

TRACK-TYPE ROLLING LADDERS AND LADDER SEATS PIECE-PART DATA, REPLACEMENT PROCEDURES, AND MINOR REPAIRS

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1.	GENERAL	1	1.01 This section covers piece-part data, replacement procedures, and minor repairs for track-type rolling ladders and ladder seats.
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3.	REPLACEMENT PROCEDURES	11	1.02 The reasons for reissuing this section are listed below. Revision arrows are used to emphasize the more significant changes. Equipment Test Lists are not affected.
	STRAIGHT-TYPE ROLLING LADDERS	13	(1) To revise paragraphs 3.16, 3.26 and 3.41.
	ROLLING LADDER BRAKES	16	(2) To add new paragraph 3.18.
	PLATFORM-TYPE ROLLING LADDERS, KS-5139-01	18	1.03 Portable-type step, rolling, and pulpit ladders are covered in Section 065-105-803. The KS-21415 L1 and L2 rolling platform ladders are covered in Section 065-105-301. The material in Sections 065-105-301, 065-105-802, and 065-105-803 replaces the material formerly contained in Section 065-105-801, which is canceled.
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4.	MINOR REPAIRS	21	1.04 Part 2 covers the piece-part numbers and the corresponding names of the parts which it is practicable to replace in the field. No attempt shall be made to replace parts not designated. Part 2 also contains explanatory figures showing the different parts.
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NOTICE

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2. PIECE-PART DATA

2.01 The figures included in this part (Fig. 1 through 10) show the various piece parts of the items and their associated assemblies. The names of parts are also included as far as practicable to facilitate identification.

2.02 The ladders covered in this section have been supplied by the Western Electric Company or by an outside supplier. Parts which are to be furnished by the Western Electric Company are listed by P numbers, while parts furnished by outside suppliers are listed by EP or B numbers. A few parts, peculiar to the older outside suppliers' ladders, are listed by their KS detail numbers.

2.03 All ladders manufactured by the Western Electric Company are steel stamped with the characters Western Electric Company, Made in U.S.A., and the ED drawing number. This stamping is located either on the central portion of a side rail or on the bottom of a centrally located step. Old KS ladders usually have the outside suppliers' nameplate with a stamped KS number located on an inner side rail on the upper portion of the ladder. The newer outside suppliers' ladders have the KS

number and list number on the outside, the same as Western Electric Company ladders. If no identifying mark can be found on an older-type ladder, it can be assumed that the ladder is a KS ladder.

2.04 When ordering parts, the P number, EP number, B number, or KS detail number should be given as well as the name of the part; for example, "Floor Wheel Bearing Detail 20 of KS-5049-01 Ladder" or "P-450354 Wheel Bearing." Do not refer to BSP numbers or to any information shown in parentheses following the piece-part numbers.

2.05 In the ordering of replacement parts, determine if cotter pins, tab lockwashers, "ANCO" locknuts, mounting screws, or tie rods and bolts are likely to be damaged in the removal of the old part. If there is a possibility that they may not be reused, order the required quantity together with the replacement part.

Note: In case of reuse, if a locknut after having been released by a wrench can be backed off by finger pressure it must be replaced by a new locknut.

