



Installation Notes

Though considerable time and effort has been invested in producing a robust, off the shelf gear drive solution, some fitment and light fabrication will likely be required to properly fit the drive to your engine.

Standard Kit Contents:

X-6 and X-10 kits include:



Hardware (see photos on following pages):

Standard X-6 and X-10 kits include the following installation hardware:

Supercharger drive hub hardware (bolt, keys and retainer)

Drive to supercharger adapter hardware (7/16" bolts, lock washers; studs/nuts if required)

Block adapter to Drive hardware (7/16" Grade 8 studs, lock washers, nuts)

Crank trigger hardware (SBC, BBC, SBF – 5/16" fine thread bolts, radius nut, washers)

Supercharger to adapter hardware (5/16" or 3/8" SHCS)

Crank hub to damper hardware (6 ea 3/8" Grade 8 bolts) *Note: use of lock washers may result in crank hub bolts interfering with the drive assembly, if thread locking is desired, use of liquid thread locker (Loctite) is recommended in lieu of lock washers.*

Standard kits may not include: Block adapter to block hardware (due to variances between applications) – Grade 8 or better fasteners are recommended. If you are unable to find a good local source for fasteners, we recommend sourcing hardware from McMaster Carr (www.mcmaster.com) or Fastenal.

Standard system component illustration



Supercharger hub hardware



Supercharger and crank drive hubs



Crank hub hardware



Supercharger to adapter plate hardware



Drive bushings (crank & supercharger)



Block Adapters (BB Chevy shown)

Standard system component illustration (continued)



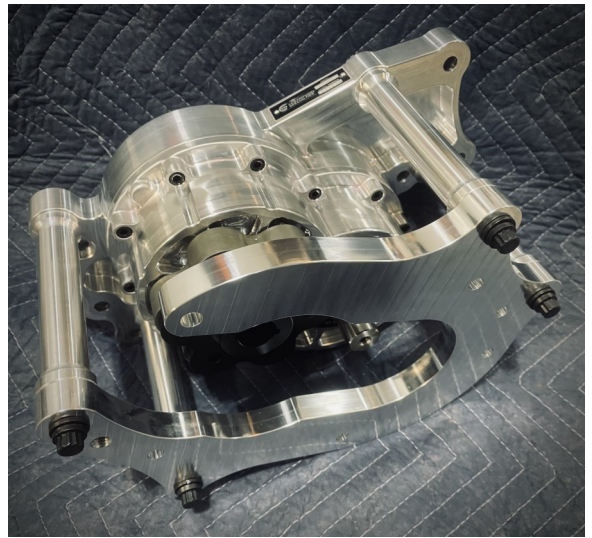
Universal stud and spacer kit (goes between drive and engine, spacers and studs must be cut to length)



Threaded drive to-blower-plate stands and hardware



Supercharger mounting plate (X-10, F-3 plate shown)



Assembled drive with threaded stands and plate (typical configuration for shipping)

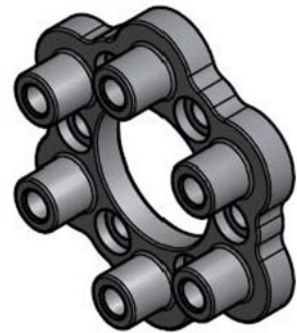
Optional components:



12-pin drive hub



Splined blower drive hub



"BDS" style crank hub

Optional component illustration (continued)



