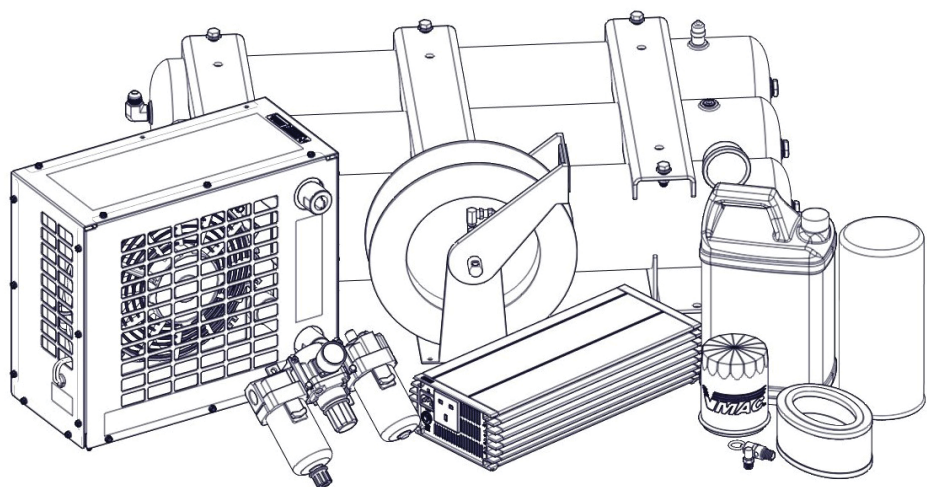




## Installation Manual for VMAC Accessory

A700303 | A700304  
A700347 | A700350 | A700351

Front Cover Repair Kit  
Compatible With VMAC VR 40 Airends  
Equipped with 85 mm Clutch.

**[www.vmacair.com](http://www.vmacair.com)**



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| Revision | Revision Details                     | Revised by | Checked by |       |       |       | Implemented  |
|----------|--------------------------------------|------------|------------|-------|-------|-------|--------------|
|          |                                      |            | Eng.       |       | Tech. | Qual. |              |
|          |                                      |            | Mech.      | Elec. |       |       |              |
| A        | Initial Release                      | MSP        | BoJ        | N/A   | DSB   | LPH   | 3 Sept. 2020 |
| B        | ECN 25-065 Application clarification | BDJ        | GJM        | N/A   | MSP   | N/A   | 11 June 2025 |

Additional Application Information

- The A700303 and A700304 Front Cover Repair Parts kit is compatible with VMAC VR 40 airends equipped with 85 mm clutch, from systems using the legacy electronic control system.
- The A700347, A700350, and A700351 Front Cover Repair Parts Kits are compatible with VMAC VR 40 airends equipped with 85 mm clutch, from systems using the Advanced Digital Controls (ADC) system.

Important Information

The information in this manual is intended for certified VMAC installers who have been trained in installation and service procedures and/or for anyone with mechanical trade certification who has the tools and equipment to properly and safely perform the installation or service. Do not attempt installation or service without the appropriate mechanical training, knowledge and experience.

Follow all safety precautions. Any fabrication for correct fit in modified vehicles must follow industry standard "best practices".

Notice

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Printed in Canada

# Safety

## Important Safety Notice

The information contained in this manual is based on sound engineering principles, research, extensive field experience and technical information. Information is constantly changing with the addition of new models, assemblies, service techniques and running OEM changes. If a discrepancy is found in this manual, contact VMAC Technical Support prior to initiating or proceeding with installation, service or repair. Current information may clarify the issue. Anyone with knowledge of such discrepancies, who proceeds to perform service and repair, assumes all risks.

Only proven service procedures are recommended. Anyone who departs from the specific instructions provided in this manual must first ensure that their safety and that of others is not being compromised, and that there will be no adverse effects on the operational safety or performance of the equipment.

VMAC will not be held responsible for any liability, consequential damages, injuries, loss or damage to individuals or to equipment as a result of the failure of anyone to properly adhere to the procedures set out in this manual or standard safety practices.

Safety should be the first consideration when performing any service operations. If there are any questions concerning the procedures in this manual, or more information is required, please contact VMAC Technical Support prior to beginning work.

## Safety Messages

This manual contains various warnings, cautions and notices that must be observed to reduce the risk of personal injury during installation, service or repair and the possibility that improper installation, service or repair may damage the equipment or render it unsafe.



***This symbol is used to call attention to instructions concerning personal safety. Watch for this symbol; it points out important safety precautions, it means, "Attention, become alert! Your personal safety is involved". Read the message that follows and be aware of the possibility of personal injury or death. As it is impossible to warn of every conceivable hazard, common sense and industry standard safety practices must be observed.***



***This symbol is used to call attention to instructions on a specific procedure that if not followed may damage or reduce the useful life of the compressor or other equipment.***



***This symbol is used to call attention to additional instructions or special emphasis on a specific procedure.***

# Warranty

## VMAC Standard Warranty (Limited)

For complete warranty information, including both VMAC Standard Warranty (Limited) and VMAC Lifetime Warranty (Limited) requirements, please refer to our current published warranty located at: [www.vmacair.com/warranty](http://www.vmacair.com/warranty)



If you do not have access to a computer, please contact us and we will be happy to send you our warranty.

VMAC's warranty is subject to change without notice.

## VMAC Lifetime Warranty (Limited)

A VMAC Lifetime Limited Warranty is offered on the base air compressor only and only on UNDERHOOD, Hydraulic Driven, Transmission Mounted, Gas and Diesel Engine Driven Air Compressors, Multifunction Power Systems, and other products as defined by VMAC, provided that (i) the purchaser fully completes and submits a warranty registration form within 3 months



of purchase, or 200 hours of operation, whichever occurs first; (ii) services are completed in accordance with the Owner's Manual; (iii) proof of purchase of applicable service kits are made available to VMAC upon request.

The VMAC Lifetime Warranty is applicable to new products shipped on or after 1 October, 2015.

## Warranty Registration

The VMAC warranty registration form is located near the back of this manual. This warranty registration form must be completed and sent to VMAC at the time of installation for any subsequent warranty claim to be considered valid.

There are 4 ways the warranty can be registered with VMAC:



[www.vmacair.com/warranty](http://www.vmacair.com/warranty)



[warranty@vmacair.com](mailto:warranty@vmacair.com)



(877) 740-3202



VMAC - Vehicle Mounted Air Compressors

1333 Kipp Road, Nanaimo, BC, Canada V9X 1R3

## VMAC Warranty Claim Process



*VMAC warranty work must be pre-authorized by VMAC. Claims are processed via our dealer network. If you are not a VMAC dealer, please select one to work with via our Dealer Locator:*  
<https://www.vmacair.com/dealer-locator/>



- 1) Communicate with VMAC Technical Support at [\(888\) 241-2289](tel:8882412289) or [tech@vmacair.com](mailto:tech@vmacair.com) to help diagnose/troubleshoot the problem prior to repair. VMAC technical support will require the VMAC System ID, and hours on the compressor.
- 2) VMAC will provide direction for repair or replacement of the failed components.
- 3) If requested, failed parts must be returned to VMAC for evaluation.
- 4) Dealers may login to the VMAC website to view the "VMAC Labour Time Guide" (under "Agreements") to see the allowable warranty labour times.
- 5) Warranty invoices must include the Service Ticket number, VMAC System ID#, hours on the compressor, and a detailed description of the work performed.
- 6) VMAC Warranty does not cover consequential damages, loss of income, overtime charges, mileage, travel time, towing/recovery, cleaning or shop supplies.
- 7) Dealers submit warranty claims on behalf of the Vehicle Owner/End User affected by the defective part(s). The dealer ensures that all warranty credits are refunded back to the Vehicle Owner/End User who made the initial warranty claim.



***In order to qualify for Lifetime Warranty (Limited), the completed warranty registration form must be received by VMAC within 3 months of the buyer receiving the Product(s), or 200 hours of operation, whichever occurs first.***

***If the completed warranty registration form has not been received by VMAC within 3 months of the buyer receiving the Product(s), or 200 hours of operation, the "Standard" warranty period will be deemed to commence 30 days from the date of shipment from VMAC.***

***Failure to follow the warranty claim process may result in denial of the warranty claim.***

VMAC Product Warranty Policies & Warranty Registration can be found on the VMAC website (see previous page for URL).

# General Information

## Optional Equipment Compatibility

While VMAC strives to design systems compatible with optional OEM equipment (such as running boards), it is impractical to develop systems that accommodate every OEM and aftermarket option or add-on. Whenever possible, VMAC endeavors to advise of compatibility issues in the "Additional Application Information" section of the manual. Even when specific optional equipment is determined by VMAC to be incompatible, it does not preclude the vehicle upfitter or end user from modifying the optional equipment to make it compatible with the installed VMAC system. VMAC does not warranty or accept responsibility or liability for the fitment, function or safety of any products modified in any way not expressly outlined in the installation manual.

## Before Starting

Read this manual prior to beginning the installation to ensure familiarity with the components and how they will fit on the vehicle. Identify any variations from the application list such as vehicle model, engines, or optional equipment (e.g., dual alternator, active steering assist, etc.).

