**INSTRUCTIONS**

GEK-86722

# TYPE IAC66K

# FORMS 51 AND UP

# TIME OVERCURRENT RELAY

GENERAL ELECTRIC

## CONTENTS

# TYPE IAC66K

# FORMS 51 AND UP

# TIME OVERCURRENT RELAY

## DESCRIPTION

The Type IAC66K relays are single-phase, current operated, AC devices designed for motor protection. They utilize a long-time inverse time-current characteristic (see Figure 1).

Each relay consists of a basic induction-disk time overcurrent unit, a dual-rated target seal-in unit, and two hinge-type instantaneous overcurrent units. The available ranges in amperes of these units, as well as information on their continuous rating, contact rating, and top ratings are given in the section on **RATINGS.**

A standard S1 case is used to mount each relay. The outline and mounting dimensions of this case are shown in Figure 2.

The internal connections are shown in Figure 3.

## APPLICATION

The IAC66K is especially suited for motor protection. The relay contains a special high dropout instantaneous unit to provide discrimination between motor-running overload and locked-rotor current. This is accomplished by setting pickup of this high dropout unit (50/B) between motor full-load current and locked-rotor current, as illustrated in Figure 4, with the normal dropout instantaneous unit (50/A) set above locked-rotor current. The time overcurrent unit must coordinate with the motor thermal limit. Typical settings to accomplish this are listed in the following table:

| | Unit | Pickup Setting Multiples of Full Load Current |
|---|---|---|
| Time Overcurrent Unit | 51 | 1.15 to 1.4 |
| Normal Dropout Instantaneous Overcurrent Unit | 50/A | 8 to 15 |
| High Dropout Instantaneous Overcurrent Unit | 50/B | 2 to 3 |

The user must determine the specific settings which will provide the required protection for his machine, and select a relay model having the operating ranges needed to obtain these settings.

*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.*

With settings as illustrated in Figure 4 and external connections shown in Figure 5, the operation of the IAC66K relay will be as follows:

1. For motor overloads, the time overcurrent unit (51) will time out, picking up an external auxiliary 51X, which sounds an alarm.

2. For the locked-rotor condition, the high-dropout unit (50/B) will pick up instantaneously and the TOC (51) will pick up with a time delay consistent with the motor thermal limit. When both units have operated, the breaker will be tripped.

3. For a fault, the normal dropout instantaneous unit (50/A) will pick up instantaneously and trip the breaker.

## RATINGS

### INDUCTION UNIT

The induction unit coil is available in several ranges of pickup current. Table I lists ranges, tap values, continuous-current ratings and short time current ratings of the induction unit coil.

TABLE I
INDUCTION UNIT COIL RATINGS

| PICKUP RANGE (AMPS) | TAP VALUES (AMPS) | CONTINUOUS CURRENT (AMPS) | SHORT TIME (ONE SECOND) RATING (AMPS) |
|---|---|---|---|
| 0.6/1.8 | 0.6, 0.8, 1.0, 1.2, 1.4, 1.6 1.8 | 3 | 75 |
| 1.5/4.5 | 1.5, 2, 2.5, 3, 3.5, 4, 4.5 | 5 | 200 |
| 2.5/7.5 | 2.5, 3, 3.5, 4, 5, 6, 7.5 | 5 | 300 |
| 4.0/12 | 4, 5, 6, 7, 8, 10, 12 | 10 | 400 |

The induction unit contacts will close 30 amperes for voltages not exceeding 250 volts. The current carrying ratings are affected by the tap selected on the target and seal-in coil, as indicated in Table II. If the tripping current exceeds 30 amperes, use an auxiliary relay that is connected such that the tripping current does not pass through either the contacts or the target and seal-in coils of the protective relay.

The two taps required for the values shown in Table I are (from the lowest to highest pickup): A/L, B/K, C/F, D/H, D/G, E/G and G/J, respectively, as labelled on the tap block. To obtain a tap value of 4.0 amps on the 2.5/7.5 amp relay, use taps D/H.

TABLE II
RATINGS OF TARGET AND SEAL-IN COIL

| CURRENT OPERATED | | DUAL-RATED 0.2/2.0 AMP | |
|---|---|---|---|
| | | 0.2 AMP TAP | 2.0 AMP TAP |
| Carry 30 amps for | (seconds) | 0.05 | 2.2 |
| Carry 10 amps for | (seconds) | 0.45 | 2.0 |
| Carry continuously | (amperes) | 0.37 | 2.3 |
| Minimum operating | (amperes) | 0.2 | 2.0 |
| Minimum dropout | (amperes) | 0.05 | 0.5 |
| DC resistance | (ohms) | 8.3 | 0.24 |
| 60 hertz impedance | (ohms) | 50 | 0.65 |
| 50 hertz impedance | (ohms) | 42 | 0.54 |

STANDARD INSTANTANEOUS UNIT

The standard instantaneous unit is designed to use one of several coils. Table IIIa lists the pickup range, continuous current ratings and short time rating of each of these coils.

The current-closing rating of the contacts is 30 amperes for voltages not exceeding 250 volts.

TABLE III
STANDARD INSTANTANEOUS UNIT COIL RATINGS

| RANGE | | SERIES OR PARALLEL | RATINGS | |
|---|---|---|---|---|
| | | | CONTINUOUS | ONE SECOND** |
| 0.5 - 4.0 | 0.5 - 2.0 | Series | 0.75 | 25.0 |
| | 1.0 - 4.00 | Parallel | 1.5 | 50.0 |
| 2.0 - 16.0 | 2.0 - 8.0 | Series | 3.0 | 130.0 |
| | 4.0 - 16.0 | Parallel | 6.0 | 260.0 |
| 10.0 - 80.0 | 10.0 - 40.0 | Series | 15.0 | 400.0 |
| | 20.0 - 80.0 | Parallel | 25.0 | 600.0 |
| 20.0 - 160.0 | 20.0 - 80.0 | Series | 25.0 | 600.0 |
| | 40.0 - 160.0 | Parallel | 25.0 | 600.0 |

**Higher currents (I) may be applied for shorter lengths of time (T) in accordance with the formula:

$$I = \frac{\sqrt{K}}{T}$$

K = constant

TABLE IV
RATINGS OF HIGH DROPOUT INSTANTANEOUS UNITS

| PICKUP RANGE (AMPS) | CONTINUOUS RATING (AMPS) | ONE SECOND RATING (AMPS) |
|---|---|---|
| 1 - 4 | 1.5 | 35 |
| 2 - 8 | 2.5 | 75 |
| 4 - 16 | 6 | 150 |
| 7 - 28 | 10.5 | 288 |
| 10 - 40 | 15 | 288 |
| 20 - 80 | 25 | 288 |

## CHARACTERISTICS

### INDUCTION UNIT

The induction unit consists of a conducting disk that passes through the poles of a permanent magnet and an electromagnet. The disk is free to rotate with a vertically suspended shaft, but is restrained in one direction by a spring. When energized with an alternating current of proper magnitude (set by the tap position), the electromagnet produces out of phase fluxes at its pole faces. These fluxes interact with induced currents in the disk to produce a torque on the disk. When this torque exceeds the restraining force of the spring, the disk begins to rotate at a speed determined by the magnetic dragging action of the permanent magnet. A post attached to the rotating shaft travels a specific distance (set by the time dial), and makes electrical contact with a fixed member.

