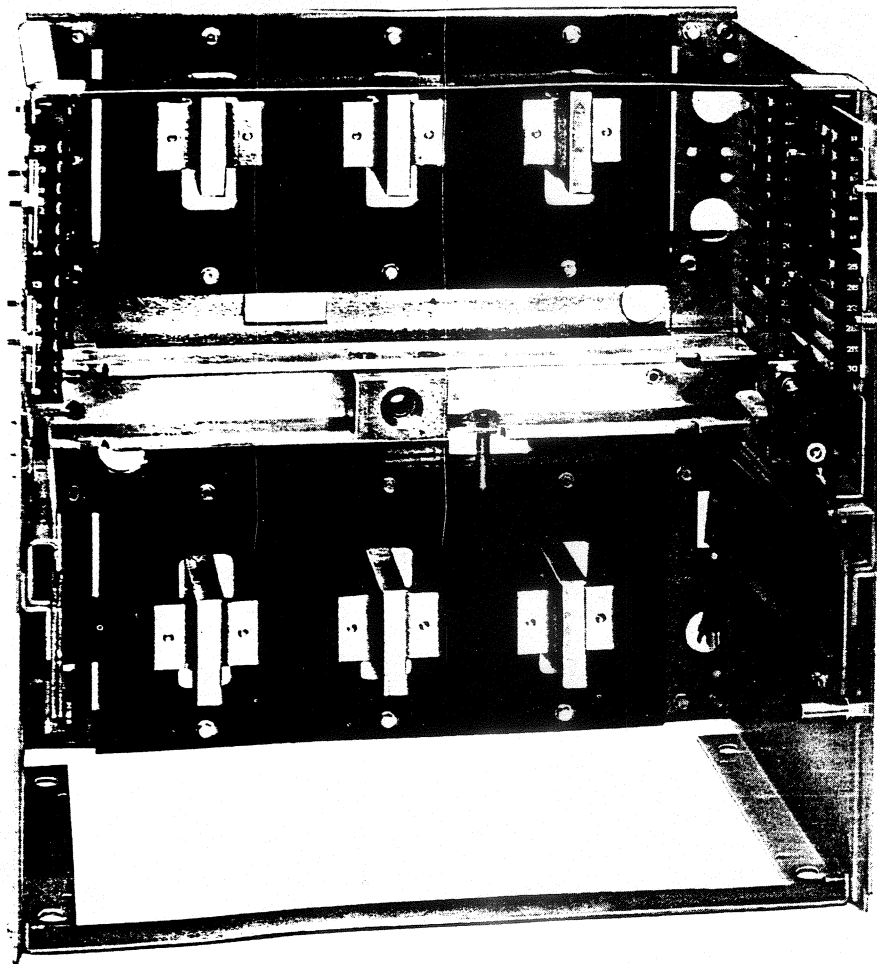


POWER BREAK[®] Circuit Breaker

Draw-Out
Substructure
800-4000 Amperes



POWER BREAK[®] Draw-Out Substructure

DESCRIPTION

The Power Break substructure is a self-contained framework serving as a stationary receptacle for type TC and THC Power Break draw-out breakers. The draw-out feature permits activation of a new feeder, rapid replacement of a circuit breaker, and facilitates inspection and maintenance of Power Break insulated case draw-out circuit breakers without making it necessary to de-energize an entire switchboard.

The substructure is designed for convenient mounting in separate compartments in a switchboard, with holes provided for bolting on a shelf or supports. Holes are also provided in the primary receivers for bolting to bus bar or terminal lugs.

INSTALLATION

Introduction

Before any installation work is to be performed, study the information contained in these instructions, and refer to the outline drawings on Pages 11 through 15 for dimensional data. Make sure all required accessories (Page 4-10) are supplied, as well as any additional materials required to meet local codes.

NOTE: Compartment dimensions and ventilation requirements must be adhered to. (Page 15)

Mounting

Place the substructure unit on a rigid, leveled shelf or appropriate support. Install (4) 1/2" bolts, nuts, and lock washers through the mounting holes shown in Fig. 2 but do not tighten. Check the squareness relationship of the substructure sides relative to the back plane, (see Fig. 1). Square up and then tighten the mounting bolts on each side to a torque of 35 to 40 foot-pounds. Connect the bus work or terminal lugs to the primary receivers using the holes provided. Use 1/2" grade 5 bolts, Belleville washers and nuts, and torque bolts to 35-40 foot-pounds.

NOTE: This device must be securely fitted and free of distortion.

Features

RAILS: The substructure has retractable rails on which the breaker rolls in and out. To operate, pull rails out as far as possible until they drop into the horizontal locked position.

INCORRECT BREAKER REJECTION FEATURE: A rejection feature is provided to permit installation of only the correct breaker. A label located on the lower bracket (see Fig. 2) lists appropriate breakers for each enclosure.

DRAW-OUT INTERLOCK PIN: (Fig. 1) Interacts with the breaker so that if the breaker racking shaft wrench lock-out is deliberately defeated, a closed breaker will trip before the primary contacts engage on installation, or disengage on breaker removal.

DRAW-OUT POSITION INDICATOR PIN: (Fig. 2) Actuates a compartment position indicator on the breaker.