Open the package, unpack the components and identify them using the Illustrated Parts List (IPL) included in the Fastener Pack.

## Hose Information

Depending on other installed equipment, it might be necessary to move the air/oil separation tank from its intended location. The hoses used in VMAC compressor systems have a specific inner liner that is compatible with VMAC compressor oil. Use of hoses other than those supplied or recommended by VMAC may cause compressor damage and may void your warranty. Replacement hoses can be ordered from a VMAC dealer or sourced locally. Refer to this Knowledge Base article for compatible hoses: [EXT-ALL-010-Required-VMAC-Hoses.pdf](#)

## Ordering Parts

To order parts, contact a VMAC dealer. The dealer will ask for the VMAC serial number, part number, description and quantity. Locate the nearest dealer online at [www.vmacair.com/dealer-locator](http://www.vmacair.com/dealer-locator) or call (877) 912-6605.



# Special Tools Required

Front Cover Installation Tool (P/N: 5300082) (Included with this kit).

## Torque Specifications

All fasteners must be torqued to specifications. Use manufacturers' torque values for OEM fasteners.

The torque values supplied in Table 1 are intended for VMAC supplied components, or for use as a guide in the absence of a torque value provided by an OEM.



*Apply Loctite 242 (blue) to all fasteners (except nylon lock nuts) unless otherwise stated.*

Torque values are with Loctite applied unless otherwise specified.

| Standard Grade 8 National Coarse Thread |     |      |     |      |     |      |     |     |
|-----------------------------------------|-----|------|-----|------|-----|------|-----|-----|
| Size (in)                               | 1/4 | 5/16 | 3/8 | 7/16 | 1/2 | 9/16 | 5/8 | 3/4 |
| Foot pounds (ft•lb)                     | 9   | 18   | 35  | 55   | 80  | 110  | 170 | 280 |
| Newton meter (N•m)                      | 12  | 24   | 47  | 74   | 108 | 149  | 230 | 379 |

| Standard Grade 8 National Fine Thread |     |      |     |     |     |
|---------------------------------------|-----|------|-----|-----|-----|
| Size (in)                             | 3/8 | 7/16 | 1/2 | 5/8 | 3/4 |
| Foot pounds (ft•lb)                   | 40  | 60   | 90  | 180 | 320 |
| Newton meter (N•m)                    | 54  | 81   | 122 | 244 | 434 |

| Metric Class 10.9   |     |    |     |     |     |     |
|---------------------|-----|----|-----|-----|-----|-----|
| Size (mm)           | M6  | M8 | M10 | M12 | M14 | M16 |
| Foot pounds (ft•lb) | 4.5 | 19 | 41  | 69  | 104 | 174 |
| Newton meter (N•m)  | 6   | 25 | 55  | 93  | 141 | 236 |

Table 1 — Torque Table

# Maintenance and Repair Safety



*It is impossible to warn of all the possible hazards that may result from operating, servicing, or repairing this system.*

*Follow all safety precautions and industry standard "best practices"*



- *Wear all appropriate Personal Protective Equipment and follow all industry standard safety practices.*
- *Prior to performing any service, ensure the vehicle transmission is in "PARK" with the parking brake applied and the wheels chocked (if applicable).*
- *Confirm that the system is depressurized and has cooled prior to performing any service work.*
- *Never use flammable solvents to clean any components. If a flammable solvent has been used, rinse the component thoroughly with water and dry it before reinstalling it to prevent the possibility of explosion.*
- *Use only genuine VMAC parts to maintain the system. Genuine VMAC parts are designed to work with the high pressure and heat generated by the compressor. Substituting genuine VMAC parts may void the warranty and could cause equipment damage, injury, or death.*
- *This information is intended for people with mechanical trade certification who have the tools and equipment to properly and safely perform the service or repair. Do not attempt to service or repair this system without the appropriate mechanical training, knowledge and experience.*

## Safety Check List

- ☐ Open the ball valve or connect an air tool to the system to ensure all the stored air is released.
- ☐ Gently pull up on the ring on the pressure relief valve to confirm the system is depressurized



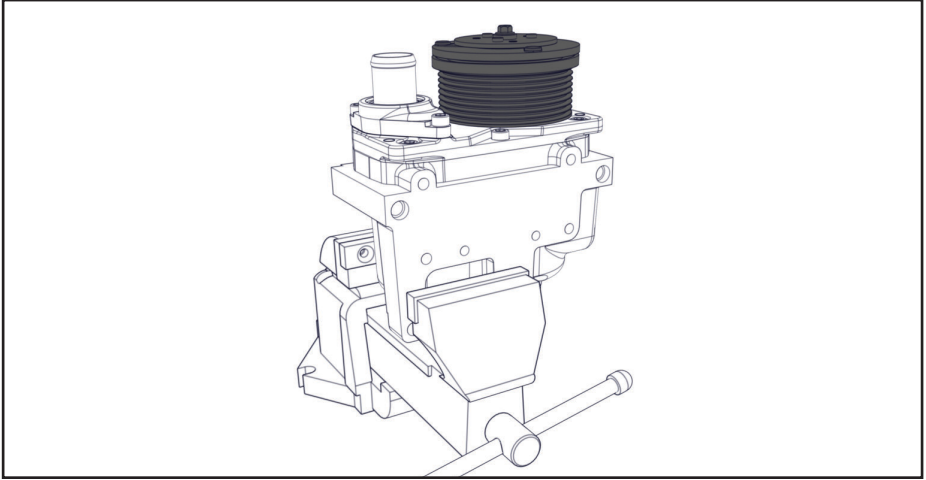
*Do not use the pressure relief valve as a means of depressurizing the compressor system. Doing so will prematurely wear the internal spring or the seat, preventing the valve from maintaining normal system pressure.*

# Disassembly



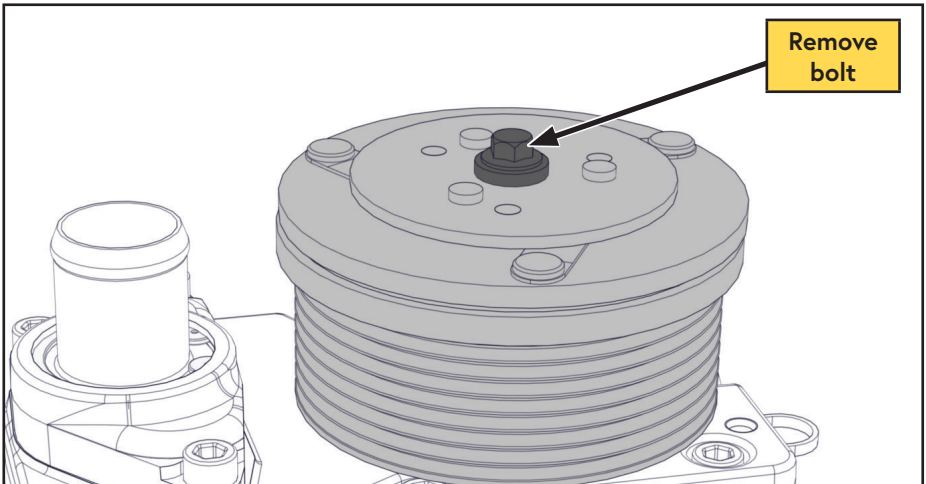
*Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 8). Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.*

- ☐ Remove the compressor from the vehicle and place the compressor in a vice with the clutch facing up (Figure 1).



**Figure 1 — Place compressor in vice**

- ☐ Clean the area around the front cover to prevent debris from entering the compressor.
- ☐ Remove the bolt from the clutch armature (Figure 2).