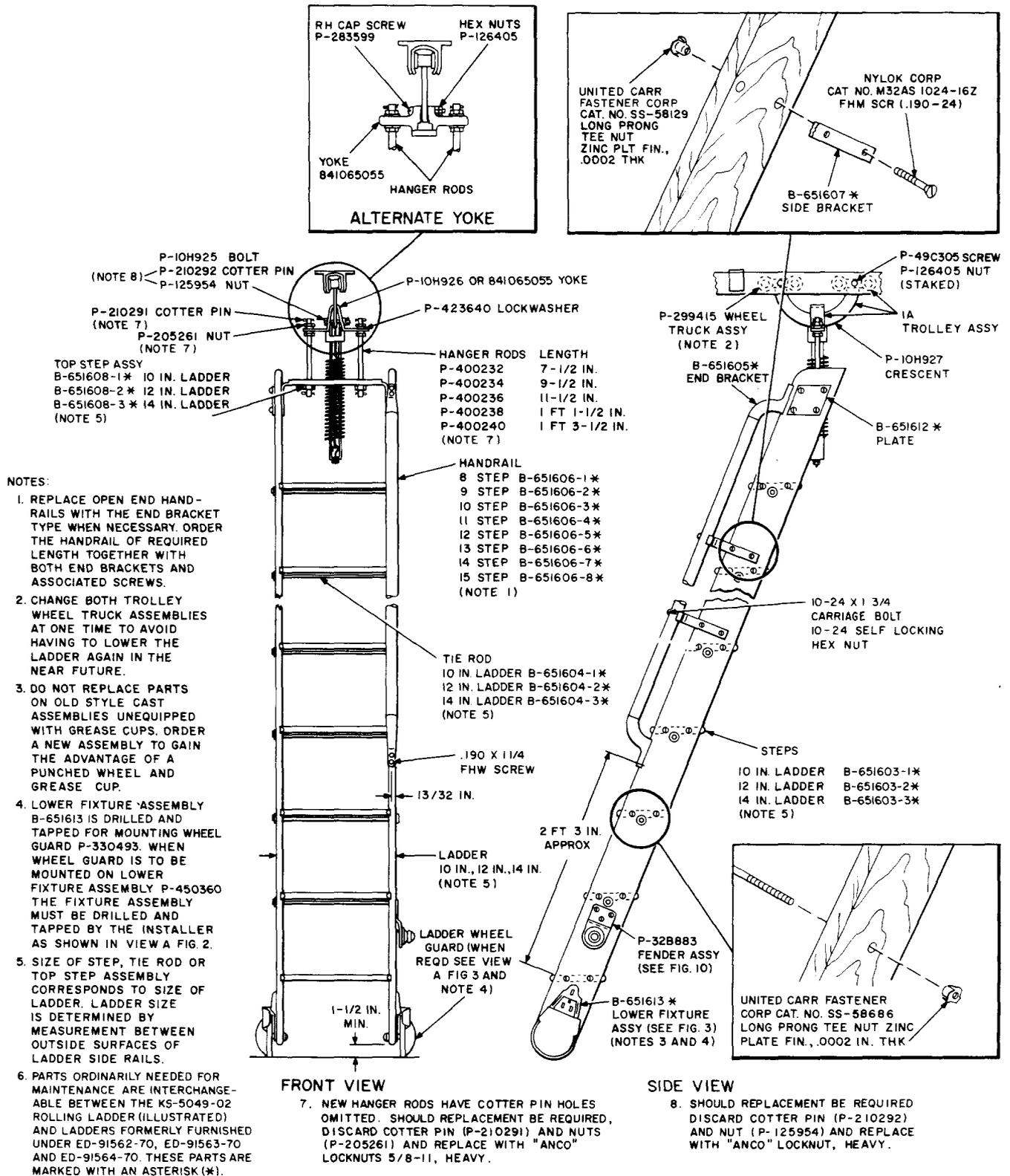


Fig. 1—Straight-Type Rolling Ladder, KS-5049-02

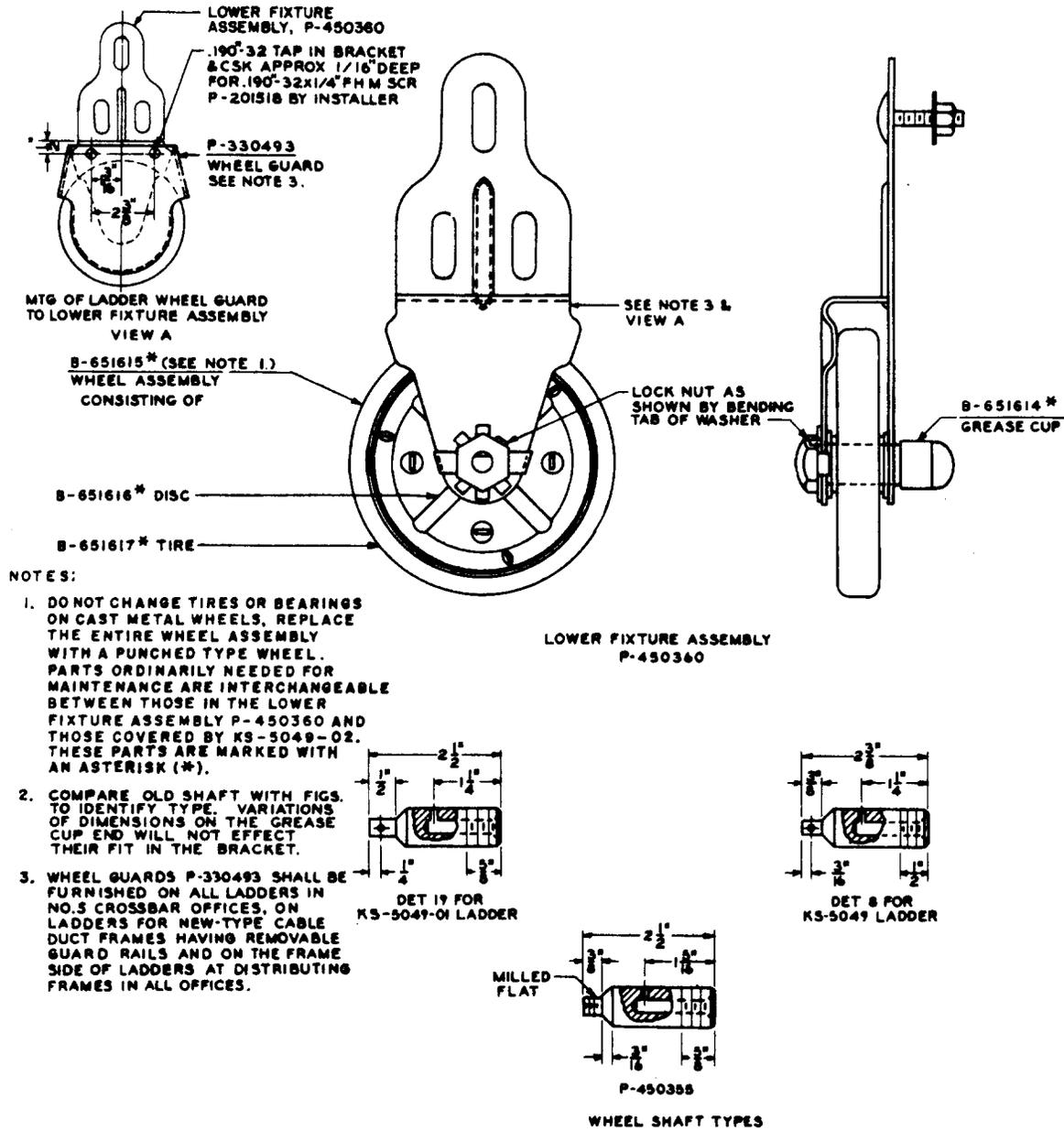
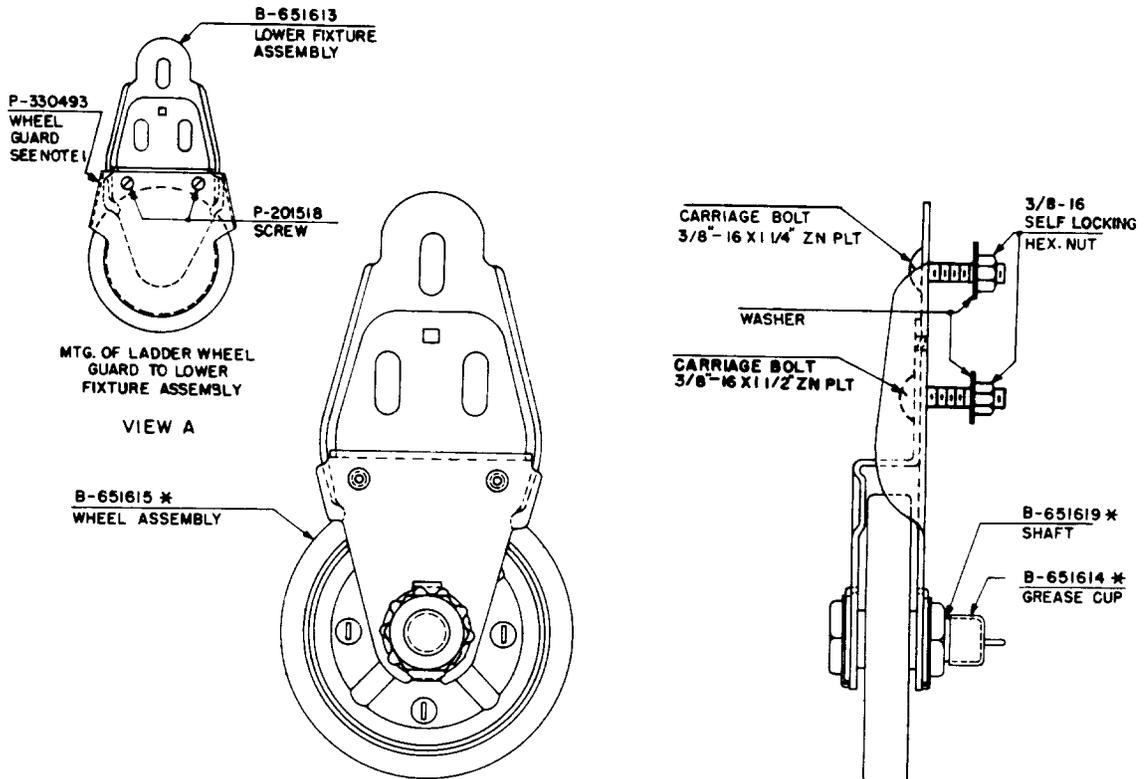


Fig. 2—Lower Fixture Assembly, P-450360, and Wheel Shaft Type



NOTES:

1. WHEEL GUARDS P-330493 SHALL BE FURNISHED ON ALL LADDERS IN NO. 5 CROSSBAR OFFICES, ON LADDERS FOR NEW-TYPE CABLE DUCT FRAMES HAVING REMOVABLE GUARD RAILS AND ON THE FRAME SIDE OF LADDERS AT DISTRIBUTING FRAMES IN ALL OFFICES

2. PARTS ORDINARILY NEEDED FOR MAINTENANCE ARE INTERCHANGEABLE BETWEEN THE B-651613 LOWER FIXTURE ASSEMBLY (ILLUSTRATED) AND THE P-33A398 LOWER FIXTURE ASSEMBLY. THESE PARTS ARE MARKED WITH AN ASTERISK (*).

Fig. 3—Lower Fixture Assembly, B-651613

NOTES:

1. PARTS ORDINARILY NEEDED FOR MAINTENANCE ARE INTERCHANGABLE BETWEEN THE 2A BRAKE (ILLUSTRATED) AND THE KS-6119 BRAKE (MFR DISC.) THESE PARTS ARE MARKED WITH AN ASTERISK (*). ACCESSORIES MARKED WITH A DAGGER (†) ARE PART OF SPEC KS-5049-02 AND ARE INTERCHANGABLE WITH SAME ACCESSORIES ON THE 2A BRAKE OR KS-6119 BRAKE.

2. CHANGE BOTH WHEEL ASSEMBLIES AT ONE TIME TO AVOID THE POSSIBILITY OF HAVING TO LOWER THE LADDER A SECOND TIME.

3. ORDER A NEW EYE-BOLT WHEN ORDERING THE COIL SPRING IN THE EVENT THAT THE OLD BOLT HAS INSUFFICIENT LENGTH TO ALLOW FOR ADJUSTMENT.

4. ON PREVIOUS COIL SPRINGS USED ON THE KS-6119 BRAKE THE HOOK WAS A SEPARATE PART LINK (P-299390)

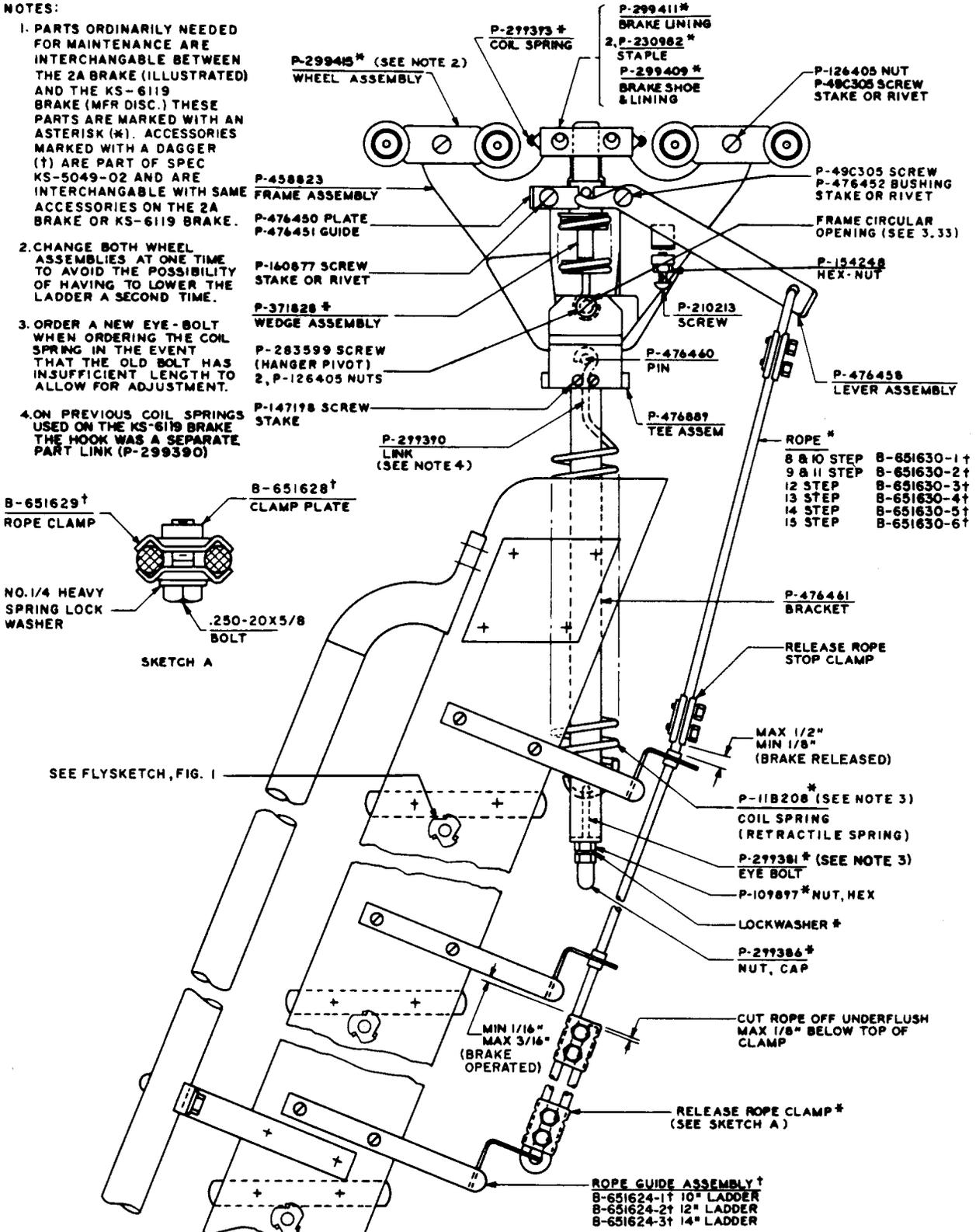


Fig. 4—2A Rolling Ladder Brake and Accessories (See Note 1)

