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EVO: Engine Mechanical

Engine Mounts

General Information

Sub Documents

- [Sequence of Installing Rigid Evo XL Motor Mounts](#) (General Assembly Procedure)
- [Evo Motor Mount Torque Specs](#)
- [Pics and Information on 1986-2003 Motor Mounts](#)

Parts Lists

1986-2003 Sportster Motor Mounts		
Rear Motor Mounts		
Year Model	Part#	Notes
1982-1990	16203-82A	Appearance- offset, billet aluminum. Replacement for 16203-82 for 82-83 models.
1991-2003	N/A	Rear motor mounts are steel (welded to and part of frame).
Lower Front Motor Mounts		
	Lower front mount (L)	Lower front mount (R)
L1984-1986 All	16212-84 (steel, black)	16210-84 (steel, black)
1987-2003 All (except 883C/1200C)	16212-84 (steel, black)	16210-84A (steel, black)
1999-2003 883C/1200C	16297-99 (alum, black)	16294-99 (alum, black)
Upper Front Motor Mounts		
1986-2003 883 (except 883R)	16222-86	Finish: steel

1986-1987 1100 1988-2002 1200 2002-2003 883R	16214-86	Finish: black
Top Center Motor Mounts		
1986-1991 883	16277-86	See the link in the sub document section above "Pics and Information on 1986-2003 Motor Mounts" for specific changes and interchangeability for these brackets.
1986-1987 1100 1988-1991 1200	16278-86	
1992-1993 All	16278-86A	
1994 All	16278-86B	
1995-1996 All	16278-95	
1997 All	16278-95A	
1998-2003 All	16278-95B	
2004-	16353-04	Mounts to heads only. Requires 16354-04 "L" bracket.
2004-	16353-04	Choke bracket connects to 16353-04 for enrichenor cable.

2004-Up Rear Isolators		
48492-04	2004-up	(L and R) Rear rubber isolators.
16291-04		(L) Rear isolator mount (right isolator fits into the frame).
2004-up Rear Stabilizer		
16232-04	2004-up	Lower Rear Tie Link (motor to frame)
2004-Up Front Stabilizer Tie Links		
47471-04	2004-up	Upper Front Tie Link Mounting Bracket (attached to engine)
47470-04		Upper Front Tie Link Bracket (attached to frame)
16232-04		Upper Front Tie Link (bracket to bracket)
47470-04		Lower Front Tie Link Bracket (attached to frame)
16232-04		Lower Front Tie Link (bracket to motor)
2004-Up Front Isolators		
48463-04	2004-up	(L and R) Front Rubber Isolator
16287-04		(L) Front Isolator Mount (right isolator fits into the frame).

1986-2003 Motor Mounts

Rear Mounts

1982-1990 mounts offset the engine 13/32" to the left of the position for pre 1982 engines and don't have the hole in them for the kicker shaft to go through. ¹⁾

1984-1990 Rear Mount:

This mount is made from billet aluminum and was also sold as a replacement for the 82-83 rear motor mount.





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Lower Front Mounts

L1984-2003 style lower front motor mounts. ⁸⁾



Upper Front Mounts

1986-2003 upper front motor mount
(all 883 except 883R) ⁹⁾

1986-2003 upper front motor mount
(1100, 1200, 883R) ¹⁰⁾



Top Center Mounts

2004-Up Motor Mounts

Sub Documents

- [Isolator Inspection and Replacement](#)

Isolator Mounts:

There shouldn't be that much vibration on rubbermount bikes. You should feel some but not enough to make your feet numb. ¹¹⁾

Keeping the motor mounts in specs makes all the difference in the world. ¹²⁾

Tip: If your mirrors are blurry, check your motor mounts. You also may notice the engine bouncing around and the handling loose. ¹³⁾

The rubber mounts do in fact allow the engine and swing arm to move all around. ¹⁴⁾

The job of the rubber mounts (or isolators) is to simply carry the weight of the engine, not to align it.

However, there are 3 stabilizer links from the frame to the engine that eliminate side to side movement of the engine.

The most obvious stabilizer link is in front of the front cylinder head.

The end result is the engine can move vertically, but not horizontally.

This system was designed by Eric Buell to reduce engine vibration to make the V Twins less prone to vibration bothering the rider.

Next time you start the engine, watch the swing arm pivot bolts, they move up and down with the engine vibration.

Now look at the tire contact patch on the ground, it barely moves at all.

An over tightened drive belt can cause the engine to be jerked backwards by the swing arm when going over bumps in the road.

If you take the shocks off, you can feel an over tightened belt bind up the suspension travel when either the rear axle is in line with a line drawn through the swing arm pivot bolts and center of the front pulley in the case of longer shocks, or at max shock extension in the case of shorter shocks.

If the stabilizer links and rubber mount bolts are tight, it is possible the problem is a loose fit between the swing arm pivot shaft (which goes through the rear mounting lug on the engine), and the rear mounting lug on the engine.

It is possible the torque of the belt can cause the rear wheel to turn out of alignment, but again, the real problem may be the fit between the swing arm pivot shaft and the rear engine mount lug.

