

# Custom Instrument Quote

Nº 1734

DATE 12-23-65

PALO ALTO  
FIELD OFFICE

LEO WULFF  
FIELD ENGINEER

71-6361-01  
REFERENCE/DATE

**FAIRCHILD SEMICONDUCTOR**

CUSTOMER

CUST. REFERENCE

QUANTITY	TYPE	SPECIAL MOD*	PROD. MOD		WKS. QUOTE ARO	* SPECIAL MOD PRICE
2	575	122E			<del>14</del> 15	

CONTROL DRAWING	HOW ACCOMPLISHED (INTERNAL)			INSTRUMENT AVAIL. (INTERNAL)	
	S & S	CUST. INST.	PLANT	STAGE	WEEK AVAIL.
SP. 575-122E <i>Rev 12/23/65</i>	<del>4</del> 4	<del>3</del> 3			8
DATE MAILED					

**REMARKS:**

1. This quote is made to Tektronix Control Drawing or mod description only. Acceptance of a purchase order referencing any other specifications is the responsibility of the ~~engineer~~ Field Engineer.

2. \*The price shown is for SPECIAL MOD only, does not include price for production modification.

**Engr. Proto.**

Labor 894.40  
Material 25.36  
Mfg. 71.97

**Production**

Labor \_\_\_\_\_  
Material \_\_\_\_\_

FILE

*Requote of 1525*

DEC 4 1965





OCT 27 1965

BE2785 10-26-65 LEO WULFF PAL AL FROM RON GOARD CONTRACT ADM  
RE TELCON OF 10-4

*FOR*

SPECIAL PRODUCTS QUOTE #1525 OF 10-26-65  
YOU MAY QUOTE TO FAIRCHILD 2 EA TYPE 575 MOD 122E AT \$365.00 EA  
ADDITIONAL. EST SHIPMENT CAPABILITY 14 WKS AFTER RECEIPT OF  
ACCEPTABLE P.O. IN BEAVERTON. SPECIFICATIONS WILL BE PER TEKTRONIX  
CONTROL DRAWING SP 575-122E REV A DATED 10/65. DO NOT  
QUOTE ANY OTHER SPECS OR ACCEPT A PURCHASE ORDER THAT REFERENCES  
ANY OTHER SPECS. QUANTITIES OTHER THAN STATED MUST BE RE-QUOTED.  
THIS QUOTE IS VALID FOR 30 DAYS.

COPIES OF CONTROL DRAWINGS IN MAIL.

5

# Custom Instrument Quote

**Nº** 1525

DATE 10-26-65

PALO ALTO  
FIELD OFFICE

LEO WULFF  
FIELD ENGINEER

TELCON OF 10/4  
REFERENCE/DATE CHUCK NOLAN

**FAIRCHILD**

CUSTOMER

CUST. REFERENCE

QUANTITY	TYPE	SPECIAL MOD*	PROD. MOD		WKS. QUOTE ARO	* SPECIAL MOD PRICE
2	575	122E			14	

CONTROL DRAWING	HOW ACCOMPLISHED (INTERNAL)			INSTRUMENT AVAIL. (INTERNAL)	
	S & S	CUST. INST.	PLANT	STAGE	WEEK AVAIL.
SP575-122E Rev. A 10/20/65	✓ 8(3)	2			9
DATE MAILED					

**REMARKS:**

1. This quote is made to Tektronix Control Drawing or mod description only. Acceptance of a purchase order referencing any other specifications is the responsibility of the ~~engineer~~ Field Engineer.

2. \*The price shown is for SPECIAL MOD only, does not include price for production modification.

**Engr. Proto.**

Labor 894.40  
Material 25.36  
Mfg. 71.97

**Production**

Labor \_\_\_\_\_  
Material \_\_\_\_\_

FILE

CI To Furnish Labor on 2nd.

STATEMENT OF MODIFICATION

Instr. 575 Mod 122 E Quant. \_\_\_\_\_ Date 10-4-65

F. O. Palo Alto Cust. Fairchild F. E. Leo Wulf

Quote No. 1339 Engineer IRV

Requirement:

0-600 v @ .5 amp collector supply  
customer wants:

0-20

0-200

0-400

0-800 w/ as much current in  
each range as he can get -  
would like .5 amp @ 800v.

4019  
BE2588 9-28 TO LEO WULFF PAL AL FROM RON GOARD CONTRCT ADM  
RE IOC OF 8-30

SPECIAL PRODUCTS QUOTE #1339 OF 9-28

YOU MAY QUOTE TO FAIRCHILD

2 EACH TYPE 575 MOD 122E AT 365.00 EA ADDITIONAL.

EST SHIPMENT CAPABILITY 13 WEEKS AFTER RECEIPT OF ACCEPTABLE PO IN  
BEAVERTON, SPECIFICATIONS WILL BE PER TEKTRONIX CONTROL DRAWINGS.

DO NOT QUOTE ANY OTHER SPECS OR ACCEPT A PURCHASE ORDER THAT  
REFERENCES ANY OTHER SPECS. QUANTITIES OTHER THAN STATED MUST BE  
RE-QUOTED. THIS QUOTE IS VALID FOR 30 DAYS.

7677

# Custom Instrument Quote

**Nº** 1339

DATE 9-28-65

Palo Alto  
FIELD OFFICE

Leo Wulff  
FIELD ENGINEER

IOC of 8/30  
REFERENCE/DATE

Fairchild  
CUSTOMER

CUST. REFERENCE

QUANTITY	TYPE	SPECIAL MOD*	PROD. MOD	WKS. QUOTE ARO	* SPECIAL MOD PRICE
2	575	122E		13	

CONTROL DRAWING	HOW ACCOMPLISHED (INTERNAL)			INSTRUMENT AVAIL. (INTERNAL)	
	S & S	CUST. INST.	PLANT	STAGE	WEEK AVAIL.
	8	4			3
DATE MAILED					

**REMARKS:**

- This quote is made to Tektronix Control Drawing or mod description only. Acceptance of a purchase order referencing any other specifications is the responsibility of the ~~engineer~~ Field Engineer.
- \* The price shown is for SPECIAL MOD only, does not include price for production modification.

New Mod #

**Engr. Proto.**

Labor 678.40 894.40  
 Material 23.36 25.36  
 Mfg. 71.97 71.97

**Production**

Labor \_\_\_\_\_  
 Material \_\_\_\_\_

FILE



TELCON NOTES

Cust. Will Steffe  
P.E.

Date 10-4-65

Subject 575 mod 122E

NOTES:

Wants 0-800 v @ .5 amp  
0-400 v @ 1 amp  
0-200 v @ 2 amp.

does not need 1500 v scale -

we will re-do the mod + re-quate.

Distribution:

Chuck

Ran

Erw.

575-122E

Taken by

la

94  
Palo Alto.

Will Daffy

Fairchild Semi. Conductor.

#1339

2-575 122E

file

400V

600V in lieu?

Prefer. 800V

STEVE WILL

415

321-7250

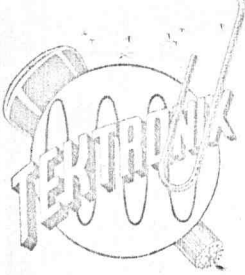
EX. 375

REFERRED TO  
CHUCK.

SI TALKING TO MR. WILL.

cc Si CORN

1339



# Inter-Office Communication

To: Bill Ewin

Date: August 30, 1965

From: Leo Wulff

# PALO ALTO

Subject: Type 575 Modification Request

Dear Bill,

Fairchild Semiconductor, "R & D Labs", is interested in purchasing a couple of new Curve Tracers and would like to get a modification to provide a 600 volt, 0.5 amp collector supply. They hinted that this capability would be a factor in the choice of a supplier. I don't know if the Fairchild/DuMont Curve Tracer goes to 600 volts or not.

