



GE Energy

*Transformer Business Department  
Regulator & Inductive Products*

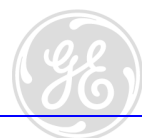
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# **Sub-Base Assembly** For Type-ML 32 & VR-1 Step Voltage Regulator Single-Phase Liquid-Filled Part # GEK – 35171

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Last Update 11-19-2013

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# ASSEMBLY INSTRUCTIONS

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### NOTE

The equipment covered by these operating instructions should be operated and serviced only by competent technicians familiar with good safety practices, and these instructions are written for such personnel and are not intended as a substitute for adequate training and experience in safe procedures for this type of equipment.





INTRODUCTION

The Sub-Base assembly for the type ML 32 step voltage regulator is an older design whereas the VR-1 is most recent. There are various sizes and differ in construction depending on the unit catalog number and overall regulator height desired. In order for each size to serve multiple catalog numbers, sub-base holes are drilled on top channels and cross tie rods, when furnished and adjustable sub-bases are made with adjustable legs to conform to the desire height NESC requirements for lowest live parts.

The Sub-Base assembly is shipped disassembled. Directions for assembly are included in these instructions. They include sketches and tables. To ascertain the construction to be used on a particular regulator check the sketch with the parts furnished. Refer also to the section "SUB-BASE HEIGHTS"

The complete Sub-Base assembly should be fastened firmly to a level foundation "concrete pad with anchor bolts". It should be thoroughly and effectively grounded utilizing the regulator-grounding fixture attached to the regulator base or tank wall.

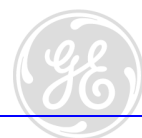
**WARNING:**

TO PROVIDE MAXIMUM PROTECTION TO THE OPERATOR, THOROUGHLY AND REFECTIVELY GROUND THE REGULATOR. GROUNDING CONDUCTOR SIZE SHOULD BE IN ACCORDANCE WITH NEC AND ANIS REQUIREMENTS TO ELIMINATE THE POSSIBILITY OF BURNING-OFF IN CASE OF A LINE GROUND. DO NOT REMOVE THE GROUND CONDUCTOR WHILE THE REGULATOR IS ENERGIZED.

**SUB-BASE HEIGHTS:**

To simplify choice of sketches and tables the following measurements are included.

Height Dimension (Inches)	Parts Assembly USE
24.5", 27.5", 30.5", 33.5"	Sketch "A,B", Table I
15.5", 18.5", 21.5", 24.5"	Sketch "A,B", Table I
33.5", 36.5", 39.5", 42.5"	Sketch "A,B", Table I
23-3/4", 33-3/4", 44"	Sketch "C", Table II
28-3/4", 38-3/4", 49-3/4"	
18-1/2"	Sketch "D", Table III
13"	Sketch "E", Table IV
7-1/4"	Sketch "F", Table V



