

ERECTING FRAMES
JOB ASSEMBLED
DISTRIBUTING AND PROTECTOR FRAMES - COMMON SYSTEMS

CONTENTS

1.	GENERAL	3.5	Auxiliary Framing Supported Frames
1.1	Scope	3.6	Floor Supported Frames
1.2	Associated Information	3.7	Wall Supported Frames
1.3	Precautions	4.	MOUNTING ASSOCIATED PARTS
1.4	Arrangement of Tools	4.1	Cable Designation Boards
1.5	Verification	4.2	Cord Hooks and Number Plates
2.	INSTALLING EQUIPMENT	4.3	Distributing Rings and Pins
2.1	Tools	4.4	Fanning Strips
2.2	Supplies	4.5	Insulating Details and Fanning Rings
3.	ERECTING, PLACING AND FASTENING	4.6	Jack Boxes
3.1	Sequence of Operations	4.7	Connector or Protector Mountings
3.2	Preliminary Operations		and 444 Type Jacks
3.3	Location of Frames	5.	VERIFICATION ITEMS
3.4	Arrangement of Auxiliary Framing over Frames		

ASSOCIATED HANDBOOK INFORMATION REFERENCE CHART

Subject	Handbook	Section
Aligning of Frames - Common Requirements and Information	30	6A
Alignment of Distributing and Protector Frames	30	27H
Drilling Holes in Masonry and Installing Self-Drilling Anchors	30	9A
General Information	30	1B
General Safety Precautions	30	1A
Laying Out Floors - Common Requirements and Information	30	6A
Precautions Against Personal Injury, Equipment Damage and Service Interruptions	0	1-4; 10-13; 20;
Protector Blocks and Heat Coils, Mounting	30	52A, 52CO

1.	GENERAL	1.12	The requirements covered in this section shall be followed except as modified by applicable specifications and drawings. Framework shall be assembled and equipment installed as shown on specified assembly and equipment drawings furnished to the Job.
1.1	Scope		
1.11	This section covers the specific requirements and installing procedures for erecting, placing and loosely fastening all types of distributing and protector frames. The requirements and methods for the alignment of distributing frames are covered in Sections 27A and 27H.		

This section includes material from BSP's 800-614-154, 800-614-155, and 800-614-161.
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1.13 Refer to the associated handbook information reference for the location of information to which reference may be necessary when performing operations covered by this section.

1.14 The method of placing protector blocks and heat coils is covered in Sections 52B and 52C.

1.3 Precautions

1.31 General safety precautions against personal injury and equipment damage are outlined in Handbook 0 and Section 1A of this handbook and are to be observed at all times as they apply to the operations being performed. Specific precautions to be taken are covered in this section.

1.4 Arrangement of Tools

1.41 Prior to starting work operations covered by this section, an analysis should be made to determine the tools and supplies required. These should be obtained before going to the work location. The tools should be arranged at the work locations in the most convenient manner to minimize fatigue.

1.5 Verification

1.51 Items for the verification of the equipment installed by the operations covered in this section are listed at the end of this section.

1.511 The items in Section 19V also may be used as a self-check guide when performing operations covered by this section.

2. INSTALLING EQUIPMENT

2.1 Tools

2.11 The tools listed below will be required for operations covered by this section. Other tools available in the General Tool Kits also may be needed.

TS-2792 General Use Wrench Set
R-3070 Handle, Speed, Long (For use with R-2819 1/2" sq. drive WRENCH SOCKETS)
R-2819 Wrench, Sockets, Dets. 5 and 6.
R-3057 Wrench, Socket, Hex. Pivoted D.E. 5/8" - 7/8"

2.2 Supplies

2.21 Lumber for designation boards when purchased locally. See Paragraph 4.111.

3. ERECTING, PLACING AND FASTENING

3.1 Sequence of Installation

3.11 In order to perform the operations covered by this section, the following work should have been completed.

3.111 Auxiliary framing installed over the area where the frame is to be located.

NOTE: The requirements covering auxiliary framing over distributing frames are included in Paragraphs 3.1 to 3.44. See Handbook 30 Section 10 for installing methods.

3.112 Lines locating the base of the frame marked on the floor.

3.113 Self-Drilling Anchors installed in the floor.

3.2 Preliminary Operations

3.21 Before erecting frame verticals, the following operations, where required, may be more readily performed on the floor.

3.211 Clean holes for fastening protector ground bars and protector mountings by retapping when required.

3.212 Assemble fibre insulators, wooden spacing blocks, (every other cross arm) and fanning strips when furnished.

3.22 Distorted Framework: Occasionally distributing frame vertical assemblies may be received with excessive bows in the angle uprights or in the transverse arms, or both. The bowing may be the result of rough handling, jarring or bumping of the parts during transit. The assemblies are not crated or otherwise protected for shipment and the cost of providing such protection has not been

found warranted in view of the comparatively small amount of trouble encountered. Where vertical assemblies are found to be bowed to the extent that they cannot be properly assembled or present a poor workmanship appearance the parts should be straightened locally as found necessary. Usually bows not exceeding 5/16" (before the vertical is erected) in the total length of the parts are not objectionable. If the amount of straightening required is thought to be excessive the condition should be reported to the Field Service organization in accordance with the standard routine.

3.3 Location of Frames

- 3.31 The location of distributing and protector frames shall conform to the floor plan drawing for each installation.
- 3.32 Where limiting dimensions or tolerances are not specified the equipment shall be located to within such limits of the specified dimensions as will insure satisfactory functioning and workmanlike appearance of the equipment.
- 3.33 Floor angles of distributing frames shall be laid directly on the linoleum when the floor covering has been laid prior to the start of the job. Where a conspicuous space (approximately 3/16" or more) occurs between the bottom of the floor angles and the floor, the entire space shall, as far as practicable, be filled with wooden filler strips, cement grouting or an approved crack filler. See Handbook 30 Section 29 for specific procedures and requirements.

3.4 Arrangement of Auxiliary Framing Over Frames

- 3.41 The auxiliary framing used for supporting distributing and protector frames more than 11'-6" high shall be installed in accordance with the requirements for installing high-type auxiliary framing.

- 3.42 The requirements in this paragraph which apply to step-by-step offices with 11'-6" auxiliary framing are "A & M Only". In step-by-step offices where the auxiliary framing level is 11'-6" above the floor, the framing may be extended to include 11'-6" distributing frames. The level of the auxiliary framing over the distributing frames, such as the IDF and TDF, where a partial cross-arm extends the terminal strip on the vertical side to within 3" of the top, shall be raised as shown in Figure 13 to obtain the proper head room above the terminal strips on the vertical side of the distributing frame.

- 3.421 In step-by-step offices, where auxiliary framing is 11 ft. 8 in. or 11 ft. 9-1/2 in. above the floor, the distributing frames shall be attached to the auxiliary framing with V-bolts and clips, as shown in Fig. 7B or 7D.
- 3.43 In panel system offices where located in switchrooms, the low-type auxiliary framing serving the area over the dial frames may be extended without change in level to include the IDF.
- 3.44 Where 11'-6" distributing frames equipped with service observing jack boxes above the vertical side are supported by means of low-type auxiliary framing, the auxiliary framing shall be located to avoid interference with the mounting of the boxes.

3.5 Auxiliary Framing Supported Frames

- 3.51 Frames supported from high type auxiliary framing
- 3.511 For information and requirements covering fastening of distributing frames to high type auxiliary framing refer to Handbook 30 Section 10.
- 3.52 Fastening Floor Angle or Floor Supports
- 3.521 Distributing frames shall, unless otherwise specified, be fastened to the floor. A hold-down bolt shall be placed at each hole provided in the base angle unless otherwise specified on the framework assembly drawing. Figure 3 illustrates the method of fastening distributing frames to the floor.

3.5211 The line distributing frame for a No. 1 Crossbar office shall be bolted to the floor, as shown in Figure 3, with one floor bolt at each end unit and one at every third interdediate unit, approximately twelve bays apart.

3.5212 The low profile floor supported distributing frames shall be bolted to the floor, as shown in Figure 3, with one floor bolt at each end of the floor support at each vertical upright, two bolts per vertical in outside holes. See Figure 3A.

3.522 Floor angles or floor supports, which are normally drilled for floor bolts by the shop, may be used as templates for locating self-drilling anchors. Refer to Section 9A for method of installing self-drilling anchors.

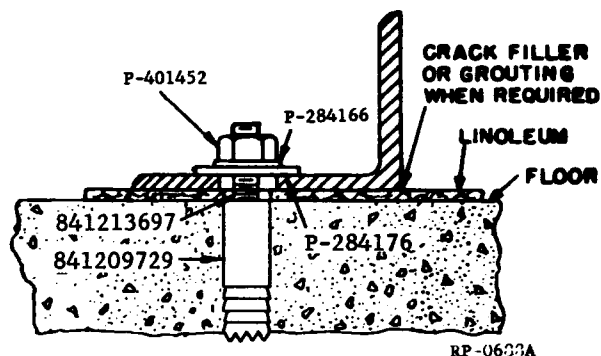
3.523 When it is necessary to install self-drilling anchors for floor bolts before the floor angles are received on the job, the dimensions for the spacing of the floor bolts are shown on drawing H-582-211 for crossbar and panel frames, and on drawing H-249-139 for manual and toll frames.

3.524 Where the floor angles of distributing frames or protector frames are to be located on top of the cable slot fascia angles and the holes in the frame floor angle do not coincide with the tapped holes in the fascia angles, the frame floor angles should be redrilled to match.

3.5241 In cases where the frame floor angles is too short to engage with the tapped holes in the fascial angle, as for example, the floor angle of a one, two or three vertical framework unit, the fascia angle should be drilled and tapped to match the holes in the frame floor angle.

3.53 Fastening Top Angles

3.531 The top angles of distributing frames with individual verticals shall be secured to the auxilliary framing as shown in Figures 6 and 13.



NOTE 1. WHEN THE EQUIPMENT IS TO BE FASTENED TO WOODEN FLOORS, SUBSTITUTE APPROPRIATE WOOD OR LAG SCREWS (1 1/4 OR 1 1/2 LONG) FOR THE STUD AND SELFDRILLING ANCHOR.

