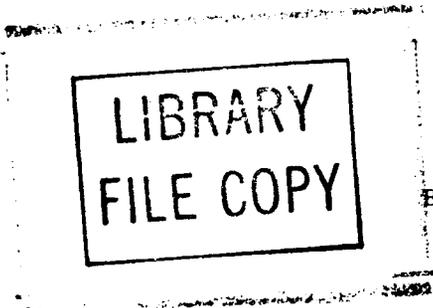


**OPERATOR CHAIRS
METAL TYPE**

REPLACEMENT PARTS, REPLACEMENT PROCEDURES, AND MINOR REPAIRS

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NOTICE

Not for use or disclosure outside the Bell System except under written agreement

1. GENERAL

1.01 This section covers the information necessary for the performance of minor repairs and ordering of parts to be used in the maintenance of KS-15784, KS-20751 (A&M only), and KS-22063 operator chairs. This section also covers the approved procedures for replacing these parts.

1.02 Revision arrows are used to emphasize significant changes. The Equipment Test List is affected. The reasons for reissue are listed below.

- (a) To rate the KS-20751 operator chair A&M only
- (b) To add the KS-22063 operator chair.

1.03 Refer to Section 065-100-102 for a description of these chairs and to Section 065-100-501 for test and inspection procedures.

1.04 Part 2 of this section covers ordering information for those parts which are practicable to replace in the field in the maintenance of operator chairs. No attempt shall be made to replace parts not designated.

1.05 Part 3 of this section covers a list of tools and materials used in this section.

1.06 Part 4 of this section covers the approved procedures for the replacement of the parts covered in Part 2.

1.07 Part 5 of this section covers the approved procedures for making minor repairs on operator chairs.

2. REPLACEMENT PARTS

2.01 Figures 1 through 7 show replacement parts of the chair as listed by the Western Electric Merchandise Department.

2.02 When ordering parts for replacement purposes, give the KS specification number, including either the list, detail, or item number, and the name of the part as shown in the figure; for example: KS-15784, L24, backrest. If a part is identified by a piece-part number, give both the piece-part number and the name of the piece-part; for example: P-126322 screw. **Do not** refer to the Bell System Practice (BSP) section number or to any information shown in parentheses.

2.03 Information enclosed by parentheses is not ordering information. This information may be references to notes or parts referred to in other portions of the section and not considered replaceable.

2.04 Cane seats of operator chairs that require recaning shall be returned to Western Electric for repair.

2.05 The only piece parts of the KS-20751 or ♦KS-22063♦ operator chairs to be replaced in the field are the seats, backseats, floor glides, spindle covers, and casters (KS-22063 chair only). See Fig. 6 and 7 for piece-part information. If the chair, for any reason, needs repair besides replacement of these parts, the chair may be disposed of or used for the basis of an engineering complaint.

2.06 If it is necessary to return a KS-15784 chair to Western Electric for repair, accessories such as purse holders, backrest pads, and ticket holders shall be removed before the chair is sent to Western Electric.

3. APPARATUS

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

TOOLS	DESCRIPTION
417A	Tool (1/4- and 3/8-Inch Open-End Flat Wrench)
KS-2993	Flat Brush
R-1060	Putty Knife
R-1482	H-Type Combination File
R-2485	Hex Socket Screw Wrench
AT-6939	Ratchet B Brace, 10 Inches With 1/2-Inch Diameter, 82-Degree Angle Countersink
—	Sign Painter's Brush, 1 Inch, Devoe & Reynolds Company, No. 244 (or equivalent)
—	Brush, Osborn Manufacturing Company, No. 816 (or equivalent)

