ABB

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Substation Automation and Protection Division
Coral Springs, FL 33065

Instruction Leaflet

41-753.1M

Effective: December 1999
Supersedes 41-753.1L Dated November 1992

(|) Denotes Change Since Previous Issue

Type MG-6 Multi-Contact Auxiliary Relay

CAUTION

Before putting the relay into service, remove all blocking which may have been inserted for the purpose of securing the parts during shipment, make sure that all moving parts operate freely, inspect the contacts to see that they are clean and close properly, and operate the relay to check the settings and electrical connections.

1.0 APPLICATION

The Type MG-6 relay is designed for applications where several independent circuits may be energized or de-energized upon the operation of a single primary relay contact or where the capacity of the primary relay contact is inadequate for the energy required. In certain applications these relays may be used directly as primary relays. The stationary contacts can be reversed so that either circuit opening or circuit closing service is readily attained. It is not necessary to predetermine the relay's circuit arrangements. If the relay has a dc operate coil, a small increase in spring tension may be required; this will be covered under **section 7, "ADJUSTMENTS and MAINTENANCE"**.

In the usual application of the relay, the armature resets when the operate coil is de-energized. However, the relays can be supplied with a latching mechanism that holds the armature in the operate position until the latch is tripped: either by hand or electrically.

An operate coil cutoff contact can be supplied with the electric-reset type, where an intermittent duty coil is required for faster than normal operation, but where the operating coil circuit will be energized continuously. An operating coil, rated at 19% of supply rating may be applied, with a maximum duty of 10,000 operations (e.g., 24 volt coil on a 125 volt dc circuit).

2.0 CONSTRUCTION

The Type MG-6 relay (Figure 1) consists of five major assemblies mounted in several base and cover configurations. The assemblies are as follows:

- Operating electromagnet
- Armature and moving contact
- Base and stationary contact
- Latch (Optional)
- Coil Cutoff Contact (Optional)

2.1. OPERATING ELECTROMAGNET

The operating electromagnet, located at the lower end of the relay as shown in Figure 1, is comprised of the operate coil (Figure 1. Item 8) and a U-shaped lamination stack. The coil utilizes one leg of the stack as its core. This leg is slotted at the outer end to receive the copper lag loops used to obtain quiet ac operation. For a dc operated coil, an iron plate, rather than lag loops, is used to improve

performance. The inner end of the other leg of the stack is shaped so the armature restraining spring can be attached.

2.2. ARMATURE AND MOVING CONTACT

The steel armature has projecting sections at the sides, near the center, which act as knife-edge bearings and rest on supports that are a part of the molded base. A stud attached to the core leg of the lamination stack, extends through a hole in the lower end of the armature. A self-locking stop-nut on the outer end of the stud is used to limit and adjust the travel of the armature in the de-energized direction.

The upper end of the armature has an adjustment screw to which one end of the armature restraining spring is attached. In both the hand and electrically reset versions of the relay, a latch screw is mounted at the extreme end of the armature. For the self-reset relays, the adjustment screw is replaced by a set screw which serves to slightly separate the locking plate (see Figure 1) from the armature. Located between the spring adjustment screw and the latch (set) screw is a third screw which, when tightened, applies pressure to the former screws and effectively locks them in place.

The type MG-6 relay for ac can be used with any combination of contacts, but the dc relay can have up to four circuit-opening contacts with the normal operating spring adjustment. With more than four the operating spring should be adjusted to give the correct back contact follow.

The moving contact fingers are mounted on a molded insulation plate attached to the armature. Silver contact buttons are on both sides of the fingers so they may be used as either a circuit-opening or a circuit-closing contact. The fingers are assembled on guide pins, between two springs so that a definite spring compression and contact wipe is assured for either the contact-closing or the contact-opening conditions. Flexible leads are connected to the contact fingers. The armature assembly has contact fingers located above and below the bearing points so

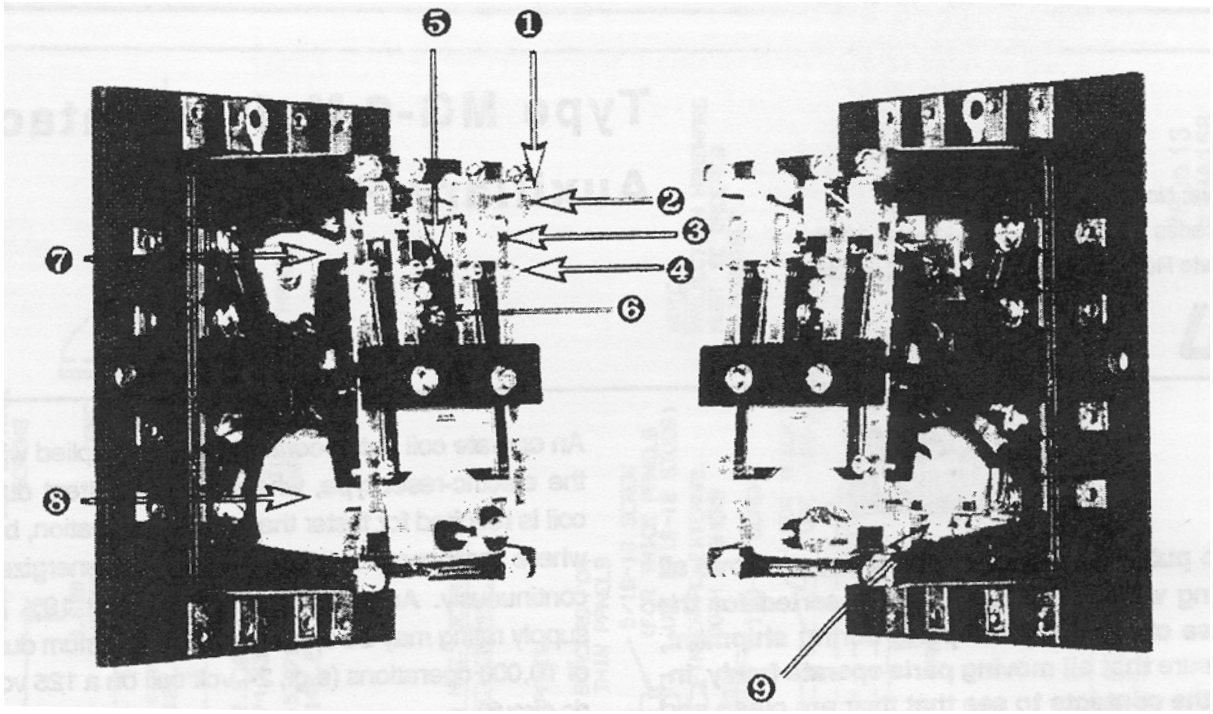


Figure 1: Front view (Cover Omitted) and Side View of the MG-6 Electric and Hand Reset Relay in Molded Case.
1–Reset Push Rod, 2–Stationary Contact, 3–Moving Contact,
4–Moving Contact Spring Assembly, 5–Latch Adjustment Screw,
6–Adjusting Screw for Armature Spring Tension, 7–Reset Coil,
8–Operating Coil, 9–Optional Operating Coil Cut-off Contact

