# Section A. GENERAL INFORMATION

## I. Description

The **Velorex Sidecar** consists of a tubular steel frame on which the sidecar body is mounted. The body is made of rugged fiberglass, reinforced with sheet steel at vulnerable and stressed areas, and rests on the frame on rubber blocks at the front and rear. The wheel axle is supported by a hydraulic shock absorber and coil spring system mounted on a swingarm for smooth and comfortable riding. The wheel is provided with a single-cam, twin-shoe, internal expanding drum brake.

An **Attachment Kit** (Part No. 562-08-800), shown in figure 1, is supplied with each Velorex Sidecar and is packed in the luggage compartment. The keys to the luggage compartment, and the molded windshield, are placed inside the sidecar.

The Attachment Kit makes it possible to attach the sidecar to virtually any current motorcycle with round tube frame, but the motorcycle should be powerful enough (not less than 25bhp) to accept the weight of the sidecar, passenger, and extra luggage.

The information and instructions for attaching the sidecar to the right-hand side of the motorcycle are contained in this handbook and must be carefully observed. Deviating from these instructions may create a dangerous condition which may contribute to an accident; under such circumstances **American Jawa Ltd will *not* be responsible** for personal injury and property damage.

Required assembly time is approximately four to five hours, involving four simple operations:

1. Attaching the frame of the sidecar to the frame of the motorcycle.
2. Adjusting toe-in and lean-out of the motorcycle in relation to the sidecar.
3. Connecting the electrical wires from the sidecar to the electrical circuits of the motorcycle.
4. Connecting the brake cable from the sidecar to the foot brake pedal of the motorcycle and adjusting its operation. **Note:** Because of the variety of brake pedal systems used on motorcycles, this operation is best performed by a qualified dealer.

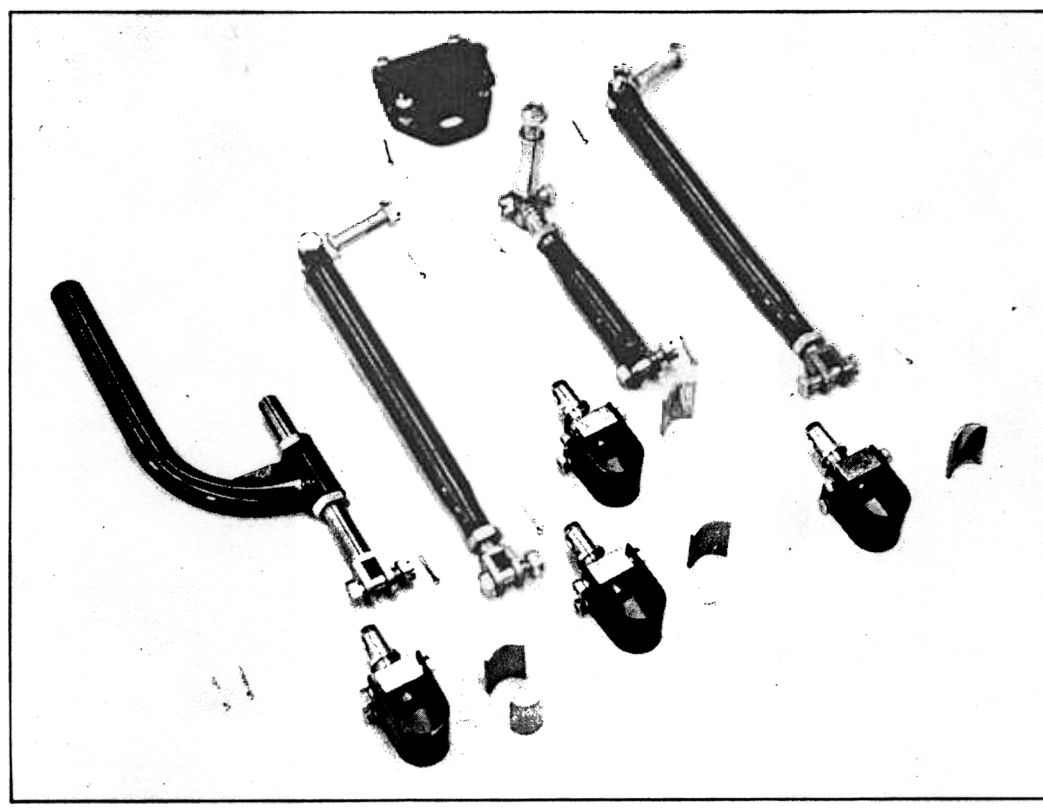


**FIGURE 1.** Attachment Kit, Part No. 562-08-800, showing Struts, U-Clamps, Sliding Clamp, Shims, Cotter Pins. Bolts and Nuts shown fitted to assemblies.

These four operations are given in easy-to-understand step-by-step procedures, which require no special tools other than regular shop wrenches, several wooden blocks or bricks for propping up the sidecar and the motorcycle, two straight strips of wood for toe-in measurements, and an angle bracket for measuring lean-out.

**Note:** For BMW models a special mounting bracket may be needed.

## II. Specifications

### Standard Safety Features

Single-cam, twin-shoe, internal expanding drum brake

Swingarm with Hydraulic Shock Absorber and Coil Spring

Stop Light

Tail and Side Clearance Lights

Provision for attaching Directional Signal Lights (Lights not included)

### Standard Convenience Features

Molded Aerodynamic Windshield

Lockable Luggage Compartment

Vinyl-covered Foam Rubber Uphostery

Sturdy Hand Grabrail

Rugged Footrest

Snap-on Tonneau Cover

### Measurements

| | |
|---|---|
| Wheel size ..... | .... 16 inch |
| Ground clearance . | . 7.5 inches |
| Unit weight ..... | 154 pounds |
| Maximum payload . | 230 pounds |

## III. Preliminary Checks

After uncrating the Velorex Sidecar and carefully examining it, report any concealed damage or missing parts directly to American Jawa Ltd. Perform the following checks:

1. To prevent damage to the windshield during assembly procedures, remove the windshield carefully from the sidecar interior and set it in a safe place.
2. **CAUTION** When handling the sidecar, take care not to damage the electrical wiring harness and the wheel brake cable through pulling or kinking.
3. The recommended tire pressure is 28 psi.
4. Working in a clear area, prop up the frame of the sidecar with blocks of wood or bricks to hold it level. Remove the Attachment Kit from the luggage compartment and check all parts against those shown in figure 1. A detailed Parts List and Exploded View is shown in Section D, along with the related Part Numbers.

