

Product: MOTOR GRADER
 Model: 140M MOTOR GRADER B9M
 Configuration: 140M Motor Grader B9M00001-UP (MACHINE)

Disassembly and Assembly 140M Motor Grader

Media Number -KENR6424-07

Publication Date -01/04/2015

Date Updated -06/04/2015

i05508509

Circle - Install

SMCS - 6154-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7574	Link Bracket	2
B	1P-1831	Adapter	1
	4C-9633	Puller Stud	1
	9U-6833	Nut	1
	5P-8250	Washer	1
	5P-4197	Spacer	1
	6V-3160	Double Acting Cylinder	1
	350-7768	Electric Hydraulic Pump Gp (115V)	1
	350-7769	Electric Hydraulic Pump Gp (230V)	1
C	4C-6486	Stand	1
	8S-7621	Tube	1
	8S-7615	Pin	1
	8S-8048	Saddle	1

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, PERJ1017, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat[®] products.

Dispose of all fluids according to local regulations and mandates.



Hydraulic oil pressure can remain in the hydraulic system on this machine after the engine and pump have been stopped. Serious injury can result if this pressure is not released before any service is done on the hydraulic systems. In order to prevent possible injury, release the hydraulic system pressure before working on any fitting, hose, or hydraulic component.

Lower all attachments to the ground before service is started. If the hydraulic system must be serviced, tested, or adjusted with the attachment in the raised position, the attachments and lift cylinders must be supported properly.

Always move the machine to a location away from the travel of other machines. Be sure that other personnel are not near the machine when the engine is running and tests or adjustments are being made.



When you are using hydraulic cylinders and puller studs, always ensure that the rated capacity of the puller stud meets or exceeds the rated capacity of the hydraulic cylinder. If the puller stud does not meet or exceed the rated capacity of the hydraulic cylinder, a sudden failure of the puller stud could occur. The sudden failure of the puller stud could result in personal injury or death.

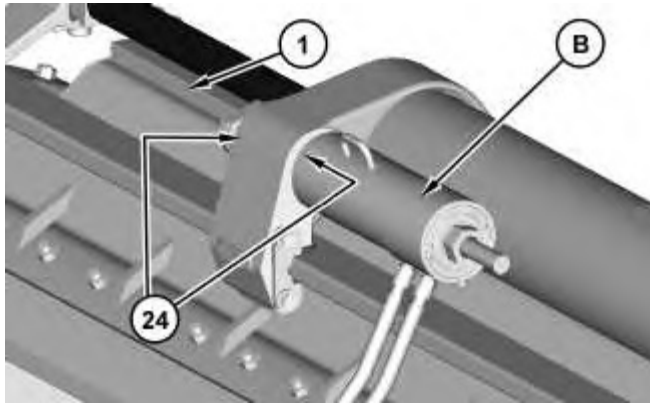


Illustration 1

g01402122

1. Lower the temperature of two bearings (24). Use Tooling (B) in order to install two bearings (24) (not shown) into blade (1). Repeat this step for the opposite side.

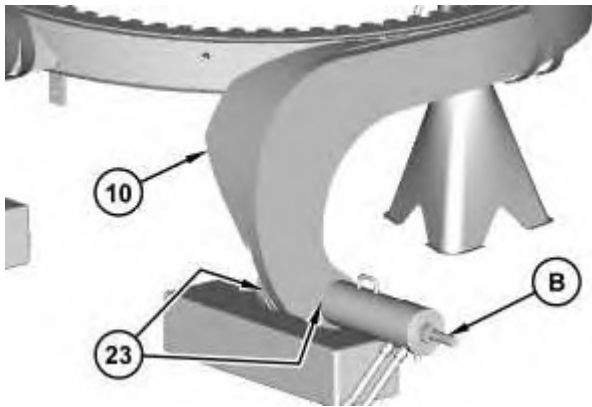


Illustration 2

g01402120

2. Lower the temperature of two bearings (23). Use Tooling (B) in order to install two bearings (23) (not shown) in circle assembly (10). Repeat this step for the opposite side.

