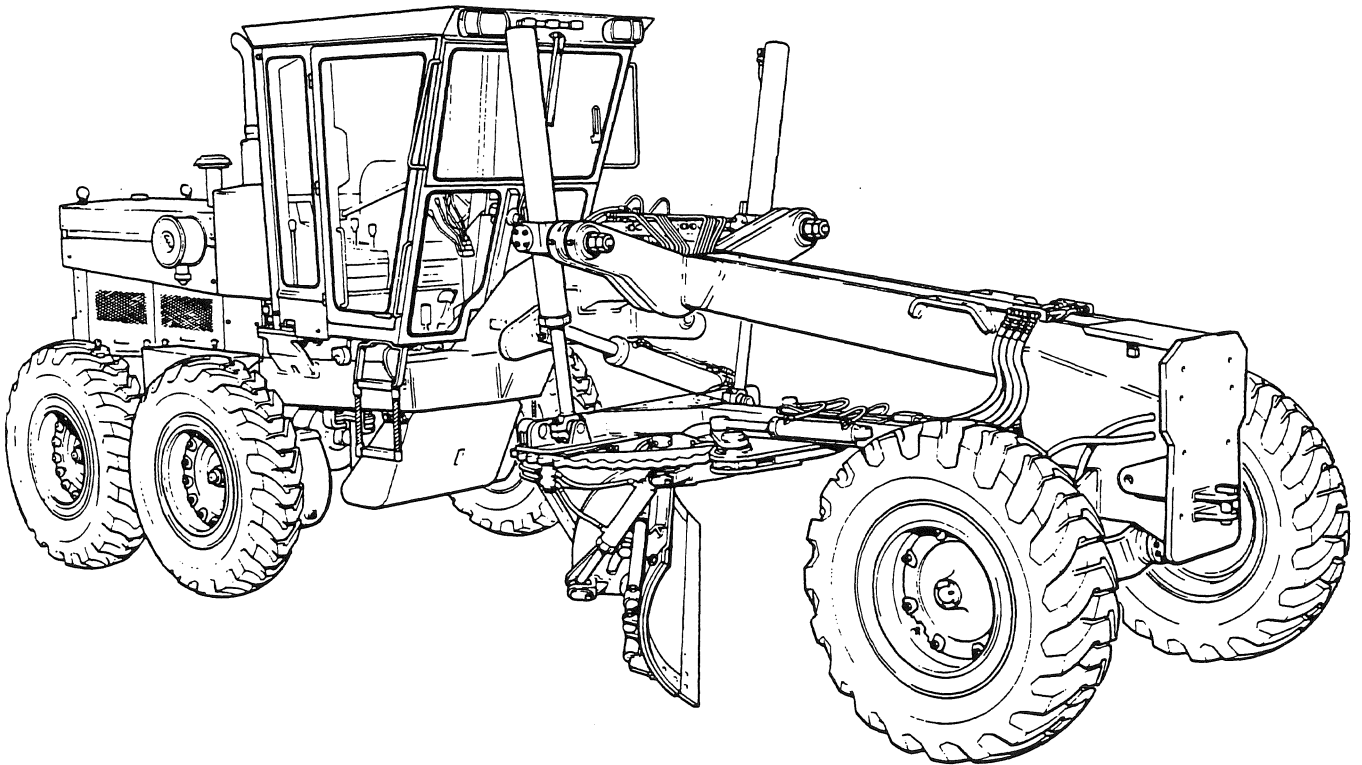


700 SERIES SHOP MANUAL

SECTION 3

**BLADE LIFT ASSEMBLY**



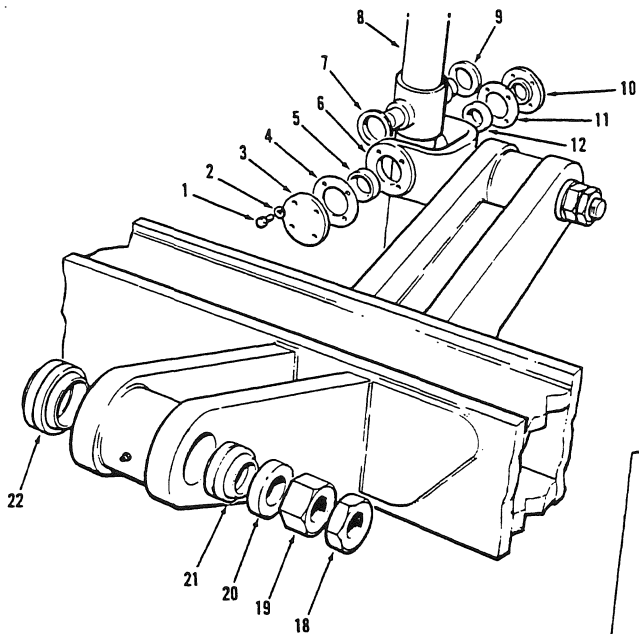


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BLADE LIFT ASSEMBLY

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BLADE LIFT ASSEMBLY

Key to Fig. 1



Item	Description
1	Capscrew
2	Lockwasher
3	Ball thrust cap
4	Shim pack
5	Bearing cup and cone
6	Stirrup
7	V ring
8	Blade lift cylinder
9	V ring
10	Ball thrust cap
11	Shim pack
12	Bearing cup and cone
13	Ball cap half
14	Shim pack
15	Bolt
16	Lockwasher
17	Nut
18	Jam nut
19	Adjusting nut
20	Retainer plate
21	Spherical bearing
22	Spherical bearing

