



**BUSHTEC VERTICAL RECEIVER HITCH SYSTEM**  
**For FLH / FLT/ Road King**  
**(1985-2008)**

**READ ALL INSTRUCTIONS BEFORE YOU START**

**ATTENTION INSTALLER: THESE INSTRUCTIONS MUST BE GIVEN**  
**TO THE END USER!!!**

**HARLEY-DAVIDSON MOTOR COMPANY, HARLEY-DAVIDSON MOTORCYCLES AND/OR ANY AFFILIATE OR SUBSIDIARY HAS NEITHER APPROVED OR ENDORSED *Bushtec Mfg. & Sales, Inc.*, ITS PRODUCTS, TRAILERS OR HITCHES. USE OF A TRAILER OR TRAILER HITCH ON ANY MOTORCYCLE COULD VOID YOUR WARRANTY AND MAY INCREASE YOUR CHANCE OF INJURY OR DEATH IN AN ACCIDENT SITUATION.**

Important information is distinguished by the following notations:

**NOTE:** Provides key information to make procedures easier and clearer.

**CAUTION:** INDICATES SPECIAL PROCEDURES THAT MUST BE FOLLOWED TO AVOID DAMAGE TO THE MOTORCYCLE, TRAILER OR ACCESSORIES.

**WARNING:** INDICATES SPECIAL PROCEDURES THAT MUST BE FOLLOWED TO AVOID SEVERE INJURY AND/OR DEATH TO A MOTORCYCLE OPERATOR OR OTHERS.

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**WARNING:** THE *BUSHTEC* FLH/FLT/ROAD KING VERTICAL RECEIVER HITCH SYSTEM HAS BEEN EXCLUSIVELY DESIGNED FOR USE ONLY ON A STOCK H-D FLH/FLT/ROAD KING. IT WILL NOT WORK ON ANY OTHER MOTORCYCLE. ANY MODIFICATION TO ANY PART OF THIS HITCH, INCLUDING BUT NOT LIMITED TO ALTERING THE SUPPLIED HARDWARE OR IMPROPER INSTALLATION COULD CAUSE INJURY OR DEATH AND IMMEDIATELY VOIDS ALL WARRANTIES.

1

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**WARNING: INSTALLATION OF THIS HITCH SHOULD BE PERFORMED BY A QUALIFIED MECHANIC. THESE INSTALLATION PROCEDURES ARE ONLY A GUIDE AND SHOULD BE USED IN CONJUNCTION WITH THE FACTORY SERVICE MANUAL AND THE NECESSARY MECHANICAL SKILLS.**

**WARNING: THE END USER OF THIS PRODUCT ASSUMES ALL LIABILITY AND RESPONSIBILITIES THAT MAY ARISE DUE TO BUT NOT LIMITED TO, NEGLIGENCE FROM IMPROPER INSTALLATION OR USE, INCLUDING OVERLOADING, EXCEEDING THE RECOMMENDED LOAD LIMITS AND IMPROPER MAINTENANCE.**

**WARNING: ALL HITCH HARDWARE SHOULD BE CHECKED PRIOR TO EACH USE. FAILURE TO DO SO COULD RESULT IN INJURY OR DEATH.**

## **BUSHTEC VERTICAL RECEIVER HITCH SYSTEM** **FLH / FLT**

### **CONTENTS:**

- 1 Receiver Center Section (3/8-16 x 1" GR8HH Bolt & Jam Nut Installed)
- 2 Support Struts, pair
- 1 3/8" SS Lock Pin
- 1 Chrome Hitch Head w/ QMC 1 7/8"  
Stainless Steel Ball  
Or
- 1 Chrome Bushtec Receiver Head w/  
Stainless Steel Lock, 2 Keys & Cover
- 1 Instructions

### **HARDWARE:**

- 8 5/16-18 x 1 inch GR8HH Bolt
- 4 5/16-18 x 1 1/4 in. bolt
- 20 1/4 inch Flat Washer
- 4 5/16-18 Nylock Nut
- 2 1/4 - 20 x 1 inch GR8HH Bolt



- 2 1/4- 20 Nylock Nut
- 1 3/8-16 x 1 in bolt
- 1 3/8-16 standard jam nut
- 2

## **1. PLEASE USE LOCTITE ON ALL BOLTS**

**CAUTION: THESE STEPS MUST BE PERFORMED IN THE FOLLOWING ORDER:**

**NOTE:** If installing the Bushtec Vertical Receiver Hitch on a motorcycle not equipped with Rear Fender Bumper and you are installing a Rear Fender Bumper or V-Rail Rear Fender Accent, install it per the instructions included with the part before proceeding any further.

