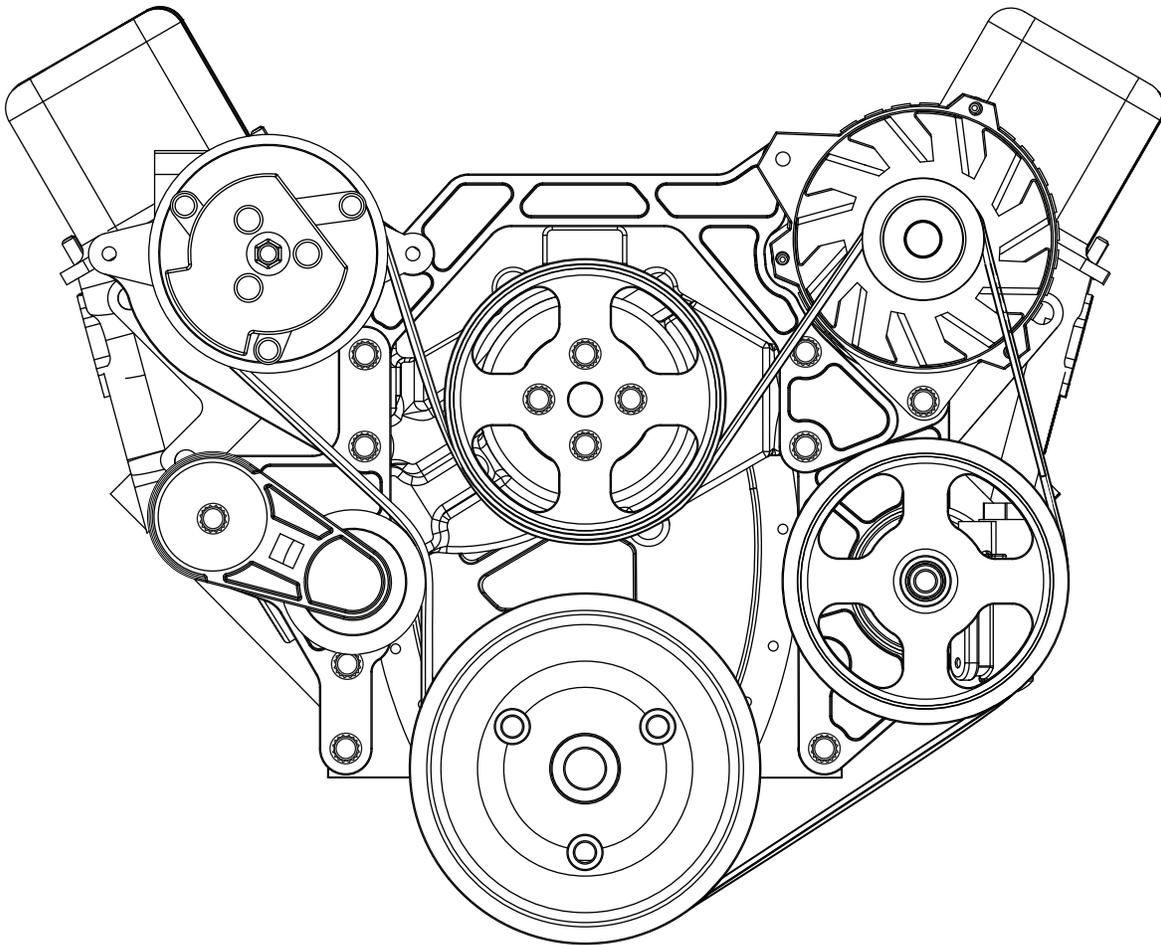




an ISO 9001:2008 Registered Company

# SMALL BLOCK CHEVY

SERPENTINE DRIVE SYSTEM  
WITH & WITHOUT POWER STEERING



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## IMPORTANT NOTICE—PLEASE READ

**FOR MAXIMUM SYSTEM PERFORMANCE, VINTAGE AIR RECOMMENDS THE FOLLOWING:**

### SERVICE INFO:

EVACUATE THE SYSTEM FOR 35-45 MINUTES WITH SYSTEM COMPONENTS (DRIER, COMPRESSOR, EVAPORATOR AND CONDENSER) AT A TEMPERATURE OF AT LEAST 85° F. ON A COOL DAY, THE COMPONENTS CAN BE HEATED WITH A HEAT GUN OR BY RUNNING THE ENGINE WITH THE HEATER ON BEFORE EVACUATING. LEAK CHECK AND CHARGE TO SPECIFICATIONS.

**USE OF THE PROPER TYPE AND AMOUNT OF REFRIGERANT IS CRITICAL TO PROPER SYSTEM OPERATION. VINTAGE AIR RECOMMENDS OUR SYSTEMS BE CHARGED BY WEIGHT WITH A QUALITY CHARGING STATION OR SCALE.**

### REFRIGERANT CAPACITY FOR VINTAGE AIR SYSTEMS:

(FOR OTHER SYSTEMS, CONSULT MANUFACTURER'S GUIDELINES)

#### **R134a SYSTEM**

CHARGE WITH 1.8 LBS. (1 LB., 12 OZ.) OF REFRIGERANT.

### LUBRICANT CAPACITIES:

**NEW VINTAGE AIR-SUPPLIED SANDEN COMPRESSOR:** NO ADDITIONAL OIL NEEDED (COMPRESSOR IS SHIPPED WITH PROPER OIL CHARGE).

**ALL OTHER COMPRESSORS:** CONSULT MANUFACTURER (SOME COMPRESSORS ARE SHIPPED DRY AND WILL NEED OIL ADDED).



**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**

## **WARNING**

READ INSTRUCTIONS COMPLETELY AND THOROUGHLY BEFORE INSTALLING THE VINTAGE AIR FRONTRUNNER SYSTEM. FOLLOW INSTRUCTIONS STEP-BY-STEP FOR PROPER INSTALLATION.

### **REMOVAL OF OEM FRONT BELT SYSTEM**

- DISCONNECT NEGATIVE BATTERY CABLE
- DRAIN RADIATOR FLUID
- REMOVE FAN AND BELTS
- REMOVE ALTERNATOR AND A/C COMPRESSOR
- REMOVE CRANKSHAFT PULLEY FROM HARMONIC BALANCER
- REMOVE OEM WATER PUMP AND THERMOSTAT

### **FRONTRUNNER ENGINE DRIVE SYSTEM**

**NOTE: FRONTRUNNER ENGINE DRIVE SYSTEM INCLUDES A STEWART HIGH PERFORMANCE ALUMINUM WATER PUMP THAT DOES NOT HAVE AN INTERNAL BYPASS. YOU MUST EITHER PURCHASE A STEWART HIGH PERFORMANCE THERMOSTAT (AVAILABLE FROM STEWART) OR DRILL (3) 3/16" BYPASS HOLES IN YOUR STOCK THERMOSTAT (SEE FIGURES 15 & 16, PAGE 14).**

### **INSTALLING MOUNTING STUDS**

- APPLY A BEAD OF SILICONE AROUND THE COARSE THREAD END OF THE WATER PUMP MOUNTING STUDS AND THREAD INTO BLOCK (SEE FIGURE 1, PAGE 4). THE STUDS SHOULD PROTRUDE 4 5/8" FROM THE FACE OF THE BLOCK (SEE FIGURE 1, PAGE 4).

