

GrudgeBox

MADE IN THE
USA



GRUDGEBOX TRANSMISSION KIT

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ABOUT YOUR NEW GRUDGEBOX

INTRODUCTION

The GrudgeBox is an all spur 6-speed overdrive transmission that delivers uncompromised performance in all gears and significantly more torque capacity than the stock unit. The primary impetus for the design was performance, but the GrudgeBox was also designed for those who spend a lot of time in the saddle looking for that extra gear on the highway. 6th gear is a true overdrive that is numerically mild to yield a 250 RPM drop as compared to the stock unit. The gearset fits into the stock transmission case with no modifications. It has earned its BAKER pedigree with extensive highway testing and many merciless passes at the dragstrip.

FITMENT

- 2006 – 2017 Dyna
- 2007 – Later Softail & Touring Models

BREAK-IN

The GrudgeBox requires no break-in schedule. However, we do recommend that you take it easy for the first 20 miles to confirm that there are no issues related to basic function of the transmission and the reassembly of the motorcycle. You will notice that the transmission will shift smoother and operate quieter after about 2,500 miles. Like any machine, scheduled oil changes are key to years of trouble-free service. Log your transmission oil changes at the recommended intervals on page 21. General maintenance can be logged on page 22.

FLUIDS

The GrudgeBox requires 24-28 oz. of transmission fluid. We recommend Spectro 6-speed transmission oil that has long chain polymers that stand up to the harsh environment that this high-performance transmission can deliver. Please follow the recommended oil change intervals on page 21 and document your transmission service history on page 22. The exception to the stated intervals is winter storage. If the bike is stored in an environment that has significant temperature fluctuations, there will be water condensation inside the transmission. The oil should be changed immediately when it comes out of storage and is put back into service.

WARRANTY

This product includes a 5-year, 50,000-mile warranty. All steps in these instructions must be completed as outlined for the warranty to remain valid. See page 23 for details.

FEATURES AND GEAR RATIOS

FEATURES

The GrudgeBox is the most innovative, well executed, robust transmission we have ever endeavored to design and manufacture. Significant GrudgeBox features include:

1. **6-Speed overdrive design.** The 5th gear ratio of the GrudgeBox is 1:1 which is equivalent to the stock transmission 6th gear ratio. The overdriven 6th gear ratio offers a 250 RPM reduction for highway cruising.
2. **Straight cut (spur) gears.** Gear School 101. Helical gears are used in most motorcycles and cars these days because they are quieter than spur gears. However, there's a cost for noise reduction because helical gears give up horsepower. The amount of horsepower given up is proportional to the angle of the helix on a given gear pair. The stock transmission has helical gears in 2nd through 6th. The GrudgeBox is configured with all spur gears and no sacrificed horsepower.
3. **Gear width.** Stock transmission gear engagement is typically .500", GrudgeBox is .700" in 1st through 4th with nearly twice the circumferential tooth thickness. Generally speaking, torque capacity of a transmission is the product of the gearset center distance, gear engagement width, and circumferential tooth thickness at the pitch line.
4. **Dog tooth engagement.** The dog teeth on the stock 3rd and 4th gears have roughly .200" axial engagement with a less-than 1° undercut. This is a formula for gear hop-out. For the GrudgeBox we chose 4° undercuts with .250" axial engagement in all positions to guarantee NO gear hop-out or missed shifts, which translates into NO lost revenue if you are a Grudge hustler.
5. **Direct acting shifter pawl.** Upshifting with the stock 07-later shifter pawl is much like pushing on a rope. To make upshifts crisp and precise, we developed a direct acting pawl that engages the drum pins with negligible free play and no ropes.

GEAR RATIOS

GrudgeBox	Stock H-D
1 st – 3.15	1 st – 3.34
2 nd – 2.20	2 nd – 2.31
3 rd – 1.59	3 rd – 1.72
4 th – 1.23	4 th – 1.39
5 th – 1.00	5 th – 1.19
6 th – 0.92	6 th – 1.00

GRUDGEBOX TRANSMISSION KIT

REQUIRED PARTS, TOOLS, & REFERENCE MATERIALS

To install the GrudgeBox Transmission Kit, the following is required:

- Factory Service Manual for your year and model motorcycle
- Common hand tools (allen wrenches, sockets, retaining ring pliers, etc.)
- Breaker bar, 1/2" drive
- Torque wrenches, 3/8" & 1/2" drive
- 1-3/16" socket, 6 pt, 1/2" drive
- Red and blue threadlocker
- A new primary cover gasket
- Main drive gear & bearing service tool
 - BAKER TOOLA-07
 - H-D equivalent 35316C
- Inner primary race service tool
 - BAKER TOOLB-56
 - H-D equivalent 34902B
- Pulley locking tool
 - BAKER TOOLC-56
 - H-D equivalent 46282
- Pulley nut socket
 - BAKER TOOLD-07
 - H-D equivalent 47910
- Countershaft bearing service tool
 - BAKER TOOLE-07
- Primary drive locking tool
 - H-D-48219 (Touring models)
 - H-D-47977 (Softail/Dyna)
- Primary fluid, 40 oz. (Touring models) or 46 oz. (Softail/Dyna)
 - BAKER recommends Spectro Heavy Duty Primary Chain Case Oil; R.HDPCO
- Transmission fluid, 24-28 oz.
 - BAKER recommends Spectro Heavy Duty Platinum 6 Speed Transmission Oil; BD-75140-32

HIGHLY RECOMMENDED ADDITIONAL PART

Baker Drivetrain highly recommends that the automatic chain tensioner be replaced with a Baker Attitude Adjuster (figure 1). Extensive testing and durability miles have proven that our Attitude Adjuster (P/N 177-67K) puts less shear stress load on the motor sprocket shaft and the transmission mainshaft, thereby extending the life of the drivetrain components.



NOTE: DOES NOT FIT 2018-LATER SOFTAILS WITH MID CONTROLS

FIGURE 1 | BAKER ATTITUDE ADJUSTER

WHAT'S INCLUDED IN MY KIT?



