VEHICLE ALIGNMENT

WARNING

Vehicle alignment is very important to assure proper handling and vibration control. To ensure proper alignment, follow this procedure carefully and in the sequence given to prevent loss of control.

1. Wheels must be true according to specifications. See CHECKING CAST RIM RUNOUT.
2. Remove the chrome plugs from the swing arm pivot shaft brackets.
3. See Figure 2-33. To assure accurate measurements, obtain a piece of 1/8 in. aluminum welding rod 25 in. long. Grind one end down to a blunt point. With a pliers, bend the rod as shown to clear the frame and extend back past the rear axle. Place a snug fitting grommet on the rod to act as a slide measurement indicator.
4. See Figure 2-34. With the blunt end of the alignment tool inserted in the center of the swing arm pivot shaft, slide the rubber grommet along the tool until it is aligned with the center of the rear axle as shown. Repeat for the other side of the motorcycle.
5. See Figure 2-35. The measurement between the center of the rear axle and the center of the swing arm pivot shaft must be equal on both sides of the motorcycle. If it is not, adjust the rear wheel with the axle adjusters to accomplish the equal measurement. It is extremely important that this adjustment be made as accurately as possible in order to make the remaining adjustments accurate.
6. Raise the rear of the motorcycle so that the rear wheel spins free. Accomplish this by placing a center stand or blocking under the frame.
7. Remove one bolt from the top stabilizer (under fuel tank).
8. Remove the two voltage regulator bracket bolts.
9. Move the voltage regulator and bracket out of the way. Be careful not to damage wires connected to the voltage regulator.
10. Loosen the center thru-bolt and two mount-to-frame bolts that attach mount to frame and engine bracket. Loosen bolts thoroughly.
11. See Figures 2-36, 2-37. The rear wheel must be aligned with the front wheel. On 1984 FLT's this is accomplished by using a straightedge along one side of the wheels and adjusting the front stabilizer until the straightedge contacts two points on each tire. On FXR's and 1985 and later FLT's use two straightedges (one on each side of the wheels) and adjust the front stabilizer so that the front wheel (rear wheel on FLT's) is centered between the straightedges. See NOTE below. Before adjusting stabilizer the two locknuts must be loosened.

NOTE

On FXR models the straightedge will not touch the front tire since the rear wheel and tire are wider than the front. Measure from straightedges to machined outer wheel surfaces to verify front wheel is centered between the straightedges.

NOTE

On late 1985 and later FLT models, the straightedges will not touch the rear tire because the front tire is slightly wider than the rear. Be sure the distance between rear wheel and straightedges is equally spaced. Measure from straightedges to rear wheel as described for FXR above.

