

Product: ENGINE  
Model: 3512E ENGINE SY2  
Configuration: 3512E Marine Engine SY200001-UP

## **Disassembly and Assembly 3512E and 3516E Marine Engines**

Media Number -M0075247-08

Publication Date -01/09/2018

Date Updated -11/09/2018

i07452148

# **Engine Oil Filter Housing - Assemble - Duplex Oil Filter Housing**

SMCS - 1306-016

## **Assembly Procedure**

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### **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<sup>®</sup> products.**

**Dispose of all fluids according to local regulations and mandates.**

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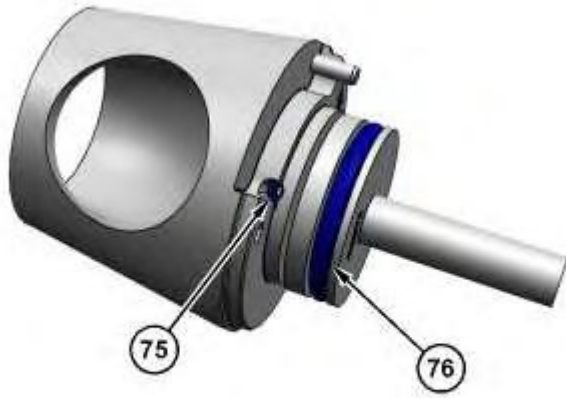
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### **NOTICE**

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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Illustration 1

g06324571

1. Install spring pin (75) and O-ring seal (76). Lubricate O-ring seal (76) lightly with fluid being sealed.

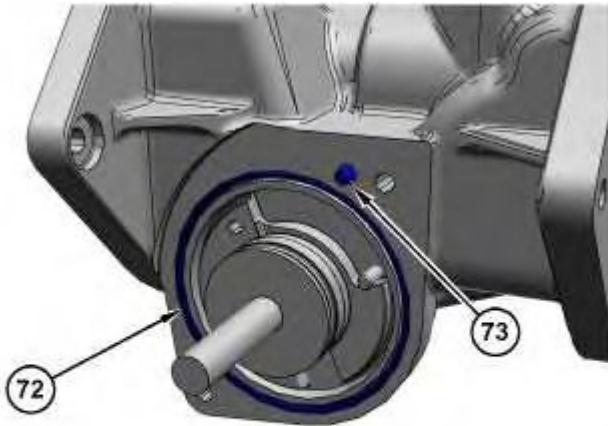


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Illustration 2

g06324569

2. Install taper valve assembly (74).
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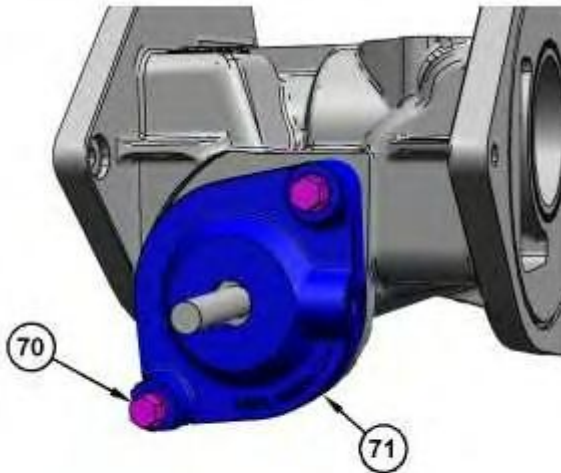


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Illustration 3

g06324548

3. Install spring pin (73) and O-ring seal (72).
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Illustration 4

g06324534

4. Install cover assembly (71) and bolts (70).
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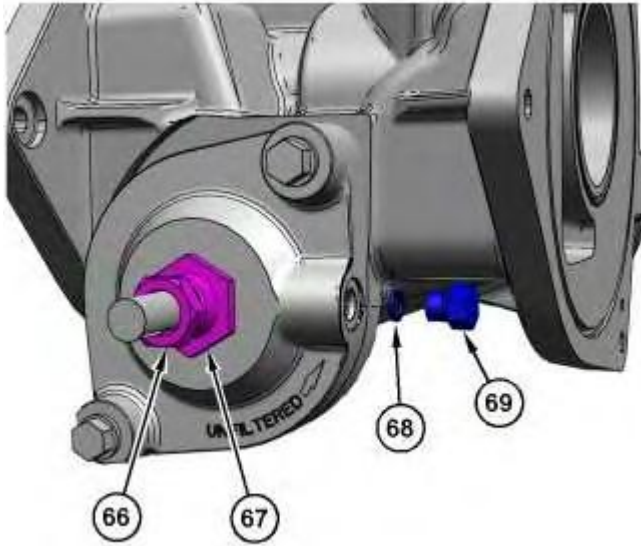


Illustration 5

g06324508

5. Install O-ring seal (66) and plug (69).
6. Loosely install nut (67) and retainer nut (66).
7. Tighten retainer nut (66) to 3 N·m (27 lb in). Make a mark locating the corner of the nut.
8. Back off retainer nut (66) 30 degrees to allow  $0.22 \pm 0.08$  mm ( $0.009 \pm 0.003$  inch) axial movement of shaft.
9. Hold retainer nut (66) and tighten nut (67) to a torque of  $45 \pm 7$  N·m ( $33 \pm 5$  lb ft). Rotate valve to verify valve moves freely with no binding. Readjust if necessary.