### **WATER PUMP INSTALLATION**

- INSTALL WATER PUMP PULLEY ON WATER PUMP USING (4) 5/16-24 x 3/4" 12 PT SS BOLTS.  
**NOTE: THE PULLEY IS ASYMMETRICAL. THE SIDE OF THE PULLEY STAMPED WITH THE PART NUMBER MUST GO TOWARD THE WATER PUMP.**
- INSTALL NEW 5/8" HOSE FITTING IN WATER PUMP PRIOR TO INSTALLING WATER PUMP (SEE FIGURE 1, PAGE 4).
- USING A SUITABLE GASKET SEALER, APPLY A BEAD OF SEALER TO BOTH SIDES OF WATER PUMP GASKET, AND PLACE GASKET ON WATER PUMP.
- INSTALL WATER PUMP AND SPACERS ON MOUNTING STUDS (SEE FIGURE 1, PAGE 4).



(4) MAIN BRKT SPACER  
.390 ID x .680 OD x .395" L

(4) 18701-TTS  
WATER PUMP  
MOUNTING STUDS

72111-SCR  
WATER PUMP

5/8 HEATER  
FITTING

WATER PUMP  
PULLEY

(4) 5/16-24 x 3/4"  
12 PT SS BOLT  
184075-ISD

**FIGURE 1**

STUDS  
SHOULD PROTRUDE  
4 5/8 "

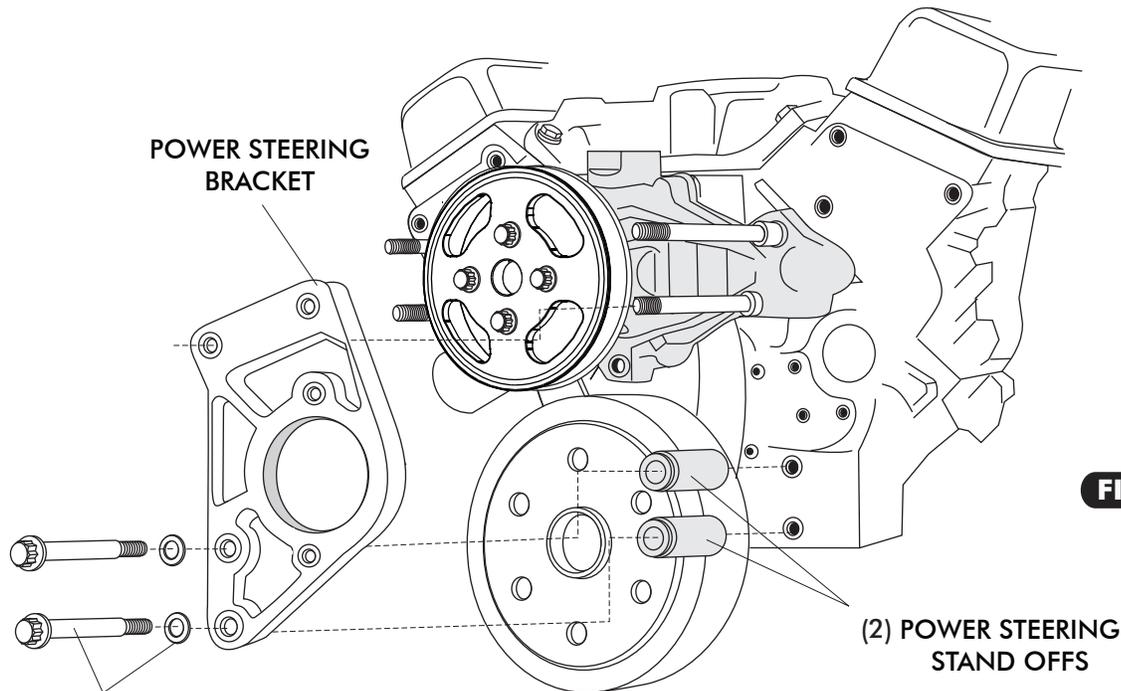
**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**



**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**

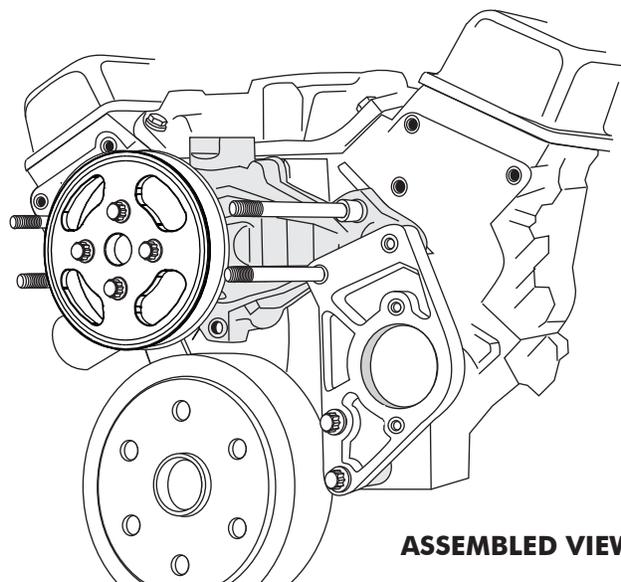
### POWER STEERING BRACKET (WITH POWER STEERING ONLY)

- INSTALL POWER STEERING BRACKET ON THE LOWER DRIVER SIDE MOUNTING STUD (SEE FIGURE 2, BELOW).
- PLACE THE (2) POWER STEERING STAND OFFS w/ SHOULDER ENDS TOWARD THE BRACKET BETWEEN THE ENGINE BLOCK AND THE POWER STEERING BRACKET. SECURE BRACKET USING (2) 3/8-16 x 2 1/2" 12 PT SS BOLTS WITH (2) 3/8" A N WASHERS AS SHOWN IN FIGURE 2, BELOW.