Would you like to check with Beaverton on the possibility of Tek supplying this modification? It would involve only two instruments at first, maybe a few more later, but nothing big.

Thank you,

*Leo*

Leo

LHW:jw

*8-31-65*

*Ron Coard - Beaverton.*

*Could you please give Leo a feeling for the feasibility of doing this mod? The information seems to be complete in this Lec.*

RECEIVED

AUG 31 1965

*Thanks -*

*Bill Ewin*

TEKTRONIX, INC.  
PALO ALTO REGION OFFICE

*cc. Leo Wulff*

# REQUEST FOR QUOTATION FOR CUSTOM SPECIAL

DATE 20 SEPT 65

JOB NO. 771339

Requested By CUSTOM MODS Dept. I. FRIED Person Ext. 3745

Requested Of \_\_\_\_\_ Need Quotation By 23 SEPT 65

Instr. Type 575 Dept. Mod No. 122E

Description of Request: (Drawings, Sketches or written info)

LAY OUT FRONT PANEL AS INDICATED  
ON SKETCH.

Quantity Required 2 Desired Delivery \_\_\_\_\_

## QUOTATION

Est. Tooling Cost \_\_\_\_\_

Est. Material Cost \_\_\_\_\_

Est. Labor Cost \_\_\_\_\_

Est. Burden Cost \_\_\_\_\_

TOTAL COST EST 9.20

Est. Labor Hours 1

Delivery After Receipt  
of Order 2 (Days)  
(Weeks)

Quoted By H Bahrs

Ext. 2505

This quote is valid for 45 Days

# REQUEST FOR QUOTATION FOR CUSTOM SPECIAL

DATE 20 SEPT 65

JOB NO. 771339

Requested By CUSTOM MODS I. FRIED Ext. 3745  
Dept. Person

Requested Of ELECTROCHEM Need Quotation By 23 SEPT 65  
Dept.

Instr. Type 575 Mod No. 122E

Description of Request: (Drawings, Sketches or written info)

MAKE FRONT PANEL AS INDICATED  
ON SKETCH. STANDARD PUNCH AND  
STANDARD FILL.

Quantity Required 2 Desired Delivery \_\_\_\_\_

## QUOTATION

Est. Tooling Cost 16.00  
Est. Material Cost 1.36  
Est. Labor Cost .90  
Est. Burden Cost 2.12  
TOTAL COST EST 20.38

Est. Labor Hours .4  
Delivery After Receipt  
of Order \_\_\_\_\_ (Days)  
\_\_\_\_\_  
(Weeks)  
Quoted By MRS  
Ext. 7807

This quote is valid for 45 Days

# REQUEST FOR QUOTATION FOR CUSTOM SPECIAL

DATE 20 SEPT 65

JOB NO. 771339

Requested By CUSTOM MODS I. FRIED Ext. 374S  
Dept. Person

Requested Of TRANSFORMERS Need Quotation By 23 SEPT 65  
Dept.

Instr. Type 575 Mod No. 122E

Description of Request: (Drawings, Sketches or written info)

MAKE A COLLECTOR SWEEP TRANSFORMER  
TO GIVE A 0 TO 20 VOLT 10 AMP RANGE  
AND A 0 TO 600 VOLT 0.5 AMP RANGE.

INDICATE TRANS. DIMENSIONS WHEN THIS  
QUOTE IS RETURNED.

Quantity Required 2 Desired Delivery \_\_\_\_\_

## QUOTATION

Est. Tooling Cost \_\_\_\_\_  
Est. Material Cost \$ 22.00  
Est. Labor Cost 13.80  
Est. Burden Cost 10.85  
TOTAL COST EST 46.65

Est. Labor Hours 6  
Delivery After Receipt  
of Order 2 ~~(Days)~~  
(Weeks)  
Quoted By Bob COGAN  
Ext. 236

This quote is valid for 45 Days

# REQUEST FOR QUOTATION FOR CUSTOM SPECIAL

DATE 15 SEPT 65

JOB NO. 771339

Requested By CUSTOM MODS. Dept. I. FRIED Person Ext. 3745

Requested Of SWITCH Dept. Need Quotation By 20 SEPT 65

Instr. Type 575 Mod No. 122E

Description of Request: (Drawings, Sketches or written info)

MODIFY SW 305 (262-633) BY REMOVING  
ONE CCW POSITION.

MAKE A REPLACEMENT FOR SW 706 (260-108)  
THAT SWITCHES SEPARATE SETS OF DIODES  
RATHER THAN SWITCHING THE DIODES FROM  
PARALLEL TO SERIES.

Quantity Required 2 Desired Delivery \_\_\_\_\_

## QUOTATION

Est. Tooling Cost \_\_\_\_\_

Est. Material Cost \_\_\_\_\_

Est. Labor Cost \_\_\_\_\_

Est. Burden Cost \_\_\_\_\_

TOTAL COST EST \$75.00

Est. Labor Hours \_\_\_\_\_

Delivery After Receipt  
of Order \_\_\_\_\_ (Days)  
\_\_\_\_\_ (Weeks)

Quoted By J. Shorbeck  
Ext. \_\_\_\_\_

This quote is valid for 45 Days

# REQUEST FOR QUOTATION FOR CUSTOM SPECIAL

DATE 13 OCT 65

JOB NO. 771339

Requested By CUSTOM MODS Dept. I. FRIED Person Ext. 374s

Requested Of TRANSFORMS Dept. Need Quotation By 15 OCT 65

Instr. Type 575 Mod No. 122 E REV B

Description of Request: (Drawings, Sketches or written info)

120-0094-00 WITH FOLLOWING  
WINDINGS FOR SUPPLY VOLTS & AMPS (PEAK)

OF:	V	A
	20	16.0 A
	200	1.6
	400	0.8
	800	0.4

SHIELD PRIMARY

Quantity Required 2 Desired Delivery \_\_\_\_\_

## QUOTATION

Est. Tooling Cost \_\_\_\_\_

Est. Material Cost \$24.00

Est. Labor Cost 13.80

Est. Burden Cost 10.85

TOTAL COST EST 48.65

Est. Labor Hours 5

Delivery After Receipt of Order 2 (Days) (Weeks)

Quoted By Bob COGAN

Ext. 236

NOTE!! HP WILL HAVE 2.6" STACK HEIGHT.

This quote is valid for 45 Days



4.750  
±.008

4.000  
±.008

LABEL  
334-704

TURNS  
WIRE SIZE

.375

3.750  
±.005

.375

4.500  
±.005

BOARD - RED FIBER  
392-107

FISH PAPER  
252-514

LAMINATION  
386-015

FINISH - BLACK GLYPTAL  
252-039

BOARD-RED FIBER  
392-108

4.90 ± 0.16

2.4 ± 0.096

LABEL  
334-703

		290 was 33
BMB244	MW DX	4.100 ± .130
A	RE	ALL E.S.
REVISION	BY	

MAJOR ITEMS THAT NEED CHANGING TO PROVIDE  
A 0-600 VOLT 0.5 AMP. COLLECTOR SWEEP IN PLACE  
OF THE 0-200 VOLT 1.0 AMP. SWEEP.

1. NEW TRANSFORMER AND A HIGHER VOLTAGE  
SET OF DIODES. (T702) (120-094)
2. NEW PEAK VOLTS RANGE SWITCH. (SW706) (260-108)
3. NEW HORIZONTAL VOLTS/DIV. SWITCH. (SW305) <sup>(260-184)</sup>  
<sub>(262-494)</sub>
3. NEW FRONT PANEL.

- TRANSFORMERS <sup>DEPT.</sup> INDICATE THE COLLECTOR SWEEP TRANSFORMER  
CAN NOT BE INCREASED IN SIZE SO THE CURRENT  
RATING HAS TO BE REDUCED TO 325 MA.

