# BAKER™ DRIVETRAIN

INNOVATIVE DRIVETRAIN COMPONENTS
FOR AMERICAN MOTORCYCLES

# ANTHOLOGY OF GEAROLOGY

VOLUME 1

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# WWBW: WHAT WOULD BERT WRITE?

## The 45° V-Twin Monolith

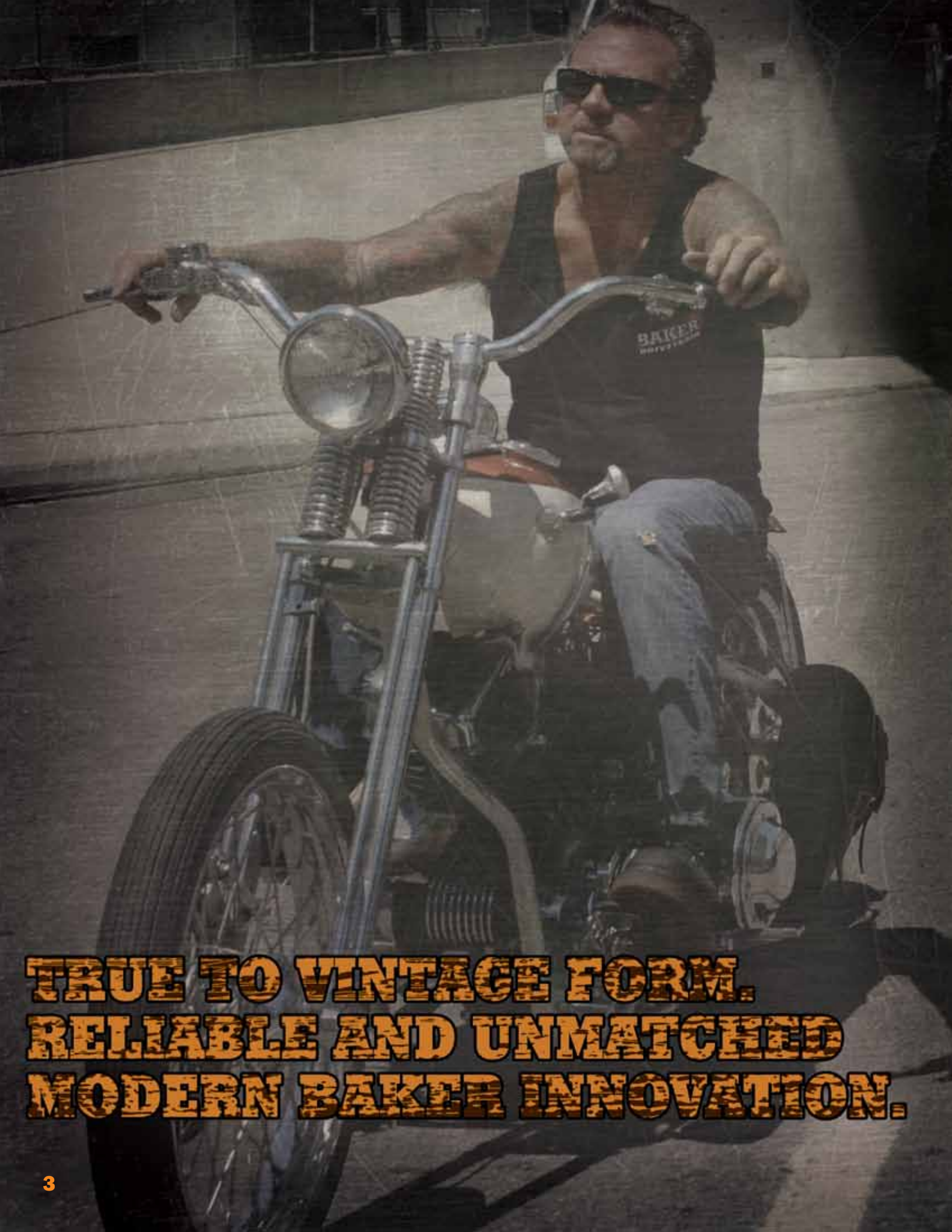
In Stanley Kubrick's 1968 masterpiece "2001: A Space Odyssey", apes awake to find a large flat black monolith that somehow triggered a shift in the evolution of mankind starting with the ability to use tools and weaponry. The apes did not understand it nor did they need to understand it: it was just there. In fact, it was a complex, but simple looking machine, planted by extraterrestrials to advance and evolve the human species. The monolith was a black, extremely flat, non-reflective rectangular solid whose dimensions were in the precise ratio of 1:4:9 (the squares of the first three integers). While the external dimensions were geometrically simple (and perfect), the internal workings were complex beyond the scope of humanity.

In the dawn of the industrial revolution, Harley Davidson started manufacturing 45° V-Twin air cooled motorcycles. Over the years, the simplicity of the design has been questioned, scoffed, and laughed at by motorcycle enthusiasts and even Harley Davidson itself. Feeling the pressure from overseas competition in 1976, Harley set out to develop a V-4 liquid cooled motorcycle, code named the Nova project. The Nova project was shelved when Harley was bought back from AMF in 1981 and the company decided to focus its limited resources on developing the Evolution engine. In this century another attack against the 45° V-Twin was made when the 60° liquid cooled V-Rod was launched in 2002. Rumors quickly circulated about the double overhead cam V-Rod powertrain eventually replacing the antiquated 45° pushrod engine in all the Big Twin platforms. But this never happened and it never will because the faithful will not allow it.

Like the Space Odyssey monolith, the iconic air cooled V-Twin engine is simple and basic looking. Because of this, it is easy to question its relevance in today's fast-paced technological world but one fact is clear; do not question its validity. Honda, Yamaha, Suzuki and Kawasaki have made fake monoliths with V-Twin cruisers that mimic the real thing but they all failed. You can't just create a cultural icon fueled by economic greed. The 45° American V-Twin engine is THE alter to which we all pay homage. Harley-Davidson is the rock and the aftermarket companies like BAKER Drivetrain are the peyote mushrooms that grow on the rock: we are the colorful side of this culture. Beyond that, there are millions of people the world over that make up this colorful subculture of people having fun, enjoying life, and escaping from fuckin cell phones.

At BAKER Drivetrain, our goal is to advance the American V-Twin drivetrains and that's exactly what we've been doing for the past 15 years. We started with our original 6-speed overdrive in 1998 and continue our quest to advance and evolve the American machine we all love. We do this by investing heavily in R&D and developing new components that make the machine better and better. Over the years, our products have been copied by slime balls overseas but they've all failed for one simple reason: they are not committed. Lisa, myself, and all BAKER employees live and breathe this stuff every day because we are 100% committed to the cause of making the 45° V-Twin monolith bigger than life.

BERT FU*KIN BAKER


TRUE TO VINTAGE FORM.
RELIABLE AND UNMATCHED
MODERN BAKER INNOVATION.

# I GET IT NOW...

At Biketoberfest in 1998 we unveiled our big new product, the 6-Speed Overdrive. I was confident that this new transmission would simultaneously solve world hunger, cure breast cancer, and kill all the deer that wait in the road to get hit by a biker . I was proud. Working in the booth one day, some old crusty coot walked by our booth and asked me what it was. I proudly proclaimed “Sir, that’s our new BAKER 6-Speed Overdrive”. With a cold stare he looked at me and said: “ what good is it if it ain’t got a ratchet top?”. I had no response and felt like snuffing it.

I don’t know that cat’s name but I thought a lot about what he said to me many years ago. So this section of the catalog is dedicated to you, mother fucker. You inspired me. I’ve been studying you and your kind for a number years and finally got you figured out. You don’t want a new bike. You want an old bike. You wouldn’t take a new bike if it was given to you. Riding a new bike would be akin to riding a Chinese moped down main street in Sturgis wearing a pink tutu.

This collection is drivetrain components, many of them new, for 4-speed Big Twins (1936-86) and 4-speed based customs. We’ve been busy. But developing new products for old bikes is tricky because you have to balance innovation with heritage. Take a look at our new 4-speed. We have a jockey top for it now and a N1 drum for foot clutch hand shift junkies. And we didn’t forget about the freaks who own 1984-86 Big Twins; we now have that special mainshaft length (unique to those bikes) now for our 6-into-4s. Finally, our new Tin Type Primary (TTP) is the first modern enclosed primary for old bikes that gives a nod to the original tin primaries from 1936. But the TTP fits today’s alternator/generator hermaphrodite motors, doesn’t leak, and is set up for dependable and tidy modern starters.

I want to find the guy who cut me down to size many years ago and gave me proper motivation. If you read this, come find me at the next bike show and identify yourself. I want to shake your hand and thank you.