**FIGURE 2**

- (2) 18369-BHS  
3/8-16 x 2 1/2"  
12 PT SS BOLTS w/  
(2) 18543-WNS 3/8"  
A N WASHERS



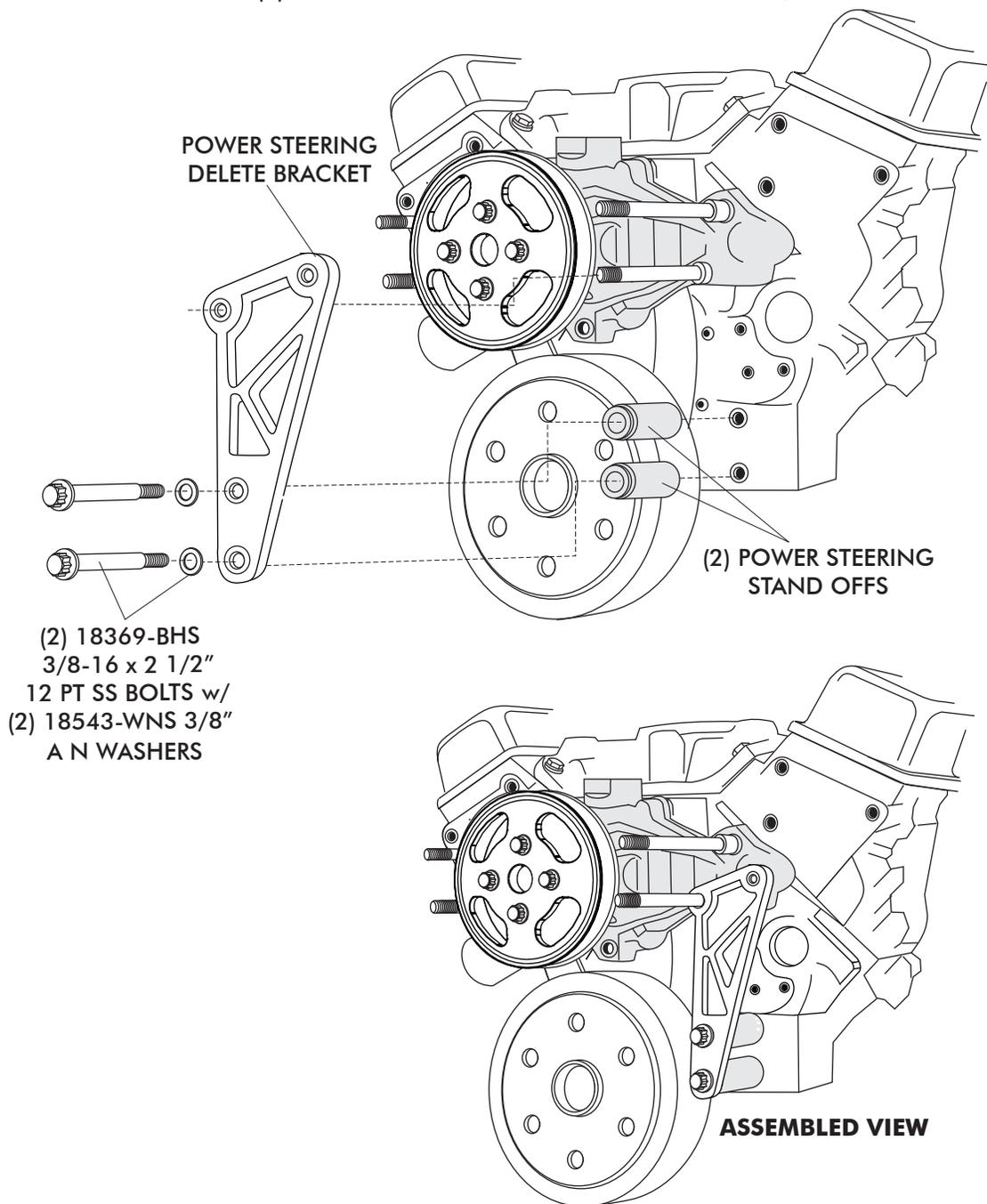
**ASSEMBLED VIEW**



**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**

### **POWER STEERING DELETE BRACKET (WITHOUT POWER STEERING)**

- INSTALL POWER STEERING DELETE BRACKET ON THE LOWER DRIVER SIDE MOUNTING STUD (SEE FIGURE 3, BELOW).
- PLACE THE (2) POWER STEERING STAND OFFS w/ SHOULDER ENDS TOWARD THE BRACKET BETWEEN THE ENGINE BLOCK AND THE POWER STEERING DELETE BRACKET. SECURE BRACKET USING (2) 3/8-16 x 2 1/2" 12 PT SS BOLTS WITH (2) 3/8" A N WASHERS AS SHOWN IN FIGURE 3, BELOW.



**FIGURE 3**

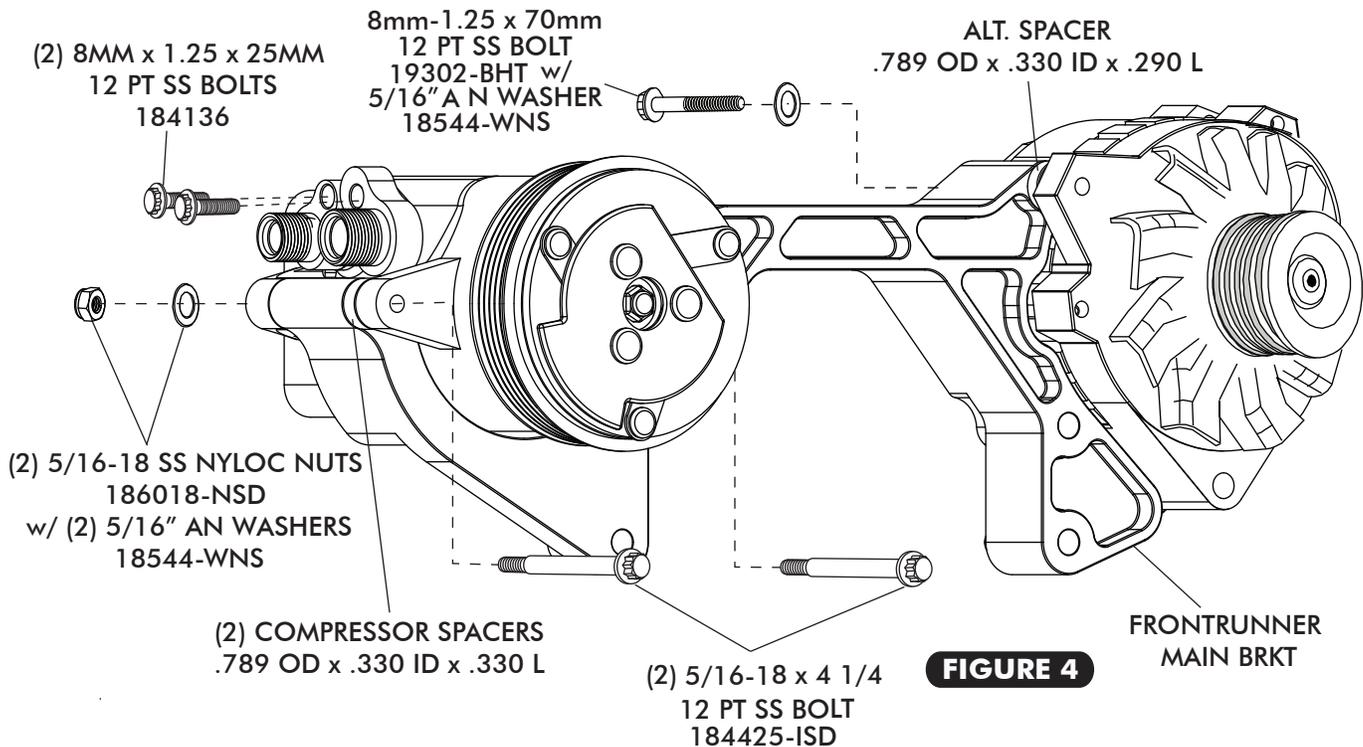


**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**

### COMP/ALT MAIN BRACKET ASSEMBLY

- INSTALL THE #8 AND #10 A/C COMPRESSOR FITTINGS ON COMPRESSOR USING (2) 8MM x 1.25 x 25MM 12 PT SS BOLTS AS SHOWN IN FIGURE 4, BELOW. KEEP PORTS SEALED WITH CAPS UNTIL A/C CIRCUIT HAS BEEN COMPLETED.
- INSTALL COMPRESSOR ON FRONTRUNNER MAIN BRACKET, USING (2) .789 OD x .330 ID x .330" L SPACERS, ONE BETWEEN THE MAIN BRACKET AND THE COMPRESSOR'S UPPER FRONT MOUNTING TAB AND ONE BETWEEN THE MAIN BRACKET AND THE COMPRESSOR'S LOWER FRONT MOUNTING TAB. SECURE THE COMPRESSOR TO THE MAIN BRACKET USING (2) 5/16-18 x 4 1/4 12 PT SS BOLTS AND (2) 5/16" A N WASHERS WITH (2) 5/16-18 NYLOC NUTS (SEE FIGURE 4, BELOW).
- INSTALL ALTERNATOR ON MAIN BRACKET USING AN 8mm-1.25 x 70mm 12 PT SS BOLT WITH A 5/16" A N WASHER (SEE FIGURE 4, BELOW).

