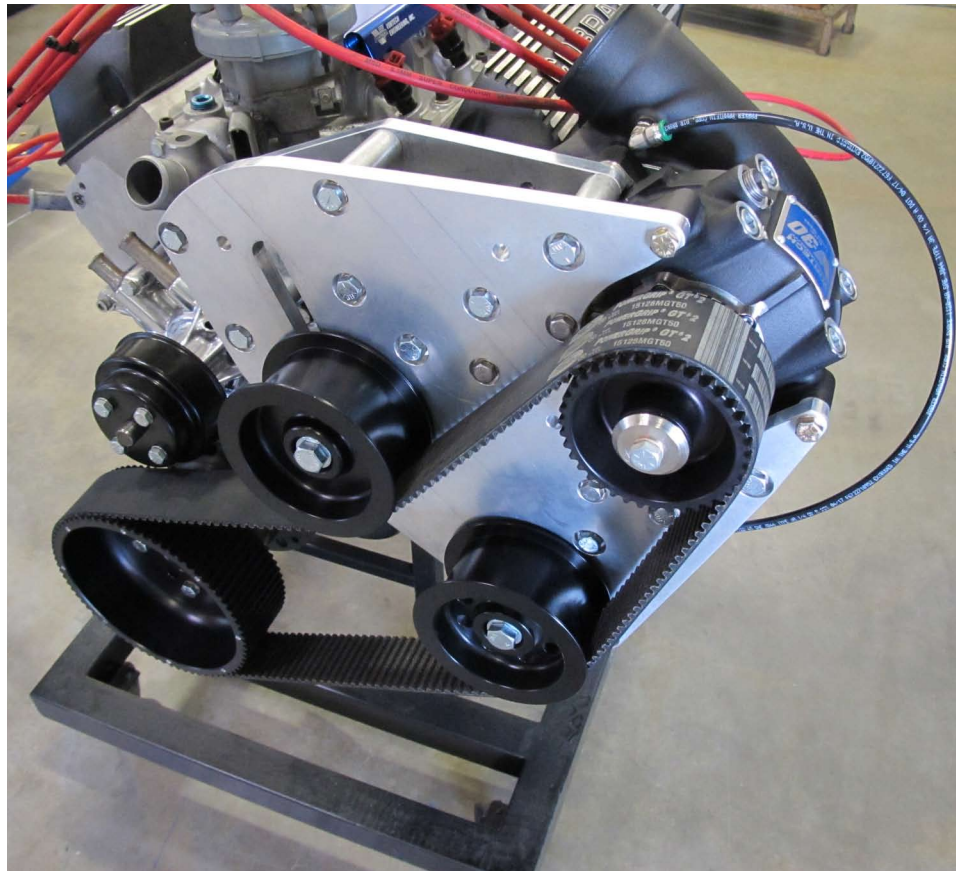


SMALL BLOCK FORD V-30 W/COG DRIVE, D.SIDE

Installation Instructions



For use with:

3FP218-010 and 4FP218-020, -030, -040



1650 Pacific Avenue, Channel Islands, CA 93033-9901 • Phone (805) 247-0226
Fax: (805) 247-0669 • www.vortechsuperchargers.com • M-F 7:00 AM - 3:30 PM (PST)

FOREWORD

All information, illustrations and specifications contained herein are based on the latest product information available at the time of this publication. Changes to the manual may be made at any time without notice. Contact Vortech Engineering for any additional information regarding this kit and any of these modifications at (805) 247-0226 7:00am-3:30pm PST.



Take note of the following before proceeding:

- 1. THIS IS A RACE PRODUCT. NO WARRANTY IS IMPLIED.**
2. Some fabrication may be necessary to fit your application.
3. Proper installation of this accessory requires general automotive mechanic knowledge and experience. Please browse through each step of this instruction manual prior to beginning the installation to determine if you should refer the job to a professional installer/technician. Please contact your dealer or Vortech Engineering for possible installers in your area.
4. Pulley and belt selection will vary depending on your application. Refer to **Appendix A** for a pulley and belt selection guide. Consult an engine builder to help select the correct combination for your application.
5. Oiling systems will vary depending your application, therefore it isn't specifically addressed in this installation manual. However, we have provided **examples** of various ways the oiling system could be set up. See **Appendix B through D** near the back of this manual. Consult an engine builder to help select the correct combination for your application.
6. Refer to **Appendix E** for the overall dimensions of the supercharger system.
7. Vortech is not responsible for any clutch, transmission, drive-line or engine damage.

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VORTECH SMALL BLOCK FORD V-30 W/COG DRIVE, D.SIDE

Installation Instructions

**Before beginning this installation,
please read through this entire instruction manual**

The Vortech Small Block Ford V-30 w/Cog Drive D.Side was designed specifically for use on Small Block Ford engines with V-30 series superchargers. As with any power enhancing product, this unit is intended for use on healthy, well-maintained engines. Vortech Engineering is not responsible for engine damage.

TOOL & SUPPLY REQUIREMENTS:

- 3/8" drive ratchet
- 3/8" drive ratchet extensions
- 3/8" drive torque wrench
- 3/8" drive socket set: SAE
- 3/8" drive hex key set: SAE
- Combination wrenches: SAE
- Loctite 242 (blue) threadlocker.
- Anti-seize lubricant
- White lithium grease

SMALL BLOCK FORD V-30 W/COG DRIVE, D.SIDE

**Part No. 3FP218-010,
4FP218-020, -030, -040**

PARTS LIST

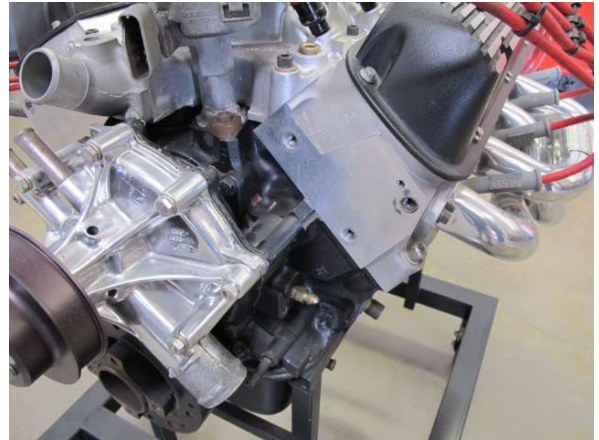
IMPORTANT: It is up to the customer to specify which supercharger they will use for their application. Before beginning installation, verify that all parts are included in the kit. Report any shortages or damaged parts immediately.

