BAKER™ DRIVETRAIN

PREMIUM DRIVETRAIN INNOVATIONS FOR AMERICAN MOTORCYCLES

INSTALLATION INSTRUCTIONS

FOR

Right Side Drive Builder's Kits

Ground-up Construction Only
Big Twin Applications

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APPLICATION

The R501K and R511K Right Side Drive (RSD) Builder's Kits are designed for installation into any 1987 and later 5-speed Big Twin transmission case. The RSD Builder's Kits are 5-speeds with the following gear ratios:

GEAR	R501K	R511K
1st	2.94	3.24
2nd	2.21	2.21
3rd	1.60	1.60
4th	1.23	1.23
5th	1.00	1.00

FUNCTION

The RSD series of transmission products allows the user to run the secondary drive output off of the ride side of the transmission housing, instead of the conventional left side configuration. The right side secondary output allows a zero offset motor placement for proper vehicle balance and reduced stress on the motor sprocket output, as compared to the left side drive convention.

FEATURES

The R501K and R511K Right Side Drive (RSD) Builder's Kit features an all-American made construction with the following attributes:

Chrome plated 6061-T6 Trap Door
8620 Gears made by Andrews products to BAKER specs
BAKER roller detent shift system
One-piece countershaft and 5th gear

Because the BAKER RSD transmissions use the one-piece countershaft and 5th gear design, the common 'fuse' that breaks in the traditional left side drive transmissions has been eliminated. For this reason, the RSD transmission is good for 180+ HP applications.

CONTENTS

The RSD Builder's Kits come with the hardware as shown in Figure 1. The gearset is pre-assembled as a 'cartridge' unit with all bearings, thrust washers, and retainers and is ready for installation.

FORWARD

We highly recommend that the BAKER RSD Builder's Kit be installed only by trained and/or seasoned mechanics with prior H-D 5-speed experience. **If you have never serviced an H-D 5-speed, do not attempt this installation project.**

REQUIRED READING

Regardless of the skill level or experience of the individual installing the RSD Builder's Kit, it is highly recommended that a genuine H-D Motor Company parts catalog (1991 - up) AND a Factory Service Manual be available for reference during installation. The installation instructions for the RSD Builder's Kit will make frequent reference to the Factory Service Manual. Any Factory Service Manual from 1991 - up is sufficient.

CLUTCH ACTUATION

Drag racers who use RSD hardware generally prefer to use their own clutch actuator setup. BAKER DRIVETRAIN offers a chrome plated pulley shroud/actuator assembly, P/N R599. It is supplied with a hydraulic piston and right side push rod. The BAKER unit is compatible with 37088-90 style long center clutch pushrods. We also offer a mechanical (ball & ramp) type shroud/actuator assembly, P/N R598 and its compatible with stock cables.

All stock and aftermarket clutch and primary drive setups are completely compatible with RSD.

For the Hydraulic actuator, BAKER recommends an 11/16” master cylinder, or larger. Use of smaller master cylinders may result in incomplete clutch disengagement.

SPEED SENSOR

If you are running an electronic speed sensor, the sensor installs in the same position as a stock 5-speed. However, you must sandwich the 3/32” spacer (provided with the kit) between the underside of the sensor and the transmission case for proper sensor spacing relative to the 5th maindrive gear that is triggering the sensor.

The sensor is triggered by the 4th mainshaft gear in a stock 5-speed and the 5th mainsthaft gear in the RSD setup. Because of this, you will need to use a recalibration unit to correct the speedometer reading.

S&S recalibration units are available through BAKER DRIVETRAIN.

FLUID FILL

Fluid capacity is 20-24 oz. and is filled through the speed sensor hole in the case. We recommend the following oils:

Red Line Heavy Shockproof
Bel Ray 85W 140
Spectro 75W 140
Torco 85W 140

Remove the 1/4” pipe plug from the top of the trap door and install the fluid in this port. Install the specified amount and re-install the pipe plug. With the bike level, fluid can be checked by removing the 1/8” pipe plug located on the side of the door. If the fluid is too high, it will run out of this port. A 1/8” pipe plug is on the bottom of the door for draining the fluid.