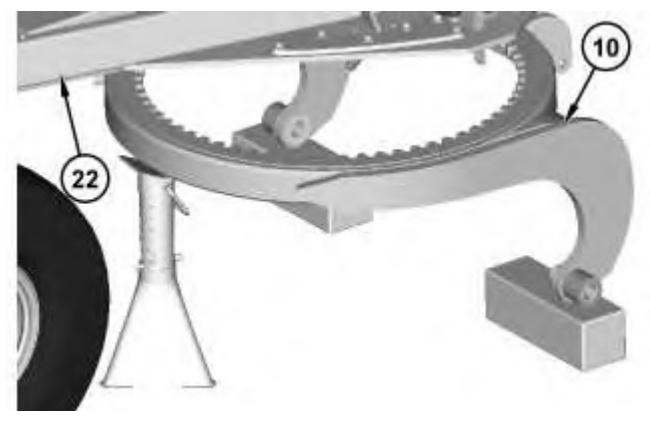


Illustration 3

g01402117

3. Start the machine. Lower drawbar (22) onto circle assembly (10).

4. Move the machine in order to engage the circle drive pinion on circle assembly (10).

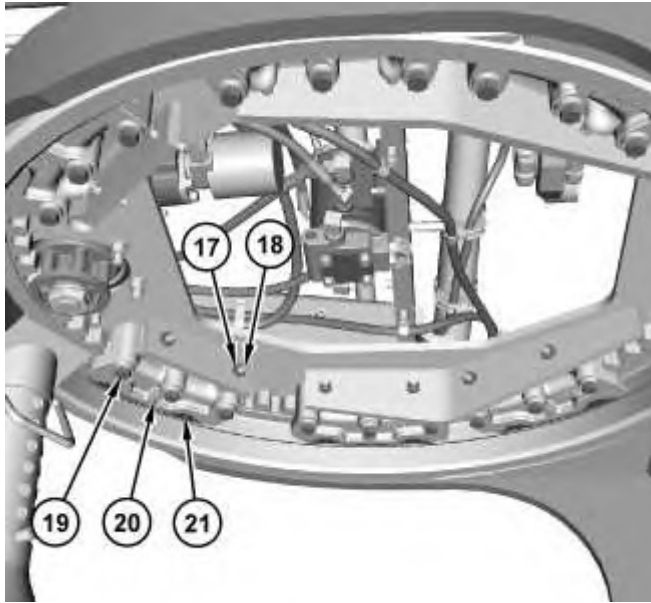


Illustration 4

g01402108

5. Stop the engine. Install wear strip (21) and shoe (20).

Note: Note the location of shoe (20). Repeat this step for the remaining shoes.