PART NO.	DESCRIPTION	QTY	PART NO.	DESCRIPTION	QTY
3FP218-010	BASE KIT, SBF V30, D.SIDE COG (PARTS LIST BELOW)	1			
007144	INSTR MAN, SBF V30, D.SIDE	1			
4FP111-091	MNTG BRKT ASY, V30 COG 50MM	1			
2A017-875-18	SPACER, .875 OD X 2.248 LNGTH	13			
4FD017-011	PILOT, 6203/5 BRG, 1/2 SCREW	1			
4FP010-081	MTG PLATE, V30, 5.0 FORD	1			
4FP010-091	SUPPORT PLATE, V20, COG 5.0	1			
4FP011-021	S/C MOUNTING BRKT	1			
4FP017-081	SPACER, IDLER, V30 5.0 COG	1			
4FP017-101	SPACER, BRKT, V30 5.0 COG	1			
4FP116-020	IDLER W/BRNG ASSY, 50MM	1			
7A312-075	5/16-18 X 3/4 HHCS, GR5, ZINC	4			
7A312-100	5/16-18 X 1 HHCS, GR5, PLATED	2			
7A375-100	3/8-16 X 1 G5 HHCS, PLT	1			
7A375-375	3/8-16 X 3-3/4 HX HD	13			
7A437-153	7/16-14 X 1.50 SHCS G8	1			
7A437-600	7/16-14 X 6" HXHD	2			
7C012-065	M12 X 1.75 X 65MM HX	1			
7F375-017	3/8-16 NYLOCK NUT	4			
7G012-175	M12 SLOT NUT, COG DRV, SPECIAL	1			
7K312-001	5/16 AN WASHER, PLATED	6			
7K375-040	3/8 AN960 FLAT WASHER PLATED	19			
7K437-001	7/16" AN WASHER	2			
4FP116-040	COG DRIVE ASY, SBF V30	1			
2A042-151	BELT, GATES 50MM, 1512 COG 189T	1			
2G034-044	44 TOOTH PULLEY, V-30 COG, 8MM PITCH	1			
4FD017-011	PILOT, 6203/5 BRG, 1/2 SCREW	1			
4FP016-041	CRK PULLEY, ACCSRY, V30 5.0	1			
4FP017-081	SPACER, IDLER, V30 5.0 COG	1			
4FP116-020	IDLER W/BRNG ASSY, 50MM	1			
4MA018-070	CRANK PLY, 70T GT 8MM X 2.5W	1			
7A375-352	3/8-16 X 3.5" HX HD GR8	4			
7C012-080	M12 X 1.75 X 80MM HHCS	1			
7G010-175	M12 X 1.75 NUT	1			
7J012-092	WASHER, M12 FLAT, ZN PLT	1			
7K375-040	3/8 AN960 FLAT WASHER PLATED	4			
8R101-009	PULLEY RET ASSY, V30 COG	1			
4FP218-020*	ASY, SBF V30-94A, CW, COG	1			
2G258-010	S/C ASY, V30-94A, CW	1			
3FP218-010	BASE KIT, SBF V30, D.SIDE COG DRIVE	1			
4FP218-030*	ASY, SBF V30-102A, CW, COG	1			
2G448-104	S/C ASY, V30-102A, CW	1			
3FP218-010	BASE KIT, SBF V30, D.SIDE COG DRIVE	1			
4FP218-040*	ASY, SBF V30-105A, CW, COG	1			
2G448-154	S/C ASY, V30-105A, CW	1			
3FP218-010	BASE KIT, SBF V30, D.SIDE COG DRIVE	1			
*ALL 4FP218 PART NUMBERS INCLUDE 3FP218-010					
AVAILABLE 50MM V-30 SUPERCHARGER PULLEYS					
2G034-032	32 TOOTH PULLEY, V-30 COG, 8MM PITCH				
2G034-034	34 TOOTH PULLEY, V-30 COG, 8MM PITCH				
2G034-036	36 TOOTH PULLEY, V-30 COG, 8MM PITCH				
2G034-038	38 TOOTH PULLEY, V-30 COG, 8MM PITCH				
2G034-040	40 TOOTH PULLEY, V-30 COG, 8MM PITCH				
2G034-044	44 TOOTH PULLEY, V-30 COG, 8MM PITCH				

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1. PREPARATION AND REMOVAL

- A. The supercharger mounting bracket in this system is designed to be mounted on the driver side of the engine. If you have any accessories mounted to the driver side of the engine, they will need to be relocated elsewhere.



- B. The supercharger drive belt in this system is designed to work using the 4-bolt harmonic balancer from the stock, late model 4 bolt pulley pattern and spacing that matches the 86-93 Mustang accessory system. Use of any other balancer will require some degree of modification to get our components to work as designed.



- C. To provide enough clearance between the crank pulley and water pump pulley, our belt drive system is designed to work with the factory 86-93 Mustang water pump pulley. If your engine currently has an underdrive water pump pulley (larger than stock), you will need to reinstall the factory water pump pulley or use the Vortech 4PFP016-081 water pump pulley (sold separately). You could also use the water pump pulley from the 93 Cobra.



1. PREPARATION AND REMOVAL

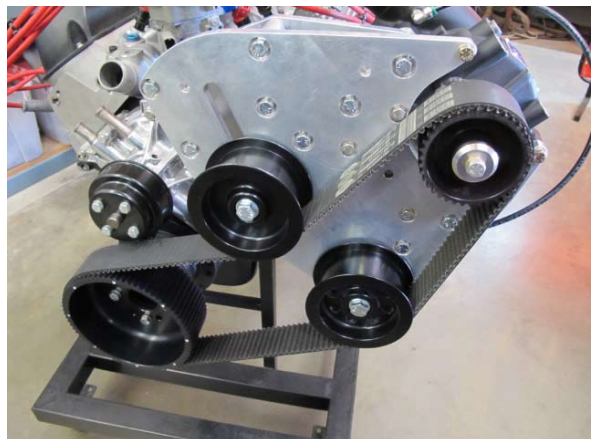
- D. If you are using a camshaft belt drive system on your engine, you may be required to modify certain components in order to keep the front end accessories in-line with the factory Fox Body belt line. Please consult an engine builder/fabricator if you decide to go this route.



- E. If you are using an aftermarket water pump solution, it's critical that it does not protrude past the outer supercharger mounting plate as you run the chance of interfering with the supercharger drive belt. For reference, the outer supercharger mounting plate is 8" out from the face of the driver side cylinder head.