Illustration 6

g06324477

10. Install O-ring seals (64) and (65).

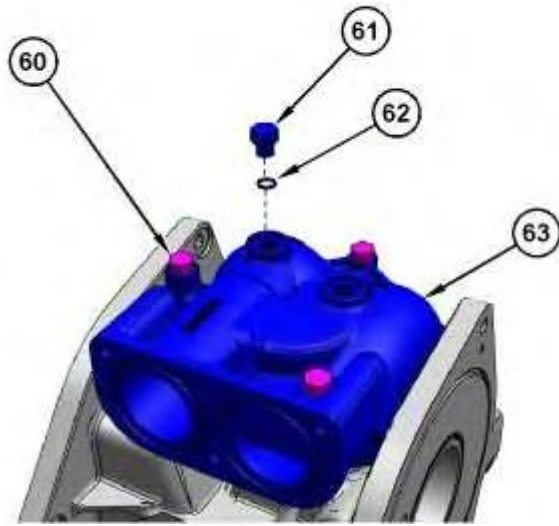


Illustration 7

g06324462

11. Install cover (63) and bolts (60).
12. Install O-ring seal (62) and plug (61).

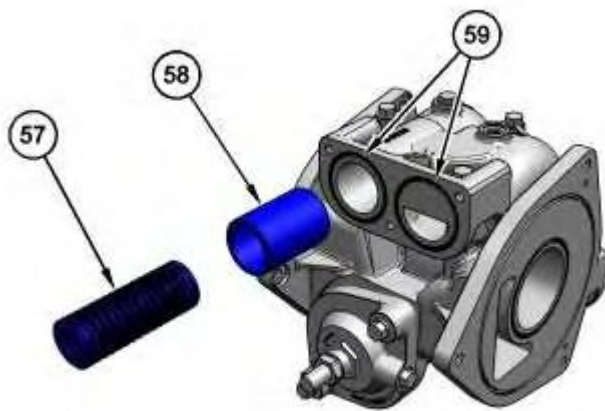


Illustration 8

g06324410

13. Install O-ring seals (59).

 **WARNING**

**Personal injury can result from parts and/or covers under spring pressure.**

**Spring force will be released when covers are removed.**

**Be prepared to hold spring loaded covers as the bolts are loosened.**

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14. Install bypass valve (58) and spring (57).

**Note:** Bypass valve (58) must move freely in bore.

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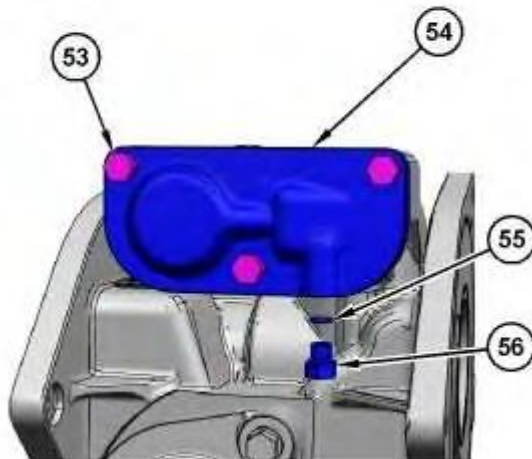
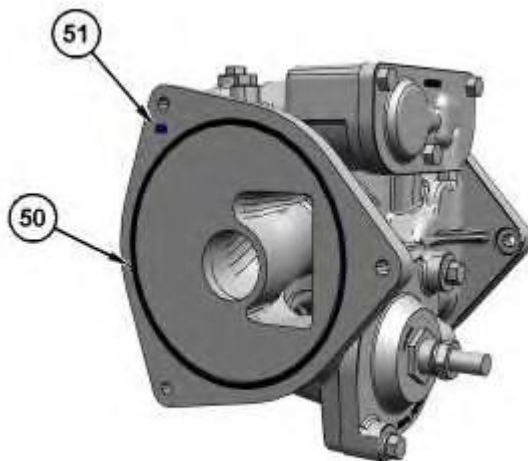


Illustration 9

g06324391

15. Install plug (56) and O-ring seal (55).

16. Install cover (54) and bolts (53).
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17. Install O-ring seal (50) and dowel pin (51).
- 

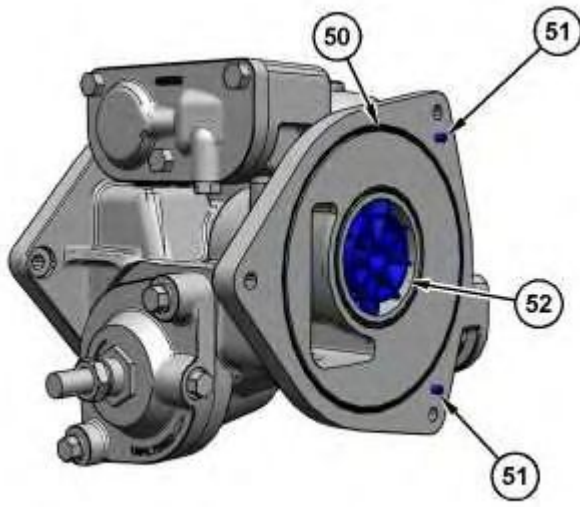


Illustration 11

18. Install check valve (52), dowel pins (51), and O-ring seal (50).
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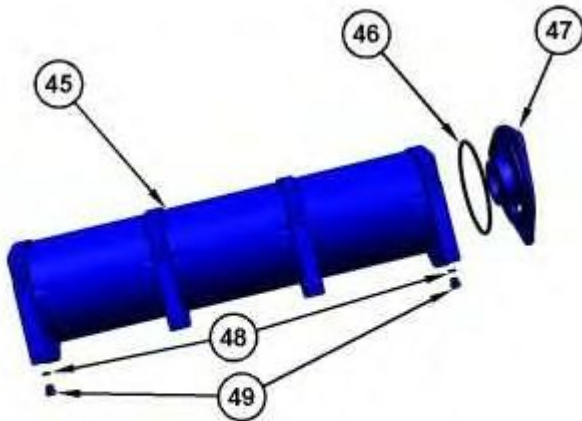
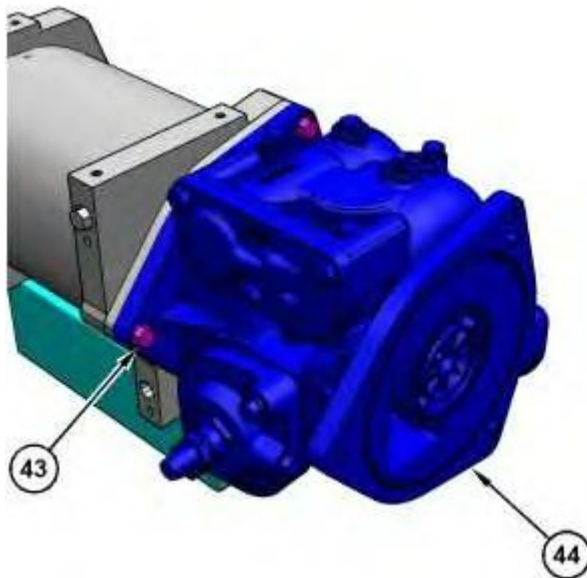


