ROLLING LADDERS, BRAKES AND LADDER TRACK
TRACK TYPE ROLLING LADDERS

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1. GENERAL

1.1 Scope of Section

1.11 This section covers the specific requirements and methods for installing and adjusting track type rolling ladders and associated parts.

1.2 General Information Pertaining to Arrangement of Tools, Precautions, Verification, Specifications, Drawings and Figures, and Associated Information.

1.21 Refer to Section 40A for information pertaining to the above subjects.

1.3 Loose Ladder Assembly

1.31 Ladders should have all parts tightly assembled in the shop. The ladders after long period of storage are subject to shrinkage. This occasionally causes some looseness of the parts. When this condition is encountered, the ladder assemblies should be tightened.

2. TOOLS REQUIRED

2.1 The tools and supplies required for operations covered in this section are of the type normally available on the job.

3. SIZES AND TYPES OF LADDERS

3.1 General

3.11 Rolling ladders 14" in width of the straight type as shown in Figures 1 and 2A or of the platform type as shown in Figure 3 are furnished where aisle widths will permit. Ladders 10" in width, used for very narrow aisles, are considered special.

3.12 The number of steps for straight-type ladders used for a particular vertical height may be determined from Figures 1 and 2A. Straight-type ladders are furnished with 15 or less steps, as required. Straight-type ladders with 16 or more steps are considered special.