Better tires and fork brace are also part of the problem.

It could also be loose steering head bearings, bad wheel bearings, loose wheel spokes and a lot of other stuff.

All this, and more, is covered in the [7 pages of Suspension](#) in the REF section of the Sportsterpedia and the famous ["Wobble" thread](#) from the XLForum.

Stabilizer Tie Links:

The 3 stabilizer links on the engine and the pivot shaft through the rear engine mount are the components that keep the alignment between front and rear. ¹⁵⁾

They are supposed to eliminate side to side movement of the motor.

They do however allow vertical movement of the motor and front of the swing arm in response to vibration. ¹⁶⁾

The rubber mounts also allow for vertical movement to absorb vibration, this is also normal.

This is how the motor's vibration is isolated from the frame. You can see this when the motor is idling.

The motor is moving, the swing arm pivot bolts are moving.

But by the time the vibration gets to the rear wheel, it is not changing the contact patch of the rear tire on the ground. Well, not much anyway.

An over tightened drive belt will cause the engine to be jerked backwards as the rear wheel goes over bumps in the road.

This is not normal. If you take off the shocks and loosen the belt so it does not bind the rear suspension, the engine and swing arm will not jerk backwards.

If the rear wheel contact patch moves forward and back while riding, the effect on handling will be barely noticeable at street legal speeds. Normal swing arm up and down movement in response to bumps in the road moves the rear tire contact patch forward and back as the wheel swings on the arc set by the swing arm. This is normal. The rubber mounts and stabilizer links do allow this front to rear movement.

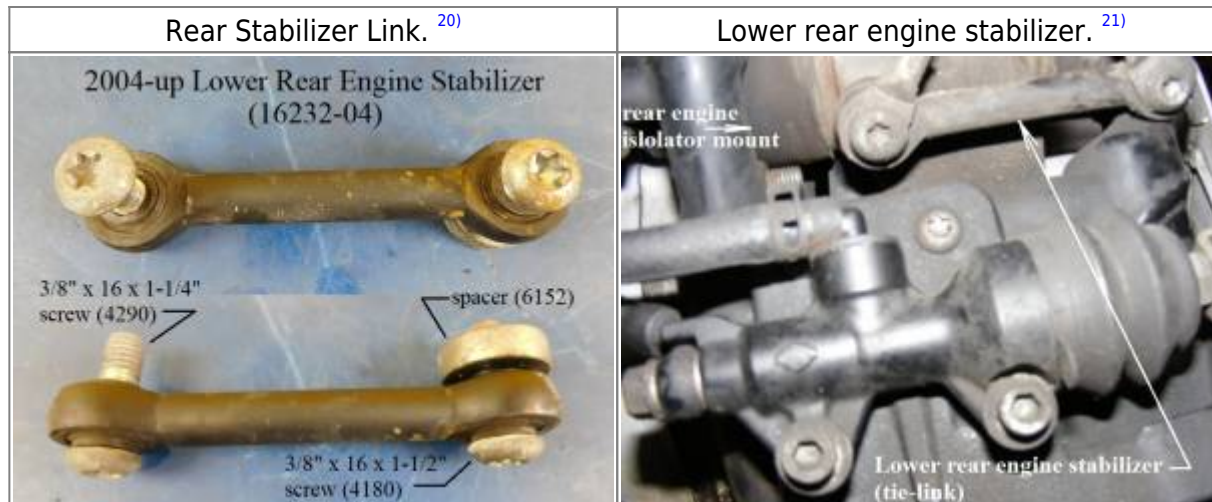
However, if the rear wheel contact patch moves side to side, or if the tire tilts side to side, or the tire is allowed to twist like a steering wheel of a car, handling will immediately be effected for the worse and the rider will lose control very quickly. ¹⁷⁾ You cannot have the tire moving side to side. The rear tire must stay in line with the front to rear axis and centerline of the bike. Lateral play or side to side play, is when the rear tire turns away from the centerline. In effect, this becomes rear steer, and that does not work on a motorcycle.

There is metal to metal contact, with no lateral or side to side play between the rear tire and axle, swing arm, pivot shaft, rear engine/transmission mount, and 3 stabilizer links to the frame. There should be no lateral or side to side play in any of these connections. These metal to metal connections are much stronger and have much less flex than the rubber mounts. These metal to metal connections are keeping everything in line, not the rubber mounts.

