



PHOTOFACT[®] with

CIRCUITRACE[®]

For Supplier Address See PHOTOFACT Index

CLEANING

LUBRICATING

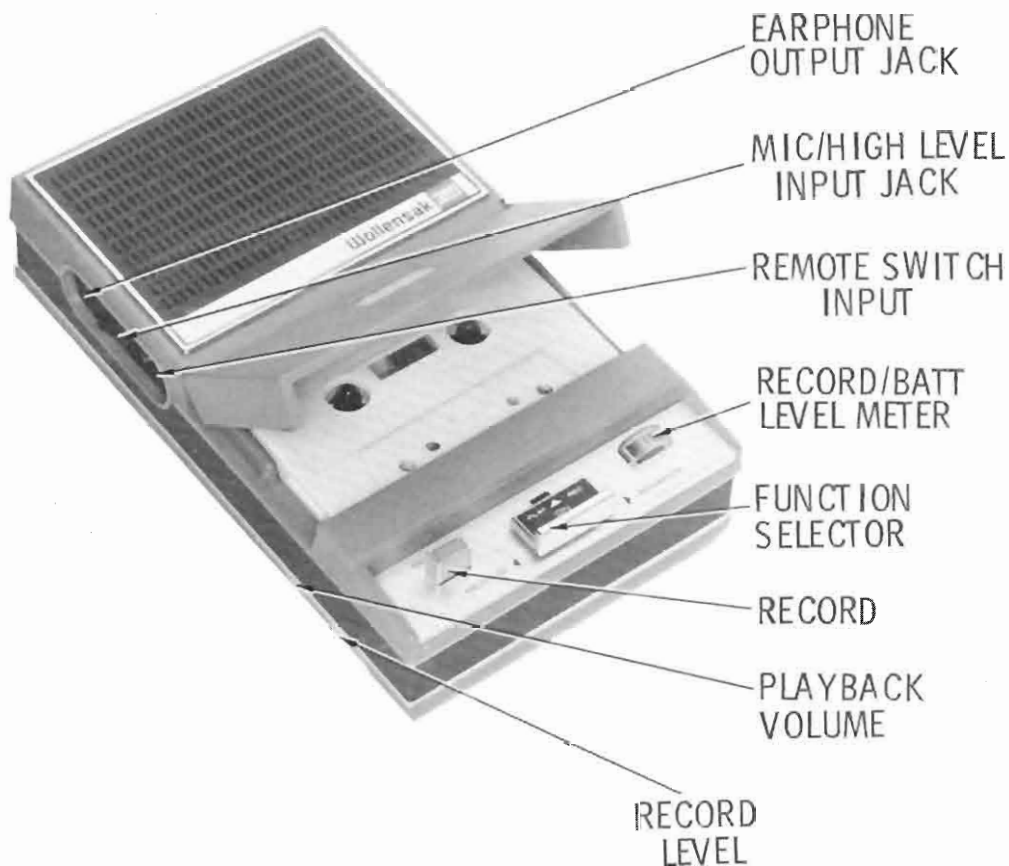
HEAD DEMAGNETIZING

Refer to "General Servicing Information" on page 4.

This unit is a two-track, monaural recorder having a speed of 1 7/8 ips.

Jacks are provided for microphone, earphone, and remote operation.