BERT BAKER

PROCEED TO THE 4 SPEED ERA >>>>>>>>>>>>>>

# 4 SPEED


**4-SPEED RATIOS:**

| | |
|---|---|
| 1st Gear | 2.50 |
| 2nd Gear | 1.70 |
| 3rd Gear | 1.25 |
| 4th Gear | 1.00 |

## 4-SPEED TRANSMISSION

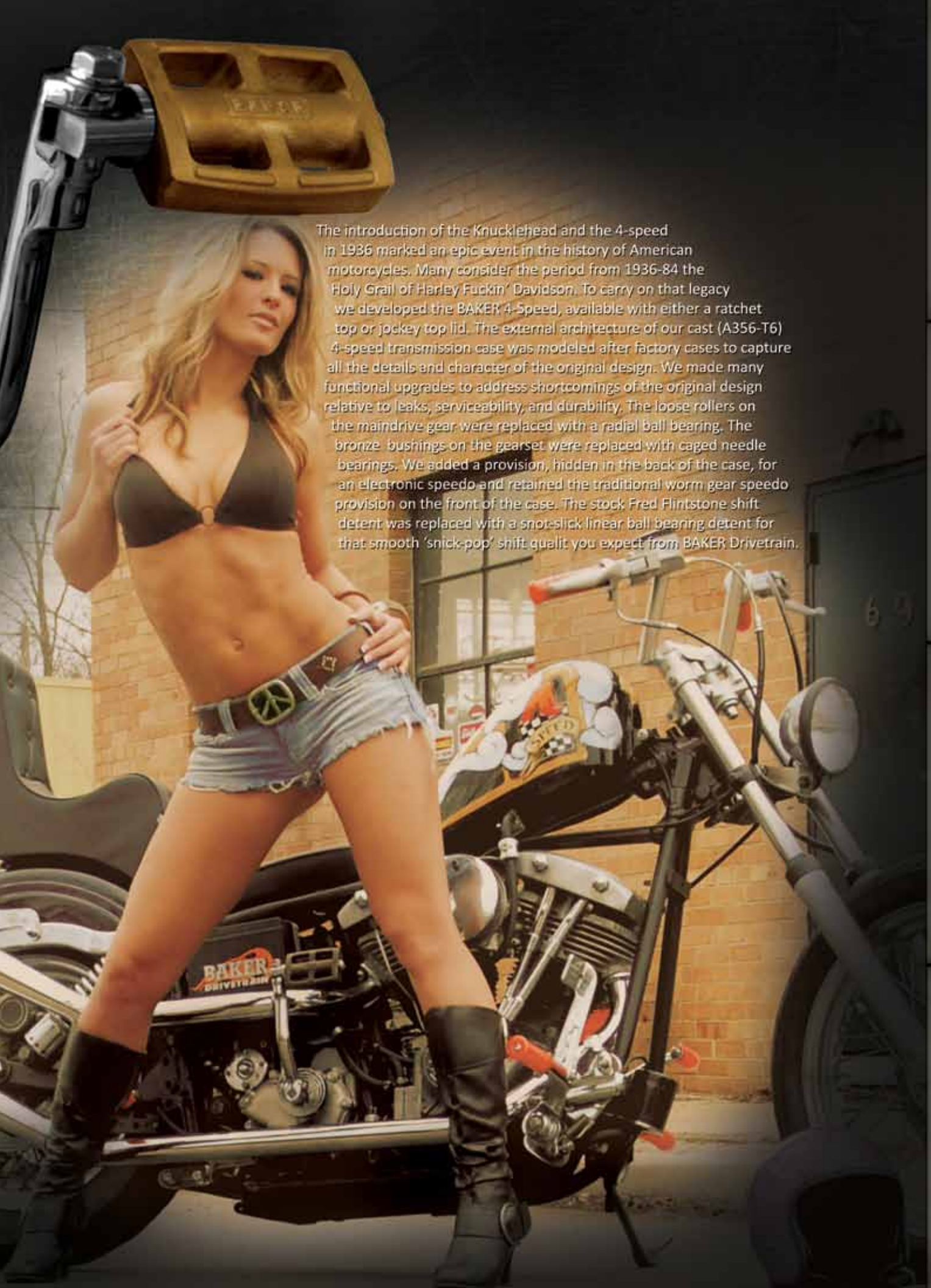
| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 4-3664 | 4-Speed, 2:1 Speedo Drive, No Ear Case | 1936-64 FL & FX |
| 4-6569 | 4-Speed, 2:1 Speedo Drive | 1965-69 FL & FX |
| 4-70E84 | 4-Speed, 1:1 Speedo Drive | 1970-E84 FL & FX |
| 4-7090 | 4-Speed, 1:1 Speedo Drive, Splined Mainshaft for use with BAKER Shovel Clutch | 1970-E84 FL & FX |

**KEY FEATURES**

- Sand cast (A356-T6 aluminum) case design holds true to the original vintage 1936 based configuration
- Ratchet and jockey top covers feature a hidden transmission vent
- Billet case hardened steel shift drum (FL, FX, and N1) rotates on Permaglide bushings for a smooth, repeatable shift each time
- BAKER Klassic Kicker Gears are standard
- Modern 4-speed gearset made with 8620 gear steel
- Gears ride on needle bearings, not bronze bushings
- Vintage cast kicker cover with traditional H-D styled early cone (PN 37310-39) throw out bearing and one piece release rod
- Direct replacement for most stock 4-speed models (See technical section of website for instructions and 1965-69 fitment detail)
- Five-year/50,000 mile warranty

NOTES

- Add an 'R' suffix to specify raw case, 'B' to specify black finish or 'P' to specify polished finish
- Replica kicker cover is standard for 4-speed builds. Alternate kicker covers are available, see page 18



The introduction of the Knucklehead and the 4-speed in 1936 marked an epic event in the history of American motorcycles. Many consider the period from 1936-84 the Holy Grail of Harley Fuckin' Davidson. To carry on that legacy we developed the BAKER 4-Speed, available with either a ratchet top or jockey top lid. The external architecture of our cast (A356-T6) 4-speed transmission case was modeled after factory cases to capture all the details and character of the original design. We made many functional upgrades to address shortcomings of the original design relative to leaks, serviceability, and durability. The loose rollers on the maindrive gear were replaced with a radial ball bearing. The bronze bushings on the gearset were replaced with caged needle bearings. We added a provision, hidden in the back of the case, for an electronic speedo and retained the traditional worm gear speedo provision on the front of the case. The stock Fred Flintstone shift detent was replaced with a snot-slick linear ball bearing detent for that smooth 'snick-pop' shift qualit you expect from BAKER Drivetrain.

# 4 SPEED FEATURES AND TECHNICAL INFO...

## GEARSET

4-speed gears and shafts are manufactured with 8620 steel. Vacuum carburized heat treat gives a case hardness of 58-62 Rockwell 'C'. Gear teeth profiles are ground and finished with diamond tooling after heat treat to correct the tooth distortion that naturally occurs when you put a chunk of steel in a very hot furnace. Remove the shifter lid from one of our 4-speeds and turn the shafts; you will hear silence because the involute profiles are perfect. The designers of this transmission back in the 1930's would be envious of the improvements we made to their design with modern manufacturing processes. We added lead-in helical ramps on the shift clutches to improve shift quality. All bronze bushings were replaced with modern low friction bearings.

3rd & 4th GEAR SHIFT DOG / CLUTCH SHOWN NOTICE THE LEAD IN ANGLE CUT INTO THE SHIFT DOGS

## KICKER COVER OPTIONS

We offer six different kicker covers with three different clutch actuation configurations including the traditional external release arm, 1987-up ball-ramp cable type, and hydraulic clutch actuation. Our full line of kicker covers is shown on page 18. Visit our website for additional details.

## SHIFT DRUM OPTIONS

We manufacture 3 shift drums for the 4-speed; the FX & FL types with conventional shift patterns and N1 style. The FX drum is for top pull applications and the FL drum is for bottom pull applications. The N1 drum takes the FX pattern and relocates neutral down below 1st for an N-1-2-3-4 pattern as an alternative to the standard 1-N-2-3-4 pattern. Great for foot clutch and performance applications.

ALL MAINSHAFTS HAVE CAGED NEEDLE BEARING LANDINGS


## MAINSHAFT LENGTHS

We manufacture 4 different length mainshafts for the 4-speed; the 1936-64, 1965-69 (1st year of electric start), 1970-E84 and a 1970-E84 splined mainshaft for modern clutch setups. See our modern splined shovel clutch on page 17. The late 84 (diaphragm clutch) style tapered mainshaft is offered in our 6-into-4 product line only, see page 9. All BAKER mainshafts are designed for caged 3rd gear needle bearings, eliminating the metal to metal contact found in the stock design.

## KLASSIC KICKER GEARS

Our Klassic Kicker Gears are standard in all BAKER 4-Speeds . These gears are made from 1018 HR steel. They're tumble finished to 20 micro, and heat treated to 50-55 RC; these gears roll smooth as glass.

## CASE OPTIONS & PROVISIONS

To design the BAKER 1936-64 4-speed transmission case, we studied an original 1936 case to capture all the details and character of the original design. The 1936-64 case is compatible with tin-type primaries (no primary 'ears') and features an alignment track on the bottom and a stock style speedo provision on the front.

An original 1965 case and a 1977 case were studied to design our vintage looking 1965-E84 case. The modern 4-speed BAKER case has the electric start style primary 'ears' and features the original speedo provision on the front and a 1994-up hall-effect speedo provision on the back which utilizes Factory 1996-06 speed sensors.

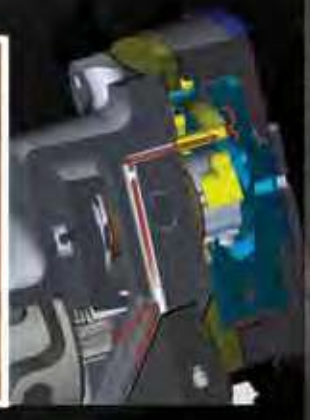

## ALIGNMENT TRACK

Like the stock 1936-64 4-speed, the BAKER 1936-64 case has an alignment track on the bottom of the case (between the studs), tongue-and-groove for the transmission plate to prevent lateral movement of the transmission. Any fore/aft adjustment is done through the adjuster boss location for the primary chain. This setup ensures a positive alignment when running belt drive applications where you don't have an inner primary to lock the motor to the transmission.

