

DC AUXILIARY RELAYTYPE NGA
MODEL 12NGA15X**INTRODUCTION**

These instructions plus those included in GEI-83905 form the instructions for this relay.

DESCRIPTION

Relay model 12NGA15X is similar to relay model 12NGA15A except as follows:

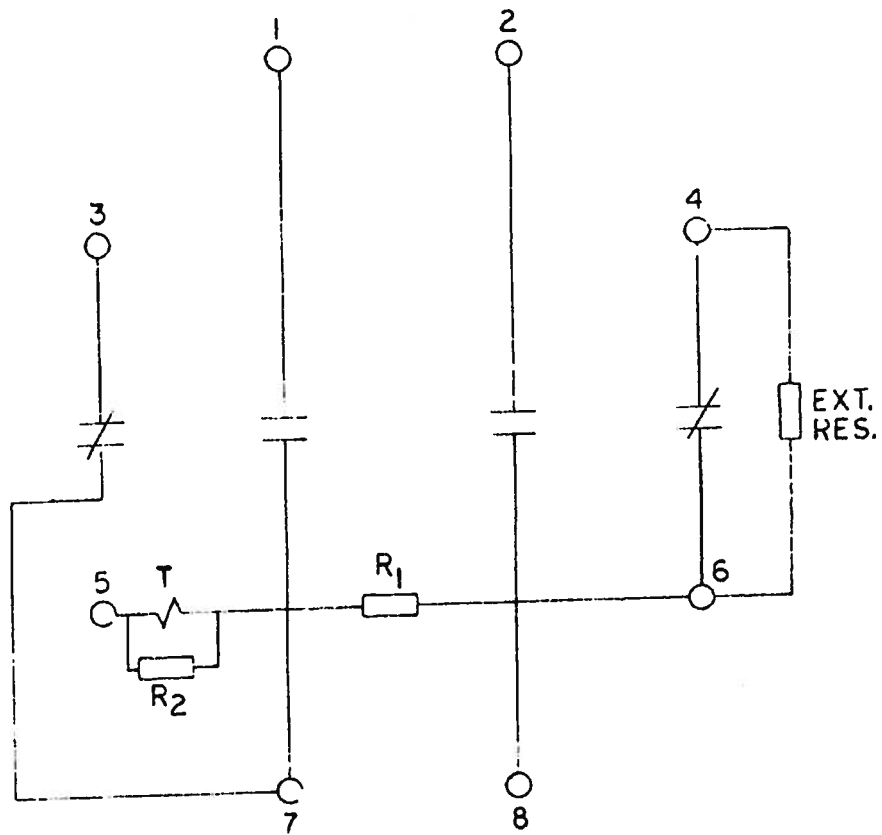
1. Pickup time (milliseconds) maximum - 4
2. Dropout time (milliseconds) maximum - 4
3. Internal as shown in Fig. 1 of this supplement.
4. Outline and panel drilling as shown in Figs 2 and 3 of this supplement.

FORM	VOLTAGE	EXT. RES
* 1	125	1500
2	125	1500

*Replaced by Form 2

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 the General Electric Company.

To the extent required the products described herein meet applicable ANSI, IEEE and NEMA standards; but no such assurance is given with respect to local codes and ordinances because they vary greatly.



