INSTRUCTIONS

GEK-24956B

AMPLIFIER CARD

193X256A-G02

DESCRIPTION

START-UP/CHECKOUT

TROUBLESHOOTING

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

WARNING

ALWAYS DISCONNECT ALL POWER TO THE DRIVE BEFORE REMOVING OR INSERTING A PRINTED CIRCUIT CARD. FAILURE TO DO SO MAY CAUSE SERIOUS INJURY TO PERSONNEL AND DAMAGE TO THE DRIVE OR DRIVEN MACHINERY.

GENERAL

This instruction provides the basic information required to start-up and troubleshoot the Amplifier Card. Refer to the system diagrams to determine how the card is used in the overall system.

DESCRIPTION

This card contains six (6) operational amplifiers, OA1-OA6 for general purpose use.

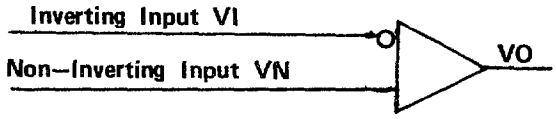
Two diode networks are also provided.

START-UP/CHECK-OUT

Refer to systems diagrams for amplifier connections.

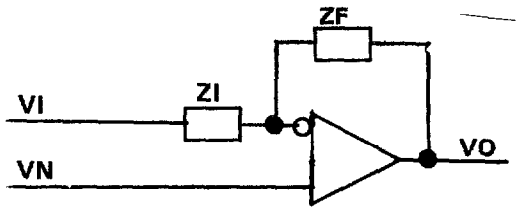
TROUBLESHOOTING

As an aid to troubleshooting a brief description of an operational amplifier follows:



The output voltage is approximately 20,000 times the difference between the voltage on the non-inverting input and the inverting input, i.e., VO = 20,000 x (VN—VI). As long as the output voltage is not in clamp (or saturation), the difference between VN and VI is essentially zero. It should be noted that the voltage to common of the inputs has no affect on the output.

A bias current will flow into each input. This current is constant and is approximately 1/2 micro amp. Each input must be connected to provide a path for this current. For an operational amplifier connected as shown below:

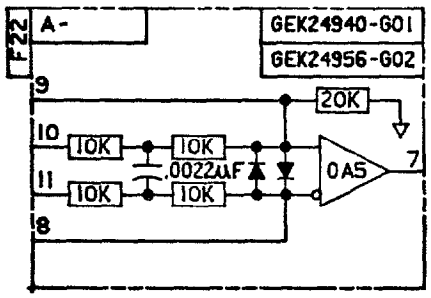


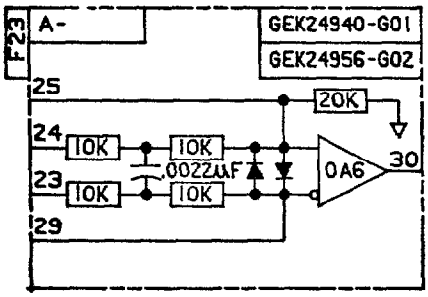
The output of an operational amplifier is short circuit proof and will swing a minimum of ±10 volts with a 2K ohm resistive load. Capacitive loads will cause oscillation unless driven by the buffered output of OA3 or OA4 (Tabs 12 and 9X).

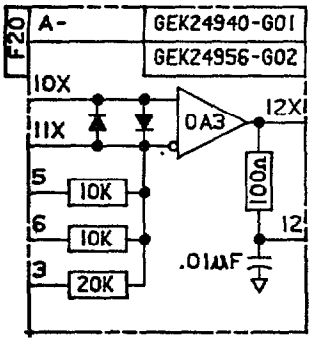
Check that ±20 volts and common are applied to this card.

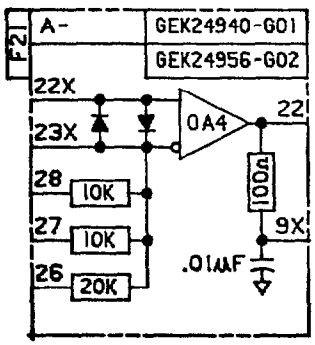
Check that the connected load is not less than 2000 ohms.