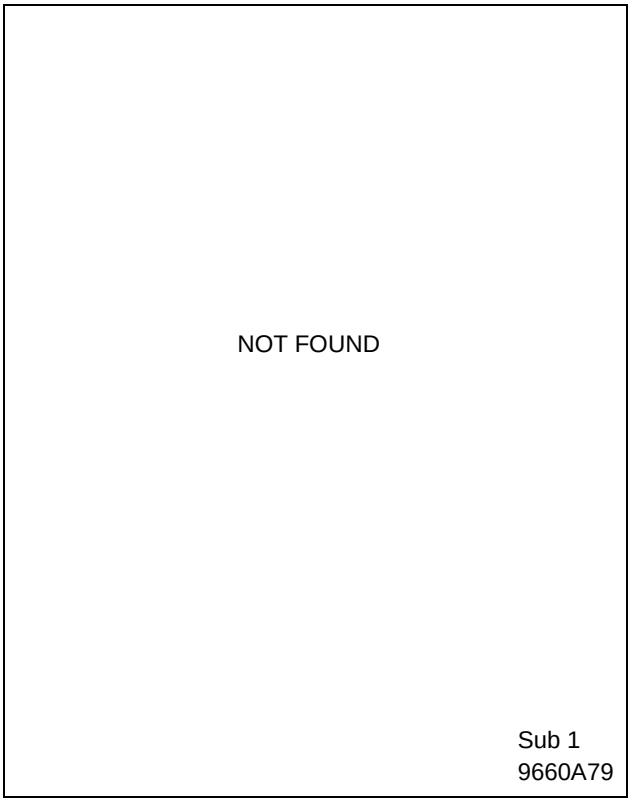
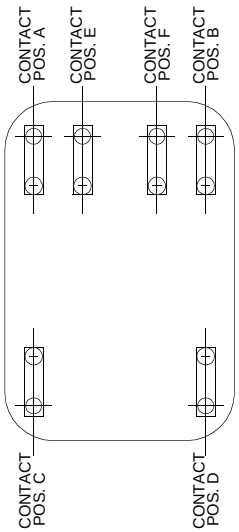


Figure 2: Detail Views of the Latch and Electrical Reset of the Type MG-6 Relay

the weight is partially balanced about the bearings leaving less chance for severe shocks to move the armature. The corresponding stationary contact assembly, with its large silver button contacts, can be installed to close with the moving contacts when the armature is in either the energized or de-energized position.

In certain applications of the type MG-6, it may be desirable to have one or more of the contacts close before other contacts on the same relay open. A special armature assembly is required to obtain such operation, and the number of special make and break contacts desired must be known when the relay is built. The special moving contacts have longer follow than the standard contacts and greater armature spring tension is required for full deflection of the break contacts. Consequently, it is preferable to limit the number of special break contacts to two. A maximum of three may be used, although the increased armature spring tension needed may raise the minimum pick-up voltage above the standard value. As many as five contacts may be special make contacts, with

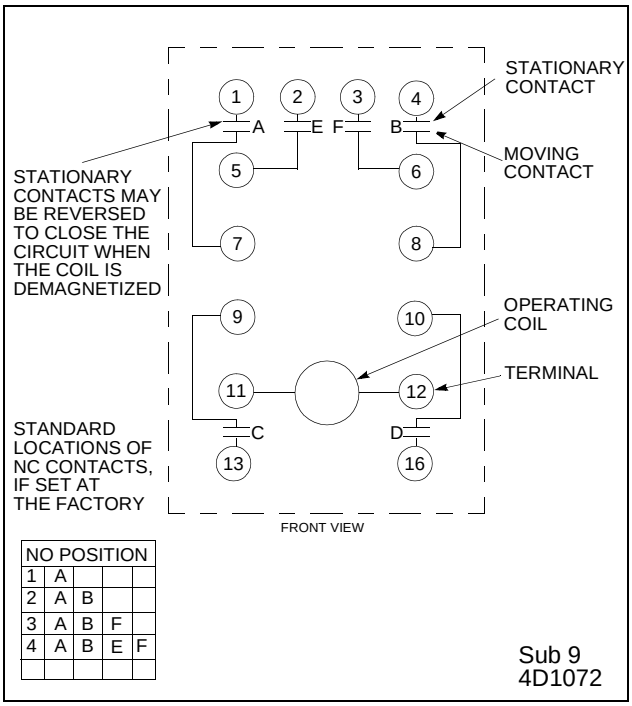


STATIONARY BREAK CONTACT ASSEMBLIES

ASSY	REVERSE CONTACT AT POSITION					
0						
*1	A					
*2	A	B				
*3	A	B	F			
*4	A	B	E	F		
5	B	C	E			
6	C	D				
7	B	E				
8	A	F				
9	A	B	C			
10	A	D	F			
11	A	B	C	D		
12	A	B	C	D	E	
13	A	B	D	E	F	
14	B					
15	B	D				
16	B	C				
17	B	C	D			
18	B	C	D	F		
19	C	D				
20	D					
21	A	E	F			
22	F	B				
23	A	D				
24	A	B	C	D	E	F
25	B	E	F			
26	F					
27	B	D	E			

*** Also used for Make-Before-Break operation. Bend all Make-Before-Break Stationary Contacts equally toward moving contacts to obtain make approx. .0625" contact travel before break.**

Figure 3: Contact Positions for Combinations of Make-Before-Break Contacts



NO POSITION				
1	A			
2	A	B		
3	A	B	F	
4	A	B	E	F

Figure 4: Internal Schematic of the Type MG-6 Relay, Without Electrical Reset, in Molded Case.

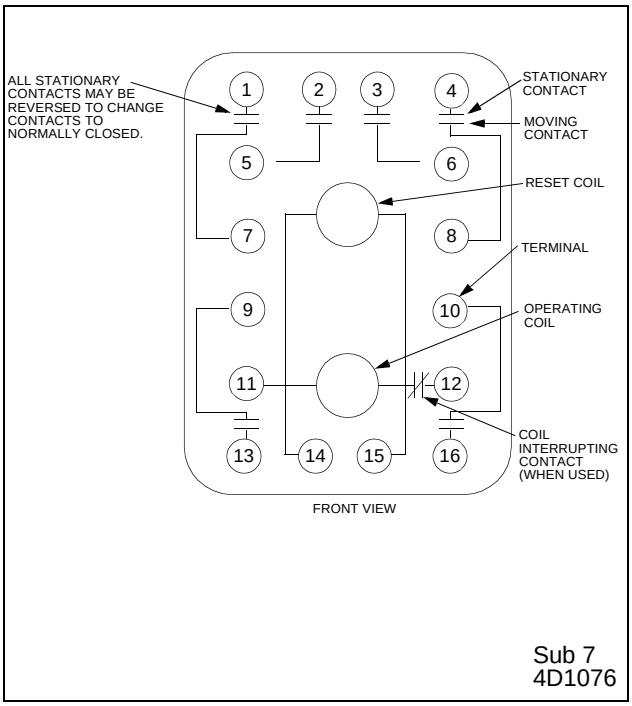


Figure 5: Internal Schematic of the Type MG-6 Relay, With Electrical Reset, in Molded Case.