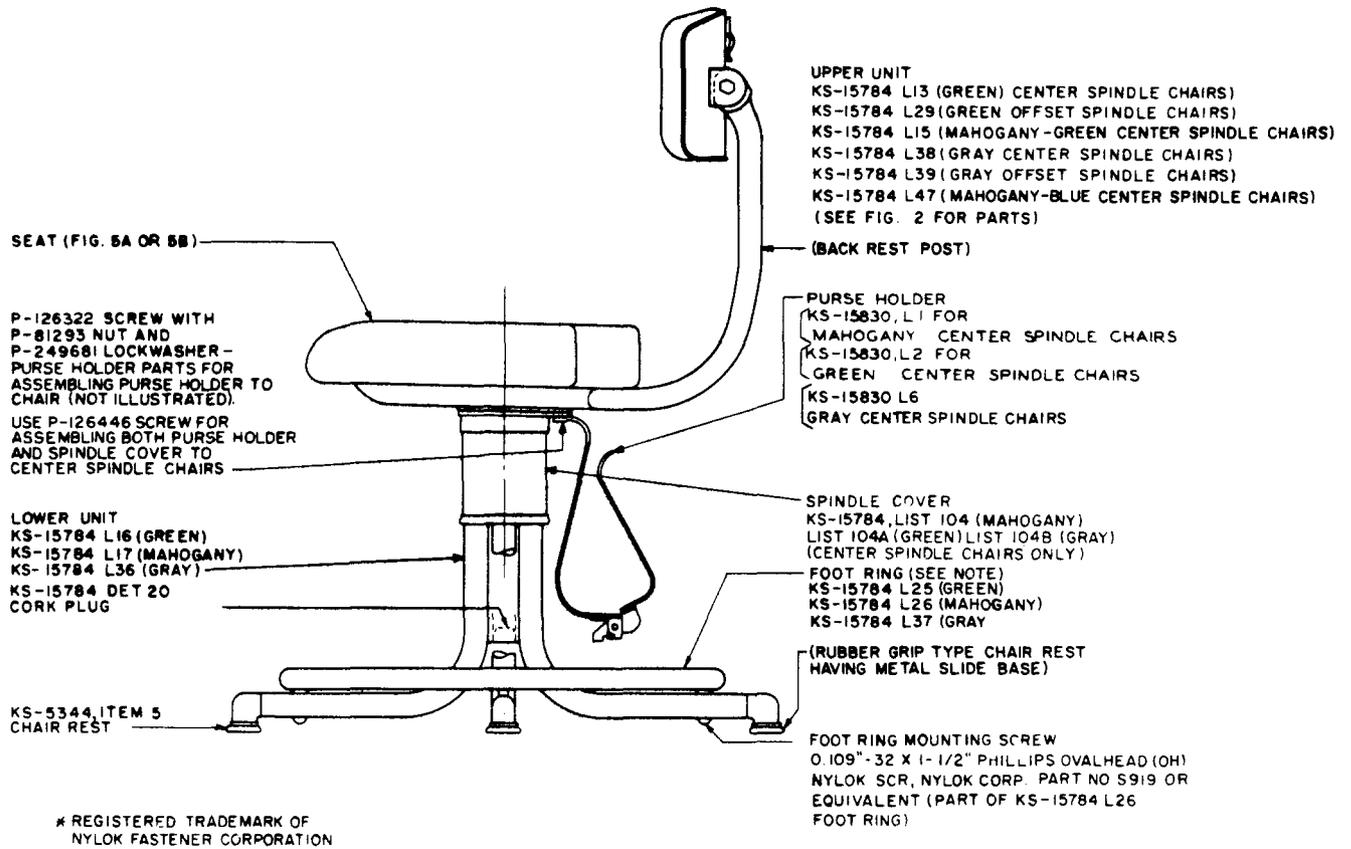


Fig. 1—Replacement Part Information for KS-15784, 18-Inch Operator Chairs

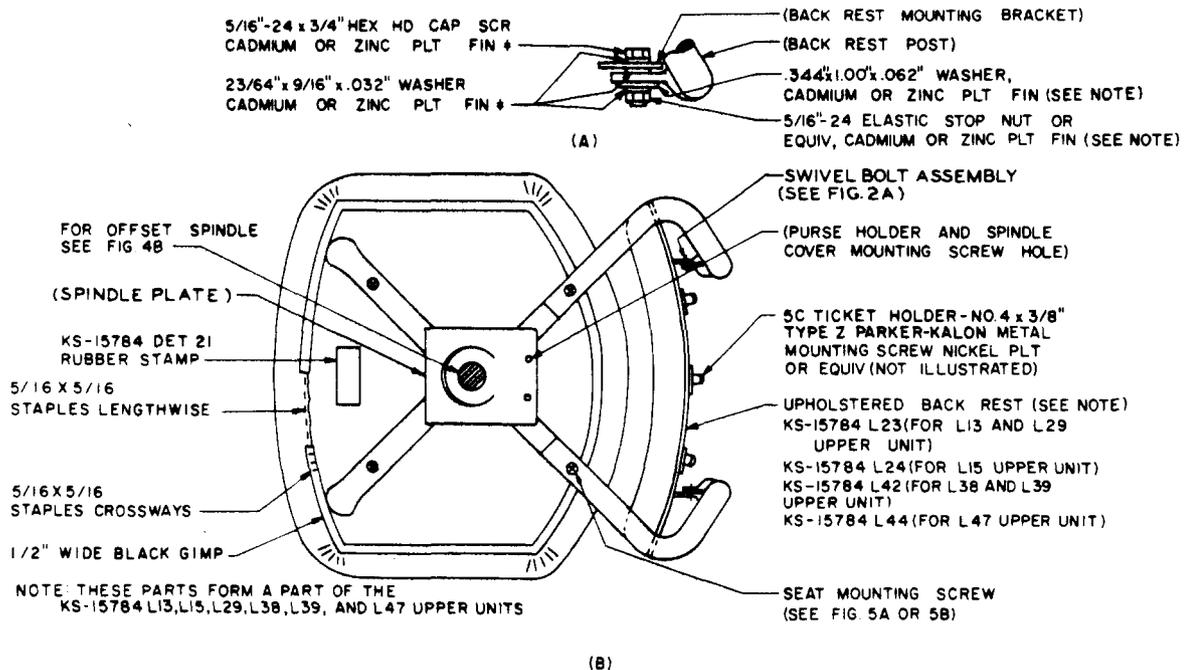


Fig. 2—Bottom View of Upper Unit—KS-15784 Operator Chairs

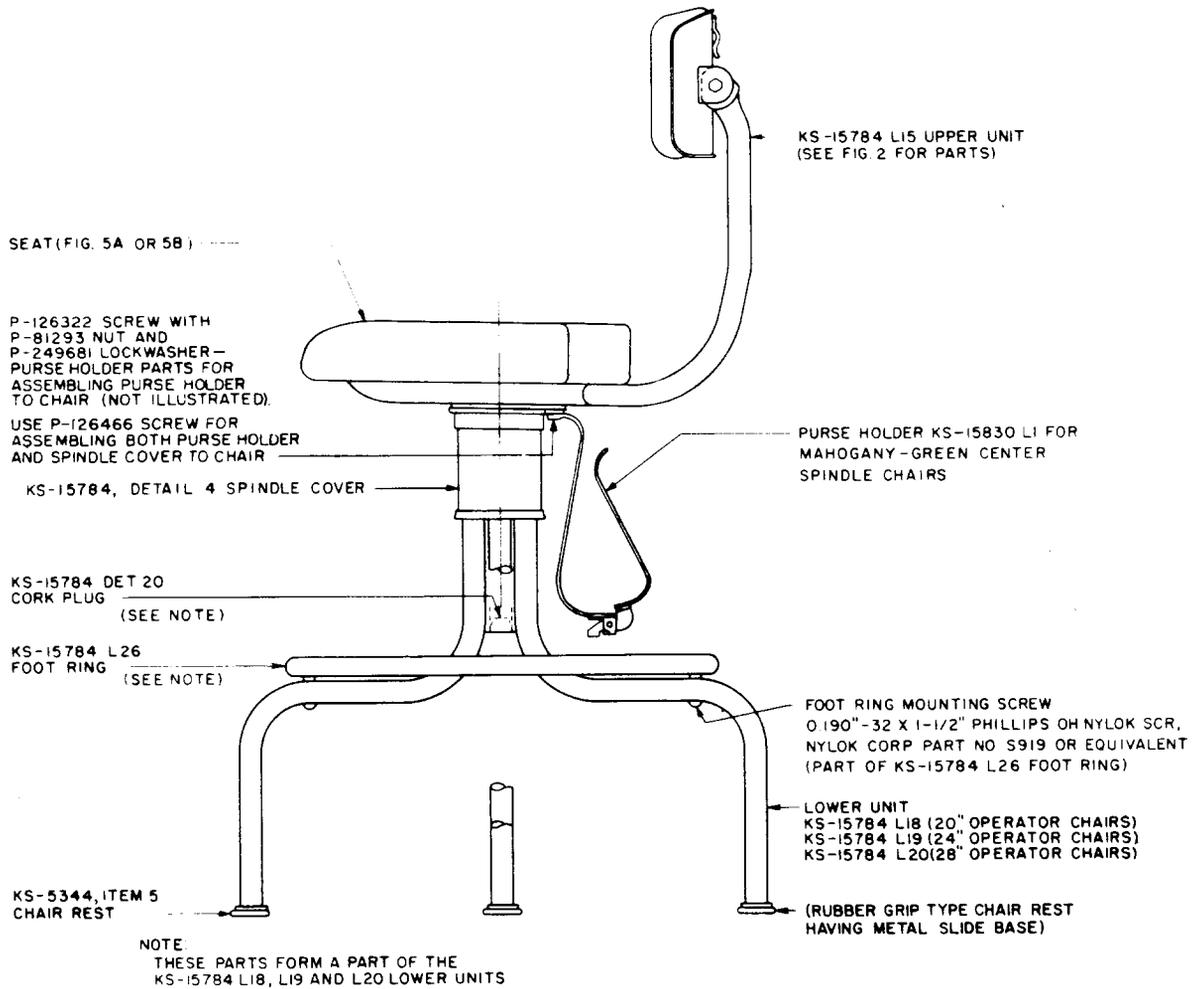


Fig. 3—Replacement Part Information for KS-15784, 20-, 24-, and 28-Inch Operator Chairs

TOOLS	DESCRIPTION	TOOLS	DESCRIPTION
—	Brush and File Card, Henry Disston & Sons, No. 2 (or equivalent)	AT-7329	1-Pound Ball-Peen Hammer
—	Cold Chisel, 1/2 Inch, Billings and Spencer Company, No. 452 (or equivalent)	AT-8420	Combination Pliers (or equivalent)
—	American Optical 710B or Bausch & Lomb W-74 Super BAL-GUARD* II Safety Goggles	AT-7825	3-Inch C Screwdriver (or the Replaced 3-Inch Cabinet Screwdriver)
—		AT-7825	4-Inch E Screwdriver (or the Replaced 4-Inch Regular Screwdriver)

*Registered trademark of Bausch & Lomb, Inc.