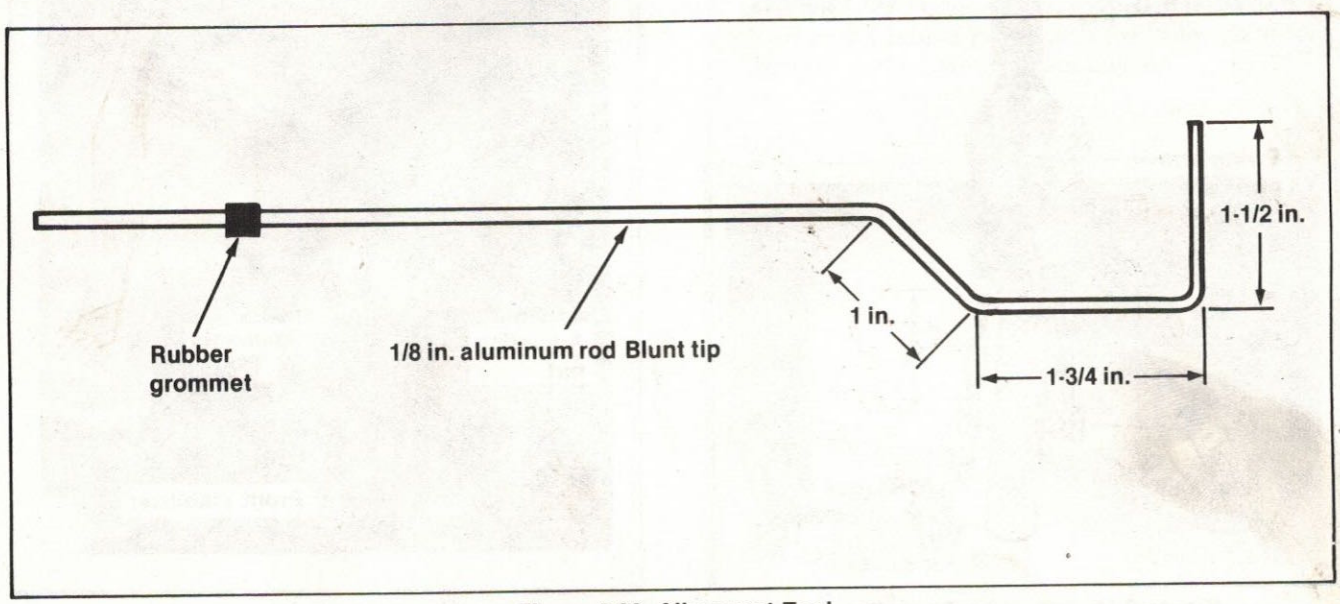
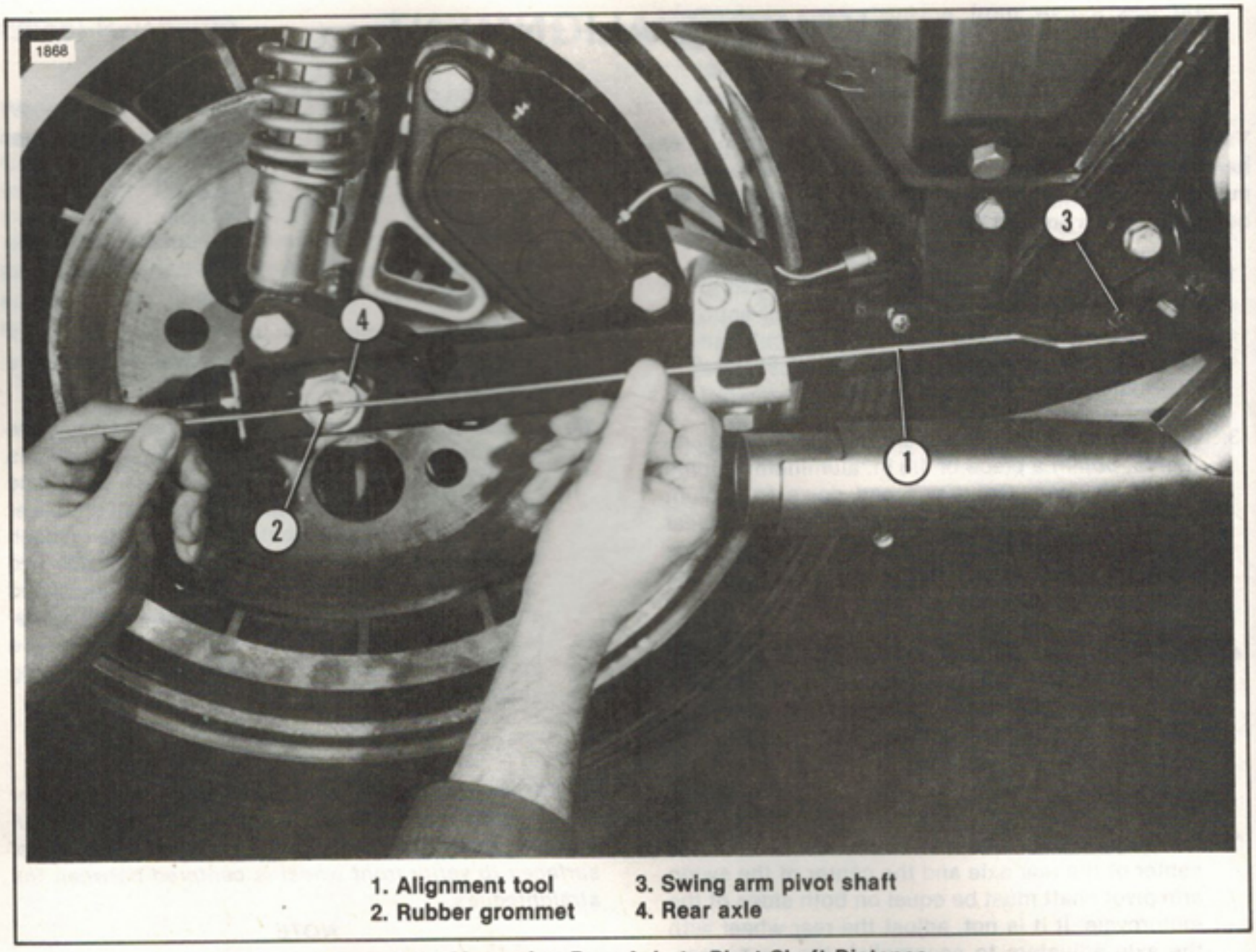