Figure 1 gives the time for the induction unit to close its contacts for various multiples of pickup current and time dial settings. The time required for this unit to reset from contact closure to the Number 10 time dial position is approximately 60 seconds.

Burden data for induction unit coils is listed in Table V. The impedance values are for the minimum tap. The impedance for other taps at pickup current (tap rating) varies (approximately) inversely to the square of the current rating. The following equation illustrates this:

$$\text{Impedance of Any Tap at Tap Amps} = \left(\frac{\text{Minimum Tap Amps}}{\text{Tap Amps}}\right)^2 \times \left(\text{Impedance at Minimum Tap}\right)$$

TABLE V
BURDENS OF INDUCTION UNIT COILS

| PICKUP RANGE (AMPS) | FREQ. (Hz) | TAP | VOLT-AMPS AT FIVE AMPS CALCULATED FROM INPUT AT MINIMUM PICKUP ($I^2Z$) | IMP. OHMS | POWER FACTOR |
|---|---|---|---|---|---|
| 0.6 - 1.8 | 60 | 0.6 | 110.75 | 4.43 | 0.32 |
| | 50 | 0.6 | 48.0 | 1.92 | 0.33 |
| 1.5 - 4.5 | 60 | 1.5 | 17.75 | 0.71 | 0.35 |
| | 50 | 1.5 | 11.5 | 0.46 | 0.37 |
| 2.5 - 7.5 | 60 | 2.5 | 6.75 | 0.27 | 0.44 |
| | 50 | 2.5 | 5.75 | 0.23 | 0.47 |
| 4.0 - 12 | 60 | 4.0 | 4.48 | 0.18 | 0.52 |
| | 50 | 4.0 | 4.05 | 0.16 | 0.47 |

STANDARD INSTANTANEOUS UNIT

The standard instantaneous unit is an electromagnet that attracts a hinged armature when sufficient current is applied. The armature carries a "T" shaped moving contact that bridges two stationary contacts when the coil is energized. A target is displayed when the unit operates. Pressing the button in the lower left corner of the relay cover resets the target.

The pickup range can be adjusted continuously over a four to one range by using the adjustable pole piece. When the top of the core is lined up with the calibration stampings, an approximate value of pickup can be determined. Dropout is about 40 to 50 percent of pickup.

Figure 6 shows the variation of operating time with applied current for this unit. Burden data of the standard unit is tabulated in Table VI.

TABLE VI
BURDEN OF STANDARD INSTANTANEOUS UNIT

| PICKUP RANGE (AMPS) | FREQ (HZ) | AMPS | VOLT-AMPS** | IMPEDANCE (OHMS) | POWER FACTOR |
|---|---|---|---|---|---|
| 0.5 - 2 | 50 | 5 | 310 | 12.4 | 0.84 |
| | 60 | 5 | 330 | 13.2 | 0.78 |
| 1 - 4 | 50 | 5 | 94 | 3.75 | 0.77 |
| | 60 | 5 | 100 | 4.0 | 0.71 |
| 2 - 8 | 50 | 5 | 23 | 0.94 | 0.77 |
| | 60 | 5 | 25 | 1.0 | 0.71 |
| 4 - 16 | 50 | 5 | 5.8 | 0.23 | 0.77 |
| | 60 | 5 | 6.2 | 0.25 | 0.71 |

(more)

Table VI, continued

| PICKUP RANGE (AMPS) | FREQ (HZ) | AMPS | VOLT-AMPS** | IMPEDANCE (OHMS) | POWER FACTOR |
|---|---|---|---|---|---|
| 10 - 40 | 50 | 5 | 0.9 | 0.04 | 0.77 |
| | 60 | 5 | 1.0 | 0.04 | 0.71 |
| 20 - 80 | 50 | 5 | 0.23 | 0.01 | 0.77 |
| | 60 | 5 | 0.25 | 0.01 | 0.71 |
| 40 - 160 | 50 | 5 | 0.07 | 0.003 | 0.71 |
| | 60 | 5 | 0.07 | 0.003 | 0.71 |

**Volt-amperes at five amps calculated from input at minimum pickup ($I^2Z$).

HIGH DROPOUT INSTANTANEOUS UNIT

The high dropout instantaneous unit is similar to the standard instantaneous unit, except it has no target and dropout current is approximately 80 to 90 percent of the pickup current. Refer to Figure 7, a photograph of the high dropout unit, for the following discussion.

The adjustable core (A) sets the pickup level. Turning the core down (clockwise, top view) lowers the pickup, while turning the core up (counterclockwise, top view) increases the pickup. Before attempting to turn the core, the locknut (B) must be loosened. When loosening or tightening the locknut, the sleeve (C) to which the shading ring (D) is attached, must be held to prevent it from turning. The locknut must be retightened after adjusting the core. Rotating the shading ring sets the dropout level, thereby determining the quietness of operation when in the picked-up position. The core has been factory set to obtain 80 percent dropout at the minimum setting, and approximately 90 percent dropout at the maximum setting. To change the dropout setting, the sleeve (C) to which the shading ring (D) is attached must always be turned in the clockwise direction (top view). This will prevent the sleeve and shading ring assembly from being loosened. When shipped from the factory, the whole coil is wired into the current circuit, and the lower half of the calibration range is available. If the upper half of the calibration range is required, the tapped section of the coil should be wired into the current circuit. Do this by taking lead B off stud 6 and lead G off stud 6A. Then put lead G on stud 6 and lead B on stud 6A (see Figures 3 and 3A).

The unit will pick up at the scale plate marking $\pm$ 5% with gradually applied current. Figure 8 shows the transient overreach characteristics. Burden data for the 60 hertz high dropout unit is tabulated in Table VII.

TABLE VII
BURDEN OF 60 HERTZ HIGH DROPOUT INSTANTANEOUS UNIT

| RANGE AMPERES | BURDEN AT MINIMUM PICKUP SETTING AND MINIMUM CURRENT R OHMS | X OHMS | Z OHMS | VOLT-AMPERES AT FIVE AMPERES CALCULATED FROM INPUT AT MINIMUM PICKUP ($I^2Z$) |
|---|---|---|---|---|
| 1 - 4 | 3.16 | 3.16 | 4.48 | 112.0 |
| 2 - 8 | 0.79 | 0.79 | 1.12 | 28.0 |
| 4 - 16 | 0.2 | 0.2 | 0.28 | 7.0 |
| 7 - 28 | 0.07 | 0.07 | 0.1 | 2.50 |
| 10 - 40 | 0.03 | 0.03 | 0.04 | 1.00 |
| 20 - 80 | 0.007 | 0.007 | 0.01 | 0.25 |

## CONSTRUCTION

Type IAC relays are induction-disk type; the induction unit is the basic unit in all IAC relays. The disk is actuated by a current operating coil on a laminated U-magnet. The disk shaft carries the moving contact that completes the alarm or trip circuit when it touches the stationary contact. A spiral spring restrains the disk shaft to provide proper contact-closing current. A permanent magnet acting on the disk retards motion to provide correct time delay.