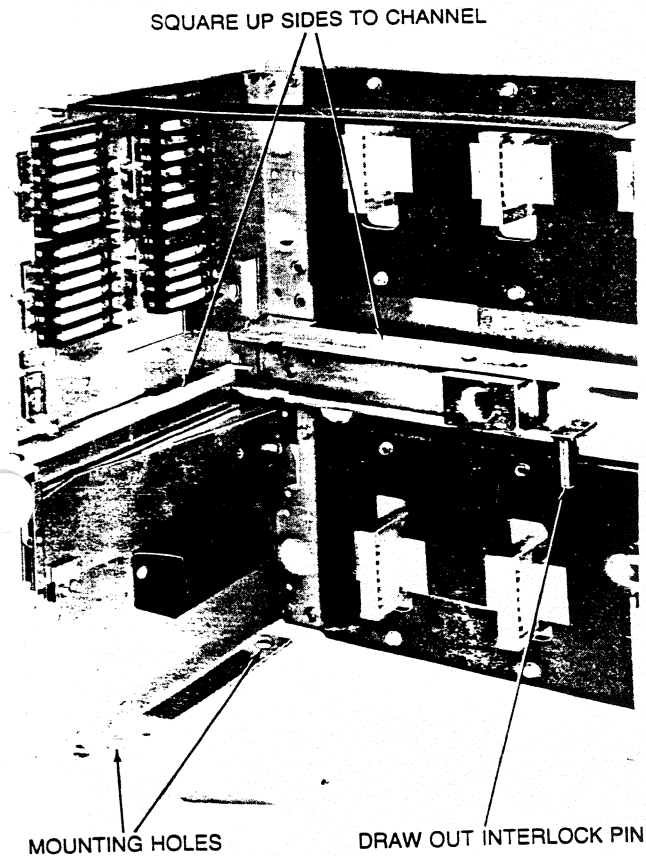


Figure 1

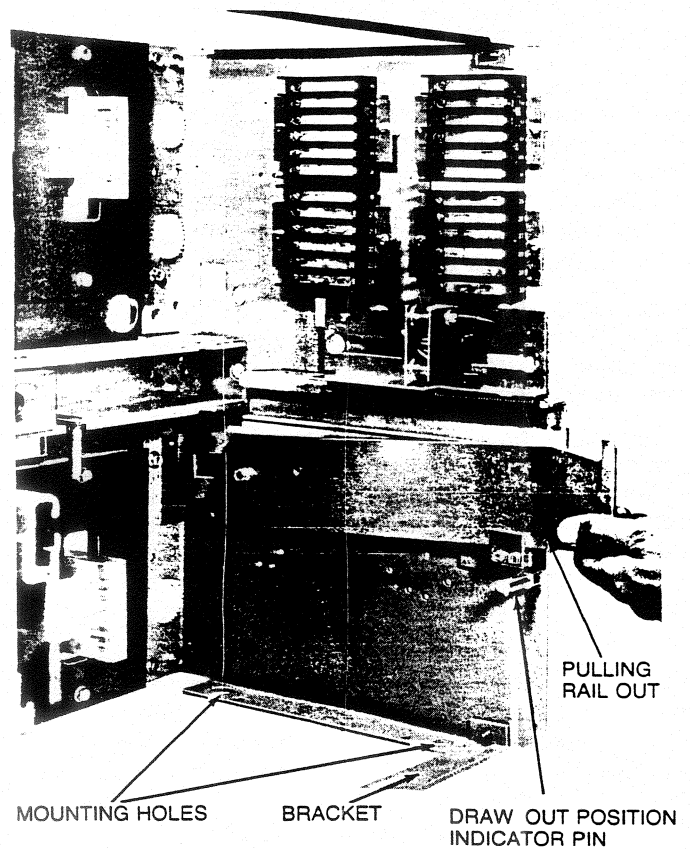


Figure 2

POWER BREAK® Draw-Out Substructure

ACCESSORIES

SECONDARY DISCONNECTS

The secondary disconnects, (Figure 5), interact with corresponding finger units on the breaker for accessory circuits. 14" compartments can accommodate up to 24 circuits, and larger compartments can accommodate up to 48 circuits. MicroVersaTrip® RMS-9, and Epic MicroVersaTrip™ units are restricted to 22 and 46 circuits respectively since the two upper terminals at position "A" are reserved for neutral sensor connection.

INSTALLATION OF SECONDARY DISCONNECTS

Sufficient secondary disconnects must be ordered to cover the needs of the breaker intended for the housing. The units are positioned, starting with the left side rear A, Figure 4, then front B, then right side rear C, then front D. If more than 24 circuits are required, (in any unit over 14" high), continue the sequence for the upper set, positions E, F, G, and H.

All rear units are attached as shown in Figure 5 (screw terminals to the rear in every case) using hardware noted. All front units are similarly mounted as shown in Figures 6A and 6B using hardware noted.

NOTE: MicroVersaTrip® RMS-9 breakers will always be supplied with a secondary disconnect at position "A" with the top two terminals labeled A and B for neutral sensor input. Electrically operated breakers have the remaining four terminals and two in position "B" for terminals 1 through 6 and the balance of accessories in alpha-numerical order from then on (see GEJ-3038).

Except for the restrictions noted above, determine what accessories are to be supplied in the breaker to be installed, then refer to the circuit index card (GEJ-3038 for MicroVersaTrip® RMS-9, Epic MicroVersaTrip™ and MicroVersaTrip®, or GEJ-4672 for MagneTrip™ and molded case switches) and instruction GEH-4696 supplied with the secondary disconnect kit. Apply the circuit numbers as shown in Figures 5, 6, 7 in alpha-numerical order, leaving no spaces, from top to bottom in positions A thru D (or H if applicable).

All accessory control wiring may now be connected, and circuits will match those supplied with the breaker. Grommets are supplied which will snap into the 1/4 inch diameter wiring access holes shown in Figure 4.

NOTE: Field installable accessories are available for the Power Break draw-out breaker. As a result, the accessory may not be wired in its correct alpha-numeric location. Therefore, if a duplicate breaker is ordered later, the factory must be notified where to wire the added accessory.

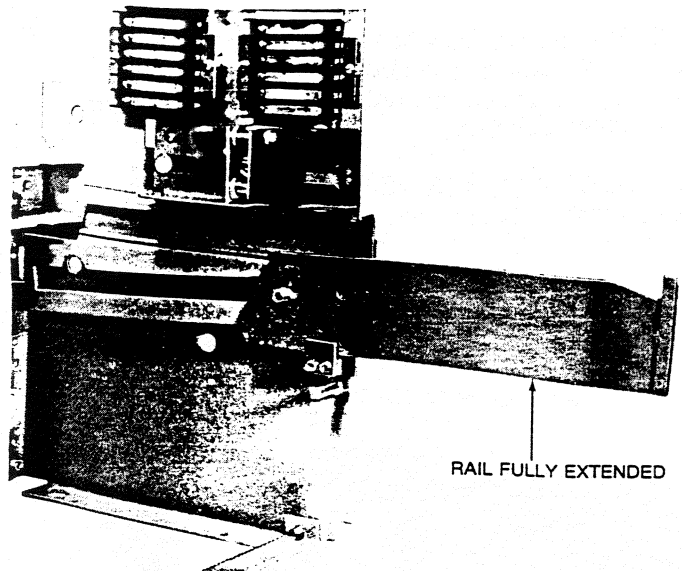


Figure 3

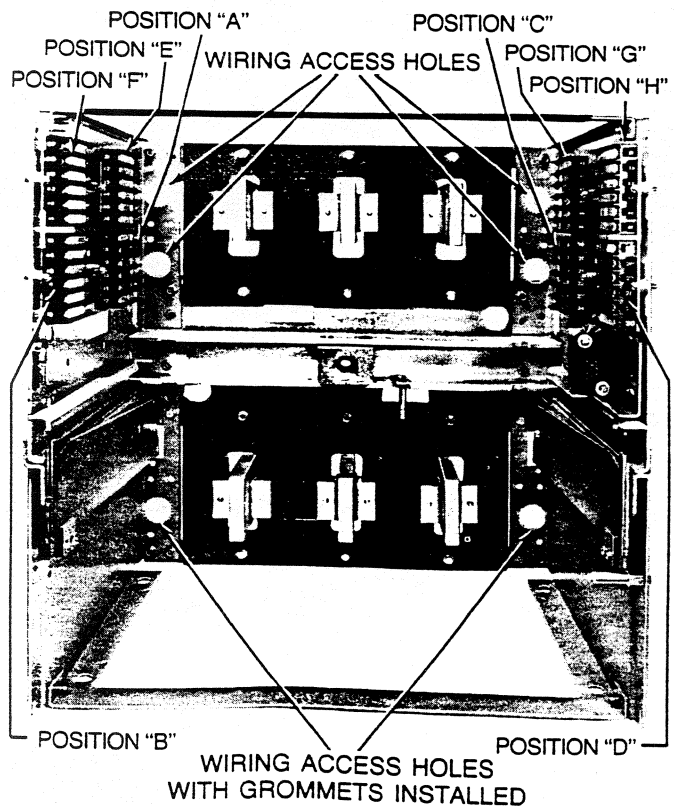
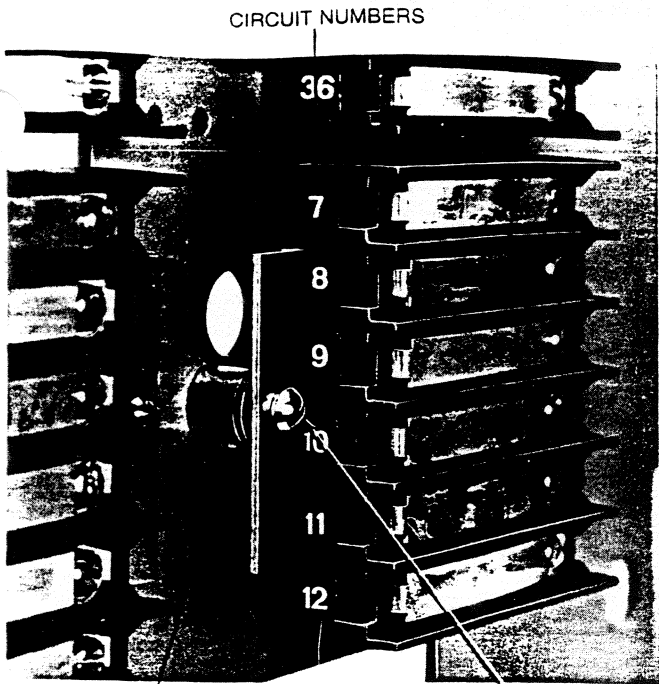
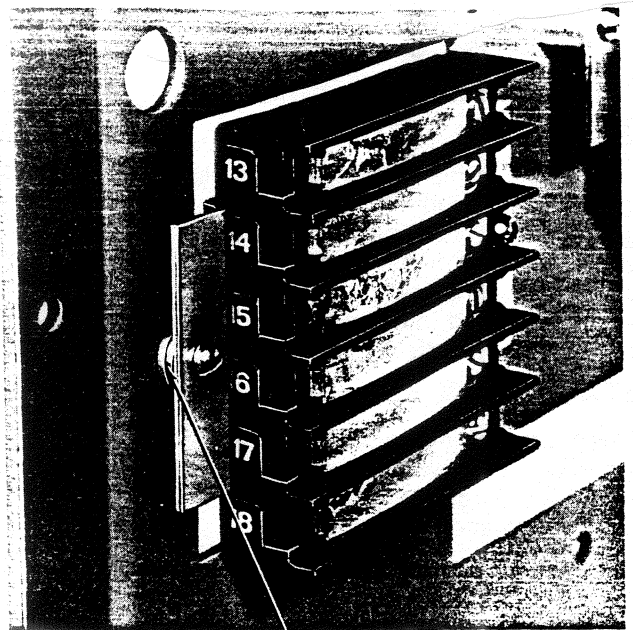


