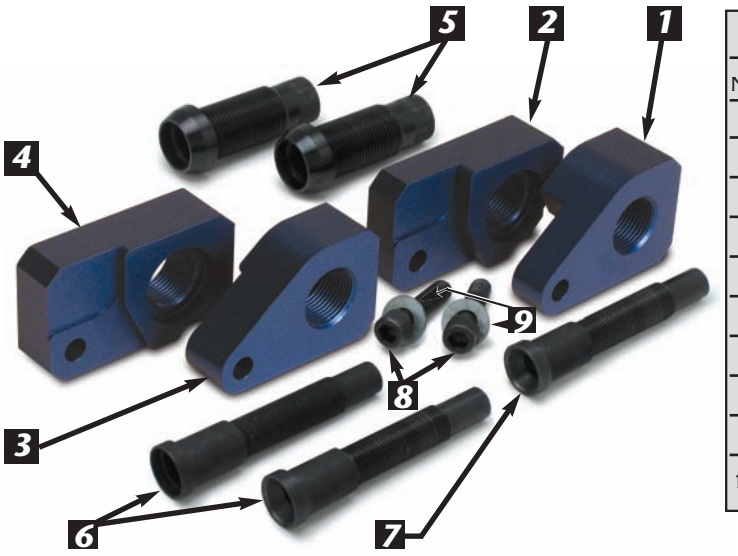
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Instruction Sheet For Tool #964

POWER TRAIN ALIGNMENT TOOL

Use on 1993 to 2008 FL Touring Models



PARTS AVAILABLE SEPARATELY			
No.	Qty.	Description	Part No.
1	1	Left alignment block 07 - 08	964-1
2	1	Right alignment block 07 - 08	964-2
3	1	Left alignment block 93-06	964-3
4	1	Right alignment block 93-06	964-4
5	2	Pilot sleeve	964-5
6	2	Alignment screw, 02 - 08 (Use 1 on 93-01)	964-6
7	1	Alignment screw, for welded nut 93-01	964-7
8	2	Screw, Allen	1181
9	2	Washer	2031
10	1	Instruction book	964-IS

NOTE: PLEASE READ ALL INSTRUCTIONS COMPLETELY & THOROUGHLY BEFORE PERFORMING ANY WORK.
IF YOU DO NOT KNOW WHAT YOU ARE DOING, DO NOT DO IT!

No information in this instruction sheet pertaining to motorcycle repair is represented as foolproof or even altogether safe. Even something safe, done incorrectly or incompletely can and will backfire. You and only you are responsible for the safety of your repair work and and for your understanding the application and use of repair equipment, components, methods and concepts.
Each and every step that this tool is designed to do must be carefully and systematically performed safely by you. All information listed in this instruction sheet has been tested, re-tested and used daily in JIMS Research and Development Department.

JIMS® is not responsible for damage, injury or your work!
JIMS® IS NOT RESPONSIBLE FOR THE QUALITY AND SAFETY OF YOUR WORK!
Perform all work per H-D service manual for appropriate year and model of the motorcycle you will be repairing.

CAUTION: Wear safety glasses. Excessive force may damage parts!
See JIMS® catalog for Hundreds of top quality professional tools.
The last tools you will ever need to buy.

Performance Parts For Harley-Davidson® Motorcycles

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Note: This Tool is a precision instrument.

JIMS Tools needed to perform this service:

1. See JIMS catalog for a complete listing of tools.

Other Hand Tools needed to perform this service:

1. H-D service manual for appropriate year and model of motorcycle you will be aligning.
2. Pair of 9/16" open end wrenches
3. 7/16" socket
4. 5/8" Socket
5. 11/16" Socket
6. 3/4" Socket
7. Ratchet for above sockets
8. In-lb torque wrench and ft-lb torque wrench
9. 9/16" Open end crows foot.
10. 9/16" Socket.
11. Quality moly lube. (For tool threads)

Warning: Disconnect the negative ground cable at the battery. Check that all the engine and transmission mounting hardware and components are in good serviceable condition.

