

Product: ENGINE
Model: 3512E ENGINE SY7
Configuration: 3512E Marine Engine SY700001-UP

Disassembly and Assembly 3512E and 3516E Marine Engines

Media Number -M0075247-08

Publication Date -01/09/2018

Date Updated -11/09/2018

i06881305

Exhaust Manifold - Remove and Install

SMCS - 1059-010

Removal Procedure

Start By:

- a. Remove air inlet manifold.

NOTICE

Keep all parts clean from contaminants. Contaminants may cause rapid wear and shortened component life.

Note: The clamps and bellows are one-time use components. Discard the components after removal and install new components.

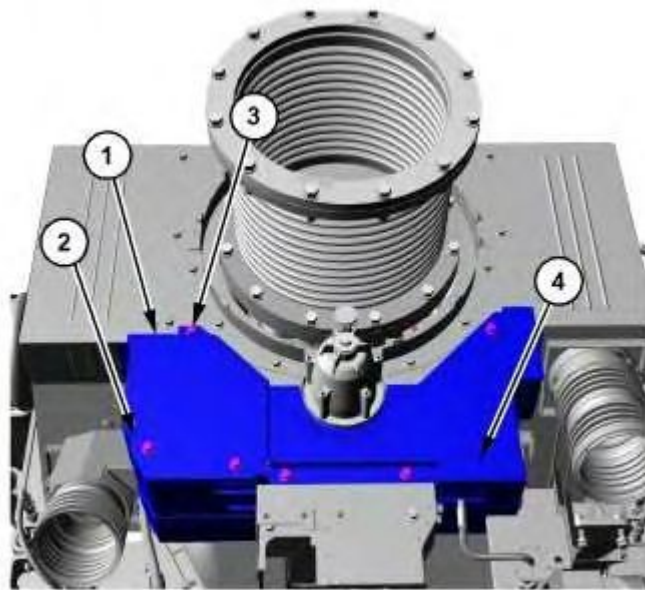


Illustration 1

g06150950

1. Remove nine bolts (3) and remove shields (1), (2), and (4).

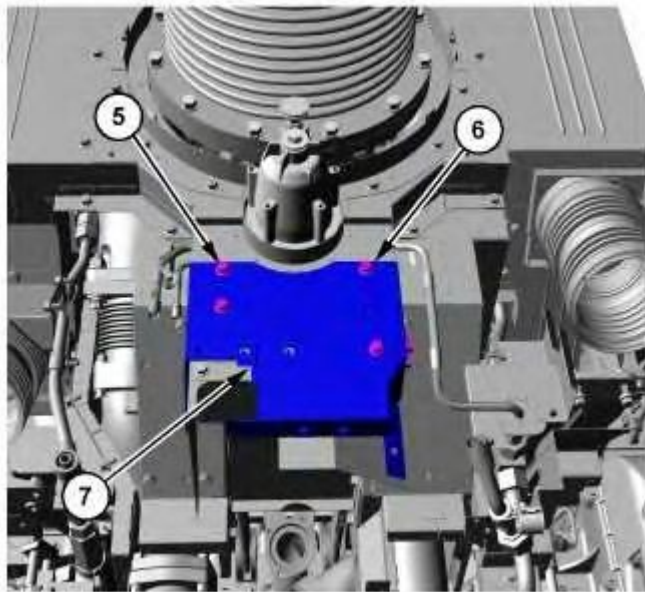


Illustration 2

g06150963

2. Remove six bolts (5) and remove shields (6) and (7).
-

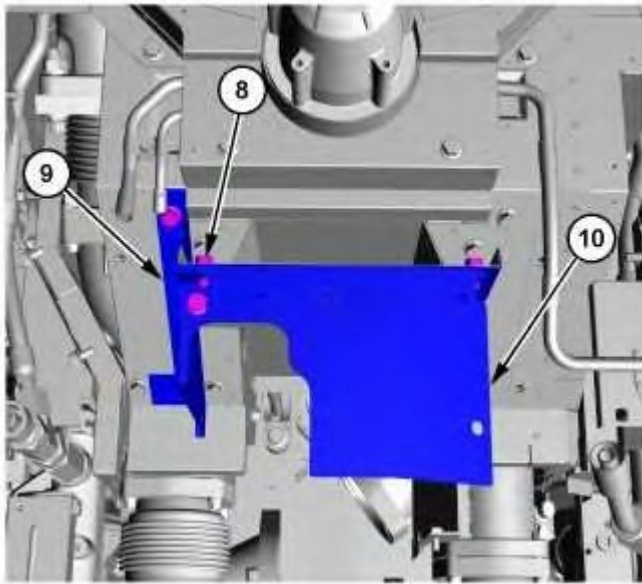


Illustration 3

g06150989

3. Remove four bolts (8) and remove shields (9) and (10).

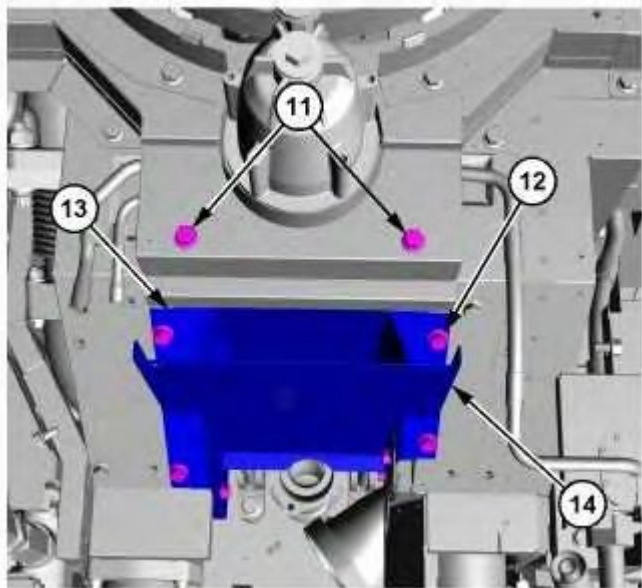


Illustration 4

g06150995

4. Loosen two bolts (11).
5. Remove seven bolts (12) and remove shields (13) and (14) as one piece.

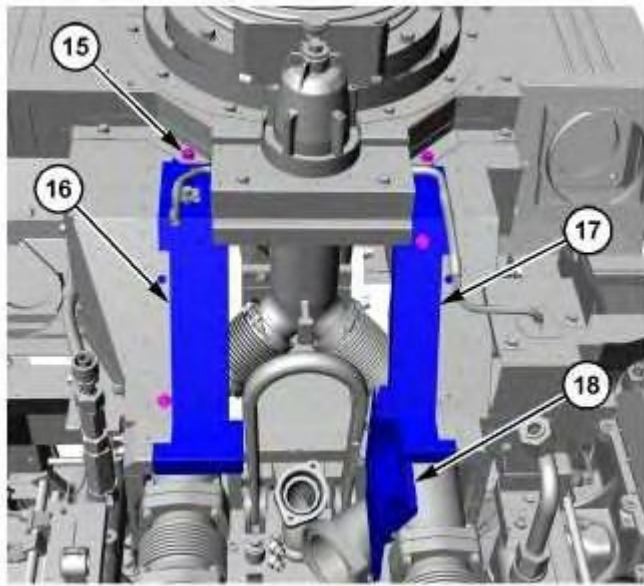


Illustration 5

g06151514