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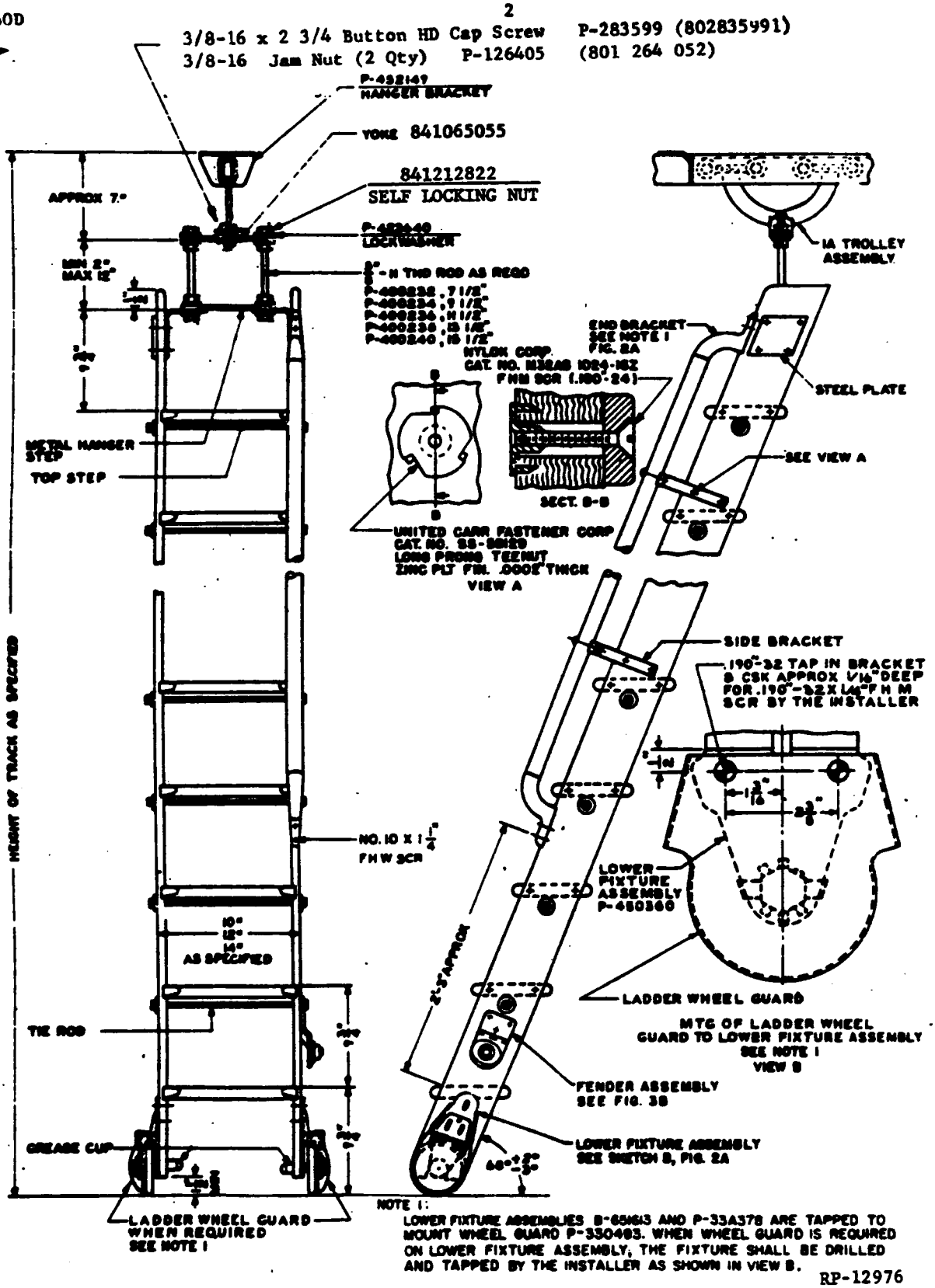
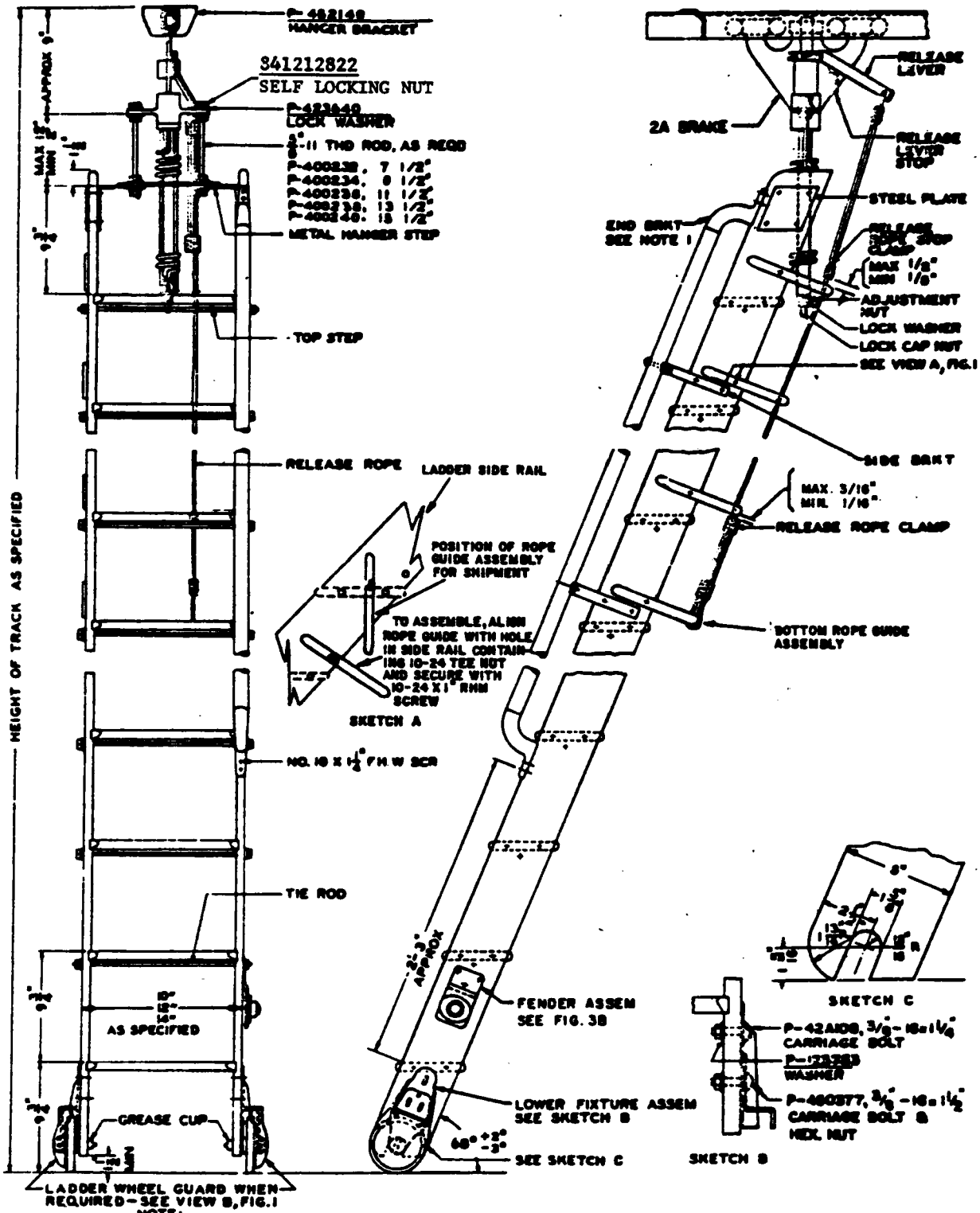


FIG. 1 STRAIGHT-TYPE ROLLING LADDER WITHOUT BRAKE PER ED-91562-70, ED-91564-70 AND KS-5049-02, L1 THROUGH L24
(PARS. 3.1,5,6.11,7.1,7.21,8.11,8.31 AND 8.33)
(BSP 800-614-159, FIG. 1)



NOTE:
1. WHEN HAND RAIL IS ASSEMBLED TO THE SIDE RAIL, THE END BRACKETS SHALL BE SO LOCATED THAT THE HAND RAIL IS TIGHT BETWEEN THE TWO END BRACKETS.

