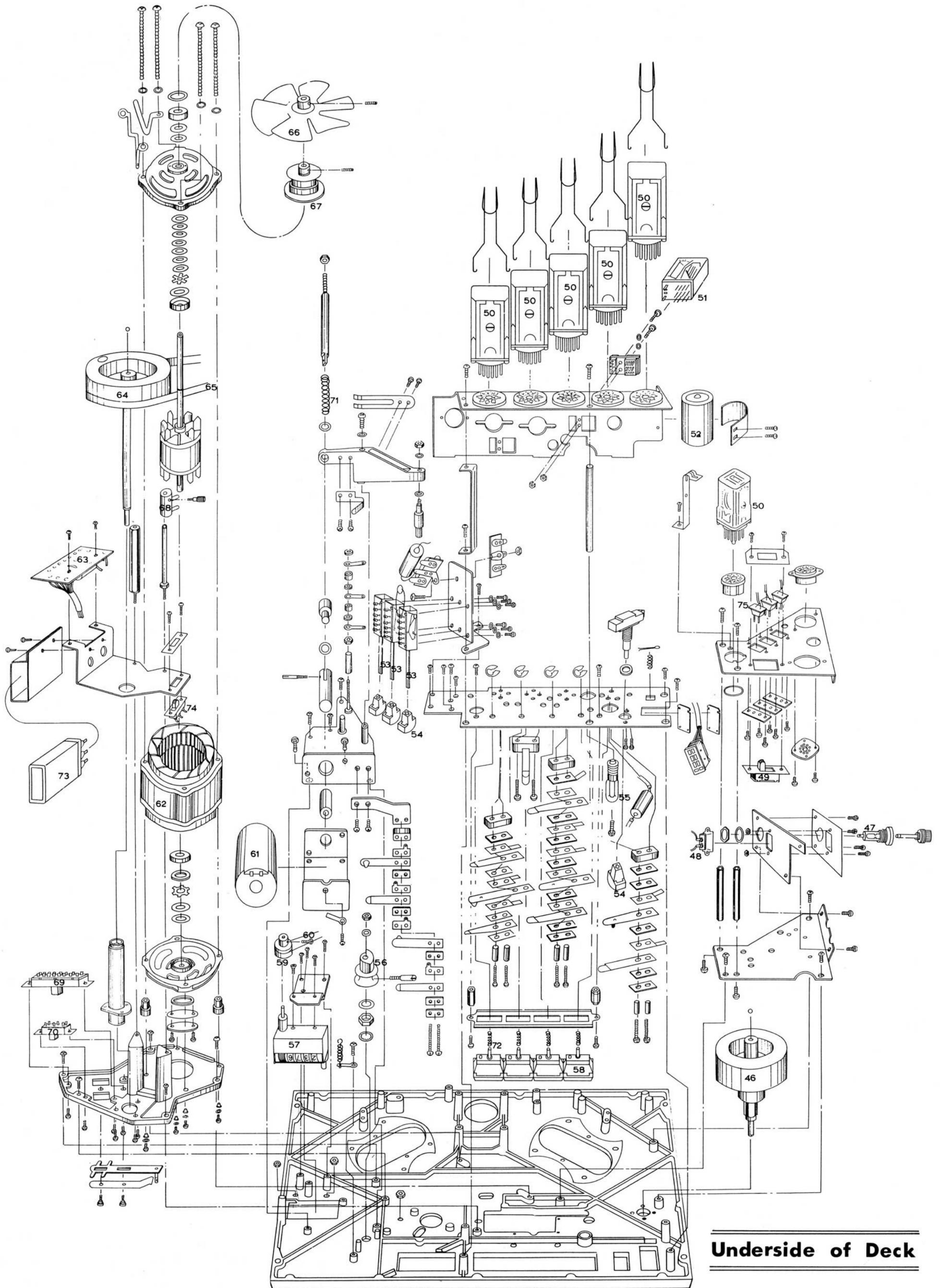
### NOTES:

1. REVISED & REDRAWN.
2. ALL VOLTAGES SHOWN ARE A.C., UNLESS NOTED.
3. ALL PLUGS & SOCKETS VIEWED FROM PIN SIDE.

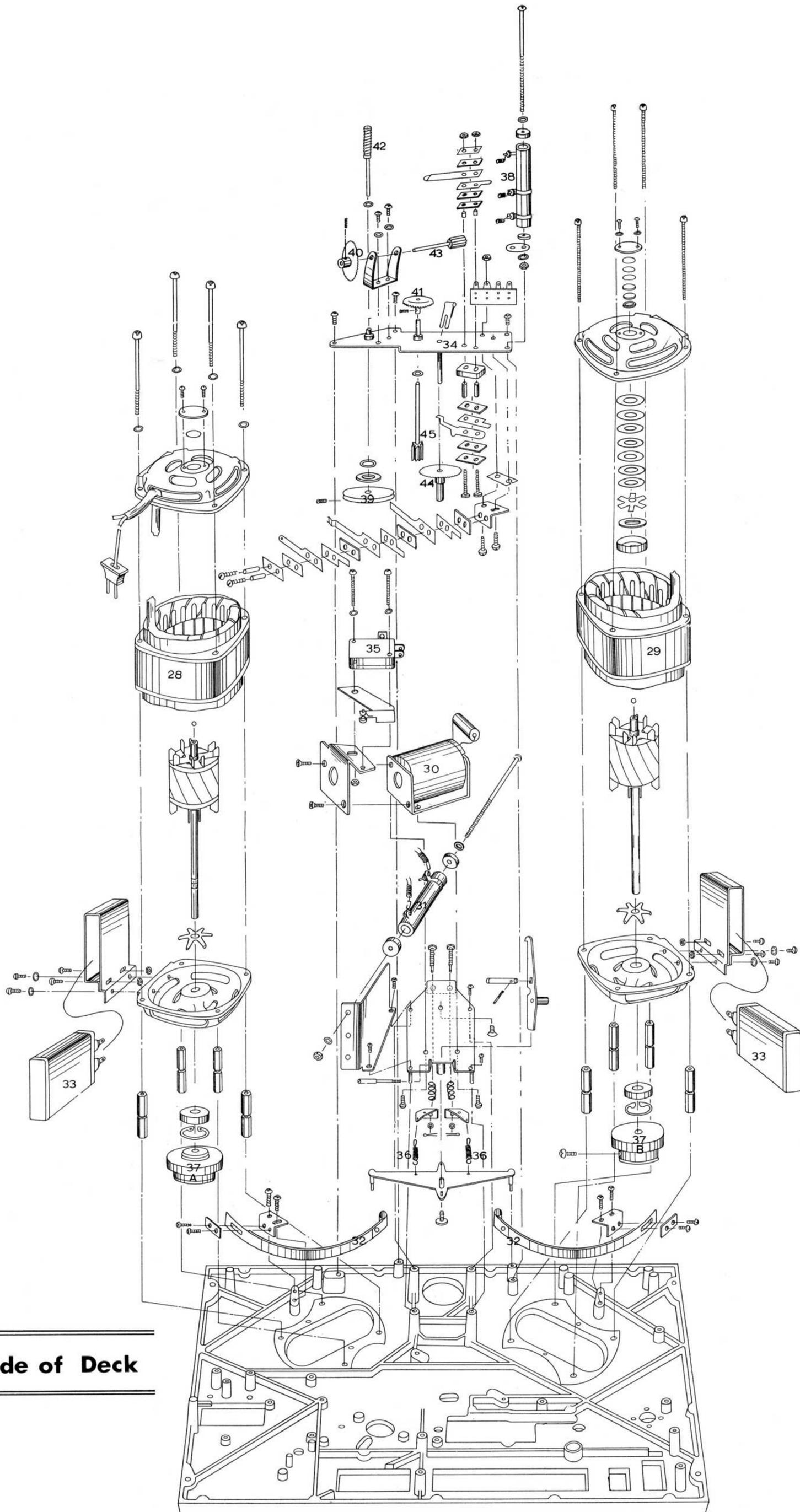


TOLERANCES EXCEPT AS NOTED: FRACT. ± 1/64 DEC. XX ± .015 XXX ± .005 HOLE SIZES 0 TO 1/8" ± .008 OVER 1/8" ± .015 ANGULAR ± 1/2°