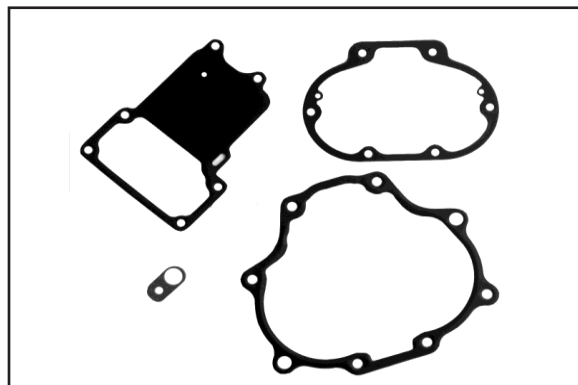
GrudgeBox gearset w/ shift system
5/16"-18 SHCS, stainless, 73497
Washers, stainless, 6100



Shifter pawl, GB6-555A
Shifter pawl washer, 6497HW
Shifter pawl retaining ring, 68010
Shifter pawl seal, 37101-84B



Mainshaft bearing, 8967A
Countershaft bearing, 8963
Main drive gear seal, 12074-67
85mm beveled internal retaining ring, VHO-334STPA



Bearing door gasket, 35654-67
Top cover gasket, 34917-06-F (shown)
25700453 (M8)
Side cover gasket, 36805-06-F
Speed sensor spacer, 132-56R



Inner primary bearing, P205PP-H
Inner primary bearing seal, 25X52X07ADL



Side cover emblem, EMBLEM-GB

BEARING DOOR EXPLODED VIEW

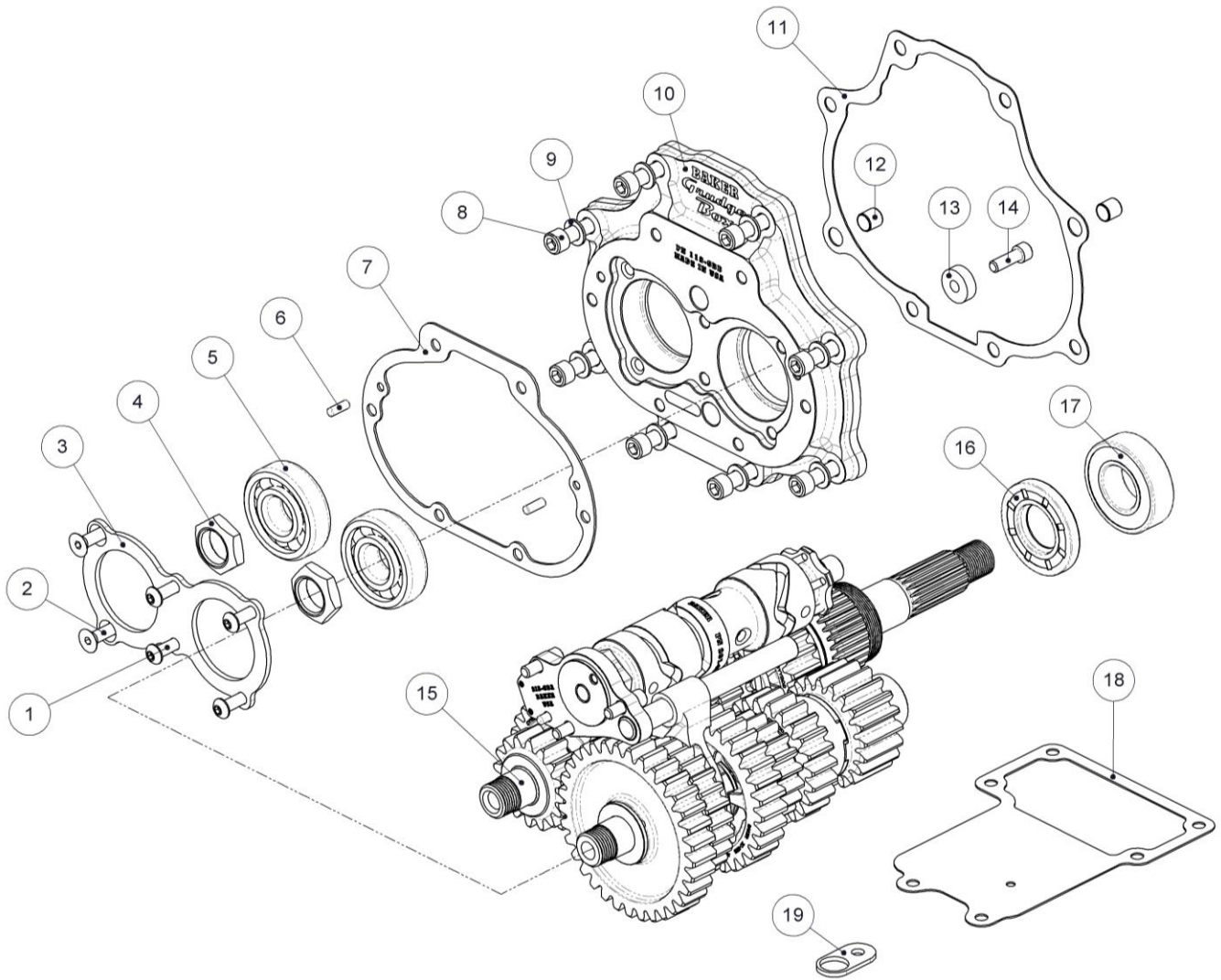


FIGURE 2 | EXPLODED VIEW, BEARING DOOR

BEARING DOOR PARTS LIST

ITEM	P/N	QTY	DESCRIPTION
1	24050	4	Button head cap screw, 1/4"-20 x .625"
2	25C62KFC	2	Flat head cap screw, 1/4"-20 x .625"
3	481C-6	1	Retainer plate, door bearings
4	7340BD	2	Nut, 1-1/8" socket, mainshaft & countershaft
5	6304	2	Bearing, radial ball, 52mm
6	26735	2	Dowel, 3/16" x .500"
7	36805-06F	1	Gasket, side cover
8	73497	8	Socket head cap screw, stainless, 5/16"-18 x 1.500"
9	6100	8	Washer, stainless, .341" x .560" x .058"
10	GB6-11802	1	Bearing door, GrudgeBox, polished
	GB6-118022	1	Bearing door, GrudgeBox, CVO charcoal w/ highlight
	GB6-11803	1	Bearing door, GrudgeBox, wrinkle black w/ highlight
11	35654-67	1	Gasket, bearing door
12	16583-67	2	Hollow dowel, 10mm x .375"
13	F1409	1	Magnet, .265" x .750" x .250"
14	25C75KCS	1	Socket head cap screw, 1/4"-20 x .750"
15	N/A	1	GrudgeBox gearset w/ shift system
16	25X52X07ADL	1	Seal, inner primary, 25 x 52 x 7mm
17	P205PP-H	1	Bearing, inner primary, 25 x 52 x 15mm
18	34917-06F	1	Gasket, top cover, 2006/07 – Later
	25700453	1	Gasket, top cover, 2017/18 – Later M8
19	132-56R	1	Spacer, speed sensor, .100"
**	22S-S08	1	Zero-Leak Gold plug w/ O-ring, 3/4"-16
	Not pictured		Supplied in M8 Softail kits to replace dipstick

