



Holley Alternator and P/S Bracket System Part Number 20-143

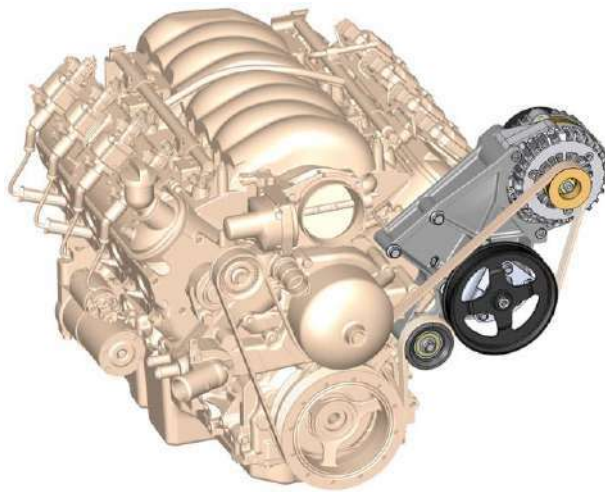
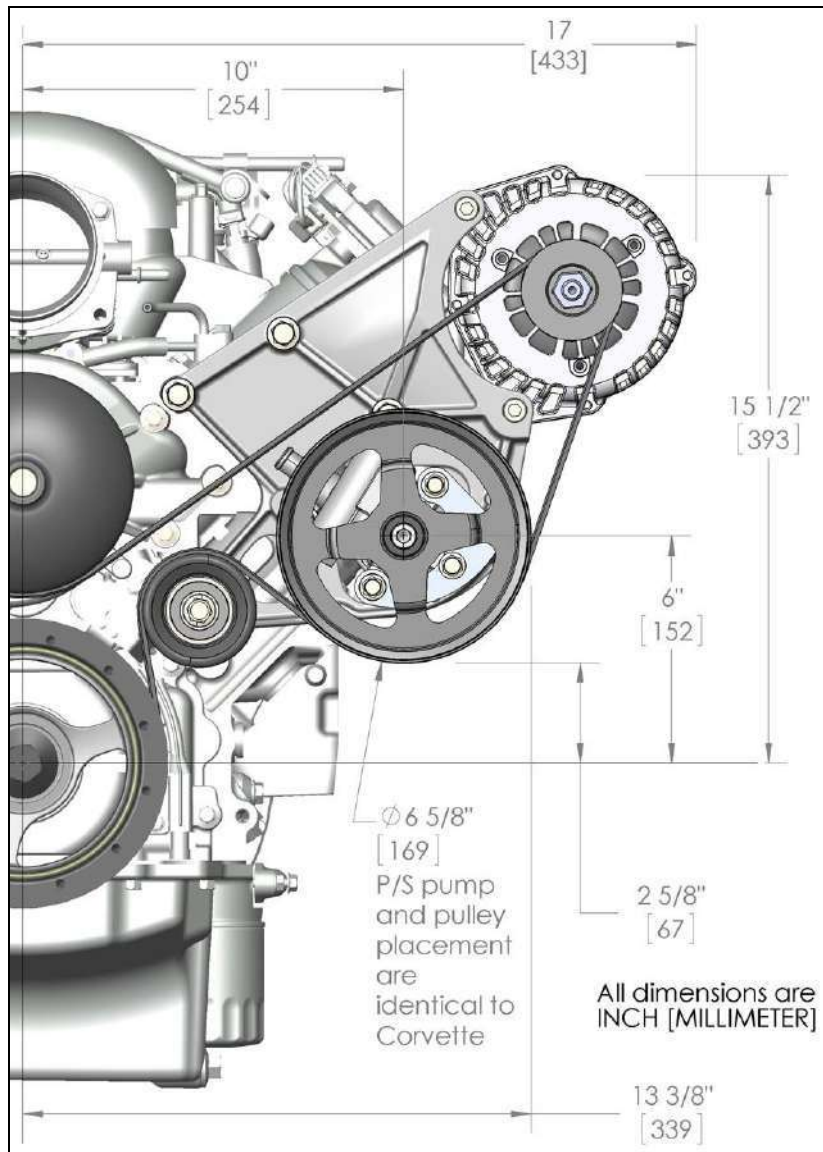


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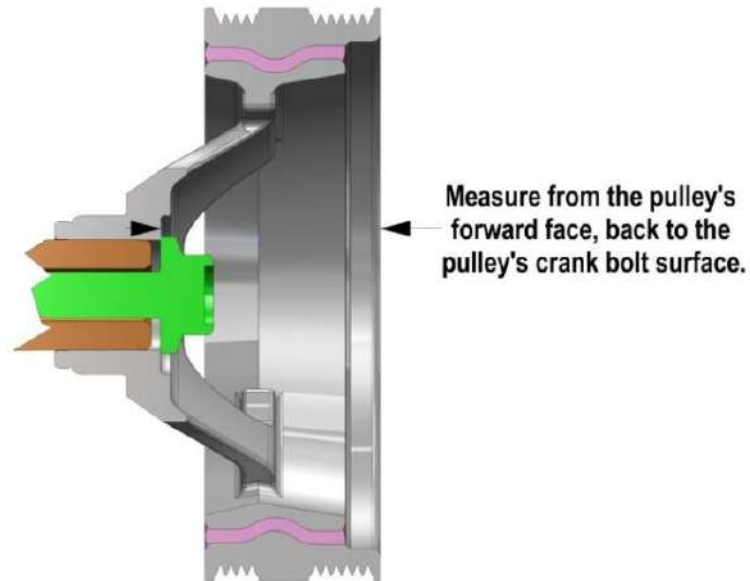
Introduction:

Holley's accessory drive systems offer clean, economical brackets and accessories for LS engines. These accessory drives look truly at home on any LS engine as if they came from the factory this way.

Holley's complete alternator and P/S bracket system comes with virtually everything needed for installation, from the accessories to the pulleys. The 20-143 can be used with any of Holley's passenger's side A/C bracket systems or used stand-alone in most cases, using the application's original tensioner that matches the crank pulley and water pump's belt alignment.

The first step is to determine which belt alignment you want to proceed with. This is determined by the crank pulley and often, but not always, the water pump. If clearance to the radiator is an issue, the compact STANDARD spacing common on the Corvette may be preferred. Otherwise, it is most cost effective to retain the existing crank pulley/water pump and space the bracket and other accessories to match. **An application specific installation kit (part # 21-2 or 21-3) is REQUIRED for this accessory drive system if not using a STANDARD belt alignment.**

Crank Pulley Belt Alignment Determination:



See the below chart for reference dimensions.

Overview of Parts Required (but NOT included with 20-143 accessory drive system):

Components with specific belt alignments

Belt Alignment Group	LS Application (Alignment Specific)	Holley Installation Kit (Alignment Specific)	Crank Pulley (Reference Dimension)		Water Pump (Alignment Specific)
					GM #
Standard	Corvette / CTS-V / G8	Not required	1.5"	37 MM	19256263, 89018052, or 12604630
Middle	F-body / GTO	21-2	2.25"	55 MM	19256263
Long	Camaro ('10-UP) / Truck (all) *	21-3	3"	75 MM	19207665 or any truck WP

* Note for truck applications, a 97-151 tensioner will also be required

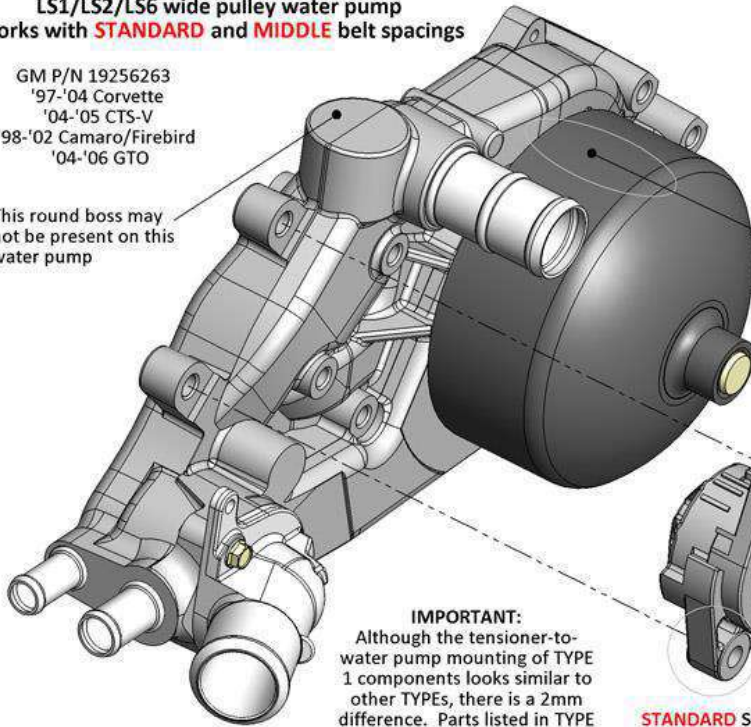
Water Pump and Tensioner Assembly Determination:

To determine which water pump type and associated tensioner you have, refer to the following:

LS1/LS2/LS6 wide pulley water pump
Works with **STANDARD** and **MIDDLE** belt spacings

GM P/N 19256263
'97-'04 Corvette
'04-'05 CTS-V
'98-'02 Camaro/Firebird
'04-'06 GTO

This round boss may not be present on this water pump



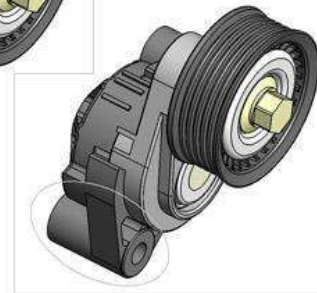
Identifying feature:
Wide pulley allowing for both standard and middle belt spacings

TYPE 1

IMPORTANT:
Although the tensioner-to-water pump mounting of TYPE 1 components looks similar to other TYPEs, there is a 2mm difference. Parts listed in TYPE 1 should not be used in combination with any other TYPE's parts or pulley misalignment *will* occur.