6. Remove four bolts (15) and remove shields (16), (17), and (18).

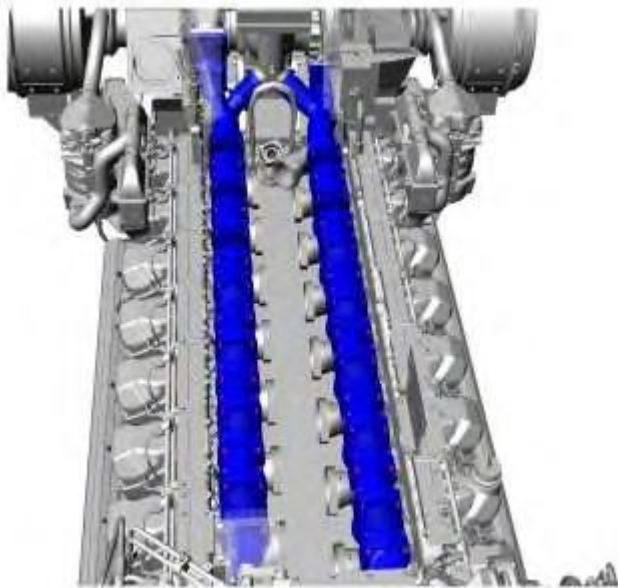


Illustration 6

g06151517

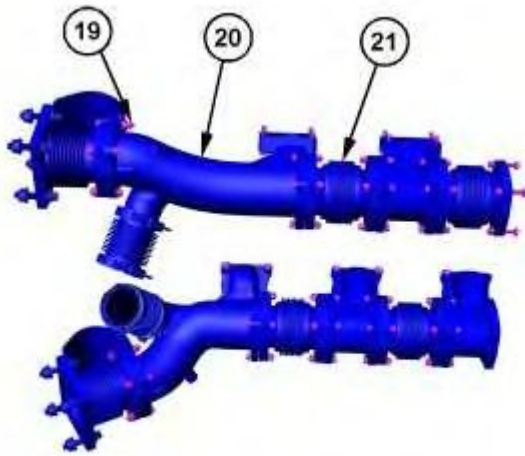


Illustration 7

g06151518

7. Remove bolts (19), exhaust manifold (20), and bellows (21).
8. Repeat for all necessary manifolds and bellows.



Illustration 8

g06151519

9. Remove necessary V-band clamps (21).

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty.

A	5P-3931	Anti-Seize Compound	-
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NOTICE

Keep all parts clean from contaminants. Contaminants may cause rapid wear and shortened component life.

NOTICE

Lubricate threads and bearing surfaces before assembly.



Illustration 9

g06151519



Illustration 10

g06149724

1. Position and install V-band clamps (22).
2. Gap (x) is to be 12.7 ± 3 mm (0.5 ± 0.1 inch).
 - a. Tighten V-band clamps (22) to a torque of 12 N·m (9 lb ft).

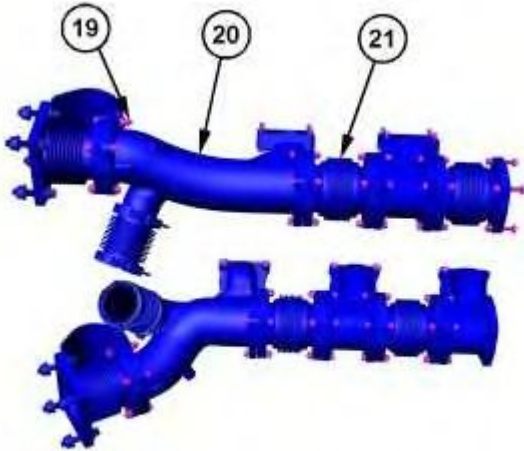


Illustration 11

g06151518

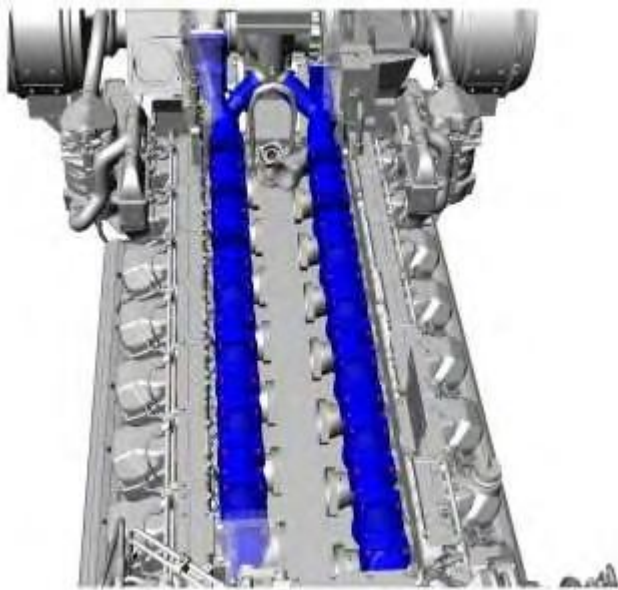


Illustration 12

g06151517

3. Position exhaust manifold (20) and bellows (21).
4. Install bolts (19).
 - a. Tighten bolts (19) to a torque of $55 \pm 5 \text{ N}\cdot\text{m}$ ($40.5 \pm 4 \text{ lb ft}$).