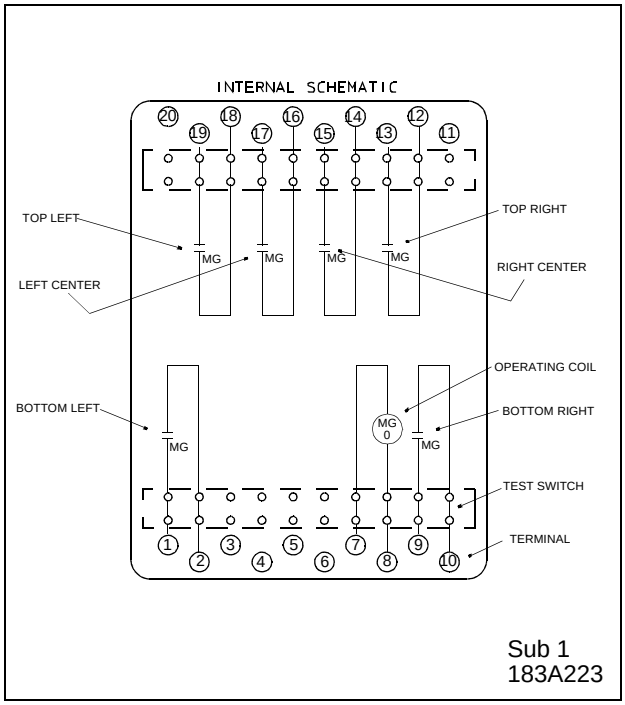


Figure 6: Internal Schematic of the Type MG-6 Relay, Without Electrical Reset, in FT-22 Case.

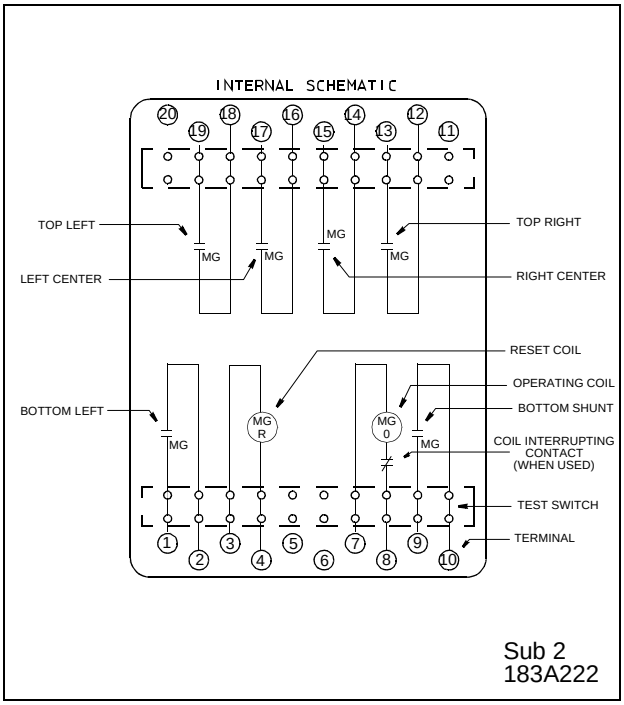


Figure 7: Internal Schematic of the Type MG-6 Relay, With Electrical Reset, in FT-22 Case.

the total of special make and break contacts limited to six. The locations of the make and break contacts for any combination of these special contacts are shown in Figure 3. This figure indicates the physical location of the contacts in the relay, and can be used in conjunction with the internal schematic diagram for the type of case involved to determine the corresponding terminal locations.

2.3. BASE AND STATIONARY CONTACT

The stationary contacts (Figure 1, Item 2) are on six legs located at the top and bottom of the base. The stationary contact brackets are connected directly to the terminal inserts by means of long screws passing through brass tubes. This method allows a tight connection without compressing the base material. The contact bracket is held against its seat by means of a spring ring which is compressed between shoulders in the base and on the hexagonal terminal insert.

2.4. BASE AND COVER

The base and cover are molded of a phenolic and in several versions. The molded versions are:

- Rear-connect projection mount
- Rear-connect semi-flush mount
- Front connect

The relay is also available in the FT-22 case. See IL 41-076 for additional details.

2.5. LATCH

The self-reset assembly is the standard build of the relay. The electrical reset assembly (as shown in Figure 2) is optional and can be supplied with any of the configurations. The upper half of the figure is the reset assembly viewed from the front. The lower half of the figure is a bottom view which shows the latch screw (in the main armature) for the relay in an energized position, and the reset armature is free to be moved to the right by the tension spring until the hardened latch plate on the reset armature rests against the tip of the latch screw. When the operating coil is de-energized, the latch screw will move slightly so that its shoulder rests on the edge of the latch plate. When the reset coil is energized its armature moves to the left, thus permitting the main armature to return to its open position. Pressing the reset push rod, which extends through the cover stud, will also release the latch through the medium of the reset lever shown in the figure.

2.6. CUTOFF CONTACT

The cutoff contact assembly (Figure 1, Item 9) is located at the side of the operate coil and is used to achieve a faster than normal relay operation.

In some applications of the Type MG-6 relay having the latch and electrical reset, it may be desirable to have the operating and reset coils de-energized automatically as soon as their functions have been performed. With the reset coil, de-energization can be accomplished by connecting the coil through one of the relay's "make" contacts. An auxiliary contact is required to open the operating coil circuit. This contact, when provided, is located on the lower right side of the relay, and is held in position by the terminal screw to which the right coil lead ordinarily connects. The coil lead is connected to the moving contact of the auxiliary contact assembly, and the end of the stationary contact bracket is in contact with the head of the terminal screw. The auxiliary contact is closed when the main armature is open. When the armature approaches the closed position, the spring on the molded insulation block snaps off the roller and causes the contacts to open and interrupt the operating coil current. When this auxiliary contact is used, a weight is added at the lower end of the armature to increase its mass and stabilize contact action. The auxiliary contact will interrupt currents to five times rated coil currents.

3.0 OPERATION

The MG-6 relay is an electromagnetic type solenoid device with six independent contacts. When the coil is energized, the armature is attracted to the lamination stack thereby operating the moving contacts. Operation is single mode with a make or break function that can be supplied with either a self or a latching reset. The duty cycle may be from extremely intermittent to continuous energization.