6. Install bolts (19).
7. Tighten setscrew (18).
8. Tighten nuts (17).

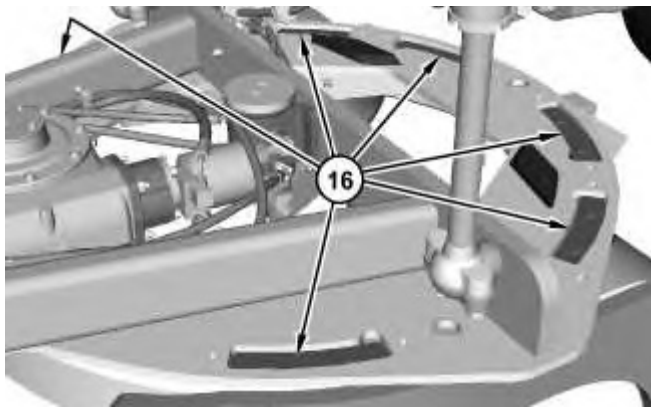


Illustration 5

g01402102

9. Install wear strips (16).
-

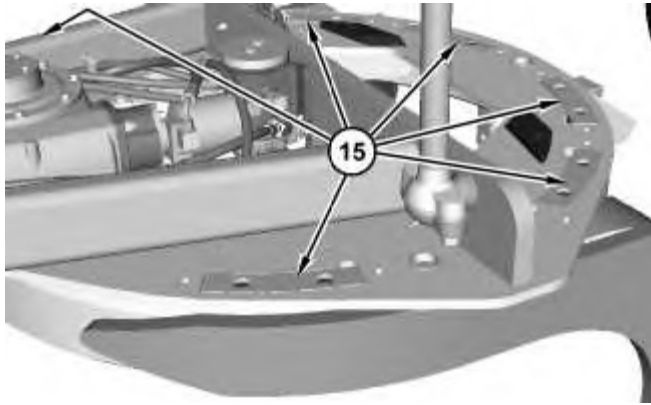


Illustration 6

g01402099

10. Install shims (15).

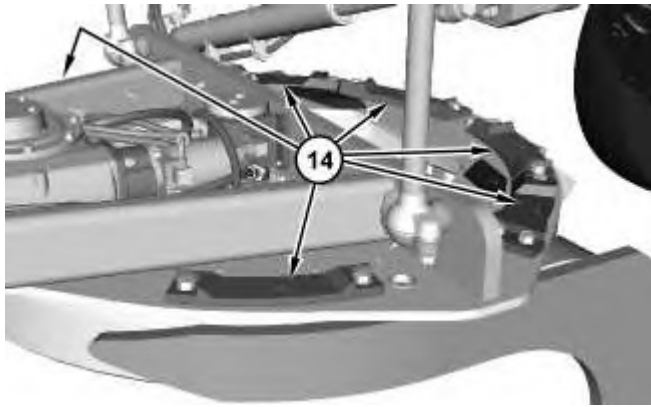


Illustration 7

g01402096

11. Install plates (14).

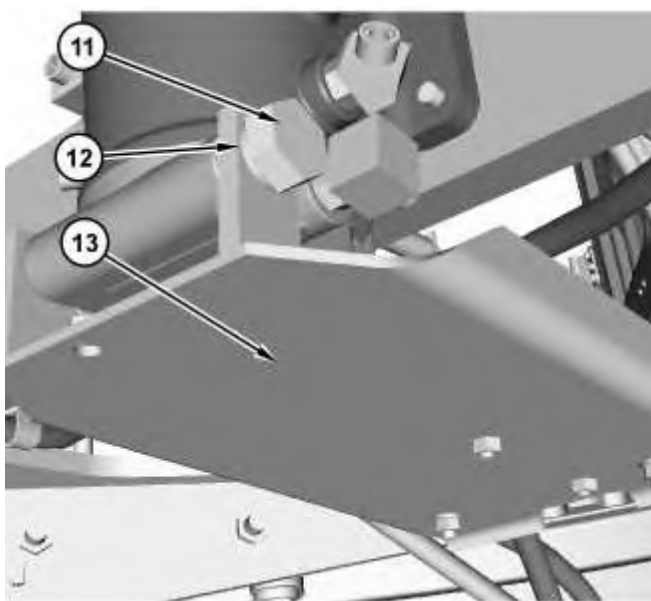


Illustration 8

g01423025

12. Position bracket (13).
13. Install washer (12) and bolt (11).

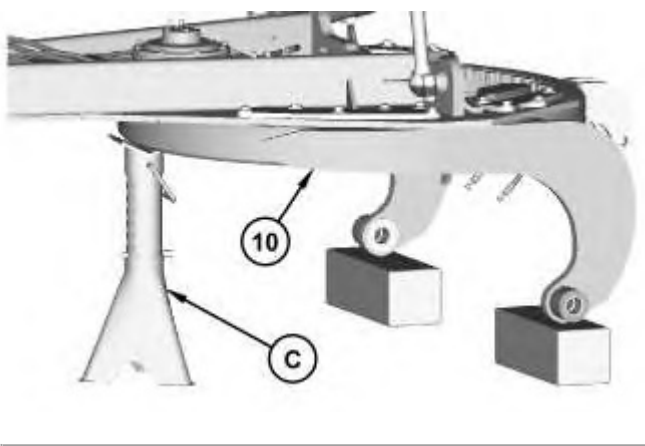


Illustration 9

g01402057

14. Start the engine. Operate the machine in order to raise circle assembly (10) off the suitable cribbing and Tooling (C). Remove Tooling (C) from circle assembly (10). Reposition the machine or the blade.

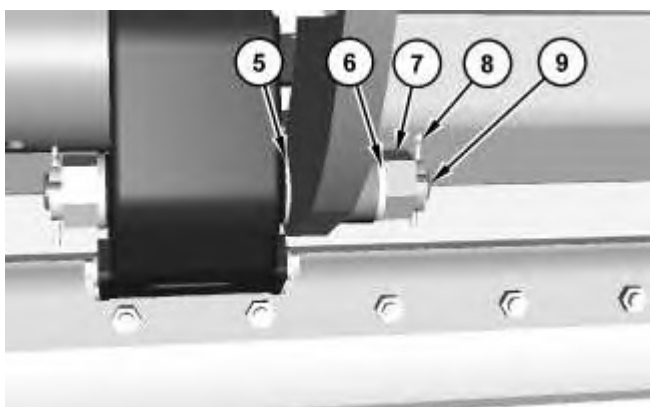


Illustration 10

g01402047

15. Position shims (5).

Note: Use the required number of shims (5) in order to provide a sliding fit with a maximum of 1.800 mm (0.0709 inch) clearance between the bracket and the beam.

16. Install shaft assembly (9).
17. Install washer (6), nut (7), and cotter pin (8).

Note: Tighten nut (7) to 0.000 mm (0.0000 inch) clearance and back off one slot.

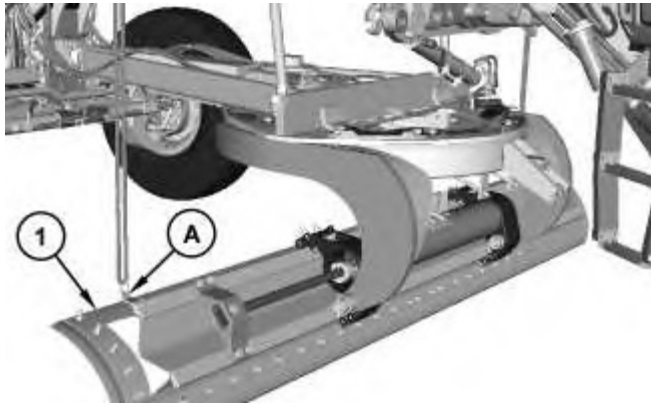


Illustration 11

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18. Attach Tooling (A) and a suitable lifting device to blade (1). The weight of blade (1) is approximately 907 kg (2000 lb). Use Tooling (A) and the suitable lifting device in order to raise blade (1).