Illustration 12

19. Install plugs (49) and O-ring seals (48).
20. Install O-ring seal (46) and adapter (47) onto filter housing assembly (45).
-

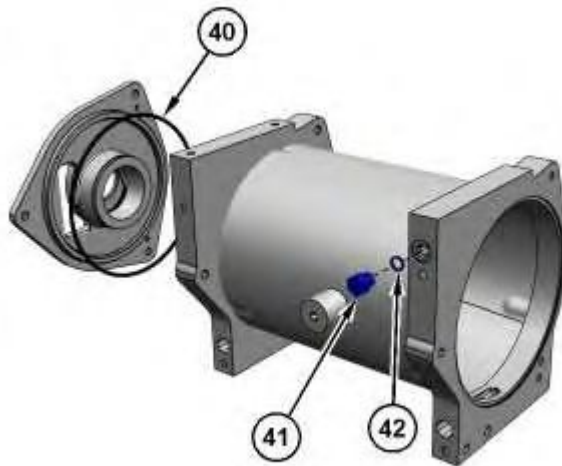


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Illustration 13

g06324312

21. Use two people or a suitable lifting device to install bypass valve housing (44). The weight of the bypass valve housing is approximately 43 kg (95 lb).
  22. Tighten bolts (43) to a torque of  $55 \pm 7 \text{ N}\cdot\text{m}$  ( $41 \pm 5 \text{ lb ft}$ ).
- 



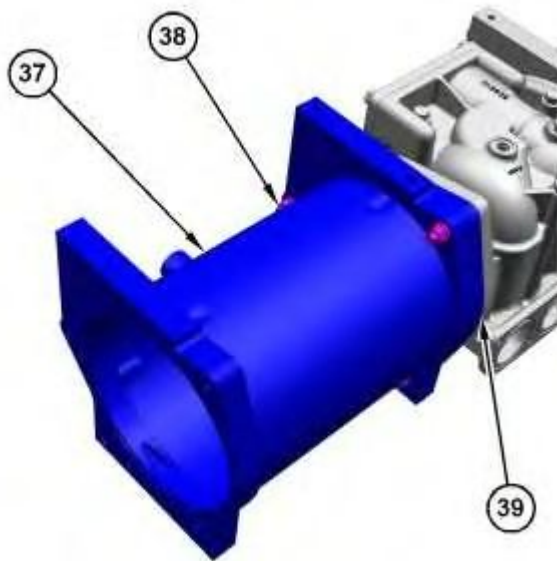
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Illustration 14

g06324301

23. Install plug (41) and O-ring seal (42).
  24. Install O-ring seal (40).
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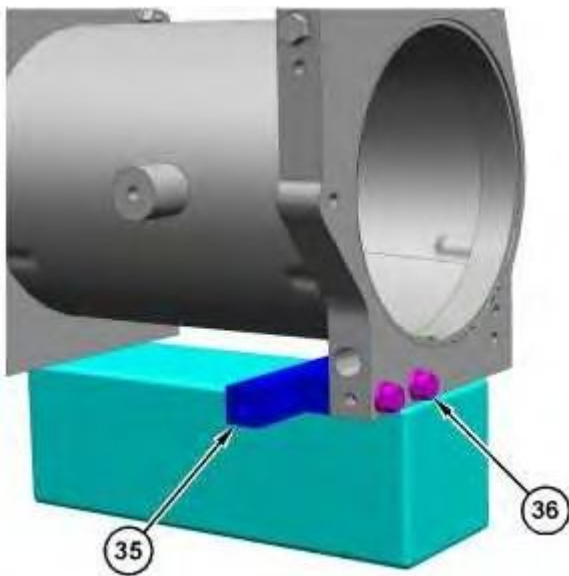


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Illustration 15

g06324183

25. Install adapter assembly (39) and filter housing assembly (37).
26. Install bolts (38) and tighten to a torque of  $55 \pm 7 \text{ N}\cdot\text{m}$  ( $41 \pm 5 \text{ lb ft}$ ).



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Illustration 16

g06324176

27. Install block (35) and bolts (36).
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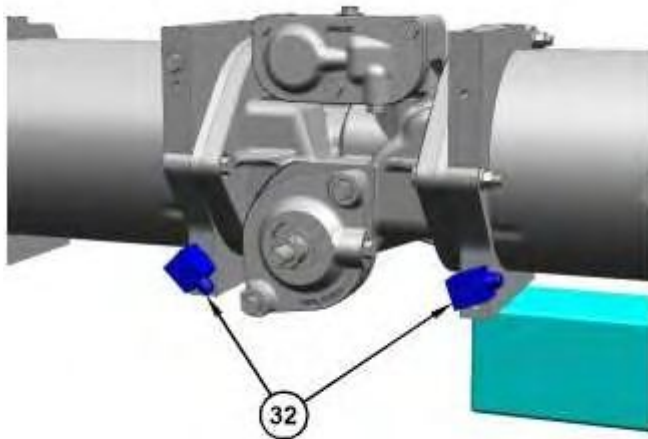
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Illustration 17

