Table of Contents

Go To Technical Menu

EVO: Engine Mechanicals - Sub-01K

Removing 91-03 Primary Cover

Before removing the primary cover, you'll need to remove the shift lever bracket (or mid foot pedal bracket if applicable), linkage and derby cover.
Drain the primary fluid, loosen or remove the clutch cable and loosen the primary chain adjuster.

Remove shift lever

1)

2)

Remove the rubber seal behind the lever.

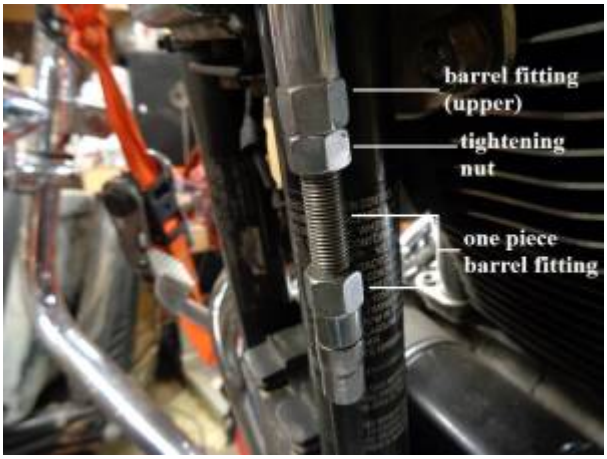

3)

4)

Clutch cable

The clutch cable is best removed from the cover.
It's awkward to handle and keep the cover out of the way while you remove the sprocket / clutch basket and work on the stator.
However, for this application, you could simply leave it on and hang the cover from the bike once removed.
If you have to remove the cable connection or the cover completely from the engine, removing the cable is the easy part.
It's easy to cross thread the cable in the primary cover if the cable isn't stretched out to keep it from binding up when installing.
To remove the clutch cable, detach both ends as shown below and any holding clips and / or wire ties.
Retract the cable connection fully to allow slack on the inner braided wire.

5)



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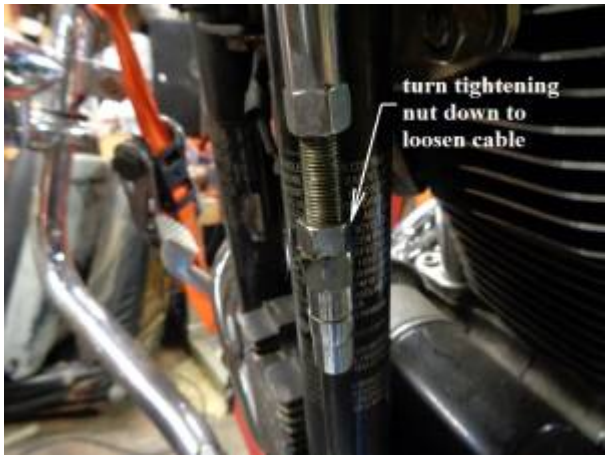

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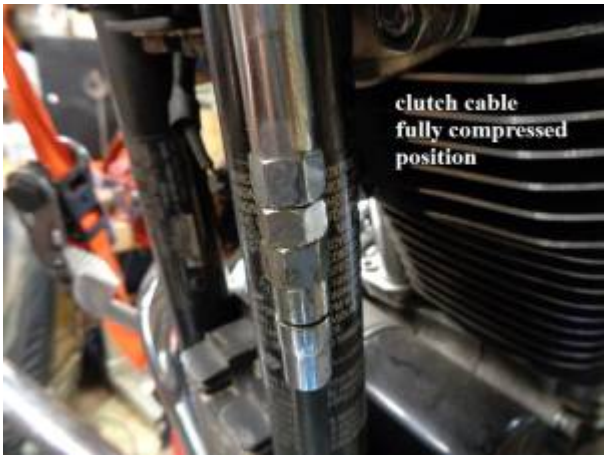
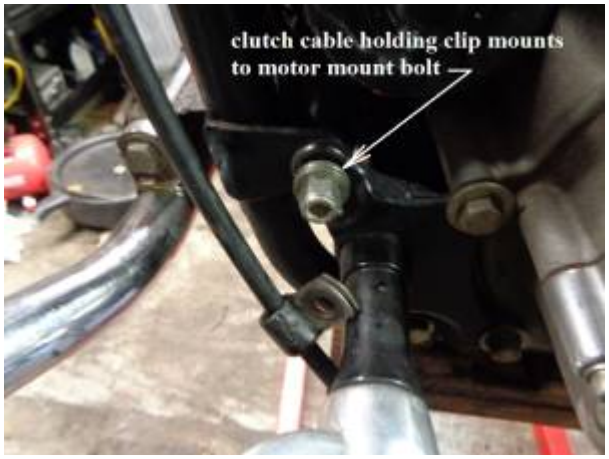


9)

10)

Remove the cable holding clip (if used) and any wire ties etc. that may be holding the cable to the frame.



11)

Remove the clutch lever from it's bracket by removing the retaining ring (circlip) underneath and pivot pin from the top.
Then pull the lever from the bracket, swing the cable wire through the slot in the bracket and remove the plastic cable pin.