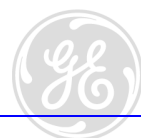


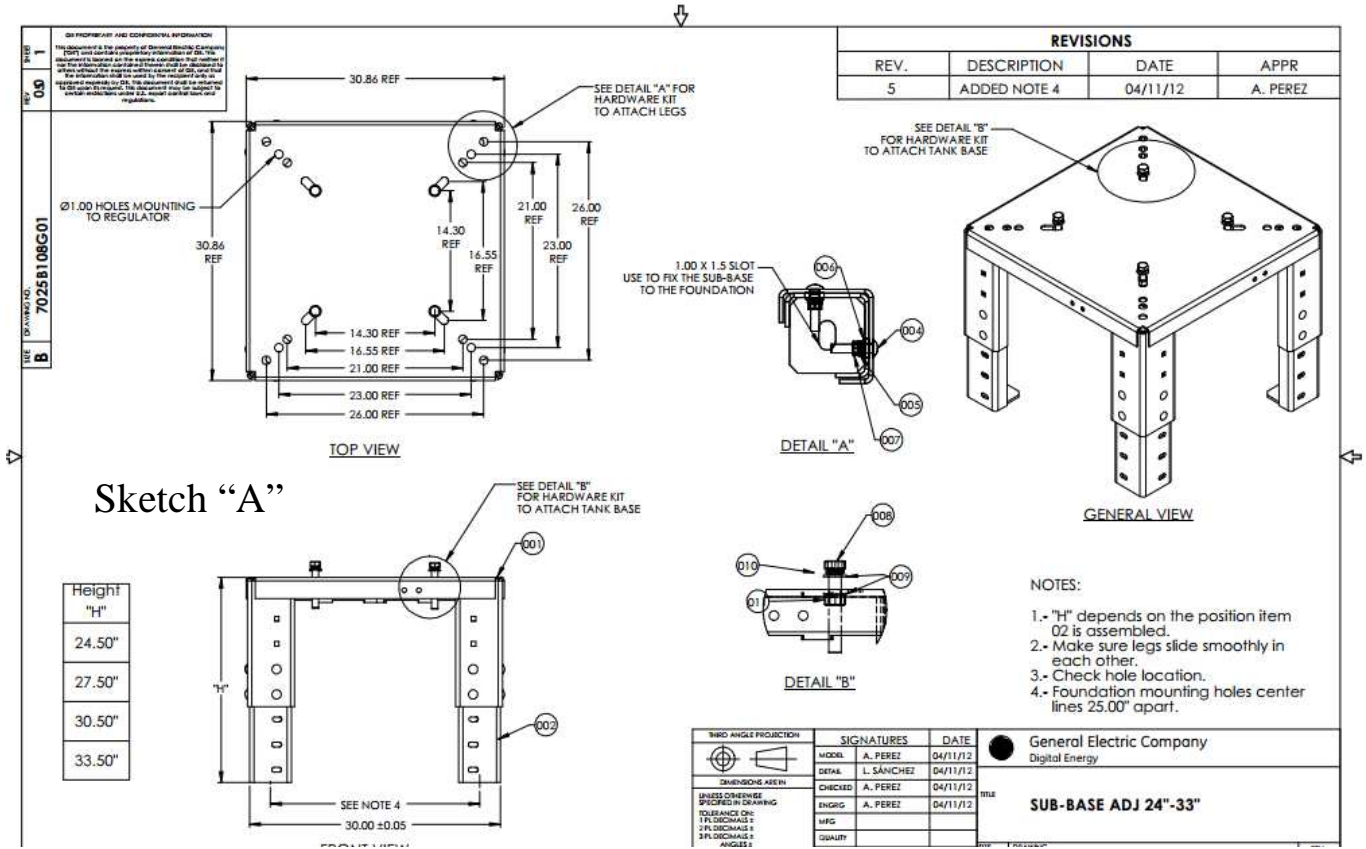
I. Adjustable Sub-base Construction

1. Assembly should be completed on a dry, flat surface. *See Sketch "A"*.
2. Extension legs (Item 2) must be assembled on the inside of the fixed-base support legs (Item 1).
3. Each extension leg (Item 2) must be attached using (2) carriage bolts on each side of the leg and spaced in overlapping holes farthest apart (Ensure Square Head fits in Square Hole).
4. Carriage Bolts used to attach the extension leg to the fixed support leg should be 0.5-inch diameter.
5. Qty. of 4 3/4 inch diameter zinc plated or stainless 5-inch long bolts should be used to attach regulator to the sub-base.
6. Bolts and washers are assembled per the Bolt Assembly Drawing. *See Detail "A"*.
7. The sub-base should be mounted to a foundation with qty. 4 3/4 inch diameter bolts in each of the 4-leg surface mounting brackets. *See Detail "B"*.
8. *NOTE: For seismic area zone, use x-bracing provided. See Sketch "B" for Configurations.*