Rear Mounts



Rear Stabilizer Mount

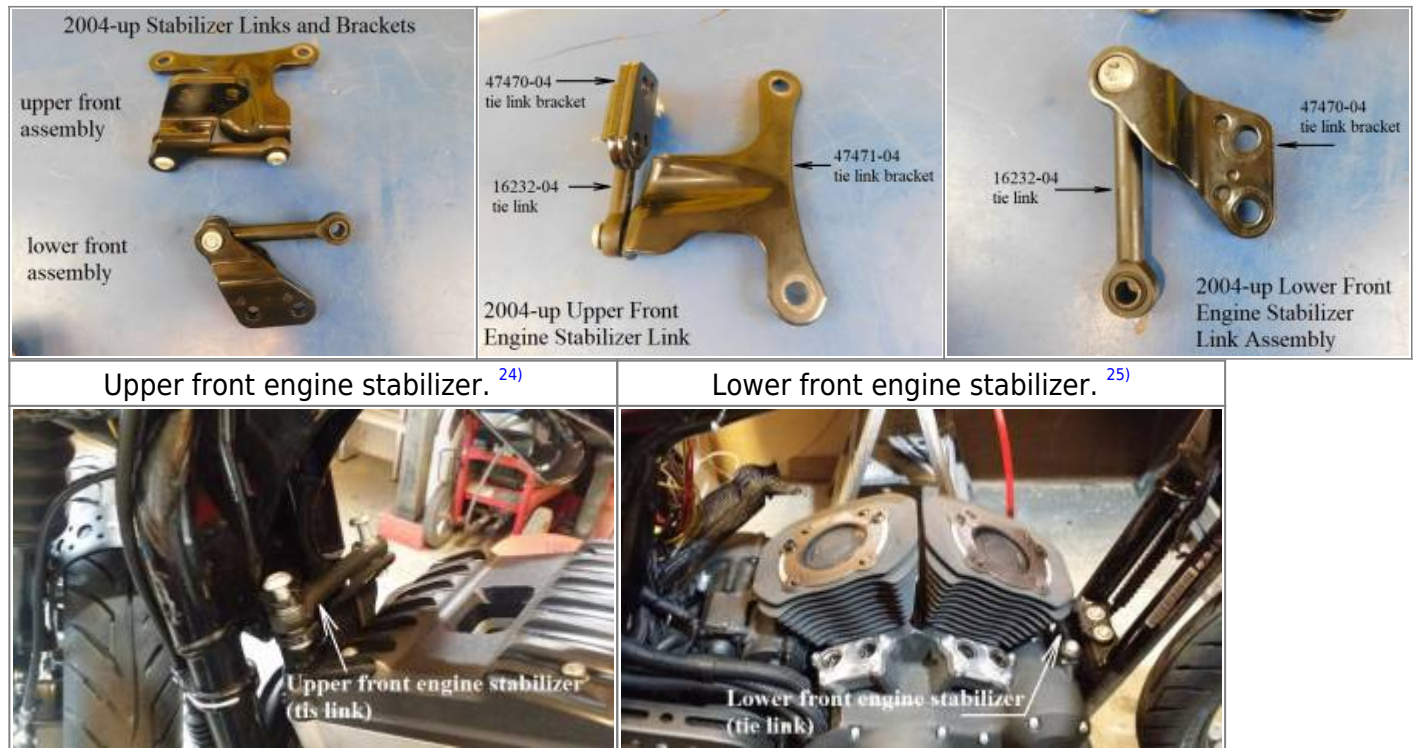


Lower Front Mounts

Top Stabilizer Mounts

Check the top isolator link mount bolts (the ones that bolt to top of the front head). ²²⁾
 (While you're there, check them all). If they come loose, add some blue Loctite to the threads and re-torque them.

Front Stabilizer Assemblies. ²³⁾



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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/ironhead-sportster-motorcycle-talk-1957-1985/198233-cracked-motor-mount/page4?highlight=motor+mount#post4358785>

2) 3) 4) 5) 6) 7)

photo courtesy of Boneyard Cycles in Melbourne, FL

8)

photos courtesy of Ebay seller, Americanbikestrippers [Link to Ebay store](#)

9)

photo courtesy of TomsCyberShop.com www.TomsCyberShop.com

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photo courtesy of Ebay seller, Motorcycle Dreams. [Link to Ebay Store:](#)

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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/rubber-mount-sportster-motorcycle-talk-2004-2006/16552-vibration-problem-solved-check-your-front-engine-mount-bolt/page6?t=27701&page=6>

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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-suspension-frame-forks->

[handlebars-fuel-tank-oil-tank-fenders/158863-swing-arm-bearings-on-rubber-mount/page3?t=1701136&page=3](https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-suspension-frame-forks-handlebars-fuel-tank-oil-tank-fenders/158863-swing-arm-bearings-on-rubber-mount/page3?t=1701136&page=3)

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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-suspension-frame-forks-handlebars-fuel-tank-oil-tank-fenders/116569-swingarm-play?t=1121503>

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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-suspension-frame-forks-handlebars-fuel-tank-oil-tank-fenders/70072-rubbermount-pivot-shaft-wobble-investigation?t=473423>

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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-engine/sportster-motorcycle-engine-conversions/171908-2013-883-cafe-hammer-performance-1250-conversion?t=1843303>

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<https://www.xlforum.net/forum/sportster-motorcycle-forum/sportster-motorcycle-era-specific-and-model-specific/rubber-mount-sportster-motorcycle-talk-2004-2006/16552-vibration-problem-solved-check-your-front-engine-mount-bolt/page4?t=27701&page=4>

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