Figure 4



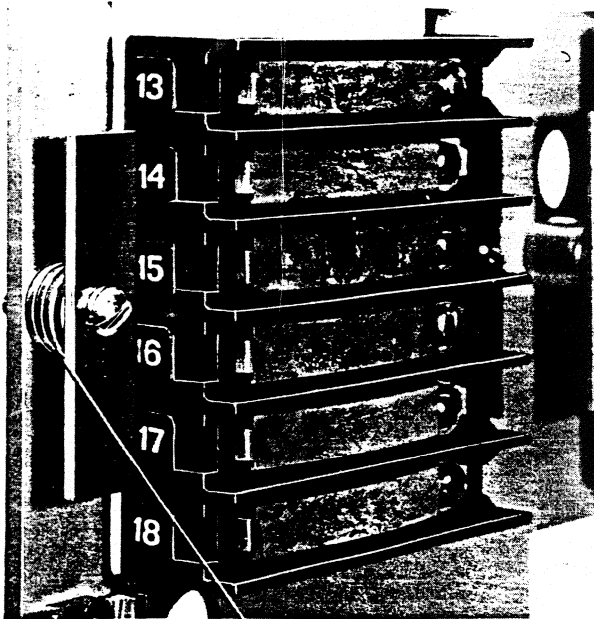
(1) THICK AND (2) THIN SPACERS SCREW AND LOCKWASHER ON EACH MOUNTING SCREW

Figure 5 Rear secondary disconnect



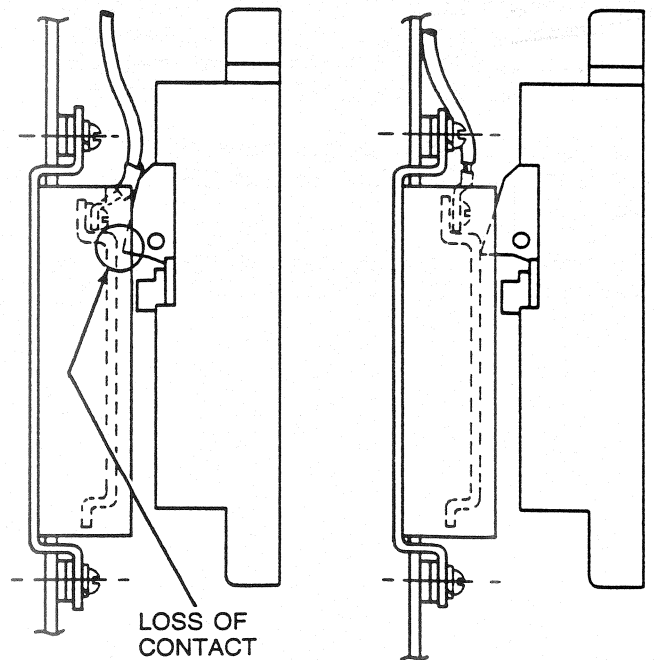
(2) THIN SPACERS ON EACH MOUNTING SCREW FOR TDOS25 THRU TDOS40

Figure 7 Front secondary disconnect



(4) THIN SPACERS ON FRONT MOUNTING SCREW AND (2) THIN SPACERS ON REAR MOUNTING SCREW FOR TDOS08 THRU TDOS20

Fig. 6 Front stationary disconnect



WRONG

RIGHT

Figure 8. Secondary disconnect wiring

CAUTION: Use only (1) #14-16 AWG maximum **uninsulated** crimp spade terminal (Hollingsworth cat. no. BS41272B provided with disconnect kit) per screw

terminal. Use of improper crimp terminals may result in a loss of contact when the breaker reaches the fully connected position. See Figure 8.

POWER BREAK® Draw-Out Substructure

ACCESSORIES (Cont.)

PROGRAMMER DISCONNECT

DESCRIPTION

The programmer disconnect is available for all substructures that accept MicroVersaTrip® RMS-9 and Epic MicroVersaTrip™ draw-out breaker units, and it provides separate circuit points for Zone Selective Interlocking functions and Epic functions. This accessory can be added to any substructure to convert to MicroVersaTrip® RMS-9 and Epic MicroVersaTrip.™

INSTALLATION

1. Orient programmer disconnect as shown in Figure 9 and assemble with wires toward rear as in Figure 9. Place enlarged portions of slots in slide over the two captive shoulder studs.
2. Slide unit towards front until it stops. It should slide freely.
3. Attach spring to spring anchor hole in slide and spring anchor tab in Figure 10.
4. Route wire through holes in back of unit (or slot in side) as desired for attachment to a suitable terminal board (not supplied). Wires are color coded and where necessary are grouped in sleeves, and designated as shown in wire chart. Attach labels provided next to terminal board, (customer supplied), for identification. A snap-in grommet is provided for the 1¼" hole at rear of substructure.
5. For more information on MicroVersaTrip® RMS-9 and Epic MicroVersaTrip™ refer to GEH-5369 and GEH-5371.
6. For more information on old style MicroVersaTrip® refer to GEH-4657.

