

# BAKER DD7 INSTALLATION INSTRUCTIONS



# OVERVIEW

## FEATURES

The all new BAKER DD7 is more than just another gear added to the mix for the sake of one-upmanship. That 7th gear enables the motorcycle to now make full use, by way of gear ratio management, of the torque and power put out by the new 96 ci and 110 ci motors rolling off the assembly line in Milwaukee. We did not make this Transmission a deep overdrive, rather we shortened 1st gear and tightened up the gears to deliver the riding experience that you were after when you bought your bike. The gear ratios as listed out below, leave you the rider, with the experience of smooth, crisp, continuously pulling acceleration from 1st all the way through 4th gear. Then you are able to start getting into the cruising portion of the program in gears 5th-7th. No big drops in RPM from one gear to the next or lugging the motorcycle off of a stop light, just smooth, uninhibited acceleration

We did not stop at just fixing the gear ratios. We improved the smoothness and crispness of the shifting by reducing the mainshaft mass by only having 1st gear be a part of the shaft, rather than 1st-4th gears like on the stock unit. Reduction in rotating mass for shift quality is a fact that has been utilized in the automotive world for years. We ditched the stock detent arm and spring assembly from the door in favor of a Linear Detent that decreased friction while increasing smoothness when coupled with the all new shift drum design. We have tightened up the dog teeth on the gears to prevent the loud clacking noise that accompanies every shift on the factory 6 speed. Through the use of a billet bearing door, 28% wider bearings in the door, steel bearing retainer plates and full width gears, the durability and strength of our unit is a drastic improvement. By utilizing fully diamond ground, helical gears in 1st & 4th-7th we are able to deliver a much quieter riding experience. While 2nd and 3rd gears are diamond ground, spur gears to handle the peak torque that is reached in that range.

Stock Ratios	DD7 Ratios
1st - 3.34	1st - 3.76
2nd - 2.30	2nd - 2.75
3rd - 1.71	3rd - 2.06
4th - 1.41	4th - 1.55
5th - 1.18	5th - 1.27
6th - 1.00	6th - 1.10
	7th - 1.00

## FITMENT

2006-Later Dyna  
2007-Later Touring  
2007-Later Softail

**Fitment Note:** The 6th gear indicator light will come on when the DD7 is shifted into 7th on all models and all ECM's. Aftermarket tuners such as Daytona Twin Tec and TTS-Mastertune will allow cruise to function in all gears, like stock, on Throttle-By-Wire bikes when coupled with the DD7 gearset. Any questions on this, please give our tech line a call.

# **BAKER DD7 INSTALLATION INSTRUCTIONS:**

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# SKILLS, TOOLS & KNOWLEDGE

## REQUIRED READING

Regardless of the skill level or experience of the installer of the DD7 Builder's Kit, it is highly recommended that a genuine H-D Motor Company parts catalog and Factory Service Manual be available for reference for your type of bike.

## TOOLS

- Common Hand Tools (Allen Wrenches, Sockets, Snap Ring Pliers, Etc)
- Torque Wrench: 3/8" & 1/2" Drive
- 1 3/16" 6 Pt Socket (Clutch Nut)
- Inner Primary Race Service Tool  
BAKER pn TOOLB-56  
HD Equivalent pn 34902B
- Main Drive Gear & Bearing Service Tool  
BAKER pn ToolA-07  
HD Equivalent pn 35316C
- Pulley Locking Tool  
BAKER pn TOOLC-56  
HD Equivalent pn 46282
- Pulley Nut Socket  
BAKER pn TOOLD-07  
HD Equivalent pn 47910
- Primary Fluid 45 oz Needed, BAKER Recommends  
Spectro Heavy Duty Primary Chain Case Oil pn R.GAPCL
- Transmission Fluid 32 oz Needed, BAKER Recommends  
Spectro Heavy Duty Platinum 6 Speed Transmission Oil pn BD-75140-32
- It is recommended that the Countershaft Bearing is replaced at the time of installation, using an approved tool and procedure, such as the Jims Countershaft Cup Bearing Tool.  
JIMS USA PN#739. (P) 805-482-6913