## Section B. ATTACHING SIDECAR TO MOTORCYCLE

For safety reasons and for best performance and riding comfort, the **Velorex Sidecar** must be attached to the motorcycle and all adjustments made in accordance with the instructions given in this handbook. As already explained, deviations may create dangerous conditions, for which **American Jawa Ltd. will *not be* responsible.**

Before proceeding, lay out the Attachment Kit and remove the **Nuts, Bolts,** and **Lockwashers** from the four **U-Clamps,** then remove the **Spacer Block** from inside each **U-Clamp.** On the **Strut** assemblies, remove the **Bolts** from the **Eyebolts.** Have two long straight strips of wood about eight feet long (such as 2x4's), and an angle bracket, at hand for toe-in and lean-out measurements later.

### Assembly

Figure 2 indicates the four attachment points on the motorcycle to which the **U-Clamps** must be fastened. The four **U-Clamps** are identical and consist of the **U-Clamp, Spacer Block, Bolts, Lockwashers,** and **Nuts.** Large and small **Shims** are provided for use on frame tubes which are too thin for the **U-Clamps.** To attach the **U-Clamps** to the motorcycle frame, proceed as follows:

1. Fit the **U-Clamp** to the top front of the motorcycle frame, insert the **Spacer Block,** and fasten in place with the two **Bolts, Lockwashers,** and **Nuts.**
2. **Thread the Eyebolt** through the **Spacer Block** and tighten it against the frame tube. If the frame tube is too thin for a firm grip, insert the **Large Shim** ahead of the **Eyebolt.** If the **U-Clamp** is still too loose, insert the **Small Shim** at the rear. See figure 3. Tighten the **Eyebolt** firmly to hold the **U-Clamp** in place.
3. Fasten the other three **U-Clamps** similarly to their attachment points as indicated in figure 2. It is important to fit the top **U-Clamps** as high as possible on the motorcycle frame, and the bottom **U-Clamps** as low as possible.

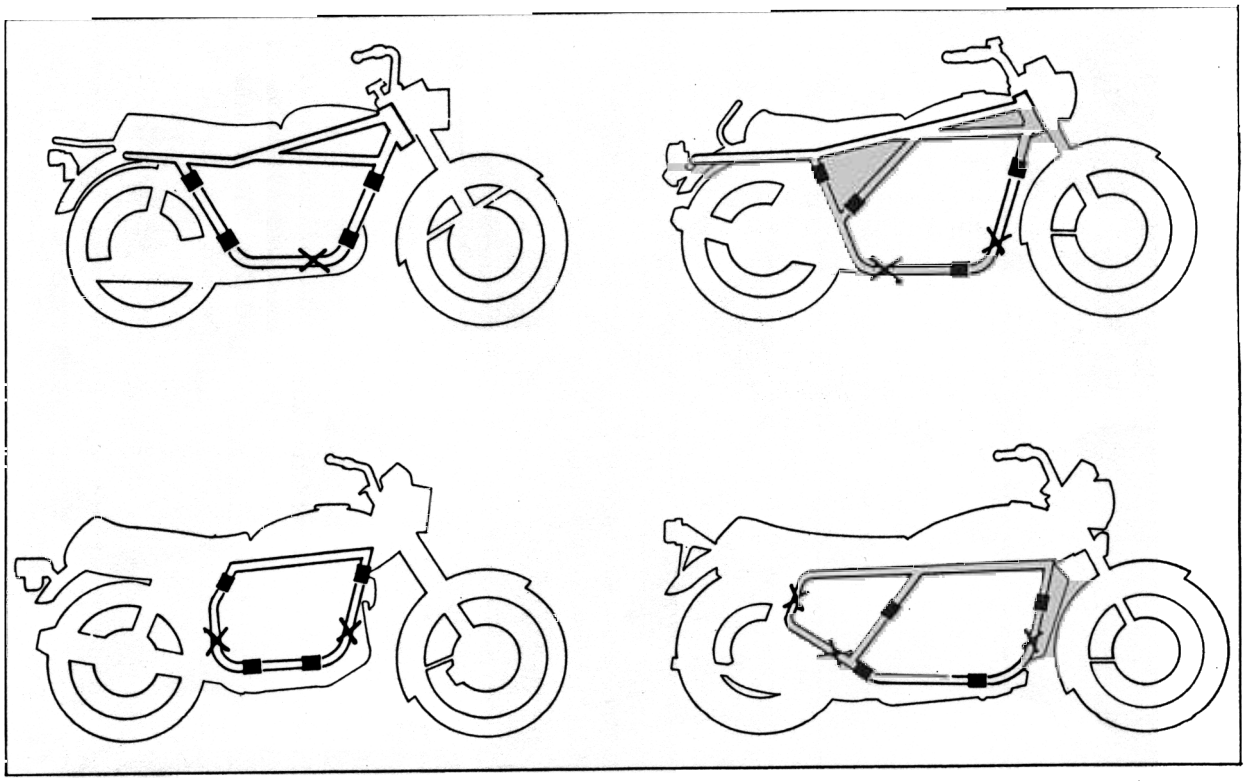


FIGURE 2. Attachment points indicated on four basic frames. X marks indicate alternate attachment points.