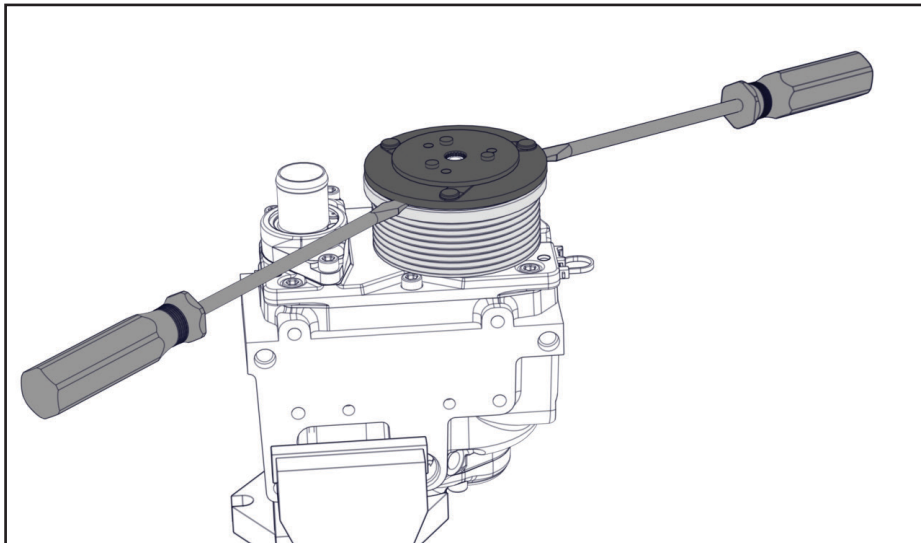


**Figure 2 — Remove clutch bolt**



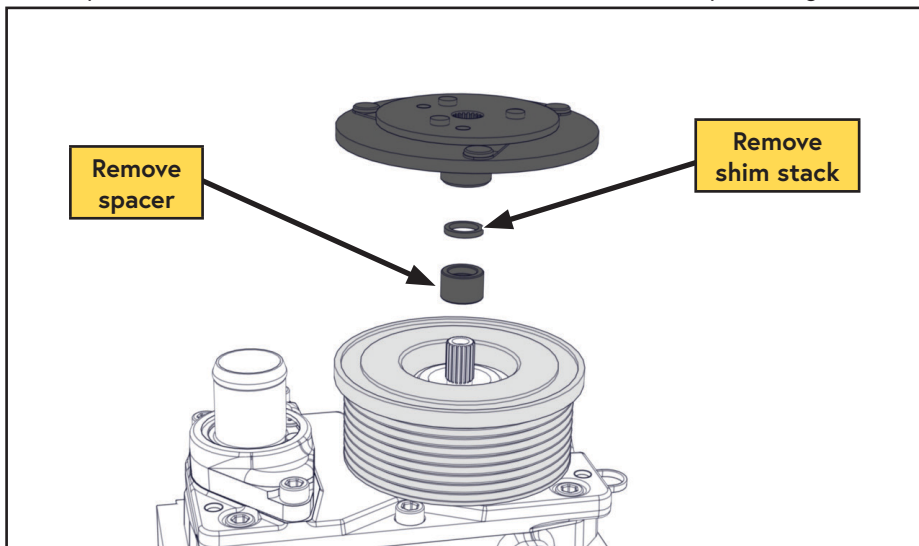
*Use care when prying up on the clutch armature as the shim stack may be stuck to the bottom of the armature.*

- ☐ Using (x2) small flat bladed screwdrivers, pry up on both sides of clutch armature to slide it off of the compressor shaft (Figure 3).



**Figure 3 — Remove clutch armature**

- ☐ Remove the shim stack and spacer from the bottom of the armature and/or the compressor shaft. Set the shim stack aside and discard the spacer (Figure 4).



**Figure 4 — Remove shim stack and spacer**

- ☐ Remove the upper snap ring on the inside of the rotor assembly (Figure 5).

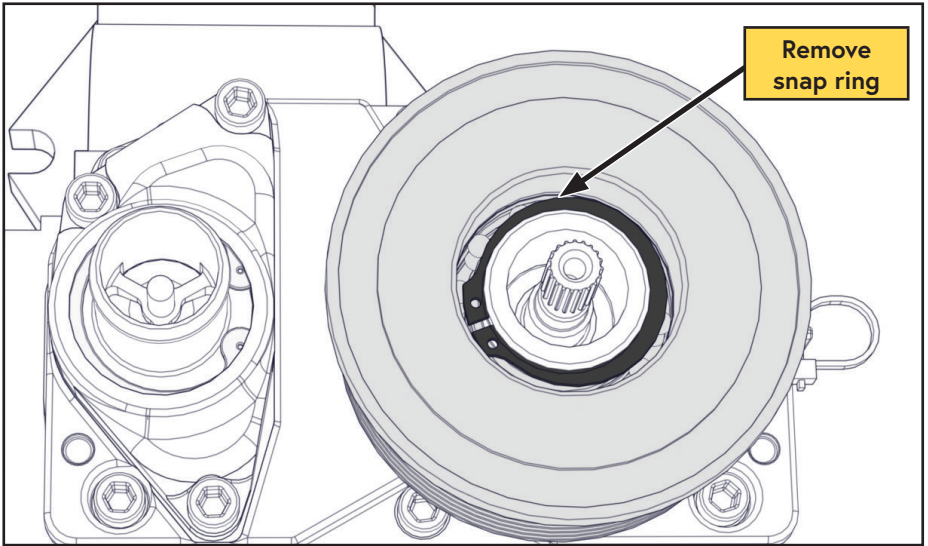


Figure 5 — Remove upper snap ring



***Use care when removing the clutch rotor assembly from the rotor shaft to prevent damaging the rotor shaft splines.***

- ☐ Slide the clutch rotor assembly off of the end of the compressor cover housing.
- ☐ Remove the lower snap ring securing the field coil assembly (Figure 6).

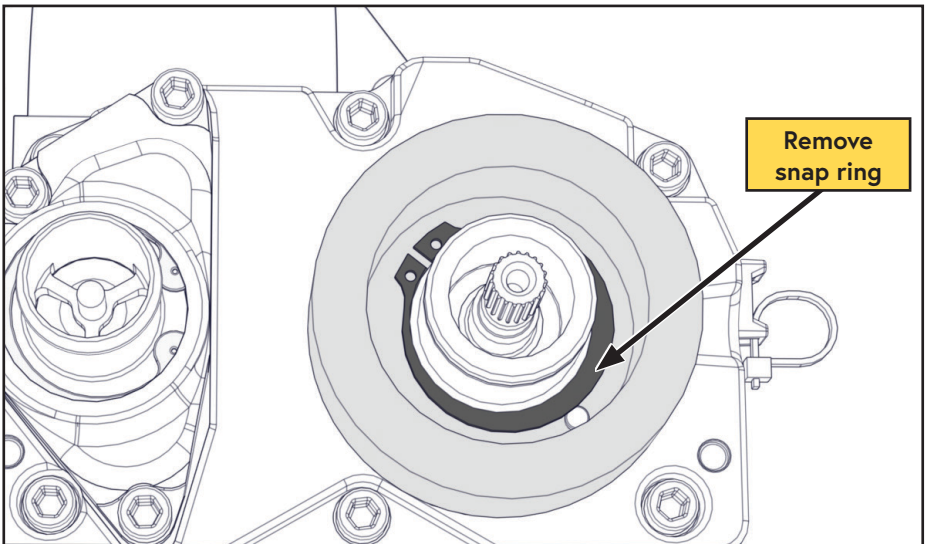
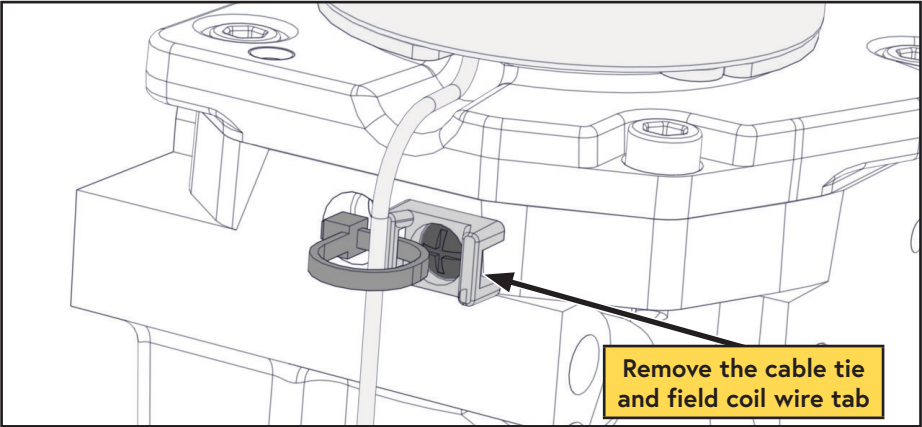


Figure 6 — Remove lower snap ring

☐ Cut the cable tie securing the field coil wire (Figure 7).

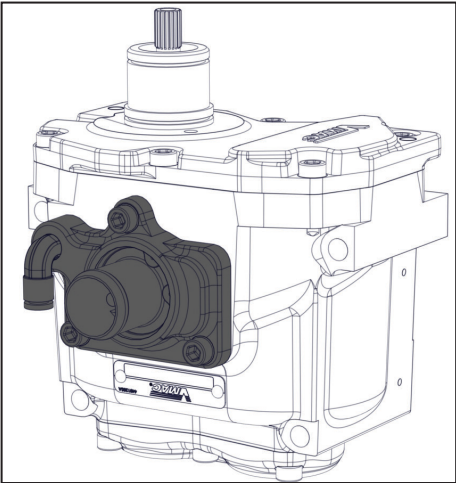


**Figure 7 — Free the field coil wire**

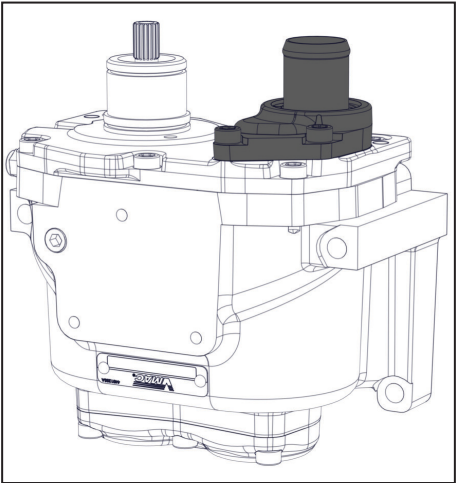
- ☐ Remove the screw securing the cable tie tab on side of compressor; set the screw and tab aside for use later (Figure 7).
- ☐ Remove the field coil.