g06324168

28. Install pipe elbow (34) and ball valves (33).

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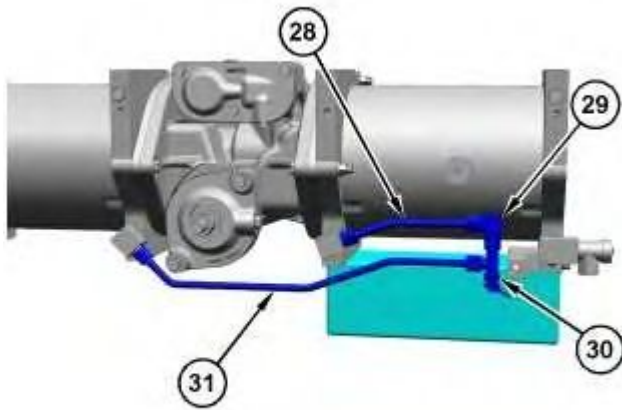
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Illustration 18

g06324166

29. Install elbow adapters (32).

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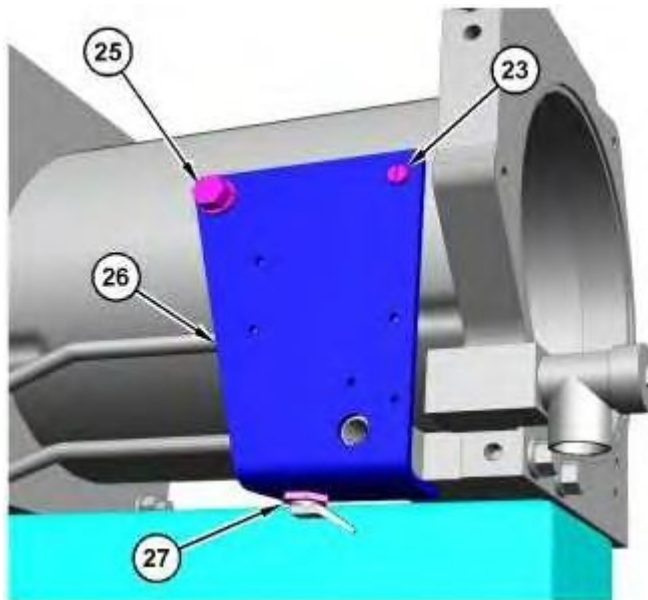


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Illustration 19

g06324161

- 30. Install tube assembly (31) with toggle valve assembly (30).
- 31. Install tube assembly (28) with elbow adapter (29).

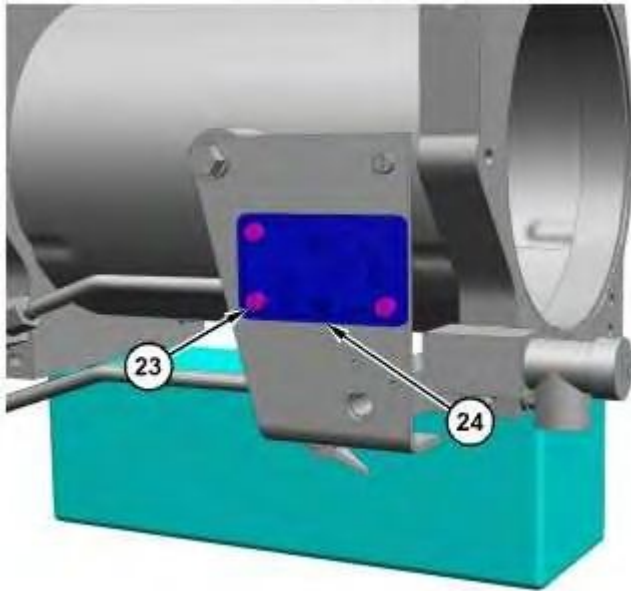


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Illustration 20

g06324156

- 32. Install bracket (26) with bolt (25), screw (23), and nut (27). Tighten nut (27) to a torque of  $12 \pm 1.2 \text{ N}\cdot\text{m}$  ( $106 \pm 11 \text{ lb in}$ ).
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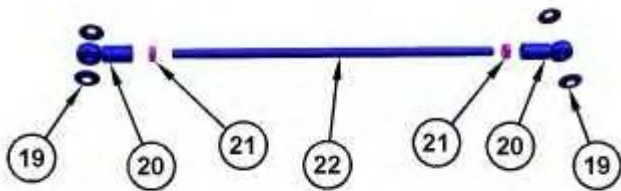


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Illustration 21

g06324153

33. Install plate (24) and screws (23).
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Illustration 22

g06324147

**Note:** Assemble tie rod (22) to provide equal thread engagement in each rod end (20). Nuts (21) and tie rod ends (20) will be torqued after adjusting tie rod (22) with levers.

34. Fill tie rod ends (19) with Multi-Purpose grease. Install seals (18) on tie rod ends (19).
35. Install nuts (21) and tie rod ends (20) onto tie rod (22).
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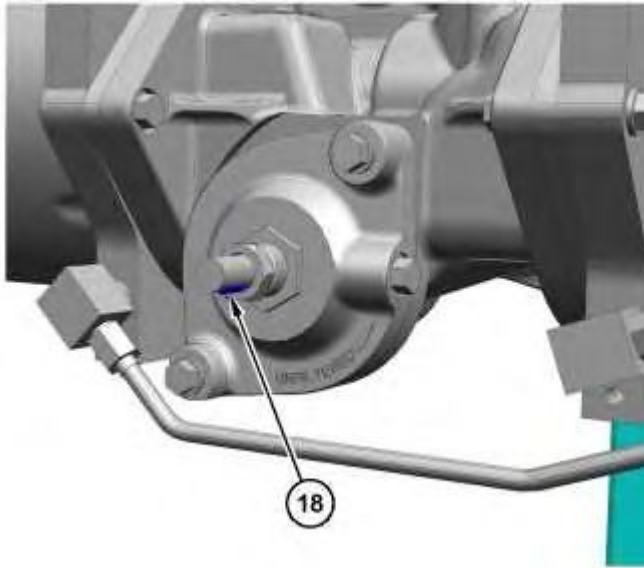


