



INSTRUCTIONS

PRELIMINARY GEK-24962

DIVIDER, 193X542A_G01-G04

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to General Electric Company.

GENERAL  **ELECTRIC**

PRELIMINARY
INSTRUCTIONS
DIVIDER, 193X542A G01-G04

1.0 GENERAL

This instruction provides basic information regarding the subject card. Refer to the system elementary diagrams for information relating to the overall system operation.

2.0 DESCRIPTION

The card contains either one or two integrated circuit divider chips with the following group arrangements:

G01 and G03 one channel
G02 and G04 two channels

The G01 and G03 card, and the G02 and G04 card are both mechanically and functionally interchangeable. Different groups for the equivalent functions identify use of different electronic devices. A transistor power supply is furnished to convert from $\pm 20V$ to $\pm 15V$.

PERFORMANCE

The card will have the following characteristics while exposed to the conditions indicated:

2.11 Division

With $\pm 20V$ and COM applied to tabs 31, 2 and 15 respectively, the card will generate a nominal output voltage of

$$OP = 10 \cdot N/D$$

where the input signal voltages N and D are within the ranges of

$$.1V \leq D \leq 10V \text{ and } |N| \leq D$$

2.12 Overall Accuracy

Total error ($25^{\circ}C$): $\pm .65\%$ max. or $\pm 0.65V$ for $D > .1V$

Total error vs temp: $\pm .033\%/^{\circ}C$ or $3.3mV/^{\circ}C$

Total error vs. power supply: $\pm .15\%$ ($\pm 0.15\%$ at $25^{\circ}C$ and $0.033\%/^{\circ}C$ of error is caused by power supply variation)

Warm-up time to rated performance: 5 min.

2.13 Output

Max. output voltage: $\pm 10V$
Max. output current: $\pm 5mA$
Output Impedance: $.1 \text{ ohm}$

2.14 Input

Rated numerator voltage, N: $\pm 10V$ with $|N| \leq D$
Rated denominator voltage, D: $\pm 10V$ with $N > 0$
Max. safe input voltage, N, D: $\pm 15V$
Input Impedance: $N-9K \text{ ohm}$, $D-25K \text{ ohm}$

2.15 Power Supply

Range: $15V \pm .15V$ at tab 26, $-15V \pm .15V$ at tab 8
Quiescent current: $+15mA$, $-9mA$ at $\pm 15V$, $+31mA$, $-25mA$ at $\pm 20V$.

2.16 Temperature

Rated performance: $0^{\circ}C$ to $+70^{\circ}C$
Max. operating: $-25^{\circ}C$ to $+85^{\circ}C$

3.0 ADJUSTMENTS

There are no adjustments on this card.

4.0 TROUBLESHOOTING

4.1 Check for $+15 \pm 1$ volts at tab 26, -15 ± 1 volts at tab 8

4.2 With $+20$ volts, -20 volts and Com applied to tabs 31, 2 and 15 respectively, apply 10 volts to N1 and D1 or N2 and D2. Card output for this condition should be 10 volts $\pm 0.65\%$.

If the output does not fall within this value, the card should be replaced.