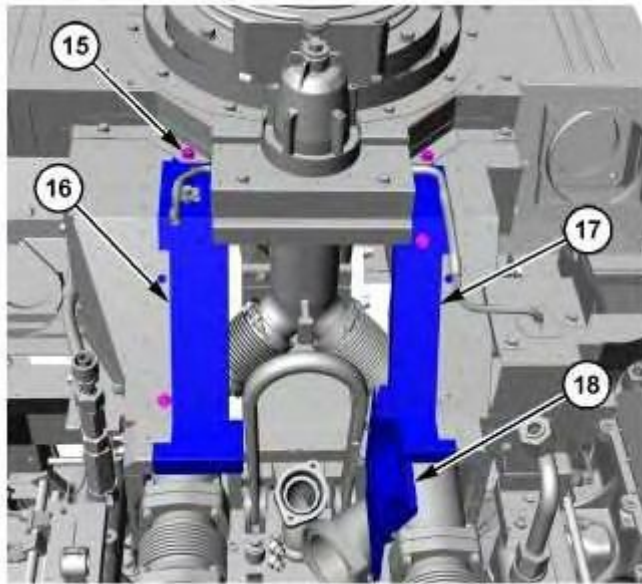


Illustration 13

g06151514

5. Position shields (16), (17), and (18).
 6. Install four bolts (15).
-

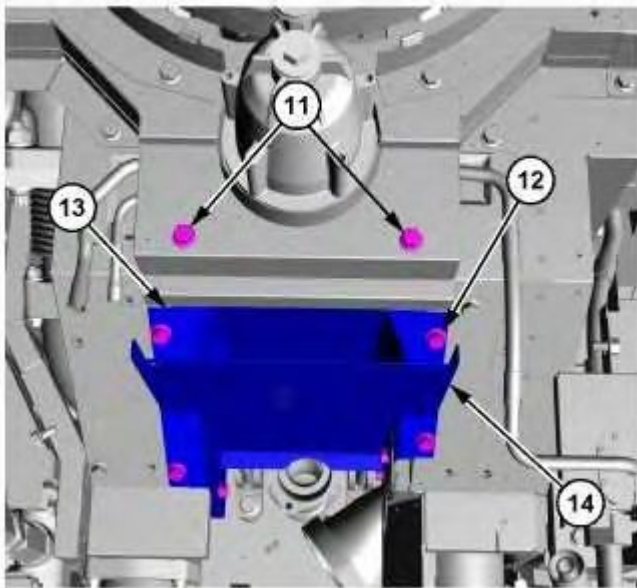


Illustration 14

g06150995

7. Position shields (13) and (14) and install seven bolts (12).
8. Tighten two bolts (11).

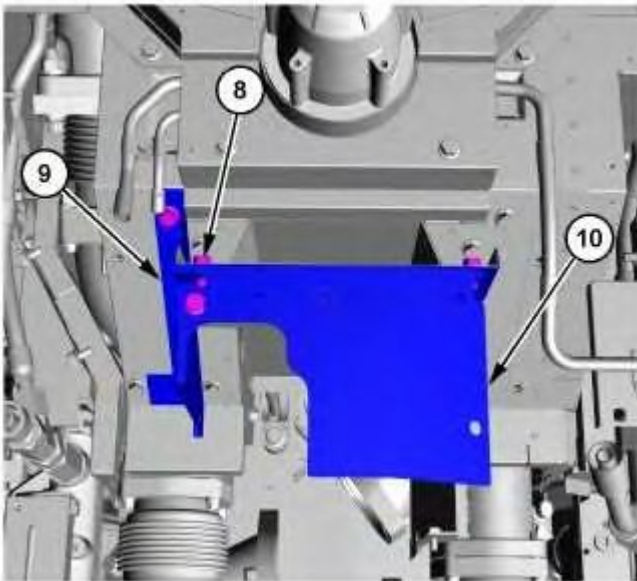


Illustration 15

g06150989

9. Position shields (9) and (10) and install four bolts (8).

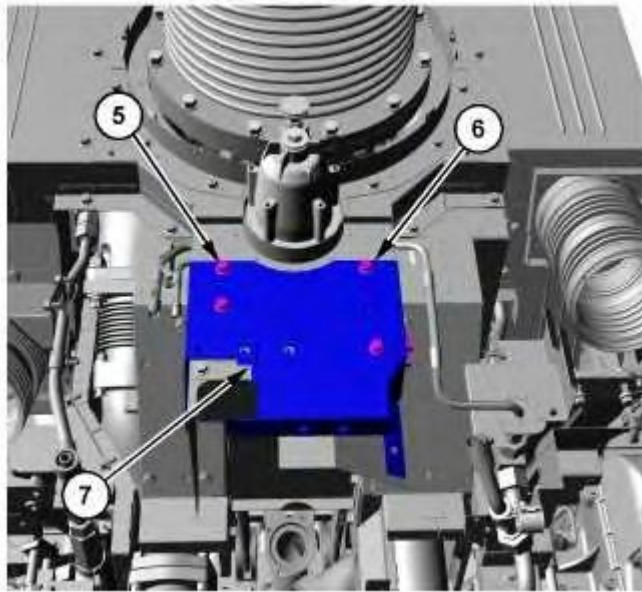


Illustration 16

g06150963

10. Position shields (7) and (6) and install six bolts (5).

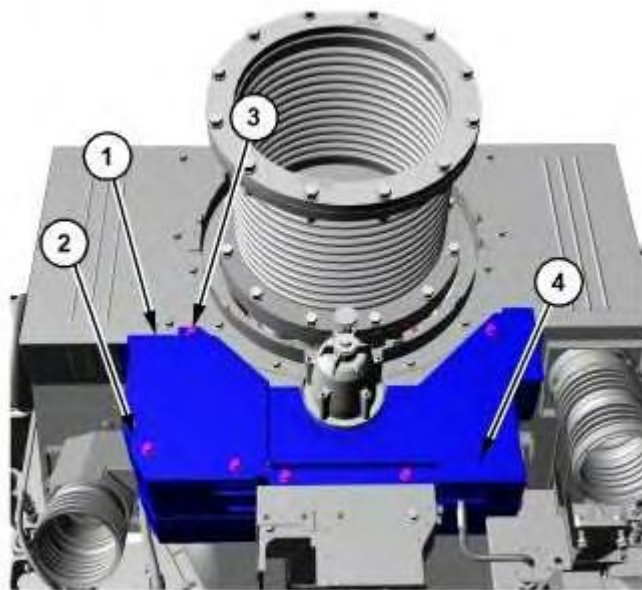


Illustration 17

g06150950

11. Position shields (1), (2), and (4) and install nine bolts (3).

Product: ENGINE
Model: 3512E ENGINE SY7
Configuration: 3512E Marine Engine SY700001-UP

Disassembly and Assembly 3512E and 3516E Marine Engines

Media Number -M0075247-08

Publication Date -01/09/2018

Date Updated -11/09/2018

i06649952

Exhaust Bypass Valve - Remove and Install

SMCS - 1057-010

Removal Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

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.

1. Drain the coolant from the cooling system to a level below the exhaust bypass valve into a suitable container for storage or disposal. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change".