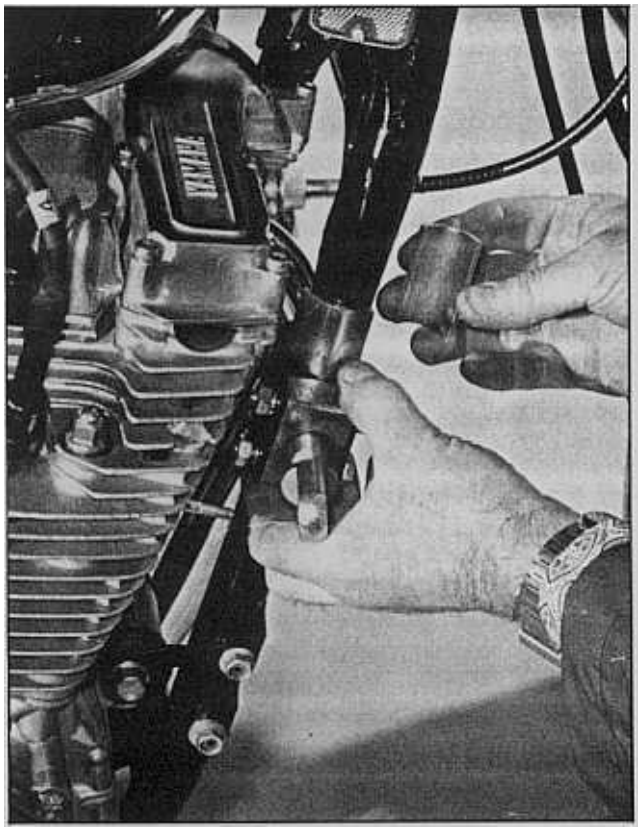


**FIGURE 3.** U-Clamp at top front of frame, showing large Shim in place. Small Shim in rear not needed in this case. Exhaust pipes removed for picture clarity.

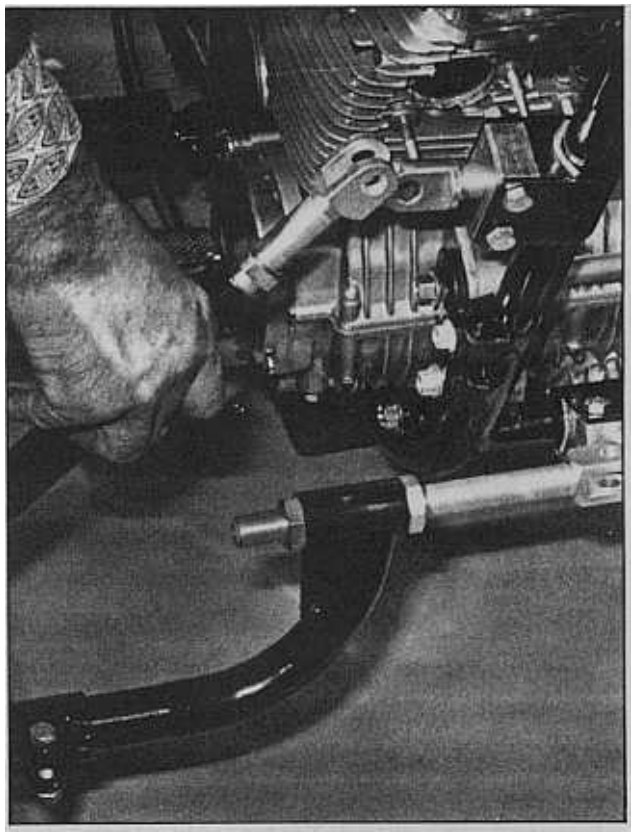


**FIGURE 4.** Clevis Adjusting Bolts must line up with Eyebolts. Note bottom front U-Clamp attached to cross tube of frame.

4. ***Note*** The front bottom **U-Clamp** may have to be attached to the cross member of the motorcycle frame in certain cases. See figure 4.

   **CAUTION** Before attaching any **U-Clamp,** make sure it is not obstructing any operating control on the motorcycle, such as levers, rods, switches, and not rubbing against any wire.

The **Curved Bar** and the **Sliding Clamp** are attached to the sidecar frame as follows:

5. First loosen the two holding bolts which are fitted to the front end of the sidecar frame, then insert the **Curved Bar** into the frame. Do not tighten the two holding bolts at this time. Note that the **Curved Bar** can be swung in an arc to simplify later assembly when connecting the **Eyebolt** of the **U-Clamp** to the **Clevis Adjusting Bolt** of the **Curved Bar.** In figure 4 one of the two holding bolts on the sidecar frame is visible, as well as the two **Locknuts** on the **Clevis Adjusting Bolt.**

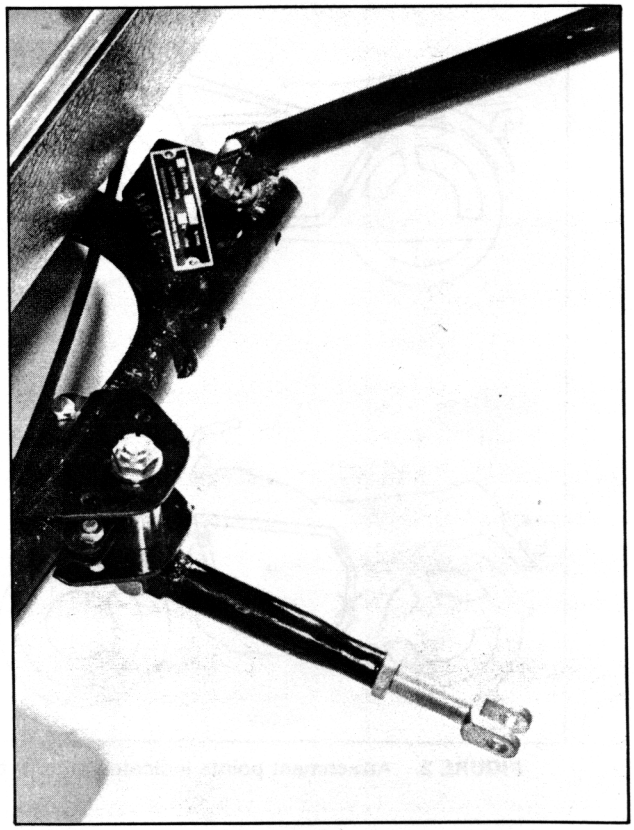


**FIGURE 5.** Rear short Strut assembled to Sliding Clamp. Eyebolts of rear long Strut assembled to sidecar frame. In all cases at least 2 inches of Clevis Adjusting Bolt must be inside Strut.