SPECIAL TOOLS

The only special tools required are tools that would also be required for any 5-speed installation.

For removing and installing the 1-7/8” transmission sprocket nut, H-D 94660-37A is required. The JIMS® equivalent part is 94660-37A.

For installing the gearset into the case (see gearset installation), H-D 34902AQ is required. The JIMS® equivalent part is 34902-84. This is the same tool that is commonly used for removing and installing the inner bearing race (34091-85) on the mainshaft.

CAUTION

BAKER DRIVETRAIN does not recommend that the RSD hardware be installed into any cases that are of foreign manufacture. It is very critical that the bearing bore positions be located correctly relative to the dowel pins on the door (right) side of the case. Foreign cases are notorious for having poor dimensional quality control. Also, used or damaged cases should not be used.

CONVENTION

Frequent references are made to the left side of the case and the right side of the case. See Figure 6 for definition of left and right.

CUSTOMER SUPPORT

For any installation and service questions, please contact our technical department at 1-877-640-2004, toll free.

DISCLAIMER

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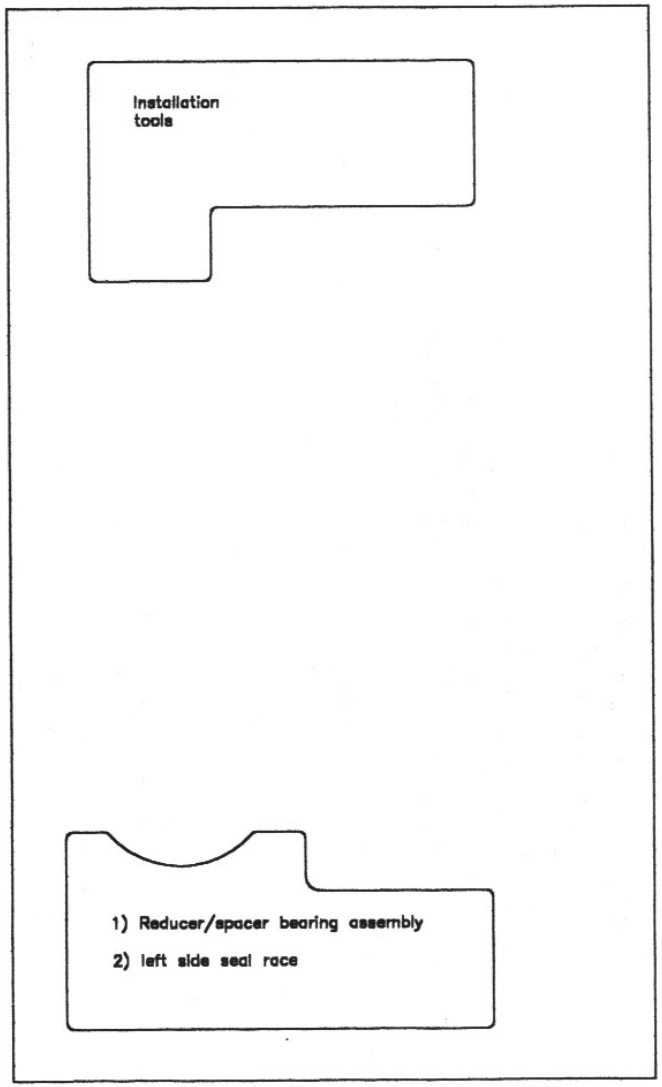
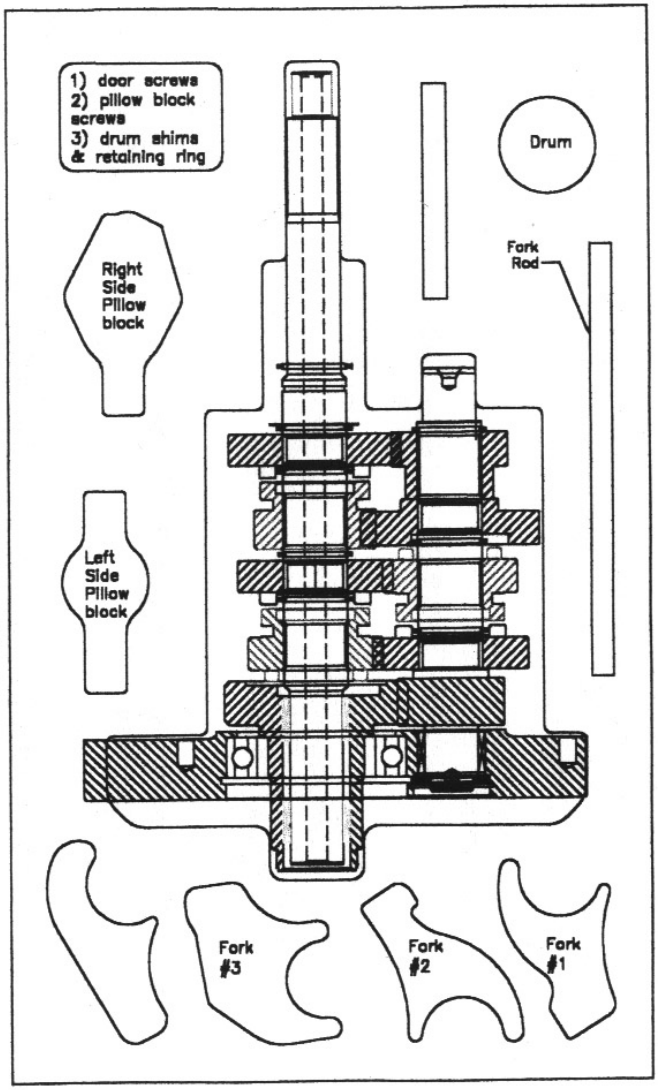
The installation of these parts may void or otherwise adversely affect your factory warranty. If is the sole responsibility of the user to determine the suitability of this product for his or her use, and the user shall assume all legal, personal injury risk and liability and all other obligations, duties and risks associated therewith.