ROBERTS ELECTRONICS, INC.				DRWN: ART RHEMERY 7/10-63
LOS ANGELES, CALIFORNIA				APPR: RAB 8/7/64
455 TRANSPORT AND POWER SUPPLY				SIZE D 8-825 (PART 4 OF 4)
CHG.	E.O. NO.	DATE	BY	CHK'D

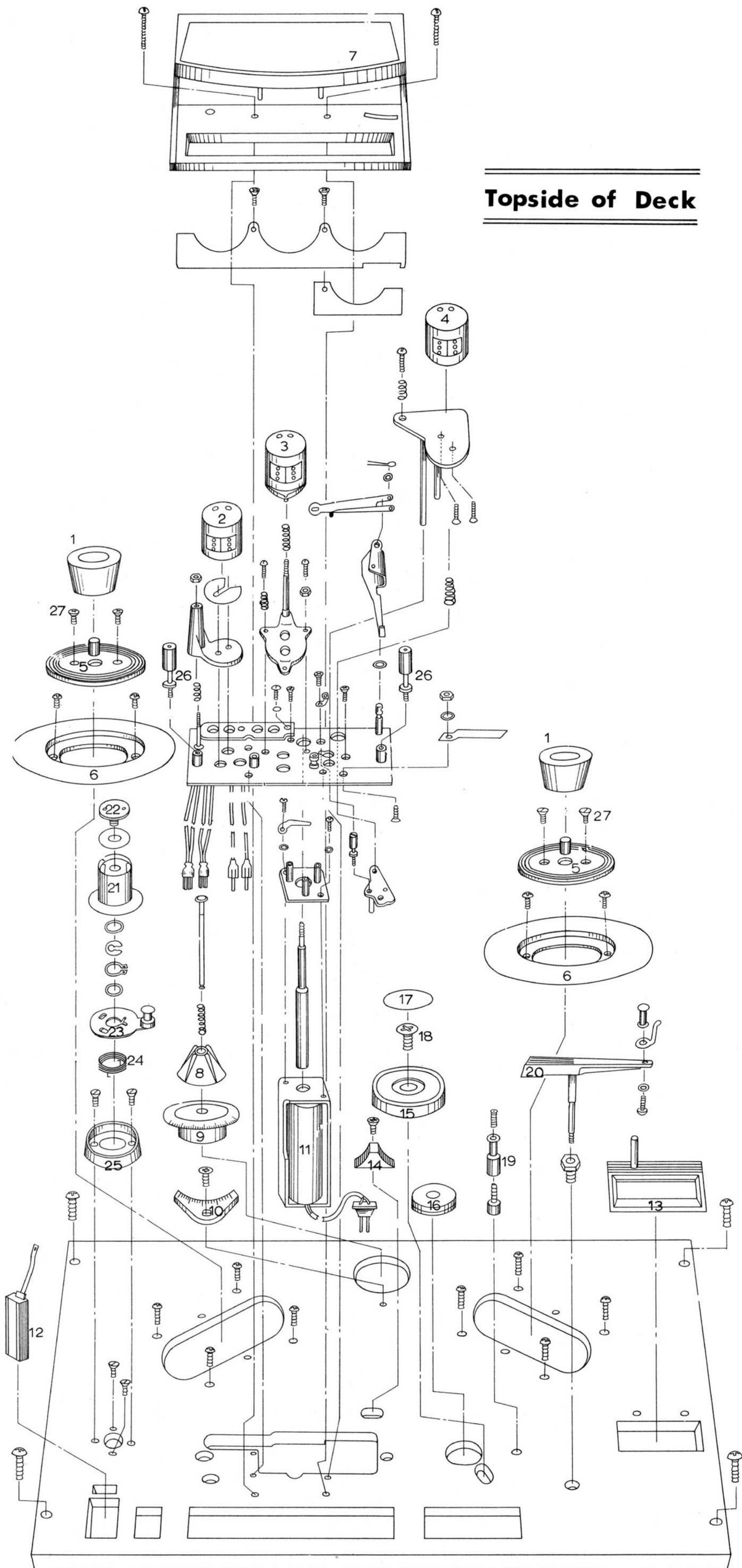


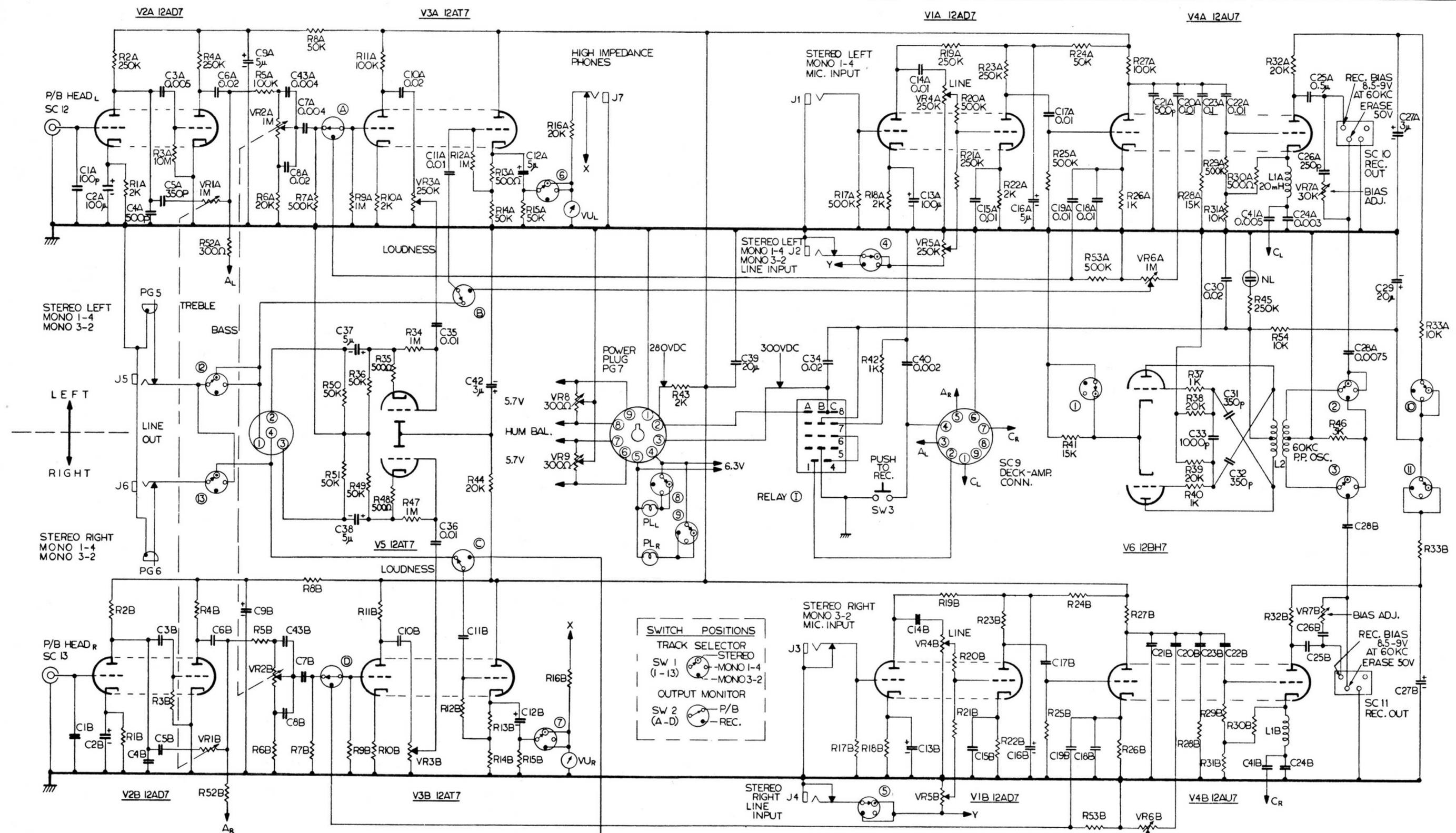