6. Attach the **Sliding Clamp** to the rear part of the sidecar frame with **Bolts, Lockwashers,** and **Nuts.** Tighten the **Bolts** only enough to hold the **Sliding Clamp** in place at this time.
7. Insert the **Eyebolt** with the **Spacer Sleeve** into the **Sliding Clamp,** and fasten with **Nut,** as shown in figure 5. Figure 6 shows the **Eyebolt** and **Strut** inverted for cases when such an assembly is required.
8. First remove the bottom **Nuts** from the **Eyebolts** on the two long **Struts,** then insert the **Eyebolts** into the front and rear holes provided on the sidecar frame, as shown in figure 7. At this time reattach the **Nuts** to the **Eyebolts** loosely.

   ***Note*** Do not insert any **Cotter Pins** at this time, as the bolts will have to be tightened securely ***after*** toe-in and lean-out adjustments have been completed.
9. Set the motorcycle on level ground on its wheels so it stands upright. This can be done with wooden blocks or bricks placed under the frame. Position the sidecar at the right-hand side of the motorcycle so that the distance from the motorcycle frame edge to the sidecar frame edge does not exceed 12 inches. Prop up the sidecar frame to hold it level.
10. **IMPORTANT** In final assembly, the short **Strut** at the bottom rear of the sidecar frame must be at an exact right angle (90°) to the sidecar and motorcycle frames, thus placing the sidecar wheel ahead of the rear wheel of the motorcycle by 8 to 10 inches. This **wheel offset** distance is important (see figure 13).

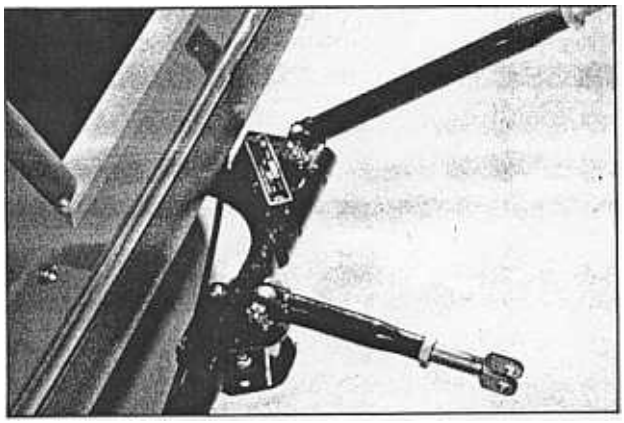


**FIGURE 6.** If necessary, short Strut can be inverted. Compare to figure 5. Short Strut must always be exactly at 90° to the frames.