11/60

# TYPE 575 TRANSISTOR-CURVE TRACER

SERIAL

THIS CHANGE, 575 MM 4269  
PEAK VOLTS RANGE SWITCH  
REQUEST OF TAYLOR  
MADE FROM FILM NO. 1242  
11-5-63 HA BAAJ

FOCUS INTENSITY ASTIGMATISM SCALE ILLUM.

**VERTICAL**

CURRENT OR VOLTAGE PER DIVISION

COLLECTOR MA: 200, 100, 50, 20, 10, 5, 2, 1, .5, .2, .1, .05, .02, .01, .005, .002, .001

BASE VOLTS: .1, .2, .5, .1, .05, .02, .01, .005, .002, .001

POSITION: 2X, 0.1X

EXT. POSITION

BASE CURRENT OR BASE SOURCE VOLTS SELECT SENSITIVITY/DIV. WITH [STEP SELECTOR] SWITCH

AMPLIFIER CALIBRATION ZERO CHECK

DC BAL.

-10 DIVISIONS

**HORIZONTAL**

VOLTS/DIV.

COLLECTOR VOLTS: .5, .2, .1, .05, .02, .01, .005, .002, .001

BASE VOLTS: .1, .2, .5, .1, .05, .02, .01, .005, .002, .001

POSITION

EXT. POSITION

BASE CURRENT OR BASE SOURCE VOLTS SELECT SENSITIVITY/DIV. WITH [STEP SELECTOR] SWITCH

AMPLIFIER CALIBRATION ZERO CHECK

DC BAL.

-10 DIVISIONS

**BASE STEP GENERATOR**

REPETITIVE: OFF

STEPS/FAMILY: 4, 12

POLARITY: [Diagram showing step generator waveform]

STEPS/SEC: 120, 240

GND. EMITTER	(NPN) +	(PNP) -
GND. BASE	(NPN) -	(PNP) +

SERIES RESISTOR: 68, 47, 33, 22, 15, 10, 6.7, 3.4, 1.5, 1.0, .68, .47, .33, .22, .15, .10, .068, .047, .033, .022, .015, .010, .0068, .0047, .0033, .0022, .0015, .0010

STEP SELECTOR: .005, .01, .02, .05, .1, .2, .5, 1, 2, 5, 10, 20, 50, 100, 200

CAUTION: TRANSISTOR CURRENT INCREASES VERY RAPIDLY WITH BASE VOLTAGE INCREASE. HALVE THE NUMBER OF STEPS/FAMILY BEFORE INCREASING BASE VOLTAGE STEP.

ZERO CURRENT (OPEN CIRCUIT)

ZERO VOLTS (GROUNDED)

**COLLECTOR SWEEP**

PEAK VOLTS RANGE: 0-20 (10 AMP), 0-600 (0.5 AMP)

CIRCUIT BREAKER: PRESS TO RESET

POLARITY: (PNP) -, (NPN) +

PERCENT OF PEAK VOLTS RANGE APPROXIMATE: 40, 50, 60, 70, 80, 90, 100

DISSIPATION LIMITING RESISTOR APPROXIMATE LOAD RESISTOR: 50, 20, 10, 5, 2, 1, 0, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K

NOTE: TO DETERMINE MAXIMUM POWER DISSIPATION AND LOAD LINE, REFER TO DATA ON TOP OF CABINET.

**CAUTION**  
DANGEROUS VOLTAGES WILL APPEAR AT COLLECTOR TERMINALS FOR SEVERAL SETTINGS OF ABOVE CONTROLS.

**TEKTRONIX**  
TEKTRONIX, INC.  
PORTLAND, OREGON, U.S.A.

POWER ON

MOD 122 E  
*[Handwritten signature]*

# REQUEST FOR QUOTATION FOR CUSTOM SPECIAL

DATE 15 SEPT 65

JOB NO. 771339

Requested By CUSTOM MODS. Dept. I. FRIED Person Ext. 3745

Requested Of C.I. Dept. Need Quotation By 20 SEPT 65  
Instr. Type 575 Mod No. 122E

Description of Request: (Drawings, Sketches or written info)

BUILD ONE INSTRUMENT FROM A PROTO  
AND CALIBRATE TWO INSTRUMENTS.  
THE MOD ~~122E~~ ADDS A 0-600VOLT  
1/2 AMP RANGE INSTEAD OF THE 0-200 VOLT  
RANGE.

Quantity Required 2 Desired Delivery \_\_\_\_\_

## QUOTATION

Est. Tooling Cost \_\_\_\_\_  
Est. Material Cost \_\_\_\_\_  
Est. Labor Cost \_\_\_\_\_  
Est. Burden Cost \_\_\_\_\_  
TOTAL COST EST 17.30

Est. Labor Hours 3.5  
Delivery After Receipt  
of Order \_\_\_\_\_ (Days)  
\_\_\_\_\_  
(Weeks)  
Quoted By Ted  
Ext. \_\_\_\_\_

This quote is valid for 45 Days



# CONTROL DRAWING

Special Products Dept.  
Engineering Div.

TEKTRONIX, INC., P. O. BOX 500, BEAVERTON, OREGON

1 of 2 Page

REV. A

1. General. This control drawing defines the specifications of Tektronix Type 575 Mod 122E Transistor Curve-Tracer.

2. Requirements.

2.1 The collector sweep range is changed to four ranges as follows:

0 to 20 volts peak	16 amps peak
0 to 200 volts peak	1.6 amps peak
0 to 400 volts peak	.8 amps peak
0 to 800 volts peak	.4 amps peak

2.2 The horizontal amplifier shall have 50 and 100 volt/div. ranges added.

SUPERSEDES  
EFFECTIVE DATE

BY  
ENGR.

APPROVED BY  
DATE 10 - 65

SP- 575-122E  
CONTROL DRAWING NUMBER

REV. A

This drawing defines modifications to a standard Tektronix item. All specifications and tolerances not affected by these modifications are the same as for the standard item.

**PROPRIETARY NOTICE** This drawing is the result of technical investigation by the Engineering Dept. of Tektronix, Inc. The disclosure of same may pertain to proprietary rights. The furnishing of this drawing does not constitute an expressed or implied license to use this drawing for re-manufacturing or re-procurement without prior consent.

All rights to these drawings are reserved to Tektronix, Inc.



# CONTROL DRAWING

Special Products Dept.  
Engineering Div.

TEKTRONIX, INC., P. O. BOX 500, BEAVERTON, OREGON

2 of 2 Page

REV  
A

## INDEX OF REVISIONS

Revision A      Added Index of Revisions Page. Revised paragraph 2.1. By  
Si Corn, October 20, 1965.