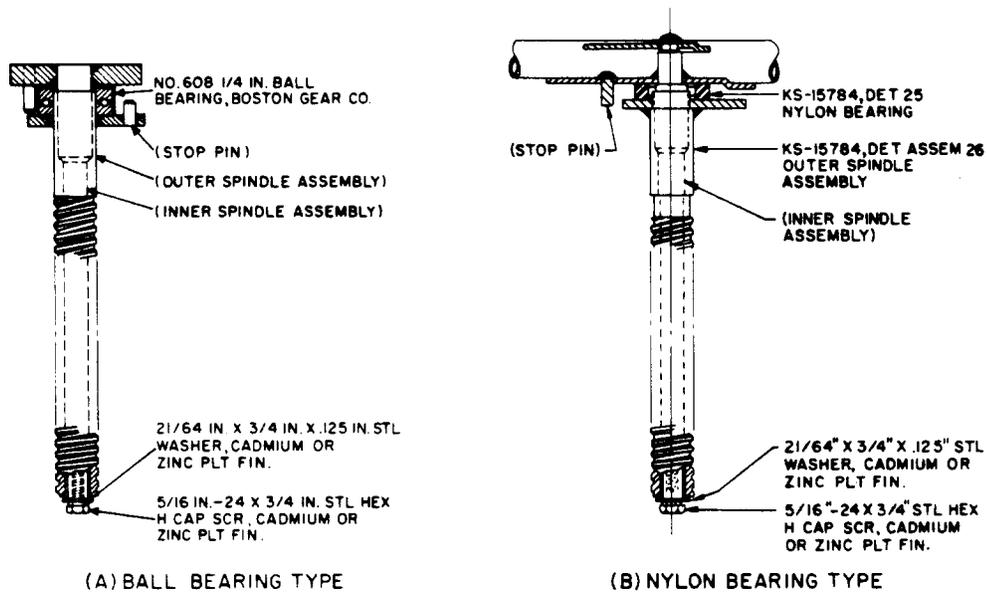


Fig. 4—Stop-Pin-Type Spindle (Offset Spindle Chairs Only)

TOOLS	DESCRIPTION	MATERIALS	DESCRIPTION
AT-7825	5-Inch E Screwdriver (or the Replaced 5-Inch Regular Screwdriver)	KS-6232	Oil
		KS-7860	Petroleum Spirits
AT-7739	B Screwdriver, No. 2	KS-14427	Cleaning Emulsion
AT-7739	B Screwdriver, No. 3 (or the Replaced Phillips-Type Screwdriver, No. 3)	KS-14666	Cleaning Cloth
		KS-14670	Commutator Cloth
—	Waldes Kohinoor, Inc, TRUARC* CR-100 Applicator Tool (or equivalent)	KS-16326	Oil
		KS-19139, L4	Lubricant
—	13/32- and 19/32-Inch Open-End Flat Wrench, J. H. Williams & Company, No. 24 (or equivalent)	—	ANSTAC† 2M Anti-Static Solution, Chemical Development Corporation, 1-Quart Bottle
—	1/2-Inch Offset Hexagon Socket Wrench, J. H. Williams & Company, No. 264A (two required)	—	ALVANIA‡ 71032 No. 2 Grease

*Registered trademark of Waldes Kohinoor, Inc.

†Registered trademark of the Chemical Development Corporation.

‡Registered Trademark of Shell Oil Company.

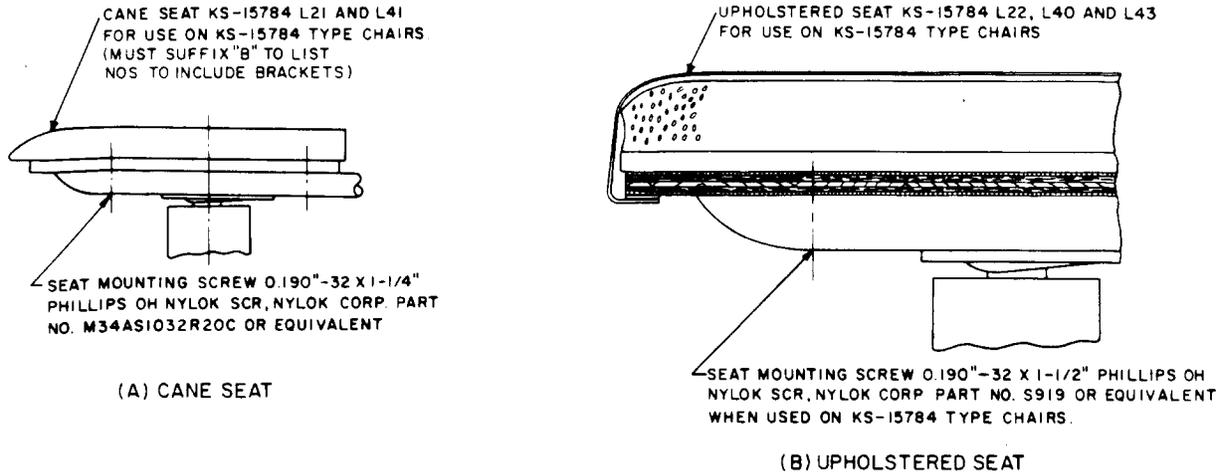


Fig. 5—Seats

MATERIALS	DESCRIPTION	MATERIALS	DESCRIPTION
—	Burlap, Felt, or Similar Material	—	Air-Drying Brushing Enamel, No. 1576 (Mahogany), Newark Varnish Works, Newark, New Jersey
—	Rubber-to-Metal Cement, No. 243, Prestite Engineering Company, St. Louis, Missouri, 1-Gallon Container, or	—	Air-Drying Brushing Enamel, No. 1581 (Walnut), Newark Varnish Works, Newark, New Jersey
—	Minnesota Mining and Manufacturing Corporation, No. 870 Adhesive, Adhesive and Coating Division of Minnesota Mining and Manufacturing Corporation, 1-Quart Container	—	Air-Drying Brushing Enamel, No. 1580 (Dark Oak), Newark Varnish Works, Newark, New Jersey
—	No. 150 Aluminum Oxide Cloth	—	Air-Drying Brushing Enamel, No. 3-18185 (Pacific Blue-Green), American Lacquer Solvents Company, Phoenixville, Pennsylvania
—	1/2-Inch Diameter Dowel, Approximately 12 Inches Long	—	Abrasive Paper—Garnet No. 2/0