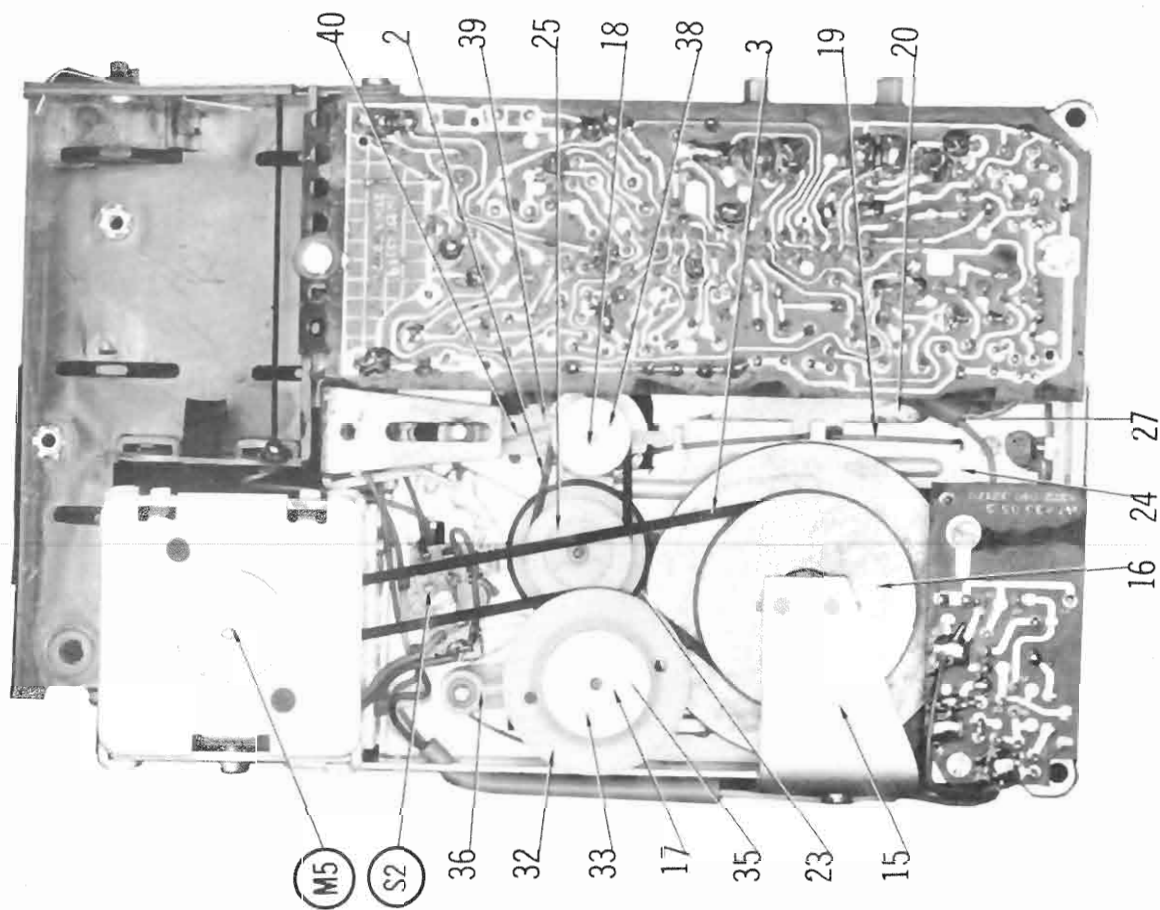
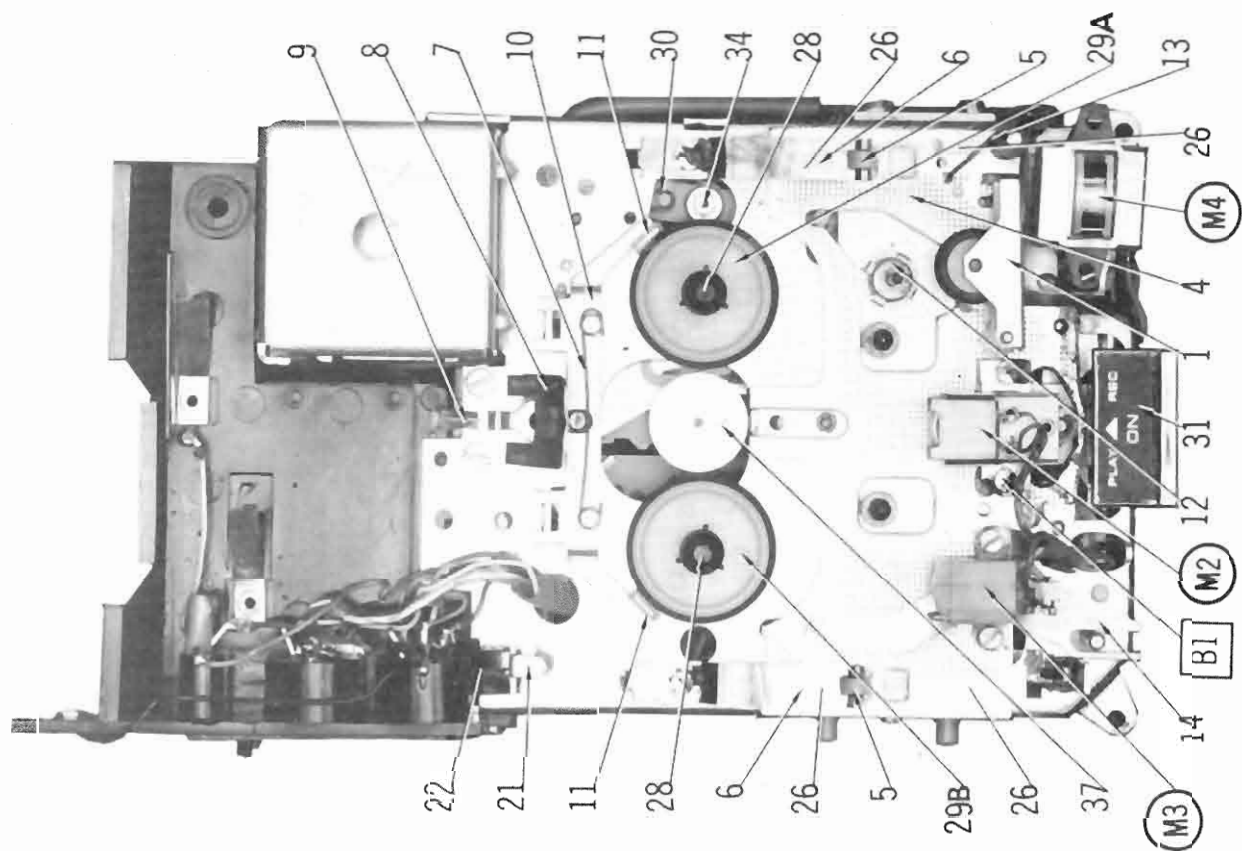
Power is supplied by five, 1 1/2 - volt "C" cells.



WOLLENSAK MODEL 4200

HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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OPERATING INSTRUCTIONS

Record

1. Move Function Selector to Stop and insert a cassette with an unbroken safety tab, closed side first.
2. Insert the microphone and switch plugs, move the remote switch to On, and press Record button while moving Function Selector to Play/Rec.

3. Set the recording level with Record Level control and record.

Play

1. Insert a cassette, move Function Selector to Play/Rec, and adjust Playback Volume control as desired.

DISASSEMBLY

1. Remove two screws holding back cover, Function Selector knob, and one screw from cassette well.
2. Remove three screws from corners of mechanism and remove front cover.

SEQUENCE OF OPERATION

Play

Moving Function Selector Knob (31) forward slides Lever (24) to release Spring (7), releasing assembly (10), pulled by Spring (9), to move Shoes (11) from Spindles (29A) and (29B). Lever (24) also moves Lever (23) to actuate Switch (S2) and moves Assembly (18) from Flywheel (16) to Spindle (29B).

Lever (24) also slides Plate (4) to move the heads forward and to press Roller (1) against the capstan.

Plate (4) also releases Assembly (17), pivoted by Spring (30), to press Drive Shaft (34) against Spindle (29A).

The motor — through Belt (3), Pulley (32), Clutch (35), Plate (33), and Drive Shaft (34) — drives Spindle (29A).

Record

The Record sequence is the same as "Play." However, if the cassette has moved Linkage (21), the Record button lowers Spring (14) to engage Lever (41), actuating Switch (S1).

Fast Forward

Moving Function Selector knob (31) to Fast Forward pivots Lever (24) to release Spring (7), re-

leasing Assembly (10), pulled by Spring (9), to move Shoes (11) from Spindles (29A) and (29B). Lever (24) also moves Lever (23) to actuate Switch (S2) and moves Assembly (18) against Spindle (29A).

The motor — through Belt (3), Flywheel (16), Pulley (25), Belt (2), Pulley (38), and Drum (37) — drives Spindle (29A).

Rewind

Moving Function Selector knob (31) to Rewind pivots Lever (24) to release Spring (7), releasing Assembly (10), pulled by Spring (9), to move Shoes (11) from Spindles (29A) and (29B). Lever (24) also moves Lever (23) to actuate Switch (S2) and causes Spring (19) to move Assembly (18) against Spindle (29A).