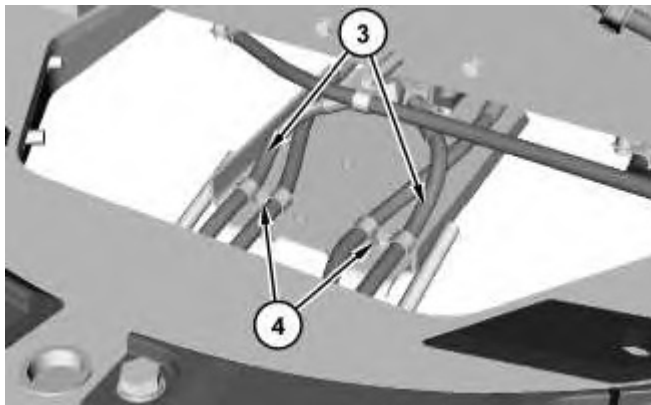
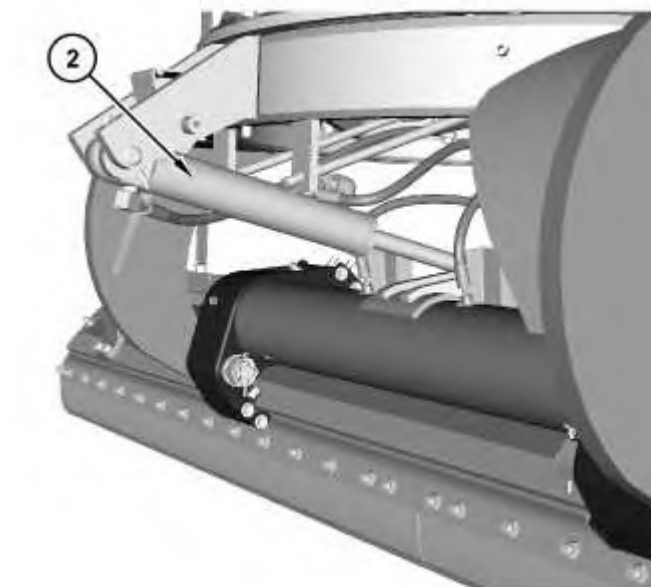


Illustration 12

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19. Connect hose assemblies (3). Install bolts (4).



