

Terraplane Hardware Mounting Instructions

Model 1100, 1981 Standard Model Only

Fasteners should be torqued to the following specifications:

- 8mm - 1.8-2.5 Kg-m (13-18ft.lb.)
- 10mm - 3.0-4.0 Kg-m (22-29ft.lb.)
- 12mm - 5.0-6.0 Kg-m (36-43ft.lb.)
- 5/8 - 11.1-15.0 Kg-m (80-108ft.lb.)

note: Use the illustrations as a guide to assembly sequence.
For initial Terraplane set up, see the Driver's/Owner's Manual supplied with every Terraplane.

Read the instructions carefully. Following the step-by-step procedures will make mounting the Terraplane an easy task and insure that it performs properly to give you many miles of trouble free riding. If you have a problem with mounting or handling, rereading the instructions will, in most instances, point out the problem area.

Customer Service:

If you have any questions on installing the Terraplane that your dealer is unable to answer, contact the Vetter Corporation Customer Service Department, Rantoul, IL 61866. (217)893-9300. These instructions contain valuable information for future reference. They must be given to the customer.

warning

THE HARDWARE DESCRIBED IN THIS MANUAL WAS DESIGNED TO MOUNT THE VETTER TERRAPLANE SOLELY FOR THE MOTORCYCLE(S) DESIGNATED.

USE THIS SCALE TO CHECK BOLT AND WASHER DIMENSIONS

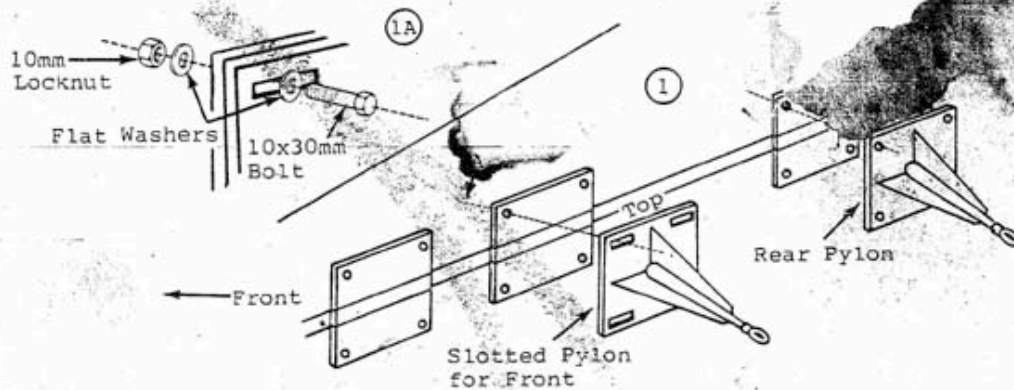


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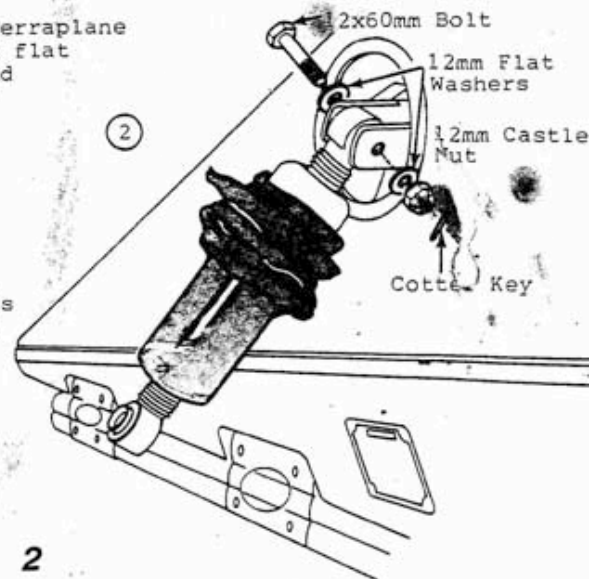
Vetter Corporation, Rantoul, Illinois 61866 217/893-9300

Terraplane Pylon Installation

1. Take the pylon with the slotted holes and mount it to the second mounting plate from the front, using the 4 bolts, 8 flat washers and 4, 10mm locknuts provided. Tighten these fasteners yet. Tightening will be done in the Final Adjustment section. Be sure to mount top side up. Top is stamped into both pylon plates.