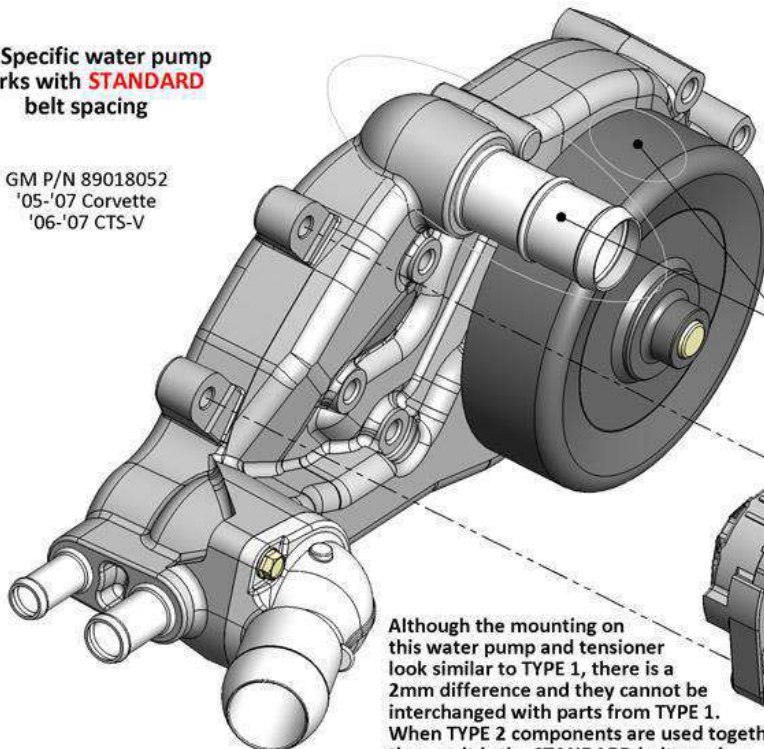
STANDARD Spacing Tensioner
Holley P/N 97151
GM P/N 12559325
'97-'04 Corvette
'04-'05 CTS-V

MIDDLE Spacing Tensioner
GM P/N 12560344
'98-'02 Camaro/Firebird
'04-'06 GTO



LS2 Specific water pump
Works with **STANDARD** belt spacing

GM P/N 89018052
'05-'07 Corvette
'06-'07 CTS-V



Identifying features:
Narrow pulley and passenger's side outlet

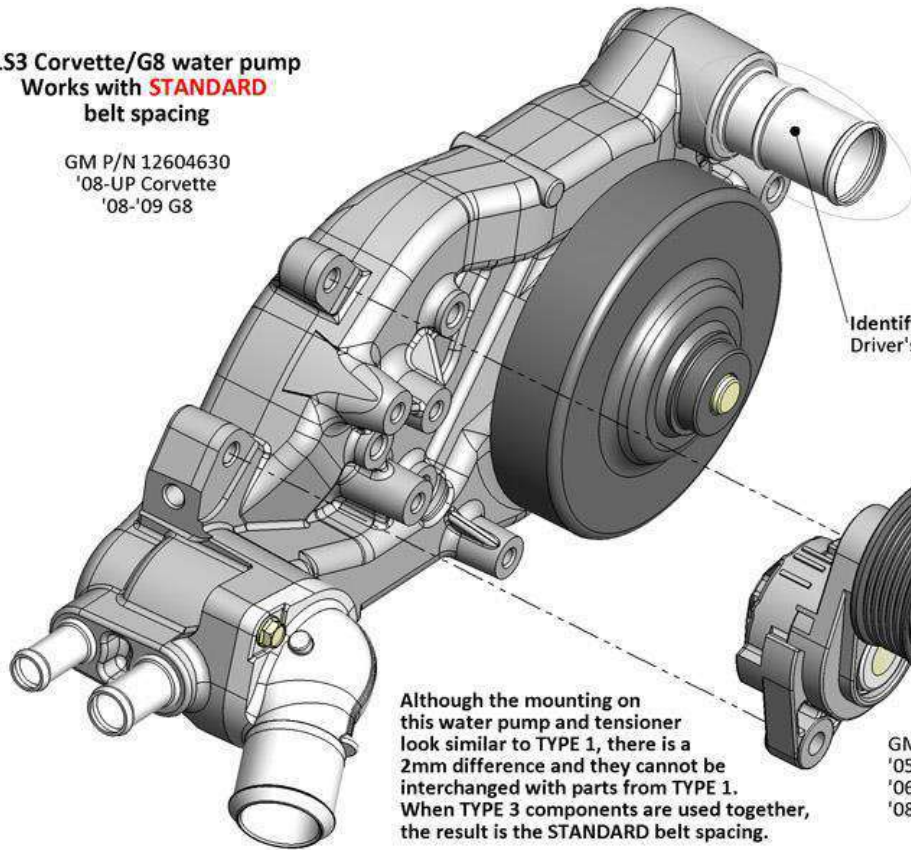
TYPE 2

Although the mounting on this water pump and tensioner look similar to TYPE 1, there is a 2mm difference and they cannot be interchanged with parts from TYPE 1. When TYPE 2 components are used together, the result is the **STANDARD** belt spacing.

GM P/N 12569301
'05-'07 Corvette
'06-'07 CTS-V
'08-'09 G8

LS3 Corvette/G8 water pump
Works with **STANDARD**
belt spacing

GM P/N 12604630
'08-UP Corvette
'08-'09 G8



Identifying feature:
Driver's side outlet

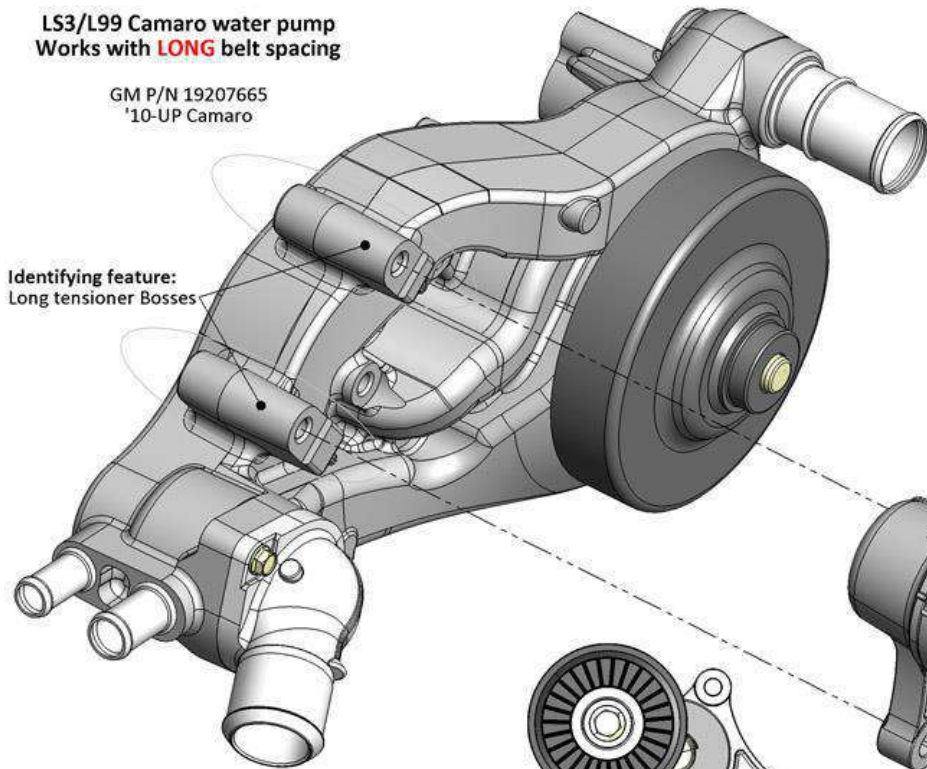
Although the mounting on this water pump and tensioner look similar to TYPE 1, there is a 2mm difference and they cannot be interchanged with parts from TYPE 1. When TYPE 3 components are used together, the result is the STANDARD belt spacing.