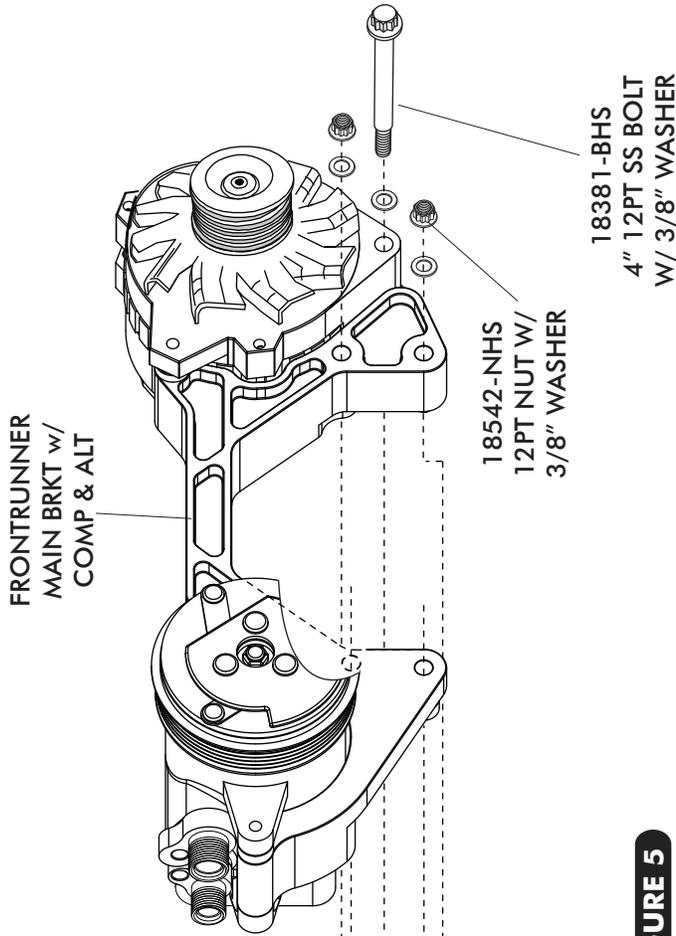
**NOTE: A/C COMPRESSOR HAS PRESS FIT BUSHINGS INSTALLED IN REAR MOUNTING EARS. THE COMPRESSOR WILL FIT LOOSELY UNTIL BOLTS ARE TORQUED TO 25 ft. LBS. THE BUSHINGS WILL NOT BOTTOM OUT FLUSH AGAINST THE COMPRESSOR.**



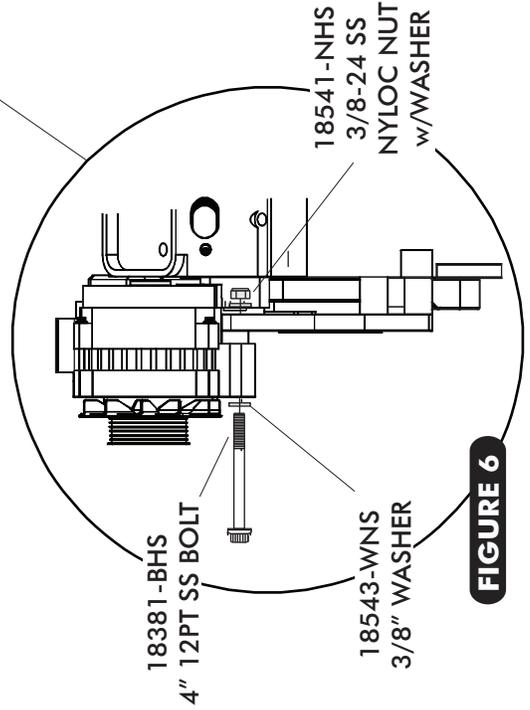
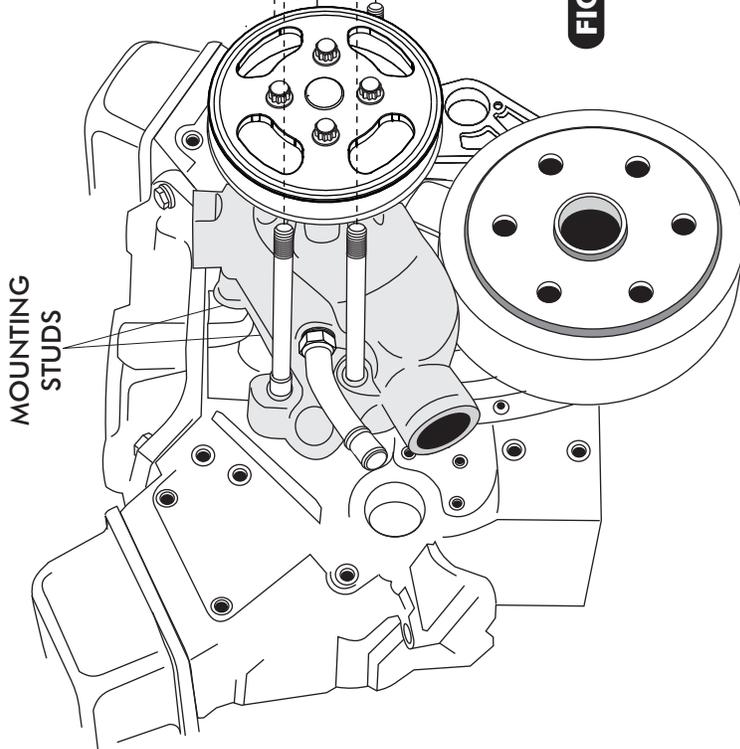
**FIGURE 4**

### FRONTRUNNER MAIN BRACKET ASSEMBLY INSTALLATION

- SLIDE FRONTRUNNER MAIN BRACKET ASSEMBLY OVER WATER PUMP MOUNTING STUDS (SEE FIGURE 5, PAGE 8).
- SECURE DRIVER SIDE OF ASSEMBLY USING (2) 3/8-24 12 PT NUTS WITH (2) 3/8 A N WASHERS.
- SECURE THE ALTERNATOR TO POWER STEERING BRACKET USING A 3/8-24 x 4" 12 PT SS BOLT WITH 3/8" A N WASHER, AND A 3/8-24 SS NYLOC NUT WITH WASHER (SEE FIGURE 6, PAGE 8).