- F. Pulley and belt selection will vary depending on your application. Refer to **Appendix A** for a pulley and belt selection guide. Consult an engine builder to help select the correct combination for your application and also consult Vortech to help you calculate impeller speed.



2. MOUNTING BRACKET ASSEMBLY INSTALLATION



Use blue threadlocker on all fasteners in this section.

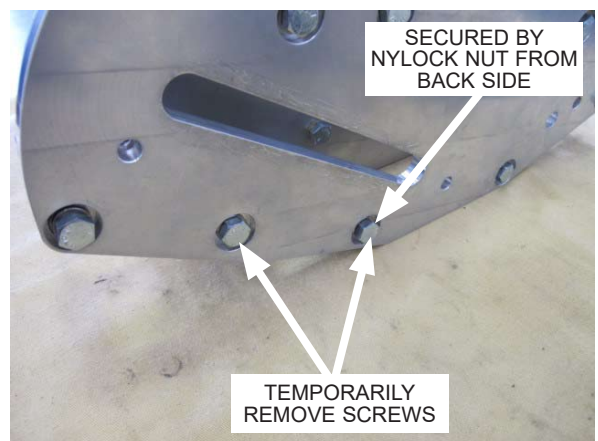
- A. The mounting bracket assembly should come preassembled. For now, remove the manual belt tensioner assembly and set it aside. It will be reinstalled in a later step.



- B. On the back side of the mounting bracket assembly, you'll notice that there's a small triangle-shaped spacer resting on three 7/16"-14 screws. You'll use these three screws to secure the mounting bracket assembly to the driver side cylinder head. The triangle-shaped spacer will be installed between the cylinder head and mounting bracket assembly. There is also a small bag containing six 5/16"-18 screws and washers. They will be installed in a later step.

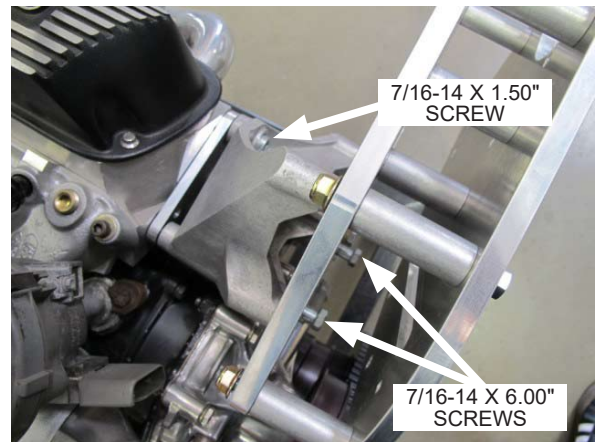


- C. You'll need to temporarily remove two screws, two spacers and one nut to provide enough room for a socket to tighten two of the main mounting screws located on the inner mounting plate. Using a 9/16" socket and 9/16" wrench, remove the two 3/8"-16 X 3.75" screws and spacers and set them aside. They will be reinstalled in a later step. Note that the screw on the right is secured by a 3/8"-16 nylock nut on the opposite side.

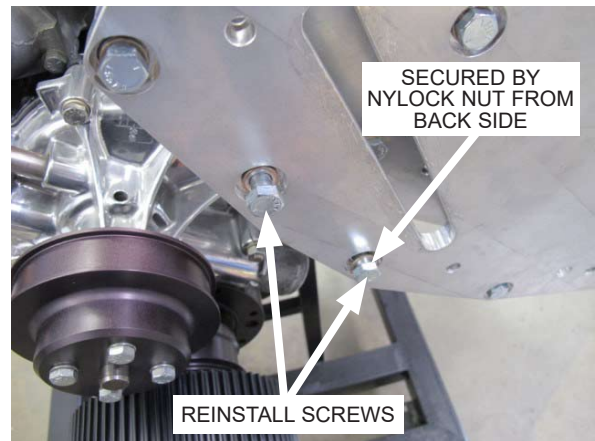


2. MOUNTING BRACKET ASSEMBLY INSTALLATION

- D. Thread the three 7/16"-14 screws into the driver side cylinder head by hand first, making sure that the triangle-shaped spacer is sandwiched between the mounting bracket and the driver side cylinder head. With everything in position, proceed to secure the three 7/16"-14 screws.



- E. Using a 9/16" socket and 9/16" wrench, proceed to reinstall the two previously-removed 3/8"-16 X 3.75" screws and spacers. Note that the screw on the right is secured by a 3/8"-16 nylock nut on the opposite side.

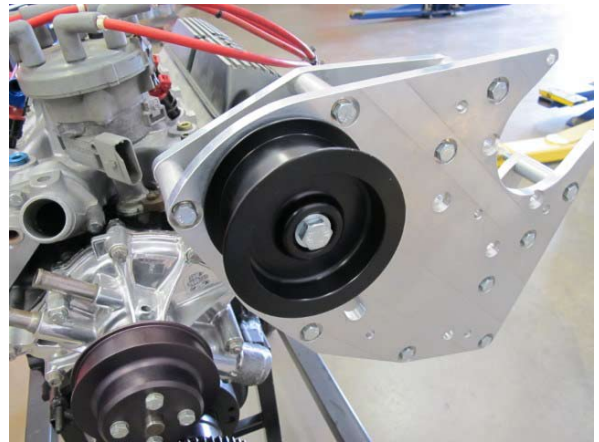


3. SUPERCHARGER AND BELT DRIVE INSTALLATION

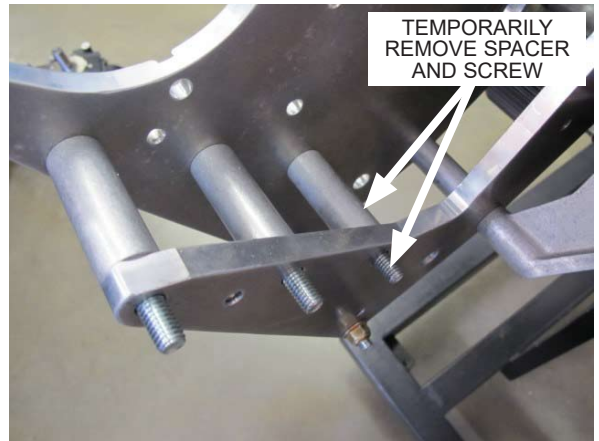


Use blue threadlocker on all fasteners in this section.