SP-575-122E  
CONTROL DRAWING NUMBER

REV  
A

SPECIALS ESTIMATE SHEET

INST. 575 MOD 122E QUOTE 1339 DATE 2-27-65

DEPT.	MAT'L. IN \$		SET UP TIME		WORK TIME		GROSS TIME		ESTIMATE BY	
	EST.	ACT.	EST.	ACT.	EST.	ACT.	DAYS	WEEKS	NAME	DATE
Engineering										
Drafting			680.-							
Shop			69.60							
Panel	1.36		16.-		3.02					
Photo										
P. C. Board										
Photo										
Silkscreen										
Photo										
Switches			50.-		25.-					
CRT										
Panel Mock-up			9.20							
Work Procedure			34.80							
Manuals			34.80							
Purchases										
Plant Time					17.30					
Material	24.-				24.65					
Totals	25.36		894.40		71.77					

# CUSTOM MODIFICATION

INST. 575 MOD 122E

HORIZONTAL VOLT/DIV. SW. KIT:

<u>Qty.</u>	<u>Part No.</u>	<u>Status</u>	<u>Description</u>
1	031-0028-00	Sw. Design	Horizontal Volt/Div. Sw.
1	050-0065-00	CMS	Prec. Res. Set
1	210-0006-00		Washer, #6 int. lock
1	210-0202-00		Lug, #6SE long
2	210-0449-00		Nut, Hex, 5.40 x 1/4
1	281-0005-00		Cap. Cer. Var. 1.5-7 pf.
2	302-0105-00		Res. Comp. 1 meg 1/2W 10%
4	309-0020-00		Res. Prec. 1.8m 1/2W 1%
1	309-0030-00		Res. Prec. 1.8K 1/2W 1%
1	309-0098-00		Res. Prec. 2K 1/2W 1%
1	309-0180-00		Res. Prec. 1.063K 1/2W 1%
1	309-0191-00		Res. Prec. 4.535K 1/2W 1%
1	309-0192-00		Res. Prec. 11.48K 1/2W 1%
1	309-0194-00		Res. Prec. 32.31K 1/2W 1%
2	311-0056-00		Res. Var. 500Ω .1W
4	323-0289-00		Res. Prec. 10K 1/2W 1%
2	323-0319-00		Res. Prec. 20K 1/2W 1%
3	323-0364-00	E	Res. Prec. 60K 1/2W 1%
2	323-0385-00		Res. Prec. 100K 1/2W 1%
2	323-0414-00		Res. Prec. 200K 1/2W 1%
1	323-0446-00	E	Res. Prec. 432K 1/2W 1%
1	388-0523-00		Ckt. Board

APPR. PLT. 4

APPR. ENG.

DATE

DATE  
5-13-66

PARTS LIST

PAGE 2 OF 3

REV.

(continued on page 2)



# CUSTOM MODIFICATION

INST. 575 MOD 122E

(continued from Page 1)

COLLECTOR BOX KIT:

Qty.	Part No.	Status	Description
1	031-0029-00	Sw. Design	Peak volts range sw.
1	031-0030-00	Sw. Design	Polarity sw.
2	124-0095-00		Cer. Strip 9 x 7/16
6	152-0208-00		Diode, 1N3195
4	166-0025-00		Spacer, 3/16 O.D. x 1/4 L
4	210-0406-00		Nut, 4-40 x 3/16
4	210-0906-00		Washer, Red fiber
4	211-0016-00		Screw, 4-40 x 5/8 PH
1	281-0005-00		Cap. Cer. Var. 4.5-25 pf
1	281-0010-00		Cap. Cer. Var. 1.5-7pf
2	306-0683-00		Res. Comp. 68K 2W 10%
4	361-0008-00		Spacer, Strip, 3/16

BOX WIRE KIT:

1	Special	CI	Cable set of 3 small cables.
1	175-0522-00		9-1 #22 sol. 4" long.
1	175-0522-00		9-1 #22 sol. 7 1/2" long
1	175-0522-00		9-2 #22 sol. 4" long
1	175-0522-00		9-2 #22 sol. 7 1/2" long
1	175-0522-00		9-3 #22 sol. 5" long
1	175-0522-00		9-4 #22 sol. 6" long
1	175-0522-00		9-8 #22 sol. 2" long
1	175-0522-00		9-101 #22 sol. 5" long
1	175-0522-00		9-101 #22 sol. 9" long
1	175-0501-00		9-0 #16 solid 6 1/2" long
1	175-0501-00		9-1 #16 solid 7 1/2" long
1	175-0501-00		9-2 #16 solid 5" long
1	175-0501-00		9-3 #16 solid 6" long
1	175-0501-00		9-12 #16 solid 6 1/2" long

(Continued on Page 3)

APPR. ENG.  
APPR. PLT 4

DATE  
5-13-66  
DATE

PARTS LIST

PAGE 2 OF 3 REV.

# CUSTOM MODIFICATION

INST. 575 MOD 122E

(Continued from Page 2)

FINAL KIT:

<u>Qty.</u>	<u>Part No.</u>	<u>Status</u>	<u>Description</u>
1	034-0117-00	Elec. Chem.	Front panel film 3320, std. tooling
1	037-2020-00	Tran. Eng.	Sweep Transformer #23-115
1	037-5008-00	Purch.	Circuit breaker 1/4A 240V Type 45-700-P ETA Prod. Co. of Amer.
2	124-0088-00		Cer. Strip 4 x 3/4
2	281-0010-00		Cap. Cer. Var. 4.5-25pf
1	281-0625-00		Cap. Cer. 35pf 500V
1	283-0521-00		Cap. Mica 750pf 500V 5%
1	302-0186-00		Res. Comp. 18 meg 1/2W 10%
1	305-0103-00		Res. Comp. 10K 2W 5%
1	305-0303-00		Res. Comp. 30K 2W 5%
2	309-0087-00		Res. Prec. 5m 1/2W 1%
1	311-0252-00		Res. Car. 1m
1	337-0476-00	Final	Collector sweep shield (modified)
4	361-0009-00		Spacer, strip, 5/16
1	366-0033-00		Knob, small, single dot
1	175-0522-00		9-7 #22 solid, 6" long

REBATCH:

1	120-0094-00		Collector swp. transformer
1	260-0180-00		Peak volts range sw.
1	260-0249-00		Circuit breaker 0.8 amp.
1	260-0258-00		Polarity sw.
1	262-0494-00		Horizontal volts/div. sw.
1	333-0527-00		Front panel
1	337-0182-00		Shield, collector box
1	366-0069-00		Knob, small 2-dot

APPR. ENG.  
APPR. PLT. 4

DATE  
5-22-66  
DATE

PARTS LIST

PAGE 3 OF 21 REV.

# INSTRUCTION MANUAL

Serial Number \_\_\_\_\_

MODIFICATION INSERT

TYPE 575  
MOD 122E

FILE COPY

This insert has been written to supplement the Instruction Manual furnished with this modified instrument. The information given in this insert will supersede that given in the manual.

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TYPE 575

MOD 122E

Tektronix, Inc.

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TYPE 575  
MOD 122E

This manual insert describes the special features of the Type 575, MOD 122E which has been modified to provide two additional voltage range positions of the PEAK VOLTS RANGE switch. The two positions, 0-400 volts and 0-800 volts, enable transistors to be checked with up to 800 volts on the collector.

### OPERATING INSTRUCTIONS

The following front panel changes have been made to this modified instrument:

COLLECTOR SWEEP PEAK VOLTS RANGE - The current limits of the PEAK VOLTS RANGE switch have been changed to peak current rather than average current. The peak current limit of the 0-20 volt position is 16 amperes; 0-200 volts, 1.6 amperes; 0-400 volts, 0.8 amperes; and 0-800 volts, 0.4 amperes.

COLLECTOR SWEEP PEAK VOLTS - The control is now graduated in approximate PERCENT OF PEAK VOLTS RANGE, from 0 to 100%.

HORIZONTAL VOLTS/DIV - Two COLLECTOR VOLTS positions, 50 and 100 volts, have been added to the control.

### RECALIBRATION PROCEDURE

The Recalibration Procedure found in this manual insert is a complete replacement for the procedure in the standard manual.

### PARTS LIST

The Parts List found in this manual insert is a supplement to the standard manual list and shows only the parts added or changed by this modification.

### SCHEMATICS

The COLLECTOR SWEEP schematic in this insert replaces the one in the manual. The PARTIAL SWITCHING DETAILS diagram shows the special Horizontal VOLTS/DIV switch.

# SECTION 5

## RECALIBRATION PROCEDURE

### NOTE

Tolerances and accuracies as stated in Specifications section and the Recalibration Procedure of this manual apply only to Type 575 instruments above serial number 8030.

### INTRODUCTION

The following equipment is required for the complete calibration of your instrument.