**FIGURE 5**



**FIGURE 6**

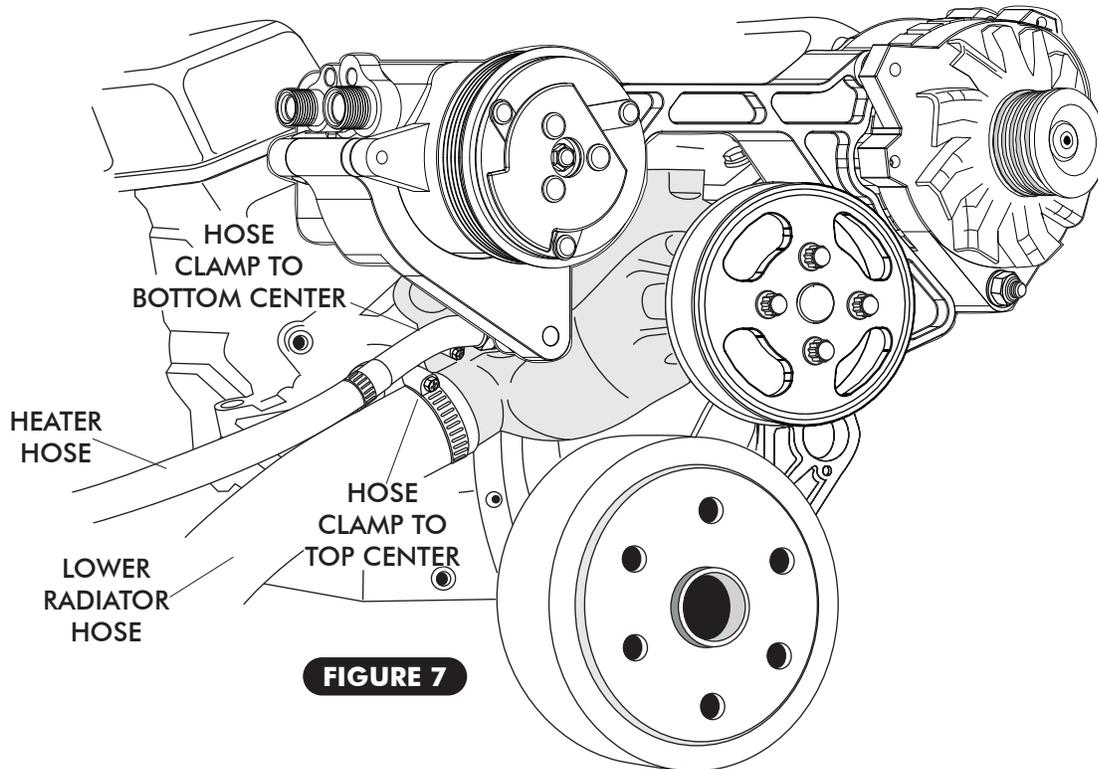
**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**



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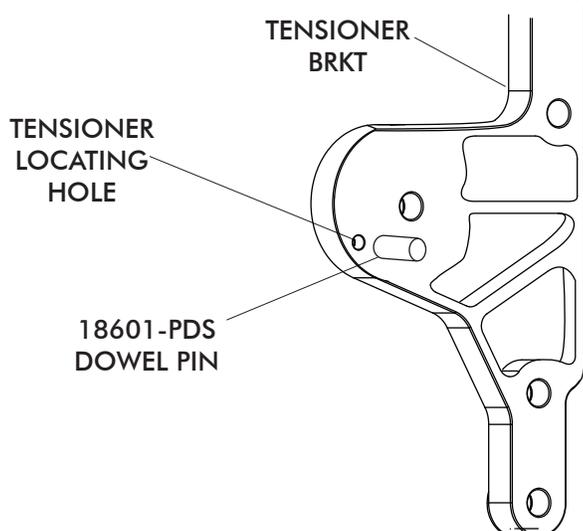
**HEATER HOSE & LOWER RADIATOR HOSE INSTALLATION**

- INSTALL HEATER HOSE, NOTING HOSE CLAMP LOCATION AND POSITION AS SHOWN IN FIGURE 7, BELOW.
- INSTALL LOWER RADIATOR HOSE, NOTING HOSE CLAMP LOCATION AND POSITION AS SHOWN IN FIGURE 7, BELOW.



**BELT TENSIONER & TENSIONER BRACKET INSTALLATION**

- CAREFULLY INSTALL DOWEL PIN IN THE LOCATING HOLE OF THE TENSIONER BRACKET (SEE FIGURE 8, BELOW). **NOTE: DOWEL PIN IS A PRESS FIT. USE A HAMMER TO CAREFULLY TAP DOWEL PIN IN LOCATING HOLE.**

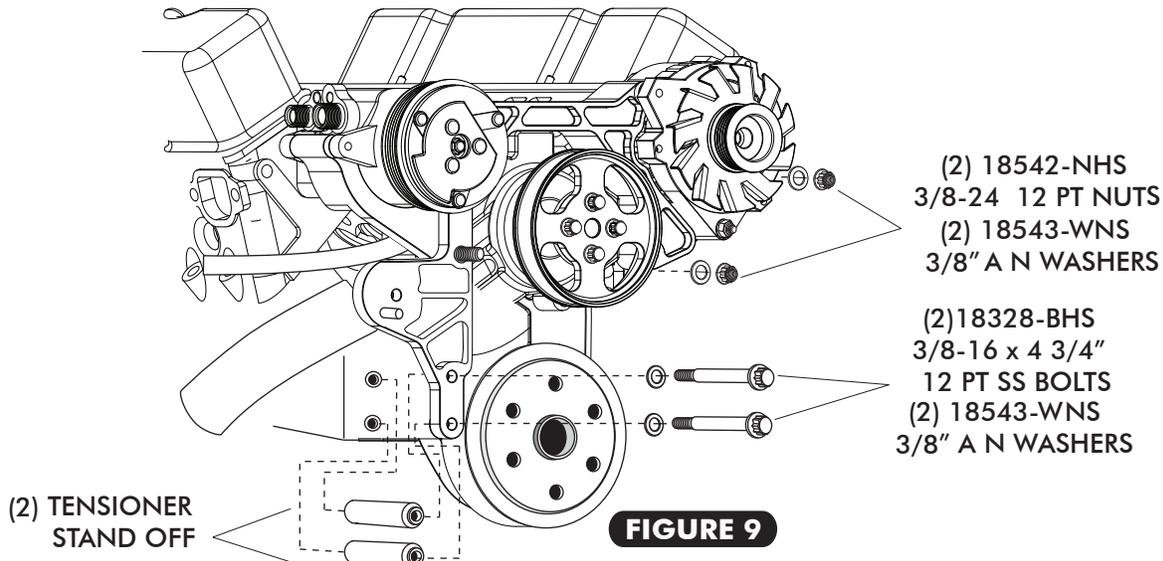




**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**

- INSTALL BELT TENSIONER BRACKET ON PASSENGER SIDE MOUNTING STUDS (SEE FIGURE 9, BELOW).
- PLACE TENSIONER STAND OFF BETWEEN ENGINE BLOCK AND BRACKET AS SHOWN. SECURE BOTTOM OF BRACKET USING (2) 3/8-16 x 4 3/4" 12 PT SS BOLTS WITH (2) 3/8" A N WASHERS. SECURE TOP OF BRACKET TO WATER PUMP MOUNTING STUDS USING (2) 3/8-24 12 PT NUTS WITH (2) 3/8" A N WASHERS.

