PV13-118232

F6R TRANSMISSION KIT

MADE IN THE USA

F6R

FACTORY 6-SPEED REVERSE SYSTEM

BAKER DRIVETRAIN

Wielding American power to the pavement for all

F6R TRANSMISSION KIT

TABLE OF CONTENTS

ABOUT YOUR NEW F6R

INTRODUCTION

The F6R kit adds a reverse gear to any existing 2006-later factory big twin 6-speed transmission. This system is unlike any other on the market – it works using the stock shift lever. With a flip of the handlebar or dash-mounted safety toggle switch and a kick of the shift lever, you're in reverse. It's that simple. No reaching near hot pipes to put your bike in reverse by hand. With the BAKER reverse system you'll be able to safely shift from 1st to reverse and back with no risk of engaging both gears at once.

FITMENT

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

BREAK-IN

The F6R requires no break-in period. However, we do recommend that you take it easy for the first 20 miles to confirm that there are no issues related to the basic function of the transmission and reassembly of the motorcycle. You will notice that the transmission will shift smoother and operate quieter after about 2500 miles. Log your transmission oil changes at the recommended intervals on page 34. General maintenance can be logged on page 35.

FLUIDS

The F6R requires 28-32 oz. of transmission fluid. We recommend Spectro 6-Speed 75W140 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 34 and document your transmission service history. 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.

FEATURES AND EXHAUST NOTES

FEATURES

The F6R is the most innovative, well executed, and robust reverse transmission on the market. Significant features include:

1. **Reverse selection**. A handlebar or dash-mounted momentary switch energizes a safety lockout solenoid, allowing you to shift into reverse with your foot shift lever just like any other gear (R-1-N-2-3-4-5-6 shift pattern).
2. **Backup with ease.** Our reverse gear ratio was chosen to make it easy for you to maneuver your bike in reverse. The overall 4.98 gear ratio in reverse is essentially a creeper gear, which is almost 50% shorter than the stock 3.34 first gear.
3. **Precision ground gears.** All BAKER gears are hobbed and then heat treated, which hardens them to 58-62 Rockwell C. The final gear tooth form is then precision ground with diamond coated tooling. This extra step ensures quiet operation and allows for tighter control of gear backlash.
4. **Billet parts.** The bearing door and side covers are machined out of billet 6061-T6 aircraft grade aluminum. The shift drum is machined from 12L14 billet steel, then case hardened to 48-52 Rockwell C. Pre heat treated 4140 billet steel shift fork (28-32 Rockwell C) rides on a case hardened, ground finish fork rod.
5. **No modifications.** Adds a reverse gear to the stock Cruise Drive 6-speed Transmission. True ‘plug-n-play’ wiring harness, just need (key on) power and ground.

EXHAUST FITMENT NOTES

2007-08 Touring Models: Stock exhaust pipes, pipes that follow the path of the stock exhaust, and true duals where the rear pipe travels directly to the left side of the motorcycle over the top of the transmission require the use of the front facing solenoid (figure 1).

2-into-1 style pipes where the rear head pipe goes down the front of the stock transmission side cover require the use of the rear facing solenoid (figure 2).

2009-Later Touring Models: The stock 2-into-1, back into 2 design requires the use of the rear facing solenoid (figure 2).

See the images below for the different side covers with front and rear facing solenoid.

FIGURE 1 | FRONT FACING

FIGURE 2 | REAR FACING

Shown is a 2011 Electra Glide with new exhaust made by D&D (http://www.danddexhaust.com/) to specifically clear the Safety Solenoid. Visit the BAKER website for a current list of exhaust that are known to fit with the F6R installed.

WHAT DO I NEED?

REQUIRED PARTS, TOOLS, & REFERENCE MATERIALS

To install the F6R 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.)
- Healthy breaker bar, 1/2" drive
- Torque wrenches, 3/8” & 1/2” drive
- 1-3/16” socket, 6 pt | 1-1/16” socket, 6 pt | 1-3/8” socket, 6pt.
- Red and blue thread lock
- A new primary cover gasket
- Access to a 20-ton hydraulic press
- Anti-seize, silver
- Black zip ties
- Split bearing puller
  - BAKER PN 483-6T
- Inner primary race service tool
  - BAKER TOOLB-56
  - H-D equivalent 34902B
- Pulley locking tool
  - BAKER TOOLC-56
  - H-D equivalent 46282
- 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, 28-32 oz.
  - BAKER recommends Spectro Heavy Duty Platinum 6 Speed Transmission Oil; BD-75140-32

WARRANTY

This product includes a 5-year, 50,000-mile warranty. All steps in these instructions, including replacement of the countershaft bearing, must be completed for the warranty to remain valid.

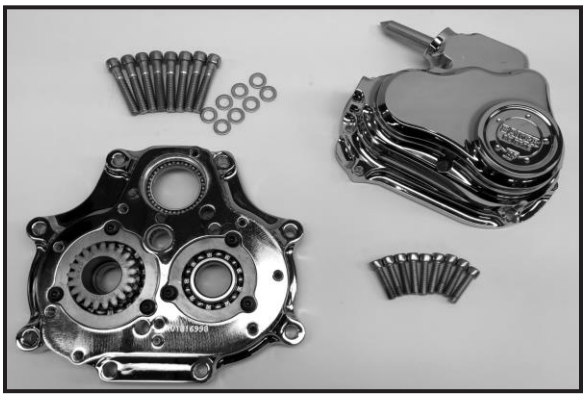
HIGHLY RECOMMENDED ADDITIONAL PART

BAKER Drivetrain highly recommends that the automatic chain tensioner be replaced with a BAKER Attitude Adjuster (figure 3). Extensive testing and durability miles have proven that our Attitude Adjuster (PN 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 3 | BAKER ATTITUDE ADJUSTER

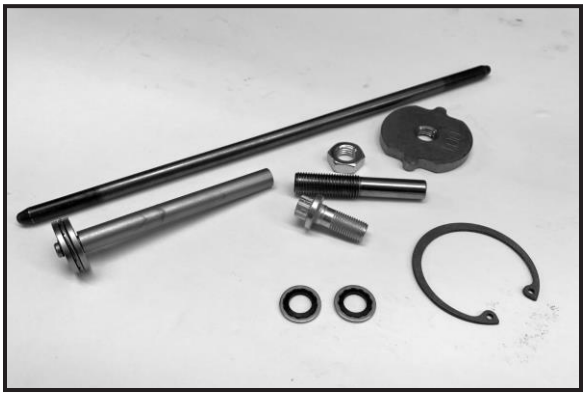
WHAT'S INCLUDED IN MY KIT?



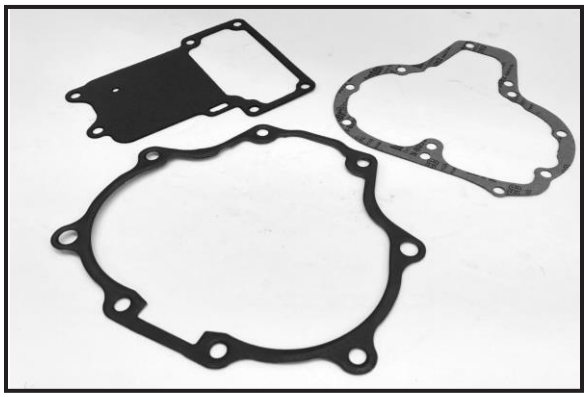
F6R Bearing Door Assembly
F6R Side Cover Assembly
5/16"-18 SHCS, Stainless Door Fasteners
5/16" Stainless Washers
1/4"-20 SHCS. Stainless Cover Fasteners

F6R Countershaft with Spacer & Retainer
Shift Drum with Drum Nut
Socket, Shift Drum
Mainshaft Retainer

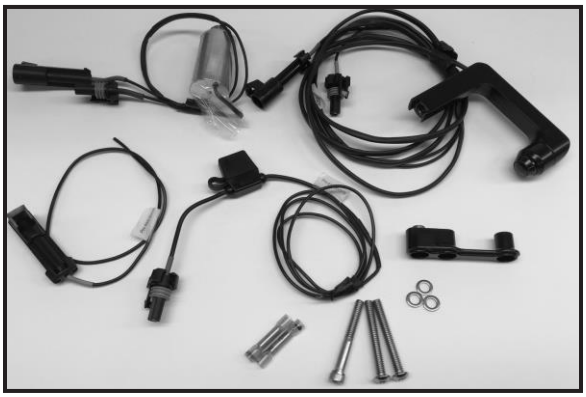
Reverse Shift Fork and Rod
Reverse Idler Gear with Thrust Washers
Solenoid Plunger Washer and Spring
Reverse Gear
Reverse Shift Dog with Nylock Nut



Center Release Rod – Pending Kit
Auxiliary Rod
Adjuster Plate, Screw, nut and retaining
Snap Ring – Pending Kit
Banjo Bolt with Seals



Bearing door gasket
Top cover gasket
Side cover gasket



F6R Switch Housing with Wiring Harness
F6R Reverse Lock Out Solenoid
12V Fuse Holder with 5AMP Fuse
Grounding Wire
Mounting Bolts with Washers
Blue Wiring Butt Connectors

BEARING DOOR INCLUDED PARTS

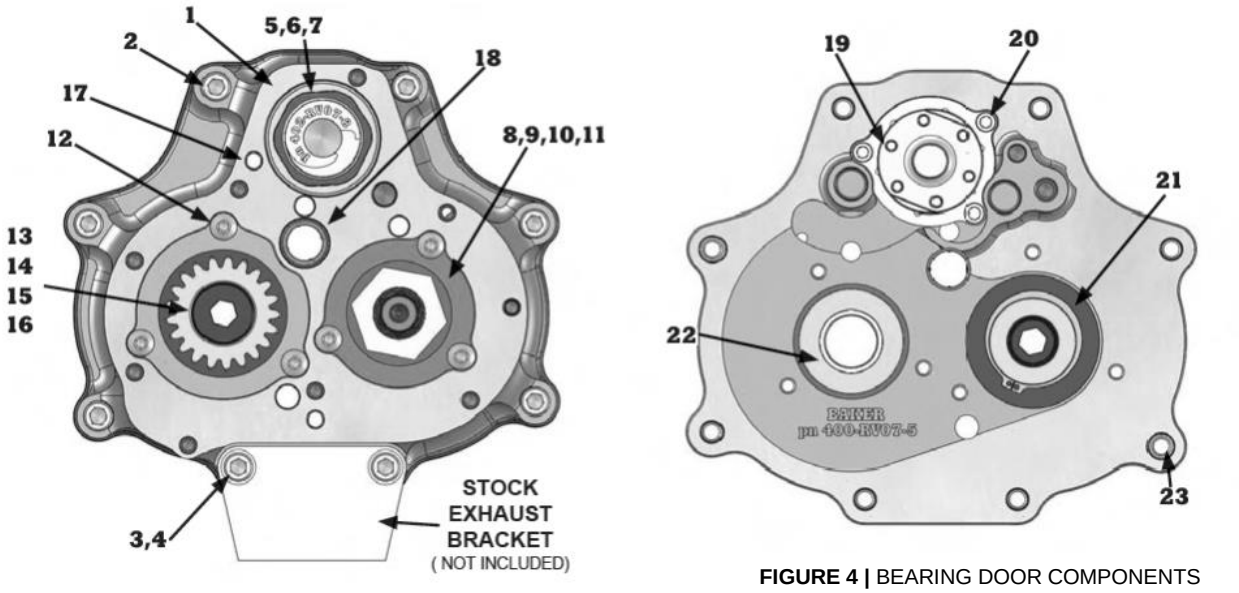


FIGURE 4 | BEARING DOOR COMPONENTS

ITEM	P/N	QTY	DESCRIPTION
1	400-RV07	1	Reverse Bearing Door
2	31C125KCSS/P	6	5/16-18 x 1-1/4” SHCS, SS, Polished
3	31C175KCSS/P	2	5/16-18 x 1-3/4” SHCS, SS, Polished
4	6100	2	5/16 AN Washer
5	402-RV07	1	Reverse Shift Drum
5	430-RV07	1	Reverse Shift Drum
5	436-RV17	1	Reverse Shift Drum
6	6807	1	Shift Drum Bearing
7	403-RV07	1	Shift Drum Nut
8	RV-7040	1	Reverse Countershaft
9	168-6N4	1	7/8-14 Thread, Countershaft Base Nut
10	6205	1	Countershaft Bearing
11	406-RV07	1	Retainer Plate, Countershaft
12	24050	6	1/4-20 x 5/8” BHCS, Black
13	RV-7050	1	Mainshaft Retainer Nut
14	RV-7000	1	Mainshaft Pinion Gear
15	6007	1	Mainshaft Bearing
16	407-RV07	1	Retainer Plate, Mainshaft
17	26749	2	1/4” x 1/2" Solid Dowel
18	HK1412	2	Split Idler Gear Bearing
19	408-RV07	1	Retainer Plate, Shift Drum
20	10C50KCS	3	10-24 x 1/2" SHCS, Black
21	137RRRE	1	Pinion Gear Snap Ring
22	LS2542	1	Countershaft Spacer (.984” x 1.654” x .118”)
23	16583-67	2	10mm Hollow Dowel