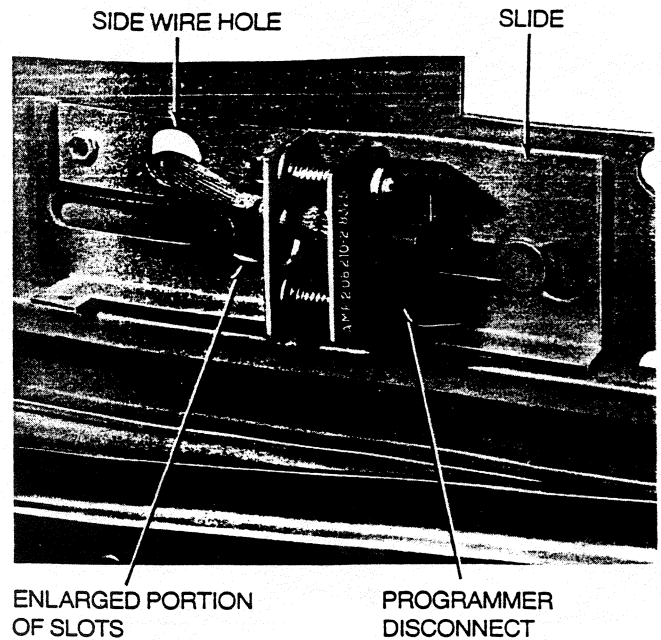


Figure 9

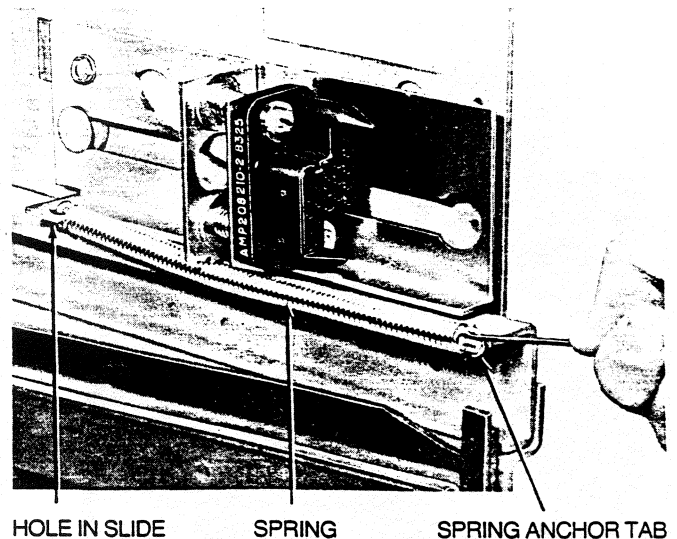


Figure 10

MICROVERSATRIP® RMS-9 AND EPIC MICROVERSATRIP™

TABLE 1—PROGRAMMER DISCONNECT WIRE CHART

| Qty | Color | Wire Description | Comments | Cat. No. | |
|-----|--------|---------------------|--|----------|-----------|
| 1 | WHITE | 73- Input— | ground fault and/or short time | TDOSVD04 | TDOSVD012 |
| 1 | GREEN | 74+ | | | |
| 1 | WHITE | 75- Output— | ground fault and/or short time | | |
| 1 | RED | 76+ | | | |
| 1 | GREEN | 105 Homenet-E | EACH OF THESE GROUPS OF WIRES ARE IN INDIVIDUAL SMALL DIAMETER SLEEVES | | |
| 1 | YELLOW | 106 Homenet-C | | | |
| 1 | RED | 107 Voltage-C phase | | | |
| 1 | WHITE | 108 Voltage-B phase | | | |
| 1 | BLUE | 109 Voltage-A phase | | | |
| 1 | BLACK | 110- 24 Vdc | | | |
| 1 | RED | 111+ 24 Vdc | | | |

TABLE 2—MICROVERSATRIP® PROGRAMMER DISCONNECT WIRE CHART

| Qty. | Color | Wire Description | Comments | Cat. No. | | | | |
|------|--------|------------------|---|---|----------|----------|----------|----------|
| 1 | BLACK | 58 | Ground fault neutral CT* | | | | | |
| 1 | WHITE | 59 | | | | | | |
| 2 | GREEN | 65, 66 | Ground fault Short circuit Overload Long time delay | ALL THESE WIRES ARE IN ONE LARGE DIAMETER SLEEVE | TDOSVD08 | TDOSVD10 | TDOSVD16 | TDOSVD18 |
| 2 | RED | 67, 68 | | | | | | |
| 2 | YELLOW | 69, 70 | | | | | | |
| 2 | BLUE | 71, 72 | | | | | | |
| 1 | WHITE | 73- Input— | ground fault | EACH OF THESE PAIRS OF WIRES ARE IN INDIVIDUAL SMALL DIAMETER SLEEVES | | | | |
| 1 | GREEN | 74+ | | | | | | |
| 1 | WHITE | 75- Output— | | | | | | |
| 1 | RED | 76+ | | | | | | |
| 1 | WHITE | 77- Input— | | | | | | |
| 1 | YELLOW | 78+ | | | | | | |
| 1 | WHITE | 79- Output— | | | | | | |
| 1 | BLUE | 80+ | | | | | | |

*NOTE: On models built after 1981, the Neutral Sensor leads are wired to terminals A and B of the secondary disconnects.

POWER BREAK® Draw-Out Substructure

ACCESSORIES (Cont.)

BY-PASS SWITCH

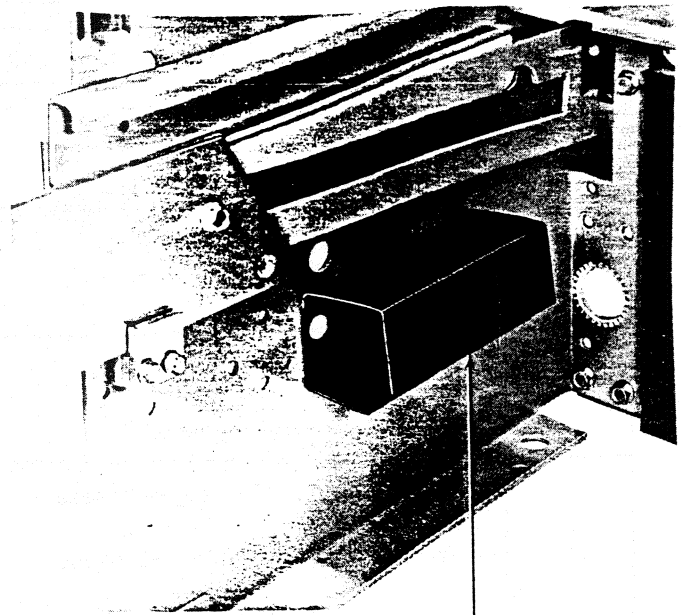
DESCRIPTION

A by-pass switch is available with N.O. and N.C. contacts, which change state between the connected and test position. The switch is available in 4 circuits, 8 circuits, or 12 circuits of which half are N.O. and the other half N.C. See Table 3, page 9, for switch terminal identification.

CAUTION: Source of power must be removed during installation of by-pass to prevent hazard of shock or burn.