GM P/N 12569301
'05-UP Corvette
'06-'07 CTS-V
'08-'09 G8

TYPE 3

LS3/L99 Camaro water pump
Works with **LONG** belt spacing

GM P/N 19207665
'10-UP Camaro



Identifying feature:
Long tensioner Bosses

Front view

TYPE 4

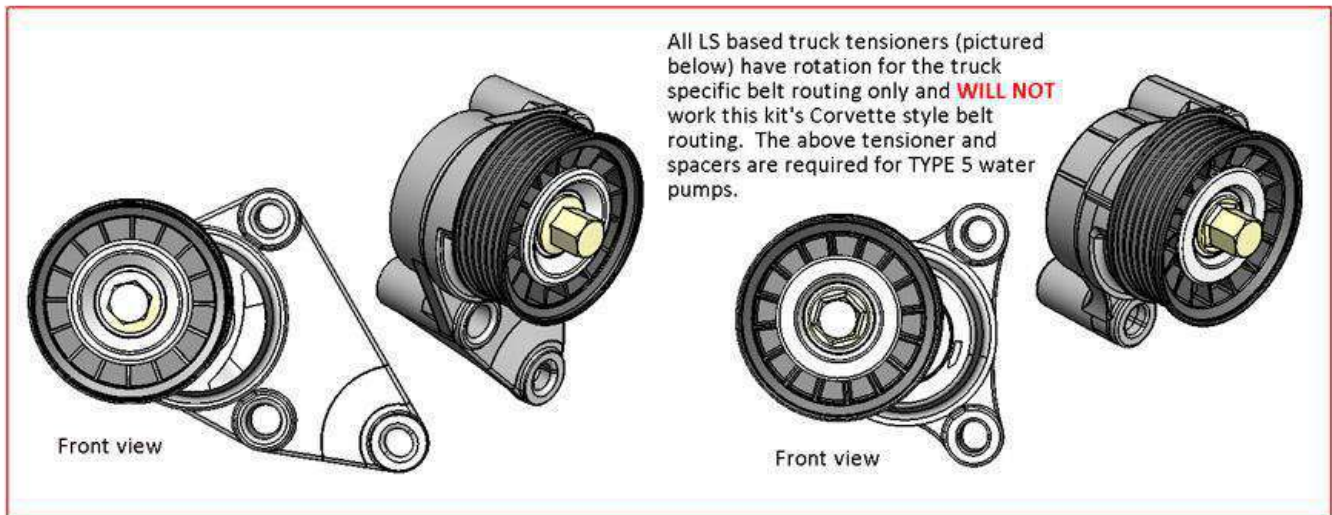
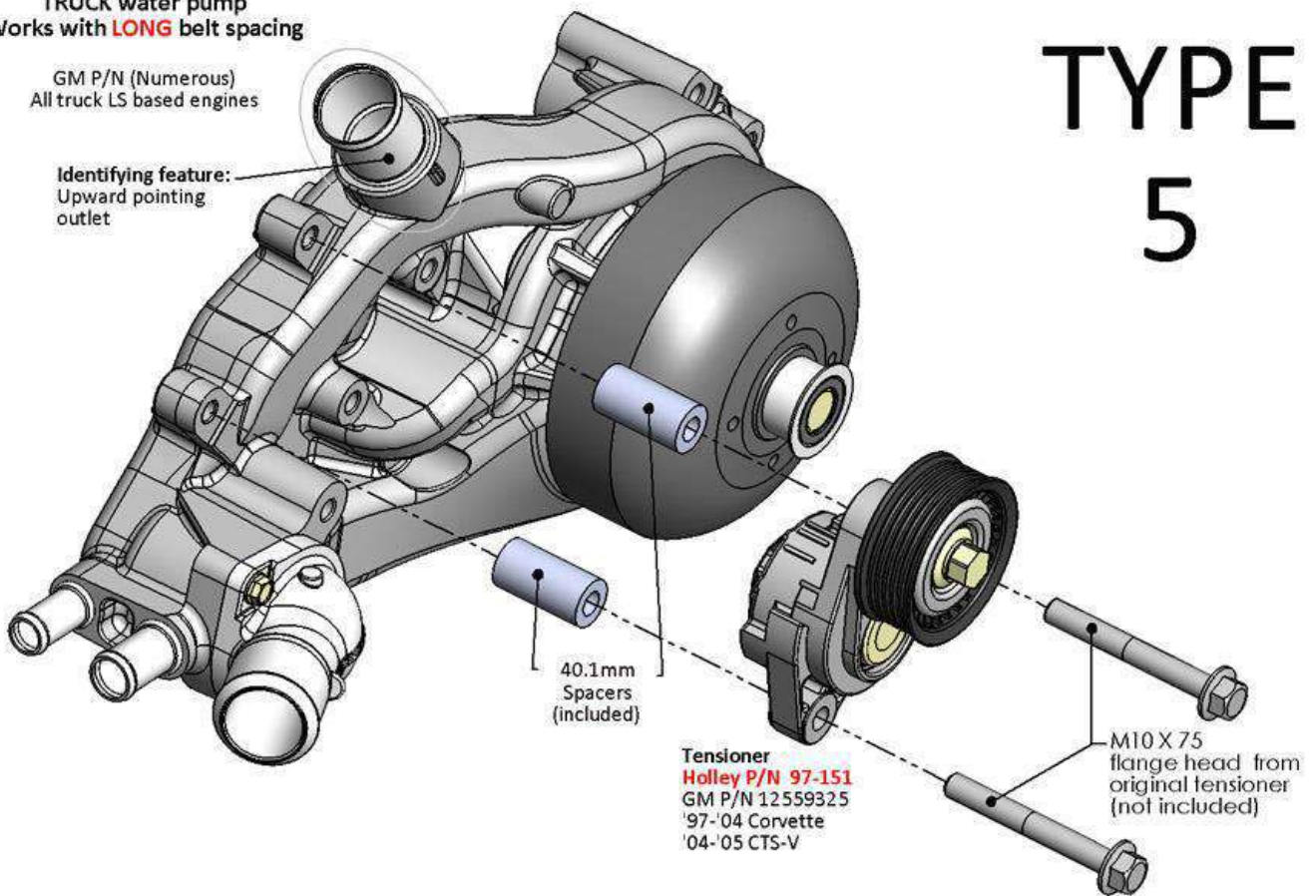
GM P/N 12628025
'10-UP Camaro

TRUCK water pump
Works with **LONG** belt spacing

GM P/N (Numerous)
All truck LS based engines

Identifying feature:
Upward pointing
outlet

TYPE 5

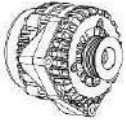
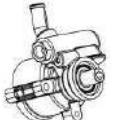



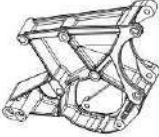



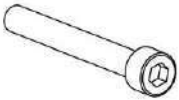



NOTE: Torque M8 bolts to 18 ft./lbs. and M10 bolts to 36 ft./lbs.

Parts List:

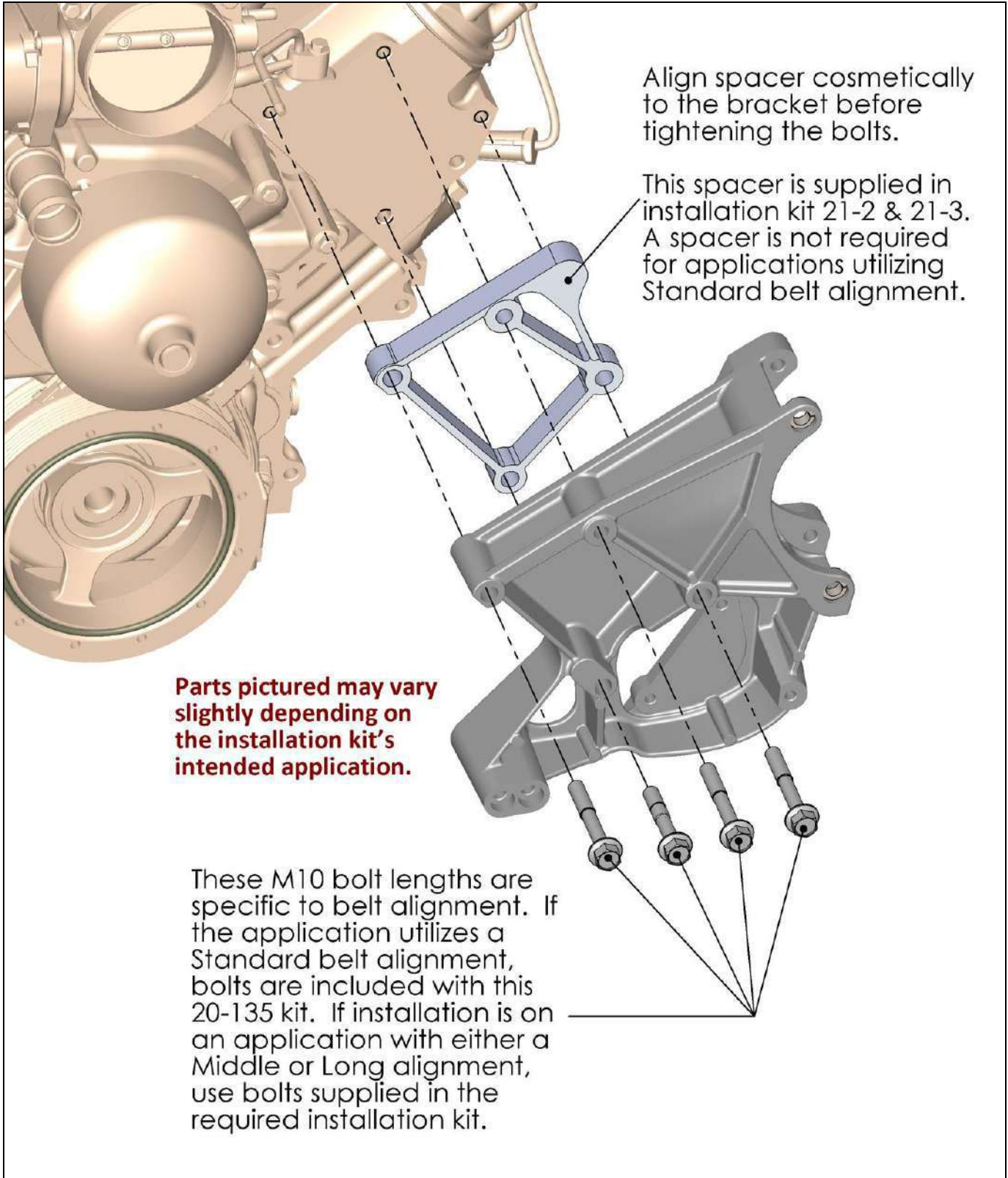
- If used with Middle or Long belt alignments, this bracket system requires installation kit part # 21-2 or 21-3 respectively. For Standard alignments no installation kit is required.

Parts included with 20-143 bracket kit (see list supplied with installation kit for additional parts):

PICTURE	QTY	DESCRIPTION	APPLICATION
	1	Alternator (P/N 197-301)	Driver's Side Bracket
	1	P/S Pump (P/N 198-100)	Driver's Side Bracket
	1	Smooth Idler Pulley (P/N 97-150)	Driver's & Passenger's Side Brackets
	1	Pigtail (P/N 197-400)	Alternator
	1	Ribbed Pulley (P/N 97-152)	P/S Pump
	1	Driver's Side Bracket Assembly	Alternator & Power Steering Pump
	1	Power Steering Pump Plate Bracket	Front Support of Power Steering Pump
	1	Step Spacer	Driver's Side Idler Pulley
	2	Tensioner Spacer	Between Tensioner & Water Pump (Use only with Type 5 water pump & Long belt alignment)
	2	Socket Head Cap Bolt, M10 x 1.5 x 80	Alternator Bolts
	2	Flange Head Bolt, M8 x 1.25 x 20	Power Steering Pump Bolts
	2	Flange Head Bolt, M8 x 1.25 x 80	Power Steering Pump Bolts
	1	Flange Head Bolt, M10 x 1.5 x 45	Idler Pulley to Driver's Side Bracket
	1	Flange Head Bolt, M10 x 1.5 x 60	Driver's Side Bracket to Head (NOT used with Middle & Long belt alignments)
	3	Flange Head Bolt, M10 x 1.5 x 70	Driver's Side Bracket to Head (NOT used with Middle & Long belt alignments)