Single hex fuel pump drive w/ Gilmer pulleys



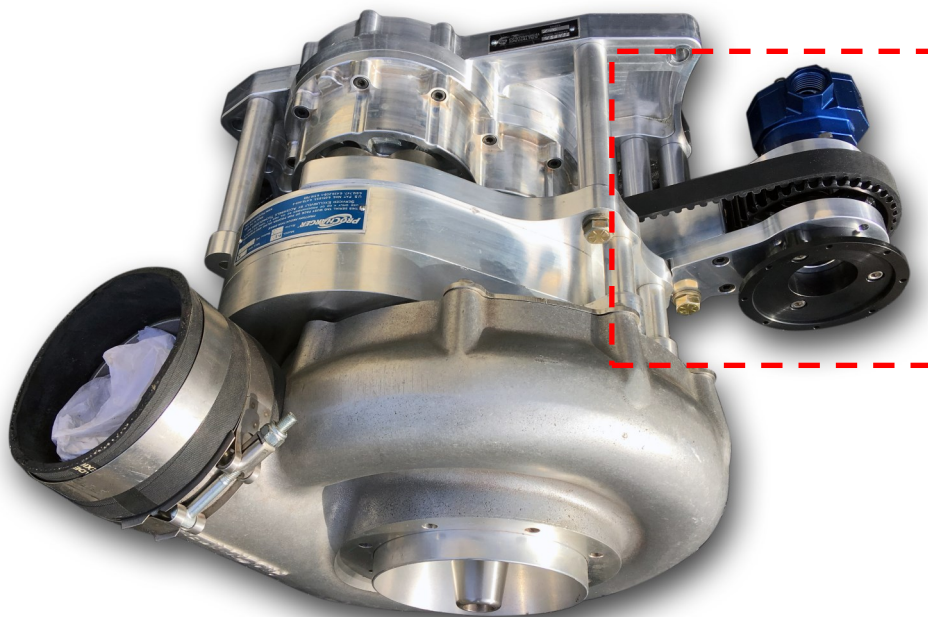
Peterson oil pump mount (use w/ dual hex drive)



Fuel pump mount



Universal crank trigger mount (multiple designs available)



X-10 w/ Dual hex drive (configured for fuel pump and vacuum pump)

Optional input/output component notes:

Note: Hemi and 481X applications typically utilize a “BDS” style damper having an external pilot and a 6-bolt 2.771” bolt pattern. Crankshaft hubs for these applications utilize low profile socket head cap screws to secure the hub to the damper.

The optional splined supercharger drive hub is also available; this optional design is intended for severe duty F-3 installations and is not compatible with the standard keyed ProCharger F-3 input shaft. It must be utilized with a supercharger featuring a splined input shaft.

The optional 12 pin drive hub is also available; this optional design is intended for severe duty X-10 installations and is not compatible with the standard X-10 input shaft. It must be utilized with an optional splined drive hub and input shaft.

Other available Optional components:

Gear sets (standard or lightweight)

Alternator mount bracket set

Crankshaft drive hub w/ integrated 6-rib pulley

Pre-cut block to drive spacers

Spare drive bushings

Fuel pump/dry sump drive belts & pulleys (radius tooth and gilmer style)

Single hex pump drive (accommodates 1 ea, 3 or 4-bolt hex drive pumps; Aeromotive, Enderle, Waterman, etc...)

Dual hex pump drive (accommodates 2 ea, 3 or 4-bolt hex drive pumps)

Vacuum pump adapter (permits use of Star Machine vacuum pump on dual hex pump drive)

Moroso external oil pump mount/adapter (for use with single stage external oil pumps and dry sump pumps)