20. Install blade tip cylinder (2). Refer to Disassembly and Assembly, "Blade Tip Cylinder - Remove and Install".

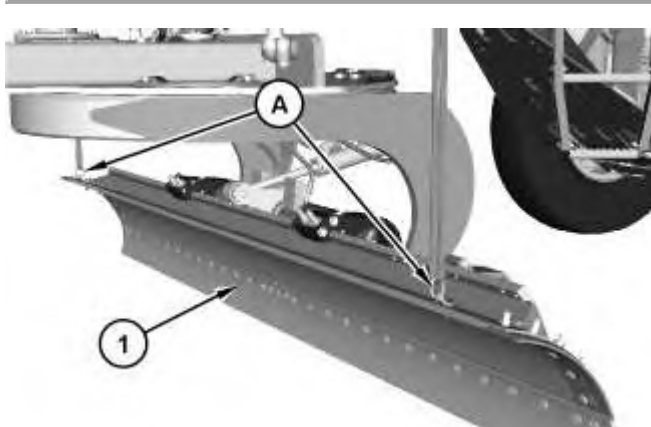


Illustration 14

21. Remove Tooling (A) from blade (1).

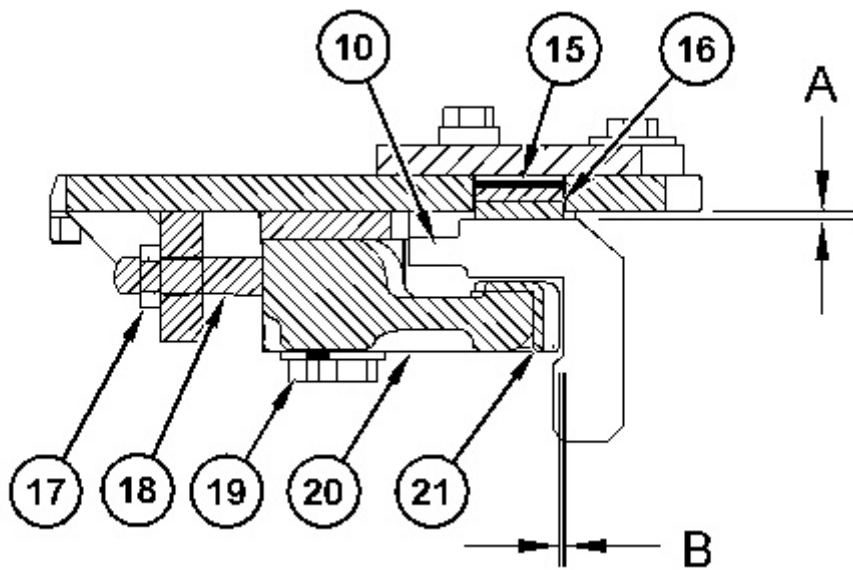


Illustration 15

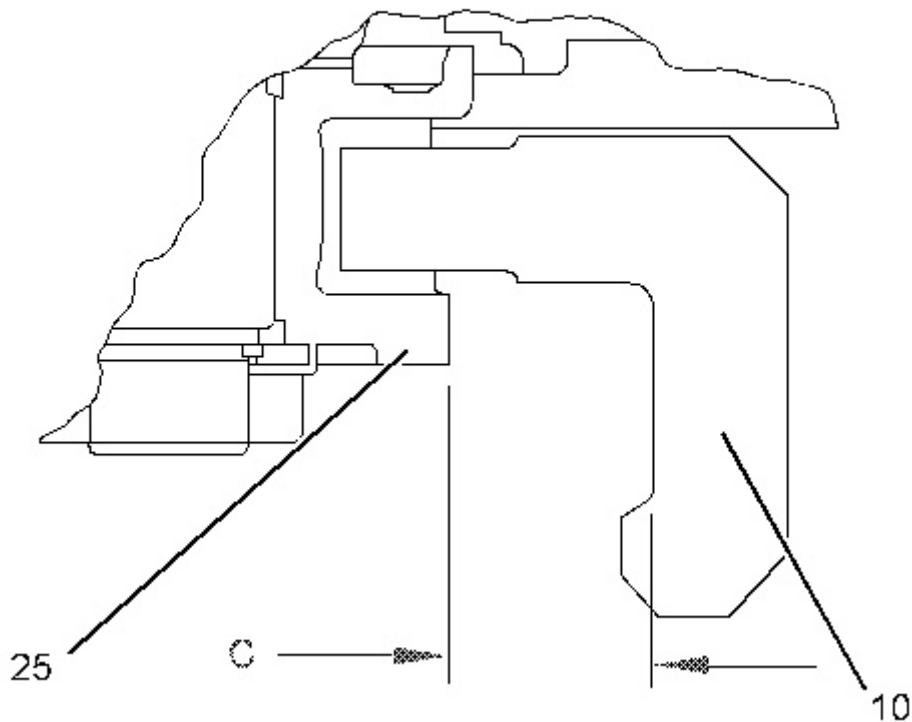


Illustration 16

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22. Loosen bolts (19) in order to allow movement in shoes (20). Seat circle drive pinion (25) in the teeth on circle (10). Move circle (10) in order to obtain Dimension (C). Dimension (C) must be $50.00 + 2.50 - 0.50$ mm ($2.000 + 0.098 - 0.020$ inch).
23. Loosen nuts (17). Evenly adjust setscrews (18) against shoes (20) in order to bring shoes (20) in contact with circle (10). Back off setscrews (18) in order to obtain Dimension (B). Dimension (B) must be no greater than 0.80 mm (0.032 inch).
24. Tighten bolts (19) to a torque of 530 ± 70 N·m (391 ± 52 lb ft). Tighten nuts (17) to a torque of 200 ± 30 N·m (148 ± 22 lb ft).
25. Measure Dimension (A) between wear strip (16) and circle (10). Dimension (A) must be no greater than 0.50 mm (0.020 inch). Add or remove shims (15) in order to obtain the correct dimension.
26. Start the engine and run the engine. Rotate the circle through the entire working range and check for binding. The circle must rotate freely.

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i07332155

Drawbar - Remove

SMCS - 6153-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	504-9791	Lift Gp (60Hz) ⁽¹⁾	1
	OR		
	504-9793	Lift Gp (50Hz) ⁽²⁾	1
B	439-3940	Bracket As	1

⁽¹⁾ High-Voltage (480V) Low-Voltage (240V)

⁽²⁾ High-Voltage (400V) Low-Voltage (200V)



WARNING

Cylinders equipped with lock valves can remain pressurized for very long periods of time, even with the hoses removed.

Failure to relieve pressure before removing a lock valve or disassembling a cylinder can result in personal injury or death.

Ensure all pressure is relieved before removing a lock valve or disassembling a cylinder.

Note: Cleanliness is an important factor. Before the disassembly procedure, the exterior of the component should be thoroughly cleaned to prevent dirt from entering the internal mechanism.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat[®] products.

Dispose of all fluids according to local regulations and mandates.



Personal injury can result from hydraulic oil pressure and hot oil.

Hydraulic oil pressure can remain in the hydraulic system after the engine has been stopped. Serious injury can be caused if this pressure is not released before any service is done on the hydraulic system.

Make sure all of the work tools have been lowered to the ground, and the oil is cool before removing any components or lines. Remove the oil filler cap only when the engine is stopped, and the filler cap is cool enough to touch with your bare hand.

Note: Put identification marks on all hoses and on all hose assemblies for installation purposes. Plug all hose assemblies to prevent fluid loss, and to prevent contaminants from entering the system.