The motor — through Belt (3), Flywheel (16), Pulley (25), Belt (2), Pulley (38), and Drum (37) — drives Spindle (29B).

Stop

Moving Function Selector knob (31) to Stop allows Springs (7), (13), (30), and (40) to reverse "Play" and "Record" sequences. Springs (7), (27), and (40) reverse "Fast Forward." Springs (7), (27), (19), and (40) reverse "Rewind."

WOLLENSAK MODEL 4200

TROUBLE CHART

IMPORTANT: Before consulting this chart be sure all servicing procedures listed on page 4 have been followed.

SYMPTOM	REMARKS
Take-up erratic, or inoperative in Play or Record.	<ol style="list-style-type: none">1. Clutch (35) worn or dirty.2. Spindle (29A) worn, dirty, or binding.3. Drive Shaft (34) dirty or binding.4. Pulley (32) dirty or binding.
Take-up erratic or inoperative in Fast Forward.	<ol style="list-style-type: none">1. Spindle (29A) worn, dirty, or binding.2. Pulley (25) dirty or binding.3. Belt (2) dirty or broken.4. Drum (37) dirty or binding.

TROUBLE CHART (Continued)

SYMPTOM	REMARKS
Rewind erratic or inoperative.	<ol style="list-style-type: none"> 1. Spindle (29B) worn, dirty, or binding. 2. Pulley (25) dirty or binding. 3. Belt (2) dirty or broken. 4. Drum (37) dirty or binding.
Tape does not stop immediately when Stop function is selected.	<ol style="list-style-type: none"> 1. Shoes (11) dirty or worn. 2. Spring (7) weak or missing.
Capstan does not rotate in Play or Record.	<ol style="list-style-type: none"> 1. Belt (3) worn, dirty, or broken. 2. Bearing (12) defective. 3. Motor defective or not supplied with power.
Wow or Flutter.	<ol style="list-style-type: none"> 1. Belt (3) worn or dirty. 2. Flywheel (16) binding. 3. Capstan bent. 4. Roller (1) dirty or binding. 5. Excessive take-up torque. 6. Motor defective. 7. Speed regulator circuit defective. 8. Cassette defective.
Sound is weak or distorted.	<ol style="list-style-type: none"> 1. Head (M2) dirty, misaligned, or defective. 2. Amplifier defective. 3. Bias oscillator defective. 4. Cassette defective.
Erase weak or inoperative.	<ol style="list-style-type: none"> 1. Head (M3) dirty or defective. 2. Inadequate erase current. 3. Cassette defective.

ADJUSTMENTS

IMPORTANT: Before making any adjustments, refer to "General Servicing Information" on page 4.

1. All voltage measurements are made at a tape speed of 1 7/8 ips with an audio VTVM having a flat response to 100KC.
2. All torque measurements are made at a tape speed of 1 7/8 ips with a spring scale applied to a point on an empty tape reel 1 inch from reel center.
3. All pressure measurements are made by using a spring scale to determine that point at which pressure is just removed.

ADJUST	REMARKS
Play Take-up Torque	Nominal value 3/4 ounce. Controlled by condition of Clutch (35).
Fast Forward Take-up Torque	Nominal value 3/4 ounce. Controlled by condition of rubber parts in drive train.
Rewind Torque	Nominal value 3/4 ounce. Controlled by condition of rubber parts in drive train.
Supply Reel Drag	Nominal value 1/8 ounce. Controlled by drag of Assembly (18).
Take-up Reel Drag	Dependent on cassette drag.

ADJUSTMENTS (Continued)

ADJUST	REMARKS
Pressure Roller Pressure	Nominal value 10 ounces. Controlled by moving Spring (13) from hole to hole.
Brake Torque	Measured in Stop. Nominal value 3 1/2 ounces clockwise on take-up spindle and counterclockwise on supply spindle.
Record/Play Head Azimuth	Connect an AC VTVM across speaker. Play an azimuth test cassette and adjust B1 for maximum output.
Erase Current	Nominal value 230ma (4Vrms) in head. No adjustment provided.
Record Bias	Nominal bias 3.1Vrms (1.25ma) across record section of record/play head. Controlled by setting of R3.
Bias Oscillator	Nominal frequency 37KC-45KC. No adjustment provided.
Record Level Indicator Calibration	Disable bias oscillator by shorting erase head. Apply a 1000-cycle tone at .0006Vrms to mic input and adjust Record Level control for .028Vrms across record section of record/play head. Record/Battery Level Meter should indicate normal maximum recording level. No adjustment provided.
Motor Speed Adjustment	Play a speed test cassette, follow instructions with cassette, and adjust R4 for proper response.