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PARTS ORDINARILY NEEDED FOR MAINTENANCE ARE INTERCHANGABLE BETWEEN THE 2A BRAKE (ILLUSTRATED) AND THE KS-6119 BRAKE (MFR DISC.) THESE PARTS ARE MARKED WITH AN ASTERISK (*). ACCESSORIES MARKED WITH A DAGGER (†) ARE PART OF SPEC KS-5049-02 AND ARE INTERCHANGABLE WITH SAME ACCESSORIES ON THE 2A BRAKE OR KS-6119 BRAKE.

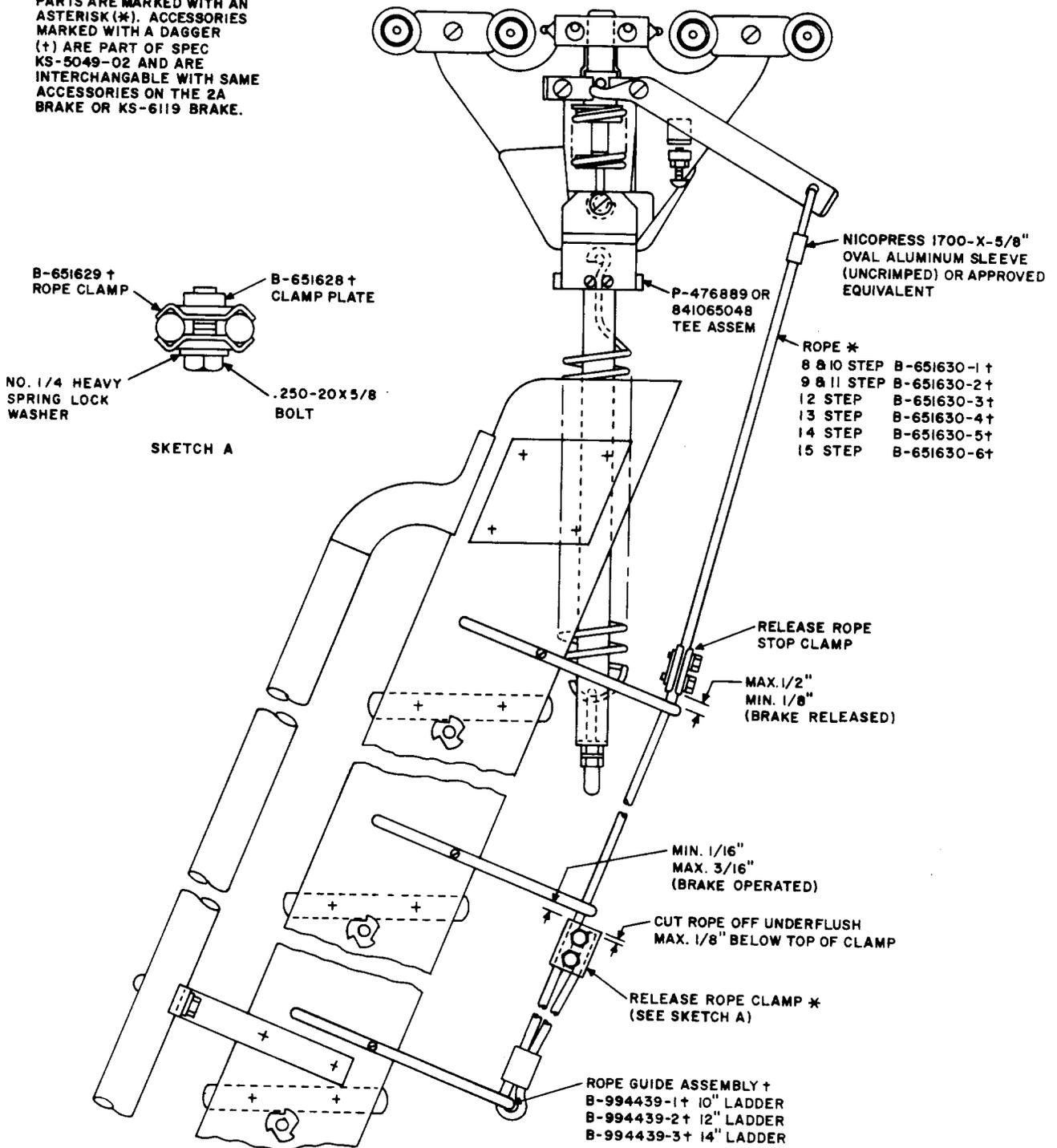


Fig. 5—2A Rolling Ladder Brake and Accessories Showing New Rope Guide Brackets

NOTES:

1. DUE TO THE NATURE OF THEIR CONSTRUCTION, CHANGE PLATFORM ASSEMBLIES AS A UNIT.
2. LADDERS OF WESTERN ELECTRIC MANUFACTURE ARE EQUIPPED WITH WHEEL ASSEMBLIES P-452523 (LEFT) AND P-432663 (RIGHT) AND P-453625 PLATES. THESE PARTS SHOULD BE ORDERED BY THEIR P NUMBERS (SEE VIEW A, FIG. 6). REPAIR PARTS SHOWN ON THIS FIGURE BY EP NUMBERS OR PARTS FOR OUTSIDE SUPPLIER'S WHEEL ASSEMBLIES SHOULD BE ORDERED BY THEIR EP NUMBERS. ON OLDER TYPE OUTSIDE SUPPLIER'S LADDERS, SEVERAL TYPES OF WHEEL ASSEMBLIES WERE USED AND ONLY THEIR SPRINGS ARE REPLACEABLE.
3. LOWER FIXTURE ASSEMBLY P-33A398 IS DRILLED AND TAPPED FOR MOUNTING WHEEL GUARD P-350493. WHEN WHEEL GUARD IS TO BE MOUNTED ON LOWER FIXTURE ASSEMBLY P-45Q360 THE FIXTURE ASSEMBLY MUST BE DRILLED AND TAPPED BY THE INSTALLER AS SHOWN IN VIEW A, FIG. 3.
4. CHANGE BOTH TROLLEY WHEEL TRUCK ASSEMBLIES AT ONE TIME TO AVOID HAVING TO LOWER THE LADDER AGAIN IN THE NEAR FUTURE.