SEE SHEET 2 FOR COMPONENT VALUES

FIG. 1 (0227A7115-1 Sh 1) Internal Connections for The NGA15X1 Relay

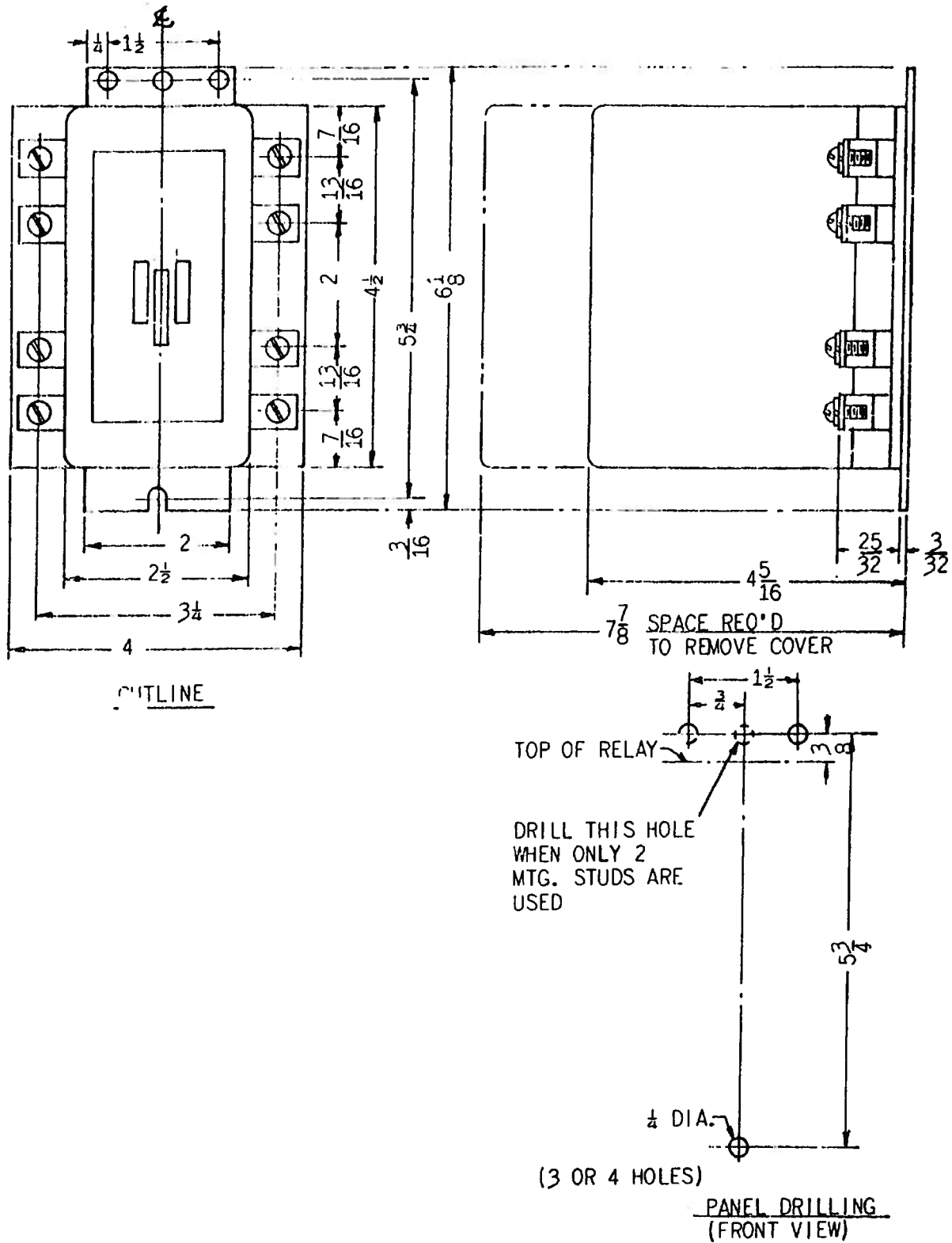


FIG. 2 (0208A3642-0) Outline, Panel Drilling For The NGA15X1 Relay

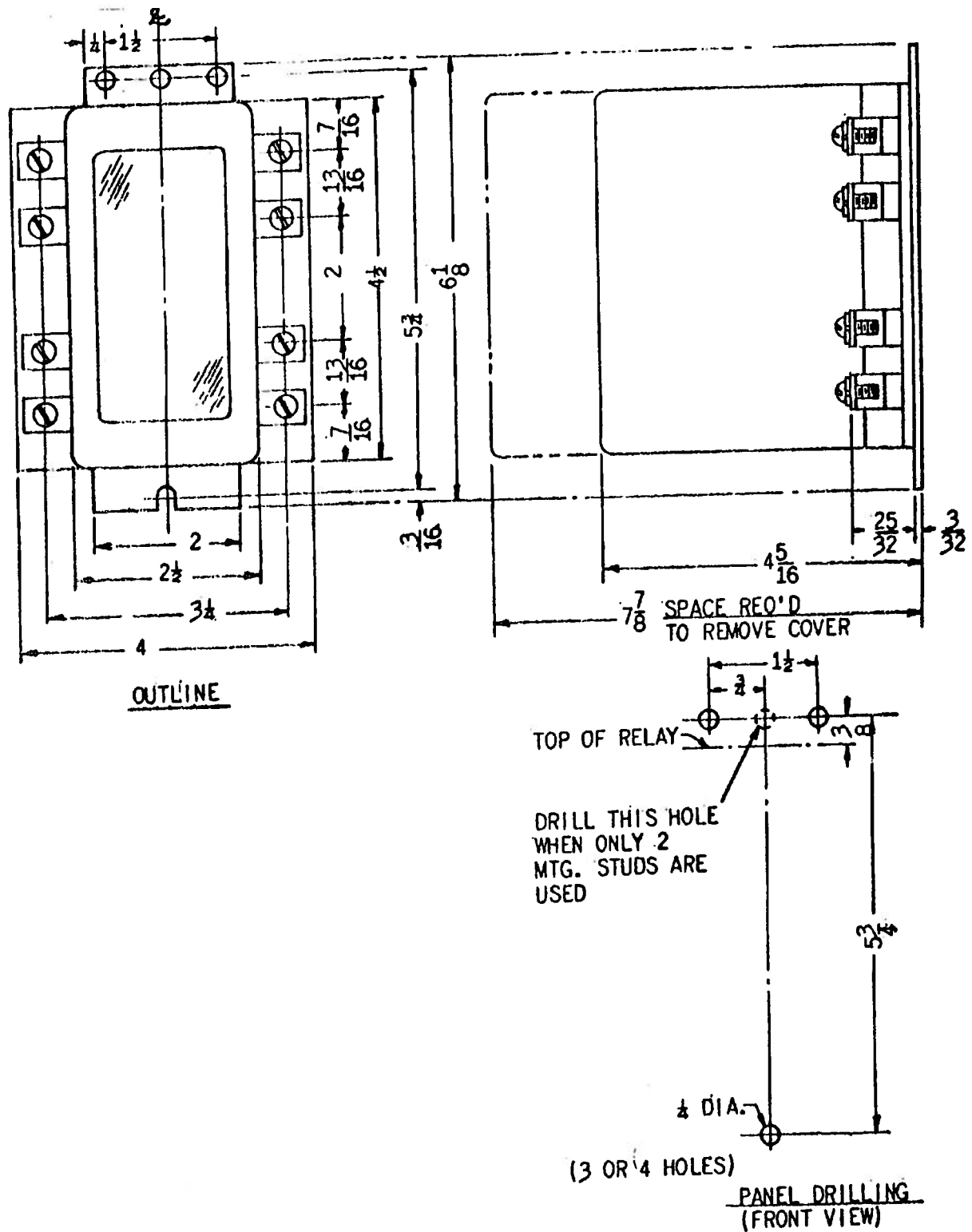


FIG. 3 (0208A3643-0) Outline, Panel Drilling For The NGA15X1 Relay



GE VERNOVA

RELAYS

AUXILIARY RELAYS

TYPES

NGA15A AND NGA15L

GEI-83905J

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Cover Photo (8030183)

AUXILIARY RELAY
NGA15A AND NGA15L

DESCRIPTION

The Type NGA15A and 15L are DC auxiliary relays mounted on a small molded base as shown in Figures 1 and 2. They are designed to provide DC auxiliary functions with a variety of operating time characteristics. Both types of relays are continuously rated and both have a diode-resistor combination for coil surge suppression. Each relay has two normally open and two normally closed contacts in a transfer contact configuration.

Additional characteristics are as follows:

NGA15A - back connected with cover, either surface or semi-flush mounting (suffix F), see Figure 3 for internal connections, and Figures 5 and 6 for outlines and panel drilling dimensions.

NGA15L - front connected with cover, surface mounting, optional glass front cover (suffix G), see Figure 7 for internal connections, and Figures 8 and 9 for outlines and panel drilling dimensions.

APPLICATION