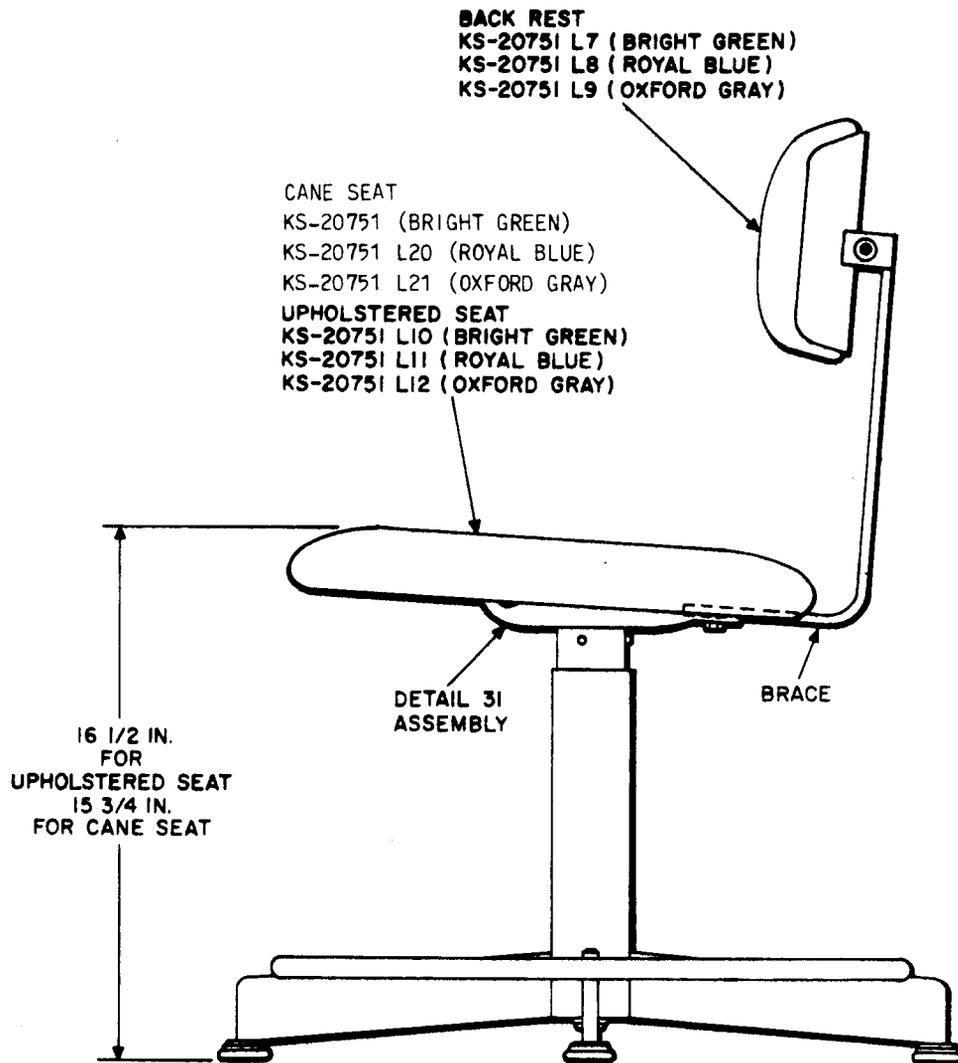


Fig. 6—Replacement Part Information for KS-20751 Operator Chairs

MATERIALS	DESCRIPTION	MATERIALS	DESCRIPTION
—	Abrasive Paper—Garnet No. 6/0	—	Liquid Soap
—	Silicon Filler Polish	—	Filler Stain (Mahogany) for 104AL Finish
—	No. 00 Powdered Pumice	—	Filler Stain (Walnut) for 104AR Finish
—	White Shellac Solution and Thinner per AT&TCO Specification No. 6623	—	

KS-22063, L5 BACKREST ASSEMBLY AVAILABLE IN:

CONTEMPORARY	CLASSIC
WEAVE FABRIC	WEAVE FABRIC
L30 (BLACK/BROWN)	L40 (BEIGE)
L31 (BEIGE/BROWN)	L41 (CHOC. BROWN)
L32 (ORANGE/YELLOW)	L42 (BLACK)
L33 (BLUE/BEIGE)	L43 (ORANGE)
L34 (RED/ORANGE)	L44 (KELLY GREEN)
L35 (GOLD/BROWN)	L45 (ANTIQUÉ GOLD)

KS-22063, L5A BACKREST CUSHION (PLASTIC OUTER BACK OMITTED)

KS-22063, L6 SEAT ASSEMBLY (SPECIFY FABRIC AS SHOWN FOR L5)

KS-22063, L6A SEAT CUSHION (PLASTIC SEAT BASE OMITTED)

KS-22063, L103 ADJUSTMENT KNOBS (COMPLETE SET)

BACKREST SUPPORT

KS-22063, L101 SPINDLE COVER KIT

LEG COVER

FOOTRING (OMITTED ON L8, L9, AND L10)

17 3/8 IN.
FOR
UPHOLSTERED
SEAT

KS-22063, L102A FLOOR GLIDES,
L102B SOFT CASTERS OR
L102C HARD CASTERS

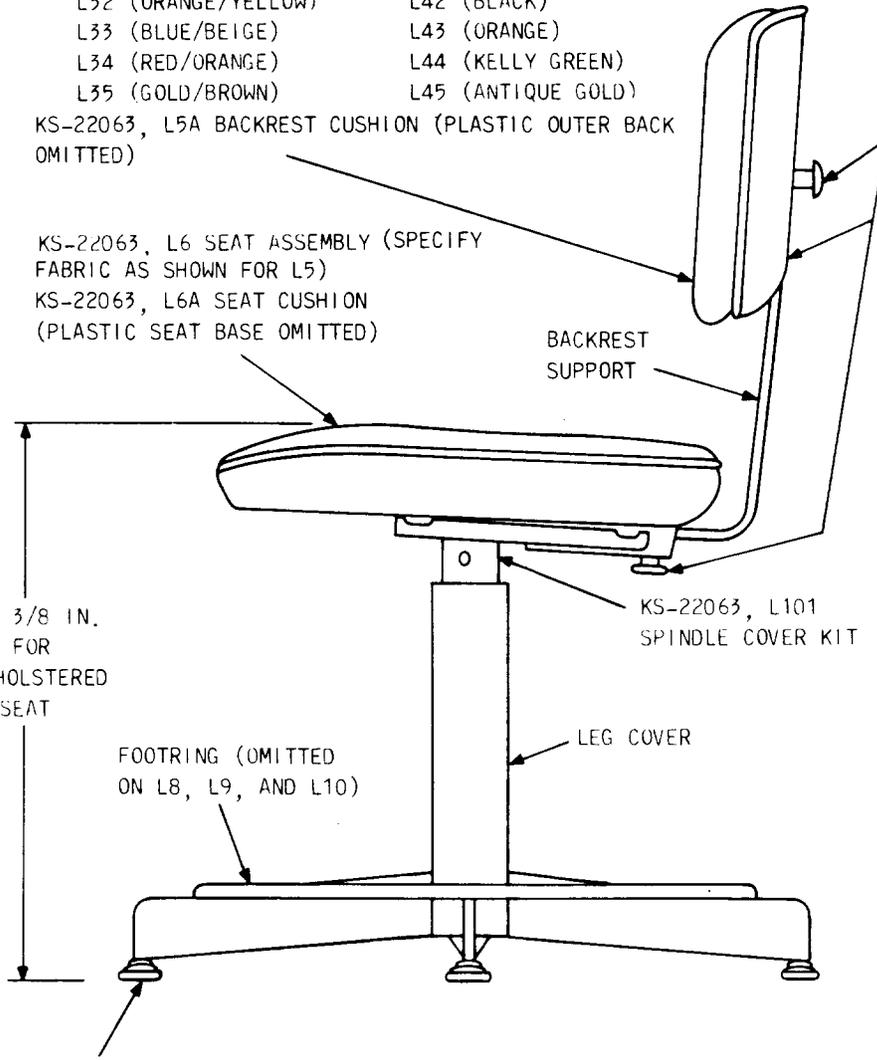


Fig. 7—Replacement Part Information for KS-22063 Operator Chairs

MATERIALS	DESCRIPTION
—	Filler Stain (Dark Oak) for 104AM Finish
—	VD-2930 Rubbing Varnish, Pittsburgh Plate Glass Company, or No. 8 Booth Rubbing Varnish, Pratt & Lambert Company, Inc.

4. REPLACEMENT PROCEDURES

A. General

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

4.02 Screws, nuts, and tapped holes should be of such length or depth that a minimum engagement of three threads is provided in tapped holes and at least one half a thread projects beyond a nut. Lockwashers, locknuts, or equivalent means shall be used to secure all threaded assemblies against loosening.

B. KS-15784 Operator Chairs

4.03 *Upper and Lower Units:* To replace an upper or lower unit of the KS-15784 chair, remove the part by unscrewing the upper unit from the lower unit and screw the new part in place.