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→ FIG. **2 A** STRAIGHT-TYPE ROLLING LADDER ASSEMBLY
WITH 2A BRAKE PER ED-91563-70, ED-91564-70
AND ES 5049-02, 125 THROUGH 148
(PARS. 3.1,4.1,4.3,5.2,6.1,6.21,6.5,6.7 AND 6.8)
(BSP 800-614-159 Fig. 2A)

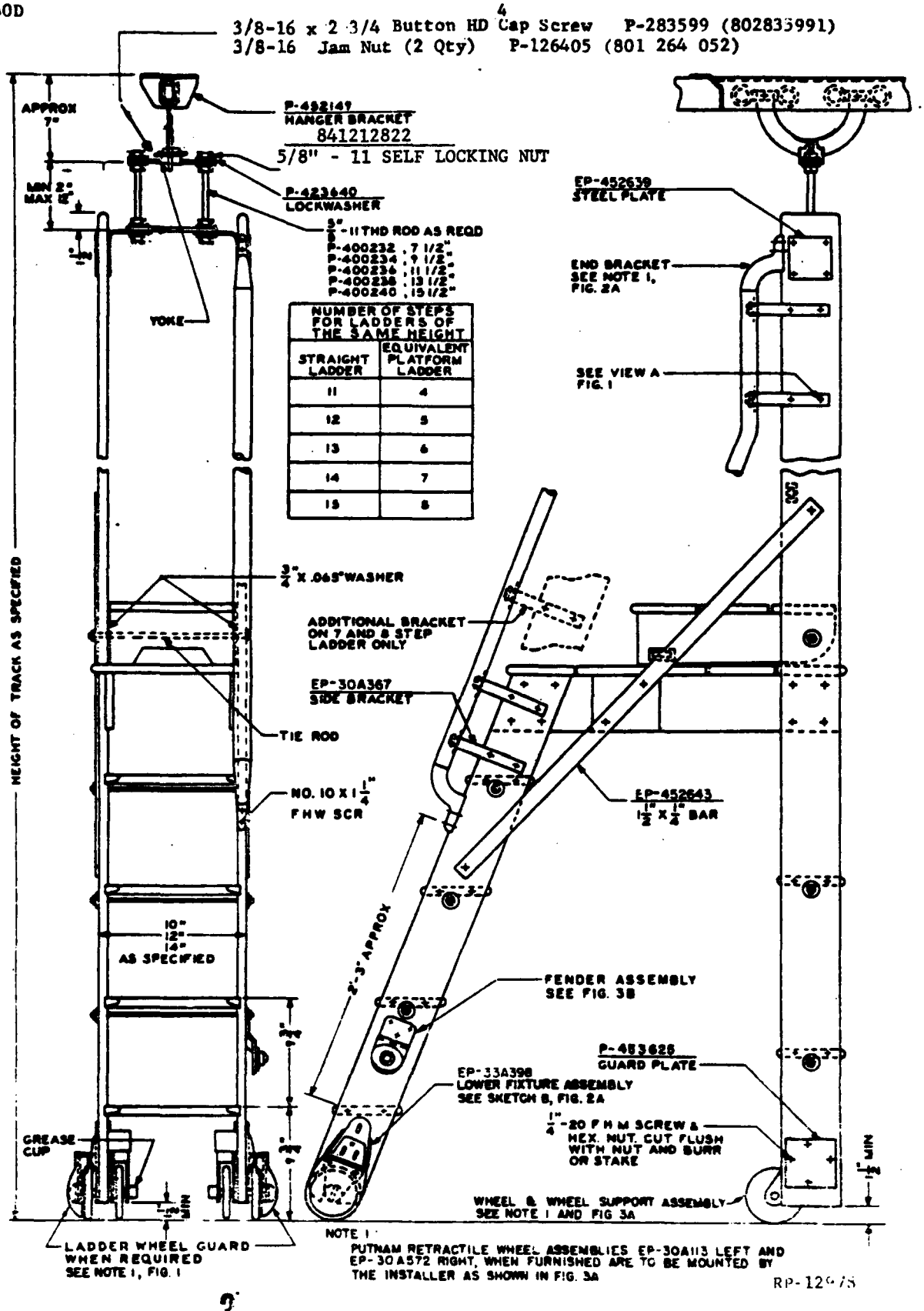


FIG. 3 PLATFORM-TYPE ROLLING LADDER PER KS-5139-01
(PARS. 3.1,5,6.211,7.1,8.11 AND 8.31)
(BSP 800-614-159, FIG. 3)

3.13 The number of steps for platform-type ladders used for a particular vertical height may be determined from Figure 3. Platform-type ladders are furnished with eight or less steps below the platform, as required. Platform ladders with nine or more steps below the platform are considered special.

NOTE: The information shown in Figures 1, 2A, and 3 apply principally to operations normally performed in the field and does not cover shop operation information.

3.2 Basic Ladder Requirements for Job

3.21 Job information will specify the number, type, size, and locations of ladders to be installed. See Section 40A.

4. SLANT OF LADDERS

4.1 In the absence of any information in job specifications regarding the slant of ladders, the direction of slant shall be determined from the following paragraphs.

4.2 The direction of slant of rolling ladders should be such that the ladders are in the most suitable position for use by the maintenance force. This is generally controlled by local conditions. Some of the more important factors with reference to the slant of rolling ladders are as follows:

4.21 Ladders should, in general, slant in a direction such that the foot is nearest the main cross-aisle or central maintenance point to avoid passing around the ladder before ascending the steps.