*Discard all of the old clutch components (except the shim stack) as a complete clutch assembly is included in this kit.*

- ☐ Determine whether the compressor inlet is "top mounted" or "front mounted" (Figure 8).



Top mounted inlet  
A700303 | A700347 | A700350



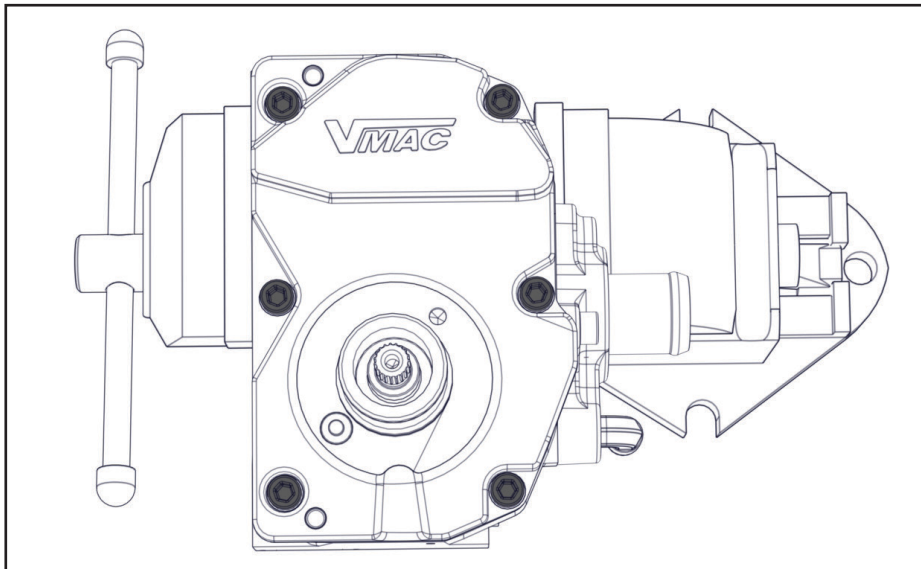
Front mounted inlet  
A700304 | A700351

**Figure 8 — Determine intake orientation**

- ☐ The front mounted inlet instructions continue on page 16

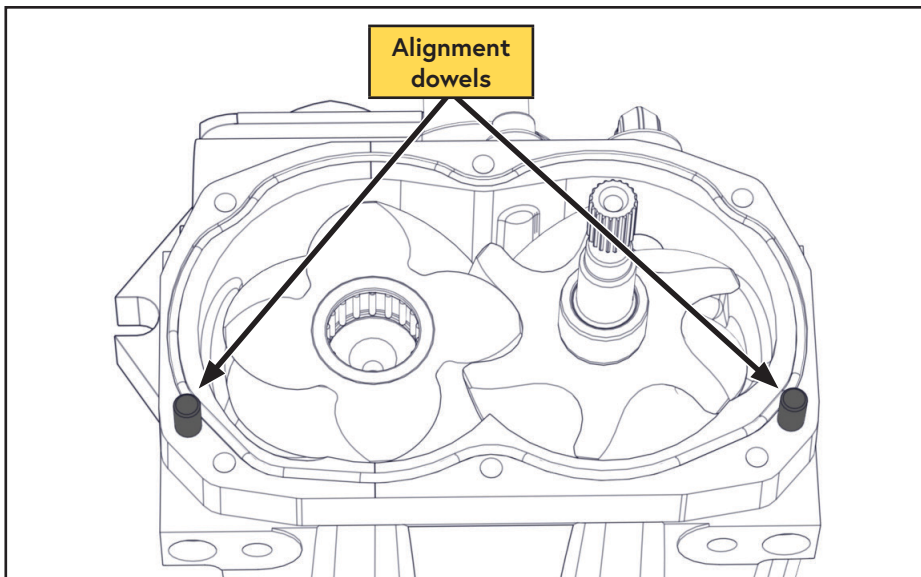
# Top Mounted Inlet Instructions

- ☐ Remove and discard the (x6) fasteners securing the compressor cover (Figure 9).



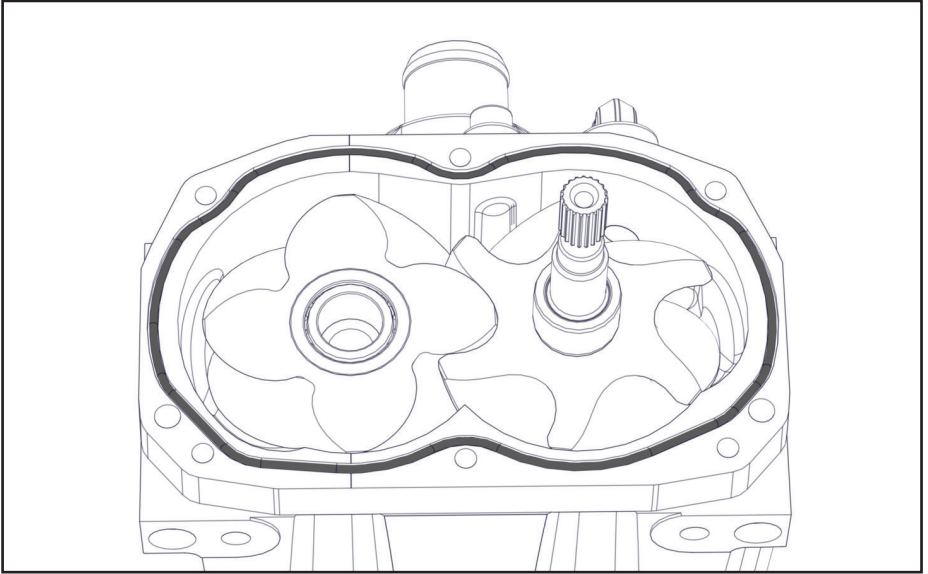
**Figure 9 — Remove front cover fasteners**

- ☐ Using (x2) flat bladed screwdrivers in the appropriate casting slots, pry up on the front cover.
- ☐ Remove and discard the (x2) alignment dowels (Figure 10).



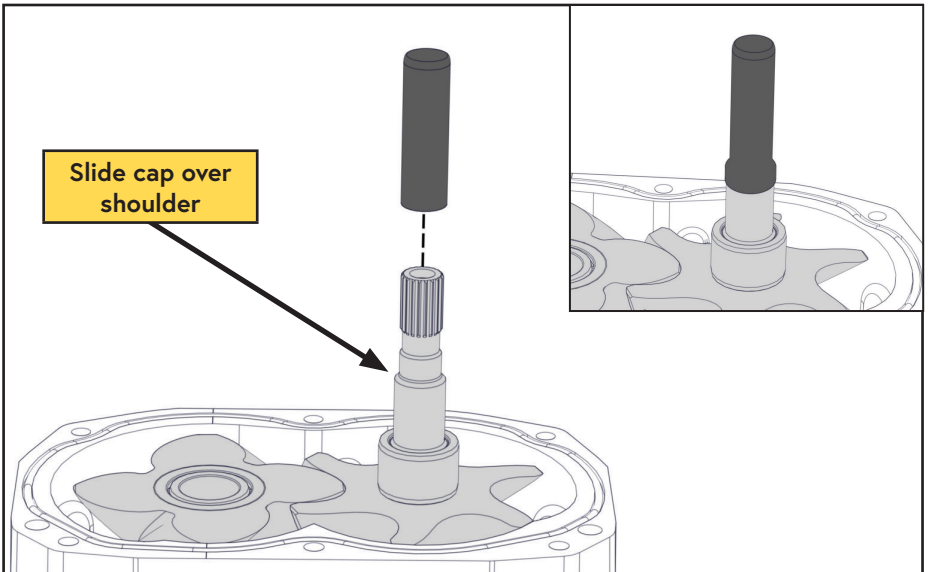
**Figure 10 — Alignment dowels**

- ☐ Remove the front cover O-ring and clean the mating surface of the compressor with a clean cloth.
- ☐ Install the supplied O-ring (Figure 11).