Figure 2-33. Alignment Tool



1. Alignment tool
2. Rubber grommet
3. Swing arm pivot shaft
4. Rear axle

Figure 2-34. Measuring Rear Axle to Pivot Shaft Distance

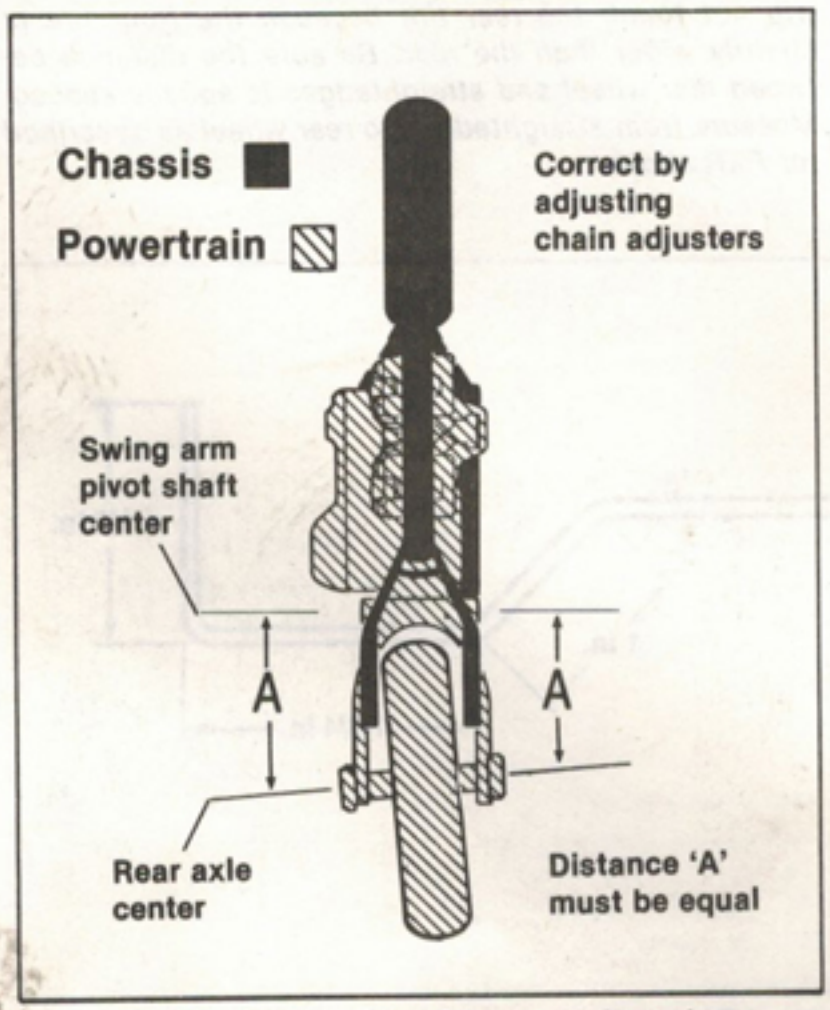


Figure 2-35. Rear Wheel Misaligned

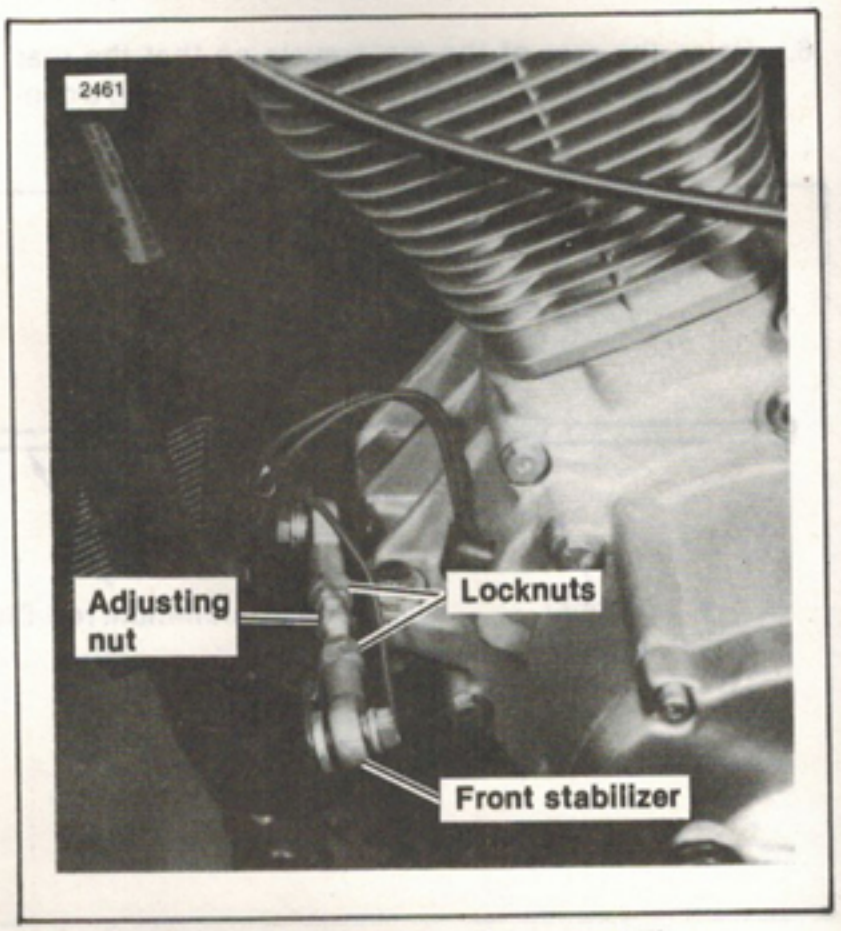