1. Connect the steering frame lock. Refer to Operation and Maintenance Manual, "Steering Frame Lock".
-

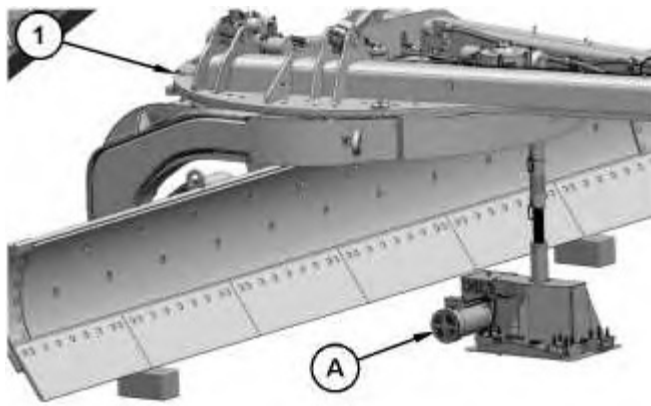


Illustration 1

g06287257

2. Position drawbar (1) to the left side of the machine. Position the blade onto suitable cribbing. Support the circle with Tooling (A) as shown. Refer to Tool Operating Manual, NEHS1303, "Lift Group (Stand - 25 Ton)" for more information on Tooling (A).
3. Stop the engine. Release the system pressure. Refer to Disassembly and Assembly, "System Pressure - Release".

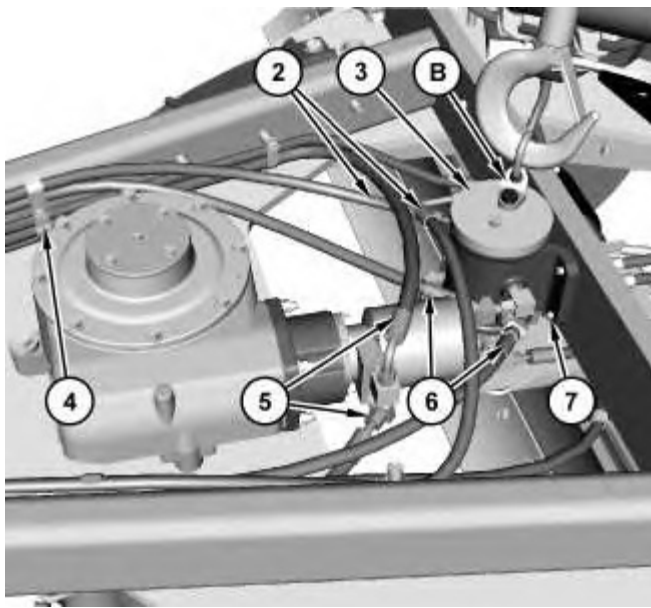


Illustration 2

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4. Attach Tooling (B) and a suitable lifting device to swivel (3). The weight of swivel (3) is approximately 41 kg (90 lb).
5. Disconnect hose assemblies (2), (5), and (6).
6. Remove bolts (7) and lower swivel (3).
7. Remove the suitable lifting device.
8. Remove all clamps (4) that connect hose assemblies (6) to the drawbar.

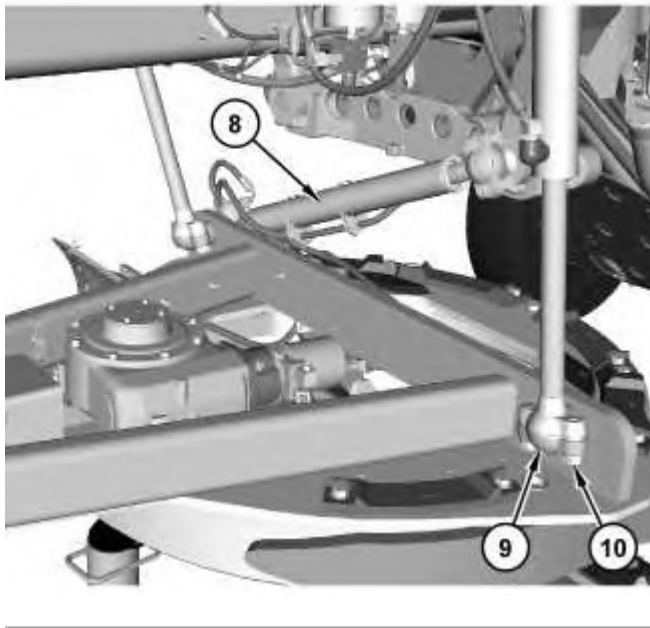


Illustration 3

g01403392

9. Remove center shift cylinder (8). Refer to Disassembly and Assembly, "Center shift Cylinder - Remove and Install".
10. Remove bolts (10), cap (9), and the shims. Repeat this step for the opposite side of the machine.
11. Use the hydraulics to retract the blade lift cylinders.

Note: Note the number and the location of the shims.

Note: Secure the blade lift cylinders to the front frame.