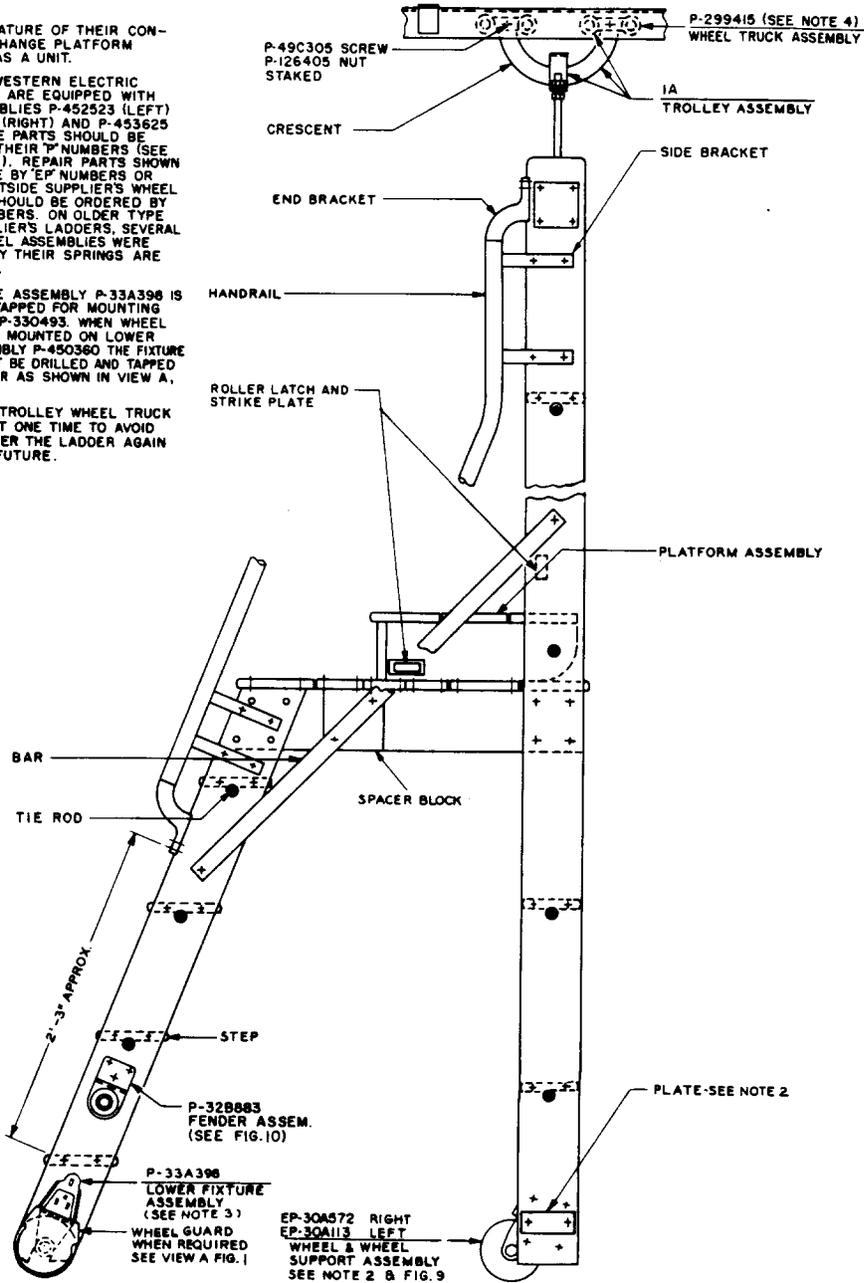


Fig. 6—Platform-Type Rolling Ladder, KS-5139-014

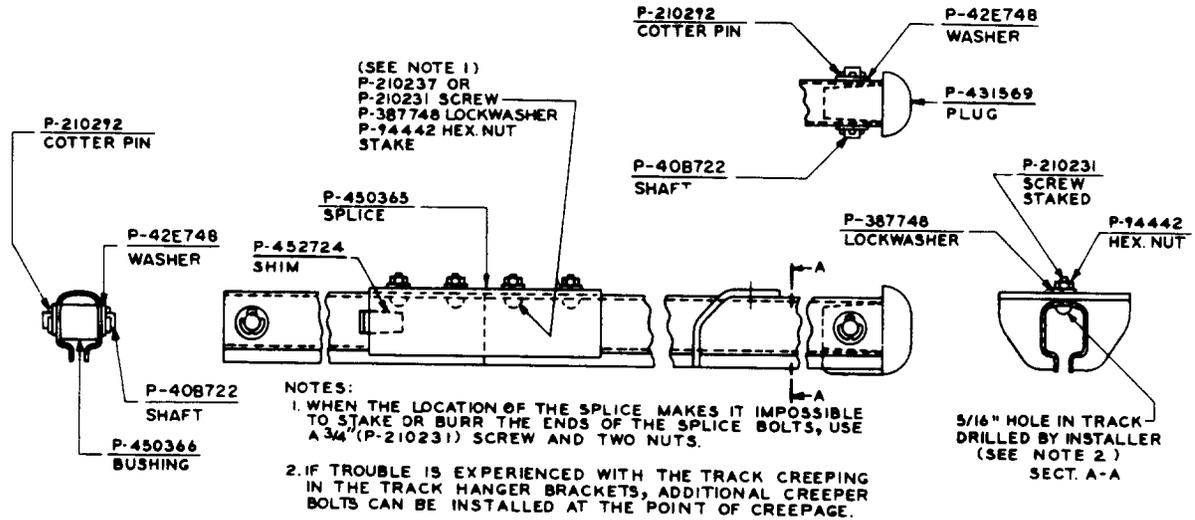


Fig. 7—Ladder Stop—Ladder Track Splice—Ladder Track Plug—Creeper Bolt

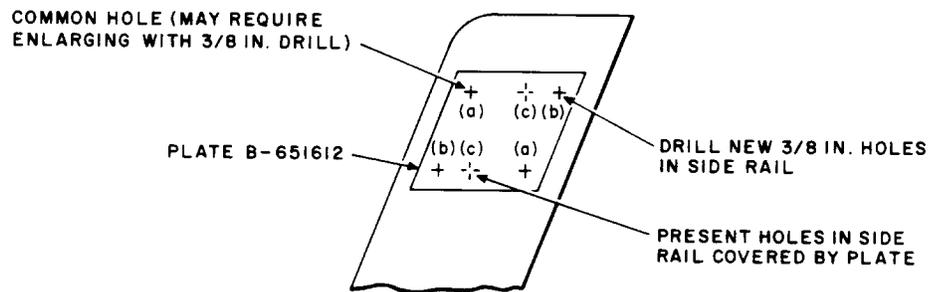


Fig. 8—Modification of Side Rails of KS-5049-01 Rolling Ladder for Top-Step Replacement

NOTES:

1. WHEN ORDERING COMPLETE WHEEL ASSEMBLIES, EP-30A572 SHALL BE ORDERED FOR RIGHT SIDE AND EP-30A113 FOR THE LEFT SIDE.

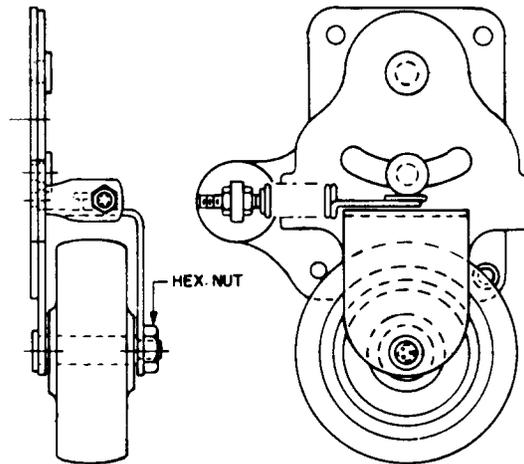
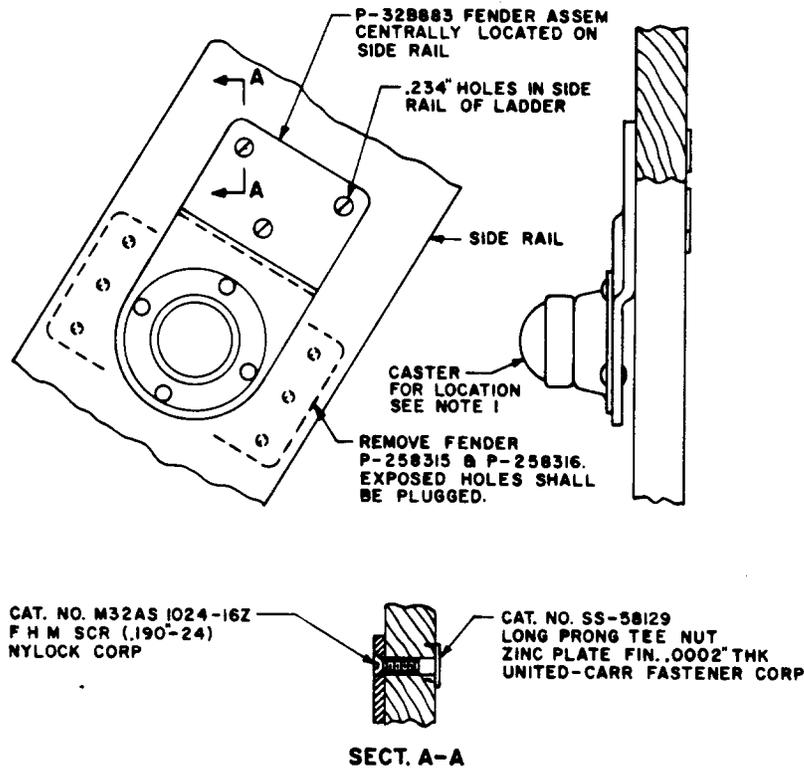


Fig. 9—Platform- and Portable-Type Rolling Ladder Wheel Assemblies



NOTES:
1. FENDER ASSEMBLY SHALL BE LOCATED ON THE SIDE RAIL ADJACENT TO THE GUARD RAIL WITH THE CASTER CONTACTING THE CENTER OF THE GUARD RAIL.

Fig. 10—Replacing Fender Assembly

3. REPLACEMENT PROCEDURES

3.01 *List of Tools, Gauges, Materials, and Apparatus*

CODE OR SPEC NO.	DESCRIPTION		
			C (24 teeth per inch)
		AT-8420	B combination pliers
		AT-8551	Hacksaw frame B
		KS-2993	Brush
TOOLS		KS-5174	Footstool
247	1-1/4 inch flat open single-end wrench	KS-14208	Brush
353C	Grease gun	R-1051	Pillar file
—	Hand drill, Stanley Tool No. 624	R-1060	Putty knife
AT-7329	1-Pound Ball-Peen Hammer	R-1298	Oilcan
AT-8176	Hacksaw blade	R-1455	6-inch C clamp
	B (18 teeth per inch)	R-1482	H-type combination file

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TOOLS		MATERIALS	
R-1640	Center punch	KS-7860	Petroleum spirits
R-2192	Rubber mallet	KS-8662	Gray enamel
R-2512	8-inch adjustable open-end wrench	KS-16326 L1	Oil
R-2919	3/16-inch round brush	KS-16832 L2	Lubricant
R-3370	Wire rope shears	R-2998	Tan chromate enamel
—	No. 3 twist drill	—	3/4-inch gray friction tape
—	No. 19 twist drill	—	Assorted grits of abrasive paper
—	No. 28 twist drill	—	Plastic wood
—	7/32-inch twist drill	—	Clean rags
—	15/32-inch twist drill	—	3-foot length of 1/4-inch rope (two required)
—	5/16-inch twist drill	—	25 feet of 1/2-inch manila rope
—	3/8-inch twist drill	—	Clear spar varnish
—	4-inch wood sanding block	—	White shellac
—	Small cellulose sponge	—	Finish, wood, clear penetrating, DuPont VC-5357 or Pittsburgh Plate Glass Company VD-4971 in quart cans for touching up ladders having the 118BB finish
—	1/2-inch cold chisel		
—	Small sharp knife		
—	3-inch C screwdriver (or the replaced 3-inch cabinet screwdriver)		
—	4-inch E screwdriver (or the replaced 4-inch regular screwdriver)		
—	5-inch E screwdriver (or the replaced 5-inch regular screwdriver)		
—	Goggles, American Optical 710B or Bausch & Lomb, Inc, W-74 Super BAL-GUARD* II		

*Registered trademark of Bausch & Lomb, Inc.

