# LADDERS AND LADDER SEATS

# TESTS AND INSPECTIONS

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## 1. GENERAL

**1.01** This section describes inspections of track-type rolling ladders and ladder tracks, portable-type rolling ladders, platform-type rolling ladders, portable ladders, KS-21415, L1 and L2, rolling platform ladders, and rolling-ladder seats.

**1.02** Revision arrows are used to emphasize significant changes. The Equipment Test List is not affected. The reasons for reissue are listed below.

(a) To revise information on the inspection of brake and brake rope

(b) To add information for the inspection of rolling ladder seats.

**1.03** Lubrication information requirements are given in Section 065-105-802.

**1.04** The inspections are shown in steps for convenience only. The order of the steps need not be followed when specific inspections are required.

## 2. APPARATUS

**2.01** ***List of Tools and Materials:*** The following tools and materials are used in this section:

| TOOLS | DESCRIPTION |
|---|---|
| AT-7329 | 1-Pound Ball Peen Hammer |
| AT-7825 | 4-Inch E Screwdriver |
| AT-7825 | 5-Inch E Screwdriver |
| R-2481 | 30-Pound Spring Balance |
| R-2512 | 15/16-Inch Adjustable Open-End Wrench |
| R-8550 | 6-Inch Steel Scale |
| **MATERIALS** | |
| KS-16326 | Oil |

## 3. METHODS

**3.01** Use the R-2512 adjustable wrench to test the tightness of threaded parts and the AT-7329 hammer to test the tightness of rivets.

## A. General Inspection—All Types of Ladders

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Inspect general condition of wood parts. | No cracks, checks, breaks, or rough splintered portions. |
| 2 | Inspect finish on wood parts. | No deterioration or peeling.<br>No unsightly or stained portions.<br>No excessive wear. |
| 3 | Inspect for dirt. | No dirt, wax, or grease. |
| 4 | Inspect for loose wood parts. | Handrails firm, tight.<br>Steps firm, tight in place.<br>Screws, nuts, bolts, brackets holding wood parts tight, properly aligned.<br>No rough or splintered edges or corners. |
| 5 | Inspect hardware.<br><br>***Note:*** Old-style mounting bolts with nuts on the inside of side rails, when located so as to constitute a hazard, should be replaced with screws, screw bushings. | All hardware clean.<br>No rough edges.<br>Held firmly in place.<br>Rods, bolts, screws, nuts, rivets, brackets fully tightened, in place.<br>Split lockwashers under nuts at both ends of ladder support rods.<br>Cotter pins in place, spread ends wrapped fully around rods. |
| 6 | Inspect floor wheels. | Floor wheel assemblies, hardware held tightly in place.<br>No excessively worn tires on floor wheels.<br>Free rolling wheels.<br>No rubbing against supporting brackets.<br>Wheel brackets free of bends or twists.<br>Wheel bearings, axles showing no sign of excessive wear.<br>No foreign material wrapped around wheel axles.<br>Floor wheels properly lubricated.<br>No grease or lubricant on tires, especially rubber or rubber composition tires.<br><br>***Note:*** Masonite composition wheels, when encountered, should be replaced. |

### B. Inspection of Ladder Track

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Inspect ladder track. | All ladder track sections in proper alignment.<br>End of sections not more than 1/8 inch apart at splices.<br>Screws, nuts, washers tight.<br>Cotter pins in place, properly spread.<br>No hardware missing.<br>No endplay.<br>No creepage.<br>Ladder stop is in proper position.<br>Ladder stops properly equipped with cotter pins and bushings.<br>Cotter pins, bushings in satisfactory condition.<br>No oil or grease on inside of track.<br>No metal particles or burrs on the inside of the ladder track in the slot area.<br>Inner slot width not less than 13/32 inch on P-450363 and P-450364 track. |

### C. Inspection of Track-Type Rolling Ladders

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Push ladder full length of track. | Ladder runs smoothly.<br>No squealing or sliding of trolley wheels.<br>No resistance to free movement of ladder. |
| 2 | Arrange ladder with center line vertically below track, ladder steps slope slightly downward toward rear and are level lengthwise. | No swerving to left or right. |
| 3 | Lift floor end of ladder or push to one side. | Test wagon can be wheeled by ladder. |
| 4 | ***DANGER: Do not touch any live portions of the power trolley track while performing Step 5 and 6.*** | |
| 5 | Inspect ladder at level of the power trolley where provided. | Power trolley is propelled smoothly, easily through length of trolley track. |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 6 | Inspect ladder trolley wheel assembly. | Bearings lightly lubricated.<br>Rivets tightened.<br><br>Trolley free of any binding action.<br>Outside edge of trolley wheels free of lubricant.<br>No defective parts.<br>Outside edge of trolley wheels free of burrs and sharp edges. |
| 7 | Inspect brake hanger pivot bolt and frame. | No excessive wear on hanger pivot bolt or frame. |
| 8 | Inspect ball bearing caster fender assemblies. | Ball bearing casters rotate freely. |

