

Technical Service Information

NAVISTAR®

TSI-14-04-02

Date: JUNE 2014

Subject File: BRAKE

Subject: Air Compressor (2 Cylinder Yoo Sung) Removal / Installation

Model: ProStar®

Engine Family: MaxxForce® 11 and 13 (EPA 10)

DESCRIPTION

Procedural steps regarding on-vehicle removal / installation of 2 cylinder Yoo Sung air compressor.

PARTS INFORMATION

Table 1. **Parts Information**

Part Number	Description	Quantity
3709815C94	Compressor, Air, 2 Cylinder Clutched	1 (As Required)
3535854C1	Bolt, Special 7/16 in - 20 in	1
273896	Nut, Lock Engine Support Shaft 7/16 in UNF	1
26272R1	Washer, Flat 7/16 in	1
ZTSE4891	Air and Fuel Cap and Plug Kit	1
3626607C1	Strap, Cable Lock 250 lb 20 in	1
289862C1	Strap, Cable Lock	1
2601295C1	O-Ring – Power Steering Pump	1
LOC38655	Fluid, Gasket Eliminator 515 50 ML	1

SERVICE PROCEDURE



GOVERNMENT REGULATION:

Engine fluids (oil, fuel, and coolant) may be a hazard to human health and the environment. Handle all fluids and other contaminated materials (such as filters or rags) in accordance with applicable regulations. Recycle or dispose of engine fluids, filters, and other contaminated materials according to applicable regulations.

SERVICE PROCEDURE (CONT.)



WARNING: Read all safety instructions in the “Safety Information” section of the *Engine Service Manual* or *Engine Diagnostic Manual* to prevent personal injury or death.



WARNING: Do not let engine fluids stay on your skin. Clean skin and nails using hand cleaner and wash with soap and water. Wash or discard clothing and rags contaminated with engine fluids. Failure to comply may result in personal injury and / or death.



WARNING: Park vehicle on hard flat surface, turn the engine off, shift transmission to park or neutral, set the parking brake, and install wheel chocks to prevent the vehicle from moving in either direction. Failure to comply may result in property damage, personal injury, and / or death.



WARNING: Always wear safe eye protection when performing vehicle maintenance. Failure to comply may result in personal injury and / or death.



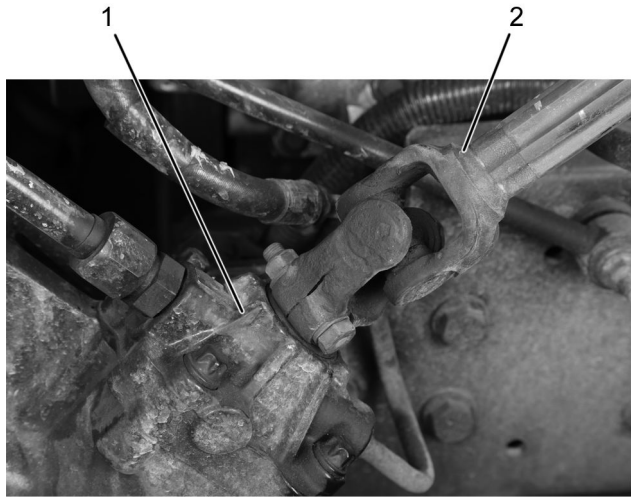
WARNING: Remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last. Failure to comply may result in property damage, personal injury, and / or death.

REMOVAL

NOTE: It is necessary to cage the power steering line mounts to prevent them from springing apart when removed. These mounts can be difficult to reassemble if left loose and rubber cushions are allowed to expand.

1. Bring vehicle into shop and park on flat surface.
2. Shift transmission to Park or Neutral, set parking brake, and install wheel chocks.
3. Unlatch and open hood.
4. Flip down bumper (if equipped).
5. Disconnect negative battery cable.
6. Using Navistar® Coolant Management Tool KL5007NAV, drain coolant system.

REMOVAL (CONT.)



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Figure 1. Steering Gear.