GAUGES

R-2481 Spring, balance (or equivalent)

MATERIALS

KS-7471 Grease

APPARATUS

P-432514 Wire washers

3.02 Care should be exercised when using petroleum spirits in power rooms where there are dc machines, since commutation may be adversely affected by the softening of the commutator film by the fumes. To avoid the need for burnishing the commutators of the dc machines after doing any cleaning operations called for in this section, provide adequate ventilation, use the absolute minimum amount of petroleum spirits required for the cleaning operation, and keep the container closed when not in use.

3.03 Replacement procedures for ladder parts listed in this section are provided in the following order.

Danger: Care shall be exercised when handling ladders that are equipped with power trolleys.

Straight-Type Rolling Ladders (3.06)

Rolling Ladder Brakes (3.25)

Platform-Type Rolling Ladders, KS-5139-01 (3.34)

Ladder Track (3.40 and 3.41)

Ladder Seats (3.42 through 3.47)

3.04 All wood parts furnished for replacement purposes will be finished with clear, penetrating, wood coating.

3.05 No replacement procedures are specified for screws or other parts when the procedure consists of a simple operation.

STRAIGHT-TYPE ROLLING LADDERS

3.06 Steps: To replace a step, proceed as follows.

- (1) Remove the two screws from each side rail, and loosen the adjacent tie rod sufficiently to release the step.
- (2) Using the R-2192 rubber mallet, tap alternately at the end and the center of the step until it is driven free.
- (3) Insert the new step evenly into the side-rail groove and, with the rubber mallet, drive it into place. If the new step is too thick for the side rail grooves, use the sanding block to taper the **top edge** of the step ends so the load-bearing **bottom edge** remains squared. Care shall be exercised not to round the edges during the sanding process.
- (4) Should the screw lead holes of the new step fail to center with those in the side rail, fill the lead holes with plastic wood and allow to dry thoroughly.
- (5) Insert new step, and drill new holes 1-3/4 inches deep using the 7/32-inch twist drill.
- (6) Insert the four screws and tighten firmly.

- (7) Remove burrs and sharp edges with the R-1051 file.
- (8) Tighten all tie rods that may have been loosened during step repair.
- (9) If the tie rods are secured with nuts, remove burrs by riveting the ends of the rod with the ball-peen hammer. Tie rods using Teenuts are self-locking and should not be riveted or staked.
- (10) When replacing a malleable iron top step of a KS-5049-01 rolling ladder, redrill the side rails as shown in Fig. 8 and mount the step assembly and plate as shown in Fig. 1.

3.07 Handrails

- (1) Remove the old handrail by taking out the carriage bolts at each side bracket and remove the lower end bracket.
- (2) Force the new handrail firmly into the upper end bracket, and mark the drill points at each side bracket.
- (3) Fill shop-drilled holes that do not match the side brackets with plastic wood, and allow to dry thoroughly.
- (4) If new holes are necessary, clamp the handrail to a bench and drill all holes with a No. 3 twist drill in a vertical position.
- (5) Position the lower end bracket so the handrail is a tight fit; then bolt the handrail in place.
- (6) If the old end bracket screw holes do not match, fill with plastic wood and redrill new holes with the No. 19 twist drill. This is a screw body hole to prevent splitting the side rail and should be drilled no deeper than 1/2 inch to ensure secure fastening of the screw.
- (7) Stake the side bracket carriage bolts with the center punch.
- (8) Check all bolts and screws for roughness.
- (9) Remove burrs and sharp edges with the R-1051 file.

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(10) When open-end type handrails are being replaced with the end bracket type, proceed as follows.

- (a) Mount the lower end bracket first as shown in Fig. 1.
- (b) Force the new handrail into the lower end bracket.
- (c) Mount the handrail and upper end bracket. The end brackets may be tipped slightly toward the outside, if necessary, to align the handrail and the old-style side brackets.

3.08 *End Brackets and Side Brackets*

- (1) When replacing end brackets, make sure the handrail is a tight fit.
- (2) If necessary, proceed as covered in 3.07 to position the new bracket.
- (3) After replacing a new side bracket, hammer the Teenut in place and tighten the Nylok screws as shown in Fig. 1.
- (4) After tightening the screw and bushing used for mounting, stake the end of the screw in three places.
- (5) Draw the handrail carriage bolt up tight and stake.
- (6) Check metal fittings for burrs and sharp edges and remove with the R-1051 file.

3.09 *Tie Rods:* When replacing tie rods, proceed as follows.

- (1) Position the Teenut in place.
- (2) Insert the new tie rod in the ladder making certain there is a washer under the tie rod head.
- (3) Turn the tie rod to a firm tightness in the Teenut as shown in Fig. 1.
- (4) On ladders which have staked or riveted nuts on one end of the tie rods, if the tie rod and nut are reused, rivet the rod end with a ball-peen hammer so it will be free from burrs.

3.10 *Fender Assembly:* The P-32B883 ball-bearing caster fender assembly shown in Fig. 10 shall be used to replace worn, broken fender assemblies or, on older ladders, to replace the P-258315 and P-258316 fenders attached to the side rail of the ladder with six screws and nuts.

- (a) When replacing a ball-bearing caster fender assembly with a similar one, new screws shall be used; but the existing Teenut may be reused if threads and prongs are not damaged or deformed.
- (b) When replacing fenders on the older ladders, proceed as follows.
 - (1) Disassemble and discard the parts.
 - (2) Fill exposed holes with plastic wood, and allow to dry thoroughly.
 - (3) Flush and refinish before attaching the new fender assembly as shown in Fig. 10.

3.11 *Removing and Replacing Rolling Ladders:* Roll the ladder to the end of the track toward which it is inclined. Loop a 1/2-inch 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 that step in the upper portion of the ladder which will allow the rope to be as near vertical as possible when the trolley is disengaged from the track. Badly worn manila rope should not be used for this purpose because of the possibility of contaminating the area with manila fibers.

Danger: Where rolling ladders propel power trolleys, the power trolley must be removed from its trolley duct before the ladder is prepared for removal. Refer to Section 065-115-801 for piece-part data and replacement procedures.

3.12 With one workman supporting the ladder from the floor by means of the rope, a second workman ascends a portable ladder, removes the ladder stop, 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 workman. If the ladder is brake equipped, allow it to rest on the KS-5174 footstool to protect the lower portion of the brake assembly. When there are other

ladders in the same track section, place the R-1455 C clamp in front of the last support as a temporary ladder stop.

3.13 Replace the ladder in an inverse procedure to its removal. As one workman supports the weight of the ladder with the rope, a second workman raises it to the proper level, then ascends a portable stepladder, and guides the trolley into the track. Check that the cotter pins and rubber bushing of the ladder stop are in good condition, and replace the stop in the track immediately.

Danger: Power trolleys shall not be inserted in power trolley duct until the ladder is completely restored to operation.

3.14 In locations where the ladder track extends to the wall, the end section of track will have to be removed in order to release the ladder. Working from a portable stepladder, tie the splice end of the track section to be removed securely to the track support with a short piece of rope. Remove the splice screws and, with the ball-peen hammer, drive the splice onto the section being removed. The splice may be moved easily if the lips of the ladder track are compressed slightly with the combination pliers while tapping with the hammer. Place another tie at the wall end of the track section, and proceed to remove the creeper bolts and hanger bracket bolts from each support. When the last support has been removed, swing the loose track section out of the way and lower the ladder as covered in 3.12 and 3.13.

Note: If the end track section is of sufficient length, it may be possible to loosen it at the splice end only. Care should be taken that enough length of the section is free so it will not be distorted when it is swung out of position.

3.15 When the ladder has been restored to the track, swing the loose track section into line and drive the splice back into place. Check that the track ends are no more than a maximum of 1/8 inch apart. Replace the splice screws and, where a single nut is used, stake the screw. Replace the track hanger bracket bolts and nuts. Hanger bolt hardware consisting of square head machine screws and/or nuts with cotter pins should be replaced with hex. head machine screws equipped

with "ANCO" locknuts. Replace and stake all creeper bolts.