**D. Inspection of Brake and Brake Rope**

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Set ladder free of guardrail, ascend ladder to third step. (See Step 12 for weight requirements.) | Brake operates.<br>1 inch of slack in brake rope. |
| 2 | ➧While reaching between the steps of the ladder, grasp the rope and pull toward the user with sufficient tension to release the brake.➧ | ➧Rope shows no sign of breakage where bent or contacting rope guides nor between each pair of adjacent rope guides.➧ |
| 3 | Pull brake rope so that brake releases. | Ladder moves freely, easily. |
| 4 | Release rope. | Brake reoperates. |
| 5 | Descend from ladder. | Brake releases.<br>Ladder moves freely, easily. |
| 6 | Ascend ladder, inspect brake release rope. | Rope is not unduly worn at guides ➧between each adjacent pair of guides.➧<br>If older-type cotton braided rope is provided—<br>Rope intact.<br>No frayed areas.<br>No broken threads.<br>Stranded wire core intact.<br><br>***Note:*** Replace any cotton rope found frayed to extent that one or more of outer strands |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| | | (group of threads) are severed or which shows considerable area of abrasion even if no strands are actually worn through.<br><br>If nylon rope is provided— No excessive wear or abrasions resulting in exposure of stranded wire core.<br><br>No cuts and cracks in nylon jacket which expose the stranded wire core or present a sharp edge which would result in a hazard to user.<br><br>Stranded wire core intact (no broken strands). |
| 7 | Inspect rope guides. | Guides are smooth with no rough areas.<br>No burrs or sharp edges present. |
| 8 | Inspect rope clamps. | Clamps are fully tightened.<br>Rope ends are tucked under flush. |
| 9 | ***Warning: Do not bend release lever or force brake mechanism.***<br><br>Pull rope until release lever is brought lightly against stop on the hanger frame. | 1/8 inch minimum to 1/2 inch maximum between release rope stop clamp, guide immediately below clamp. |
| 10 | Descend from ladder. | |
| 11 | With smooth gradual acceleration, move ladder at a walking pace full length of ladder track in each direction. | Brake does not drag at any point in ladder run. |
| 12 | At rear of ladder—With short piece of rope, attach one end of R-2481 spring balance to ladder step as indicated below: | |

| NO. OF STEPS | ATTACH SPRING BALANCE TO |
|---|---|
| 9, 10, or 11 | 3rd step from bottom |
| 12, 13, or 14 | 4th step from botton |
| 15 or 16 | 5th step from bottom |

| | | |
|---|---|---|
| 13 | Place a load of approximately 100 pounds, 140 pounds, or 170 pounds on step to which spring balance is attached. | |
| 14 | Release brake by pulling release rope. | |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 15 | Pull horizontally on spring balance in direction parallel with ladder track and to rear of ladder. | Pull of not more than 7 pounds for a 100-pound load, not more than 12 pounds for a 140-pound load, or not more than 15 pounds for a 170-pound load should be required to set ladder in motion. |
| 16 | Set brake. | |
| 17 | Repeat Step 14. | Pull of not less than 15 pounds for a 100-pound load, not less than 22 pounds for a 140-pound load, or not less than 27 pounds for a 170-pound load will be required.<br><br>***Note:*** Failure of brake to hold ladder properly may be due to presence of oil or grease on inside of track. |

**E. Inspection of Portable-Type Rolling Ladders**

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Inspect for stability. | All four wheels rest firmly on floor. |
| 2 | With no weight on ladder, inspect for freedom of movement. | Ladder moves freely in any horizontal direction with no binding or friction. |
| 3 | Inspect for lubrication. | Wheels are lightly, adequately lubricated. |
| 4 | Place sheet of paper beneath end of each of four side rails; have an average-weight man ascend to third step of ladder, first on one side, then on other. | Paper cannot be withdrawn from any side rail when weighted. |
| 5 | With one foot on bottom step, pull on rope in a direction parallel to the spreaders and fold ladder for storage. | If ladder will not fold to closed position, the spreader assembly should be lubricated with KS-16326 oil. |

### F. Inspection of Platform-Type Rolling Ladders

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Inspect vertical leg wheels.<br><br>***Note:*** Retractile wheel assemblies on vertical legs of platform-type rolling ladder are intended primarily to stabilize ladder throughout full length of track, not to bear weight. | Minimum gap between movable parts of wheel assemblies and their stops is approximately 1/4 inch on KS- ladders, 1/16 inch on ED- ladders. |
| 2 | Check tension of springs in retractile wheel assemblies. | Springs are tensioned so wheels exert sufficient pressure on floor to eliminate side sway of ladder throughout full length of ladder run without causing perceptible lifting effect. |
| 3 | Inspect handrail insulation. | Friction or plastic tape on metal handrails is in good condition.<br>No apparent signs of wear.<br>No tears or flaps.<br>Tape is applied with two layers of tape with half lap from bottom up.<br>Taped portion of handrail is finished with coat of shellac if gray friction tape is used. No shellac required if gray plastic is used. |
| 4 | Inspect ball bearing caster fender assembies. | Ball bearing casters rotate freely. |