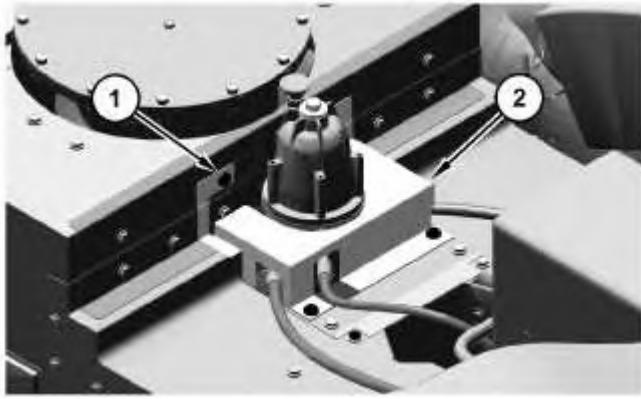


Illustration 1

g06059614

2. Remove bolts (1) and cover (2).

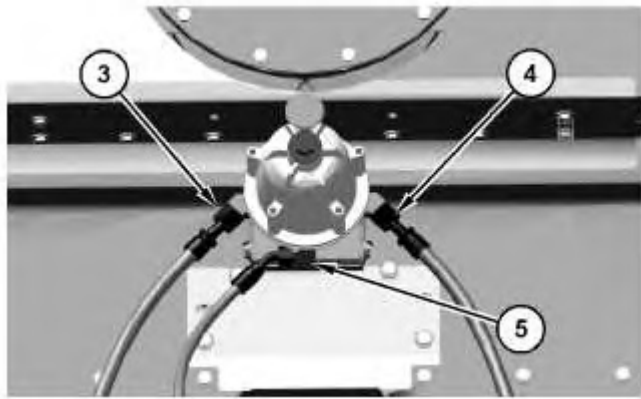


Illustration 2

g06059654

3. Disconnect line (3), line (4), and line (5)

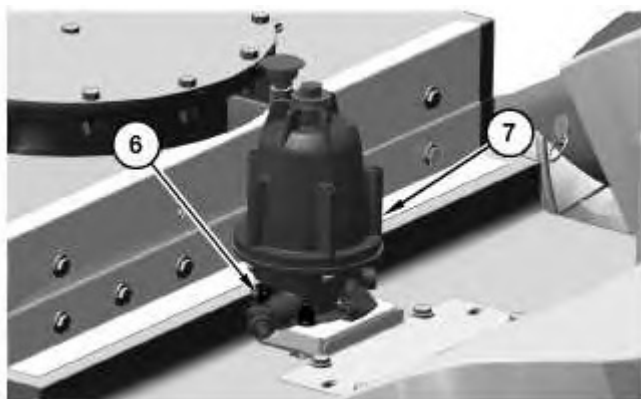


Illustration 3

g06059706

4. Remove locknuts (6) and exhaust bypass valve (7).

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	2P-2333	High Temperature Sealer	-

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

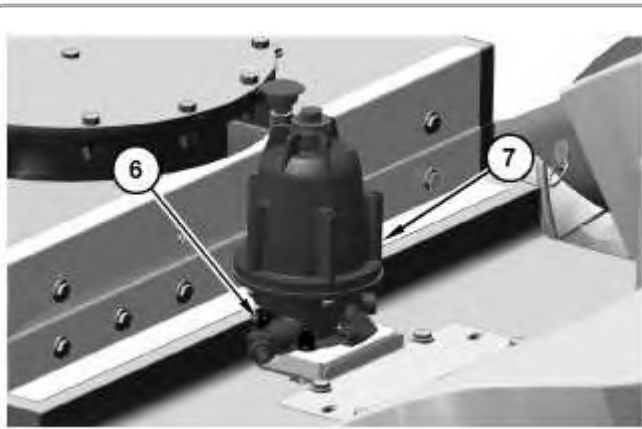


Illustration 4

g06059706

1. If the studs for exhaust bypass valve (7) are installed, tighten the studs to a torque of $35 \pm 5 \text{ N}\cdot\text{m}$ ($26 \pm 4 \text{ lb ft}$).
 2. Apply Tooling (A) to the threads of the studs and to the mating face of the locknuts. Position the new gasket and exhaust bypass valve (7) on the exhaust elbow. Install new locknuts (6). Tighten locknuts (6) according to the following procedure.
 3. Tighten two diagonal locknuts to a torque of $25 \pm 6 \text{ N}\cdot\text{m}$ ($18 \pm 4 \text{ lb ft}$).
 4. Tighten the remaining locknuts to a torque of $25 \pm 6 \text{ N}\cdot\text{m}$ ($18 \pm 4 \text{ lb ft}$).
 5. Tighten all four locknuts to a torque of $47 \pm 9 \text{ N}\cdot\text{m}$ ($35 \pm 7 \text{ lb ft}$).
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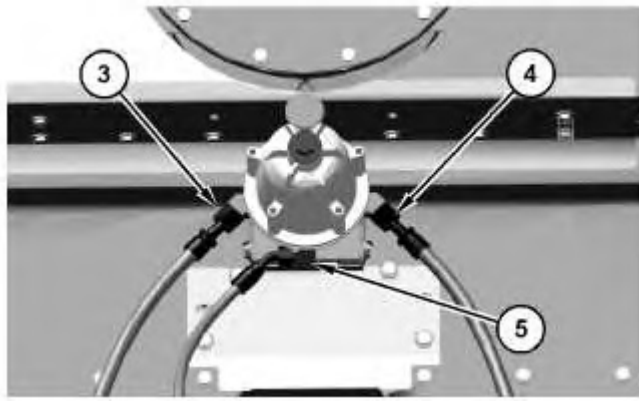


Illustration 5

g06059654

6. Connect line (3), line (4), and line (5)

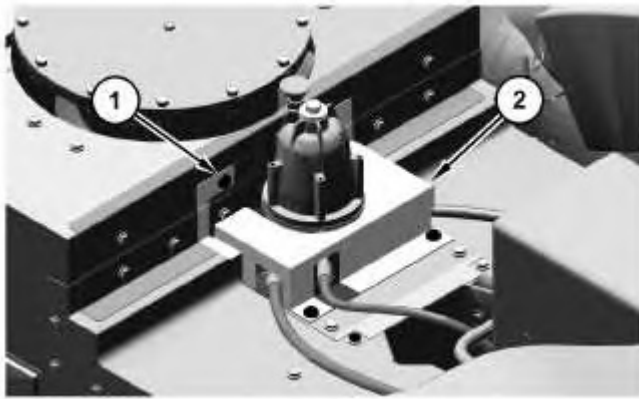


Illustration 6

g06059614

7. Install cover (2) and bolts (1).
 8. Fill the cooling system with coolant. Refer to Operation and Maintenance Manual, "Cooling System Coolant - Change".
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Configuration: 3512E Marine Engine SY700001-UP

Disassembly and Assembly 3512E and 3516E Marine Engines

Media Number -M0075247-08

Publication Date -01/09/2018

Date Updated -11/09/2018

i06882132

Exhaust Bypass Valve - Remove and Install

SMCS - 1057-010

Removal Procedure

NOTICE

Keep all parts clean from contaminants. Contaminants may cause rapid wear and shortened component life.