## OPTIONAL PARTS

- BAKER FF Hydraulic Side Cover P/N DD7-106C-KIT  
Chrome Standard
- BAKER FF Hydraulic Side Cover P/N DD7-106B-KIT  
Hog Black Standard
- Dakota Digital Programmable Gear Indicator  
Chrome Finish  
Flush Mount For Fairings P/N P6R-1000-F  
Handlebar Mount Version 7/8"-1 1/2" Bars P/N P6R-1

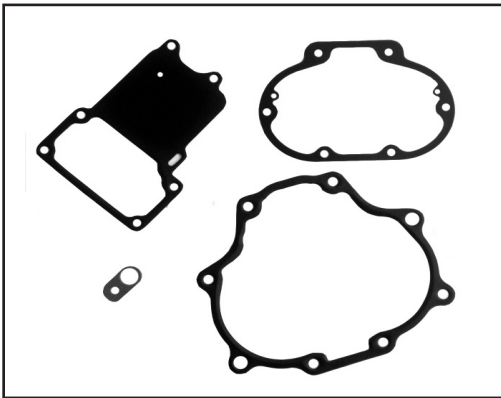
## BAKER DD7™ BUILDERS KIT INCLUDED PARTS DETAIL



DD7 Gearset Cassette



Main Drive Gear Bearing, pn 8967  
Main Drive Gear Seal, pn 12074  
Main Drive Gear Snap Ring, pn 1302-334PP



Bearing Door Gasket, pn 35654-06  
Top Cover Gasket, pn 34917-06  
Side Cover Gasket, pn 36805-06  
Speed Sensor Gasket, pn 133-56R-GAS



Bearing Door Bolts, 18-8 Stainless Steel, Socket  
Head Bolts, 8 pcs, pn 73497  
Washers, 8 pcs, pn 6100