The NGA15A and NGA15L are DC auxiliary relays designed for general applications. They are available with a variety of operating time characteristics as is shown in Tables A and B. These are the currently available models as of the printing date of this book. If a specific pickup or dropout time is not given, as indicated by a dash, this time is not checked and is not held within any specific limits in the factory tests. The tables also give the specific values of all the components of the circuit.

Details of other forms of these relays which are now obsolete are given in the tables of Figure 3 for NGA15A and Figure 7 for NGA15L. These tables also specify the suitable relay to be substituted for those relays that have been made obsolete.

These instructions do not purport to cover all details or variations in equipment nor 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 the General Electric Company.

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The internal connection diagrams show that resistor R1 in series with a blocking diode is connected around the operating coil (T). This circuit serves to limit the surge overvoltage that the coil can produce when that circuit is interrupted. The overall circuit is designed to limit the surge voltage to a value approximately equal to the continuous voltage rating of the relay. The value of resistor R1 will also affect the dropout time of the relay. Therefore the selection of the resistance value of R1 must be made on the basis of both characteristics of the relay, surge overvoltage and dropout time.

RATINGS

The relay contacts will close and carry 30 amperes DC momentarily for tripping duty at control voltages of 250 VDC or less. These contacts will carry three amperes (3 amps) continuously and have interrupting ratings as given in Table C.