REVERSE GEAR COMPONENTS

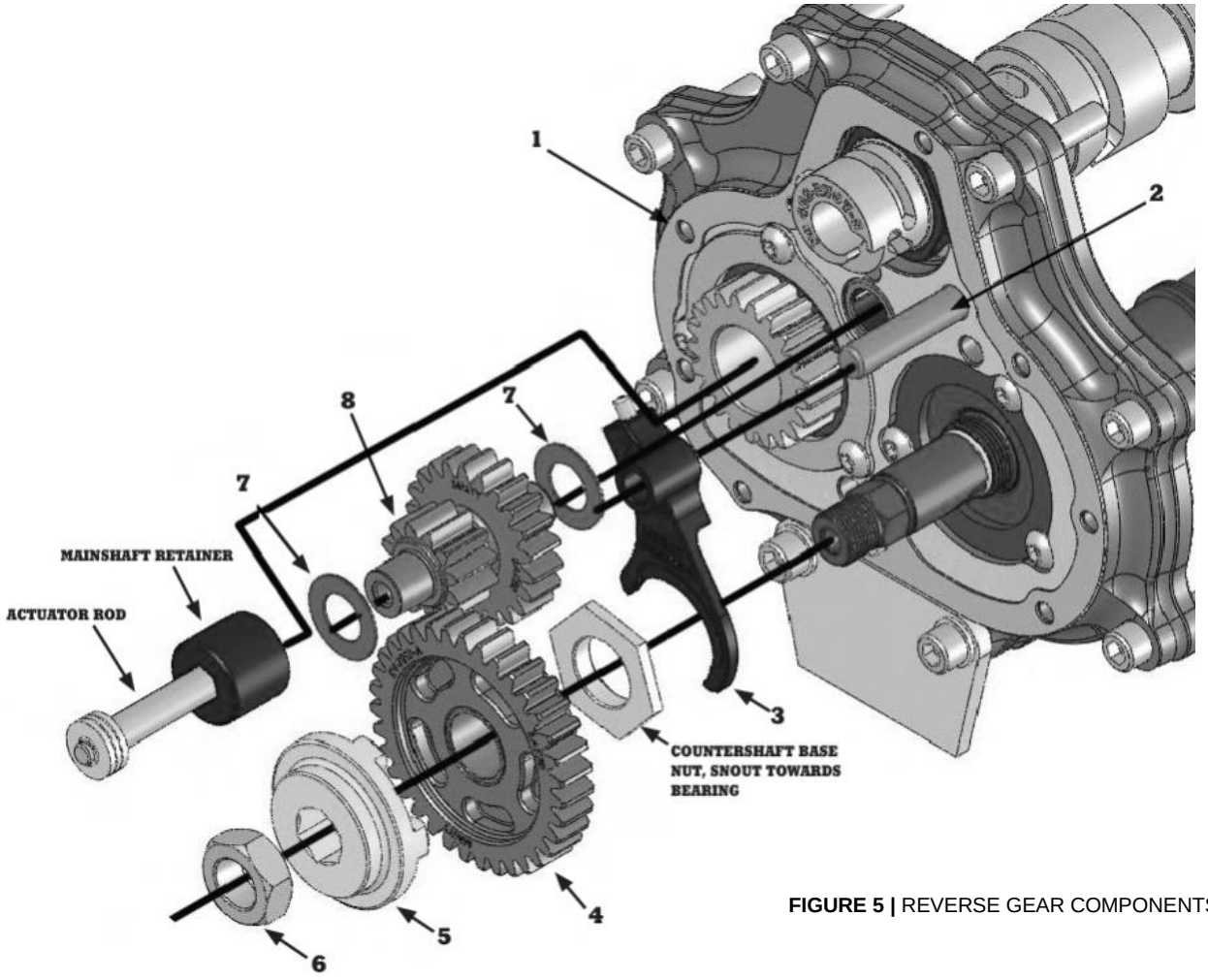


FIGURE 5 | REVERSE GEAR COMPONENTS

ITEM	P/N	QTY	DESCRIPTION
1	413-RV07	1	Reverse Side Cover Gasket
2	412-RV07	1	Reverse Fork Rod
3	404-RV07	1	Reverse Shift Fork
4	RV-7020	1	Reverse Slider Gear
5	RV-7030	1	Reverse Dog Clutch
6	62FNTE0Z	1	5/8-18 Nylock Jam Nut
7	TRA-916	2	Thrust Washer, Split Idler Gear
8	RV-7010	1	Split Idler Gear

FRONT FACING CABLE STYLE COVER COMPONENTS

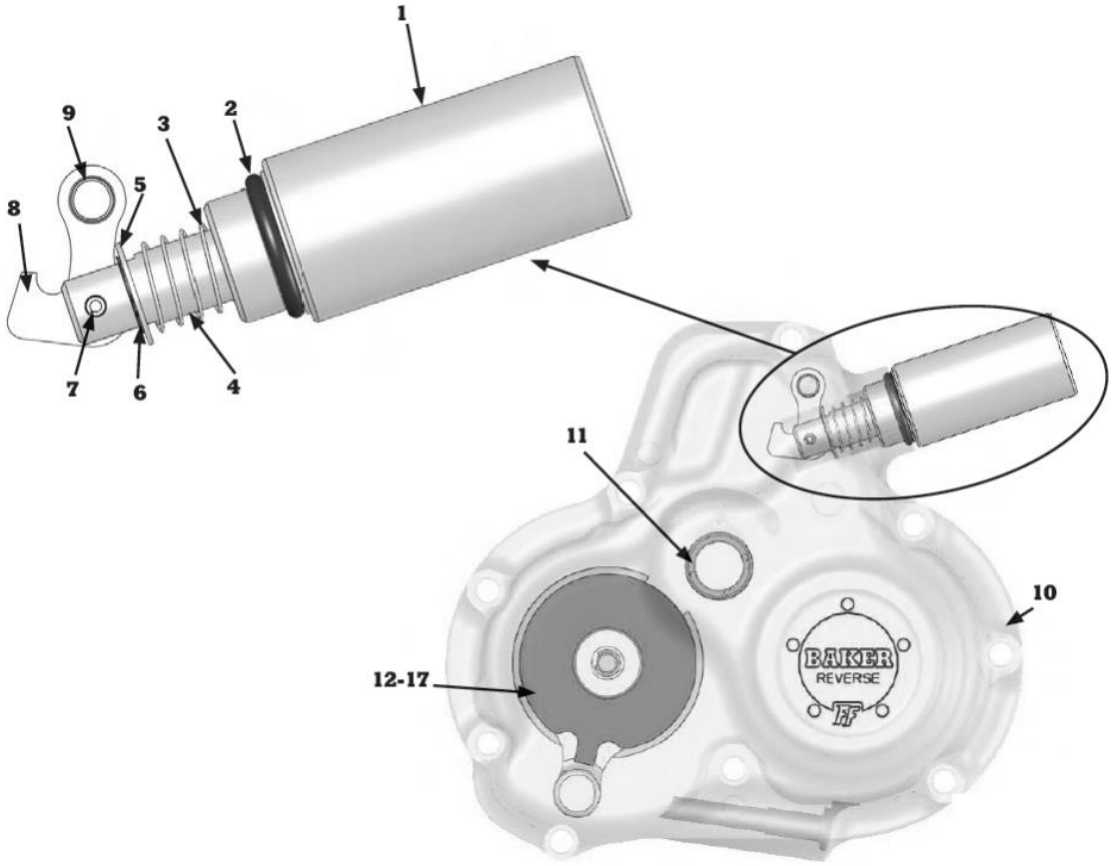


FIGURE 6 | FRONT FACING, CABLE COVER

ITEM	P/N	QTY	DESCRIPTION
1	420-RV07	1	Safety Lockout Solenoid Assembly
2	66827	1	Solenoid O-Ring (11/16” x 7/8” x 3/32”)
3	LP 026K 01 S316	1	Safety Return Spring, (3/4” Long)
4	182-1027-001	1	Solenoid Plunger
5	716NWSFS	1	Spring Seat Washer
6	91665A350	1	Spiral Snap Ring (7/16” Shaft)
7	12R50PRP0P	1	1/8 “x 1/2” Split Roll Pin
8	409-RV07	1	Reverse Safety Lever
9	25R100PDP	1	1/4” x 1” Pull Dowel
10	401-RV07	1	F6R Side Cover, Front Solenoid, Cable Style
11	HK1412	2	Split Idler Gear Bearing
12	37089-84	1	Clutch Rod Assy, Mech (2-5/8” Overall)
13	WT3196B	1	Outer Ball Ramp
14	987687	3	3/8” OD Ball Bearings
15	WT3096B	1	Inner Ball Ramp
16	3094-DSSC	1	Clutch Cable Ferrule
17	68067	1	Snap Ring, Ball & Ramp Retainer

REAR FACING CABLE STYLE COVER COMPONENTS

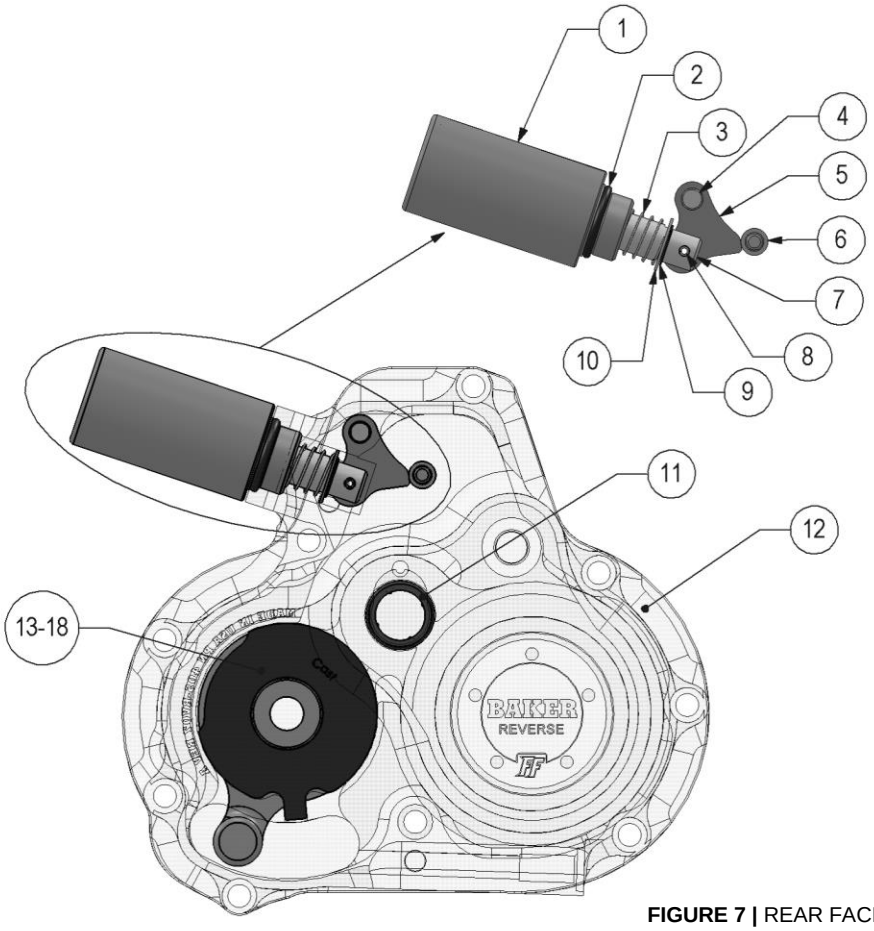


FIGURE 7 | REAR FACING, CABLE COVER

ITEM	P/N	QTY	DESCRIPTION
1	420-RV07	1	Safety Lockout Solenoid Assembly
2	66827	1	Solenoid O-Ring (11/16” x 7/8” x 3/32”)
3	LP 026K 01 S316	1	Safety Return Spring, (3/4” Long)
4	25R100PDP	1	1/4" x 1” Pull Dowel
5	409-RV07A	1	Reverse Safety Lever, Flat Style
6	10C37KCS	1	10-24 x .3/8”, SHCS, Safety Lever Dead-stop
7	182-1027-001	1	Solenoid Plunger
8	12R50PRP0P	1	1/8” x 1/2" Split Roll Pin
9	91665A350	1	Spiral Snap Ring (7/16” Shaft)
10	716NWSFS	1	Spring Seat Washer
11	HK1412	2	Split Idler Gear Bearing
12	405B-RV07	1	F6R Side Cover, Rear Solenoid, Cable Style
13	37089-84	1	Clutch Rod Assy, Mech (2.5/8” Overall)
14	WT3196B	1	Outer Ball Ramp
15	987687	3	3/8” Diameter Ball Bearings
16	WT3096B	1	Inner Ball Ramp
17	3094-DSSC	1	Clutch Cable Ferrule
18	68067	1	Snap Ring, Ball & Ramp Retainer