4.0 CHARACTERISTICS

Standards Meets all of the following as applicable:
ANSI C37.90
IEC 255
UL STD-508

Operating Time Normal: ac - approximately 0.033 sec
dc - approximately 0.083 sec

If faster operation is desired and if the application requires only intermittent energization of the relay, the operating coils may be energized at higher than rated voltage. (1)Twice rated voltage will give an operating time of approximately .017 cycle on ac, and the coil will stand this voltage safely for over two minutes if 60 hertz or 4 minutes if 25 hertz. (2) The time of the dc relay can be reduced to slightly over .017 cycle if the coil is energized at five times rated voltage. The coil will stand this voltage for one minute. If faster time is desired on a dc relay which must be energized continuously, the use of a low voltage coil with a series resistor will reduce the time. With 10% of the line voltage across the relay coil and the balance across a series resistor, the reduced inductance of the circuit results in an operating time of approximately .033 seconds. The time of operation may be reduced to approximately .017 second by applying 4 or 5 times rated dc voltage to the coils through the coil interrupting contact.

Frequency dc, 50 or 60 hertz
(Specify when ordering)

Dielectric Withstand 1000 volts plus twice the operational Voltage for one minute

Relay Pickup 80% of rated voltage
60% of dc relay without interrupting contact rating.

Relay Latch Reset 70% of rating momentarily applied

Contact Rating Make: 30 Amp @ 575 volts ac for 1 Min.
12 Amp continuous

Break: Non-inductive loads only

30	Amp @ 115 volts ac
20	Amp @ 230 volts ac
15	Amp @ 460 volts ac
10	Amp @ 575 volts ac
30	Amp @ 12 volts dc
15	Amp @ 24 volts dc
10	Amp @ 32 volts dc
8	Amp @ 48 volts dc
3	Amp @ 125 volts dc
1	Amp @ 250 volts dc

Burdens:

Operating Coil at rated Voltage	Frequency (Hertz)	Closed Gap Watts	Closed Gap Volt-Amps	Open Gap Watts	Open Gap Volt-Amps
	25	6.8	23	19.6	53
	50	9.8	31	17.4	78
	60	12	37	17.6	92
	dc	7.8 cold		7.8 cold	
	dc	6.5 hot		6.5 hot	
Reset Coils at rated voltage	25	48	51.6	52	54
	50	46	58.2	57	63.8
	60	84	104.5	96	112.8
	dc	66 cold		68 cold	

Reset coils are for intermittent duty only and should not be energized longer than one-half minute.

Temperature Range -20 to +55 degrees C (operating)
-40 to +70 degrees C (storage)

5.0 SETTINGS

The relays are shipped from the factory correctly adjusted for armature travel and for contact follow and pressure. No adjustments should be necessary. All contacts are assembled for circuit closing (making) operation unless special arrangements have been ordered. To convert to circuit-opening (breaking) operation, loosen the screws for the stationary contact bracket, turn the bracket over and tighten the screw. Check the contact follow. It may be necessary to slightly bend the bracket(s). Refer to section 7.4.1 for details. On dc relays it is recommended that no more than four contacts be reversed. This is to assure that correct contact pressure and travel are maintained.

6.0 INSTALLATION

The MG-6 relay should be mounted on switchboard panels or their equivalent in a location free from dirt, dust, moisture, excessive vibration and heat. Mount the relay vertically by means of the rear mounting stud or studs for projection mounting, four mounting holes on the frame for semi-flush mounting, four mounting holes in the backplate for the front-connected style relay or for the FT-22 case mounted relay. The electrical connections may be made directly to the terminals by means of screws for steel panel mounting or to the terminal studs (furnished on request) for thick panel mounting. The terminal studs may be easily inserted or removed by locking two

nuts on the stud and then turning the proper nut with a wrench. Relay grounding is accomplished by using a mounting screw or the lower mounting stud. In the case of the front-connected with cover, a lug is provided adjacent to the upper mounting hole for device grounding.

For detailed FT case information, refer to I.L. 41-076.

OPERATING DATA FOR CONTINUOUSLY RATED AUXILIARY RELAYS

Rating	Operating Coil		Reset Coil
	dc Resistance (Ohms) ±10% @25 Degree C	Must Pickup (Volts) 80% of Rating	dc Resistance (Ohms) ±° 10% @25 Degree C
1 amp dc	4.8		
2 amps dc	1.0		
3 amps dc	.4		
4 amps dc	.24		
5 amps dc	.15		
6 volts dc	4.8	4.8 volts	.53
12 volts dc	19	9.6 volts	2.12
24 volts dc	75	19.2 volts	8.5
32 volts dc	132	25.6 volts	13.9
48 volts dc	310	38 volts	34
62.5 volts dc	530	50 volts	56
125 volts dc	2000	100 volts	222
250 volts dc	8200	200 volts	890
115 volts, 60 Hz	19	92 volts	91
208 volts, 60 Hz	67	166 volts	322
230 volts, 60 Hz	75	184 volts	364
460 volts, 60 Hz	305	368 volts	1445
575 volts, 60 Hz	495	460 volts	2208
115 volts, 50 Hz	26	92 volts	138
230 volts, 50 Hz	105	184 volts	550
460 volts, 50 Hz	465	368 volts	2200
575 volts, 50 Hz	660	460 volts	3500

* Reset Coil Intermittent Rating 100% for 60 Seconds

7.0 ADJUSTMENTS AND MAINTENANCE

The proper adjustments to insure correct operation of the relay have been made at the factory and the relay should not require readjustment after receipt by the customer. If any of the adjustments or the contact configuration have been changed or the relay disassembled, the instructions below should be followed. The relay should be mounted in a normal vertical operating position for all of these checks. Reference Figures 1 & 2 and Section 5,**SETTINGS**, above for part identification and contact information.

7.1. ACCEPTANCE CHECK

The following checks are recommended to ensure that the relay is in proper working order:

Pickup:	80 percent of rating
Make contacts:	Operate simultaneously
Break contacts:	Operate simultaneously

7.2. ARMATURE

7.2.1. Armature Stop Adjustment Nut

The armature stop adjustment nut should be set to 3/8 inches with the armature held against the electromagnet. For those relays having an interrupt contact, the measurement is 7/16 inches. The flat on the nut should be parallel with the armature. The hole in the armature must not touch the stop nut stud for either the extreme right or the extreme left position of the armature in its bearings. Adjust the position of the coil should the stud be touching either side.

7.2.2. Armature Spring (Preliminary adjustment)

When adjusting the armature spring tension, the locking screw for the spring adjusting screw is loosened, and this adjusting screw is turned (inward, to reduce the spring tension) until the spring barely holds the armature against the stop nut. The relay must be in its normal vertical position when this adjustment is made, with all contacts assembled as circuit-closing. The armature spring should then be tightened by turning the adjusting screw 4 turns counter-clockwise for ac relays or 2 turns for dc relays, and the locking screws should be tightened.