A seal-in unit is mounted on the front to the left of the shaft. This unit has its coil in series and its contacts in parallel with the main contacts so that when the main contacts close, the seal-in unit picks up and seals in. When the seal-in unit picks up, it raises a target that latches up and remains in view until released by pressing the button beneath the lower left corner of the cover.

The standard instantaneous unit is a small hinge-type unit mounted on the right front side of the induction unit. Its contacts are normally connected in parallel with the contacts of the main unit, and its coil is connected in series with the operating coil of the main unit.

When the current reaches a pre-determined value, the instantaneous unit operates, closing the contact and raising the target into view. The target latches in the exposed position until released by pressing the button beneath the lower left-hand corner of the relay cover.

The special high-dropout instantaneous unit is constructed without a target, and is designed to drop out at 80 percent of pickup or higher. The pole piece is constructed and secured with a special wave washer so that it can be rotated to the position most suited for the application. The armature has been shortened for the same reason. Mounted in the rear of the relay, the unit's coil is connected in series with the operating coil of the main unit, but its contact is electrically separate.

## RECEIVING, HANDLING AND STORAGE

This relay, when not included as part of a control panel, will be shipped in a carton designed to protect it against damage. Upon receipt, immediately examine the relay for any damage sustained in transit. If damage from rough handling is evident, file a damage claim at once with the transportation company, and promptly notify the nearest General Electric Apparatus Sales Office.

If the equipment is not to be installed immediately, it should be stored indoors in a location that is dry and protected from dust, metallic chips and severe atmospheric contaminants.

## ACCEPTANCE TESTS

An inspection and acceptance test should be made when the relay is received to determine if damage has occurred in shipment, or if relay calibrations have been disturbed.

### VISUAL INSPECTION

Check the relay nameplate to see that the model number, rating and calibration range of the relay agree with the requisition.

Remove the relay from its case and check that there are no broken or cracked molded parts or other signs of physical damage. All screws should be tight. The drag magnet should be securely fastened in position on its mounting shelf. No metallic particles or any other foreign matter should be in the air gap of either the drive magnet or the drag magnet.

Check the location of the contact brushes on the cradle and case blocks against the internal connections diagram. The shorting bars should be in their proper locations on the case block, and the long and short brushes on the cradle block should agree with the internal connections diagram. Figure 9 is a sectional view of the case and cradle blocks with the connection plug in place. Note that there is an auxiliary brush in each position on the case block. This brush should be formed high enough so that when the connection plug is inserted, it engages the auxiliary brush before striking the main brush. An improper adjustment of the auxiliary brush could result in a CT secondary circuit being momentarily open-circuited in a current circuit.

### MECHANICAL INSPECTION

The following mechanical adjustments should be checked:

#### Induction Unit

The moving contact should just touch the stationary contact when the time dial is at the zero position. There should be sufficient clearance between the stationary contact brush and its backing strip to allow for a least 1/32 inch wipe. Set the dial at the approximate setting that will be used when the relay is installed.

The disk and shaft assembly should have a vertical end play of 1/64 to 1/32 inch. The set screws for the upper pivot and lower jewel screw must be tight. The disk

should be centered (approximately) in the air gap of both the drive magnet assembly and the drag magnet. The disk and shaft assembly should turn freely without noticeable friction.

The stop arm assembly, located near the top of the disk shaft, should be checked for approximately 1/64 inch deflection of the leaf spring.

Timer Unit

Each normally open contact should have a gap of 0.010 to 0.020 inch with the relay de-energized. Deflect the stationary contact member towards the frame and observe approximately 0.005 inch minimum wipe on each normally closed contact.

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

ELECTRICAL TESTS

The following electrical checks should be made upon receipt of the relay. Note that all tests are to be made with the relay in its case and in a level position.

All alternating-current-operated devices are affected by frequency. Since non-sinusoidal waveforms can be analyzed as a fundamental frequency plus harmonics of the fundamental frequency, it follows that alternating-current devices (relays) will be affected by the applied waveform.

Therefore, in order to properly test alternating-current relays a sine wave current and/or voltage must be used. The purity of the sine wave (i.e., its freedom from harmonics) cannot be expressed as a finite number for any particular relay; however, any relay using tuned circuits, RL or RC networks, or saturating electromagnets (such as time overcurrent relays), would be essentially affected by non-sinusoidal waveforms.

Similarly, relays requiring DC control power should be tested using DC and not full wave rectified power. Unless the rectified supply is well filtered, many relays will not operate properly due to dips in the rectified power. Zener diodes, for example, can turn off during dips. As a general rule, the DC source should not contain more than five percent ripple.

Since drawout relays in service operate in their cases, they should be tested in their cases or an equivalent steel case. This way, any magnetic effects of the enclosure will be accurately duplicated during testing. A relay may be tested without removing it from the panel by using a 12XLA13A test plug. This plug makes connection only with the relay and does not disturb the shorting bars in the case. The 12XLA12A test plug may also be used. Although this test plug allows greater testing flexibility, it also requires CT shorting jumpers and greater care in testing, since connections are made to both the relay and the external circuitry.

Induction Unit

With the tap plug in the minimum position, and the time dial in the Number 1/2 position, check that the current required to just close the contact is within plus or minus five percent of the minimum pickup shown on the tap block.

The operating time from the Number 5 time dial setting at five times minimum pickup setting should be within seven percent of the value shown in Figure 1.

Instantaneous Units and Target Seal-in

It should be possible to attain the minimum pickup value without turning the core to its absolute minimum position. The high-dropout unit should drop out at 80% or more of pickup when the current is gradually reduced. The target seal-in unit should pick up with adequate wipe at rated current. The mechanical target should latch up when the unit is energized, and drop down when the reset arm is depressed and the unit de-energized. **Note that the induction unit contacts must be closed for the seal-in unit to operate.**

## INSTALLATION

Use a test source of 120 volts or greater with good wave form and constant frequency when making settings on the induction unit. Step-down transformers or "phantom loads" should not be used in testing induction units, since they may cause a distorted wave form. A setting that can be obtained by one of the tap positions will be satisfactory, and no further adjustment will be required. However, sometimes a pickup setting might fall between available tap positions. Such intermediate settings can be obtained by placing the tap screw in the tap position nearest the required pickup, and adjusting the control spring until the required pickup is obtained. Refer to **SERVICING** for a more detailed description of pickup adjustment.