4.211 When ladder track is run continuously across aisles to permit a concentration of ladders on either side of the aisle, all ladders in that particular run may slope in the same direction unless otherwise specified by the Telephone Company.

4.22 Ladders at a single line of frames, equally convenient for approach in more than one direction, should slant in such a manner that the foot of the ladder is towards the right when facing the frames. This applies in both apparatus and wiring aisles of a single lineup.

4.221 The lineup adjacent to a distributing frame is not considered to be single lineup. Refer to Paragraph 4.24 to determine direction of slant in this instance.

4.23 Ladders at distributing frames, where the approach is equally convenient from either direction, should be slanted, so that a man standing on and facing the ladder will have his right side nearest the frame.

4.24 Ladders between lines of frames, equally convenient for approach in either direction, may slant in either direction, preferably in the same direction as other adjacent ladders in the same section of the building.

4.25 Where a ladder slanted in accordance with the above cannot be run a sufficient distance beyond the end of a row of frames to provide access to the equipment at the upper portion of the end frame, the ladder should be reversed. This condition is usually due to interference of the track with ventilating ducts, cable runs, columns, walls, partitions, or other obstructions.

4.26 The slant of platform-type ladders should be in the direction which permits the best access to the equipment at the upper portion of the end frames. This direction will usually be such that the straight portion of the ladder is towards a wall, column, partitions, or other obstruction.

4.27 At frame lineups where the guard rails have an offset to a wider guard rail at one end, the ladder shall be slanted so that the upper end of the ladder will not strike the apparatus on the frames due to the wheel being opposite the narrow rail. Where a reversal of the slant of the ladder to accomplish this is not practicable, the wider guard rail shall be extended as necessary along the lineup to prevent interference.

5. SUPPORT OF LADDERS

5.1 The ladder shall be suspended from the upper support or hanger step by threaded rods as shown in Figures 1, 2A, and 3. Pay particular attention to requirements concerning Min./Max. dimensions and use of locknuts and lockwashers.

5.2 Check to see that the ends of the mounting screws in the trolley wheel trucks are either staked or peened before placing a trolley assembly in the track. (See Figures 1, 2A, and 3).

5.3 Aluminum Cast Yoke Installation

5.31 The old "U" bracket was replaced with an Aluminum Yoke 841065055. The present yoke is so positioned that only the 3/8"-16 bolt supports the ladder to the 1A Trolley per ED-99688-70 (see Figure 3C).

5.32 It is permissible to invert the yoke (see Figure 3D) where installation conditions permit. The inverted yoke provides additional safety measure to equipment and personnel.

NOTE: When the aluminum yoke is installed in the inverted position, 1" longer threaded rods are required.

5.33 The Aluminum Yoke 841065055 does not apply to 2A Trolley Assembly.

6. ADJUSTMENT OF HANGER RODS AND FLOOR WHEELS

6.1 Straight-Type Ladders

6.11 The effective length of the rods shall be such that the steps of the ladder are approximately level. When making this adjustment, it is preferable that the ladder steps slope slightly toward the rear. However, the requirement of 68° plus 2° minus 3° (see Figures 1 and 2A) may be considered as having been met if the top surface of the steps does not slope downward more than 9/32" toward the rear or 3/16" toward the front.

6.111 Where ladder track slopes as shown in Figure 11A of Section 40B, the ladder normally used at this slope shall receive the adjustments covered in Paragraph 6.11 at the mid-point of the slope.

6.12 If necessary, after the above adjustment, adjust the height of the floor wheels to level the steps lengthwise. This should bring the line through the contacting points of the two wheels on the floor at approximately 90° with the frame guard rails when the ladder is centered in the aisle.

6.2 Platform-Type Ladders

6.21 Hanger Rods

6.211 With the ladder at the point in the run where the clearance between the bottom of the vertical rails and the floor is the least (high point in the floor), the hanger rods shall be adjusted so that the vertical rails are in a vertical position and so that there is a minimum clearance of 1-1/2" between the vertical rails and the floor. See Figure 3.

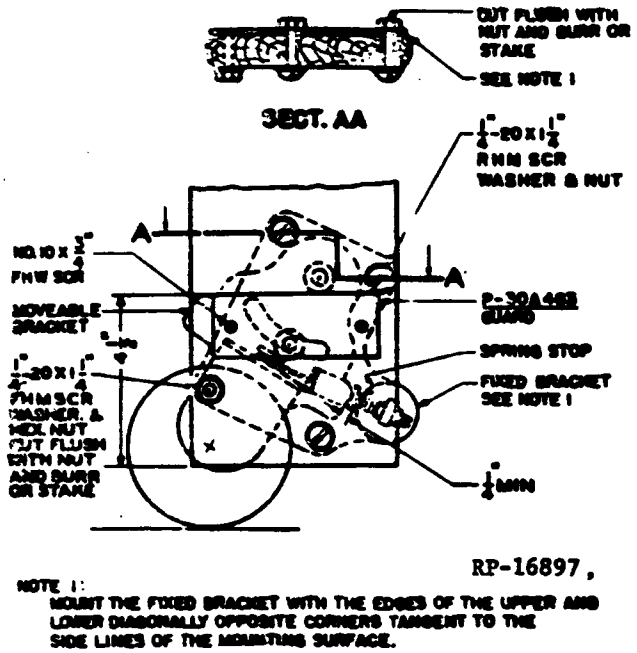
6.22 Floor Wheels

6.221 The retractile wheel assemblies on vertical rails of platform-type rolling ladders are intended primarily to stabilize the ladder (prevent sway) and not to bear weight. After adjusting the hanger rods per Paragraph 6.211, retractile wheel assemblies shall be adjusted as follows:

6.2211 If the ladder is equipped with Western Electric P-432663 (right) and P-452523 (left) retractile wheel assemblies, the ladder shall be rolled to a point in the run where the clearance between the bottom of the vertical rail and the floor is the greatest (low point in the floor). Then the backstop screw of the retractile wheel assembly shall be adjusted so that the backstop gap will be not less than approximately 1/16". The spring tension shall be so adjusted that the wheel will exert sufficient pressure on the floor at all points of the ladder run to eliminate side sway of the ladder without causing a perceptible lifting effect.

NOTE: The low point can be found by observing the change in the gap between the stop and the movable bracket as the ladder is moved.

6.2212 Putman-type retractile wheel assemblies, EP-30A113 and EP-30A572, shall be mounted on the vertical rails of platform-type rolling ladders by the Installer. To do this the ladder shall be rolled to a point in the run where the clearance between the bottom of the vertical rail and the floor is the greatest (low point in the floor). Then, with a minimum gap of 1/4" between the retractile spring stop and the movable bracket, the fixed bracket shall be mounted so that the edges of the upper and lower diagonally opposite corners of the fixed bracket are tangent to the side lines of the mounting surface of the vertical rails as shown in Figure 3A.



NOTE 1:
MOUNT THE FIXED BRACKET WITH THE EDGES OF THE UPPER AND LOWER DIAGONALLY OPPOSITE CORNERS TANGENT TO THE SIDE LINES OF THE MOUNTING SURFACE.

FIG. 3A METHOD OF MOUNTING PUTNAM-TYPE RETRACTILE WHEEL ASSEMBLIES ON PLATFORM-TYPE ROLLING LADDERS
(PAR. 6.2212)
(BSP 800-614-159, FIG. 3A)

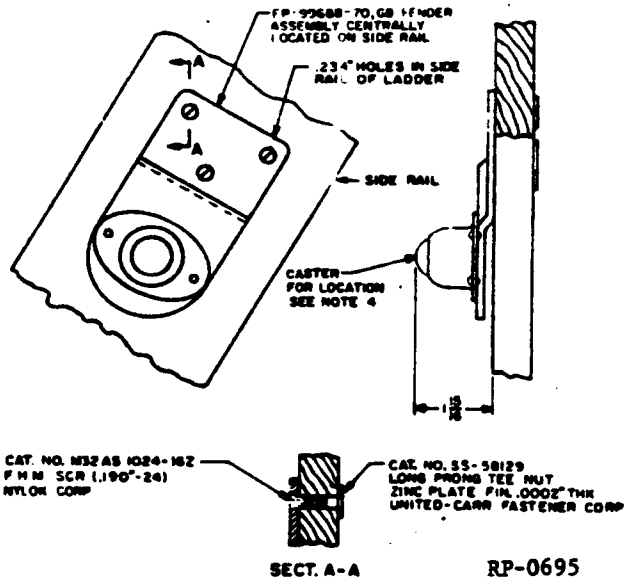
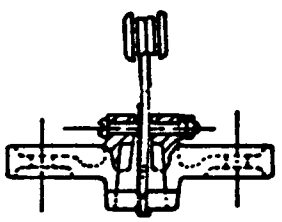
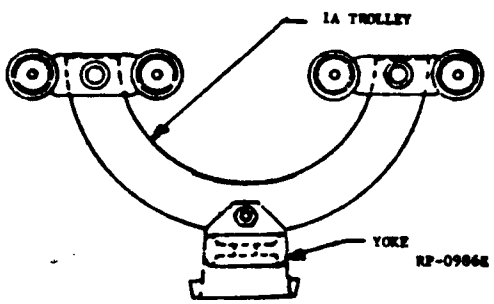
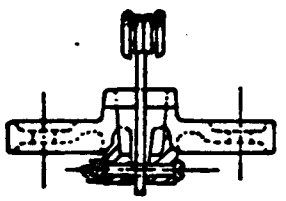


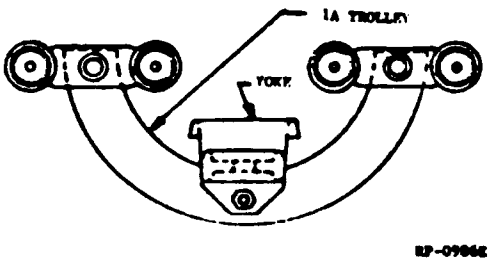
FIG. 3B METHOD OF MOUNTING ED-99688-70, G8 FENDER ASSEMBLY
(PAR. 7.1)
(BSP 800-614-159, FIG. 3B)





