Human Electric Hybrid Vehicles
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Jackshaft kit for the Small Block PowerPack Deluxe

Thank-you for purchasing the Jackshaft kit for your PowerPack Deluxe! .

The jackshaft kit upgrades your PowerPack Deluxe with a 3:1 gear reduction system. The Jackshaft kit and PowerPack Deluxe were designed from the beginning to work together as an integrated drive system solution to help you power your project.

Adding a Jackshaft to your PowerPack offers many advantages for both retrofit and custom applications. It will help you to configure and optimize your drive system.

1. Increases Torque 3X.
2. Expanded gear ratio choices.
3. Simplifies output sprocket changes for easy ratio changes.
4. Adaptable to different chain and sprocket types.
5. Potential for increased ground clearance. You can use a smaller sprocket on your axle than a direct-from-gearbox drive chain set up.
6. Places the output sprocket on the right side of vehicle. Many imported buggies have their sprockets on the right side. This helps retain your original axle layout.
7. Solves the problem of using the 30 Series F-N-R gearbox with non-standard chain sizes, like 40 and 50 series chains.

Note: This kit uses a 41/420 style chain from the gearbox to the 30T jackshaft input sprocket. Be sure to install the correct sprocket on your gearbox. This 10T #41/420 sprocket is usually included with your 30 series gearbox kit.

This Jackshaft kit uses 41/420 chain and sprocket as standard. Other options are available. Any sprocket with a ¾" keyed shaft diameter, can be used to match your vehicles drive chain type on the output side of your jackshaft.

Installation Instructions:

Start by installing the adjusters. Each adjuster mounts to the inside of the PowerPack side plates. The adjuster tab will protrude outward thru the slot in the PowerPack bracket.

Start with the clutch side adjuster. Place a bearing flange on the outside of the PowerPack side plate. Place a bearing in the flange. The locking collar should face inward to ensure proper chain alignment to the gearbox.

Place another bearing flange over the bearing. Attach the bearing assembly to the adjuster with the 5/16" x 1" bolts kitted with your adjusters. Start the threads to hold the bearings and flanges in place, but do not tighten. You will tighten everything down later.

Install the 3/8" X 2" tensioner bolt and flat and lock washers thru the open slot on the PowerPack bracket face plate. Thread this bolt into the adjuster bracket weld nut.

Repeat this procedure for the output side. The only difference here is the bearing lock collar and bearing pilot protrusion will usually be towards the outside of the Powerpack on the shifter cable side. Your application may be different. Find the optimum position for your particular application.

Once the bearings and adjusters are installed, you can slide your jackshaft thru the bearings. Don't forget to install the bearing lock collar on the clutch side bearing! This lock collar will be on the inside of the PowerPack between the two side plates, so make sure it's there and oriented correctly. Once your jackshaft is installed, you can put on the 30T Jackshaft input sprocket. Place the sprocket over the shaft with the hub protrusion facing out. Check for alignment to your gearbox output sprocket. You can add a shim or two if you need them. This should line up with the output sprocket on your gearbox pretty well, as is. If needed, there are some shim spacers included with the kit. Insert the 1.4" long key into the keyway. Do not force this! Make sure everything goes together easily. If it doesn't check for burrs or sharp edges and make sure set screws are not protruding thru the hub or in the keyway slot. Use some light oil and take your time! Don't force it! Use a file to remove any burrs or sharp edges and try to keep the hammer in the toolbox!

Once your sprocket and key are in position, place a shaft collar on the end. There should be 1/8"-3/16" of the jackshaft protruding beyond the shaft collar. Put on your chain and master link and move to the opposite side of the jackshaft. The gearbox chain is 40 links long including the master. If you are using the CVT backing plate without the gearbox you will need a 42 link chain. This is not included with this kit.

Repeat the process with the output sprocket. Place this sprocket hub in or out, depending on your application. The other difference is the length of the key. This one is the shorter 1.15" key used with the 41/420 16T output. If you ordered a custom sprocket, you may need a longer key!

Once everything is aligned, tighten lock collars and all shaft hardware like set screws and shaft collars.

You can now adjust your jackshaft to the gearbox. Tighten the adjuster bolts evenly! Make sure the exposed slots in PowerPack brackets are the same left to right and the jackshaft is square to the PowerPack case. The chain should be taught, but not overly tight. Rotate the jackshaft via the secondary clutch to ensure everything spins without binding. If there is tightness, back off chain tension until this is eliminated. Chains will stretch after use, so keep an eye on the tension as you put some miles on.

Once you are happy with the assembly, tighten bearing bolts. Adjust the drive chain tensions as necessary. Use a good chain lube to ensure everything rolls smoothly and doesn't rust.

Note: Your Jackshaft adjustment and your final drive chain adjustments go hand in hand. If you adjust your Jackshaft, you will likely need to adjust your PowerPack to keep your final drive chain in proper adjustment.

Have fun building your PowerPack engine Drive! If you have any questions, please reach out!