FIG. 3 FASTENING DISTRIBUTING FRAMES HAVING ANGLE BASE CONSTRUCTION (PAR. 3.521)

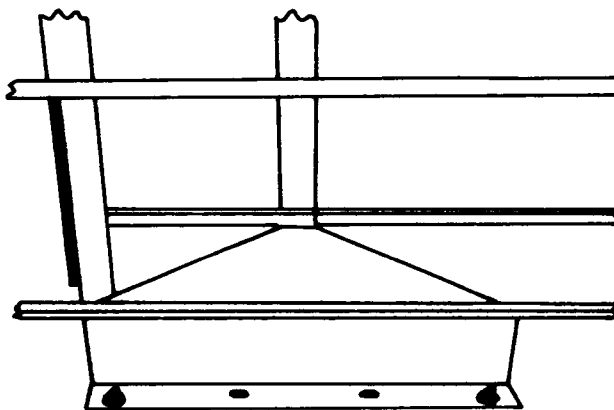


FIG. 3A FASTENING LOW PROFILE DISTRIBUTING FRAME - FLOOR SUPPORTED (PAR. 3.5212)

- | | |
|--|---|
| <p>3.5311 Use R-3057 Double Ended 5/8"-7/8" Socket Wrench for tightening the 1/2" hexagon nuts on bolts securing the top angles.</p> <p>3.532 The alignment of the top angle in relation with the bottom angle should be established as covered in Handbook 30, Section 27H.</p> <p>3.533 When the angle is welded to shop assembled units, the "V" bolts should be assembled on the top angle, as shown in Figures 6 and 13, after the units are erected.</p> <p>3.534 In step-by-step offices where auxiliary framing is 11'-8" or 11'-9-1/2" above the floor, the distributing frames shall be attached to the auxiliary framing with "V" bolts and clips, as shown in Figure 7B or Figure 7E (or Figure 7D where it is necessary to offset the "V" Bolt to clear frame upright).</p> <p>3.535 Where distributing frames with single top angles, such as the LDF, are installed in a No. 1 Crossbar office having auxiliary framing at the 11'-8" level, the frames shall be attached to the auxiliary framing 1/2" "V" bolts, clips and channel spacer as shown in Figure 7A (or Figure 7C where it is necessary to offset "V" bolt to clear frame upright).</p> <p>3.536 Where distributing frames with single top angles are installed in No. 5 Crossbar offices having auxiliary framing of the usual 11'-9-1/2" level, the frames shall be attached to the framing, using "V" bolts, clips, etc., as shown in Figure 7B (or Figure 7D where it is necessary to offset "V" bolt to clear frame upright).</p> <p>3.537 Where ESS No. 101 control unit frames are installed in an office having 11'-9-1/2" Auxiliary framing the frames shall be attached to the auxiliary framing as shown on ED-1H420-70.</p> | <p>3.54 <u>Erecting Verticals</u></p> <p>3.541 When individual distributing frame vertical units are furnished, erecting the two end verticals of a frame unit and fastening them to the floor and top angles will insure that the top angles are located at the proper height and alignment. Other verticals may then be erected and secured.</p> <p>3.5411 To stabilize verticals while being raised, place end of vertical against floor angle and base of preceding verticals.</p> <p>3.5412 Use R-2819 socket wrench, Det. 8, for tightening the 3/8" nuts on the cap screws at top and bottom of verticals.</p> <p>3.5413 The common requirements and information for aligning distributing frame verticals are covered in Handbook 30, Section 27H.</p> <p>3.542 An MDF may be supported directly from ceiling inserts where no high type auxiliary framing bars or channels are otherwise required for the support of mezzanine platforms, ladder tracks or cable rack. Brace rods shall not exceed 4' in length and shall be evenly distributed on both sides of the frame.</p> <p>3.543 Where line distributing frames (No. 1 Crossbar) are placed back to back it may be found difficult to install some screws used for bolting adjacent units together through the gusset plates of the guard rails. Screws may be omitted from the gusset plates under the rear guard rail if an expansion bolt is used for anchoring each unit of the line-up to the floor.</p> <p>3.544 Adjacent units of line distributing frames shall be bolted through the holes in the guard rail gusset plates, using 3/8"-16 x 1" R.H.M. screws, hexagonal nuts and washers, as required.</p> <p>3.545 Support double sided protector frames only on high side (located farthest from the associated main distributing frame).</p> |
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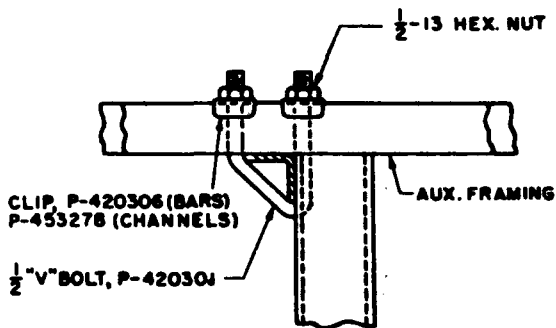


FIG. 6 DISTRIBUTING FRAME FASTENED
DIRECTLY TO AUXILIARY FRAMING
(PARS. 3.531, 3.533)

- 3.546 Temporary bracing of distributing frames that are located between the rows of frames and are to be supported by the low type auxiliary framing will not be necessary if the installation of these frames is deferred until the framing bars have been installed over the locations of the frames. Distributing frames located next to a wall and which are to be supported by the low type auxiliary framing will require temporary bracing if erected before the adjacent frames.
- 3.547 The vertical stiffening bars shown on assembly drawings for distributing frames of riveted construction are omitted by the shop from frame verticals which are welded.

3.548 Retouch paint when required.

3.55 Assembling Tie Bars

- 3.551 Tie bars shall be assembled on frame uprights with the offset ends located in the direction shown on the assembly drawings for the particular frame.
- 3.552 Assemble tie bars so that the mounting hole is nearest the top edge of the bar as shown in Figure 14, Sketch A.

- 3.553 Tighten the nuts (P-160120) on the cap screws (P-125775) used to secure tie bars with the R-3070 Speeder Handle and Wrench socket. These nuts are 3/8"-16 and measure 11/16" across the flats.

3.6 Floor Supported Frames

- 3.61 Locate floor supported distributing frames as shown on the floor plan drawing and secure them to the floor with self-drilling anchors or lag screws depending on whether the floor is concrete or wood construction. A bolt or lag screw should be placed at each hole provided in the base angle unless otherwise specified on drawing.
- 3.62 Self-drilling anchors for concrete floors or lag screws (3/8" x 2") for wood floors are usually furnished with floor supported frames. Bolts or screws not required should be discarded.
- 3.63 Frames shall be plumb within the limits covered in Section 27H. Where required, shims of the proper thickness shall be used.
- 3.64 Floor supported frames are usually supported also be a cable ack running lengthwise and fastened by "J" bolts to the top angle. Low profile distributing frames usually do not require such additional support.
- 3.641 In the case of single sided frames the "J" bolts are secured to bars welded flatwise to the top angle. One bar per unit is provided. A cross-aisle cable rack may connect at right angles to the cable rack over the frame. For additional rigidity, if required, a brace to the wall or adjacent row of frames may be installed. Holes are provided in the top angle for attaching this brace.

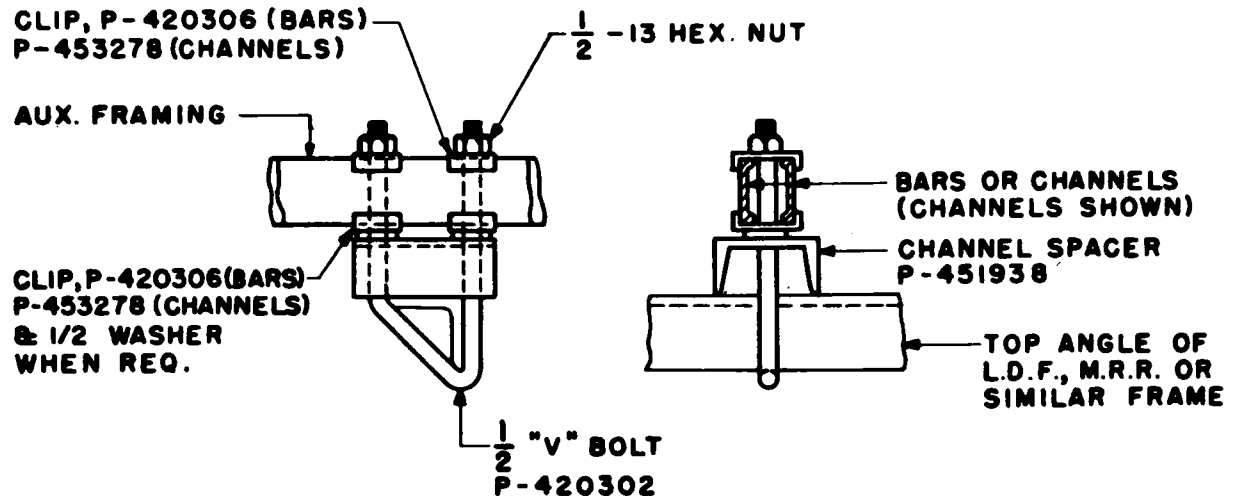


FIG. 7A SINGLE TOP ANGLE DISTRIBUTING FRAMES IN NO. 1 CROSSBAR OFFICES FASTENED TO 11' -8" AUXILIARY FRAMING (PAR. 3.535)

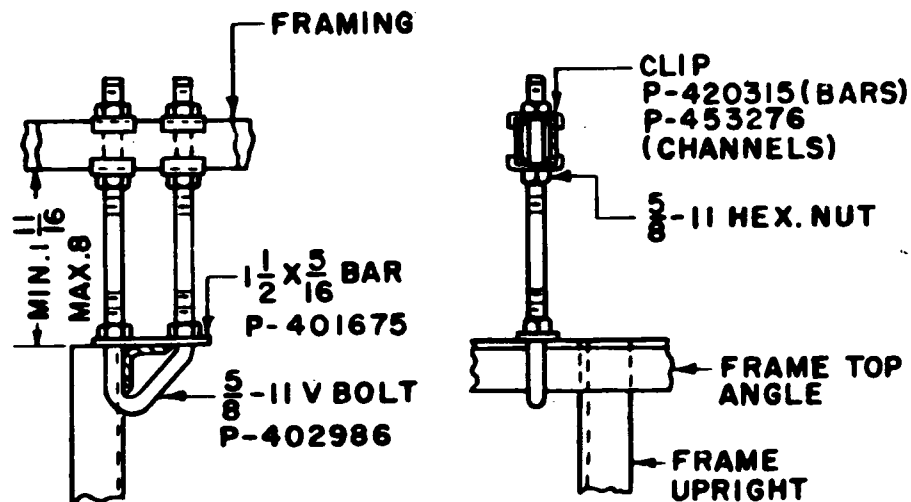


FIG. 7B "V"-BOLT FRAME SUPPORT ASSEMBLY FOR DISTRIBUTING FRAMES IN NO. 5 CROSSBAR OFFICES (PAR. 3.534, 3.536)