1. A voltmeter which measures dc voltage in the range from 100 to 1700 volts with an accuracy of 3%.
2. Dc voltmeter such as the Fluke Model 803 or the Electro Instruments Model Eitronic 880. Required characteristics: Input resistance at least 1 megohm. Accuracy at least  $\pm 1\%$  of reading between 0.1 volt and 5 volts.
3. A variable-voltage transformer capable of supplying 6.5 amperes at 105 to 125 volts, rms.
4. An oscilloscope capable of displaying a low-frequency waveform with an amplitude of about 10 mv, peak-to-peak.
5. A resistance bridge capable of measuring resistances from 1 ohm to 500 kilohms. The resistance bridge accuracy must be capable of insuring that the resistor is within 1% of its proper value.
6. A small, non-metallic screwdriver.

### NOTE

Steps 5 and 6 should be performed in the sequence given. Other steps may be performed in any sequence.

Unless otherwise stated, all adjustments are to be made at design center line voltage (117 v).

#### 1. Checking the Step Selector Switch

Connect the resistance bridge between the wire running from the STEP SELECTOR switch to the POLARITY switch and the wire running from the front wafer to the middle wafer on top of the STEP SELECTOR switch. Read resistance values as shown in Table 5-1, and record percentage error at each position of the STEP SELECTOR switch.

#### 2. Checking the Series Resistor Switch

Set the STEP SELECTOR switch to .01 VOLTS/STEP and Transistor Selector Switch to TRANSISTOR A. Connect the resistance bridge between binding posts B and E on the left side of the test panel. Compare each resistance value on the SERIES RESISTOR switch with the resistance reading of the resistance bridge ( $\pm 5\%$ ). There is approximately 0.1  $\Omega$  resistance in series with the SERIES RESISTOR switch which may make the lower resistance readings appear slightly high. The 0.1  $\Omega$  of resistance is made up of wiring and switch contact resistance.

TABLE 5-1

STEP SELECTOR (MA PER STEP)	Resistance $\pm 1\%$
.001	500 k
.002	250 k
.005	100 k
.01	50 k
.02	25 k
.05	10 k
.1	5 k
.2	2.5 k
.5	1 k
1	500 $\Omega$
2	250 $\Omega$
5	100 $\Omega$
10	50 $\Omega$
20	25 $\Omega$
50	10 $\Omega$
100	5 $\Omega$
200	2.5 $\Omega$

#### 3. Checking the Dissipation Limiting Resistor Switch

Connect the resistance bridge between binding post C on the left side of the test panel and the white-brown-red wire on left side of the PEAK VOLTS RANGE switch. Set the PEAK VOLTS RANGE switch between detents. Measure the resistance in each position at the DISSIPATION LIMITING RESISTOR switch. Each measured resistance should agree with the value indicated ( $\pm 5\%$ ).

#### 4. Power Supply

All voltage test points are brought out to pin jacks on the sides of the lower deck.

a. Turn the instrument on and allow a ten minute warm-up period. After the ten minute warm-up period, connect the precision voltmeter between the junction of R302 and R303 and ground (these resistors are located on the Horizontal VOLTS/DIV switch). Adjust -150 V Adj for exactly -5 v as read on the voltmeter. Measure the voltages and record the percentage of error at the other resistor junctions on the voltage divider (see Table 5-2). These errors will be taken into account when calibrating the vertical and horizontal amplifiers.

TABLE 5-2

Measure between ground and junction of:	Correct reading in volts
R303 and R304	-2
R304 and R305	-1
R305 and R306	-0.5
R306 and R307	-0.2
R307 and R308	-0.1

## Recalibration—Type 575, 122E

The accuracy of the entire instrument is no better than the accuracy with which this adjustment is made. Check voltage at -150 V TEST PT for -150 volts  $\pm 3\%$ . Use an oscilloscope to check for ripple on this supply as the line voltage is changed through the range from 105-125 volts. Normal ripple is 10 millivolts, peak-to-peak.

b. In the same manner, check regulation and ripple of the +100-volt and +300-volt supplies. The output voltage of both supplies should be within 3% of the nominal value. The ripple on the +100-volt supply is normally 10 millivolts, peak-to-peak. The ripple on the +300-volt supply is normally 25 millivolts, peak-to-peak.

c. Set the output of the high-voltage supply to -1700 volts with the -1700 ADJ control. The control and jack are located on the left side of the lower deck. Defocus the crt beam and turn the INTENSITY control fully clockwise. Change the power line voltage from 105 volts to 125 volts and check the -1700-volt supply for constant output voltage. Then turn the INTENSITY control fully ccw and again check for constant output voltage as the line voltage is changed from 105 to 125 volts. Now reset the line voltage to the design center voltage (117 v).

### 5. DC Balance

When the DC BAL control is properly set, the trace on the crt will not shift appreciably as the corresponding Vertical or Horizontal control is moved through the BASE VOLTS range. (AMPLIFIER CALIBRATION in ZERO CHECK position.)

#### a. Horizontal Amplifier

Set controls as follows:

BASE STEP GENERATOR	OFF
Horizontal	.5 BASE VOLTS
INTENSITY	Usable level

Hold the AMPLIFIER CALIBRATION switch in the ZERO CHECK position as you make the following adjustments.

Move the spot to the center of the graticule with the two positioning controls. Switch the Horizontal control to .01 BASE VOLTS and move the spot back to the center of the graticule with the DC BAL control. If the spot cannot be moved to the center, it will be necessary to match the input tube (V344, V354) by trial and error. Normally, the spot can be positioned off either side of the CRT screen with the DC BAL control.

Readjust the DC BAL control until the spot does not shift appreciably as the Horizontal control is moved between .5 and .01 BASE VOLTS.

#### b. Vertical Amplifier

The procedure for adjusting the vertical DC BAL control is the same as that used for adjusting the horizontal DC BAL control.

### 6. Differential Balance

When the differential balance control is properly adjusted, equal signals applied to both grids will not appear between the plates of the input tubes and therefore will not be amplified by succeeding stages.

Set controls as follows:

Vertical	EXT.
Horizontal	EXT.
PEAK VOLTS RANGE	0-20
PEAK VOLTS	25%
Transistor Selector Switch	TRANSISTOR A

Connect all four external inputs together (rear panel). On instruments above S/N 3659 pins E, F, H, and J, of the Type 175 adapter socket must be tied together for this adjustment. Run a wire from the external inputs to the binding post marked "C" on the left side of the test panel. Position the trace on the central area of the graticule. On instruments below serial number 2765 the DIFF BAL controls are the miniature potentiometers mounted on ceramic terminal strips below the Vertical and Horizontal selector switches. Instruments above serial number 2764 have the DIFF BAL controls mounted on a small bracket just behind the front panel on the right side of the instrument. Adjust the DIFF BAL controls so that only a spot remains on the face of the CRT.

Slowly turn the PEAK VOLTS control from 25 to 0 and watch the spot. If it changes into a line which is longer than four spot diameters as you rotate the PEAK VOLTS control, it will be necessary to select input tubes which have more similar characteristics. When you change input tubes, repeat the DC BAL procedure before attempting to adjust the differential balance. After a satisfactory differential balance has been attained, repeat the DC BAL procedure. Remove your test leads.

### 7. CRT Alignment

Set controls as follows:

PEAK VOLTS RANGE	0-20
Vertical	1 COLLECTOR MA
Horizontal	.5 COLLECTOR VOLTS

Adjust the PEAK VOLTS and Horizontal POSITION controls for a horizontal trace of about 10 major divisions. Center the trace with the Vertical POSITION control. The trace and the graticule line should coincide.