## PERIODIC CHECKS AND ROUTINE MAINTENANCE

Protective relays play a vital role in the operation of a power system, and it is important to follow a periodic test program. The interval between periodic checks will vary depending upon environment, type of relay and the user's experience with periodic testing. Until the user has accumulated enough experience to select the test interval best suited to his individual requirements, the points listed in the **ACCEPTANCE TESTS** section should be checked at an interval of from one to two years.

Operate the disk and shaft assembly by hand. Check that the contacts are making with the proper wipe. Allow the disk to reset, then check that there is no sign of excessive friction or a tendency to bind. Check for obstructions to disk travel. Dirt or metallic particles in the watt-metric or drag magnet gaps can interfere with the motion of the disk.

Examine contact surfaces for tarnishing or corrosion. Fine silver contacts should not be cleaned with knives, files, or abrasive paper or cloth. Knives or files may leave scratches which increase arcing and deterioration of the contacts. Abrasive paper or cloth may leave minute particles of insulating abrasive material in the contacts and thus prevent closing. Use a burnishing tool specifically designed for this purpose.

## SERVICING

Induction unit pickup for any current tap is adjusted by a spring adjusting ring. If the adjustment has been disturbed, turn the ring by inserting a screw driver in the notches around the edge; turning the ring brings the operating current of the unit into agreement with the tap setting. This adjustment also makes any setting between the various tap settings possible. Note, however, that if pickup is changed by turning the spring adjusting ring, then the relay will be operating at a different torque level, and the published time curves will not apply for this setting.

The unit has been factory adjusted to close its contacts from any time dial position at minimum current within five percent of the tap plug setting. If a pickup time for a particular time dial setting and pickup multiple is outside the limits mentioned in the acceptance tests, changing the position of the drag magnet on its supporting shelf will restore the pickup time. Moving the magnet towards the shaft decreases the pickup time, while moving it away from the shaft increases the pickup time. If the drag magnet is moved towards the shaft, be sure that it clears the counterweight on the disk for all positions of the disk and shaft assembly in its final position. When the magnet is moved away from the shaft, its outer edge must be at least one-eighth inch from the edge of the disk at the disk's smallest radius.

Pickup and time tests should always be made with the relay in its case so that the magnetic effect of the case is the same as when the relay is in service.

## RENEWAL PARTS

Sufficient quantities of renewal parts should be kept in stock for 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 the name of the part wanted, quantity required, and complete nameplate data, including the serial number, of the relay.