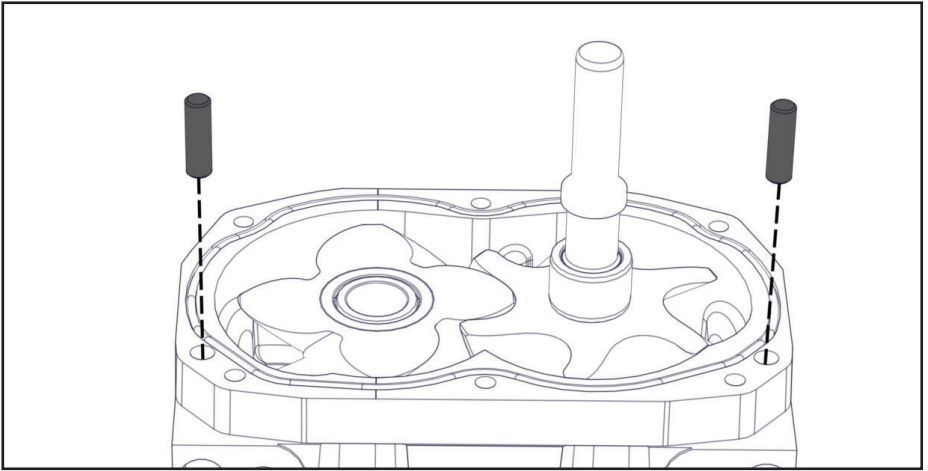
**Figure 11 — Install O-ring**

- ☐ Slide the supplied spline protector cap over the compressor shaft to protect the splines and shaft seal during installation. The spline protector cap must slide over the shoulder of the shaft in order to protect the seal (Figure 12).



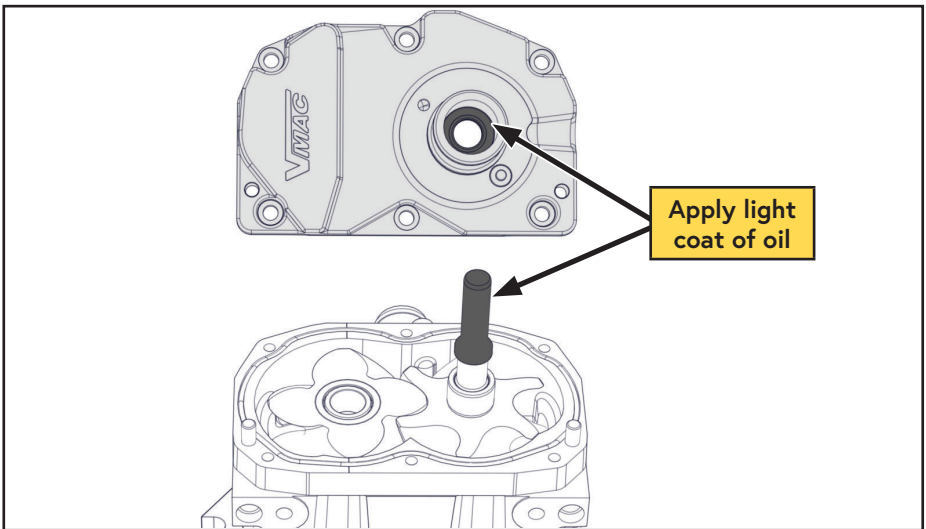
**Figure 12 — Install spline protector cap**

- ☐ Install the supplied alignment dowels into the compressor (Figure 13).



**Figure 13 — Install supplied alignment dowels**

- ☐ Apply a thin film of oil to the spline protector cap and shaft seal (Figure 14).



**Figure 14 — Lubricate seal and spline protector cap**

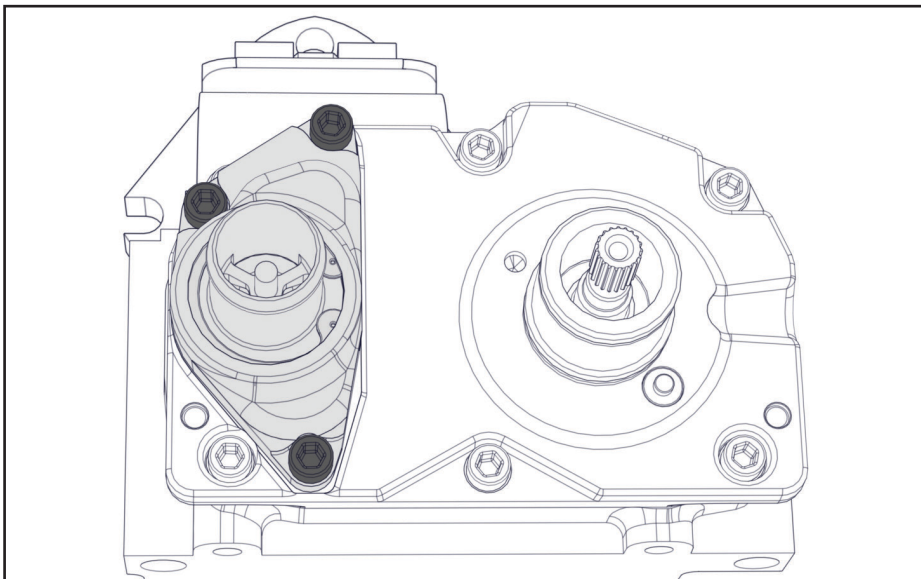
- ☐ Slide the front cover over the compressor shaft and alignment dowels; gently tap the cover into place.
- ☐ Apply Loctite 242 (blue) to the (x6) front cover fasteners and install them into the front cover. Torque the fasteners to specification in a cross pattern.
- ☐ Remove the spline protector cap from the compressor shaft.



*The remainder of the installation instructions can be found on page 21.*

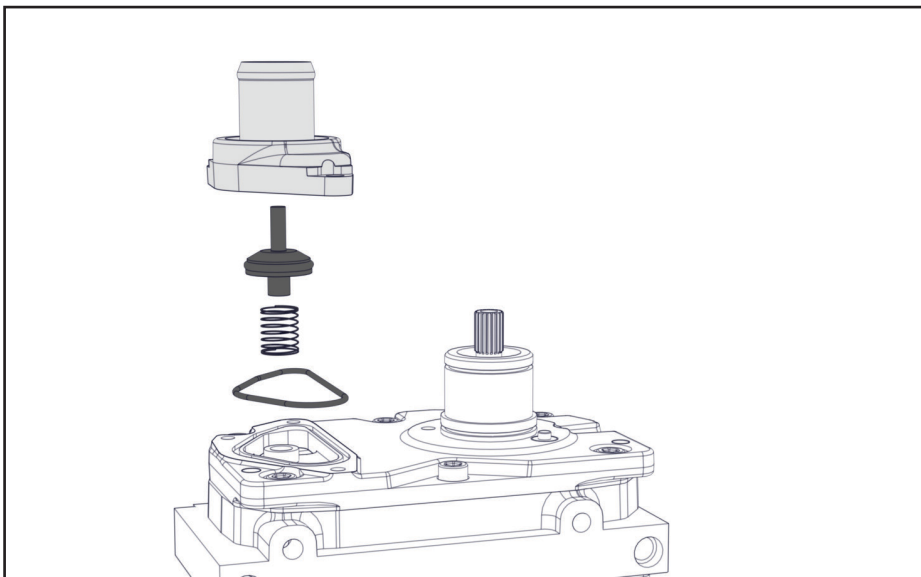
## Front Mounted Inlet Instructions

- ☐ Remove the (x3) fasteners securing the inlet to the compressor cover and set them aside for reinstallation later (Figure 15).



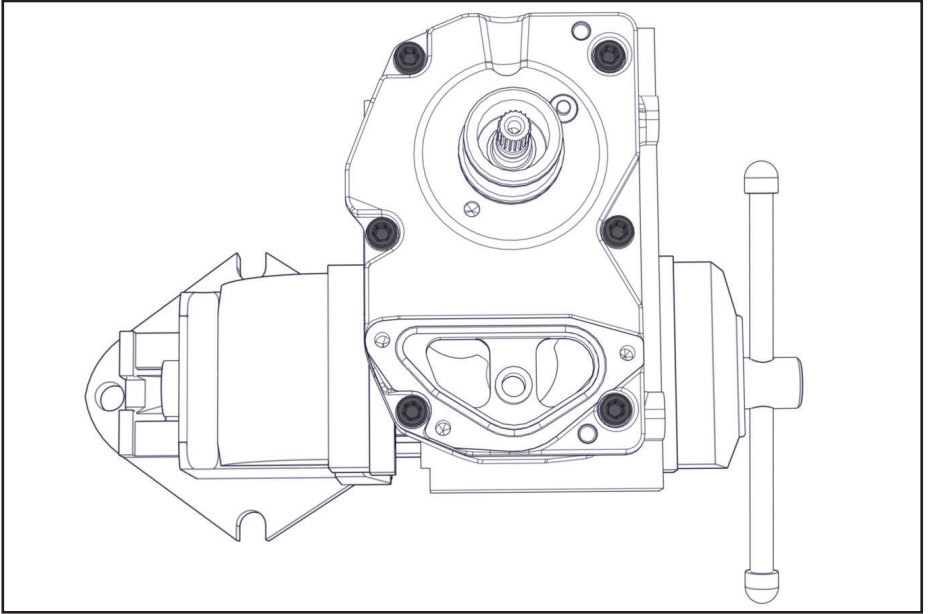
**Figure 15 — Remove front cover fasteners**

- ☐ Remove the inlet assembly (including the spring, poppet, and O-ring) and set it aside for reinstallation later (Figure 16).