TABLE A - NGA15A(-)

FORM (-)	DC VOLTS	PICKUP MS	DROPOUT MS	OHMS			C mfd	EXT RES ohms
				T	R1	R2		
21 (REVA)	125	8 max	100min	2500	-	2000	-	-
28 (REVA)	75	50 max	250 min	2500	1000	-	0.05	-
30 (REVA)	125	80-120	60-90	2500	1000	1000	-	-
32 (REVA)	125	90-110	60 max	2500	3900	1000	-	-
33 (REVA)	125	50-55	-	7800	1000	-	-	-
34 (REVA)	125	28-38	220-300	2500	3900	1500	0.05	-

TABLE B (NGA15L(-)

5	125	50-55	-	7800	10000	-	-	-
6	125	8 max	100 min	2500	-	2000	-	-
7	250	50-55	-	7800	10000	-	-	-

TABLE C

Volts	Current Inductive †	Current Non-Inductive
48	1.0	3.0
100/125 VDC	0.5	1.5
220/250 VDC	0.25	0.75
115V 60 Cyc.	0.75	2.0
230V 60 Cyc.	0.5	1.0

† Induction of Average Trip Coil

RECEIVING, HANDLING AND STORAGE

These relays, when not included as part of a control panel, will be shipped in cartons designed to protect them against damage. Immediately upon receipt of a relay, examine it for any damage sustained in transit. If injury or damage resulting from rough handling is evident, file a damage claim at once with the transportation company and promptly notify the nearest General Electric Sales Office.

Reasonable care should be exercised in unpacking the relay. If the relays are not to be installed immediately, they should be stored in their original cartons in a place that is free from moisture, dust, and metallic chips. Foreign matter collected on the outside of the case may find its way inside when the cover is removed and cause trouble in the operation of the relay.

When the relay is received, check the nameplate stamping to ensure that the model number and the rating of the relay received agree with the requisition. Check the operation manually and also check that the contact gap and wipe agree with values given under the section on **ADJUSTMENTS AND INSPECTION**.

ADJUSTMENTS AND INSPECTION

The relay has been adjusted at the factory to pick up at 80% or less of rated voltage and should not require further adjustment. If necessary the pickup can be decreased by decreasing the spacing of the armature from the pole face.

With the relay de-energized each normally open contact should have a gap of 0.010 inch - 0.015 inch. Observe the wipe on each normally closed contact by deflecting the stationary contact member toward the frame. Wipe should be approximately 0.005 inch.

The wipe on a normally open contact can be checked by inserting a 0.005 inch shim between the residual screw and the pole piece and operating the armature by hand. The normally open contact should make before the residual screw strikes the shim.

The dropout time of the relay may be adjusted by means of the residual screw in the armature. The more the residual screw is turned in the shorter the dropout time. Be sure to tighten the locknut after adjusting this screw. The residual screw must not be removed completely. The minimum gap must be 0.002 inch between the armature and the pole face.

The dropout time may also be adjusted a small amount by varying the amount of pressure on the closed contacts.

In order to decrease the pickup time of the relay, reduce the pressure of the normally closed contacts by bending slightly the movable flexible contact arm.

After each adjustment the contact gap and wipe must be rechecked and the contact pressure should never be less than 10 grams measured at the contact tips.

All of the adjustments in this section may be most easily made with the tools supplied in the relay tool kit XRT11A1.

SERVICING

For cleaning fine silver contact a flexible burnishing tool should be used. This consists of an etch-roughened strip of flexible metal, resembling a superfine file which removes corroded material quickly without scratching the surface. The flexibility of the tool ensures the cleaning of the actual points of contact. Never use knives, files, abrasive paper or cloth to clean fine silver contacts. A burnishing tool as described above can be obtained from the factory.

RENEWAL PARTS

It is recommended that sufficient quantities of renewal parts be carried in stock to enable the prompt replacement of any that are worn, broken or damaged.

When ordering renewal parts, address the nearest Sales Office of the General Electric Company, specify quantity required, name of the part wanted, and give complete nameplate data. If possible, give the General Electric requisition number on which the relay was furnished.

Since the last edition, Figure 7 has been revised.

