

**V-Twin Mfg.**  
**3" OPEN BELT DRIVE KIT**  
**W/MOTOR PLATE FITS 86-99 ST Models**  
**VT No. 20-2021**

**This is a custom application rider safety depends on proper installation. This product should only be installed by a knowledgeable and trained motorcycle technician. V-Twin Mfg. accepts no responsibility for improper installation.**

**Special Note:** The belt drive kit was designed with the use of stock HD frames. The shaft to shaft dimensions on a stock ST is 12.825" and on an FXR it is 11.325". The number of teeth on the pulleys and the number of teeth on the belt was engineered to exact fit using the above dimensions. If aftermarket frames, engines or transmissions are used then these dimensions may vary slightly, you may have to address this problem so that the kit will fit properly. We will not be able to help you with this problem, this is an issue to be addressed by the manufacturer of the after market parts that you may be using.

**Installation Instructions:**

1. Be sure to disconnect battery.
2. Installation on 1986-89 models requires the use of a 1990-up starter and modifications to starter mounting hole on transmission will be necessary. You must open the mounting hole up to 2-1/8 inches.
3. Remove inner primary, refer factory alignment procedures, then install motor plate (ST only). Be sure to use stock spacer behind front pulley.
4. Remove stock starter pinion gear and complete starter gear assembly from starter. Bolt starter into back side of motor plate.
5. Install front and rear pulleys and check for proper fit. At this time you should determine if the front pulley will need shimming or not depending on how the pulleys align with each other. Remove pulleys and make any modifications necessary.
6. Re-install belt drive placing front pulley, rear pulley and belt on at the same time.
7. Install mainshaft hub nut and tighten to HD specifications. Be sure to apply red loctite.

**Note:** We supply a special hub nut with seal for all spline shaft on 1990 and later models.

**Note:** Engine shaft spline should not protrude from pulley.

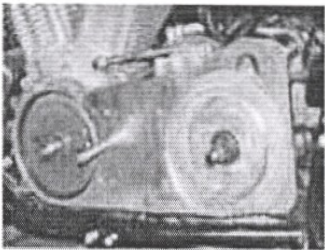
8. For spline mainshaft models, 1990-up, apply red loctite onto the back side of our hub 1/4" inside of the spline and let the loctite flow onto the mainshaft when sliding the rear basket assembly on. This procedure is necessary so that the hub and mainshaft will fit together properly and will not let the mainshaft spin inside of our hub.

**Note:** FAILURE TO LOCTITE THE SPLINED HUB PROPERLY WILL CAUSE THE SPLINES TO WASH OUT.

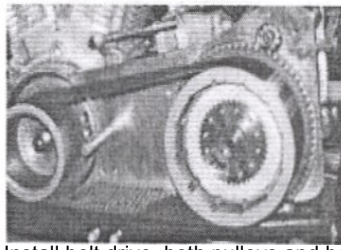
9. Rotate the motor using a socket wrench. The belt should track straight and away from the motor plate but not so that it may come in contact with the outside pulley flanges. Be sure that the belt drive is not making contact with the motor plate.
10. Grease starter shaft and install our starter pinion gear onto starter shaft. Apply red loctite to starter bolt and tighten to HD specifications.

**Note:** We supply 2 starter bolts with the kit, one is a 1/4-20 x 2 1/2" for 1990-93 starters. The other is a 10-32 x 2-1/2" for 1994 and up starters. Be sure not to tighten starter bolt too tight as this may interfere with proper engagement of the starter pinion gear.

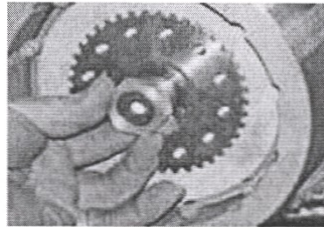
11. Install clutch pack, spline steel first, 1/2 sided friction plate with fiber facing out, then alternate steel and two sided fiber plates ending with the other 1/2 sided friction plate with fiber facing in. Install pressure plate, springs and shoulder bolts.
12. To install shoulder bolts apply red loctite to a bolt and install it one turn, go on to the next bolt with same procedure until all bolts are in place, then tighten them all the way down until they bottom out. There is no adjustment to the spring pressure, this is all pre-determined with the length of the shoulder bolt and exact dimensions of our pressure plate.
13. Install the 4 hexagon extensions into motor plate and mount side guard with the 4 buttonhead allen bolts.
14. Clutch screw adjustment. should be 3/4 to 1 turn loose from lightly seated. (Note when clutch is hot the adjustment screw should not be seated) Tighten rod nut when adjustment is complete. (We supply a clutch adjusting rod and nut for all models 1990-up only).



Install motor plate and check for proper fit.



Install belt drive, both pulleys and belt at the same time.

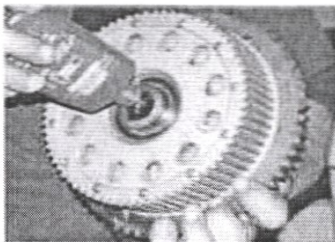


Tighten sealed mainshaft nut supplied with 1990 – up kits only.

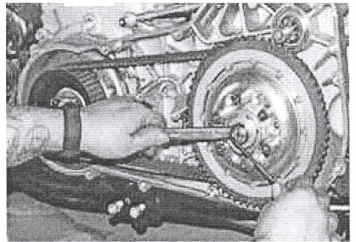
If engine shaft spline protrudes as pictured a washer is needed to compensate for protrusion of spline before washer and nut are installed.



Install starter pinion, supplied with kit. There are 2 bolts supplied, one for 1990-93 and one for 1994 – up.



Use loctite on spline hubs to ensure proper fit on mainshaft.



Install clutch adjusting rod supplied with kit 1986 – Up and adjust clutch.