4.04 *Chair Seats:* To replace a cane seat or an upholstered seat by a new seat of the same list number on all KS-15784 chairs, proceed as follows. Turn the chair upside down, and remove the seat mounting screws with either the 4-inch E screwdriver (or the replaced 4-inch regular screwdriver) or the B screwdriver, No. 3 (or the replaced Phillips-type screwdriver, No. 3), depending on the type of screwhead used; then remove the seat. The new seat is provided with three sets of mounting holes, designed to permit assembly to the chair in any one of three alternate positions with respect to the backrest. Select the seat position desired and align the required set of holes in the seat with the holes in the tubing. Fasten the seat in place by replacing the seat-mounting screws, and tighten them securely. Clean the seat with a clean KS-14666 cloth. Brackets will not be included with orders for replacement cane seats unless the list numbers are suffixed "B".

4.05 *Backrest:* Using the 1/2-inch offset hexagon socket wrenches, one for holding the head

of the swivel bolt and the other for loosening the stopnut, remove the hexagon head cap screws, elastic stopnuts, and washers which attach the backrest to the backrest posts. Replace the old backrest with the new backrest; replace the hexagon head cap screws, elastic stopnuts, and washers, and tighten the hexagon head cap screws to such a tension that the backrest will not drop of its own weight. The backrest should move only when a light, external pressure is applied. Clean the backrest with a clean KS-14666 cloth.

4.06 *Backrest Pads:* To replace a backrest pad, pull out the two U-hook fasteners in back of the backrest and slip the pad off the backrest. Assemble the new part in the reverse order of removal.

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 used when striking the head of the cold chisel with the ball-peen hammer to prevent the possibility of flying chips causing personal injury.*

4.07 *Cotter-Pin-Type Chair Rests:* To replace the cotter-pin-type chair rest by the rubber-grip-type chair rest having a metal slide base, it is necessary first to pull out the chair rest and then remove the chair rest socket which is held in the end of the chair leg by four crimps. To do this, drive the socket out of the chair leg by placing the cold chisel on the socket shoulder at each of the four crimps which hold the socket in place. Strike the chisel with a heavy blow of the ball-peen hammer using additional blows at each point, if necessary, until the socket is removed. Assemble the new rubber-grip-type chair rest in the chair leg as follows. Run the nut of the new chair rest up against the metal washer; then insert the rubber part of the chair rest in the chair leg, and turn the slide base clockwise until it is tight. The outer surfaces of the rubber part of the chair rest may be slightly moistened with liquid soap to facilitate assembly of the chair rest in the leg if necessary.

4.08 *Rubber-Grip-Type Chair Rest Having a Plastic Slide Base:* To replace a rubber

grip-type chair rest having a plastic slide base by a rubber-grip-type chair rest having a metal slide base, loosen the flathead screw on the bottom of the chair rest a few turns with the 5-inch E screwdriver (or the replaced 5-inch regular screwdriver), and pull chair rest out of the leg. The new rubber-grip-type chair rest should then be assembled in the chair leg as follows. Run the nut of the new chair rest up against the metal washer; then insert the rubber part of the chair rest in the chair leg, and turn the slide base clockwise until it is tight. The outer surface of the rubber part of the chair rest may be slightly moistened with liquid soap to facilitate assembly of the chair rest in the leg if necessary.

4.09 Rubber-Grip-Type Chair Rest Having a Metal Slide Base: To replace a rubber-grip-type chair rest having a metal slide base by a new rubber-grip-type chair rest having a metal slide base, turn the metal base counterclockwise until it is loose; then pull the chair rest out of the leg. The new rubber-grip-type chair rest should then be assembled in the chair leg as follows. Run the nut of the new chair rest up against the metal washer; then insert the rubber part of the chair rest in the chair leg, and turn the slide base clockwise until it is tight. The outer surface of the rubber part of the chair rest may be slightly moistened with liquid soap to facilitate assembly of the chair rest in the leg if necessary.

4.10 Stop-Pin-Type Outer Spindle and Ball Bearing or Nylon Bearing of Offset Spindle Chairs: To replace an outer spindle and, if necessary, the ball bearing or nylon bearing of the upper unit of the offset spindle chairs, unscrew the upper unit of the chair from the lower unit. Then unscrew the hexagon nut at the bottom of the inner spindle with the 19/32-inch open-end wrench, remove the washer, and slide the outer spindle off the inner spindle. Then lift the bearing from the top of the outer spindle. Place the old bearing or, if necessary, a new ball bearing or nylon bearing on the new outer spindle, and reassemble the remaining spindle parts in the reverse order of removal. Tighten the hexagon nut securely. Reassemble the upper and lower units.

4.11 Purse Holders: To replace a purse holder, turn the chair upside down, remove the purse holder mounting screws from the lockwasher and nuts with the 4-inch E screwdriver (or the replaced 4-inch regular screwdriver), and remove the purse holder. Align the new purse holder over the purse holder mounting screw holes, and replace the mounting screws, lockwashers, and nuts.

4.12 Spindle Covers: To replace a spindle cover, unscrew the upper unit of the chair from the lower unit. Turn the upper unit upside down, remove the spindle cover mounting screws from the lockwashers and nuts with the 4-inch E screwdriver (or the replaced 4-inch regular screwdriver), remove the purse holder if furnished with the chair, and remove the spindle cover. Align the new spindle cover over the mounting screw holes, and replace the purse holder, mounting screws, lockwashers, and nuts. Reassemble the upper and lower units.

C. KS-20751 and KS-22063 Operator Chairs

4.13 Adjustment Knobs: To replace the adjustment knobs (Fig. 7), turn counterclockwise until the knob comes out. Install the new knob, with the threads matching, and turn clockwise until the knob is securely tightened.

4.14 Backrest: To replace the backrest on the KS-20751 chair (Fig. 8), tilt the backrest forward from the top and, using a 417A tool, remove the two bolts which secure the backrest as shown in Fig. 9. Fit a new backrest in place, replace the bolts, and tighten them securely. For the KS-22063 chair, remove the adjustment knob that mounts the backrest to the seat assembly. Fit a new backrest in place, replace the upper adjustment knob, and tighten securely.

4.15 Backrest Cushion: To replace the backrest cushion, remove the four Phillips head screws (KS-22063 has two Phillips head screws) with the B screwdriver, No. 3. Remove the old cushion and replace it with the new cushion, tightening the screws securely.

4.16 Casters: To replace casters, turn the chair upside down and wedge the blade of a 5-inch E screwdriver between the bottom of the leg and the top of the caster. Using a prying motion, loosen the caster. When the caster has been loosened, remove by hand. Replace the new caster by pushing into place with the hand.

Note: Floor Glides (L102A), soft casters (L102B), and hard casters (L102C) are interchangeable for KS-22063 operator chairs. (See Fig. 7.)

4.17 KS-20751 Chair Seat: To replace an upholstered seat or a cane seat, turn the chair

upside down and, using a 417A tool, remove the bolts which secure the seat to the seat pan as shown in Fig. 9. Fit the new seat in place, replace the four bolts, and then tighten them securely.

4.18 Seat Assembly and Cushion—KS-22063, L6 and L6A: To replace the seat assembly, proceed as follows:

- (1) Turn chair upside down on a workbench, remove backrest support (Fig. 7), and remove the four bolts on the control mechanism (Fig. 9), using the 417A tool.
- (2) Remove the seat assembly.
- (3) Remove the two bolts and five Phillips head screws from the frame under the cushion to separate the frame and cushion.
- (4) Replace cushion and assemble in reverse order.