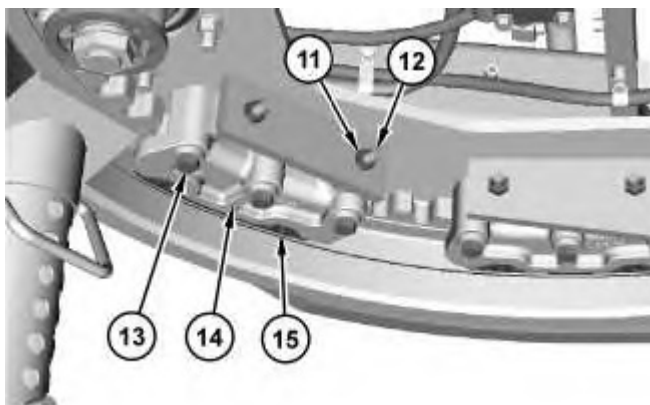


Illustration 4

g01403404

12. Loosen nuts (11).
13. Loosen set screws (12).
14. Remove bolts (13).

15. Remove shoe (14) and wear strip (15).

Note: Note the location of the shoes.

16. Repeat Steps 12 through 15 for the remaining shoes.

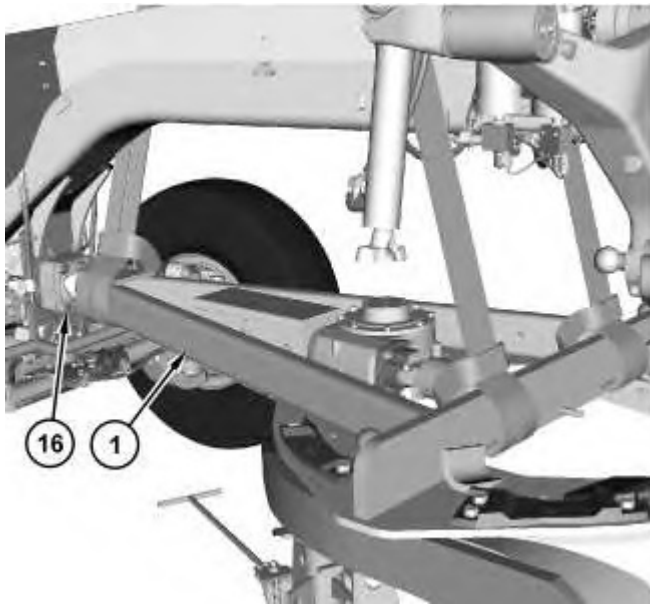


Illustration 5

g01403432

17. Attach a suitable lifting device to drawbar (1).

18. Remove bolts (16).

19. Remove drawbar (1). The weight of drawbar (1) is approximately 907 kg (2000 lb).

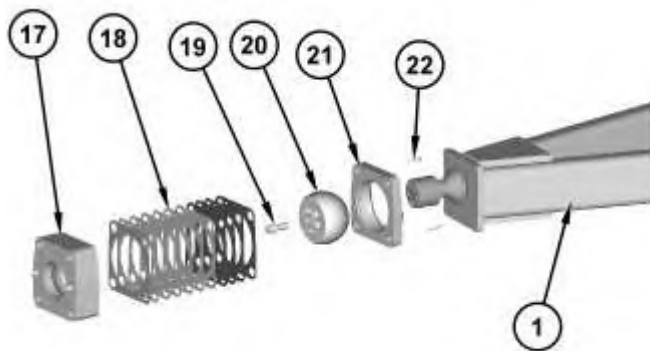


Illustration 6

g03485398

20. Remove bolts (22).

21. Remove adapter (17) and shims (18) from drawbar (1).

22. Remove bolts (19) and ball (20). Remove adapter (21) from drawbar (1).

23. If necessary, remove the circle drive. Refer to Disassembly and Assembly, "Circle Drive - Remove".

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i07339896

Drawbar - Install

SMCS - 6153-012

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	504-9791	Lift Gp (60 Hz) ⁽¹⁾	1
	OR		
	504-9793	Lift Gp (50 Hz) ⁽²⁾	1
B	439-3940	Bracket As	1

⁽¹⁾ High-Voltage (480V) Low-Voltage (240V)

⁽²⁾ High-Voltage (400V) Low-Voltage (200V)

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

1. If necessary, install the circle drive. Refer to Disassembly and Assembly, "Circle Drive - Install".
-

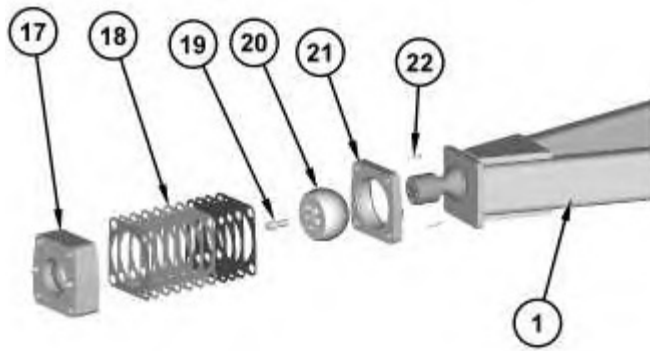


Illustration 1

g03485398

2. Install adapter (21) to drawbar (1). Install ball (20) and bolts (19) to drawbar (1). Tighten bolts (19) to a torque of $500 \pm 65 \text{ N}\cdot\text{m}$ ($369 \pm 48 \text{ lb ft}$).
3. Install shims (18) and adapter (17). Adjust shims (18) to obtain an end play of $0.60 \pm 0.20 \text{ mm}$ ($0.024 \pm 0.008 \text{ inch}$).
4. Install bolts (22).