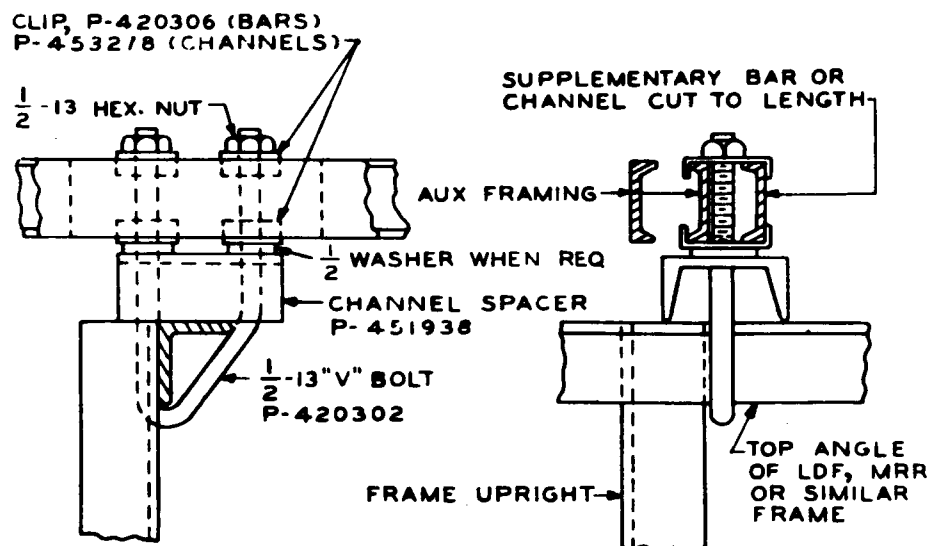


FIG. 7C "V" BOLT FRAME SUPPORT - "V" BOLT OFFSET TO CLEAR FRAME UPRIGHT (PAR. 3.535)

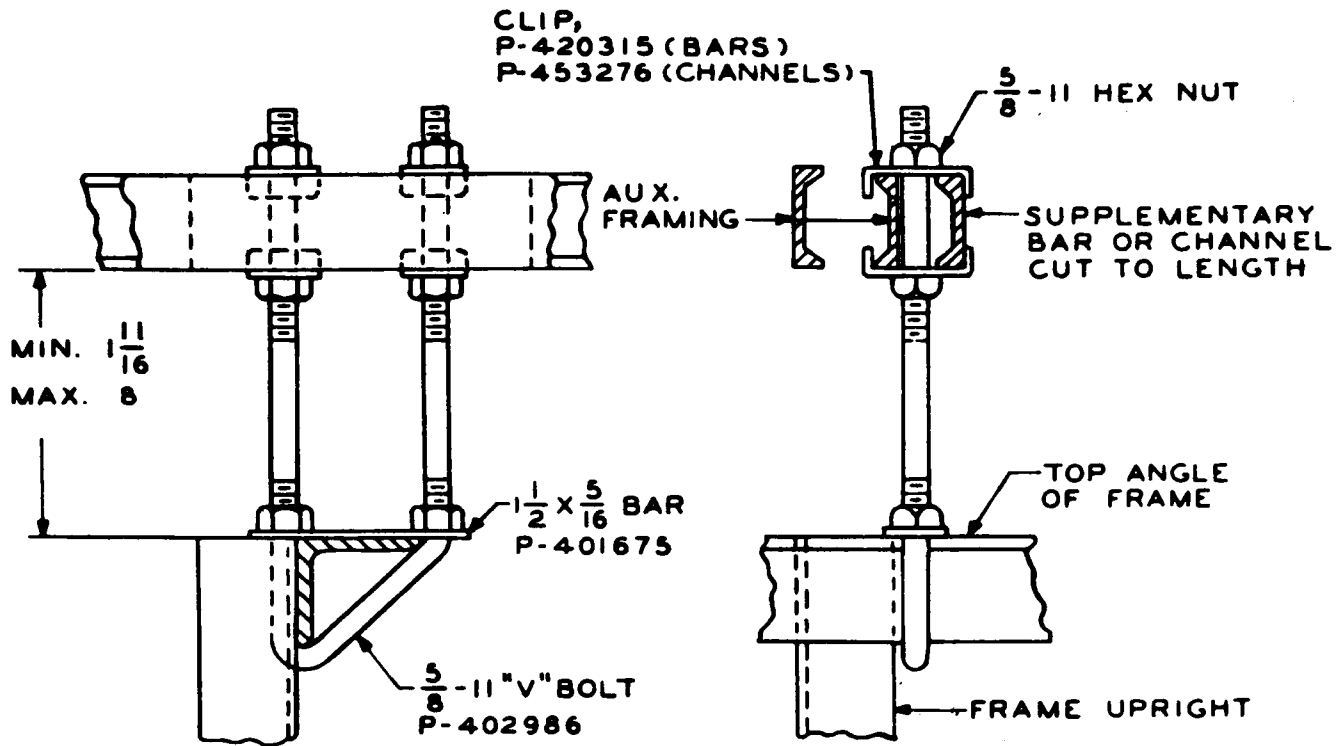


FIG. 7D "V" BOLT FRAME SUPPORT ' "V" BOLT OFFSET TO CLEAR FRAME UPRIGHT (PAR. 3.534 and 3.536)

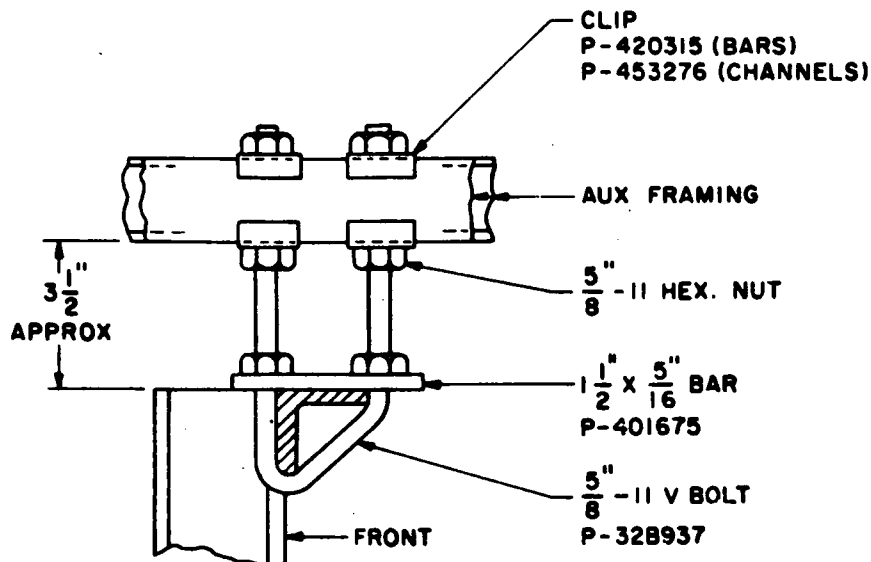


FIG. 7E AUXILIARY FRAMING FASTENED TO SINGLE TOP-ANGLE FRAMES - 11'-9-1/2" FRAMING (PAR. 3.534)

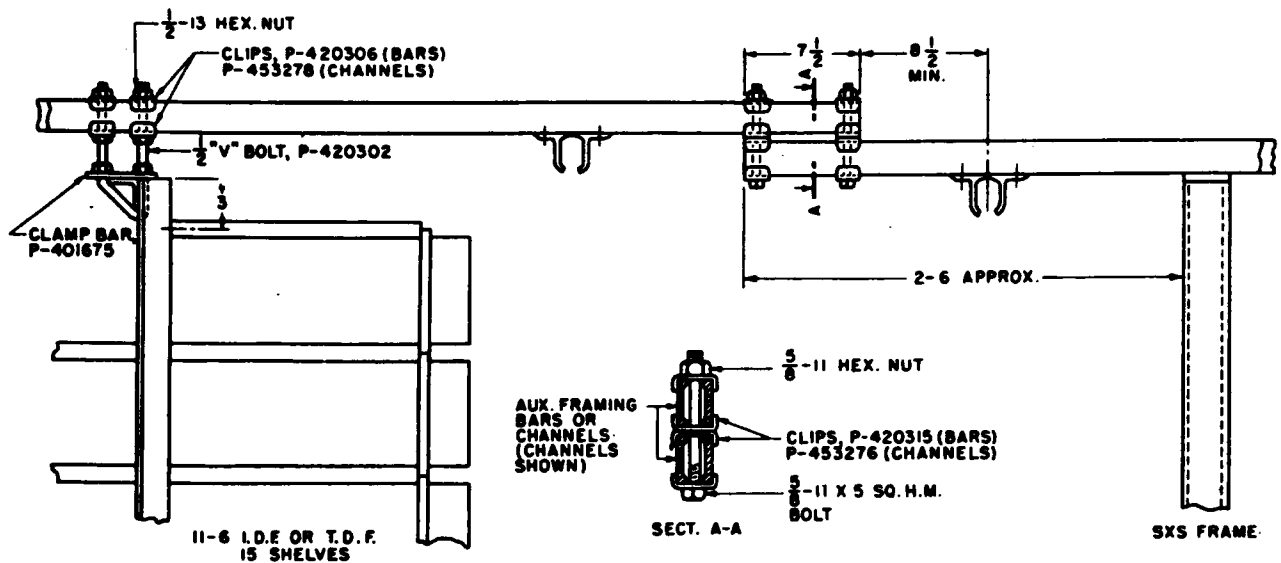
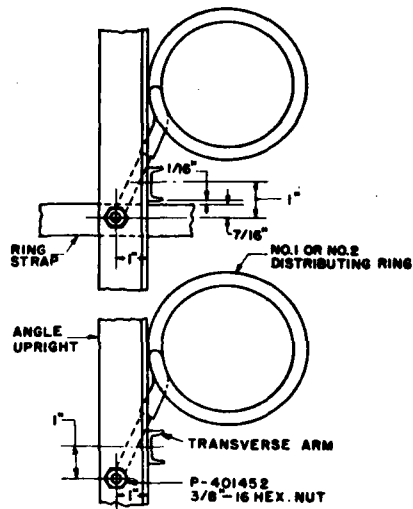