4.19 Control Mechanism, Spindle Cover or Upper Unit: To replace the control mechanism, proceed as follows:

- (1) Place the chair upside down on a bench, and remove the backrest support by removing the lower adjusting knob (Fig. 9).
- (2) Turn the base assembly clockwise until the base is in its lowest position.
- (3) Remove the retaining ring (Fig. 10) and turn the base assembly to the highest position.
- (4) Remove the retainer plug and separate the lower unit from the upper unit.

Note: The design of the KS-20751 operator chair (Fig. 8) is such that its upper unit is interchangeable (Fig. 11) with the upper unit of the KS-22063 operator chair. The individual parts of both chairs are not interchangeable with any existing operator chair.

- (5) If the control mechanism is defective, remove the four 3/8-inch hex head machine bolts (Fig. 10) from the seat assembly. Replace the control mechanism and tighten the four 3/8-inch hex head machine screws.

Note: Replace all parts provided with the control mechanism.

- (6) If the spindle cover is the only part that is defective, remove the three Phillips head screws

(Fig. 10) on the cover. Replace the spindle cover and tighten three Phillips head screws.

Note: Replace all parts provided with the spindle cover kit.

- (7) Place the lower unit on the upper unit and insert the retainer plug (Fig. 10) in place.

Note: The ring must be in the correct location before insertion of the retainer plug.

- (8) Turn base assembly counterclockwise to the lowest position and insert the lower bushing and retaining ring (Fig. 10).
- (9) Place the backrest support on the chair and tighten the adjusting knob securely.
- (10) Place legs of chair on the floor and adjust to desired height.♦

5. MINOR REPAIRS

A. General

5.01 NYLOK Self-Locking Footring Mounting Screws—Lower Units: Replace loose or missing footring mounting screws by mounting screws of the NYLOK self-locking type as follows:

- (a) Remove the loose footring mounting screws with the 4-inch E screwdriver (or the replaced 4-inch regular screwdriver).
- (b) When necessary, countersink the footring mounting-screw holes on the underside of the leg sufficiently to clear away the plastic covering and to cut slightly into the metal tubing if this has not already been done.
- (c) Insert the NYLOK self-locking mounting screw through the leg and into the footring. Tighten the NYLOK self-locking screw sufficiently to fasten the footring to the leg securely using the B screwdriver, No. 3 (or the replaced Phillips-type screwdriver, No. 3). Lockwashers are not required with the NYLOK self-locking mounting screws.

5.02 Cane Seats: Trim off upturned, rough, or frayed strands, which are separated by at least two unbroken strands, on seats which are in



◆ Fig. 8—KS-20751 Operator Chair ◆

otherwise satisfactory condition. Preserve the cane by a coat of either rubbing varnish or shellac.

5.03 *Static Charges on Air-Cell Seats:* Static charges which may accumulate on air-cell seats may be reduced by wiping the seat with a clean KS-14666 cloth, slightly moistened with ANSTAC 2M anti-static solution. Allow the seat to dry, and then wipe with a dry, clean KS-14666 cloth before it is returned to service. Apply the solution as often as necessary.

5.04 *Metal Parts:* Remove any sharp edges or burrs on the nuts, bolts, screws, and other metal parts with the H-combination file.

5.05 *Cleaning Chairs:* Remove oil, grease, excessive furniture polish, etc, from all parts of the chair with a clean KS-14666 cloth slightly moistened with KS-7860 petroleum spirits.

Warning: Cloth shall be moistened slightly with KS-14427 cleaning emulsion.

5.06 *Cleaning Seats and Backrests:* Clean the air-cell seats, upholstered seats, and upholstered backrest with KS-14427 cleaning emulsion.

B. *Cleaning and Lubricating KS-15784 Operator Chairs*

5.07 Between 6 to 8 weeks of actual use, after initial installation, operator chairs should be cleaned and relubricated to avoid accelerated wear. Cleaning and oiling are required each year thereafter to provide for good service and long life.

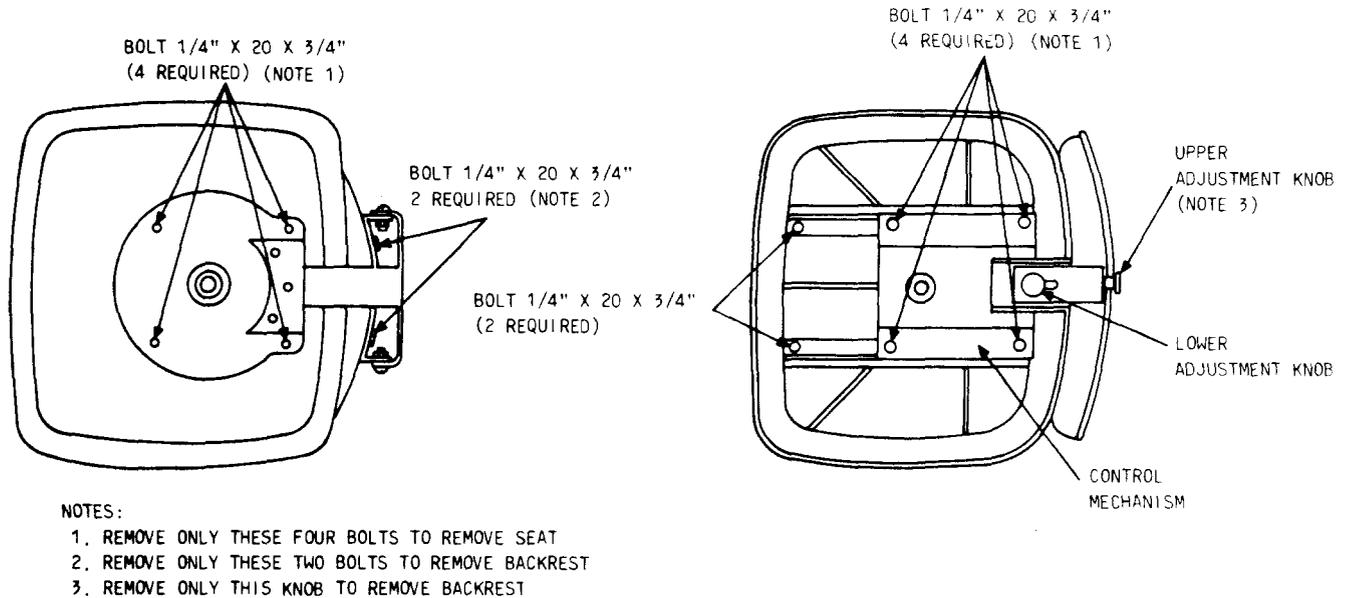
5.08 *Lubricating With the KS-19139, L4, Lubricant:* The KS-19139, L4, is a thixotropic-type lubricant and is packaged in 1-pint cans. The procedure for applying this lubricant is as follows:

(a) ***Surface Preparation:*** All surfaces requiring lubrication shall be free from dust, dirt, metal particles, oil, grease, etc. Protect surfaces not to be lubricated with a convenient shield. Clean with KS-7860 petroleum spirits.

(b) ***Mixing the KS-19139, L4, Lubricant:*** Shake the can vigorously until it is determined that the contents have liquefied.

(c) Using a No. 244 Devco & Reynolds Company 1-inch sign painter's brush, or equivalent, brush on all surfaces to be lubricated a thin coat of KS-19139, L4, lubricant. Wipe off any excess with a clean cloth.