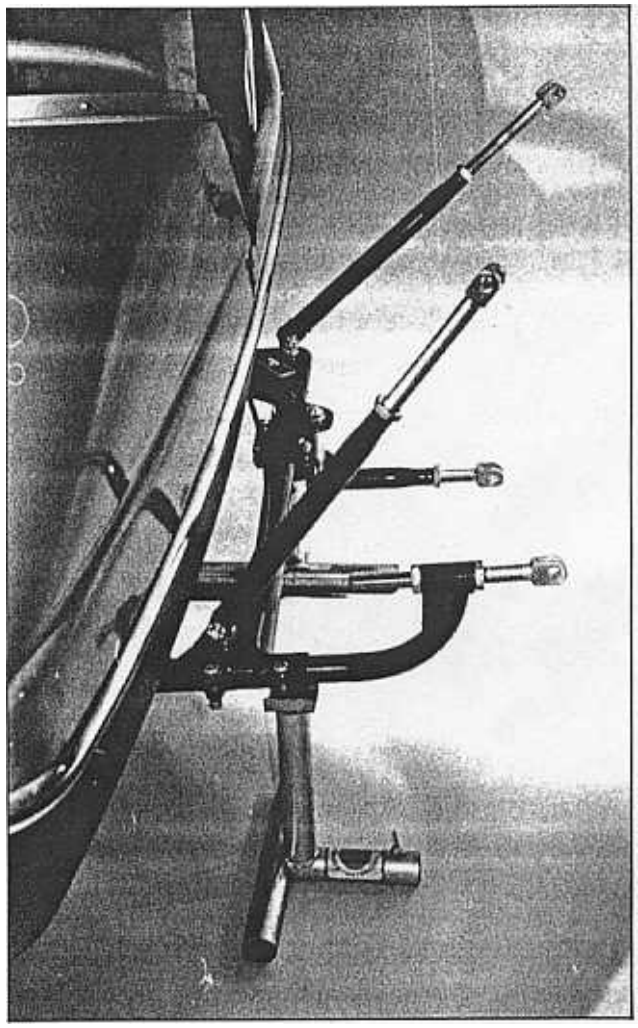


**FIGURE 7.** Struts and Curved Bar are shown attached with Eyebolts to frame of sidecar.

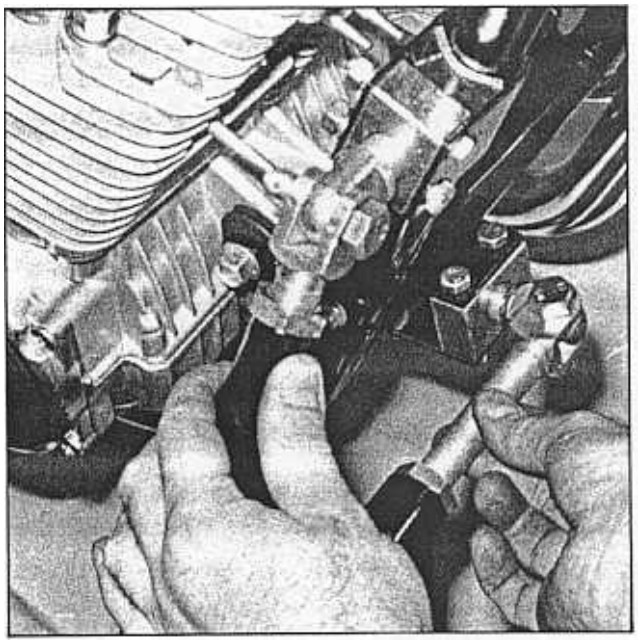


**FIGURE 8.** Bolts fitted to front Clevis Adjusting Bolts hold Struts in place during adjustment procedures.

11. Fit the **Clevis Adjusting Bolts** of the **Struts** and of the **Curved Bar** to the **Eyebolts** of each **U-Clamp,** and insert the **Bolts** to hold the **Struts** in place. See figures 8 and 9. During alignment operations these **Bolts** must be removed to allow the **Clevis Adjusting Bolt** to be turned in or out, as necessary. The **Locknuts** on all **Clevis Adjusting Bolts** are left loose at this time, but will be tightened securely after toe-in and lean-out adjustments are completed.
12. **CAUTION** The long **Struts** connected to the top **U-Clamps** on the motorcycle frame must not be parallel to each other. When viewed from the top, the **Struts must be angled outward** from the sidecar frame to the motorcycle frame, as shown in figure 10. This angling of the **Struts** provides stability and lessens stress on the motorcycle and sidecar. From the standpoint of safety, each **Clevis Adjusting Bolt** must be threaded into its **Strut** at least two inches deep.
13. With all **Struts** connected, remove the supports from under the sidecar and motorcycle.

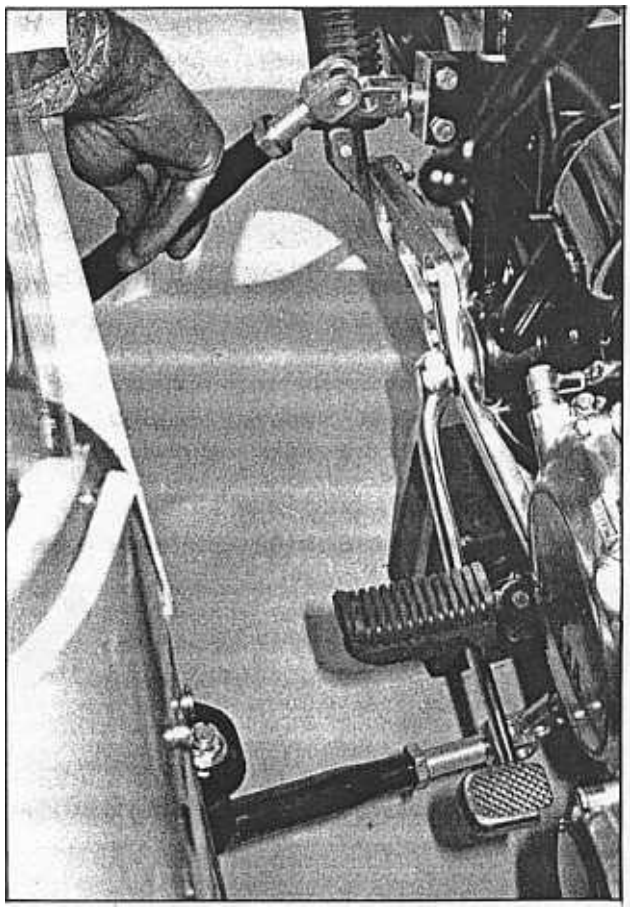


**FIGURE 9.** Rear short and long Struts being lined up with bottom and top U-Clamps.

## II. Toe-in and Lean-out Adjustments

When riding a motorcycle with a sidecar attached, stability and control depend on proper **toe-in** alignment of the wheels in relation to the line of travel, and the correct amount of **lean-out** of the motorcycle from the exact vertical.