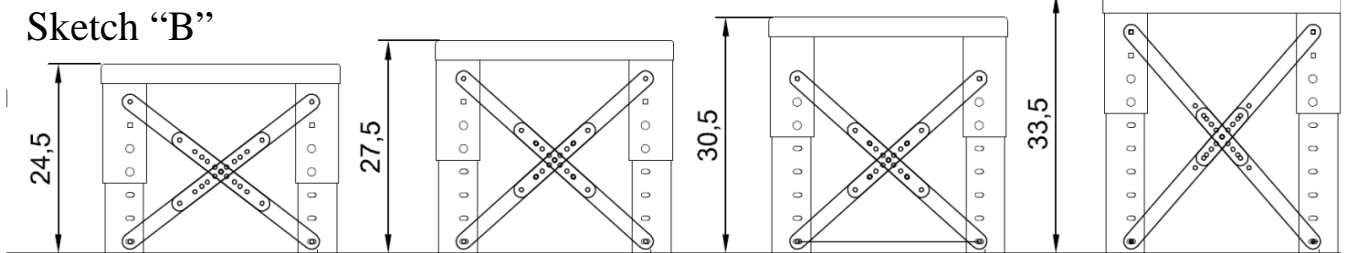
TABLE I

ADJUSTABLE SUB-BASE GROUPS PART NUMBERS	ADJUSTABLE HEIGHTS
21 & 25 Tanks – 7025B108G01	24.5", 27.5", 30.5", 33.5"
21 & 25 Tanks – 7025B108G02	15.5", 18.5", 21.5", 24.5"
21 & 25 Tanks – 7025B108G03	33.5", 36.5", 39.5", 42.5"
28 Tank – 7025B108G06	24.5", 27.5", 30.5", 33.5"
28 Tank – 7025B108G07	15.5", 18.5", 21.5", 24.5"
28 Tank – 7025B108G08	33.5", 36.5", 39.5", 42.5"





7025B109G01  
XBRACE:7325B004P07

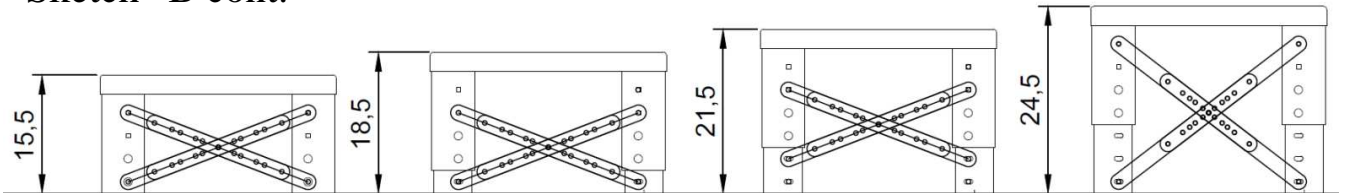




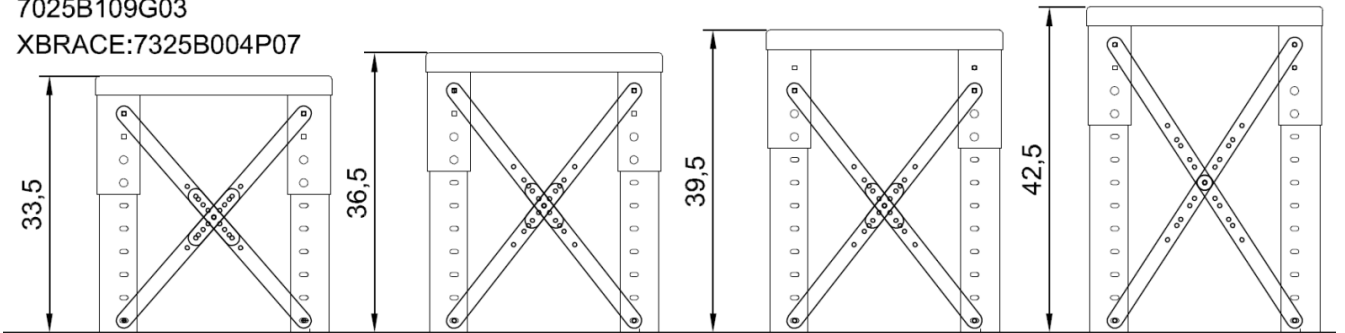
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7025B109G02  
XBRACE:7325B004P07

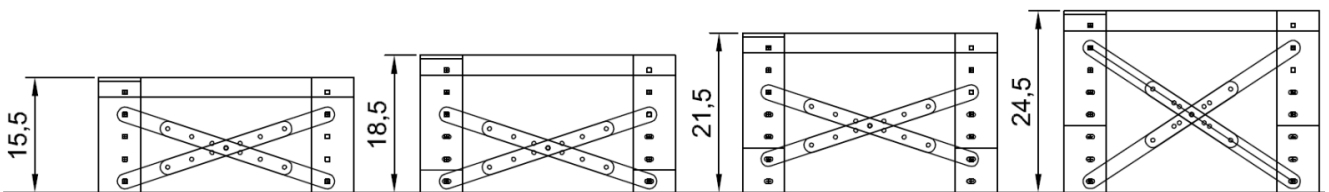
Sketch "B cont."



