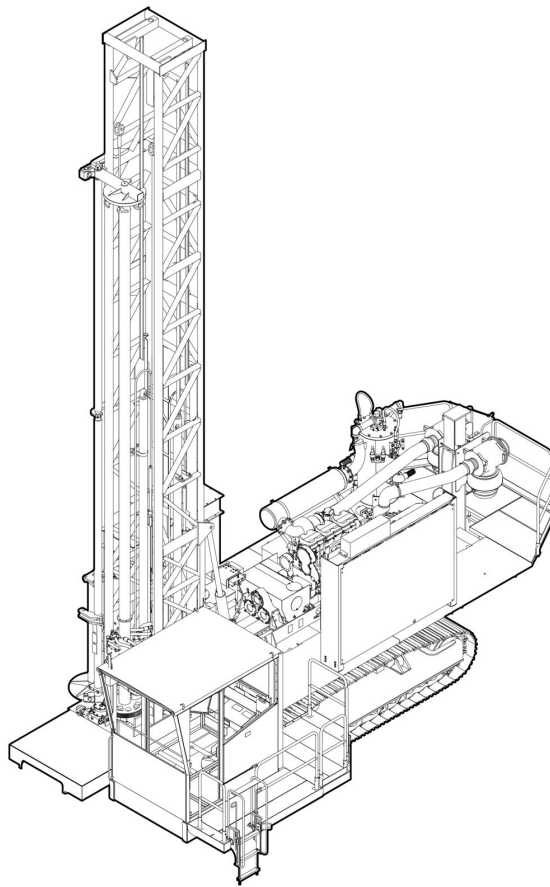


Standard Operating Procedure

Compressor Coupling - QSK15 and QSK19 Engines Removal and Installation

DML/SP, DML D, DM50, DM45SP, DM45



Original Instructions

2019-12-09 | No: TIS0000875.002 en-US

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1 Customer Acknowledgment

Use only Epiroc original parts. Damage or breakdown that is caused by non-original spare parts are not covered by the warranty or product liability.

Epiroc is not held responsible for damages that are caused by unauthorized modification of the machine and its associated equipment.

The manufacturer is not liable for damage that is caused by inappropriate use.

The following damages are not covered by the customer warranty policy:

- Damage from substandard repairs,
- Injury to personnel from unresolved repairs,
- Damage to equipment from unresolved repairs.

Always refer to the customer warranty policy.

Performance specifications are based on maximum computed values and are subject to revisions without notification. Nothing in this instruction extends any warranty or representation expressed or implied, regarding the products described. Any such warranties or other terms and conditions shall be in accordance with Epiroc standard terms and conditions of sale for such products, which are available upon request.

Specifications represented herein are calculated values at 100% efficiency. Epiroc is constantly striving for product improvements and enhancements. Accordingly, Epiroc reserves the right to make such changes in specifications and design as the company considers in conformity with this policy or due to unavailability of materials or assemblies.

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2 General Information

2.1 Qualifications / Licenses Required

THIS PROCEDURE IS ONLY FOR EPIROC-CERTIFIED TECHNICIANS.

Service technicians/workers doing this maintenance procedure must have a Service Level 1 or Service Level 2 certification.

This task serves numerous customer jurisdictions. If a particular procedure or clause conflicts with the site-specific requirements or a particular country's occupational health and safety standards, the responsibility rests on the user to amend those procedures or clauses, as applicable.

2.2 Introduction

This SOP provides an administrative control to help manage the hazards and risks of doing the task of Component Removal and Installation.

As a preface to using this SOP, all other types of controls, such as elimination, substitution, isolation, and engineering must be considered and implemented.

2.3 Terms and Abbreviations

Term	Definition
Job Safety and Environmental Analysis	Local job risk observation tool, used for job hazard identification and determination of how to manage the risk through appropriate control measures.
Technician	A person who is qualified to do the work according to local regulations and requirements.
Approved lifting device	A device that is connected to, or applied on, a component for the purpose of lifting it. The device must fulfill local regulations and requirements for the lifting operation. All lifts must be assessed and calculated by an approved person inclusive of rigging selection and placement on the load to determine the safe lifting methods that are applied.
Machine	Complete Epiroc machine that the component is located within.
Equipment	Auxiliary equipment to assist task operations, including but not limited to lifting devices, compressors, tooling.

Abbreviation	Definition
JSEA	Job Safety and Environmental Analysis
PPE	Personal Protective Equipment
HP	High Pressure

Abbreviation	Definition
LP	Low Pressure
psig	pounds per square inch gauge
kPa	Kilopascal
OEM	Original Equipment Manufacturer

2.4 Manufacturer's Information

Sweden Epiroc Rock Drills AB Klerkgatan 21 Örebro, 701 91	USA Epiroc Drilling Solutions, LLC 2100 North First Street Garland, Texas 75040 - USA
India Epiroc Mining India Limited Phoenix Market City, Viman Nagar Pune, 411014	India Epiroc Mining India Limited 90, MIDC, Satpur Nashik, 422007
China Epiroc (Nanjing) Construction and Mining Equipment Limited 2, Hengtai Road Nanjing Economic and Technological Development Zone Nanjing, 210033	

3 Safety

3.1 Safety First

The person or persons doing the tasks contained in this document must be qualified in accordance with local regulations and requirements. It is the duty of all personnel involved in doing the tasks to read and understand the machine-specific Safety, Operation, Maintenance, and Isolation manuals and any other documentation specifically referenced in this document before starting any work on the machine.

The instructions include specific safety messages that are marked with **Danger**, **Warning**, **Caution**, **Notice**, or **Note**. Give extra attention to these messages, as they contain additional information to the instruction text. Comply with any local safety rules that are specific to the work location.

Use this instruction in conjunction with a local Job Safety and Environmental Analysis (or equivalent) to identify and manage hazards.

3.2 Job Safety and Environmental Analysis (JSEA)

Job Safety and Environmental Analysis provides job hazard identification, potential risk assessment, and suggested controls for the tasks that are described in this instruction. All persons involved in the task must create a JSEA for the job or task on the physical objects in front of them, and consider any local conditions, environmental hazards, and risks.

Remove or minimize all of the hazards that are identified before you begin work.

If hazards cannot be reduced to an acceptable level of risk, do a complete review of the site-specific JSEA.



NOTE: Refer to local or site-specific regulations and the JSEA or equivalent type of job-risk-assessment documentation.