GEARSET EXPLODED VIEW

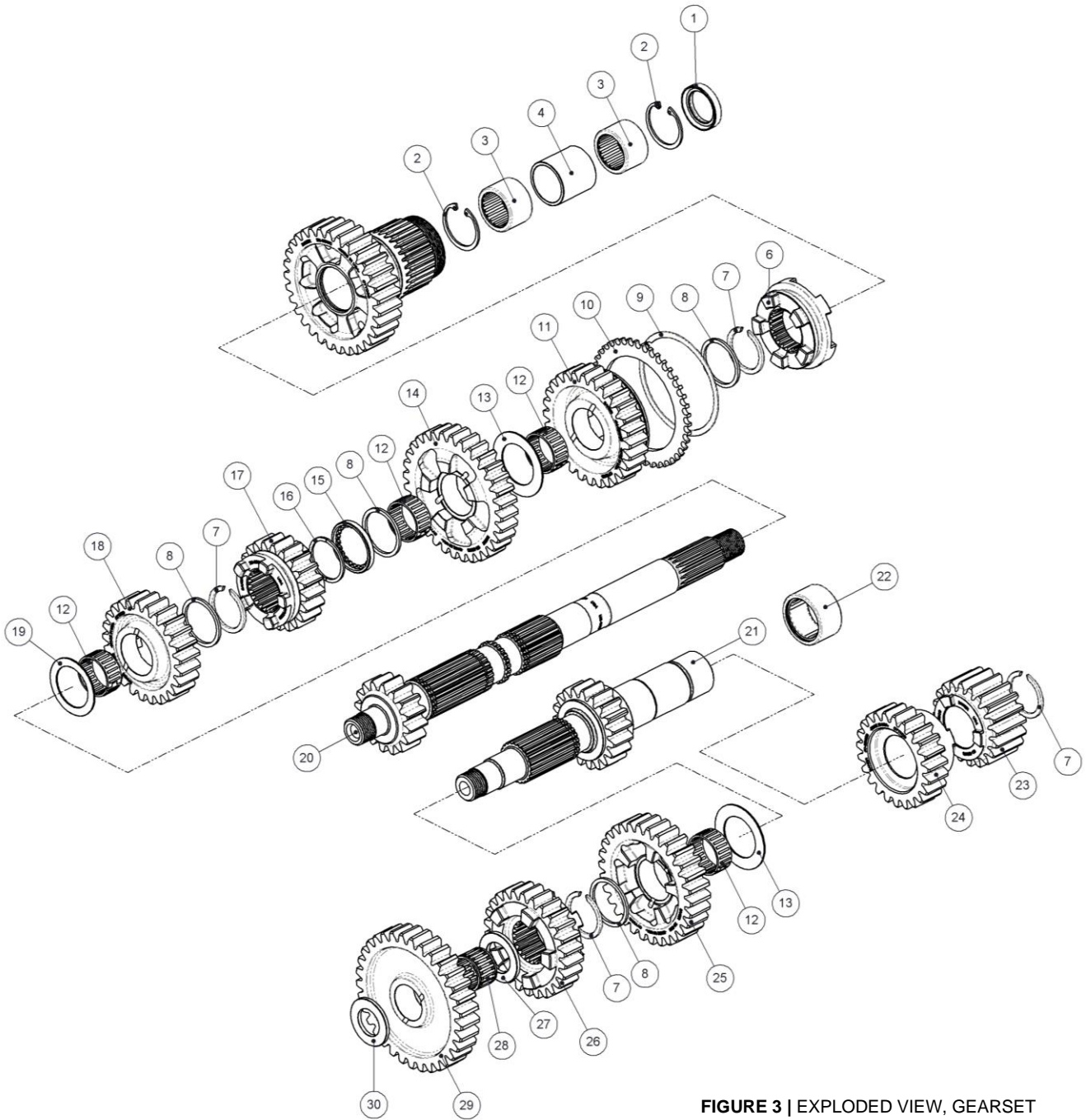


FIGURE 3 | EXPLODED VIEW, GEARSET

GEARSET PARTS LIST

ITEM	P/N	QTY	DESCRIPTION
1	12035B	1	Seal, main drive gear, 25 x 32 x 6mm
2	125RRBI	2	Retaining ring, internal, 1.250"
3	HK2520	2	Bearing, drawn cup needle, 25 x 32 x 20mm
4	11599-90	1	Spacer, main drive gear, 1.060" x 1.250" x 1.225"
5	GB6-5M	1	5 th gear, mainshaft, 29T, spur
6	GB6-DC45	1	Dog clutch, 4 th -5 th gear, GrudgeBox, all
7	11067	5	Retaining ring, external, eaton style, 30mm
8	6003B	4	Thrust washer, 1.185" x 1.380" x .071"
9	VS-275	1	Retaining ring, external, 2.750"
10	BD-7242	1	Reluctor ring, 42T
11	GB6-4M	1	4 th gear, mainshaft, 26T, spur
12	8876A	4	Bearing, split cage needle, 26 x 30 x 13mm
13	AS3047	2	Thrust washer, 1.185" x 1.843" x .039"
14	GB6-6M	1	6 th gear, mainshaft, 30T, spur
15	BD-11081	1	Thrust washer, splined, 1.185" x 1.430" x .125"
16	11082	2	Segment ring, 1.102" x 1.280" x .056"
17	GB6-2M	1	2 nd gear, mainshaft, 18T, spur
18	GB6-3M	1	3 rd gear, mainshaft, 23T, spur
19	BD-3042	1	Thrust washer, 1.185" x 1.645" x .039"
20	GB6-MS	1	Mainshaft & 1st gear, 15T, spur
21	GB6-CS	1	Countershaft & 6 th gear, 18T, spur
22	8963	1	Bearing, drawn cup needle, 30 x 37 x 21mm
23	GB6-5C	1	5 th gear, countershaft, 19T, spur
24	GB6-4C	1	4 th gear, countershaft, 21T, spur
25	GB6-2C	1	2 nd gear, countershaft, 26T, spur
26	GB6-3C	1	3 rd gear, countershaft, 24T, spur
27	TWD1423	1	Thrust washer, .883" x 1.420" x .125"
28	K22X26X17	1	Bearing, caged needle, 22 x 26 x 17mm
29	GB6-1C	1	1 st gear, countershaft, 31T, spur
30	BD-2035	1	Thrust washer, .791" x 1.361" x .107"