1. Steering gear
2. Steering shaft

CAUTION: To avoid damage to steering shaft, use a pry bar to detach steering shaft from steering gear.

7. Detach steering shaft (Figure 1, Item 2) from steering gear (Figure 1, Item 1), and position toward cab of vehicle. Discard bolt, flat washer, and locknut.
8. Remove air cleaner assembly. Using ZTSE4891 Fuel Cap and Plug Kit, install protective caps to prevent dirt and / or foreign particles from entering and contaminating air induction system.
9. Remove operator side inner fender.
10. Drain air tanks.

REMOVAL (CONT.)



Figure 2. Support Bracket.

- 1. Support bracket
- 2. Tie strap

NOTE: To assist with steering pump removal, the power steering pressure tubes, with two insulated support brackets, must be laid aside as an assembly. The two support brackets must be tightly contained before loosening attachment fasteners, or reassembly can be very difficult. Use tie straps to cage support brackets.

- 11. Install tie straps (Figure 2, Item 2) on both upper and lower support brackets (Figure 2, Item 1) to prevent separation during removal.
- 12. Remove power steering pump and steel lines. Refer to MaxxForce® 11 and 13 Engine Service Manual (EPA 10), [0000001682](#) for specific procedures.

REMOVAL (CONT.)

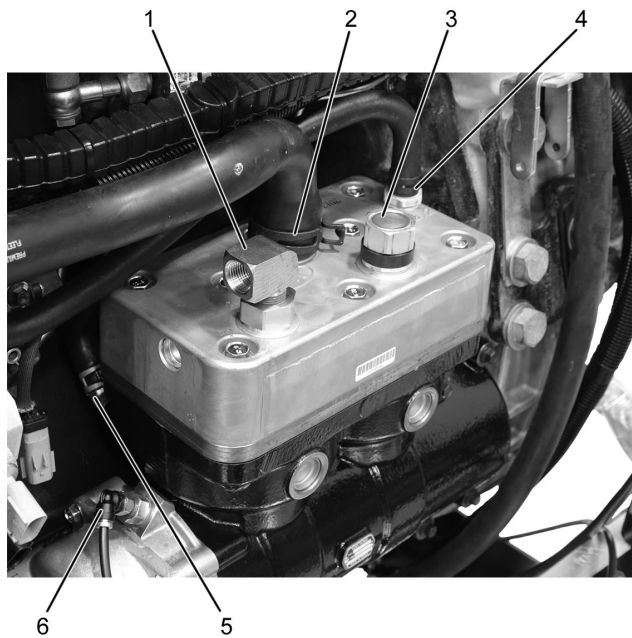


Figure 3. Air Compressor Lines / Fittings.

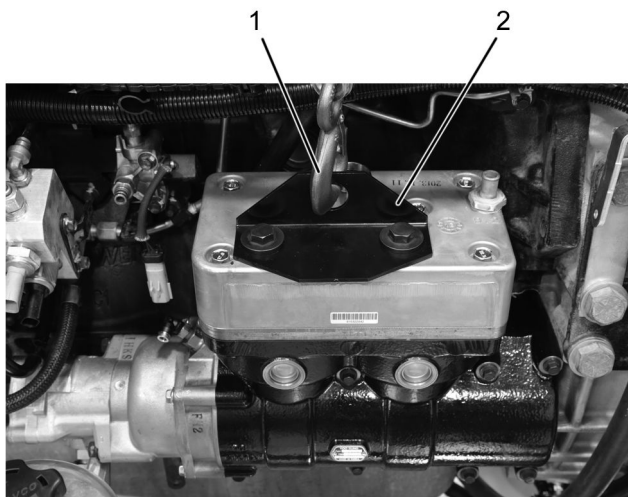
1. Air outlet fitting
2. Air inlet tube
3. Safety valve
4. Coolant return line
5. Coolant supply line
6. Clutch supply line

NOTE: Record position of fittings on compressor.