**Underside of Deck**



**Underside of Deck**

# Topside of Deck

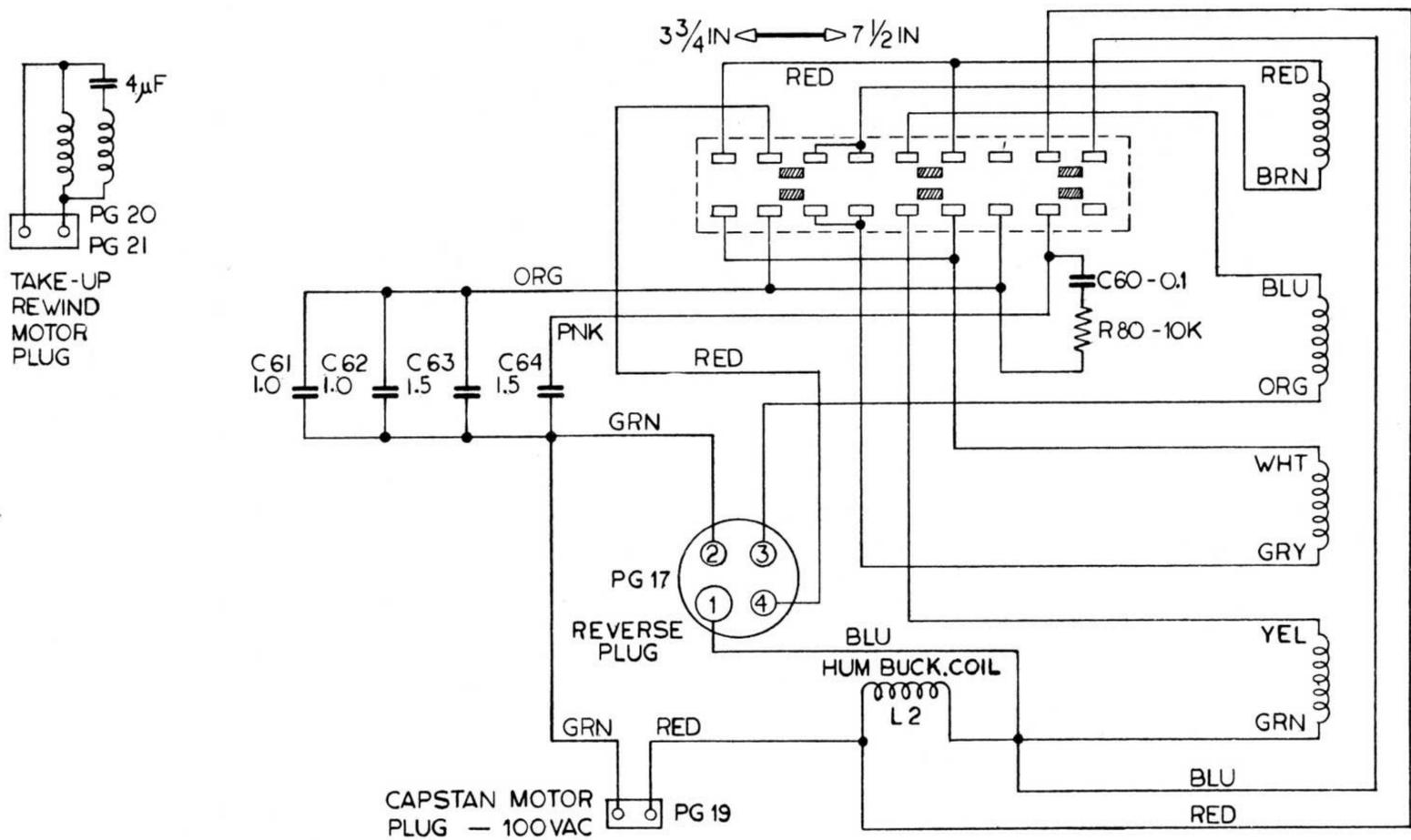




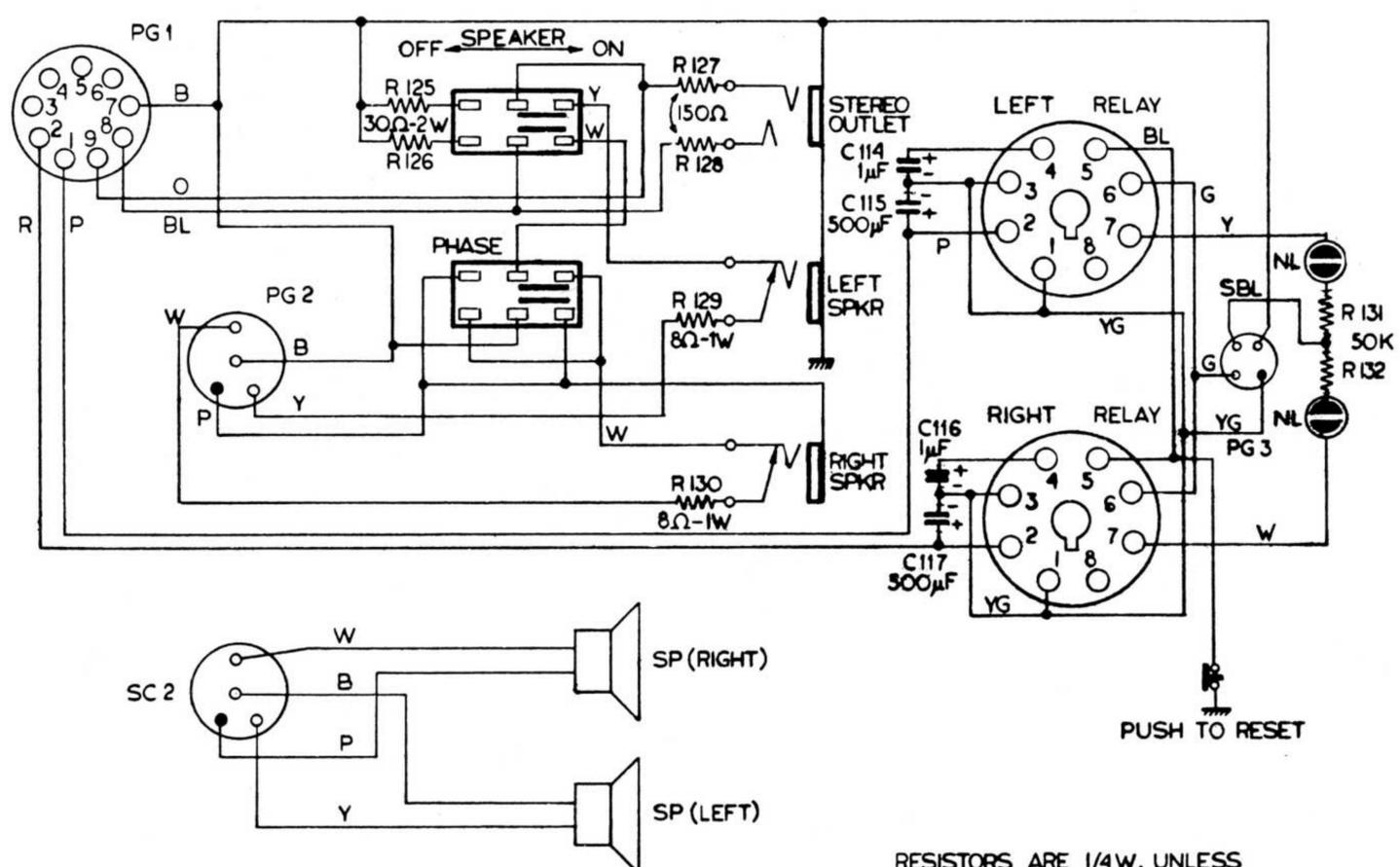
**SWITCH POSITIONS**

TRACK SELECTOR  
 SW 1 (1-13)  
 ○ STEREO  
 ● MONO 1-4  
