

Rekluse Motor Sports

The ProStart™ Clutch

H-D Big Twin

(1990 – 1997)

Installation Guide

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ProStart Revision 1.000

RMS680– H-D Big Twin

195-680

Manual Revision: 121206

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Required Tools

ProStart Install Tools	Snap Ring Pliers
11/16-inch wrench	Torque Wrench
3/16-inch Hex Key	Blue Loctite 243 (oil resistant)
7/32-inch Hex Key	Safety Glasses
5/16-inch Hex Key	

Included Parts for the ProStart Clutch

ProStart Clutch Assembly with Retaining Ring
Throw-out Spacer
9 x .047 (1.2mm) Drive plates
3 x .040 (1.0mm) Drive plates
1 x Rekluse Narrow Friction Disk
1 x Rekluse Friction Disk
Rekluse Jutter Spring Seat
Rekluse Jutter Spring
Compression Spring
2 Spring Retaining Washers
2 x 0.030-inch Wire Gages
2 x 0.040-inch Wire Gages
491-006 In Line Adjuster Sticker



ProStart Install Tools



Basic Pro-Start Clutch Operation

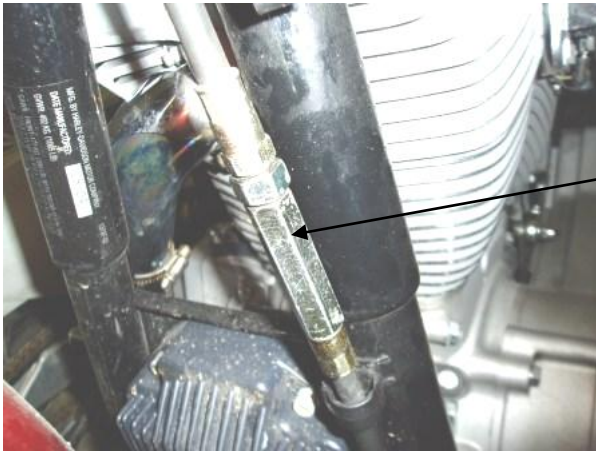
The ProStart Clutch functions through centrifugal force. As engine RPM increases, the balls contained in the ProStart Pressure Plate travel up the ball ramps and push against the Top Plate. This action forces the Pressure Plate to engage the clutch pack.

Installation Tips

- In order for the ProStart Clutch to perform properly, it must be mounted properly—read each step of this manual to guarantee proper installation.
- The ProStart Clutch comes assembled and should never be disassembled.
- Measuring and maintaining the Installed Gap is **critical**. If the Installed Gap is too big the clutch will slip excessively and cause rapid clutch wear. If the Installed Gap is too small, the clutch will drag and cause engine stall.
- A pair of calipers is useful for measuring steel drive plates.

Bike Preparation and Disassembly

1. Place the motorcycle on a suitable lift in an upright level position.
2. Following the guidelines in the H-D Service Manual, drain the Primary chaincase oil.
3. Following the guidelines in the H-D Service Manual, drain the Transmission oil.
4. Adjust the in-line clutch cable adjuster so that it is all the way in. **See following picture.**



Cable adjuster adjusted all the way in.

Installing Rekluse Clutch Lever Spring

5. Following the guidelines in the H-D Service Manual, remove the transmission clutch release cover, but leave the clutch cable attached to it.
6. Following the guidelines in the H-D Service Manual, remove the Snap Ring, Outer Ramp, and Ramp Coupling from the transmission release cover. Be careful not to lose the 3 balls.
7. Slide one of the washers over the clutch cable followed by the compression spring followed by the remaining washer. Compress the spring and retain it by installing the Ramp Coupling onto the clutch cable end. **See following pictures.**



1st washer and Spring installed.



2nd washer and Ramp Coupling installed to retain spring.

8. Re-connect the Outer Ramp to the Ramp Coupling and place it back over the balls and Inner Ramp. Secure with the stock snap ring following the H-D Service Manual guidelines. **See following picture.**



Inner and Outer Ramps
and Compression spring
installed properly.