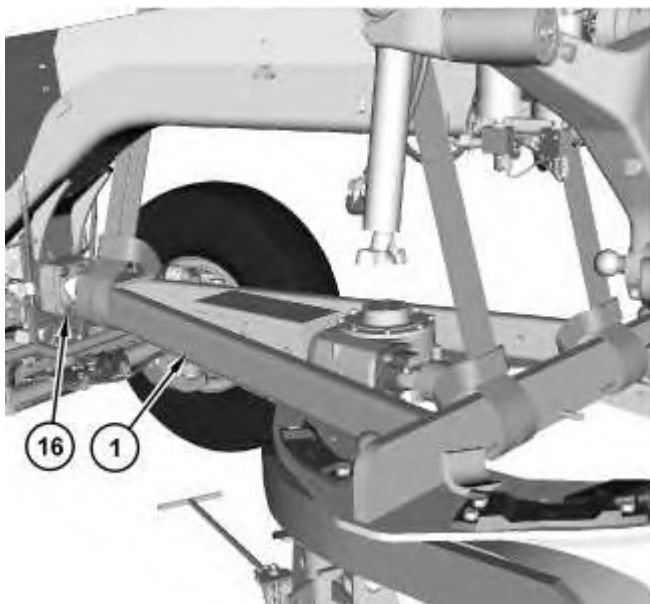


Illustration 2

g01403432

5. Attach a suitable lifting device to drawbar (1). Install drawbar (1). The weight of drawbar (1) is approximately 907 kg (2000 lb).
6. Install bolts (16).

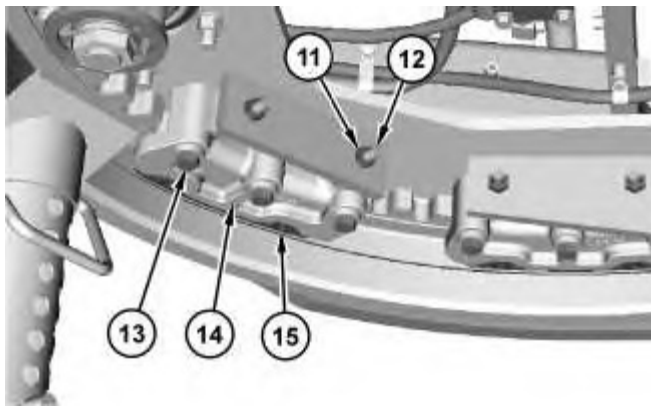


Illustration 3

g01403404

7. Install shoe (14). Repeat for the remaining shoes.
8. Install bolts (13).
- Note:** Note the number of shims (15) and the location of shoes (14).
9. Tighten set screw (12).
10. Tighten nut (11).

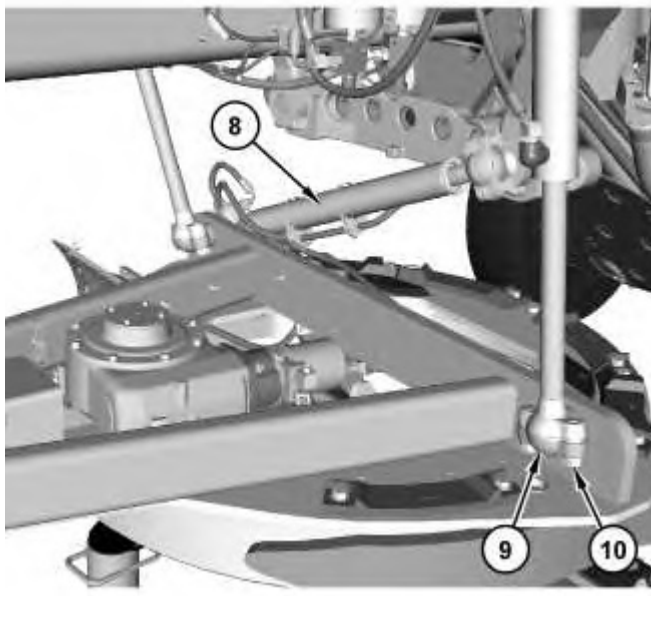


Illustration 4

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11. Extend the blade lift cylinders.
12. Install cap (9) and the shims. Install bolts (10). Repeat this step for the opposite side of the machine.
- Note:** Note the number of shims.
13. Install centershift cylinder (8). Refer to Disassembly and Assembly, "Centershift Cylinder - Remove and Install".



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