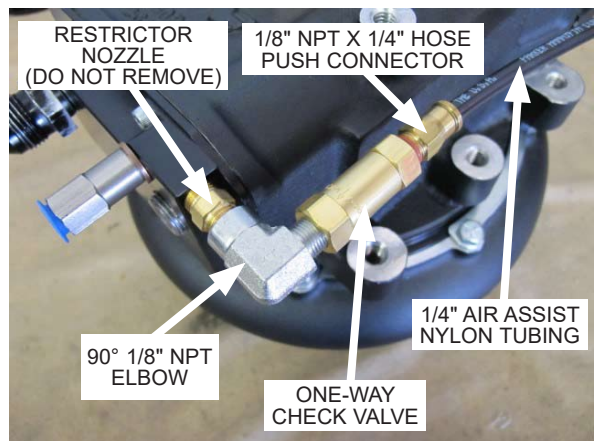
- A. Locate and install the manual belt tensioner assembly. Temporarily raise the pulley to its highest point to allow for easier installation of the supercharger cog drive belt.



- B. You'll need to temporarily remove the highlighted spacer and screw in order to provide enough space for the air assist during installation of the supercharger. Set it aside for now. It will be reinstalled in a later step.

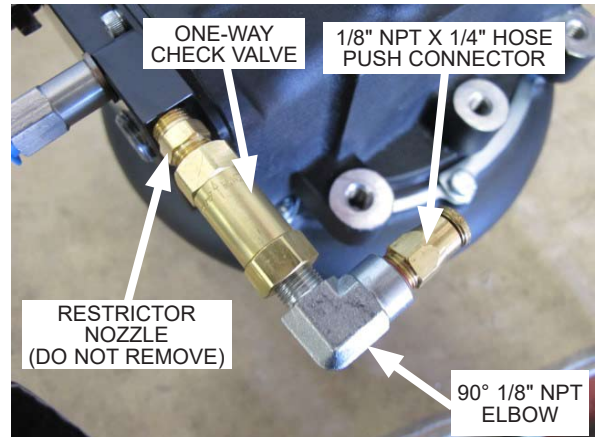


- C. Each V-30 supercharger comes preinstalled with an air assist for the oil feed system. In order to install the supercharger to the mounting bracket assembly, the air assist fittings will need to be reorganized. Start by removing the 1/4" nylon tubing, push-lock hose connector, one-way check valve and 90° 1/8" NPT elbow. The restrictor nozzle installed to the lower oil cap can does not need to be removed.

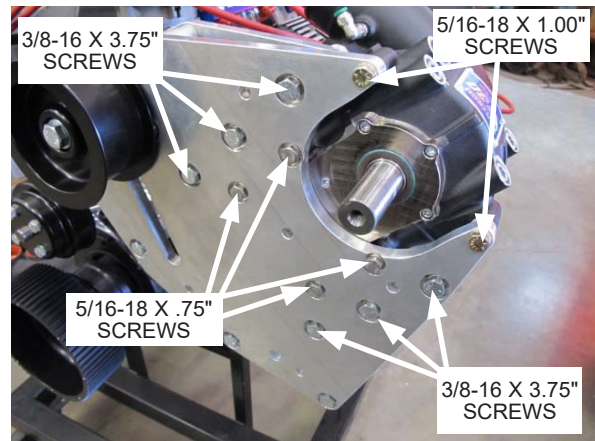


3. SUPERCHARGER AND BELT DRIVE INSTALLATION

- D. Install the one-way check valve to the restrictor nozzle as shown, making sure that the flow arrow is pointing towards the restrictor nozzle. Next, install the 90° 1/8" NPT elbow and push-lock hose connector as shown. Leave the 1/4" nylon tube disconnected at this time.



- E. Reinstall the spacer and screw that was temporarily removed during Step B. Next, locate the bag containing six 5/16"-18 screws and washers as you'll need them in this step. Place the supercharger into the mounting bracket assembly and begin to thread in the 5/16"-18 and 3/8"-16 screws by hand. Once they're started, tighten the six 3/8"-16 screws first, followed by the six 5/16"-18 screws. At this time, verify that all other mounting bracket hardware is secure.

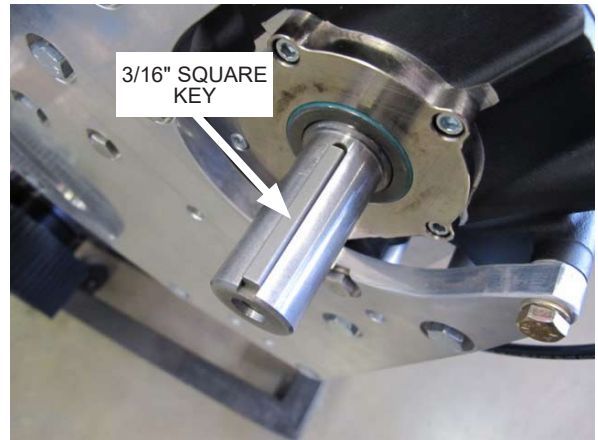


- F. Proceed to reattach the 1/4" nylon tube to the push-lock hose connector at this time. Keep in mind that you are free to shorten the hose length if necessary.

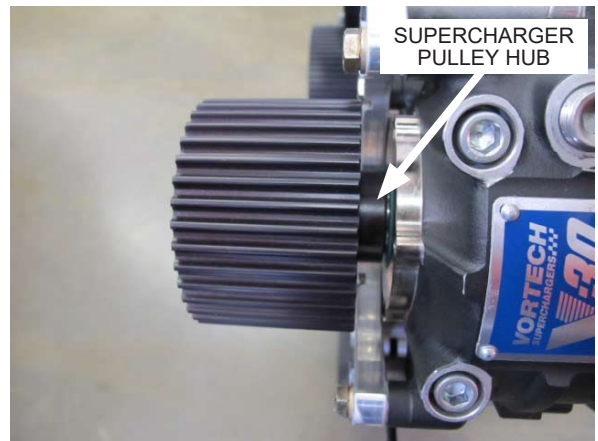


3. SUPERCHARGER AND BELT DRIVE INSTALLATION

- G. Locate the 3/16" square key, located in the pulley retainer assembly, and place it in the keyway on the supercharger input shaft.



- H. With the keyway on the supercharger pulley lined up with the key on the input shaft, install the pulley onto the input shaft, making sure that the long hub of the pulley is facing towards the supercharger.