Figure 1

Top Foam



Bottom Foam



INSTALLATION INSTRUCTIONS

CASE PREPARATION

Start with any 1987-up 5-speed case with a pre-2000 style ratchet pawl installed. With a conventional hydraulic press, press the reducer/spacer bearing assembly into the large bearing bore on the left side of your case with the snap ring facing outwards. Just like installing a bearing, apply force to the outside of the reducer spacer. It helps to put the reducer spacer/bearing assembly in your freezer, for an our or more, to shrink it slightly before you install it into the case. Use the large, loose, snap ring provided to retain the reducer spacer/bearing assembly into the case (like a conventional 5-speed).

The small bearing bore in the left side (32mm diameter) of the case uses the conventional HD8977 'cup' bearing. This stock bearing is not provided.

GEARSET INSTALLATION

At this time, do not remove the zip tie that secures the mainshaft to the countershaft.

Place the side door gasket (provided) onto the case dowel pins. As a 'cartridge' unit, slide the gearset into the case (Figure 2). Draw the mainshaft through the bearing with special tool P/N H-D 34902A, 2 1/2" long black pipe spacer (provided), and 1" I.D.

washer (provided) that is included with the kit (Figure 3). Install the retaining ring that you removed earlier onto one end of the mainshaft; install it from the left side of the case (Figure 4).

Tap the trap door onto the dowels with a rubber hammer. Install the eight screws (4-1/4 -20's and 4-5.16-18s) into the door. Torque the 1/4-20 screws to 7-9 ft lbs. and the 5.16-18 screws to 13-16 ft lbs.

At this time, remove the zip tie that secures the two shafts together.

Pour some transmission oil (approximately 2 ounces) on the gears and shafts. Position the slider gears (the gears that forks will be installed on in the next step) in a neutral position. In other words, position the slider gears in the middle of the adjacent gears so that there is no dogtooth engagement on either side. Spin the mainshaft over to make sure everything rotates freely.