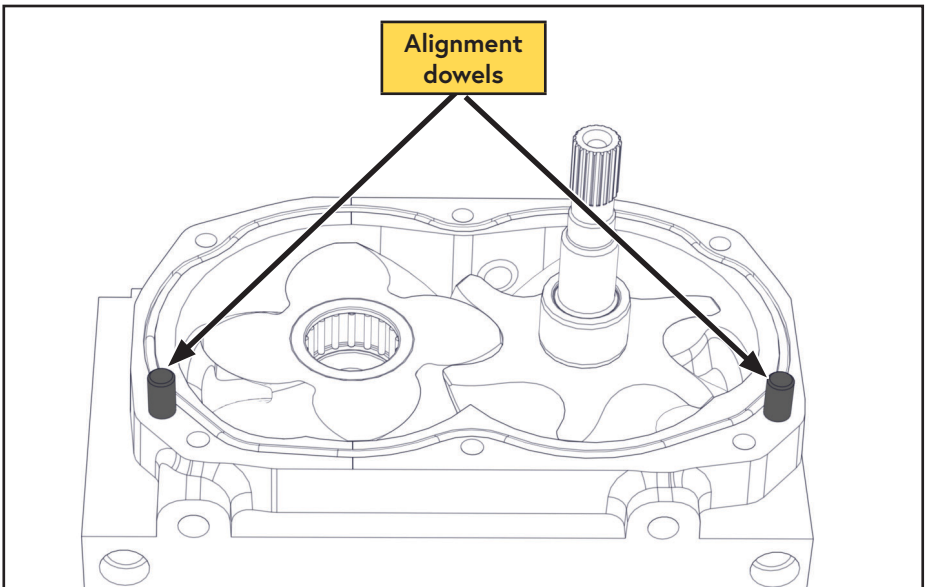
**Figure 16 — Remove front cover fasteners**

- ☐ Remove and discard the (x6) fasteners securing the compressor (Figure 17).



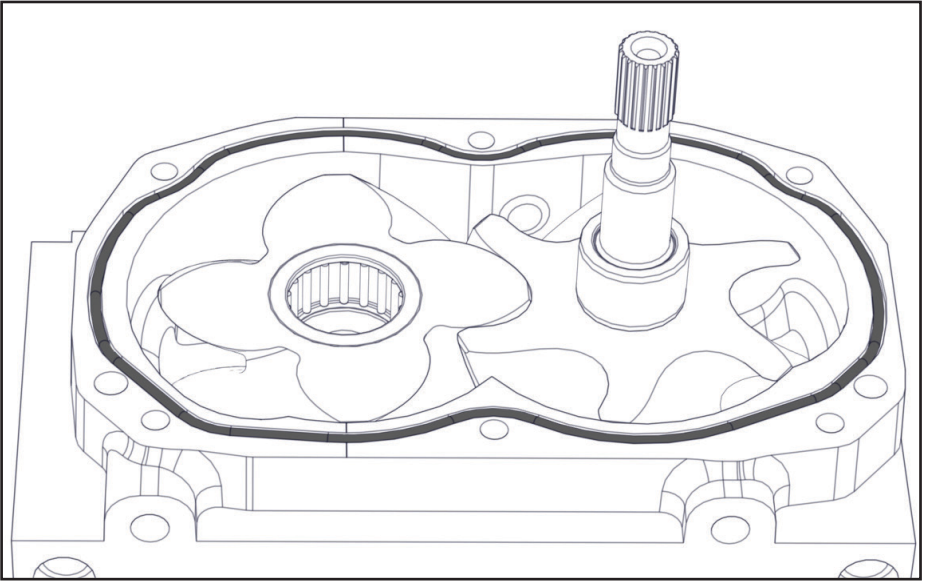
**Figure 17 — Remove front cover fasteners**

- ☐ Using (x2) flat bladed screwdrivers in the appropriate casting slots, pry up on the front cover.
- ☐ Remove and discard the (x2) alignment dowels (Figure 18).



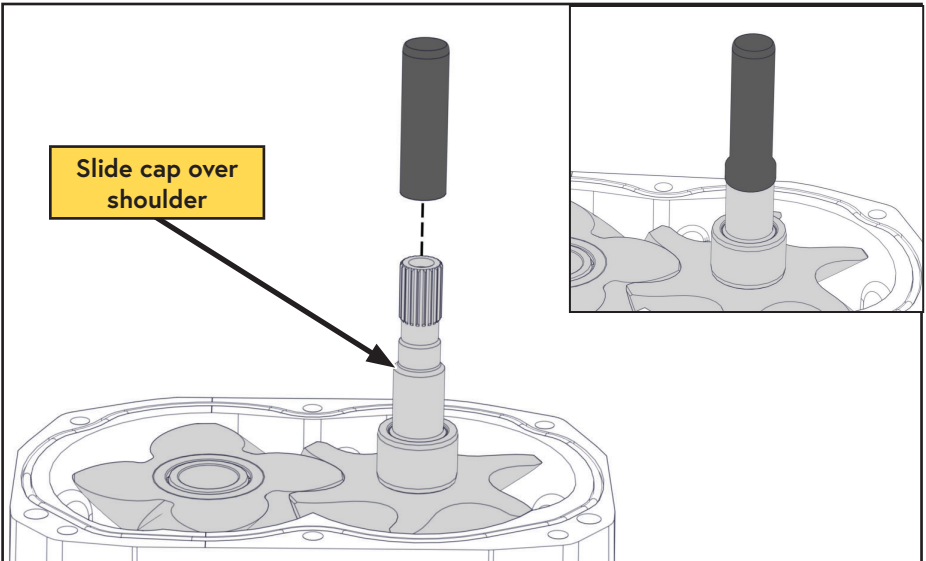
**Figure 18 — Alignment dowels**

- ☐ Remove the front cover O-ring and clean the mating surface of the compressor with a clean cloth.
- ☐ Install the supplied O-ring (Figure 19).



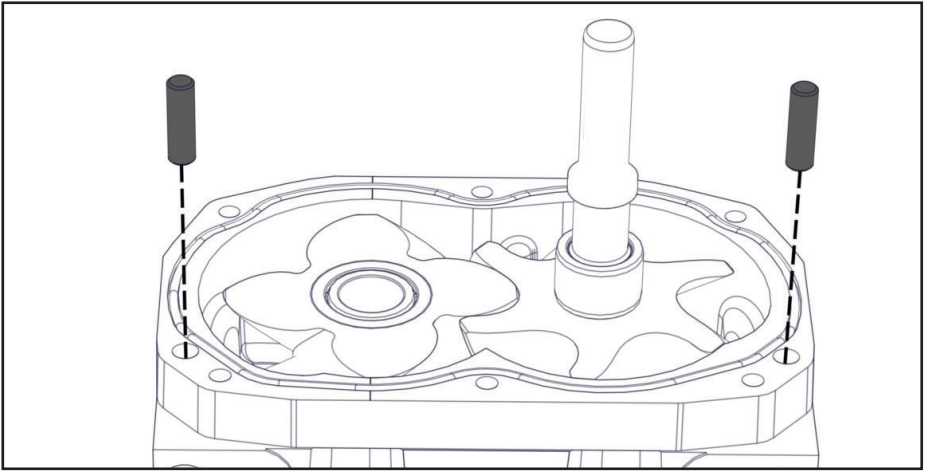
**Figure 19 — Install O-ring**

- ☐ Slide the supplied spline protector cap over the compressor shaft to protect the splines and shaft seal during installation. The spline protector cap must slide over the shoulder of the shaft in order to protect the seal (Figure 20).



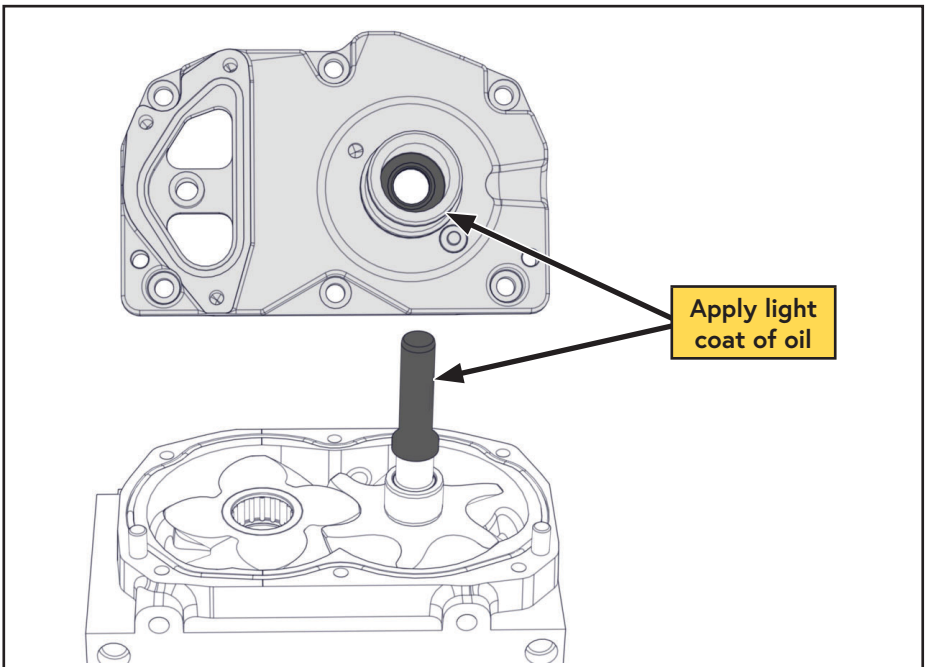
**Figure 20 — Install front cover installation tool**

- ☐ Install the supplied alignment dowels into the compressor (Figure 21).