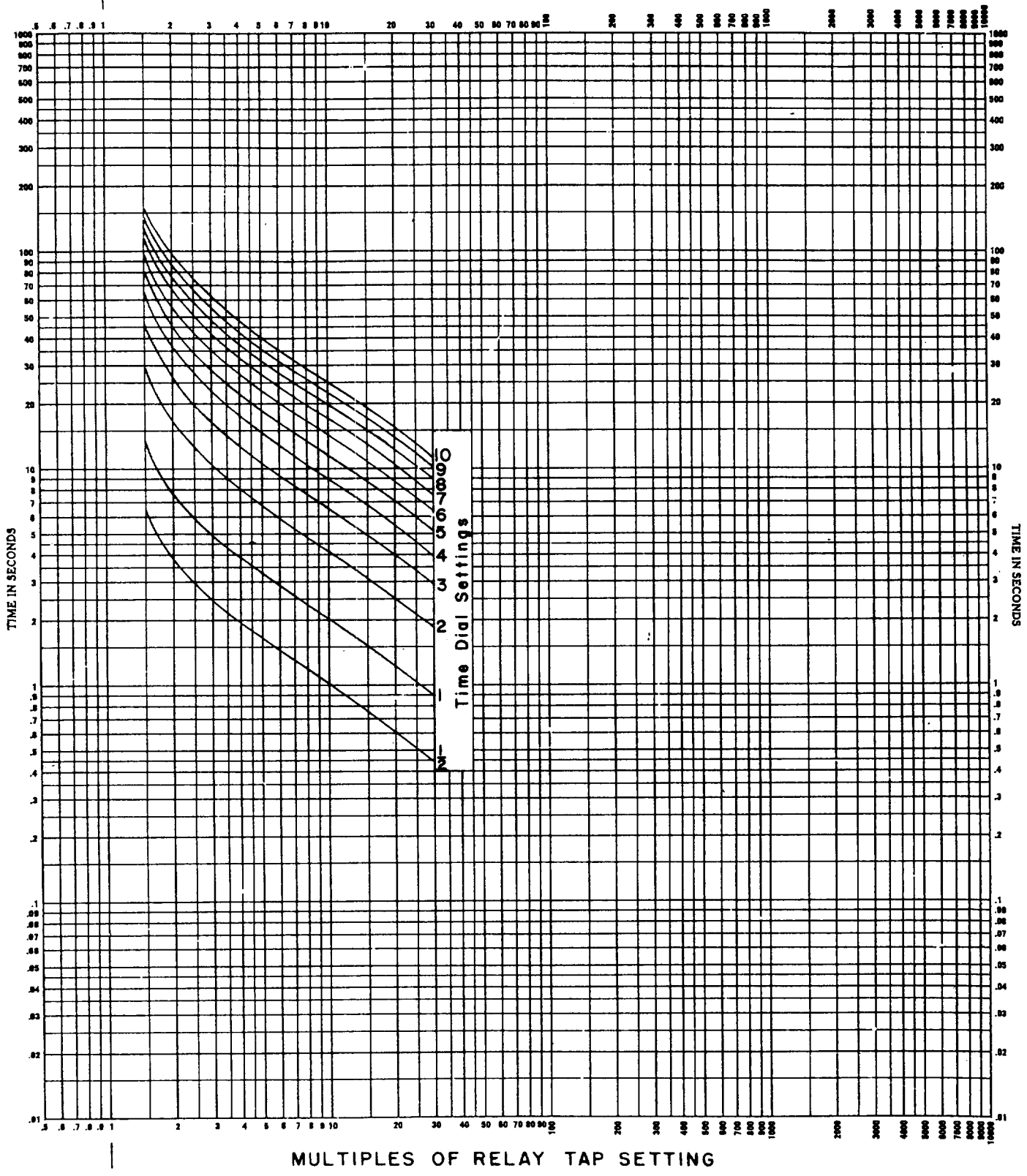



Figure 1 (0888B0273-0) Time Current Curve for the Long-time Overcurrent Unit

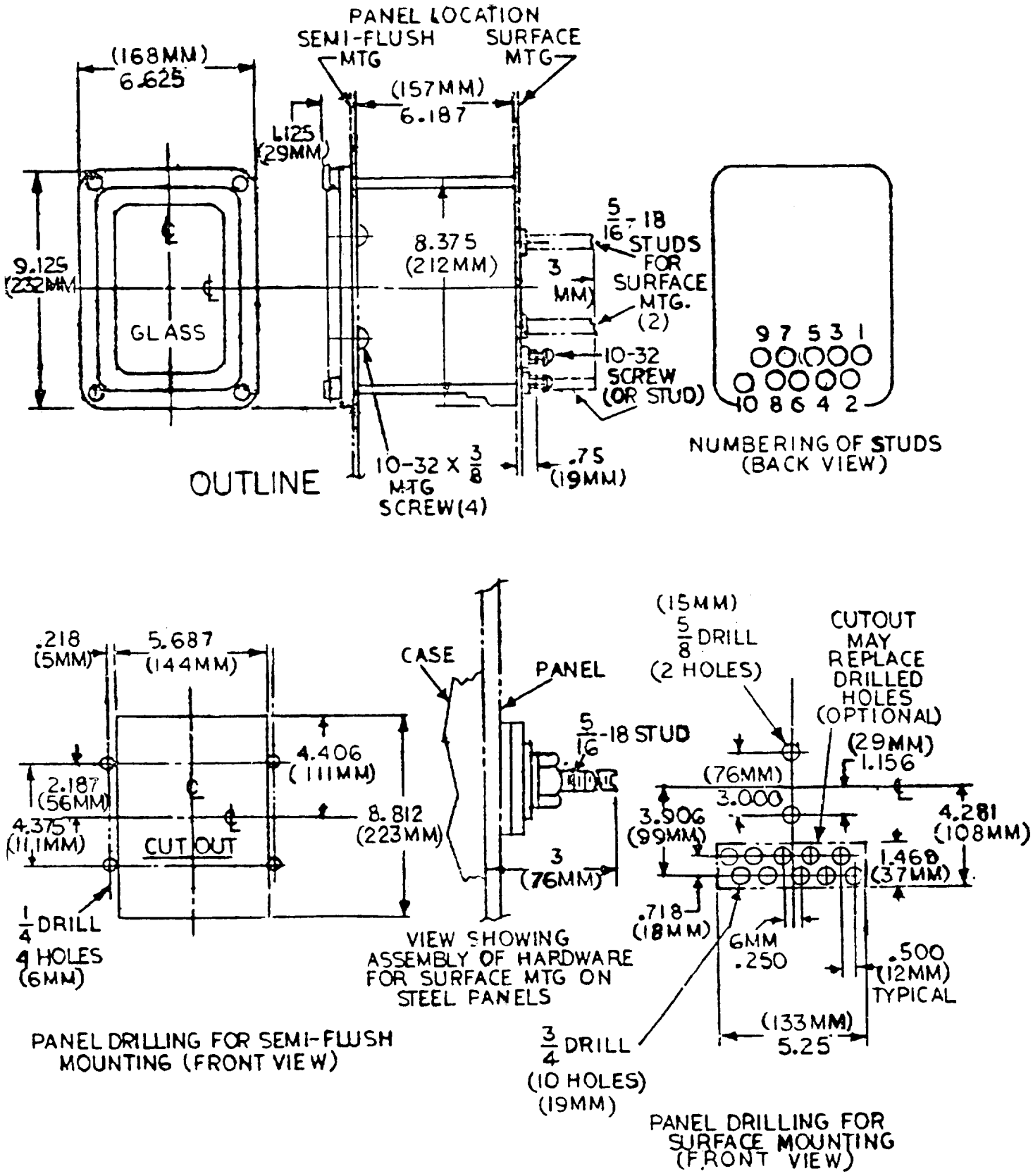



Figure 2 (K-6209271-7) Outline and Panel Drilling Dimensions for Type IAC66K Relays

NOTE: STD. INST. UNIT.

THE A, B, C, D LEAD CONNECTIONS AS SHOWN ARE FOR THE LOWER PICKUP RANGE.

MOVE LEAD "B" TO STUD 7 AND LEAD "C" TO STUD 4 FOR THE HIGHER PICKUP RANGE

HI D.O. INST. UNITS.

THE HI DROPOUT INST. UNIT CONNECTIONS AS SHOWN ARE FOR THE LOWER PICKUP RANGE.

REVERSE THE LEADS (B-T) ON STUDS 6 WITH 6A FOR THE HIGHER PICKUP RANGE

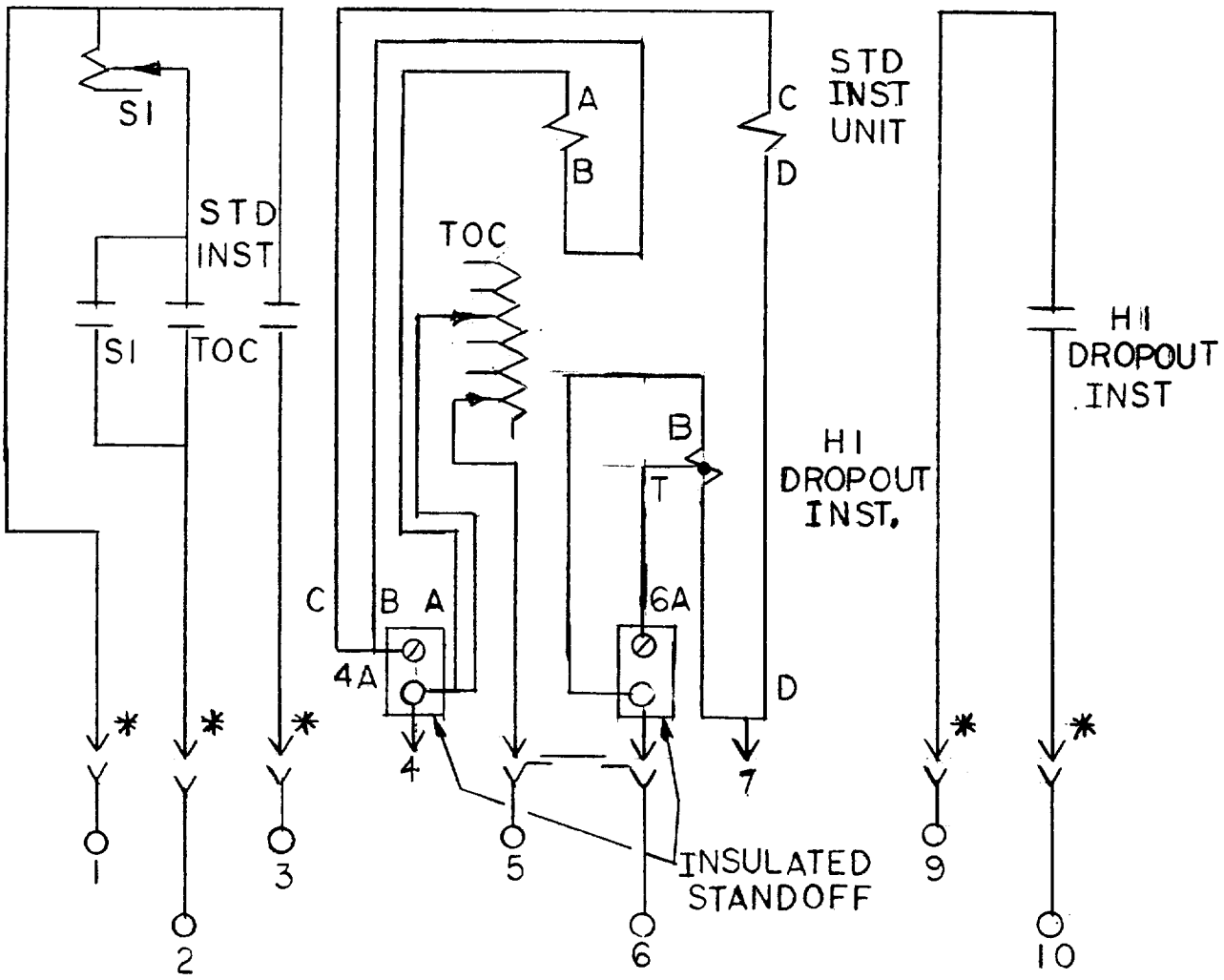



Figure 3 (0285A6748-0) Internal Connections Diagram, Type IAC66K Relay Forms 51 and Up