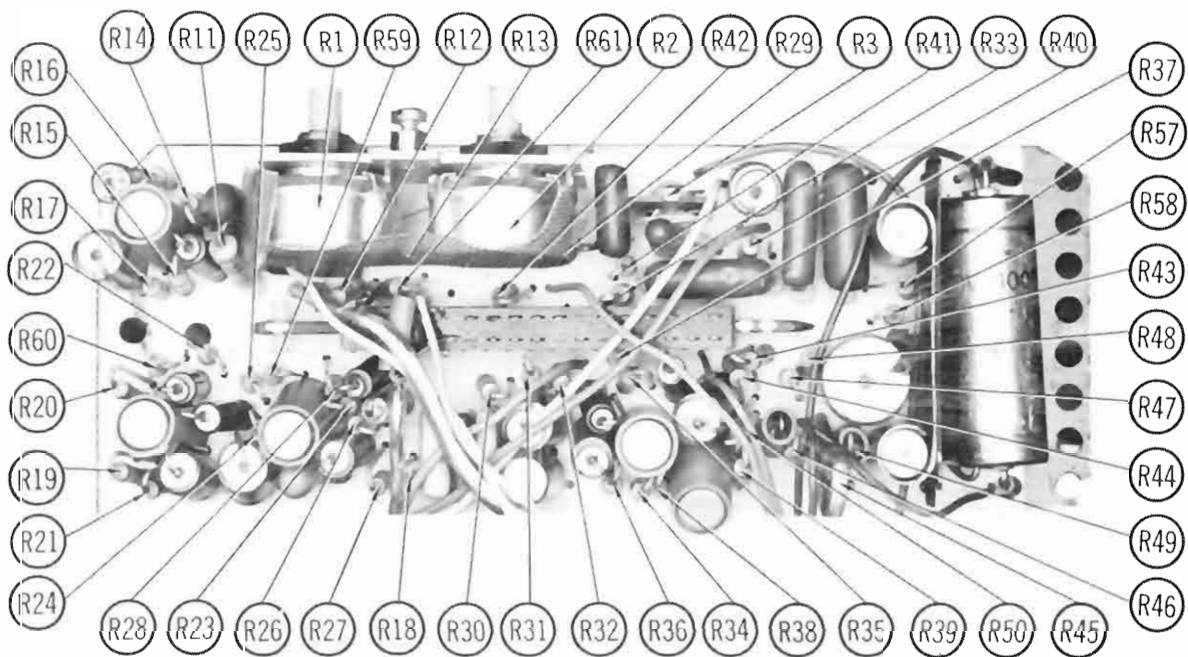
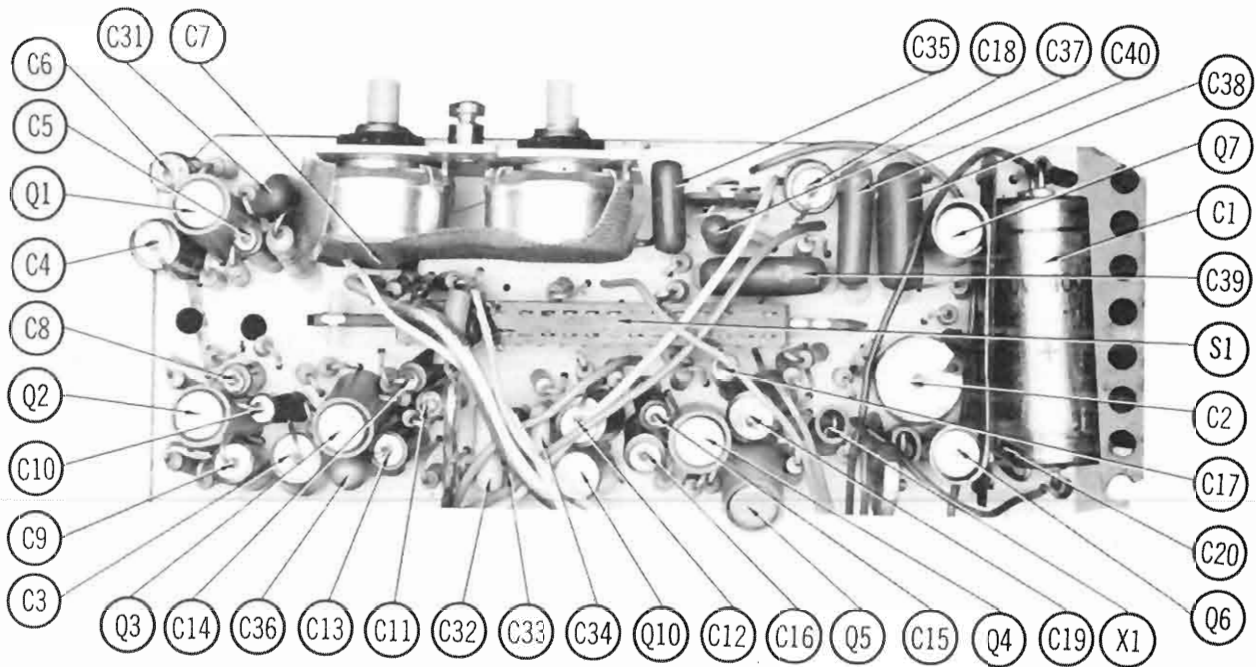
WOLLENSAK MODEL 4200