Illustration 23

g06324138

36. Install woodruff key (18).

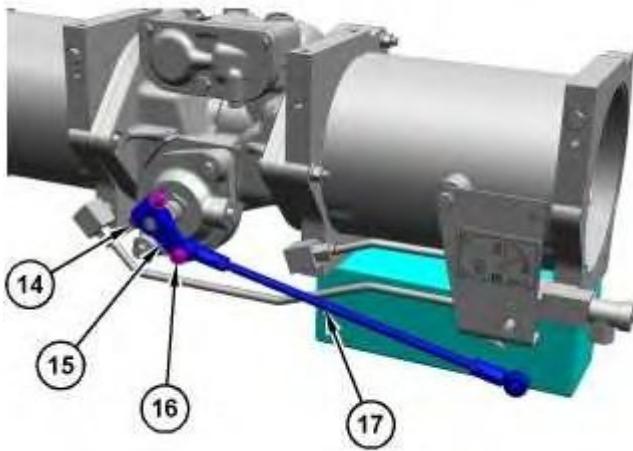
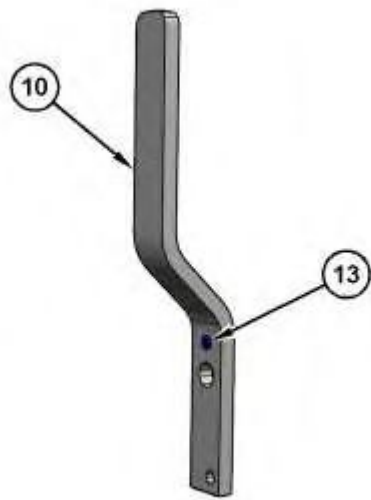


Illustration 24

g06324130

37. Install lever (15) and tie rod assembly (17).
38. Install bolts (14) and (16). Tighten bolt (16) with jam nut to a torque of  $30 \pm 5$  N·m ( $22 \pm 4$  lb ft).

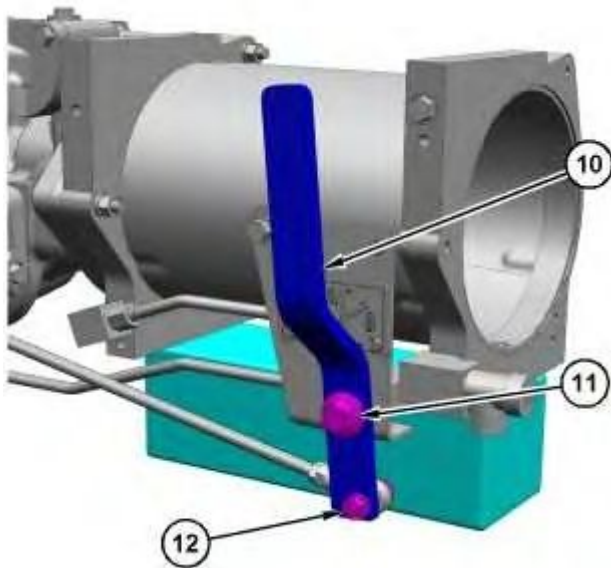


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Illustration 25

g06324666

39. Install plunger assembly (13) into lever (10).

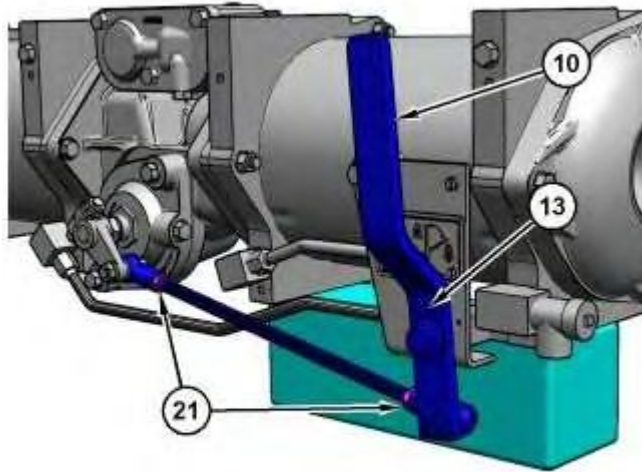


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Illustration 26

g06324114

40. Install lever (10) with bolt (12) and shoulder bolt (11). Tighten bolt (12) with jam nut to a torque of  $30 \pm 5$  N·m ( $22 \pm 4$  lb ft).
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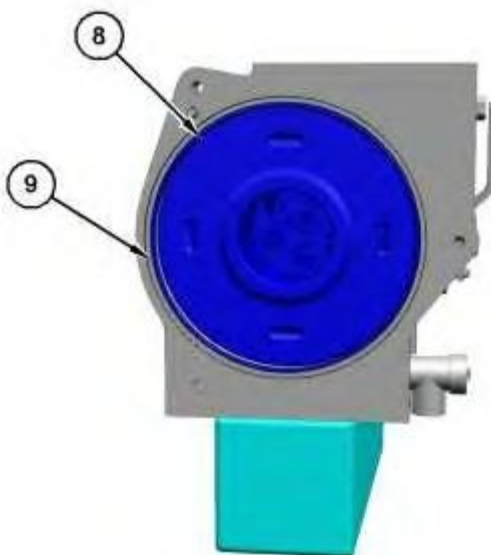


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Illustration 27

g06325017

- a. Rotate lever (10) to main run position until valve touches stop pin inside the cover assembly.
- b. With the lever (10) in main run position, screw plunger assembly (13) into lever until plunger assembly ball seats into the top hole in the bracket.
- c. Adjust tie rod assembly to lever and handle positions.
- d. Tighten nuts (21) to a torque of  $30 \pm 5 \text{ N}\cdot\text{m}$  ( $22 \pm 4 \text{ lb ft}$ ).