9. Following the guidelines in the H-D Service Manual, re-install the transmission clutch release cover.

Removing the Primary Cover and Stock Pressure Plate

10. Following the guidelines in the H-D Service Manual, remove the Primary chain inspection cover, the clutch inspection (derby) cover and Primary cover. On some models this will require you to remove the shift lever and foot peg.
11. Following the guidelines in the H-D Service Manual, and using a spring compression tool, remove the snap ring, retaining ring, diaphragm spring, and pressure plate.
12. Using an 11/16-inch end wrench, and a 7/32-inch hex key, remove the stock threaded throw-out and lock-nut from the pressure plate. See following picture.



Remove Lock nut and throw-out from the stock pressure plate—they will be re-used.

13. Remove the clutch pack (8 friction disks and 7 drive plates) and set aside.

Configuring the Clutch Pack

14. Remove the Spring Plate from the clutch pack and set aside. The Spring Plate will not be re-installed. See following picture.



15. Remove the 6 stock steel drive plates (steel disks) from the clutch pack and set aside.

Installing Rekluse Jutter Spring and Narrow Friction Disk

Note: The following pictures depict a bench top install of the Rekluse Jutter Spring components **for illustrative purposes**. You will be installing these parts onto the center clutch in your bike.

16. Slide the Rekluse Jutter Spring Seat (thin flat ring) over the center clutch and down against the base of the flange. See following picture.



Installing the flat Spring Seat

17. Slide the Rekluse Jutter Spring (curved ring) **concave side out** over the center clutch and down against the previously installed Rekluse Jutter Spring Seat. See following picture.



Install Jutter Spring
Concave side up/out



Jutter Spring Seat and Spring installed
against Center Clutch Flange

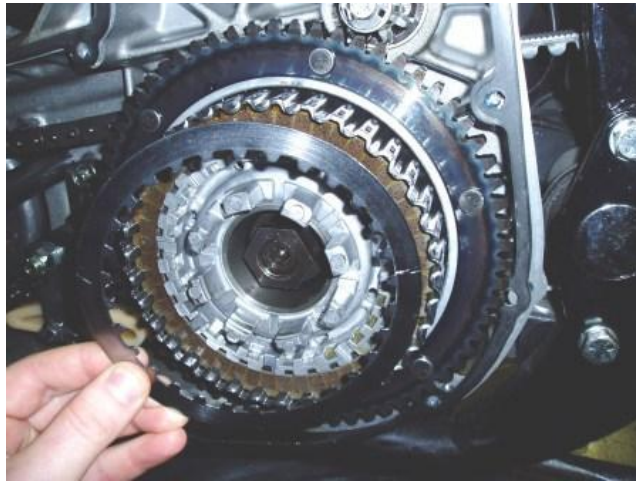
18. Next, slide the Rekluse **Narrow Friction Disk** over the center clutch and down against the base of the flange around the Jutter Spring Seat and Jutter Spring. See following picture.

Warning: Rekluse **Narrow Friction Disk** must be the first clutch disk installed to accommodate the Rekluse Jutter Spring or severe clutch damage will result.



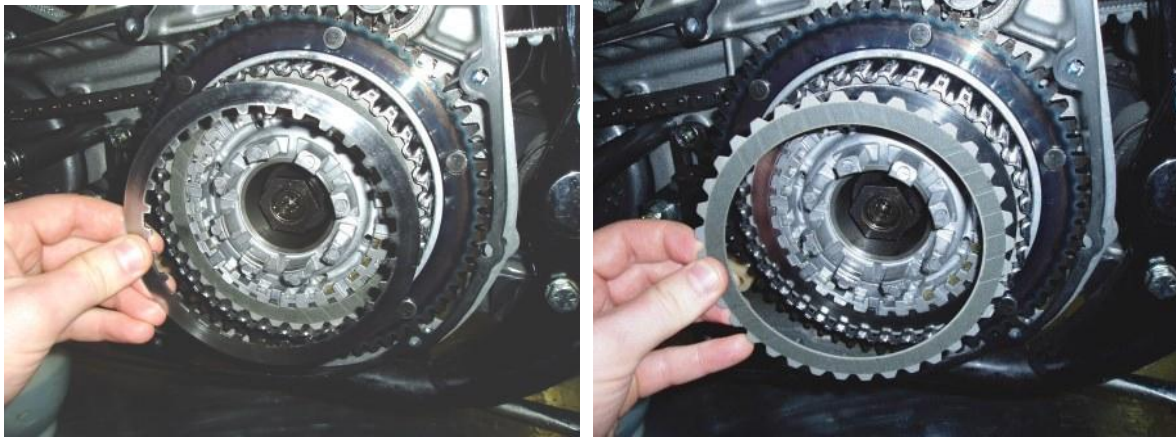
ID of Narrow Friction Disk containing Jutter Spring and Jutter Spring Seat.