13. Disconnect or remove air compressor lines / fittings:

- Remove safety valve (Figure 3, Item 3).
- Disconnect coolant supply line (Figure 3, Item 5).
- Disconnect coolant return line (Figure 3, Item 4).
- Disconnect air inlet tube (Figure 3, Item 2).
- Disconnect air outlet tube (not shown).
- Remove air outlet fitting (Figure 3, Item 1).
- Disconnect clutch supply line (Figure 3, Item 6).

REMOVAL (CONT.)



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Figure 4. Hook Attachment.

1. Lifting hook
2. Lifting eye bracket

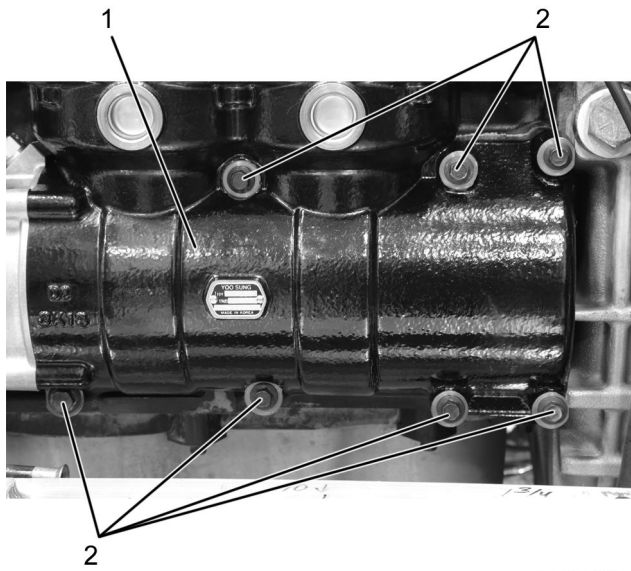
14. Install Air Compressor Lift [04-202-01](#).

15. Position lifting hook (Figure 4, Item 1) into lifting eye bracket (Figure 4, Item 2).

NOTE: Do not attempt to lift compressor at this point.

16. Using hand crank, apply enough tension to remove any slack from cable.

REMOVAL (CONT.)



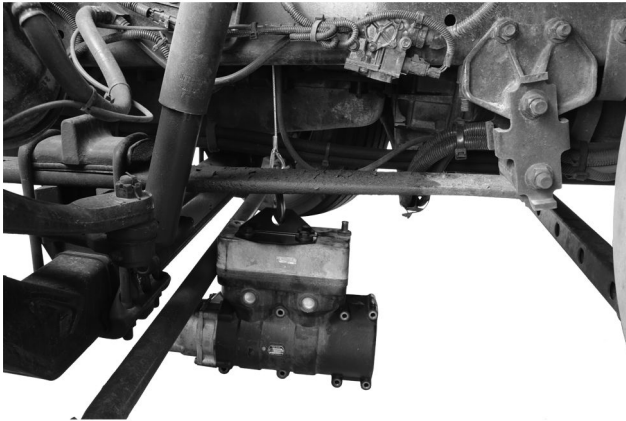
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Figure 5. Air Compressor Mounting Bolts.

- 1. Air compressor
- 2. Bolt (7)

17. Remove mounting bolts (Figure 5, Item 2) from compressor (Figure 5, Item 1).

REMOVAL (CONT.)



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Figure 6. Air Compressor Separated.

NOTE: Mounting sealant between air compressor and engine block may hinder removal of air compressor.

NOTE: Reposition air compressor as necessary when lowering to avoid hitting any components.

18. With assistance from an additional technician to operate hand crank, lower air compressor out of chassis. Maneuver to avoid any obstruction(s) and **carefully lower compressor to floor** (Figure 6).
19. Remove sealant from engine block mating surfaces.
20. Transfer air compressor to bench.
21. Separate power steering pump from air compressor by removing two bolts.