**CASE FINISH OPTIONS:**
**Polished, Wrinkle Black and Raw**

## TOP COVER OPTIONS

All 4-speed top covers have a hidden vent system, which enables the transmission to breathe. Machined into the internal walls of the billet top cover, the breathing system allows air to flow in through the ratchet cavity and out through the shift cover. Jockey top covers vent out through the bottom side of the cover, just below the neutral switch. The full line of top covers may be viewed on our website.



# 6-INTO-4 TRANSMISSION

| PN | DESCRIPTION |
|---|---|
| 6402 | 6-into-4, Close Ratio, 2.94 First Gear |
| 6412 | 6-into-4, Stock Ratio, 3.24 First Gear |
| 64212 | 6-into-4, R-Ratio 2.82 First Gear, 2.08 Second Gear |

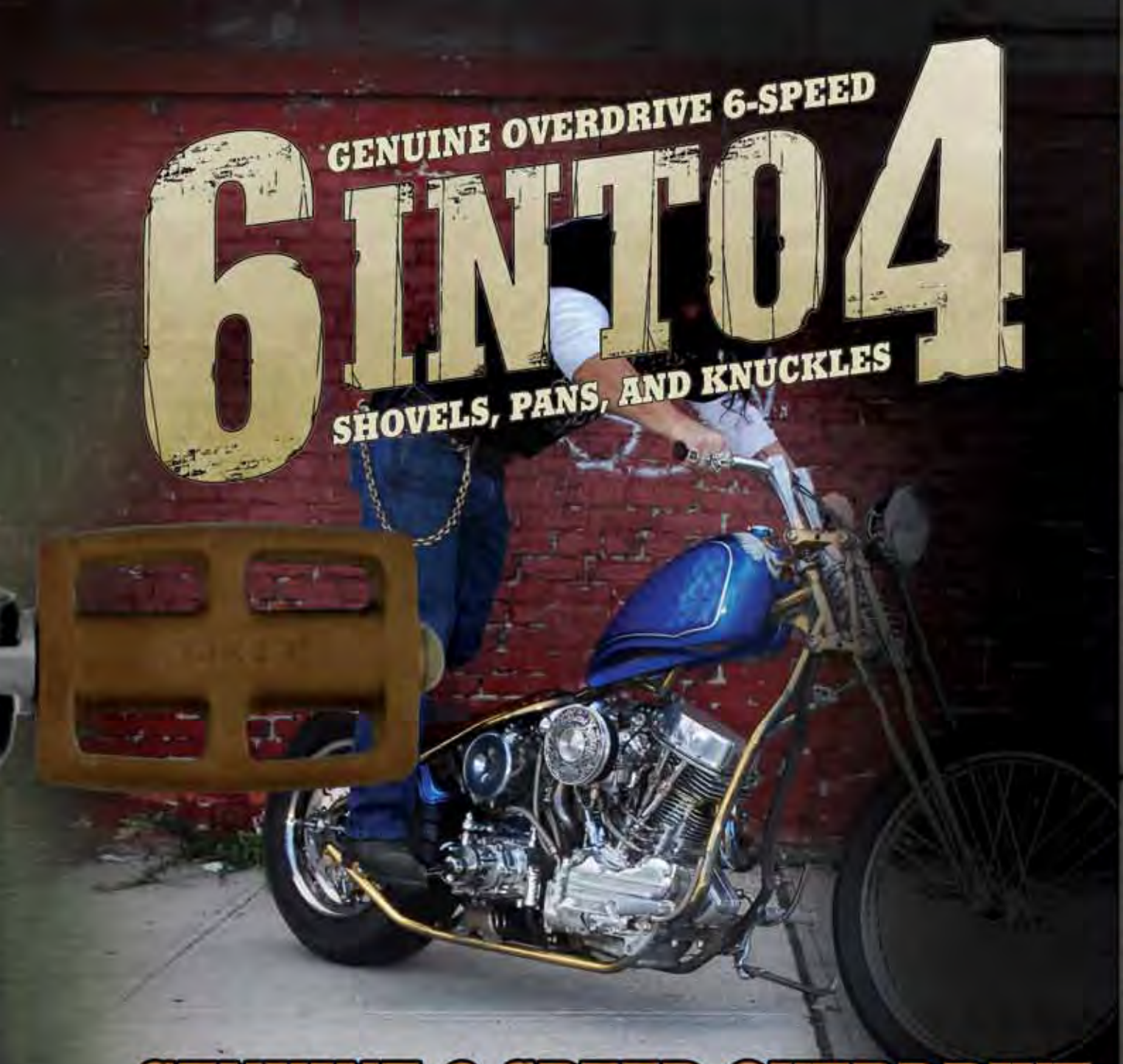
**FITMENT**
1936-86 FL & FX

**KEY FEATURES**
- 6061-T6 extruded billet case with nostalgic look of 4-speed and precision machined for no leaks
- The fifth mounting stud is machined into the case for strength and eliminates the need for the failure-prone offset 5th stud adapter bracket
- BAKER Klassic Kicker gears, stainless steel kick arm, and bronze pedal standard
- Case available with or without primary flange in raw, wrinkle black, or polished finish
- 23-tooth sprocket standard, optional 24-tooth and 33-tooth pulley
- Forged top cover available with or without neutral switch
- Modern 6-speed style shift drum and shifter pawl for smooth quick shifts
- Electronic speed sensor provision on right rear of case
- Available with standard pattern shift drum (1-N-2-3-4-5-6) or N1 pattern drum (N-1-2-3-4-5-6)
- Five-year/50,000 mile warranty

**NOTES**
- Add an 'R' suffix for raw case finish, 'B' suffix for wrinkle black, or 'P' suffix for polish
- Add a '-36' suffix for the 1936-64 mainshaft with a no ear case
- Add an '-N1' suffix for N1 shift drum

**GEAR RATIO OPTIONS**

| | |
|---|---|
| 1st Gear | 3.24, 2.94, 2.82 R-Ratio |
| 2nd Gear | 2.21, 2.08 R-Ratio |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |
| 6th Gear | 0.86, 0.80 Deep Overdrive |




# GENUINE 6-SPEED OVERDRIVE FUNCTIONALITY, WITHOUT LOSING THAT 4-SPEED APPEAL

Years ago we came out with the 6-into-4 for Shovelheads. Sales of these transmissions have been a complete shocker and the message is loud and clear: People love their Shovelheads and they ride the piss out of them. We often get asked "why not a 5-into-4"? This is because 4-speeds and 5-speeds both have a 1:1 top gear ratio. This 1:1 top gear ratio provides no RPM advantage to your old iron. 6-into-4's have a 1:1 fifth gear and a .86:1 sixth gear; good for a 500 RPM reduction on the highway.

Our original 6-into-4 transmission is a significant upgrade to any 1936-86 4-speed Big Twin. We have longer mainshaft options that allow fitment into mid-80's wet (diaphragm) clutch models and shorter mainshafts for Panheads and Knuckles. Available with a variety of kicker covers.

GENUINE OVERDRIVE 6-SPEED

# 6 INTO 4

SHOVELS, PANS, AND KNUCKLES

# FEATURES AND TECHNICAL INFO...

**KICKER COVER OPTIONS**

We offer six different kicker covers with three different clutch actuation configurations including the traditional external release arm, 1987-up ball-ramp cable type, and hydraulic clutch actuation. Our full line of kicker covers is shown on page 18. Visit our website for additional details.

No ear case for stock 1936-1964 Applications

Primary ear case for 1970-1986 stock primary and bearing support applications

**CASE OPTIONS & PROVISIONS**

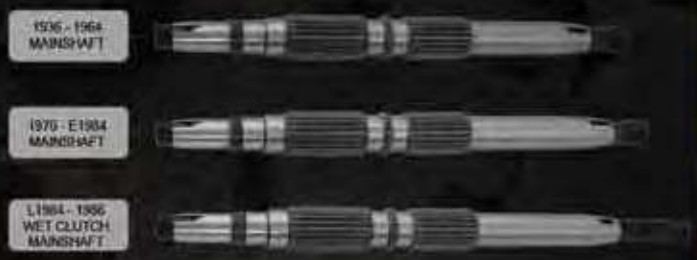
All 6-into-4 case options come with a 'machined-in' 5th stud. We took the weakest point on other aftermarket transmissions and made it into the strongest point on ours. The 5th stud commonly breaks out of its bolted on plate causing your driveline to tweak in the chassis. The 6-into-4 transmission case comes in two different versions. Our 1936-64 case is a no ear case to work with the factory primary. Our 1970-86 version comes with the primary ear bosses on it. These can be used with stock primary applications, belt drive applications, or when running no primary plate at all. If no inner primary or motor plate is used, we recommend the use of our outside bearing support, BAKER PN 6-4SSP-A or 6-4SS1.0P-A. Both cases have a provision for an electronic speedometer and are compatible with stock 1996-06 speed sensors. Some electronic speedometers may require the use of a speedometer recalibration box, BAKER PN 95E-56A.

