Belt Tensioner Cylinders

SMCS - 4197-010; 4197-017

Remove & Install Belt Tensioner Cylinders

<table>
<thead>
<tr>
<th>Tools Needed</th>
<th>A</th>
<th>B</th>
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</thead>
<tbody>
<tr>
<td>FT-2228 Hose Assembly</td>
<td>1</td>
<td></td>
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<tr>
<td>9U-4270 Lock</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>8T-9379 Bolt 3/8 in X 16 X 4 14 in (108mm)</td>
<td>4</td>
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<tr>
<td>1U-7683 Suction Gun</td>
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<td>1</td>
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</tbody>
</table>

1. Remove four bolts and washers (3) and remove plate assembly (2) from both belt tensioner cylinders (1).
2. Disconnect electrical connector (3) from both belt tensioner cylinders (1).

3. Remove two bolts (6) and guard (5) from both belt tensioner cylinders (1).

4. Remove breaker relief valve (7) from both belt tensioner cylinders (1).

5. Connect Tooling (A) to each belt tensioner cylinder (1) and to the "Number One Raise implement quick disconnect coupler", at the rear of the machine.

**NOTE:** If the machine is not operable, use 4C-5809 Hydraulic Pump as an alternate hydraulic source to pressurize belt tensioner cylinders (1).
6. Position floor jack (8) under belt tensioner cylinder (1).

**NOTICE**

Do not exceed a maximum pressure of 11 000 kPa (1600 psi) when pressurizing belt tensioner cylinders (1) or machine damage may result. When pressurizing the belt tensioner cylinders, extend the cylinders only far enough to install Tool (B).

7. Use the implement hydraulics to pressurize belt tensioner cylinders (1).
   a. Position tools (B) over both the belt tensioner cylinder rod assemblies (11).
   b. Assemble tools (C) to tools (B) to secure to belt tensioner cylinder rod assemblies (11).

8. Remove bolt and washer (10) from pin (9)
   a. Remove pin (9) and spacer from belt tensioner cylinder (1) and frame.

**NOTE:** If removing both belt tensioner cylinders (1), repeat Step 8. for the other side after lowering and moving the floor jack to the other belt tensioner cylinder.

9. Use implement hydraulics to pressurize belt tensioner cylinders (1) to extend rod assembly (11) far enough to remove tools (B) and (C).
   a. After removing tools (B) and (C), retract rod assemblies (11) on belt tensioner cylinders (1).

10. Disconnect Tooling (A) from belt tensioner cylinders (1).
11. Install plug and cap (13) to belt tensioner cylinders (1)

   a. Remove bolt and washer (12) from pin (14).

   b. Remove pin (14) and spacer from belt tensioner cylinder (1) and frame.

   c. Lower belt tensioner cylinder (1) from the machine.

   NOTE: The weight of belt tensioner cylinder (1) is **295 kg (650 lb)**.

   NOTE: Repeat Step 11. for the other belt tensioner cylinder.

12. Remove bearings (15) from the frame.

   NOTE: The following steps are for installation of the belt tensioner cylinders.

13. Install bearings (15) in the frame.

   NOTE: Install bearings (15) with the split in the six o'clock position.

14. Use floor jack (8) to position belt tensioner cylinder (1).

   a. Install pins (14) with spacers to belt tensioner cylinders (1) and frame.

   b. Install bolts and washers (12) to pins (14) and belt tensioner cylinder (1).

   NOTE: Repeat Step 14. for the other belt tensioner cylinder.

15. Connect Tooling (A) to belt tensioner cylinders (1).

16. Use implement hydraulics and Tooling (A) to pressurize belt tensioner cylinders (1).

   a. Extend rod assemblies (11) of belt tensioner cylinders (1) until pins (9) can be installed.
b. Install pins (9) and spacers to frame and belt tensioner cylinders (1).

17. Install bolts and washers (10) to pins (9) and belt tensioner cylinder (1).

**NOTE:** Repeat Steps 16. and 17. for the other belt tensioner cylinder.

18. Pressurize belt tensioner cylinders (1), and remove tools (B) and (C) from rod assemblies (11).

19. Remove Tooling (A) from belt tensioner cylinders (1).

**NOTE:** Use Tool (D) to remove hydraulic fluid from belt tensioner cylinders (1) of approximately ... 1.90 L (.50 gal)

a. Remove caps and plugs (13) and install breaker relief valves (7) to belt tensioner cylinders (1).

20. Install guards (5) with four bolts and washers (6) to belt tensioner cylinders (1).

21. Connect electrical connectors (4) to belt tensioner cylinders (1).

22. Install plate assemblies (2) with bolts and washers (3) to belt tensioner cylinders (1).

23. Check the belt tension, and adjust it if necessary.

Refer to: "Measure Cylinder Rod Extension (Belt Tension)", SENR9438 Systems Operation Testing and Adjusting, Undercarriage, Steering and Brakes.

**Disassemble & Assemble Belt Tensioner Cylinders**

<table>
<thead>
<tr>
<th>Tools Needed</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>9U-7835 Fixture Assembly</td>
<td>1</td>
<td></td>
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<tr>
<td>138-7574 Link Bracket</td>
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<tr>
<td>138-7576 Link Bracket</td>
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<tr>
<td>132-8223 Pump</td>
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<tr>
<td>132-8119 Wrench with 2³/₁₆ Socket</td>
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<tr>
<td>7S-5437 Nitrogen Charging Group</td>
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Start By:

a. remove belt tensioner cylinder

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**WARNING**
Dry nitrogen is the only gas approved for use in the belt tensioner cylinders. The charging of oxygen gas in these components, by accident, will cause an explosion. This danger can be eliminated by the use of nitrogen cylinders with standard CGA (Compressed Gas Association, Inc.) No. 580 Connections. When nitrogen gas is ordered, make sure to order the cylinders with CGA No. 580 Connections. Do not attempt to identify by color codes or other methods of identification to tell the difference between nitrogen and oxygen cylinders. Never use an adapter to connect the nitrogen charging group to a valve outlet used on both nitrogen, oxygen or other gas cylinders. Be sure to use dry nitrogen.