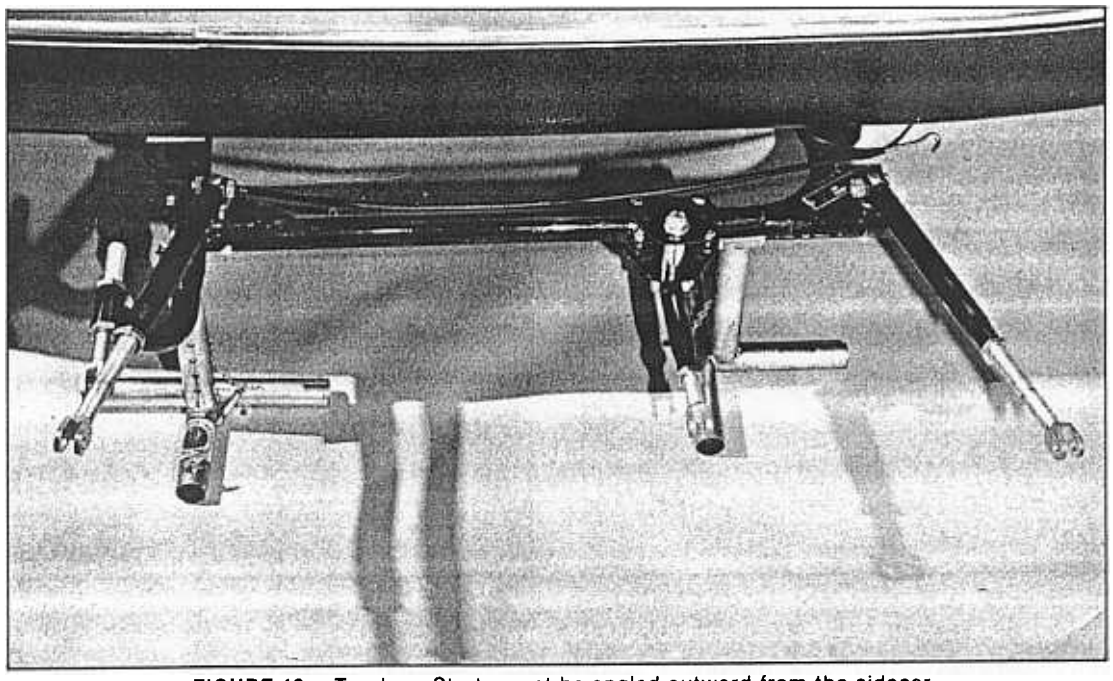


**FIGURE 10.** Top long Struts must be angled outward from the sidecar.

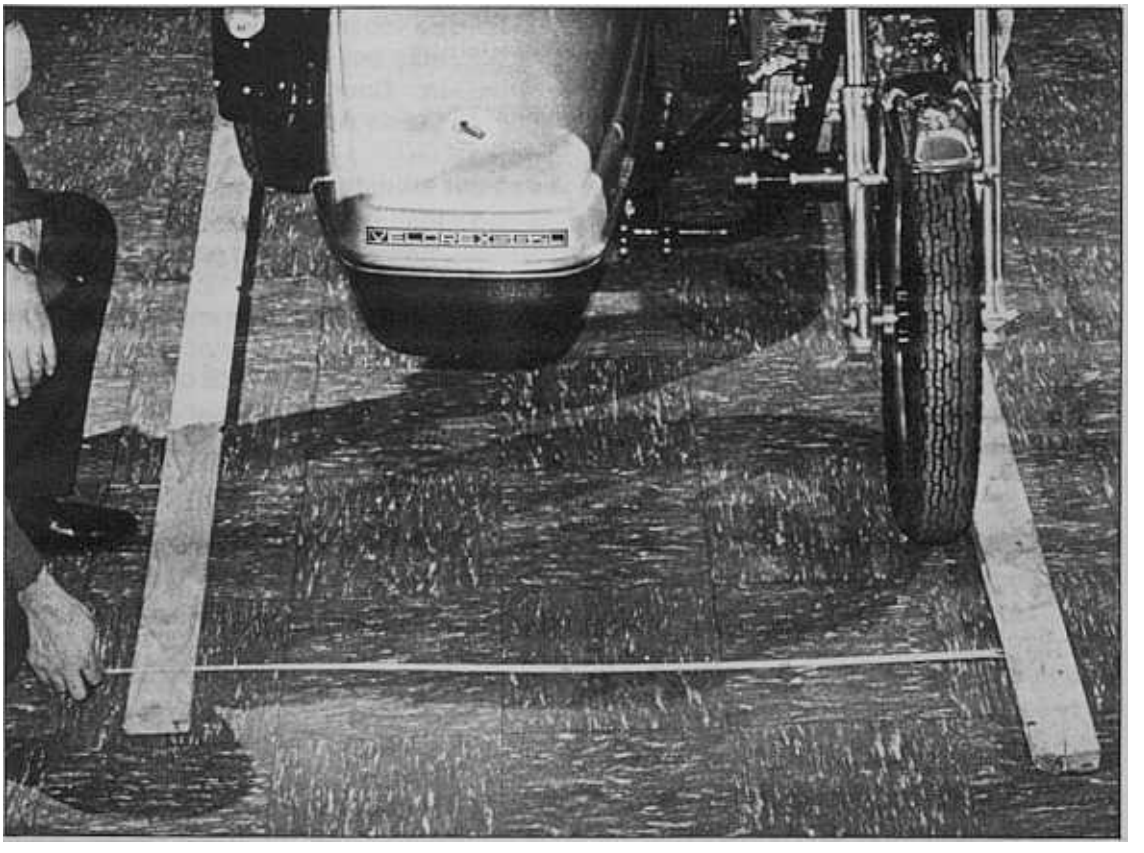


**FIGURE 11.** Take Toe-in measurement about one foot ahead of the front tire. Distance must be between 1/2 inch to 3/4 inches less than at rear.