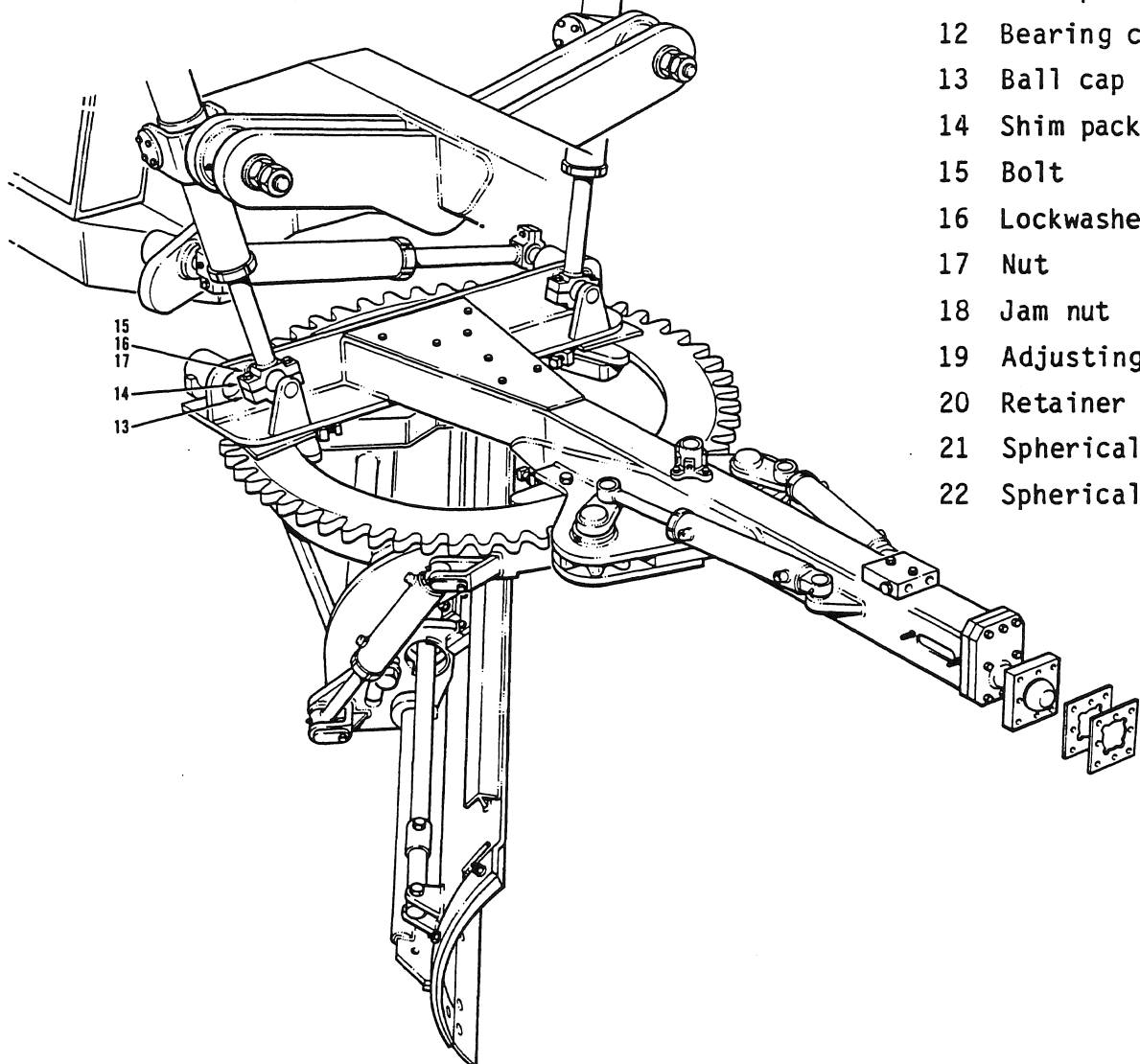


Fig. 1

General

Make sure proper tools are available and in good working order. You will require a safe lifting device; blocks; and normal shop tools.



**ALWAYS PUT THE GRADER IN THE SERVICE POSITION BEFORE ATTEMPTING ANY OVERHAUL, MAINTENANCE OR INSPECTION PROCEDURE.**

**THE SERVICE POSITION IS AS FOLLOWS:- PARK THE GRADER ON A LEVEL SURFACE AND FULLY LOWER THE MOLDBOARD AND ALL ATTACHMENTS. IF IT IS NECESSARY TO ADJUST OR SERVICE THE MOLDBOARD OR ATTACHMENTS IN A RAISED POSITION, SUPPORT THEM WITH PROPER STANDS OR BLOCKS. APPLY THE PARKING BRAKE. TURN THE IGNITION SWITCH TO THE "OFF" POSITION AND REMOVE THE KEY. OPERATE ALL HYDRAULIC CONTROLS TO ENSURE THAT NO ACCUMULATED PRESSURE REMAINS IN THE HYDRAULIC SYSTEM. INSTALL CHOCKS**

**AT THE FRONT AND REAR WHEELS. TURN THE ISOLATION SWITCH TO THE "OFF" POSITION. THE ISOLATION SWITCH IS LOCATED BEHIND THE ENGINE SIDE PANELS. ON ARTICULATED MACHINES, INSTALL THE LOCKING PINS ON BOTH SIDES OF THE HINGE. ALLOW THE ENGINE AND HYDRAULIC SYSTEM TO COOL BEFORE WORKING IN THESE AREAS.**

**THE GRADER IS READY FOR SERVICING.**

**NOTE**

**Weights, measures and tolerances are in Metric (SI), Imperial and U.S. quantities. International standards specify the comma to represent the decimal point in all Metric measurements.**

**Description**

The two blade lift cylinders raise or lower the drawbar, circle and moldboard and can be used either together or independently. Refer to the 700 Series Operator's Manual for full instructions.

Both blade lift cylinders pivot in stirrups which are supported by spherical bearings in the blade lift arms.

The two sides of the drawbar rear cross-member include ball pin anchors for the blade lift cylinder ball caps.

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BLADE LIFT ASSEMBLY

Cleaning and Inspection

**Cleaning - Bearings and Small Parts**



You are recommended to wear cotton gloves when handling bearings. This prevents transfer of skin acids and perspiration onto bearing races.

Immerse bearings and small parts into a cleaning solvent. You can use a hot tank system and a mild alkali solvent. Agitate the parts to remove all foreign matter.

Parts should remain in the solvent long enough to be thoroughly cleaned. In the hot tank system, heated parts help to evaporate the solvent and rinse water. Thoroughly rinse parts to remove all traces of dirt and solvent.

After rinsing, immediately dry the parts using moisture-free compressed air or lint-free rags. Make sure all oil passages are unblocked. Lubricate all bearings with system oil; wrap in clean, lint-free cloth or paper and store in a cool, dry place.

**Inspection - General**

A careful and thorough inspection of all parts is extremely important. Replace all parts showing indications of wear or damage.

**Inspection - Bearings**

Carefully inspect all spherical races, cups and teflon-lined cones for wear, nicks or chipping. When replacing bearings, **ALWAYS** install new mating cups and cones. After inspection, lubricate all bearings with system oil; wrap in clean, lint-free cloth or paper and store in a cool, dry place.