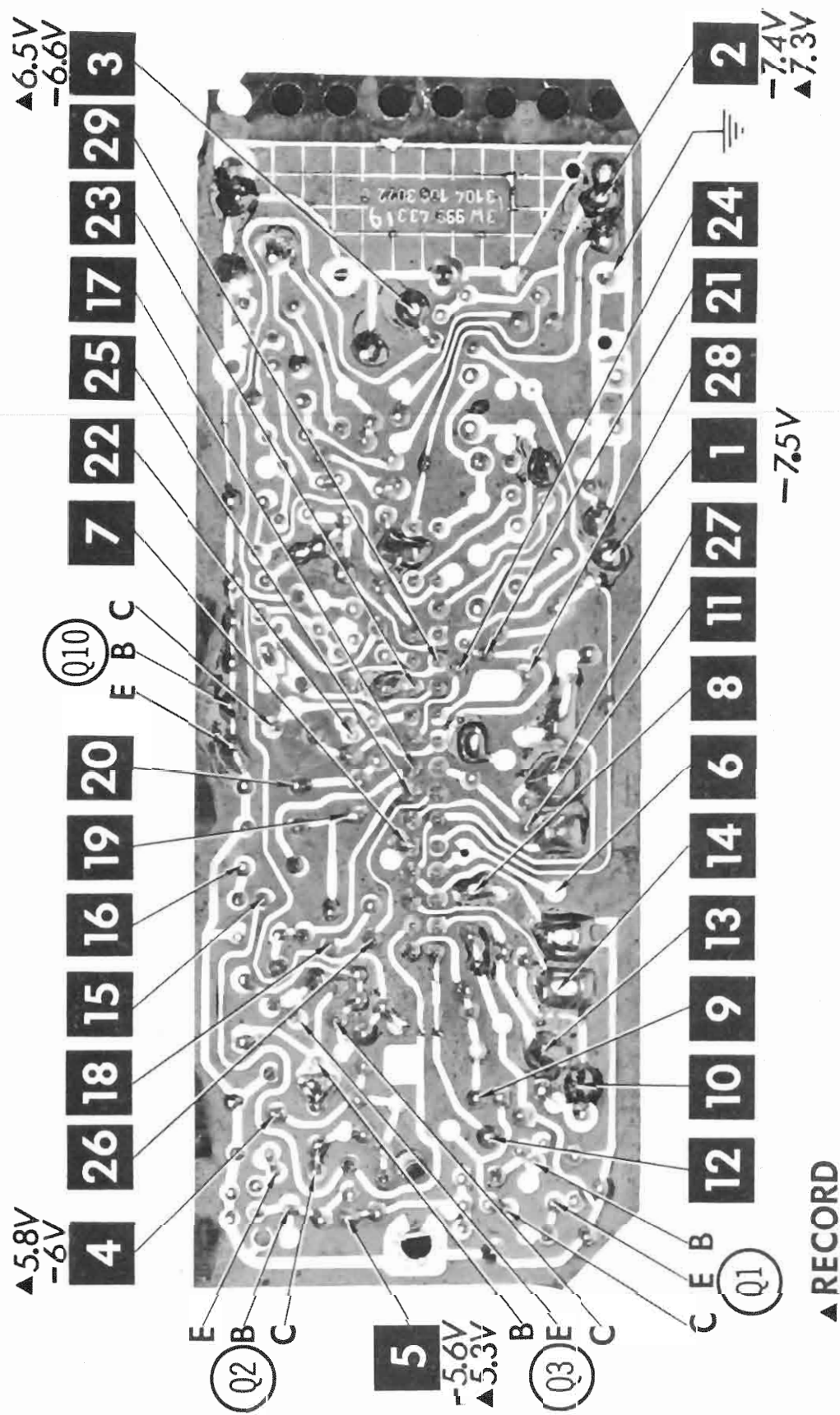
MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	01305360	Capstan Pressure Roller Ass'y.	21	03305990	Record Interlock Linkage
2	30306670	Advance Belt	22	13306000	Interlock Linkage Return Spring
3	30306680	Main Drive Belt	23	15305230	Switch Actuator Lever
4		Slide Plate	24	01306640	Function Selector Lever
5	01305210	Detent Roller and Shaft	25	01305300	Pulley Assembly
6	13305200	Detent Spring (2 used)	26	09306620	Ball Bearings (4 used)
7	13305320	Brake Bracket Retaining Spring	27	13305240	Control Bracket Spring
8	03305400	Cassette Retaining Spring	28	15305340	Spindle Retaining Cap (2 used)
9	13305330	Brake Return Spring	29	01305370	Spindle and Tire Assembly (2 used)
10	01305350	Brake Bracket Assembly	30	13305440	Take-up Clutch Return Spring
11	15307040	Brake Shoe (2 used)	31	01306740	Knob (With Integral Extension Piece)
12		Flywheel Upper Bearing	32	①	Pulley
13	01305380	Capstan Pressure Roller Return Spring	33	①	Clutch Plate
14	13305190	Record Lock Push-button Spring	34	①	Drive Shaft
15	01305490	Flywheel Bearing Bracket	35	①	Felt Clutch
16	01305480	Flywheel and Capstan Assembly	36	①	Clutch Arm
17	01305460	Take-up Clutch Assembly	37	②	Drive Drum
18	01306660	Winding Roller Lever Assembly	38	②	Fast Wind Pulley
19	13306650	Function Selector Lever Spring	39	②	Fast Wind Lever Assembly
20	13306650	Spring Under Lever	40	②	Fast Wind Spring
			41		Switch Actuating Lever

① Part of Ref. No. (17).

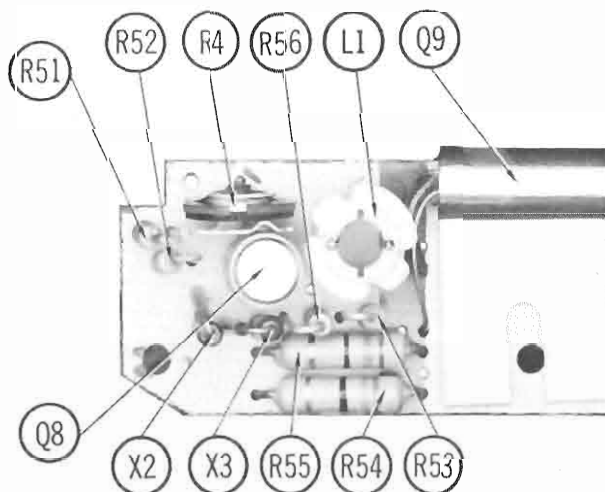
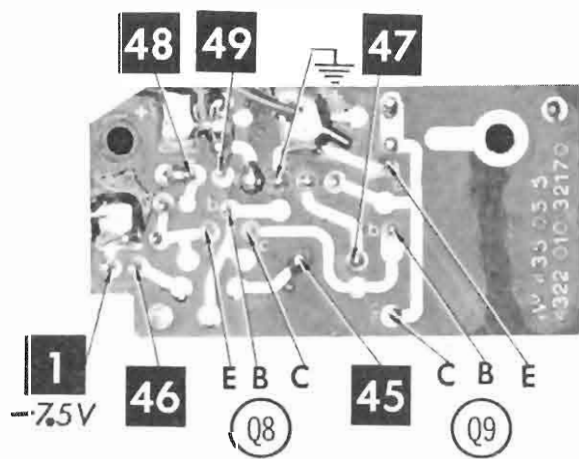
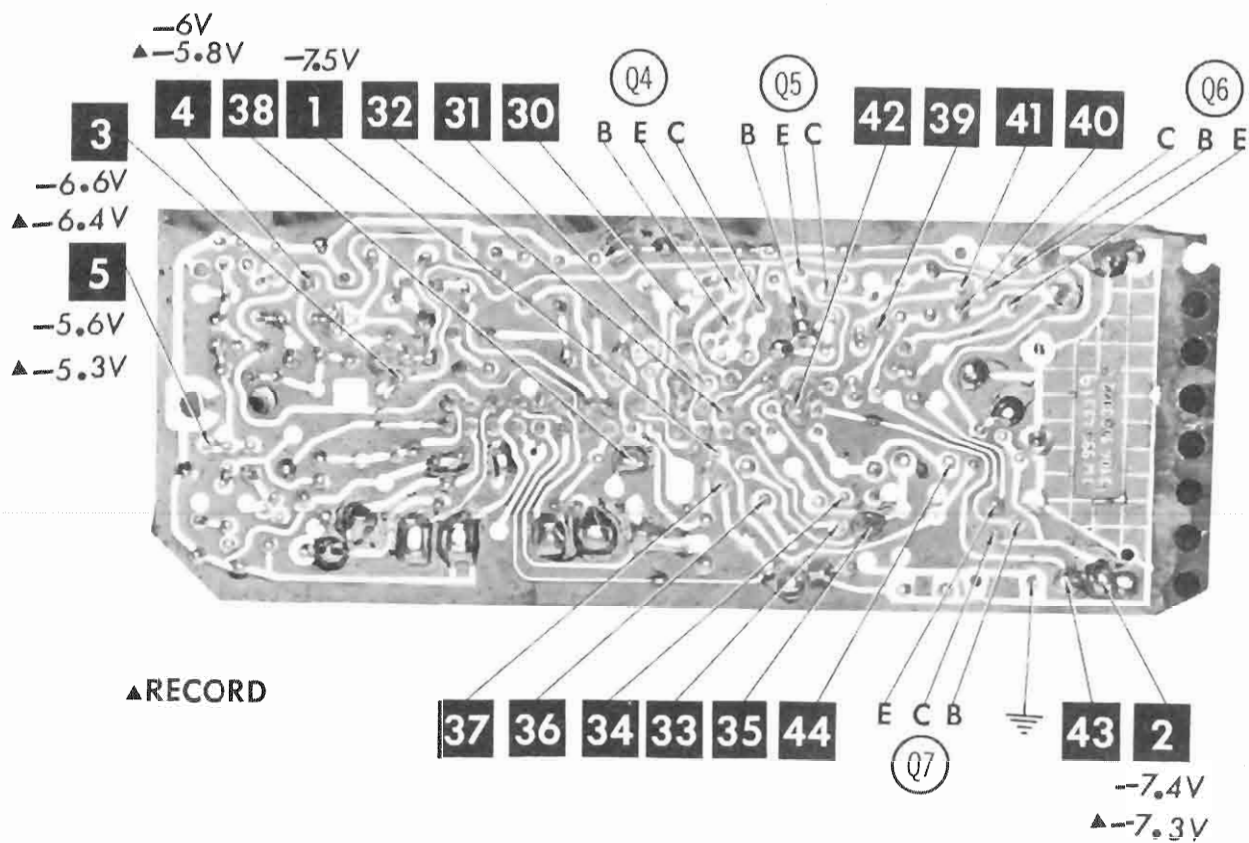
② Part of Ref. No. (18).