TAPERED BEARING EXPLODED VIEW AND PARTS LIST

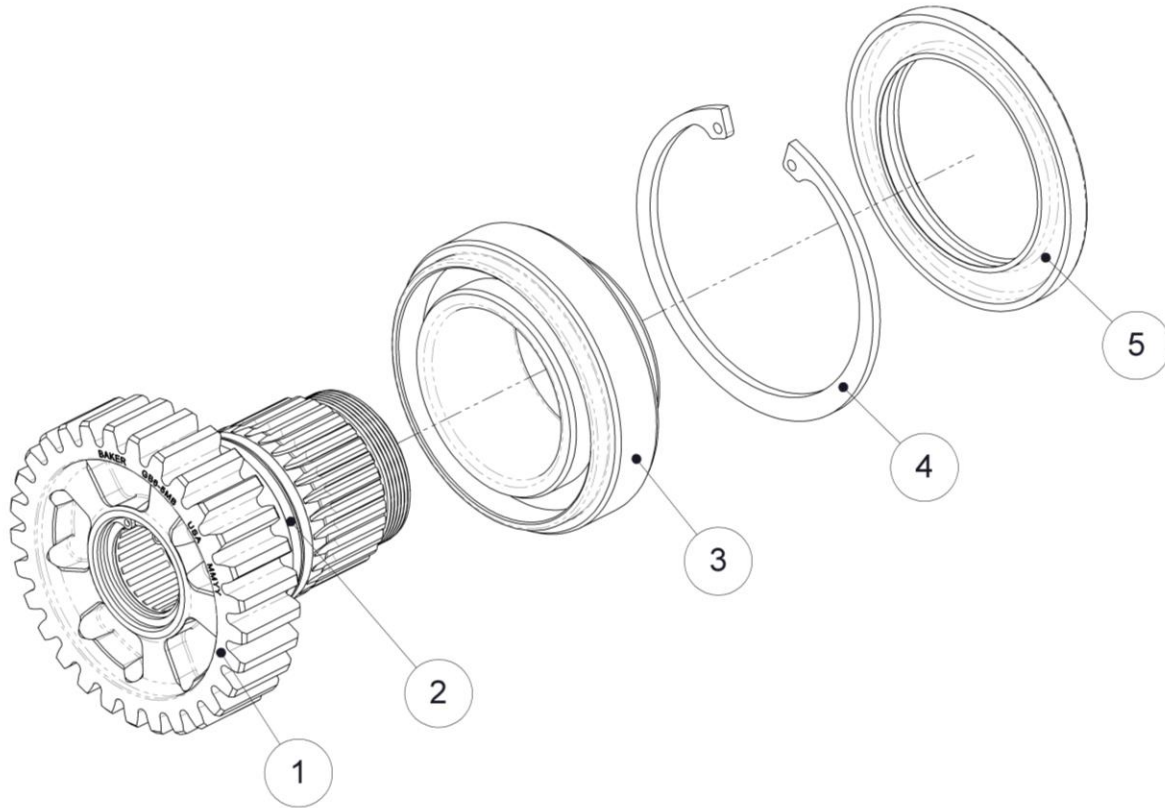


FIGURE 4 | EXPLODED VIEW, MAIN DRIVE GEAR AND BEARING

ITEM	P/N	QTY	DESCRIPTION
1	GB6-5M	1	5 th gear, mainshaft, 29T, spur
2	OR568133	1	O-ring, Buna #133 (pre-installed on GB6-5M)
3	8967A	1	Bearing, main drive gear, 50 x 85 mm
4	VHO-334STPA	1	Retaining ring, beveled internal, 85mm
5	12074-67	1	Seal, main drive gear, 2.380" x 3.375" x .285"