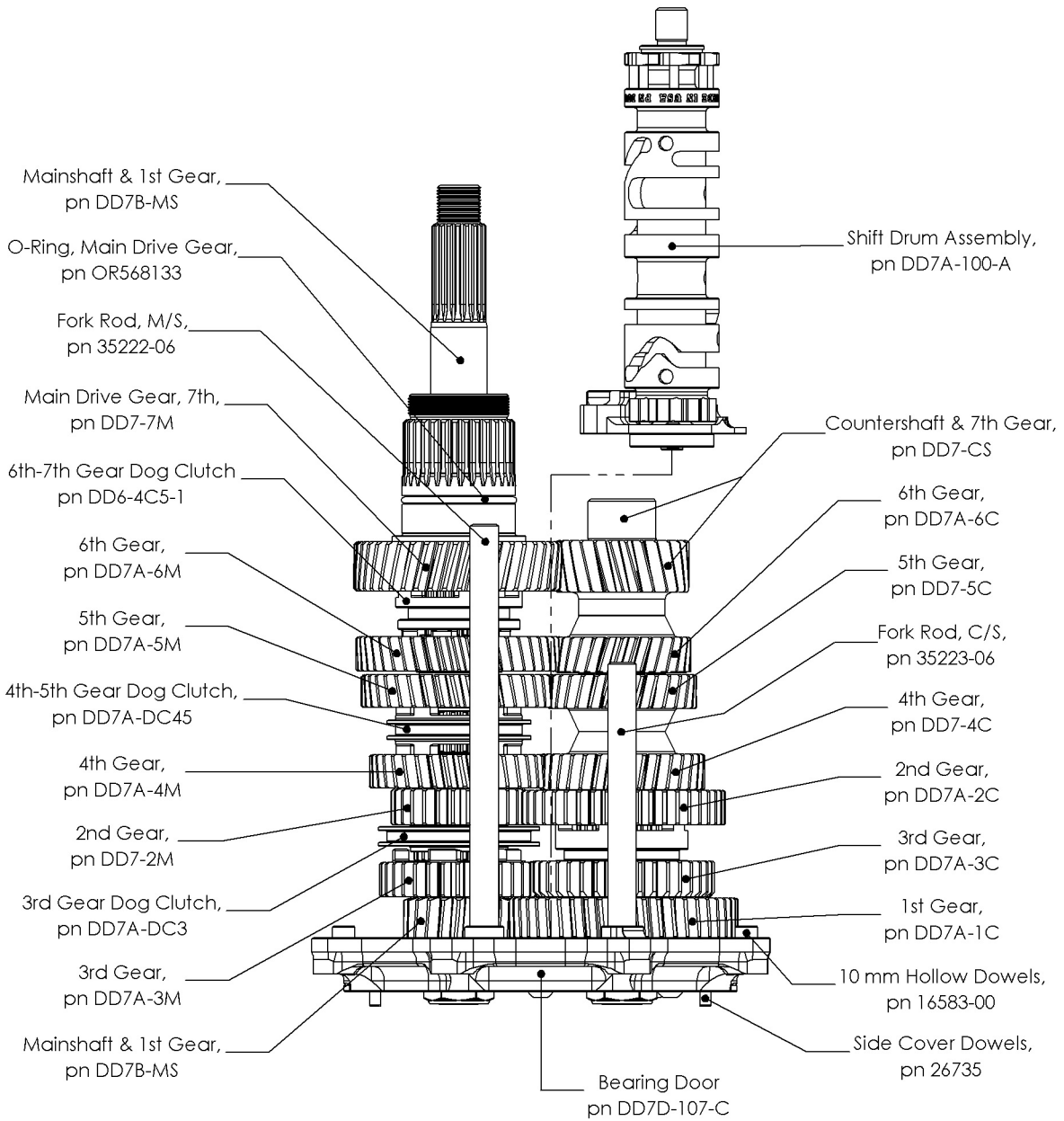


BAKER Shifter Pawl pn 555-07-A  
Snap Ring pn 68010  
Seal pn 37101-84B  
Washer pn 6497HW-H-D

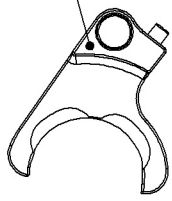


Bearing Inner Primary Race pn 34091-06  
Side Cover Emblem pn DD7-108

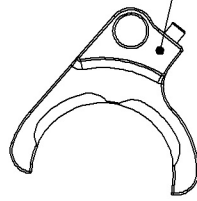
# DD7 GEARSET LAYOUT



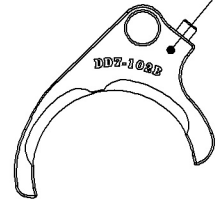
6th-7th Gear Shift Fork, pn DD7D-104



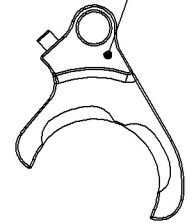
4th-5th Gear Shift Fork, pn DD7C-103



3rd Gear Shift Fork, pn DD7B-102



1st-2nd Gear Shift Fork, pn DD7B-101



# BAKER DD7 BUILDERS KIT INSTALLATION

## CASE PREPARATION/ GEARSET REMOVAL

1) Whereas it may seem as we are skimming over many of the steps, your Factory Service Manual will lay out in detail the proper methods for removal and reassembly of the components listed out in the steps within these instructions. Softails, Dyna's and Touring Models are all different configurations and require a different order and method to accomplish the various steps.



**SIMILAR TO ANY OTHER DRIVETRAIN RELATED PROJECT, THE FIRST STEPS THAT YOU WANT TO TAKE ARE TO REMOVE THE SEAT AND DISCONNECT THE BATTERY FOR YOUR OWN SAFETY. NOW IS A GOOD TIME TO GET OUT A COUPLE OF DRAIN PANS AND DRAIN THE PRIMARY FLUID AS WELL AS THE TRANSMISSION FLUID. FOR LOCATION OF THE APPLICABLE DRAIN PLUGS, CHECK YOUR SERVICE MANUAL.**

2) Next remove the saddlebags, (if applicable), then the floorboards/pegs and the pipes. Remember to disconnect the two O2 sensor plugs from the pipes so as to not damage them when pulling the pipes off. Unbolt the starter, pull it out and set aside on your workbench. Pull off the outer primary, the primary chain, clutch assembly and the inner primary. Having a drip pan underneath the primary when you are taking off the outer primary is a great idea, as residual oil will get all over your lift or garage floor depending on your work environment. Pull the bearing race found on the mainshaft next with your Inner Race Service tool. You can not pull the gearset out of the case without first removing this bearing race. Remove the transmission pulley and set aside at this point as well. (NOTE: Pulley nuts are Right Hand threads).

3) Remove the bolts on the side cover, remove it and set aside for reuse as it will bolt back up to the DD7 Bearing Door. You do not need to disconnect it from the Clutch Cable. Remove the Neutral Switch and Vehicle Speed Sensor from the top of the transmission case. Having the sensor and switch removed makes installation of the new DD7 Gearset cassette easier.