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.

1. Drain the coolant from the cooling system to a level below the exhaust bypass valve into a suitable container for storage or disposal. Refer to Operation and Maintenance Manual, “Cooling System Coolant - Change”.
-

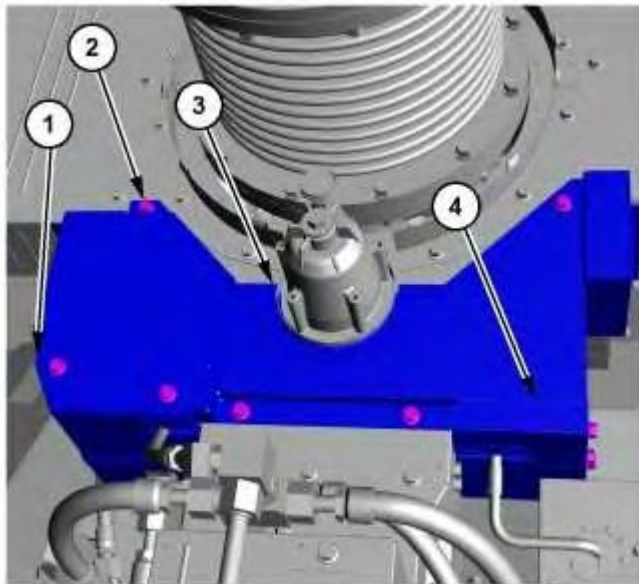


Illustration 1

g06151917

2. Remove 11 bolts (2) and remove shields (1), (3), and (4).

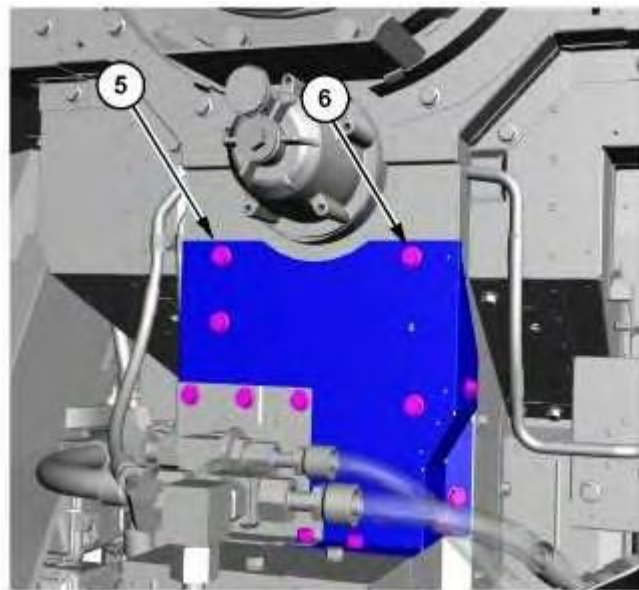


Illustration 2

g06151954

3. Remove 13 bolts (6) and remove shield (5).
-

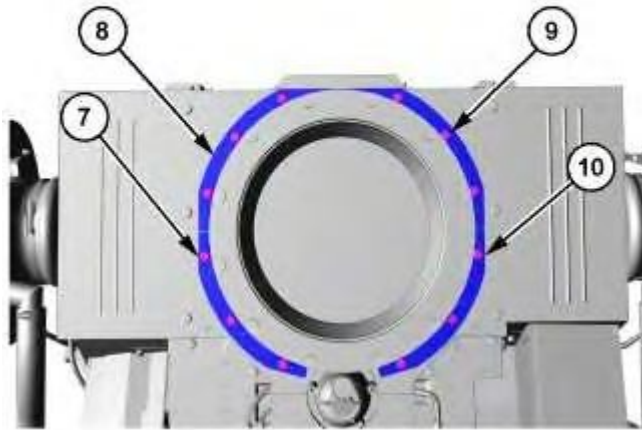


Illustration 3

g06152213

4. Remove 12 bolts (9) and remove shields (7), (8), and (10).

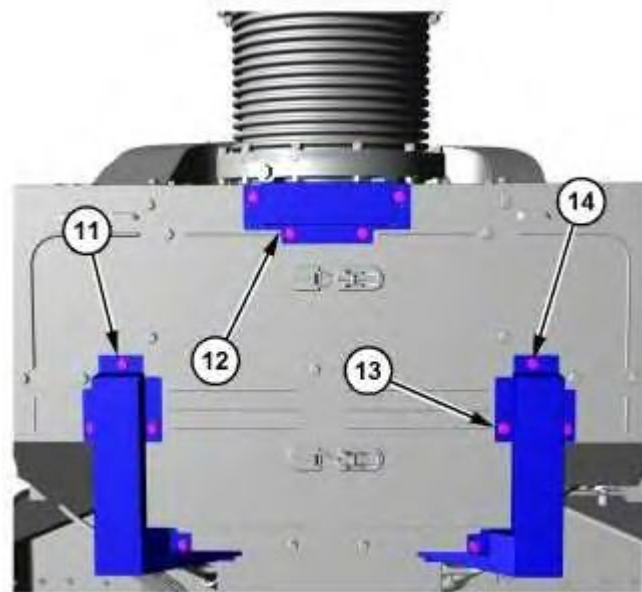


Illustration 4

g06152245

5. Remove 14 bolts (14) and remove shields (11), (12), and (13). Two bolts are not shown.

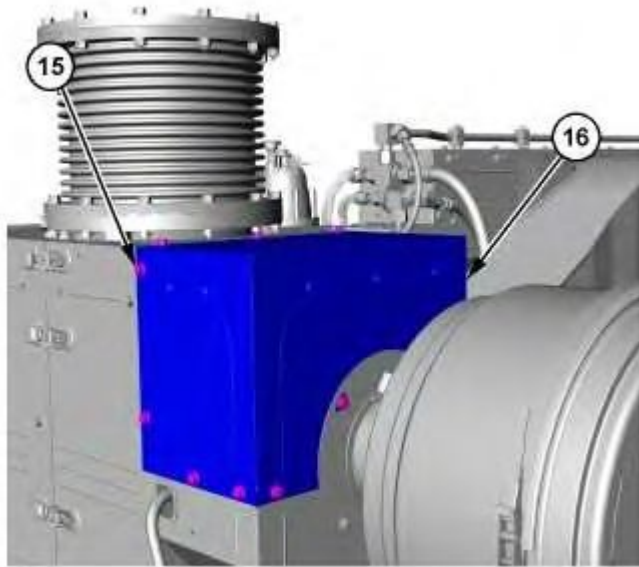