SHIFT SYSTEM EXPLODED VIEW AND PARTS LIST

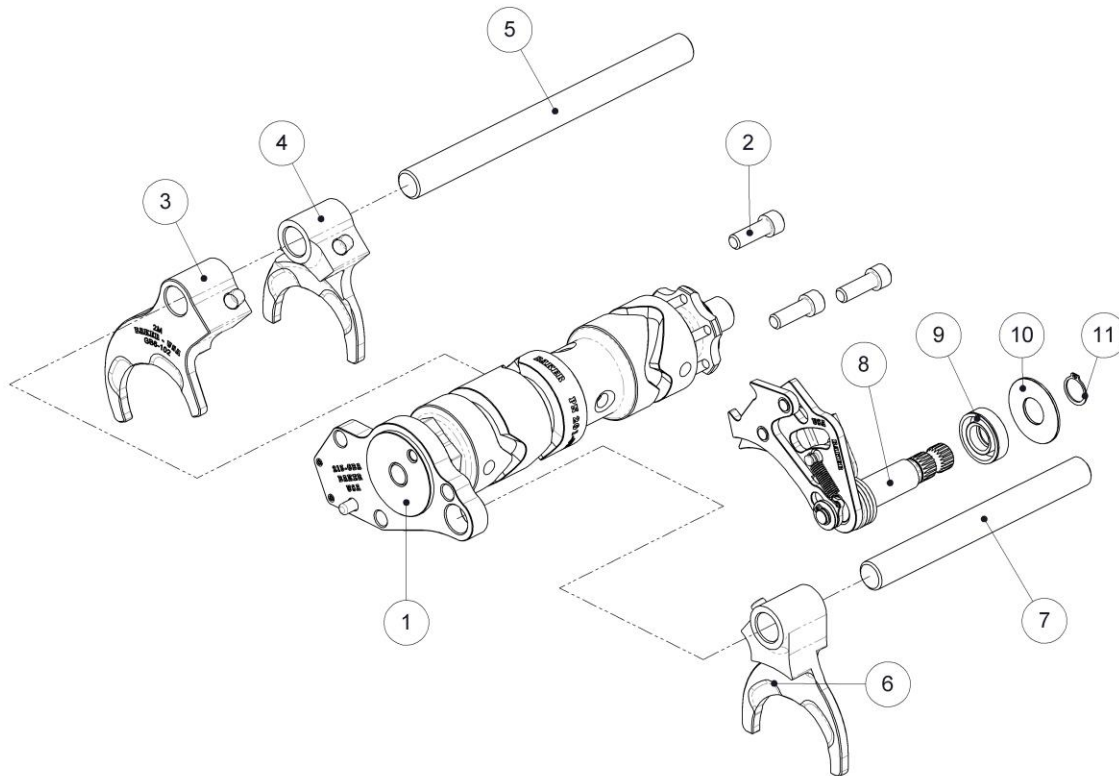


FIGURE 5 | EXPLODED VIEW, SHIFT SYSTEM

ITEM	P/N	QTY	DESCRIPTION
1	200-GB-A	1	Shift system, standard pattern
	200-GBN1-A	1	Shift system, N1 pattern
	200-GBN1RK-A	1	Shift system, reverse N1 pattern w/ kill
	200-GB17-A	1	Shift system, standard pattern, M8 models
	200-GB17N1-A	1	Shift system, N1 pattern. M8 models
	200-GB17N1RK-A	1	Shift system, reverse N1 pattern w/ kill, M8 models
2	23205	3	Socket head cap screw, 1/4"-20 x .750"
3	GB6-102	1	Shift fork, 2 nd gear, mainshaft
4	GB6-101	1	Shift fork, 4-5 dog clutch, mainshaft
5	35224-GB	1	Fork rod, mainshaft, 6.285"
6	GB6-103	1	Shift fork, 3 rd Gear, countershaft
7	35222-67	1	Fork rod, countershaft, 4.825"
8	GB6-555A	1	Shifter pawl
9	37101-84B	1	Seal, shifter pawl, .500" x .750" x .170"
10	6497HW	1	Washer, .459" x 1.125" x .045"
11	68010	1	Snap ring, external, .4375

GRUDGEBOX TRANSMISSION KIT

BEFORE YOU BEGIN

The transmission is a component in the powertrain of your motorcycle. As such, its function is highly dependent on other components in the powertrain to perform as designed. If the clutch, clutch actuator, primary, or shift linkage is worn, tired, or compromised in any way, the transmission will not perform as designed. The process of installing the GrudgeBox is the perfect time to assess and freshen up these components to ensure the transmission gives you years of trouble-free service.

TORQUE SPECIFICATIONS

THREAD	APPLICATION	TORQUE VALUE	THREADLOCKER
1/4"-20	Side cover, top cover, derby cover, outer primary, VSS, pulley locking plate	132 – 156 in-lb	Blue recommended
5/16"-18	Bearing door, inner primary	22 – 25 ft-lb	Blue recommended
5/16"-24	Shift arm pinch bolt	18 – 22 ft-lb	Blue recommended
9/16"-12	Comp sprocket bolt	See Factory Service Manual	Red required
3/4"-18	Clutch nut	70 – 80 ft-lb	Red required
1-3/4"-20	Pulley/sprocket nut	100 ft-lb, loosen 1 full turn, then 35 ft-lb + 35° – 40°	Red required
9/16"-18	Neutral switch	120 – 180 in-lb	None
3/4"-16	Transmission dipstick	25 – 75 in-lb	None
1/2"-20	Transmission drain plug	14 – 21 ft-lb	None
1/2"-20	Primary drain plug	14 – 21 ft-lb	None

STOCK COMPONENT REMOVAL

Refer to your Factory Service Manual for detailed instructions on how to remove your stock gearset, main drive gear, bearings, shifter pawl, and speed sensor from the transmission case. Softails, Dynas, and Touring models are all different configurations and require different methods to accomplish the removal. Ensure that you have the correct Factory Service Manual for your year and model of motorcycle.



THE USED COUNTERSHAFT CUP BEARING MUST BE REMOVED FROM THE TRANSMISSION CASE AT THIS TIME. USE BAKER TOOLE-07 OR EQUIVALENT.

A REPLACEMENT IS PROVIDED IN YOUR KIT, BUT IT WILL BE INSTALLED AFTER THE MAIN DRIVE GEAR BEARING.

BERT TIPS:

Remove the dipstick prior to removing the gearset from the transmission case. Failure to do so will result in a broken dipstick and a trip to the nearest H-D dealer.

Apply heat to the comp sprocket bolt head prior to removal. Failure to do so could result in mangled sprocket shaft threads and halt the installation of your GrudgeBox.

BEFORE INSTALLING YOUR GRUDGEBOX

TRANSMISSION CASE CLEARANCE

Check for adequate shifter pawl spring clearance by installing the shifter pawl into the transmission case. Do not install the retaining ring (P/N 68010, page 10) at this time.

1. Push the shifter pawl toward the left side of the bike with your thumb and hold the washer (P/N 6497HW, page 10) firmly against the left side of the case.
2. If the retaining ring groove is completely visible as shown in figure 6, no modification is required and the retaining ring may be installed.
3. If the entire retaining ring groove is NOT visible, the interior wall of the transmission case adjacent to the shifter pawl spring must be relieved. Figure 7 shows the spring contacting the case wall in the "corner" where the horizontal parting line converges with a vertical transition wall. With a Dremel or rotary file, relieve the corner to allow proper operational clearance for the shifter pawl spring. Make many light clearance reliefs and check your work by frequently installing the shifter pawl and washer to check retaining ring groove visibility as described in steps 1 and 2.
4. When the retaining ring groove is fully visible, there should be a .020" - .040" air gap between the spring and the case wall. Do a final check by rotating the shifter pawl to simulate upshift and downshift movements, ensuring that the air gap remains throughout the entire range of motion.

You may also need to add clearance for the 2C gear as shown in figure 8. This is most common with M8 FX models, but other models may be affected as well.

1. Use a Dremel or rotary file to relieve the area of the case that is circled in figure 8.
2. Make many light clearance reliefs and check your work frequently.
3. Once proper clearance has been made, the 2C gear will be able to spin freely without contacting the transmission case wall.