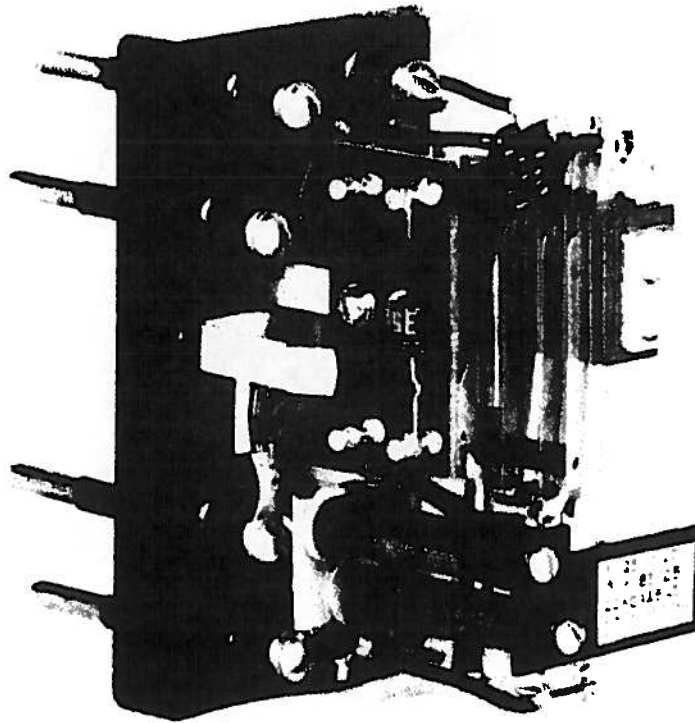


Figure 1 (8030186) NGA15A Relay Removed from Case

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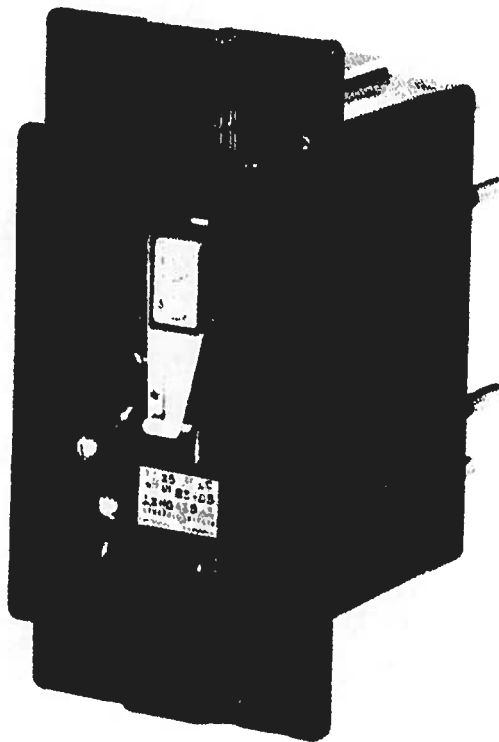
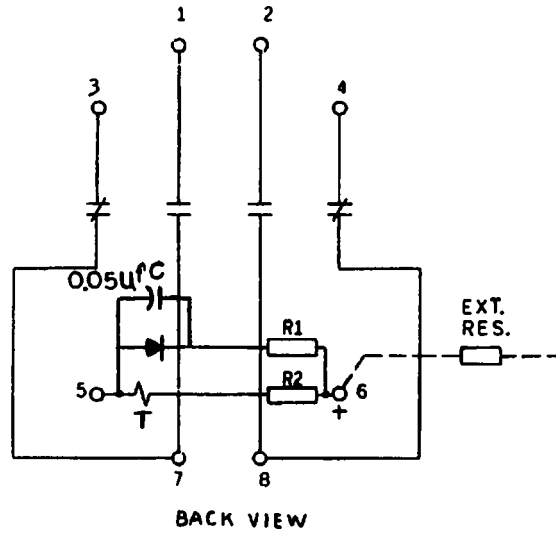


Figure 2 (8030182) NGA15A Relay in Flush Mounted Case



SEE SHEET 2 FOR COMPONENT VALUES

MODEL	O-C VOLTS CONTINUOUS	P.D. TIME (MILLISECONDS)		O.C. TIME (MILLISECONDS)		QPGS			EXT. RES.
		MIN.	MAX.	MIN.	MAX.	T	R1	R2	
12GA15A (1) (2)	125	8	32			1200	4000	5000	
2 (3)	80	16	116	167	800	800			
3 (25)	250	8	32			8000	10,000	10,000	
4 (26)	50	8	32			150	700	800	
5 (24)	125	8	32			1200	4000	5000	
6 (2)	80	16	116	167	800	800			
7 (25)	250	8	32			8000	10,000	10,000	
8 (26)	50	8	32			150	700	800	
9 (22)	220	8	32			1200	4000	5000	
10 (1)	125 .88	8	32			80	800	1000	
11 (1)	250 .88	8	32			80	800	1000	
12 (3)	125 .88	16	116	167	3000	8000			
13 (3)	250 .88	16	116	167	12,000	20,000			
14 (1)	125 .88	80	110	80	2500	4000	1000		
15 (1)	125 .88	80	85		2000	10,000			
16 (1)	125 .88	80	220	300	2000	4000	1000		
17 (1)	125 .88	80	220	300	2000	4000	1000		
18 (25)	75	80	300		2000	1000			
19 (25)	250	8	32		80	700	100	2000	
20 (1)	50 .88	8	32		80	300	10		
21 REV. A	125	8	100		2000	2000			
22 (30)	125	80	120	80	80	2000	1000	1000	
23 (31)	125	8	32		80	3000		1500	
24 (4)	125	8	32		1200		4000		
25 (3)	250	8	32		8000		10000		
26 (3)	50	8	32		150		800		
27 (7)	220	8	32		1200		4000		
28 (1)	75	80	250		2000				
29 (1)	250	8	32		80		800	1000	
30 REV. A	125	80	120	80	80	2000	1000	1000	
31 (32)	125	8	32		80			1500	
SUPERCEDED BY 1216A15A-1 OF FORM NUMBER SHOWN IN (-). SUPERCEDED BY 12GA15A-1 OF FORM NUMBER SHOWN IN (-). INTERMITTENT RATING (10 SECONDS)-DO NOT ORDER-SEE 12GA15A8 INTERMITTENT RATING (10 SECONDS)-DO NOT ORDER-SEE 12GA15A2									
									C MFD
32 REV. A	75		50	250		2500	1000		.C5
33 REV. A	125	90	110		80	2500	3000	1000	
34 REV. A	125	50	55			7000	1000		
35 REV. A	125	28	36	220	300	2500	3000	1000	.05
36 REV. A	110	28	38	140	160	2500	3000	1000	.05
37 REV. A	220	28	38	140	160	2500	3000	4000	.05