Illustration 5

g06152261

6. Remove 14 bolts (15) and remove shield (16). Five bolts are not shown.

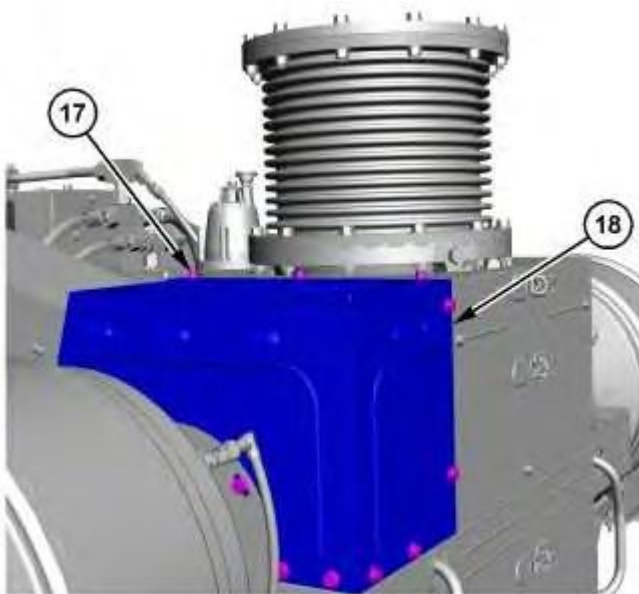


Illustration 6

g06152285

7. Remove 16 bolts (17) and remove shield (18). Ten bolts are not shown.

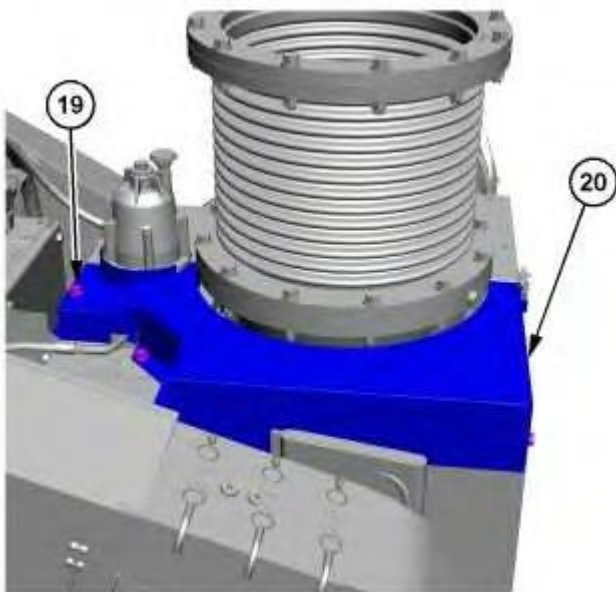


Illustration 7

g06152304

8. Remove three bolts (19) and remove shield (20).

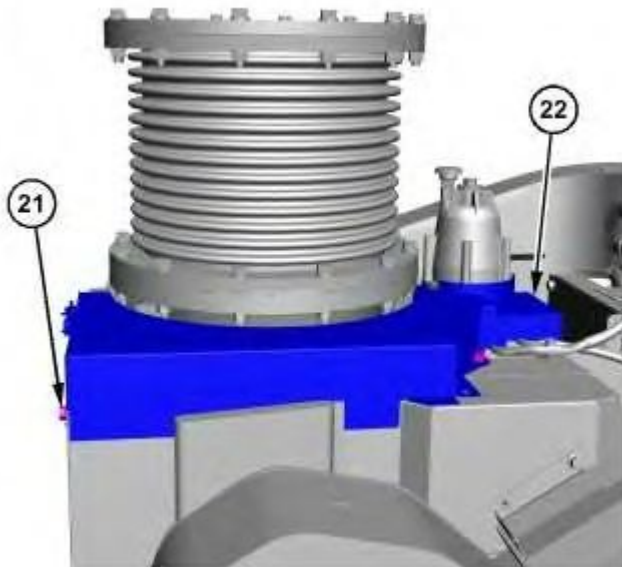


Illustration 8

g06152444

9. Remove two bolts (21) and remove shield (22).

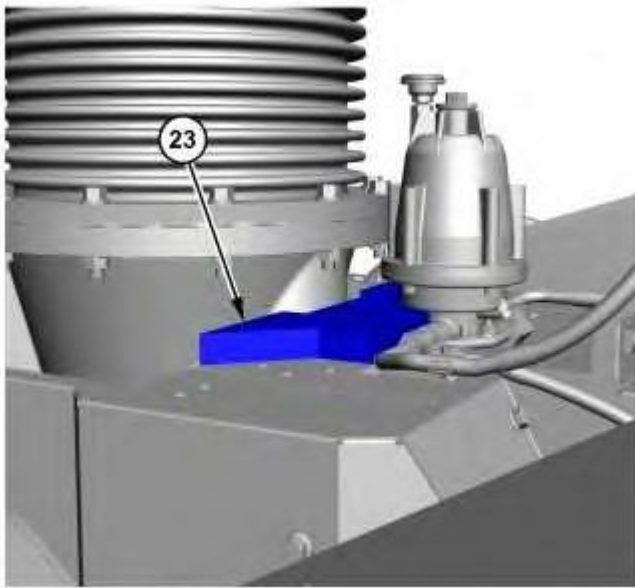


Illustration 9

g06152450

10. Remove insulation (23).

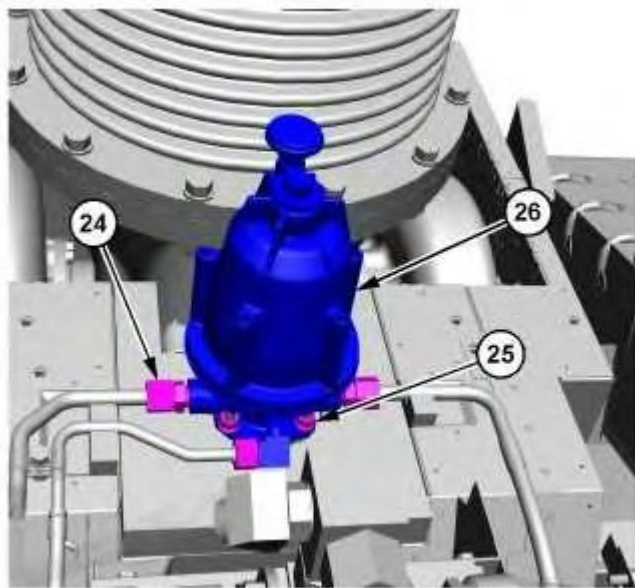


Illustration 10

g06152452

11. Disconnect three swivel nuts (24) and remove four nuts (25).

12. Remove exhaust bypass valve (26).

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty.