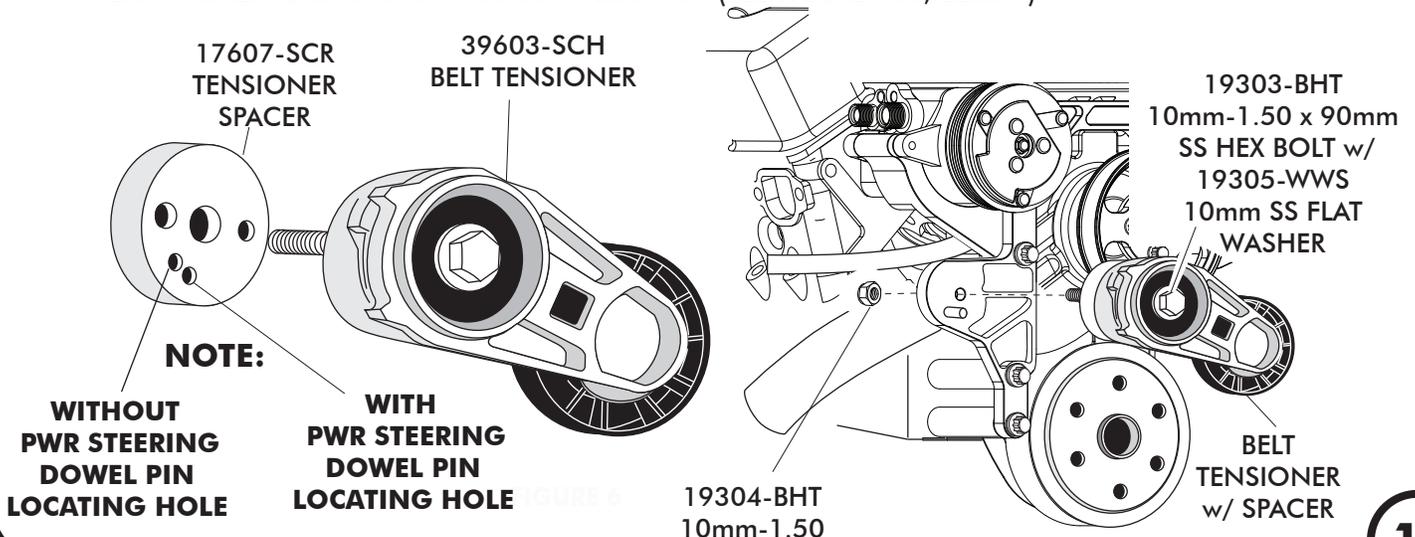
**NOTE: TENSIONER STAND OFF FITS IN COUNTER BORE ON BACK SIDE OF TENSIONER BRACKET.**



**FIGURE 9**

**NOTE: BEFORE INSTALLING BELT TENSIONER, SEE INSTRUCTION PACKAGE INCLUDED WITH TENSIONER COVER KIT.**

- INSTALL TENSIONER SPACER ON BACK SIDE OF BELT TENSIONER (SEE FIGURE 10, BELOW).
- INSTALL BELT TENSIONER WITH SPACER THROUGH TENSIONER BRACKET. **NOTE: BE SURE TO INSERT DOWEL PIN IN CORRECT LOCATING HOLE OF THE TENSIONER SPACER (SEE FIGURE 10, BELOW).** SECURE TENSIONER WITH SPACER TO BRACKET USING A 10mm-1.50 x 90mm SS HEX BOLT, A 10mm SS FLAT WASHER AND A 10mm-1.50 SS NYLOC NUT (SEE FIGURE 10a, BELOW).



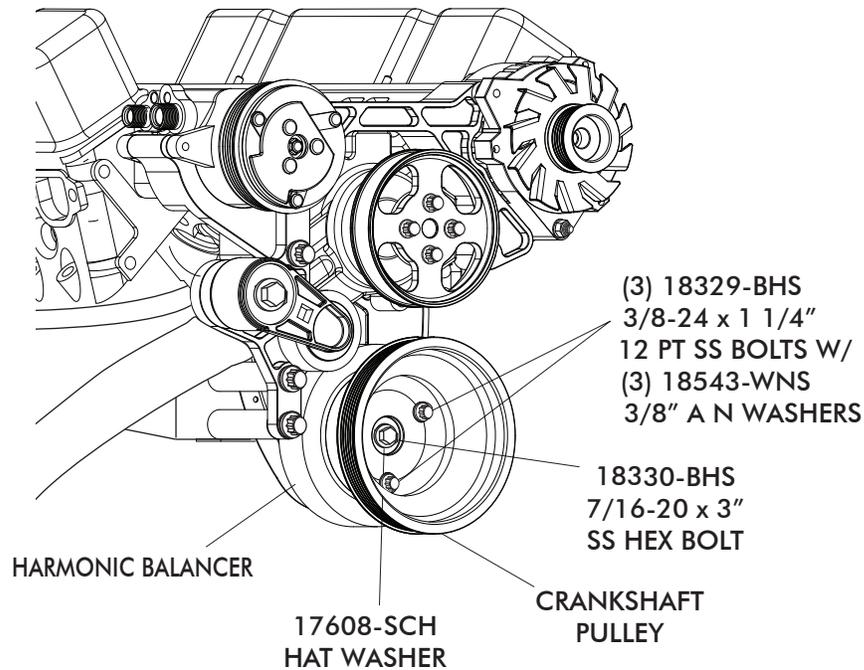


**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**

## CRANKSHAFT PULLEY INSTALLATION

- INSTALL CRANKSHAFT PULLEY ON HARMONIC BALANCER USING (3) 3/8-24 x 1 1/4" 12 PT SS BOLTS WITH (3) 3/8" A N WASHERS. SECURE CRANKSHAFT PULLEY TO THE CRANKSHAFT SNOOT WITH HAT WASHER AND 7/16-20 x 3" SS HEX BOLT (SEE FIGURE 11, BELOW).

**FIGURE 11**



## POWER STEERING PUMP INSTALLATION (IF EQUIPPED)

### **WARNING:**

**PULLEY MUST BE INSTALLED WITH PROPER TOOL (K-D TOOL #2897 OR EQUIVALENT).**

**DO NOT ATTEMPT TO HAMMER OR PRESS PULLEY ON POWER STEERING PUMP SHAFT! FAILURE TO USE PROPER TOOL WILL DESTROY PUMP.**

**NOTE: SOME TYPE II GM POWER STEERING PUMPS HAVE THREADED MOUNTING BASES. THESE MUST BE DRILLED OUT TO ALLOW FRONTRUNNER MOUNTING BOLTS TO PASS THROUGH THE HOLES AND THREAD INTO THE BRACKET (SEE FIGURE 12, PAGE 12).**

- USING A POWER STEERING PUMP PULLEY INSTALLER, INSTALL THE POWER STEERING PULLEY ON POWER STEERING PUMP (SEE FIGURE 12, PAGE 12).
- INSTALL POWER STEERING PUMP USING (2) 5/16-18 X 2 3/4" 12 PT SS BOLTS WITH (2) 5/16" A N WASHERS (SEE FIGURE 12, PAGE 12).



