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IH: Engine Mechanicals - Sub-09I

Lower Front Motor Mount Assembly

Specifics Behind the Assembly

From Dr Dick of the XLFORUM ¹⁾

- The key to what the factory did is the 4 holes in the plates (2 for plate to case & 2 for plate to frame)
 - Let's look at case holes in the plates 1st.
The top hole (this is the one that has the nut welded on the right side plate) is round and fits closely to bolt diameter.
When this bolt gets put together, the plates are located to the case cause the plate hole isn't sloppy on the bolt.
This is the "master" bolt. (although the plate can rotate using the bolt as an axle until you put in the lower case bolt).
 - Now look at the plate hole for the lower case bolt.
Its slotted in a way that the plate can rotate about the upper case bolt even when the lower bolt get put in.
This rotary play allows the plates to rotate so the upper frame plate bolt holes in them can line up to the upper holes in frame.
 - Now these upper frame bolt holes are slotted in the plate too (forward to back).
This is so the bolt will pass thru if different bikes have slightly different frame to motor distances.
But when this bolt gets put in, because of the direction of it's slot, the plates no longer can rotate.
So what you got now is a setup that has the ability to assemble to a big difference in motor / frame alignment, but still not be sloppy.
 - The last bolt goes thru a big round plate hole. It don't have anything to do with alignment.
The hole is big and round so the last bolt will align no matter how the 1st 3 fit.
 - What the grooves in the hardened washers do is bite into the face of the plates over the slots and the big over sized lower frame plate hole.
(hence nicknamed "Biter Washers")
This stops the possibility of the plates sliding in those slots during operation.
The grooves lock the plates to the bolts (6 slots / big holes, 6 grooved washers with the grooves against plates).

Order of Bolt / Washer Installation

The washers have concentric ridges on one side only (affectionately known as biter washers).

The hardened washers (16218-52) described below are the biter washers. ²⁾

The gripper side of each washer goes toward it's corresponding plate.

On 57-76 models, all the lower front mount bolts install from the left side. ³⁾

On 77-85 models with the gerotor oil pump, the bolts install from the left side with the exception of the bottom rear bolt that installs into the right side.

(The bolt head and washer takes up less space than the bolt end, washer and nut. So that leaves more clearance for the green wire/nut from the oil switch.)

- There are 5 of the hardened washers required for the front motor mounts 76< motors, 6 for 77-81 motors and 7 for 82-E84 motors.
- There are two motor mount plates.
- There are 4 motor mount bolts. Two we will call front upper and lower. The other two we will refer to as rear upper and lower bolts.
- **Front upper bolt:**
 - Install a hardened washer against the head of the bolt.
 - Slip bolt through upper hole in front left engine plate.
 - Slip bolt through frame.
 - Install spacer on bolt.
 - Install hardened washer.
 - Install right engine plate. (Right side engine plate sits inside the frame)
 - Slip bolt through frame on right side.
 - Install nut and flat washer.
- **Front lower bolt:**
 - Done the same as above.
- **Rear lower bolt:**
 - Done the same as above, except:
 - No spacer is used. Run the bolt through the crankcase.
 - The right side engine plate rests against the crankcase.
 - Hardened washer is installed on bolt.
 - Install nut and flat washer.
- **Rear upper bolt:**
 - This is the odd one. Install a lock washer against the head of the bolt.
 - Insert bolt into left engine plate.
 - Run bolt through engine crankcase.
 - This bolt will thread into the welded on nut sitting on the left side engine plate.



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1)

As arranged by IronMick,

<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/ironhead-sportster-motorcycle-talk-1957-1985/109872-71-motor-mounts/page2?t=1025434&page=2>

2)

piniongear of the XLFORUM

<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/ironhead-sportster-motorcycle-talk-1957-1985/90065-front-motormount-bolts/page2?t=727192&page=2>

3)

IronMick of the XLFORUM

<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/ironhead-sportster-motorcycle-talk-1957-1985/109737-motor-mount-spacer?t=1023762>

4)

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