19. Install a Rekluse 0.047" (1.2-mm) steel drive plate on top of the Rekluse Narrow Friction Disk.
20. Install 7 of the stock friction disks with 1 Rekluse 0.047" (1.2-mm) steel drive plate between each friction disk on top of the previously installed Rekluse 0.047" (1.2-mm) steel drive plate.
21. Next, install 1 Rekluse 0.040" (1.0-mm) steel drive plate on top of the stock friction disk followed by the last stock friction disk. **See following picture.**



22. Install 1 stock 0.062 (1.6-mm) steel drive plate on top of the last stock Friction disk. Then install the 1 Rekluse Friction Disk. **See Following chart.**

The new clutch pack consists of 10 Friction disks and the 8 Rekluse 0.047 (1.2-mm) steel drive plates, 1 Rekluse 0.040 (1.0-mm) steel drive plate, and 1 Stock 0.062 (1.6-mm) steel drive plate. **See following pictures. See following chart.**



New Clutch Pack Configuration

- (1) **Rekluse Narrow Friction Disk**
Rekluse 0.047" steel drive plate
- (2) **Stock Friction Disk**
Rekluse 0.047" steel drive plate
- (3) **Stock Friction Disk**
Rekluse 0.047" steel drive plate
- (4) **Stock Friction Disk**
Rekluse 0.047" steel drive plate
- (5) **Stock Friction Disk**
Rekluse 0.047" steel drive plate
- (6) **Stock Friction Disk**
Rekluse 0.047" steel drive plate
- (7) **Stock Friction Disk**
Rekluse 0.047" steel drive plate
- (8) **Stock Friction Disk**
Rekluse 0.040" steel drive plate
- (9) **Stock Friction Disk**
Stock 0.062" steel drive plate
- (10) **Rekluse Friction Disk**

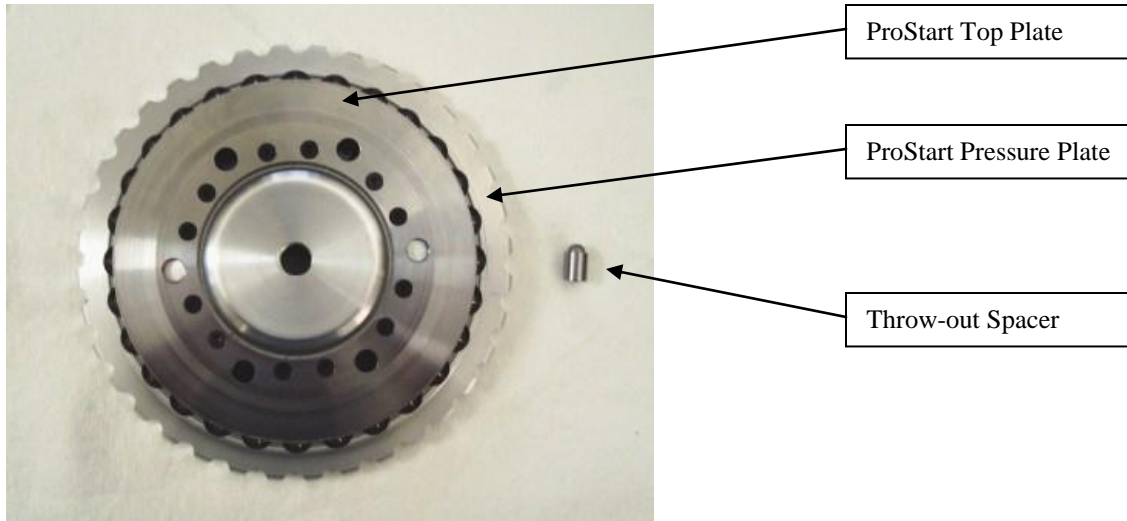
Inner most disk (1st disk installed)