2. Mount the rear pylon, which does not have slots, to the rear mounting plate, top side up. Use the same type of fasteners used for mounting the front pylon. Tighten these fasteners, using torque wrench to 3.0-4.0 Kg-m (22-29ft.lb.). (Illus. 1)
3. Attach the Trim-Grip to the Terraplane using a 12x60mm bolt, 2, 12mm flat washers, a 12mm castle nut and cotter key. Tighten securely. (Illus. 2)
4. Rotate Trim-Grip to expose 4 threads at both ends.
5. Screw the rod ends into the pylons, leaving one thread exposed beyond the locknut. Do not tighten locknut at this time. These two locknuts will be tightened later in the Final Adjustment section.



Side Hardware Mounting

This section applies specifically to the bracketry that is used on the motorcycle.

MOUNTING BRACKET INSTALLATION

1. Place the special 10x32mm long nut. Tighten.

2. One of the four U-bolts is flattened. The one not flattened is used on the lower rear bracket.

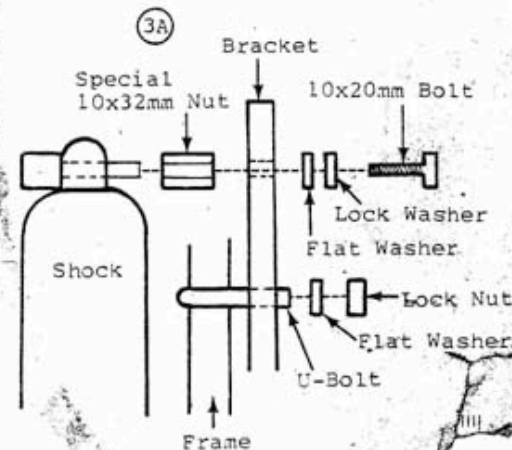
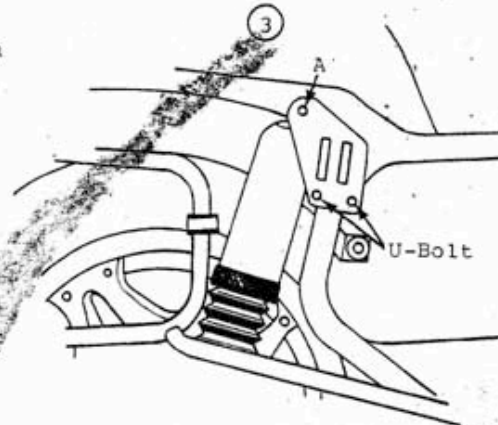
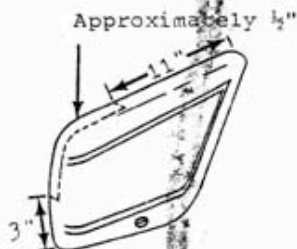
3. Position the U-bolt behind the frame, holding it in place with one hand.

4. Place the mounting bracket against the frame and over the U-bolt. Install a flat washer and locknut on both studs protruding through the plate. Do not tighten yet. (Illus. 3 and 3A).

5. Install the 10x20mm bolt with lock and flat washer, through the upper hole and into the shock nut. (Illus. 3A). Tighten the U-bolt and upper bolt securely.

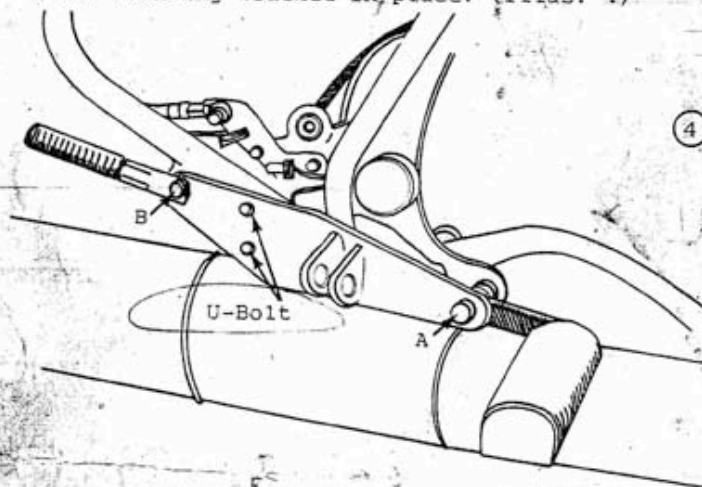
note:

If you wish to reinstall the side cover on the motorcycle, it must be modified as shown below.