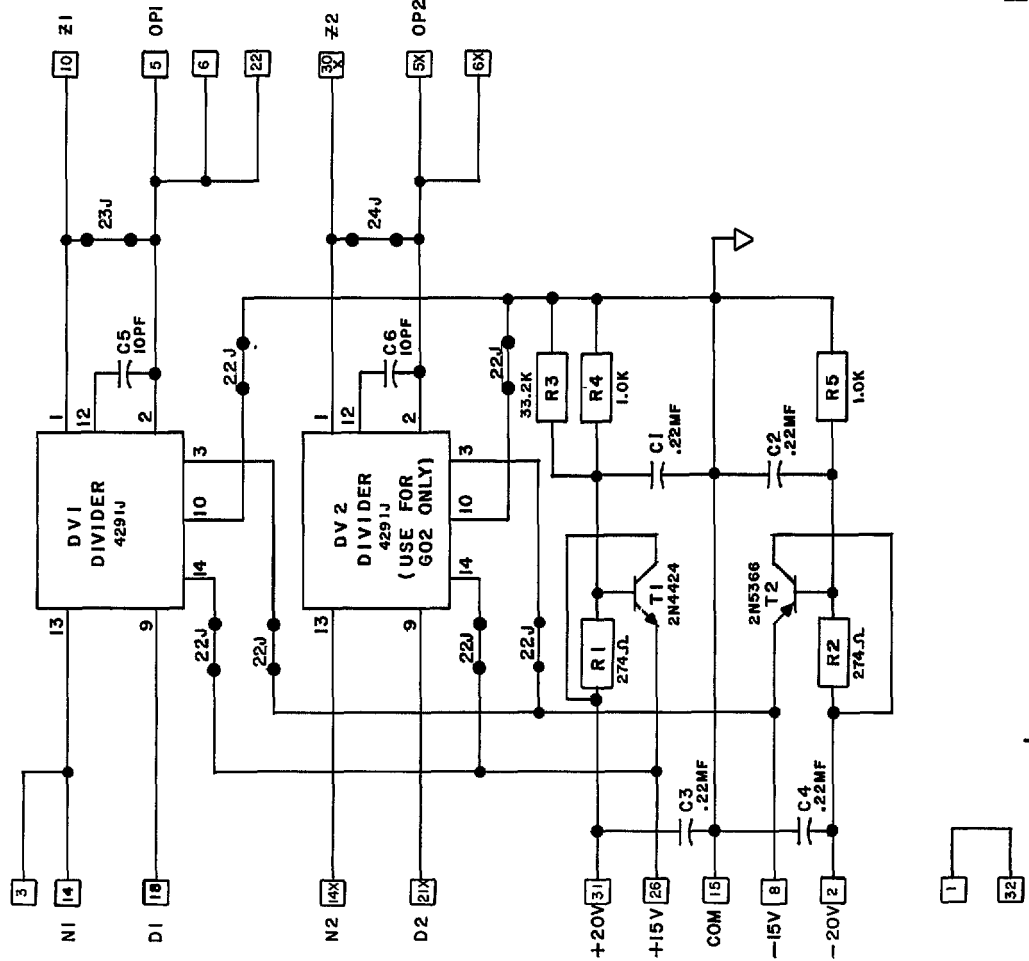
4.3 Use an oscilloscope to determine if excessive noise on any of the input signals causes a distortion of the output signal during system operation. Filtering of the input signal(s) may be necessary to improve operation.

TITLE ELEMENTARY DIAGRAM
DIVIDER CARD
BURR-BROWN, 4291J
FIRST MADE FOR STANDARD LINE
193X542AB601, G02

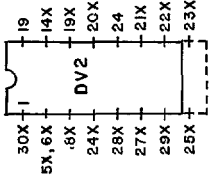
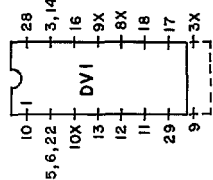
REV. 0
CONT ON SHEET SH NO.

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:
APPLIED PRACTICES SURFACES
TOLERANCES ON MACHINED DIMENSIONS
FRACTIONS DECIMALS ANGLES

ON THE
LEADS NO. AND
ON DRAWING



IC CHIP POINTS RUN DIRECTLY TO TABS BUT ARE NOT SHOWN ON ELEM.



NOTES:
1. DIVIDER
 $OP = \frac{IO \cdot N}{D}$
 $0.1V < D < 10V$

REVISIONS
No revisions are to be made to this drawing without the approval of the Development Engineering Section of the Speed Variator Department

PRINTS TO	5B(81M)	5J(BW)
	5R(21BW)	
	5L(21BW)	
	AW(BW)	
	5D(CD)	
	JA(CD)	

SPEED VARIATOR
ERIE, PA.

APPROVALS
MADE BY *C. R. Becker* OCT. 11, 1977
ISSUED *Robert M. ...* FEB 16, 1978