Outer most disk (last disk installed)

Installing the ProStart Assembly

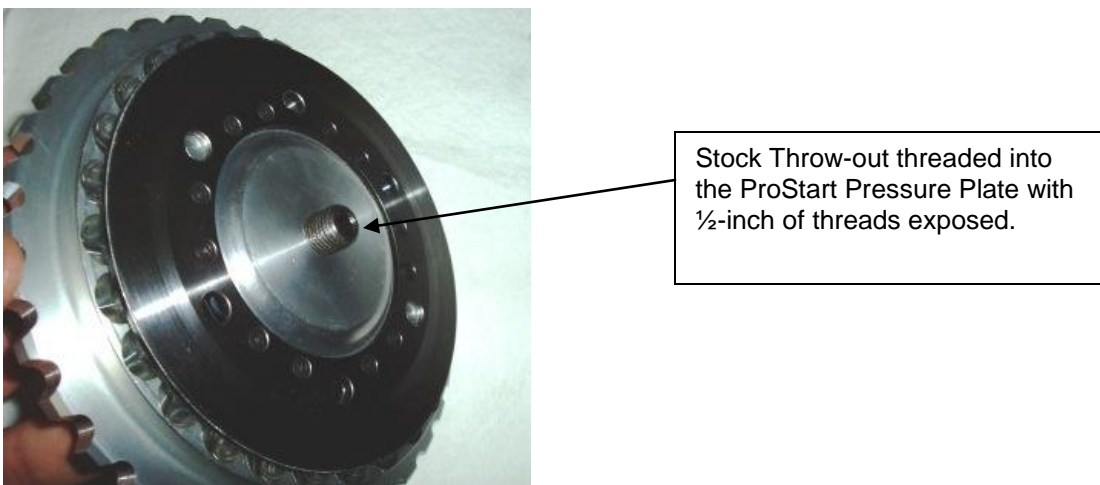
23. See the following picture for part identification.



24. Insert the Rekluse throw-out spacer, dome end out, into the hole in the center of the mainshaft.
See following picture.



25. Thread the stock throw-out into the hole in the ProStart Pressure Plate until there is about a 1/2-inch of threads exposed above the ProStart pressure plate. See following picture.