7025B109G03  
XBRACE:7325B004P07



7025B109G07  
XBRACE:7325B004P06





## II. Post Construction (Obsolete Design)

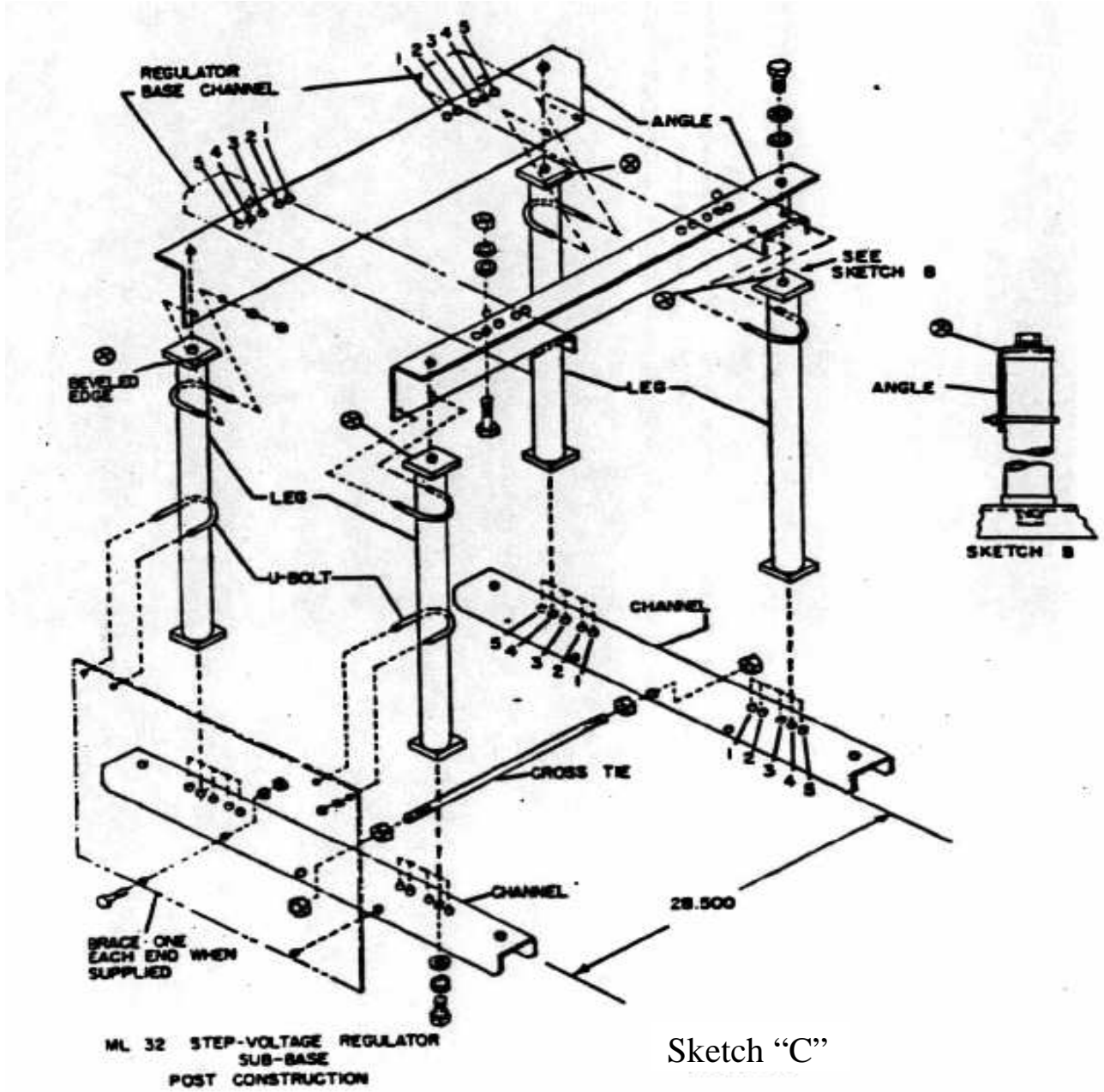
1. Determine dimensions between regulator base mounting holes from the regulator outline. Refer to TABLE II for channel angle mounting holes to be used.
2. Assemble CORNER posts (legs) to the proper holes in the bottom channels. See Sketch "C", which shows hardware.
3. Insert bottom cross tie in holes provided on bottom channels and secure in place maintaining 28.5" between inside of channels.
4. Assemble top angles to corner post (legs). Observe positioning of beveled edge (\* in Sketch "C"). Attach U-bolt to firmly secure top angles to corner posts.
5. Assemble gusset braces to corner posts with U-bolts.
6. Position regulator sub-base and fasten using 3/4 inch hardware.