#### CRT Adjustment S/N 101-1620

If the trace and graticule line do not coincide over the length of the graticule, loosen the crt base clamp and rotate the tube with the alignment ring. When the trace and the graticule line are in coincidence, push the tube forward so that it rests snugly against the graticule. Then tighten the crt base clamp. Recheck the alignment after tightening the clamp to be sure it didn't move while the clamp was being tightened.

#### CRT Adjustment S/N 1620-up

Loosen the clamp at the base of the crt and push the crt against the graticule, then tighten the clamp. Now with the red knob, near the bottom of the clamp, rotate the crt until the trace runs parallel to the horizontal lines of the graticule.

### 8. Vertical Gain

The controls to be adjusted in this step set the gain of the Vertical Amplifier to a value which results in a trace de-

flection of 10 divisions when the appropriate internal calibrating voltage is fed into the input grids (AMPLIFIER CALIBRATION switch).

a. Switch the Base Step Generator off and set the STEP SELECTOR to .01 VOLTS PER STEP. Set the Vertical switch to 1000 COLLECTOR MA. Hold the vertical AMPLIFIER CALIBRATION switch in the ZERO CHECK position and move the spot or trace directly behind the fifth line above the center of the graticule. Now press down the AMPLIFIER CALIBRATION switch lever to the -10 DIVISIONS position. If the vertical MIN GAIN ADJ control is properly set, the trace will move to the fifth line below the center of the graticule, plus or minus the recorded error of the -1 volt measurement at the junction or R304 and R305, which was recorded in step 4.

If the adjustment is not properly set, alternately adjust the Vertical POSITION control and the vertical MIN GAIN ADJ control until exactly 10 divisions of deflection, plus or minus the error of -1 volt measurement taken in step 4, is obtained as the AMPLIFIER CALIBRATION switch is changed from the ZERO CHECK to the -10 DIVISIONS position.

b. Now set the Vertical switch to .01 BASE VOLTS and adjust the MAX GAIN ADJ control for 10 divisions of deflection in the manner described in part (a) of this step considering the error at the -0.1 volt measurement instead of the -1 volt measurement which was taken in step 4.

The MAX GAIN ADJ control is a miniature potentiometer mounted on the Horizontal switch. Since there is interaction between the MAX GAIN ADJ and the MIN GAIN ADJ controls, it is now necessary to recheck the calibration in the 1000 COLLECTOR MA position and recalibrate in both the 1000 COLLECTOR MA and .01 BASE VOLTS positions if necessary. Then check the calibration in the other positions of the Horizontal switch in the same manner.

## 9. Horizontal Gain

The controls to be adjusted in this step set the gain of the Horizontal Amplifier to a value which results in a trace deflection of 10 divisions when the appropriate internal calibrating voltage is fed into the input grids (AMPLIFIER CALIBRATION switch).

a. Set the Horizontal switch to .5 BASE VOLTS. Hold the horizontal AMPLIFIER CALIBRATION switch in the ZERO CHECK position and position the spot directly behind the right-hand edge of the graticule. Now press down the AMPLIFIER CALIBRATION switch to the -10 DIVISIONS position. If the horizontal MIN GAIN ADJ control is properly set, the spot will move directly behind the left edge of the graticule. If not, alternately adjust the horizontal MIN GAIN ADJ and the Horizontal POSITION control until the deflection is exactly 10 divisions.

b. Now set the Horizontal switch to .01 BASE VOLTS and adjust the MAX GAIN ADJ control for 10 divisions of deflection in the same way as described in part (a) of this step, considering the recorded error of the -0.1 volt measurement in step 4. The MAX GAIN ADJ control is a miniature potentiometer mounted on the Horizontal switch. Since there is interaction between the MAX GAIN ADJ and the MIN GAIN ADJ controls, it is now necessary to recheck the calibration of the .5 BASE VOLTS range and recalibrate both the .5 and

.01 BASE VOLTS positions if necessary. Then check the calibration in the other positions of the Horizontal switch by the same method.

## 10. Phase A, Phase B, and Geometry

The PHASE A and PHASE B controls adjust the time relationship between the Collector Sweep and the Step Generator so that switching between steps occurs at a time when the collector sweep voltage is either at a maximum, at a minimum, or both.

The GEOM ADJ control is used to adjust the voltage on one of the crt elements to give the best trace linearity. Set controls as follows:

Vertical	.1 COLLECTOR MA
Horizontal	BASE CURRENT OR BASE SOURCE VOLTS
Base Step Generator	REPETITIVE
STEP SELECTOR	.01 VOLTS/STEP
STEPS/SEC	120 lower
Collector Sweep POLARITY	Minus
PEAK VOLTS RANGE	0-20
PEAK VOLTS	50%
DISSIPATION LIMITING RESISTOR	10 k
Transistor Selector Switch	TRANSISTOR B
Base Step Generator POLARITY	+

Short binding posts C and E on the TRANSISTOR B side of the test panel. Position the display so that the tops and bottoms of the vertical lines are within the graticule area. Adjust the Phase B control for a display like that of Fig. 5-1.

Now set the STEPS/SEC switch to the upper 120 position and adjust the STEPS/FAMILY control for a stable display.

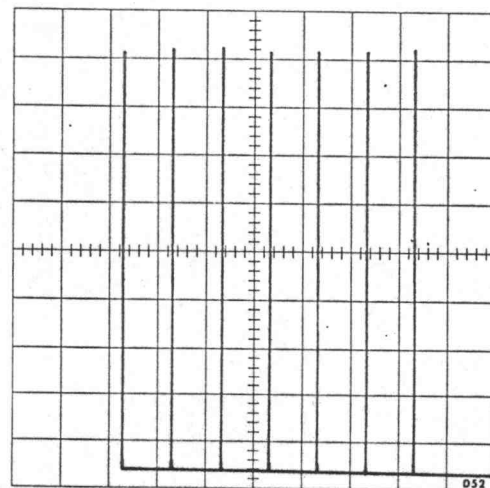


Fig. 5-1. Typical display resulting from proper adjustment of the Phase B control.

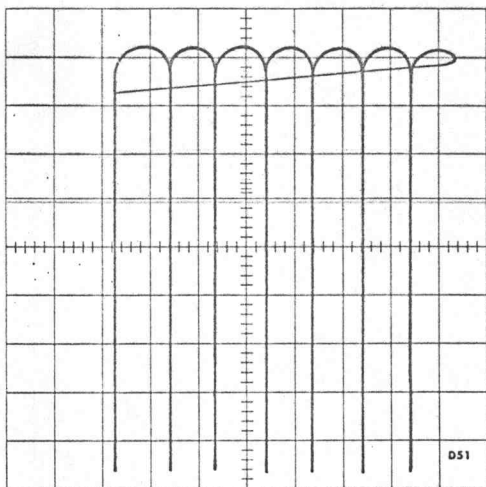


Fig. 5-2. Typical display resulting from the proper adjustment of the Phase A control.

Adjust the Phase A control for a display similar to that of Fig. 5-2. Return STEPS/SEC control to 240.

Move the Vertical control to .05 COLLECTOR MA and position the resulting display so that only the vertical lines of the trace are visible. Adjust the STEPS/FAMILY control so that there is one vertical section of the trace for each vertical line of the graticule. Adjust the GEOM ADJ control for minimum curvature of the vertical lines which are within the area enclosed by the graticule.

### 11. Zero Adj, ± Adj, and Volts/Step Adj

The ZERO ADJ control sets the voltage at the base of the stairstep waveform to a value which is the same in both positions of the Base Step Generator POLARITY switch.

The ±ADJ control is used to set the voltage at the base of the output stairstep waveform to zero.

The VOLTS/STEP ADJ control is used to set the amplitude of the voltage steps occurring across the current determining resistor of the Step Amplifier (R246).