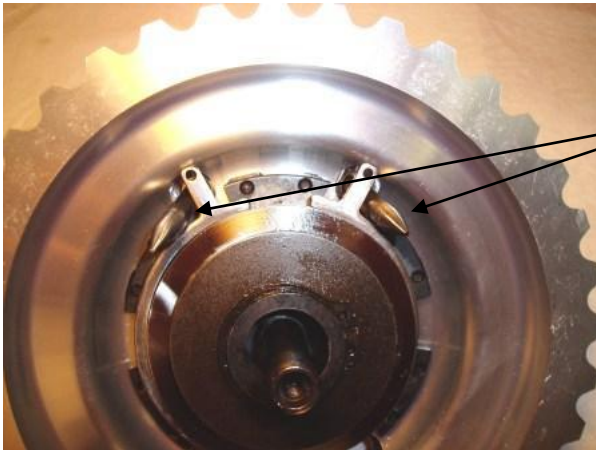


26. Line the tabs of the Retaining Ring up with access holes in the ProStart Assembly. See following picture.



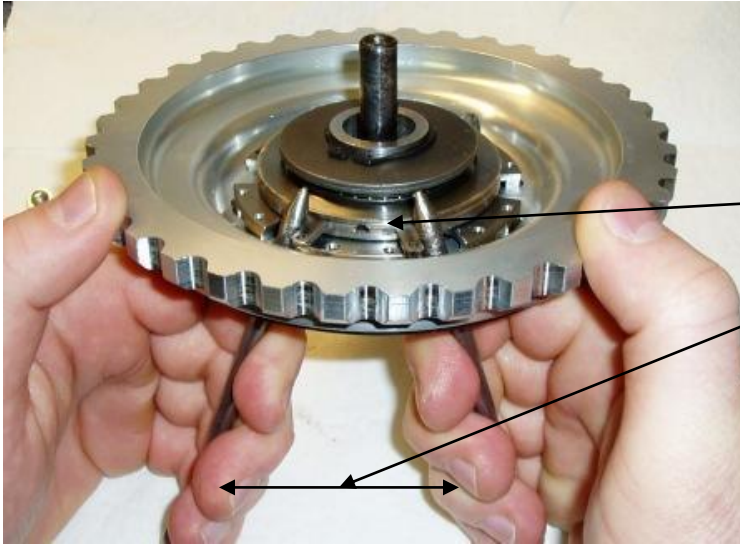
Retaining Ring Tabs lined up with access holes in the ProStart Top Plate

27. Insert the 2 Rekluse Retaining Ring Tools into the 2 access holes lined up with the Retaining Ring tabs. The 2 tools need to be in place along the outer edge of each tab. See following picture.



Tools inserted through the access holes along outer edge of each Retaining Ring Tab.

28. Using the tools to pry outward will compress the Retaining Ring into the groove of the ProStart Assembly. Compressing the Retaining Ring will allow you to snap the retaining ring into the groove in the 8 Center clutch posts. See following pictures.



Prying the tools out and compressing the Retaining Ring into the ProStart Groove.



Retaining Ring Groove.

29. While compressing the Retaining Ring, guide the ProStart Assembly over and onto the center clutch.

Center the gap between the 2 Retaining Ring tabs on one of the 8 center clutch posts. Guiding the Throw-out into the hole in the main-shaft will help keep The ProStart centered, making it easier to line everything up.

Lastly, as you are snapping the ProStart into place, index the outer tabs of the ProStart Pressure Plate into the clutch basket. See following pictures.

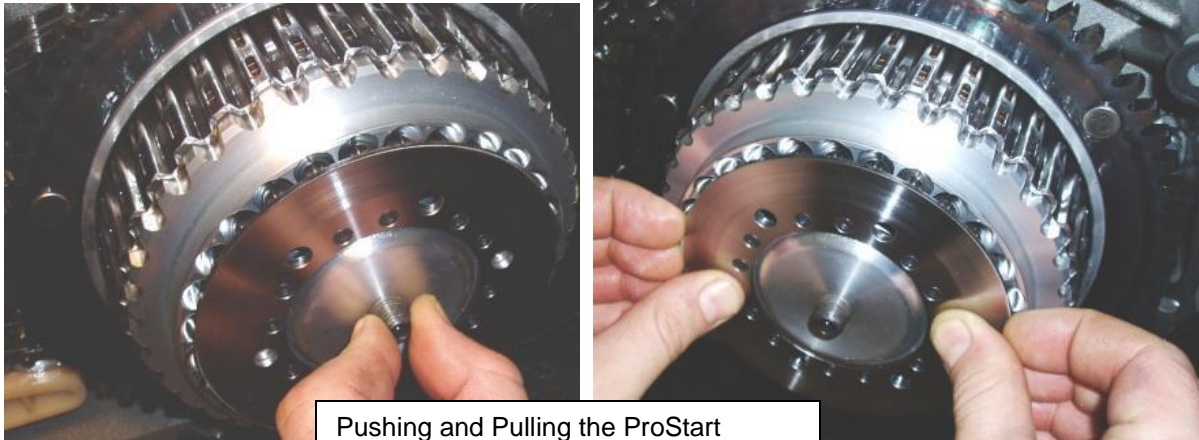


Gap between the 2 Retaining Ring tabs centered over one of the 8 center clutch posts.



Checking that Retaining Ring is properly seated

30. You must ensure the Retaining Ring is snapped into the groove in the 8 center clutch posts. Grab the exposed part of the Throw-out or the Top Plate and push in and pull out making sure that the ProStart is locked into place. See following pictures.



Pushing and Pulling the ProStart Assembly to make sure the Retaining Ring is locked into place.

Warning: If the Retaining Ring holding the ProStart in place is not properly located into the groove of the 8 center clutch posts, considerable damage to the clutch will result.