 ○ MONO 3-2

OUTPUT MONITOR  
 SW 2 (A-D)  
 ○ P/B  
 ● REC.

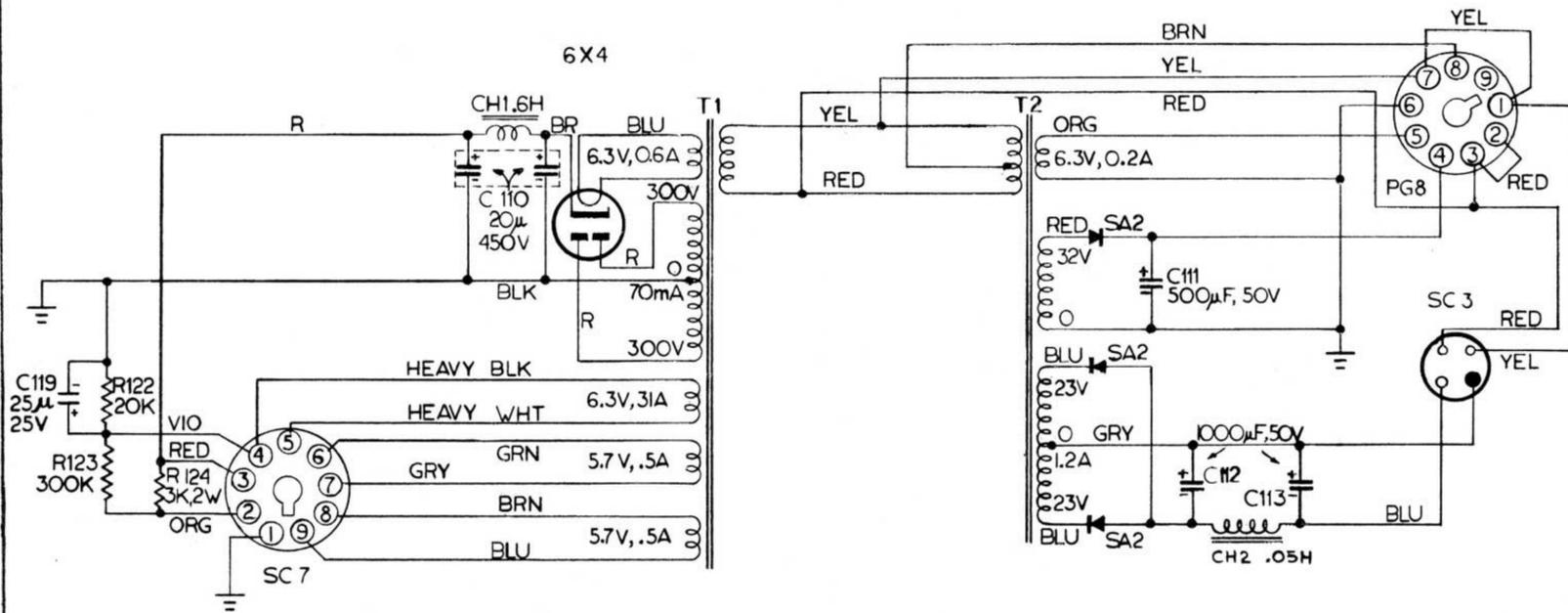


CAPSTAN DRIVE, TAKE-UP & REWIND MOTOR CONNECTIONS  
 ROBERTS ELECTRONICS MOD. 400 & 4000D  
 DIVISION OF RHEEM MFG CO.  
 DWG NO.: 8-880 SHEET 2 OF 7