7.2.3. Armature Spring (Final adjustments)

If the relay is dc operated, turn the spring adjuster counterclockwise 2 turns. This does not apply to those relays with four or more break contacts. If the relay is ac operated and has less than six break contacts, turn the spring adjuster counterclockwise 4 turns. For the dc relays with four or more break contacts and the ac relay with six break contacts, turn the spring adjuster counterclockwise only enough for the armature to hit the stop nut. Tighten locking screw on non-latching relays. See section on latch assemblies for information on latching relays.

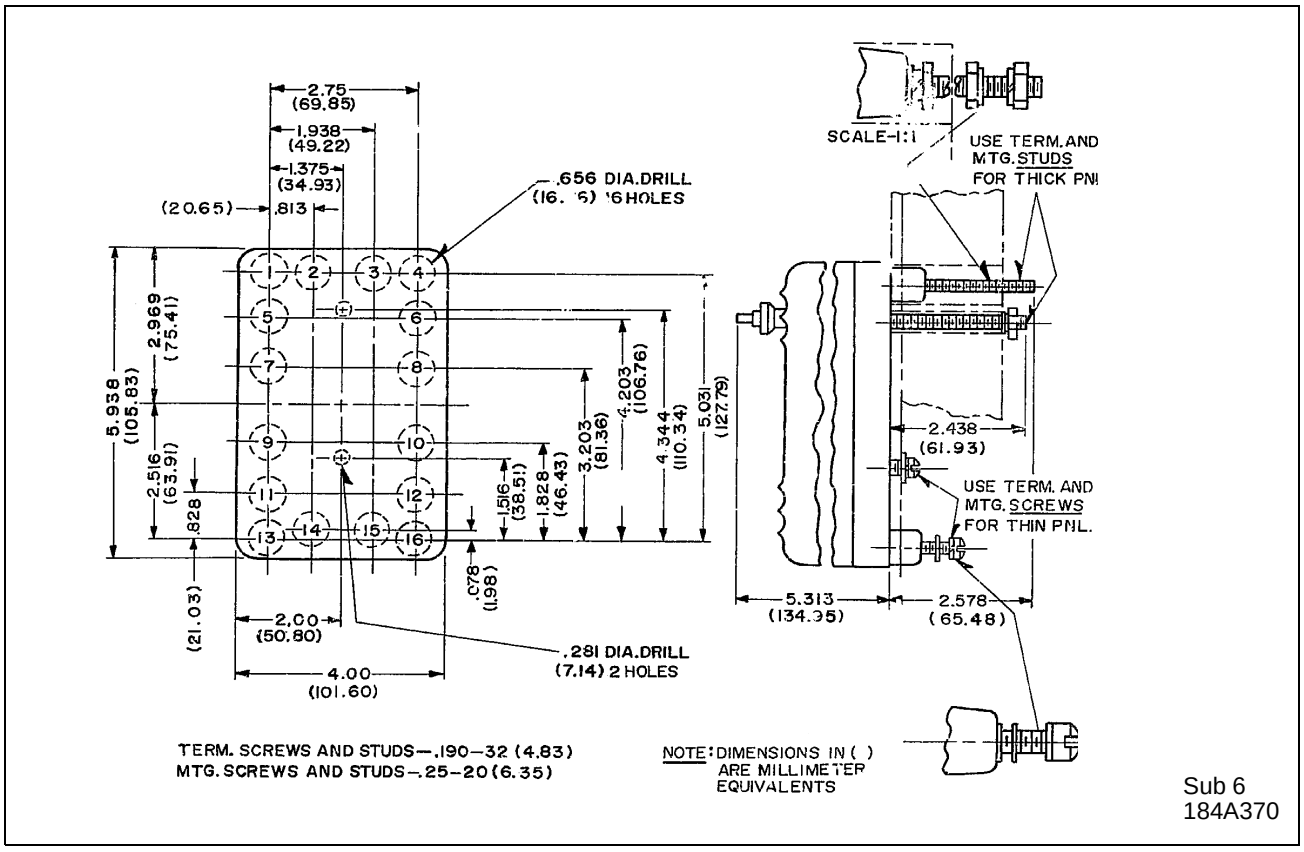


Figure 8: Outline and Drilling Plan for the Type MG-6 Relay in the Rear Connected Molded Case. For Reference Only.

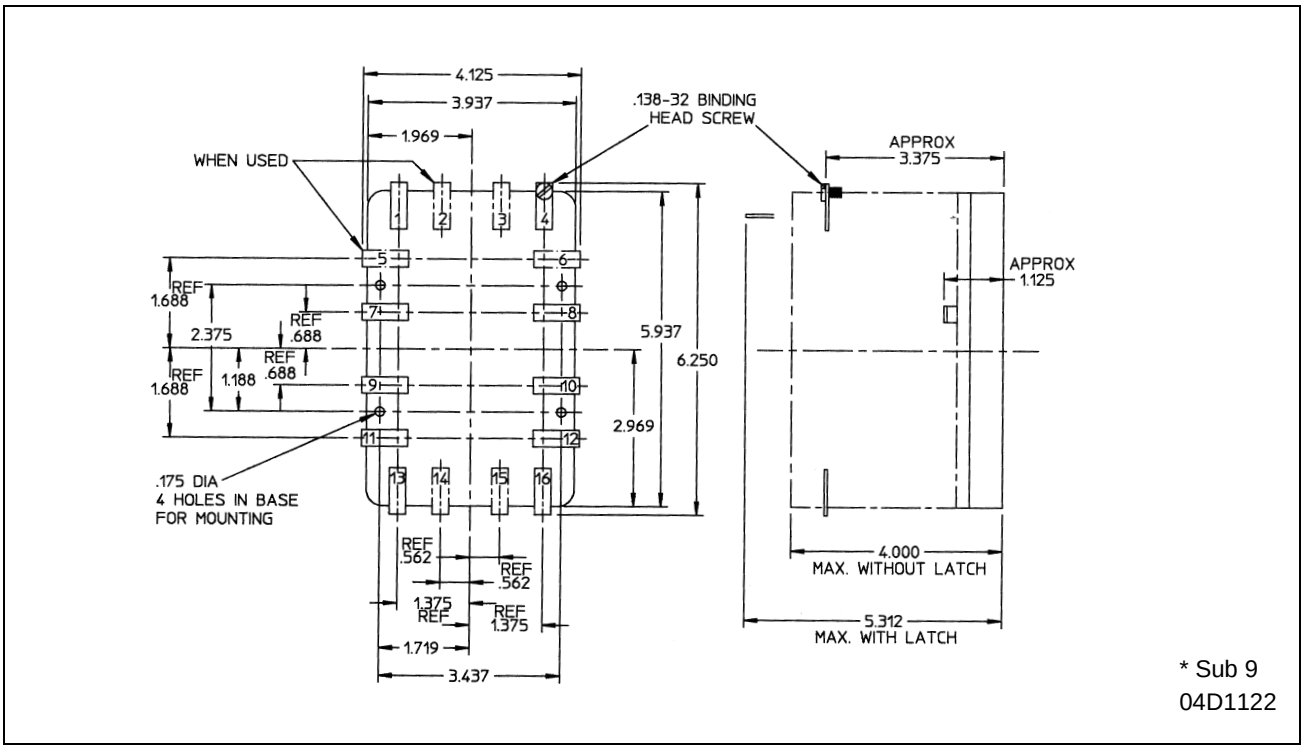


Figure 9: Outline and Drilling Plan for the Type MG-6 Relay in the Front Connected Molded Case. See Internal Schematic For Terminals Supplied.For Reference Only.