FIG. 13 AUXILIARY FRAMING RAISED AND EXTENDED OVER 11'-6" STEP-BY-STEP DISTRIBUTING FRAMES (PARS. 3.42, 3.531, 3.533)

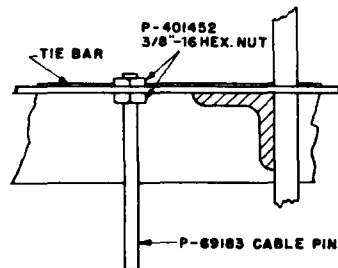
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| <p>3.65 Retouch paint when required.</p> <p>3.7 <u>Wall Supported Frames</u></p> <p>3.71 In wood joist constructed buildings, fasten wooden strips approximately 2" thick to the wall located horizontally and attach the frame uprights to these strips. Strips should be 2" x 4", clear pin lumber with smooth surfaces. When locating the uprights measure from the face of the wooden strips instead of from the wall.</p> <p>3.72 Upright details may be used as templates for locating bolt holes in floor and wall.</p> <p>3.73 In buildings of brick or concrete construction frame uprights shall be blocked out from the wall to compensate for any irregularities in the wall line.</p> <p>3.74 Retouch paint when required.</p> | <p>4. <u>MOUNTING ASSOCIATED PARTS</u></p> <p>4.1 <u>Cable Designation Boards</u></p> <p>4.11 The cable designation board at the top of the protector frame and distributing frame shall be placed at an angle of 45 degrees, unless otherwise specified. Bend designation board supports (P-403583) as required. The space at joints in designation boards shall not exceed 1/8".</p> <p>4.111 Designation boards should be made from white pine or white wood 6" x 1/2", minimum finished dimensions 5-1/2" x 7/16", purchased locally. 3/4" board may be used when 1/2" is not available. A length of approximately 10' is usually preferable from the standpoint of quality and economy.</p> <p>4.2 <u>Cord Hooks and Cord Number Plates</u></p> <p>4.21 Cord hooks shall be securely fastened so as not to loosen under the strain caused by the cords.</p> |
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- 4.22 The 145 type number plates used for designating service observing, plugging-up, test line, and miscellaneous cords at distributing frames shall be attached to the cords by passing the stay cord through the ring of the number plate. Where the cord is not provided with a stay cord, the number plate shall be tied to the cord as near the end as practicable with 12 twine using a slip loop around the cord and secured by a square knot through the ring of the number plate.
- 4.3 Distributing Rings and Pins
- 4.31 The method of mounting various types of distributing rings and pins are shown in Figure 14, Sketches A to E. Rings are not included in the framework groups shown on assembly drawings but are ordered separately. Rings are ordered for the right end vertical only when specified.
- 4.32 No. 10B (Double) distributing rings, designed for verticals on 6-1/2" centers, are used throughout except on initial frames with an even number of verticals or on additions with an add number of verticals where No. 9A (Single) rings will be required for one of the verticals.
- 4.33 The most convenient and economical method of mounting Nos. 9A and 10B distributing rings, shown in Figure 14, Sketch D, is to secure them all in place and tighten the nuts as much as possible by hand. When securing the rings by hand, run the nut on far enough to insure that the shoulder of the ring is well engaged with the face of the frame vertical. The shoulder should hold the ring in its proper position when the nut is fully tightened.
- 4.34 Tighten the nuts on the Nos. 9A and 10A distributing rings with the R-3070 Long Speeder Handle and a R-2819 Wrench Socket (Det. 5). These rings are equipped with 3/8"-16 nuts (P-401452) which measure 5/8" across the flats.
- 4.35 Nos. 1 and 2 distributing rings are rated "A & M" and are only specified for use on existing frames and additions. No. 3 rings are provided for use only on verticals of toll distributing frames having terminal strips located in a vertical position.
- 4.36 Distributing rings having 3/8"-16 nuts (P-160120) which measure 11/16" across the flats, may be tightened with the R-3070 Speeder Handle and Wrench Socket.
- 4.37 Distributing rings shall be installed for the right end vertical, facing the vertical side of a frame, only where this vertical is equipped.
- 4.38 The insulation of the ring portion of distributing rings shall be free of breaks against which cross-connecting wire may be drawn.
- 4.39 The insulation of distributing rings shall not be painted.
- 4.4 Fanning Strips
- 4.41 When mounting fanning strips on MDF, CDF and protector frames assemble clamps as shown in Figure 15. Where clamps can be drawn together so they touch due to framework variations, the cross-arms shall be wrapped with 1" strips of 1/64" gray vulcanized fibre to widen the gap between the clamps, as needed, to obtain the proper clamping action. In no case shall the clamps be tightened so that wood screw P-160554 is withdrawn from the fanning strip.
- 4.42 Clamp the insulators and spacing blocks in place with the fanning strips.
- 4.421 Where wood screws are used to fasten fanning strips, soap applied to the screws will aid in tightening them.

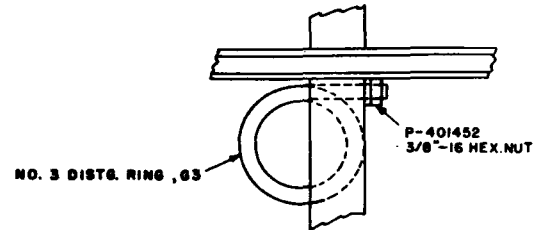
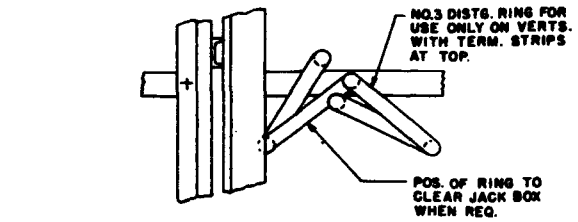


METHOD OF MOUNTING
DISTRIBUTING RINGS NOS. 1 & 2
SKETCH D (ABM ONLY)
REPLACED BY SKETCH D

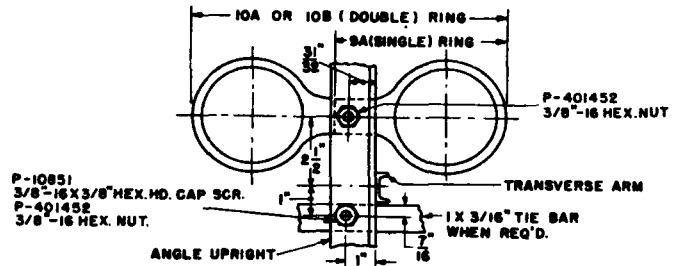
SKETCH A



SKETCH C

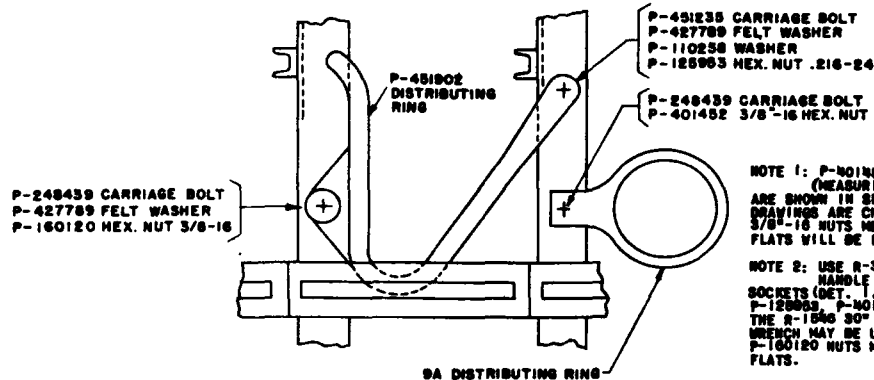


SKETCH B



METHOD OF MOUNTING
9A, 10A & 10B DISTRIBUTING RINGS
AND HORIZONTAL TIE BAR

SKETCH D



METHOD OF MOUNTING CLOSED
DISTRIBUTING RING WHEN TAKING
THE PLACE OF A "V" TYPE RING

SKETCH E

NOTE 1: P-401452, 3/8-16 HEX. NUTS (MEASURING 5/8" ACROSS FLATS) ARE SHOWN IN SKETCHES A TO E. UNTIL DRAWINGS ARE CHANGED, P-160120 3/8-16 NUTS MEASURING 11/16" ACROSS FLATS WILL BE FURNISHED.

NOTE 2: USE R-3070 LONG SPEEDER HANDLE WITH R-2819 WRENCH SOCKETS (DET. 1, 5 OR 6) FOR TIGHTENING P-125953, P-401452, OR P-160120 NUTS. THE R-1546 30" LONG SPEEDER HANDLE WRENCH MAY BE USED ONLY TO TIGHTEN P-160120 NUTS MEASURING 11/16" ACROSS FLATS.