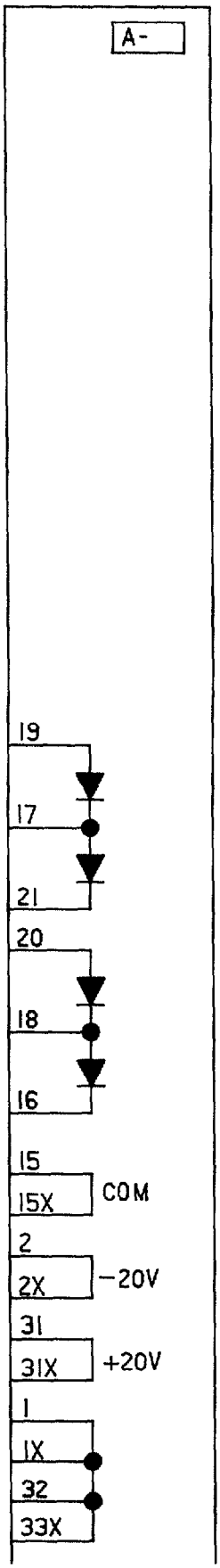
Analyze the input/output to determine if the input signal is improper or if the amplifier is defective.

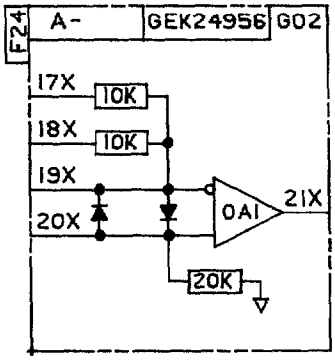

F22
A-
GEK24940-G01
GEK24956-G02
9
20K
10
10K
10K
.0022μF
0A5
7
11
10K
10K
8

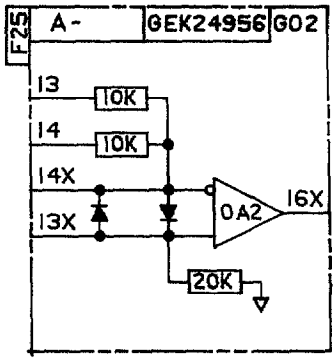

F23
A-
GEK24940-G01
GEK24956-G02
25
20K
24
10K
10K
.0022μF
0A6
30
23
10K
10K
29


F20
A-
GEK24940-G01
GEK24956-G02
10X
11X
0A3
12X
100Ω
5
10K
6
10K
12
.01μF
3
20K


F21
A-
GEK24940-G01
GEK24956-G02
22X
23X
0A4
22
100Ω
28
10K
27
10K
9X
.01μF
26
20K


A-
19
17
21
20
18
16
15
15X
COM
2
2X