**Inspection - Seals**

Replace all seals. Handle seals carefully; particularly when being installed. Cutting, scratching or curling of the sealing lips seriously reduced efficiency. Lubricate all sealing lips with system oil.

**700 SERIES SHOP MANUAL**  
**BLADE LIFT ASSEMBLY**

**Torque Guide**

Fig. No.	Application	Torque Value		
		N.m	kgf.m	lbf.ft
Fig. No. 20	Ball thrust cap capscrews .....	108,5	11	80
Fig. No. 22	Ball cap nuts .....	230,5	23,5	170
Fig. No. 23	Ball cap nuts .....	230,5	23,5	170
Fig. No. 24	Stirrup jam nut .....	542	55	400

**Adjustments**

Fig. No.	Application	kg	lb
Fig. No. 18	Spring scale tension at top of cylinder .....	7 - 11	15 - 25
Fig. No. 21	Spring scale tension at top of cylinder .....	7 - 11	15 - 25

700 SERIES SHOP MANUAL  
BLADE LIFT ASSEMBLY

Blade Lift Assembly - Disassembly

**Fig. 2**

Park the grader on level ground. Place the transmission mode lever in **Neutral**. Lower the moldboard onto wooden blocks. Shut down the engine and place the machine in the **Service Position**.

**Fig. 3**

Attach a safe lifting device to the upper end of the blade lift cylinder (8). Loosen the jam nut (18) and adjusting nut (19) on the stirrup (6).

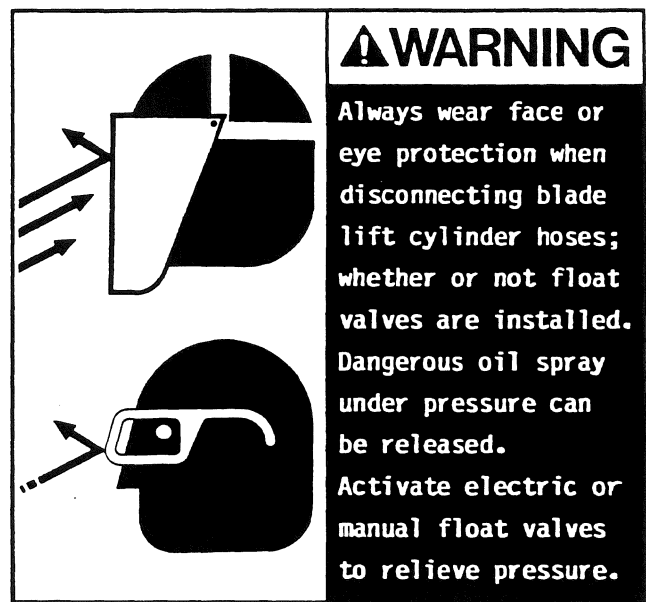
**Fig. 4**

Remove the bolts (15), nuts (17) and lockwashers (16) retaining the ball cap half (13). Remove the ball cap half and shim packs (14). The blade lift cylinder ball cap halves are a matched set. **Never** mix these parts with other ball cap assemblies.

**Fig. 5**

Fully retract the blade lift cylinder (8) piston rod. Temporarily install the shim packs (14) and ball cap half (13). Secure with the bolts (15), nuts (17) and lockwashers (16). **Make sure** you align the matched set marks.

**Fig. 6**



Carefully disconnect the hoses. Disconnect wiring harnesses on graders equipped with electric float valves.

**Fig. 7**

Remove the capscrews (1), lockwashers (2), ball thrust caps (3 and 10) and shim packs (4 and 11).