Caution: This Tool is a precision gauge, it will last a lifetime if it is handled in a professional manner. Using it in a professional manner is easy to do if you follow the instructions and do not miss any of the steps in this instruction sheet. This tool will **NOT MOVE** the power train. You must allow the power train to float into alignment at the time this tool is installed on the motorcycle. Look over this tool's part number list. This instruction sheet will be calling out part numbers as a reference to the part list. Also refer to part numbers lasered on the tool pieces.

Warning: Some torque figures for this tool No.964 are called out in INCH POUNDS (In-lbs). It takes 12 in-lbs of torque to equal 1 foot-pound of torque. We use a callout of 30 in-lbs of torque. This will make 2.5 foot-pound of torque. Example: If you tried to torque a screw to 30 ft-lbs of torque this would be 360 in-lbs of torque, so make sure to use the proper torque wrench.

If for any reason you need assistance, please call JIMS TECH department at 805-482-6913.

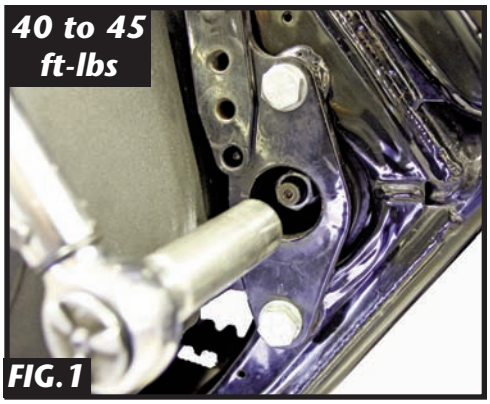
1. Safely lift rear tire of motorcycle off the ground with motorcycle being level. Support M/C with tie downs so it cannot and will not fall over, as you will be checking torque as high as 105 ft-lbs for some models.
2. Remove left passenger floorboard per H-D® service manual.
3. Some exhaust systems and or heat shields may interfere with the mounting of tool blocks. Remove as necessary.
4. Check and torque both the left and right swingarm bracket bolts to 34 to 42 ft-lbs.
5. Check the torque of the swingarm pivot axle shaft nut. Remove both the left and right chrome covers from swingarm brackets. Check that both swingarm brackets are clean so tool has a clean surface to install flush to.

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Note: Use a non-marring pry stick. An example: Sharpen an old toothbrush handle into the shape and size of a small screwdriver.

6. If alignment is being inspected on a 2002 to 2008 FLH you will need to hold the left side pivot shaft locknut with your 11/16" socket and check the torque of the right side locknut to be 40 to 45ft-lbs. **See Fig 1.**

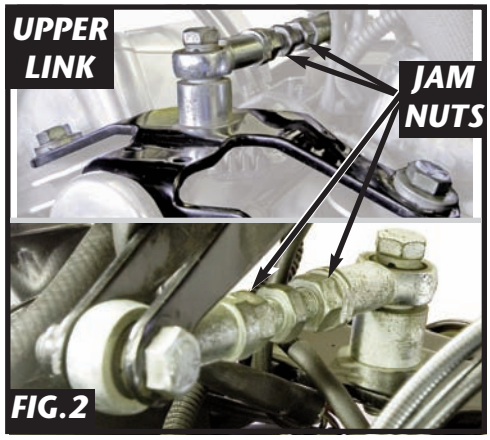


7. If alignment is being inspected on a 1993 to 2001 FLH you'll need to hold the pivot shaft welded nut with your 3/4" socket and check the torque of the opposite side locknut to be 40 to 45 ft-lbs. Most early pivot shafts have the welded nut on the right side.

8. Check rear belt alignment and axle nut torque for the year motorcycle you're servicing per that year H-D® service manual. Adjust to spec as necessary.

Note: This tool will not fix or adjust rear belt alignment.