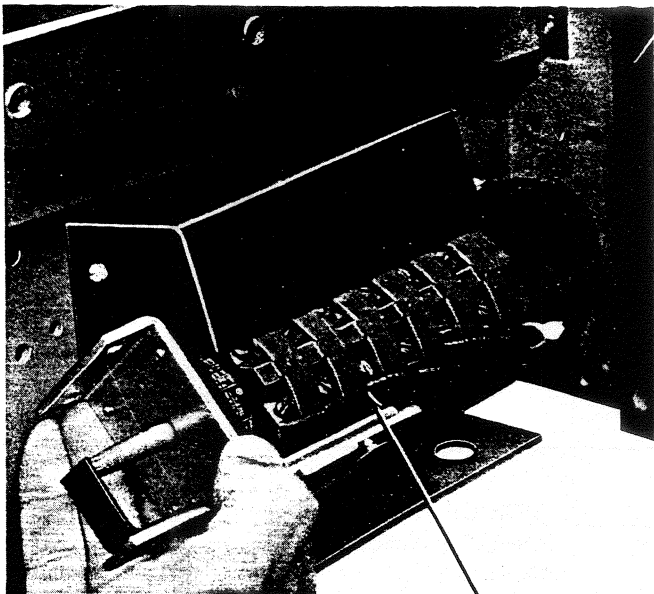
INSTALLATION

1. The barrier shown in Fig. 12 is factory supplied.
2. Position the prewired unit inside the barrier as indicated in Fig. 11, and line up the mounting holes.
3. Fasten with the two 1/4" thread forming screws and torque to 80-90 inch-lbs as shown in Fig. 13.
4. Grommets are supplied with this kit, that snap into the 1 1/4" dia. holes in the rear or side of the substructure, to protect the wires.
5. Wires must be grouped and tied on each side of switch as shown in Fig. 11 to prevent barrier from being pushed up into the path of the retractable rail.



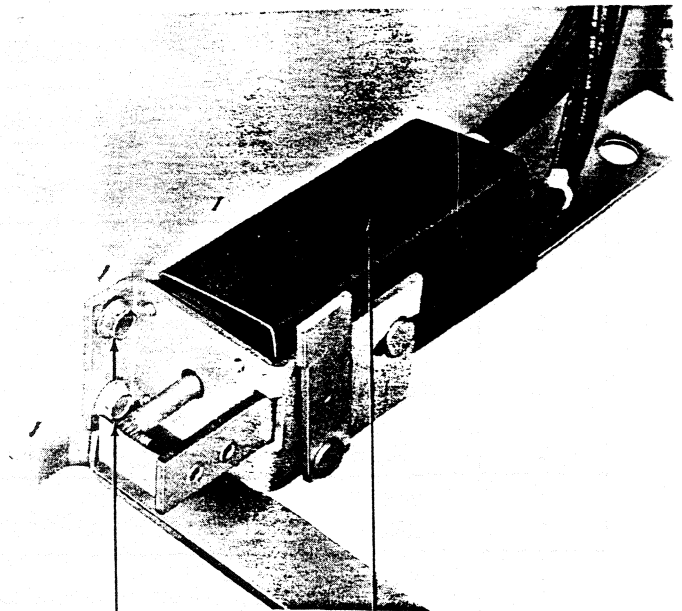
BARRIER

Figure 12



BYPASS SWITCH

Figure 11



SCREWS

BYPASS SWITCH

Figure 13

**WIRE LOGIC FOR BYPASS SWITCH
RATING 10A 600V AC, 3/4 AMPERE 125V
DC, 1/4 AMPERE 250V DC**

| Terminals | Catalog Number | | |
|-----------|----------------|---------|---------------|
| | TDOBP2L | TDOBP4L | TODBP6L |
| N.C. | 1-2 | 1-2 | 1-2 |
| | 3-4 | 3-4 | 3-4 |
| | | 5-6 | 5-6 |
| | | 7-8 | 7-8 |
| | | | 9-10 11-12 |
| N.O. | 5-6 | 9-10 | 13-14 |
| | 7-8 | 11-12 | 15-16 |
| | | 13-14 | 17-18 |
| | | 15-16 | 19-20 |
| | | | 21-22 |
| | | | 23-24 |
| | | | |

TABLE 3

SHUTTERS

DESCRIPTION

Shutters are available to protect installation and service personnel from inadvertently contacting the primary stabs of an energized switchboard when the drawout breaker unit is removed.

CAUTION: Source of power must be removed during installation of shutters to prevent hazard of shock or burn.

INSTALLATION

To install the shutter unit, align captive mounting screws, located in the middle of each shutter side frame, with the tapped holes located in the nut channel as shown in Fig. 14. Tighten screws securely with a torque of 27-32 inch-pounds. An additional captive screw on the right side of the 28-inch unit must be fastened to the right compartment side. (Fig. 16).

After the shutter unit has been installed, an operational check should be made to ensure that all moving parts are free, and that the upper and lower movable barriers operate properly. This check is accomplished by pushing down on the actuating lever by hand (Fig. 15 or 16 and 17). When the lever is released, the barriers should return to the fully closed position.

Place the draw-out breaker unit on the extended rails and push the breaker into the compartment. As the breaker enters the compartment, the shutter begins to open at a fast rate in order to avoid interference with the breaker primary disconnects.

Place the draw-out breaker unit on the extended rails and push the breaker into the compartment. As the breaker enters the compartment, the shutter begins to open at a fast rate in order to avoid interference with the breaker primary disconnects.