Drive the left side seal race onto the mainshaft with the two 3/8-16 blind screw holes facing out. This can be accomplished one of two ways. The easiest way is to heat the seal race in an oven for an hour at 250°F. Simultaneously put a bag of ice on the mainshaft to cool and contract it. Remove the seal race from the oven with a thick leather glove and rapidly slide it onto the mainshaft until it stops.

The alternate way is to use special tool P/N H-D 324902A and drive the seal race onto the shaft as shown in Figure 5. The 1 1/2" long black pipe spacer (provided) and the 1" I.D. washer will have to be sandwiched in between the tool and the left side seal race to drive the seal race home after the nut on the tool meets the end of the threads on the tool.

After the seal race is installed, install a stock H-D 12067A seal over the seal race into the left side of the case like a conventional factory 5-speed. Be careful not to fold the lip of the seal over.

FORKS AND SHIFT DRUM INSTALLATION

Install the three forks onto three gears. Two forks are similar in shape and one fork is unlike the other two. The dissimilar fork goes onto the 3rd countershaft gear; it is marked with a ‘3’. The other two forks go onto the 2nd main and are 1st main with the 1/4” dowel pins tucked inward, they are marked with a ‘2’ and ‘1’, respectively. See Figure 6,

Slide the fork rod through the forks. Move each fork back and forth to check that it moves freely.

Assemble the left side pillow block (the one with the spring loaded detent art) to the drum. Install the shim provided and the retaining ring just like a stock left side drive 5-speed; see your Factory Service Manual. The shim for the drum has been prematched to the drum and pillow block assembly and complies with BAKER endplay specifications.

Install the drum and pillow block assembly onto the top case dowels with the 1/4-20 x 1 1/4” cap screws and blue Loctite. The detent lever faces downward into the case.

Install your shifter arm (not provided with kit) onto the splines of the ratchet pawl and tighten down the pinch bolt. Bench-shift the transmission to make sure that the fork actuation is correct. To bench shift any transmission, you must simultaneously rotate the mainshaft as you are shifting.

Install the top cover of your choice. If the top cover is not a stock-style cover, then make sure that the top cover allows the detent arm on the right side pillow block to actuate freely. If you are running a neutral switch, check function with an ohmmeter at this time.