FRONT FACING HYDRUALIC COVER COMPONENTS

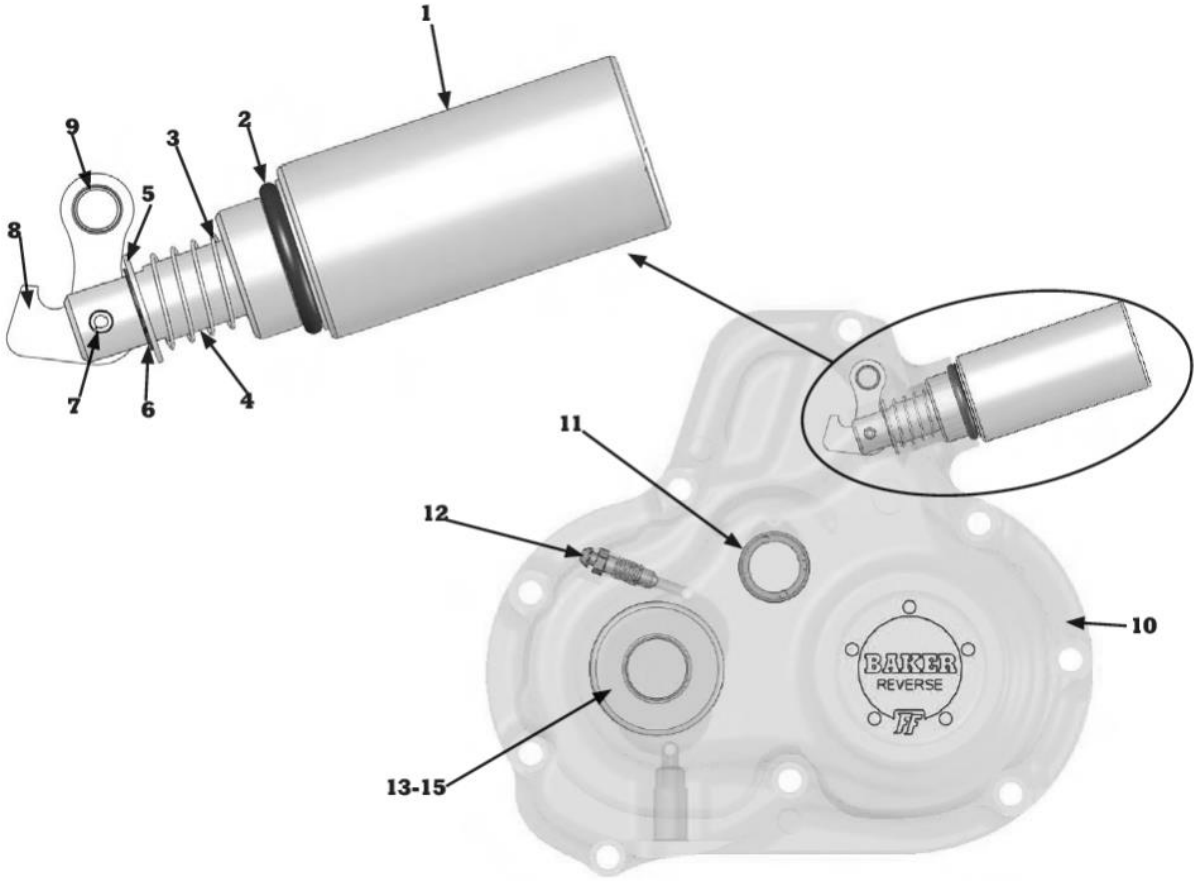


FIGURE 8 | FRONT FACING, HYDRAULIC COVER

ITEM	P/N	QTY	DESCRIPTION
1	420-RV07	1	Safety Lockout Solenoid Assembly
2	66827	1	Solenoid O-Ring (11/16” x 7/8” x 3/32”)
3	LP 026K 01 S316	1	Safety Return Spring, (3/4” Long)
4	182-1027-001	1	Solenoid Plunger
5	716NWSFS	1	Spring Seat Washer
6	91665A350	1	Spiral Snap Ring (7/16” Shaft)
7	12R50PRP0P	1	1/8 “x 1/2” Split Roll Pin
8	409-RV07	1	Reverse Safety Lever
9	25R100PDP	1	1/4” x 1” Pull Dowel
10	410-RV07	1	F6R Side Cover, Front Solenoid, Hydraulic
11	HK1412	2	Split Idler Gear Bearing
12	45-9404	1	Bleeder Valve
13	37084-84L	1	Clutch Rod Assy, Hydraulic (2.815” Overall)
14	124-56L	1	Hydraulic Piston, 1-1/2” Diameter, LSD
15	66855	2	Hydraulic Piston O-Ring (1-1/4” x 1-1/2” x 1/8”)

REAR FACING HYDRUALIC COVER COMPONENTS

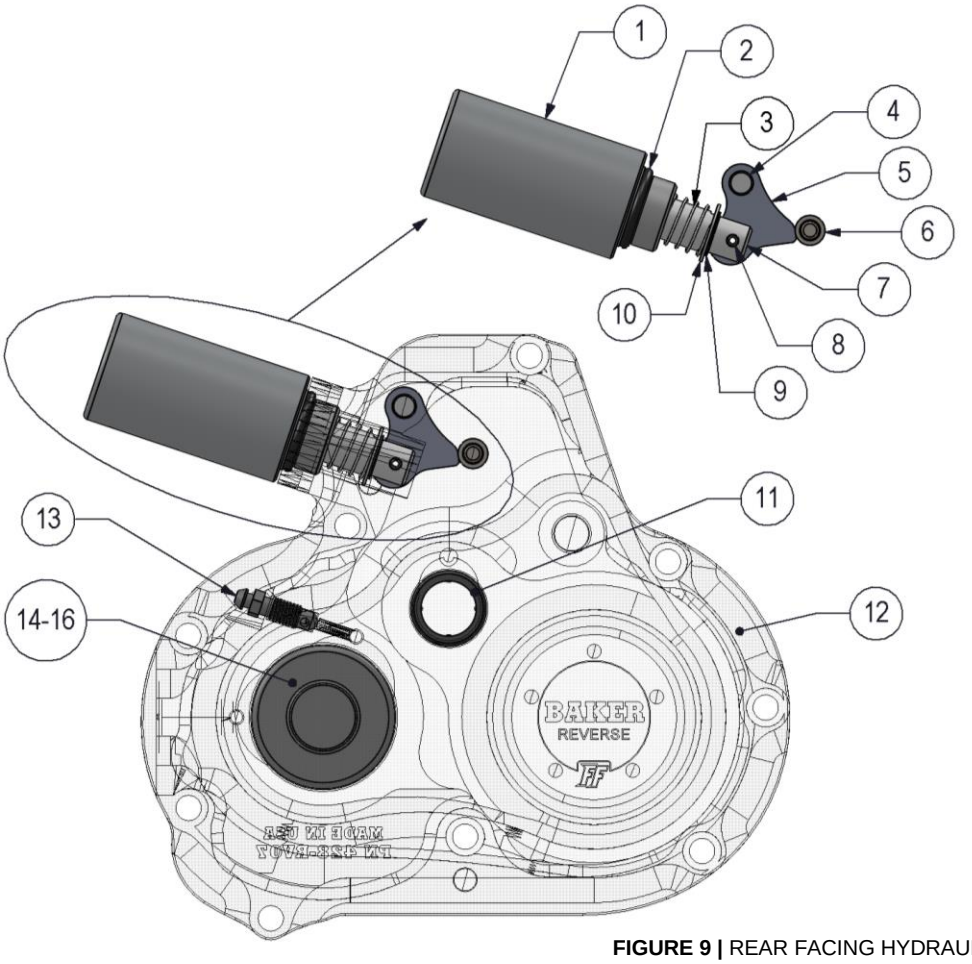


FIGURE 9 | REAR FACING HYDRAULIC COVER

ITEM	P/N	QTY	DESCRIPTION
1	420-RV07	1	Safety Lockout Solenoid Assembly
2	66827	1	Solenoid O-Ring (11/16” x 7/8” x 3/32”)
3	LP 026K 01 S316	1	Safety Return Spring, (3/4” Long)
4	25R100PDP	1	1/4" x 1” Pull Dowel
5	409-RV07A	1	Reverse Safety Lever, Flat Style
6	10C37KCS	1	10-24 x 3/8”, SHCS, Safety Lever Dead-stop
7	182-1027-001	1	Solenoid Plunger
8	12R50PRP0P	1	1/8” x 1/2" Split Roll Pin
9	91665A350	1	Spiral Snap Ring (7/16” Shaft)
10	716NWSFS	1	Spring Seat Washer
11	HK1412	2	Split Idler Gear Bearing
12	428-RV07	1	F6R Side Cover, Rear Solenoid, Hydraulic
13	45-9404	1	Bleeder Valve
14	37084-84L	1	Clutch Rod Assy, Hydraulic (2.815” Overall)
15	124-56L	1	Hydraulic Piston, 1-1/2” Diameter, LSD
16	66855	2	Hydraulic Piston O-Ring (1-1/4” x 1-1/2" x 1/8”)

M8 REAR FACING HYDRUALIC COVER COMPONENTS

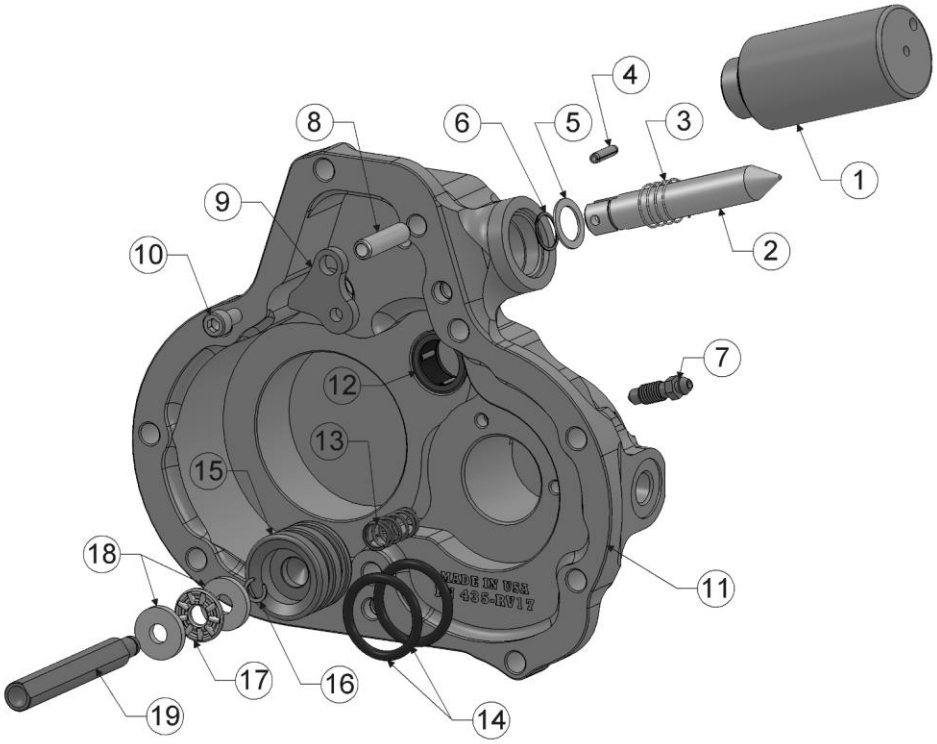


FIGURE 10 | M8 (MILWAUKEE-EIGHT®) REAR FACING HYDRAULIC COVER

ITEM	P/N	QTY	DESCRIPTION
1	420-RV07	1	Safety Lockout Solenoid Assembly
2	182-1027-001	1	Solenoid Plunger
3	LP026K01S316	1	Safety Return Spring, 3/4” Long
4	12R50PRP0P	1	1/8” X 1/2" Split Roll Pin
5	716NWSFS	1	Washer, Spring Seat
6	91665A350	1	Spiral Snap Ring, 7/16” Shaft
7	45-9404	1	Bleeder Valve, Hyd. Piston
8	25R100PDP	1	Pull Dowel, 1/4" X 1”
9	409-RV07A	1	Reverse Safety Lever, Flat Style
10	10C37KCS	1	10-24 X 3/8” SHCS, Lever Dead Stop
11	435-RV17	1	F6R Side Cover, Rear Solenoid, HYD
12	HK1412	2	Split Idler Gear Bearing
13	9435K78	1	Spring, Hydraulic Piston Return
14	9262K269	2	O-Ring, Buna, 3 X 22MM
15	128-6L	1	Hydraulic Piston, 28MM
16	10705-01149	1	1/4" C-Clip, Retainer
17	TC411	1	Bearing, Caged Needle
18	TWC411	2	Washer, Throwout
19	37089-84L	1	Actuator Release Rod

BEFORE INSTALLING YOUR F6R

BEFORE YOU GET STARTED

The transmission is a component in the powertrain of your motorcycle. As such, it's 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 F6R builders kit 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	THREAD LOCK
1/4"-20	Side cover, top cover, derby cover, outer primary, VSS, pulley locking plate	125 – 135 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 nut	35 ft-lb + 35° – 45°	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 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. Removal of the belt pulley, main drive gear and shift lever are not necessary. See disassembly notes on the next page for aid in removing the gearset.