INSTALLATION

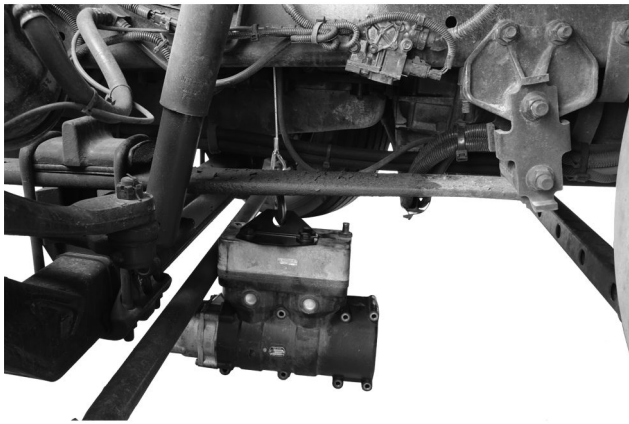
1. Clean power steering pump mating surfaces.
2. Install new pump collar O-ring.
3. Install power steering pump onto air compressor with two bolts.
4. If installing new air compressor, transfer coolant supply line fitting, coolant return line fitting, and clutch supply line fitting to new compressor.

NOTE: Remove grease and road dirt from exterior of the engine mounting surface with a cleaning solvent.

5. Clean all mating / sealing surfaces.

NOTE: Use Loctite® 38655 Sealant.

6. Apply sealant to air compressor and engine block mating surfaces.



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Figure 7. Air Compressor Separated.

7. If installing a new compressor, install lifting eye bracket to compressor using two bolts. Using torque wrench, tighten bolts to 66 lb-ft (89 N•m).
8. Position air compressor under vehicle.
9. Install lifting hook to lifting eye bracket on compressor.

NOTE: May need to reposition the air compressor when lifting to avoid hitting any components.

10. With assistance from an additional technician to operate hand crank, lift air compressor into position (Figure 7). Maneuver to avoid any obstruction(s) and **carefully lift compressor to mating area on crankcase.**

INSTALLATION (CONT.)

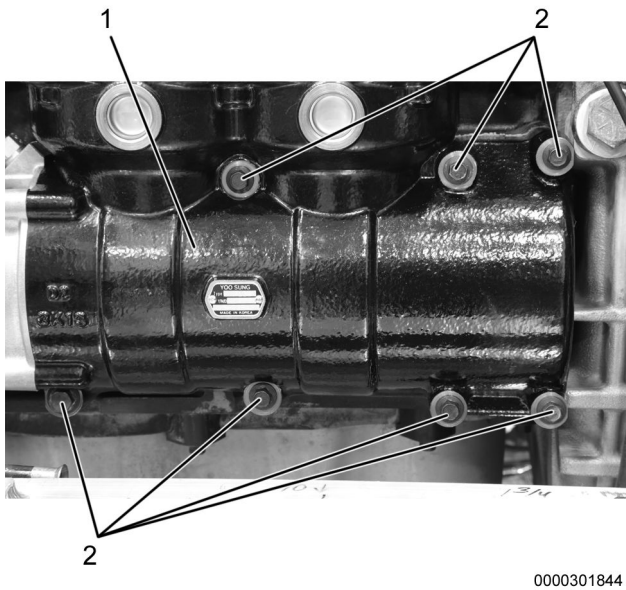


Figure 8. Air Compressor Mounting Bolts.

- 1. Air compressor
- 2. Bolt (7)

11. Position air compressor (Figure 8, Item 1), align and loosely install air compressor mounting bolts (Figure 8, Item 2).
12. Using torque wrench, tighten compressor mounting bolts to 41 - 50 lb-ft (55 - 68 N•m).
13. Remove Air Compressor Lift [04-202-01](#).

INSTALLATION (CONT.)