A Howard W. Sams **CIRCUITRACE®** Photo

WOLLENSAK MODEL 4200



PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

TRANSISTORS

ITEM No.	TYPE No.	FUNCTION	REPLACEMENT DATA						
			MFGR. PART No.	DELCO PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	MOTOROLA PART No.	RCA PART No.	SYLVANIA PART No.
Q1	AC125 (2N2428)	Preamp	27125180(1)	DS-26	GE-2	TR-14	HEP254	SK-3004	ECG 102
Q2	AC125 (2N2428)	Preamp	27125180(1)	DS-26	GE-2	TR-14	HEP254	SK-3004	ECG 102
Q3	AC125 (2N2428)	AF Amp	27125180(1)	DS-26	GE-2	TR-14	HEP254	SK-3004	ECG 102
Q4	AC126 (2N2429)	AF Amp	27125190(1)	DS-26	GE-2	TR-14	HEP254	SK-3004	ECG 102
Q5	AC126 (2N2429)	AF Amp & Bias	27125190(1)	DS-26	GE-2	TR-14	HEP254	SK-3004	ECG 102
Q6	AC127	Oscillator	27125310		GE-8	TR-09		SK-3010	ECG 103
Q7	AC128 (2N2431)	Output	27125150(1)	DS-26	GE-2	TR-05	HEP254	SK-3004	ECG 102
Q8	AC127	Speed Amp	27125310		GE-8	TR-09		SK-3010	ECG 103
Q9	AC128 (2N2431)	Speed Control	27125150(1)	DS-26	GE-2	TR-05	HEP254	SK-3004	ECG 102
Q10	AC125	Meter Rectifier							

(1) Part Number for Alternate type.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MFGR. PART OR TYPE No.	REPLACEMENT RECTIFIERS & DIODES			REPLACEMENT RECTIFIERS		NOTES
		GENERAL ELECTRIC PART No.	INTERNATIONAL RECTIFIER PART No.	SYLVANIA PART No.	RCA PART No.	SARKES TARZIAN PART No.	
X1	27123220 (BA114)						
X2	27123220 (BA114)						
X3	27123220 (BA114)						

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA						
		PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	400 10V	27116390					MTA400F10	TL-1140
C2	200 10V	27116340						
C3	32 10V	(1)						
C4	32 10V	(1)						
C5	2.5 16V	(2)			TYR136F2R7K		TAS275K015P0A	150D275X9020 B2
C6	40 2.5V	27116580			TYR138B390K		TAS396K010P0C	150D396X9006 B2
C7	2.5 16V	(2)			TYR136F2R7K		TAS275K015P0A	150D275X9020 B2
C8	2.5 16V	(2)			TYR136F2R7K		TAS275K015P0A	150D275X9020 B2
C9	40 2.5V	27116580			TYR138B390K		TAS396K010P0C	150D396X9006 B2
C10	2.5 16V	(2)			TYR136F2R7K		TAS275K015P0A	150D275X9020 B2
C11	.64 6.4V	27116570			TYR138F684J		TAS684K050P0A	150D684X9006 A2
C12	32 10V	(1)						
C13	40 2.5V	27116580			TYR138B390K		TAS396K010P0C	150D396X9006 B2
C14	2.5 16V	(2)			TYR136F2R7K		TAS275K015P0A	150D275X9020 B2
C15	2.5 16V	(2)			TYR136F2R7K		TAS275K015P0A	150D275X9020 B2
C16	40 2.5V	27116580			TYR138B390K		TAS396K010P0C	150D396X9006 B2
C17	2.5 16V	(3)			TYR136F2R7K		TAS275K015P0A	150D275X9020 B2
C18	64 4V	27116590			TYR138B680K		TAS686K015P0F	150D686X9006 R2
C19	64 4V	27116590			TYR138B680K		TAS686K015P0F	150D686X9006 R2
C20	800 4V	27116600						

(1) 25mfd @ 6.4V, Part Number 27116430, used in some versions.