Figure 3 (0148A4042 SH.1[8] & SH.2[10]) Internal Connection Diagram and Table of Resistance Values of the NGA15A Relay

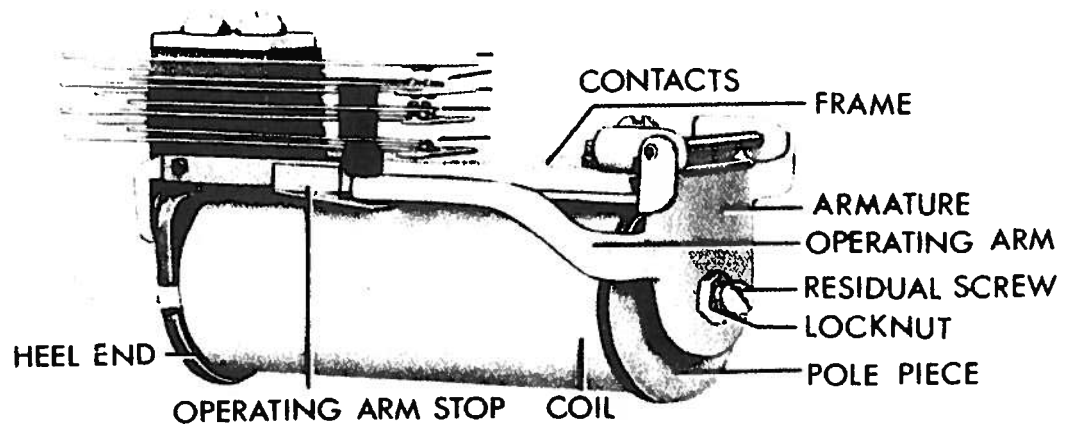
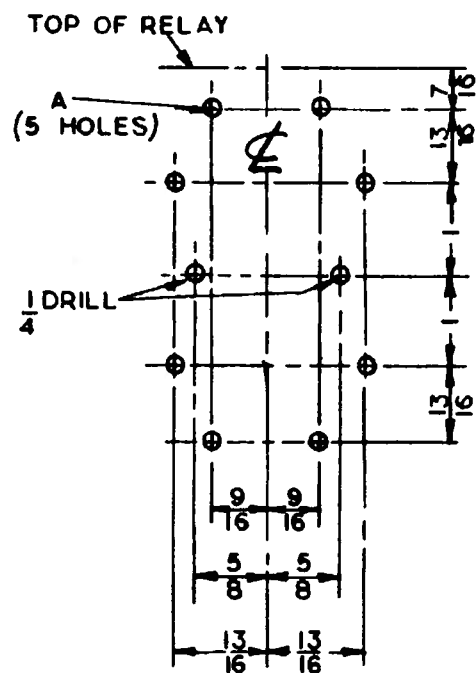


Figure 4 (8012106) Typical Telephone-Relay Unit in the NGA15A Relay



TYPE OF PANEL	A	B
INSULATING	7/16	2-13/16
STEEL	9/16	1-3/8

Figure 5 (0148A3979-6) Outline and Panel Drilling Dimensions for the Projection Mounted NGA15A Relay