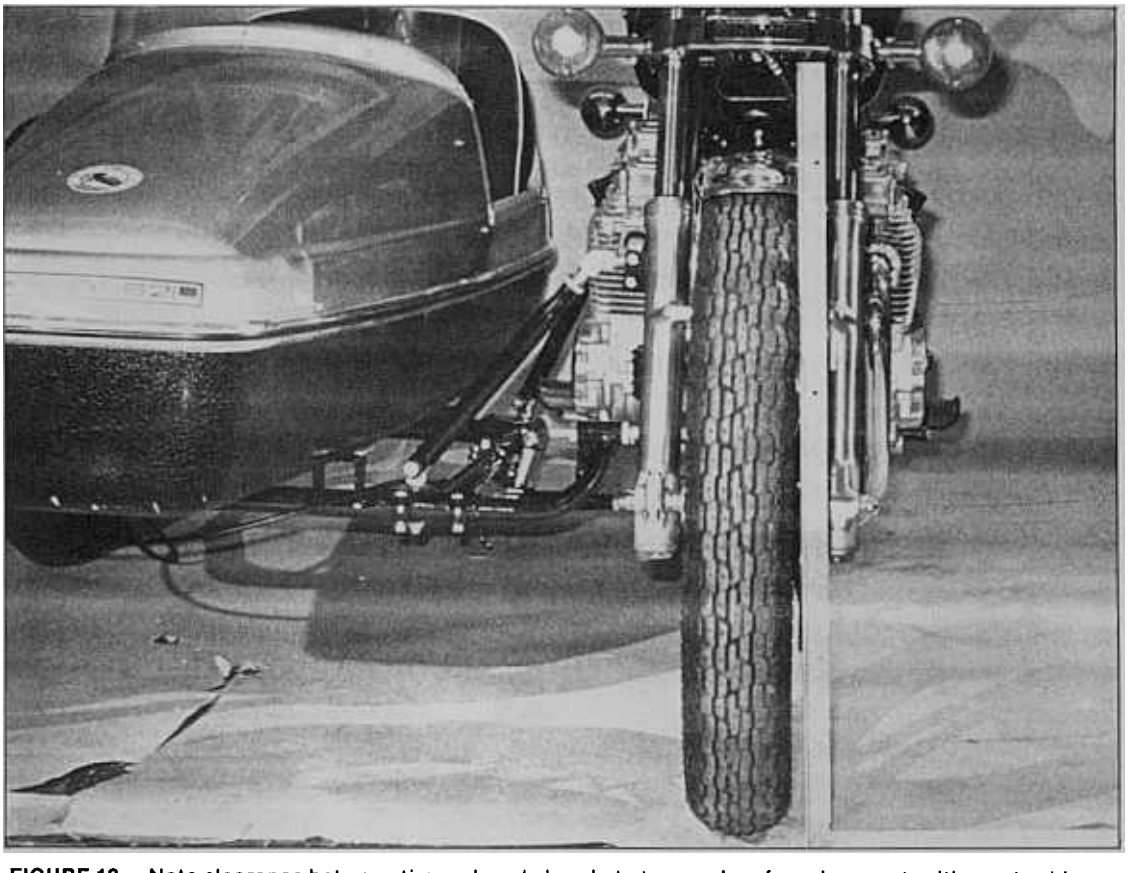


**FIGURE 12.** Note clearance between tire and angle bracket at ground surface. Lean-out, with empty sidecar, is 1/8 of an inch.

Under certain conditions it may be advisable to have your dealer stiffen the front and rear suspension of your motorcycle by installing air pressure cups or other devices, and inserting cotter pins into the wheel axles (or using axle locknuts)j.

**Toe-in** adjustment is as follows:

1. Place one of the long straight strips of wood against the outside edges of both motorcycle tires, with the front wheel facing straight ahead. Place the other strip of wood against the outside edges of the sidecar tire. See figure 11.
2. Measure the distance between the wood edges at the front and rear. For accuracy and consistency, take the measurements at one foot ahead of the front wheel, and one foot behind the rear wheel.
   **Toe-in** difference at the front must be between a ½ inch to ¾ of an inch less than at the rear. See figure 11. If the distance difference at the front is greater, turn the front top and bottom **Clevis Adjusting Bolts** clockwise (tightening).
   ***Note*** The top and bottom **Clevis Adjusting Bolts** at the rear may have to be loosened (or tightened, as the need may be) in order to achieve proper toe-in. Counter-clockwise turning of the **Clevis Adjusting Bolts** reduces toe-in.

**Lean-out** adjustment is as follows:

1. Place an angle bracket against the outside edges of the front wheel tire, as shown in figure 12. Note the clearance between the tire and the angle bracket at the ground surface. The correct **lean-out** distance is 1/8 of an inch.
2. If the lean-out is not correct, remove the **Nuts** and **Bolts** from the **Clevis Adjusting Bolts** at the upper ends of the front and rear **Struts,** then turn the **Clevis Adjusting Bolts inward to lessen lean-out,** and outward to increase lean-out.
3. After making all adjustments, replace the **Bolts** and **Nuts** into the **Clevis Adjusting Bolts,** tighten securely, and insert all **Cotter Pins.**
4. **Test ride** the machine, with a passenger in the sidecar. Note that the weight of a passenger in the sidecar brings the lean-out adjustment back to zero, which is correct. For this reason it is suggested that when riding solo an