1. Place the motorcycle on firm level ground and remove both saddlebags (if applicable). Remove the seat.
2. Locate the four bolts that hold the saddlebag rails to the chrome vertical fender rails (If applicable). Remove these four bolts (two each side). If the motorcycle is not equipped with saddlebag rails, use the two lowest holes in the vertical fender struts to attach the support struts. Install the two support struts onto the outside of the fender struts and under the saddlebag rails (If applicable). The bent end of the struts with the welded on nuts should bend to the center of the motorcycle and be level with the bottom of the fender. Attach the struts to the fender rail using the supplied 5/16-18 x 1 inch GR8HH bolts and 1/4 inch flat washer using the recommended amount of removable thread lock. Do not tighten.

**NOTE:** *If motorcycle is equipped with quick detachable accessories such as backrest or tour pack, the strut will fit between the factory chrome vertical fender rail and the quick detachable brackets attaching to the fender rails.*

3. Remove the four bolts (two each side) that hold the saddlebag support and muffler hanger bracket to the factory chrome vertical strut rails. Install the supplied 5/16-18 x 1 1/4 inch GR8HH bolts with a flat washer in place of the removed bolts. The bolts should run from the rear toward the front of the motorcycle.
4. Hang the Receiver Center Section onto the four bolts just installed with receiver tube pointed up. Install the supplied 1/4 inch flat washer and 5/16-18 Nylock nuts onto the back of the 5/16-18 x 1 inch GR8HH bolts securing the center section. Do not tighten.
5. Attach the center section to the struts using the four supplied 5/16-18 x 1" GR8HH bolts and recommended amount of removable thread lock. Do not tighten.
6. Install (2) 1/4-20 x 1 inch GR8HH Bolt, flat washer and Nylock nuts through the holes securing the struts to the center section inside of the bend in the support struts.
7. Tighten hardware in the following order:



1. (4) 5/16-18 x 1 inch GR8HH bolts securing receiver center section to lower saddlebag supports and bottom tab of factory chrome vertical fender rails.
2. (4) 5/16-18 x 1 inch GR8HH bolts securing hitch support struts to Receiver Center Section.
3. (2) ¼-20 x 1-inch bolts securing support struts to receiver center section
4. (4) 5/16-18 x 1-inch bolts securing support struts to factory chrome vertical fender rails.

**CAUTION: THREAD LOCK DRIES QUICKLY, MAKE SURE IT IS STILL IN LIQUID FORM WHEN YOU COMPLETE STEP #7.**

Installation of the hitch platform is now complete. You will reassemble the motorcycle after completing the installation of the receiver head and wiring as indicated below.

**RECEIVER HEAD INSTALLATION INSTRUCTIONS**  
**(BUSHTEC PIN AND STAINLESS STEEL BALL)**

If you ordered your hitch for use with a *BUSHTEC* trailer, you will have received a receiver head with the *BUSHTEC PIN* welded in place. If you ordered your hitch for use with any other trailer, you will have received your receiver head with the standard ¾ inch hole along with a **1 7/8 inch QMC TECHNOLOGIES, INC. Stainless Steel Ball w/ Stainless Steel Hardware.**

**WARNING: MAKE SURE THAT YOUR TRAILER REQUIRES A 1 7/8 INCH BALL, FAILURE TO USE THE APPROPRIATE SIZE BALL WILL ALLOW THE TRAILER TO DISCONNECT AND COULD RESULT IN INJURY OR DEATH.**

1. (ALL APPLICATIONS) At the bottom rear of the receiver center section, there is a 3/8-16 x 1 inch GR8HH bolt with a jam nut. Loosen the bolt so that it does not protrude into the receiver center section blocking insertion of the receiver head.