TECH TIPS:

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 F6R.

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.

STOCK GEARSET REMOVAL

TRANSMISSION DISASSEMBLY NOTES

1. Before removing the gearset from the transmission case, shift the transmission into 1st gear and hold the rear brake with your right foot. Using a 1-1/16" 6 pt socket with breaker bar, remove the mainshaft and countershaft jam nuts.

WE RECOMMEND THAT YOU DO NOT USE AN IMPACT GUN TO REMOVE THE MAINSHAFT AND COUNTERSHAFT JAM NUTS. DOING SO MAY DAMAGE THE THREADS ON THE END OF THE SHAFT OR GEAR TEETH WHILE REMOVING THE JAM NUTS.

2. Place the shifter pawl on the top cover mounting surface. This will allow you to remove the gearset without the shifter pawl arm getting caught on the shift system (figure 11).
3. Removed all of the bolts from the trap door.
4. Lightly tap (DO NOT strike with force) on the end of the mainshaft with a rubber mallet to loosen the gearset.

FIGURE 11 | LIFT THE PAWL ARM ONTO THE GASKET

YOU MUST RE-USE YOUR STOCK GEARSET AND WANT TO TAKE GREAT CARE NOT TO DAMAGE IT IN ANY WAY. DO NOT HIT THE END OF THE MAINSHAFT WITH A METAL HEADED HAMMER. DOING SO WILL DAMAGE THE THREADS.

5. Move to the other side of the motorcycle and pull the gearset out of the transmission case by the trap door. If you feel that you need to use a great deal of force, stop and look over all previous steps. You may have forgotten to remove a bolt or the mainshaft race, or the shifter pawl or some other solid object is impeding the path of the gearset.
6. Once you have successfully removed the gearset from the case, set it down with the trap door on a workbench and the shafts pointing in the air. Refer to your Factory Service Manual for the safe and efficient way to strip the assembly down to the trap door. You will be reusing the mainshaft and all of its gears.

STOCK COUNTERSHAFT DISASSEMBLY

COUNTERSHAFT DISASSEMBLY

1. Following the service manual, disassemble the countershaft down to 5th gear.
2. You will need to use a split bearing press tool to press the stock 5th gear off of the countershaft (figure 12). Press the gear off of the shaft as shown in figure 13. You must ensure that you have everything lined up completely vertical and parallel to the ram on the press. Getting the gear cocked or crooked on the shaft can and will result in both gear and countershaft damage.

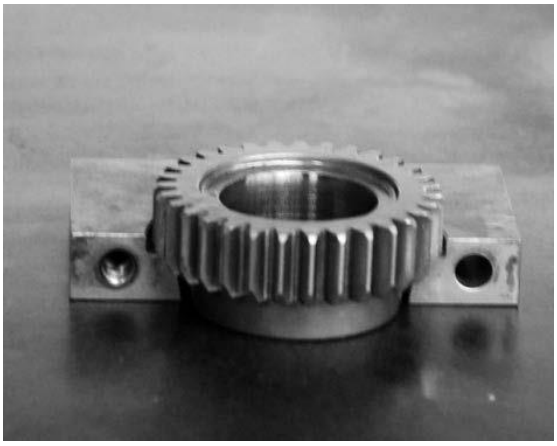


FIGURE 12 | SPLIT BEARING PRESS TOOL HALF SHOWN WRAPPING 5TH COUNTER GEAR

ANY TIME THAT YOU ARE USING A HYDRAULIC PRESS OF ANY SIZE, GREAT CARE MUST BE TAKEN TO ENSURE THAT YOU ARE OPERATING THE PRESS IN A SAFE MANNER. CHECK TO MAKE SURE THAT THE MACHINE IS IN GOOD WORKING ORDER PRIOR TO USE. USING ADEQUATE AND SOLID PIECES OF MATERIAL TO PRESS ON THE COUNTERSHAFT WILL PREVENT IT FROM SLIPPING OUT OF THE STACK WHILE UNDER LOAD. IT IS ESSENTIAL TO YOUR PERSONAL SAFETY TO USE EXTREME CARE WHILE OPERATING A HYDRAULIC PRESS.

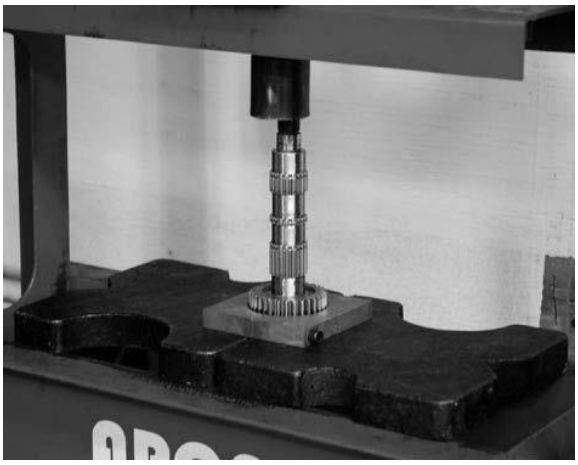


FIGURE 13 | PRESSING OFF 5TH COUNTER GEAR FROM THE COUNTERSHAFT USING THE SPLIT BEARING TOOL

F6R COUNTERSHAFT ASSEMBLY

COUNTERSHAFT ASSEMBLY

1. Once you have removed the stock 5th gear from the countershaft, you are ready to press that gear onto the BAKER F6R (reverse) countershaft. Flip the shaft and tool over and press the gear onto the shaft in the manner demonstrated in figures 14 and 15. Make sure to press the 5th gear snout firmly to the right against 6th gear. It is critical for the overall spacing of the gears down the countershaft.

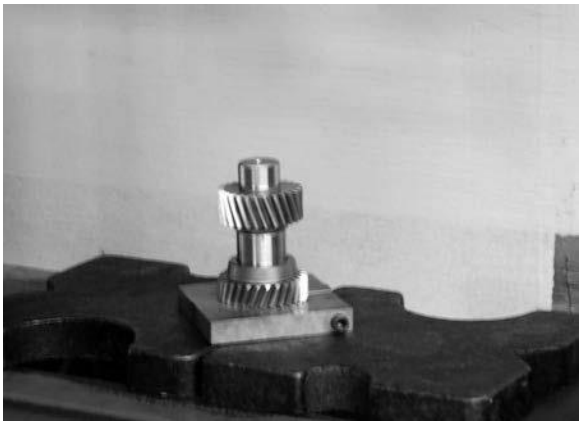


FIGURE 14 | PRESSING 5TH COUNTER GEAR ONTO THE F6R COUNTERSHAFT

2. Once you have successfully pressed the 5th counter gear onto the shaft, you are ready to reassemble the countershaft. Carefully following the service manual, reassemble the stock gears back onto the countershaft. Make sure that the gears are free of dirt and debris and that the needle bearings are well lubricated with transmission fluid before you put them onto the BAKER reverse countershaft. The one variant in the assembly of the countershaft gear stack is that we do not re-use the spacer (H-D P/N: 5387A) between 1st gear and the bearing in the door. We instead use P/N LS2542 as laid out in the BAKER reverse bearing door assembly view in figure 4 (page 5).

FIGURE 15 | PRESSING 5TH COUNTER GEAR ONTO THE F6R COUNTERSHAFT

GREAT CARE AND ATTENTION TO DETAIL MUST BE TAKEN WHEN ASSEMBLING THE SEGMENT RINGS AND THE VARIOUS SPLINED THRUST WASHERS ONTO THE COUNTERSHAFT. WHILE THEY ARE EASIER TO USE THAN CONVENTIONAL SNAP RINGS, THEY CAN BECOME EASILY DISLODGED FROM THEIR DESIGNED POSITION AND DAMAGED WHILE PRESSING THE COUNTERSHAFT INTO THE REVERSE BEARING DOOR. USE A SMALL PICK OR SCREWDRIVER TO PUSH THE SEGMENT RINGS INTO POSITION AROUND THE COUNTERSHAFT TO MAKE SURE THAT THEY ARE SECURLY IN POSITION AGAINST THE SHAFT. USING A SMALL AMOUNT OF AXLE GREASE ON THE SEGMENT RINGS WHEN INSTALLING THEM WILL HELP THEM STICK IN PLACE WHILE YOU ARE BUILDING THE COUNTERSHAFT GEAR STACK.

F6R GEARSET ASSEMBLY

GEARSET ASSEMBLY

1. Do not tip over or lay the countershaft on its side until you have pressed it into the BAKER reverse bearing door, so as not to dislodge any of the thrust washers or segment rings. Feed the free end of the countershaft through the bearing door and position it in a press as seen in figures 16 and 17. We found that using the steel tube from the inner race installation tool works great as a press tool for pressing the countershaft assembly into the bearing door. If you do not have one or do not have room in your press, you need to use a sufficiently strong steel tube that lands on the countershaft bearing inner race within the bearing door. **You must only press on the inner race of the bearing.**

FIGURE 16 | ALIGNING DOOR TO COUNTERSHAFT

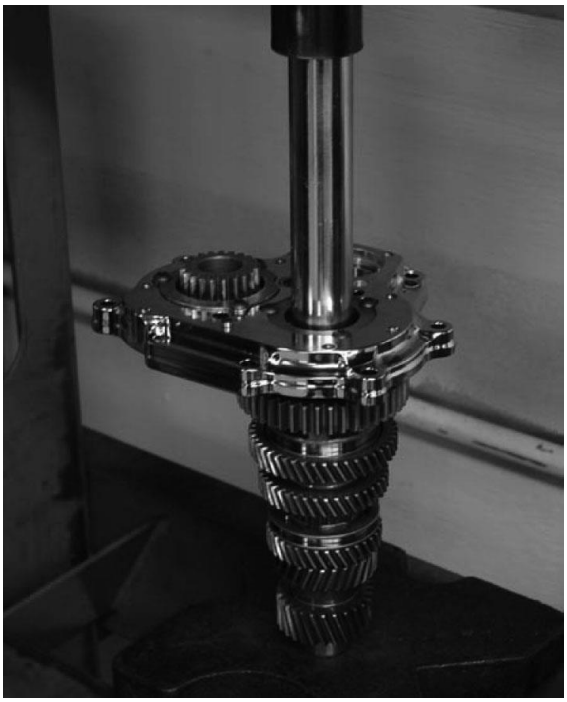


FIGURE 17 | PRESSING ON THE INNER RACE INSTALLATION TOOL

DO NOT PUSH ON ANY PART OF THE BEARING DOOR WITH THE PRESS TO INSTALL THE COUNTERSHAFT

2. Once the countershaft bearing is pressed tightly against the provided BAKER countershaft spacer (P/N LS2542), you are ready to install the mainshaft.

F6R GEARSET ASSEMBLY

GEARSET ASSEMBLY CONTINUED

3. Align the mainshaft in the bearing door in the same manner as shown in figures 18 and 19. The mainshaft pinion gear is what is pressed onto the mainshaft and it must be done with the press as shown.

   DO NOT PUSH ON ANY PART OF THE DOOR WITH THE PRESS TO INSTALL THE MAINSHAFT INTO THE BEARING DOOR.

   Take your time while pressing the mainshaft into place to make sure the gears are meshing together. Using a free hand to jostle the countershaft while pressing the mainshaft into the door is a good way to make sure that the gears are meshing and not bound up.

STOP PRESSING IF YOU FEEL ANY TYPE OF BINDING OR IF THE COUNTERSHAFT WILL NOT SPIN FREELY. CHECK THAT EVERYTHING IS PROPERLY LINED UP AND THE MAINSHAFT IS PERPENDICULAR TO THE BEARING DOOR AND VERTICAL TO THE RAM THE PLUNGER.

4. With the pinion gear fully bottomed out on the end of the mainshaft, you are ready to move forward to the next step. With the two shafts completely assembled and pressed into the bearing door, gently remove the gearset from the press and set it on the workbench.

   TECH TIP:
   While the gearset is on the bench, spin the mainshaft by hand to ensure everything spins freely and is properly aligned before proceeding.