**CASE FINISH OPTIONS:**

Polished, Wrinkle Black and Raw

**MAINSHAFT OPTIONS**

- Late 1984-86 length mainshaft. Diaphragm type wet clutch
- 1970-E84 length mainshaft. Shovelhead mainshaft
- 1965-69 length mainshaft. Panhead/Shovelhead
- 1936-64 length mainshaft. Knuckle/Panhead




**KLASSIC KICKER GEARS**

Our Klassic Kicker Gears are standard in all BAKER 4-Speeds . These gears are made from 1018 HR steel. They're tumble finished to 20 micro, and heat treated to 50-55 RC; these gears roll smooth as glass.

**TOP COVER OPTIONS**

The 6-into-4 is constructed with a single pole neutral switch top cover that features a hidden vent. The transmission can be ordered with our no-neutral top cover or you can upgrade to the Voyeur top cover that shows the internal beauty of the 6-into-4.



**SHIFT DRUM OPTIONS**

Standard Pattern Shift Drum (1-N-2-3-4-5-6)
N1 Pattern Shift Drum (N-1-2-3-4-5-6)

Our 5th stud is machined right in the case, for no chance of breaking

Aftermarket 5th studs are bolted on and notorious for breaking off

**OUTER BEARING SUPPORT**

Outer Bearing Support optional for 6-into-4 applications

BAKER DRIVETRAIN

# TTP
# TIN TYPE PRIMARY

## TTP: TIN TYPE PRIMARY

| PN | DESCRIPTION |
|---|---|
| 3100-TTP-R | TTP, Media Blasted, Kick Only |
| 3100-TTP-P | TTP, Show Polished, Kick Only |
| 3100-TTP-R-6N4 | TTP, Media Blasted, Kick Only - BAKER 6-into-4 |
| 3100-TTP-P-6N4 | TTP, Show Polished, Kick Only - BAKER 6-into-4 |
| 3101-TTPS-R | TTP, Media Blasted, Starter Version |
| 3101-TTPS-P | TTP, Show Polished, Starter Version |
| 3101-TTPS-R-6N4 | TTP, Media Blasted, Starter Version - BAKER 6-into-4 |
| 3101-TTPS-P-6N4 | TTP, Show Polished, Starter Version - BAKER 6-into-4 |

**FITMENT**

1970-E84 Big Twin and customs with Factory 4-speeds, BAKER 4-speeds, and BAKER 6-into-4.

**KEY FEATURES**

- Billet 6061-T6 Aluminum inner and outer primary housings available in steel shot blasted or show polished finish
- Available in kick only and 1.4kw 1990-2006 style starter configuration
- Starter type includes jackshaft and related hardware
- Modern fine chain tooth adjuster shoe and L-bracket included
- O-ring sealed locking flanged nuts for transmission-to-inner primary studs
- Nostalgic slotted screws, gasket, and related hardware included
- Zero leak drain plug with magnet standard
- Chain oiler and suction hardware included
- Inner primary is reinforced for strength around mainshaft bore with generous gussets
- Compatible with stock style stamped steel derby and inspection covers, BAKER aluminum covers are optional
- Two-year/20,000 mile warranty

# WE GET IT...
# OLD SHIT IS COOL

S&S started some shit. A few years ago they took the classic Shovel, Pan, and Knuckle engine designs and re-birthed them with many modern improvements to address leaks, durability, reliability, and performance. So we took the hint and re-engineered the venerable ratchet top and jockey top 4-speeds with that classic external architecture and updated it with many modern improvements. The only piece of the puzzle missing was the primary. We took the classic 1936-64 tin primary design and re-constructed it with 6061-T6 aluminum to facilitate alternator motor case compatibility, address leaks, reduce chain noise, and make modern starter integration possible. The result is the Tin Type Primary (TTP) in kick-only and starter type configurations, available with blasted or show polished finishes. The starter version is set up for factory 1990-06 starters. Stock tin derby and inspection covers fit but we highly recommend our sexy 6061-T6 aluminum TTP covers. The design utilizes our fine tooth modern L-bracket chain tensioner.

# TTP
## TIN TYPE PRIMARY

# FEATURES AND TECHNICAL INFO...

**TTP FINISH OPTIONS**
The TTP comes in 2 different finishes

**TTP FITMENT/COMPATIBLE WITH:**
- 1970-E84 Big Twins and custom 4-speed builds
- 1970-79 ratchet top 4-speeds (top or bottom pull)
- 1980-E84 turtle top 4-speeds (non starter TTP version only)
- Jockey top 4-speeds
- BAKER 4-Speed
- BAKER 6-into-4
- BAKER TTP-200A, Clutch release arm kit
- Alternator style motor cases
- Shovelhead clutches and BAKER splined clutch
- 1990-2006 1.4kw H-D starters with ¼-20 or 10-32 shaft
- Traditional tin derby and inspection covers or BAKER TTP covers
- 1955-64 splined non-compensator motor sprockets
- Stock 40007-36B primary chains
- TTP is not compatible with factory mid controls

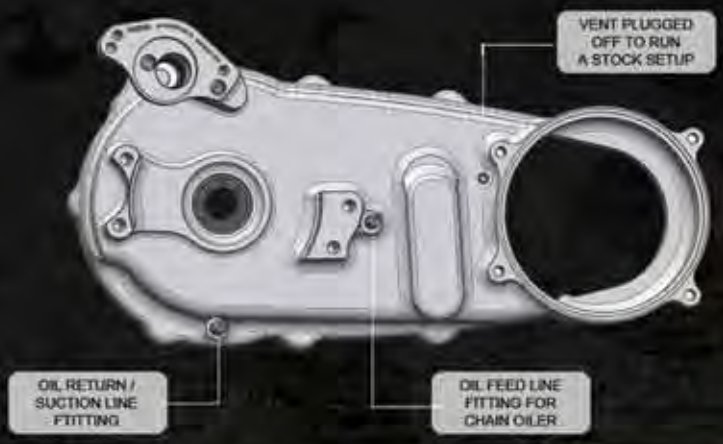
Media Blasted

Show Polished

**PRIMARY DRIVE CONFIGURATION OPTIONS:**
- 24 tooth motor sprocket, 37 tooth clutch sprocket, and stock 82 pitch primary chain (PN 40007-36B), for a 1.54 primary ratio.
- 24 tooth motor sprocket is maximum size that fits within the TTP envelope
- 22 tooth motor sprocket, 35 tooth clutch sprocket, and 80 pitch primary chain (available through BAKER) for a 1.59 primary reduction. 35 tooth clutch sprocket available with BAKER splined Shovel clutch
- 23 tooth motor sprocket, 38 tooth clutch sprocket, and stock 82 pitch primary chain (PN 40007-36B) for a 1.65 reduction. 38 tooth clutch sprocket available with BAKER Splined Shovel Clutch

**OPTIONAL DERBY COVERS & ACCESSORIES**
The TTP utilizes the stock stamped steel derby and inspection covers. Alternately, BAKER derby and inspection covers constructed with billet 6061-T6 aluminum are available

| PN | DESCRIPTION |
|---|---|
| 3102-TTP-P | Inspection & Derby Cover Kit, Show Polished |
| 3102-TTP-R | Inspection & Derby Cover Kit, Media Blasted |




TTP Inner Primary Fittings

**RUN IT WET OR DRY**

Can be run dry with Shovelhead era clutches and a 1970-E84 4-speed. Chain oiler feed and return provisions are on back side of inner primary similar to factory locations. For a cleaner look with better clutch function, heat dissipation, and dependability the TTP can be run wet with primary oil with the Splined Shovel clutch in conjunction with the BAKER splined 4-speed mainshaft. Splined 4-speed mainshaft available to convert any existing 1970-E84 transmission or it can be specified in a new BAKER 4-speed build. Splined Shovel clutch is highly recommended for 93+ inch engines to eliminate the problem of shearing the clutch key on the mainshaft.

**INTERNAL DESIGN**

The internal design of the Tin Type Primary has been beefed up around the mainshaft bearing with a structural web design unlike the the original 1970's inner primary housing, which is prone to breaking. Our modern fine tooth chain tensioner setup ensures quiet operation along with maintaining proper chain adjustment. Keeping your primary chain lubricated is a chain oiler fitting positioned just above and rearward of the adjuster. We added O-Ring counter bore pockets around the stud holes. These O-Rings provide a leak free sealing solution over the old silicone trick. Provided with the TTP are self locking flanged nuts for a proper squish of the O-Rings and a leak-free setup.


TTP Inner Primary Internal Design

Clutch Cable Kit TTP-200A


**NOTES**

Kit PN TTP-200A is needed in order to run your stock style clutch cable setup. It features a 10 degree release arm to clear modern starters and a clutch cable extension ferrule, so no modification to your stock setup are necessary.

# SPLINED SHOVEL CLUTCH

You know the sad story...The torque on the clutch nut backs off a hair and the key on the transmission mainshaft shears off. This usually happens at the most inconvenient time and place. And the probability of this sad story playing out is greater with performance applications.

The BAKER Splined Shovel Clutch kit retrofits and upgrades the stock tapered mainshaft and clutch to a modern 18 tooth spline configuration. Kit includes a fully assembled clutch and splined 4-speed mainshaft to retrofit stock 1970-E84 Big Twins.


## OPTIONS

You have the option of having the Shovel Clutch as a Kick Only application or as a stock replacement with starter ring gear for electric start applications. Both styles can be run wet or dry, note the differences in clutch basket design.