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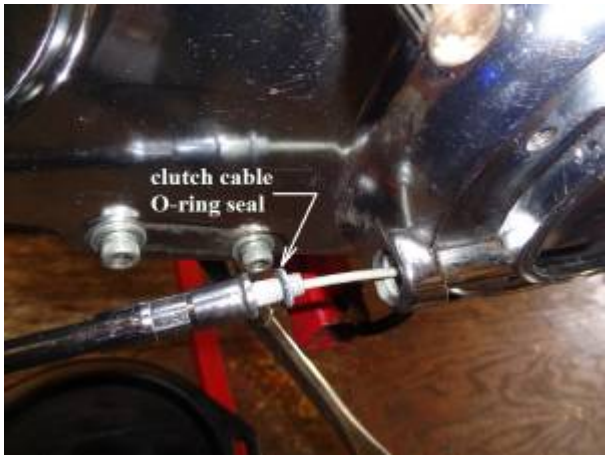
14)

Then pull the clutch cable down thru the trees and lay it out in front of the bike.
Use a 1/2“ open end wrench to loosen the cable connector at the primary cover and then you can most likely twist the cable to loosen the threads.
This method will help keep the cable straight so as to not cross thread it making it more safe for re-installing the cable later.

Be careful not to damage the O-ring on the part of the cable that comes out of the cover.
Inspect the O-ring and replace it if needed.

15)



16)

Remove the clutch ramp assembly

Remove the derby cover and the clutch ramp assembly.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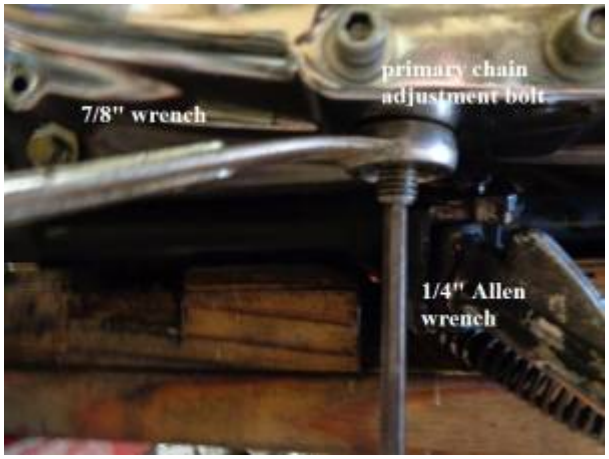
25)

Loosen the primary chain adjuster

Loosening the primary chain adjuster takes the pressure off the primary chain from the cover.
Hold the stud with a 1/4” Allen wrench and use a 7/8“ open end wrench to loosen the tightening nut.
Once the nut is loose, unscrew the stud until it bottoms out to loosen the chain adjuster. \ This is easier done before removing the cover since the engine holds the assembly in place.
If you don't loosen this before re-installing the cover, it will be more difficult to install the cover later.



26)

27)

Loosen and remove the primary cover

Loosen the screws will most likely result in an oil leak. So, first, put an oil drain bucket or catch pan under the engine.
Loosen the primary cover screws but don't completely remove them to allow oil to drain into a bucket or catch pan.

The primary cover has (14) 1/4” and (2) 5/16“ Allen head screws of various lengths.
They will need to be replaced back in the same holes from which they were removed.
So, their proper location will need to be marked upon removal. You can make a drawing of the primary cover on a piece of cardboard.
Then put them into the cardboard in the proper orientation as removed from the cover.
You can punch the holes with a screwdriver, insert the screws for holding and it makes reassembly less of a headache.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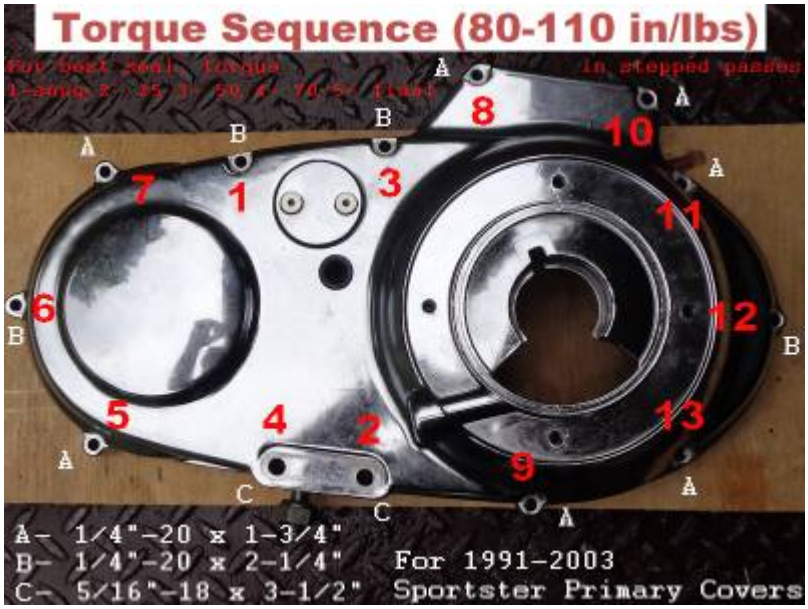
Installing the Cover

Torque specs are in the FSM but torque sequence is not. In order to get the best seal and keep the cover from warping, it should be torqued in sequence.
Torque spec is 80-100 in/lbs. Suggested torque sequence is in the pic below.
NOTE: using too much torque on these bolts has been known to strip the bolt heads and crack primary covers.

If you are using a clicker type torque wrench, it's best not to on these small torque values.
Clicker type torque wrenches have a habit of giving false results. In that case, just use the “snug plus a nudge” method with the sequence in the pic below.
Snug all the bolts in sequence first, then use the same pressure “nudge” on the second pass.
As this method will not tighten all the bolts the same, you'll have to use “feel” to know when to stop.

If you are using a beam type torque wrench, use the sequence below to get to the torque spec.
This is a proven sequence that will pull all the bolts up evenly without distorting the cover.



[34]

Go To Technical Menu

[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18] [19] [20] [21] [22] [23] [24] [25] [26] [27] [28] [29] [31] [32] [33] [34]

photo by Hippysmack
[30]

photo by cjburr of the XLFORUM
https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-drivetrain/sportster-motorcycle-transmission-clutch-primary-secondary-drive/29955-06-clutch-install?t=49915