**REMOVE THE TRANSMISSION DIPSTICK AT THIS TIME; YOU CAN NOT PULL THE GEARSET WITH THE DIPSTICK IN THE BIKE. IT WILL BREAK OFF IF YOU LEAVE IT IN THE BIKE WHEN ATTEMPTING TO PULL THE GEARSET.**

4) Remove the top cover and set aside; this is necessary so that you can pull the shifter pawl off of the drum when you remove the entire gearset and trap door assembly. According to the Factory Service Manual, you want to place the shifter pawl on the top cover mounting surface with the gasket acting as a 'pad' while pulling the gearset.

5) Now you can unbolt the trap door from the case. Lightly tap on the end of the mainshaft on the primary side with a rubber mallet to loosen the entire gearset and trap door from the case and the 6th main needle bearings. Set the gearset aside on the workbench as you do not need any parts from it for this installation. Use the main drive gear and bearing service tool of your choice and while following the Factory Service Manual remove the 6th main Drive gear, seal, snap ring and bearing. Now is a good time to clean out the case, the main drive gear bearing bore, the top cover and bearing door gasket surfaces of any debris, to prevent leaks in the future.

6) Remove the stock shifter pawl assembly.

# BAKER DD7 BUILDERS KIT INSTALLATION

## GEARSET INSTALLATION

- 1) Install the provided BAKER Shifter Pawl using the supplied seal, washer and snap ring.
- 2) Still following the Factory Service Manual press the provided Main Drive Gear Roller Bearing (pn 8967) into the case. Install the provided Beveled Snap Ring (pn 1302-334PP) at this time, with the beveled edge of the snap ring facing you.



**NEVER INSTALL THE BEARING INTO THE CASE BY APPLYING PRESSURE TO THE INNER RACE OF THE BEARING. YOU WILL DESTROY THE BEARING AND IT MAY FAIL IN THE FUTURE.**

- 3) Remove the new 7th Main Drive Gear (pn DD7-7M) from the DD7 Gearset by simply sliding it off of the mainshaft. Lube the snout of the Main Drive gear and the O-ring already on the gear with WD-40 or equivalent to aid in assembly. Following the Factory Service Manual press the gear into place and install the provided Main Drive Gear Seal (pn 12074)

- 4) Hang the provided Bearing Door Gasket (pn 35645-06) on the inside of the bearing door. Apply some WD-40, or equivalent to the main drive gear seal and the mainshaft (on the portion adjacent to the clutch splines) to aid in gearset installation. Holding the gasket place over the 10 mm hollow dowels on the backside of the bearing door, slide the entire gearset into the transmission case. Be sure that the threads of the mainshaft do not contact the seal in the main drive gear. If the shaft tears the seal, leakage will occur.

It may take some jiggling of the gearset to get the fork rods to line up with the Teflon lined bushings in the case, but the gearset should slide all the way into the transmission case until the gasket is flat against the door surface. The fork rods are designed to have a tight 'slip fit' into their bores on the bearing door. If you find the forks rods try to slip out of place while sliding the gearset into the case, remove the gearset and apply some thick grease to ends of the fork rods and push them back into the door. This will help to hold them in place while you are sliding the gearset in.



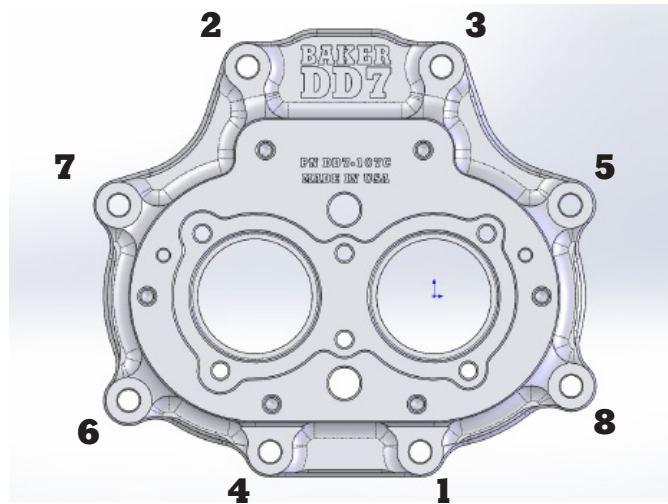
**IF YOU FEEL THAT THE TRANSMISSION IS NOT SLIDING IN, JOSTLE THE MAIN DRIVE GEAR TO HELP THE COUNTERSHAFT MESH WITH IT, AND CHECK TO MAKE SURE THE FORK RODS ARE IN PLACE ON THE BACK SIDE OF THE BEARING DOOR AS THOSE COULD BE THE CULPRITS.**