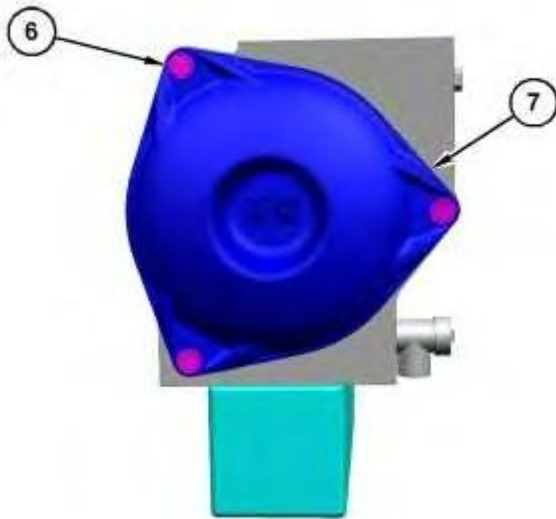


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Illustration 28

g06324082

41. Install three engine oil filter elements (8) and O-ring seal (9).
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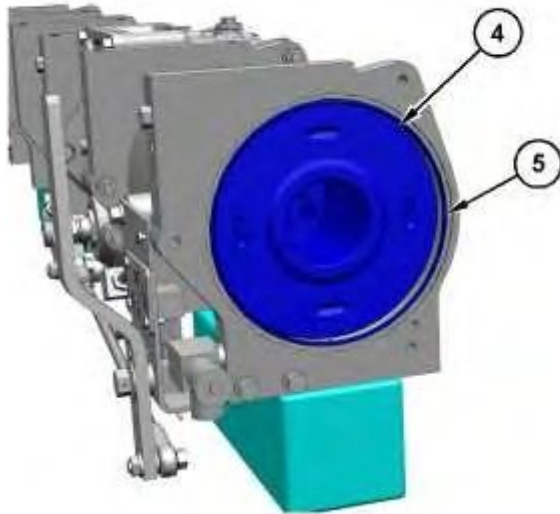
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Illustration 29

g06324080

42. Install oil filter cover (7) and bolts (6).

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Illustration 30

g06324074

43. Install engine oil filter element (4) and O-ring seal (5).

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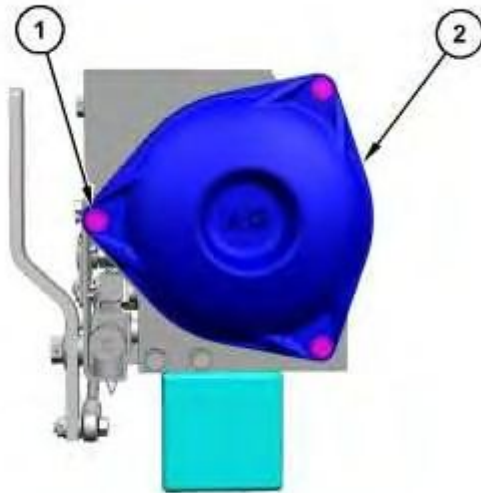
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Illustration 31

g06324063

44. Install dowel pin (3).

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Illustration 32

g06324059

45. Install oil filter cover (2) and bolts (1).

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Product: ENGINE

Model: 3512E ENGINE SY2

Configuration: 3512E Marine Engine SY200001-UP

## Disassembly and Assembly 3512E and 3516E Marine Engines

Media Number -M0075247-08

Publication Date -01/09/2018

Date Updated -11/09/2018

i06715388

# Engine Oil Filter Housing - Install

SMCS - 1306-012

## Installation Procedure

Table 1

| Required Tools |             |                  |     |
|----------------|-------------|------------------|-----|
| Tool           | Part Number | Part Description | Qty |
| A              | 138-7573    | Link Bracket     | 2   |

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### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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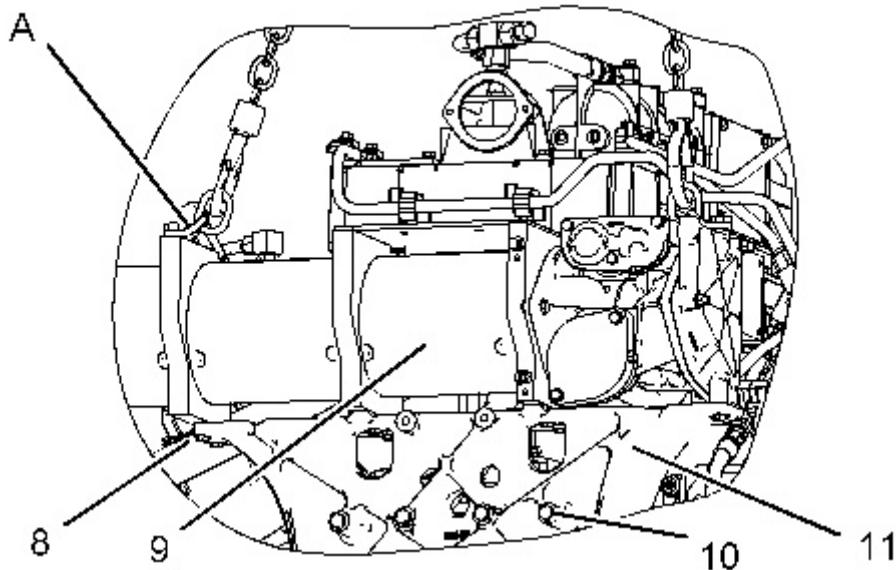


Illustration 1

g01113831

1. Attach a suitable lifting device on oil filter housing support (11). The weight of oil filter housing support (11) is approximately 70 kg (155 lb). Position oil filter housing support (11) and install bolts (10).
2. Install Tooling (A) and a suitable lifting device on engine oil filter housing (9). The weight of engine oil filter housing (9) is approximately 35 kg (77 lb). Position engine oil filter housing (9) and install bolts (8). Remove Tooling (A).