3.3 Risk Factors

- Possible crushing or pinching
- Environmental contaminant
- Mast obstructions
- Pressurized components
- Residual pressure
- Hot fluids or components
- Crushing hazard
- Energized equipment

3.4 Safety Precautions Before and During the Work



NOTE: Obey all warning statements in this procedure.

- Release all of the pressure in the receiver tank and hoses before you work on the compressor system.
- Do not remove any of the regulation or control hoses when the machine is operating or pressure is in the system.

3.5 Personal Protective Equipment

Make sure that all necessary personal protective equipment (PPE) is available and correctly used when doing this procedure, including:

- Head - Hard hat
- Ears - Hearing protection
- Eyes - Safety glasses
- Hands - Applicable gloves
- Feet - Safety shoes with steel toes
- Safety devices

Obey all site-specific standard PPE requirements, mandatory area PPE regulations, and any other PPE requirements that are identified in the risk assessment.

4 Preparations and Prerequisites

4.1 Labor Resource (People/Skills)

Service Technician x 2

Crane Operator x 1

4.2 Technical Data

To select correct lifting devices, stands, and tools, refer to the technical data as detailed throughout the instruction sections.



NOTE: Due to the variation of machine options and components, actual values can differ from data. Data is for reference only.

4.3 Machine Technical Data

See machine-specific manuals for weight, dimensions, and other data relevant to bringing the machine to the work area and doing the task.

4.4 Component Technical Data

Description	Data	Remarks
Compressor coupling		

4.5 Tools

Description	Specification
Standard mechanic toolkit	
Straight edge	1 m (3 ft)
Adjustable square	
Tape measure / ruler	
Pry bar	
Rawhide/hard rubber mallet	
Clamp	Minimum opening of 64 mm (3 in)
Torque wrench, calibrated	Capacity up to 41 to 102 N·m (30 to 75 ft·lb)
Torque wrench, calibrated	Capacity up to 68 to 339 N·m (50 to 250 ft·lb)
Feeler gauge	Must contain a 0.006-in gauge


4.6 Support Equipment

Description	Specification
Crane	As required
Lifting equipment	As required
M20 eye cap screw	As required
Mobile pressure washer/steam cleaner	
Container	
Hydraulic plugs and caps	

4.7 Consumables

Description	Specification	Quantity
Compressor oil, HP 350	As specified in Refill Capacities and Lubricants	As required
Compressor oil, LP 150	As specified in Refill Capacities and Lubricants	As required
Cold weld compound		As required
Shim set		As required
Di-electric grease	As specified in Refill Capacities and Lubricants	As required
220-grit sandpaper		As required
Tags		As required

4.8 Spare Parts



NOTE: To create an order list request for the spare parts, refer to the Spare Parts Catalog for the specific machine model and serial number.

Description	Specification	Quantity
Coupling, HP (High-pressure compressor only)		1
Coupling, LP (Low-pressure compressor only)		1
Key, half		
Coupling flange		1


Description	Specification	Quantity
Cap screws	Engine housing	As required
Cap screws	Coupling flange	As required

4.9 Suggested Time Required (Standard Planning Hours)

Ref.	Description	Planned Time (HH:MM)
5,6,7	Compressor Coupling Removal and Installation	24:00

4.10 Reference Documentation

The following list of reference material relates to this instruction. Additional specific documentation is referenced at each applicable step.



NOTE: The listed documentation must be available in valid version at the location where the job is done.

Description	Reference
Safety Manual	Model specific
Operation Manual	Model specific
Service/Maintenance Manual	Model specific
Spare Parts Catalog	Machine specific (per serial number)
Safety Locks and Tags Minimum Requirements	Model specific Maintenance Manual
Low-Pressure Air Compressor Removal and Installation	TIS0000793
High-Pressure Air Compressor Removal and Installation	TIS0000794
Change the Compressor Oil and Filters	Model specific Maintenance Manual
Refill Capacities and Lubricants	Model specific Maintenance Manual

5 Removing the Compressor Coupling



NOTE: If it is necessary to remove the entire compressor, refer to the procedure High-Pressure Compressor Removal and Installation, or refer to the procedure Low-Pressure Compressor Removal and Installation to remove the compressor from the machine.

1. Park the machine on a level surface.

DANGER

Electrocution Hazard

Operating near or contacting a power line with any part of the machine can cause electrocution, causing death.

- ▶ Do not raise the mast or operate the machine near electric power lines.
- ▶ Keep at least 3 meters (10 feet) away from power lines.
- ▶ If there appears any danger of wind or other obstruction decreasing the distance, do not drill in that area.

2. Raise the mast to the vertical position and lock it in place.
3. Attach safety locks and tags to the machine in accordance with the site-specific procedures or refer to Safety Locks and Tags Minimum Requirements in the Maintenance manual.

WARNING

High Pressure

High-pressure cleaning with compressed air, water jets, or steam cleaning methods can cause personal injury.

- ▶ Put on applicable personnel protective clothing to protect eyes and exposed parts of the body.
- ▶ Maximum air pressure at the nozzle must be less than 207 kPa (30 psig) for cleaning purposes.

4. Clean the engine and the compressor area with a pressure washer to remove any oil and grease.



NOTE: Refer to Figure 1 for component location, name, and cap screw hole quantity.

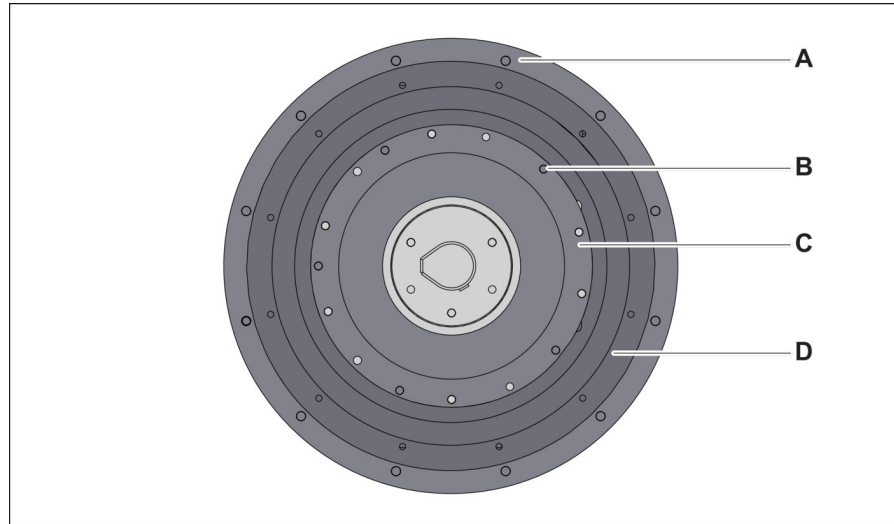


Figure 1

Item	Component Name	Cap Screw Hole Quantity
A	Coupling flange	12 cap screws
B	Push off threads	5 holes
C	Inner ring	10 cap screws
D	Rubber element	

5. Open the manual blowdown ball valve (Figure 2, item A) at the receiver tank to release the pressure in the system.

! **NOTE:** Make sure that the gauge reads zero bar (zero psi).