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BLADE LIFT ASSEMBLY

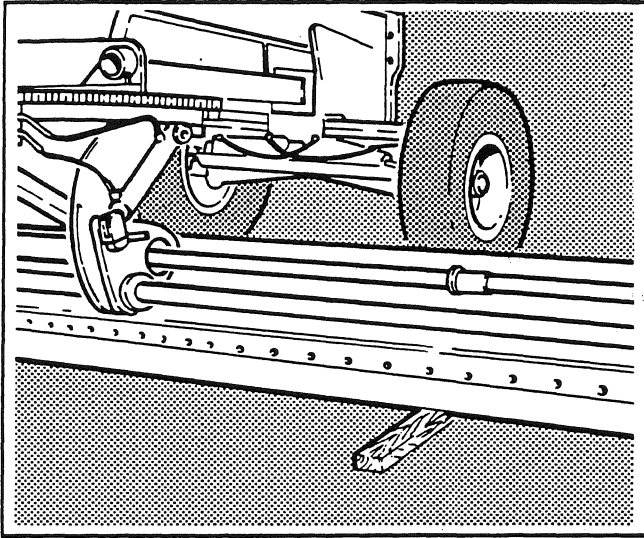


Fig. 2

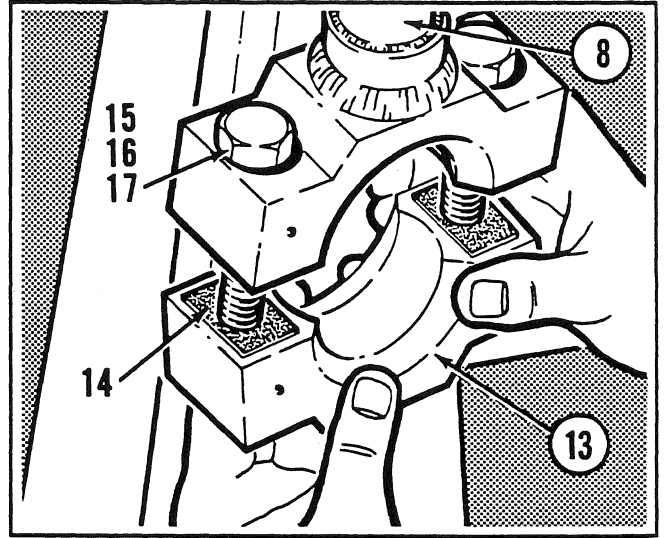


Fig. 5

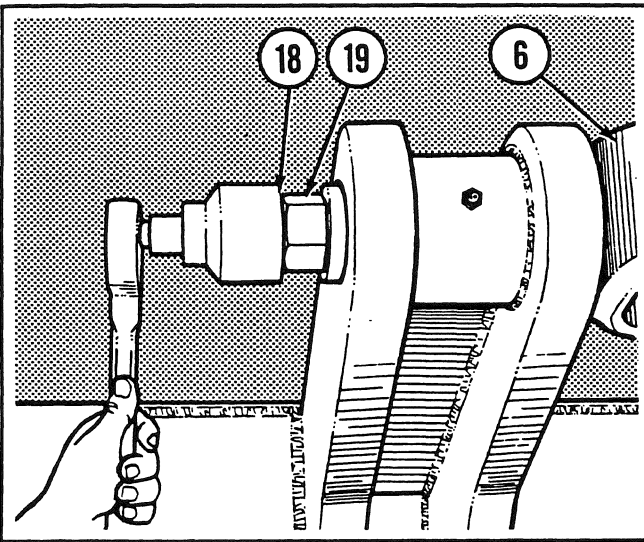


Fig. 3

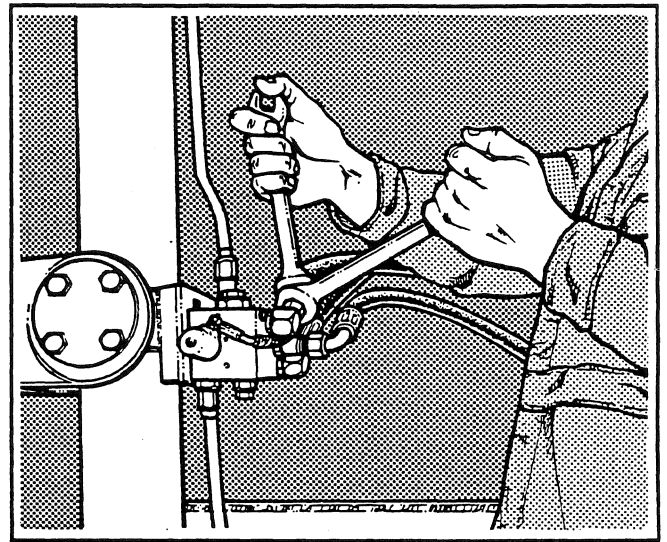


Fig. 6

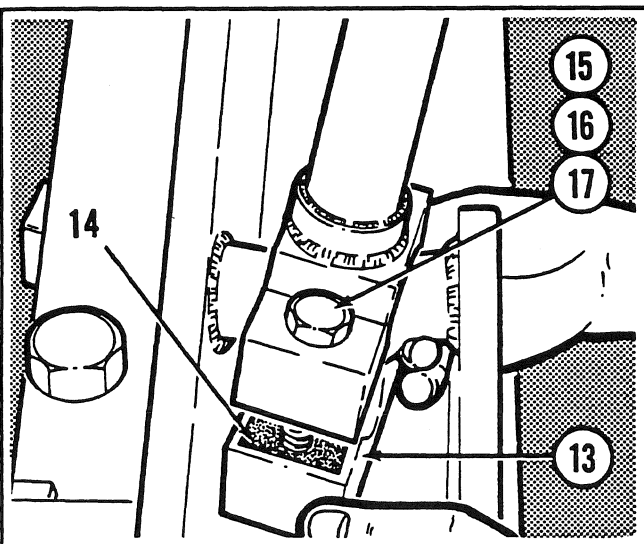


Fig. 4

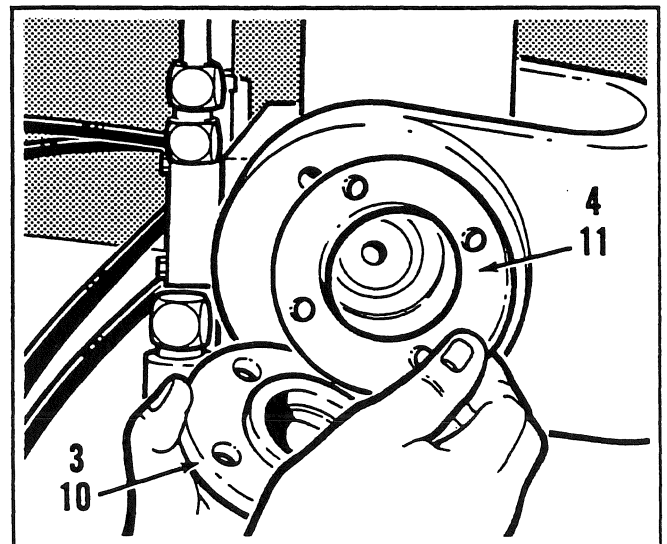


Fig. 7

700 SERIES SHOP MANUAL  
BLADE LIFT ASSEMBLY

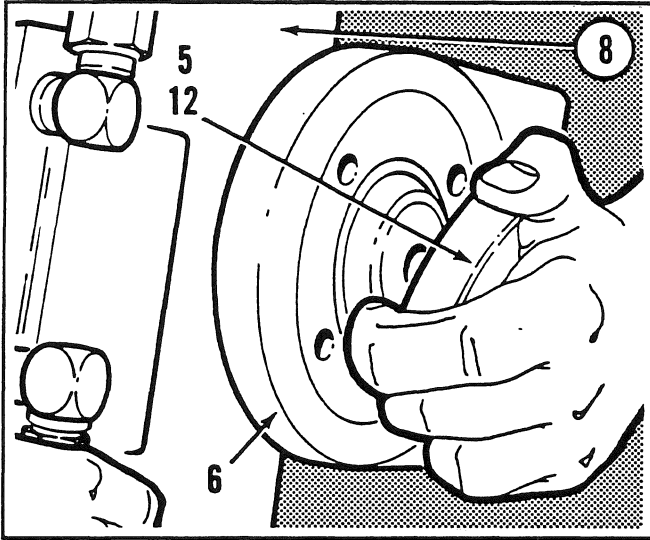


Fig. 8

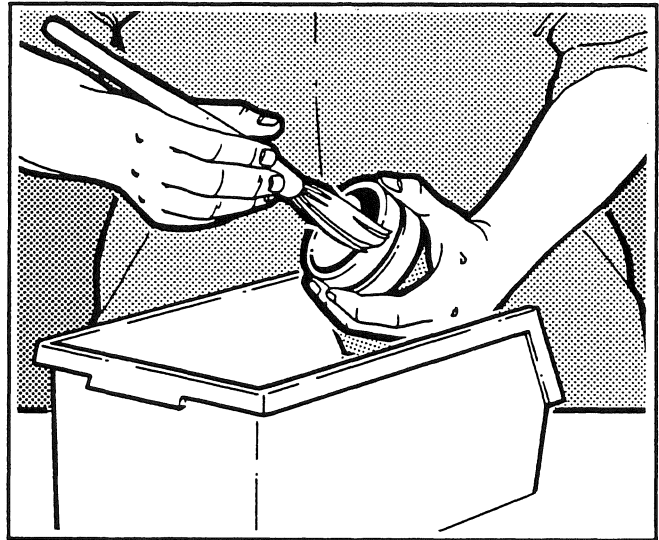


Fig. 11

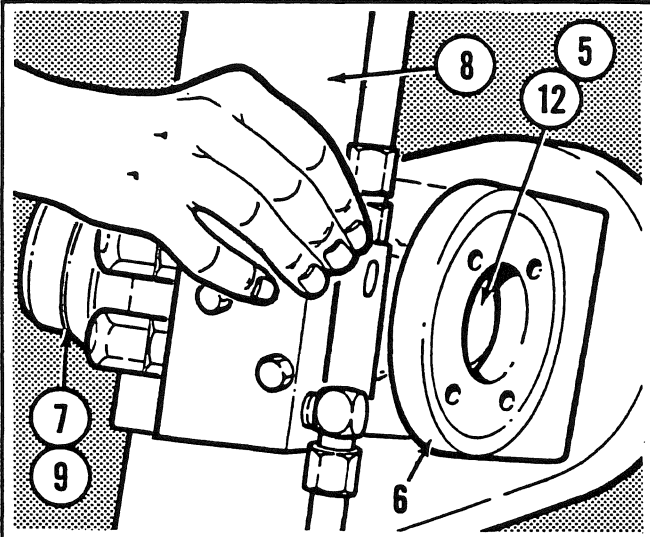


Fig. 9

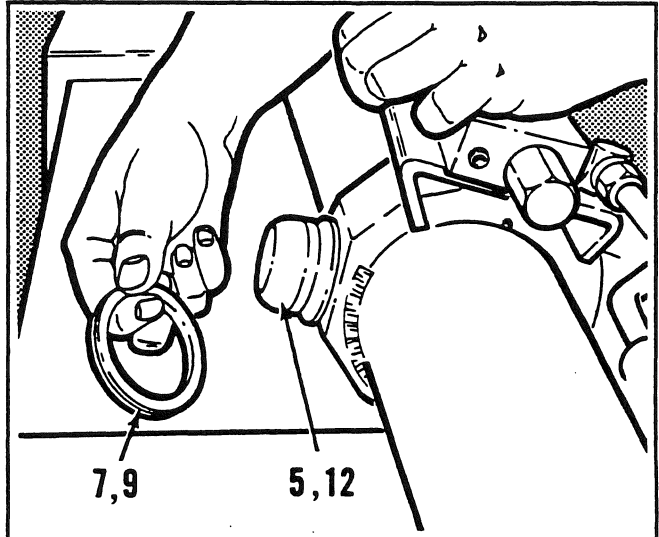


Fig. 12