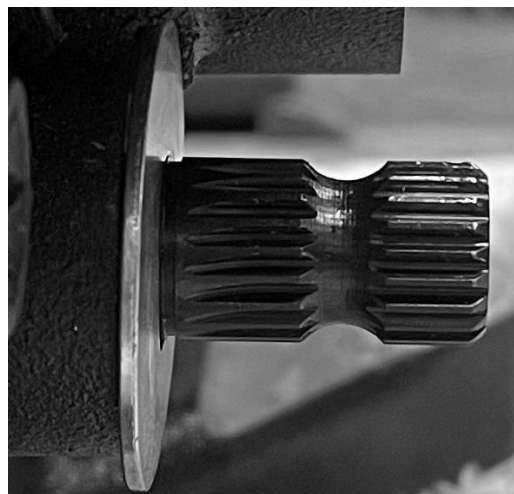


FIGURE 6 | SHIFTER PAWL FULLY INSTALLED IN TRANSMISSION CASE; ENTIRE RETAINING RING GROOVE SHOULD BE VISIBLE

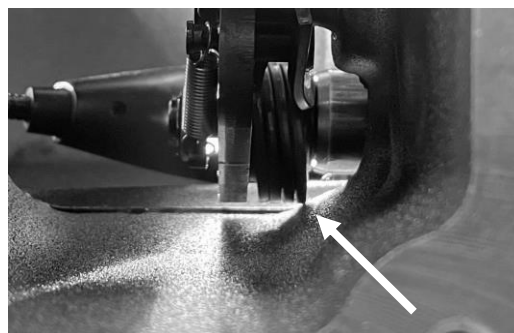


FIGURE 7 | POTENTIAL SHIFTER PAWL INTERFERENCE WITH CASE

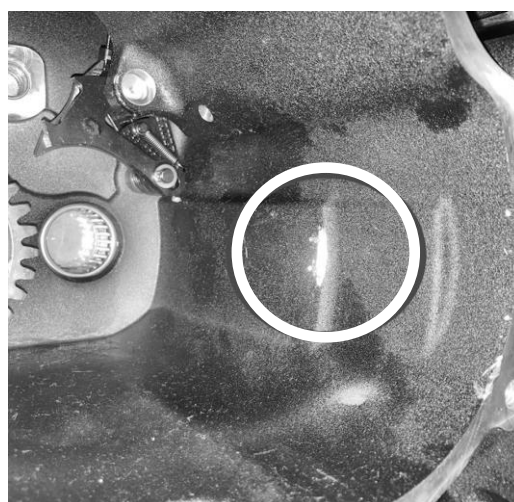


FIGURE 8 | TRANSMISSION CASE CLEARANCE FOR 2C GEAR

BEFORE INSTALLING YOUR GRUDGEBOX

TRANSMISSION CASE PREPARATION

Surgically clean the left side of the transmission case in preparation for installing the new GrudgeBox main drive gear and gearset. This surgical cleansing includes the main drive gear and countershaft bearing boss areas, the three inner primary mount bosses, and the shifter pawl boss. See figure 9.

The bearing boss areas must be clean to ensure that no dirt or debris scores the bearing bores during the removal of old bearings and installation of new ones. The three inner primary mount bosses need to be clean so that the tool plate registers flat on the left side transmission case.



FIGURE 9 | SURGICALLY CLEAN THE LEFT SIDE OF THE TRANSMISSION CASE IN THE AREAS INDICATED ABOVE

CAUTIONARY NOTE

There are special tools available from other manufacturers that remove and install the countershaft cup bearing, but they all have one fundamental error – they push on the inside of the cup (from right to left in the motorcycle) for removal and installation. **THIS IS WRONG!** Cup bearings require that the installation force be applied to the outside of the cup (from left to right). BAKER TOOLE-07 (sold separately) applies removal and installation forces in the proper direction.

INSTALLING M/S AND C/S BEARINGS INTO THE CASE

MAIN DRIVE GEAR BEARING INSTALLATION

1. The GrudgeBox uses the same 8967A bearing that is used in a stock transmission and it is installed into the case in the exact same manner.
2. Before installing the 8967A bearing into the case, wipe out the main drive gear bearing bore with a clean rag. Apply a thin coating of oil to both the bearing bore and the outer diameter of the 8967A bearing.
3. Use BAKER TOOLA-07 or H-D equivalent 35316C to draw the bearing into the case. The TOOLA-07 setup is shown in figure 10. See the appropriate tool instructions or your Factory Service Manual for details.
4. With the bearing firmly seated against the landing at the bottom of the main drive gear bearing bore, install the P/N VHO-334STPA retaining ring with the beveled side facing out, as shown in figure 11.



FIGURE 10 | TOOL SETUP FOR INSTALLING THE MAIN DRIVE GEAR BEARING

COUNTERSHAFT BEARING INSTALLATION

1. It is important to install a fresh countershaft bearing when installing your GrudgeBox. A new 8963 countershaft bearing has been provided in your kit.
2. Use a countershaft bearing tool (BAKER TOOLE-07 or equivalent) to press the old bearing out of the transmission case.
3. Wipe out the countershaft bearing bore with a clean rag. Apply a thin coating of oil to both the bearing bore and the outer diameter of the 8963 countershaft bearing.
4. Use the same tool to press the new 8963 bearing into the case. You want to press on the outside of the 'cup' to avoid damaging the bearing during installation. See the appropriate tool instructions and your Factory Service Manual for details.

BEVEL ON RETAINING RING
MUST FACE OUTWARD

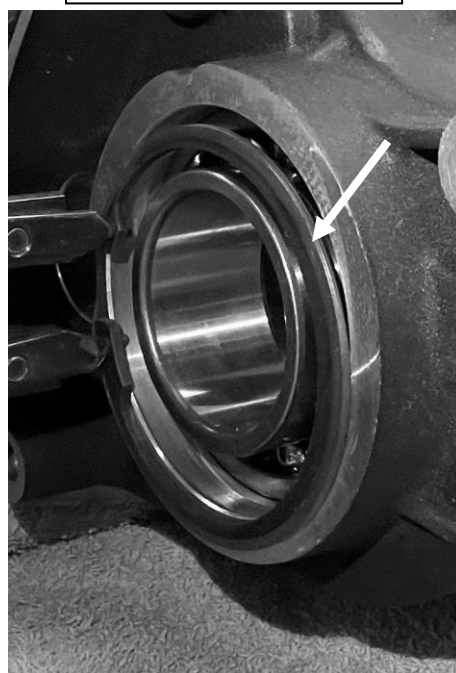


FIGURE 11 | INSTALLING THE BEVELED RETAINING RING WITH BEVEL FACING OUTWARD

INSTALLING THE MAIN DRIVE GEAR

MAIN DRIVE GEAR INSTALLATION

1. Installing the GrudgeBox main drive gear uses the same process as the stock transmission.
2. Before installing the main drive gear, apply a light coating of oil to the o-ring on the main drive gear and the 8976A bearing bore.
3. Use BAKER TOOLA-07 or H-D equivalent 35316C to draw the main drive gear into the bearing. The TOOLA-07 setup is shown in figure 12. See the appropriate tool instructions or your Factory Service Manual for details.
4. With the main drive gear installed, install the 12074-67 seal flush with the transmission case as shown in figure 13.



FIGURE 12 | TOOL SETUP FOR INSTALLING THE MAIN DRIVE GEAR



FIGURE 13 | MAIN DRIVE GEAR SEAL INSTALLED FLUSH WITH CASE

INSTALLING THE GEARSET

SHIFTER PAWL INSTALLATION

1. If you removed the stock centering pin to clean the case, reinstall it with red threadlocker. Install the GrudgeBox shifter pawl along with the new seal, washer, and 7/16" retaining ring.