TABLE II

23-3/4", 33-3/4", 44" 28-3/4", 38-3/4", 49-3/4"	POLE SUB-BASE HEIGHTS (NOT ADJUSTABLE HEIGHTS)
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REGULATOR BASE DIMENSIONS BETWEEN MOUNTING HOLES	CHANNEL MOUNTING HOLES	ANGLE MOUNTING HOLES
14-312"	1	1
16"	2	2
19"	3	3
21"	4	4
23"	5	5









### III. Formed Channel Construction

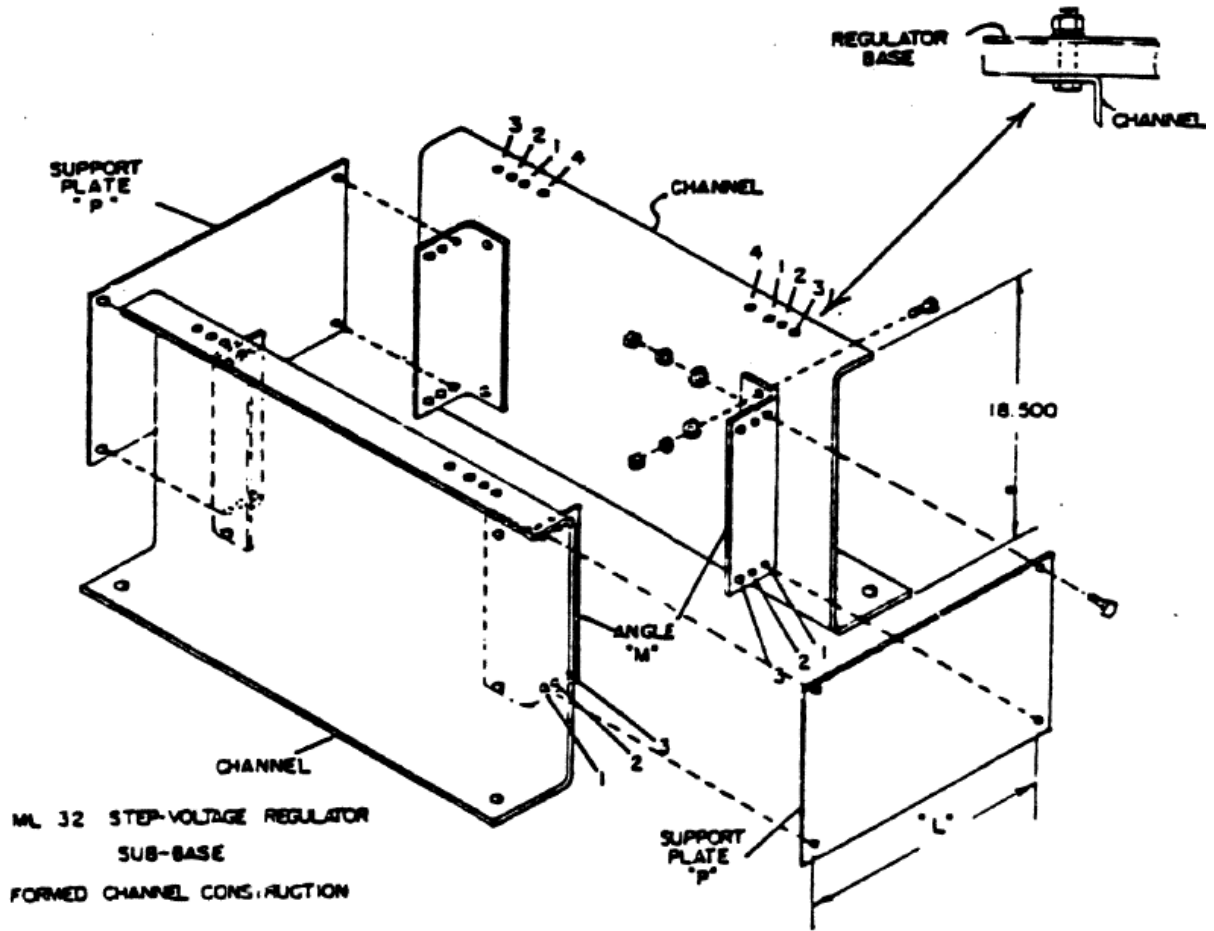
1. Determine dimensions between base mounting holes from the regulator outline. Refer to TABLE III for channel mounting holes to be used. See Sketch "D".
2. Assemble angle "M" to sides of channel.
3. Assemble support plate "P", refer to proper "L" dimension as called for in TABLE III.

