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## REF: Tools & Fasteners

# Finding Acceptable Lengths for Gearcase/Cam Cover Screws

Below are suggestions for finding the lengths of unknown cam cover screws and where they go.

Some parts books list the length screws/bolts HD sold for certain applications.

1957-1985 parts catalogs contain the threads and lengths for the cover mounting screws but do not show where they go.

Screw thread size was taken out of the parts books in 1986 and was put back in the books in later years. And historically, some lengths have either been misprinted (as in motor mount bolts) or changed at the parts dept. from time to time.

1991-2003 parts books show where SOME of the bolts go but not all and 2004-up parts books do show where all the go.

All cam cover mounting bolts have 1/4"x20 threads with various quantities used (8, 9 or 11 screws depending on year model).

## Find Proper Screw Length by Uniformity

If you have the correct length/amount of screws but don't know which hole they go in, you can deduce the lengths needed.

- Hold the cam cover so that the outside is facing up and drops screws in all mounting holes. <sup>1)</sup> Check the screw depths on bottom (inward side) of the cover. They should all stick out of the cover app the same length. If not, move them around until the ends of the screws on the bottom are basically equal in length sticking out from the cover. Then record the lengths so you'll know where the screws go next time you have the cover.

## Find Acceptable Screw Length by Measuring the Depth of a Light Seat

The hole depths in the gearcase are deeper than the installed screw lengths in the parts book (some

deeper than others).

There should be about 1/8" minimum or more of space between the end of the screw and the bottom of the hole.

So if you don't know the lengths, you can still deduce the lengths needed.

**Note:** It's best to use normal screw threads for this instead of a straw or other. The hole bottom is always longer than the screw ending seat.

Drill bits are chamfered and when the threads are cut, they end before the hole chamfer ends.

Using objects other than a cut off rod or bolt can easily end with too long screw lengths and cracked cases or broken screws.

With the cam cover on the motor;

- Cut at least three pieces of threaded rod about 3-1/2" long each (or cut the head off a long 1/4" screw/bolt).  
Screw a couple in the gearcase as "holders" for the cover.  
Install the cover gasket and cover over the rods and push lightly on the cover to take up any space to the gearcase.  
Screw another threaded rod through a mounting hole in the cover by hand until it "lightly seats" in the bottom of the hole.  
Mark the point where it peeks out of the cover with some tape.  
Remove the rod, measure from your mark to the end of it and subtract 1/8".  
That is the longest screw you want to put in THAT hole.  
Repeat for all questionable holes. Buy/use screws that are in that range.  
Screws/bolts are normalized in size so you may have to go shorter when buying them from stores.  
If you can't find the right size screw(s), you can buy longer ones and cut them to the size needed.

The thread lengths of a 1980 XLH cam cover were found and recorded using this method <sup>2)</sup>

Dims were transferred to the pic below. Click on the pic to enlarge:



# Find the depth of the holes in the gearcase

With the cam cover off;

- You can use a long OEM screw for this without cutting it.  
Screw it into each cover mounting hole in the case by hand until it "lightly seats" in the bottom of the hole.  
Mark the point where it is flush to the case with some tape. Remove the screw and measure from your mark to the end of it.  
This is the maximum depth a screw can be threaded into the hole. THIS IS NOT the proper depth of the screws.  
The installed screws should stop short of bottoming out to keep from cracking the case or breaking a screw. Be sure to take that into account when sizing screws.

The thread depths of a 1980 XLH gearcase were found and recorded using this method <sup>4)</sup>  
Dims were transferred to the pic below. Click on the pic to enlarge:



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<sup>1)</sup>

Ocgreenmachine of the XLFORUM

<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/frame-mount-evo-sportster-talk-1986-2003-models/92923-bolt-pattern-on-cam-cover?t=763023>

<sup>2)</sup> <sup>4)</sup>

dims by sickchops of the XLForum

<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-s>