Set:

STEP ZERO	Midrange
Base Step Generator POLARITY	—

Position the display so the last trace to the right is in the center of the graticule. When the Base Step Generator POLARITY switch is changed to the plus position, the centered trace should not move. If it does, set the ZERO ADJ control for a symmetrical display around this trace as the Base Step Generator POLARITY switch is changed from one position to the other.

Now hold the horizontal AMPLIFIER CALIBRATION switch in the ZERO CHECK position and move the trace to a point directly behind the center vertical graticule line. Then release the switch and move the same trace behind the center vertical line with the ±ADJ control.

The STEP ZERO front-panel control should move the display approximately one-half of a major division each side of the centerline.

Position the display toward the center of the graticule and turn the STEPS/FAMILY control fully clockwise. With the POLARITY switch set in the minus position, set the VOLTS/STEP ADJ for one trace per major division. Remove shorting strap.

### 12. Adjusting the Collector Sweep Balance

The Collector Sweep Balance capacitors are used to cancel the effects of stray capacitance in the Collector Sweep wiring so that no current flows through the collector current sampling resistors when the Collector Sweep is not loaded.

Set the controls as follows:

Vertical	.01 COLLECTOR MA
Horizontal	20 COLLECTOR VOLTS
Base Step Generator	OFF
STEP SELECTOR	.01 VOLTS PER STEP
Transistor Selector Switch	TRANSISTOR B
PEAK VOLTS RANGE	0-200
PEAK VOLTS	75%
POLARITY	+
DISSIPATION LIMITING RESISTOR	5K

Use a non-metallic screwdriver to make the following adjustments. Press the 0.1X button and adjust R733, C735, C730, C728 and C706C for minimum trace separation. These controls are located behind the power switch and on the collector sweep box. R733 controls the over all loop. C730 and C735 effect the first 10% for the display. C728 effects the display between about 10% and 30%. This is a preliminary adjustment.

Set the horizontal to 50 COLLECTOR VOLTS. Press the 0.1X button and adjust C318 for minimum trace separation. C318 is located behind the horizontal switch.

Set PEAK VOLTS RANGE to 0-20 and horizontal to 2 COLLECTOR VOLTS. Press the 0.1X button and adjust C706C for minimum trace separation.

Set horizontal to 100 COLLECTOR VOLTS and PEAK VOLTS RANGE to 0-800. Press the 0.1X button and adjust C706B for minimum trace separation. Make final adjustment of R733, C735, C730 and C728 for minimum trace separation. Switch the collector sweep POLARITY between + and - and adjust these controls for similar displays.

Set PEAK VOLTS RANGE to 0-400 and horizontal to 50 COLLECTOR VOLTS. Press the 0.1X button and adjust C706E for minimum trace separation.



**13. Min. No. Steps and Max. No. Steps**

These controls determine the upper and lower limits of the STEPS/FAMILY control.

Vertical	1 COLLECTOR MA
Horizontal	.01 BASE VOLTS
Base Step Generator	REPETITIVE
STEP SELECTOR	.01 VOLTS/STEP
PEAK VOLTS	0

Turn the STEPS/FAMILY control fully counterclockwise and adjust MIN. NO. STEPS for 5 dots. Next, turn the STEPS/FAMILY control fully clockwise and adjust MAX. NO. STEPS for 13 dots. There is some interaction between these controls, so it may be necessary to repeat both adjustments.

**14. Check the Step Selector Switch and set the +Step Adj (SN 4270-up)**

Set controls as follows:

Vertical	1000 COLLECTOR MA
Horizontal	.01 BASE VOLTS
STEP SELECTOR	.01 VOLTS/STEP
Base Step Generator	REPETITIVE
PEAK VOLTS	0
Base Step Generator POLARITY	—

Check for one dot per division  $\pm 2\%$  and note percentage of error. Change POLARITY to + and adjust +STEP ADJ for exactly the same display as was seen when the POLARITY switch was in the minus position.

**15. Checking Vertical Collector ma/div Switch**

Set controls as follows:

Horizontal	100 COLLECTOR VOLTS
Vertical	.01 MA/STEP
STEP SELECTOR	.01 MA/STEP
Base Step Generator	REPETITIVE
PEAK VOLTS RANGE	0-20
PEAK VOLTS	0
DISSIPATION LIMITING RESISTOR	0
Base Step Generator POLARITY	+

Short binding posts C and B on right side of test panel together and switch Transistor Selector Switch to TRANSISTOR B.

Note a display of one dot per division  $\pm 1\%$  minus the percent of error recorded in step 1 (Table 5-1) for the .01 MA PER STEP position of the STEP SELECTOR switch. Do this procedure for each of the corresponding positions of the CURRENT OR VOLTAGE PER DIVISION section of the Vertical switch and the MA PER STEP section of the STEP SELECTOR switch. The 500 and 1000 COLLECTOR MA positions of the Vertical switch should be checked with the STEP SELECTOR at 50 and 100 MA PER STEP respectively, and with the 0.1X button depressed.

## PARTS LIST

The following parts have been added to this modified instrument. When ordering replacement parts, specify instrument type, serial number, and MOD number. Include the circuit number, part number, and description of the desired item.

## CAPACITORS

C318	Add	281-0005-00	1.5-7 pf	var	cer
C706B	Add	281-0010-00	4.5-25 pf	var	cer
C706C	Add	281-0005-00	1.5-7 pf	var	cer
C706E	Add	281-0007-00	3-12 pf	var	cer
C728	Add	281-0010-00	4.5-25 pf	var	cer
C729	Add	281-0625-00	35 pf	500v	cer
C730	Change	281-0010-00	4.5-25 pf	var	cer
C734	Change	283-0521-00	750 pf	500v	mica

## DIODES

D706A	Add	(3)152-0208-00	1N3195, 3 in series
D706B	Add	(3)152-0208-00	1N3195, 3 in series

## RESISTORS

R250A	Add	309-0020-00	1.8M	1/2w	1%	prec
R250B	Add	309-0020-00	1.8M	1/2w	1%	prec
R258A	Add	309-0020-00	1.8M	1/2w	1%	prec
R258B	Add	309-0020-00	1.8M	1/2w	1%	prec
R319	Add	323-0446-00	432k	1/2w	1%	prec
R705	Add	306-0683-00	68k	2w	10%	comp
R706	Add	306-0683-00	68k	2w	10%	comp
R723	Change	305-0103-00	10k	2w	5%	comp
R724	Change	305-0303-00	30k	2w	5%	comp
R728	Add	302-0186-00	18M	1/2w	10%	comp
R729	Add	309-0087-00	5M	1/2w	1%	prec
R730	Change	309-0087-00	5M	1/2w	1%	prec
R733	Add	311-0252-00	1M	var		

## SWITCHES

SW305	Change	031-0028-00	Horizontal VOLTS/DIV
SW706	Change	031-0029-00	PEAK VOLTS RANGE
SW708	Change	031-0030-00	POLARITY