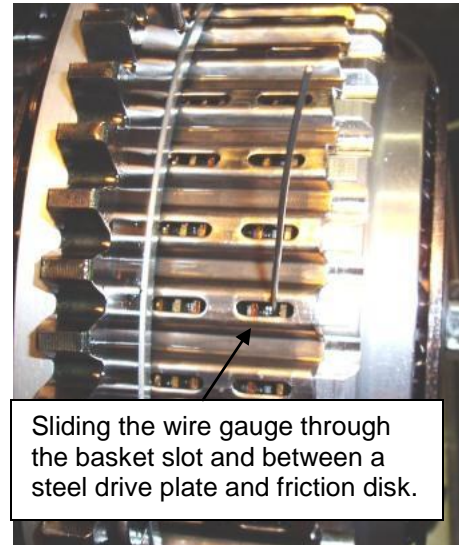
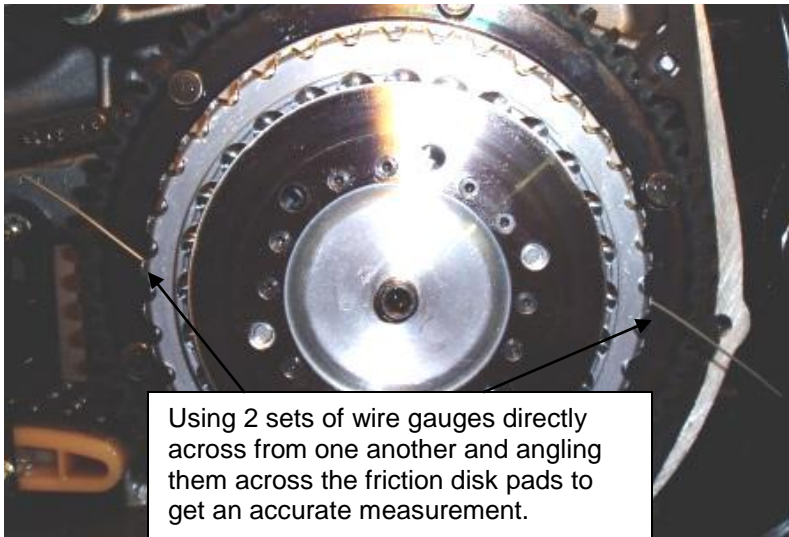
Determine the installed gap of the ProStart Clutch

31. Two sets of 2 wire gauges are included for measuring the Installed Gap. The Installed Gap is the distance the ProStart Pressure Plate must travel to clamp the clutch pack.

To measure the Installed Gap, start with the 0.030 (smaller) set of wire gauges and insert them 180 degrees apart through the slots in the basket and between a drive plate and friction disk.

Angle the wire gages as much as possible to be sure that you are measuring across the pads of a friction disk—if the wire gages are slid into the space between friction disk pads, you will get an inaccurate reading.

Once the gages are slid in, slide them in and out to feel how much drag there is on the wires.



You want to have some drag on the wires, but it should not be overly tight or overly loose. If it is loose, repeat the measurement with the 0.040 (larger) set of wire gauges. Ideally, we want the Installed Gap to be somewhere between the 0.030 set and 0.040 set of wire gauges. If you determine the Installed Gap to be between the smaller and larger set of wire gauges then the Installed Gap is within the proper range and you can move on to step 28.

If the Installed gap is tighter than the small set of wires, or looser than the large set of wires then the clutch pack needs to be adjusted. You must remove the ProStart Assembly by compressing the Retaining Ring with the 2 provided tools and pulling outward on the ProStart assembly.

If Installed Gap is too large: If the gap was larger than the large set of wires replace the 0.040 (1.0-mm) Rekluse steel drive plate with a 0.047 (1.2-mm) Rekluse steel drive plate and Repeat steps 24 – 27. If the installed gap is still too loose, replace one of the 0.047 (1.2-mm) Rekluse steel drive plates with a 0.062 (1.6-mm) Stock steel drive plate and replace one of the 0.047 (1.2-mm) Rekluse steel drive plates with a 0.040 (1.0-mm) Rekluse steel drive plate.