**Figure 21 — Install supplied alignment dowels**

- ☐ Apply a thin film of oil to the spline protector cap and shaft seal (Figure 22).



**Figure 22 — Lubricate seal and spline protector cap**

- ☐ Slide the front cover over the compressor shaft and alignment dowels; gently tap the cover into place.
- ☐ Apply Loctite 242 (blue) to the (×6) front cover fasteners and install them into the front cover. Torque the fasteners to specification in a cross pattern.

- ☐ Install the intake assembly O-ring, and the intake poppet assembly (including the spring and poppet) onto the compressor front cover (Figure 23).

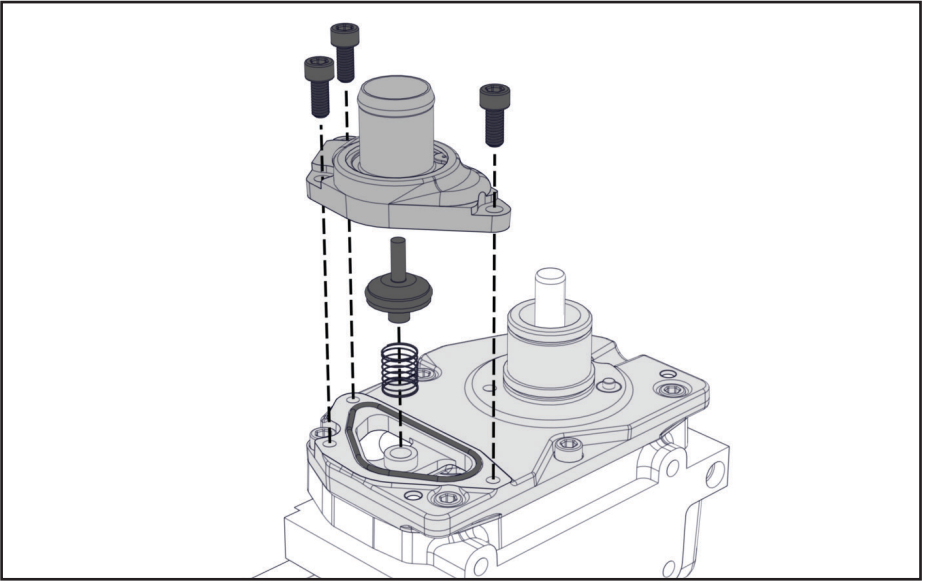


Figure 23 — Install intake assembly

- ☐ Apply Loctite 242 (blue) to the (x3) intake assembly fasteners and install them into the front cover. Torque the fasteners to specification in a cross pattern.



***Cycle the intake poppet several times to ensure the poppet moves freely. If the poppet does not move freely, loosen the front cover bolts, shift the front cover slightly, torque the fasteners and cycle the poppet again.***

- ☐ Press down on the inlet poppet and release it to ensure the poppet closes properly. Cycle the poppet valve in this fashion several times to ensure it operates smoothly (Figure 24).

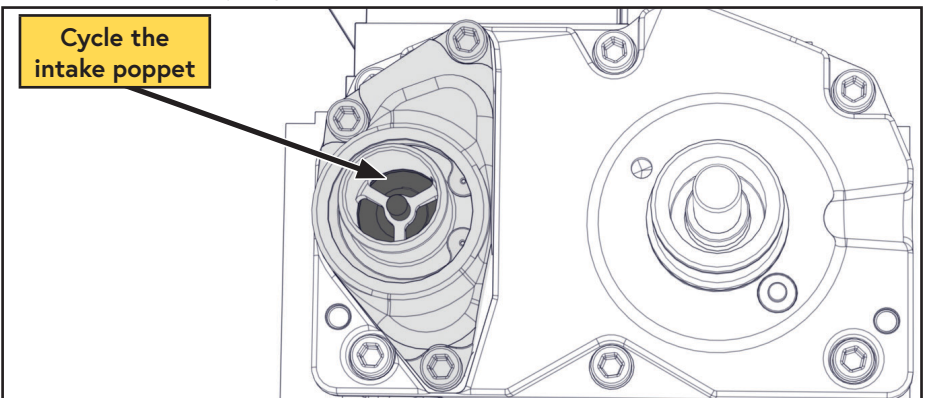


Figure 24 — Cycle the intake poppet

# Completing the Installation



*The figures in this chapter illustrate a compressor with a top mounted inlet however the clutch installations instructions are the same for a compressor with a front mounted inlet.*



***It is imperative that the front cover and field coil alignment pins fully engage into the slots to ensure the clutch will not rotate during use.***

- ☐ Remove the spline protector cap from the compressor shaft.
- ☐ Install the new field coil. Ensure the alignment pins on the field coil and the front cover fully engage in their respective slots. The field coil should not have any rotational movement once it is installed (Figure 25).

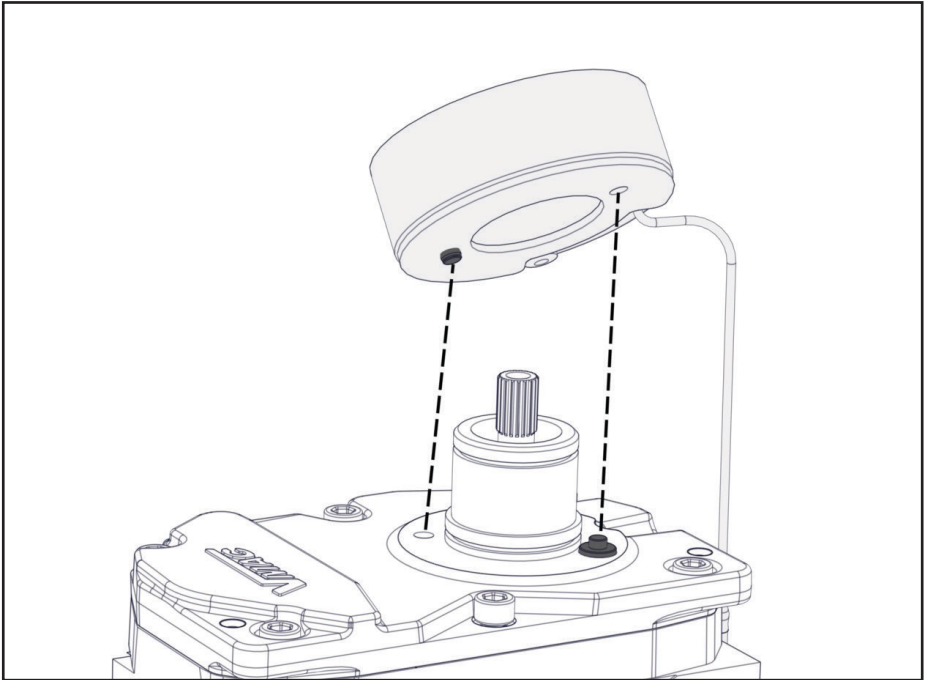
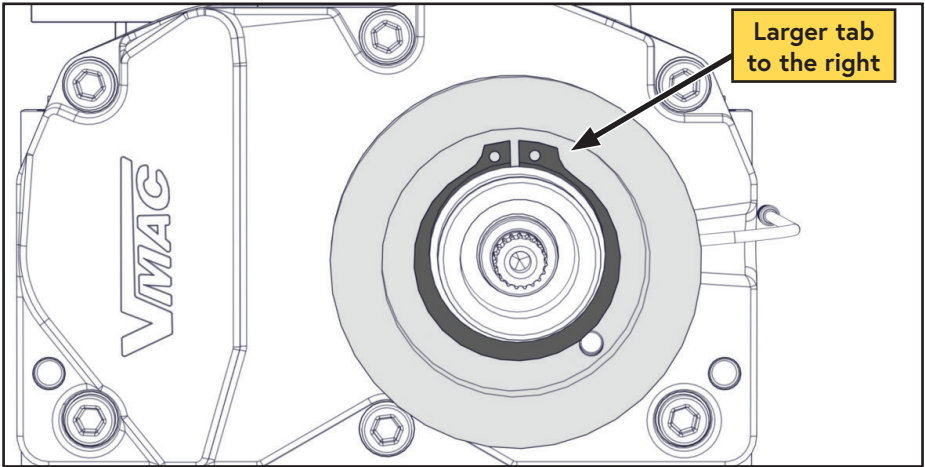


Figure 25 — Install field coil



**The snap ring must be installed in the correct orientation. Ensure the snap ring is installed with the opening at the 12 o'clock position and the larger tab to the right.**

- ☐ Install the lower (larger) snap ring with the opening at the 12 o'clock position and the larger tab to the right (Figure 26).