APPLIER PRACTICES	✓
718A51P	

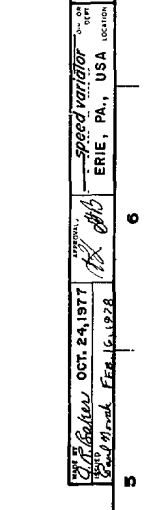
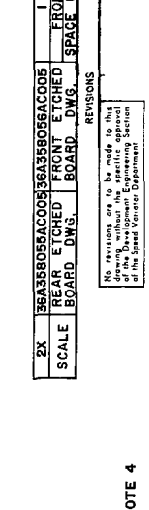
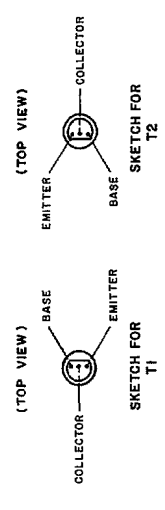
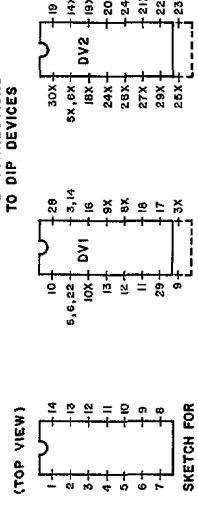
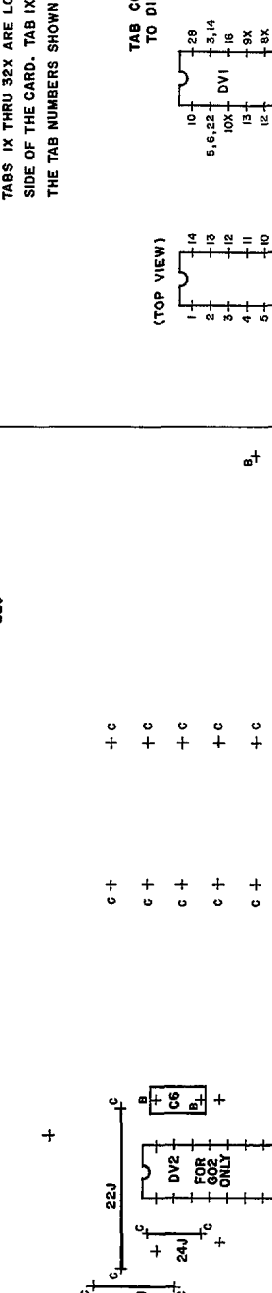
UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING SURFACES	+
REVERSE OF PRINTED SURFACES	+
FRONT OF PRINTED SURFACES	+

13745 16 1102	ON BOARD
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HOLE TABULATION
 ALL HOLES .032 DIA EXCEPT THE HOLES TABULATED BELOW

LOC	DIA	QUAN
A	.157	2
B	.040	32
C	.052	38

- NOTES**
- INDICATED TAB NUMBERS CORRESPOND TO MATCHING RECEPTACLE NUMBERS
 - CROSS HATCHED TABS INDICATES TABS USED.
 - CARD SIZE, 5 500⁺.000 X 6 130⁺.002
 - THIS CARD HAS GOLD PLATED TABS ON BOTH SIDES. TABS I THRU 32 ARE LOCATED ON THE REVERSE SIDE OF THE CARD. TAB IX IS OPPOSITE TAB I AND ETC. THE TAB NUMBERS SHOWN ARE THOSE USED ON THIS CARD.



SEE NOTE 1 & 2

GROUP KEY LOCATIONS

GROUP	KEY LOCATIONS
G01	8-9 12-13 26-27
G02	8-9 12-13 19-20 26-27

REVISIONS

REV	DATE	BY	DESCRIPTION
1			58(B)M 5(J)B(W)
2			58(B)M 5(J)B(W)
3			58(B)M 5(J)B(W)
4			58(B)M 5(J)B(W)
5			58(B)M 5(J)B(W)

NO REVISIONS ARE TO BE MADE TO THIS DRAWING WITHOUT THE APPROVAL OF THE DESIGN ENGINEERING SECTION OF THE DESIGN CENTER DEPARTMENT.