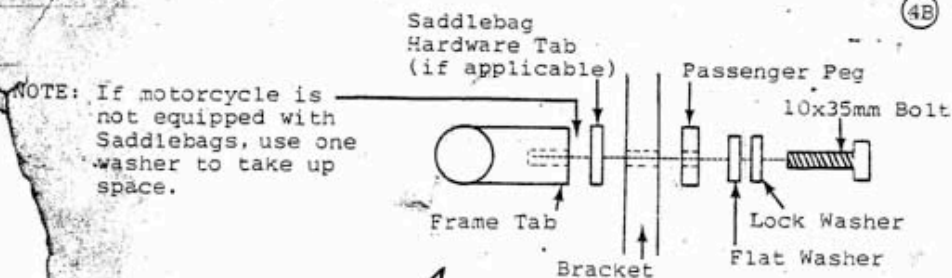
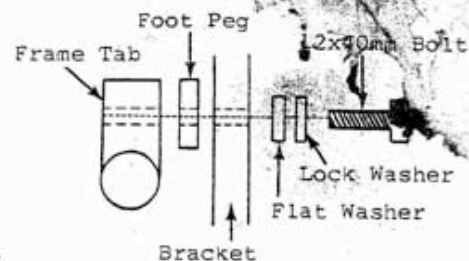


LOWER REAR HARDWARE INSTALLATION

1. Remove passenger and rider foot pegs.
2. Place supplied, nonflattened, U-bolt around the frame. While holding with one hand, put mounting bracket C and loosely install flat washer and locknut on both. Hold mounting bracket in place. (Illus. 4)



3. Place the front riders foot peg in its original position. Install the supplied 12x40mm bolt, lock washer and flat washer. Do not tighten yet. (Illus. 4A)
4. Place the rear passenger foot peg on the outside of mounting plate rear hole and insert the supplied 10x35mm bolt, lock washer and flat washer through the bracket. Tighten all fasteners using torque specifications given on the first page of these instructions. (Illus. 4B)



BRACKET INSTALLATION

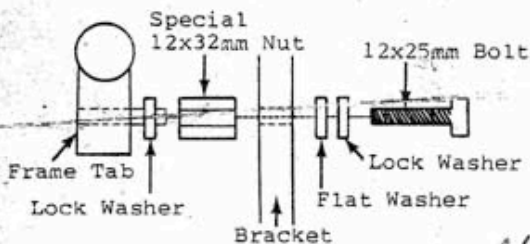
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Remove the nut from the lower front engine mount, leaving the bracket in place. Replace the nut removed with a special 12x32mm long nut. Tighten it in place using the torque specifications given on the first page of these instructions.

Insert the upper, flattened U-bolt through the front mounting bracket and the U-bolt studs and install two flat washers and locknuts finger tight. (Illus. 5)

With the bracket in place, insert the supplied 12x25mm bolt, lock washer and flat washer. Tighten finger tight. (Illus. 5A)

4. Insert the second flattened U-bolt into the center holes of the bracket. Install the flat washers and locknuts.
5. Tighten the fasteners securely using the torque specifications given on the first page of these instructions.



(5A)

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Final Attachment & Alignment

1. Place the motorcycle on it's side stand.
2. Slide the Terraplane into place. It may be necessary to move the front pylon forward or backward for proper alignment.
3. Insert the two 5/8"x2 1/2" bolts through the two lower points. Place the nut on the rear bolt and tighten to the torque specifications on the first page of these instructions. Install the cotter key and bend end.
4. Tighten the four pylon mounting bolts using the torque specifications.

NOTE: Before proceeding to the next step, make sure there are four threads exposed at both ends of the frame pylon.

5. Before installing front pylon bolt, lean bike toward left and place the 12x60mm bolt through the Trium-C. Tighten to proper torque. Install cotter key and bend end over.