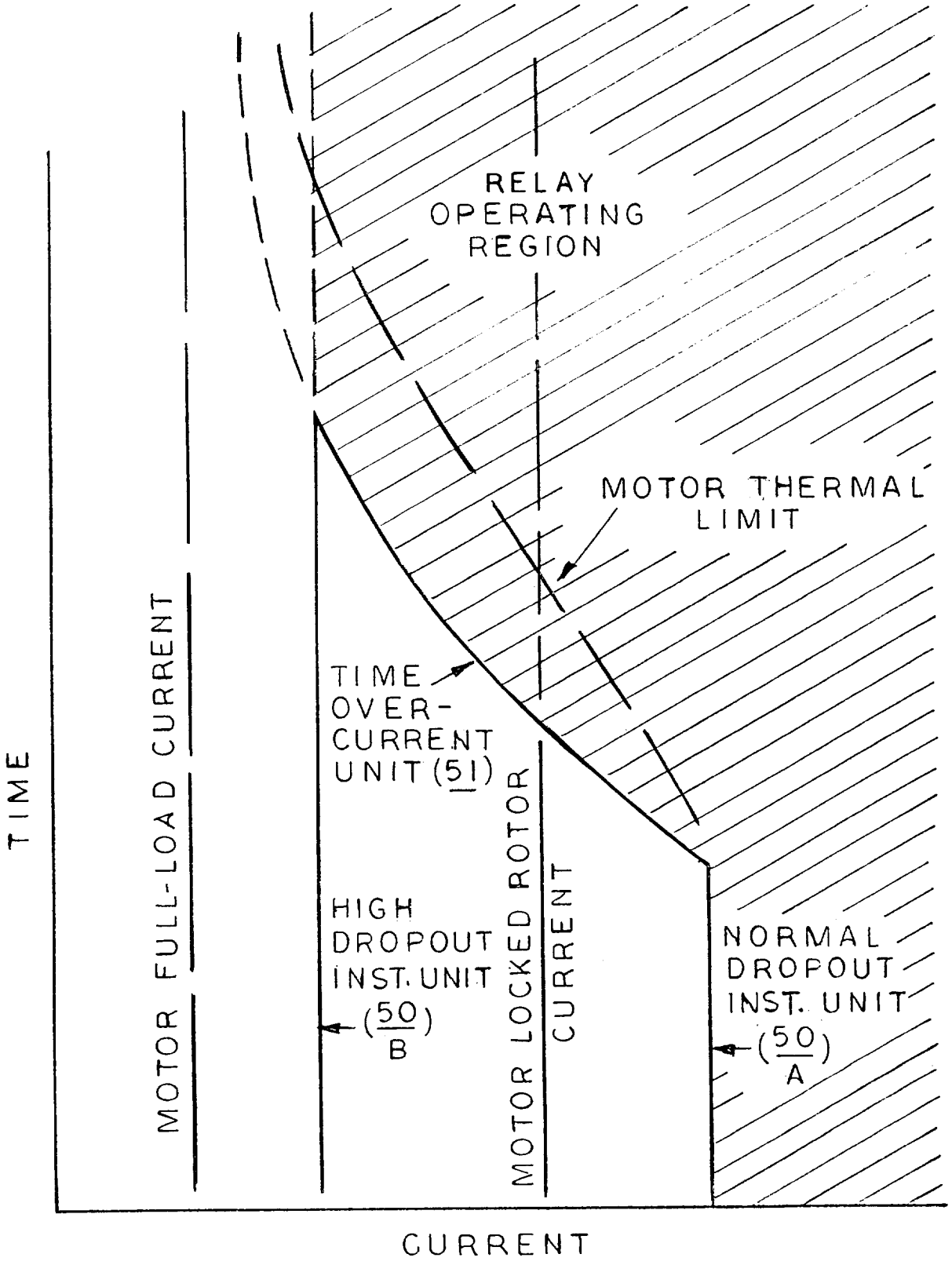
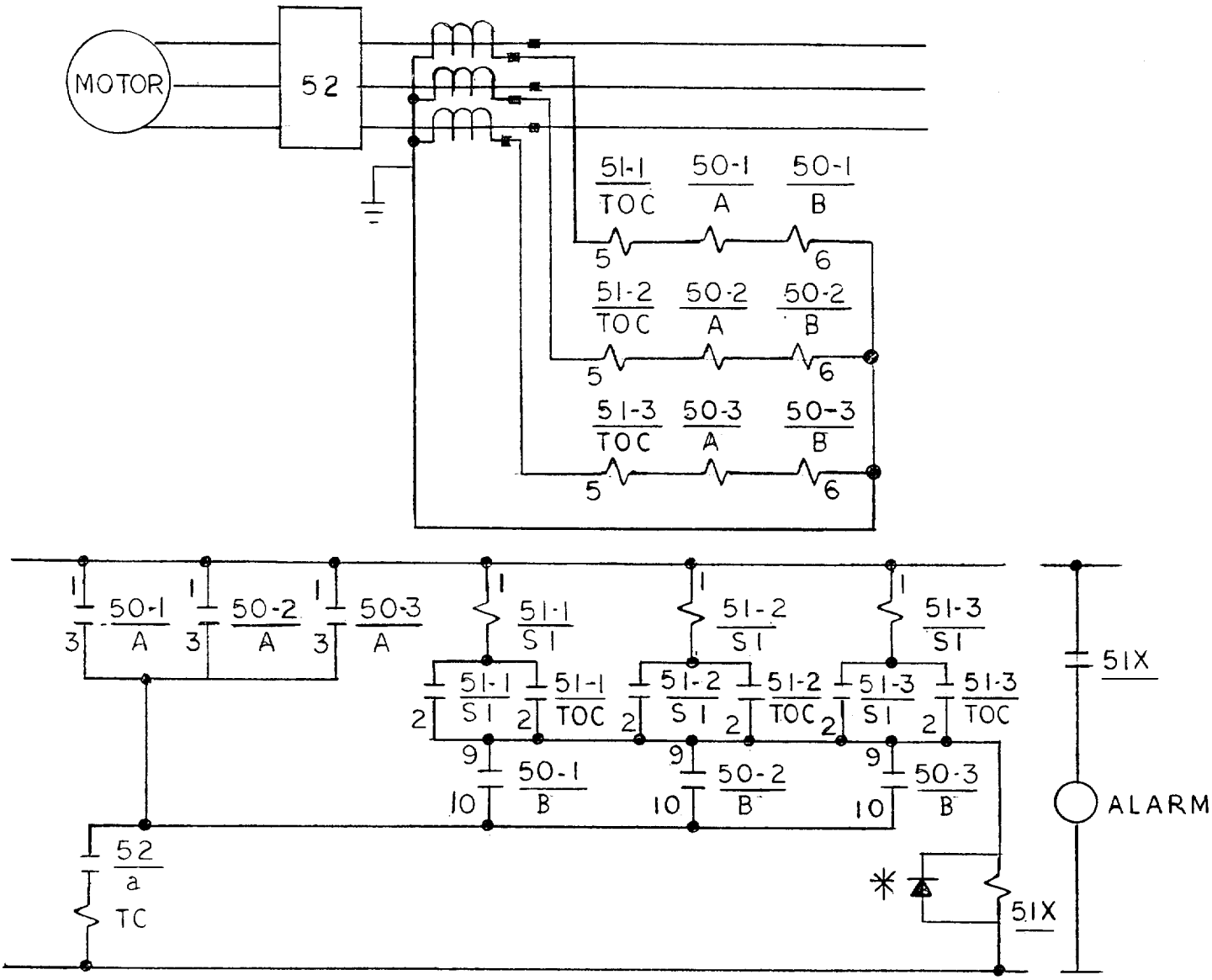