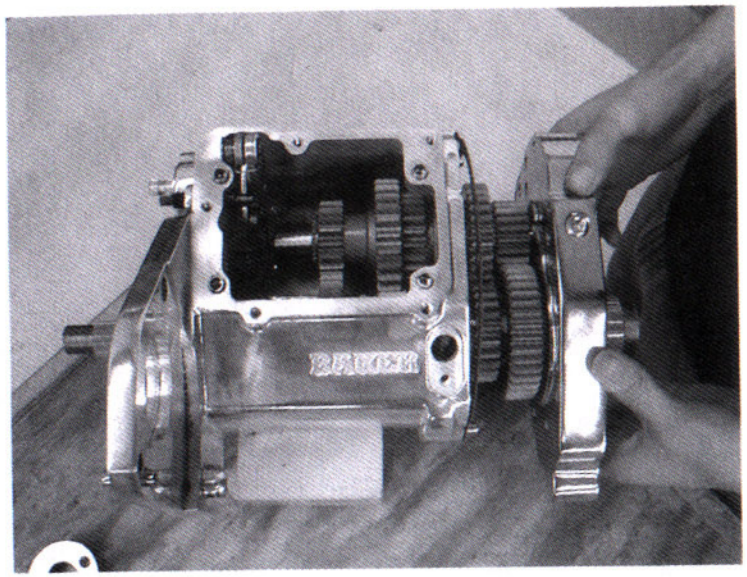


Figure 2

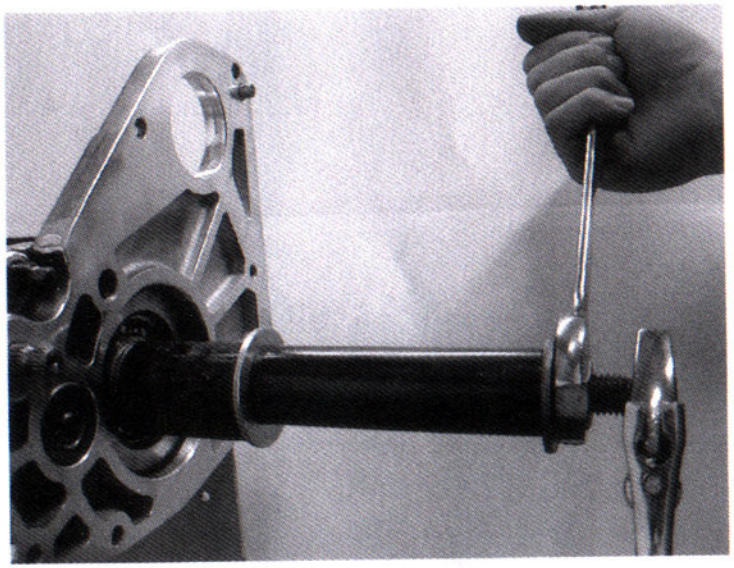


Figure 3

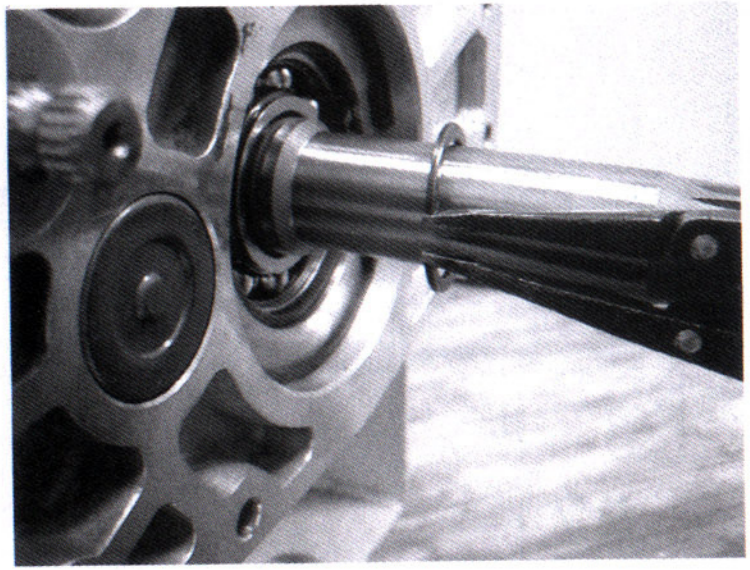


Figure 4

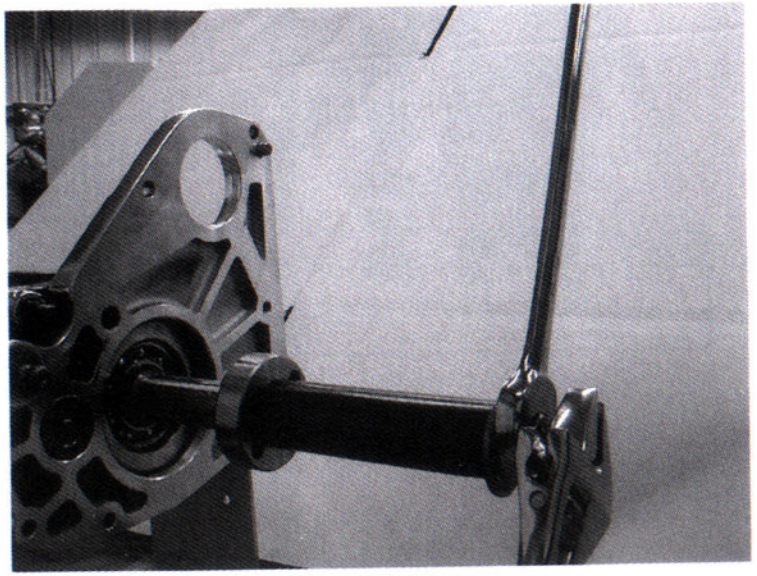
