

# **BANDIT MACHINE WORKS**

## **2007-up Big Twin Sportsman SuperClutch PN 039831 & PN 039835**

### **Installation Instructions**

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1. Remove your stock clutch, disassemble and remove the stock clutch hub from the stock clutch shell as per factory service manual instructions and clean the shell thoroughly.
2. Disassemble the Sportsman superclutch by removing the spring retaining screws, the springs and spring retainers, removing the pressure plate and removing the friction plates and steels from the clutch center hub. Do not remove the snap rings retaining the thrust washer in the hub.
3. Apply light oil to the press-fit surface of the clutch center hub and press the hub into the bearing of the clutch shell with an arbor press, being certain to support the inner race of the bearing with a sleeve of the proper size so that the bearing is not damaged. We recommend installing a new bearing at this time.
4. Install the snap ring supplied with the new clutch onto the hub to retain hub in the bearing. Do not interchange the Bandit snap ring with the HD snap ring.
5. Lubricate the splines of the transmission with the supplied assembly lube containing moly-disulfide. Clean the threads on the end of the shaft.
6. Install the clutch shell, chain, and engine sprocket as a unit. Slide the clutch center hub onto the lubricated transmission input shaft. Apply loctite to the clean mainshaft threads, install the mainshaft nut supplied with the clutch, and torque to 80 ft/lbs.
7. Before installing the clutch pack, pre-wet the friction plates with the fluid you are going to use in the primary. Soaking the plates works, however simply rubbing a liberal amount into both sides of each plate as it is installed works well also. See below for fluid recommendations.
8. Install the clutch plates as follows: First install the thick(.119) steel and slide it to the back of the assembly. Next install a pre-wetted friction plate. Now install a thin(.047) steel. Continue alternating frictions and steels until you have 11 frictions and 10 thin steels installed, with the last plate facing you being a friction plate. Make sure all of the plates fall in freely - If any drag on the sides of the shell, that will cause drag when the clutch is released. Check to make sure that the friction material on the friction plates does not contact the inside diameter of the basket! – trim the material back with a sharp utility knife if this occurs.
9. Measure the stack height of the clutch pack as follows: Hold the clutch pack in position firmly with one hand and using a dial caliper, measure the distance from the last friction plate to the end of the teeth on the clutch center hub. This measurement must fall in the range of .180/.300. Less than .180 may allow the pressure plate to catch on the end of the center hub when released, which will cause the clutch to stick in the released position, and more than .300 will allow the pressure plate to bottom out on the end of the center hub, which will prevent full pressure to be applied to the clutch pack, causing slippage and premature wear of the plates. If the clutch pack is worn enough to increase this dimension to over .300, we recommend replacing the clutch pack. **On models with HD hydraulic release mechanisms, hold the stack height to .180/.240 for proper operation of the hydraulic release.**
10. Installing the pressure plate: Align the timing mark on the pressure plate with the timing mark on the splined hub and install. Insert the spring cups into the pressure plate. If the timing marks are not aligned, the spring cups can rub and drag against the spring stands.
11. Install a spring into each spring cup, followed by inserting a spring collar into each spring. If shims are needed for increased pressure, they are inserted in the cup under the spring. See the chart below for spring pressure settings. Insert a spring retaining screw through the retainer and into the spring stand. Tighten securely – 75 in/lbs is enough.
12. Adjust the clutch release freeplay as follows: Collapse the cable adjuster completely. Turn the adjusting screw in the pressure plate in lightly until it stops against the pushrod, removing freeplay from the pushrods. Back the adjusting screw out 1 full turn and lock with the adjusting screw lock nut. Adjust the cable adjuster to produce 1/8" to 3/16" freeplay in the cable at the hand lever. The release mechanism must produce .070" travel of the pressure plate after freeplay is set for the clutch to release reliably. **DO NOT USE 'ez-pull' accessories – they reduce the amount of pressure plate release travel, and prevent drag free release of the clutch.** If after break-in, you find that the clutch engages too close to the end of the lever travel, you can increase the cable free play to change the engagement location.
13. Set up a dial indicator to read runout on the pressure plate, place the indicator on the flat part of the plate just outside the engraved logo. Put the transmission in gear, release the clutch and rotate the rear tire to rotate the pressure plate. The pressure plate runout should be no more than .010" in the released position. If it exceeds