### G. Inspection of Pulpit-Type Rolling Ladders

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Inspect for stability. | All four wheels rest firmly on floor. |
| 2 | With no weight on ladder, inspect for freedom of movement. | Ladder moves freely in horizontal direction with no binding or friction. |
| 3 | Inspect for lubrication. | Wheels are lightly, adequately lubricated. |
| 4 | With no weight on ladder, inspect retractile wheel assemblies. | All movable parts returned to rest against their stops. Clearance between sloping side rail and floor is approximately 1/8 inch. |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 5 | With no weight on ladder, inspect retractile casters. | Casters swivel freely through 360 degrees. Clearance between vertical side rails and floor approximately 1/16 inch. |
| 6 | Inspect latches. | Latch arms shall slide freely over entire length of guide bar. |
| 7 | Place sheet of paper beneath each of four side rails. Have an average-weight man ascend to platform. | Paper cannot be withdrawn from any side rail when weighted. |

## H. Inspection of KS-21415, L1 and L2, Rolling Platform Ladders

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Inspect for stability. | All four wheels rest firmly on floor. |
| 2 | With no weight on ladder, inspect for freedom of movement. | Ladder moves freely in any horizontal direction with no binding or friction. |
| 3 | Inspect for lubrication. | Wheels are lightly, adequately lubricated. |
| 4 | Place sheet of paper beneath the rubber shoes which are on each bottom end of the four side rails; have an average-weight man ascend to the center of the main platform. | Paper cannot be withdrawn from beneath any side rail when weighted. |
| 5 | Place folding step in up position and secure in place. | The snap fasteners or magnetic catch retain folding step in up position during ladder movement. |

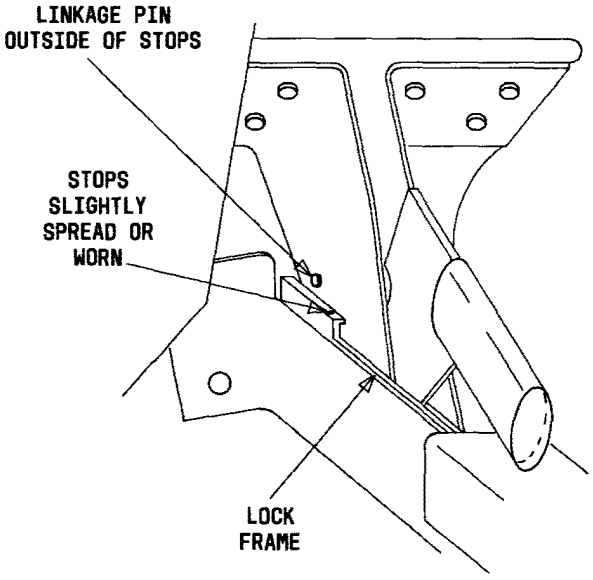
## I. Inspection of Rolling-Ladder Seats

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Inspect wood parts. | Wood parts are smooth.<br>No splinters present.<br>Wood parts are not split or broken. |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| | | ♦***Note:*** All defective ladder seats should be removed from service.♦ |
| 2 | Inspect metal parts of wood seat. | Ironwork is sound, straight, cleanly finished, not bent.<br>Screws, nuts, bolts are tightened.<br>No burrs or sharp edges are present. |
| 3 | Inspect metal seats. | Metal is cleanly finished.<br>No rough edges are present.<br>♦No loose parts.♦ |
| 4 | ♦***Warning: Never use a ladder seat if the linkage pin (Fig. 1) is outside the lock frame stops.***♦<br><br>Inspect locks on metal seats. | Lock spring properly secured between pin of lock clamp and projecting tongue of lock frame.<br>Lock clamp properly seated within lock frame.<br>Locks are lubricated, operate properly.<br>The lock clamps seat securely to rolling ladder step.<br>No excessive wear in lock frame channel. |
| 5 | Inspect finish on metal seats. | Retouched surfaces are matching. |
| 6 | Inspect for metal fatigue. | No cracks in the area of lock frame, particularly no cracks in the projecting tongue. |

**J. Inspection of Ladder Block, ED-99543-70, G1, and ED-99543-70 (Mfr Disc.)**

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 1 | Inspect bottom surface. | No dirt, wax, or grease.<br>Pads not worn or cracked. |




♦Fig. 1—Seat Locking Arrangement♦