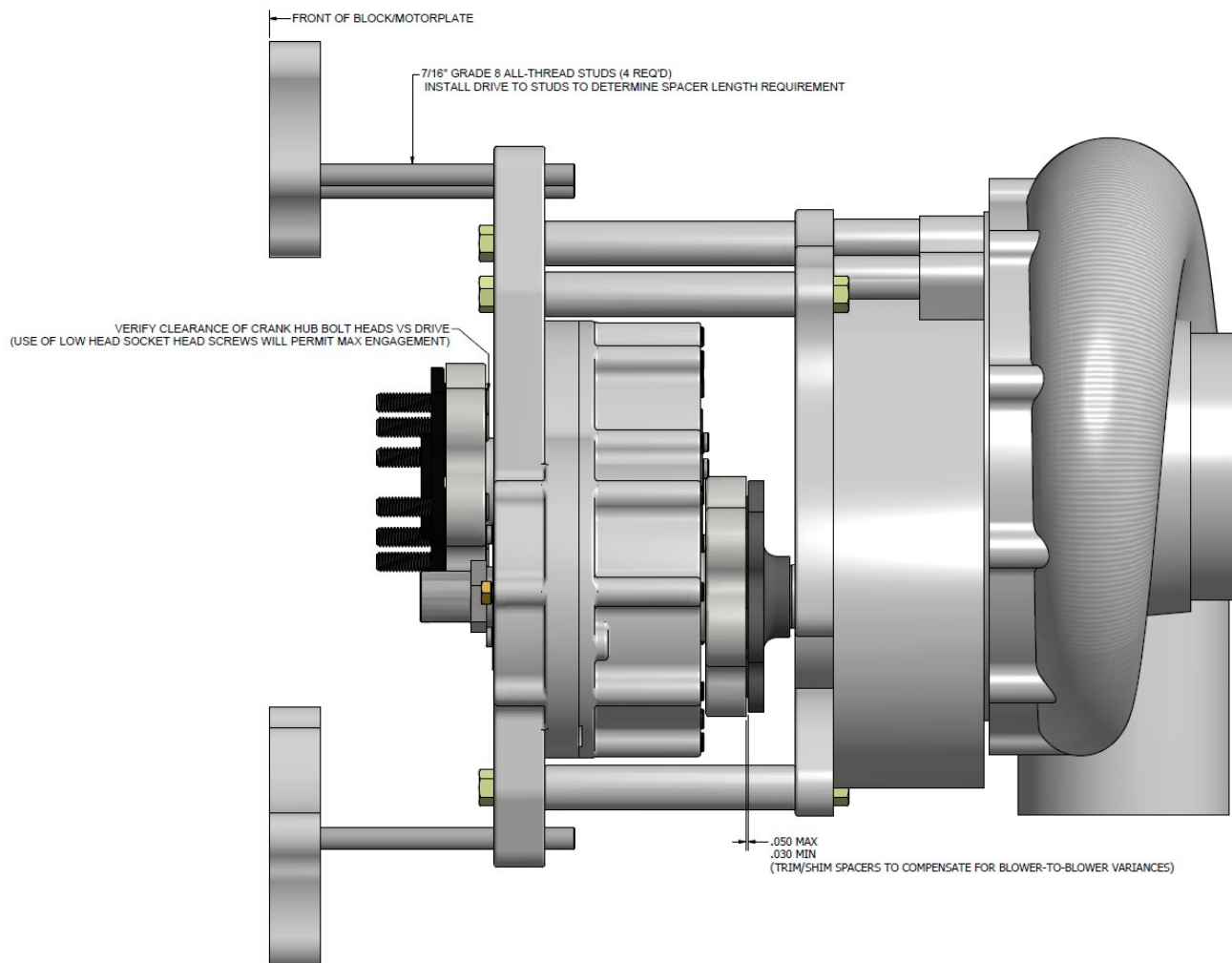
Mounts and adapters for various fuel pump, vacuum pumps, crank triggers and other items are available, Contact us for additional details.

Block to Drive spacing:

Universal spacer & stud kit (standard):

1. Install drive hub and bushings to damper
2. Install block adapters to face of block or motor plate
3. Install the 4 provided Grade 8 studs to the block adapters (threading studs fully into block adapters)
4. Install Drive to studs, aligning Drive input shaft (driven hub) to bushings on drive hub, fully seating the drive hub into the driven/input shaft
5. Measure distance between the block adapters and the drive then adding 0.040" to ensure optimum thrust clearance and bushing engagement
6. Using a lathe, cut spacers to length determined in previous step
7. Trim excess length from studs, (abrasive cutoff wheel works well), use Loctite to secure studs to block adapters

Pre-cut block adapter to drive spacer (optional): Spacers are pre-sized per provided dimensions from balancer face to motor plate face. Due to manufacturing tolerances, etc. the end user must carefully verify that there is sufficient axial clearance and the installed Xdrive is not inducing a thrust on the crankshaft when installed. Properly installed, there should be 0.030"-0.050" of clearance between the face of the driving (crankshaft) and driven (drive) hubs



Drive to Blower spacing:

Supercharger adapter to drive spacers are sized per the specific superchargers used to develop the drive. In some cases, due to variance in drive and supercharger manufacturing tolerances, it may be necessary to shim/lengthen the spacers to prevent a binding/excessive thrust condition between the supercharger and the drive, or in some cases spacers must be shortened to maximize engagement of drive bushings. *Note: excessive axial clearance will result in limited engagement of the drive bushings and will result in reduced bushing life. Having too little clearance may result in damage to supercharger or Drive.*

Lubrication:

Lubrication - The Drive does not include lubricant. We recommend the use of 80/90 EP gear oil to provide maximum gear reliability. There are two plugs at the height of the proper oil level on X-6 drives. We find it easiest to fill from one side while observing the oil level from the opposite side. Typical oil capacity is 6 fluid ounces for X-6 drives, and 12-14 ounces for X-10 drives.

Bushings:

Use of the softest drive/coupler bushing package that provides a suitable service life will minimize shock loads and reduce wear and tear to the drive and supercharger is recommended. The recommendation for applications making 1200 hp or less is red bushings on the input (crankshaft) side of the drive and black bushings on the output (supercharger) side. The recommendation for all other applications using 6-pin drive hubs is red bushings on the input and output.

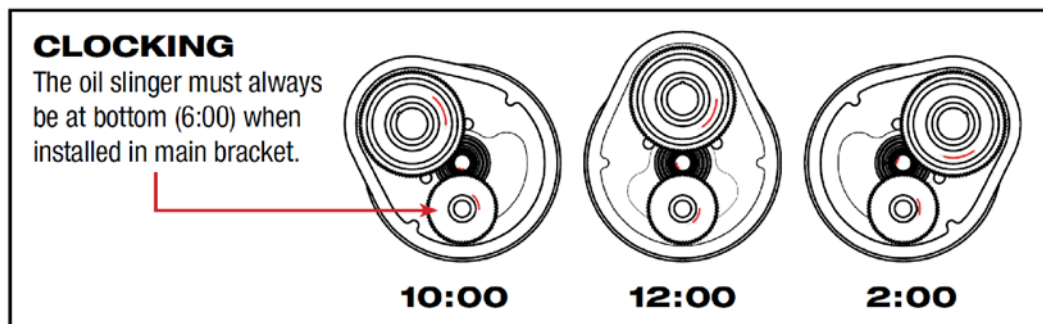
Block Adapter Notes:

Block adapters have been designed per OEM dimensions and will generally allow fitment of the drive without modification. However, due to variances between different aftermarket manufacturers of engine blocks, it may be necessary to enlarge mating holes in the block adapters of the drive to allow fitment without binding/misalignment of the bolts. The drive has been designed with plenty of material on the block adapter interface area and drilling holes 1/32" - 1/16" oversize is permissible, however take care to drill the smallest amount possible to maximize structural integrity of the drive.

Fitment of adapters to aftermarket block designs (481X, TFX, BAE, etc.) may require some modification/fabrication by the installer/end user, as various gear drive and timing cover designs incorporate timing pointers and crank trigger pickup mounts into the timing cover. If needed, our engineering team is available to assist with the design and production of custom design block adapters. Prices for the design of custom adapters start at \$500/set. Designs that may be suitable for production may be available at a reduced price.