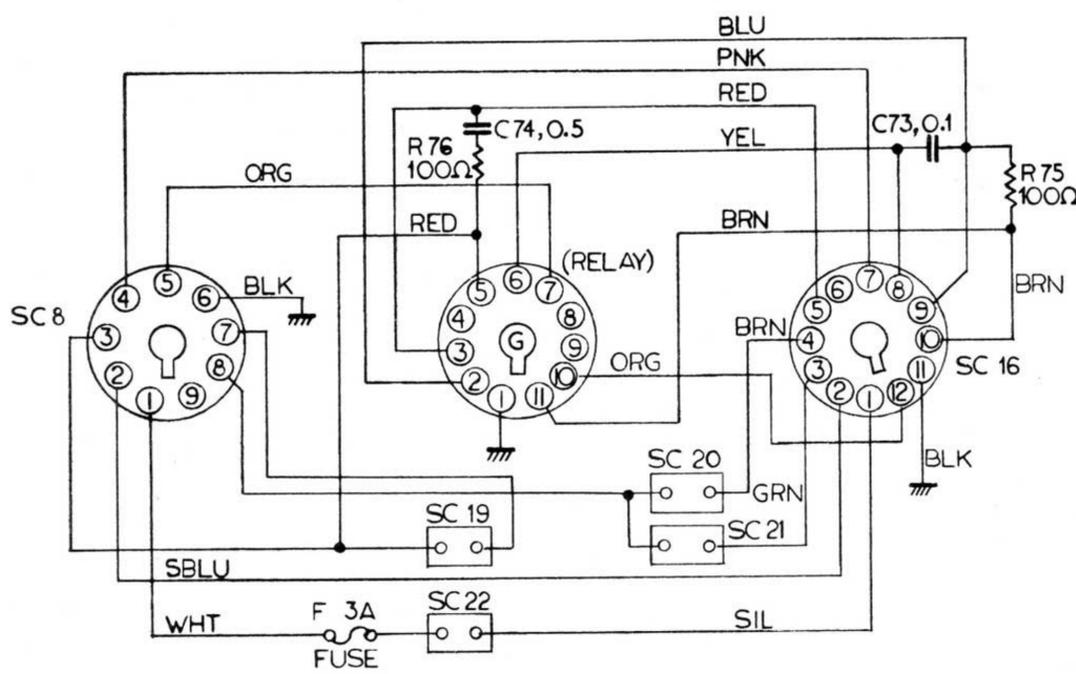


RESISTORS ARE 1/4W, UNLESS OTHERWISE NOTED

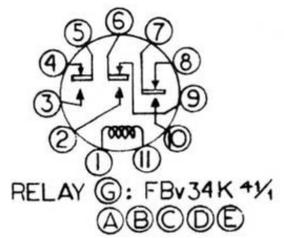
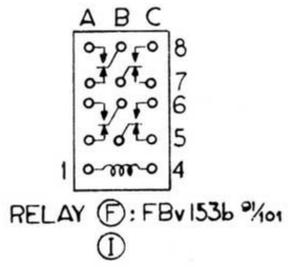
LOUD SPEAKER & POWER OUTPUT CONNECTIONS  
 ROBERTS ELECTRONICS MODEL 400 & 4000D  
 DIV. OF RHEEM MFR'G CO.  
 DWG NO.: 8-880 SHEET 3 OF 7



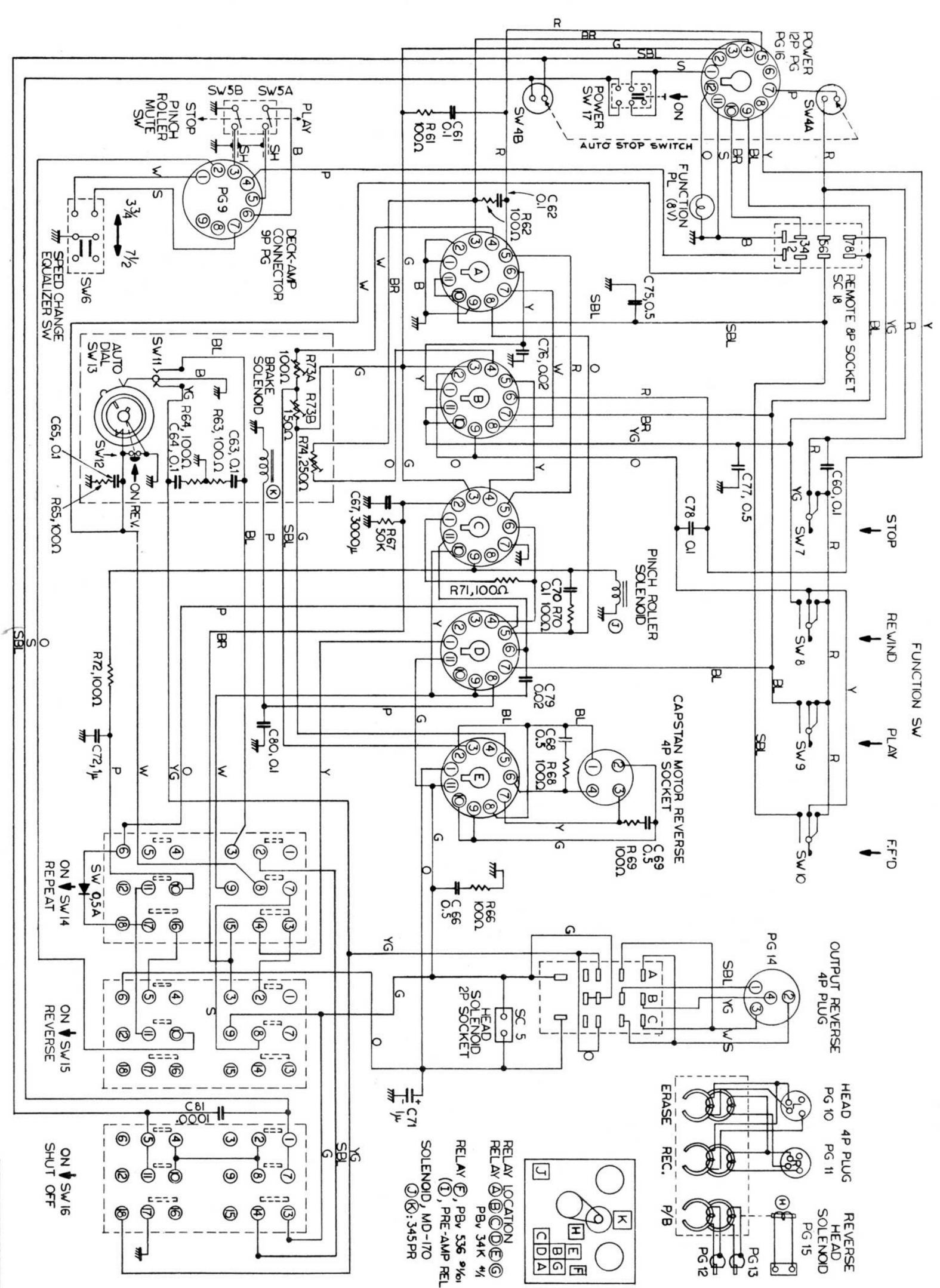
SCHEMATIC, POWER SUPPLY, MOD.400 & 4000D  
 ROBERTS ELECTRONICS  
 DIVISION OF RHEEM MFG CO.  
 DWG NO. 8-880 SHEET 4 OF 7