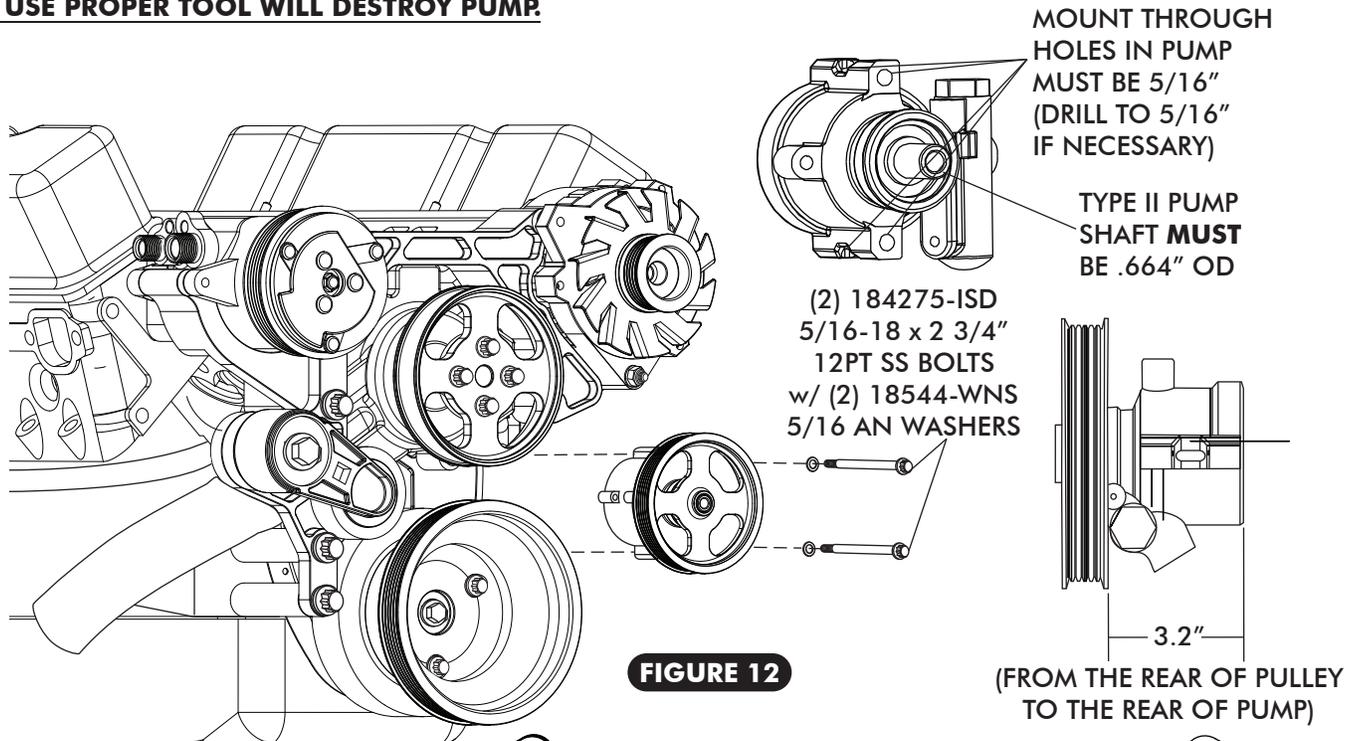
**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**

WITH POWER STEERING (CONT.)

**WARNING:**

**PULLEY MUST BE INSTALLED WITH PROPER TOOL (K-D TOOL #2897 OR EQUIVALENT).**

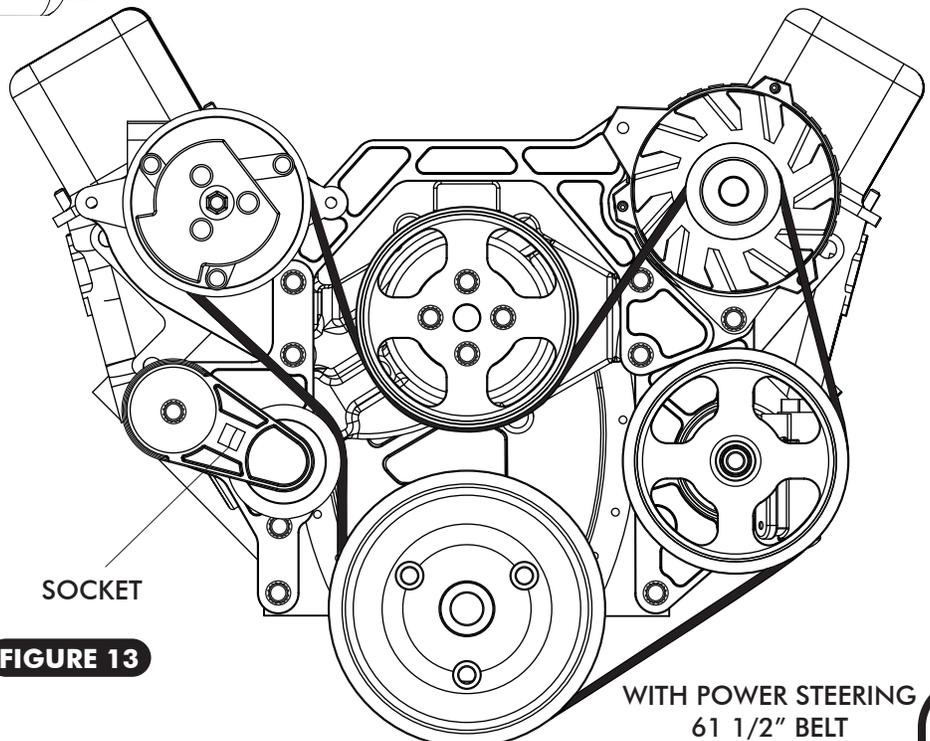
**DO NOT ATTEMPT TO HAMMER OR PRESS PULLEY ON POWER STEERING PUMP SHAFT! FAILURE TO USE PROPER TOOL WILL DESTROY PUMP.**



**FIGURE 12**

**BELT INSTALLATION**

INSERT A 1/2" DRIVE RATCHET OR BREAKER BAR INTO SOCKET ON TENSIONER, AND ROTATE CLOCKWISE TO TENSIONER STOP. ROUTE BELT AROUND CRANKSHAFT PULLEY, POWER STEERING PULLEY, ALTERNATOR, AND OVER COMPRESSOR. PULL BELT DOWN AND **SLIDE UNDER WATER PUMP PULLEY LAST** (SEE FIGURE 13, RIGHT).