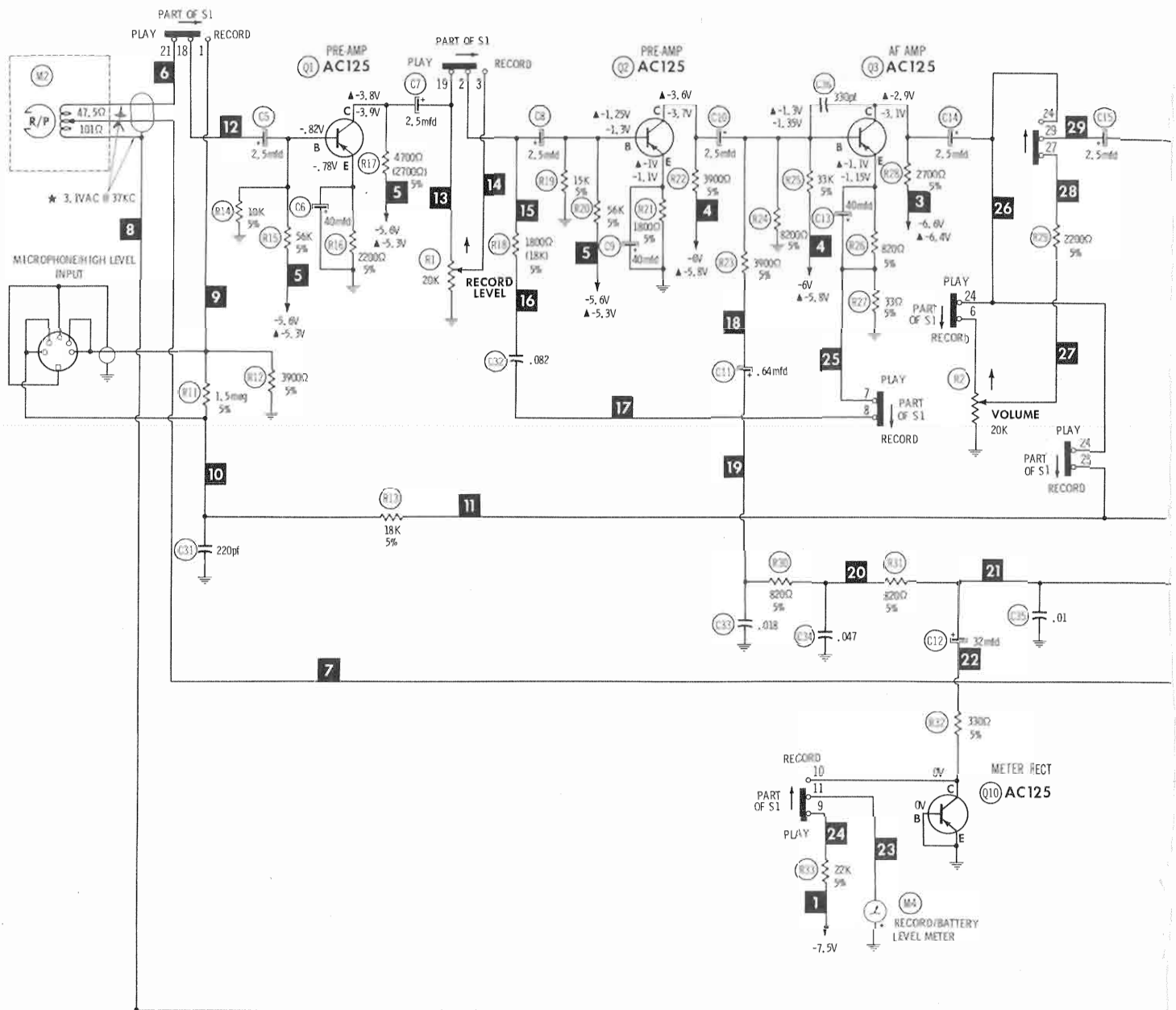
(2) 2.5mfd @ 10V, Part Number 27116420, used in some versions.

(3) 8mfd used in some versions.

(CONTINUED ON PAGE 120)

WOLLENSAK MODEL 4200

NOTE: DEMAGNETIZE HEADS AFTER SERVICING RECORDER



Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

Arrows at controls indicate clockwise rotation viewed from actuator end.

▲ MEASURED IN "RECORD"

★ MEASURED IN "RECORD" WITH AN AUDIO VTVM

③ See parts list

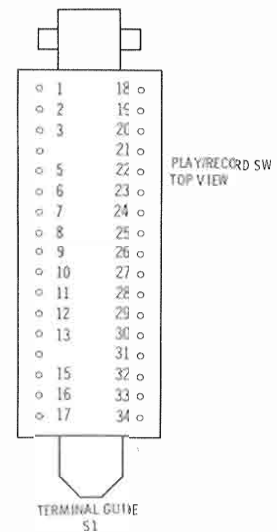
1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found on the unit.
6. Supply voltage maintained at rated value for voltage readings.
7. Resistance measurements not given because of the wide variation in internal resistance of transistor.