TABLE III

18.-1/2"	FORMED CHANNEL SUB-BASE HEIGHT (NOT ADJUSTABLE HEIGHTS)
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REGULATOR BASE DIMENSIONS BETWEEN MOUNTING HOLES	CHANNEL MOUNTING HOLES	ANGLE "M" MOUNTING HOLES	SUPPORT PLATE "P" "L" (DIM.)
16"	4	3	6-1/2"
19"	1	1	13-1/2"
21"	2	2	13-1/2"
23"	3	3	13-1/2"





Sketch "D"





IV. Short Channel Construction  
With Cross Tie-Rods

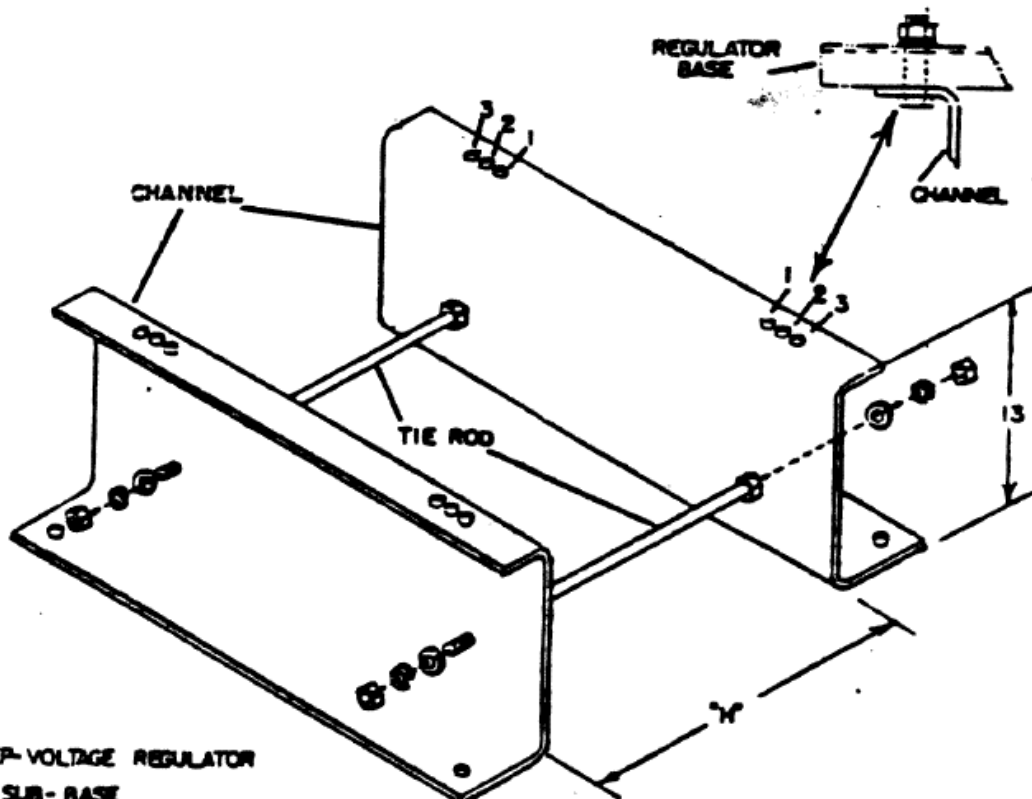
1. Determine dimensions between regulator base mounting holes from the regulator outline.
2. Refer to TABLE IV for channel mounting holes to be used to mate with the regulator base.
3. Refer to *Sketch "E"* for proper "H" width dimensions. Apply cross tie-rods as shown in *Sketch "E"* insert.