(RP-15848-0)

FIG. 14 MOUNTING DISTRIBUTING RINGS, TIE BARS AND CABLE PINS (PAR. 3.552, 4.31, 4.33)

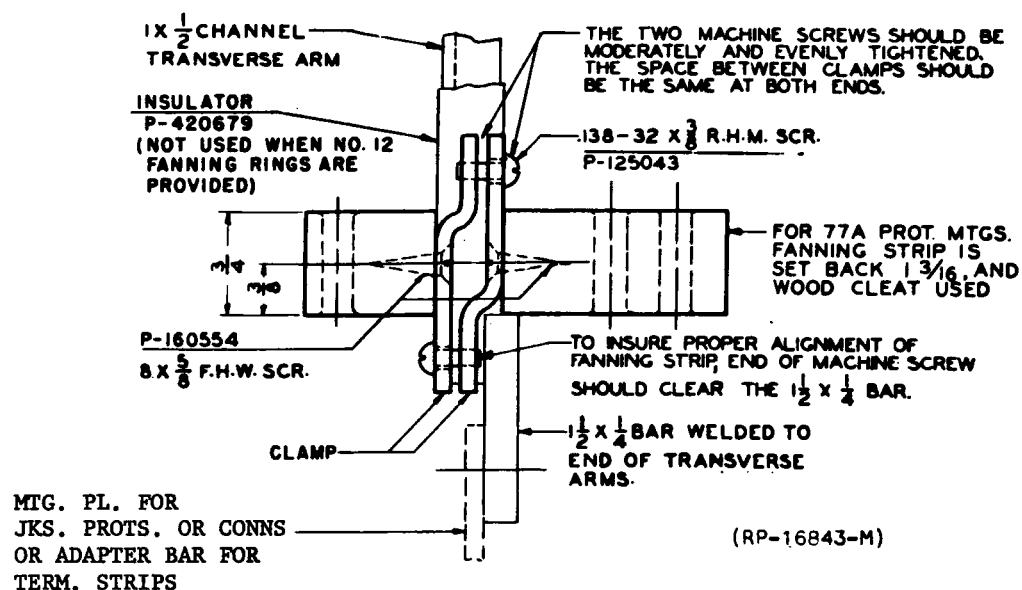


FIG. 15 ASSEMBLING CLAMP FOR FANNING STRIP
(PAR. 4.41)

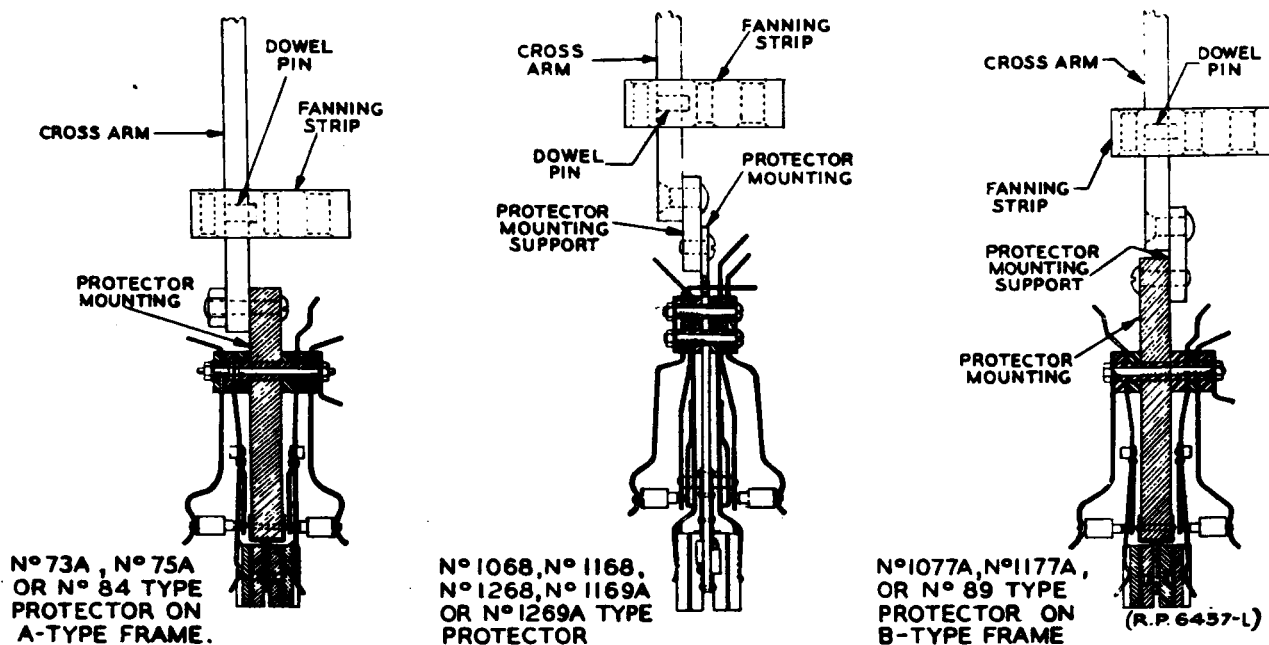


FIG. 16 METHOD OF MOUNTING PROTECTORS ON FRAMES WHERE MOUNTING BARS ARE RIVETED (PAR. 4.75)

- 4.5 Insulating Details and Fanning Rings
- 4.51 Fiber insulating details are not required over transverse arms of MDF's where No. 12 type distributing rings are furnished.
- 4.511 When fiber insulating details (P-420679) are provided instead of distributing rings, they should be installed when the fanning strips are assembled.
- 4.6 Jack Boxes
- 4.61 Jack boxes shall be securely fastened in place and shall not project into the cross connection or cabling space more than the specified dimension. Jack boxes shall be mounted so as to be readily accessible for maintenance purposes.
- 4.62 Supports should be mounted on the verticals prior to placing the jack boxes on the mountings.
- 4.7 Protector or Connector Mountings and 444 Type Jacks
- 4.71 Protector mountings shall be so secured that good electrical contact is made between the protector mounting and the mounting support. The tapped holes in the mounting support should be free of paint or other material. The screws securing the mounting to the mounting supports shall be securely tightened and the screw heads shall seat on a clean surface.
- 4.711 To insure that the holes in the mounting supports are free of paint and other material, retap the holes at the time the supports are equipped with protectors, connectors or jacks.
- 4.712 Clean mountings to insure good electrical contact with mounting support and screw heads, Galvanized finish mountings need not be scraped.
- 4.72 The framework contact surface of protector mountings should be clean, but the finish need not be scraped, regardless of whether metallic or non-metallic finish is used, due to the fact that good electrical contact will be made through the screw assemblies.
- 4.73 The top horizontal protector ground bar of the MDF should be securely fastened to the framework or vertical protector supports and all connections shall be treated as current carrying ones with the surfaces properly prepared. On the other hand the contact surfaces between the bottom ground bus bar and the framework should be clean but need not be treated as current carrying.
- 4.74 444-type jacks should be securely fastened to the support bar on the frame. Separation between adjacent clamping plates of adjacent jacks should not be less than 1/16" or more than 5/64", measured near the front, solid portion of the plate. To align jacks vertically clamping plate P-466179 should be used. To mount this plate, the installer will remove the nut and washer on each of the two clamping screws on the jack, put the plate in position and return and tighten the nuts. The washers taken off will not be reused.
- 4.741 Assembly screws and nuts on 444A and B jacks are tightly fastened by the use of high pressure in the shop. When necessary to remove them on the job use a "C" clamp or some similar device to compress the jacks while loosening the screws.
- 4.75 Mount protectors on old type distributing frames where the mounting bars are riveted as shown in Figure 16.
- 4.76 Mount protectors, connectors, or 444 type jacks on latest type distributing frames as shown on the frame assembly drawings.
- 4.77 Cable forms of outside cables should be in place before the protector mountings to insure ample working space.

5. VERIFICATION ITEMS

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS		REFERENCE	
		Par.No.	Fig.No.
5.1	<u>Erecting, Placing and Fastening Frames</u>		
5.11	<u>Location of Frames</u>		
5.111	Frames located to conform with dimensions on floor plan drawing specified for the particular job.	3.31	
5.112	Frames located to insure satisfactory functioning and workmanlike appearance where no limiting dimensions are specified.	3.32	
5.113	Floor angles of frames laid directly on linoleum when floor covering was laid prior to start of job.	3.33	
5.12	<u>Arrangement of Auxiliary Framing Over Frames</u>		
5.121	Frames more than 11'-6" high installed in accordance with requirement for high-type auxiliary framing.	3.41	
5.122	Frames 11'-6" high with service observing jack boxes supported by low-type auxiliary framing have auxiliary framing located to avoid jack boxes.	3.44	
5.123	SxS Offices - Auxiliary framing raised to extend over distributing frames.	3.42	13
5.124	Panel Offices - Low-type auxiliary framing extended without change in level in offices having 11'-6" I.D.F. located in switchrooms.	3.43	
5.13	<u>Auxiliary Framing Supported Frames</u>		
5.131	Frames fastened to floor unless otherwise specified.	3.521	
5.132	Hold-down bolt placed at each hole provided in base unless otherwise specified.	3.521	3
5.133	Frame for No. 1 Crossbar office bolted to floor at each end unit and one at every third intermediate unit, approximately twelve bays apart.	3.5211	3
5.134	Top angles of frames with individual verticals secured to auxiliary framing as shown.	3.531	6, 13
5.135	When top angle is welded to shop assembled units, V-bolts assembled on top angle as shown.	3.533	6, 13
5.136	Frames with single top angles installed in SxS Offices having auxiliary framing at 11'-8" or 11'-9-1/2" level, attached to auxiliary framing with V-bolts, clips, etc.	3.534	7B,7D,7E
5.137	Frames with single top angles, such as LDF in No. 1 Crossbar offices, and having auxiliary framing at 11'-8" or 11'-9" level attached to auxiliary framing with 1/2" V-bolts, clips and channel spaces.	3.535	7A,7C

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS		REFERENCE	
		Par.No.	Fig.No.
5.138	Frames with single top angles installed in No. 5 Crossbar offices having auxiliary framing at 11'-9-1/2" level, attached to auxiliary framing with V-bolts, clips, etc.	3.536	7B
5.14	<u>Erection of Frames</u>		
5.141	Brace rods for M.D.F. frames supported directly from ceiling inserts not over 4' in length and evenly distributed on both sides of frames.	3.542	
5.142	Adjacent units of L.D.F. bolted through holes in guard rail gusset plates.	3.544	
5.143	Double sided protector frame supported only on high side. (Located farthest from associated M.D.F.)	3.545	
5.15	<u>Assembly of Tie Bars</u>		
5.151	Correctly spaced.	3.551	
5.152	Offset ends to left (facing horizontal side).	3.551	
5.153	Mounting holes nearest top edge of strip.	3.552	
5.16	<u>Floor Supported Frames</u>		
5.161	Located as shown on floor plan drawing.	3.61	
5.162	Secured with self-drilling anchors and studs or screw - one in each hole in base unless otherwise specified.	3.61	
5.163	Plumb within limits. Shims of proper thickness used where required.	3.63	
5.17	<u>Wall Supported Frames</u>		
5.171	In wood joist constructed building, uprights fastened to wood strips approximately 2" thick.	3.71	
5.172	In brick or concrete constructed building, uprights blocked out from wall to compensate for any irregularities in wall line.	3.73	
5.2	<u>Mounting Associated Parts</u>		
5.21	<u>Cable Designation Boards</u>		
5.211	Assembled in accordance with assembly drawing.	4.11	
5.212	Made of white pine or white wood 6" x 1/2".	4.111	
5.213	Board supported at 45° angle unless otherwise specified.	4.11	
5.22	<u>Cord Hooks and Cord Number Plates</u>		
5.221	Securely fastened so as not to loosen under strain caused by cords.	4.21	
5.222	145-type number plates attached by passing stay cord through ring of plate unless otherwise specified.	4.22	

VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS		REFERENCE	
		Par.No.	Fig.No.
5.23	<u>Distributing Rings and Pins</u>		
5.231	Proper code of ring or pin installed as specified	4.31	3
5.232	Shoulder of ring well engaged with face of frame vertical.	4.32	
5.233	Rings installed for right end vertical facing vertical side of frame, only where this vertical is equipped.	4.37	
5.234	Insulation on ring portion free of breaks.	4.38	
5.235	Insulation not painted.	4.39	
5.24	<u>Fanning Strips</u>		
5.241	Assembled as shown in figure.	4.41	15
5.242	Cross-arms wrapped with fiber where necessary to prevent clamps from being drawn together.	4.41	
5.243	Clamps not tightened so wood screw is withdrawn from fanning strip.	4.41	
5.244	Insulators and spacing blocks clamped in place as shown on assembly drawing.	4.42	
5.26	<u>Insulating Details and Distributing Rings</u>		
5.261	Insulating details installed only when fanning rings are not furnished.	4.51	
5.27	<u>Jack Boxes</u>		
5.271	Securely fastened and accessible for maintenance.	4.61	
5.28	<u>Protector or Connector Mountings and 444 Type Jacks</u>		
5.281	Framework contact surface clean.	4.71, 4.712	
5.282(P)	Paint and other material removed from tapped holes in protector mounting supports at the time protectors or jacks are mounted.	4.711	
5.283	Mounting screws seated on clean surface and tight.	4.71	
5.284	444-type jacks securely fastened and correctly aligned.	4.74, 4.76	
5.285	Protectors on old style riveted bar distributing frame mounted as shown in figure.	4.75	16

No arrowed lines due to extensive revision.

[Vertical lines at side of paragraph
indicates requirements.

Engineering Planning Manager
Common Installation and Services

Reason for Reissue:

To update information.

ERECTING FRAMES
SHOP EQUIPPED CABLE DUCT TYPE BAYS
SINGLE BAY FRAMEWORKS, IN-PLACE

CONTENTS

1. GENERAL

- 1.1 Scope
- 1.2 Associated Information.

2. INSTALLING EQUIPMENT

3. FLOOR SUPPORTED FRAMES

4. 9'-0", 10'-6" AND 11'-6" FRAMES

- 4.1 Transporting to Final Location
- 4.2 Supporting Chain Hoist
- 4.3 Preparing R-3787 Hoisting Fixture
- 4.4 Attaching Hoisting Fixture
- 4.5 Erecting Frames
- 4.6 Fastening to Superstructure

1. GENERAL

1.1 Scope

1.11 This section describes installation procedures for the in-place erection of single bay, cable duct type frames. These frames are shop equipped, with uprights having either equal or unequal flanges.

1.12 The equal flange cable duct type frameworks covered by this section are 11'-6", 10'-6" and 9'-0" per ED-63409-50, ED-63408-50, and ED-63460-50 respectively. The floor supported models are 7'-0" and 6'-0" per ED-92712-70, ED-50172-50, and ED-92523-50.

1.13 The unequal flange cable duct type frameworks covered by this section are the 11'-6", 10'-6" and 9'-0" single bay frames per ED-97170-50 and 7'-0" single bay frames per ED-97162-50.

1.2 Associated Information

1.21 Specifications, floor plan and framework drawings furnished the job.

1.22 Handbook 30, Section 19E2 which covers laying out floors, fastening and aligning frames, installing end guards, etc. for cable duct type frames.

1.23 Handbook 30, Section 19F1 which supplements Section 19E2 for laying out floors under unequal flange frames.

2. INSTALLING EQUIPMENT

2.1 Tools

2.11 The tools listed below will be required for the operations listed in this section. Other tools, available in the General Tool Kits, may also be needed.

Kit 65	Ceiling Supported Hoisting Kit
Kit 68	Duct Type Bay In-place Erecting Kit
R-2384	Bar, Pinch, 30"
R-2599	Truck, Dolly
R-1605	Truck, Hand

3. FLOOR SUPPORTED FRAMES

3.1 Shop equipped floor supported 6'-0" and 7'-0" bays are packed and shipped in either an upright position or on their back. When a bay is received on the job it should be unpacked outside the building or in an area designated by the Telephone Company. Labor contracts permitting, the truckmen can then move the bay to its approximate location in the lineup.

4. 9'-0", 10'-6" AND 11'-6" FRAMES

4.1 Transporting to Final Location

4.11 As the bays are hoisted into the building, they should be placed on the R-2599 dolly truck and moved into position for erecting.

4.12 Turning bays around lineup corners may require erecting the R-3431 portable hoisting bars in the center of the intersection. The R-3787 fixture is attached to the bay and used to hoist and turn the bay to its new direction of travel.

4.2 Supporting Chain Hoist

4.21 When the bay has the top angle pointed up, the bars should be located so that the center of the "U" bolt will be in the aisle approximately 14" in front of the junction pipe.

4.22 When the bay has no top angle or if the top angle points down, the bars should be located in the aisle opposite the junction pipe and behind the bay position to be entered.

4.221 Allow approximately 10" lateral clearance between the center of the "U" bolt and the closest equipment or guard rail (sides B or C) of the lineup to be entered.

4.23 After the portable hoisting bar has been installed, attach the R-3764 "U" bolt and hoist as shown in Figure 1. The "U" bolt should be in its highest possible position.

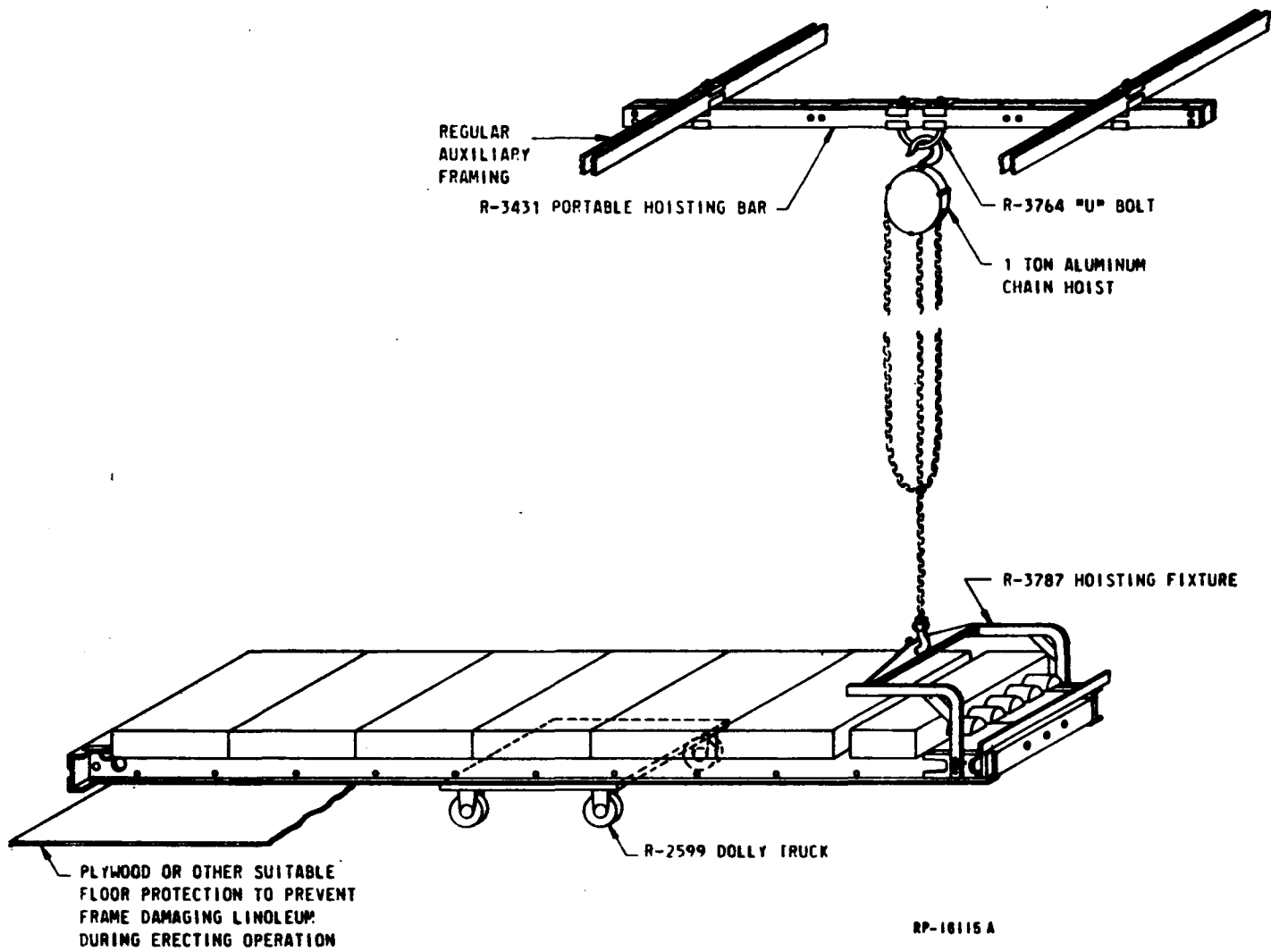


FIG. 1 TYPICAL SHOP EQUIPPED BAY IN POSITION FOR ERECTING (PARS. 4.2, 4.3)

4.3 Preparing the R-3787 Hoisting Fixture

4.31 The R-3787 fixture has been designed for the in-place erection of equal and unequal flange, 9'-0", 10'-6", and 11'-6" single, shop equipped duct type frames containing either 19" or 23" mounting plates.

CAUTION: Do not use this fixture for loads over 1600 lbs.