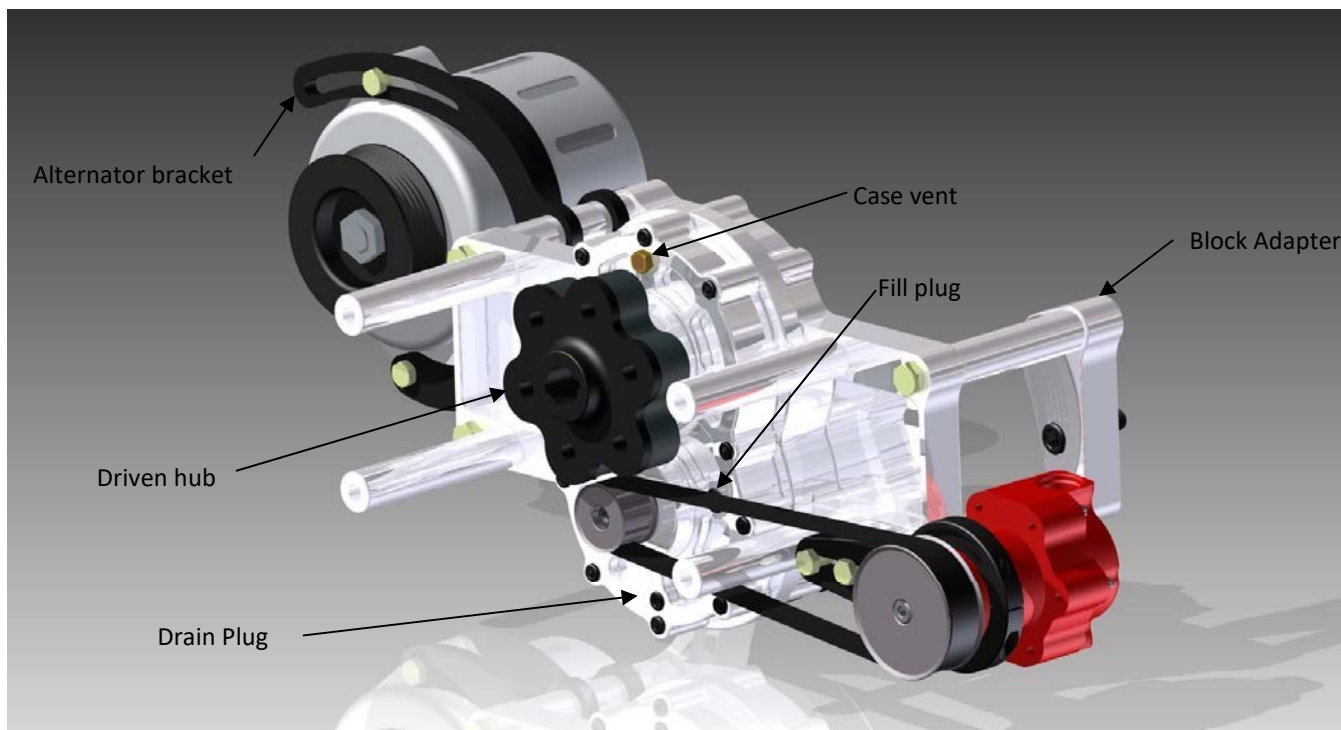
Other Install Notes:

Supercharger clocking – end users should verify that F-1 and F-2 series ProCharger superchargers are configured to locate the internal oil slinger at the bottom of the supercharger's oil reservoir. Standard orientation for X-6 installations will utilize the "10:00" orientation shown below. X-10 installations will utilize the "2:00" orientation. X-6 brackets for "2:00" orientation are available on a special-order basis, however end users must note that utilization of this configuration with the X-6 will result in a very low placement of the supercharger and may result in interference with steering linkage, etc. Note the diagram below illustrates the supercharger as viewed from the input shaft side.



Blower hub installation –keyed supercharger drive hubs are designed to provide a slight interference fit to the supercharger input shaft. Typical installation may require some heating of the supercharger drive hub or light honing of the hub to facilitate installation. Warning: use of excessive heat may result in weakening of the hub material. We have also found the use of a harmonic damper installation tool to be an effective method for installation.

Stud replacement—If you need to replace or make new studs, we recommend utilizing Grade 8 all thread studs. 1' and 3' lengths are readily available from McMaster Carr (www.mcmaster.com) under part number 90322A138



Cover removal (for gear changes)

X-6 procedure

Remove the upper shaft retaining bolt cover (3ea Allen head screws, engine side of drive, in-line with output shaft, see photo below). If the upper shaft features a retaining bolt, it may be removed using a 3/8" hex drive/allen wrench – Note: The shaft retaining bolt is left-hand threaded, so turning clockwise will loosen it. Please also note that some drives utilize a press-fit shaft and do not require the use of a retaining bolt. For those drives, proceed to step two, as no removal of a retainer bolt is required.