If Installed Gap is too tight: If the gap was tighter than the small set of wires replace one of the 0.047 (1.2-mm) Rekluse steel drive plate with a 0.040 (1.0-mm) Rekluse steel drive plate and Repeat steps 24 – 27.

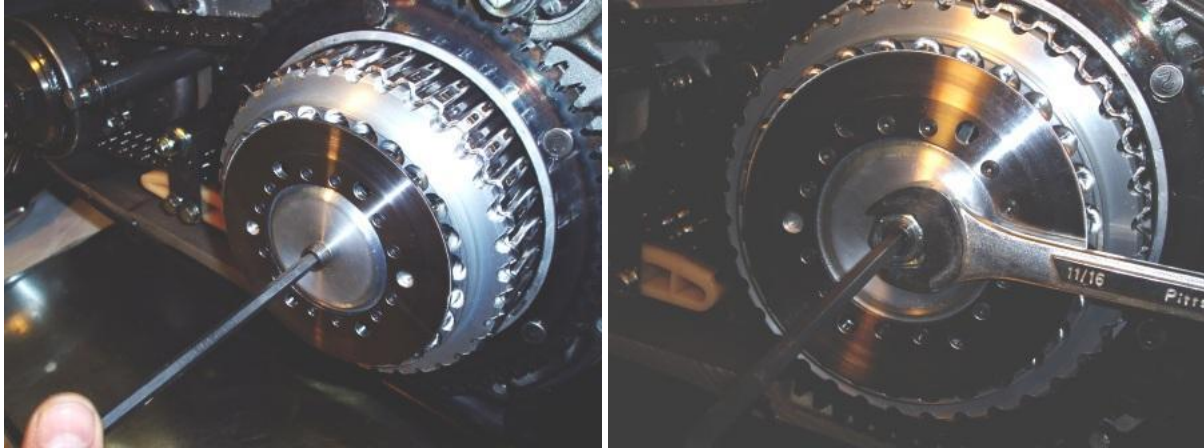
Warning: If the Installed Gap is too tight or too loose, the clutch will slip excessively and accelerate clutch pack wear. **See following pictures.**

Adjusting the Clutch Throw-out

32. Using a $\frac{7}{32}$ " Hex Key, turn the stock throw-out clockwise until it seats against the Rekluse throw-out spacer and stock throw-out rod. Now, back-out the stock throw-out by turning it counter-clockwise (loosening) $1\frac{1}{2}$ to $1\frac{3}{4}$ turns.

Install the stock lock-nut onto the exposed threads of the throw-out and thread the lock-nut up against the ProStart pressure plate. Insure that you do not change the position of the throw-out, set in the previous step, when installing the Lock nut.

Lock the throw-out in position by holding the throw-out with a $\frac{7}{32}$ " hex key and apply moderate torque to the lock-nut with an $\frac{11}{16}$ " end wrench. See following pictures.



Relieving the Primary Cover

33. The lower 2 bosses that the derby cover attaches to slightly interfere with the ProStart. Place the Primary cover over the case to see where it interferes with the ProStart Clutch.

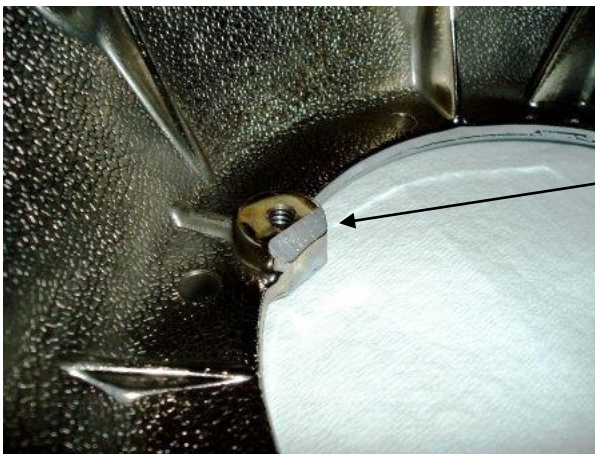


2 lower derby cover screw bosses interfering with the ProStart.