## STOCK CLUTCHES

Shovelhead clutches from the 70's had several shortcomings. Two of the leading issues were the sticky/jerky clutch and the other was the starter ring gear design. The ring gear design on the old stock clutches was a 3-piece design riveted together then welded to the basket. Over time the ring gear would wear and become skewed and cause starting issues.

## SHOVEL CLUTCH DESIGN

Our shovel clutch is based off our 9-plate clutch used on 1990-up applications and fits in the stock primary housing and TTP. We offer 35, 36, 37, and 38 tooth clutch sprockets with our clutches so that you can dial in your overall gear ratio.

The fundamental design approach of the BAKER clutches is different than anything available from the factory or other aftermarket manufacturers. For strength reasons, we manufacture our clutch with a 1-piece ring gear/basket. First, a large donut shaped forging is turned on a CNC lathe to the shape of the finished basket. Next the internal splines for the friction plates are formed with a 6-foot long broach. Threads for attachment of the carrier are machined on a mill, then the ring gear teeth are hobbed on the same type of machine that makes our gears. It is not cheap to make the heart and soul of our clutches in this manner but the end result justifies the expense. The radial strength gained by integrally putting the ring gear around the basket is analogous to the steel bands placed around a whiskey barrel. Without the steel bands, the barrel would explode and that would be alcohol abuse. Additionally, the ring gear is supported by the hoop of the basket and this guarantees the T.I.R. at the pitch line of the ring gear teeth (no egg shaped ring gear).


| PN | DESCRIPTION |
|---|---|
| 9P400 | Splined Shovel Clutch Assembly |
| 9P401 | Splined Shovel Clutch with Mainshaft |
| MS-4-SPLINE | 18-Tooth Splined Mainshaft |

**FITMENT**

Must be used in conjunction with a splined mainshaft. Stock 1970-E84 4-speeds must be retrofitted with a PN MS-4-SPLINE mainshaft or BAKER offers new 4-speeds with splined mainshaft, PN 4-7090.

**KEY FEATURES**

- Nine Kevlar two-sided clutch plates with large mean radius
- Billet 6061-T6 blasted clutch carrier
- Hard anodized pressure plate
- Raw blasted clutch carrier
- BAKER's exclusive one-piece clutch basket and 66-tooth ring gear design
- Larger torque capacity
- Diaphragm-type pressure plate spring with ergonomic break-over feel during disengagement
- Two-year/20,000 mile warranty

# 4-SPEED KICKER COVERS

Kick starting a 74 inch motor with 7.5:1 compression ratio is one thing; kicking a healthy 93 inch motor is quite another. Our kicker covers are designed with structural overkill to handle the bending forces imposed on that kicker shaft when the weight of your body on that kick pedal has a fist fight with the gods of spark and combustion. Available in either cast or billet.

### ALL BILLET KICKER COVERS HAVE:

- Kicker cover carved from 6061-T6 aluminum for strength
- 1-piece bronze kicker shaft bushing with outer seal
- Smooth and strong BAKER Klassic Kicker Gears, includes mainshaft gear and ratchet hub
- Kicker shaft, kicker gear and return spring, assembled
- Zero leak fluid level plug
- Concentric dowels around two of the stud positions; used on 6-into-4 door and BAKER 4-Speed case for positive kicker cover location
- Available in show polish
- Two-year/20,000 mile warranty

### BILLET MECHANICAL VERSION

- Stainless steel release shaft support with O-ring
- Includes release shaft and finger
- Compatible with 37310-39 type throwout bearing (not included)
- Mechanical release shaft with O-Ring
- Forged release fork

### BILLET HYDRAULIC VERSION

- 1.5" actuator piston included
- 11/16" master cylinder recommended
- Includes BAKER Heavy Duty Throw-out Bearing
- Dot 5 compatible

### BILLET CABLE VERSION

- Ball and ramp actuator. Uses 1987-2006 Big Twin clutch cables
- Eliminates external linkages. Great for bikes with limited clearance above the transmission and around the oil tank

### BILLET FUNCTION FORMED HYDRAULIC VERSION

- Structurally gusseted FF design with vulgar display of mechanical purpose
- 1.5" actuator piston included
- 11/16" master cylinder recommended
- Includes BAKER Heavy Duty Throw-out Bearing

### CAST MECHANICAL COVER

- 1-piece bronze kicker shaft bushing with outer seal
- Smooth and strong BAKER Klassic Kicker Gears, includes mainshaft gear and ratchet hub
- Includes kicker shaft, kicker gear and return spring assembled
- Mechanical release shaft with o-ring
- Forged release fork
- Available in chrome only

### CAST MECHANICAL REPLICA COVER

- Casted out of A356-T6 aluminum in the USA from S&S
- 1-piece bronze kicker shaft bushing with outer seal
- Smooth and strong BAKER Klassic Kicker Gears, includes mainshaft gear and ratchet hub
- Includes kicker shaft, kicker gear and return spring assembled
- Mechanical release shaft with o-ring
- Forged release fork
- Available in raw blast, show polished or wrinkle black

### CAST ELECTRIC START COVER

- Mechanical release shaft with O-Ring
- Forged release fork
- Available in chrome only

| PN | DESCRIPTION |
|---|---|
| 478-56MP-K | Kicker Cover, Billet Mechanical, Polished |
| 478-56HP-K | Kicker Cover, Billet Hydraulic, Polished |
| 478-56CP-K | Kicker Cover, Billet Cable, Polished |
| 479-56P-K | Kicker Cover, Billet FF Hydraulic, Polished |
| 480-56MC-K | Kicker Cover, Cast Mechanical, Chrome |
| 480-56EC-K | Kicker Cover, Cast Mechanical, Electric, Chrome |
| 480-56R*-K | Kicker Cover, Cast Mechanical, Replica |

**NOTES**

- For cast replica covers only, replace the '*' with an 'R' for raw blast, a 'B' for wrinkle black, or a 'P' for polish
- All part numbers do not include a kicker arm assembly, unless for a complete transmission build

**FITMENT:**
1936-86 FX/FL Style 4-speeds, BAKER 4-Speeds, and BAKER 6-into-4s


**KICKER GEARS**
Our Klassic Kicker Gears are standard with BAKER Billet Kicker Covers. These gears are made from 1018 HR steel. They're tumble finished to 20 micro, and heat treated to 50-55 RC; these gears roll smooth as glass.

# 4-SPEED TOP COVERS

We understand the love affair with your vintage motorcycle, there's nothing like putting authentic, vintage styled components on your nostalgic bike. That's why BAKER has taken the time to reinvent the 4 Speed Top Covers. The BAKER billet aluminum (6061-T6) top covers include a billet case-hardened shift drum with a linear detent system for that smooth reliable shift quality you have come to expect from us.

### RATCHET SHIFT DRUM OPTIONS

We manufacture 3 shift drums for the Ratchet Top; the FX & FL types with conventional shift patterns and N1 style. The FX drum is for top pull applications and the FL drum is for bottom pull applications. The N1 drum takes the FX pattern and relocates neutral down below 1st for a N-1-2-3-4 pattern as an alternative to the standard 1-N-2-3-4 pattern. Great for foot clutch and performance applications.

### JOCKEY SHIFT DRUM OPTIONS

We manufacture two shift drums for the Jockey Top; the FL & N1. The FL shift drum is setup for a top pull (1936-46) or bottom pull (1947-65), each with the standard 1-N-2-3-4 shift pattern. The N1 drum is set up as a bottom pull only and relocates neutral down below 1st for a N-1-2-3-4 pattern as an alternative to the standard pattern. Great for foot clutch and performance applications.


Ratchet Top Configurations


Jockey Top Configurations

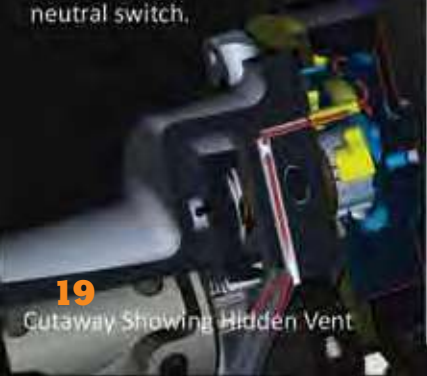
### TOP COVER

BAKER 4-Speed top covers are designed for that vintage appeal yet function like a modern masterpiece.

Each top cover has a linear roller ball detent plunger for smooth consistent shifts. The linear detent consists of a 11/32" primary ball bearing that is cradled by, and rolls on, 60 secondary micro ball bearings. In turn the cradle is part of the plunger that actuates during shifting and is guided by a tertiary linear 24 micro ball bearing system.


### VENT SYSTEM

All BAKER 4-Speed top covers have a hidden vent system which allows the transmission to breathe. Machined into the internal walls of the billet top cover, the breathing system allows air to flow in through the ratchet cavity and out through the shift cover. Jockey top covers vent through the bottom side of the cover just below the neutral switch.