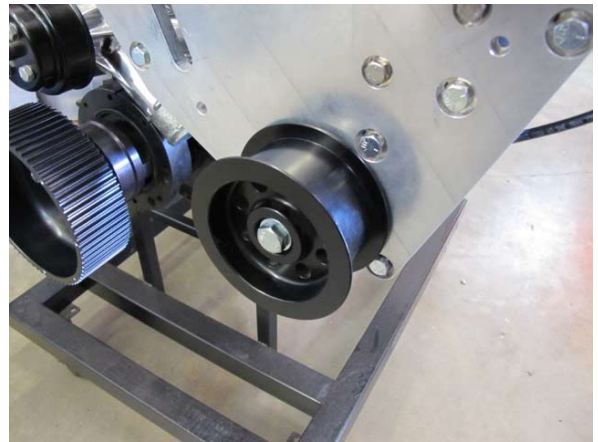


- I. Use the included 3/8"-24 x 1.75" screw, 3/8" washer and steel pulley retainer to secure the supercharger pulley to the input shaft.



3. SUPERCHARGER AND BELT DRIVE INSTALLATION

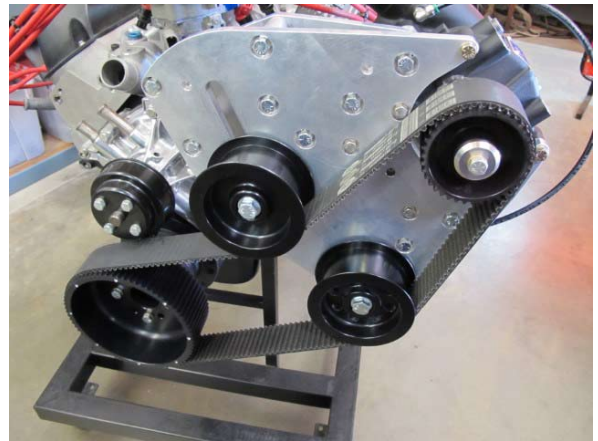
- J. **1512mm belt option:** You will need to install the secondary smooth idler pulley in order to take up the slack of the included belt. Install it to the existing hole on the lower section of the supercharger mounting bracket assembly as shown and secure it from the back side using the provided 7/16" nut.



- K. **1512mm belt option:** Install the supercharger drive belt as shown, then apply tension to the smooth side of the belt using the manual belt tensioner. Using a 3/4" socket, tighten the manual belt tensioner once proper belt tension is achieved.

NOTE: See **Appendix A** for the pulley and belt combination guide.

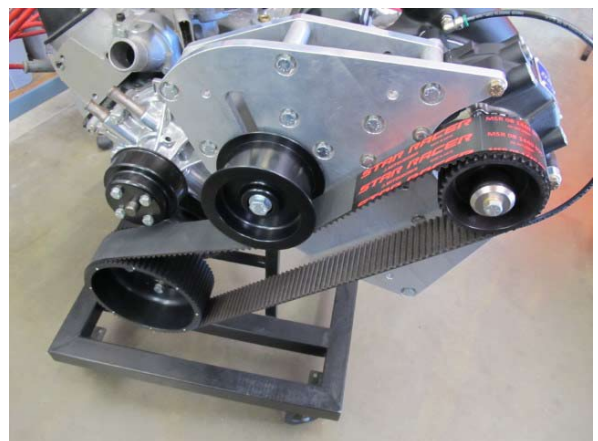
NOTE: Do not apply excessive tension to the cog belt. By design, cog belts do not require the same amount of tension as a ribbed belt.



- L. **1440mm belt option:** If your pulley combination requires you to use the 1440mm belt option, you DO NOT need to use the secondary idler. Install the supercharger drive belt as shown, then apply tension to the smooth side of the belt using the manual belt tensioner. Using a 3/4" socket, tighten the manual belt tensioner once proper belt tension is achieved.

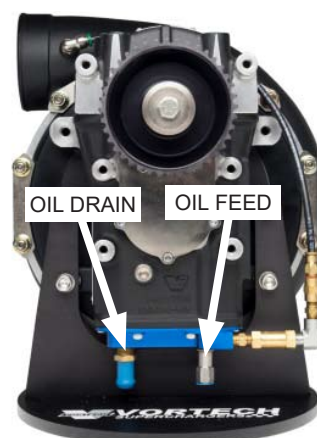
NOTE: See **Appendix A** for the pulley and belt combination guide.

NOTE: Do not apply excessive tension to the cog belt. By design, cog belts do not require the same amount of tension as a ribbed belt.

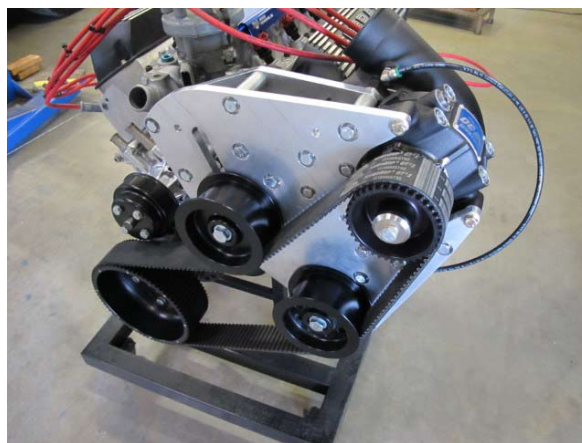


4. OIL SYSTEM NOTES AND FINAL CHECK

- A. Oil systems will vary depending on your application, therefore they aren't specifically addressed in this installation manual. However, we have provided **examples** of various ways the oiling system could be set up. See **Appendix B through D** near the back of this manual.



- B. Verify that all mounting hardware, belt drive hardware and manual belt tensioner hardware is secure.