**NOTE:** The Bushtec pin or ¾ inch hole should be facing away from the rear tire.

2. Insert the receiver head into the receiver center section. Insert the 3/8 inch SS Lock Pin through the 3/8 inch hole in both the receiver head and receiver center section and make sure the catch wraps around the end of the pin. Tighten the jam bolt with a 9/16 inch wrench until snug.



**WARNING: DO NOT OVER TIGHTEN THE JAM BOLT. IT IS DESIGNED TO STOP OR REMOVE ANY PLAY BETWEEN THE RECEIVER HEAD AND RECEIVER CENTER SECTION. OVERTIGHTENING CAN CAUSE HITCH FAILURE RESULTING IN DAMAGE TO YOUR MOTORCYCLE, TRAILER AND/OR INJURY DEATH.**

3. Once you have tightened the jam bolt, tighten the jam nut to the receiver center section (not the bolt head) with a 9/16" wrench. This will lock the jam bolt and keep it from vibrating loose.
4. (BUSHTEC Application) You are now ready to wire the motorcycle.
5. (All other applications) Install the 1 7/8" Stainless Steel Ball according to the manufactures instructions. You are now ready to wire the motorcycle.

### **WIRING INSTRUCTIONS**

**NOTE:** The isolator package supplied with your new hitch comes with generic wiring instructions. The following instructions are more specific to the FLH/FLT/ROAD KING.

Although wire routing, connections and isolator location is left up to the individual installer. These instructions are a guide through the procedure

If you purchased this hitch with a new Bushtec trailer, you will have received a 4' bike side wire harness with the trailer. If you need a new harness, they are available from the factory at an additional cost. If you are using this hitch with anything other than a Bushtec trailer, you will need to purchase the appropriate plug and sufficient length of wiring to reach the isolator package from your local parts store or your trailers manufacturer.

1. (BUSHTEC APPLICATION) Attach the plug body of the bike side harness within 2-3 inches of the hitch pin using wire ties, electrical tape or a fastener of your choice.
2. (ALL OTHER APPLICATIONS) Attach your plug body in a suitable location that, once connected to the trailer, allows sufficient movement in the trailer harness. (I.e. Too long or to short, the harness will drag the ground or disconnect respectively).

**CAUTION: MAKE SURE THAT THE HARNESS DOES NOT RUB THE BOTTOM OF THE FENDER WHEN IN USE.**

3. Run the bike side harness up the left side of the bike and under the seat. Fasten the harness so that it does not interfere with the movement of the trailer, exhaust pipe, rear tire or get in the way of reassembling your motorcycle.



- Unpack the isolator package and set it near the battery compartment. Find a suitable location to house the isolator package that will not interfere with motorcycle reassembly and cannot be damaged by moving components.

***NOTE:*** *The location of the isolator package should allow the red and black wires to reach the battery terminals. The (4) striped white wires stemming from the isolator will connect to the motorcycle's harness supplying power to the rear fender harness. It is recommended that you tap into the harness BEFORE the plug between the main harness and rear fender harness (on the main harness side of the plug). Failure to do so can result in an altered signal being supplied to the isolator package and incorrect trailer light function.*

- Run the (4) four white-striped wire to the rear fender harness. Connect these wires to the appropriate wires on the motorcycle with the supplied connectors as described in the table below. Connect the four white-striped wires using the supplied red male spades and red T-taps (4) each.

***NOTE:*** Attach the connectors as described in the isolator instructions. Connect the wires in the following order:

<u>Function</u>	<u>Isolator</u>	<u>Motorcycle</u>
Brake Light	White/ Blue Stripe	Red/Yellow Stripe
Running Light	White/Green Stripe	Blue
Left Signal	White/Brown Stripe	Purple
Right Signal	White/Yellow Stripe	Brown

- (BUSHTEC APPLICATION) The Bushtec harness contains a Sixth wire (the black wire), which operates the interior light. Bushtec recommends combining the black wire with the green running light wire so that the interior light operates only when the running lights are functioning, otherwise you may drain your battery if the light is left on. If you wish to be able to operate the interior light at any time without turning on the ignition, you will need to connect the black wire of the trailer harness directly to the positive (+) terminal of the battery with the appropriate inline fuse (not supplied).