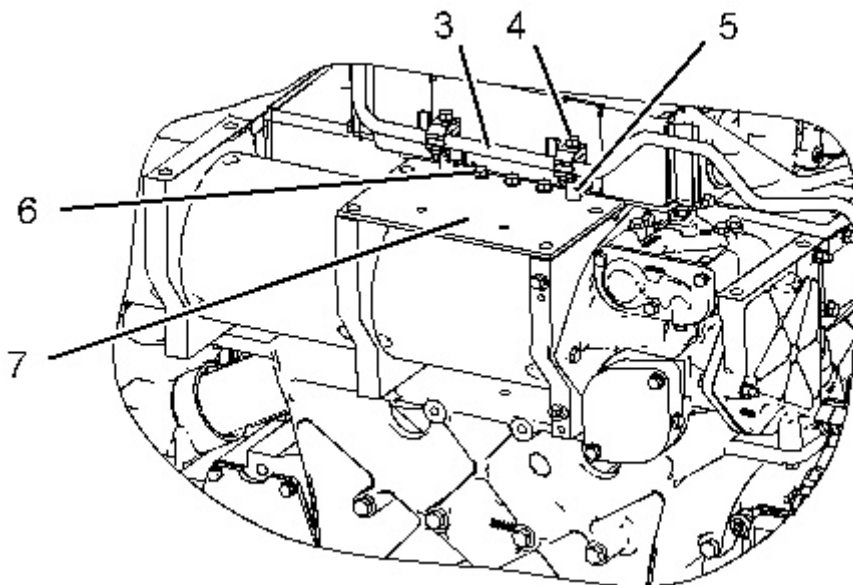
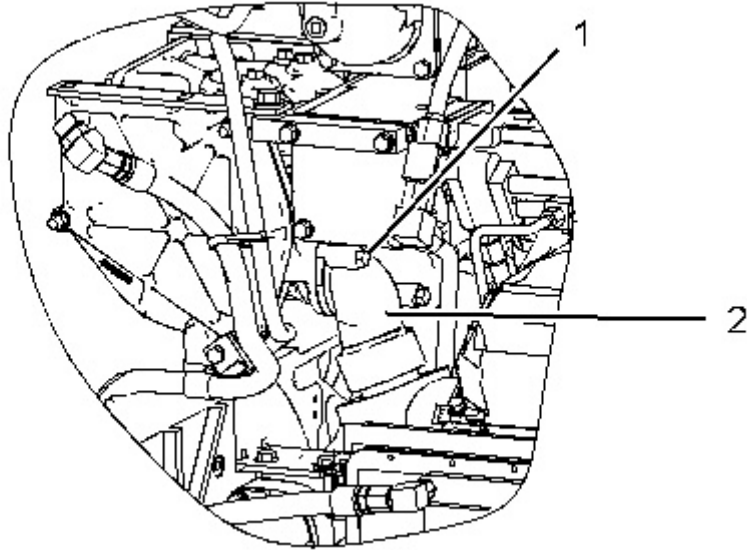


Illustration 2

g01113751

3. Position plate (7) and install bolts (6).
4. Install spacers (5) and bolts (4) to secure tube assembly (3).



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Illustration 3

g01113749

5. Install the O-ring seal on adapter (2). Install the adapter and install bolts (1).
6. Disconnect the oil pressure sensors.
7. Check the oil level. Maintain the oil level at the "FULL" mark. Refer to Operation and Maintenance Manual, "Engine Oil and Filter - Change" for the correct filling procedure.

**End By:**

- a. Install the fuel filter housing. Refer to Disassembly and Assembly, "Fuel Filter Housing - Install".
-

Product: ENGINE

Model: 3512E ENGINE SY2

Configuration: 3512E Marine Engine SY200001-UP

## Disassembly and Assembly 3512E and 3516E Marine Engines

Media Number -M0075247-08

Publication Date -01/09/2018

Date Updated -11/09/2018

i07452144

# Engine Oil Filter Housing - Install - Duplex Oil Filter Housing

SMCS - 1306-012

## Installation Procedure

Table 1

| Required Tools |             |                      |     |
|----------------|-------------|----------------------|-----|
| Tool           | Part Number | Part Description     | Qty |
| A              | 395-1590    | Lifting Eye Assembly | 2   |

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### NOTICE

**Keep all parts clean from contaminants.**

**Contaminants may cause rapid wear and shortened component life.**

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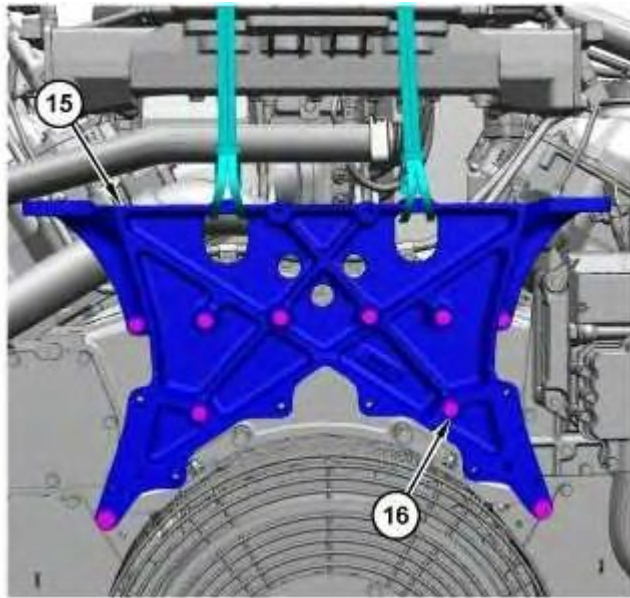


Illustration 1

g06323868

1. Attach a suitable lifting device to oil filter housing support (15). The oil filter housing support is approximately 70 kg (154 lb).
2. Position oil filter housing support (15) and install bolts (16).