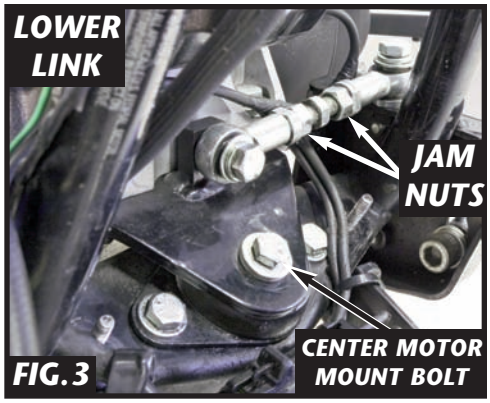
9. You will need to gain access to the top motor mount and the stabilizer link. This is located between cylinders or on the front cylinder head bracket on 2008 FL's. Use the proper H-D® service manual for the M/C you're servicing.



10. Torque both top motor mount to front and rear cylinder head bolts to 35 to 40 ft-lbs; torque the top stabilizer link that is attaching it to the frame to 18 to 22 ft-lbs. For 2008 models, torque motor mount to front cylinder head bolts to 30-35 ft/lbs.

11. Still working at the top stabilizer link, loosen both jam nuts and remove top stabilizer link bolt from the top motor mount bracket. **See Fig 2.**

12. Remove voltage regulator per the H-D® service manual for year M/C you're servicing to gain access to the two bolts that mount the front motor mount bracket to the engine. You don't have to disconnect voltage regulator wiring. It can hang from wires at front of frame. Check that both bolts are torqued to 33 to 38 ft-lbs on 1993 to 2006 models on 2007 & 2008 models torque to 36 to 40 ft-lbs. **See Fig 3.**



13. Torque the front stabilizer link that is attaching it to front motor mount bracket to 18 to 22 ft-lbs. Still working at the front stabilizer link, loosen both jam nuts, then remove front stabilizer link bolt from the frame mounting point. **See Fig 3.**

14. Remove the front center motor mount bolt and washers This is the bolt that's located through rubber mount and frame. **See Fig 3.**

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15. Apply moly lube to all tool threads.

Note: All components have the part number laser marked on them for ease of identification.

16. If you will be adjusting the alignment of a 1993 to 2006, you will need to use Tool No. 964-3 alignment block for the left side and tool No. 964-4 for the right side. Apply moly lube to all threads.

Note: For 2007 and 2008 FL's skip to line 19 and parts list.

Caution: Alignment adjusting screw No. 964-7 (the large diameter end with I.D. of .705) is required to be installed in the alignment block of whichever side has the welded nut on pivot shaft for 1993 to 2001. Before installing in the left or right side tool blocks No. 964-3 or No. 964-4, you will need to check which side the welded nut has been installed. Most early pivot shafts have been installed with the welded nut on the right side.

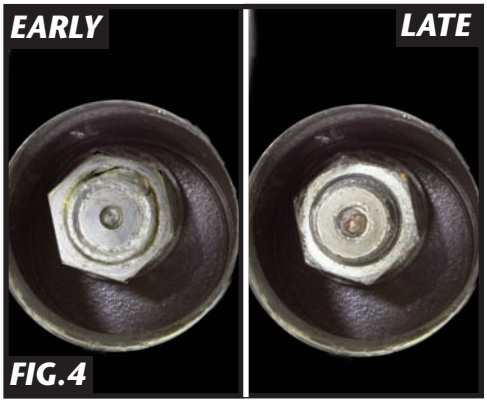


FIG.4

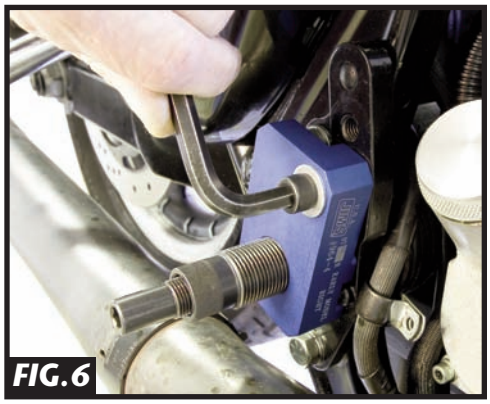
17. If you have determined that the welded nut is on the right side of motorcycle then install (with lubed threads) both pilot sleeve tools, No. 964-5. Thread in by hand only, all the way until it stops at the face of tool block. Start from the counterbored side of the left alignment block No.964-3 and then the right alignment block No. 964-4. **See Fig 4.**