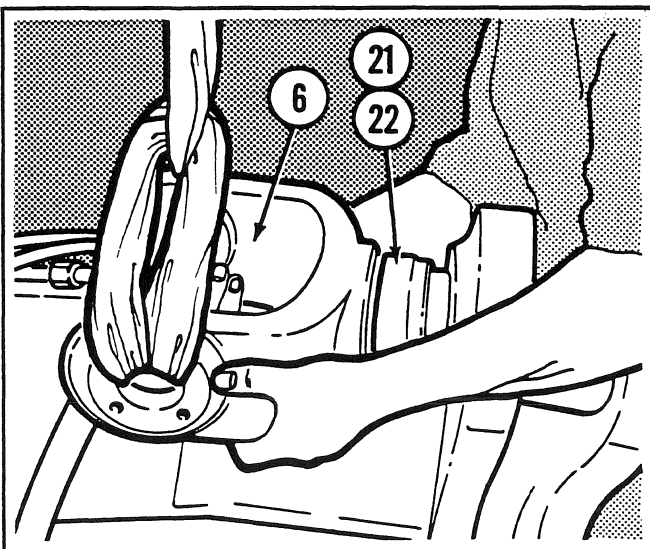


Fig. 10

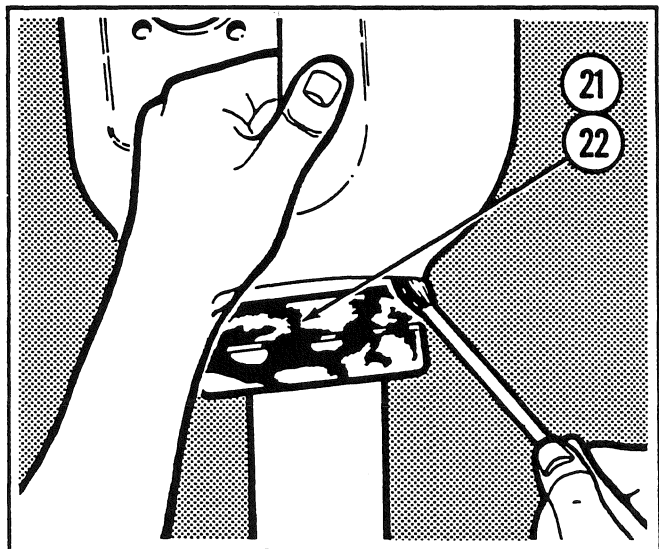


Fig. 13

700 SERIES SHOP MANUAL  
BLADE LIFT ASSEMBLY

**Blade Lift Assembly - Disassembly**  
(Continued)

**Fig. 8**

Move the blade lift cylinder (8) barrel sideways in the stirrup (6) using a bearing puller. Remove the bearing cup (5). Repeat this procedure to remove the bearing cup (12) from the opposite side of the stirrup.

**Fig. 9**

Turn the blade lift cylinder (8) barrel and remove it from the stirrup (6). Remove and discard the V ring seals (7 and 9). Remove the bearing cones (5 and 12) using a bearing puller. Lower the cylinder to the ground.