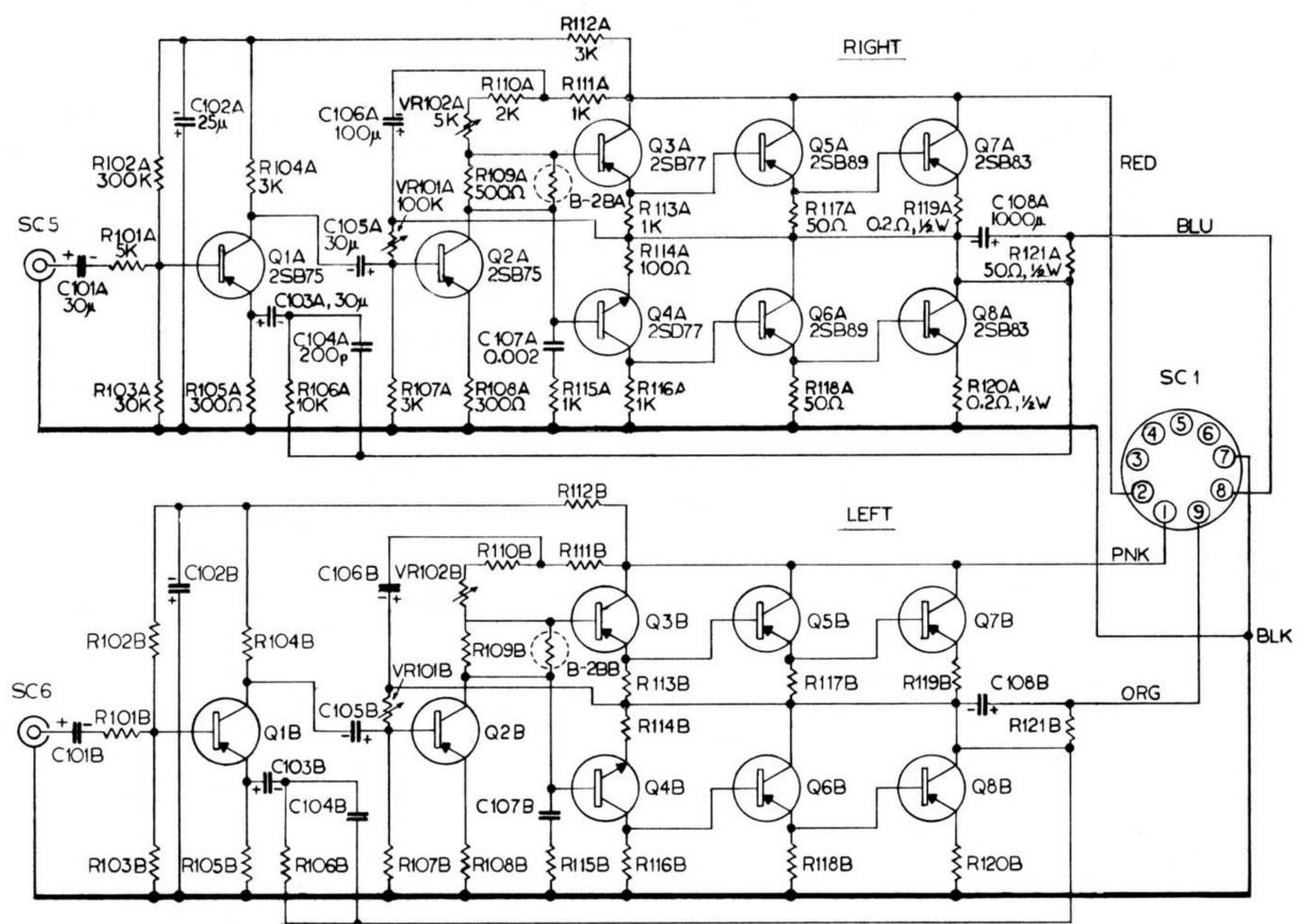
- SC8 - POWER SOCKET (9P)
- SC16 - POWER SOCKET (12P)
- SC19 - CAPSTAN MOTOR SOCKET
- SC20 - TAKE-UP MOTOR SOCKET
- SC21 - REW. MOTOR SOCKET
- SC22 - AC. POWER SOCKET



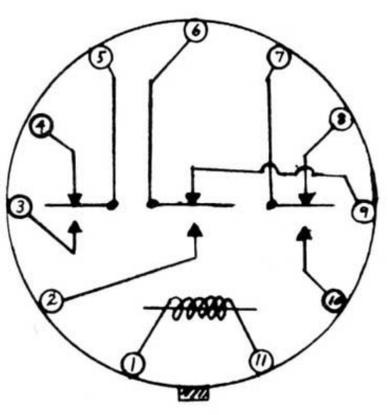
POWER BOARD CONNECTION DIAGRAM, 400 & 4000D  
 ROBERTS ELECTRONICS  
 DIVISION OF RHEEM MFG CO.  
 DWG NO. 8-880 SHEET 5 OF 7



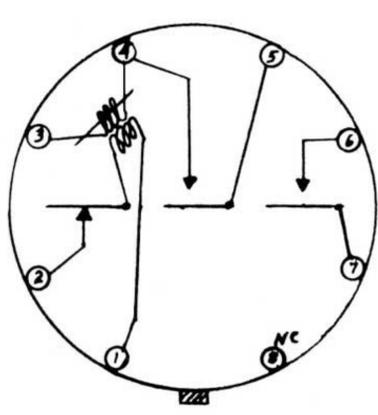
SWITCH CONNECTION DIAGRAM, MODEL 400 & 4000D  
 ROBERTS ELECTRONICS  
 DIV. OF KUEHN-HEPP & CO.  
 DWG NO.: 8-880 SHEET 6 OF 7



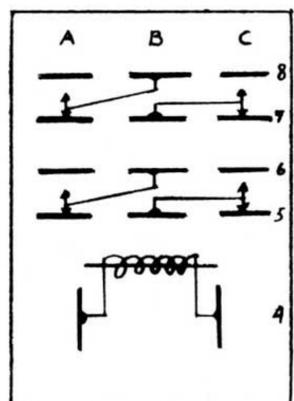
SCHEMATIC, POWER AMPLIFIER MOD.400 & 4000-D  
 ROBERTS ELECTRONICS  
 DIVISION OF RHEEM MFR'G CO.  
 DWG NO. 8-880 SHEET 7 OF 7



RELAYS  
 A B C D E G  
 FUNCTION RELAYS



RELAYS  
 MA-12  
 MA-12A  
 POW. AMP. SAFETY RELAYS



RELAYS  
 F I  
 AUTO REC.  
 REVERSE RELAY

'A B C D E G' RELAYS ARE ALL INTER-RELATED, HOWEVER THEIR PRIME DUTIES ARE:  
 A.... FAST FORWARD  
 B.... FAST FORWARD, REWIND, AND PLAY  
 C.... PINCHWHEEL SOLENOID  
 D.... BRAKE SOLENOID AND PLAY  
 E.... CAPSTAN MOTOR REVERSE  
 G.... TAKE UP AND SUPPLY MOTOR POWER AND REVERSING

RELAY IDENTIFICATION  
 FOR MODELS 400 & 4000D  
 AND 455 & 4550D

# Model 400 and 455 Parts

Ref. No.	Part No.	Description
	88-531	Amplifier, Transistor Model 400
	25-234	Amplifier, Transistor Model 455
	88-582	Automatic Function Gear Assembly Model 400
	88-583	Automatic Stop Arm Assembly
	88-584	Belt, Automatic Function Gear Assembly Model 400
	63-009	Belt, Capstan
	88-111	Belt, Index Counter
	88-585	Bearing, Ball, at Base of Flywheel
	88-586	Bracket, Power Block Relay Model 455
	88-520	Bracket, Relay Bank Model 400
	88-114	Brake Assembly with Micro Switch
	88-108	Brake Band
	88-587	Bushing, Capstan Belt Roller
	88-588	Button, Monitor Switch White Plastic
	88-535	Button, Push to Record, Metal Model 400
	88-589	Button, push to record, red plastic Model 455
	62-72	Cap, Pinch Wheel
	88-590	Capacitor, Electrolytic 3000 MF @ 40V
	88-591	Capacitor, Electrolytic 1000 x 1000 MF @ 50V
	14-783	Capacitor, Electrolytic 1000 MF @ 25V
	14-789	Capacitor, Electrolytic 1000 MF @ 3V Model 455
	88-702	Capacitor, Electrolytic 500 MF @ 50V
	14-790	Capacitor, Electrolytic 500 MF @ 25V
	88-113-1	Capstan, Flywheel and Shaft
	88-122-1	Capstan Motor Assembly Model 400
	88-122	Capstan Motor Assembly Model 455
	88-511	Case, Complete Less Speakers Model 400
	88-123	Case, Complete Less Speakers Model 455
	88-608	Case Hardware, Hinge Set, Two Pieces
	88-298	Case Hardware, Latch Set, Two Pieces
	88-123-1	Case Lid
	88-304	Coil, Audio Choke, 6 Henrys
	88-609	Coil, Bias Oscillator 60 KC
	88-610	Coil, Bias Oscillator 90 KC
	88-611	Coil, DX Choke 0.5 Henrys
	88-099	Coil, Hum Bucking
	88-611	Coil, Peaking 20 MH
	88-612	Connector, 9 Pin Model 400 Power Amp
	29-7346	Connector, 4 Pin Power Amp Model 455
	29-7346	Connector, 4 Pin Reverse Relay Model 400
	27-335	Cord, A.C. Interlock Type
	88-613	Cover, Remote Control Socket Model 400
	88-103	Cover, Remote Control Socket Model 455
	88-513	Cover, Head Model 400
	88-092	Cover, Head Model 455
	88-614	Dial, Repeater Vernier Model 400
	88-615	Door, Speaker Model 400
	88-093	Door, Speaker Model 455
	17-422	Diode, CER 67 Model 455
	17-394	Diode, Silicone 400 PIV Top Hat
	88-125	Diode, SW-05
	88-616	Diode, S2A20
	88-617	Drum, Supply Motor Brake
	88-618	Drum, Take-up Motor Brake
	88-619	Escutcheon, Line Input and Output
	88-524	Escutcheon, Speaker Panel Model 400
	88-107	Escutcheon, Speaker Panel Model 455
	88-620	Escutcheon, Record Button Model 400
	88-621	Escutcheon, Record Button Model 455
	88-622	Escutcheon, Reel Table Metal
	88-514	Escutcheon, V.U. Meter Model 400
	88-623	Escutcheon, V.U. Meter Model 455
	88-624	Fan, Capstan Motor
	88-301	Foot, Back of Case, Rubber
	88-301-1	Foot, Bottom of Case, Rubber
	25-103-4	Fuse, 3 Amp.