THE TOE-IN

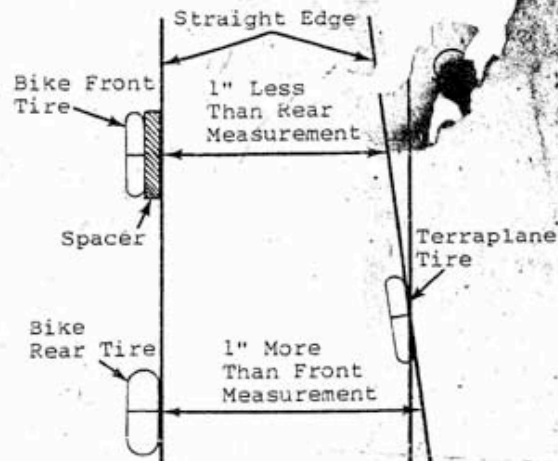
Toe-in must be measured at motorcycle axles.

1. Measure the width of the rear tire. Taking half of this measurement and place it on the front tire. The straight edge of the tires as shown in (Illus. 6) will give you the center line of the motorcycle for toe-in reference.

2. If adjustment is necessary, remove the 5/8" bolt from the front mount and turn the rod end out for less toe-in or in for more toe-in. When toe-in of 1" is attained, place nut on bolt and tighten to proper torque. Install cotter key and bend end over.

3. Tighten nuts on rod ends on pylons.

note: This drawing (Illus. 6), shows the toe-in greatly exaggerated for the purpose of illustration.



Wiring

are two connections to be made. One for the tail light and the brake light. These are to be made to the tail light bracket under the motorcycle seat. Grounding of the Terraplane motorcycle is accomplished through the mounting bracketry.

Function	Motorcycle Wire Color
.....brake light.....	Green/Yellow
.....tail light.....	Brown
.....accessory.....	Direct to Positive (+) Post of Battery

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TERRAPLANE HARDWARE

Specifications:

All mounting plates = .250 (1/4") thick
Sidecar axle to bike rear axle = $20^{\circ} \pm 5^{\circ}$ to front
Brake pedal to brake pedal = .5 (1/2") $\pm .750$ (3/4") front to back, side to side
Sidecar frame angle = $2^{\circ} \pm .5^{\circ}$
Minimum front sidecar frame clearance = $12.5" \pm .5$
Wheel camber = $0^{\circ} \pm .5^{\circ}$
Toe in = $1" \pm .125$
Threads on trim grip = 3 to 4 threads exposed
Distance between sidecar and motorcycle = 1" minimum
Total misalignment of trim grip 10° side to side

SPECIAL NOTE: Before attempting to fit the Terraplane to any motorcycle, a determination should be made whether or not the motorcycle frame will handle the additional load which is present with a sidecar attached. The motorcycle frame should be visually inspected for proper mounting points, gussets and cross braces.

Parameters for Hardware (Motorcycle Mounts)

- 1) Make as simple and light as possible.
- 2) Saddle pads should fit flush to frame and not be positioned on welds or seams.
- 3) U-bolts should always use a pad to protect the frame and provide more bearing surface.
- 4) The seat and side cover should remain in stock position if possible. (May be relocated or modified slightly)
- 5) Use existing frame holes and mounting points whenever possible (8mm or larger only).
- 6) Pylon mounts must be positioned in such a way that force is exerted over entire mounting plate assembly.
- 7) Mounting plates should be positioned over frame cross tubes or heavy gussets.
- 8) Rod end tabs should be kept as short as possible.
- 9) Mounting plates should be positioned as far apart as necessary with ideally the two bottom mounting points on the same plane and as low as possible.
- 10) Hose clamps, j-bolts or similar type fasteners cannot be used under any circumstances.
- 11) All Terraplane hardware must fit with Vetter Windjammer, Quicksilver, Saddlebags and Lowers installed.

TROUBLE SHOOTING

ELECTRICAL

If you encounter an electrical problem, first check color codes to insure that all wires are connected properly.

Problem	Possible Cause	Corrective Action
Tail Light and/or Brake Light does not work	<ul style="list-style-type: none"> - Bulb burned out. - Quick disconnect at tail light not making good contact - Blue connector not making good contact. - Faulty socket - Motorcycle tail light fuse blown. - Ground wire (white) not making good contact. 	<p>Replace.</p> <p>Clean & crimp with pliers if necessary</p> <p>Clean & recrimp with pliers.</p> <p>Replace tail light</p> <p>Replace.</p> <p>Check wire connect & insure ground is tight.</p>

HANDLING

If handling problems or questions arise, reread the Owners/Operators manual as well as the hardware mounting instruction which pertains to your specific motorcycle and insure that every detail is correct.