**Fig. 10**

Attach a safe lifting device to the stirrup (6). Remove the jam nut (18), adjusting nut (19) and retainer plate (20). Carefully remove the stirrup and bearing assembly from the blade lift arm. Remove the spherical bearings (21 and 22). Install the nuts to prevent thread damage. Repeat the steps in Fig. 3 through Fig. 10 for the other side. The blade lift assembly is now disassembled.

**Blade Lift Assembly - Assembly**

**Fig. 11**

Following disassembly of the blade lift assembly, refer to **Cleaning and Inspection** on page 2 of this Shop Manual Section. Thoroughly clean and inspect all applicable parts before assembling the blade lift assembly.

**Fig. 12**

Apply a coating of anti-seize compound, Champion part number 30453, onto the blade lift cylinder trunnion pins. Install the bearing cones (5 and 12) onto the trunnion pins. Lubricate and install new V ring seals (7 and 9).

**Fig. 13**

Apply a coating of anti-seize compound, Champion part number 30453, onto the outside diameter of the spherical bearings (21 and 22) and the bores of the blade lift arms. Install the bearing (21) using a soft metal tubular drift with a diameter the same size as the bearing outer race. **Make sure** the blade lift arm bores and bearings are clean and burr-free.

700 SERIES SHOP MANUAL  
BLADE LIFT ASSEMBLY

Blade Lift Assembly - Assembly (Continued)

**Fig. 14**

Install the bearing (22) using a soft metal tubular drift with the same diameter as the bearing outer race. Remove the nuts. Attach a safe lifting device to the stirrup (6). Carefully install the stirrup into the blade lift arm. Install the retainer plate (20) and adjusting nut (19). Tighten the nut sufficiently to seat the bearings. **DO NOT** over-tighten.

**Fig. 15**

Attach a safe lifting device to the upper end of the blade lift cylinder (8). Turn the blade lift cylinder barrel and install it in the stirrup (6). Take care to align the bearing cones (5 and 12) with the stirrup bores during installation.

**Fig. 16**

Ensure that the V ring seals (7 and 9) are intact and correctly positioned. Apply a coating of anti-seize compound, Champion part number **30453**, onto the outside diameter of the bearing cups (5 and 12). Carefully install the bearing cups into the stirrup bores using a soft metal hammer.

**Fig. 17**

Install the ball thrust caps (3 and 10) **without** shim packs (4 and 11). Install the capscrews (1) and lockwashers (2). Tighten the capscrews until one thrust cap is tight against the stirrup.

**Fig. 18**

Loosen, but **DO NOT** remove the lifting device. Attach a spring scale to the top fitting of the cylinder (8). Pull on the spring scale and tighten the capscrews (1) of the other ball thrust cap until the tension on the scale agrees with the adjustment specified in the front of this Shop Manual Section.

**Fig. 19**

Measure the gap between the ball thrust cap and the machined face of the stirrup (6) in at least four different places. Assemble a shim pack with a thickness equal to the average of these measurements.