Cutaway Showing Hidden Vent

| RATCHET TOP COVERS | | JOCKEY TOP COVERS | |
|---|---|---|---|
| **FITMENT:** 1952-79 4-Speeds & BAKER 4-Speeds | | **FITMENT:** 1936-65 4-Speeds & BAKER 4-Speeds | |
| **PN** | **DESCRIPTION** | **PN** | **DESCRIPTION** |
| 4-165R | Top Cover Assembly, Ratchet Top, Raw | 4-125R | Top Cover Assembly, Jockey Top, Raw |
| 4-170B | Top Cover Assembly, Ratchet Top, Black | 4-130B | Top Cover Assembly, Jockey Top, Black |
| 4-175P | Top Cover Assembly, Ratchet Top, Polished | 4-135P | Top Cover Assembly, Jockey Top, Polished |

**KEY FEATURES**

- Carved out of billet aircraft grade 6061-T6 aluminum
- Billet shift drums with Permaglide bushing
- Hard anodized backing plate (ratchet top covers only)
- Stainless steel, T303 engraved detent cap
- Linear detent for smooth, positive shifting
- Hidden vent system
- Two-year/20,000 mile warranty

# STASH TUBE
## BAKER DRIVETRAIN

The term 'crank' was coined because some road dogs used to store their crystal meth in the crankcases of their engines to hide it from Johnny Law. Crank melts in the heat and oily crank does not sound too tasty, so we developed a stash tube to keep registration papers dry and to keep the stash cool and oil-free.


Section View of the Stash Tube

**STASH AREA**
The BAKER Stash Tube has an internal diameter of 2.5" and is 4" deep, giving you plenty of room to conceal your valuables.

## STASH TUBE

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| ST-150B | Stash Tube, Cat Black, Highlighted | S&S Alternator/Generator Motors |
| ST-155R | Stash Tube, Media Blasted, Highlighted | S&S Alternator/Generator Motors |

**FITMENT**
The stash tube fits all Knucklehead, Panhead, and Shovelhead S&S motors (ALT/GEN Style), as well as any left-side alternator/right-side generator style motor cases.

**KEY FEATURES**
- Made with billet 6061-T6 aluminum
- Screw-on top
- .200" thick O-ring for a water-tight seal
- Highlighted ribbed fin design to keep your stash cool
- Two-year/20,000 mile warranty

# 4 SPEED & 6-INTO-4 PARTS & ACCESSORIES...

**STOCK 4-SPEED N1 SHIFT DRUM**

The N1 drum changes the shift pattern from the standard 1-N-2-3-4 shift pattern to N-1-2-3-4 and eliminates the possibility of catching neutral on a 1-2 upshift. We start with a solid chunk of steel and machine in all the features, then remove all the unnecessary material. Two teflon coated bushings are pressed into the drum axis bore for smooth rotation on shifts. Kit includes drum, ratchet shaft, and gear.

| PN | DESCRIPTION |
|---|---|
| 4-155N1-K | N1 Shift Drum, 4-speed |

**FITMENT**

1952-79 Ratchet Tops with No Modification

**OUTSIDE BEARING SUPPORT**

For BAKER 6-into-4 with ear case. Running without a motor plate removes the inner primary mainshaft bearing support and this induces stress on the mainshaft. The outside bearing support corrects that shortcoming.

| PN | DESCRIPTION |
|---|---|
| 6-4SSP-A | Outside Bearing Support, 25mm diameter mainshaft |
| 6-4SS1.0P-A | Outside Bearing Support, 1.000" diameter mainshaft |

**FITMENT**

BAKER 6-into-4 Case, with Ear

**KLASSIC KICKER GEARS**

We started making 6-into-4 transmissions with kickers over ten years ago. At the time, we could only purchase some Taiwanese shit kicker gears in volume because nobody made them in the USA anymore and that wasn't gonna get it. So we tooled up our own right here in Michigan; fuck it. They come standard on all BAKER 4-speeds, 6-into-4s, and kicker kits. Take a pair of imported shit gears and roll the teeth together; they roll like a mismatched pair of gears and are dangerous to have inside your tranny. Klassic Kicker Gears roll smooth as glass. They're not cheap, but they are the last set you will have to buy.

| PN | DESCRIPTION |
|---|---|
| 140-64 | Klassic Kicker Gears |

**NEUTRAL SWITCH PLUG**

If you don't use a neutral switch, this plug replaces the neutral switch in 4, 5 and 6-speed top covers for that clean look. Made from billet 6061-T6 aluminum and polished to perfection.

| PN | DESCRIPTION |
|---|---|
| NSP-456P | Plug, Neutral Switch, Polished |

**FITMENT**

BAKER 4-Speed, 5-Speed and 6-Speed Top Covers

### STRAIGHT KICK ARM

When we first started producing our 6-into-4, we purchased our pedal and kick arm from an aftermarket supplier but there were problems, because the 6-into-4 sticks out an extra 1.6" (compared to 4-speeds) and no elbow is required. We tooled our own straight kick arm and made the cross section twice as thick. The BAKER Straight Kick arm is stonger and provides a more positive kicking motion than a stock 4-speed kick arm.

**STRAIGHT KICK ARM & PEDAL**

| PN | DESCRIPTION |
|---|---|
| 351-64K | Straight Kick Arm, Standard Length, Stainless Steel, Polished |
| 3510-64 | Straight Kick Arm and Pedal Assembly, Standard Length |
| 352-64K | Kick Pedal, Bronze, 5/8" Spindle |

**FITMENT**

1936-86 4-Speed, BAKER 4-Speed, BAKER 6-into-4

**NOTE**

When installing a straight arm onto a 4-speed transmission, make sure that you have enough clearance between the arm and exhaust system.


### BAKER KICKER PEDAL SPINDLES

The kicker pedal spindle takes all of the shock and load from kick starting your motorcycle. These spindles are prone to break over time from all the abuse. The BAKER spindle is made from pre-heat treated 4140 then dipped in a bath of hard chrome plate to ensure longevity and resistance to rust.

### BAKER KICKER PEDALS

We used to purchase our pedal assemblies from an aftermarket supplier. These assemblies were made out of shit metal and were prone to break. So after receiving many death threats, we designed and tooled our own pedal.

Our pedal is cast out of 876 bronze, machined to spec, then put through a blast machine where the part is hit with steel bead shot. This work hardens the pedal while giving it a unique look.


### KICK ARM

The straight arm is cast out from 304 stainless steel, machined and polished to perfection. The arm features all stainless steel fasteners and flush mount for the pedal assembly.

### BENT KICK ARM

The bent kick arm is the traditional style for the 4-speed, this chrome arm is made to fit around exhaust systems.

**BENT KICK ARM**

| PN | DESCRIPTION |
|---|---|
| 292020 | Standard Bent Kick Arm |
| 292020-352K | Standard Bent Kick Arm with Pedal Assembly |

**FITMENT**

1936-86 4-speeds, BAKER 4-Speed, BAKER 6-into-4

# 4 SPEED & 6-INTO-4 ANCILLARY PARTS...

**530 CHAIN SPROCKETS**

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 23T-64A | Sprocket, 23T | BAKER 4-Speed/6-into-4 exc 1964-69 |
| PN 23T-6469A | Sprocket, 23T | 1964-69 BAKER 4-Speed/6-into-4 |
| 24T-64A | Sprocket, 24T | BAKER 4-Speed/6-into-4 exc 1964-69 |
| 24T-6469A | Sprocket, 24T | 1964-69 BAKER 4-Speed/6-into-4 |

**NOTE**
BAKER Sprockets are compatible with 530 and 530 O-ring chains.
Part numbers shown above include sprocket and nut.

**33 TOOTH BELT PULLEY**
Convert that 6-into-4 from chain to belt with our 33 tooth pulley.
Made from 1045 steel with a pressed-on flange.

| PN | DESCRIPTION |
|---|---|
| 32181S-A | Pulley Assembly, 33T |

**FITMENT**
33 tooth pulley fits BAKER 6-into-4, compatible with modern secondary drive belts.

**BAKER SPLINE INFORMATION**
Our 4-speed and 6-into-4 transmission sprockets and pulleys are based off the early 5-speed six-tooth straight spline from 1980-84. This spline is larger than a stock 4-speed style spline. Why did we adopt this larger spline? Using a larger spline gave us the ability to run caged needle bearings inside of the main drive gear. Stock 4-speed main drive gears use a brass bushing instead of bearings. This bushing wears over time and causes a major transmission leak.

# CHOOSE YOUR BIKE'S DESTINY: THE FUTURE, THE PAST OR BOTH

Ever been to a motorcycle salvage yard? You'll find dirt bikes, old crotch rockets, quads, and maybe snowmobiles, but no Harleys. Why? Because they are coveted highly prized possessions. You'll have a better chance of finding an old girlfriend or ex-wife stuffed in a parts bin at a motorcycle junkyard than finding a Harley. Owners of American motorcycles take care of them, have life experiences with them, and grow old with them.

When Harley introduced the Cruise Drive 6-speed in 2007, they legitimized everything we've been doing since 1998. Until Harley introduced their 6-speed, there were those that doubted the virtues of having a highway cruising gear. A 6-speed gives you that next gear that you're always looking for on the highway at 75mph with a significant RPM reduction, reduced vibrations, reduced wear and tear (on motor and rider), and increased fuel economy.

When we started back in 1998, we unwittingly developed the template for all future BAKER products. That is, we take the drivetrain that the factory offers and make it better, a lot better. That's our job and we're damn good at it. And every time Harley implements one of our ideas it validates the fact that we're doing the right thing.