* Denotes Change since previoius issue

7.3. MOVING CONTACT FINGERS

When a moving contact finger has been removed from its guide pin and is to be reassembled, the coil springs on either side of the finger must be replaced correctly. Select the stronger spring and place it on the closing side of the contact finger. The stronger spring can be selected by placing the two springs on a flat surface and compressing them. Pick the stronger of the two.

7.4. CONTACTS

7.4.1. Contact Follow

The follow of the moving contact fingers should be 3/32" for the make contacts and 1/16" for the break contacts, measured at the contacts. This can be checked more conveniently by measuring the travel of the lower edge of the armature after the contacts touch. This should be approximately 1/8" for the make contacts and 3/32" for the break contacts. In case moving contact fingers have been removed from their guide pins, it is important that the coil springs on the two sides of the fingers be replaced correctly. The springs which are compressed by circuit-closing contacts are approximately three times as strong as the ones compressed by circuit-opening contacts and thus they can be readily distinguished. The positions of the two springs are reversed at the two ends of the relay.

7.4.2. Special Purpose Contacts

When special contacts have been supplied for make-before-break applications, all corresponding stationary contacts must be bent equally toward their respective moving contact to obtain "make" at the point where the "break" moving contact has approximately a 1/16 inch follow before parting from its stationary contact.

7.4.3. Cutoff Contact

If the relay is provided with a coil interrupting contact, the following points must be observed to assure satisfactory operation. With the relay in its normal operating position and the armature shifted to the extreme right, align the armature "snap" spring so that it is at least 1/64 inch in from the right-hand edge of the moving contact spring. With an .030 inch gap between the armature and the lower pole face of the electromagnet, adjust the bracket by means of the adjusting screw, until the snap spring just passes the roller. The latch screw should be adjusted so that with the armature in the latched position and the operating coil deenergized, the gap between the armature and the lower pole face of the electromagnet is .010 to .015 inch. With the armature in this position the coil interrupting contact should be open at least 3/64 inch.

7.4.4. Contact Cleaning

All contacts should be periodically cleaned. A contact burnisher Style # 182A836H01 is recommended for this purpose. The use of abrasive material for cleaning contacts is not recommended, because of the danger of embedding small particles in the face of the soft silver and therefore impairing the contact.

7.5. LATCH ASSEMBLIES

On latching type relays the latch screw is adjusted so that with the armature latched and the operating coil de-energized, there will be a gap of 0.020 ± 0.005 inches between the electromagnet pole face and the raised section of the armature striking the pole face. Following this adjustment, tighten the locking screw securely.

There is a small amount of clearance between the armature and its supporting posts, and in order to insure proper operation, allowance must be made for this in the following manner. With the armature held against its left-hand support and nearly closed, the latch spring or reset armature should be moved to the left as far as it will go by means of the hand reset. To assure that the latch will always release the armature the resulting space between the latch and the latch screw should be at least .010 inch, and should not be more than about 1/64". This should also be checked electrically if electrical reset is provided. Some change of this gap can be made by loosening the mounting screws in the relay base and moving the latch support in the desired direction. The gap also can be changed by loosening the two screws which hold the moving contact insulation block to the armature and shifting the armature in the desired direction.

On electrical reset relays, the tension of the spring which draws the reset armature toward the latch screw must be adjusted if these parts are being reas-

sembled. The locking screw (Figure 2) is screwed out until its head clears the head of the adjusting screw. The main armature is then held completely closed and against its right-hand support, and the latch spring tension adjusting screw is turned until the latch barely touches the stop projecting from the center of the latch screw. Then the latch spring tension should be increased by turning the screw clockwise 9 turns, and the locking screw should be tightened.

If either the core nut of the electrical reset assembly or the screws which mount its armature have been loosened, the relative positions of the core and plunger may shift sufficiently to cause the plunger to strike on the side of the conical core opening. To assure correct alignment of these parts, .042 diameter holes are provided through the center of the core and about 1/16” deep in the center of the plunger. After tightening the core nut, a close fitting pin should be inserted through the core and into the plunger. With the pin in place, and plunger pressed firmly against the core, and the mounting end of the armature centrally located with respect to the electromagnet, the two armature mounting screws should be tightened. The pin then should be removed.

A small amount of silicone oil is supplied at the factory to the polished and hardened surfaces of the latch screw and the latch plate to minimize wear and as protection against corrosion. Oil should be reapplied after any cleaning and reassembling of these parts, and it is desirable also to renew this at the regular maintenance periods

7.6. SPECIAL DROPOUT COILS

If an ac relay is to be dropped out by shorting the coil, a high wattage resistor must be placed in series with the coil to handle the current during the time the coil is shorted. An alternate method is to reduce the armature spring tension to approximately 1-1/2 turns and reduce the follow of the stationary make contact to 1/16 inches. This can be accomplished by bending the stationary contact. With this reduced tension, the number of break contacts is limited to two. Because of the low relay impedance with armature open as compared to the impedance with armature closed, it is not advantageous to use a resistor in series with a coil rated at less than line voltage as in the case of dc applications. If the coil is to only be shorted momentarily or if a higher wattage consumption is not objectionable, it may not be necessary to reduce the spring tension or contact follow. The contact and spring adjustments example specified above is a 60 hertz MG-6 relay with a voltage rating equal to line voltage and can be used with a series resistor that handles 90 watts when placed directly across the line.