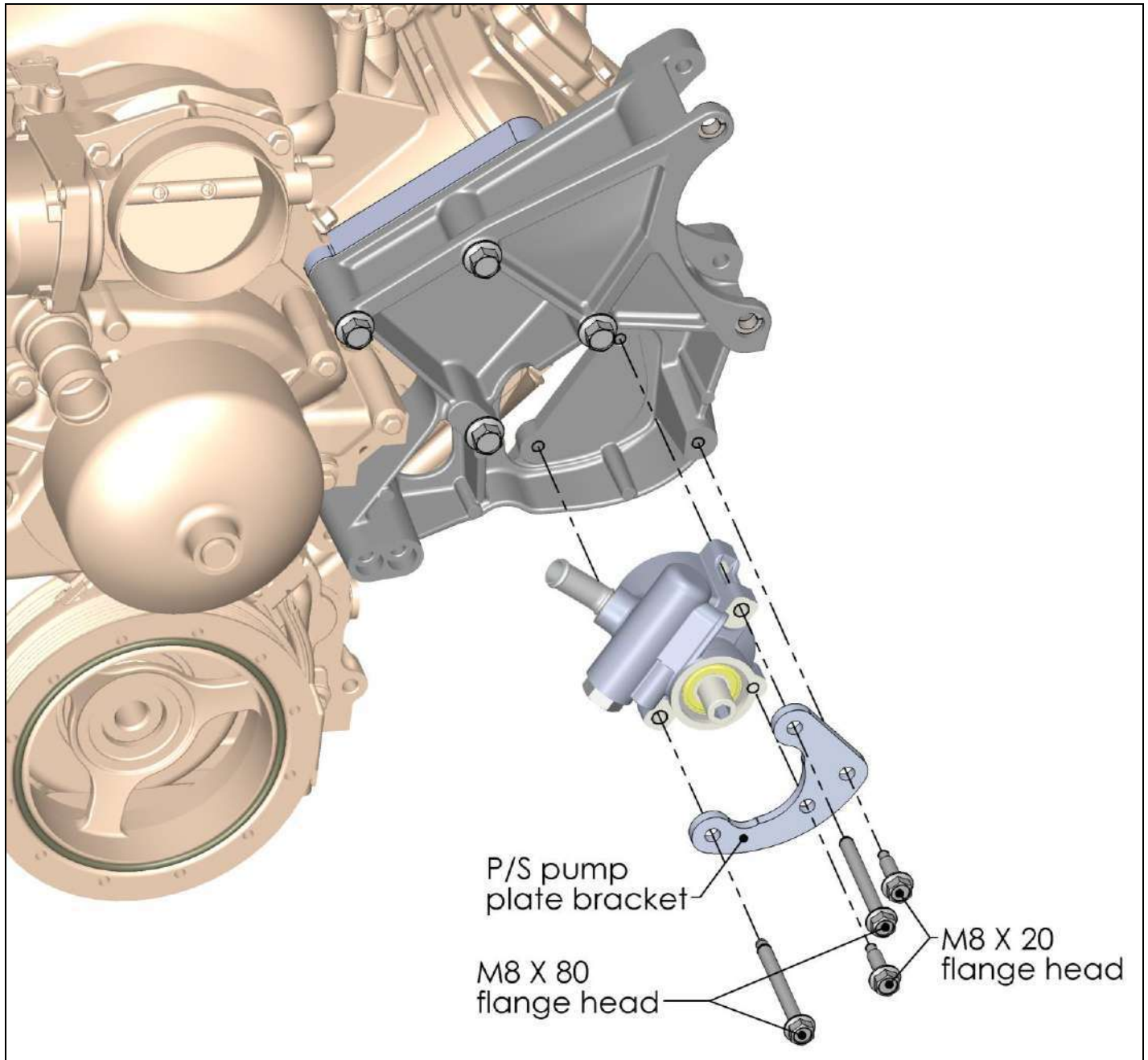
Assembly Instructions

Driver's Side Bracket Installation:



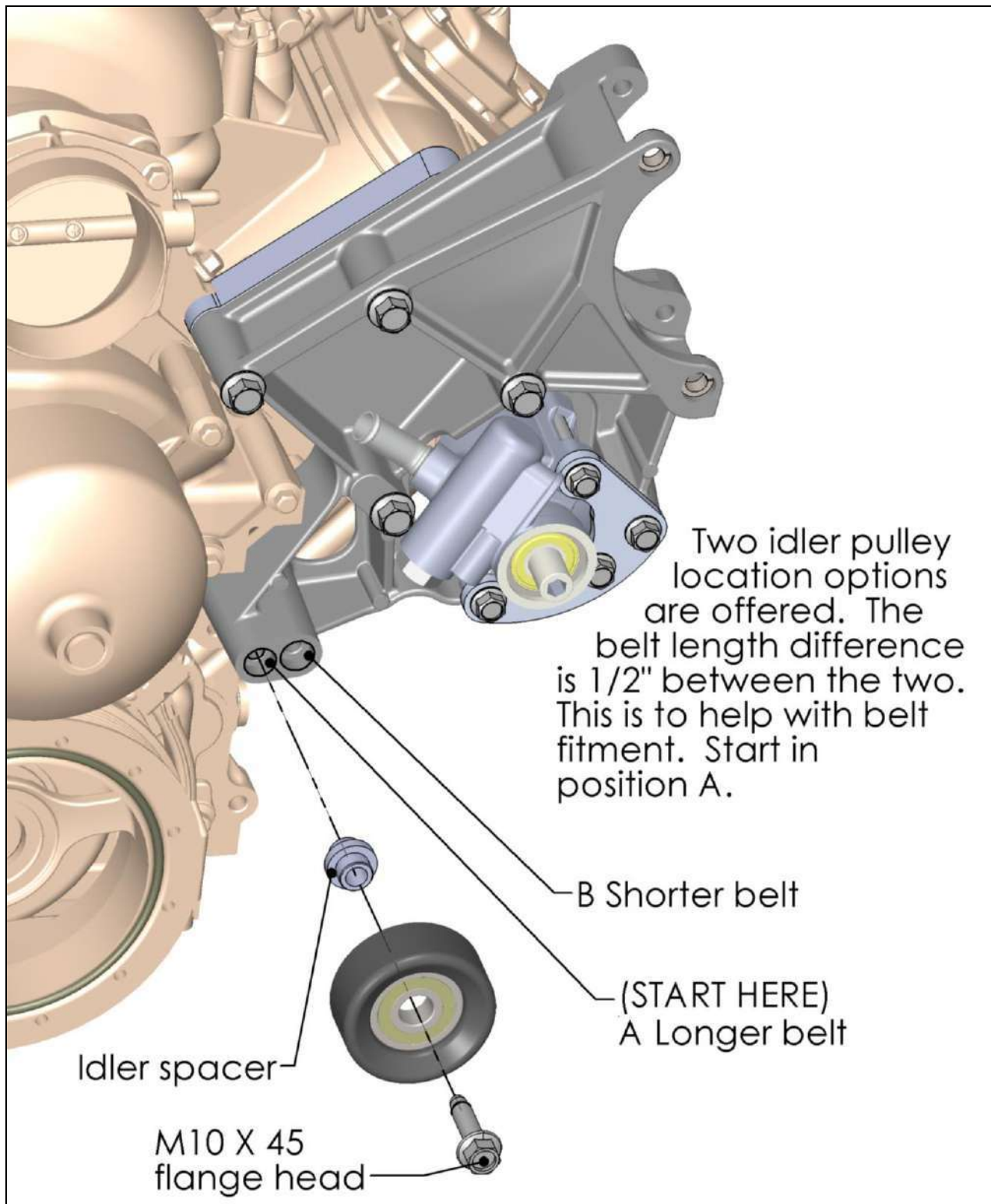
NOTE: Torque M8 bolts to 18 ft./lbs. and M10 bolts to 36 ft./lbs.

Power Steering Pump Installation:



NOTE: Torque M8 bolts to 18 ft./lbs. and M10 bolts to 36 ft./lbs.

Idler Pulley Installation (position options):



NOTE: Torque M8 bolts to 18 ft./lbs. and M10 bolts to 36 ft./lbs.

Power Steering Pump Pulleys:



NOTE: If using AN fittings on the pressure line, Holley P/N 961961ERL AN extension/adaptor is required.

There are several pulleys that will fit the pump, but some do not have the correct belt alignment for this application. See applicable service manual for pulley installation procedures.

Small Diameter Pulley:

Power steering pulleys may interfere with the suspension A-arm in certain swap applications. Choosing a smaller pulley in these situations can give additional clearance.



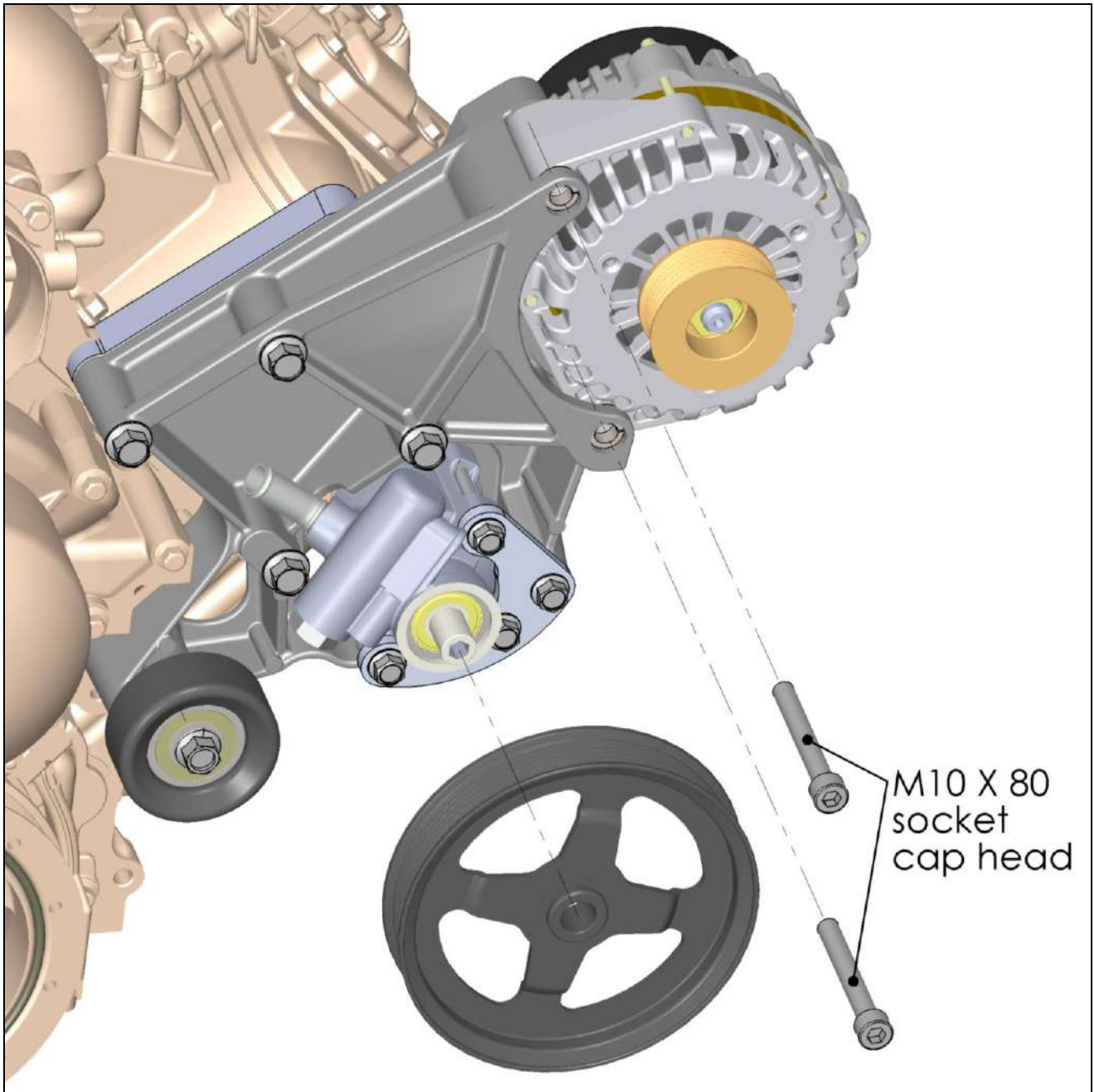
Power steering pump pulley
Holley P/N 97-154
OD to grooves: 5.45"
OD overall: 5.75"

WARNING! Smaller power steering pulleys, such as a 97-154 can rotate the pump beyond recommended RPMs. To correct this, a 25% under-drive balancer should be used if choosing a pump pulley smaller than 6" OD.