TABLE IV

13"	SHORT CHANNEL SUB-BASE (CROSS TIE-RODS) HEIGHT (NOT ADJUSTABLE HEIGHTS)
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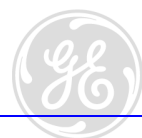
REGULATOR BASE DIMENSIONS BETWEEN MOUNTING HOLES	CHANNEL MOUNTING HOLES	ANGLE MOUNTING HOLES
19"	1	15-3/4"
21"	2	17-3/4"
23"	3	19-3/4"





ML 32 STEP-VOLTAGE REGULATOR  
SUB-BASE  
SHORT CHANNEL CONSTRUCTION  
WITH TIE RODS

Sketch "E"





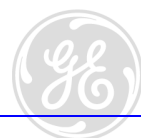
V. Short Channel Construction

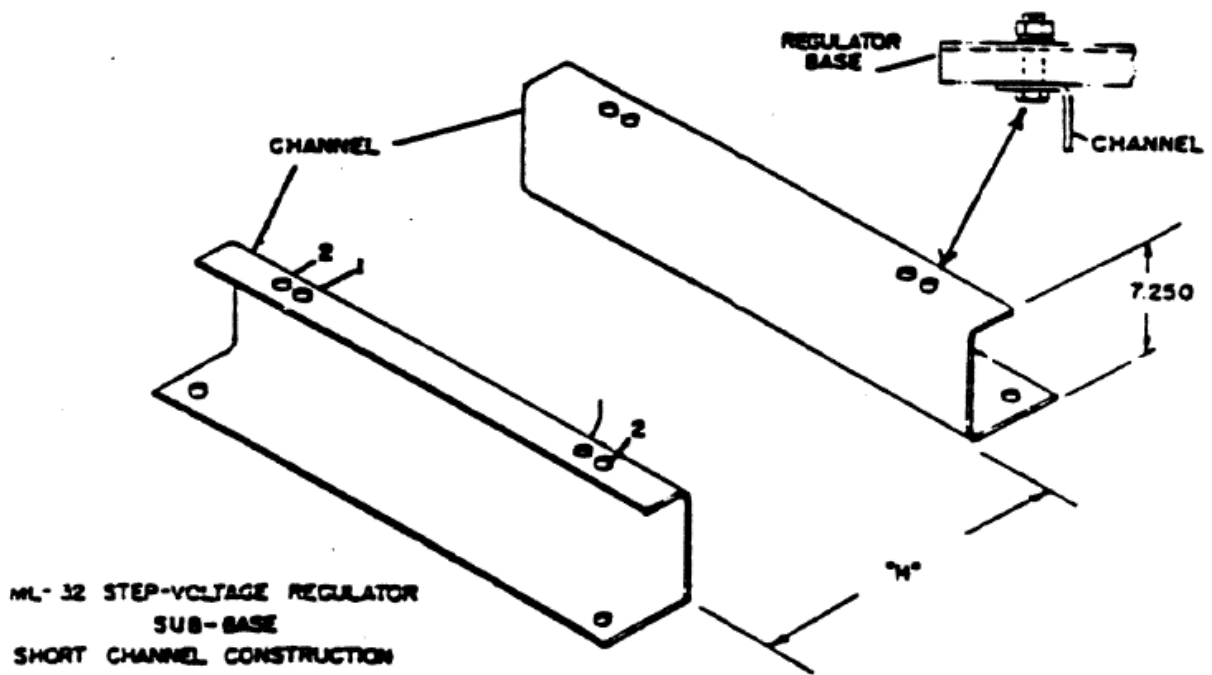
1. Determine dimensions between regulator base mounting holes from the regulator outline. Refer to TABLE V for channel mounting holes to be used to mate with regulator base and proper separation per "H" width dimensions. See Sketch "F".

TABLE V

7-1/4"	SHORT CHANNEL SUB-BASE HEIGHT (NOT ADJUSTABLE HEIGHTS)
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REGULATOR BASE DIMENSIONS BETWEEN MOUNTING HOLES	CHANNEL MOUNTING HOLES	ANGLE MOUNTING HOLES
21"	1	18"
23"	2	20"





Sketch "F"





## RENEWAL AND SPAER PARTS

Orders for renewal or supply parts should be placed with the nearest Apparatus Sales Office of the General Electric Company. Specify the Serial Number, the quantity required, description of the part and the Catalog or Drawing Number of the part whenever possible. Always specify the Serial Number appearing on nameplate.

Any Renewal parts supplied will be manufactured from the same or similar materials as those used originally. Successful operation of the renewal parts is contingent upon proper field assembly, the condition of the remaining parts, and a thorough drying cycle if moisture has entered the regulator.

## SERVICE

If you need to repair, recondition or rebuild any electrical apparatus, a General Electric Service Shop near you is available for work in the shop or on your premises. Latest factory methods and genuine G-E Renewal Parts are used to maintain the original performance of your General Electric equipment. For full information about these services, contact the nearest General Electric Service Shop or Apparatus Sales Office.