- 5) Find the 8 provided 18-8 Stainless Steel Socket Head Bearing Door Bolts (pn 73497) in the Builders Kit box, using 'Blue' Thread Lock place them in the bearing door and torque to 220 in-lbs while following the torque sequence (See Figure 4). Make sure to put in place any exhaust brackets before tightening down the bolts.

**GEARSET INSTALLATION CONTINUED ON NEXT PAGE**



# BAKER DD7 BUILDERS KIT INSTALLATION



**FIGURE 4**

## GEARSET INSTALLATION CONTINUED

- 6) Re-install your Factory top cover, using the supplied gasket and following your Factory torque sequence and procedure.
- 7) While following the Factory Service Manual, slide the pulley into place on the new 7th Main Drive Gear and torque to spec while making sure to install the nut lock plate and retaining bolts.
- 8) In accordance with the Factory Service Manual, install the Neutral Sensor, Dipstick (to keep debris out of transmission) and the Transmission Side Cover.
- 9) After properly bolting down the side cover, clean the side cover thoroughly of dirt, oil, and emblem residue and apply the included 7 Speed Side Cover Emblem (pn DD7-108). Firmly push the emblem onto your side cover. Some cable style side covers already have a 6 speed emblem on them, with some heat from a heat gun and a thin putty knife, this will easily pull off.
- 10) Before reassembling the motorcycle, install the Vehicle Speed Sensor Gasket (pn 133-56R-GAS) under the factory VSS (Vehicle Speed Sensor). It is located under the starter on the backside of the transmission case. Refer to factory service manual for exact location. Installation of this gasket will make the speedometer easier to re-calibrate by bringing the air gap from the VSS to the 6th main gear under it, up to factory specifications.

# BAKER DD7 BUILDERS KIT INSTALLATION

## MOTORCYCLE REASSEMBLY

1) With the transmission installed, you are ready to start reassembly of your motorcycle. While referencing the Factory Service Manual, install the Starter, Inner Primary Race, Inner Primary, Chain Tensioner Mechanism, Clutch, Motor Sprocket, Primary Chain Assembly, Outer Primary, Exhaust, Saddlebags (if applicable), Seat, Foot Controls and Connect the Battery. Fill the Primary and Transmission with Fluids.

According to the Factory Service Manual:

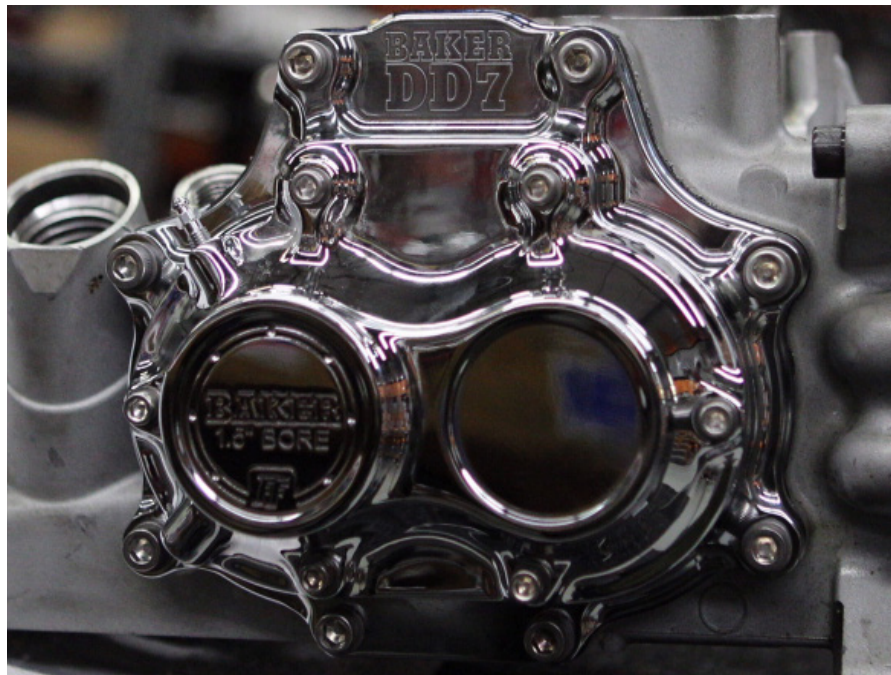
- Transmission: 32 Fluid OZ
- Primary: 45 Fluid Oz.