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GENERAL ELECTRIC

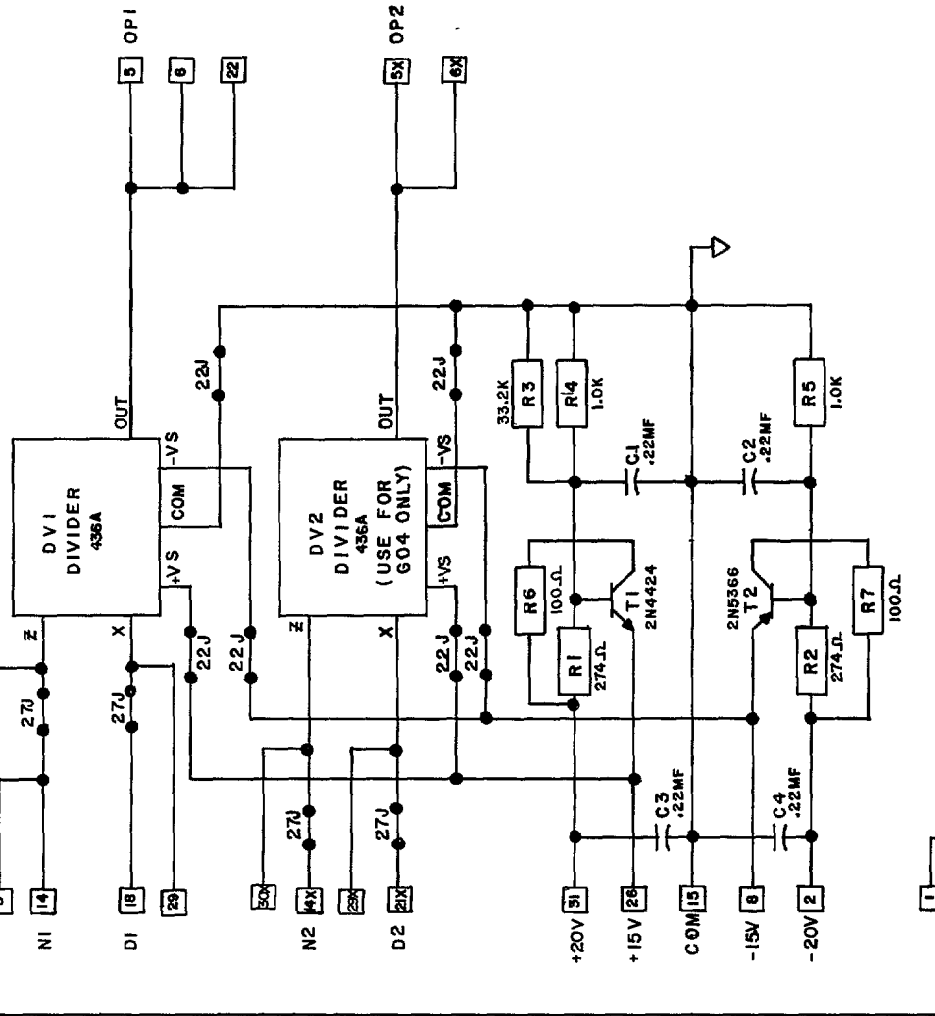
TITLE ELEMENTARY DIAGRAM
DIVIDER CARD
ANALOG DEVICES, 436A
FIRST MADE FOR STANDARD LINE
193X542AB603 & 604

REV NO 0
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UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:
APPLIED PRACTICES SURFACES
TOLERANCES ON MACHINED DIMENSIONS
FRACTIONS DECIMALS ANGLES

ON HS 137MS NO LINDS
ON DRAWING

FF 806-1(1.77)



NOTES

- DIVIDER
OP = $\frac{10 \cdot N}{D}$
0.1V < D < 10V

REVISIONS

No revisions are to be made to this drawing without the specific approval of the Engineering Department of the Speed Variator Department

PRINTS TO	5B(BM)	5J(BW)
	5R(2)BW	
	5L(2)BW	
	AW(BW)	
	5D(CD)	
	JA(CD)	

MADE BY
G.R. Becker
OCT. 10, 1977

APPROVALS
SPEED VARIATOR
ERIE, PA.

APPROVALS
OCT. 10, 1977

APPROVALS
FEB. 16, 1978

DIV OR LOCATION
SPEED VARIATOR
ERIE, PA.