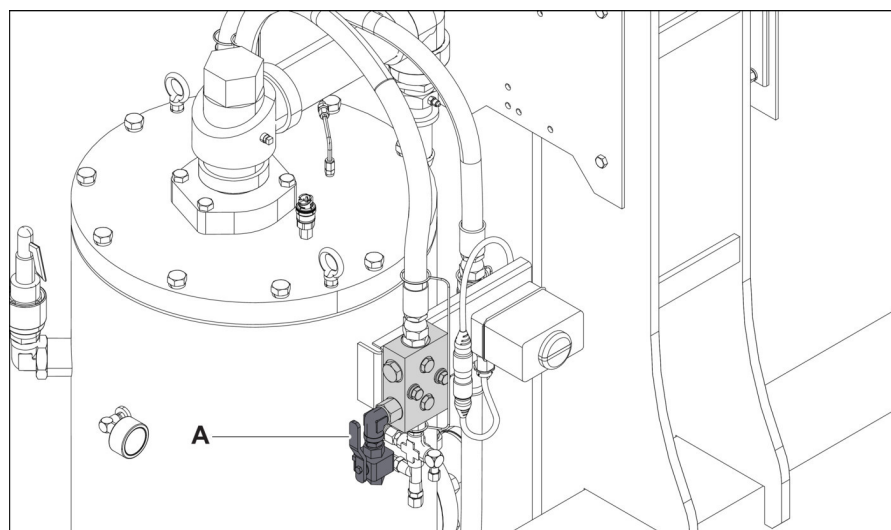


Figure 2

A	Blowdown ball valve
---	---------------------

⚠ WARNING**Burn Hazard**

Hot fluids or components can burn.

- ▶ Do not touch hot fluids or components.

⚠ CAUTION**Environmental Contaminant**

Oil is an environmental contaminant and must be discarded correctly.

- ▶ Do not let the used oil drain into the ground.
- ▶ Discard the used oil in accordance with local environmental regulations.

6. Drain the compressor oil.



NOTE: Refer to *Change the Compressor Oil and Filters in the Maintenance manual*.

⚠ CAUTION**High Pressure**

Can cause personal injury

- ▶ Loosen the fittings carefully to release the pressure before fully disconnecting and capping the hoses.

⚠ CAUTION**Environmental Contaminant**

Oil is an environmental contaminant and must be discarded correctly.

- ▶ Do not let the used oil drain into the ground.
- ▶ Discard the used oil in accordance with local environmental regulations.

7. Clean, label, and disconnect the oil hoses that are connected to the compressor. Plug the hoses and cap the ports immediately.

8. Disconnect the electrical connection (Figure 3, item A) of the EARS actuator. Wrap the connectors inside a plastic bag or some other form of protection.

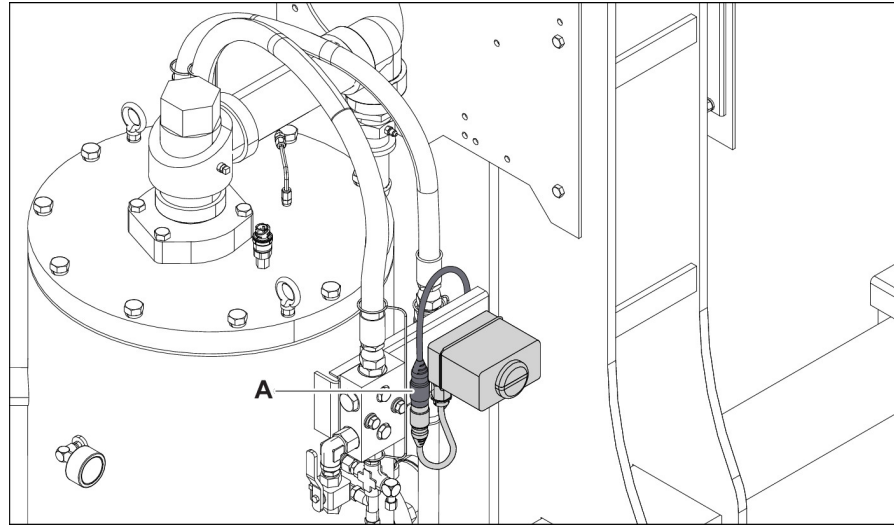


Figure 3

A	Electrical connection
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9. Disconnect the hump hoses (Figure 4, item A) and remove the piping from the Air Cleaner Assembly and the compressor inlet.

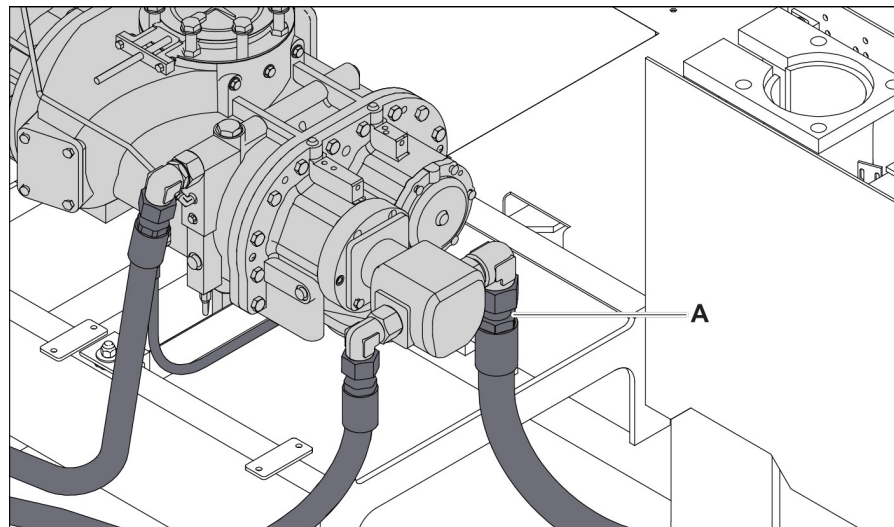


Figure 4

A	Hump hose
---	-----------

10. Put a container near the compressor discharge pipe. Loosen all of the discharge check valve cap screws and let the fluid drain into the container (Figures 5 and 6).