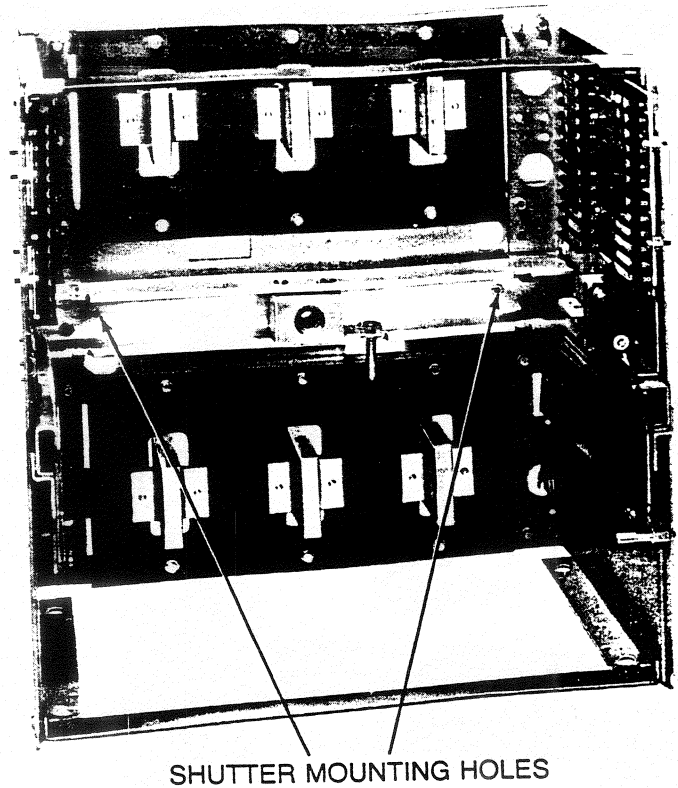


Figure 14

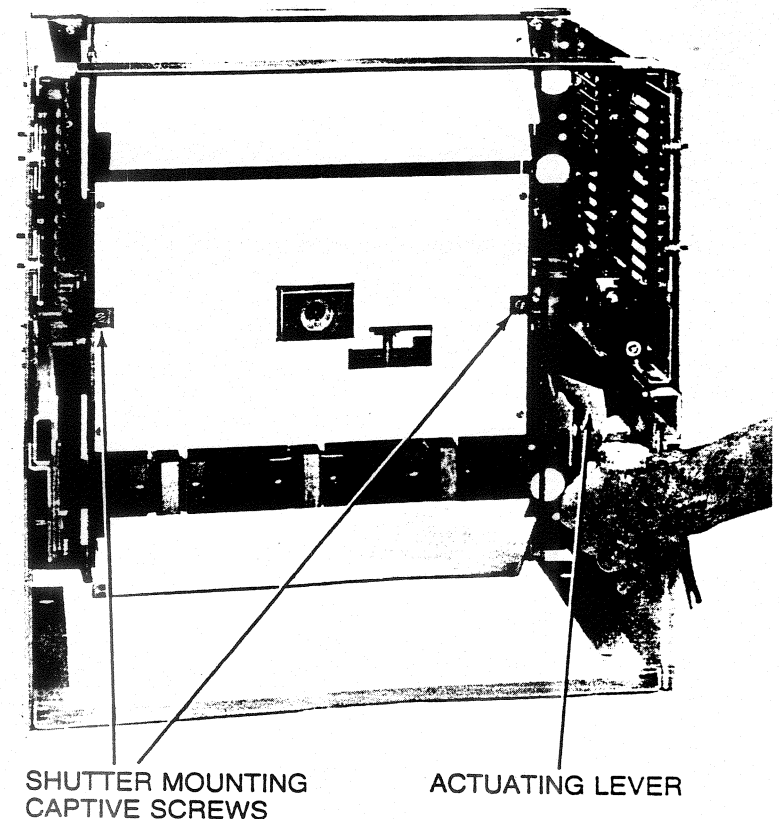
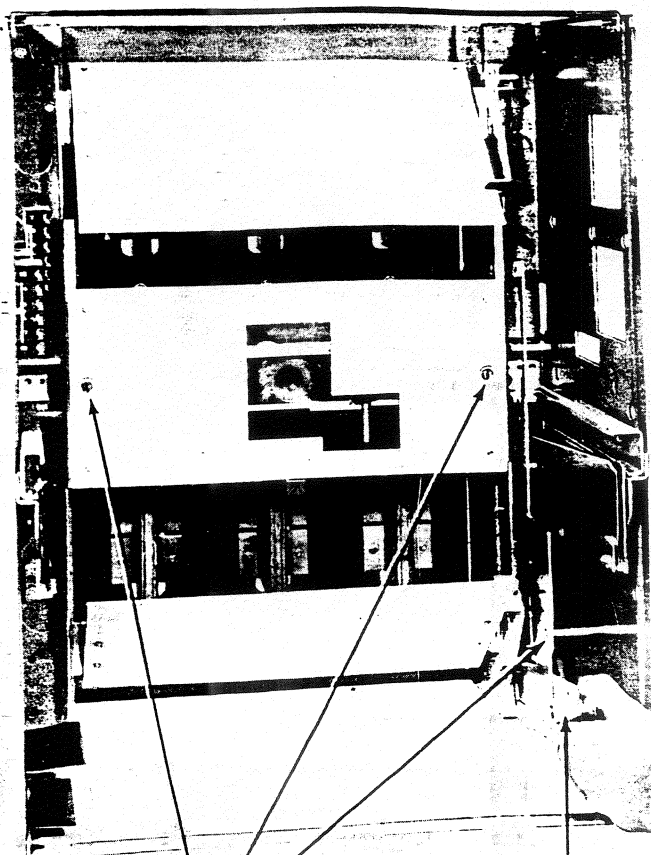


Figure 15 Shutter partly open

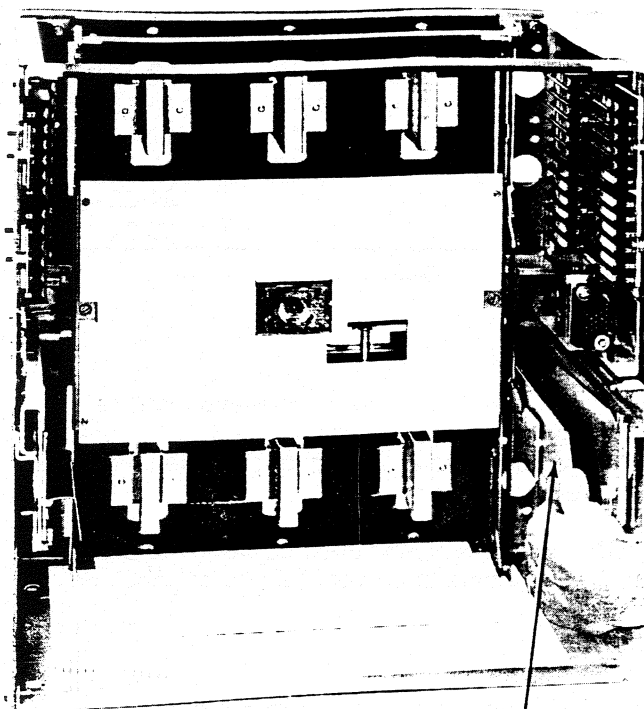
POWER BREAK® Draw-Out Substructure



SHUTTER MOUNTING
CAPTIVE SCREWS

ACTUATING LEVER

Figure 16 Shutter partly open (Cat. No. TD0SS30)



ACTUATING LEVER

Figure 17 Shutter fully open (Cat. No. TD0SS20)

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 GENERAL ELECTRIC COMPANY

139C5235
PRINTED BY THE
 GENERAL ELECTRIC COMPANY

GENERAL ELECTRIC

TITLE OUTLINE
 TD OR THDOS SUBSTRUCTURE WITH TC OR
 THC DRAWOUT BREAKER
FIRST MADE FOR 2500A 4.300A FRAMES

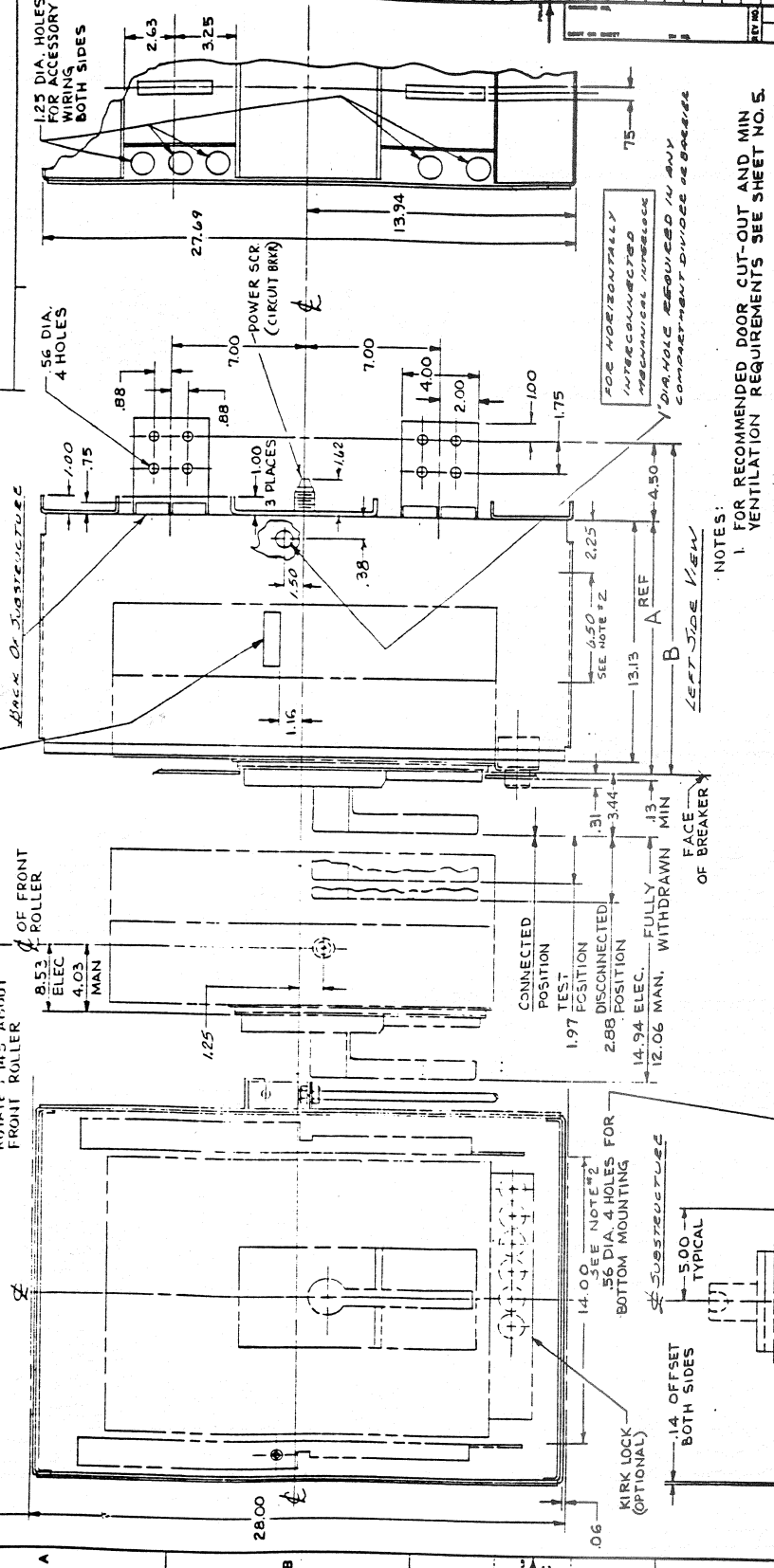
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 FINISHES +