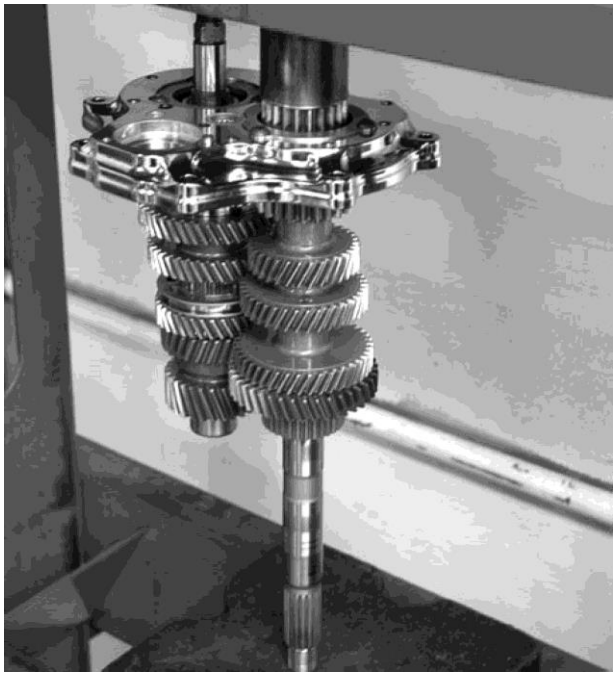


FIGURE 18 | ALIGN THE MAINSHAFT WITH THE COUNTERSHAFT AND START THE END OF THE SHAFT INTO THE BEARING. POSTION THE SHAFT ON THE PRESS.

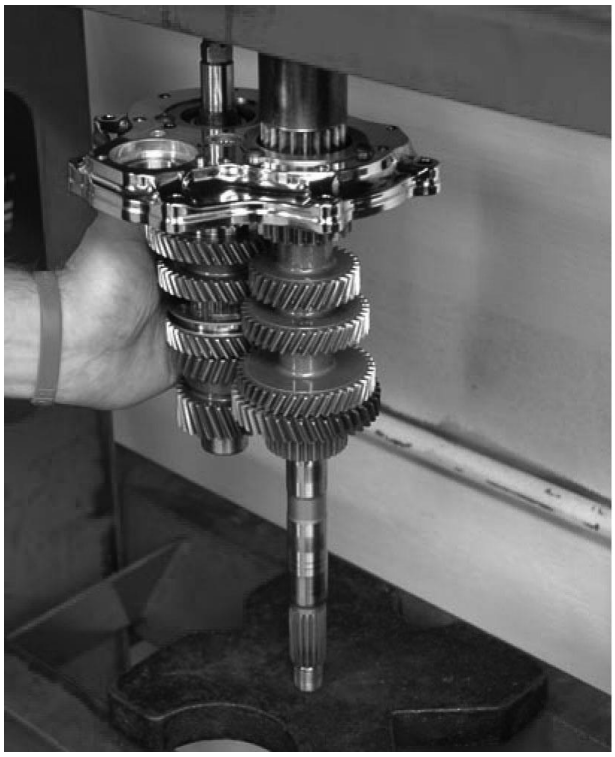


FIGURE 19 | WITH THE MAINSHAFT SQUARE TO THE PRESS, PRESS ON THE MAINSHAFT SIDE OF THE GEAR UNTIL FULLY SEATED

F6R GEARSET ASSEMBLY

GEARSET ASSEMBLY CONTINUED

5. Now that the gearset is assembled to the door without the shift drum, shift the gearset into two gears at once. Do this by sliding the shift dogs into gear on the mainshaft and countershaft. This will lock the gearset to from rotating (figure 20).

   Locking the gears together is for assembly reasons only.

6. Bolt the bearing door assembly into the case (with the door gasket in place) with the provided 5/16”-18 socket head cap screws. Just snug four of the bolts with washers for now. Make sure that the countershaft bearing retainer plate is removed from the bearing door at this time to ensure full socket contact on the countershaft base nut; refer to figure 4 (page 5).

7. With the snout of the countershaft base nut facing the bearing (figure 21), torque both the mainshaft retainer nut and the countershaft base nut to 45-55 ft-lbs with red thread lock.

   The shafts are locked together in step 5. If the shafts are spinning freely (no longer in two gears at once), using the rear brake/right foot technique is necessary to achieve the full torque values.

8. When you have tightened the two shaft nuts, install the countershaft retainer plate with the provided 1/4”-20 x 5/8” button head cap screws. Using red thread lock, torque the retainer plate screws to 130 in-lbs (figure 22).

9. Pull the gearset back out of the transmission case in preparation for assembly of the shift system.

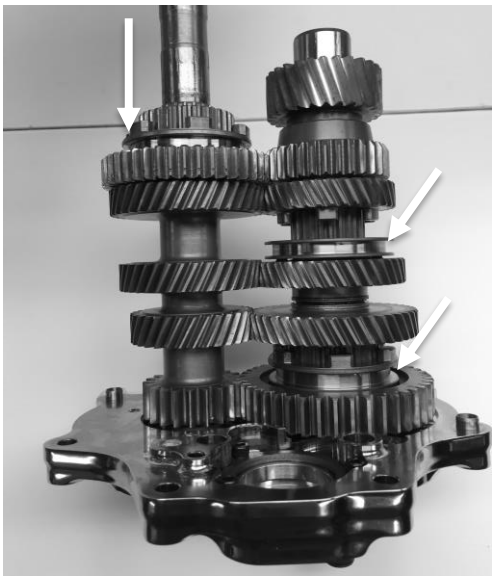


FIGURE 20 | LOCK THE GEARSET BY ENGAGING AT LEAST TWO OF THE SHIFT DOGS

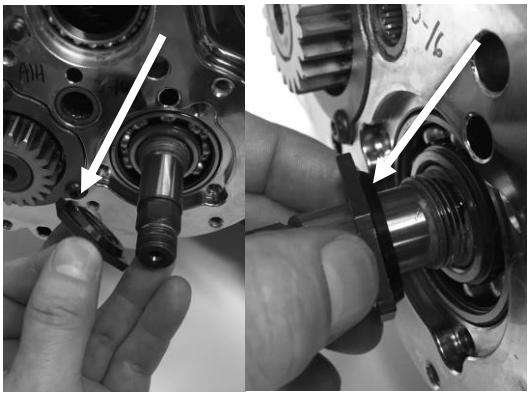


FIGURE 21 | INSTALL THE SNOUT OF THE COUNTERSHAFT BASE NUT FACING THE BEARING

FIGURE 22 | INSTALL RETAINER PLATE AND TORQUE TO 130 IN-LBS

F6R SHIFT SYSTEM ASSEMBLY

SHIFT SYSTEM ASSEMBLY

1. With the door & shaft assembly on the bench, install the stock detent lever assembly into the BAKER reverse bearing door. Torque the stock detent lever bolt to 150 in-lbs using blue thread lock.

   Figure 23 shows the detent lever installed. Note the spring orientation.

2. Pull the detent lever out of the way of the drum and slide the drum from the inside of the bearing door through the bearing that is already installed. It is a tight slip fit, so it may take some wiggling to get the drum to seat against the drum bearing inner race. When the shift drum is fully seated, you can let go of the detent lever.

   NOTE: The shift drum nut is directional. Install with the round snout pointing inward toward the inner race of the shift drum bearing.

3. Using the provided shift drum socket, tighten the drum nut onto the shift drum while holding the other end of the drum with an adjustable wrench. Torque to 20-25 ft-lbs using red thread lock (figure 25).

FIGURE 23 | INSTALLATION OF THE SHIFT DRUM DETENT LEVER

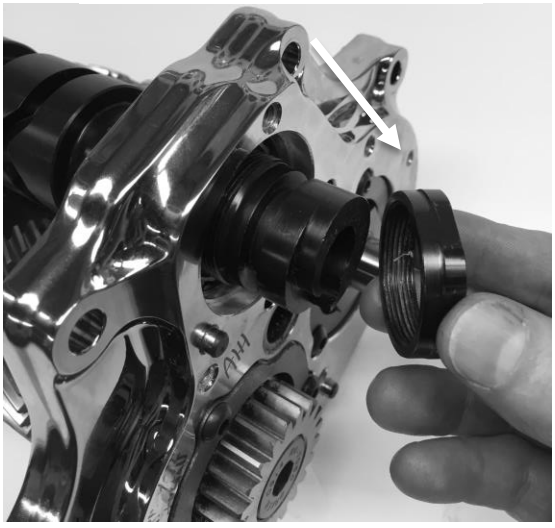


FIGURE 24 | ROUNDED END OF SPECIAL SHIFT DRUM NUT FACES THE DRUM BEARING

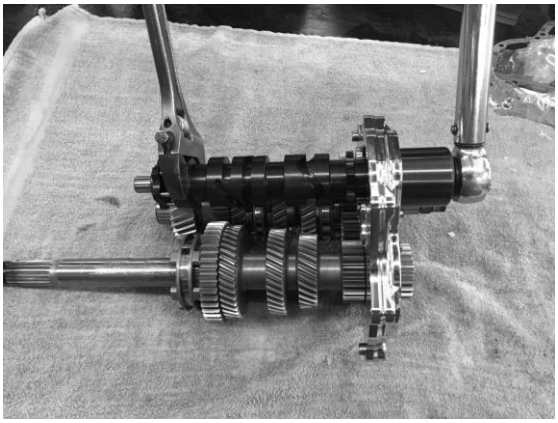


FIGURE 25 | TORQUE SHIFT DRUM TO 20-25 FT-LBS

F6R GEARSET INSTALLATION

SHIFT FORK ASSEMBLY

1. The stock shift forks and fork rods will be re-used. While referencing the Factory Service Manual, slide the shift forks into their corresponding fork grooves on the stock dog clutches. With the forks in their correct positions, and the pins residing within the correct shift track on the drum, slide the fork rods into place through the shift forks and into the fork rod bores within the back of the bearing door assembly. Lubing the fork rods with transmission fluid before installation is good practice for preventing premature wear.

2. Once the fork rods are in their correct positions, tap on the ends of them with a ball peen hammer until they bottom out in the fork rod bores. Use a brass punch to avoid damage to the fork rods. You have now successfully assembled the BAKER F6R reverse gearset cassette.

FIGURE 26 | SHIFT FORK AND FORK ROD INSTALLATION

WHEN SEATING THE FORK RODS INTO THE DOOR WITH A HAMMER, GREAT CARE NEEDS TO BE TAKEN NOT HIT ANY OF THE GEARS, FORKS, DRUM OR ANY OTHER PARTS OF THE GEARSET. FAILURE TO DO SO WILL RESULT IN DAMAGE THAT MAY INHIBIT PROPER FUNCTION OF THE TRANSMISSION.

GEARSET INSTALLATION

1. Check the inside of the case and clean any debris. Wipe the gasket surfaces and insert the BAKER reverse gearset cassette into the case with a new door gasket.

2. After sliding the gearset into the case, install the 8 bolts with washers using blue thread lock. Tighten the bolts following the torque sequence in figure 27. Make sure to re-install the exhaust bracket under the two bottom bolts. Torque bolts to 220 in-lbs.

   If you have a rear facing solenoid, leave out bolt #3 at this time. It will be installed later when you install the reverse solenoid wiring harness

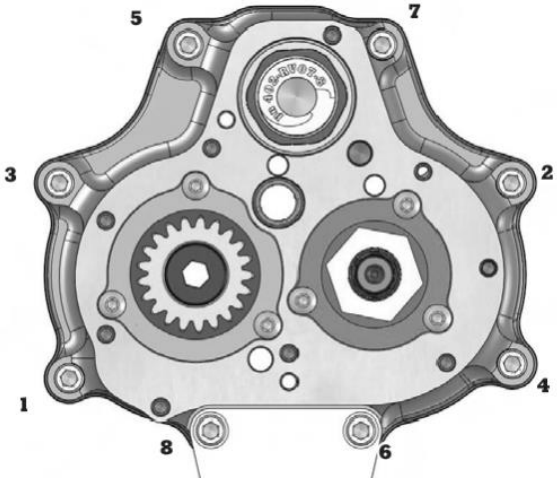


FIGURE 27 | BEARING DOOR TORQUE SEQUENCE

F6R GEARSET INSTALLATION

GEARSET INSTALLATION CONTINUED

3. With the bearing door securely in place and torqued, put the shifter pawl down onto the shift pins on the end of the drum through the top cover opening.

4. This is a great time to check your work in assembling the F6R gearset cassette. With the bike safely supported and the back tire off of the ground, spin the back tire by hand and shift the bike from 1st gear to 6th and back down to 1st. You will have to spin the tire at a pretty decent clip to get the transmission to shift smoothly. You are checking that the transmission finds each gear with ease and that you can find neutral without any issues.

5. Once you are satisfied with the function and you know that the transmission will shift, you can bolt on the top cover with a new gasket and torque it down to 110 in-lbs, using blue thread lock.

   TECH TIP:
   If you have a front facing solenoid cover, leave out the right rear bolt on the top cover at this time. It will be installed later when you install the reverse solenoid wiring harness (figure 28).