Belt Alignment Group	LS Application (Alignment Specific)	Balancer (25% under-drive)
		Powerbond P/N
Standard	Corvette/CTS-V/G8	PBU1117SS25
Middle	F-body/GTO	PBU1480SS25
Long	Camaro ('10-UP)/ Truck (all)	PBU1190SS25

Helpful Hint: If any of these smaller pulleys are used, the supplied belt will not work and a shorter size will have to be purchased at an auto parts store.

P/S Pulley & Alternator Installation:



NOTE: Torque M8 bolts to 18 ft./lbs. and M10 bolts to 36 ft./lbs.

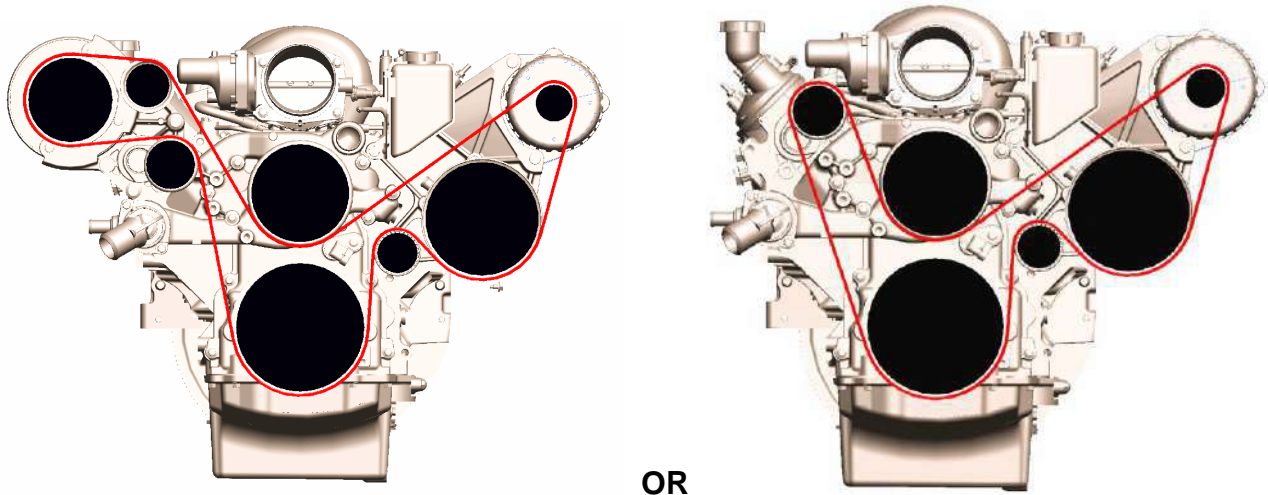
Helpful Hint: When wiring the alternator, install the included 197-400 plug into the alternator. Next connect the yellow wire to switched voltage that is “on” when the key is in the run position. If the vehicle has a “charge indicator light” the yellow wire can be connected to that circuit.

The P/S pulley must be installed using an installation tool that can be rented at most auto parts stores. Incorrect installation of this pulley may damage the P/S pump internals. When installed, the pulley bore face should be flush with the end of the pump shaft.

Helpful Hint: Open faced pulley part 97-152 can be installed onto pump before bracket assembly as bolts can be accessed through pulley windows.

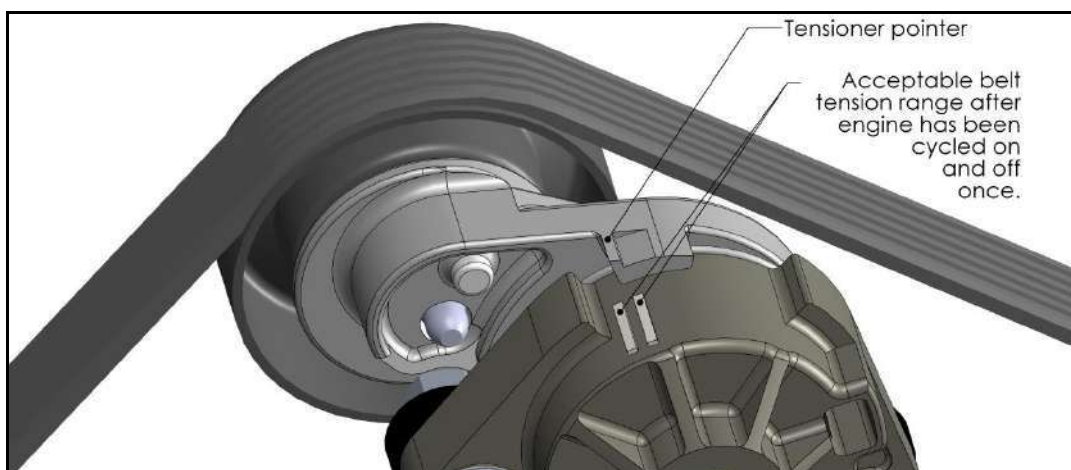
Belt Routing & Length Calculation:

HELPFUL HINT: When installing the belt, route around all the pulleys except the water pump pulley. While fully rotating the tensioner arm, slip the belt on the smooth water pump pulley last.



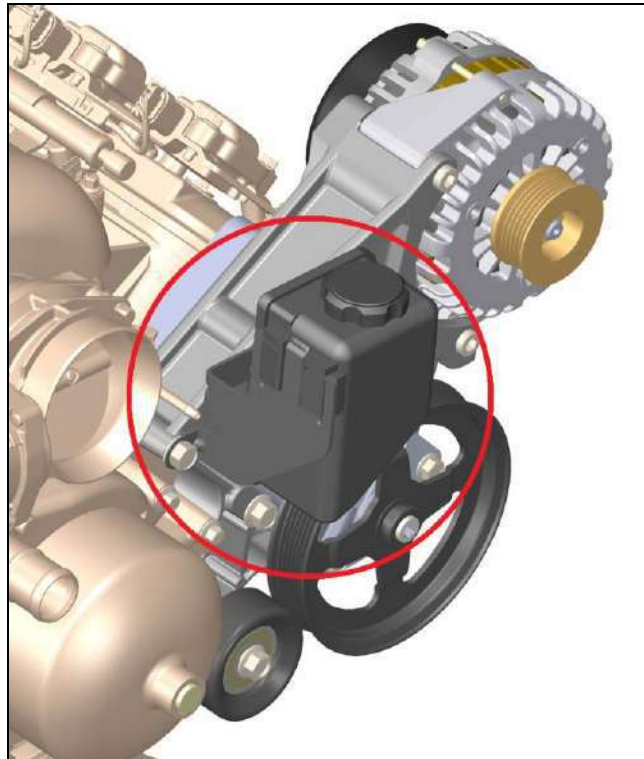
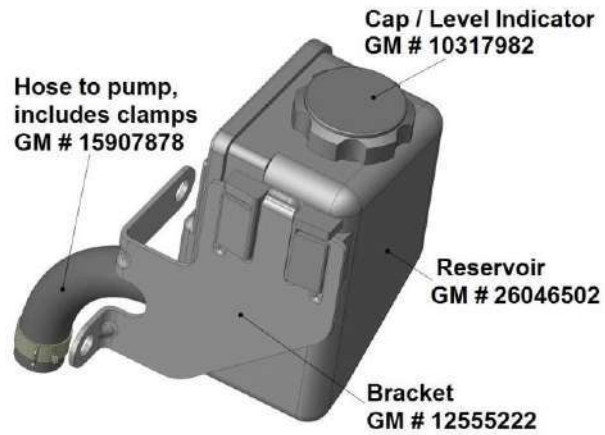
Both the bracket application and pulley diameters vary and will directly affect belt length. To acquire the measurement for the correct belt, perform the following:

After all brackets and accessories are installed, route masking tape or string around the belt path. Leave the tensioner in the un-sprung position for this measurement. Mark or cut the tape/string to length and remove from the pulleys. Subtract approximately 1 1/8" (28 mm) from the measured length to compensate for the un-sprung tensioner position. You will need to convert belt length to millimeters if measured in inches ($\text{inches} \times 25.4 = \text{mm}$). Go to any auto parts store and ask for a 6PK0000 belt with the "0000" being the length in millimeters. For example, if you measured 2493 mm and then subtracted 28 mm, you would get 2465 mm, and the part number would be 6PK2465. Remember, if you miss on size, the driver's side idler can be moved to decrease the required belt length by 1/2".



Power Steering Pump Reservoir Options:

The Holley driver's side bracket works with reservoirs found on '97-up Corvettes. Other remote reservoirs can be custom fitted with this bracket as well. All the below reservoir parts are included in **Holley kit # 198-200**.