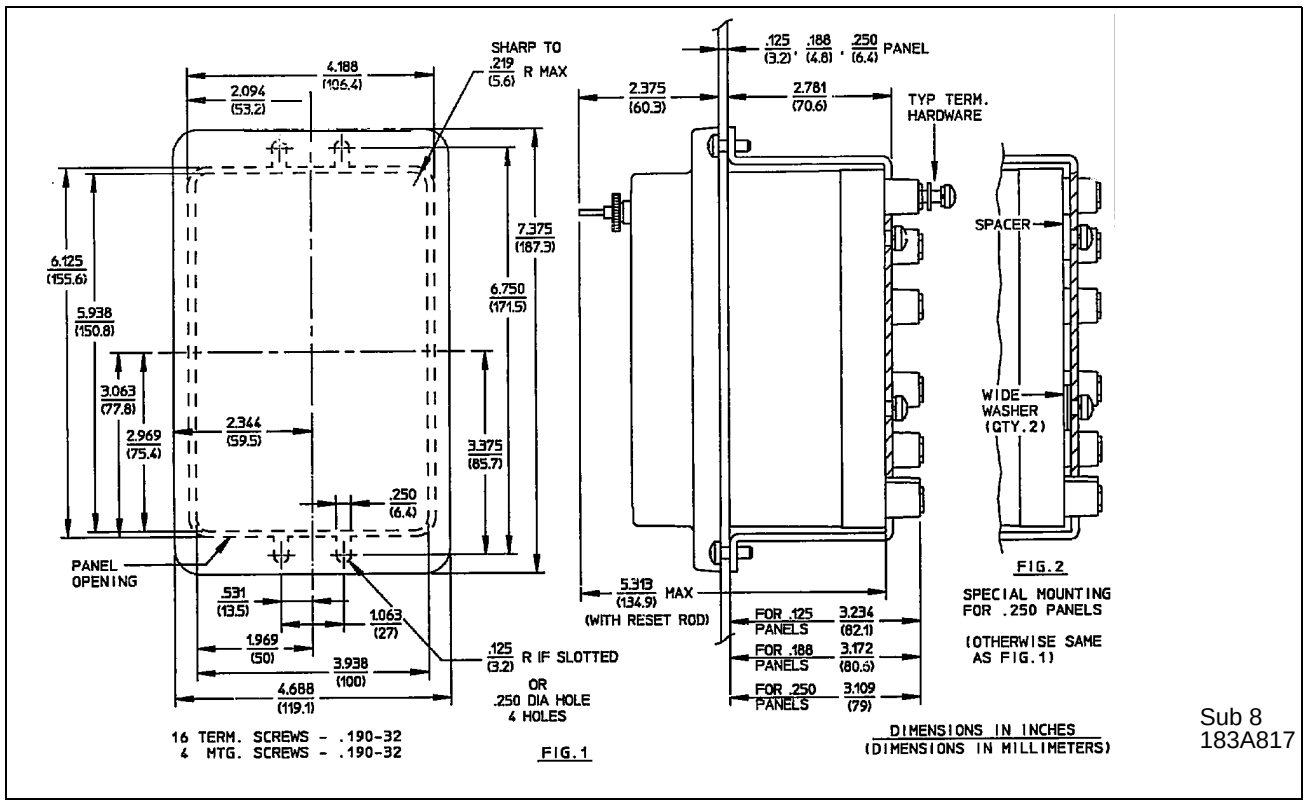


Figure 10. Outline and Drilling Plan for the Molded Semi-Flush Case. For Reference Only.

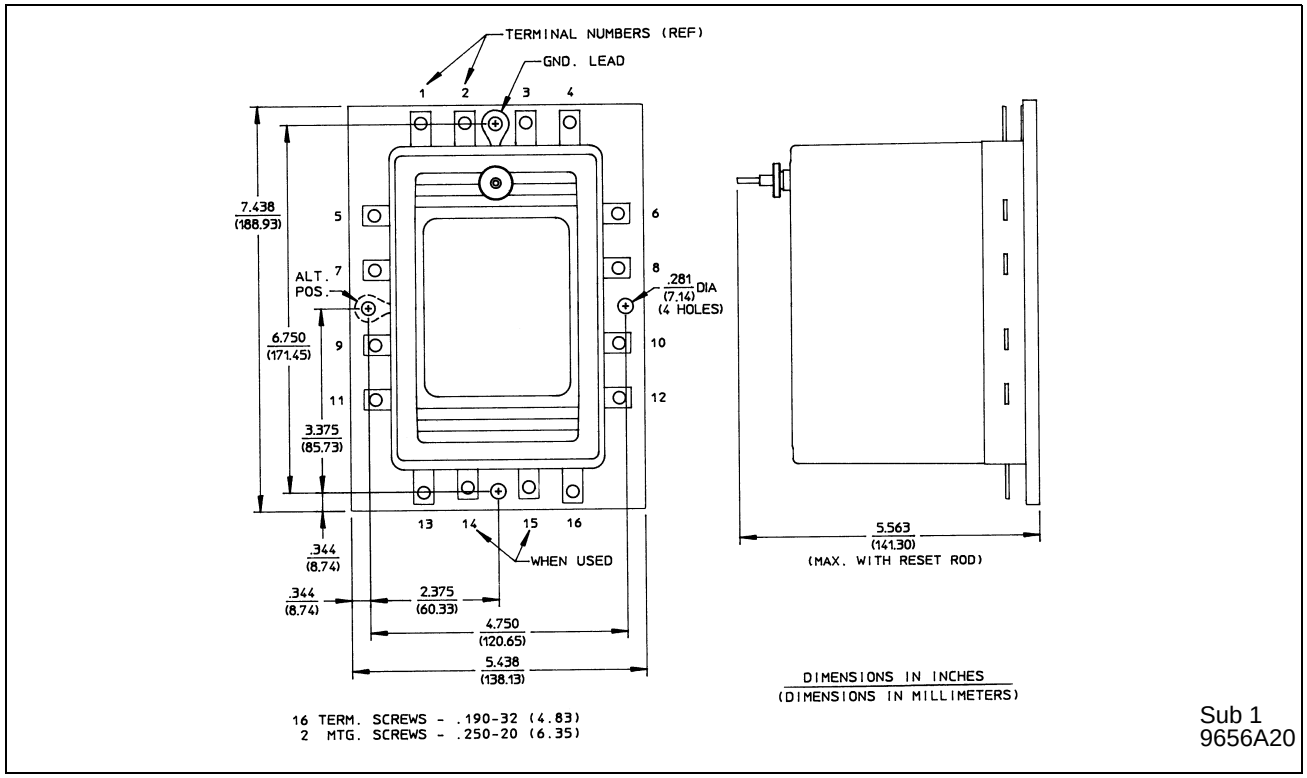
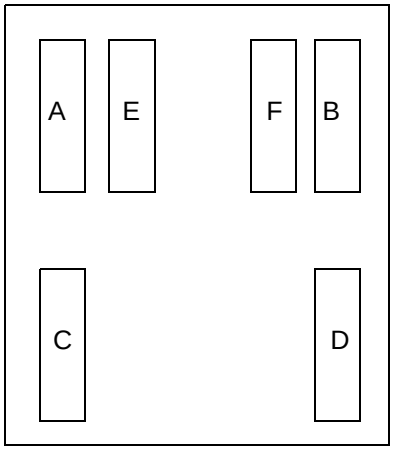


Figure 11: Outline and Drilling Plan for the Front Connected with Cover Case. For Reference Only.