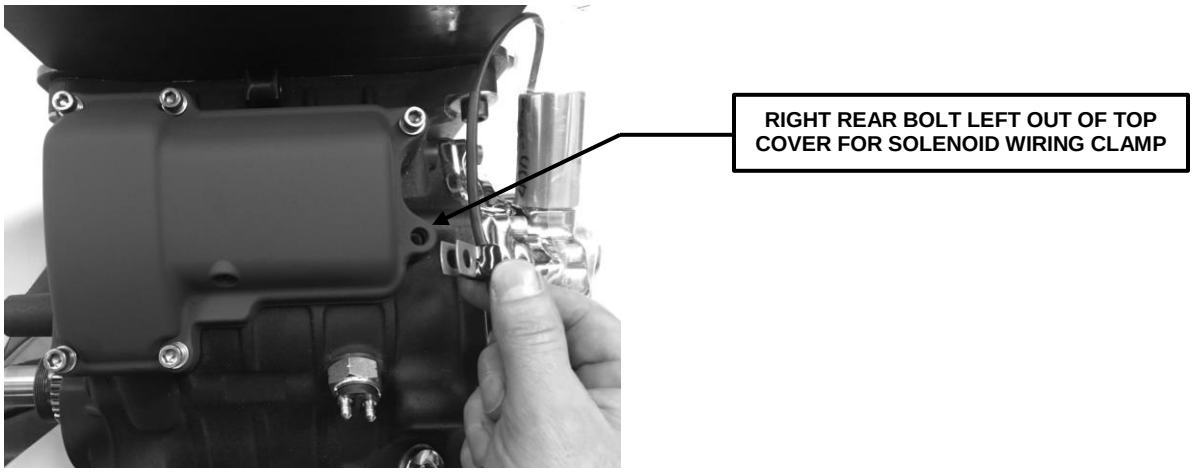


FIGURE 28 | SOLENOID WIRING CLAMP ON TOP COVER

REVERSE GEAR INSTALLATION

REVERSE GEAR INSTALLATION

1. Grab the split idler gear and douse it in transmission fluid at this time.

   MAKE SURE TO PUT THE THRUST WASHER (P/N TRA-916) ON THE GEAR BEFORE YOU SLIDE IT INTO PLACE.

   Slide the gear into the needle bearing on the bearing door as shown in figure 29.

2. Lube the countershaft and bushing of the reverse slider gear with transmission fluid, then slide the reverse slider gear onto the countershaft with the dog tooth pockets facing outward (figure 30).

3. Take the reverse shift fork and slide it down into position on the slider gear fork groove, while at the same time aligning the fork pin in the groove track of the shift drum. Lube the supplied shift fork rod and slide it through the shift fork into the fork rod hole of the bearing door (figure 31).

4. Slide the reverse dog clutch onto the hexed end of the countershaft. Torque the supplied 5/18”-18 nylock jam nut onto the end of the countershaft at 45-55 ft-lbs (figure 32).

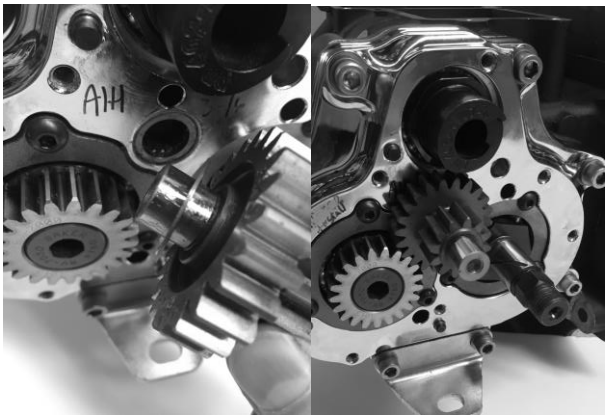


FIGURE 29 | INSTALLING THE THRUST WASHER AND SPLIT IDLER GEAR

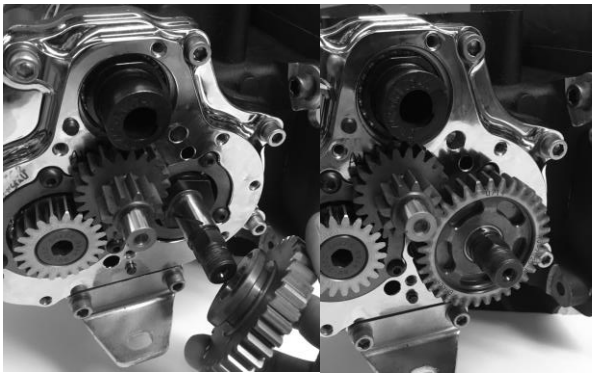


FIGURE 30 | INSTALLING THE REVERSE SLIDER GEAR ONTO THE COUNTERSHAFT

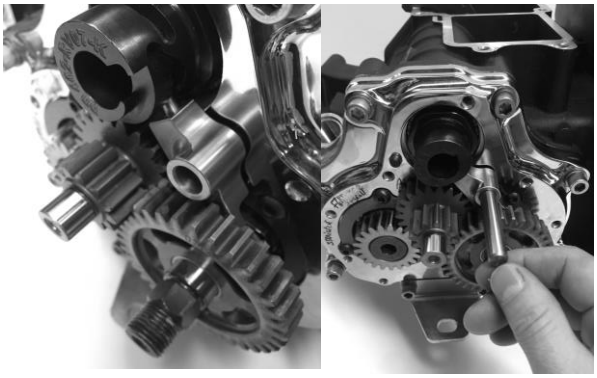


FIGURE 31 | INSTALLING THE REVERSE SHIFT FORK AND FORK ROD

FIGURE 32 | INSTALLING THE REVERSE SHIFT DOG CLUTCH AND NYLOCK NUT

USE THE REAR BRAKE/ RIGHT FOOT TECHNIQUE TO ACHIEVE THE FULL TORQUE VALUE

F6R SIDE COVER INSTALLATION | CABLE STYLE

MECHANICAL SIDE COVER INSTALLATION, FRONT & REAR FACING SOLENOID

1. The F6R cable style reverse side cover will have the ball and ramp assembly already installed with a snap ring. The solenoid safety lever assembly will also be installed with the 1/4" diameter pull dowel. Take your stock clutch cable and screw it into the clutch port on the bottom of the side cover. Use a small dab of silver anti-seize to prevent the steel threads of the clutch cable from sticking to the aluminum threads of the side cover. Make sure your clutch cable O-ring is also in good condition at this time to reduce oil leaks in the future. With all of the slack in the clutch cable, feed it through the hole in the ball ramp (figure 33).
2. Using the supplied ferrule, slip it over the barrel end of the cable, then pull the cable back so that the cable ferrule seats in the ball ramp (figure 34).
3. Put the side cover gasket in place. Install the center rod and mechanical clutch actuator rod into the mainshaft, and thrust washer (P/N TRA-916) on the end of the split idler gear. You are now ready to slide the side cover onto the bearing door (figure 35).
4. Install the side cover onto the bearing door until it rests flat against the entire gasket surface.

   If you are unable to get the side cover to fully seat against the side cover gasket, double check that you have fully seated the reverse fork rod into the door. Also make sure that the solenoid plunger is pulled out all the way; the safety lever might be hitting the shift drum. DO NOT FORCE THE SIDE COVER ONTO THE BEARING DOOR AS DAMAGE TO THE SAFETY LEVER WILL OCCUR.
5. Bolt the side cover down using the 9 supplied 1/4"-20 socket head cap screws with blue thread lock. Use the torque sequence shown in figure 36 and torque to 130 in-lbs.

FIGURE 33 | INSTALLING THE CLUTCH CABLE

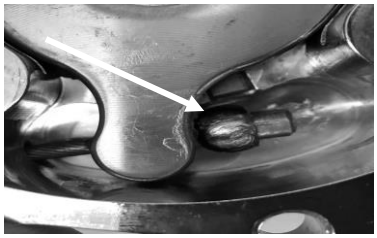


FIGURE 34 | INSTALLING CLUTCH CABLE FERRULE

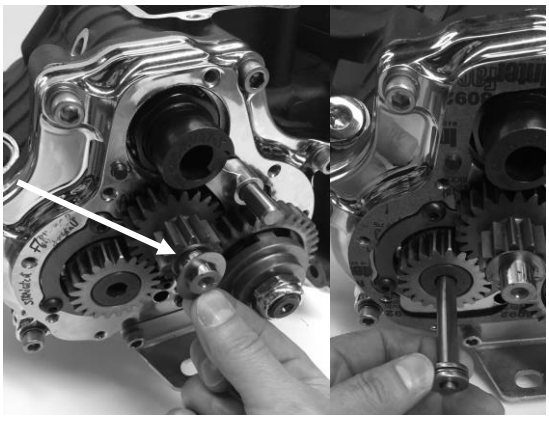


FIGURE 35 | THRUST WASHER, RELEASE AND ACTUATOR ROD INSTALLATION

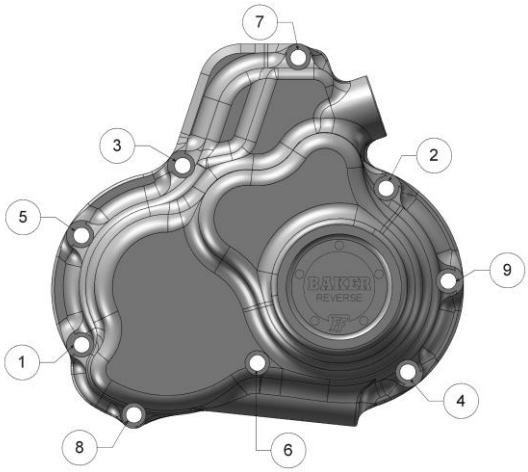


FIGURE 36 | TORQUE SEQUENCE FOR FRONT OR REAR FEED CABLE STYLE COVER

F6R SIDE COVER INSTALLATION | HYDRAULIC STYLE

HYDRAULIC SIDE COVER INSTALLATION, FRONT & REAR FACING SOLENOID

1. The F6R hydraulic reverse side cover will have a 1.500” diameter piston with O-rings and bleeder screw already installed and pressure tested. The solenoid safety lever assembly will also be installed with the 1/4” diameter pull dowel.

   NOTE: Hydraulic covers are designed to accept straight 35˚ or 90˚ banjo fittings. It is up to you what style will work best on your make and model.

   If you purchased a 2013-2016 model F6R kit it will come with an adapter line. This adapter converts our cover to the stock hydraulic line (figure 37).

   Bleeding of the hydraulic system can be found on page 31.

2. Put the side cover gasket in place. Install the center rod and mechanical clutch actuator rod into the mainshaft, and thrust washer (P/N TRA-916) on the end of the split idler gear. You are now ready to slide the side cover onto the bearing door (figure 38).

3. Install the side cover onto the bearing door until it rests flat against the entire gasket surface.

   If you are unable to get the side cover to fully seat against the side cover gasket, double check that you have fully seated the reverse fork rod into the door. Also make sure that the solenoid plunger is pulled out all the way; the safety lever might be hitting the shift drum. DO NOT FORCE THE SIDE COVER ONTO THE BEARING DOOR AS DAMAGE TO THE SAFETY LEVER WILL OCCUR.

4. Bolt the side cover down using the 9 supplied 1/4”-20 socket head cap screws with blue thread lock. Use the torque sequence shown in figure 36 and torque to 130 in-lbs.

STOCK CLUTCH LEVER AND CLUTCH CABLE WILL HAVE TO BE REMOVED IF YOU ARE CONVERTING OVER TO A HYDRAULIC SYSTEM.

INSTALL THE HYDRAULIC CLUTCH LEVER (11/16” BORE) OF YOUR CHOICE AND HYDRAULIC LINE.

RUN THE LINE DOWN TO THE REVERSE SIDE COVER IN A MANNER THAT KEEPS IT AWAY FROM HOT ENGINE COMPONENTS AND PREVENTS IT FROM BEING KINKED OR BENT WITH FULL MOVEMENT OF THE FRONT END.