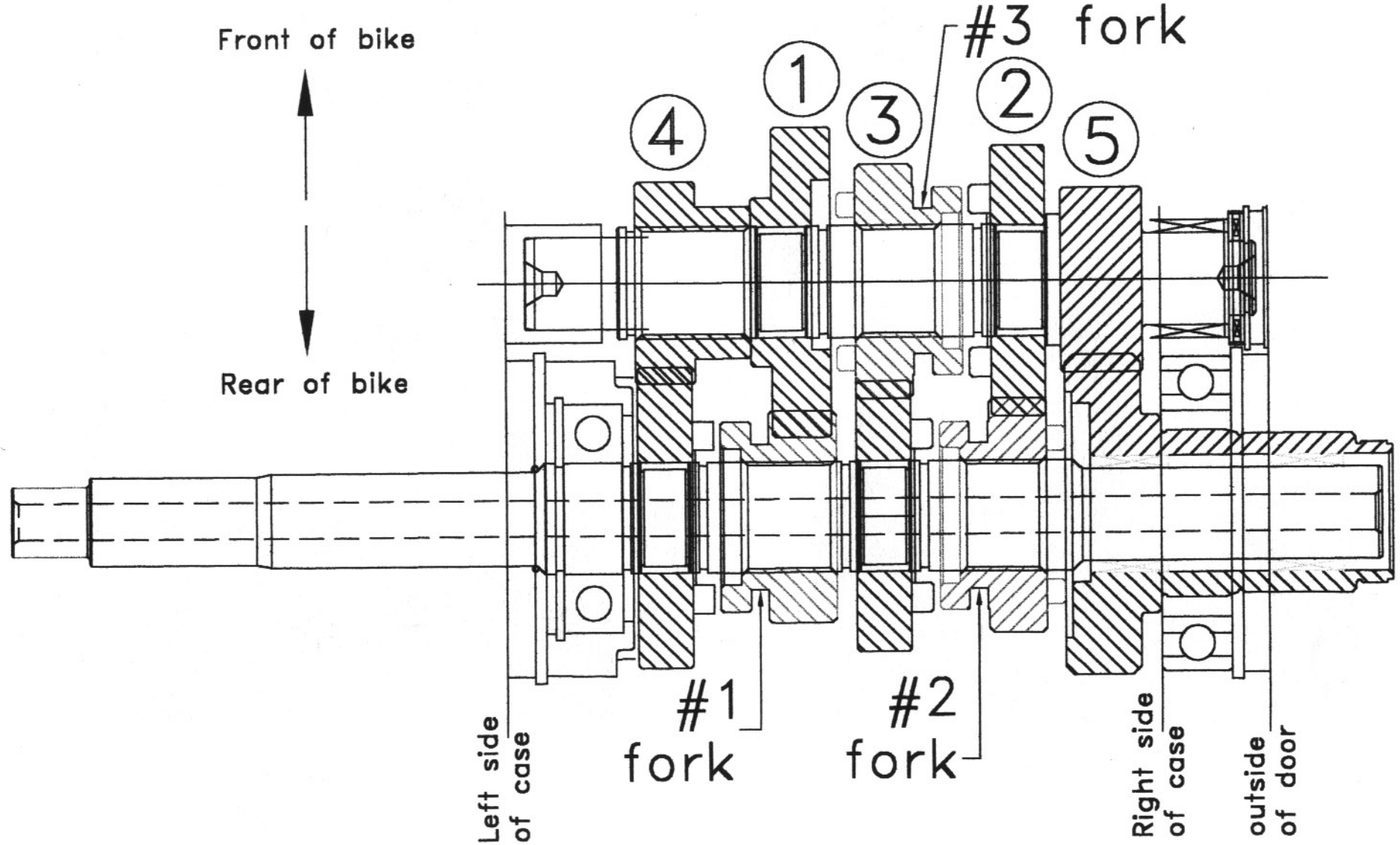


Figure 5

Figure 6


Front of bike
Rear of bike
4
1
3
#3 fork
2
5
#1
fork
#2
fork
Left side
of case
Right side
of case
outside
of door