Figure 4 (0269A3055-0) Motor Protection Characteristic Curve




✳ USE WHEN NECESSARY FOR CONTACT ARC SUPPRESSION

| | |
|---|---|
| 51 | TIME OVERCURRENT RELAY |
| 51X | AUXILIARY RELAY |
| 50/A | NORMAL DROPOUT INSTANTANEOUS OVERCURRENT UNIT |
| 52 | POWER CIRCUIT BREAKER |
| 50/B | HIGH DROPOUT INSTANTANEOUS OVERCURRENT UNIT |
| 52/a | AUXILIARY CONTACT CLOSED WHEN CIRCUIT BREAKER IS CLOSED |
| TC | TRIP COIL |

Figure 5 (0269A3013-1) Typical External Connections for Motor Protection Using Type IAC66K Relays

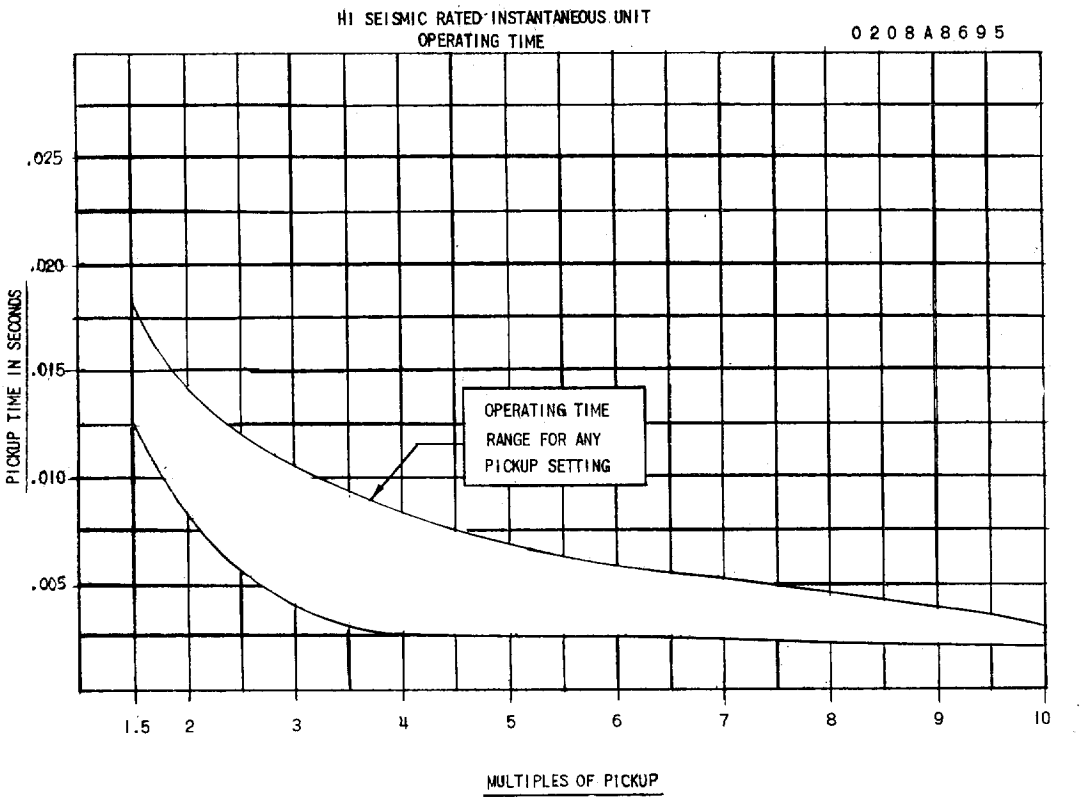



Figure 6 (0208A8695-1) Operating Time Versus Current for the High Seismic Instantaneous Unit

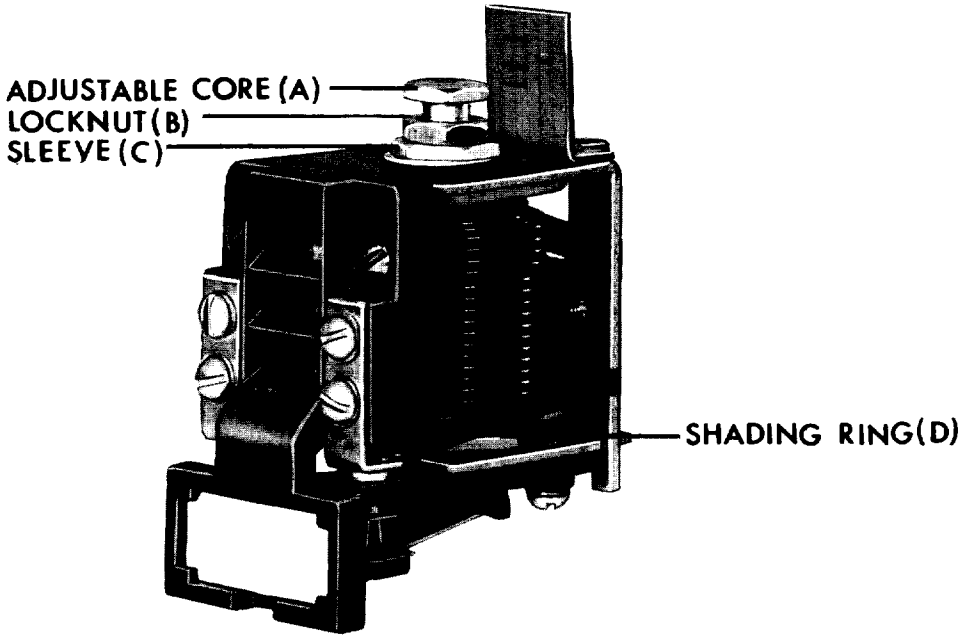



Figure 7 (8036365) Photograph: Construction of the High Dropout Instantaneous Unit