FIGURE 37 | HYDRAULIC LINE ADAPTER & FITTING

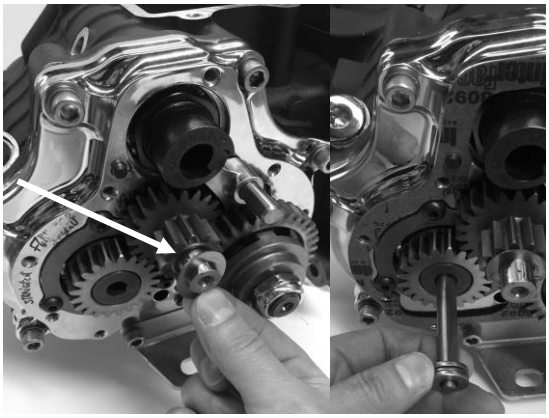


FIGURE 38 | THRUST WASHER, RELEASE AND ACTUATOR ROD INSTALLATION

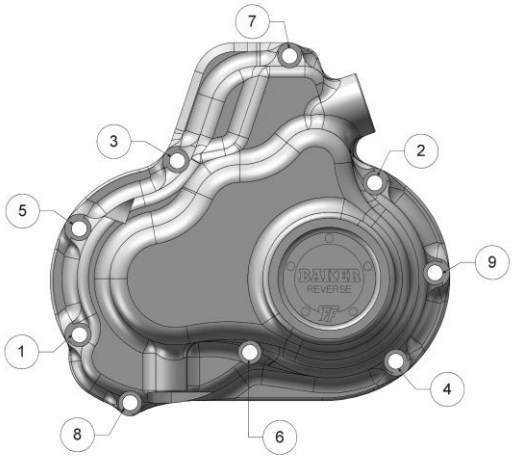


FIGURE 39 | TORQUE SEQUENCE FOR FRONT OR REAR FEED HYDRAULIC COVER

F6R SIDE COVER MILWAUKEE 8 MOTOR | M8 HYDRAULIC

M8 SIDE COVER INSTALLATION, FRONT & REAR FACING SOLENOID

1. The F6R Milwaukee 8 Motor hydraulic reverse side cover will have a 28MM diameter piston with O-rings, piston return spring and bleeder screw already installed and pressure tested. The solenoid safety lever assembly will also be installed with the 1/4” diameter pull dowel.

   NOTE: M8 hydraulic cover (2017-Later Models) comes with an adapter line. This adapter converts our cover to the stock hydraulic line, figure 40.

   Bleeding of the hydraulic system can be found on page 31.

2. Put the side cover gasket in place. Install the center rod and mechanical clutch actuator rod into the mainshaft, and thrust washer (P/N TRA-916) on the end of the split idler gear. You are now ready to slide the side cover onto the bearing door (figure 41).

3. Install the side cover onto the bearing door until it rests flat against the entire gasket surface.

   If you are unable to get the side cover to fully seat against the side cover gasket, double check that you have fully seated the reverse fork rod into the door. Also make sure that the solenoid plunger is pulled out all the way; the safety lever might be hitting the shift drum. DO NOT FORCE THE SIDE COVER ONTO THE BEARING DOOR AS DAMAGE TO THE SAFETY LEVER WILL OCCUR.

4. Bolt the side cover down using the 9 supplied 1/4”-20 socket head cap screws with blue thread lock. Use the torque sequence shown in figure 42 and torque to 130 in-lbs.

FIGURE 40 | 10MM HYDRAULIC LINE ADAPTER

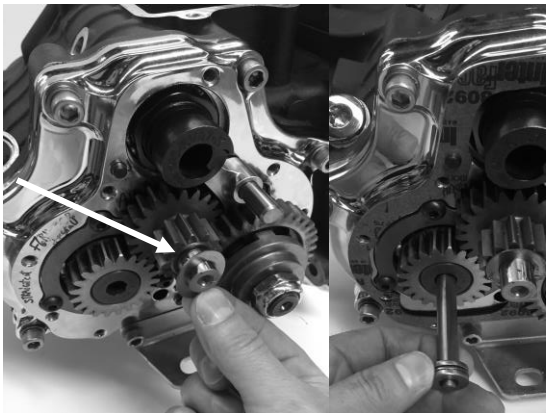


FIGURE 41 | THRUST WASHER, RELEASE AND ACTUATOR ROD INSTALLATION

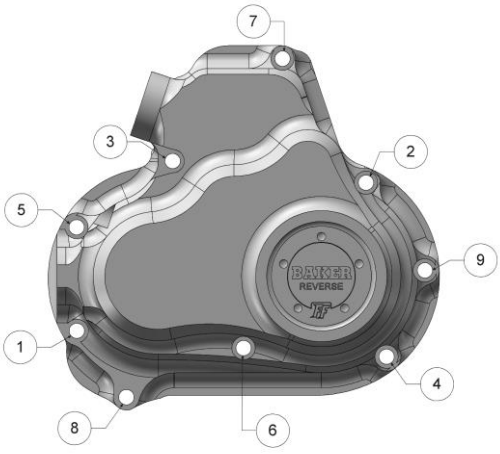


FIGURE 42 | TORQUE SEQUENCE FOR M8 REAR FEED HYDRAULIC COVER

F6R SOLENOID INSTALLATION

SOLENOID INSTALLTION

1. Contained in the kit hardware is the reverse safety spring. This spring is an integral part in keeping the safety lever in place on the shift drum during times of forward movement on the bike. Slide the reverse spring seat washer (P/N 716NWSFS) over the reverse plunger, then the spring (P/N LP 026K 01 S316) (figure 43).
2. Apply a small amount of silver anti-seize to the 3/4”-24 threads of the solenoid and thread it into the side cover.

   DO NOT TIGHTEN THE SOLENOID WITH PLIERS. DOING SO WILL DAMAGE THE SOLENOID THREADS AND SOLENOID COVER.
3. Sufficiently tighten the solenoid by hand, ensuring the O-ring is fully seated into the side cover. See pages 7-11 for the exploded view diagram of the solenoid assembly that you are installing.

FRONT FACING COVERS:

Wrap the wire clamp around the solenoid wires and bolt it to the top cover in the right rear corner using the top cover bolt that you left out earlier. Use blue thread lock and tighten to 110 in-lbs (figure 44).

REAR FACING COVERS:

Route the solenoid wires down the door. Wrap the supplied wire clamp around the solenoid wires and bolt it to the upper left side of the bearing door using the bolt that you left out earlier. Torque to 220 in-lbs. Follow the factory wiring/brake line back up toward the starter and zip tie into place (figure 45).

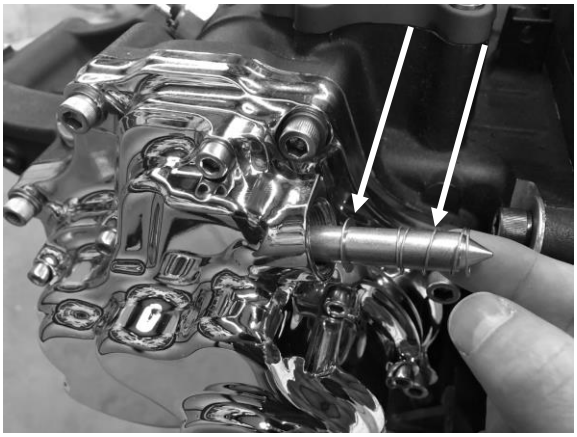


FIGURE 43 | REVERSE SPRING SEAT WASHER AND SPRING INSTALLATION; WASHER FIRST – THEN SPRING

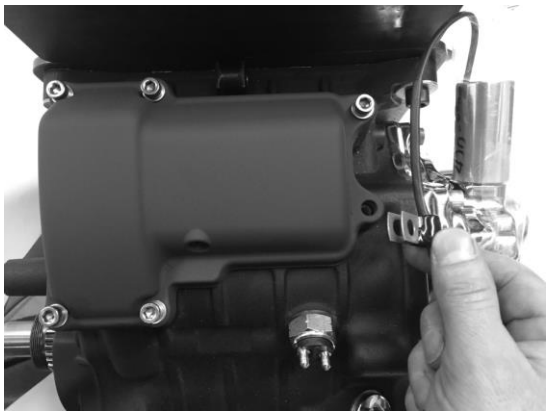


FIGURE 44 | SOLENOID WIRING CLAMP TO THE RIGHT REAR TOP COVER BOLT

FIGURE 45 | REAR SOLENOID WIRE ROUTING – TOURING MODELS

F6R SWITCH HOUSING

SWITCH HOUSING INSTALLATION

1. We recommend that you remove the fuel tank in order to route the wiring. This keeps the wiring together so nothing gets crimped, chafed, or melted. Figure 46 shows the tank removed on a touring model, ready for the switch installation.
2. Remove the perch clamp stock retaining screws from the right (front brake) side handlebar using a T27 Torx bit.
3. Install the F6R switch housing perch clamp with provided bolts and washers using blue thread lock (figure 47). The switch housing perch clamp goes over the stock clamp. See figure 48 below for reference on housing components.

   TECH TIP: Do not torque the perch clamp bolts until the bracket with switch and wiring harness are installed. This way you can position the switch exactly where you want it.

FIGURE 46 | TOURING MODEL WITH TANK REMOVED FOR WIRING

FIGURE 47 | SWITCH HOUSING PERCH CLAMP LOOSELY INSTALLED; NOT TORQUED

SWITCH HOUSING DETAIL VIEW

ITEM	P/N	QTY	DESCRIPTION
1	90600A629	2	1/4-20x2” BHCS, Torx S.S.
2	25C200KCSS	1	1/4-20x2” SHCS, S.S.
3	6099SS	3	Washer, S.S.
4	431-SW	1	Perch Clamp Housing
5	609B	1	Dowel, Alignment
6	432-SW	1	Bracket, Switch Housing
7	N/A	2	Retainer Nut, Part of #11
8	BDAPG-H1X17	1	O-Ring, Buna #70 (1X17mm)
9	6C12KKCS	1	6-32 x 1/8” Set Screw, S.S.
10	433-SW	1	Cap, Switch Housing
11	X0013H1CW5	1	Switch, Momentary Push, BLK

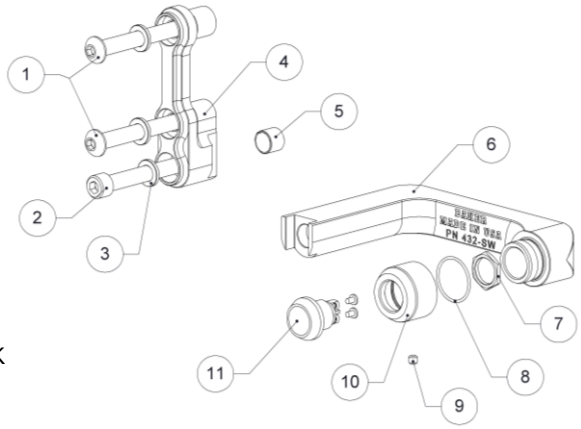


FIGURE 48 | SWITCH HOUSING DETAILED VIEW

F6R SWITCH HOUSING

SWITCH HOUSING INSTALLATION CONTINUED

NOTE: Switch housing bracket assembly comes pre-wired with switch, ready to install.

4. Install the housing bracket assembly with the provided bolt and washer using blue thread lock (figure 49). Just snug the bolt for now.
5. With the switch housing bolted together, position the switch. Rotate the housing forward and backward to get the best switch position relative to your thumb. Once you have found the best position, torque the two perch clamp bolts (T27 torx) to 60-80 in-lbs.
6. Torque the switch housing bracket bolt (3/16 Allen) to 100-110 in-lbs, (figure 50).
7. Route the wiring, following the brake line down the handle bars and to the neck of the frame.

TOURING MODELS:
Remove the bottom dash panel screws at the base of the fairing. Carefully remove the housing to route the harness through and to the neck of the motorcycle (figure 51).

8. Leave enough slack in the harness to accommodate turning the handle bars from lock to lock. Zip tie the harness into place, then route the harness down the backbone of the frame as shown in figure 52.

FIGURE 49 | INSTALLATION OF BRACKET ASSEMBLY WITH HARNESS

FIGURE 50 | F6R SWITCH HOUSING INSTALLED

FIGURE 51 | PULL BACK THE DASH PANEL TO ROUTE WIRING BEHIND THE BARS

FIGURE 52 | WIRING AT THE NECK AND DOWN THE BACKBONE OF THE FRAME

ROUTE THE HARNESS THROUGH THE FACTORY ROUTING OF THE FUEL LINES DOWN TO THE SEAT

F6R WIRING HARNESS

SWITCH HOUSING WIRING

9. On the right side of the motorcycle, connect the solenoid wiring to the switch harness (P/N 414-RV07) that was run down the backbone and to the fuse holder harness (P/N 415-RV07). The connectors are color coded, blue to blue and red to red (figure 53).
10. Route the fuse wire (switched power wire) toward the left side of the battery.
11. Connect the ground harness (P/N 425-RV07) to the green end of the switch harness (P/N 414-RV07). See figure 56 for reference on page 30.

    TECH TIP: We recommend that you purchase an accessory wiring harness for your make and model to connect the power and ground. The harness takes the guess work out of trying to find the switched (key on) power source. Using a voltmeter, check the wires for switched power (figures 54 and 55).
12. Using the supplied blue butt connectors, connect the switched power to the fused wire harness (P/N 415-RV07) and ground wire to harness (P/N 425-RV07). Use a heat gun to shrink and seal the connectors when finished.

    Route all wiring so that is does not get chafed or damaged, and so you have easy access to replace the 5 amp fuse.