3.16 Trolley Wheel Truck Assembly: The wheel truck assembly must be removed from the track for replacement or bearing inspection. Inspect the trucks to assure that all bearings are properly lubricated, do not have excessive wear (rotational movement of the wheel in the plane of the shaft axis), and have freedom of rotation. If it is found that the bearings are not properly lubricated, they must be cleaned and repacked with KS-7471 grease. The KS-7471 grease is forced into the bearing race by finger pressure. After repacking, rotate the wheels and remove any grease that has a tendency to work out of the bearings. ♦Remove any burrs and sharp edges from the outside edge of the trolley wheels with the R-1051 file.♦ If it is found that the fault with the wheel trucks cannot be corrected by cleaning and repacking the bearings, replace both trucks. Remove the trucks from an ED ladder by turning off the nut and from a KS ladder by removing the cotter pins. Examine the replacement trucks to see that all bearings turn freely and assure they are properly packed with grease. Fasten the new trucks to the trolley crescent of ED ladders with screws, nuts, and stake. On the KS ladders, insert the cotter pins in the trolley pin and bend them back fully around the trolley pin.

3.17 If the crescent or the trolley yoke has been changed, before rehangng the ladder, assure that cotter pins and nuts have been replaced with "ANCO" locknuts on the ends of the hanger rods and at the end of the crescent bolt.

3.18 ♦Adjustment of Hanger Rods and Floor Wheels: The effective length of the hanger rods shall be such that the steps of the ladder are approximately level. It is preferable that the ladder steps slope slightly toward the rear. The top surface of the steps should not slope downward more than 9/32 inch toward the rear or 3/16 inch toward the front. If necessary, 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 degrees with the frame guard rails when the ladder is centered in the aisle.♦

3.19 Replacement of Cast-Type Lower Fixture Assembly: Remove the old

assembly and modify the ends of the ladder in accordance with view A of Fig. 1. Position the new assemblies as shown in Fig. 1, mark the bolt holes, and drill with the 15/32-inch twist drill. Mount the assemblies, and position them so the ladder side rails are a minimum of 1-1/2 inches from the floor; then the ladder will roll in a straight line.

3.20 Tires: Replace tires on punched wheels by dismounting the wheel and disassembling the wheel discs. On shafts secured by a nut and washer, use the cold chisel and ball-peen hammer to straighten the locking tab of the washer and turn off the nut.

Danger 1: The head of the cold chisel shall not be mushroomed.

Danger 2: No hammer other than a ball-peen hammer shall be used for striking the cold chisel.

Danger 3: Safety goggles shall be worn when striking the head of the cold chisel with the ball-peen hammer to prevent the possibility of flying chips causing personal injury.

On shafts of the cotter pin type, straighten the cotter pin and remove. Remove the shaft and check for wear and scoring. Disassemble the wheel by removing the disc screws, and check the condition of the bearing before mounting the new tire.

3.21 Reassemble and remount the wheel with the new tire. Replace the cotter pin and spread fully to the edges of the slot. On the screw-type shaft, do not turn the nut up too tightly as the bent tab of the washer will lock it securely in place. At some later date, after the new tire has assumed its permanent set, it may be necessary to retighten the wheel disc screws.

3.22 When necessary to replace a cast metal wheel which is to be used with cast brackets having narrow forks, the hubs of the new wheels must be filed sufficiently to allow space for the fiber washers. With the R-1482H-type combination file, dress down the hubs of the new wheel evenly until it turns freely in its supporting details and is centered as closely as possible.

3.23 Bearings: In punched-typed wheels, bearings are changed by disassembling the wheel discs and in cast metal wheels by the replacement of the wheel itself as covered in 3.20 through 3.22.

3.24 Shafts: When a shaft is being replaced and the old grease cup is being reused, clean out the old grease and repack with new KS-7471 grease. Screw the grease cup onto the new shaft until the shaft is fully packed with grease, and mount within the wheel assembly. After the wheel assembly is mounted, continue to turn the grease cup until the grease appears at the end of the bearing. Then remove the grease cup, refill, and replace it on the shaft.

ROLLING LADDER BRAKES

3.25 When making repairs, cleaning, or replacing parts on rolling ladder brakes, lower the ladder from the track as covered in 3.11, 3.12, and 3.14 and allow it to rest on the KS-5174 footstool.

3.26 Wheel Truck Assembly: The wheel truck assembly must be removed from the track for replacement or bearing inspection. Inspect the trucks to assure that all bearings are properly lubricated, do not have excessive wear (rotational movement of the wheel in the plane of the shaft axis) and have freedom of rotation. If it is found that the bearings are not properly lubricated, they must be cleaned and repacked with KS-7471 grease. After repacking, rotate the wheels and remove any grease that has a tendency to work out of the bearings. Remove any burrs and sharp edges from the outside of the trolley wheels with the R-1051 file. If it is found that cleaning and repacking does not correct the fault with the bearings, then replace both trucks. In removing the old trucks and replacing with new, check the new trucks for freedom of movement and tightness of assembly and see that the bearings are adequately packed with grease. To pack the new wheel bearings, force KS-7471 grease into the bearing race by finger pressure. The wheels should be spun, and all excess grease wiped off before returning the assembly to the track. In removing the old trucks and replacing with new, on the 2A brake stake the bolt with the R-1640 center punch, and on the KS brakes spread the cotter pins fully and bend them back around the pin.

3.27 Brake Shoes and Linings: After the brake shoes and linings have been replaced, check that the coil springs are in good condition. When coil springs are installed, they should hold the new shoes firmly against the wedge when the stop surface of the release lever is brought into contact with the stop.

Note: The setting of the brake release stop screw is a function of the 2A brake assembly. It is factory adjusted to a maximum 1/16-inch clearance between the end of the release lever adjustment screw and the associated stop surface of the release lever when the brake is in the unoperated position. The adjusted screw is held in place by a locknut.

3.28 Replace the ladder and restore the track as covered in 3.13 and 3.15.

3.29 Final Brake Adjustment: Adjust the tension of the retractile spring so with an unloaded ladder, the hanger pivot bolt will touch the top of the circular opening in the frame lightly but firmly. Increasing the tension beyond this amount will decrease the braking power with a man on the lower steps of the ladder. Secure this adjustment by tightening the cap nut. If the eye bolt is too long to permit locking the hexagonal nut, cut off the end of the eye bolt with the hacksaw so it will extend approximately 1/2 inch below the hexagonal nut. (See Fig. 4.) After this final adjustment is done, refer to Section 065-105-501 and perform operations as specified in Inspection D, Steps 11 through 16.

3.30 Brake Release Rope: To replace a broken or defective release rope, remove the four rope clamp assemblies or the two rope clamp assemblies and Nicopress* aluminum sleeves and remove the old rope.

*Registered trademark of the National Telephone Supply Company.

3.31 Installing Rope—Under Guide

(a) **Old-Style Guides:** Thread the new rope up through the eyes of each rope guide bracket, and release the lever. With a man's weight on the ladder holding the brake in its operated position (release lever up), draw the rope through the lever until the end is approximately 2 inches above the top guide bracket. Place a clamp so the upper end of the rope will be

underflush (maximum 1/8 inch) with the bottom of the clamp. With the release lever held lightly against its stop (brake release), adjust the rope loop so the lower of the two clamps is a maximum 1/2 inch and a minimum 1/8 inch from the top of the top bracket as shown in Fig. 5. Tighten the clamp. The second clamp is then assembled on the rope at a point just above the lower clamp with the screws engaged so the clamp may slide along the rope to a point approximately 1 inch below the release lever. Tighten the screws of the second clamp.

(b) **New-Style Guides:** Thread the new rope up through the eyes of each rope guide bracket, through the Nicopress aluminum sleeve, and then the release lever. With a man's weight on the ladder holding the brake in its operated position (release lever up), draw the rope through the lever and back through the Nicopress aluminum sleeve until the rope end is approximately 2 inches above the top guide bracket. Place a clamp so the upper end of the rope will be underflush (maximum 1/8 inch) with the bottom of the clamp. With the release lever held lightly against its stop (brake release), adjust the rope loop so the clamp is a maximum 1/2 inch and a minimum 1/8 inch from the top of the top bracket as shown in Fig. 5. Tighten the clamp. Then slide the Nicopress aluminum sleeve to a point approximately 1 inch below the release lever.

3.32 Installing Rope—Lower Guide

(a) **Old-Style Guides:** At lowest rope guide bracket, turn up the lower end of the rope and so adjust it that there will be about 1 inch of slack when the brake is fully operated by the weight of a man on the ladder (release lever up). Secure this adjustment with a clamp placed 1 inch above the lowest guide bracket. Place the second clamp so that with the rope held tightly between the two lowest guide brackets, the top of the clamp will be a maximum 3/16 inch and a minimum 1/16 inch below the bottom of the second lowest guide bracket as shown in Fig. 4. With the rope shears, cut off the excess rope so the end will be underflush with the top of the clamp as shown in Fig. 4.

(b) **New-Style Guides:** At the lowest rope guide bracket, thread rope through a Nicopress aluminum sleeve, through the bottom bracket, and then back through the aluminum sleeve.

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Adjust it so there will be about 1 inch of slack when the brake is fully operated by the weight of a man on the ladder (release lever up). Secure this adjustment with a clamp placed so the top of the clamp will be a maximum 3/16 inch and a minimum 1/16 inch below the bottom of the second lowest bracket as shown in Fig. 5. With wire rope shears, cut off the excess rope so the end will be underflush with the top of the clamp. Tighten the clamp. Slide the aluminum sleeve to a point approximately 1 inch above the lower rope guide bracket.