4.32 Because of the three possible frame widths, adjustments of this fixture may be required on the job. Items which require removal or change of position are; spreader ends, block adapters, and butterfly upright bolts.

4.321 For frames having equal flange uprights use the short butterfly bolt, Detail 8, to fit into the uprights oval hole. Attach the Detail 3 spreader ends to the Detail 6 spreader with the Detail 30 captive bolts. Insert the bolts into the spreader holes furthest from each end. See typical assemblies in Figures 2 and 3.

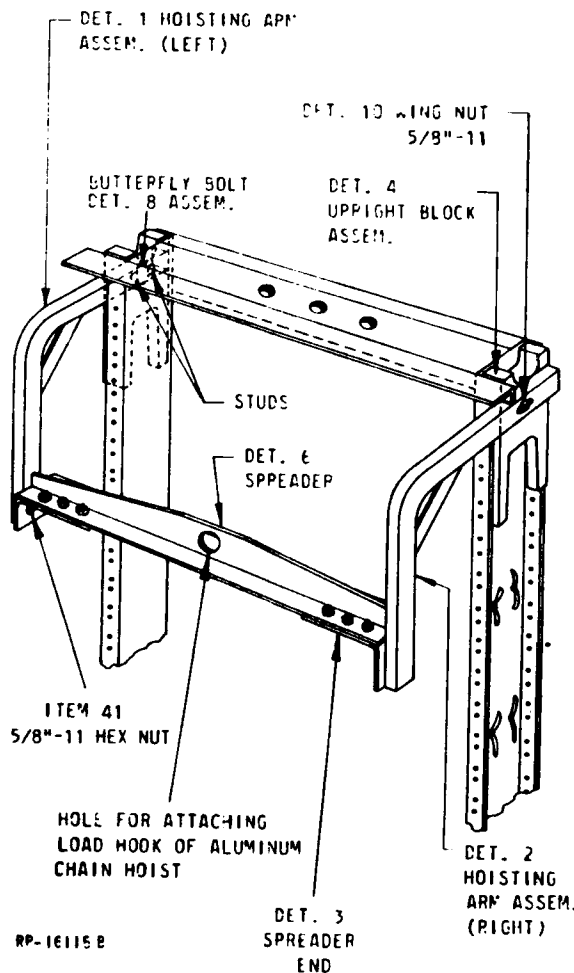


FIG. 2 ATTACHING R-3787 HOISTING FIXTURE TO EQUAL FLANGE UPRIGHT

4.322 For frames with unequal flange uprights, use the long butterfly upright bolt, Detail 9. Secure the Detail 5 block adapter to the Detail 4 upright block with the Detail 31 adapter bolt. See Figures 4 and 5.

4.3221 For mounting plate widths of 19", attach the Detail 3 spreader ends to the Detail 6 spreader. Insert the bolts through the set of spreader holes second furthest from each end.

4.3222 For mounting plate widths of 23", attach the spreader ends to the spreader with the bolts through the set of spreader holes closest to each end.

4.4 Attaching Hoisting Fixtures

4.41 Attach the R-3787 Hoisting Fixture through the oval hole in the tops of the bay uprights as shown in Figure 2, and Figure 6.

4.411 Do not bang this fixture into position. If it does not fit properly, check for screws in the duct.

NOTE: The R-3787 fixture supplements the R-3027 fixture and is used for bays having oval holes in the tops of the bay uprights. The R-3787 fixture does not require removal of the upper mounting plates, paper fasteners or cable brackets that frequently block the 1" round hoisting hole located 5" from the tops of the bay uprights.

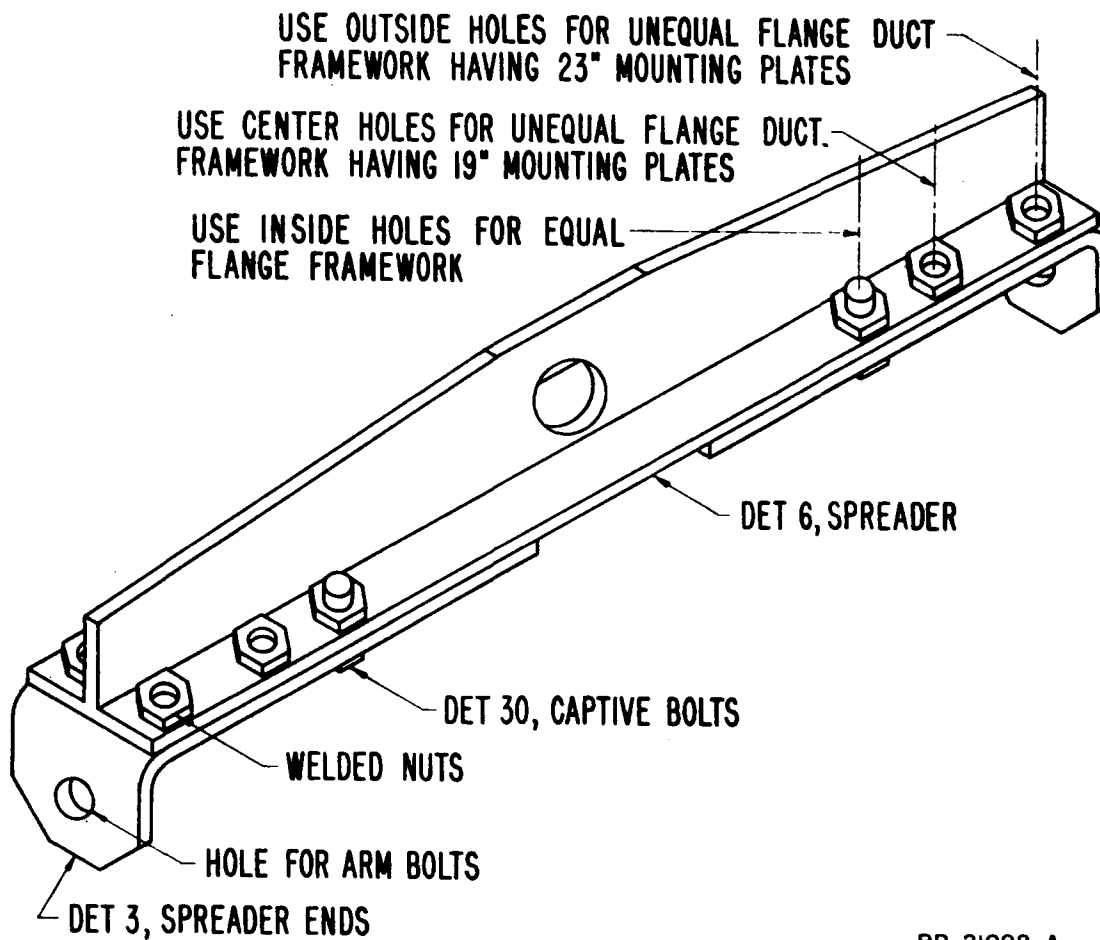
4.42 The R-3027 hoisting fixture is used for the older equal flange bays which have a round 1" hole in the top of the upright.

4.421 Attach the R-3027 fixture through the round hoisting holes as shown in Figure 7.

4.5 Erecting Frames

4.51 Bays having equipment extending from both sides of the frame should have their shipping support details left on during the initial stages of the erecting operation.

4.511 If the shipping skid has been removed before reaching the bays final location, the R-1605 hand truck may be used to lift the bottom of the frame during the erecting operation to prevent equipment extending out of the bay from being pressed against the floor.



RP-21098-A

FIG. 3 SPREADER ARRANGEMENTS

4.512 If the corrugated container is used as a skid, remove the dolly, cut the tape at the four corrugated corners, lower the base end, and use the R-1605 hand truck as in the above paragraph.

4.513 The hand truck and shipping details should be removed when the bay has been hoisted halfway up and the equipment extending from the bay has cleared the floor.