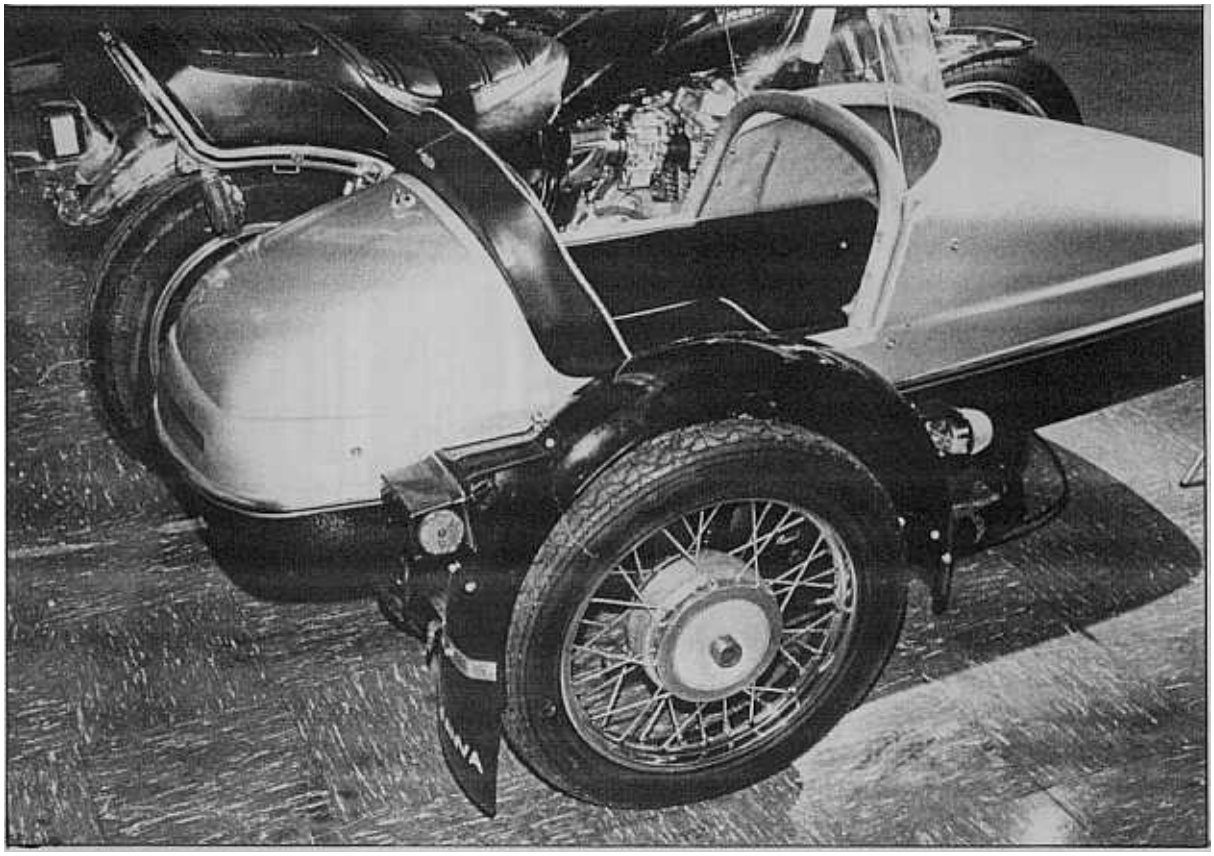


**FIGURE 13.** Correct wheel offset shows sidecar wheel axle 8 to 10 inches ahead of motorcycle wheel axle.

appropriate weight be carried in the sidecar for better stability.

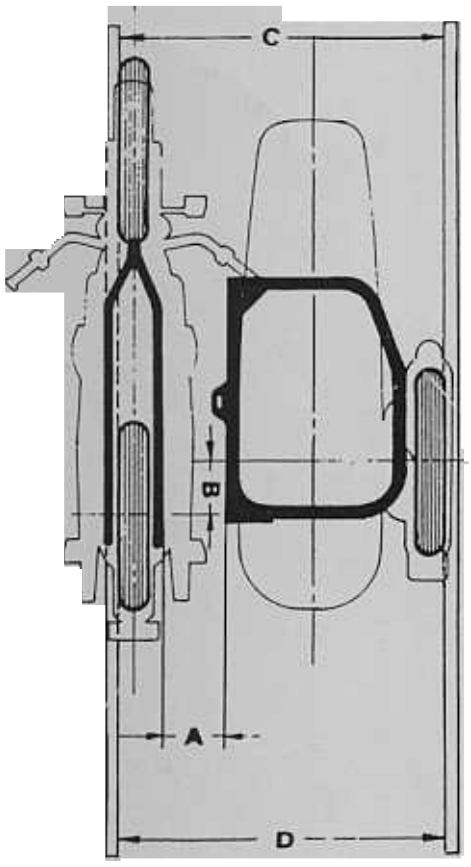
Ride the machine a short distance in a straight line and also in circles to both sides. From the standpoint of safety, bear in mind that when turning to the right centrifugal force will tend to lift the sidecar wheel off the ground. At fast speed this is dangerous!

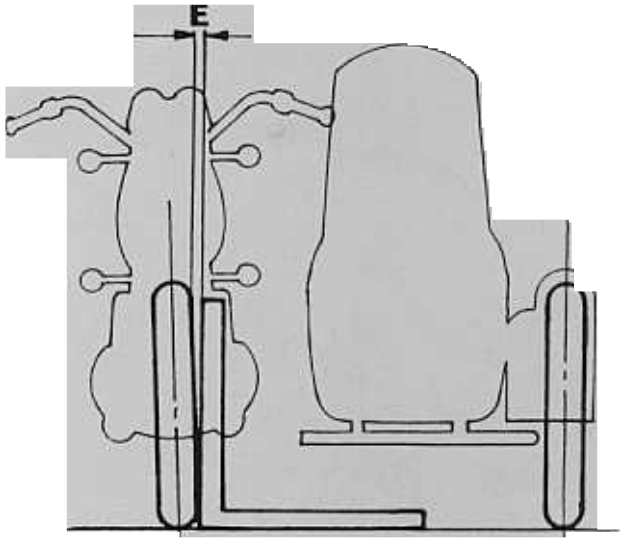
**After the test ride,** check the toe-in and lean-out adjustments, and if necessary make minor changes. Thereafter, check these adjustments after every 500 miles of travel. Whenever strong vibrations or shaking are noticed, it means the toe-in adjustment is out of line.

5. Normal riding stresses and vibrations may loosen the bolts and nuts. Check all attachment points periodically to ensure that nothing has loosened!

The sidecar **Wheel Offset, Fittings,** and **Brake** must be checked periodically.

1. Refer to Section B for information regarding adjustments. See figures 11, 12, 13, 14 and 15.
2. If the sidecar wheel must be removed, the fittings come off as shown in figure 14 (**Cotter Pin** not shown). Replace in same order, and insert **Cotter Pin.**
3. The hydraulic **Shock Absorber** and **Coil Spring,** mounted on the **Swingarm,** are shown in figure 15. Note the single-cam, twin-shoe **Brake,** on which the linings are easy to replace.




A = Frame-to-Frame distance 12 inches.

B = Wheel Offset 8 to 10 inches.

C = Toe-in less than at D by ½ to ¾ inch.

E = Lean-out 1/8 inch.