→ FIG. 3C ALUMINUM YORK ATTACHMENT TO 1A TROLLEY





→ FIG. 3D ALUMINUM YORK ATTACHMENT IN THE INVERTED POSITION TO 1A TROLLEY

7. FENDERS, GUARD PLATES AND WHEEL GUARDS

7.1 Fenders and Guard Plates

7.11 Rolling ladders are equipped with fenders only where the frame guardrails are located above the shoulder of the ladder wheel brackets as is true at distributing frames. Here the fender shall be attached to the side rail of the ladder as shown in Figures 1, 2A, 3, and 3B, and located to engage with the center of the frame guard rail as shown in Figure 4 of Section 40A. The guard plates on the vertical legs of platform-type ladders shall be relocated to engage with the guardrails in such cases.

7.2 Wheel Guards

7.21 Ladders used in No. 5 Crossbar offices, and in offices with cable duct frames per ED-63409-50 and ED-97170 having removable guardrails shall be equipped with 2 wheel guards. Ladders used at distributing frames in offices other than No. 5 Crossbar shall be equipped with one (1) wheelguard located on the side of the ladder adjacent to the distributing frame. P-33A398 and B-051613 lower fixture assemblies are tapped to facilitate the mounting of wheelguards. When a wheelguard is to be mounted on a P-450360 lower fixture assembly, the Installer shall drill and tap the P-450360 lower fixture assembly and install the wheelguard as shown in View B of Figure 1.

8. HANDRAILS

8.1 Location

8.11 Ladders are assembled (ordinarily in the shop) with the handrails on the right-hand side as shown in Figures 1, 2A, or 3. Where the floor plan arrangement is such that ultimately a ladder serves equipment on the right side only, the handrail shall be relocated by the Installer on the left side of the ladder. Where ultimately a ladder serves both a distributing frame and other equipment frames, the handrail shall be located on the side away from the distributing frame.

8.2 Transferring - General

8.21 New ladders may have the left side drilled for handrail side brackets. If not, the Installer shall drill the left side of the ladder for handrail side brackets where required as well as for end brackets. It will not be necessary to fill the bracket holes remaining in the right side rail after the handrail has been relocated.

8.22 When transferring the handrail, the end brackets shall be so assembled that handrail is tight between the two end brackets.

8.3 Handrail Brackets and Screws

8.31 Handrail brackets are assembled (ordinarily in the shop) as shown in Figures 1, 2A, or 3. The number of brackets used varies with the length of the ladder, and is as follows:

No. of Handrail Side Brackets	Type of Ladders	
	Straight	Platform
2	8 & 9 Steps	-
3	10,11 & 12 Steps	-
4	13,14 & 15 Steps	4,5 & 6 Steps
5		7 & 8 Steps

8.32 The ends of bolts securing the handrails to the side brackets shall be staked (ordinarily done in the shop).

8.33 All new ladders have handrail side brackets fastened to the side rails with special (nylon insert) screws and long prong teenuts per View A of Figure 1. Ends of these screws may be underflush by more than one complete turn but not more than three complete turns of the thread (as measured from the outside surface of teenut). When conventional screws and bushings are used, the screws shall be staked.

8.4 Transferring Handrails on Straight-Type Ladders

8.41 When changing the handrail from the right to the left side, it is not necessary to loosen the nuts securing the handrail to the side brackets.

8.42 Remove the screws securing the side and end brackets to the side rail.

8.43 Drill the corresponding side bracket holes in the left side rail, if required.

8.44 Turn the handrail end for end and assemble it to the left side rail.

8.441 To prevent bow in the handrails mounted in the field, due to misalignment of end brackets, the side brackets and the hand rail are secured before the end brackets.

8.442 The end brackets shall be so assembled that handrail is tight between the two end brackets. When mounting end brackets, drill a hole 1/2" deep with a No. 19 (.166") drill for each mounting screw. The .116" hole is in addition to the customary lead hole and is drilled for clearance to prevent the body of the screw from splitting the side rail.

8.5 Transferring Handrails on Platform-Type Ladders

8.51 To change the handrail from the right to the left side, remove the screws securing the side and end brackets to the side rail.

8.52 Loosen the nuts securing the handrail to the side brackets 3 or 4 turns. Rotate the brackets 180°, and tighten and restake these screws.

NOTE: If difficulty is encountered in loosening the nuts sufficiently to permit the brackets to be rotated 180°, file off the staked end of the bolts and replace them with similar bolts, purchased locally.

8.53 If required, drill corresponding holes for side brackets in the left side rail.

8.54 Assemble the handrail on the left side rail by following the instructions in Paragraphs 8.441 and 8.442 for straight-type ladders.

8.55 The handrail of platform-type ladders is a slotted metal tube. It shall be completely taped with two (2) layers of either R-3428 3/4" Gray Plastic Tape, or RM-591127 3/4" Gray Friction Tape, whichever is available. Apply the tape with at least a half lap and from the bottom up in order to prevent the edges from curling when sliding the hands down the rail. When friction tape is used, apply two (2) coats of R-3454 Orange Shellac.