34. Using a rotary tool, chamfer the leading edge of the 2 derby cover screw bosses that are interfering—**be careful not to grind too much away and damage the threaded holes for the clutch inspection cover screws. See following pictures.**

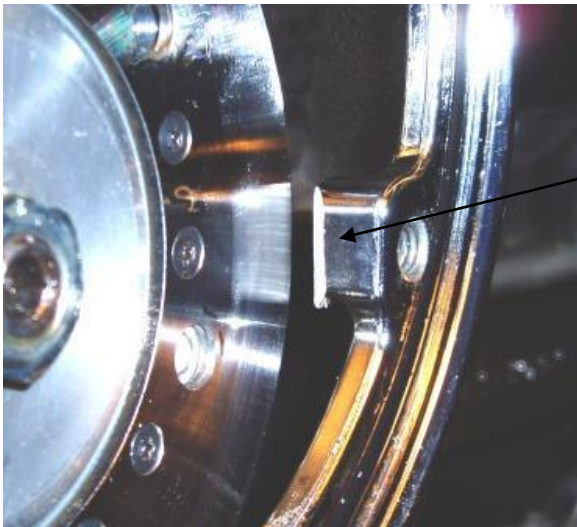


Using a rotary tool to chamfer the inner edge of the bosses.



Screw boss after its inner edge has been chamfered.

35. Once the interfering portion of the 2 screw bosses has been cleared. Verify that the cover clears. There should be at least 0.10-inch of room. The ProStart Clutch expands outward at higher RPM's. **See following pictures.**



Checking for clearance.

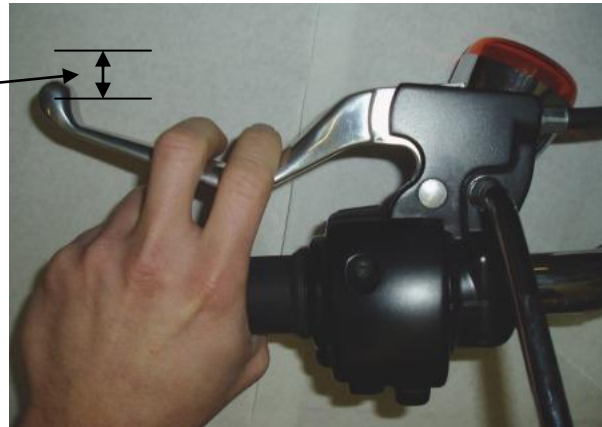
36. Remove any chips or shavings from the inside of the primary cover when finished modifying for clearance.

Final Installation Steps

37. Following the guidelines in the H-D Service Manual, re-install the Primary cover, Primary chain inspection cover, shift lever, and foot peg. You may need to replace the primary gasket if it was damaged upon removal.
38. Following the guidelines in the H-D Service Manual, fill the primary chaincase and transmission with the proper oil to the proper level.
39. Take the motorcycle down off of the lift and insure the transmission is in neutral.
40. Start the motorcycle and allow it to warm up.
41. **With the motorcycle in neutral**, rev the engine to a minimum of 2500 RPM's and adjust the clutch cable slack so that there is adequate lever free-play—because the ProStart is only engaged when the engine is being revved, you must have the engine revved to at least 2500 RPM's to set the proper amount of clutch cable slack.

While the engine is revved adjust the in-line cable adjuster out until you can pull the clutch lever in about a 1/4-inch before feeling the lever pull get harder—this will guarantee proper cable slack setup. **See following pictures.**

While the engine is revved, you need to be able to pull the clutch lever in a 1/4-inch to ensure proper cable slack.



Warning: Proper cable slack must be maintained or premature clutch wear will result.

42. Install the In-Line Adjuster Sticker at this time as shown. This alerts any mechanic in the future that you have a Rekluse Pro-Start installed and that the in-line adjuster needs to be adjusted properly.



43. The engine idle speed affects when the ProStart engages and disengages. Higher idle speeds increase clutch drag at low RPM's. Engine idle speeds between 900 and 1050 RPM work best. If necessary, adjust the engine idle speed according to the H-D Service Manual.
44. Please refer to the ProStart owners guide for operation, break-in, and maintenance of the ProStart Clutch.