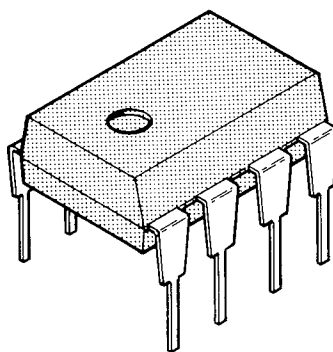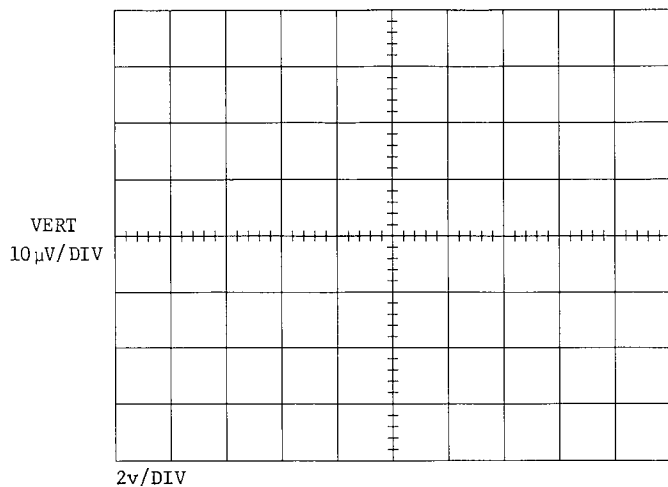# Tektronix®
COMMITTED TO EXCELLENCE

178 COMMON MODE CALIBRATION FIXTURE
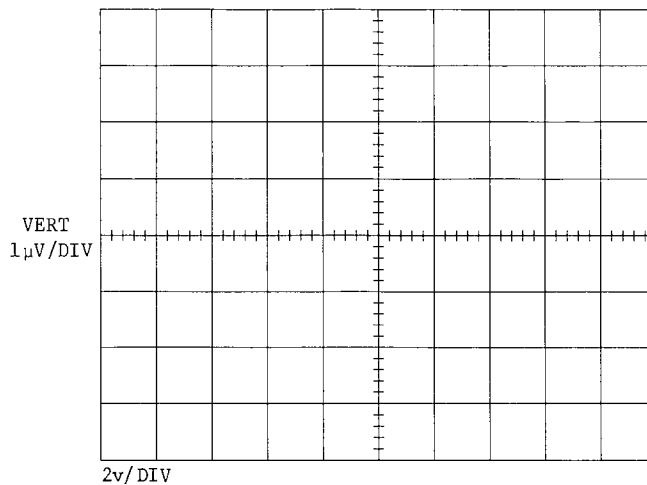## (Part No. 067-0756-00)

This Calibration Fixture is used to verify/adjust the Common Mode Rejection Ratio of the 178 Instrument.

The LM725 has been selected by Tektronix, Inc. to meet or exceed 120dB Common Mode Rejection. The Diagrams below show the exact CMRR of the Op-Amp Included.

VERT
10 μV/DIV

2v/DIV

Compensation Diagram for 10 μV attenuation range

VERT
1 μV/DIV

2v/DIV

Compensation Diagram for 1μV attenuation range

CHECK COMMON-MODE REJECTION RATIO

577		
	Storage	OUT
	Var Collector %	0
	Coll Polarity	+DC
	Max Peak Volts	25
	Series Resistors	
	Step Family	OFF
	Step Rate	
	Step/Offset Amp	
	Step/Offset Pol	
	No of Steps	
	Offset Mult	
	Offset Zero	IN
	Offset Aid	
	Pulsed 300 us	OUT
	Step X.1	
	Display invert	IN
	Display Filter	OUT
	Horiz Volts/Div	2 Collector Volts
	X10 Horiz Mag	IN
	X10 Vert Mag	OUT
	Horiz Position	
	Vert Position	

178		
	DUT Supplies	OFF
	Load R	
	Source R	50 Ohm
	+ Supply	+15V
	- Supply	Track + Supply
	Sweep Ampl	Fully CCW
	Sweep Freq	.1HZ
	Display Zero	
	Function	CMRR