−20V
31
31X
+20V
1
1X
32
33X


F24
A-
GEK24956-G02
17X
10K
18X
10K
19X
0A1
21X
20X
20K


F25
A-
GEK24956-G02
13
10K
14
10K
14X
0A2
16X
13X
20K

GENERAL ELECTRIC

36C764161AA
CONT ON SHEET 2 SH NO. 1

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING—

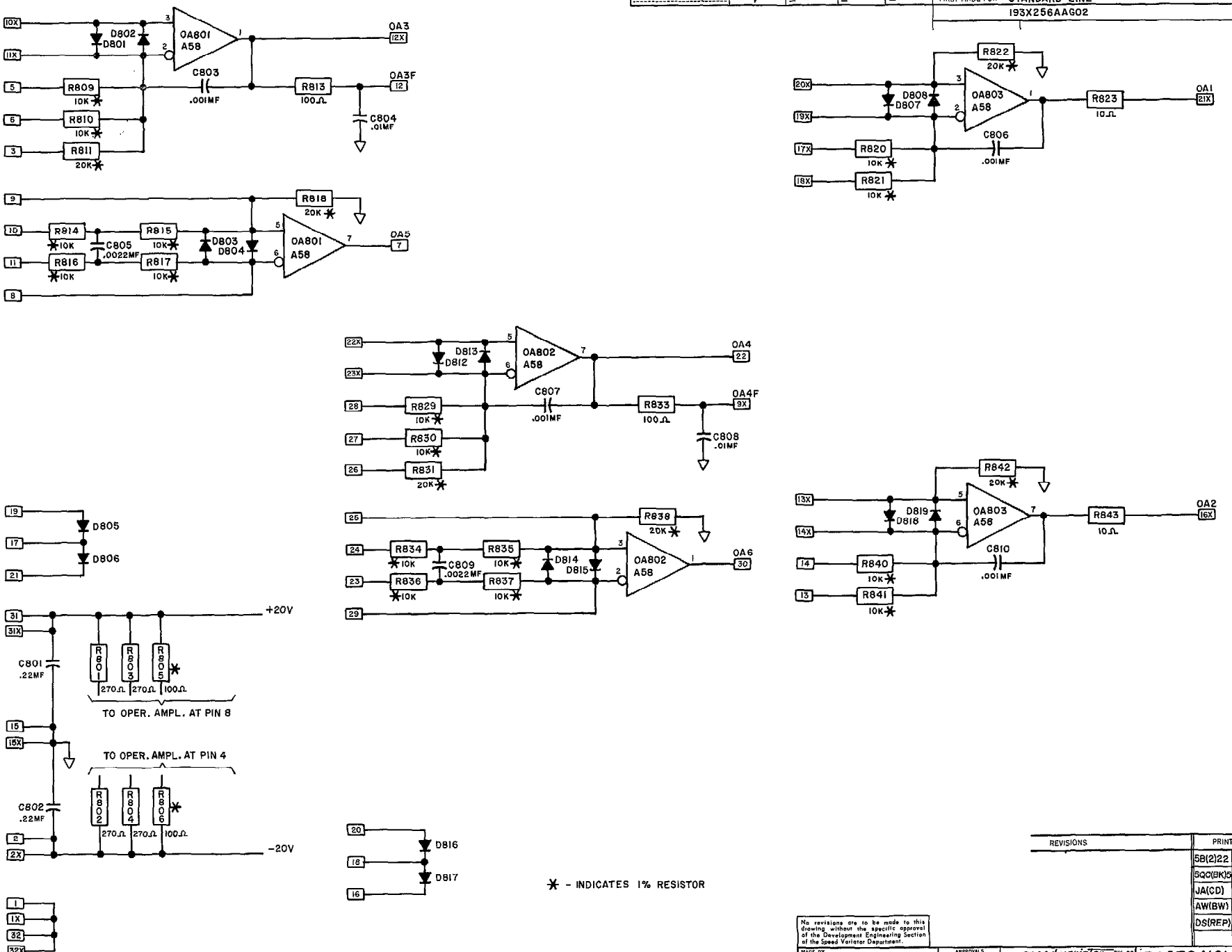
APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS		
		FRACTIONS	DECIMALS	ANGLES
	✓	±	±	±

TITLE ELEMENTARY DIAGRAM

AMPLIFIER CARD

FIRST MADE FOR STANDARD LINE

193X256AAG02



REVISIONS	PRINTS TO	
	5B(2)22	5(S)
	5QC(BK)5	5D(BK)
	JA(CD)	5(TS)5D
	AW(BW)	5I.(BW)5
	DS(REP)	5AE(BW)
		5QC(B)