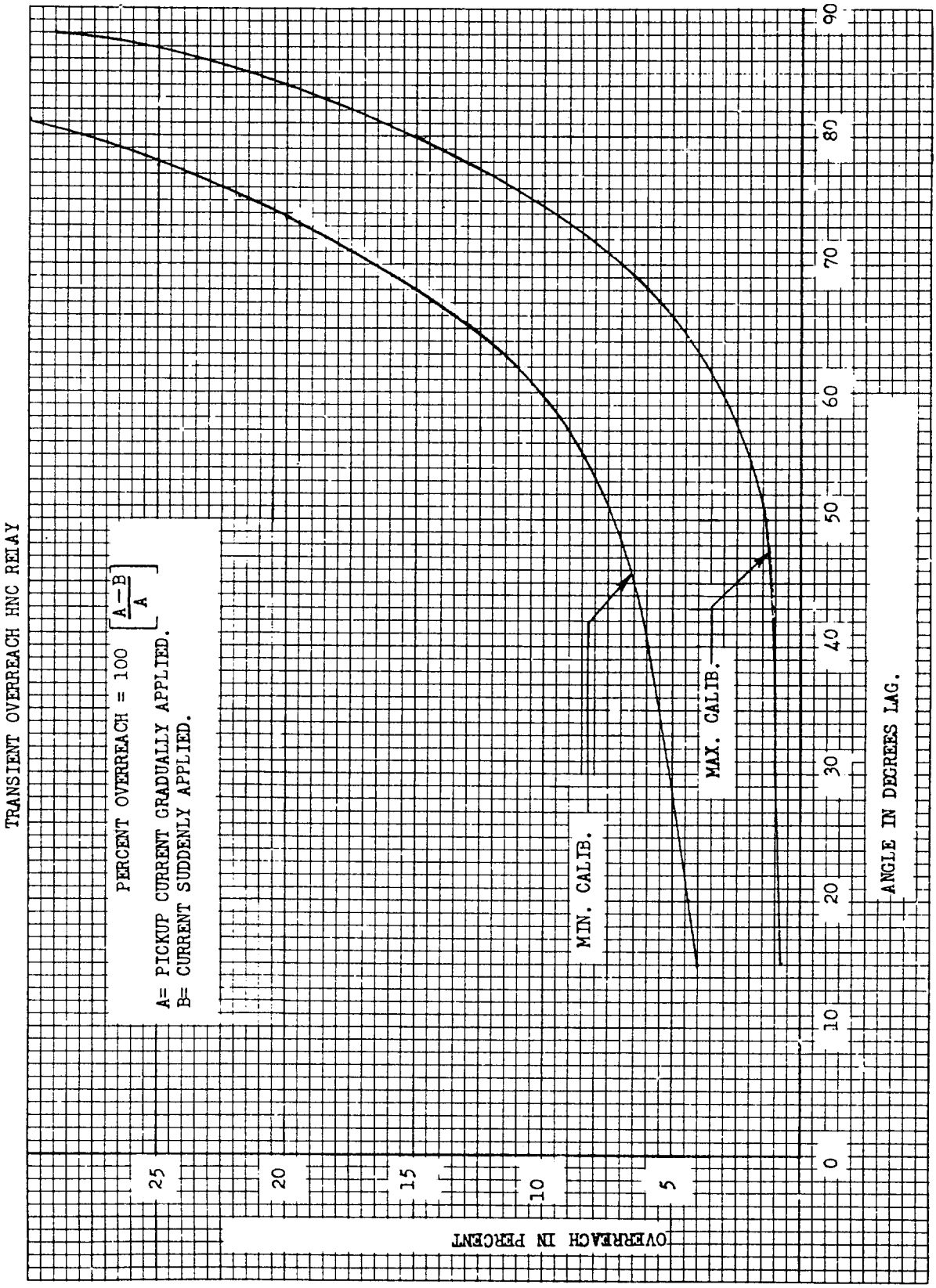
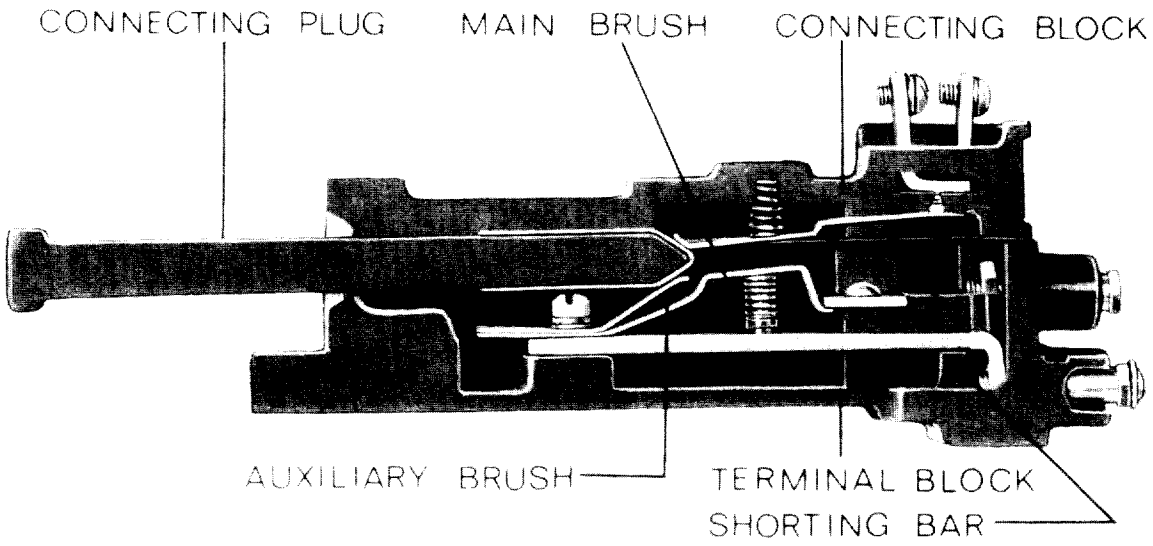



Figure 8 (0195A4950-0) Transient Overreach of the High Dropout Instantaneous Unit




NOTE AFTER ENGAGING AUXILIARY BRUSH CONNECTING PLUG TRAVELS 1/4 INCH BEFORE ENGAGING THE MAIN BRUSH ON THE TERMINAL BLOCK

Figure 9 (8025039) Photograph: Cross-Section of the Drawout Case Showing Position of the Auxiliary Brush

(LATER)

Figure 10 (Photograph) IAC66K Relay Construction
Forms 51 and Up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