**FIGURE 13**

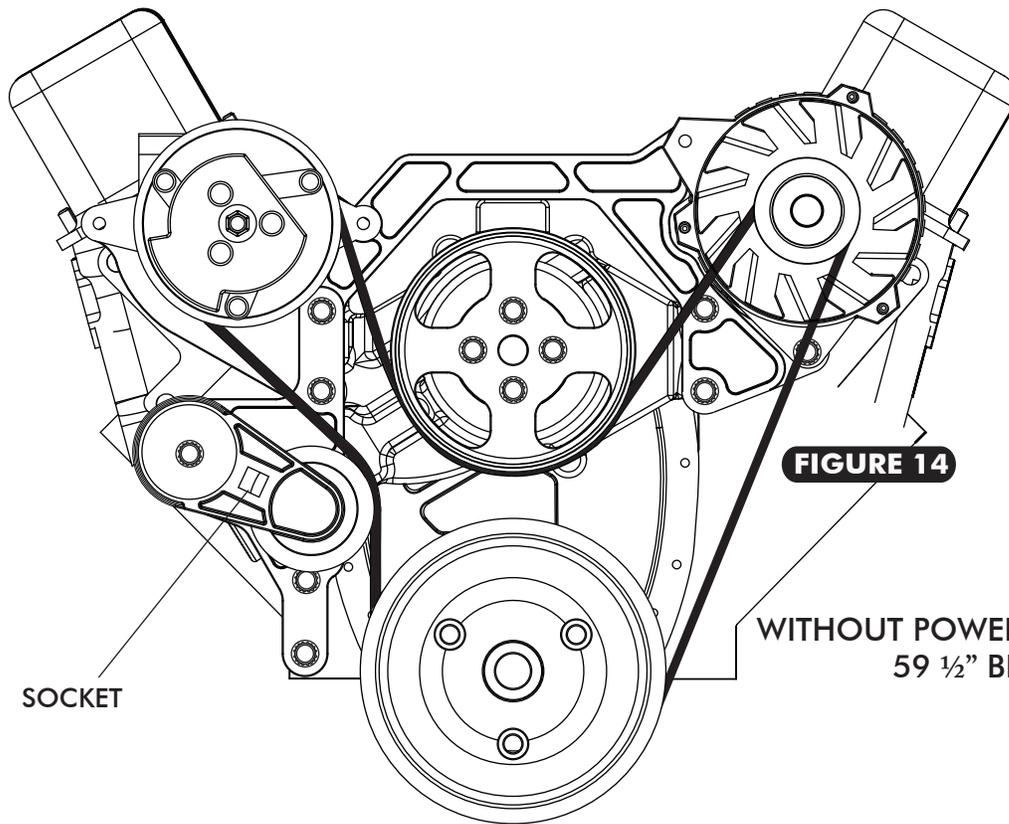


**WARNING: ANTI-SEIZE MUST BE USED ON THREADS OF BOLTS, OR MECHANICAL LOCKING WILL OCCUR, PREVENTING REMOVAL OF NUT FROM BOLT, AND CAUSING DAMAGE TO FASTENERS.**

## **WITHOUT POWER STEERING**

### **BELT INSTALLATION**

- INSERT A ½" DRIVE RATCHET OR BREAKER BAR INTO SOCKET ON TENSIONER, AND ROTATE CLOCKWISE TO TENSIONER STOP. ROUTE BELT AROUND CRANKSHAFT PULLEY AND ALTERNATOR, AND OVER COMPRESSOR. PULL BELT DOWN AND **SLIDE UNDER WATER PUMP PULLEY LAST** (SEE FIGURE 14, BELOW).

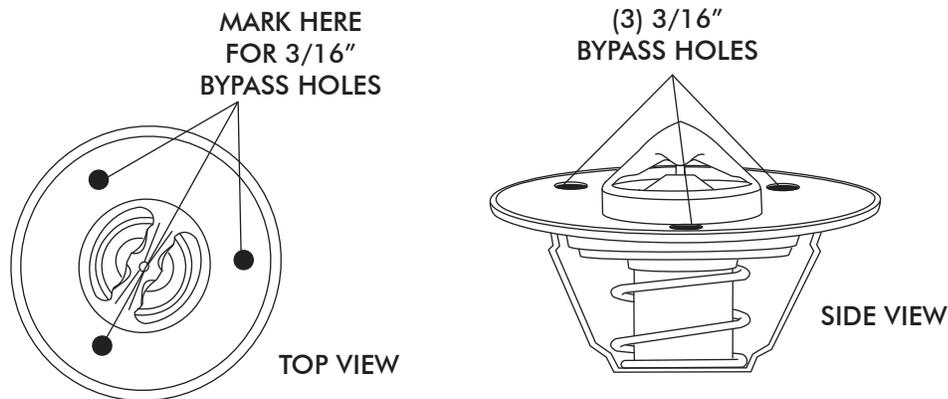




## MODIFYING YOUR STOCK THERMOSTAT

- IF YOU HAVE CHOSEN TO MODIFY YOUR STOCK THERMOSTAT, MARK THREE (3) BYPASS HOLES. MAKE SURE THE BYPASS HOLES ARE SPACED EVENLY AROUND THE TOP OF THE THERMOSTAT (SEE FIGURE 15, BELOW).
- USING A 3/16" DRILL BIT, DRILL (3) 3/16" BYPASS HOLES IN YOUR STOCK THERMOSTAT (SEE FIGURE 15, BELOW).

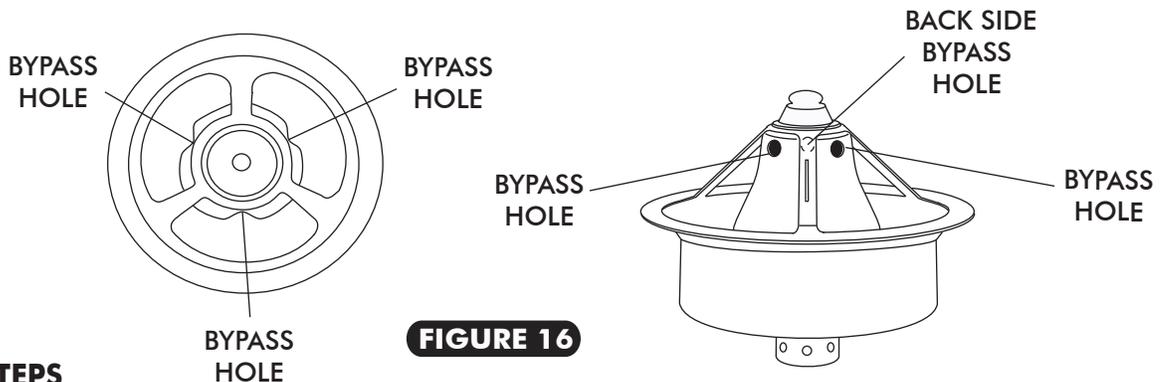
**NOTE: BE SURE TO CLEAN OFF ANY REMAINING METAL SHAVINGS BEFORE INSTALLING THERMOSTAT.**



**FIGURE 15**

## STEWART HIGH PERFORMANCE THERMOSTAT

- A STEWART HIGH PERFORMANCE THERMOSTAT (AVAILABLE FROM STEWART) COMES WITH THE BYPASS HOLES PRE-DRILLED (SEE FIGURE 16, BELOW).



**FIGURE 16**

## FINAL STEPS

- REINSTALL ALL PREVIOUSLY REMOVED ITEMS (RADIATOR, FAN BLADE, RADIATOR HOSES ETC.).
- RECONNECT ALL ELECTRICAL CONNECTORS.

**NOTE: CHARGING SYSTEM MUST BE PROPERLY WIRED TO ACCEPT ONE-WIRE INTERNALLY REGULATED ALTERNATOR.**

- CONNECT NEGATIVE BATTERY CABLE
- FILL RADIATOR WITH AT LEAST A 50/50 MIXTURE OF APPROVED ANTIFREEZE AND DISTILLED WATER. IT IS THE OWNER'S RESPONSIBILITY TO KEEP THE FREEZE PROTECTION AT THE PROPER LEVEL FOR THE CLIMATE IN WHICH THE VEHICLE IS OPERATED. FAILURE TO FOLLOW ANTIFREEZE RECOMMENDATIONS WILL CAUSE HEATER CORE TO CORRODE PREMATURELY AND POSSIBLY BURST IN A/C MODE AND/OR FREEZING WEATHER, VOIDING YOUR WARRANTY.
- DOUBLE CHECK ALL FITTINGS, BRACKETS AND BELTS FOR TIGHTNESS.
- VINTAGE AIR RECOMMENDS THAT ALL A/C SYSTEMS BE SERVICED BY A CERTIFIED AUTOMOTIVE AIR CONDITIONING TECHNICIAN.
- EVACUATE THE SYSTEM FOR A MINIMUM OF 45 MINUTES PRIOR TO CHARGING, AND LEAK CHECK PRIOR TO SERVICING. CHARGE THE SYSTEM TO THE CAPACITY STATED ON THE INFORMATION PAGE (PAGE 2) OF THIS INSTRUCTION MANUAL.