FIGURE 53 | CONNECTING THE SOLENOID WIRING HARNESS – RIGHT SIDE OF BIKE, TOURING MODEL SHOWN

FIGURE 54 | ACCESSORY WIRING HARNESS

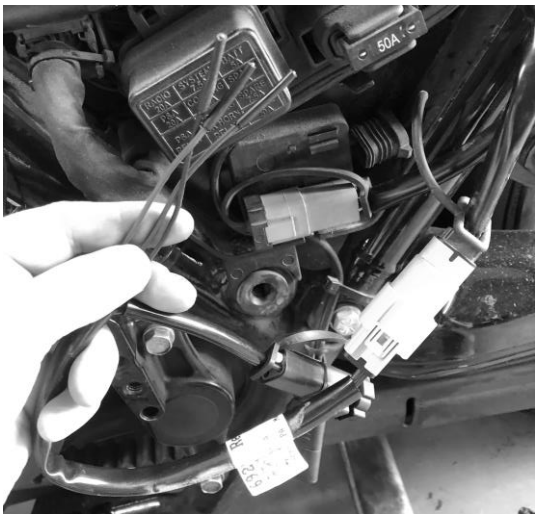


FIGURE 55 | ACCESSORY WIRING HARNESS CONNECTION ON FUSE PANEL SIDE (LEFT SIDE), TOURING MODEL SHOWN

MOTORCYCLE ASSEMBLY

Re-install the fuel tank, primary, clutch, exhaust, shift linkage, and floorboards/footpegs per your Factory Service Manual. Don't forget to re-install the primary drain plug and fill the primary with fluid.

TECH TIP: We recommend leaving off the primary derby cover for now if your F6R builder kit has a hydraulic side cover.

F6R SWITCH HOUSING WIRING DIAGRAM

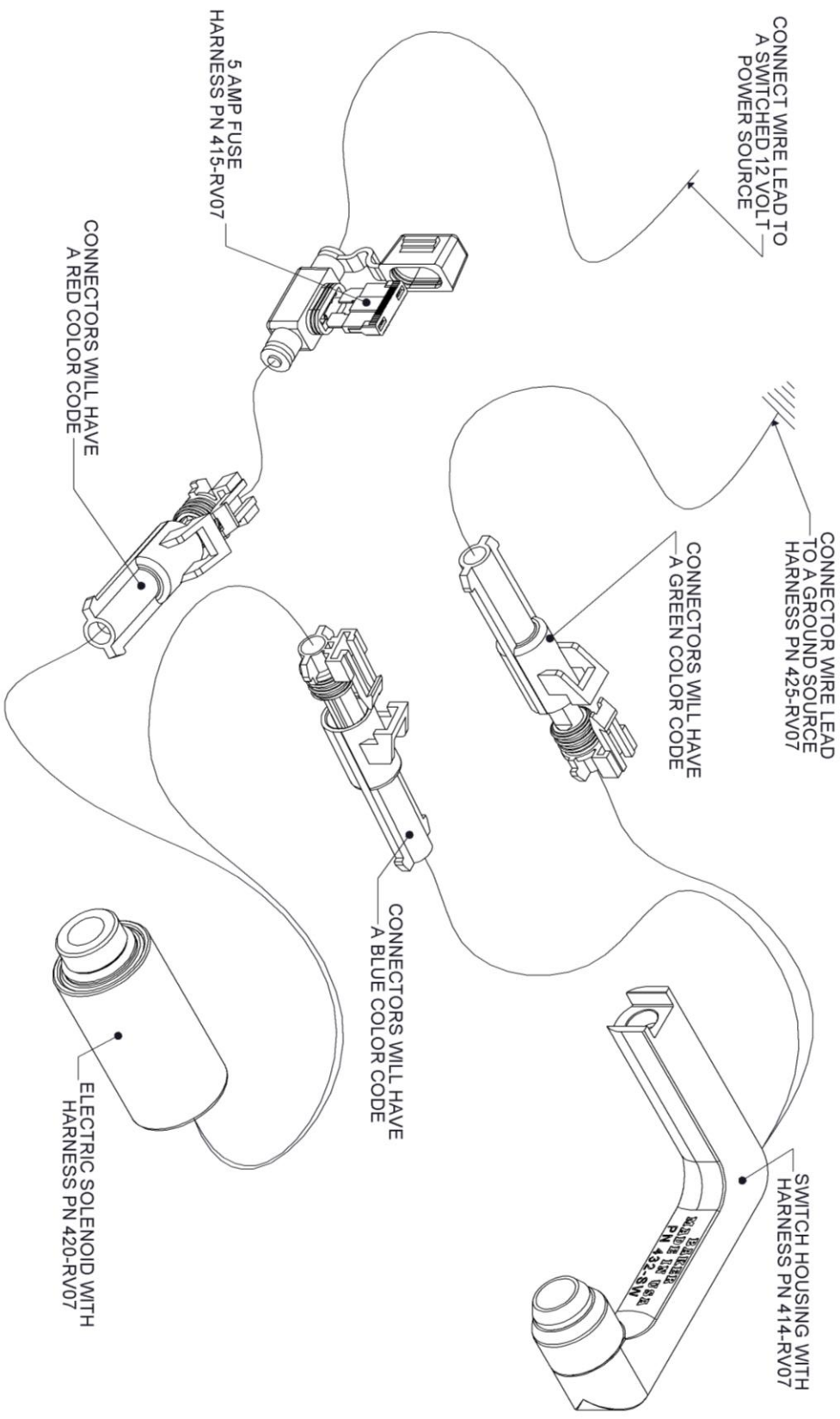


FIGURE 56 | WIRING DIAGRAM

BLEEDING HYDRAULIC SYSTEM

BLEEDING THE HYDRAULIC CLUTCH SYSTEM – HYDRAULIC COVERS ONLY

BAKER DRIVETRAIN STRONGLY RECOMMENDS THAT A POWER BLEEDER SYSTEM BE UTILIZED, WHETHER THAT IS A HAND OPERATED PUMP OR PNEUMATIC, TO BLEED THE HYDRAULIC CLUTCH SYSTEM ON YOUR MOTORCYCLE. IT IS THE MOST EFFECTIVE AND ONLY SUREFIRE WAY TO ENSURE THAT ALL OF THE AIR BUBBLES ARE PURGED FROM THE SYSTEM. IF YOU DO NOT OWN A POWER BLEEDER, THE FOLLOWING SET OF INSTRUCTIONS WILL ENABLE YOU TO BLEED YOUR CLUTCH SYSTEM. GREAT CARE AND ATTENTION TO DETAIL MUST BE USED IN FOLLOWING THESE STEPS TO ENSURE A PROPERLY BLED AND FUNCTIONING SYSTEM AND YOUR SAFETY AS A RIDER.

1. Before you can bleed the hydraulic clutch system, you must adjust the free play and rod length at the clutch. Loosen the bleeder valve on the side cover. Using an Allen wrench, run the adjuster bolt (center of the clutch) inboard until you can feel the piston bottom out in the side cover. You will also know that you have hit the bottom point as the clutch will begin the move. At the point where it is fully bottomed out, back the adjuster off 1/2 to 1 full turn. The closer to the 1 full turn that you adjust it to, the more reserve you will have in the lever before the motorcycle begins to move; the full engagement of the clutch will be proportionally closer to the end of the sweep of the lever. This amount can be adjusted to suit rider comfort and riding style. Tighten the jam nut to 120 in-lbs while holding the adjuster screw from rotating.
2. Snug the bleeder valve and place a clear tube over the bleeder valve on the side cover. Run the tube into a clean container.
3. Stand the motorcycle upright so that the master cylinder on the clutch lever is level. Remove the master cylinder lid and gasket.
4. Add new DOT 4 silicone brake fluid to the master cylinder reservoir until the fluid level is at or below the full line. **DO NOT OVERFILL THE MASTER CYLINDER.**
5. Squeeze the lever 5-10 times. Open the bleeder valve on the side cover and clutch fluid should flow through the tubing. If not, keep pumping the lever as it may take a few minutes for the fluid to make it all of the way through the line and cover. Once fluid begins to flow through the clear tube, close the bleeder valve. It may be necessary to add more fluid at this time, even before any fluid begins to flow out of the clear tubing.
6. Squeeze the clutch lever and hold it against the handlebar to build up hydraulic pressure. Open the bleeder valve on the side cover about 1/2 turn. Clutch fluid will flow through the clear tubing. Close the bleeder when the clutch lever has traveled about 50-75% of its full travel. Wait for the clutch lever to return to its released position. Repeat this step until all air bubbles have been forced out of the system and there are no bubbles in the fluid within the clear tubing.
7. When the system has been fully bled and the clutch lever no longer feels mushy, fully tighten the bleeder valve on the side cover to 80 in-lbs. It may be necessary to fill the fluid in the reservoir to the full line at this time**. DO NOT OVERFILL THE MASTER CYLINDER.**
8. Place the cover back on the master cylinder and tighten down according to the manufacturer's specifications. Check to make sure that the clutch line is tight at the clutch lever and the side cover at this time.
9. Install the primary derby cover, referring to the Factory Service Manual for the proper tightening sequence.

FINAL STEPS | OPERATION

TRANSMISSION FLUID

1. Re-install the transmission drain plug and torque it to 14 – 21 ft-lb.
2. Pour 28-32 oz. of transmission fluid (75-85W140 synthetic gear oil) into the transmission through the dipstick hole using a funnel.
3. Re-install the transmission dipstick and torque it to 25 – 75 in-lb.

FIGURE 57 | INSTALLED F6R TRANSMISSION KIT

REVERSE SYSTEM OPERATION
R-1-N-2-3-4-5-6 SHIFT PATTERN

In order to shift the motorcycle into reverse, you need to be at a complete stop in 1st gear. Pull the clutch in, depress the reverse safety momentary switch, and while still holding the switch with your thumb, shift the motorcycle into reverse by pushing down on the shift lever (below 1st gear). You are now in the reverse gear.

You may let go of the reverse safety momentary switch once you have shifted into reverse. Then let out the clutch and apply a small amount of throttle, similar to slowly maneuvering your bike a tight parking lot. When you are done backing up, stop the bike, grab the clutch, and using the foot shifter, shift UP into 1st gear. You do not need to use the reverse safety momentary switch to shift the bike back into 1st gear.

NOTE: HOLDING THE MOMENTARY SWITCH FOR EXTENDED PERIODS OF TIME WILL DEGRADE THE LIFE OF THE SOLENOID, POSSIBLY CAUSING IT TO FAIL.

Once back into 1st gear, make sure the lock out is working properly by pushing down on the shift lever without using the safety momentary switch; you should not go back into reverse. This lets you know that the safety lever is doing its job by blocking you from shifting into reverse without using the reverse safety momentary switch.

Once securely back into 1st gear, you are free to ride around with your new R-1-N-2-3-4-5-6 shift pattern. ***IT MAY BE TEMPTING TO TRY AND RIDE FAST IN REVERSE, BUT IT IS UNSAFE TO DO SO. THE FRONT END RAKE OF YOUR BIKE MAKES IT VERY EASY TO TIP OVER IF YOU FAIL TO MAINTAIN REASONABLE SPEEDS IN REVERSE.*** When you take off for your initial test ride, ease into it and slowly accelerate through all of the gears to ensure that you reassembled the vehicle properly. Additionally, make sure all other components are functioning in the manner in which they were designed.

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, give ‘em hell and enjoy your new BAKER F6R reverse system.

TERMS & CONDITIONS

ORDERS

Orders can be pre-paid using VISA, MasterCard, American Express, and Discover or via wire transfer ($30 wire transfer fee applies). All orders not pre-paid will be sent C.O.D. certified check or money order only unless pre-approved for company check acceptance. Any orders from outside the USA must be pre-paid in US funds via wire transfer ($30 transfer fee applies).
Prices shown are F.O.B. Haslett, MI. BAKER™ ships via UPS Ground or USPS Parcel Post for all orders. UPS air shipment or USPS Priority/ Express services are available upon request. Customer is responsible for all shipping charges unless otherwise arranged at the time of sale.

CUSTOMER SUPPORT

For any installation or service questions, please contact our BAKER technical department: 1-517-339-3835.

LIMITED WARRANTY

BAKER™ transmission assemblies, transmission kits, primaries, and oil pans 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. BAKER™ clutches, kicker cover kits, belt drives, F6F kit, reverse systems, covers and accessories 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. Electrical components are guaranteed for 90 days, chrome finish is guaranteed for 6 months.

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™ option, repair or replace the defective part of the assembly.

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

RETURNS AND EXCHANGES

Any merchandise returned for any reason (exchange, credit or modification) must be accompanied by a Returned 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% restocking fee for all returned items. BAKER™ is not liable for any shipping changes or damages incurred during shipping. Shipments of returned goods must be insured by the customer.

ADDITIONAL WARRANTY PROVISIONS

NOTE: 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 accessories are designed exclusively for use in American V-Twin 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 unless you were instructed to do so by a BAKER Drivetrain technician for diagnostic purposes.

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.

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	SER

NOTES