3.33 Lubrication: During annual inspection, or as conditions and usage warrant, lubricate the rolling ladder brakes illustrated in Fig. 4 with one dip of KS-16832 L2 lubricant as follows:

- (a) Both wheel assemblies center pivots and both surfaces of frame front and rear
- (b) Wedge assembly lower loop and both surfaces of frame front and rear
- (c) Coil spring (retractile spring) upper pivot and lower loop and eye bolt.

One dip of KS-16832 L2 lubricant is the amount of lubricant retained on a KS-14208 brush after being dipped into the lubricant to a depth of 1/2 inch and the tip lightly touched against the edge of the container to remove any surplus.

PLATFORM-TYPE ROLLING LADDERS, KS-5139-01

3.34 The track-supported, platform-type rolling ladder, Fig. 6, consists of three major parts: the vertical legs, which are suspended vertically from a track-type trolley to the floor; a small platform located approximately 5 feet 10 inches from the top of the ladder; and an inclined portion equipped with steps reaching from the platform to the floor. A folding step which is part of the platform assembly provides assistance in reaching equipment at the top of the frames.

3.35 Platform Assemblies: Remove the old platform step assembly by taking out the associated tie rod which acts as the hinge for the step platform. Position the new assembly, reinsert the tie rod and washers, and draw the nut up tightly. If necessary, cut off the tie rod end so only one or two threads project beyond the nut; then rivet the end so it will be free from burrs.

Tie rods with Teenuts are self-locking and are not riveted or staked.

3.36 Trolley and wheel truck assembly replacement is covered under Straight-Type Rolling Ladders without brakes, 3.22 and 3.23. The lower fixture assembly replacement is covered under Straight-Type Rolling Ladders, 3.19 through 3.24. Refer to Fig. 1 and 2.

3.37 Wheel and Wheel Support Assemblies:

The ladder's inclined legs are equipped with regulation-type floor wheel assemblies which help to support the weight of the ladder, while the vertical legs have a retractile-type wheel assembly which exerts enough pressure on the floor to eliminate side sway of the ladder. The wheel and wheel support assemblies on the vertical legs for the platform-type rolling ladder are EP-30A113 (left leg) and EP-30A572 (right leg). The adjustments for this assembly when used on platform-type rolling ladders are as follows.

- (a) When replacing outside supplier-type retractile wheel assemblies on platform-type rolling ladders, roll the ladder to a point in the run where the clearance between the bottom of the vertical rail and the floor is the greatest. Replace the assembly being sure to maintain an approximate gap of 1/4 inch between the stop and the movable bracket. The slight rotation of the assembly that might be necessary to do this can be made possible by enlarging the holes for the mounting screws with a file where necessary.
- (b) On ladders equipped with Western Electric retractile wheel assemblies, the ladder shall be moved the full length of the ladder run and the backstop screw of the vertical leg wheel so adjusted that at no point in the run shall the backstop gap be less than approximately 1/16 inch. The spring tension shall then be adjusted so 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.

- (c) The inclined leg wheel and support assemblies are identified as P-33A398 lower fixture assembly and associated parts. Parts ordinarily required for maintenance which are interchangeable between the P-33A398 assembly and the B-651613

assembly are illustrated in Fig. 3. These parts are marked with an asterisk(*).

3.38 Tie rod and step replacement procedures are covered under Straight-Type Rolling Ladders, 3.06 and 3.09.

3.39 Fender assemblies on platform-type rolling ladders shall be replaced as covered in 3.10 and illustrated in Fig. 10.

LADDER TRACK

3.40 Creeper Bolts: To install additional creeper bolts, drill a hole through the track in line with the center of the hanger bracket, using the 5/16-inch twist drill. Provide adequate protection to prevent metal filings from falling into the equipment. Place the creeper bolt with the head inside the track, draw the nut up tightly, and stake.

3.41 Track Splice: If the track does not line up within the splice, it may be possible to correct by driving metal shims (P-452724) between the splice and the side of the track. However, if the splice is distorted beyond correction, remove the splice screws and, replace any screws that have a burred screwdriver slot with the ball-peen hammer, drive the splice onto the supported section of the track, swing the free section out of the way, and then drive the splice off. Place the new splice in a reverse manner and check the track ends for alignment and a maximum separation of 1/8 inch. Replace the screws and stake. If the screws are in such a location that they cannot be staked, use the 3/4-inch screw and install two nuts.

LADDER SEATS

3.42 Ladder seats are used only on track-supported rolling ladders, Fig. 11. The ladder seat is removed as soon as it is no longer required. Before placing a metal ladder seat on a ladder, check for the lock handle to be in the released position. This position may be either vertical or horizontal depending on the model of the ladder seat.

WARNING: *Metal ladder seats shall not be mounted on the ladder so that the seat causes interference with the trolley-type appliance outlet. Failure to observe this may result in damages*

to the outlet or the ladder-locking mechanism.

3.43 A metal ladder seat KS-5173-02, as shown in Fig. 12, is placed on a ladder in the following manner.

- (a) Tilt seat end slightly upward, and place tool box end between desired steps of ladder.
- (b) Guide ladder seat toward ladder until lip at tool box end is slightly to rear of upper step and bottom of ladder seat rests on a lower step.
- (c) Slide bottom of ladder seat to rear of lower step, checking that lip at tool box end comes to rest behind upper step as locking clamp slips into place over rear edge of lower step.
- (d) Operate lock handle to secure ladder seat to lower step by means of locking clamp.

3.44 A metal ladder seat is removed from a ladder in the following manner.

- (a) Release lock handle.
- (b) Disengage locking clamp by operating lock handle, either up and toward seat end or down and toward footrest, depending on the model of the seat.
- (c) With lock handle in release position, slide bottom of ladder seat out from ladder.
- (d) Tilt seat end up slightly and tool box end down until lip clears rear edge of upper step; then draw seat clear of ladder.

3.45 The ladder seat lock should be lubricated occasionally with a slight amount of KS-16326 L1 oil to assure proper operation.

3.46 Any burr appearing on the metal seat should be removed with the R-1051 file.

3.47 The portable flat, wooden KS-5173-01 ladder seat is available for some old-style ladders which will not accommodate the new KS-5173-02 magnesium and aluminum portable metal ladder seat.