Figure 2-36. Adjusting Front Stabilizer

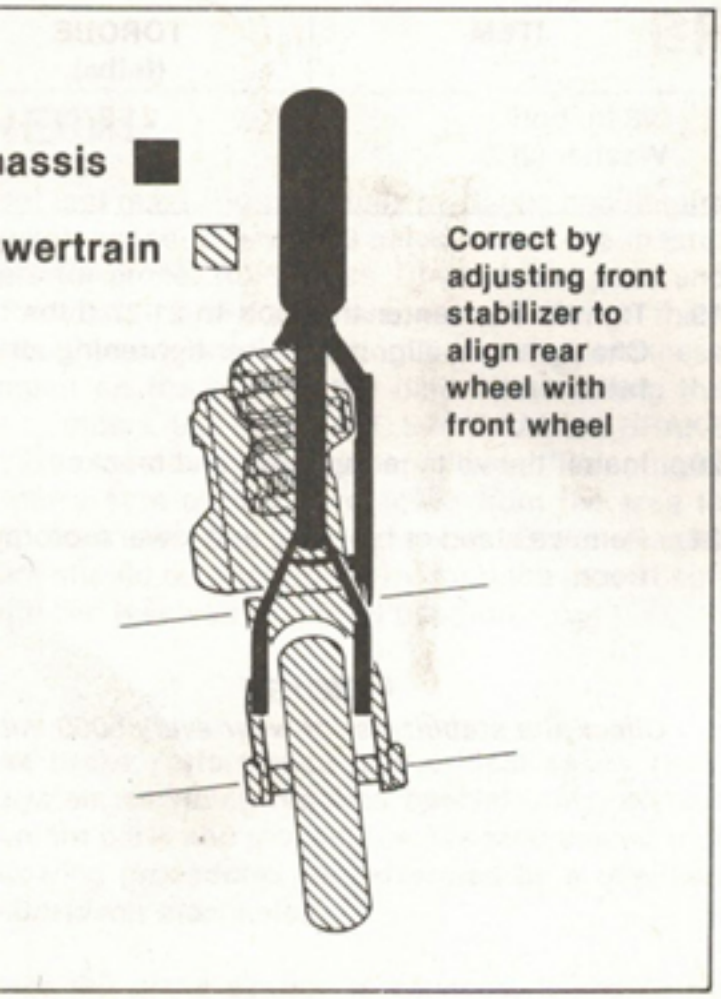


Figure 2-37. Horizontally Misaligned

ee Figure 2-38. Loosen locknuts on top stabilizer. djust the top stabilizer so that the bolt removed in tep 7 can be reinstalled without pushing the ngine to the right or left.