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

MADE BY G.R.Baker NOV. 11, 1975

ISSUED G.R.Baker Nov. 13, 1975

APPROVALS

speed variator DIV OR DEPT

ERIE, PA., U.S.A. LOCATION

36C764161AA
CONT ON SHEET 2 SH NO. 1

REV NO. 0

GENERAL ELECTRIC

36C764161AA

CONT ON SHEET FL SH NO 2

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING

APPLIED PRACTICES	SURFACES	TOLERANCES ON MACHINED DIMENSIONS FRACTIONS	DECIMALS	ANGLES
718A515	√	±	±	±

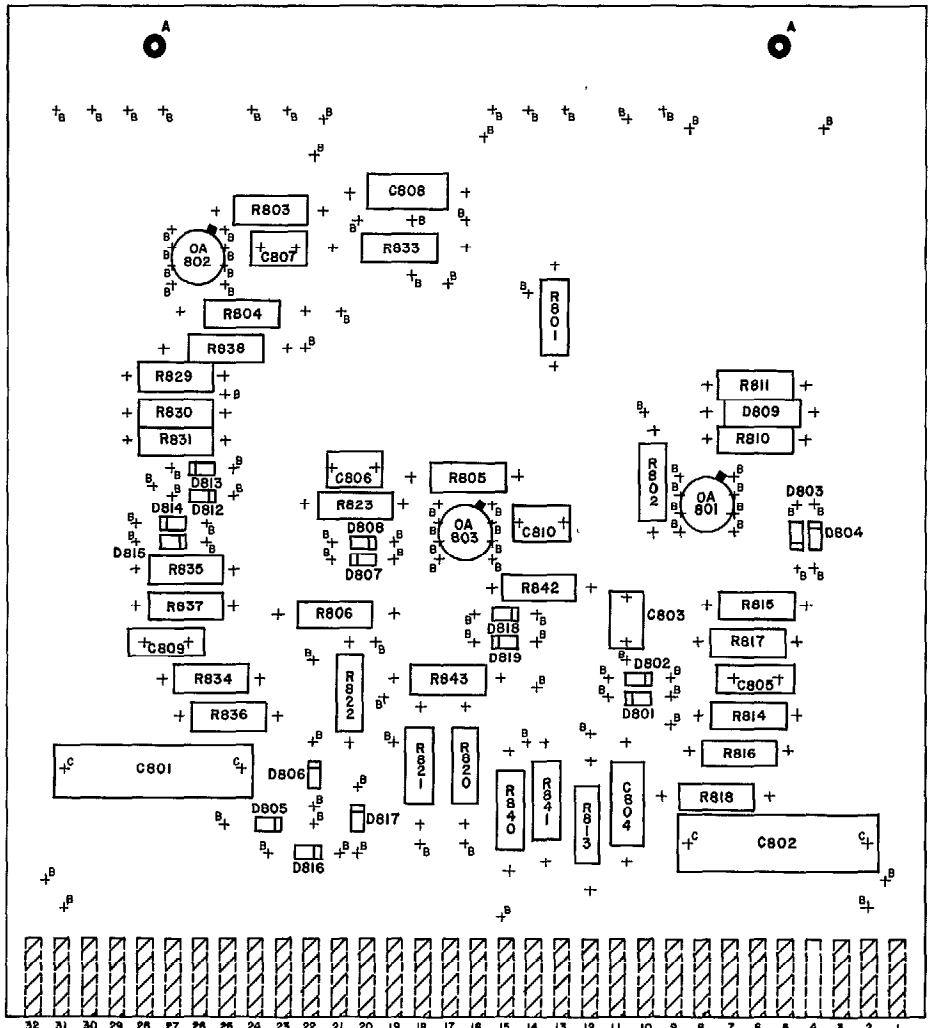
TITLE PRINTED CIRCUIT DIAGRAM
AMPLIFIER CARD

FIRST MADE FOR STANDARD LINE
193X256AAG02

HOLE TABULATION

ALL HOLES .040 DIA. EXCEPT THE HOLES TABULATED BELOW

LOC	DIA	QUAN
A	.157	2
B	.032	99
C	.052	4



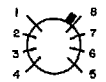
GROUP	KEY LOCATIONS			
01	12-13	19-20	30-31	

NOTES

1. INDICATED TAB NUMBERS CORRESPOND TO MATCHING RECEPTACLE NUMBERS
2. CROSS HATCHED TABS INDICATES TABS USED.
3. CARD SIZE, $5.500^{+.000}_{-.015}$ X $5.130^{+.002}_{-.008}$
4. THIS CARD HAS GOLD PLATED TABS ON BOTH SIDES. TABS 1 THRU 32 ARE LOCATED ON THE REVERSE SIDE. TABS 1X THRU 32X 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.
5. ALL OP AMPS SHALL BE MOUNTED TO A .50 INCH MAXIMUM ABOVE THE CARD SURFACE.

OP AMP LEAD SKETCH

(TOP VIEW)



SKETCH FOR 0A801, 0A802, 0A803, 0A804, 0A805

2X	36A353861AA005 REAR ETCHED BOARD DWG.	36A353862AA005 FRONT ETCHED BOARD DWG.	1 FRONT	— BACK
SCALE			SPACE UNIT REQUIREMENT	

REVISIONS

REV NO 0

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

PRINTS TO	
5B(2)22	5(S)
5QC(BK)5	5D(BK)
JA(CD)	5(TS)50
AW(BW)	5L(BW)5
DS(REP)	5AE(BW)
	5QC(B)

MADE BY C.E. Baker NOV. 12, 1975

APPROVALS speed variator

DRV OR DEPT 36C764161AA

GENERAL ELECTRIC COMPANY
SPEED VARIATOR PRODUCTS OPERATION
ERIE, PENNSYLVANIA 16531

GENERAL ELECTRIC

GEK-24956B (4/81) 500 (P)