HIGH TORQUE BEARING INSTALLATION

2. Your GrudgeBox builder's kit includes a high torque inner primary bearing to replace the stock H-D inner primary bearing and race. Install the high torque bearing and seal into the inner primary. DO NOT install the bearing race from the stock transmission onto the GrudgeBox mainshaft.

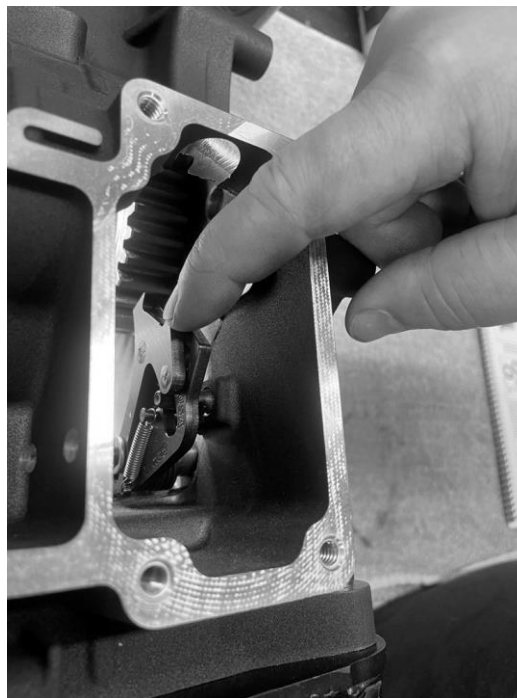


FIGURE 14 | PUSH DOWN ON THE ACTIVE PLATE OF THE SHIFTER PAWL WHEN INSTALLING THE GEARSET INTO THE CASE

GEARSET INSTALLATION

3. The time has come to stuff the gearset (figure 15) into the transmission case. Before that is done, take time to ensure no debris or tarantulas have found their way into the case. Check that the two bearing door dowels came out of the case with old bearing door. Locate the new bearing door gasket onto the dowels of the GrudgeBox bearing door.

Generously apply transmission lube to the last 6" of the mainshaft, end of the countershaft, mainshaft bearing, countershaft bearing, and the bearings/seal inside the main drive gear. Do not remove the black rubber cap from the end of the mainshaft. Its function is to protect the seal in the main drive gear as the gearset is installed.



FIGURE 15 | GRUDGEBOX GEARSET READY FOR INSTALLATION INTO THE CASE

INSTALLING THE GEARSET

- Carefully install the gearset into the transmission case. It is helpful to have a second set of hands on the left side of the motorcycle to grab onto the mainshaft as it passes through the main drive gear. The person on the left side can help the process along by gently rotating the main drive gear back and forth; this helps the 5th gear on the countershaft find home with the main drive gear.

Press down on the active plate of the shifter pawl (see figure 14) as you finish easing the gearset into the transmission case. This allows the end of the shift drum to slide past the active plate.

It is rare, but sometimes the fork rods need to be jostled to find home on the left side of the transmission case. Once all of these obstacles are cleared there should no longer be a gap between the bearing door and transmission case.

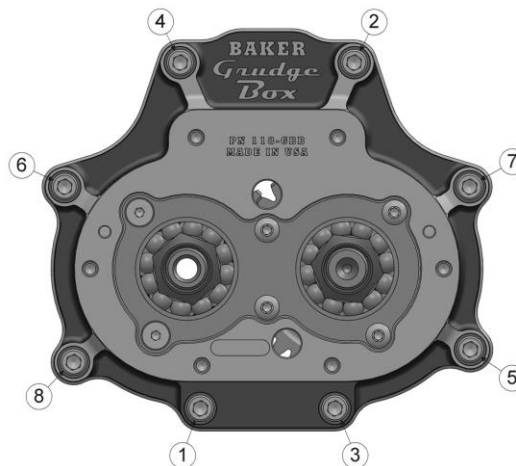


FIGURE 16 | TORQUE SEQUENCE FOR GRUDGEBOX BEARING DOOR BOLTS

- Install the eight stainless steel cap screws and washers (rounded side down) onto the bearing door using blue threadlocker. Be sure to replace the exhaust bracket beneath the bottom inner bolts. Torque to 22 – 25 ft-lb using the torque sequence in figure 16. You may remove the black rubber cap from the mainshaft at this time.
- Locate the speed sensor that was removed from the transmission case during stock component removal. Remove the O-ring from the speed sensor, install the provided spacer (132-56R), and re-install the O-ring. The speed sensor with spacer can now be placed back into the transmission case. Torque the bolt to 125 – 135 in-lb with blue threadlocker.
- With the new side cover gasket in place, re-install the side cover and torque the bolts to 125 – 135 in-lb with blue threadlocker. Go to the other side of the motorcycle and re-install the drive pulley or sprocket onto the main drive gear. Use BAKER TOOLD-07 or H-D equivalent to torque the pulley / sprocket nut to 35 ft-lb + 35° – 45° with red threadlocker. Refer to your Factory Service Manual for details.

TRANSMISSION FLUID

- Re-install the transmission drain plug and torque it to 14 – 21 ft-lb. Re-install the transmission dipstick* and torque it to 25 – 75 in-lb.

***Note:** The stock transmission dipstick on Milwaukee Eight Softail models interferes with the GrudgeBox and must be replaced with the included 22S-S08 Zero-Leak Gold plug.
- Put 24-28 oz. transmission fluid (75-85W140 synthetic gear oil) into the transmission by pouring it through the top cover cavity onto the main drive gear and shifter pawl. Make sure to coat as much of the gearset components as possible with the fluid.