Front End Shimmy	<ul style="list-style-type: none"> - Loose or worn swingarm bushings on motorcycle. - Tire pressures low or tires worn beyond serviceable limit. - Steering head bearings loose or worn out. - Motorcycle wheel bearings loose or worn beyond serviceable limits. - NOTE: With some motorcycles, it will be necessary to install a friction or hydraulic type steering damper to correct or at least minimize the wobble if it only occurs at low speeds, 35mph or less, during deceleration as it is quite typical for a sidecar to cause this type of controllable wobble. But, if the wobble exists at any steady speed or during acceleration, a problem exists. - Incorrect toe-in setting 	<p>Adjust or replace.</p> <p>Inflate tires to maximum. Replace tires.</p> <p>Adjust or replace M/C service manual</p> <p>Adjust or replace.</p> <p>Reset toe-in following instructions on back page of hardware mounting.</p>
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- 12) If extremely long mounting tabs for rod ends are needed, they must be of .375 (3/8") material thickness.

Pylon Parameters

- 1) Try to maintain the front and rear pylons on the same horizontal and vertical angles.
- 2) Try to keep the pylon stud centered on the mounting plate assemblies.
- 3) Keep pylons as short as possible.
- 4) There must be two gusset plates per pylon assembly.
- 5) The gusset plate length should be a maximum of .250 (1/4") shorter than the pylon.
- 6) The rod ends mounting bolts must be kept parallel to the plane of the ground.

Trim Grip Parameters

- 1) The less misalignment the better the trim grip will function. However, due to the many variables involved (i.e. front and rear pylon angles) it may be necessary to position the trim grip on a slight angle to obtain proper functioning.
- 2) The trim grip should be positioned to eliminate all possibility of it buckling or acting as a hinge.
- 3) During fit-up it should be positioned with 3 to 4 threads exposed on both sides of the body.

TROUBLE SHOOTING/Page 2

Problem	Possible Cause	Corrective Action
	- Worn out shocks (front or rear)	Service per manual or replace.
Excessive or Abnormal Tire Wear	- NOTE: Typically, tire life with a sidecar attached is decreased from that of a solo motorcycle. - Motorcycle front tire - 6000ml Motorcycle rear tire - 3500ml Terraplane tire - 9000ml	
Terraplane Tire	- Loose or worn swingarm or wheel bearings on Terraplane. - Terraplane toe-in set incorrectly.	Adjust or replace. Re-adjust as needed.
Excessive Rear Tire Wear (Motorcycle)	- Excessive toe-in of sidecar. - Tire pressure low - Tire composition/style incorrect.	Check toe-in, re-adjust if necessary. Adjust pressure to manufacturers maximum recommended pressure Change tire to a medium to firm compound type tire such as Goodyear HSt, Continental Twin Series, Michelin M45-M48 or equivalent
Motorcycle Wanders	- Terraplane toe-in incorrect. - Low tire pressure on either front or rear or both motorcycle tires. - Spokes on motorcycle wheels loose or broken. - Swingarm or steering head bearings loose or worn.	Set toe-in per Owner Operators manual. Adjust to maximum recommended pressure NOTE: This information may be found on the side of the tire or the motorcycle owner manual. Adjust or replace as necessary. Adjust or replace as necessary.

GENERAL INFORMATION

To insure maximum handling and steering capabilities with your Terraplane equipped motorcycle, we recommend the use of a fork brace which will help minimize fork flex caused by the side loading which a sidecar creates.

Head shaking (low speed wobble) is a common occurrence with a sidecar outfit. The best way to minimize or possibly eliminate it is to install either a hydraulic or friction type steering damper. We recommend the hydraulic type which is the easiest to mount and the most effective.

Both of the above mentioned items are available through your local motorcycle dealers or accessory shops.

TERRAPLANE INSTRUCTION MANUAL UPDATE INFORMATION

The enclosed information should be kept with your Terraplane Owners/Operators manual for future reference.

General Information
Troubleshooting Information