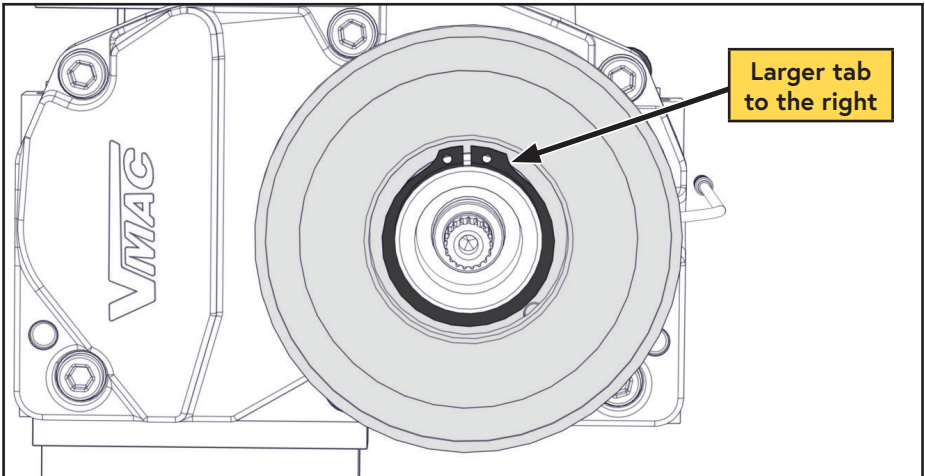
**Figure 26 — Install lower snap ring**

- ☐ Slide the new clutch pulley onto the compressor.



**The snap ring must be installed in the correct orientation. Ensure the snap ring is installed with the opening at the 12 o'clock position and the larger tab to the right.**

- ☐ Install the upper (smaller) snap ring with the opening at the 12 o'clock position and the larger tab to the right (Figure 27).

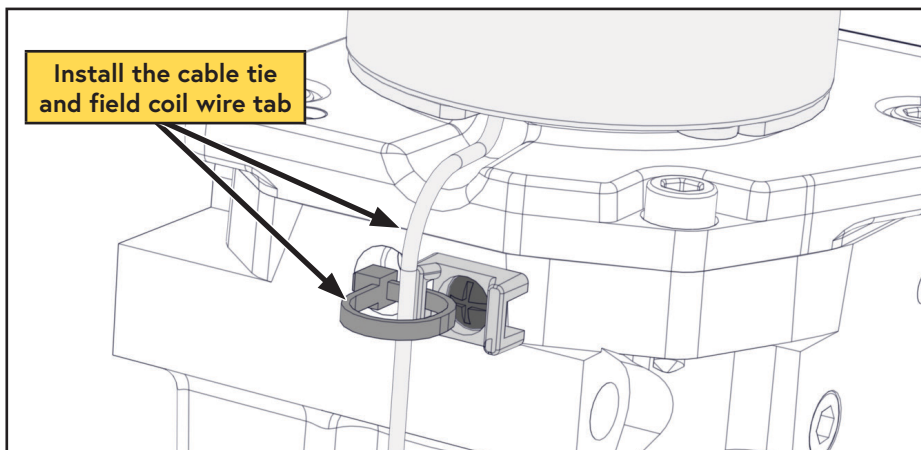


**Figure 27 — Install upper snap ring**



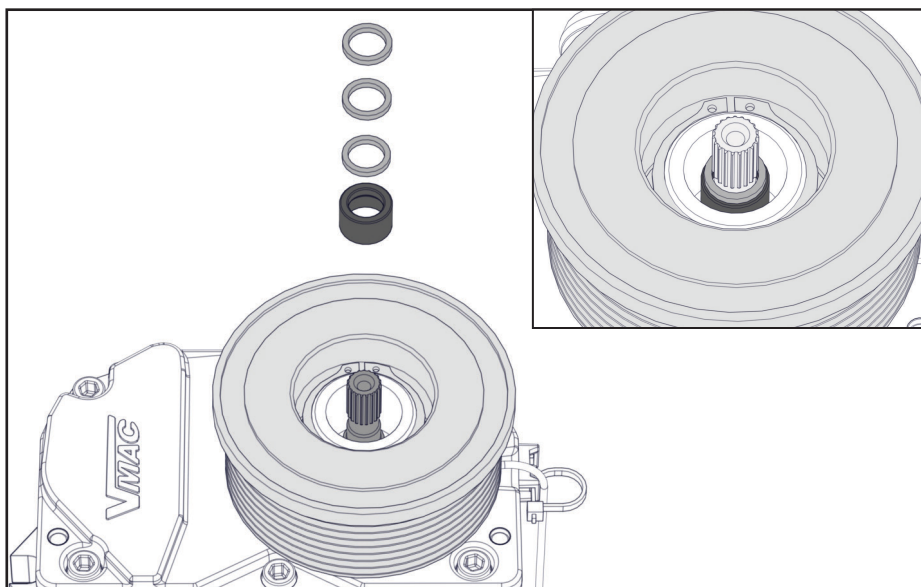
**Ensure the field coil wire is pulled toward the rear of the compressors before cinching the cable tie to ensure it will not contact the clutch pulley .**

- ☐ Secure the field coil wire using a cable tie and the cable tie tab on the side of the compressor (Figure 28).



**Figure 28 — Secure the field coil wire**

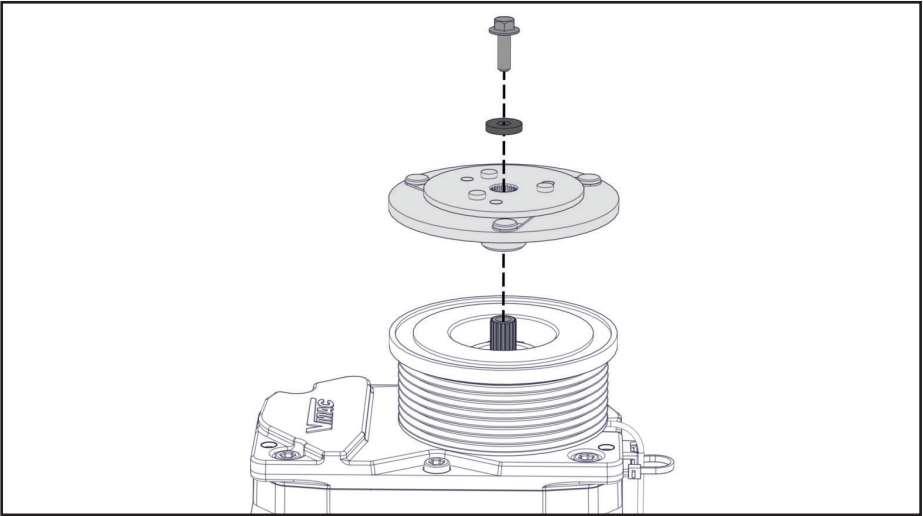
- ☐ Slide the supplied spacer onto the compressor shaft until it rests on the shoulder of the shaft (Figure 29).



**Figure 29 — Install shim pack**

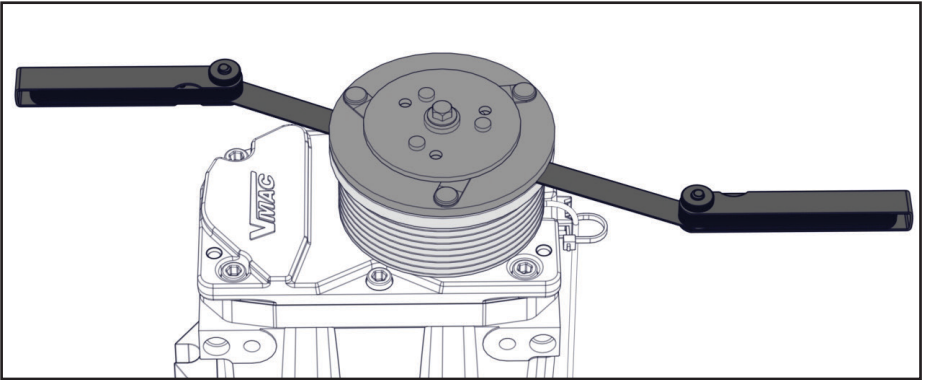
- ☐ Reinstall the shim pack (set aside earlier in the installation) onto the compressor shaft (Figure 29).

- ☐ Align the splines on the armature with the compressor shaft and slide the armature onto shaft. Push the armature down until the armature is fully seated (Figure 30).



**Figure 30 — Install the armature**

- ☐ Install the bolt (do not apply Loctite) and torque it to 54 in•lb (6 N•m).
- ☐ Measure the air gap between the compressor rotor assembly and the armature using (x2) feeler gauges. The gap must measure between 0.016 in (0.4 mm) and 0.023 in (0.6 mm) (Figure 31).



**Figure 31 — Measure air gap**

- ☐ Adjust the shim stack height as necessary using the supplied shims to obtain the appropriate air gap.
- ☐ Remove the bolt, apply Loctite 242 (blue), and reinstall it.
- ☐ Torque the bolt to 54 in•lbs ( 6 N•m).
- ☐ Install the compressor on the vehicle.
- ☐ Start the vehicle and test the compressor system.



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