***NOTE:*** DO NOT confuse black wire in trailer harness with the black wire from isolator package.

- Connect the Bushtec Trailer harness to the isolator package using the supplied blue butt connectors as follows:



<u>Function</u>	<u>Isolator Input</u>	<u>Harness Output</u>
Brake Light	White/Blue Stripe	Solid Blue
Left Signal	White/Brown Stripe	Solid Brown
Right Signal	White/Yellow Stripe	Solid Yellow
Running Light	White/Green Stripe	Solid Green
Interior Light	(refer to step# 6)	Solid Black
Ground	XXXXXXXXXX	Solid White

Connect the Red wire of the isolator package to the Positive (+) terminal of the battery and the Black wire of the isolator package to the Negative (-) terminal using the supplied ring terminals.

- (ALL OTHER APPLICATIONS) Attach the white-striped wires as described above. Connect your harness to the isolator package using the above solid colored outputs to the appropriate wires of your harness.

**NOTE:** the red and black wire of the Isolator should always be hooked up directly to the Positive (+) and Negative (-) terminals of the battery. Chassis ground is not acceptable in any application. Your trailers harness ground wire will need to be attached to the battery negative (-) terminal.

- Insert the supplied 30amp fuse into the fuse holder and check the functions with your trailer plugged in.
- Secure all the wiring making sure that nothing will affect the reassembly of the motorcycle.

**CHECK ALL HARDWARE TO MAKE SURE IT'S TIGHT. CHECK ALL ELECTRICAL CONNECTIONS.**

**YOU ARE NOW READY TO REASSEMBLE YOUR MOTORCYCLE.**

**FINAL TRAILER HOOKUP**

- Install the hitch head into the receiver and secure with lock and jam bolt as described.



2. (BUSHTEC APPLICATION) Set the hiem joint over the hitch pin. Place the key into the lock and turn ¼ turn clockwise. Place the lock on top the hitch pin and turn the key ¼ turn counterclockwise while holding lock and remove key. Lift up on the lock to insure lock is engaged on the hitch pin. Place the black rubber cover over the lock to keep keyway free from debris.

**WARNING: THE KEY IS REMOVABLE REGARDLESS IF THE LOCK IS ENGAGED OR NOT!**

3. Remove the dead plug from the end of the bike harness and plug in trailer harness. Hook the safety chain catch to the ring below the pin. CHECK ALL TRAILER CONNECTIONS ONCE AGAIN!
4. (ALL OTHER APPLICATIONS) Attach the trailer to the ball and secure the coupler latch. Check that the trailer coupler is adjusted properly and in excellent working order.

**WARNING: BUSHTEC ASSUMES ABSOLUTELY NO RESPONSIBILITY IN THE USE OF ANYTHING OTHER THAN A BUSHTEC TRAILER. PROPER USE, MAINTAINENCE, AND ANY AND ALL WARNINGS ASSOCIATED WITH TRAILERING ARE THE RESPONSIBILITIES OF YOUR RESPECTIVE TRAILERS MANUFACTURER. BUSHTEC'S TOTAL LIABILITY WILL BE LIMITED TO THE INITIAL PURCHASE PRICE OF THIS PRODUCT OR REPLACEMENT OF THIS PRODUCT AT OUR DISCRETION.**

**WARNING: DUE TO THE NATURE OF TOWING A TRAILER AND THE ENGINEERING INVOLVED WITH THIS HITCH OR ANY MOTORCYCLE HITCH, ALL HARDWARE MUST BE CHECKED BEFORE, DURING AND AFTER YOU TOW TO INSURE THE PROPER WORKING ORDER OF THIS PRODUCT**

**350 LBS. MAXIMUM GVWR**  
**70 LBS. MAXIMUM TONGUE WEIGHT**





All Manufacturers names, model designations, brand names, trademarks and registered trademarks are the property of their respective holders.

## INSTALLATION NOTES

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