11. Remove all of the cap screws and components. Discard the cap screws and store them aside for installation.

! ***NOTE:** The check valve gasket must be replaced with a new one when disassembled.*

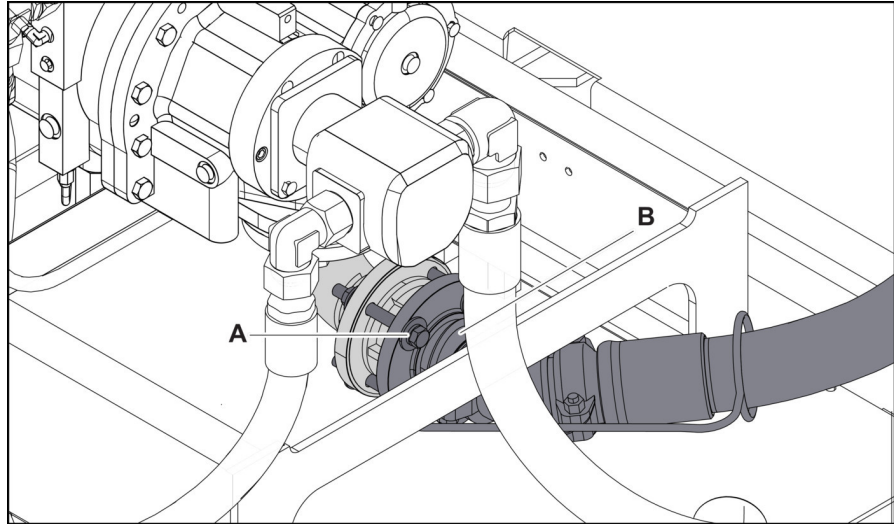


Figure 5

A	Cap screw
B	High-pressure compressor hose

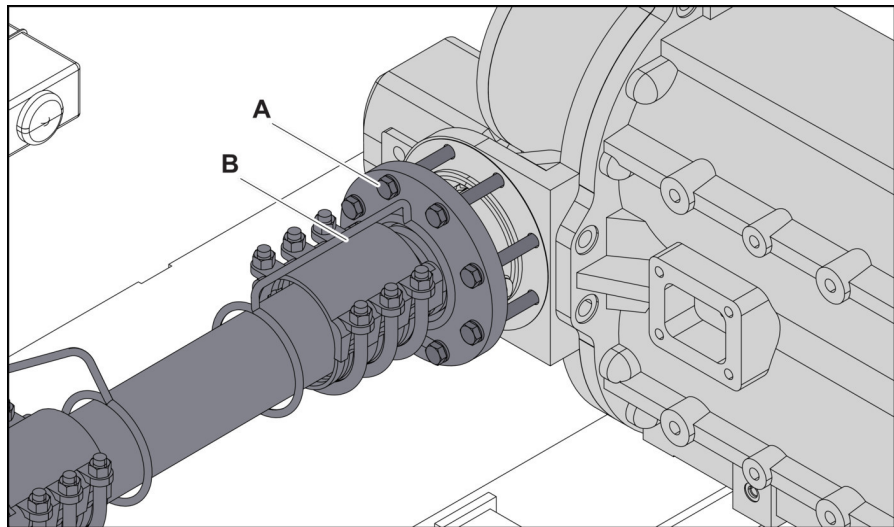


Figure 6

A	Cap screw
B	Low-pressure compressor hose

12. Remove the compressor access covers (Figure 7 item B) and the engine rotation access cover (item A).

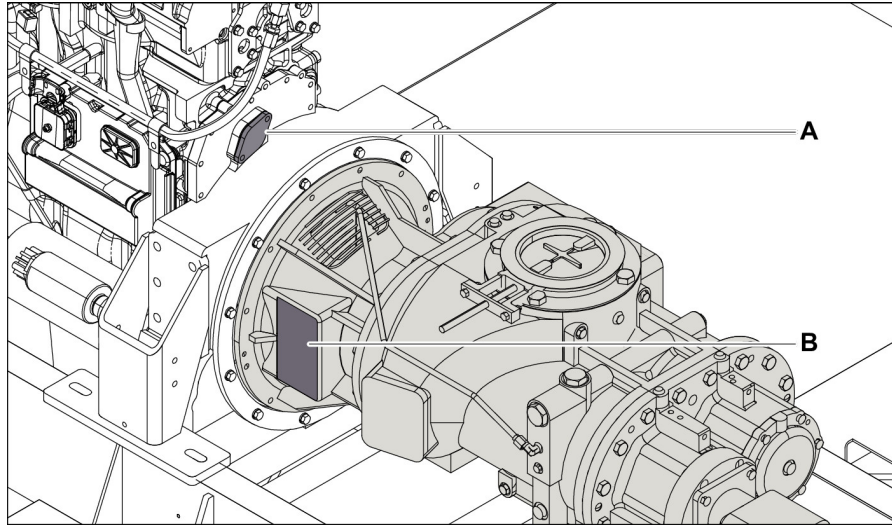


Figure 7

A	Engine rotation access cover
B	Compressor access covers

13. Turn the engine to align each of the mounting cap screws (Figure 8, item A) on the coupling and remove the cap screws one at a time.

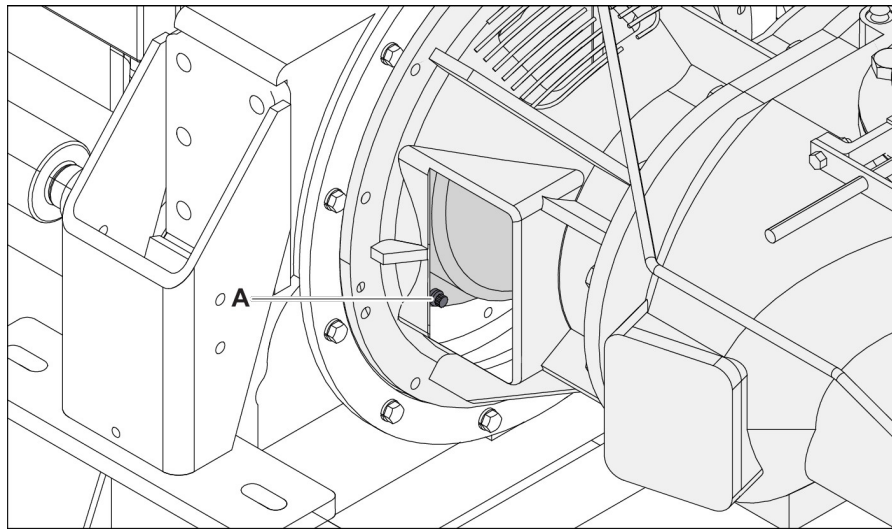


Figure 8

A	Mounting cap screw
---	--------------------

⚠ WARNING

Crushing Hazard
Can cause personal injury.