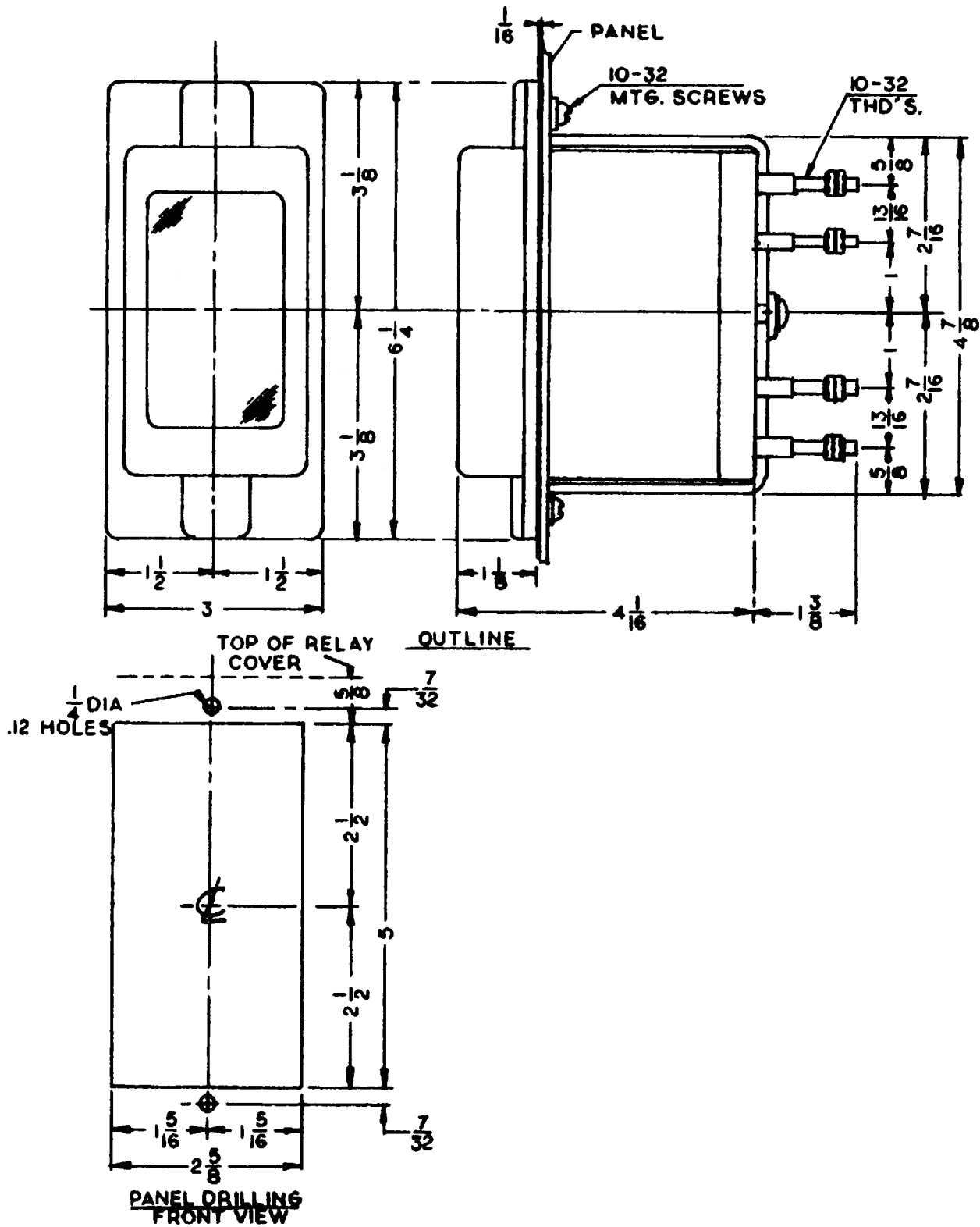
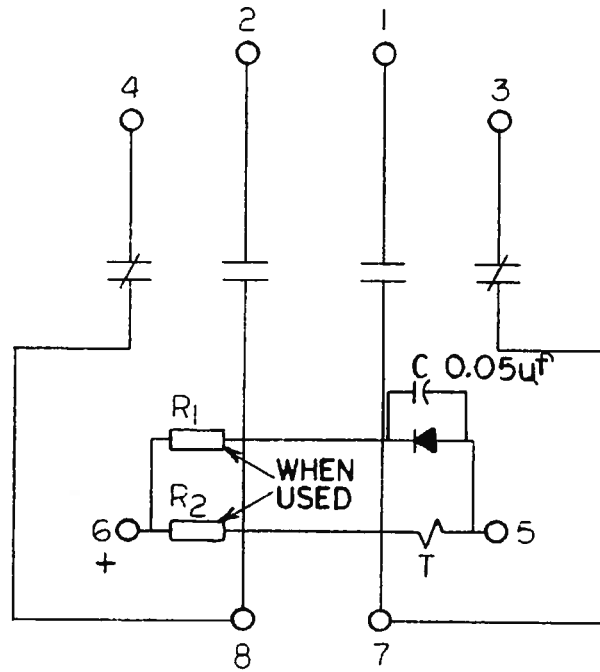


Figure 6 (0148A3978-7) Outline and Panel Drilling Dimensions for the Semi-Flush Mounted NGA15A Relay