NOTICE

Keep all parts clean from contaminants. Contaminants may cause rapid wear and shortened component life.

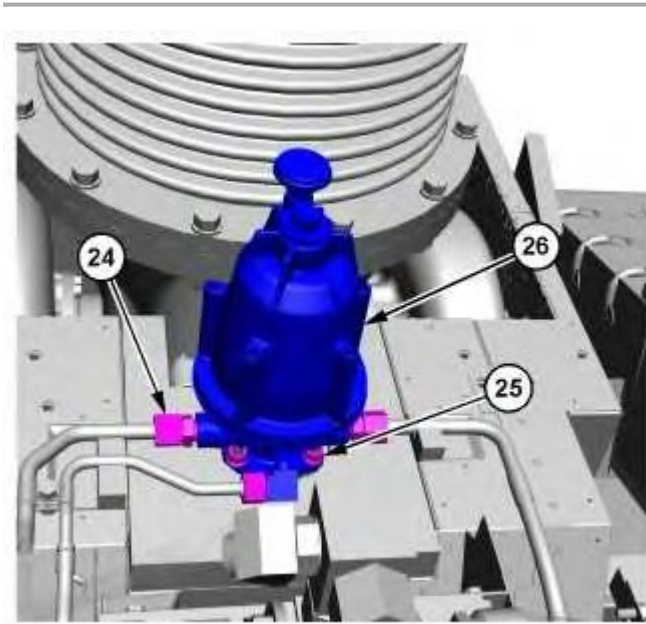


Illustration 11

g06152452

1. Position exhaust bypass valve (26).
 2. If the studs for exhaust bypass valve (26) are installed, tighten to a torque of 35 ± 5 N·m (26 ± 4 ft lb).
 3. Apply Tooling (A) to the threads of the studs and to the mating face of the locknuts. Position the new gasket and exhaust bypass valve (26) on the exhaust elbow. Install new locknuts (25). Tighten locknuts (25) according to the following procedure.
 - a. Tighten two diagonal locknuts to a torque of 25 ± 6 N·m (18 ± 4 lb ft).
 - b. Tighten the remaining locknuts to a torque of 25 ± 6 N·m (18 ± 4 lb ft).
 - c. Tighten all four locknuts to a torque of 47 ± 9 N·m (35 ± 7 lb ft).
 4. Connect three swivel nuts (24).
-