- ▶ Lifting equipment must be adequately sized, have the correct lifting capacity, and be in good condition.
- ▶ Be careful when lifting heavy components.

14. Attach an approved lifting device to the compressor (Figure 9, item A) according to the compressor type. Lift the compressor with the crane until there is slight tension.

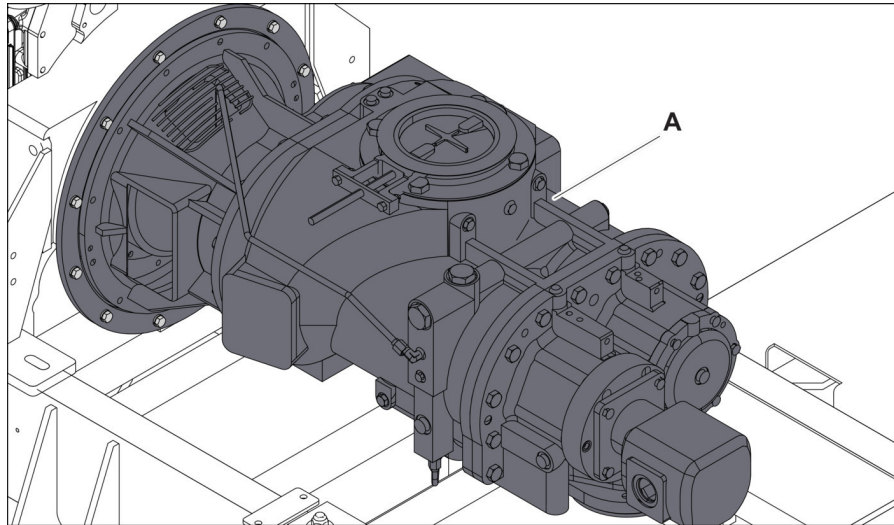


Figure 9

A	Compressor
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! **NOTE:** HP compressor uses two M20 eye cap screws. LP compressor uses a 102-millimeter (4-inch) wide strap or equivalent.

15. Remove all 12 cap screws (Figure 10, item A) connecting the compressor to the engine housing. Store the cap screws aside for installation.

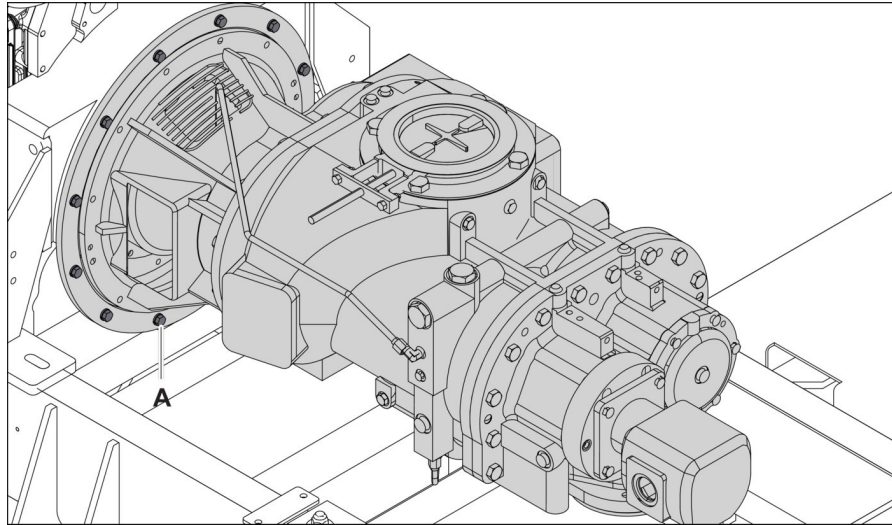


Figure 10

A	Cap screw
---	-----------

16. Remove the compressor mounting cap screws (Figure 11, item A) to the power pack base (LP compressor has eight cap screws and HP compressor has two cap screws).

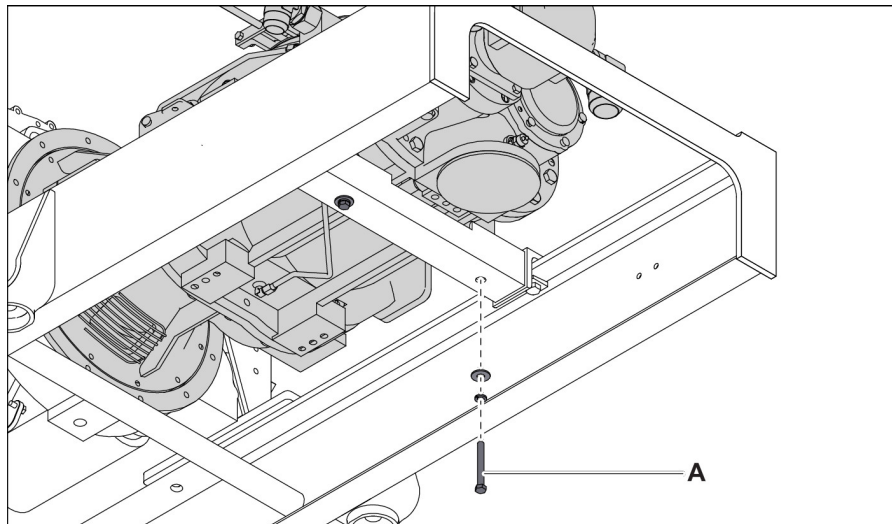


Figure 11

A	Compressor mounting cap screws
---	--------------------------------



NOTE: Shimming can be necessary for alignment during installation. Be careful when removing the shims, as these shims can be used for installation.

17. Lift the compressor lightly with the crane. Disconnect the compressor from the fly-wheel housing with the pry bar. This distance must be approximately 0.70 meter (2 feet).



