

# TABLE OF CONTENTS

	Page		Page
LIST OF ILLUSTRATIONS .....	iii	<b>SECTION 3 THEORY OF OPERATION</b>	
LIST OF TABLES .....	iii	INTRODUCTION .....	3-1
OPERATORS SAFETY SUMMARY .....	iv	GENERAL DESCRIPTION .....	3-2
SERVICING SAFETY SUMMARY .....	v	DETAILED CIRCUIT DESCRIPTION .....	3-3
<b>SECTION 1 SPECIFICATION</b>		VERTICAL ATTENUATORS .....	3-3
INTRODUCTION .....	1-1	Input Coupling .....	3-3
ACCESSORIES .....	1-1	Buffer Amplifier and Gain .....	
PERFORMANCE CONDITIONS .....	1-1	Switching Network .....	3-4
<b>SECTION 2 OPERATING INSTRUCTIONS</b>		Paraphase Amplifier .....	3-4
PREPARATION FOR USE .....	2-1	VERTICAL PREAMPLIFIERS .....	3-5
SAFETY .....	2-1	CHANNEL SWITCH AND	
LINE VOLTAGE .....	2-1	VERTICAL OUTPUT .....	3-5
POWER CORD .....	2-1	Delay Line Driver .....	3-6
LINE FUSE .....	2-1	Vertical Output Amplifier .....	3-6
INSTRUMENT COOLING .....	2-2	A/B Sweep Separation Circuit .....	3-7
CONTROLS, CONNECTORS, AND		TRIGGER AMPLIFIERS AND	
INDICATORS .....	2-2	SWITCHING .....	3-7
POWER, DISPLAY, AND PROBE		Internal Trigger .....	3-7
ADJUST .....	2-2	Internal Trigger Amplifier .....	3-8
VERTICAL .....	2-3	A External Trigger Amplifier .....	3-8
HORIZONTAL .....	2-4	Line Trigger Amplifier .....	3-8
TRIGGER .....	2-6	A TRIGGER GENERATOR .....	3-9
REAR PANEL .....	2-7	A Trigger Level Circuit .....	3-9
OPERATING CONSIDERATIONS .....	2-8	A Trigger Level Comparator .....	3-9
GRATICULE .....	2-8	A Schmitt Trigger and TV	
GROUNDING .....	2-8	Trigger Circuit .....	3-9
SIGNAL CONNECTIONS .....	2-8	A SWEEP GENERATOR AND	
INPUT COUPLING CAPACITOR		LOGIC .....	3-9
PRECHARGING .....	2-8	A Miller Sweep Generator .....	3-10
OPERATOR'S ADJUSTMENTS .....	2-9	A Sweep Logic .....	3-11
INTRODUCTION .....	2-9	ALTERNATE B SWEEP .....	3-11
TRACE ROTATION .....	2-9	B Miller Sweep Generator .....	3-12
PROBE COMPENSATION .....	2-9	B Trigger Level Comparator .....	3-12
OSCILLOSCOPE DISPLAYS .....	2-10	Runs After Delay .....	3-12
INTRODUCTION .....	2-10	B Delay Time Position	
BASELINE TRACE .....	2-10	Comparator .....	3-12
SIGNAL DISPLAY .....	2-11	B Sweep Logic .....	3-12
MAGNIFIED-SWEEP DISPLAY .....	2-11	Alternate Display Switching	
DELAYED-SWEEP DISPLAY .....	2-11	Logic .....	3-13
DELAYED-SWEEP		B Z-Axis Logic .....	3-13
MEASUREMENTS .....	2-11	HORIZONTAL .....	3-13
SINGLE-SWEEP DISPLAY .....	2-12	Horizontal Preamplifier .....	3-14
X-Y DISPLAY .....	2-12	X-Y Amplifier .....	3-14
TV SIGNAL DISPLAYS .....	2-12	Horizontal Output Amplifier .....	3-15
		Z-AXIS AMPLIFIER .....	3-15
		Dc Restorer .....	3-16



# LIST OF ILLUSTRATIONS

Figure		Page	Figure		Page
	The 2235 Oscilloscope .....	vi	2-7	Rear-panel connector .....	2-7
1-1	Maximum input voltage vs. frequency derating curve for CH 1 OR X, CH 2 OR Y, and EXT INPUT connectors .....	1-7	2-8	Graticule measurement markings .....	2-8
2-1	Voltage, power cord, and fuse data .....	2-1	2-9	Probe compensation .....	2-10
2-2	Fuse holder and power cord connector ...	2-2	3-1	Block diagram of the Vertical Attenuators .	3-4
2-3	Power, display, and probe adjust controls connector and indicator .....	2-3	3-2	Block diagram of the Channel Switching circuitry .....	3-6
2-4	Vertical controls and connectors .....	2-4	3-3	Block diagram of the A Sweep Generator and Logic Circuitry .....	3-10
2-5	Horizontal controls .....	2-5	3-4	Block diagram of the Horizontal Amplifier .	3-14
2-6	Trigger controls, connector, and indicator .	2-6	3-5	Simplified diagram of the Dc Restorer circuitry .....	3-16
			6-1	Multi-connector holder orientation .....	6-6

# LIST OF TABLES

Table		Page	Table		Page
1-1	Electrical Characteristics .....	1-2	5-4	Attenuator Compensation Adjustments ...	5-9
1-2	Environmental Characteristics .....	1-8	5-5	Settings for Bandwidth Checks .....	5-12
1-3	Physical Characteristics .....	1-9	5-6	Settings for Timing Accuracy Checks .....	5-17
4-1	Test Equipment Required .....	4-2	5-7	Settings for Delay Time Accuracy Checks .	5-18
4-2	Deflection Accuracy Limits .....	4-4	5-8	Switch Combinations for A Triggering Checks .....	5-21
4-3	Settings for Bandwidth Checks .....	4-6	6-1	Relative Susceptibility to Static-Discharge Damage .....	6-1
4-4	Settings for Timing Accuracy Checks .....	4-9	6-2	External Inspection Checklist .....	6-3
4-5	Settings for Delay Time Accuracy Checks .	4-10	6-3	Internal Inspection Checklist .....	6-3
4-6	Switch Combinations for A Triggering Checks .....	4-12	6-4	Power Supply Limits and Ripple .....	6-8
5-1	Adjustment Interactions .....	5-2	6-5	Maintenance Aids .....	6-11
5-2	Power Supply Limits .....	5-4	6-6	Trigger Bandwidth Alteration .....	6-20
5-3	Deflection Accuracy Limits .....	5-8			