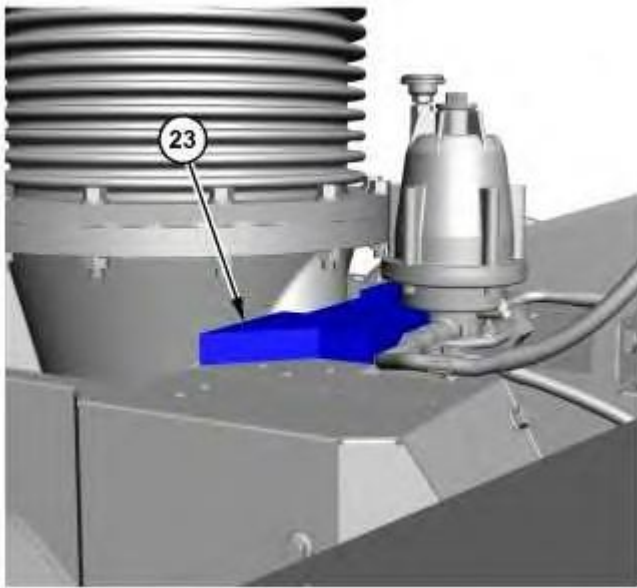


Illustration 12

g06152450

5. Install insulation (23).

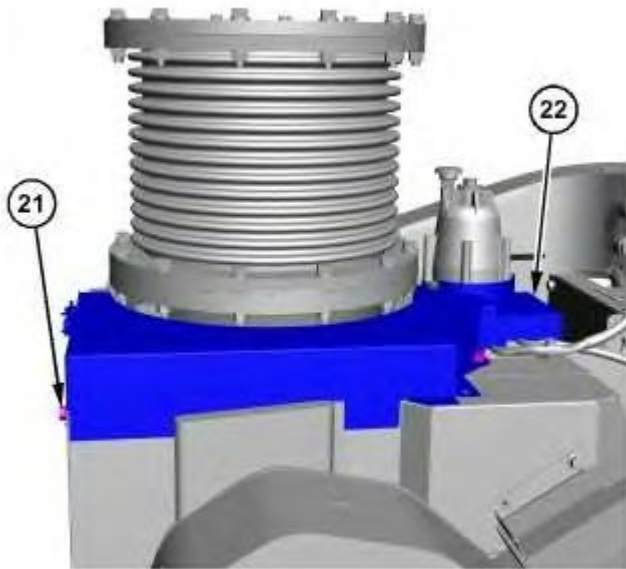


Illustration 13

g06152444

6. Position shield (22) and install two bolts (22).

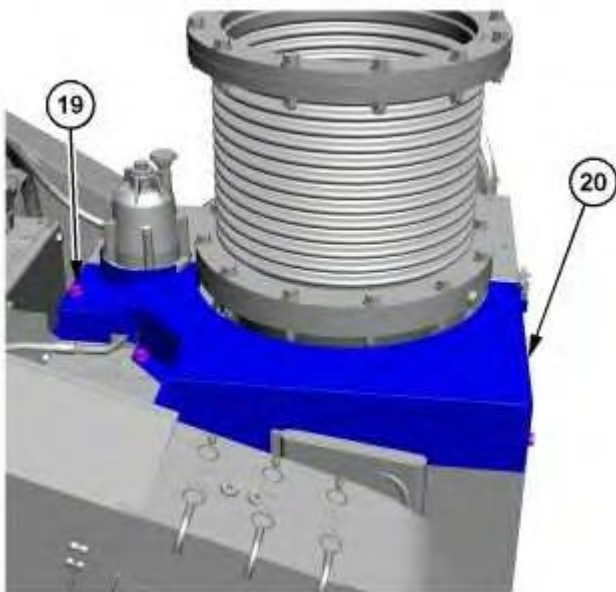


Illustration 14

g06152304

7. Position shield (20) and install three bolts (19).

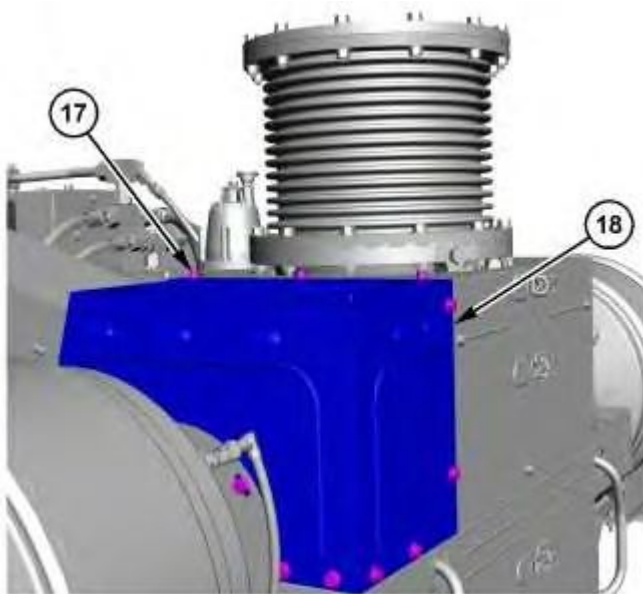


Illustration 15

g06152285

8. Position shield (18) and install 16 bolts (17). Ten bolts are not shown.

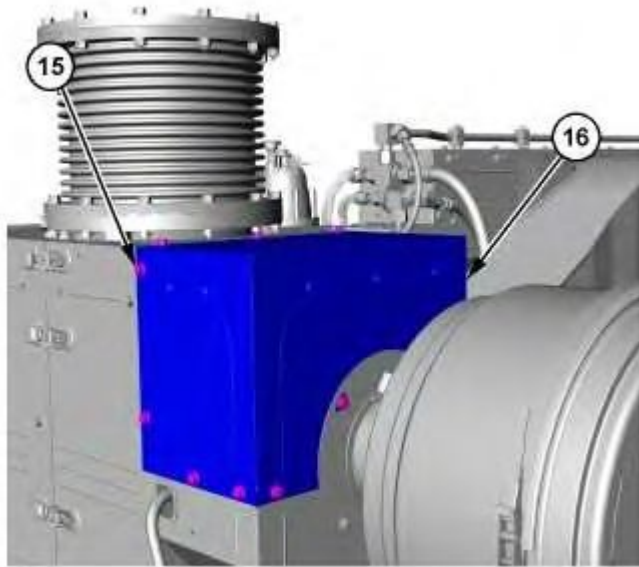


Illustration 16

g06152261

9. Position shield (16) and install 14 bolts (51). Five bolts are not shown.

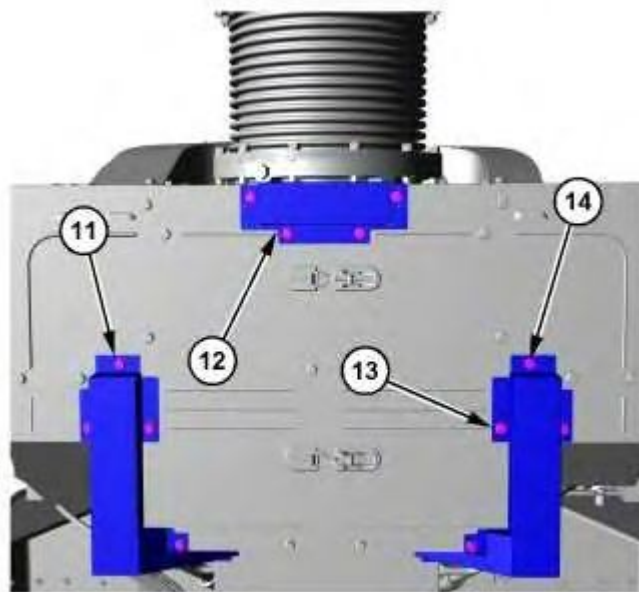


Illustration 17

g06152245

10. Position shields (11), (12), and (13) and install 14 bolts (14). Two bolts are not shown.

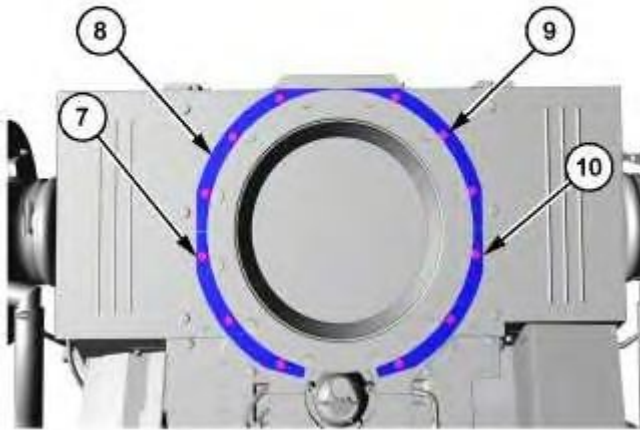


Illustration 18

g06152213

11. Position shields (7), (8), and (10) and install 12 bolts (9).

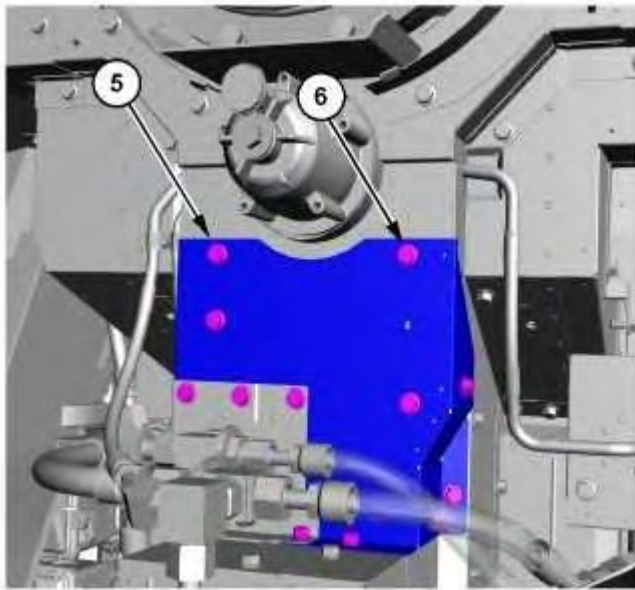


Illustration 19

g06151954

12. Position shield (5) and install 13 bolts (6). One bolt is not shown.

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