NOTE: Tension must be kept on the lifting device for the entire time to minimize jump and unexpected drop of the compressor. Temporary cribbing across the power pack frame can be used to support the compressor during the coupling removal and installation process.

18. Remove the 10 inner ring shoulder head cap screws (Figure 12, item A) in a circular motion with an 8-millimeter hex key. Five of these cap screws can be necessary to remove the coupling.

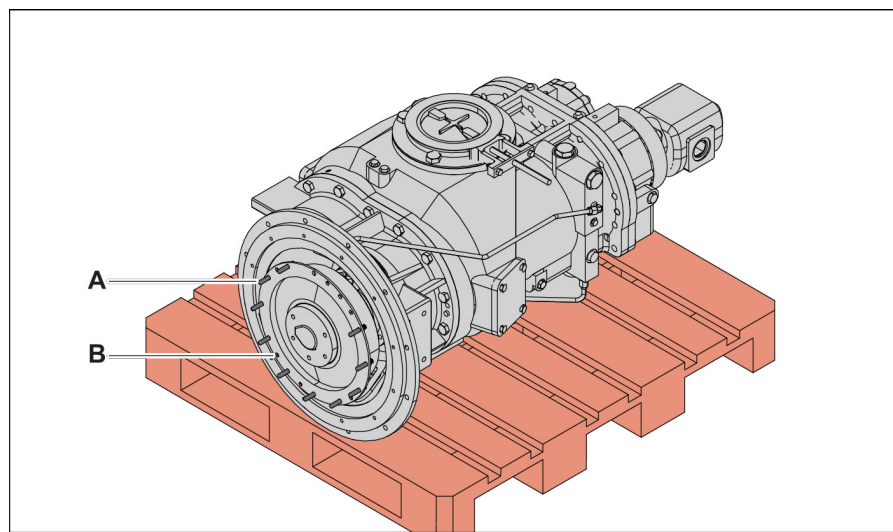


Figure 12

A	Typical 10 places
B	Typical 5 places

19. Discard the used parts and hardware. The new coupling has new hardware.
20. Tap the coupling several times with a rawhide/rubber mallet to loosen it. Remove the coupling.



NOTE: If this action does not free the coupling, use the five cap screws (Figure 12, item B) and insert into the push off threads. Tighten the cap screws in a crisscross pattern until the coupling is loose and can be removed.

21. Remove and discard the half-key on the compressor shaft.

22. Remove the 12 cap screws that attach the coupling flange (Figure 13, item A) to the flywheel. Discard the cap screws.

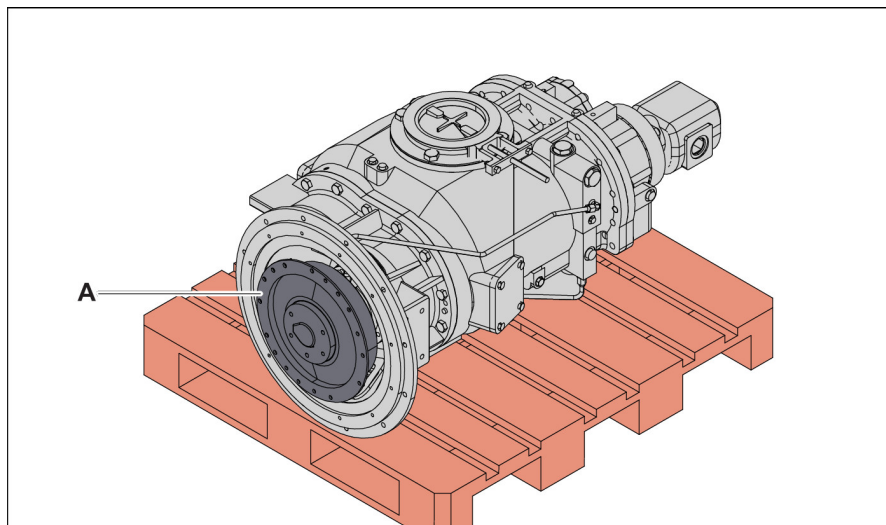


Figure 13

A	Coupling flange
---	-----------------

23. Discard the flange.



NOTE: Four of these cap screws are used to make sure of the torque of the 12 outer hub cap screws.

6 Installing the Compressor Coupling

1. Attach safety locks and tags to the machine in accordance with the site-specific procedures or refer to Safety Locks and Tags Minimum Requirements in the Maintenance manual.
2. Rub the entire compressor shaft with 220-grit sandpaper to remove any burrs and make it smooth for easier installation.
3. Test fit the new half-key and make sure it has a smooth fit within the keyway. If it does not fit in the slot easily, sand the half-key edges as necessary.
4. Clean the shaft and the keyway surfaces. Apply a liberal amount of cold weld compound to the keyway.
5. Insert the half-key into the keyway. Clamp the half-key in place and let it set for 25 minutes.



NOTE: Wipe off all excess cold weld compound and discard it correctly.



NOTE: Steps 7 to 10 are necessary to verify the torque of the 12 outer hub cap screws.

6. Align the coupling flange and the flywheel cap screw holes with four of the cap screws that attach the coupling flange to the flywheel (Figure 13).
7. Tighten the four cap screws in a crisscross pattern at 90 degrees of each other. Hand tighten the cap screws and give an additional full turn with the correctly sized wrench/socket.
8. Insert the coupling into the flange.
9. Torque all of the cap screws to 210 Newton meters (155 foot-pounds) dry with a 14-millimeter hex key socket and torque wrench.
10. Remove the four mounting cap screws from the flywheel. Remove the entire assembly and put it on the ground.