NOTES:

- FOR RECOMMENDED DOOR CUT-OUT AND MIN VENTILATION REQUIREMENTS SEE SHEET NO. 5.
- ANY COMPARTMENT METAL IN U.50 X 14 AREA BELOW (AND ABOVE AT MINIMUM STACKING HEIGHT) MUST BE REMOVED.
- CUSTOMER LOCATION FOR DRILLING HOLE FOR HORIZONTAL OR VERTICAL INTERCONNECTED MECHANICAL INTERLOCK. SEE BOTTOM OR SIDE VIEW, PROPERLY IDENTIFIED BY DOCUMENT NUMBER AND LOCATION FROM CHARTERED ELECTRICAL.

| CATALOG NUMBER | BREAKER TYPE | A REF | B REF | WEIGHT LBS BKR COMP |
|----------------|--------------|-------|-------|---------------------|
| TD OR THDOS25 | MAN | 13.25 | 17.75 | 225 III |
| TD OR THDOS25E | ELEC | 17.75 | 22.25 | 265 III |
| TD OR THDOS30 | MAN | 13.25 | 17.75 | 231 III |
| TD OR THDOS30E | ELEC | 17.75 | 22.25 | 271 III |

| PRINTS TO | DATE | BY | CHKD BY | APP'D BY |
|-----------|---------|--------|---------|----------|
| 6 | 8/21/82 | BLANKS | 1 | W70-BE |
| 7 | 8/21/82 | BLANKS | 2 | W70-BE |
| 8 | 8/21/82 | BLANKS | 3 | W70-BE |
| 9 | 8/21/82 | BLANKS | 4 | W70-BE |
| 10 | 8/21/82 | BLANKS | 5 | W70-BE |

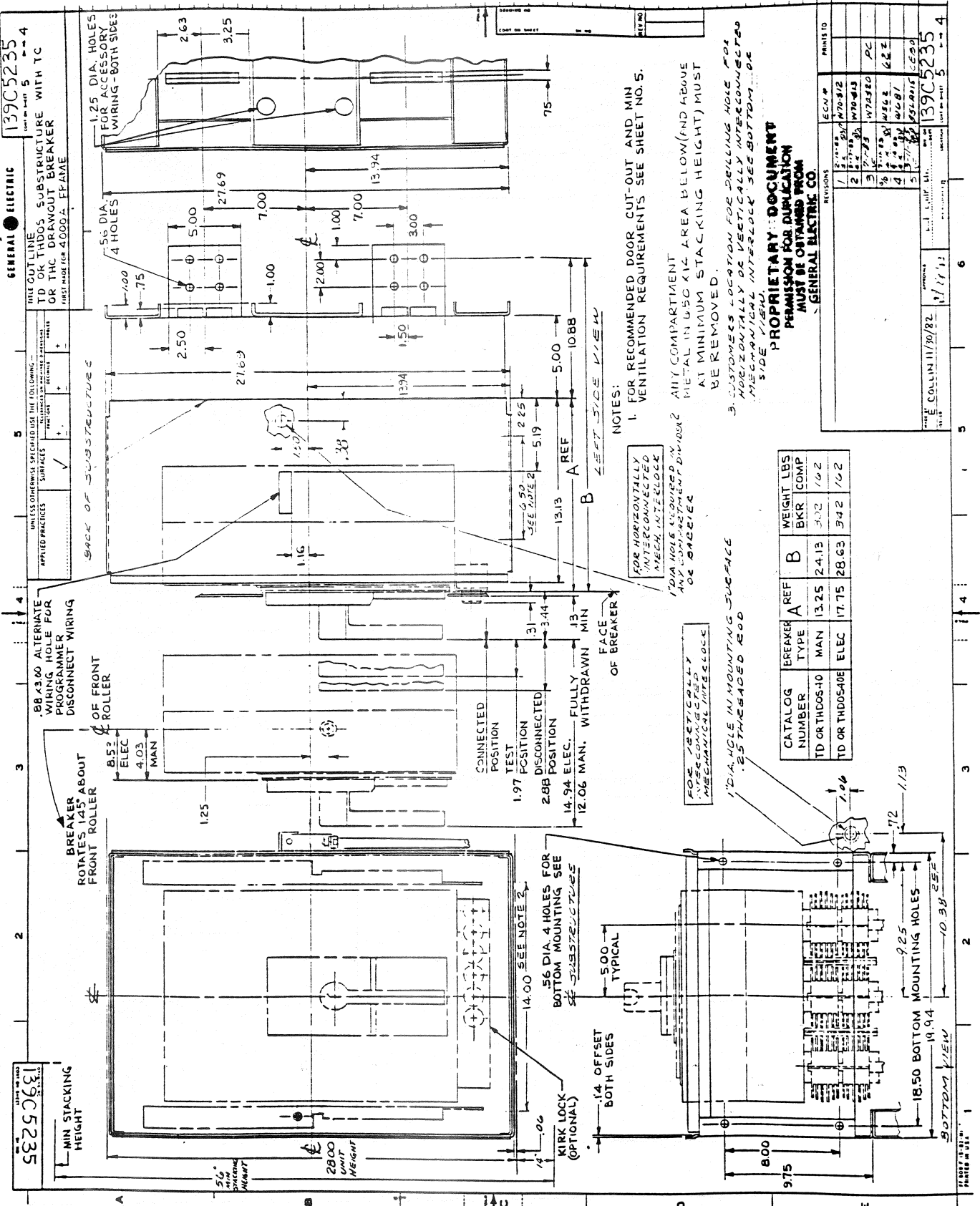
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| 8/21/82 | BLANKS | 3 | W70-BE |
| 8/21/82 | BLANKS | 4 | W70-BE |
| 8/21/82 | BLANKS | 5 | W70-BE |

| DATE | BY | CHKD BY | APP'D BY |
|---------|--------|---------|----------|
| 8/21/82 | BLANKS | 1 | W70-BE |
| 8/21/82 | BLANKS | 2 | W70-BE |
| 8/21/82 | BLANKS | 3 | W70-BE |
| 8/21/82 | BLANKS | 4 | W70-BE |
| 8/21/82 | BLANKS | 5 | W70-BE |

| DATE | BY | CHKD BY | APP'D BY |
|---------|--------|---------|----------|
| 8/21/82 | BLANKS | 1 | W70-BE |
| 8/21/82 | BLANKS | 2 | W70-BE |
| 8/21/82 | BLANKS | 3 | W70-BE |
| 8/21/82 | BLANKS | 4 | W70-BE |
| 8/21/82 | BLANKS | 5 | W70-BE |