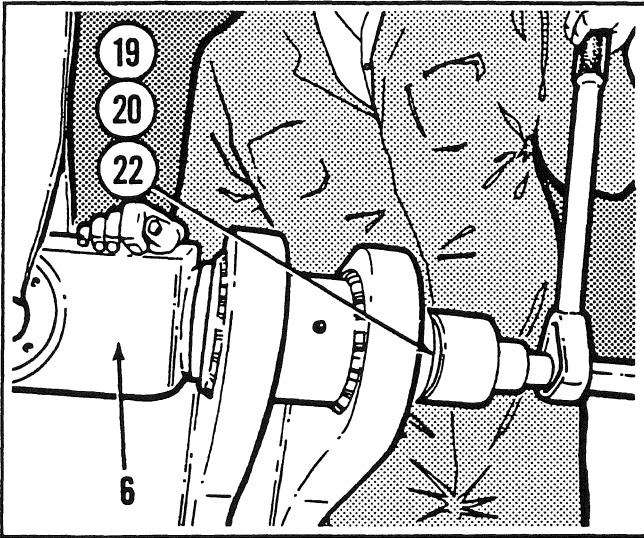


Fig. 14

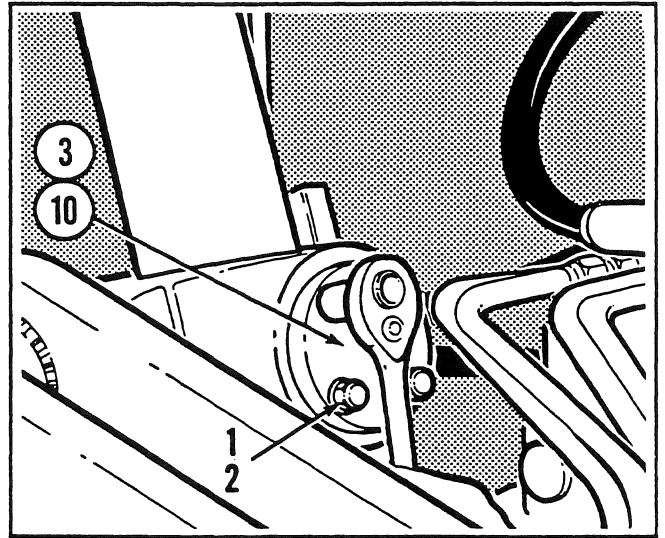


Fig. 17

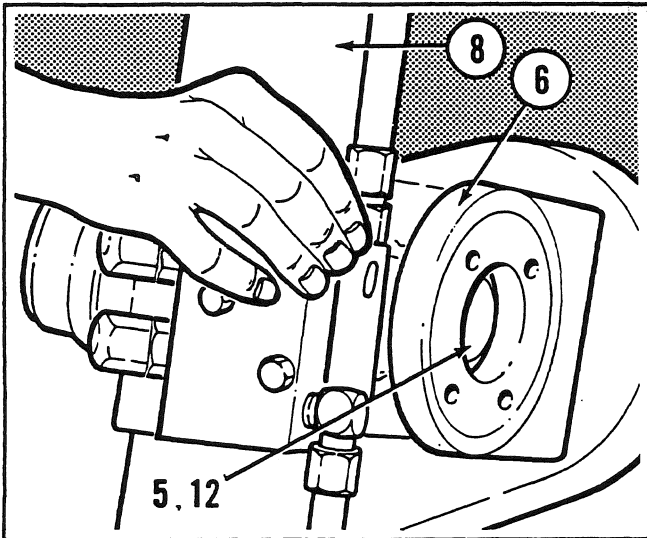


Fig. 15

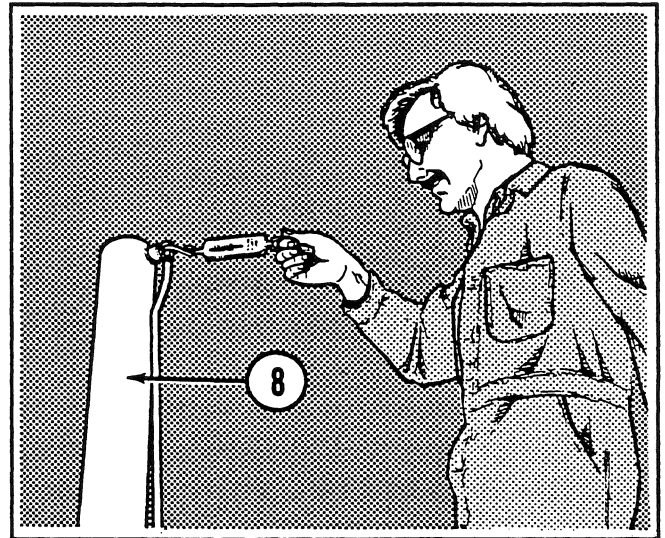


Fig. 18

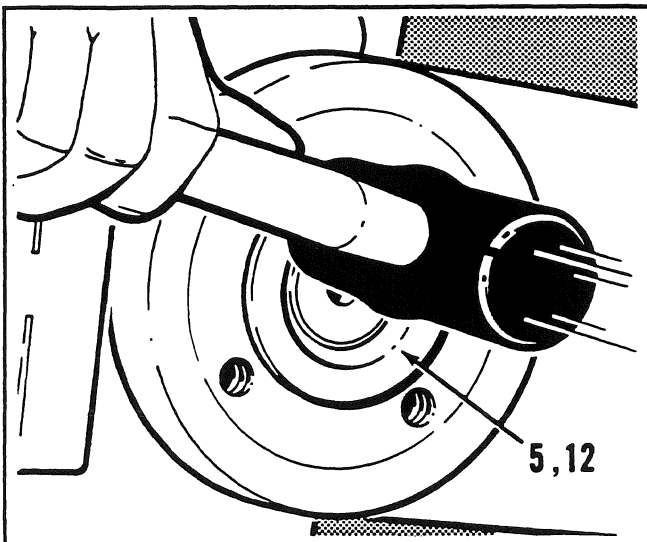


Fig. 16

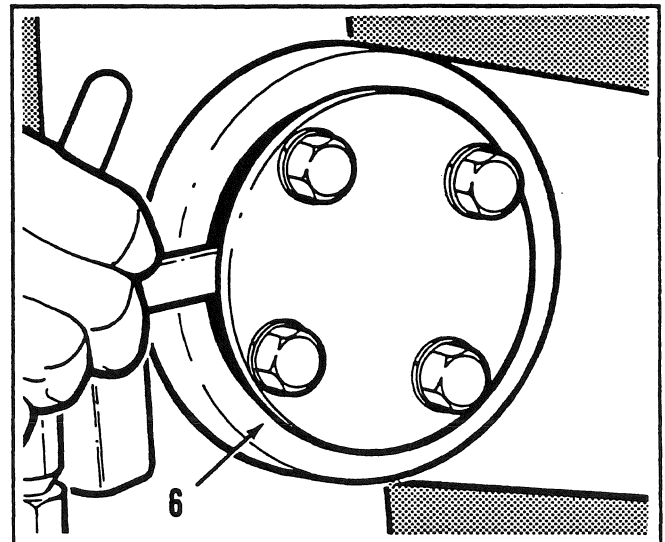


Fig. 19

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BLADE LIFT ASSEMBLY

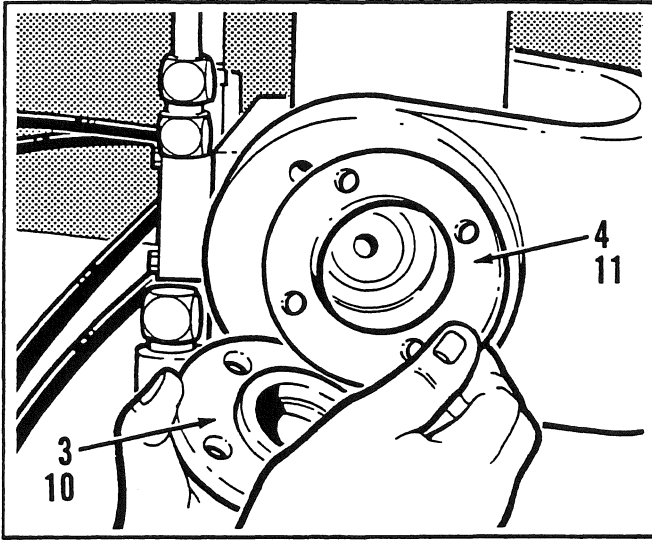


Fig. 20

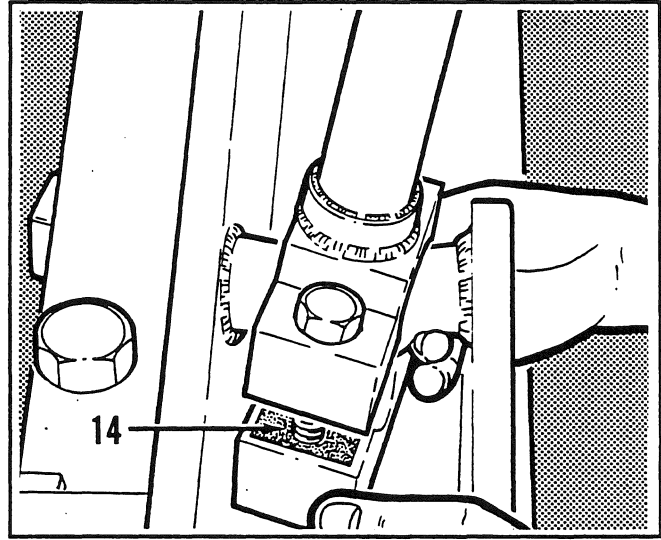


Fig. 23

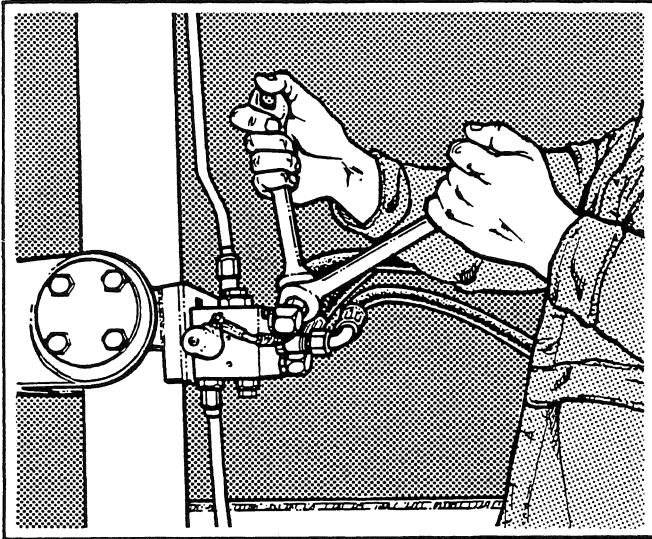


Fig. 21

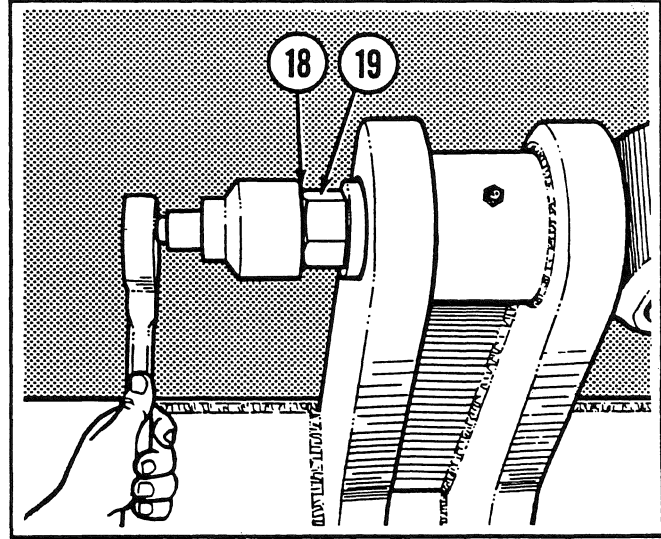


Fig. 24

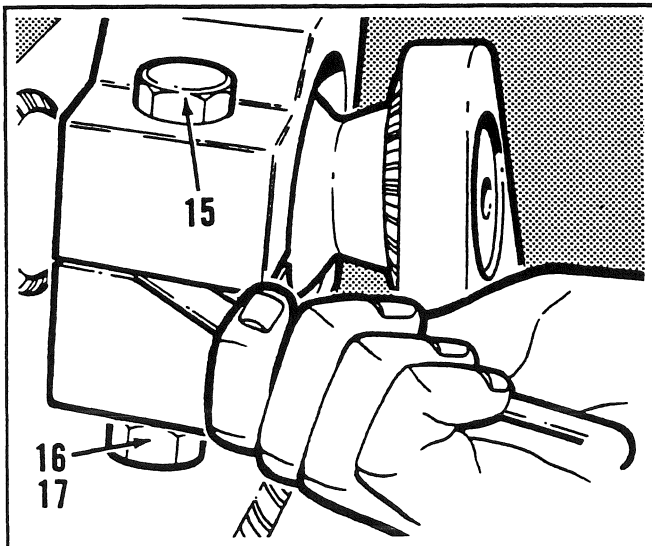


Fig. 22

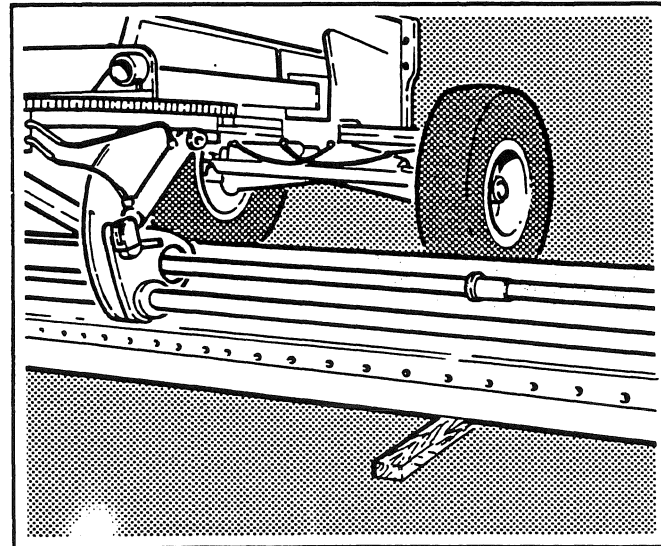


Fig. 25

700 SERIES SHOP MANUAL  
BLADE LIFT ASSEMBLY

Blade Lift Assembly - Assembly (Continued)

**Fig. 20**

Divide the shim pack in half. Remove both ball thrust caps (3 and 10). Re-install the caps and shim packs (4 and 11). Install the capscrews (1) and lockwashers (2). Tighten the capscrews to the specified torque.

**Fig. 21**

Pull on the spring scale and check to see if it agrees with the adjustment specified in the front of this Shop Manual Section. Re-connect the hoses. Re-connect the wiring harnesses for graders equipped with electric float valves.

**Fig. 22**

Determine the size of the ball cap shim packs (14). Install the matched ball cap halves **without** shims. Secure with the bolts (15), nuts (17) and lockwashers (16). Tighten the nuts to the specified torque. Measure the gap between the ball cap halves.

**Fig. 23**

Install shim packs (14) equal in thickness to this measurement. Tighten the ball cap nuts (17) to the specified torque.

**Fig. 24**

Loosen the stirrup adjusting nut (19). Install the jam nut (18). Hold the adjusting nut with a wrench. Tighten the jam nut to the specified torque. Lubricate the blade lift spherical bearings with grease recommended in the Lubrication Specifications at the front of this Shop Manual. **Make sure** you see grease seeping out of the bearings. Ensure the stirrup assembly is free to rotate.

**Fig. 25**

Repeat the steps in Fig. 13 through Fig. 24 for the other side. The blade lift assembly is now completely assembled.