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APPENDIX A. DIAGRAM, PULLEY AND BELT SELECTION GUIDE

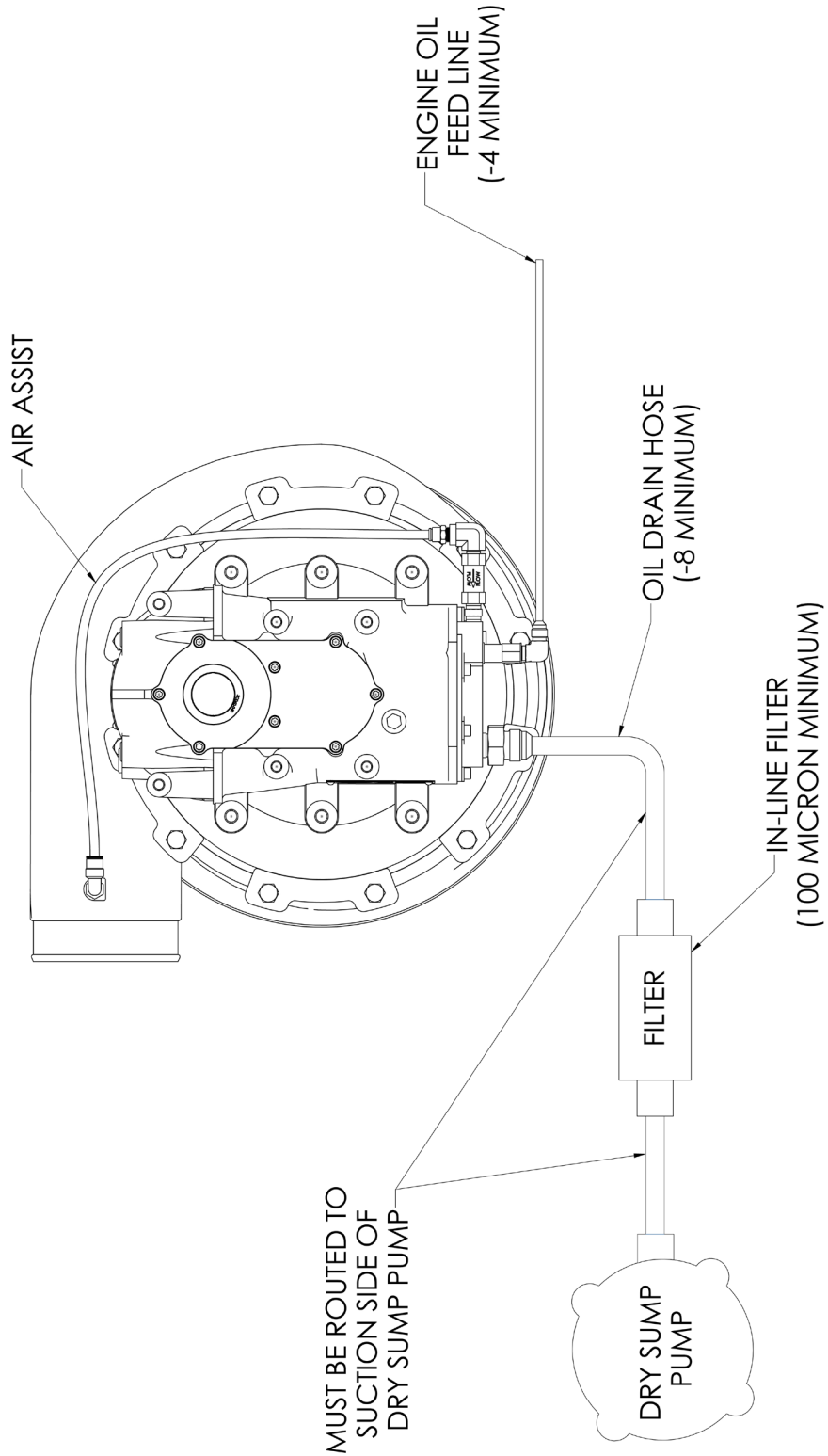
FOR USE WITH 70 TOOTH CRANK PULLEY			
Crank Pulley (4MA018-070)	S/C Pulley	Belt Length (mm)	Notes
70T	32T	1440-8MGT-50 (Vortech P/N: 2A042-144)	Alternate belt: 1432-8MGT-50 (Not available through Vortech) Use of secondary idler is NOT REQUIRED for these pulley and belt combinations.
70T	34T		
70T	36T		
70T	38T		
70T	40T	1512-8MGT-50 (Vortech P/N: 2A042-151)	Requires use of secondary idler, which is included in this system.
70T	44T		

FOR USE WITH 75 TOOTH CRANK PULLEY			
Crank Pulley (4MA018-075)	S/C Pulley	Belt Length (mm)	Notes
75T	32T	NO BELT AVAILABLE	
75T	34T	1512-8MGT-50 (Vortech P/N: 2A042-151)	Requires use of secondary idler, which is included in this system.
75T	36T		
75T	38T		
75T	40T		
75T	44T	1512-8MGT-50 (Vortech P/N: 2A042-151)	Requires use of secondary idler, which is included in this system. Clearance between the belt and water pump pulley is tight, therefore you may be required to make another hole in the mounting bracket to move the secondary idler pulley up and in towards the manual belt tensioner pulley. This provides more slack to the belt, bringing it further away from the water pump pulley when the belt is tensioned.

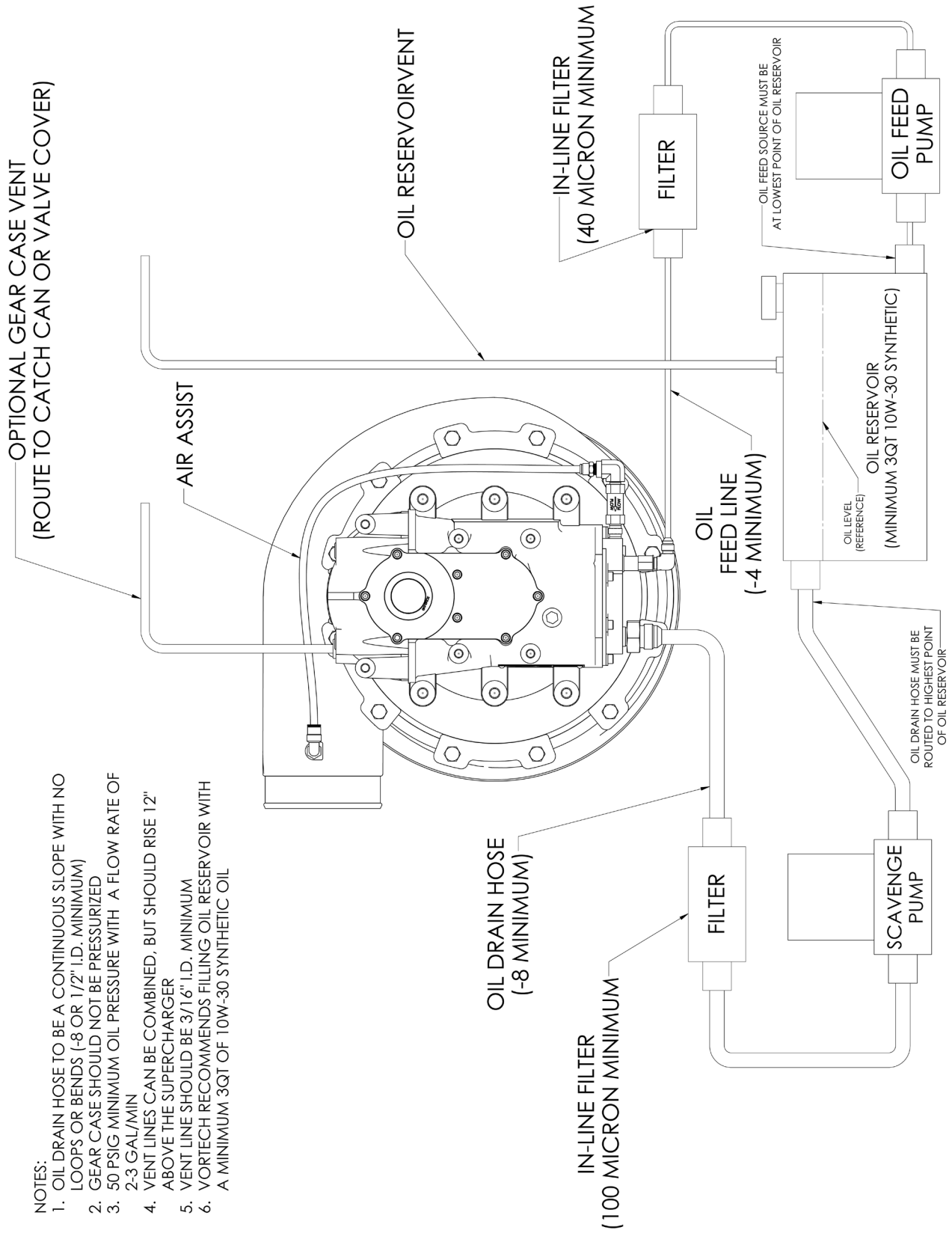
APPENDIX B. DIAGRAM, OIL SYSTEM, DRY SUMP