9. LUBRICATION

9.1 No lubrication of any kind shall be applied to the trolley wheels at the time of installation.

9.2 The floor wheels of straight-type ladders and those on the slanting part of platform ladders shall be thoroughly lubricated and the grease cups filled with KS-7471 Grease when the ladders are released for service. This also applies to the floor wheels of the vertical legs of platform-type ladders per ED-91741-01 and KS-5139-01.

9.3 Grease cups, when turned up so that further lubrication is impossible, shall be refilled with KS-7471 Grease.

10. CLEANING AND REFINISHING

10.1 Ladders that have become soiled during the installation period shall be cleaned by rubbing with a cloth dampened with KS-7860 Petroleum Spirits. Any steps or portions of the rails which cannot be cleaned satisfactorily with the petroleum spirits shall be cleaned and refinished as specified in Paragraphs 10.2 to 10.7 inclusive.

10.11 If the refinishing process is so extensive as to cause an undesirable amount of dust or other contaminates in the equipment room, lower the ladder from the track and move it to some other portion of the building during the reconditioning operations.

10.2 Gauges in the wood which present splinters or may develop splinters shall be dressed with a knife and smoothed with 2-0 emery cloth.

CAUTION:	CARE MUST BE EXERCISED THAT DIRT CAUSED BY THIS OPERATION DOES NOT GET INTO THE EQUIPMENT. USE PROTECTION AS NECESSARY.

10.3 Rub the soiled portions generally in the direction of the grain of the wood with a water dampened (not dripping) cellulose sponge dipped into a cleaning solution consisting of household scouring powder mixed with a sufficient amount of water to form a paste. About 1/4 level teaspoonful of the paste shall be transferred to one of the large surfaces of the sponge by the dipping process. The sponge may be partially folded so that paste will be confined to a small area of the sponge, thus permitting the use of a comparatively small pan for the paste. Use a pail of approximately 10 qt. capacity for the water used for wetting and cleaning the sponge.

CAUTION: THE PASTE SHALL BE PREPARED OUTSIDE OF THE TERMINAL ROOM IN ORDER TO AVOID HANDLING THE DRY POWDER IN THE TERMINAL ROOM WHERE IT MIGHT GET ON THE EQUIPMENT.

10.4 The highest step which requires cleaning and the adjacent portions of the side rails and the hand rail shall be cleaned with one dip of the sponge. The cleaned portions shall then be washed with the reverse side of the sponge until all loosened dirt and cleaner are removed. Dry the cleaned portions with a dry cloth. Clean the sponge thoroughly in water and repeat this procedure on successive steps until the bottom is reached.

CAUTION: CARE MUST BE EXERCISED THAT THE CLEANER AND WATER ARE NOT SPLASHED INTO THE EQUIPMENT. USE PROTECTION AS NECESSARY.

10.5 When ladders cleaned with household scouring powder are thoroughly dry, wipe over the cleaned surfaces with a KS-14666 Cleaning Cloth dampened with RM-648414 Clear Penetrating Wood Finish so that a thin film will be deposited. Any excess finish which does not penetrate into the wood and remains on the surface must be wiped off with a dry cleaning cloth within 5 minutes of application, by rubbing vigorously across the grain. Starting at the top step to be finished, finish about three steps and wipe off the excess finish. Repeat this procedure until the bottom is reached.

NOTE: If the excess finish is allowed to remain on the ladder too long it will become tacky and difficult to remove, and will remain tacky for a long period.

10.6 Surfaces which were cleaned only with KS-7860 Petroleum Spirits need not be refinished.

10.7 The refinished ladders may be used after a drying period of at least six hours if care was taken to remove all excess finish.

NOTE: The above method of cleaning and refinishing rolling ladders may be applied to the present standard dull finished ladders as well as ladders having the former glossy varnish finish. However, if (for appearance reasons) it is not desirable to mix the two finishes use two coats of clear spar varnish (obtained locally) in place of the RM-648414 Penetrating Finish on varnished ladders. Allow the varnish to dry overnight between coats and before using.

11. FLOOR WHEELS FOR EXISTING LADDERS TO BE RECONDITIONED FOR BRAKES

11.1 In reconditioning ladders to be equipped with brakes, floor wheel assemblies without grease cups shall be replaced by floor wheel assemblies having grease cups. The lower ends of the ladder sides shall be modified for the new floor wheel assemblies in accordance with Sketch C of Figure 2A.

12. PLACING OR REMOVING LADDER FROM TRACK

12.1 Placing a rolling ladder in ladder track is best accomplished by two men and may be performed as follows:

12.11 Loop a 1/2" manila rope over the ladder track (behind a track support or brace) in such a manner that it cannot slide off the end. Tie it securely to the step in the upper portion of the ladder which will allow the rope to be as nearly vertical as possible when the trolley is engaged in the track.

12.12 As the first Installer supports the weight of the ladder with the rope, the second Installer raises the ladder to the proper level and then ascends a platform ladder conveniently placed and guides the trolley into the track, being sure the ladder stop is in place before descending.