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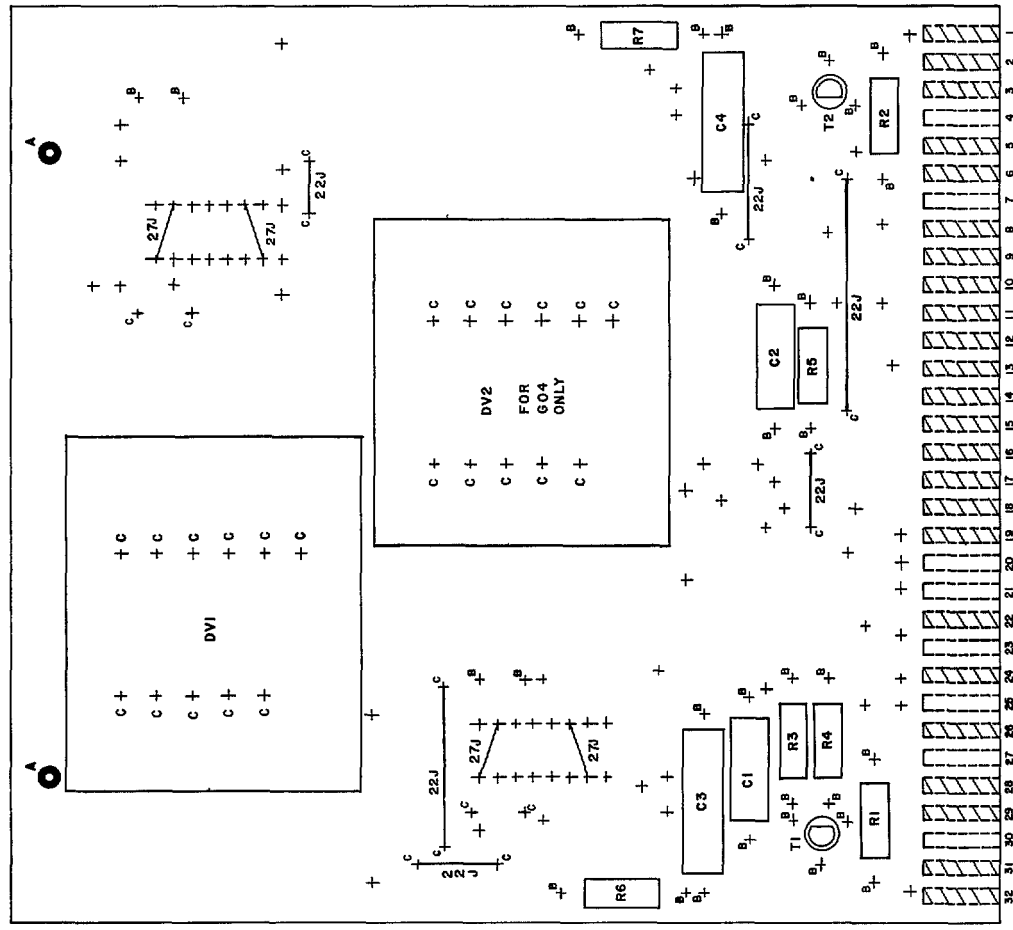
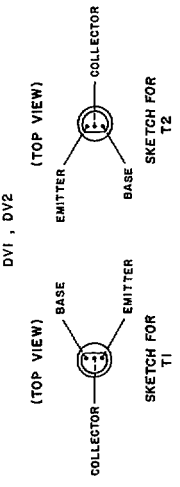
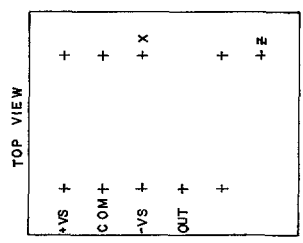
UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING PRACTICES:
 SURFACES: ZIBABIB
 TOLERANCES: AS SHOWN
 DIMENSIONS: IN UNITS

HOLE TABULATION

ALL HOLES 032 DIA EXCEPT THE HOLES TABULATED BELOW

LOC.	A	B	C	QUAN.
	157	2		
	.040	.052	.32	
				38

- NOTES**
- INDICATED TAB NUMBERS CORRESPOND TO MATCHING RECEPTACLE NUMBERS
 - CROSS HATCHED TABS INDICATES TABS USED.
 - CARD SIZE, 5 500±.000 X 5 130±.008
 - THIS CARD HAS GOLD PLATED TABS ON BOTH SIDES TABS 1 THRU 32 ARE LOCATED ON THE REVERSE SIDE TABS 33 THRU 38 ARE LOCATED ON THE COMPONENT SIDE OF THE CARD TAB 1X IS OPPOSITE TAB 1 AND ETC. THE TAB NUMBERS SHOWN ARE THOSE USED ON THIS CARD



SEE NOTE 4

KEY LOCATIONS

GROUP	8-9	12-13	26-27
603			
604			

PRINTS TO

SCALE	FRONT BOARD D.W.G.	SPACE UNIT REQUIREMENT	REVISIONS
2X	46A35805AC005A35805AC005	FRONT BOARD D.W.G.	58(BM) 5/J(BW)
	REAR ETCHED BOARD D.W.G.	SPACE UNIT REQUIREMENT	5R(2)BW
	FRONT BOARD D.W.G.	SPACE UNIT REQUIREMENT	AW(BW)
	REAR ETCHED BOARD D.W.G.	SPACE UNIT REQUIREMENT	5UC(D)
	FRONT BOARD D.W.G.	SPACE UNIT REQUIREMENT	J(A(CD))

**SPEED VARIATOR PRODUCTS OPERATION
GENERAL ELECTRIC COMPANY – DIRECT CURRENT MOTOR & GENERATOR DEPARTMENT
ERIE, PENNSYLVANIA 16531**

GENERAL  ELECTRIC

GEK-24962 (8-78) 1.5M (F)