11. Slip the flange (Figure 14, item A) off of the coupling (item B) and store it aside for installation.

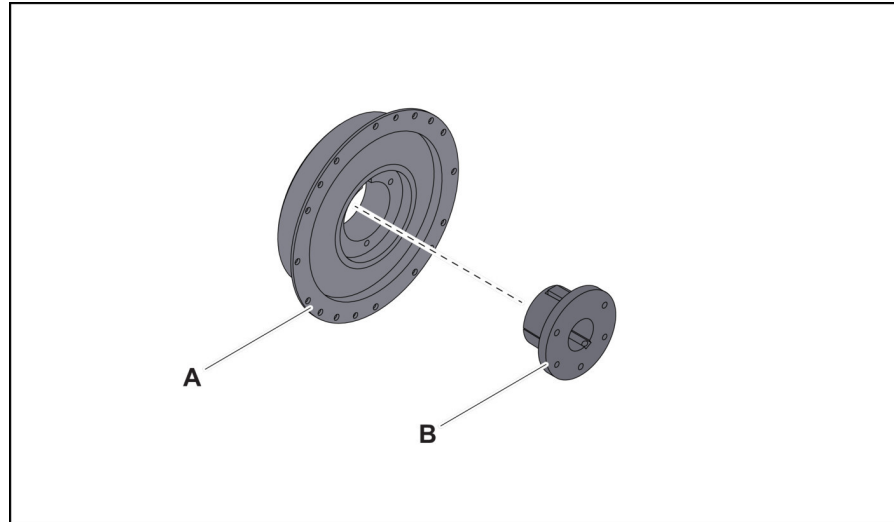


Figure 14

A	Flange
B	Coupling

12. Install the rubber element onto the compressor shaft with the inner ring of 10 cap screws facing towards the outside. Make sure that the element has full travel along the length of the crankshaft without binding (Figure 13).
13. Move the aluminum flange onto the rubber element.
14. Starting at the top and working to the way down, move the flange (Figure 15, item A) back far enough to where it is flush with the back part of the coupling.



NOTE: It can be necessary to do this step two to three additional times. The coupling must be evenly recessed within the flange all the way around. The two side covers can be removed and used to visually make sure that the coupling is flush with the flange.

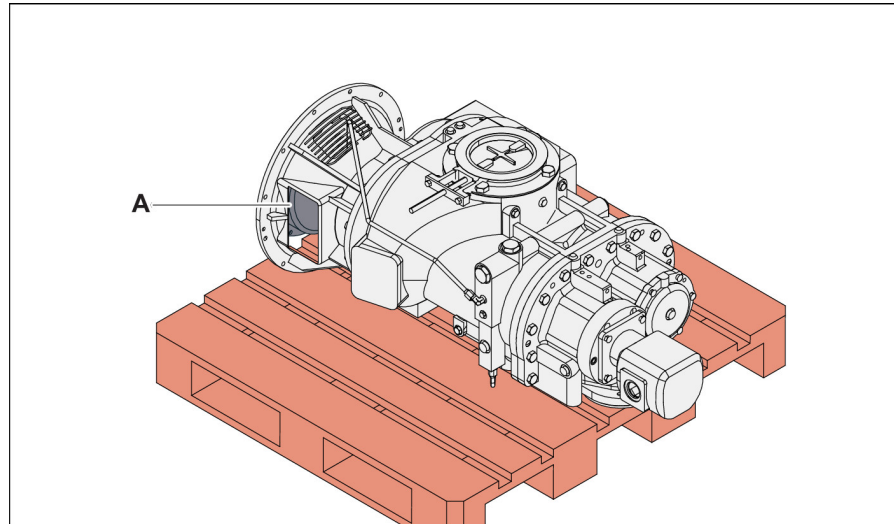


Figure 15

A	Flange
---	--------

15. When the coupling and the flange are flush at the back, measure and write the depth of the recessed coupling when the coupling and flange are flush at the back. Save the depth value for a later step.
16. Set the coupling onto the compressor shaft in accordance with steps 16 to 20.
17. Put a straight edge across the flywheel housing. Put the head of the square on the straight edge with the adjustable square and extend the ruler part out until it touches the flywheel surface. Tighten the set screw and lock the ruler in place at the head.
18. Calculate the measurement to set the coupling inner hub to the compressor shaft. See the following steps for an example.
 - a. Take the coupling recessed measurement from step 15. For this case, it was 11 millimeters (7/16 inch). Center this measurement because, when tightened, the hub moves out approximately 2 millimeters (1/16 inch).
 - b. Subtract 2 millimeters (1/16 inch) from the 11 millimeters (7/16 inch) measured, leaving 10 millimeters (6/16 inch).
 - c. Divide 10 millimeters (6/16 inch) by 2 to get 5 millimeters (3/16 inch).
 - d. Loosen the set screw at the square head and push the blade forward 5 millimeters (3/16 inch) and retighten it.
19. Put the straight edge against the face of the aluminum flange.



NOTE: Make sure that the coupling stays flush with the flange.

20. Put the adjustable square head against the straight edge with the ruler pointing towards the compressor.
21. Move the Coupling Assembly in and out carefully until the correct depth is achieved.

22. Tighten the 10 inner cap screws lightly in a circular pattern with an 8-millimeter hex key wrench/socket. Tighten the cap screws as much as possible until the Coupling Assembly begins to turn (Figure 13).



NOTE: Be careful when tightening the cap screws. Make sure that the hub does not move.

23. Remove the flange from the rubber element and set it aside carefully.
24. Attach the rubber element by either putting a hammer between the element and the power pack base or with a small chain and two cap screws. Put the chain through the inspection hole, wrap the chain to the element, and attach it with a cap screw (Figure 13).
25. Torque all 10 inner ring cap screws to 69 Newton meters (51 foot-pounds) dry in a circular pattern with the torque wrench.



NOTE: This step can take multiple tightening sequences to achieve the final torque value.

26. Put the flange on the back of the flywheel and align the cap screw holes.
27. Insert the cap screws with the washers that were removed during removal (Figure 12).
28. Hand tighten all 12 cap screws in the following sequence:
 - a. Torque all 12 cap screws to 122 Newton meters (90 foot-pounds) dry in a criss-cross pattern (Figure 16).
 - b. Torque to a final value of 156 Newton meters (115 foot-pounds) dry in the same crisscross pattern (Figure 16).

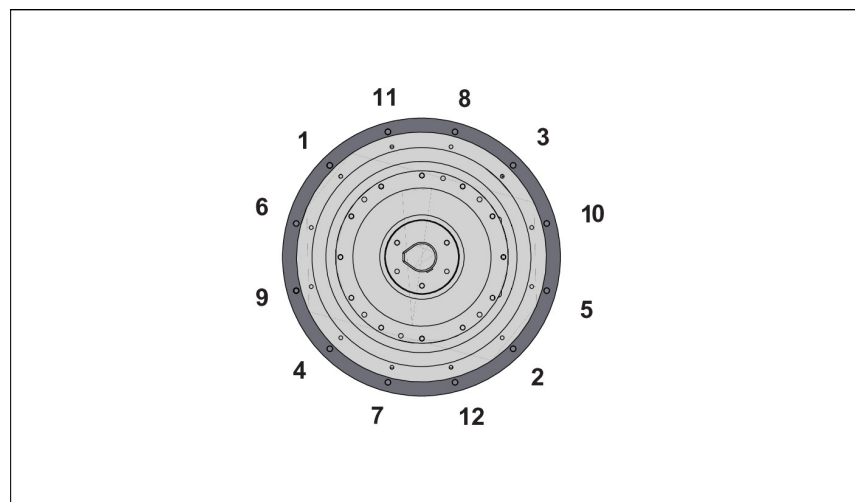


Figure 16

⚠ WARNING**Crushing Hazard**

Can cause personal injury.