Ref. No.	Part No.	Description
	29-7349	Fuseholder
	88-625	Handle, Case
	88-626	Head, Erase
	88-627	Head, Play
	88-628	Head, Record
	88-629	Head Assembly Model 400
	88-630	Head Assembly Model 455
	88-699	Index Counter Model 400
	88-094	Index Counter Model 455
	29-7315	Jack, 3 Pole, Stereo Headset
	29-7260	Jack, 2 Pole, Line Input and Output, Mic and Speaker
	28-9002	Nut for 29-7315 and 29-7260
	88-343	Jewel, Green
	88-343-1	Jewel, Red Remote Control
	63-99	Kit, 15 i.p.s. Conversion
	88-532	Knob, Mic/Line/Loudness, Outer, Right Ch. Model 400
	88-533	Knob, Mic/Line/Loudness, Inner, Left Ch. Model 400
	88-631	Knob, Mic/Line/Loudness, Outer, Right Ch. Model 455
	88-632	Knob, Mic/Line/Loudness, Inner, Left Ch. Model 455
	88-533	Knob, Base and Treble Model 400
	88-633	Knob, Base and Treble Model 455
	88-534	Knob, Track Selector Model 400
	88-105	Knob, Track Selector Model 455
	88-634	Knob, Speed Change, White Model 400
	88-104	Knob, Speed Change, Gray Model 455
	88-635	Knob, Pushbutton Power, White Model 400
	88-102	Knob, Pushbutton Power, Gray Model 455
	88-521	Knob, Pushbutton Stop/Rewind/Play/Fast Fwd. White Model 400
	88-636	Knob, Pushbutton Stop/Rewind/Play/Fast Fwd. Gray Model 455
	88-522	Knob, Pushbutton Reverse/Repeat/Shut Off Model 400
	88-637	Knob, Repeater, Numbered Model 400
	88-638	Knob, Repeater, Pointer Model 400
	88-509	Lamp, Pilot, Bayonet Base
	88-639	Lamp, Pilot, Screw Base
	88-280	Lamp, Neon Record
	88-640	Lever, Brake Bands
	88-641	Meter, V.U. Model 400
	88-101	Meter, V.U. Model 455
	88-642	Motor, Supply Model 400
	88-698	Motor, Supply Model 455
	88-643	Motor, Take-up Model 400
	88-704	Motor, Take-up Model 455
	88-644	Motor, Capstan Model 400
	88-705	Motor, Capstan Model 455
	62-096	Nut, 4mm
	62-097	Nut, 3mm Meter Mounting
	28-9002	Nut, for 29-7315 and 29-7260 Replacement Jacks
	88-645	Panel, Cast Deck Model 400
	88-132	Panel, Cast Deck Model 455
	88-646	Panel, Cast Pre Amp Model 400
	88-133	Panel, Cast Pre Amp Model 455
	88-091	Panel, Back of Case with A.C. Cord Brackets
	88-647	Panel, Bottom of Case
	88-700	Panel, Speaker Output less Relays Model 400
	88-701	Panel, Speaker Output Model 455
	88-345	Panel, Transistor Amp Model 455
	88-648	Panel, Transistor Amp Model 400
	88-649	Plug, 12 Pin Pushbutton Block Model 455
	88-650	Plug, 9 Pin Pre Amp Power
	88-651	Plug, 9 Pin Record Equalization
	88-652	Plug, 8 Pin Power Supply Model 455
	63-006	Plug, 8 Pin Remote Control
	29-7345	Plug, 4 Pin Transistor Amp Power
	29-7247	Plug, 4 Pin Record and Erase Head

## Model 400 and 455 Parts (Cont'd.)

Ref. No.	Part No.	Description
	88-085	Plug, 2 Pin Power for Supply and Take-up Motors
	88-653	Plug, Phono Play Heads
	88-148	Pinch Wheel
	88-706	Pinch Wheel Assembly
	88-119	Plunger, Brake and Pinch Wheel Solenoid
	88-654	Post, Deck and Pre-Amp Mounting
	88-655	Post, Vent Panel Mounting
	88-656	Pulley, Index Counter Metal
	88-518	Reel Holder, with Screw Model 400
	88-657	Reel Holder, Model 455
	88-658	Reel Table Model 400
	88-659	Reel Table Model 455
	88-096	Relay, Function 11 Pin
	88-097	Relay, Record and Head Reversing
	88-530	Relay, Power Amp Cut-off 8 Pin Model 400
	88-662	Resistor, 350 Ohm 30W, Replaces 20W 455 Resistor
	88-663	Resistor, 250 Ohm 30W, Replaces 20W 455 Resistor
	88-664	Resistor, 30 Ohm 2W Flex
	88-264	Resistor, 8 Ohm 1W Flex
	88-666	Resistor, Variable 1 Meg. Bass & Treble
	88-130	Resistor, Variable 250K Loudness/Mic/Line
	88-667	Resistor, Variable 30K Bias Adjustment
	88-266	Resistor, Variable 300 Ohm Hum Adjustment
	88-668	Resistor, Variable Wafer 1 Meg
	88-541	Resistor, Variable Wafer 100K Model 400
	88-542	Resistor, Variable Wafer 5K Model 400
	62-89	Screw, Pinch Wheel 4x8mm Truss Head
	88-669	Screw, Head Cover 3x15mm Black
	88-670	Screw, Brake Adjustment
	88-671	Screw, Deck Mounting 4x20mm Truss Head Model 400
	88-136	Screw, Deck Mounting 4x22mm Oval Head Model 455
	62-88	Screw, Pre Amp Mounting 4x15mm Truss Head Model 400
	88-134	Screw, Pre Amp Mounting 4x12mm Oval Head Model 455
	88-707	Screw, Reel Table 3x7mm Flat Head
	88-672	Screw, Speed Change Knob 3x5mm Flat Head Model 400
	88-673	Screw, Speed Change Knob 3x5mm Flat Head Gray Model 455
	88-674	Screw, Vent Panel Mounting 3x6mm Truss Head
	88-112	Socket, 14 Pin Record and Reverse Relay
	88-708	Socket, 12 Pin Power Block
	88-106	Socket, 11 Pin Function Relay
	88-675	Socket, 9 Pin Power Block and Power Supply Model 400
	88-676	Socket, 9 Pin Wafer, Power Supply Model 455
	88-677	Socket, 9 Pin Record Equalization
	63-068	Socket, 8 Pin Remote Control
	88-678	Socket, 8 Pin Wafer, Power Block Model 455
	88-679	Socket, 7 Pin for 6x4 Tube
	88-680	Socket, 4 Pin Wafer, Power Supply
	29-7351	Socket, 4 Pin Wafer, Record and Erase Head
	88-086	Socket, 2 Pin Wafer, A.C. for Motors
	29-7347	Socket, 2 Pin, A.C. Power Interlock
	29-7348	Socket, 2 Pin, A.C. Convenience Outlet
	29-7311	Socket, Double Phono
	88-681	Socket, Phono, Play Head
	88-342	Socket, Pilot Bulb with Screw Base
	88-709	Socket, Pilot Bulb with Bayonet Base
	88-528	Solenoid, Brake and Pinch Wheel
	88-543	Solenoid, Play Head Model 400
	88-526	Speaker, 8 Inch Round Model 400