TYPE 575, MOD 122E

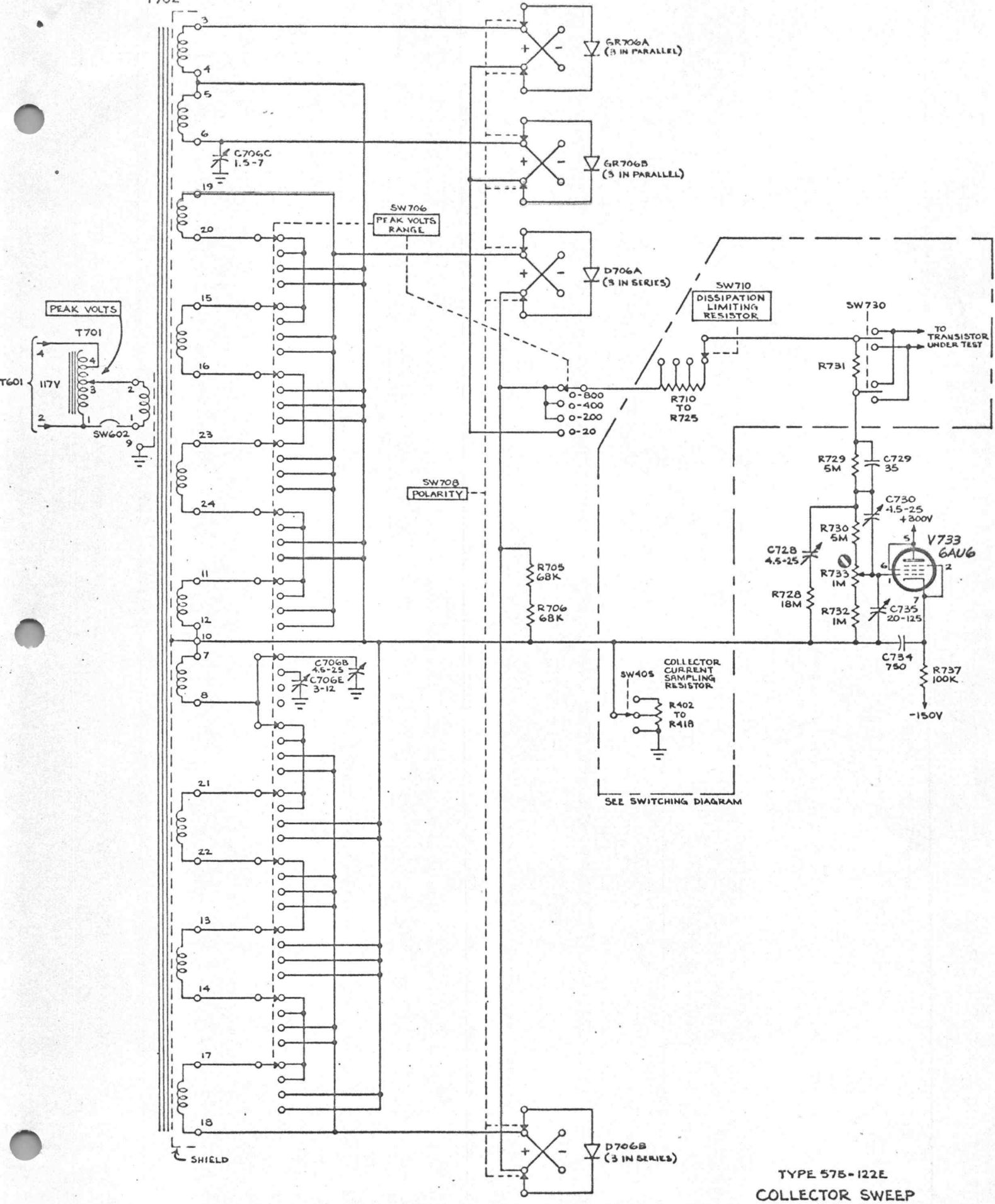
TRANSFORMERS

T702          Change    037-2020-00          #23-115, Sweep Transformer

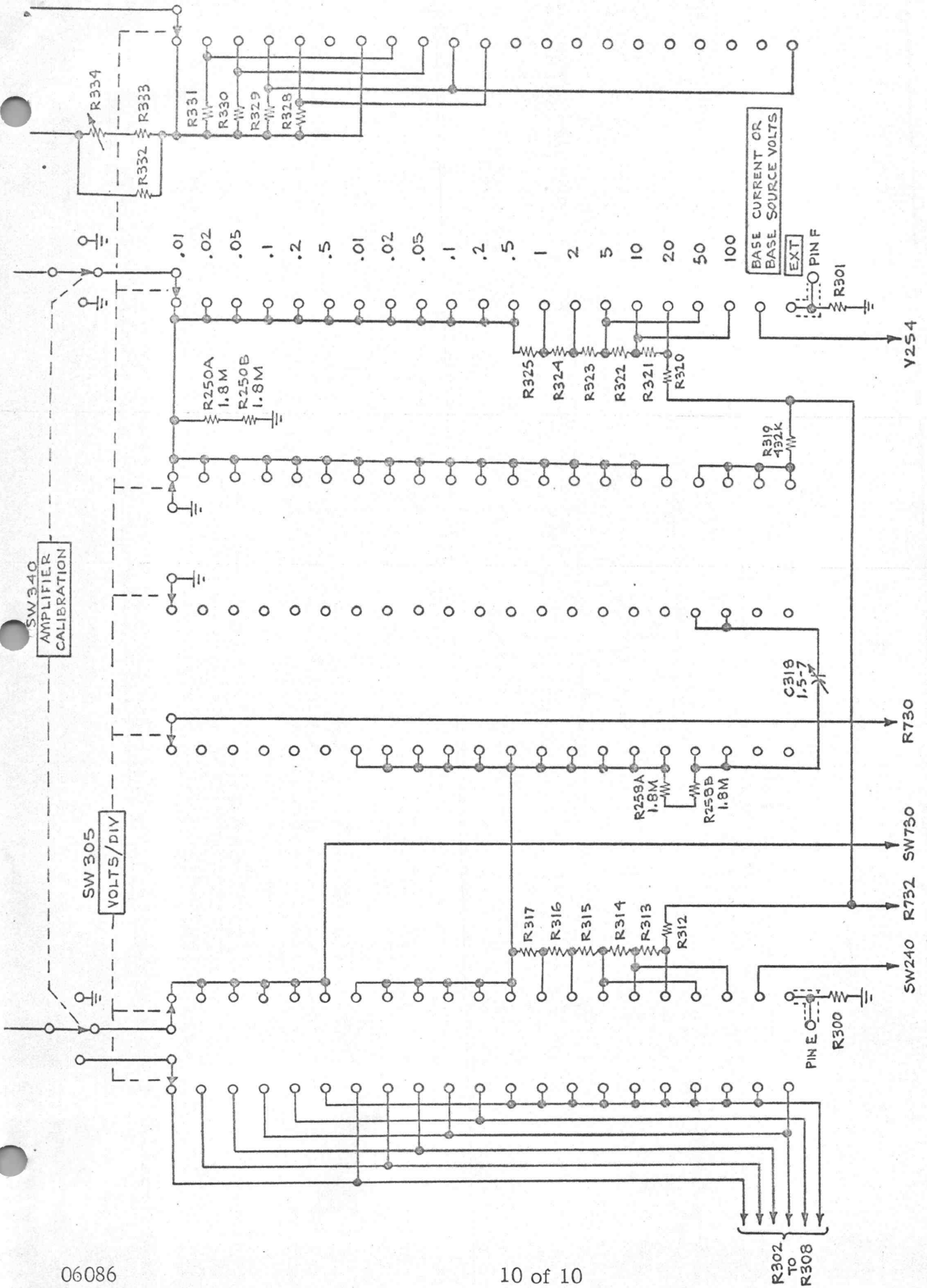
MECHANICAL

CIRCUIT BOARD, Display Switch	Add	1	388-0523-00
KNOB, Small, Single dot	Change	1	366-0033-00
PANEL, Front, Film #3320	Change	1	034-0117-00
SHEILD, Collector Sweep	Change	1	337-0476-00
SPACER, 3/16 o.d. x 1/4 l.	Add	4	166-0025-00
SPACER, Strip, 3/16"	Add	4	361-0008-00
SPACER, Strip, 5/16"	Add	4	361-0009-00
STRIP, Ceramic, 4 x 3/4"	Add	2	124-0088-00
STRIP, Ceramic, 9 x 7/16"	Add	2	124-0095-00

T702



TYPE 575-122E  
COLLECTOR SWEEP



PARTIAL DETAILED SWITCHING DIAGRAM