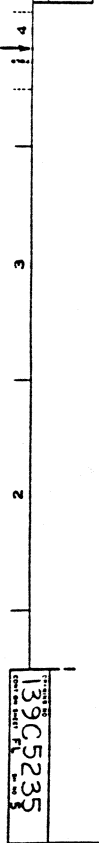
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| 8/21/82 | BLANKS | 2 | W70-BE |
| 8/21/82 | BLANKS | 3 | W70-BE |
| 8/21/82 | BLANKS | 4 | W70-BE |
| 8/21/82 | BLANKS | 5 | W70-BE |

POWER BREAK® Draw-Out Substructure



UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING—

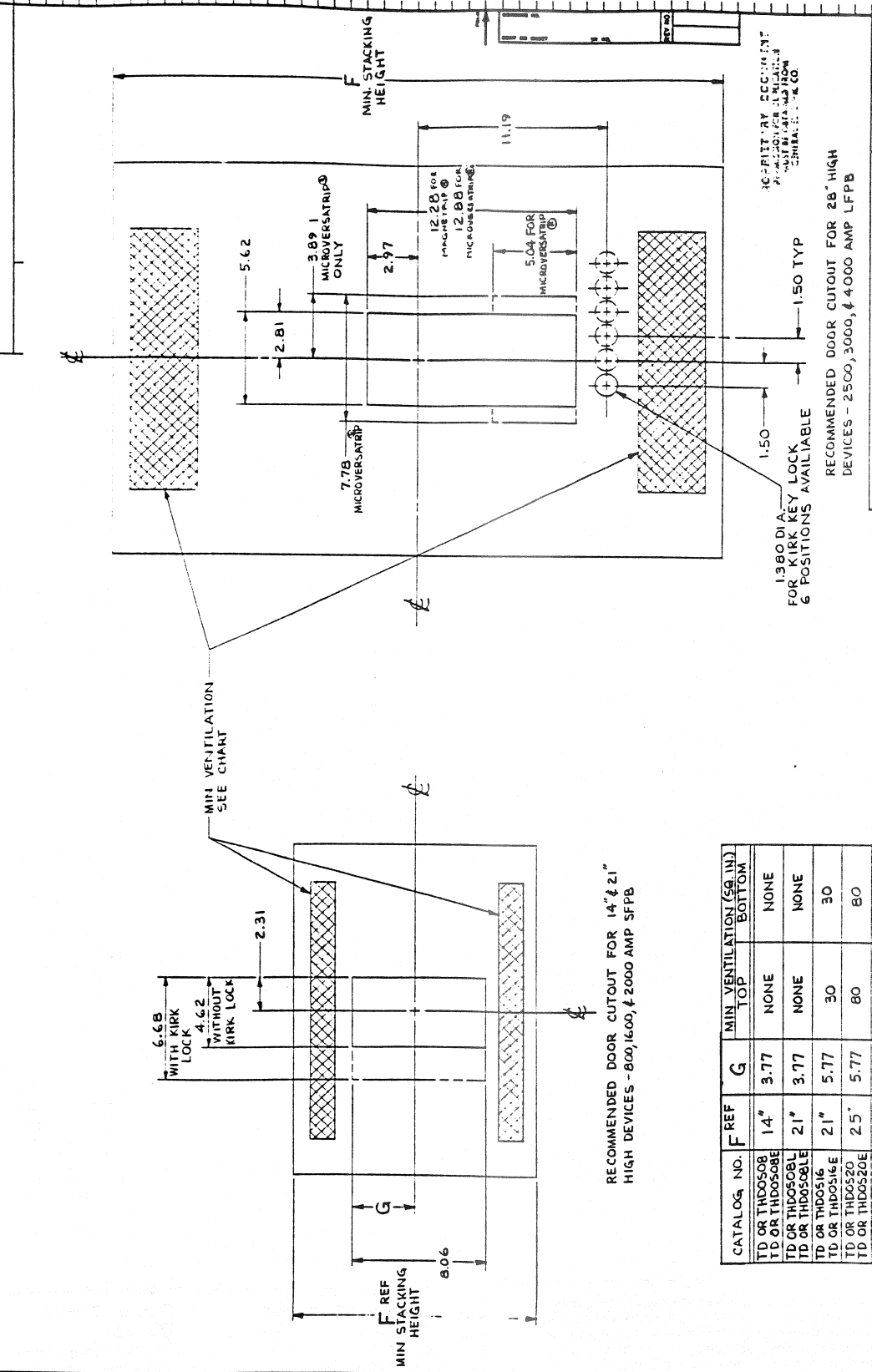
| APPLIED PRACTICES | SURFACES | FUNCTIONS | DETAILS | PROJECT |
|-------------------|----------|-----------|---------|---------|
| ✓ | | | | |



RECOMMENDED DOOR CUTOUT FOR 14" & 21" HIGH DEVICES - 800, 1600, & 2000 AMP SFPB

| CATALOG NO. | F REF | G | MIN VENTILATION (SQ IN.) |
|-----------------|-----------------|------|--------------------------|
| | | | TOP |
| | | | BOTTOM |
| TD OR THDOS08 | 14" | 3.77 | NONE |
| TD OR THDOS08E | 14" | 3.77 | NONE |
| TD OR THDOS08L | 21" | 3.77 | NONE |
| TD OR THDOS08LE | 21" | 3.77 | NONE |
| TD OR THDOS16 | 21" | 5.77 | 30 |
| TD OR THDOS16E | 25" | 5.77 | 80 |
| TD OR THDOS20 | 28" | 8.06 | 80 |
| TD OR THDOS25 | 28" | 8.06 | 135 |
| TD OR THDOS30 | 28" | 8.06 | 140 |
| TD OR THDOS30E | 56" SEE NOTE 1. | | |
| TD OR THDOS40 | 56" SEE NOTE 1. | | |
| TD OR THDOS40E | 56" SEE NOTE 1. | | |

MIN VENTILATION (SEE IN.)



NOTES:
 1. THE MIN. STACKING HEIGHT IS TO BE SUCH AS TO PROVIDE FOR THE MIN. VENTILATION TOP AND BOTTOM BEYOND THE 28.00" DIMENSION SHOWN WITH THE DEVICE.

PROPRIETARY DOCUMENT
PERMISSION FOR REPLICATION
MUST BE OBTAINED FROM
GENERAL ELECTRIC CO.

| REV | DATE | BY | CHKD | DESCRIPTION |
|-----|---------|-----------|------|----------------------|
| 1 | 12/2/81 | E. COLLIN | | REVISED FOR 139C5235 |
| 2 | 12/2/81 | | | |
| 3 | 12/2/81 | | | |

REVISIONS: ECN # 139C5235
 PRINTS TO: 5

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.

Outside the U.S. write Construction Equipment Export Operation,
411 Theodore Fremd Ave., Rye, N.Y. 10580 U.S.A.
GEH-4697C 0187 PSA

For further information
call or write your local
General Electric
Sales Office or . . .

General Electric
Company
41 Woodford Avenue
Plainville, CT 06062 U.S.A.

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