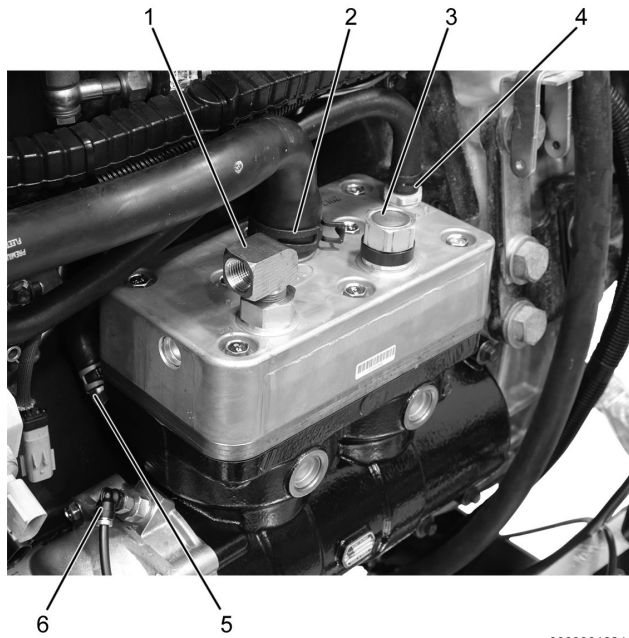


Figure 9. Air Compressor Lines / Fittings.

1. Air outlet fitting
2. Air inlet tube
3. Safety valve
4. Coolant return line
5. Coolant supply line
6. Clutch supply line

14. Install or connect air compressor lines / fittings to air compressor:

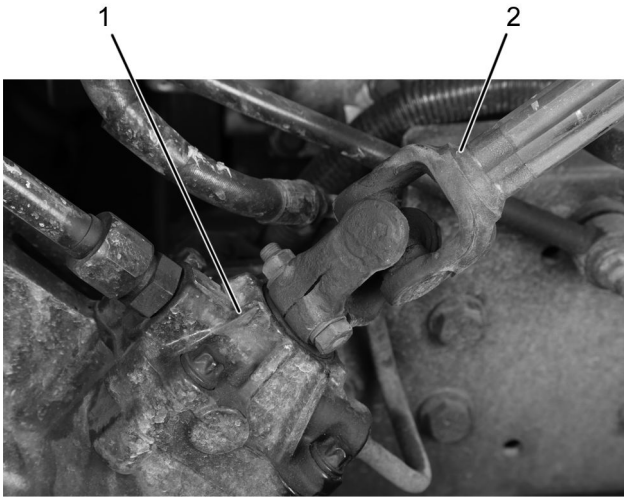
- Connect clutch supply line (Figure 9, Item 6).
- Install air outlet fitting (Figure 9, Item 1).
- Connect air outlet tube (not shown).
- Connect air inlet tube (Figure 9, Item 2).
- Connect coolant return line (Figure 9, Item 4).
- Connect coolant supply line (Figure 9, Item 5).
- Install safety valve (Figure 9, Item 3).

15. Install power steering pump and steel lines. Refer to MaxxForce® 11 and 13 Engine Service Manual (EPA 10), [0000001682](#) for specific procedures.

16. Install operator side inner fender.

17. Remove protective caps and install air cleaner assembly.

INSTALLATION (CONT.)



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Figure 10. Steering Gear.

1. Steering gear
2. Steering shaft

NOTE: A new special Bolt 7/16 - 20 (3535854C1), Flat Washer 7/16 in (26272R1), and Locknut 7/16 - 20 (273896) must be used when connecting the steering shaft to the steering gear.

18. Connect steering shaft (Figure 10, Item, 2) to power steering gear (Figure 10, Item 1), observing alignment keyway. Install new special bolt, flat washer, and locknut. Tighten bolt until head breaks off.
19. Connect negative battery cables.
20. Using Navistar® Coolant Management Tool KL5007NAV, fill cooling system. Verify coolant is between MIN and MAX line of deaeration tank. Add coolant as required.
21. Verify power steering reservoir is full:
 - Start engine and let idle for 2 minutes. Do not steer.
 - Shut engine off.
 - Check fluid level in reservoir. Refill as required.
 - Start engine.
 - Steer vehicle from full left to full right several times.
 - Shut engine off.
 - Add fluid, as necessary, to FULL line on dip stick.
22. If equipped, flip up and secure front bumper. Close and secure hood.
23. Remove wheel chocks.