Ref. No.	Part No.	Description
	88-457	Speaker, 5x7 Inch Oval Model 455
	88-507	Spring, Hold Down for Record and Reverse Relay
	88-508	Spring, Hold Down for Function Relays Model 455
	88-510	Spring, Pre Amp Tube Hold Down
	88-711	Spring, 6x4 Hold Down
	88-682	Spring, Record Equalization Plug
	88-683	Spring, Brake Adjustment Screw
	88-684	Spring, Brake Band Lever
	88-377	Spring, Remote Control Cover
	88-071	Switch, Micro for Brake Solenoid
	88-100	Switch, Rotary Track Selector
	88-685	Switch, Monitor Pre Amp
	88-686	Switch, Slide D.P.D.T. Speaker On-Off/Phase/Equalization/50-60 Cycle
	88-687	Switch, Slide 3 Section D.P.D.T. Speed Change
	88-688	Switch, Pushbutton Record Pre Amp
	88-689	Switch, Power Amp Reset Model 400
	13-998	Switch, A.C. Power
	88-690	Switch, Leaf, Automatic Stop Model 400
	88-691	Switch, Leaf, Automatic Stop Model 455
	88-692	Switch, Leaf, Fast Forward and Rewind
	88-673	Switch, Leaf, STOP
	88-694	Switch, Leaf, PLAY
	88-527	Switch Assembly, Automatic Function
	88-517	Tape Guide, Stationary
	88-309	Tape Guide, Mechanical Flutter Filter
	17-432	Thermistor, M904-101 Model 455
	88-695	Thermistor, B2B Model 400
	88-369	Transformer, Power Pre Amp Model 455
	88-95	Transformer, Power Deck and Power Amp Model 455
	88-696	Transformer, Power Pre Amp Model 400
	88-697	Transformer, Power Deck and Power Amp Model 400
	17-423	Transistor, Power 42-06 Model 455
	17-424	Transistor, 42-05, 2N647 Model 455
	17-425	Transistor, 42-04, 2N591 Model 455
	88-536	Transistor, 2SB83 or 2SB338 (Replace in Pairs) Model 400
	88-537	Transistor, 2SB89A Model 400
	88-538	Transistor, 2SB77A Model 400
	88-539	Transistor, 2SD77A Model 400
	88-540	Transistor, 2SB75 Model 400
	88-519	Trim Case, Metal Model 400 (4 Pieces Make Set)
	88-225	Tube, 12AD7
	17-380	Tube, 12AU7
	17-386	Tube, 12AT7
	17-379	Tube, 12BH7A
	17-381	Tube, 6X4

# THE NEW ROBERTS SPECIFICATIONS

**Weight:** 64 lbs. (455) 72 lbs. (400)

**Size:** 11 1/2" x 17" x 18" (455)  
17 1/4" x 16" x 12 1/4" (400)

**Voltage and Power Requirements:** 110 to 125 V AC, 50 or 60 cycle, 200 watts

**Power Cord:** 8' SPT-2 UL Approved Power Cord

**Speeds:** 3 3/4 & 7 1/2 ips — (15 ips conversion kit available as optional accessory.)

**Playing/Recording Time:** With 1/2 Mil, 2400' Mylar Tape, up to 8 hrs., 4 Track Monaural; up to 4 hrs., 4-Track Stereo.

**Tube Complement, Record and Playback Preamps only:**  
4-12AD7, 3-12AT7, 2-12AU7  
1-12BH7, 1-6X4

**Power Output:** 8 watts per channel from 12-transistor stereo power amplifier

**Power Supply:** Transformer type power supply for all electronics and control operations

**Controls:** Separate bass and treble tone controls; Dual separate mic. and line input controls, 4 simultaneous mixing inputs, playback loudness control track selector and sound-on-sound switch

**Frequency Response:**  $\pm 3$  db 40 cycles to 17 kc 7 1/2 ips  
 $\pm 3$  db 40 cycles to 12 kc 3 3/4 ips

**Bias & Erase Frequency:** Specially biased for perfect recording of all FM Stereo radio broadcasts; 100 KC

**Erasing Efficiency:** 60 db

**Rewind time:** 36 sec. for 1200 foot reel of tape

**Timing Accuracy:** within 99.5%

**Wow & Flutter:** 0.15% max. at 7 1/2 ips

**Speakers:** 5 x 7 oval (455) 6" (400)

**Signal to Noise Ratio:** 45 db

**Channel Separation (Crosstalk):** 50 db

**Recording Inputs:** Mic. and line with mixing controls

**Playback Outputs:** Stereo cathode follower line outputs, stereo ext. speaker output and stereo headset output

**Direct Electrical (Relay-Solenoid) push button controls**

**Record & Playback Equalization:** NAB for 7 1/2 ips  
EIA for 3 3/4 ips

**Input Sensitivity:** .5 mv in mic. input  
50 mv in line input

**Pre-amplifier output:** 2 volts

**3 Heads:** Separate erase, record and playback monitor heads

**3 Motors:** Dual speed electrically switched hysteresis synchronous capstan drive motor with dynamically balanced flywheel. Separate take-up and supply reel motors.

**Reel Size:** 7"

**Operating Positions:** Vertical or horizontal

**Remote Control:** Available as optional accessory

THE ROBERTS POLICY IS ONE OF CONTINUAL DEVELOPMENT AND IMPROVEMENT. FOR THAT REASON, ROBERTS RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE, AND WITHOUT INCURRING ANY OBLIGATION RELATING TO MODELS PREVIOUSLY MANUFACTURED BY THEM.

Replacement parts are available from:

## ROBERTS ELECTRONICS

DIVISION OF RHEEM MANUFACTURING CO.

5922 BOWCROFT STREET,  
LOS ANGELES, CALIF., 90016