(d) ***Identification Marking:*** All chairs and replacement units lubricated with the KS-19139, L4, lubricant in accordance with the above procedure will not require further lubrication when subjected to normal usage and conditions. To



◆ Fig. 9—Bottom View of Upper Unit—KS-20751 and KS-22063 Operator Chairs ◆

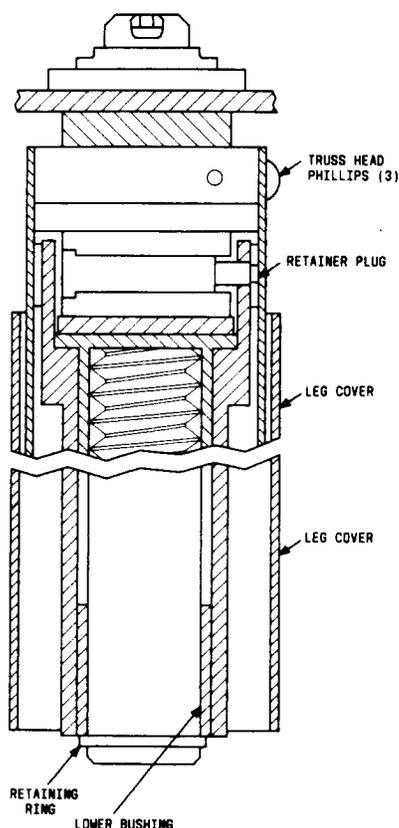
provide a means of identification which will eliminate the possibility of unnecessary relubrication, rubber stamp a 3/8-inch high character "M" in vermilion (red) on the underside of the upper unit. Locate the marking on the surface of the spindle plate in an area where it will not be obscured from view by the spindle cover or the hub of the lower unit after the chair is reassembled.

Note: Existing chairs and upper units having an identification mark shall be cleaned and relubricated only when it is apparent that the lubricant has been contaminated with an excess of dirt or other foreign matter.

5.09 To clean and lubricate the spindle and hub of the KS-15784, L1 through L4 and L7 through L12 operator chairs, proceed as follows.

- (a) Separate the upper unit of the chair from the lower unit by rotating the upper unit in a counterclockwise direction, viewed from above the chair.
- (b) Remove the spindle cover, if provided, from the upper unit.
- (c) Remove excess material from spindle threads with the brush part of the Henry Disston and Sons No. 2 brush and file card.

- (d) Wipe spindle with KS-14666 cloth moistened with KS-16326 oil to remove residue from brushing operation.
- (e) Lubricate the spindle with KS-19139, L4, lubricant in accordance with the procedure outlined in paragraphs 5.07 and 5.08.
- (f) Replace the spindle cover, if provided, on upper unit.
- (g) Remove the cork in the bottom of the hub by driving it out with a 1/2-inch diameter dowel.
- (h) Shake lower unit in a vertical plane to dislodge loose particles in the bottom of hub.
- (i) Brush out excess material with an Osborn Manufacturing Company No. 816 brush by rotating the brush clockwise through the threads and completely out of the hub. Do not draw brush back through hub.
- (j) Replace cork in bottom of hub by driving it securely in place until it is flush with the bottom of the hub.
- (k) Lubricate the threaded portion of the hub with KS-19139, L4, lubricant.
- (l) Reassemble the upper unit to the lower unit of the chair, turning the upper unit all the way



◆Fig. 10—KS-22063, L104, Control Mechanism (Also Includes Seat Plate and Backrest Channel Not Shown Here)◆

down and then up again until the top of the spindle thread is exposed.

(m) Remove any lubricant which may be on parts other than the threads with a clean KS-14666 cloth.

Note: After the lubrication of the chairs has been completed, all chairs not provided with spindle covers shall be equipped with a KS-15784, Detail 4, spindle cover (Fig. 3).

5.10 To clean and lubricate the spindle and hub of the KS-15784, L5 and L6, operator chairs equipped with stop-pin-type spindle, proceed as follows:

(a) Separate the upper unit of the chair from the lower unit by rotating the upper unit in a

counterclockwise direction, viewed from above the chair.

(b) Remove the cork at the bottom of the hub by driving it out with the 1/2-inch diameter dowel.

(c) Clean the outer spindle in the same manner as outlined for cleaning the spindle in paragraph 5.09.

(d) Remove the inner spindle from the outer spindle by removing the hexagon nut and washer at the bottom. After its removal, clean the inner spindle in the same manner as covered in paragraph 5.09 for cleaning the spindle and clean the inner surface of the outer spindle in the same manner as covered in paragraph 5.09 for cleaning the hub.

(e) Lubricate the inner spindle with KS-19139, L4, lubricant in accordance with the procedure outlined in paragraphs 5.07 and 5.08.

(f) Assemble the inner spindle to the outer spindle, and secure by replacing the washer and hexagon nut at the bottom.

(g) Lubricate the threaded surfaces of the outer spindle with KS-19139, L4, lubricant in accordance with the procedure outlined in paragraphs 5.07 and 5.08.

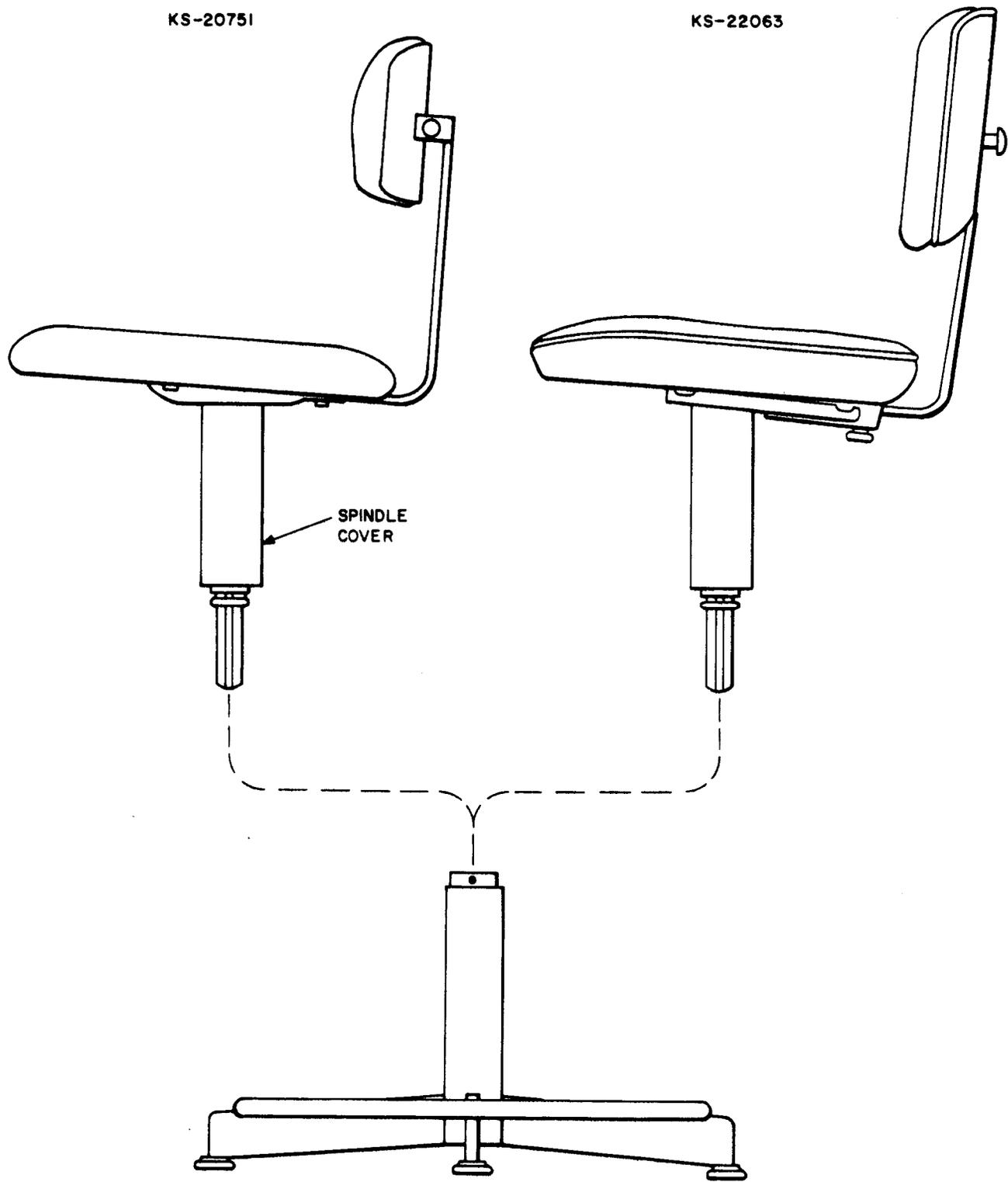
(h) Clean the hub as covered in paragraph 5.09 and replace the cork, driving it securely into place until it is flush with the bottom.