1. Position belt tensioner cylinder (2) as shown.

2. Bleed off the nitrogen gas from belt tensioner cylinder (2) by loosening nitrogen valve cap (1).

3. Remove four bolts and washers (3) and remove plate assembly (4).

4. Remove two bolts (5) and remove manifold (6).
a. Remove the O-ring seal from manifold (6).

![Image of manifold with labeled parts]

5. Remove two bolts (7) and relief valve (8).
   a. Remove the O-ring seal from relief valve (8).

![Image of relief valve with labeled parts]

6. Install belt tensioner cylinder (2) in Tooling (A).

   NOTE: Align rod assembly (9) with the notch on the side and at the bottom of fixture (A).

![Image of rod assembly and tensioner cylinder]

7. Install a strap and hoist to cap (11).
   a. Remove four bolts and washers (10).
   b. Remove cap (11) from tensioner cylinder (2).
   c. The weight of cap (11) is 27 kg (60 lb).
8. Remove O-ring seal (12) and head seal (13) from cap (11).

9. Remove bolt and washer (14) from piston (15) in tensioner cylinder (2) with Tooling (D) and (E).

10. Install Tool (B) to piston (15).

   a. Remove piston (15) from tensioner cylinder (2).
11. Remove seal assembly (16) and wear ring (17) from piston (15).

12. Install two straps and a hoist 180 degrees apart around the top coils of spring (18).
   a. Install four pieces of cardboard (X) 90 degrees apart, cut to 711 mm (28 in) X 51 mm (2 in).
   b. Insert cardboard (X) between tensioner cylinder (2) wall and spring (18).
   c. Remove spring (18), stopping periodically to move cardboard (X) down in bore of tensioner cylinder (2) until spring (18) is completely removed.

**NOTE:** The weight of spring (18) is 78 kg (170 lb).

13. Install Tool (C) to tensioner cylinder (2).
   a. Lift tensioner cylinder (2) off rod assembly (9).

**NOTE:** The weight of tensioner cylinder (2) is 106 kg (235 lb).
14. If necessary, remove lip seal (19), two "U" cup seal assemblies (20), and wear ring (21) from tensioner cylinder (2).

15. Install bolt (14) and a strap to rod assembly (9).
   a. Remove rod assembly (9) from Tool (A).
   b. The weight of rod assembly (9) is 33 kg (73 lb).

16. If necessary, remove two rings (22) and aligning bearing (23) from rod assembly (9).

   NOTE: The following steps are for assembly of the belt tensioner cylinder.

17. Apply **7M-7456 Bearing Mount** to the bore of rod assembly (9).
   a. Install two rings (22) and align bearing (23) in rod assembly (9).

18. Install bolt (14) and a strap to rod assembly (9).
   a. Install rod assembly (9) in Tool (A).

19. Apply **7M-7456 Bearing Mount** to the bore of tension cylinder (2).
a. install wear ring (21), two "U" cup seals (20) and lip seal (19) in tension cylinder (2).

20. Install Tool (C) to tension cylinder (2).

a. Install tension cylinder (2) on rod assembly (9).

21. Install two straps and a hoist **180 degrees** apart around the top coils of spring (18).

a. Install four pieces of cardboard (X) **90 degrees** apart, cut to **711 mm (28 in) X 51 mm (2 in)**.

b. Insert cardboard (X) between tensioner cylinder (2) wall and spring (18).

c. Install spring (18), stopping periodically to move cardboard (X) up the bore of tensioner cylinder (2) until spring (18) is completely installed.

**NOTE:** The weight of spring (18) is **78 kg (170 lb)**.

22. Install seal assembly (16) and wear ring (17) on piston (15).

23. Install Tool (B) to piston (15). Install piston (15) in tensioner cylinder (2).

24. Apply **2P-2506 Thread Lubricant** on the threads of bolt (14).

a. Install bolt and washer (14) to piston (15) in tensioner cylinder (2) with Tooling (D) and (E).

b. Tighten bolt (14) with Tooling (D) and (E) to a torque of **3600 ± 400 N·m (2650 ± 300 lb ft)**

**NOTE:** 56 500 kPa (8200 psi) required for Tooling (D) and (E) for torque required in Step 24b.

25. Install O-ring seal (12) and head seal (13) to cap (11).

26. Place cap (11) on tensioner cylinder (2).
a. Install four bolts and washers (10) to cap (11).

27. Remove tensioner cylinder (2) from Tool (A).

28. Place the O-ring seal on relief valve (8).

a. Install relief valve (8) with two bolts (7) to tensioner cylinder (2).

29. Place the O-ring seal on manifold (6).

a. Install manifold (6) with two bolts (5) to tensioner cylinder (2).

30. Install four bolts and washers (3) and plate assembly (4) to tensioner cylinder (2).

31. Install nitrogen valve cap (1).

a. Tighten cap (1) to a torque of 5 ± 1 N·m (4 ± 1 lb ft).

32. Remove cap on rod end of tensioner cylinder (2) and add SAE 10W oil.

a. Install cap on rod end of tensioner cylinder (2).

32. Refer to: "Test and Charge the Tensioner Cylinder", SENR9438 Systems Operation Testing And Adjusting, Undercarriage, Steering And Brakes.

End By:

a. install belt tensioner cylinders