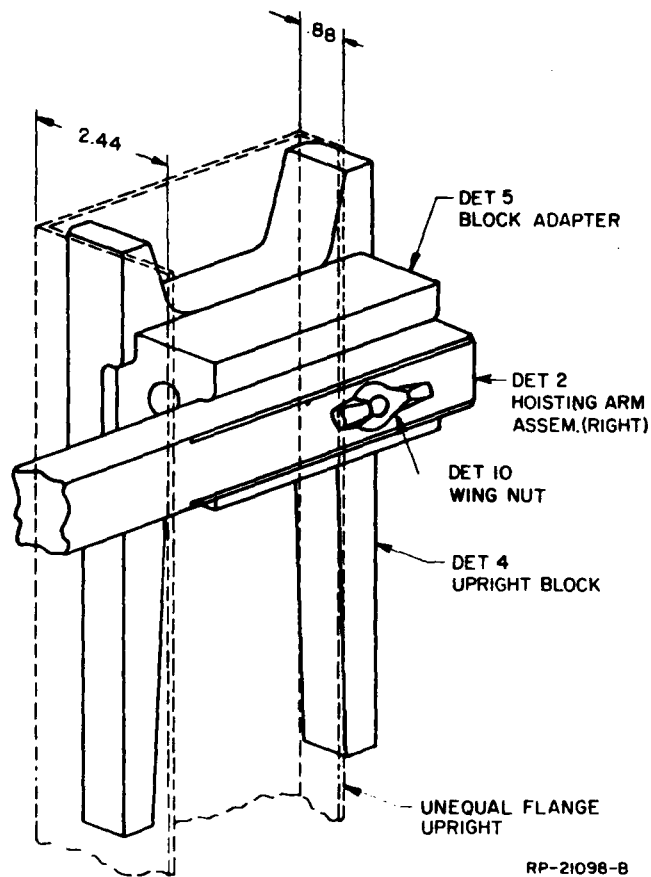


FIG. 4 ARRANGEMENT FOR UNEQUAL FLANGE UPRIGHT

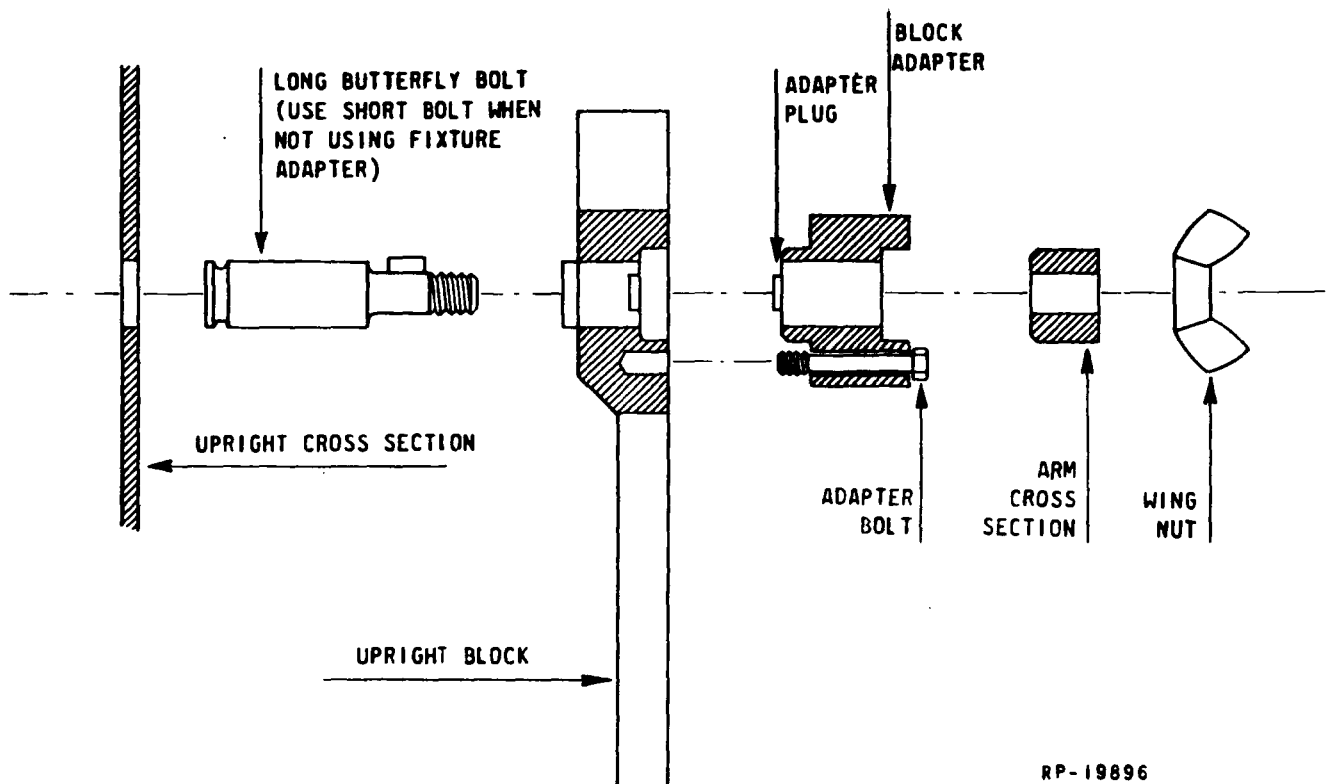
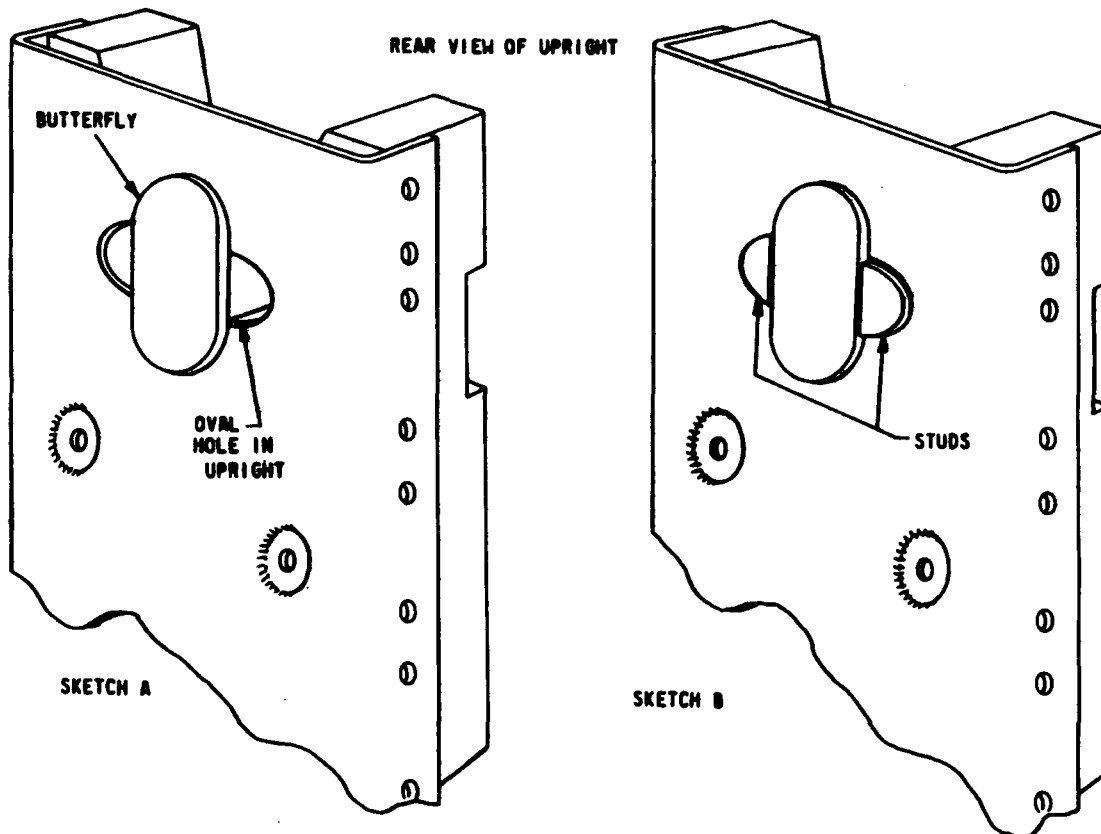


FIG. 5 CROSS-SECTION OF FIXTURE ASSEMBLY IN UNEQUAL FLANGE FRAME UPRIGHT



SEQUENCE OF MOUNTING FIXTURE:

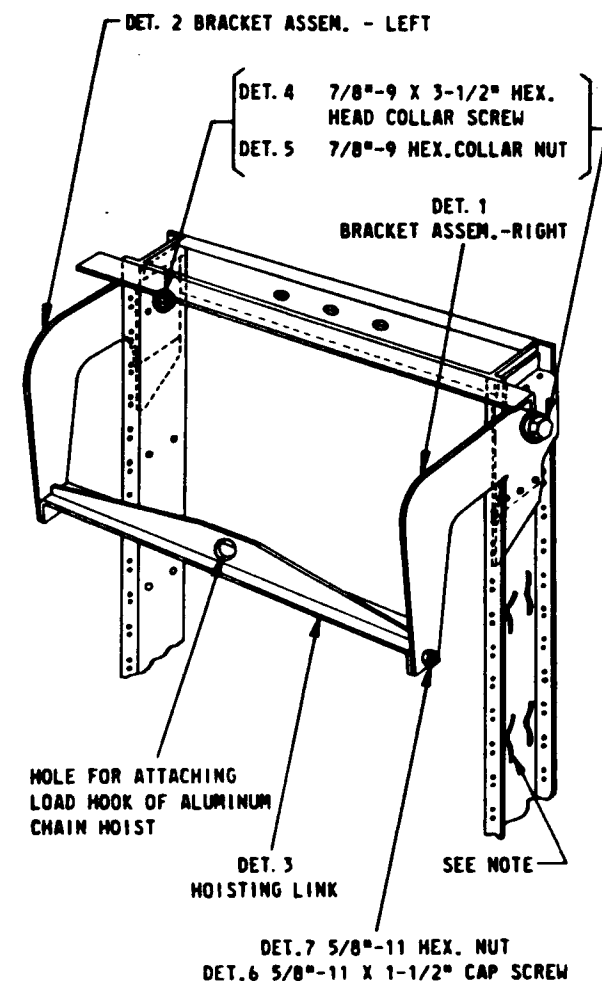
1. POSITION BLOCK INTO THE TOP OF THE UPRIGHT DUCT WITH THE BUTTERFLY OF THE BOLT LINED UP WITH THE OVAL HOLE IN THE UPRIGHT
2. PUSH BUTTERFLY THROUGH HOLE AND TURN 90° TO POSITION SHOWN IN SKETCH A.

NOTE: USE CAUTION WHEN EQUIPMENT IN THE BAY IS CLOSE TO THE OVAL HOLE.

3. PUSH BLOCK INTO DUCT SO THAT THE STUDS PROTRUDE THROUGH UPRIGHT, AS IN SKETCH B.
4. ATTACH ARMS TO BLOCKS AND FASTEN WITH WING NUTS.
5. ATTACH SPREADER BETWEEN ARMS.

(8P-16828-6)

FIG. 6 MOUNTING UPRIGHT BLOCK OF R-3474 HOISTING FIXTURE



NOTE: REMOVE PAPER FASTENERS OR BRACKETS FROM TOP HOLES BEFORE ATTACHING FIXTURE TO BAY (THESE ARE PROVIDED FOR HOLDING LOOSE WIRES IN CABLE DUCT).

(RP-10620-8)

FIG. 7 ATTACHING THE R-3027 HOISTING FIXTURE

→ Arrowed lines indicate new or changed information

4.52 Slowly erect the bay to the vertical position guiding it into place so that the top angle, if provided, fits over the top junctioning pipe and the indentations on the front and rear of the frame bases coincide with the center line previously marked on the floor.

4.53 Cautions

4.531 Do not stand under frame being erected.

4.532 Do not raise the bottom of frames more than 3 inches off the floor with the R-3787 or R-3027 Hoisting Fixtures.

4.6 Fastening to Superstructure

4.61 When walking a frame, connect an R-2849 safety strap between the top of the frame and the junction pipe or superstructure. The strap should be tightened as necessary to maintain control of the frame.

4.62 When the frame is in its final location, secure its top angle to the junction pipe with an R-2849 strap. The strap should be left attached until the frame is fastened at the top with "V" bolts.

4.621 Temporarily secure the top channels, of frames without top angles, to available superstructure.

4.63 Loosely attach the top fastening and floor bolts. Final tightening of these fastenings should be made in connection with the aligning operations.

4.64 Use the R-2384 pinch bar for shifting the bay as require for aligning.

Assistant Manager
Common Installation Engineering

Reason for Reissue:
To revise paragraph 4.532