DUT CARD		
	Vert Units/Div	.1mV
	Amplifier SW	
	EXT FBA SW	NORM
	+ Supply Limit	
	- Supply Limit	

a. Set controls as indicated on the chart to the left.

b. Using patch cords, connect the LM725 Op Amp on the Standard Op Amp card as shown in Figure 1.

c. Set the DUT SUPPLIES switch to ON. Press the DISPLAY ZERO button and center the DISPLAY ZERO reference point.

d. Set the SWEEP AMPLITUDE control for ten divisions of horizontal display.

e. CHECK-Vertical deflection of the horizontal trace should not exceed ±3 divisions.

f. Set the VERT UNITS/DIV switch to 10uV (magnified). Press the DISPLAY ZERO button.

CHECK-Vertical deflection of the horizontal trace should not exceed ±3 divisions, + the LM725's CMRR slope on the 10uV/Div range. If no diagram is supplied for the 10uV/Div range with the LM725, consider the LM725's CMRR to be flat. Set the VERT UNITS/DIV switch to 1uV (magnified). Press the DISPLAY ZERO button.

CHECK-Vertical deflection of the horizontal trace should not exceed ±3 divisions, + the LM725's CMRR slope on the 1uV/Div range.
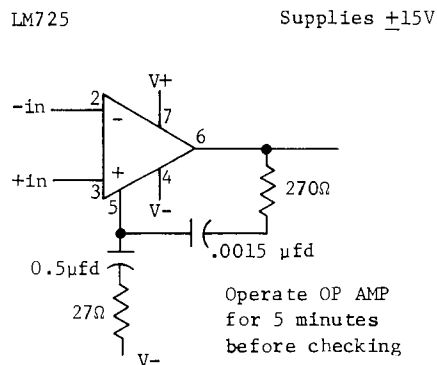
LM725   Supplies ±15V

Figure 1. LM725 connection and compensation diagram

ADJUST COMMON-MODE REJECTION RATIO

Storage	OUT	
Var Collector %	0	
Coll Polarity	+DC	
Max Peak Volts	25	
Series Resistor		
Step Family	OFF	
Step Rate		
Step/Offset Amp		
Step/Offset Pol		
No of Steps		
Offset Mult		
Offset Zero	IN	
Offset Aid		
Pulsed 300 us	OUT	
Step X.1		
Display Invert	IN	
Display Filter	OUT	
Horiz Volts/Div	2 Collector Volts	
X10 Horiz Mag	IN	
X10 Vert Mag	OUT	
Horiz Position		
Vert Position		

(left margin label: 577)

DUT Supplies	OFF
Load R	
Source R	50 Ohm
+ Supply	+15V
- Supply	TRACK + SUPPLY
Sweep Ampl	FULLY CCW
Sweep Freq	.1HZ
Display Zero	
Function	CMRR
Vert Units/Div	1mV

(left margin label: 178)

Amplifier SW	
EXT FBA SW	NORM
+ Supply Limit	
- Supply Limit	

(left margin label: DUT CARD)

a. Set controls as indicated on the chart to the left.

b. Using patch cords, patch the LM725 and compensation network to the standard Op Amp card as shown in figure 1. Place the LM725 Op Amp in the test socket. Set the DUT SUPPLIES switch to ON. Press the DISPLAY ZERO button and center the display.

c. ADJUST-R267, X10 CMRR, for no vertical deflection of the horizontal trace.

d. Set the VERT UNITS/DIV switch to 10uV (MAG ON) and press the DISPLAY ZERO button.

e. ADJUST-R265, X100 CMRR, for the known vertical deflection of the horizontal trace. If no diagram is supplied for the 10uV/Div range with the LM725, the vertical deflection is flat.

f. Set the VERT UNITS/DIV to 1mV (MAG ON) and press the DISPLAY ZERO button and repeat parts C through F until there is no vertical variation of the horizontal trace from the known CMRR for the LM725.

g. Set the VERT UNITS/DIV to 1uV (MAG ON) and press the DISPLAY ZERO button.

h. ADJUST-R262, X1000 CMRR, for the known vertical deflection of the horizontal display as shown by the diagram for 1uV/Div.