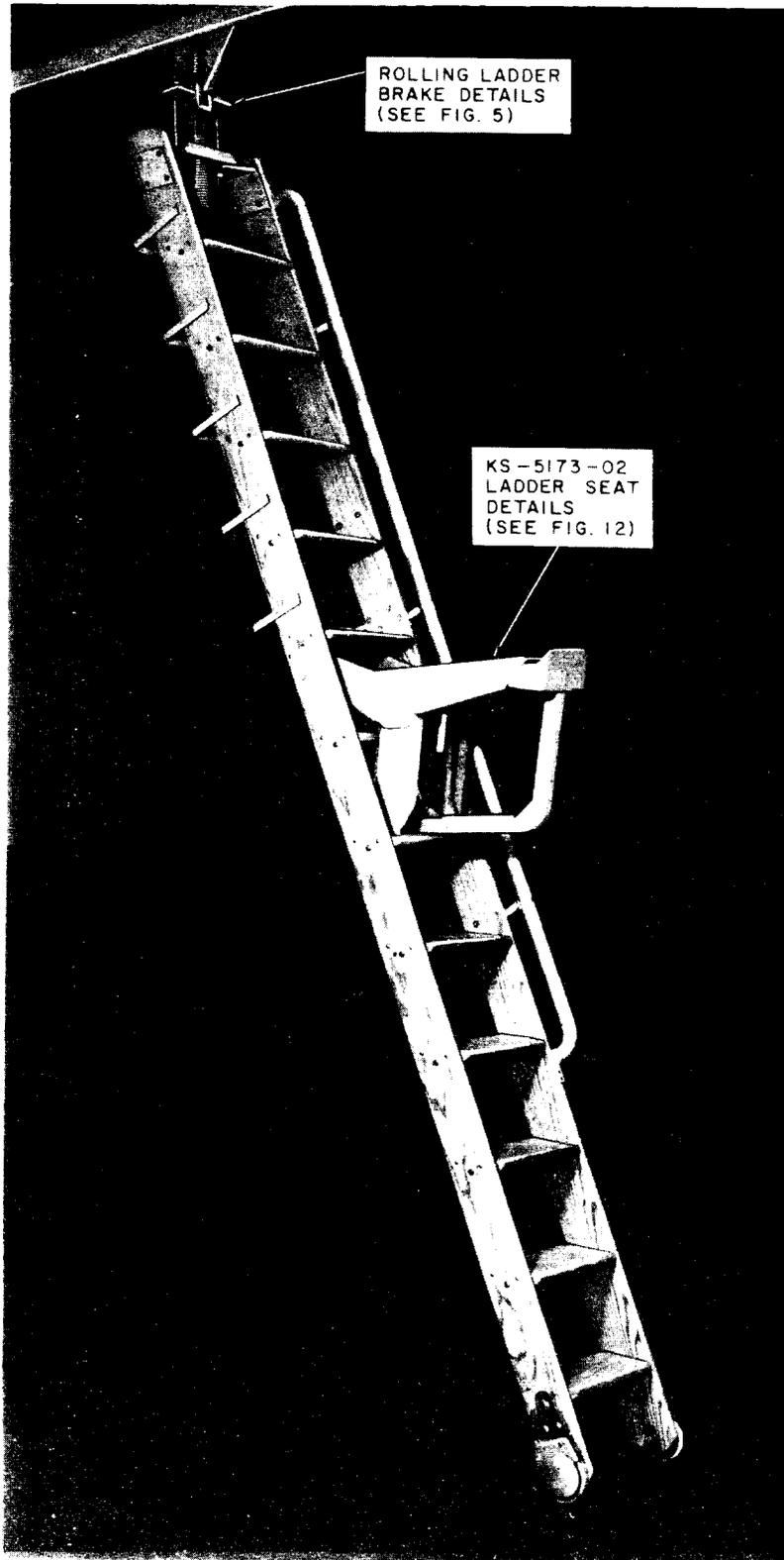


Fig. 11—KS-5173-02 Ladder Seat Installed on Typical Straight-Type Rolling Ladder

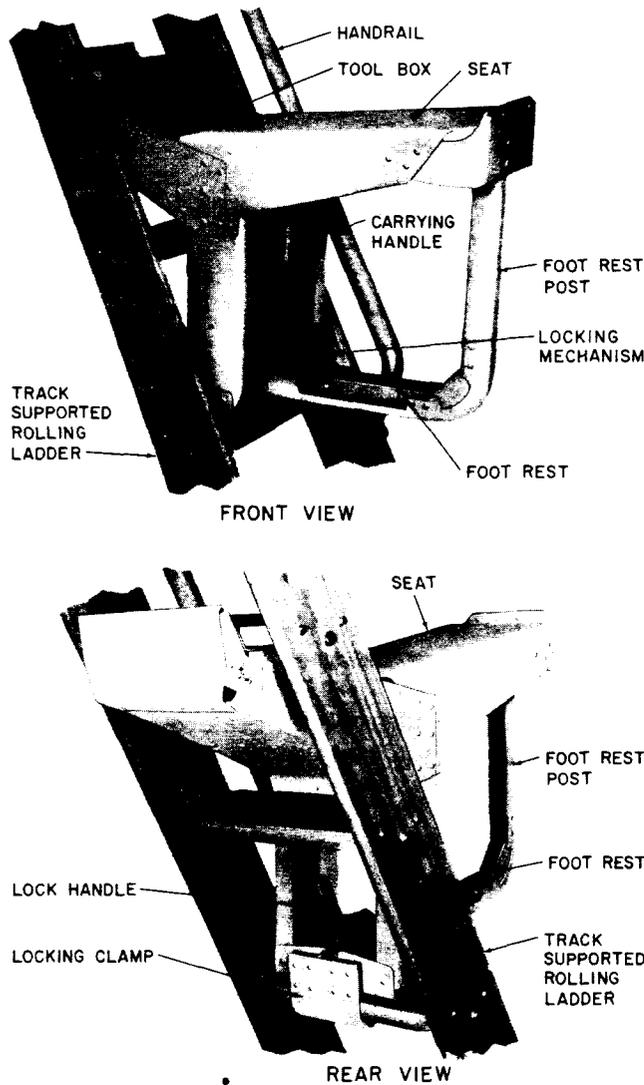


Fig. 12—KS-5173-02 Ladder Seat in Place (Front and Rear Views)

4. MINOR REPAIRS

4.01 This portion of the section covers the minor repairs that may be made to ladders, ladder track, and ladder seats. It includes cleaning, reconditioning, and restoration of wood and finished metal parts, cleaning and lubricating of moving parts, and repair and maintenance of brakes and brake ropes.

CLEANING WOOD PARTS

4.02 Remove wax and dirt from wood parts by using a cloth moistened with KS-7860

petroleum spirits. This method is applicable to both the varnished and the penetrating finish ladders and ladder seats. If trouble should be encountered in the cleaning of excessively dirty, penetrating finish ladders, take household scouring powder to some point outside the switchroom and mix with water to form a thick paste. Dip the cellulose sponge lightly in the paste, and rub the soiled part briskly until it becomes clean. Rinse the sponge well in clear water, and wipe the cleaned area thoroughly. This method has a bleaching effect on the finish, and it will be necessary, after the part is thoroughly dried, to wipe a thin coat of new penetrating finish over the cleaned portion with a soft cloth.

4.03 Remove wax and dirt from the bottom of ED-99543-70 ladder block using a cloth moistened with KS-7860 petroleum spirits.

RECONDITIONING WOOD PARTS

4.04 Wood parts that are damaged to the extent that they may not be refinished should be replaced. If refinishing of the part will not impair its strength, cut out the damaged portion with the sharp knife and sand the area smooth with fine sandpaper. Wipe up all dust with a soft cloth moistened with petroleum spirits, allow to dry, and with the KS-2993 brush apply a thin coat of penetrating finish to the sanded area. Allow the finish to penetrate for approximately 15 minutes; then with a clean cloth wipe off the excess finish before it becomes tacky. When the finish is thoroughly dry after approximately 1 hour, sand the area lightly again; and after wiping with the moistened cloth and allowing the area to dry, apply a second coat of finish. Wipe off the excess finish, and allow the area to dry for several hours before using.

4.05 Varnished ladder and ladder seat parts may be refinished as covered in 4.04. However, if for appearance reasons it is not desirable to mix the two finishes, use two coats of clear spar varnish in place of the penetrating finish. Allow the varnish to dry overnight between coats and before using.

4.06 If the refinishing process is so extensive as to cause an undesirable amount of dust in the equipment room, lower the ladder from the track as covered in 3.11 through 3.17 and move it to some other portion of the building during the reconditioning operations.

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4.07 Steps that have become badly worn or damaged should be replaced with new steps rather than turning them over or reversing the front to the rear.

CLEANING METAL PARTS

4.08 Finished metal surfaces shall be cleaned by wiping lightly with a cloth moistened with petroleum spirits or with household scouring powder if the dirt is stubbornly ingrained.

RECONDITIONING METAL PARTS

4.09 Burrs and sharp edges should be removed with the R-1051 file or by peening with the ball-peen hammer.

4.10 When a nut is tightened on an end-staked bolt or a riveted tie rod, saw one or two threads off the end beyond the nut, if necessary, before restaking or reriveting. Peen staked bolts free of sharp edges, and rivet tie rods free from burrs.

RETOUCHING FINISHES ON METAL PARTS

4.11 Details having a No. 395, 525, or 533 gray enamel finish and which have been marred by the use of a file shall be retouched with the KS-8662 gray enamel finish using the R-2919, 3/16-inch round brush. Screws, nuts, washers, and details having the No. 289 passivated zinc finish and which have been marred by the use of a file or another tool shall be retouched with the R-2998 tan, chromate, enamel finish using the R-2919, 3/16-inch round brush.

CONDITIONING OF FLOOR WHEELS

4.12 If wheels rub against supporting details, determine if the cause is lack of sufficient washers to center the wheel in the bracket, if the wheel bearing or axle is worn, or if the wheel bearing is not gripped tightly by the wheel discs. As the condition requires, add washers, replace parts, or tighten the bearing in the disc by the addition of two wire washers, P-432514. The wire washers can be placed by removing and disassembling the wheel. Place one washer over each side of the bearing within the collar, and reassemble the wheel. If wheel bracket assembly P-450360 becomes bent, it shall be removed and replaced by wheel bracket assembly P-33A398, since straightening

the bend might tend to further weaken the bracket as well as weaken the welded joint.

LUBRICATION OF FLOOR WHEELS

4.13 If floor wheels do not revolve freely, remove any foreign material that may be twisted around the axle. Check metal wheels for lubrication. If grease cups are provided and a bearing appears dry, turn up its grease cup until a small amount of grease is forced through as indicated by grease appearing at the far end of the bearing. If the cup is screwed up to the limit of its travel, refill it with KS-7471 grease. If grease cannot be forced through the bearing, remove the axle and thoroughly clean all passages. Where grease cups are not provided on ladders equipped with metal wheels, apply a few drops of KS-16326 L1 oil, exercising care to avoid any excess which might later reach the rubber tires or the floor.

Note: Bearings of rubber composition wheels should not be lubricated unless bronze bushed.

BRAKE ADJUSTMENTS

4.14 After making minor repairs, brakes shall be adjusted as covered in 3.29.

CONDITIONING OF TRACK AND BRAKE LININGS

4.15 During annual inspections and as conditions and usage warrant, remove all oil or grease from a ladder track by folding a piece of cloth to make a swab which will fit snugly into the ladder track. Moisten slightly with petroleum spirits. Before folding the cloth, tie a piece of heavy twine about the middle. Move all the ladders to one end of the ladder run, and remove the ladder stop from the vacated end. Insert the swab in the open end of the track with the twine extending through the track slot, and proceed to swab the track thoroughly over half its length. Dry the track with a dry cloth swab in the same manner, and replace the ladder stop. Proceed to clean the remainder of the track following the same procedure.

4.16 If the brake linings of the ladders have become saturated with the oil or grease, it will be necessary to lower the ladders and replace the linings.

HANDRAIL INSULATION

4.17 Check that the tape on the metal handrail is in good condition. If signs of wear are apparent or if the tape is torn, remove the old tape and replace it with two layers of new, gray, friction tape or grey, plastic tape per KS-14090. Apply the tape with at least a half lap, wrapped from the bottom up. Where friction tape is used, it shall be finished with two coats of white shellac.

FENDER ASSEMBLIES

4.18 If the ball-bearing caster contained in the fender assembly should stick or fail to rotate freely, it shall be cleaned with a clean cloth moistened with petroleum spirits. The ball-bearing caster shall be slightly lubricated by wiping with a clean cloth moistened with a few drops of oil to prevent rust.