NOTES:

1. OIL DRAIN HOSE TO BE A CONTINUOUS SLOPE WITH NO LOOPS OR BENDS (-8 OR 1/2" I.D. MINIMUM)
2. GEAR CASE SHOULD NOT BE PRESSURIZED
3. 50 PSIG MINIMUM OIL PRESSURE WITH A FLOW RATE OF 2-3 GAL/MIN
4. DRY SUMP SYSTEMS CAN OMIT USING GEAR CASE VENT

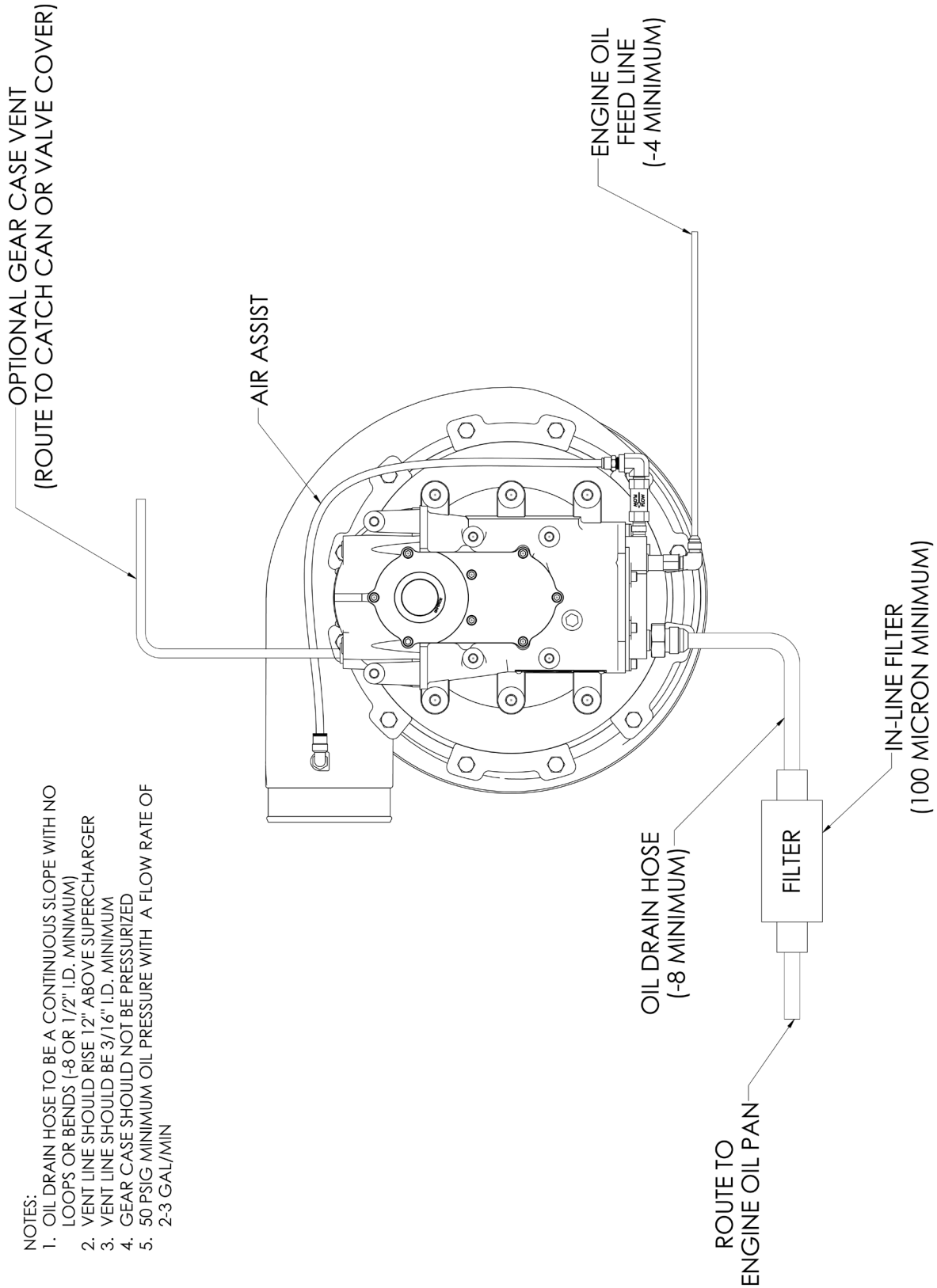


APPENDIX C. DIAGRAM, OIL SYSTEM, DEDICATED RESERVOIR



- NOTES:
1. OIL DRAIN HOSE TO BE A CONTINUOUS SLOPE WITH NO LOOPS OR BENDS (-8 OR 1/2" I.D. MINIMUM)
 2. GEAR CASE SHOULD NOT BE PRESSURIZED
 3. 50 PSIG MINIMUM OIL PRESSURE WITH A FLOW RATE OF 2-3 GAL/MIN
 4. VENT LINES CAN BE COMBINED, BUT SHOULD RISE 12" ABOVE THE SUPERCHARGER
 5. VENT LINE SHOULD BE 3/16" I.D. MINIMUM
 6. VORTECH RECOMMENDS FILLING OIL RESERVOIR WITH A MINIMUM 3QT OF 10W-30 SYNTHETIC OIL