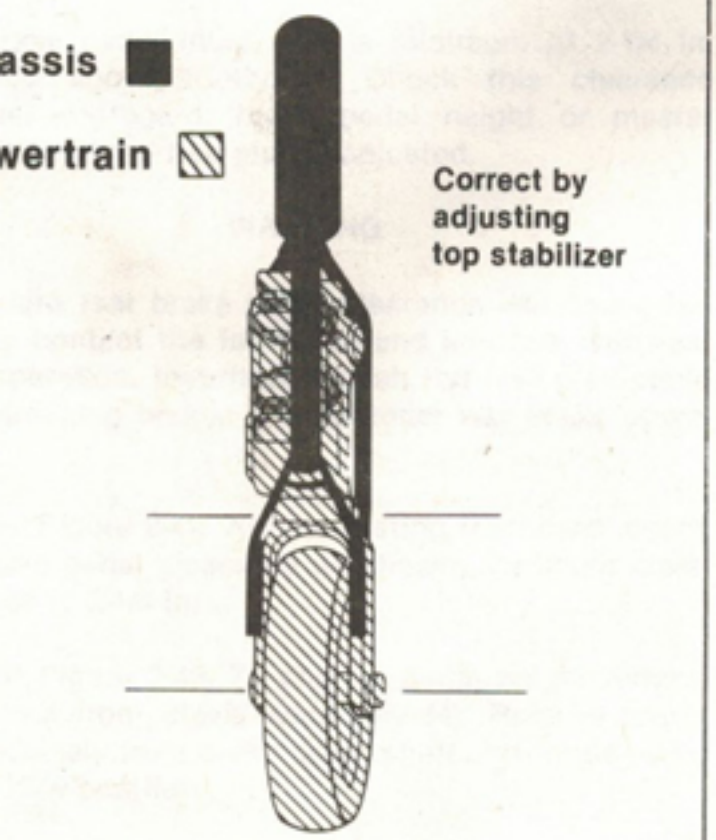


Figure 2-38. Vertically Misaligned

13. Tighten the stabilizer jamnuts on both stabilizers.

14. Install swing arm pivot shaft bracket plugs.

15. With the engine weight on the mount, check that the two mount-to-frame bolts are loose. (These bolts should have been loosened in step 10 of the VEHICLE ALIGNMENT procedure.)

16. See Figure 2-39. Push the mount outer plate from side to side until the rubber bulge feels even with the outer plate at the bottom side of the mount (equal bulge). Retighten the two mount bolts to 33-38 ft-lbs torque.

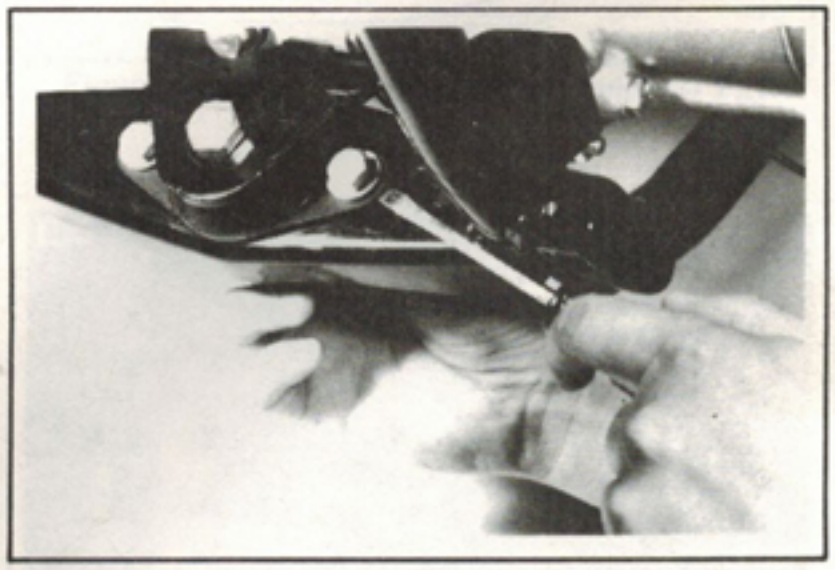


Figure 2-39. Aligning Mount Sideways

17. See Figure 2-40. Remove the long center bolt. Again, leaving the engine weight on the mount, push the top of the center sleeve fore or aft to center the rubber bulge with the outer plate fore and aft at the bottom (equal bulge).