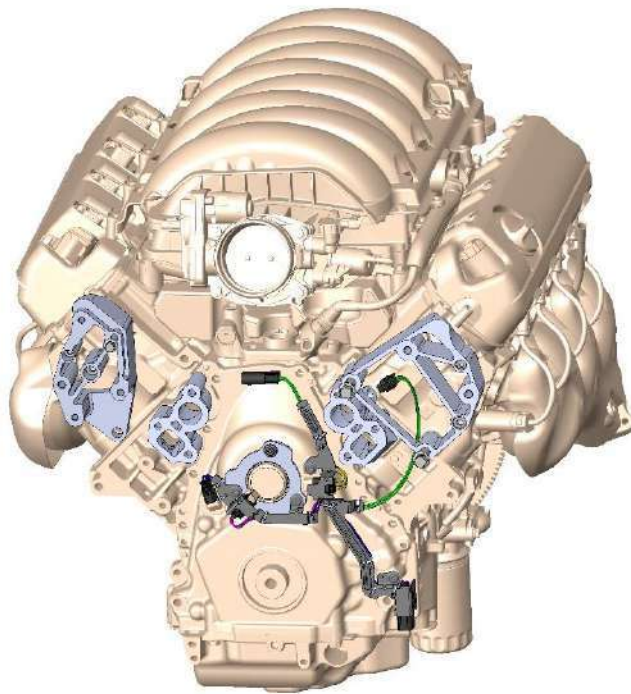


LT Assembly Instructions

*These instructions supersede bracket instructions.
See bracket instructions for Fitment and Required Components and Final Assembly.*

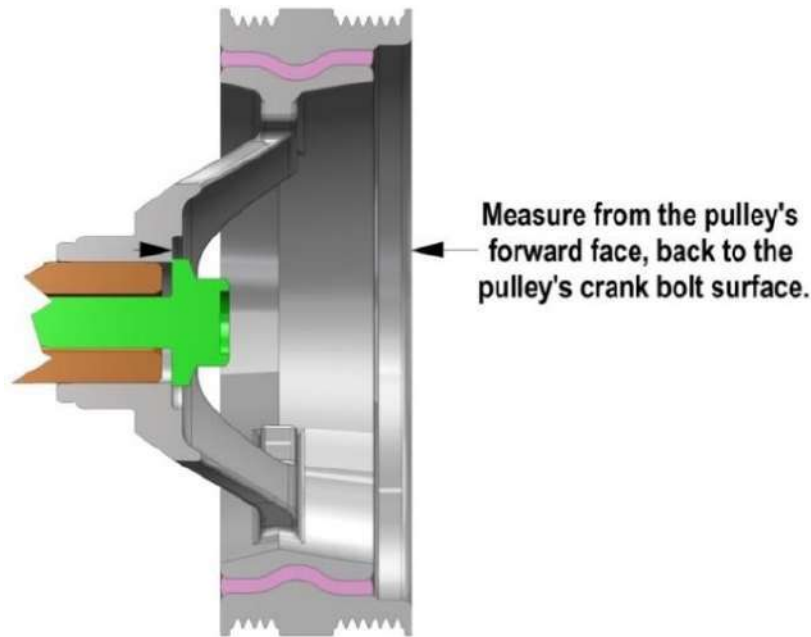


Installation Kit for High Mount Accessory Drive Brackets on LT Applications Part Number 21-5



Features:

- Mounts any of Holley's popular High Mount accessory drive brackets to LT engines
- Utilizes conventional LS center water pump (Holley P/N 22-100 or similar)
- No engine modification required - completely bolt-on.
- Hides temperature sensor and harness connector from sight.
- Works with LT Truck Harmonic Balancer (often already on donor engine)
- Cost effective and proven solution
- Utilizes conventional single sided belt.



Overview of Parts Needed (but NOT included with 21-5 installation kit):

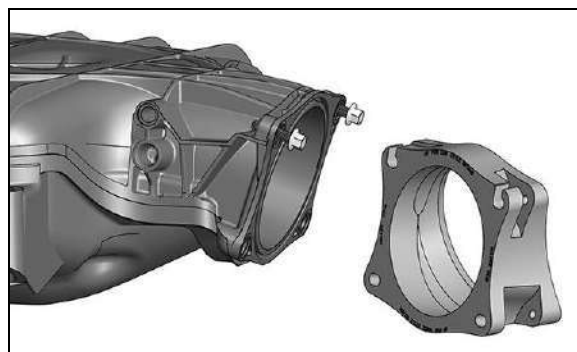
Belt Alignment Group	Crank Pulley	Crank Pulley (Reference Dimension)		LS Water Pump Gasket (2 required)*	LT Water Pump Gasket (2 required)	Water Pump (Type 1)	Throttle Body Angle Adapter (required for use with car style intakes)	Works with: Holley brackets
	Application / GM #	3.4"	86 MM	GM # / AC Delco #	GM #	Holley # / GM #	Holley #	Holley #
LT - Long	2015 Silverado / 12620312			12630223 / 251-663	12657430	22-100 / 19256263	717-15	20-131 THRU 20-135 20-136 THRU 20-143

*LS gaskets typically supplied with LS water pump.


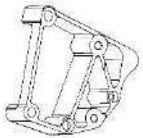
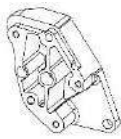




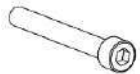

NOTES:

- 21-1, 21-2, or 21-3 are not required when using 21-5 on LT applications
- Holley brackets used with 20-5 work with LT VVT applications.
- If desired the OE mechanical vacuum pump can be utilized with this system.
- If your LT engine does not already have the above crank pulley, one will need to be installed for proper belt alignment. See engine service manual instructions for removal and installation of the crank pulley and pulley bolt.

NOTE: If using a car style intake, a 717-15 angle adapter is required to gain clearance to the water pump. If using a truck style intake the 717-15 is not required, but can be used inverted to improve throttle body angle for swap applications.



Parts List:

PICTURE	QTY	DESCRIPTION	APPLICATION
	1	Harness Assembly	Timing Cover
	1	Bracket Driver's Side Spacer	Between Bracket & Head
	1	Bracket Passenger's Side Spacer	Between Bracket & Head
	1	Water Pump Driver's Side Spacer	Between Water Pump and Engine Block
	1	Water Pump Passenger's Side Spacer	Between Water Pump and Engine Block
	1	Clocking Ring	Cam Actuator
	1	Tensioner spacer	Between Tensioner & Water Pump (ONLY used with R4 A/C Compressor Brackets)
	2	Socket Head Cap Bolt, M10 X 1.5 X 50	Driver's Side Spacer to Head
			Passenger's Side Spacer to Head
	2	Socket Head Cap Bolt, M8 X 1.25 X 50	Driver's Side Spacer to Head
			Passenger's Side Spacer to Head
	6	Flange Head Bolt, M8 X 1.25 X 125	Water Pump to Block
	1	Flange Head Bolt, M8 X 1.25 X 110	Passenger's Side Bracket to Head (Sanden A/C Compressor Brackets Only)
	1	Flange Head Bolt, M8 X 1.25 X 130	Passenger's Side Bracket to Head (R4 A/C Compressor Brackets Only)
	2	Flange Head Bolt, M10 X 1.5 X 35	Passenger's Side Bracket to Spacer
			Tensioner to Water Pump
	1	Flange Head Bolt, M10 X 1.5 X 115	Alternator Bracket to Spacer (Top Left)
	1	Flange Head Bolt, M10 X 1.5 X 105	Alternator Bracket to Spacer (Bottom Left)
2	Flange Head Bolt, M10 X 1.5 X 70	Alternator Bracket to Spacer (Top and Bottom Right)	

Disassembly

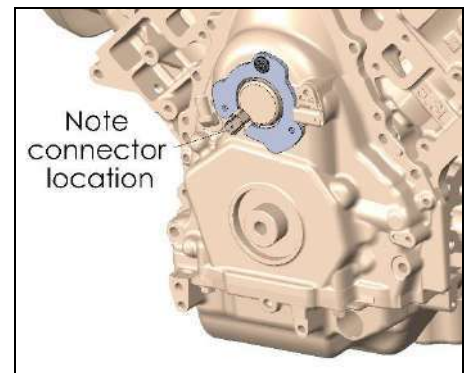
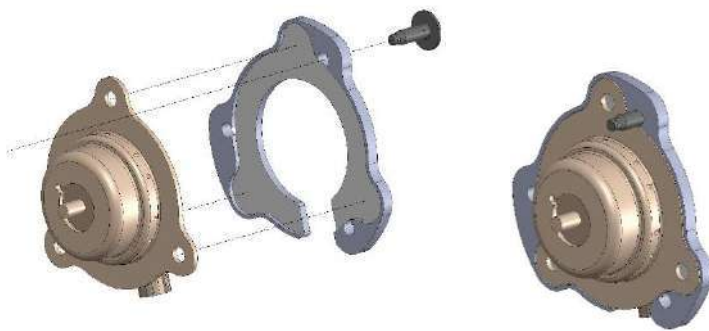
1. Disconnect the ground cable at the battery.
2. Remove the water pressure sensor from the original water pump. Save this sensor for use later.
3. Remove original accessories, water pump and brackets.
4. Remove original harness assembly and VVT actuator. Most connectors have a red redundant safety lock that must be slid to unlock. Then the retainer tab can be pressed and the connector removed. Retain all actuator and harness bolts for use in the assembly steps 5 and 6.

Assembly

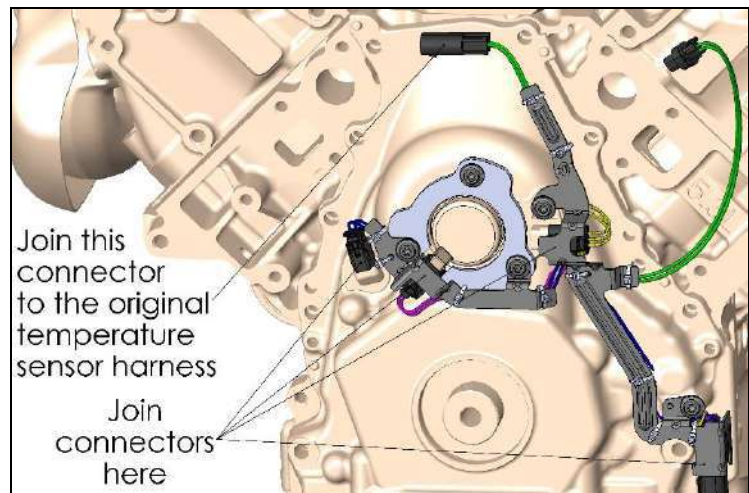
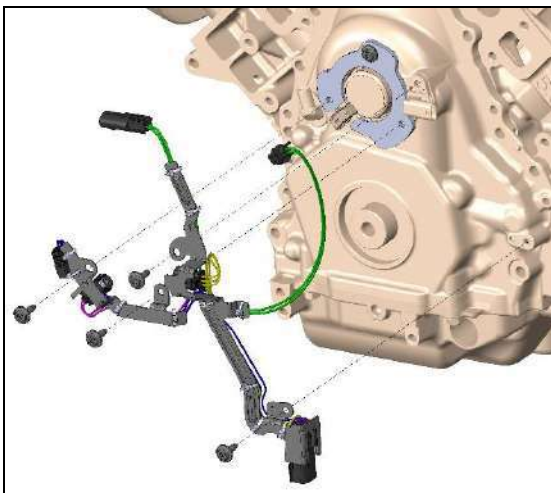
NOTE: Crank pulley and vacuum pump removed for instructional visibility only. Removal is not required for installation.