- ▶ Lifting equipment must be adequately sized, have the correct lifting capacity, and be in good condition.
- ▶ Be careful when lifting heavy components.

29. Hoist the service crane slightly to support all of the weight of the compressor.



NOTE: *If a new or remanufactured compressor is being installed, refer to High-Pressure Air Compressor Removal and Installation, or refer to Low-Pressure Air Compressor Removal and Installation, for shimming and new compressor installation.*

30. Loosen the four cap screws below the power pack frame that connect the cross member bracket (Figure 11).

⚠ WARNING**Pinch Points**

Can cause serious injury.

- ▶ Be careful with the pinch points created by the two mounting surfaces.

31. Move the compressor into the flywheel housing.
32. With the compressor that is pressed against the engine, do the following steps:
- a. Insert a small pry bar through the side access port.
 - b. Rotate the rubber element and guide it into the flange.

⚠ WARNING**Pinch Points**

Can cause severe injury

- ▶ Do not turn or align the rubber element with your fingers.
- ▶ Keep your fingers away from the compressor.
- ▶ Keep your hand on the top of the compressor or flywheel housing when guiding it.

33. From the compressor side, insert the cap screws into the flywheel housing (Figure 8). Torque the cap screws to 41 Newton meters (30 foot-pounds) dry.
34. With the compressor torqued correctly, make sure that the rubber element is fully seated with the rubber element recessed approximately 5 millimeters (3/16 inch) into the flange.

35. Tighten and torque the four cross-member cap screws to 340 Newton meters (250 foot-pounds) dry that were loosened in step 30.



NOTE: *Shimming can be necessary for either of the following conditions:*

- A cross member is removed from the power pack base and the shims fall out.
- A new or remanufactured compressor is being installed which could have different mounting characteristics. See steps 36 to 38 if necessary.



NOTE: *With the compressor bolted up to the engine and the cross-member that is firmly bolted to the compressor, the ends of the cross-member must lay flat on the power pack base.*

36. Add shims if there is a gap on one or both sides of the compressor.



NOTE: *The shim set includes various thicknesses. It is highly recommended to have at least three shim sets available to complete this task.*

37. Try different combinations of shims until there is a tight fit and no gap. Once this action is accomplished, add one 8 millimeter (0.30 inch) shim to the combination.
38. Pry up the cross-member slightly with a pry bar enough to slide the shims into place. Do not cover the cap screw hole.
39. Insert the mounting cap screws and the associated hardware that were removed and torque the cap screws to 203 Newton meters (150 foot-pounds) dry.
40. Install the compressor access covers and the engine rotation access cover (Figure 7).
41. Install all of the piping and other removed components in the reverse order as they were removed (Figure 4).

NOTICE

Component Damage

Failure to obey the instruction can cause component failure.

- ▶ Position the discharge check valve correctly with the flow towards the receiver tank.



NOTE: *When installing the hose clamp for the discharge hose to the receiver tank, refer to the manufacturer's information that is supplied with the clamps for clamp installation process and torque values.*



NOTE: Do not reuse the discharge hose clamps once they are removed. Replace them with new clamp.

7 Testing the Compressor Coupling Operation



NOTE: After completing the installation section of this instruction, the component is installed but possibly not ready to operate. A trained machine specialist must proceed with a commissioning start-up procedure to make sure that the machine system status is correct for start-up and all machine safety and functional requirements are met. Refer to the machine-specific manuals for information about machine start-up requirements.



NOTE: Make sure that the work area is clean, free of unwanted material, and tools are returned to the designated locations.



CAUTION

Environmental Contaminant

Oil is an environmental contaminant and must be discarded correctly.

- ▶ Do not let the used oil drain onto the ground.
- ▶ Obey all local standards and regulations for discarding the used oil.

1. Remove the container and discard the used oil in accordance with local environmental regulations.
2. Add compressor oil.



NOTE: Refer to *Change the Compressor Oil and Filters in the Maintenance manual*.



WARNING

High Pressure

High-pressure cleaning with compressed air, water jets, or steam cleaning methods can cause personal injury.

- ▶ Put on applicable personnel protective clothing to protect eyes and exposed parts of the body.
- ▶ Maximum air pressure at the nozzle must be less than 207 kPa (30 psig) for cleaning purposes.

- Clean the machine with a pressure washer to remove oil and grease.

⚠ WARNING**Energized Machine**

Can cause serious injury.

- ▶ The machine must be fully energized and the engine must be switched on to complete this procedure.
- ▶ Be careful around moving parts and pinch points.

- Inform the supervisor, lead hand, and all other persons concerned of the intent to restart the machine for testing purposes.



NOTE: Make sure that all personnel and bystanders are clear of the machine before start-up.

- Remove the safety locks and tags from the machine in accordance with the site-specific procedures or refer to Safety Locks and Tags Minimum Requirements in the Maintenance manual.
- Start the machine.
- Operate the engine at idle speed.
- Do a leak check. Repair the leak, if necessary.
- Operate the engine at high idle speed.
- Start the compressor and make sure that it is fully functional and operating correctly.



NOTE: Refer to the OEM manual, if necessary.

- Fill all of the fluids to their correct levels.

9 Procedure Report

Use the report to document all of the installation specifications such as torques and pressures.

The report must be completed, signed, and stored to use as a record, if settings or installation conditions require verification. Include photos where necessary.

9.1 Machine / Component Details

Service Order Number:

Machine Model:

Machine Number:

Machine Serial Number:

Machine Hours:

Component Model:

Component Serial Number:

Technician Name:

Technician Signature:

9.2 Task Specifications

Use this section to record installation specifications such as torques and pressures.

Ref Step	Installation Step and Description	Value
9	Flange cap screws	
25	Inner ring cap screws	
28a	Flywheel cap screws	
28b	Flywheel cap screws final torque value	

Ref Step	Installation Step and Description	Value
33	Flywheel housing cap screws	
35	Cross-member cap screws	
39	Mounting cap screws	