(i) Reassemble the upper unit to the lower unit of the chair, turning the upper unit all the way down and then up again until the top of the spindle thread is exposed.

(j) Remove any lubricant which may be on parts other than the threads with a clean KS-14666 cloth.

C. Lubricating New KS-15784 Replacement Upper and Lower Units

5.11 New KS-15784, L13 and L15, upper units ordered for replacement purposes are provided with only a protective coating of oil applied to the



◆Fig. 11—KS-20751 and KS-22063 Operator Chairs Disassembled◆

spindle. Before the upper unit is assembled to the existing lower unit of the chair, the spindle shall be lubricated with KS-19139, L4, lubricant in accordance with the procedure outlined in paragraphs 5.07 and 5.08.

5.12 New KS-15784, L14, upper units ordered for replacement purposes are provided with an adequately lubricated inner spindle which will not require additional lubrication. However, the outer spindle shall be lubricated with the KS-19139, L4, lubricant in accordance with the procedure outlined in paragraphs 5.07 and 5.08 before the upper unit is assembled to the existing lower unit of the chair.

5.13 New KS-15784, L16 and L20, lower units ordered for replacement purposes will not require additional lubrication other than the lubricant which will be transferred to the hub threads through contact with an upper unit spindle lubricated in accordance with paragraphs 5.07 and 5.08.

D. Woodwork Finishes

5.14 To retouch the finish of the cane seat frames, wooden backrests, or other wooden parts worn through to the wood, either through ordinary wear or by sanding operations, proceed as follows:

- (a) Smooth rough and splintered parts with No. 2/0 Garnet abrasive paper.
- (b) Apply one coat of filler stain to match the finish of the spots to be retouched with the Devoe and Raynolds No. 244 sign painter's brush. Apply two applications, if necessary, to produce the desired depth of color.

Note: In applying the filler stain, rebrush until the desired grained effect and depth of color are obtained. The filler stains used for finishing chairs have been developed with a view to preventing diffusion. It is necessary, therefore, to adhere strictly to the filler stains specified. A toner or stain which is subject to diffusion should not be used.

- (c) Allow stain to dry 16 hours. Sandpaper with No. 2/0 Garnet abrasive paper to remove fibers which may have been raised by the staining operation.
- (d) Apply one coat of rubbing varnish or shellac.

Note: Use shellac when it is necessary to hold the drying time to a minimum.

- (e) Allow varnish or shellac coat to dry thoroughly; then sand lightly with No. 6/0 Garnet abrasive paper, and apply a finished coat of rubbing varnish.

- (f) When dry, sand lightly with No. 6/0 Garnet abrasive paper and rub dull with No. 00 powdered pumice mixed with KS-6232 oil. Use burlap, felt, or similar material for the rubbing operation. Remove all excess rubbing materials.

E. Metalwork Finish

5.15 To retouch the finish of worn metal parts, remove all rust with No. 2/0 Garnet abrasive paper and wipe clean with a KS-14666 cloth, slightly moistened with KS-7860 petroleum spirits. Apply one coat of air-drying enamel to match the color of the part with the Devoe and Raynolds No. 244 sign painter's brush, and allow to dry thoroughly.

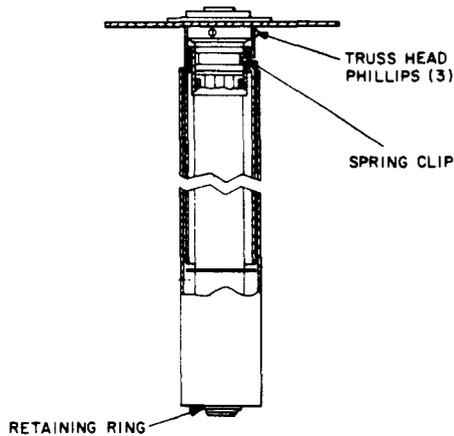
F. Removal of Scratches and Paint Spots on Plastic-Covered Parts

5.16 Do not retouch or refinish plastic-covered parts. Parts may be cleaned with a KS-14666 cloth, slightly moistened with KS-14427 cleaning emulsion. Scratches and paint spots on the plastic parts may be removed by rubbing with a silicon filler polish or by sanding with No. 150 aluminum oxide cloth, or an approved equivalent, and then buffing.

G. KS-20751 and KS-22063 Operator Chairs

5.17 Lubrication: To lubricate the spindle and associated parts of the operator chair using ALVANIA 71032 No. 2 grease, the base assembly and black vinyl cover must be removed from the upper unit assembly. To separate the base assembly from the upper unit, it is necessary to remove the retaining ring (Fig. 12) from the bottom of the spindle and the spring clip assembly from the spindle housing (Fig. 12).

- (a) To expose the retaining ring for removal, place the chair upside down and turn the base assembly clockwise until the seat is in its lowest position. The retaining ring should be on the end of the spindle with the large section of the ring across the key way of the spindle. If the ring is not in this position, rotate it by pressing the flat side of the 3-inch C screwdriver against the end of the ring lug until the large section of the ring is across



◆ Fig. 12—Piece Parts to be Removed for Disassembly of KS-20751 and KS-22063 Operator Chairs ◆

the key way. Care should be exercised as the ring may pop off during this operation. When the large section of the ring is across the key way, insert the blade of the 3-inch C screwdriver into the key way between the spindle and the ring. Rotate the blade, and then move the handle outward away from the spindle. This will allow the ring to be removed by hand.

(b) After removing the retaining ring, turn the base counterclockwise until the spring clip assembly is accessible. Next, insert the blade of

the 3-inch C screwdriver between the spring and spindle housing. Then slide the blade next to the pin and rotate. The clip assembly may then be removed with the free hand.

(c) With the retaining ring and clip assembly removed, the chair base assembly can be removed from the upper chair assembly (Fig. 10). This is done by rotating and lifting the base assembly while restraining the upper assembly. After removal is complete, set the base assembly aside.

(d) The black vinyl cover for the spindle should be removed next. This is done by removing the three Truss Head Phillips screws (Fig. 11) with a B-type, No. 2 Phillips screwdriver and then lifting the cover up over the end of the spindle.

(e) With the upper and lower assemblies separated and the spindle cover removed, the spindle threads on the upper assembly and the thrust washer can now be cleaned and lubricated as specified in paragraph 5.08.

(f) Reassemble the chair in reverse order. Waldes Kohinoor, Inc, TRUARC CR-100 applicator tool, or equivalent, should be used to expedite replacing the retaining ring. The position of the ring on the spindle shaft should be such that the large ring section is across the key way of the spindle.