12.2 Removing a rolling ladder from the ladder track is done by an inverse procedure to its placement. With the first Installer supporting the ladder from the floor by means of the rope, the second Installer ascends the platform ladder and removes the ladder stop, then descends to the floor and pushes the rolling ladder out of the track, guiding it down as the rope is payed out by the first Installer. If the ladder is brake equipped, allow it to rest on an R-5460 Three Position Stool to protect the lower portion of the

brake assembly. If there are other ladders in the same track, place the R-1455 "C" Clamp in front of the last track support as a temporary ladder stop. See Section 40A.

13. VERIFICATION ITEMS

	VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS	REFERENCE Par. No.	REFERENCE Fig. No.
13.1	Trolley Wheel Truck Mounting Screws		
13.11(P)	End of mounting screws staked or peened.	5.2	
13.12	Aluminum cast yoke installation	5.3	3C, 3D
13.2	Locations and Clearances		
13.21	Number, type, size, and location of ladders in accordance with information furnished the job.	3.2	
13.3	Slant of Ladders		
13.31	In accordance with information furnished the job.	4.1	
13.32	In accordance with standard practices when information is not provided in job information.	4.2	
13.4	Support and Setting of Ladders		
13.41	General		
13.411	Ends of hanger rods do not extend more than 1-1/2" beyond nuts.	5.1	1, 2A, 3
13.412	Both ends of hanger rods equipped with lockwashers, and lock nuts.	5.1,5.2	1, 2A, 3
13.413	Upper ends of side rails not more than 1-1/2" above top of hanger step.	5.1	1, 2A, 3
13.414	Min. 2" and Max. 12" between top surface of metal hanger step and bottom surface of hanger yoke or "T" bracket of brake assembly.	5.1	1, 2A, 3
13.415	Floor wheels adjusted for 9-3/4" between floor and top surface of bottom step.	5.1	1, 2A, 3
13.416	1-1/2" clearance between floor and bottom of side rails.	5.1	1, 2A, 3
13.42	Straight-Type Ladders		
13.421	Steps approximately level in front to rear and side to side directions.	6.1	1, 2A
13.422	On ladders used where track slopes, steps level with ladder at midpoint of slope.	6.111	

	VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS	REFERENCE Par. No.	REFERENCE Fig. No.
13.43	Platform-Type Ladders		
13.431	At high point in floor, vertical rails plumb and 1-1/2" minimum between vertical rails and floor.	6.211	3
13.432	With Western Electric retractile wheel assemblics:	6.2211	
(a)	Backstop gap not less than 1-1/6" with ladder at low point of floor.		
(b)	Spring tension adjusted to meet conditions specified.		
13.433	With Putnam-Type retractile wheel assemblies:	6.2212	2A
(a)	1/4" minimum gap between retractile spring stop and moveable bracket with ladder at low point of floor.	6	
(b)	Fixed bracket mounted as specified.		
13.5	Fenders, Guard Plates and Wheel Guards		
13.51	Fenders and Guard Plates		
13.511	Fenders installed where frame guardrails are above shoulder of ladder wheel brackets.	7.11	1, 2A, 3, 3B
13.512	Fender caster contacting center of guardrail.	7.11	
13.513	Guard plates on vertical rails of platform ladders mounted to engage guardrails when fenders are installed.	7.11	
13.52	Wheel Guards		
13.521	Two wheel guards on ladders in No. 5 Crossbar offices, and in offices with cable duct frames having removable guardrails.	7.2	1
13.522	Ladders at distributing frames in other than No. 5 Crossbar offices equipped with one wheel guard on side of ladder adjacent to distributing frame.	7.2	1
13.6	Handrails		
13.61	Location		
13.611	On left side when ultimately a ladder will serve equipment on right side only.	8.1	
13.612	On side away from distributing frame when ladder ultimately serves distributing frame and other equipment frames.	8.1	
13.62	Assembly		
13.621	Bolts securing handrails to side brackets staked.	8.32,8.52	
13.622	Ends of nylon insert bolts securing side brackets to side rails not underflush by more than 3 turns.	8.33	

	VERIFICATION ITEMS AND BRIEF STATEMENT OF REQUIREMENTS	REFERENCE	
		Par. No.	Fig. No.
13.623	Ends of conventional bolts securing side brackets to side rails staked.	8.33	
13.624	Transferred handrails tight between 2 end brackets.	8.22, 8.442, 8.54	
13.625	Handrails on platform type ladders taped.	8.55	
13.7	Lubrication		
13.71	Grease cups on floor wheels filled with KS-7471 Grease.	9.2,9.3	
13.8	Cleaning & Refinishing		
13.81	Ladders cleaned or refinished where necessary.	10.1	
13.9	Floor Wheels		
13.91	Existing ladders reconditioned for use with brakes equipped with floor wheels having grease cups.	11.1	2A

→Indicates new or changed information.

[Vertical line at side of paragraph indicates requirement.

Engineering Planning Manager
(Installation)

Reason for Reissue:
1. Incorporate UIS 40D Dated 6-16-78.
2. Add Paragraphs 5.31, 5.32, and 5.33.
3. Add Figures 3C and 3D.