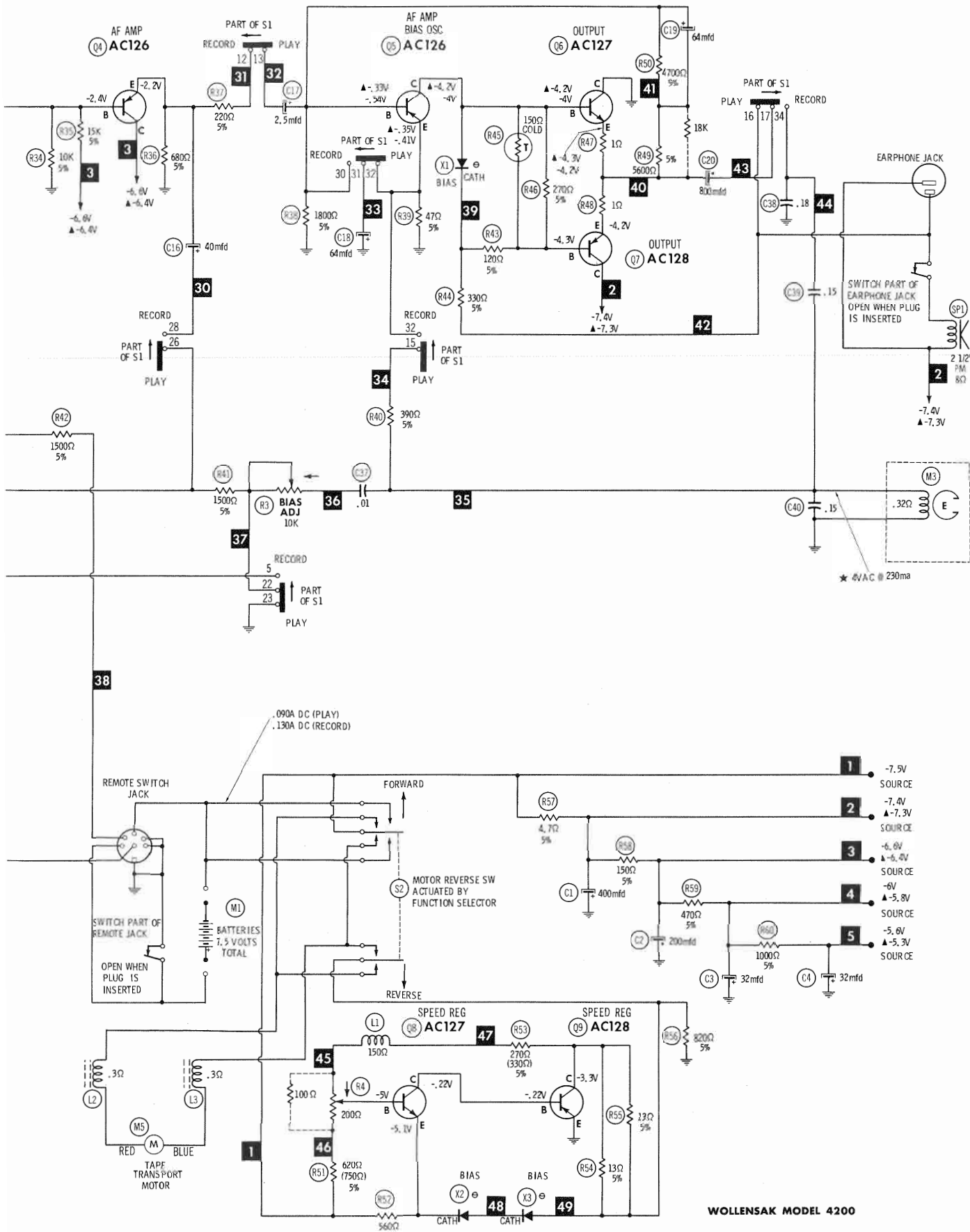
8. All measurements taken in "PLAY" unless otherwise indicated.

A PHOTOFACIT STANDARD NOTATION SCHEMATIC

with **CIRCUITRACE**

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PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL- DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C31	220		GPD X5F221K	DD-221	JBZ601YP221K	CCD-221	GP322	10TS-T22
C32	.082 10%				WMFIS82			22SP82391
C33	.018 10%				WMFIS18		PVC1118	22SP18391
C34	.047 10%				WMFID47			22SP47291
C35	.01 10%				WMFIS1	IDP-1-103		22SP10391
C36	330		GPD X5F331K	DD-331	JBZ601YP331K	CCD-331	GP331	10TS-T33
C37	.01		TTP-01	CK-103	HDY101ZV103P	CCD-103	TA110	TG-S10
C38	.18 10%				WMFIP18			22SP18491
C39	.15 10%				DMFIP15	IDP-3-154	PVC1015	22SP1549R
C40	.15 10%				DMFIP15	IDP-3-154	PVC1015	75 22SP1549R

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST- ANCE	REPLACEMENT DATA				
			MFGR. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
R1	Record Level	20K	27140560		44-25K-W		
R2	Playback Volume	20K	27140560		44-25K-W		
R3	Bias Adjust	10K	27140660				
R4	Motor Speed Adjust	200	(1)				

(1) 220 ohms, Part Number 27140670, used in some versions.

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	MFGR. PART No.			IRC PART No.	WORKMAN PART No.	MFGR. PART No.
R45	150 (Cold) Thermistor			27107020					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA			
		PART No.	MEISSNER PART No.	MILLER PART No.	WORKMAN PART No.
L1	RF Choke	27133220			
L2	RF Choke	27133130	19-1011	4626	T863
L3	RF Choke	27133130	19-1011	4626	T863

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA			NOTES
		MFGR. PART No.	JENSEN PART No.	QUAM PART No.	
SP1	2 1/2" PM 8 ohms	27160380	P20001	22A06Z8	

PARTS LIST AND DESCRIPTION (CONTINUED)

(When ordering parts, state Model, Part Number, and Description.)

BATTERIES

ITEM No.	VOLTAGE	MFR. PART No.	REPLACEMENT DATA			NOTES
			BURGESS	EVEREADY	MALLORY	
M1	7.5V		130 or AL-1 (1)	1035 or E93 (1)	M14R or MN1400 (1)	(1) 5 Required

TAPE HEADS

ITEM NO.	MEASURED			PART NO.	NORTONICS PART NO.	DESCRIPTION
	INDUCTANCE	BIAS/ERASE VOLTS (RMS)	BIAS FREQ.			
M2	14.7mh (1)	3.1Vrms	37KC	27161340		Cassette 2-Track Monaural Record/Play
M3	60mh (2) .07mh	4Vrms	37KC	27161330		Cassette 2-Track Monaural Erase (1) Record Section (2) Play Section

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M4	Meter	27164040	Record & Battery Level
M5	Motor	09310170	Tape Transport - Includes Pulley
M6	Microphone Assembly	01306900	Microphone, and Switch Complete
S1	Switch	28141010	Record/Play
S2	Switch	09310190	Motor & Amplifier
	Printed Circuit Board	09310180	Motor Speed Control

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Case Assembly Complete	01306710	Knob, Playback Volume	01306790
Bottom Cover	15306770	Knob, Record Level	01306800
Battery Compartment Cover	15306760	Knob, Function Selector	01306740
Cassette Compartment Lid	15306730	Button, Record Lock	15306750
Cover Strip	15306990		

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors 8524 (Stranded) Available in 12 Colors
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401 or 8421
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor-Unshielded) 8429 (Two Conductor-Shielded) 8419 (Three Conductor-Shielded)

WOLLENSAK MODEL 4200