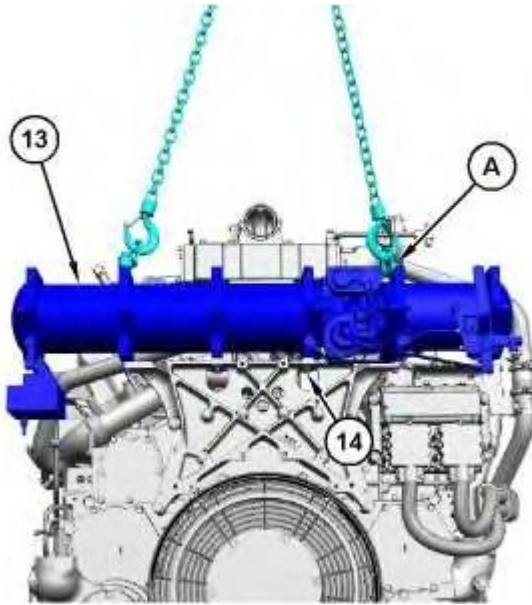


Illustration 2

g06323880

3. Install Tooling (A). Attach a suitable lifting device to engine oil filter housing (13). The weight of the engine oil filter housing is approximately 130 kg (287 lb).
4. Position oil filter housing (13) and install bolts (14).

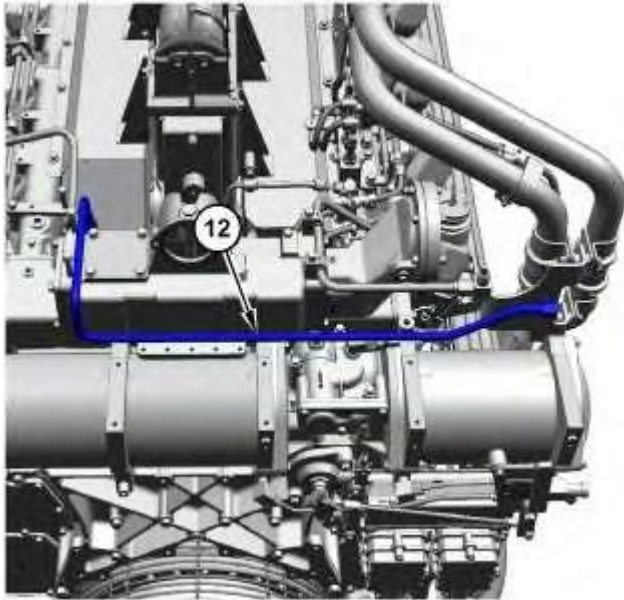


Illustration 3

g06323850

5. Install tube assembly (12).

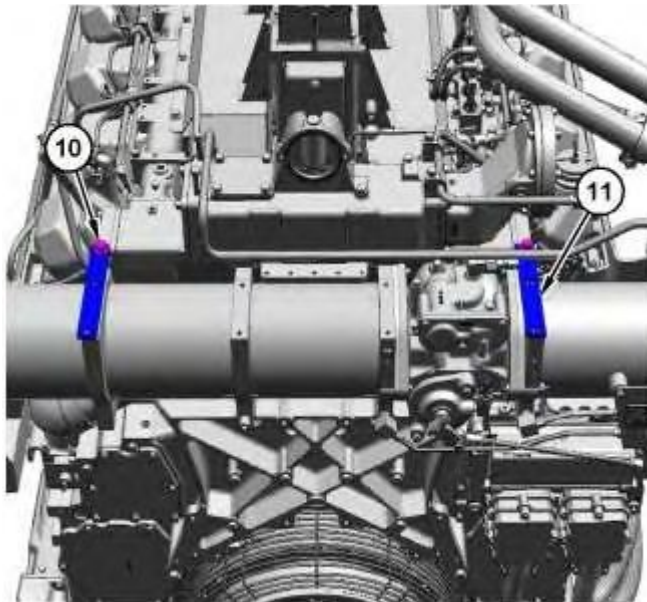


Illustration 4

g06323847

6. Install plates (11) and bolts (10).

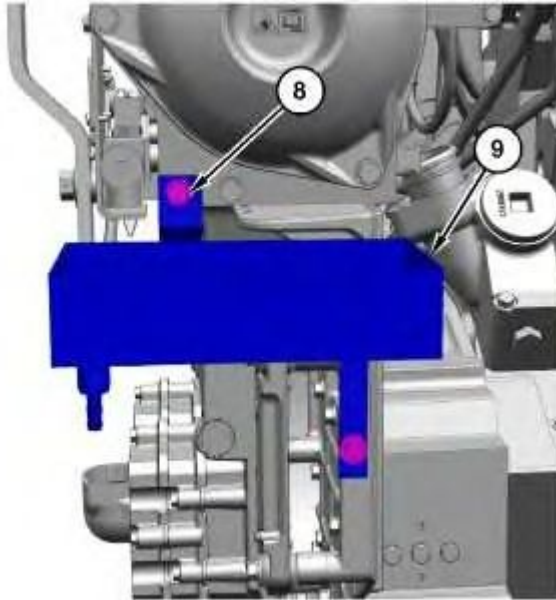


Illustration 5

g06323843

7. Install pan assembly (9) and bolts (8).

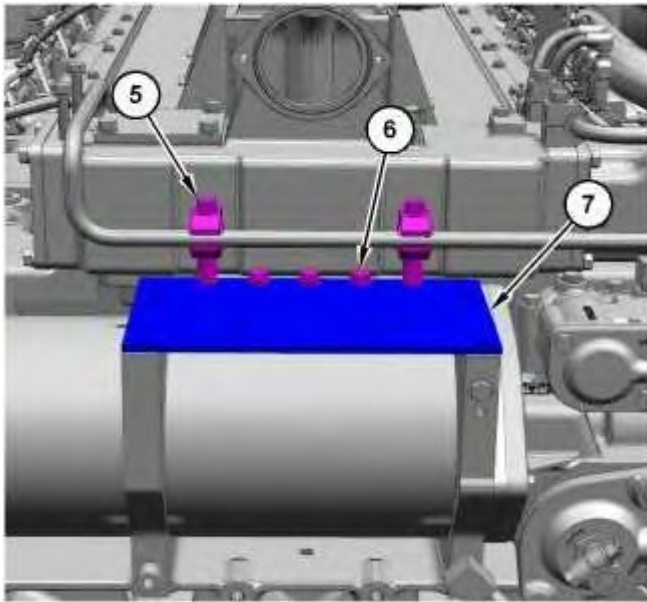


Illustration 6

g06323838

8. Position plate (7) and install bolts (5) and (6).



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