- .010, Check for one or more springs of different length, or for a different number of shims under one or more springs. The dial indicator is also the best way to measure your pressure plate travel.
14. 2015-up slim primary covers have a series of fins inside the inspection hole at the bottom edge that need to be removed to clear the pressure plate at full lift. A sanding disc is an easy way to accomplish this.
  15. Reinstall the cover and add primary fluid. We recommend using 14oz. This allows the ring gear to pick the oil up and distribute it onto the chain without filling the clutch pack and causing hydraulic drag between the plates. Golden Spectro Motorcycle Gear Lubricant SAE80w (Golden Gear 80) and Bel Ray Gear Saver SAE 75W or 80W are recommended for best results. We have also had good results from Automotive Automatic Transmission Fluid (ATF), either Dexron or Mercon. Do NOT use HD Primary fluid! Using the HD oils can cause the clutch to slip and drag.
  16. Upon initial fire-up, the clutch will drag until the oil used to pre-wet the friction plates slings off the plates. One trip around the driveway is usually enough. Test ride the bike and watch the clutch freeplay adjustment over the first 10-20 miles, and readjust as necessary. The friction material is very long lived and after this initial seat-in requires a lot of riding to 'break in'. Depending on the bike and the rider's riding style, you may need from 1000 to 5000 miles before the clutch 'breaks in' and produces a completely free release under all conditions. The up side to this is that this is an indication of how long the lining will last after break in.

### Springs and spring adjustment

There are 4 springs available for this clutch. In order from lightest to heaviest they are short gold PN154406(light), long gold PN154401(standard), red PN154402(medium), and silver PN154403(Heavy Duty). We recommend the short gold springs only for engines below 75 horsepower where the rider needs the very lightest lever pull possible. We recommend the long gold springs for engines up to about 100 HP, and the silver springs for engines over 100 HP. Spring pressure requirements are altered by the riding style of the rider. A motorcycle which is shifted at wide open throttle will require more spring pressure than an identical motorcycle which has the throttle rolled closed during shifts. The red springs are a compromise between gold and silver, have a slower spring rate than the silver and can provide a slightly lighter 'feel' for a given pressure than the silver.

The spring pressure can be adjusted by inserting shims (supplied) to shorten the springs' compressed length. When the clutch pack installed height is nominal, the spring collars will be flush with the pressure plate. When the collar is flush with the pressure plate and there are no spring shims installed, the spring's compressed length is 1.250". The supplied shims are .050 thick. Up to 5 shims can be installed under each spring – there MUST be the same number of shims under each spring for the pressure plate to run true. 5 shims will compress the spring to 1.00" installed height, which is the minimum installed height – shorter will lead to coil bind at full pressure plate travel. Make sure you have enough pressure on the clutch to hold the motor at full throttle in high gear. Clutch slip is often not noticed in the lower gears but will still wear the friction plates out in short order. Applying more pressure than necessary will not affect the operation of the clutch, but will make the lever effort higher than necessary. We recommend starting with slightly more pressure than you think is necessary, then try backing off on the pressure once the bike is on the road and you are satisfied with the operation of the clutch. The chart below shows the pressure produced by 6 springs. As the clutch pack wears, the installed height will increase, this can be compensated for to a degree by adding shims to the springs. Full spring pressure charts and other technical information are available at [www.banditmachineworks.com](http://www.banditmachineworks.com) .

	Spring height	Silver – lbs	Gold – lbs.
No shims	1.250	322	200
1 shim -.050	1.200	367	219
2 shims-.100	1.150	412	237
3 shims-.150	1.100	456	256
4 shims-.200	1.050	501	274
5 shims-.250	1.000	546	282

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