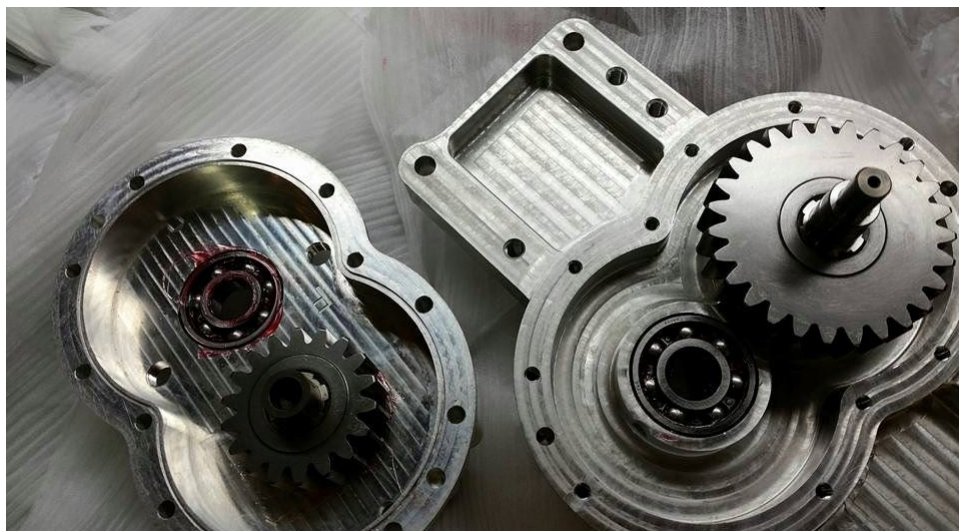


Rear cover plate location

Remove the 12ea 1/4" Socket head cap screws securing the front cover to the drive body.

Once the cover bolts have been removed, the cover may be removed from the drive, allowing access to the gear set. Note: Dowel pins used to locate the drive cover to the main body are tightly fitted to permit precise alignment of the cover to the main body. As such, it may be helpful to pry or apply heat to the cover side of dowel pin bosses after removal of cover bolts to facilitate separation of the cover from the drive. Warning: use of excessive heat may result in weakening of the cover material and or seal damage. Later units (2018 and later) feature pry points near the dowel pin bosses to ease the removal of the cover

Note the orientation of the gear set. Correct installation of X-6 gears requires the gear to be installed as shown in the photo below, with the shoulder facing away from the large bearing and the smooth face toward the large bearing



X-6 gear set installation

Cover removal (for gear changes)

X-10 procedure

1. Remove the upper shaft retaining bolt cover (3ea Allen head or 12-point screws; similar to X-6 shown on prior page *Note: Units built after May 2021 feature a shaft that has a press fit to the bearing and is self-retaining. As such, these units do not require a retainer bolt, and do not require removal of this cover or retainer bolt.
2. If so equipped, remove lower shaft retaining bolt, or keyed accessory drive stub (Note: this is a left-hand thread, rotate clockwise to remove)
3. Remove the 12ea ¼" Socket head cap screws securing the cover to the drive body
4. Remove cover and upper/output shaft assembly from drive. Note: Dowel pins used to locate the drive cover to the main body are tightly fitted to permit precise alignment of the cover to the main body. As such, it may be helpful to pry or apply heat to the cover side of dowel pin bosses after removal of cover bolts to facilitate separation of the cover from the drive. Warning: use of excessive heat may result in weakening of the cover material and or seal damage. Later units (2018 and later) feature pry points near the dowel pin bosses to ease the removal of the cover. Insertion of the head of a large screwdriver will permit the cover to be pried from the drive without damage the cover to drive sealing surface.



Warnings:

In order to facilitate easy change of gears, drive output shafts may be slip fitted to the Drive. As such, the installation of a supercharger to the drive is required for safe operation of the Drive. As such, the drive must not be operated with the supercharger removed, as failure to do so may result in serious injury, should the output shaft become separated from the drive.

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