MODEL	DC VOLTS CONTINUOUS	R.U. TIME (MILLISECS)		D.O. TIME (MILLISECS)		OHMS		
		MIN.	MAX.	MIN.	MAX.	T	R1	R2
NGA15L1 Δ	125		8	32		1200	4000	4000
NGA15L2 *	48		8	32		150	700	500
NGA15L3 Δ	125		8	32		1200	3900	4000
NGA15L4 *	48		8	32		150	680	500
NGA15L5	125	50	55			7800	10000	
NGA15L6	125		8	100		2500		2000
NGA15L7	250	50	55			24000	10000	

Δ = SUPERCEDED BY NGA15AG3

* = SUPERCEDED BY NGA15AG4

Figure 7 (0227A2500 [5]) Internal Connection Diagram and Table of Resistance Values of the NGA15L Relay

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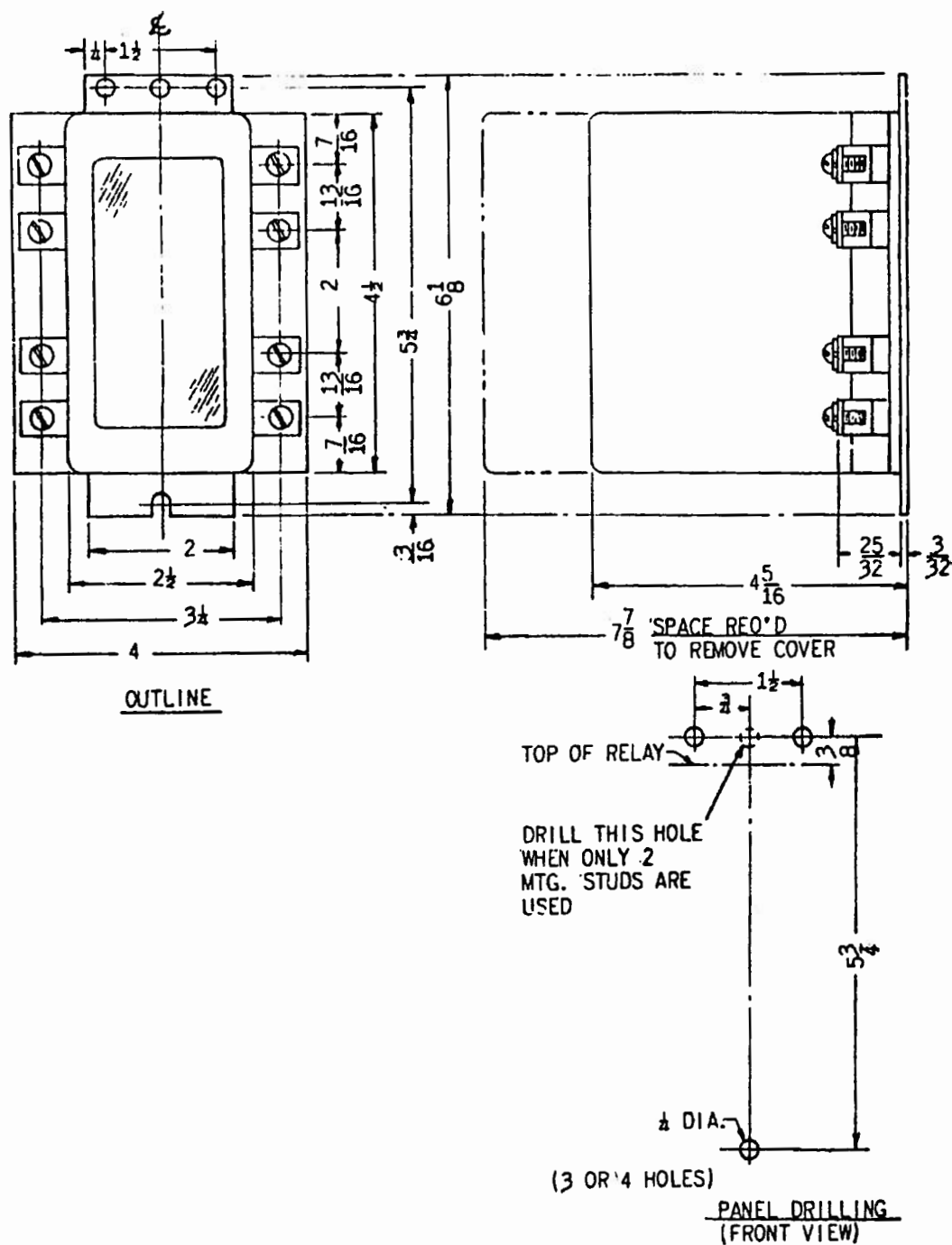


Figure 9 (0208A3643) Outline and Panel Dimensions for the Front Connected NGA15A with Glass Front Cover



GE VERNOVA

650 Markland Street
Markham, Ontario
Canada L6C 0M1
Worldwide telephone: +1 905 927 7070
North America toll-free: 1 800 547 8629
Website: <https://www.gevernova.com/grid-solutions>