FINISH LINE

FINAL STEPS

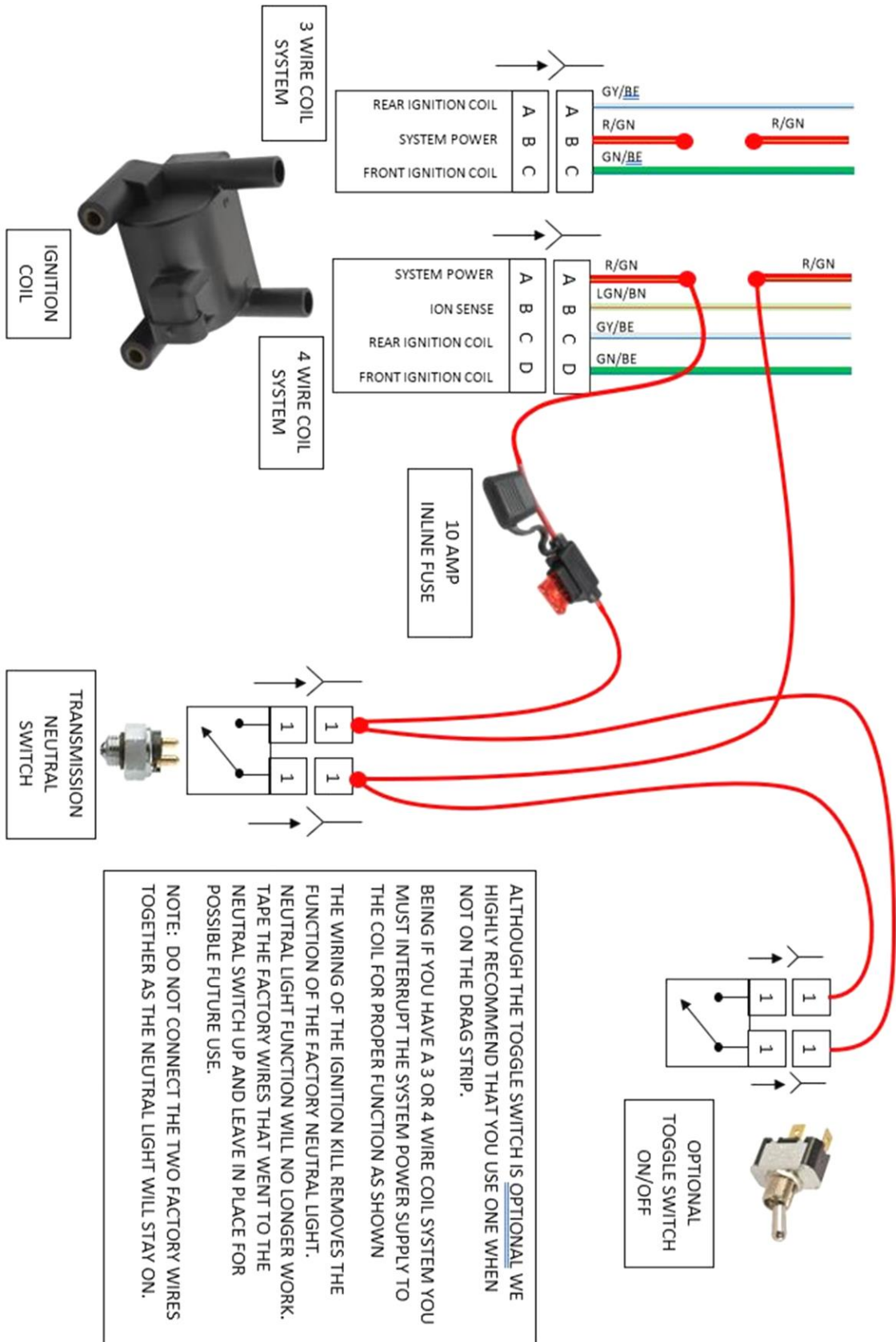
1. Re-install the top cover with the new gasket provided. Button up the primary, exhaust, shift linkage, and floorboards/footpegs per your Factory Service Manual. Make sure to re-install the primary drain plug and fill the primary with fluid.
2. You have successfully completed the installation of your new transmission. Be observant of basic transmission function and overall vehicle operation during the first 20 miles. Check for leaks after your first ride. Provided there are no issues, ride on and enjoy your new BAKER GrudgeBox.



SPEEDOMETER, GEAR INDICATOR, & CRUISE CONTROL

The GrudgeBox has different gear ratios than the stock transmission (except GrudgeBox 5th gear is the same as stock 6th gear, 1:1). This changes the input to the ECM. The 42-tooth reluctor ring in the GrudgeBox compensates to correct the speedometer within ± 2 mph with no re-flash to the ECM. However, the gear indicator and cruise control may only operate in 5th gear. To correct the gear indicator in all gears and enable cruise control in 3rd, 4th, and 6th, an ECM re-flash is required.

WIRING DIAGRAM FOR IGNITION KILL SHIFT DRUMS



NOTES

TRANSMISSION OIL CHANGE LOG

DATE	ODOMETER	OIL USED	SERVICED BY
	500		
	2,500		
	7,500		
	12,500		
	17,500		
	22,500		
	27,500		
	32,500		
	37,500		
	42,500		
	47,500		
	52,500		
	57,500		
	62,500		
	67,500		
	72,500		
	77,500		
	82,500		
	87,500		
	92,500		

GENERAL MAINTENANCE LOG

DATE	ODOMETER	WORK PERFORMED	SERVICED BY

TERMS & CONDITIONS

LIMITED WARRANTY

NOTE: Warranty card must be returned within 45 days of purchase for your warranty to be valid.

BAKER™ transmission assemblies and transmission builder 's 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 occurs first. All other BAKER products are guaranteed to the original purchaser to be free of manufacturing defects in materials and workmanship for a period of 2 years from the date of purchase or up to 24,000 miles, whichever occurs first, except for the following; Warranty does not cover clutch plate wear, throw out bearing failures or mainshaft breakage due to improper clutch nut installation.

Electrical components carry a 30-day warranty; cosmetic finishes (chrome plating, hard anodizing, powder coating) are covered for 60 days. Certain promotional products may carry a shorter warranty as specified at the time of purchase. 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 a description of the problem. If it is deemed necessary for BAKER to make an evaluation to determine whether the transmission assembly or transmission kit or accessory 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 purchase invoice. If after evaluation by BAKER a defect in materials and/or workmanship is found, BAKER will, at their option, repair or replace the defective part of the assembly.**

RETURNS AND EXCHANGES

Any merchandise returned for any reason (exchange, credit or modification) must be accompanied by a Return Goods Authorization (RGA) number or it will be refused. **Call BAKER to obtain this number prior to returning goods for any reason. There is a 15% re-stocking fee for all returned items.**

BAKER is not liable for any shipping

ADDITIONAL WARRANTY PROVISIONS

NOTE: 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: BAKER OEM transmissions ; (these are subject to the OEM manufacturers warranty only), Improper installation , accident, modification (including but not limited to use of unauthorized parts, transmission oils or lubricants), 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, 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 accessories are designed exclusively for use in American V-Twin

motorcycles . BAKER shall have no warranty or liability obligation if BAKER parts are used in any other application .

If it is determined that a BAKER product has been disassembled during the warranty period for any reason, this limited warranty will no longer apply unless you were instructed to do so by a BAKER Drivetrain technician for diagnostic purposes.

High Torque Bearing Kit Addendum

High Torque Bearing Kit Seal

Installation

Please install the seal with the flat side facing the transmission (showing). If you have any further questions, please give us a call at 517-339-3835.