FIG.5

18. Thread in (with lubed threads) the alignment adjusting screw No. 964-7 (the large diameter end has a I.D. of .705) into the right side tool block No. 964-4, Thread in (with lubed threads) the alignment adjusting screw No. 964-6 into the left tool block No.964-3. Both of above screws need to be installed all the way into both pilot sleeves, tool No. 964-5. **See Fig 5.**

Note: You will need to remove the screw and clamp securing rear brake hose on some models.


FIG.6

19. With Tool block for either the right or left side ready to install onto the swing-arm bracket, start with the tool block centered over swing-arm bracket and held tight with your hand against the bracket. Make sure it is laying flat over bracket. Thread in pilot sleeve tool No. 964-5 by hand from the knurled end of tool, until it contacts in the center of swing-arm bracket. Wiggle the tool block at the same time until all free movement has been removed and tool block is still laying flat over swing-arm bracket. Hold tool in this location without moving the tool block and install washer No. 2031 over Allen screw No. 1181 and tighten Allen screw to passenger footboard mount to 20 ft-lbs of torque. **See Fig 6.**

20. Mount the next tool block on the other side of motorcycle following lines 15,16,17 and 18.

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Note: If you will be adjusting the alignment of a 2007 and 2008, you will need to use tool No. 964-1 alignment block for the left side and tool No. 964-2 for the right side.

Note: Use both alignment-adjusting screws No.964-6, installed in both the left and right tool blocks for 2002 thru 2008.

Caution: Before working through line 20, you must make sure that all lines 1 through 14 of this instruction sheet have been followed. If for any reason just one of the steps have not been performed as indicated, this tool will not be able to do its job, and damage to this tool will occur, voiding all warrantees. We can tell if you did not follow this instructions sheet!

21. Turn in center alignment screw No. 964-7 and No.964-6, with your 7/16" Socket until both just bottom at the end of swing arm pivot shaft.

Warning: Do not apply more then 30 in-lbs of torque to center the alignment screws over the swing arm pivot shaft ends. At this time, it may be necessary to lightly rock the engine-trans package top to bottom or side to side to make sure the screw ends go over the pivot shaft ends. What we are trying to do is allow the end diameter of swing arm pivot shaft to slide inside the end bore of each alignment-adjusting screw.

22. Tighten both alignment center screws one side at a time, until you have applied 40 in-lbs of torque to each one.

23. With the tool in this state, it is holding the complete power train; swingarm to transmission, to engine, and with the swingarm holding the rear wheel, it completes the power train.

24. Working at the top stabilizer link, holding the eyelet (you removed in line 11) turn the center nut (the one between the two jam nuts) either clock wise or counter clock-wise, so you can slip the stabilizer link's mounting screw thru the eyelet. Thread it with your fingers into the top motor mount. This all being done with out moving the engine. Torque stabilizer link's mounting screw to 18 to 22 ft-lbs. Also torque the stabilizer link's two jam nuts to 18 to 22 ft-lbs with your 9/16" open end crows foot.

25. Repeat line 24 for the front motor mount stabilizer link, all being done without moving the engine.

26. Remove the alignment tool from M/C and reinstall all parts removed from lines 8,9,10,11 and 12. Do not install regulator at this time.

27. Moving to the front motor mount, check that the long front mounting bolt will slip thru the rubber motor mount freely without any binding or pushing the power train. If it will pass through mount, reinstall in the reverse order of removal.

28. If the long front mounting bolt will not slip through mount, you will need make sure the two bolts holding the rubber mount to the frame are loose enough to move this mount around on the frame until bolt can be slipped through mount. Install the regulator and torque all bolts per the Harley-Davidson service manual for the year and model you are repairing.