Harness and clocking ring:

1. Install clocking ring and original actuator as shown with top bolt only.



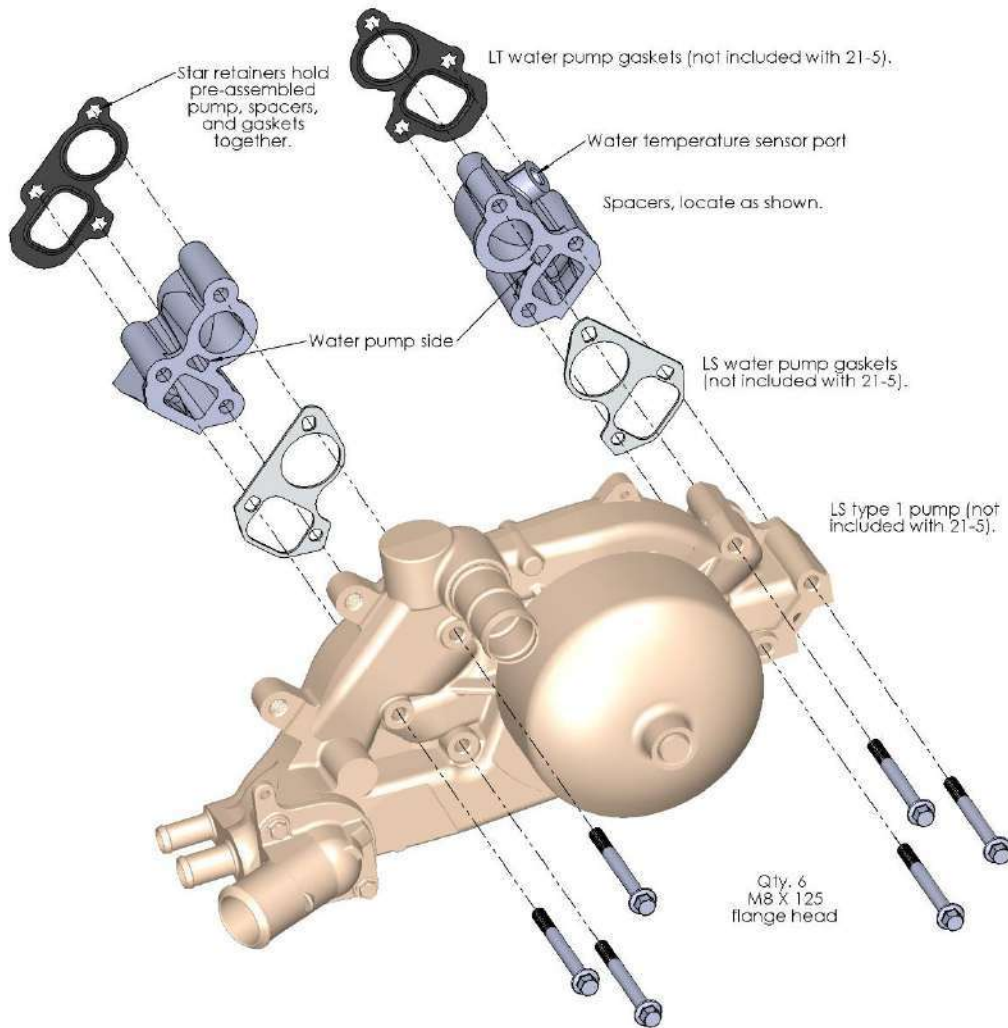
2. Install supplied harness assembly as shown. Make sure no wiring is pinched between engine and harness bracket. Reinstall the four harness bolts. Join the five connectors shown and engage red connector locks.



NOTE: Torque bolts M6 bolts to 11 Ft/lbs

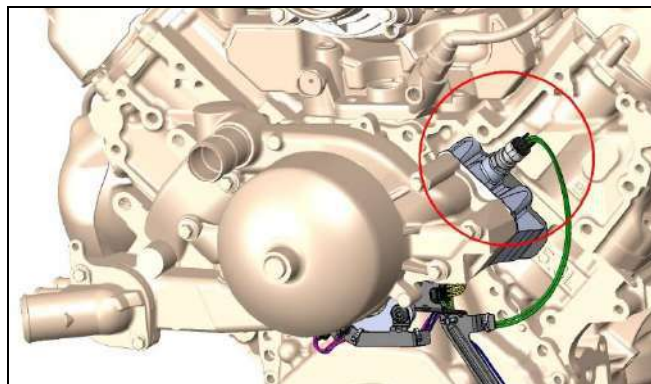
Water pump:

1. Assemble the LS water pump>LS gasket>spacer>LT gasket to M8 bolts for each side. The LT gaskets will retain the assembly at the bolt threads. Before installing assembly to the engine, look into each of the four water passages and confirm all gaskets and spacers are aligned.



Torque M8 bolts to 18 ft./lbs.

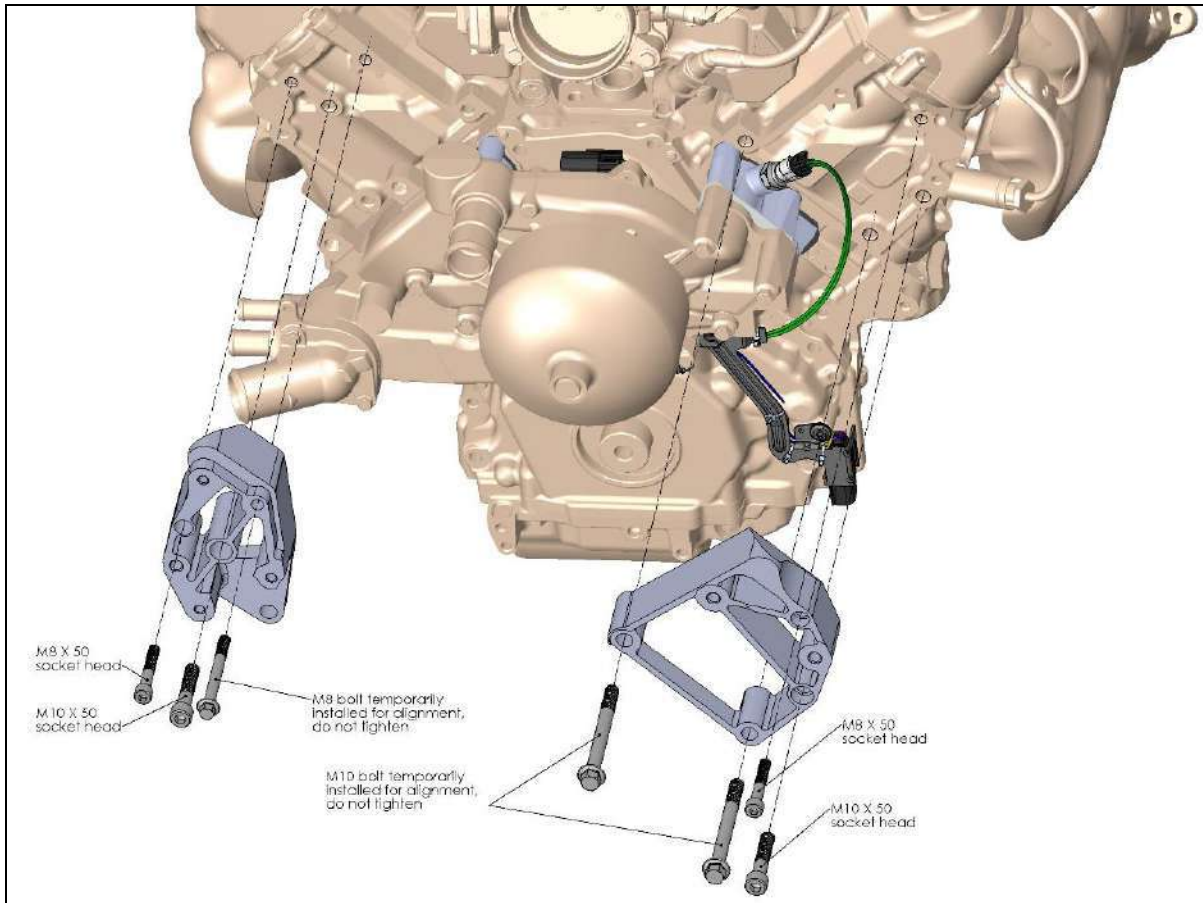
2. Install the water pump assembly to the engine.
3. Install the original water temperature sensor to the driver's side spacer.
4. Connect harness to the temperature sensor.



Torque temperature sensor to 15 ft/lb

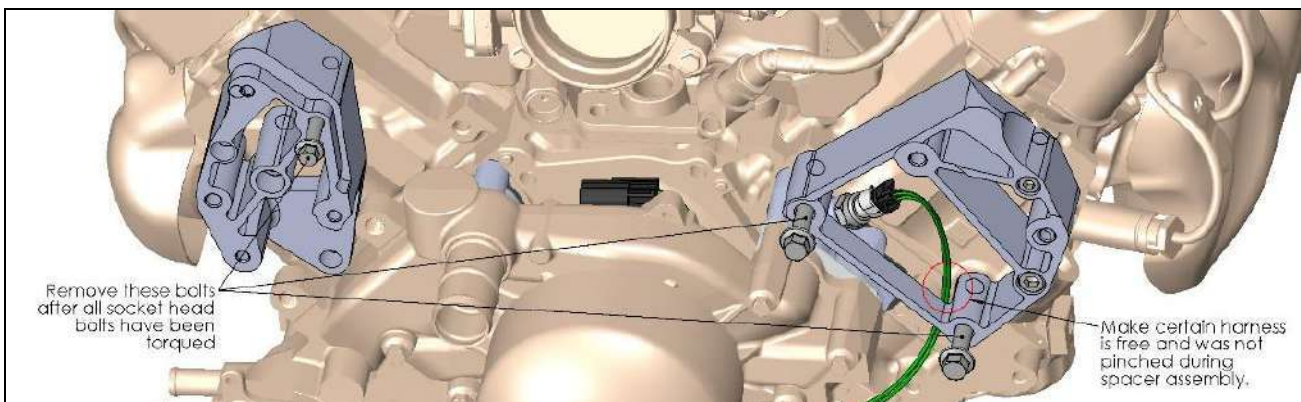
Bracket spacers:

1. Loosely install the below shown bolts.
2. While holding each respective spacer approximately centered on the bolts, tighten the four socket head bolts only. Torque these four bolts at this time.