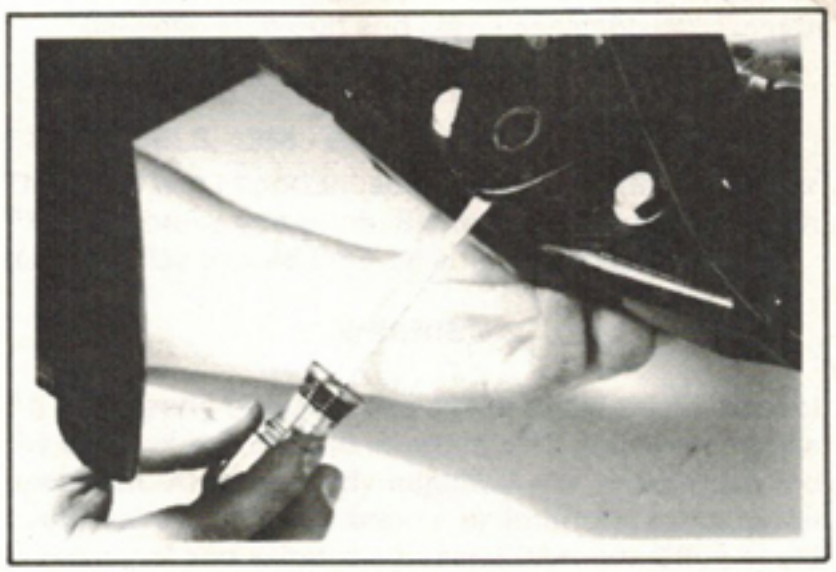


Figure 2-40. Aligning Mount Front-to-Rear

18. See Figure 2-41. With the mount now centered, insert the 3/8 in. diameter bolt and install the two washers and nut.

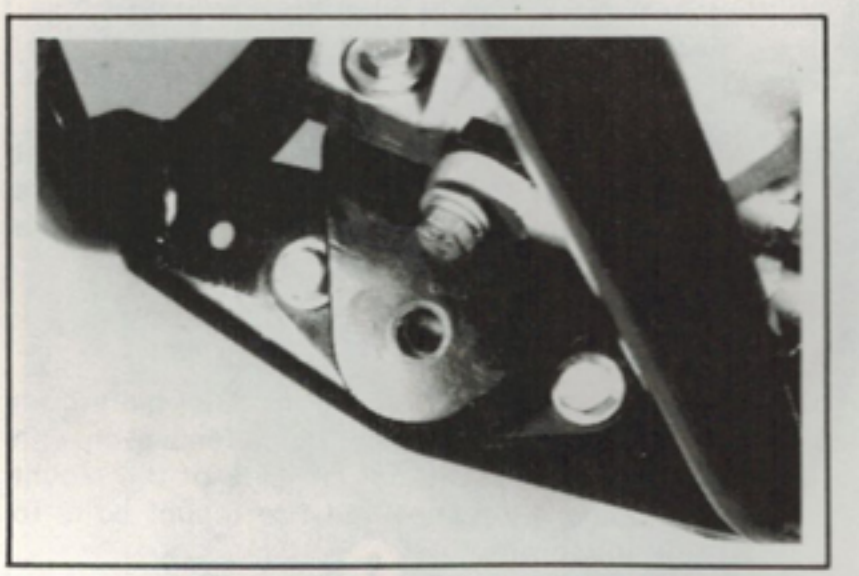


Figure 2-41. Engine Mount Aligned

ITEM	TORQUE (ft-lbs)
3/8 in. bolt Washer (2) Nut	21-27

19. Tighten the center thru-bolt to 21-27 ft-lbs torque. Check mount alignment after tightening all mount fasteners.

20. Install the voltage regulator and bracket.

21. Remove stand or blocking and lower motorcycle to floor.

NOTE

Check the stabilizers for wear every 5000 miles.

HANDLING

Irregularities

1. Loose wheel axle nuts. Tighten to recommended tightness.
2. Excessive wheel hub bearing play.
3. Rear wheel out of alignment with frame and front wheel.
4. Rims and tires out-of true sideways.
5. Rims and tires out-of-round or eccentric with hub.
6. Irregular or peaked front tire tread wear.
7. Incorrect tire pressure. Check TIRE DATA section.
8. Tire and wheel unbalanced.
9. Steering head bearings improperly adjusted. Correct adjustment and replace pitted or worn bearings and races. See FORKS.
10. Shock absorber not functioning normally.
11. Shock absorber springs improperly adjusted.
12. Improperly loaded motorcycle. Non-standard equipment on the front end such as heavy radio receivers, extra lighting equipment or luggage tends to cause unstable handling.
13. Worn engine stabilizer links.
14. Damaged rear engine mounts.
15. Swing arm pivot shaft nut improperly tightened or assembled.
16. Incorrect air suspension pressure.