2) Adjust the clutch per the Factory Service Manual.

## FINISH LINE

When you have successfully reassembled your motorcycle, take the time to double check that you have replaced all of the parts and that none are left on the lift /garage floor, work bench etc. Double check to make sure that you put Primary and Transmission Fluid in the bike. Take the time to double check the drain plugs are tight and to wipe down the bearing door, side cover and primary to make sure there are no leaks after the maiden voyage.

When you take off for your test ride, ease into it and slowly accelerate through the gears to ensure that you reassembled the motorcycle in a functional and safe manner. You have now successfully completed the installation of the BAKER DD7. Enjoy.



# TERMS

## **SPECIAL ORDERS**

A minimum \$500 deposit is required with all special orders. Special orders include unique case finishes, unique side door requests (i.e.; wrinkle black door or no logo).

## **ALL OTHER ORDERS**

Orders can be pre-paid using VISA, Mastercard or American Express.

Prices shown are F.O.B. Haslett, MI. BAKER™ provides free UPS ground shipping on all retail orders for complete transmissions or transmission kit. UPS air shipment is available upon request. Customer is responsible for air shipment premiums.

## **LIMITED WARRANTY**

BAKER™ Inc. transmission assemblies, transmission kits, and wide tire kits are guaranteed to the original purchaser to be free of manufacturing defects in materials and workmanship for a period of 5 years from the date of purchase or up to 50,000 miles - whichever is sooner.

If the product is found by BAKER™ to be defective, such products will, at the option of BAKER™, be replaced or repaired at cost to BAKER™.

In the event warranty service is required, the original purchaser must call or write BAKER™ immediately with the problem.

If it is deemed necessary for BAKER™ to make an evaluation to determine whether the transmission assembly or transmission kit is defective, the entire transmission assembly, whether originally purchased as an assembly or kit, must be properly packaged and returned prepaid to BAKER™ with a copy of the original invoice of purchase.

If after an evaluation has been made by BAKER™ and a defect in materials and/or workmanship is found, BAKER™ will, at BAKER's option, repair or replace the defective part of the assembly.

Warranty card must be returned within 45 days of purchase to be valid.

## **ADDITIONAL WARRANTY PROVISIONS**

This limited warranty does not cover labor or other costs or expenses incidental to the repair and or replacement of BAKER™ products. This warranty does not apply if one or more of the following situations is judged by BAKER™ to be relevant: improper installation, accident, modification (including but not limited to use of unauthorized parts), racing, high performance application, mishandling, misapplication, neglect (including but not limited to improper maintenance), or improper repair.

BAKER™ shall not be liable for any consequential or incidental damages arising out of or in connection with a BAKER™ transmission assembly, transmission kit, swingarm, fender, component or part. Consequential damages shall include without limitation, loss of use, income or profit, or losses sustained as the result of injury (including death) to any person or loss of or damage to property.

BAKER™ transmissions, transmission kits, and Wide Tire Kits are designed exclusively for use in Harley-Davidson® motorcycles. BAKER™ shall have no warranty or liability obligation if a BAKER™ part is used in any other application.

If it is determined that a BAKER™ transmission assembly has been disassembled during the warranty period for any reason, this limited warranty will no longer apply.

## **DISCLAIMER**

The words Harley, and H-D are registered trademarks and are for reference only. Use of H-D model designations and part numbers are for reference only. BAKER Drivetrain has no association with, and makes no claim against, these words, trademarks, or companies.

It is the sole responsibility of the user to determine the suitability of this product for his or her use, and the user shall assume all legal, personal injury risk and liability and all other as well as all other obligations, duties and risks associated therewith.

### **CUSTOMER SUPPORT**

For any installation or service questions, please contact our BAKER technical department toll free: 1-877-640-2004.

# NOTES



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