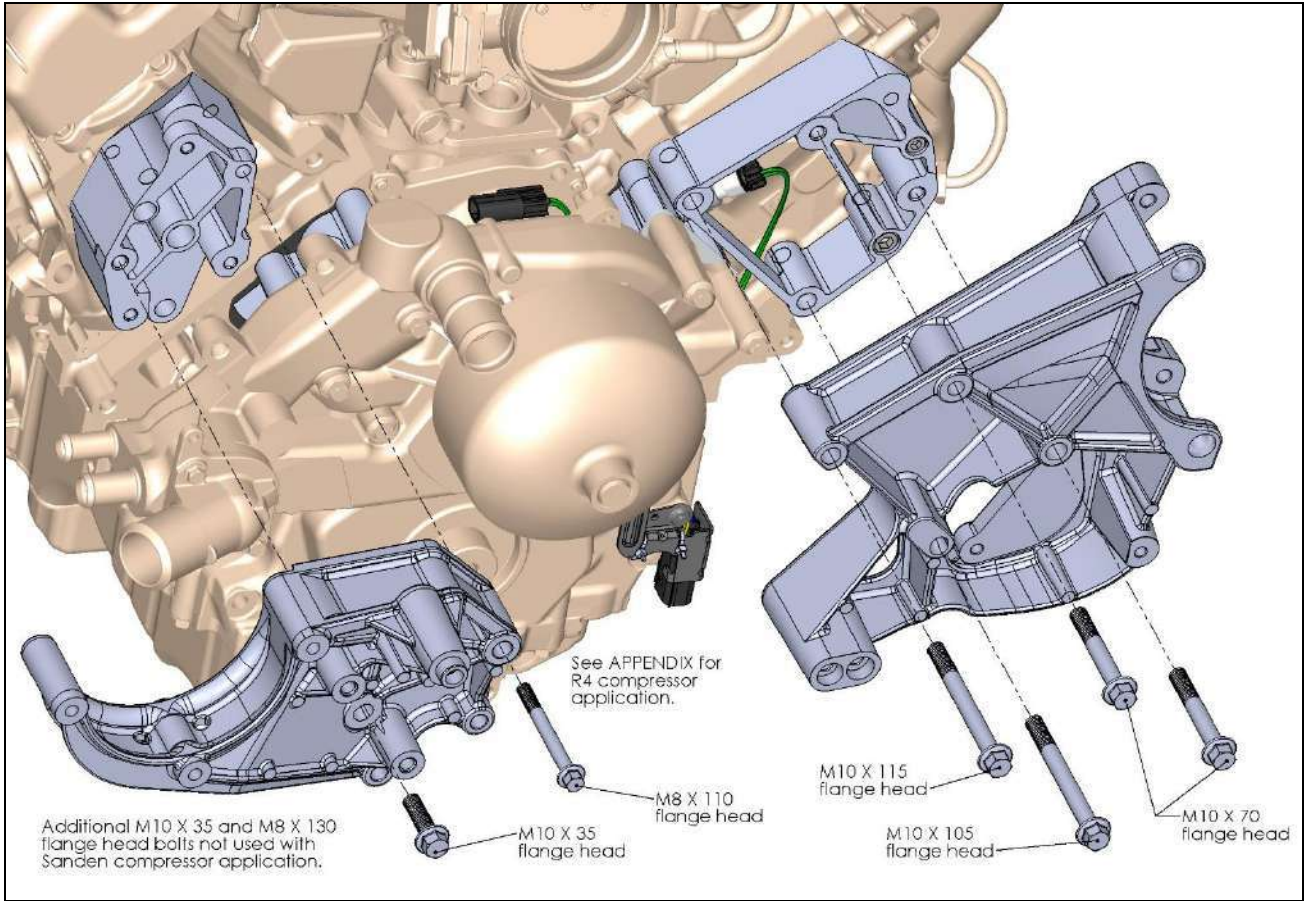


Torque M8 bolts to 18 ft./lbs. and M10 bolts to 36 ft./lbs.

3. Remove all three flange head bolts installed in step 11.



4. Install the accessory brackets per the instructions supplied with the brackets while substituting the below bolts supplied with the 21-5 installation kit. Sanden A/C compressor bracket shown.

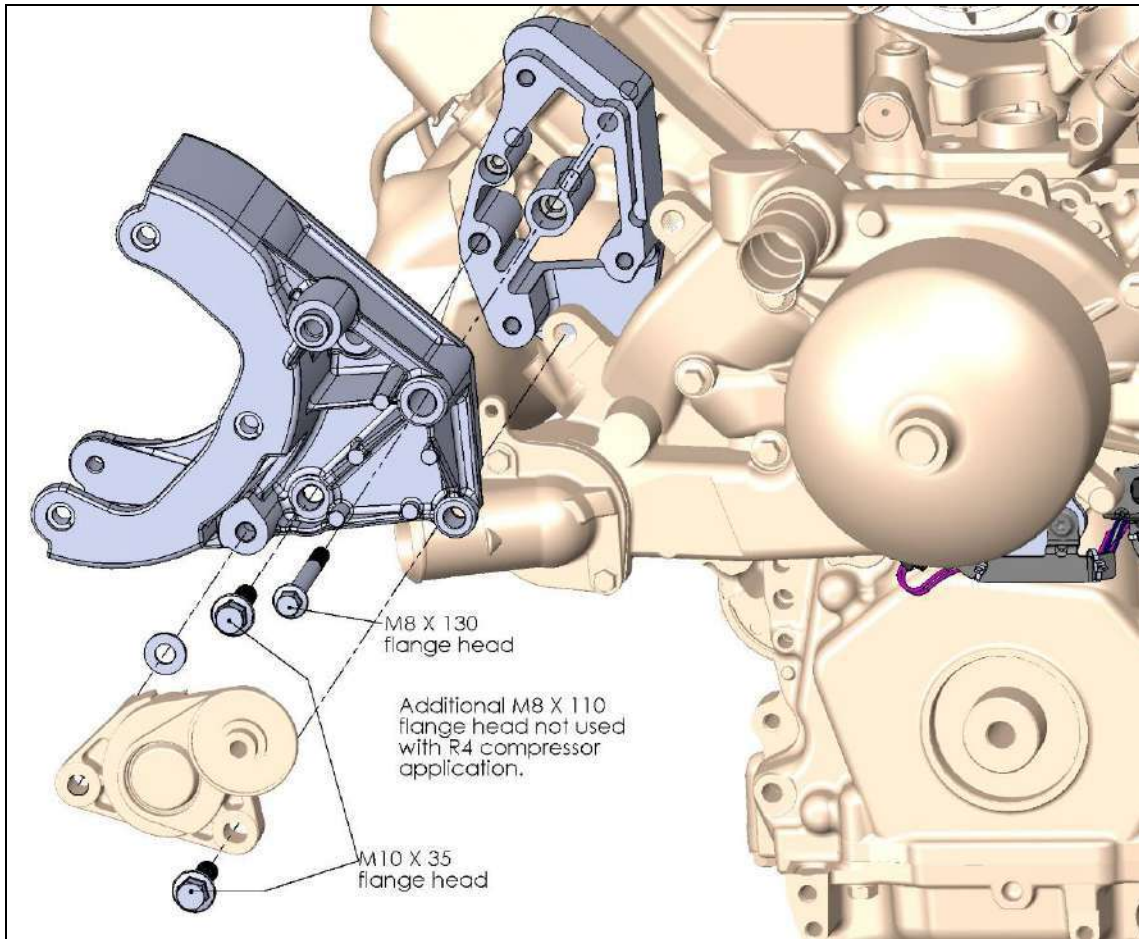


Torque M8 bolts to 18 ft./lbs. and M10 bolts to 36 ft./lbs.

5. Follow bracket supplied instructions from this point. All additional hardware is included with the bracket kit.

APPENDIX:

If installing an R4 compressor and bracket, additional step are described below.



Torque M8 bolts to 18 ft./lbs. and M10 bolts to 36 ft./lbs.

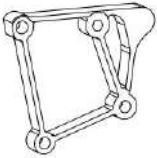
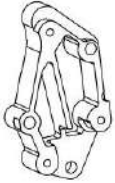


Follow bracket supplied instructions from this point. All additional hardware is included with the bracket kit.



Installation Kit for LS Accessory Drive Bracket Kits Part Number 21-2

Required for applications with **middle belt alignment***

Parts list

PICTURE	QTY	DESCRIPTION	APPLICATION
	1	Driver's Side Bracket Spacer	Between Bracket & Head
	1	Passenger's Side Bracket Spacer	Between Bracket & Head
	1	Tensioner Spacer	Between tensioner & water pump (Use with R4 A/C compressor bracket only)
	1	Flange Head Bolt, M10 x 1.5 x 60	Tensioner to Water Pump (Use with R4 A/C compressor bracket only)
	1	Flange Head Bolt, M10 x 1.5 x 65	Passenger's Side Bracket to Head
	1	Flange Head Bolt, M10 x 1.5 x 85	Driver's Side Bracket to Head
	3	Flange Head Bolt, M10 x 1.5 x 95	Driver's Side Bracket to Head
	1	Flange Head Bolt, M10 x 1.5 x 95	Passenger's Side Bracket to Head (Use with Sanden A/C compressor bracket only)
	1	Flange Head Bolt, M10 x 1.5 x 110	Passenger's Side Bracket to Head (Use with R4 A/C compressor bracket only)



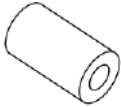
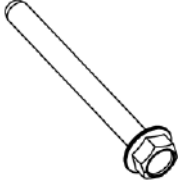
*Some bolts and spacers may not be used for your application.



Installation Kit for LS Accessory Drive Bracket Kits Part Number 21-3

Required for applications with **long belt alignment***

Parts list

PICTURE	QTY	DESCRIPTION	APPLICATION
	1	Driver's Side Bracket Spacer	Between Bracket & Head
	1	Passenger's Side Bracket Spacer	Between Bracket & Head
	1	Tensioner Spacer	Between Tensioner to Water Pump (Use with Type 5 water pump & R4 A/C compressor bracket only)
	1	Flange Head Bolt, M10 x 1.5 x 75	Tensioner to Water Pump (Use with R4 A/C compressor bracket only)
	1	Flange Head Bolt, M10 x 1.5 x 85	Passenger's Side Bracket to Head
	1	Flange Head Bolt, M10 x 1.5 x 100	Driver's Side Bracket to Head
	3	Flange Head Bolt, M10 x 1.5 x 115	Driver's Side Bracket to Head
	1	Flange Head Bolt, M10 x 1.5 x 115	Passenger's Side Bracket to Head (Use with Sanden A/C compressor bracket only)
	1	Flange Head Bolt, M10 x 1.5 x 130	Passenger's Side Bracket to Head (Use with R4 A/C compressor bracket only)

* Some bolts and spacers may not be used for your application.

Check out the collection of performance engine parts we offer.