MG-6 ENCODE/DECODE TABLE

Relay Contact Positions									A	B	C	D	E	F
Positions	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Relay Style No (example)	M	G	F	7	3	Y	7	3	M	M	M	M	M	M

Pos 3:	Enclosure (A-F)	A = Semi-Flush Mounting Rear Connected B = Projection Mounting Rear Connected C = Surface Mounting without cover Front Connected D = FT-22 (Flexitest) F = Surface Mounting with cover Front Connected
Pos 4 & 5:	Operate Coil Rating Code (01-99)	See Table 1 (Coil Code)
Pos 6:	Coil Interrupting Contact (CIC)	N = No (CIC is not used) Y = Yes (CIC is used)
Pos 7 & 8:	Reset Coil Rating Code (01-99)	See Table 1 (Coil Code)
Pos 9-14:	Contact Arrangement (B,M,1,2)	B = Standard break M = Standard make 1 = Special break (make before break) (see below) 2 = Special make (make before break) (see below)



Location of Contact Positions (Front View)

Contact Positions

		A	B	C	D	E	F
Number of Special Make Contacts	1			X			
	2			X	X		
	3			X	X	X	
	4			X	X	X	X
	5		X	X	X	X	X

Contact Positions

		A	B	C	D	E	F
Number of Special Break Contacts	1	X					
	2	X	X				
	3	X	X				X

Location Chart for Special Make-Before-Break Contacts

TABLE 1

OPERATE AND RESET COIL CODES

ac			dc		
CODE	**RATING**	**FREQ**	**CODE**	**RATING**	**FREQ**
01	12 V	60 Hz	59*	5 A	dc
02	12 V	50 Hz	60*	4 A	dc
03	24 V	60 Hz	61*	3 A	dc
04	24 V	50 Hz	62*	2 A	dc
05	48 V	60 Hz	63*	1 A	dc
06	48 V	50 Hz	64	12 V	dc
07	48 V	25 Hz	65	24 V	dc
08	115 V	60 Hz	66*	28 V	dc
09	115 V	50 Hz	67	32 V	dc
10	208 V	60 Hz	68*	36 V	dc
11	230 V	60 Hz	69*	38 V	dc
12*	230 V	50 Hz	70	48 V	dc
13	460 V	60 Hz	71	62 V	dc
14	575 V	60 Hz	72*	79 V	dc
15	575 V	50 Hz	73	125 V	dc
16	460 V	25 Hz	74	200 V	dc
17*	575 V	25 Hz	75*	220 V	dc
18	12 V	25 Hz	76	250 V	dc
19	24 V	25 Hz	77	6 V	dc
20	115 V	25 Hz	78*	40 V	dc
21	230 V	25 Hz	79*	0.1 A	dc
22	460 V	50 Hz	80	500 V	dc
23	60 V	60 Hz	81 to 99 are not used		
24	120 V	60 Hz			
25**	220 V	50 Hz			
26	208 v	50 Hz			
27*	92 V	60 Hz			
28*	5 A	60 Hz			
29 to 58 are not used					

NOTE: For 57.5 – 58 Volts 50 Hz
Use 60 Volts 60 Hz

* = Not available for reset coil.
** = Not available for operate coil.

REF:

Operate coil style = 632F619G (Code No.)
Reset coil style = 1461C19G (Code No.)
Table 1 = 1503B34, Sub 11

THIS SPACE RESERVED FOR NOTES

THIS SPACE RESERVED FOR NOTES

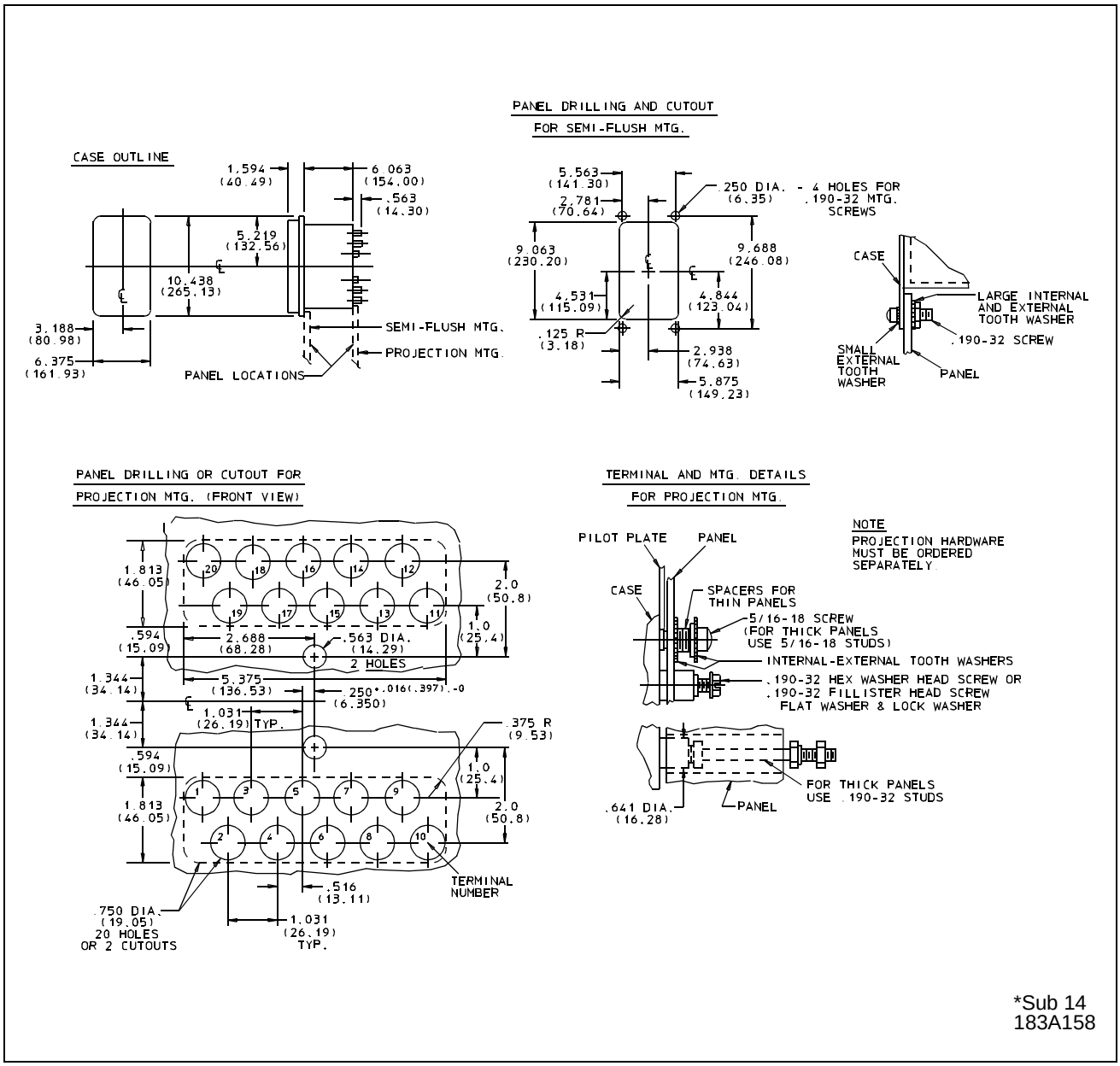


Figure 11. Outline and Drilling Plan for the Type MG-6 Relay in Type FT-22 Case.

* Denotes Change since previoius issue

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