APPENDIX D. DIAGRAM, OIL SYSTEM, ENGINE OIL FED



- NOTES:
1. OIL DRAIN HOSE TO BE A CONTINUOUS SLOPE WITH NO LOOPS OR BENDS (-8 OR 1/2" I.D. MINIMUM)
 2. VENT LINE SHOULD RISE 12" ABOVE SUPERCHARGER
 3. VENT LINE SHOULD BE 3/16" I.D. MINIMUM
 4. GEAR CASE SHOULD NOT BE PRESSURIZED
 5. 50 PSIG MINIMUM OIL PRESSURE WITH A FLOW RATE OF 2-3 GAL/MIN

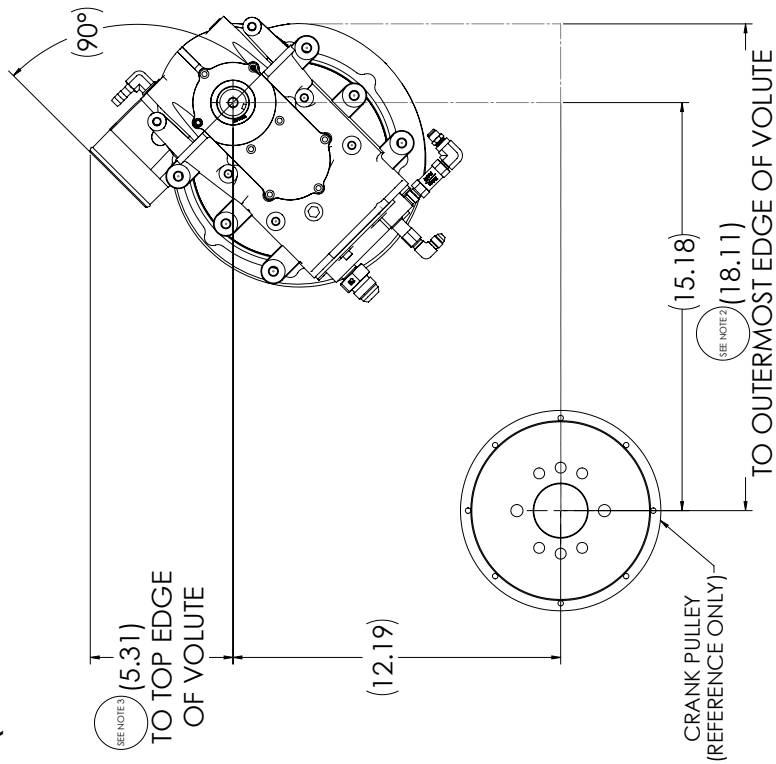
APPENDIX E. DIAGRAM, OVERALL DIMENSIONS

NOTES

1. ALL DIMENSIONS ARE IN INCHES.
2. TURNING THE VOLUTE OUTLET CLOSER TOWARDS THE THROTTLE BODY OR CARBURETOR WILL BRING THE OUTER EDGE OF THE VOLUTE IN TIGHTER TOWARDS THE ENGINE, THEREFORE PROVIDING MORE CLEARANCE BETWEEN THE VOLUTE AND A FENDER OR FRAME RAIL.
3. TURNING THE VOLUTE OUTLET CLOSER TOWARDS THE THROTTLE BODY OR CARBURETOR WILL BRING THE TOP EDGE OF THE VOLUTE IN TIGHTER TOWARDS THE ENGINE, THEREFORE PROVIDING MORE CLEARANCE BETWEEN THE VOLUTE AND THE UNDERSIDE OF A HOOD.

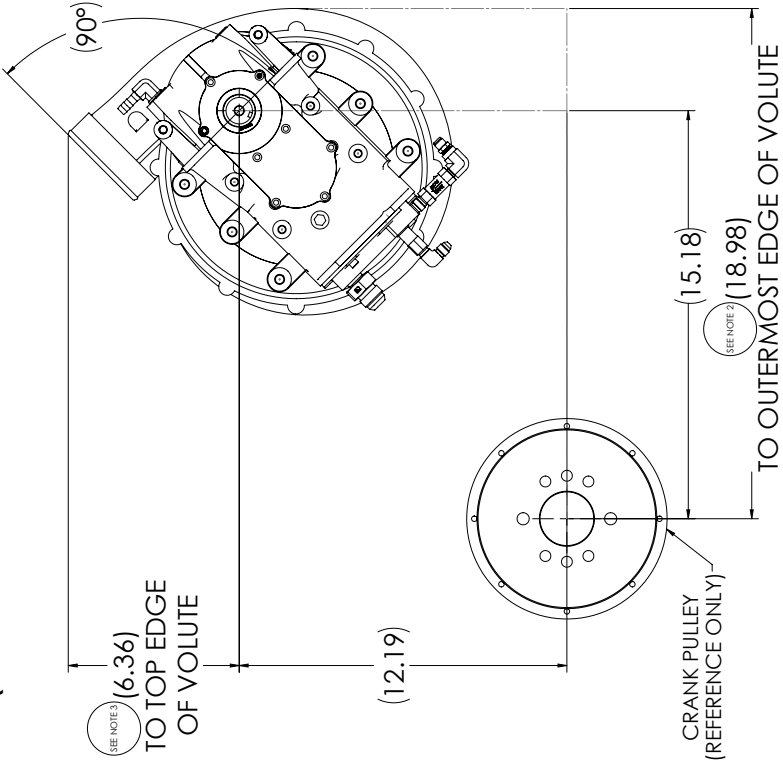
V-30 94A DIMENSIONS

(VOLUTE Clocked AT 90°. CLOCKING CAN BE CHANGED AT YOUR DISCRETION.)



V-30 102A & 105A DIMENSIONS

(VOLUTE Clocked AT 90°. CLOCKING CAN BE CHANGED AT YOUR DISCRETION.)



FOR USE WITH 4FP218-020, 4FP218-030, 4FP218-040 SMALL BLOCK FORD COG DRIVE V-30 SUPERCHARGER KITS



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