BAKER features American made drivetrain components for any 5-speed Big Twin built between 1984 and 2006. Bring your bike into the 21st century with our DD6 or OD6 or send your bike back to the days before Hitler invaded Poland with a 1936-based F5K kicker kit. Or have both 6-speed and kicker with a Frankentranny. Is your stock clutch sucking wind? Check out the King Kong Klutch and 9-plate Street Performance Clutch. Got a vertically challenged inseam (short legs like me) and tired of backing up your 800 lb dresser? We've got our F5R bolt on reverse kit to back you up. And if your tranny fell off the wagon, we can re-build your stock unit with our Factory Service and Repair/12-step program. Drivetrains are what we do and we know our shit hands down. We are Americans making American-made drivetrain products for American motorcycles.

The components we offer for the Harley Davidson® drivetrain aftermarket are contained within this anthology, divided into four sections as follows: Cruise Drive era (2007-later), 5-speed era (1984-2006), 4-speed era (1936-86), and Custom/Performance (includes Big Dog and Sportster/Buell). Each section is technically informative, includes part numbers and fitment, and should provide the information necessary to improve the performance of your American V-Twin.

BERT BAKER

PROCEED TO THE 5 SPEED ERA >>>>>>>>>>>>>>


## DD5: DIRECT DRIVE 5-SPEED

**KEY FEATURES**

- One-piece countershaft with integral 5th gear makes our DD5 durable up to 200 HP
- Larger door bearings
- Billet 6061-T6 chrome or polished door for strength
- Hard chrome plated shift forks for wear resistance
- Smooth roller shift system with redundant neutral detent for improved neutral finding
- Five-year/50,000 mile warranty

***BUILDER'S KIT AND COMPLETE TRANSMISSION NOTES**

- Change '0' in PN to '1' to specify 3.24 1st gear ratio; ie: PN 501 changes to PN 511
- Change '0' in PN to '21' to specify 'R' ratio; ie: PN 501 changes to PN 5211

**BUILDER'S KIT PART NUMBERS***

*All Part Numbers Listed Are Standard Gear Ratios*

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| T501K | DD5 Builder's Kit with Tapered Mainshaft | 1987-89, Softail, FXR, FLT-FLH |
| 501K | DD5 Builder's Kit | 1990-06 S/T, 1990-94 FXR, 1990-92 FL, 1991-05 Dyna |
| 504K | DD5 Builder's Kit | 1993-06 FLT-FLH |

**COMPLETE TRANSMISSION PART NUMBERS***

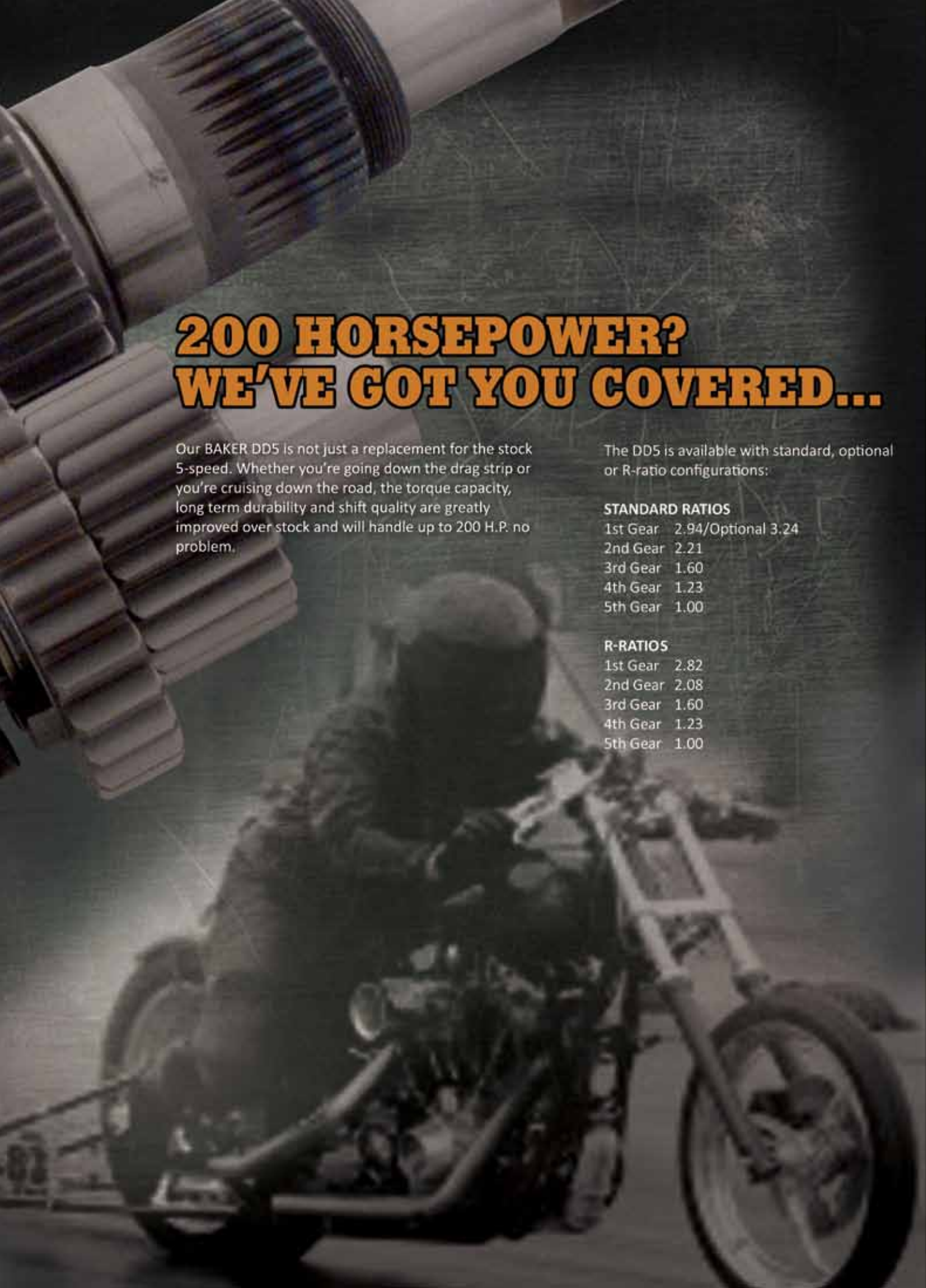
*All Part Numbers Listed Are Standard Gear Ratios*

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| T501 | DD5 Transmission Assembly with Tapered Mainshaft | 1987-89 Softail |
| 501 | DD5 Transmission Assembly | 1990-97 Softail |
| T502 | DD5 Transmission Assembly with Tapered Mainshaft | 1985-89 FXR<br>1985-89 FLT-FLH |
| 502 | DD5 Transmission Assembly | 1990-94 FXR, 1990-92 FL |
| 503 | DD5 Transmission Assembly | 1991-97 Dyna |
| 504 | DD5 Transmission Assembly | 1993-97 FLT-FLH |

**COMPLETE TRANSMISSION NOTES**

- Add an 'S' suffix for 1998 versions of PN 501, 502, 503, and 504
- Add a 'R' suffix to raw case, 'B' to specify black, and 'P' to specify polished case finish.
- Add a 'PB' suffix to PN 501 for a polished billet BAKER case
- Add a 'CB' suffix to PN 501 for a chrome billet BAKER case
- 1999-06 Twin Cam complete transmissions are available for registered Harley motorcycles only; call our sales dept for details
- Optional front or rear feed hydraulic side covers are available as an upgrade; inquire with our tech department for details

Builder's Kits and Complete Transmissions have the option of a reverse pattern shift drum and reverse pattern shift drum with ignition kill



# 200 HORSEPOWER? WE'VE GOT YOU COVERED...

Our BAKER DD5 is not just a replacement for the stock 5-speed. Whether you're going down the drag strip or you're cruising down the road, the torque capacity, long term durability and shift quality are greatly improved over stock and will handle up to 200 H.P. no problem.

The DD5 is available with standard, optional or R-ratio configurations:

**STANDARD RATIOS**

| | |
|---|---|
| 1st Gear | 2.94/Optional 3.24 |
| 2nd Gear | 2.21 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |

**R-RATIOS**

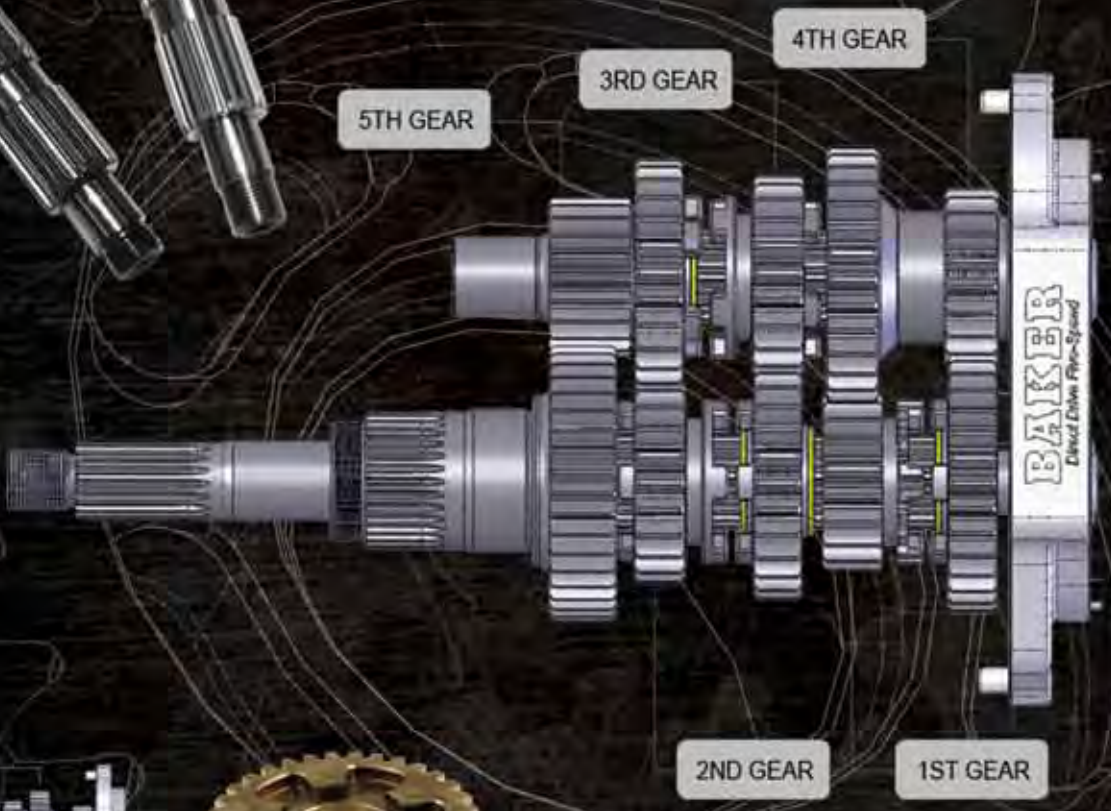
| | |
|---|---|
| 1st Gear | 2.82 |
| 2nd Gear | 2.08 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |

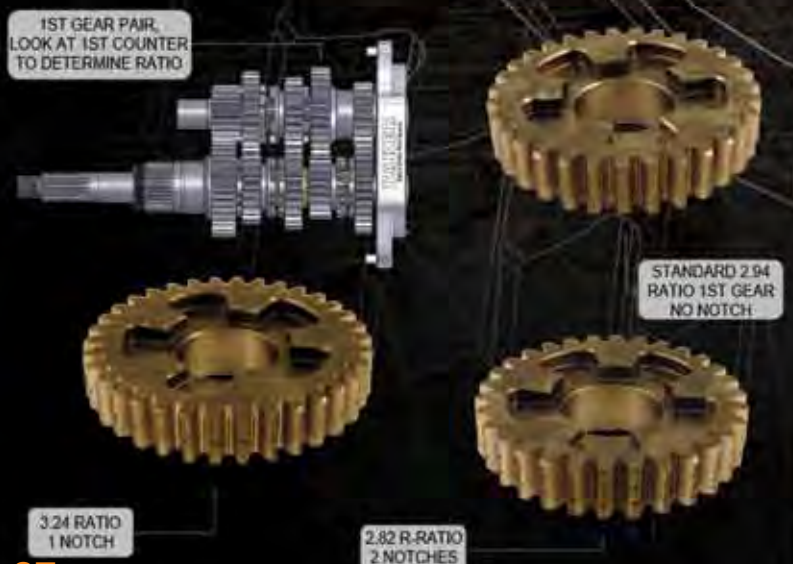
# DD5™ DIRECT DRIVE FIVE-SPEED

# FEATURES AND TECHNICAL INFO...

**GEARSET**

All DD5 gearsets come with a 1-piece countershaft which eliminates the well known Achilles heel of the stock 5-speed under high horsepower and/or heavy GVW applications. That is, the 5th gear cracks radially and splits in half with catastrophic results. Our one piece design is good to 200 H.P. All gears are made with 8620 steel, hobbed before heat treatment, then precision ground with diamond coated tooling after heat treatment (58-62 Rockwell 'C'). These extra steps ensure a quieter gear pair and much tighter backlash control.




**RATIOS**

The DD5 comes in a standard, optional or R-Ratio configuration. A way to physically tell which ratio you have is pretty common knowledge here at BAKER, but if you would like to know look at the 1st gear pair on the gearset. Our standard 2.94 1st gear will not have a notch on the 1st countershaft gear, our (stock) 3.24 1st gear will have a single notch around the center of the 1st countershaft gear and our 2.82 (R-Ratio) 1st gear will have 2 notches around the 1st gear countershaft. Use the image to the left for reference. This is very important to know if you need any replacement parts or components.

## BEARING DOOR

All DD5 bearing doors have the same outer profile as a stock 5-speed so exhaust brackets, torque arms etc. fit like stock. The DD5 door comes with or without an ear. The ear door is for exhaust bracket mounting and does not fit 1993-06 FL applications. Note the images to the right. The DD5 door bearings are larger, providing 25% more dynamic load capacity than the stock bearings used through 1998.




## CASE DESIGN

The BAKER Softail case design addresses all of the shortcomings of the factory and othermarket designs. We added stud pads to the inside of the case so that the threaded holes for the transmission studs were blind holes, NOT through holes like some aftermarket brands. Looking at the image to the left you can see the difference.

## SHIFT SYSTEM

Our 5-speed shift system with roller detent guarantees smooth shifts every time and our redundant neutral detent ensures that finding neutral is an easy chore. We mount a plunger detent on the left side pillow block and cut a plunger track into the barrel of the shift drum. The plunger follows this track during operation (shifting) and when shifting into neutral pops into a pocket. This system lets you feel that you're shifting into neutral. No more guessing. Shift drum features more aggressive timing on the fork groove profiles and is case hardened to 58 RC for wear resistance and crisp shifts. We built our reputation on smooth shifting 6-speed transmissions; our 5-speed drum designs benefit from the engineering lessons learned.



## CASE FINISH OPTIONS

Our DD5 cases come in a variety of configurations to fit your bike model and the following finishes:

- Show Chrome (BAKER billet only - Not Shown)
- Polished
- Wrinkle Black
- Raw

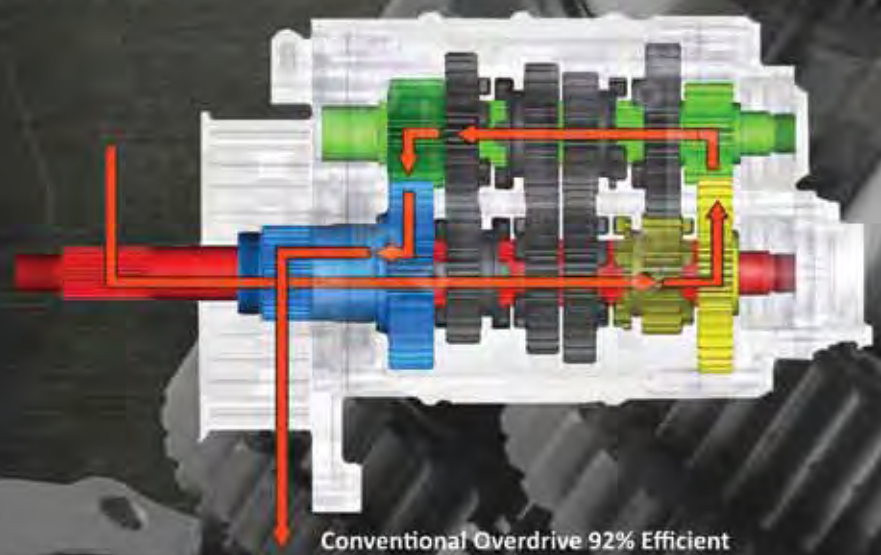

# OVERDRIVE VS. DIRECT DRIVE

## WHICH IS BEST FOR YOUR BIKE?

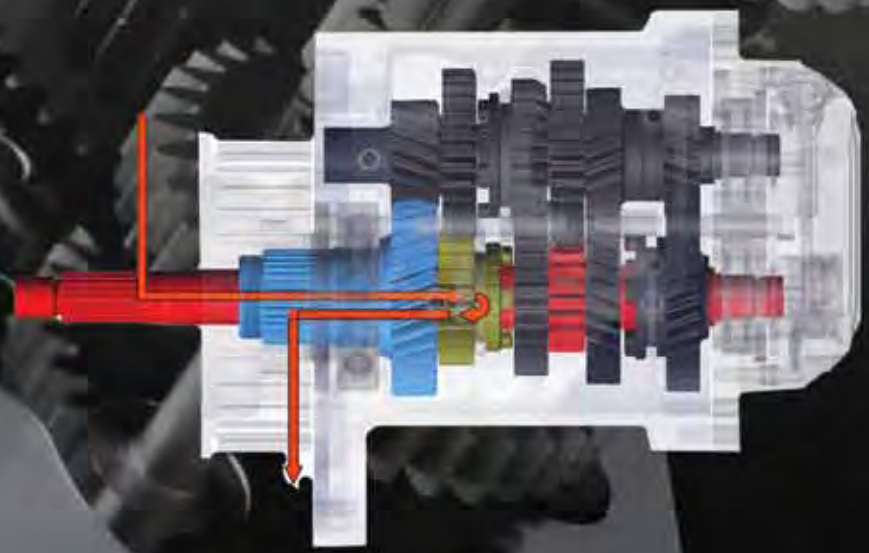
We manufacture 2 types of 6-speeds for Big Twins; OD6 (Overdrive 6-speed) and DD6 (Direct Drive 6-speed). Both 6-speed configurations achieve a significant RPM reduction on the highway without compromising around town performance. In other words, you get the five gear ratios you currently have with a 5-speed plus that extra gear you're always looking for on the highway. To determine which 6-speed is right for your application, you must look at your engine output, riding style, bike gearing, GVW, and performance priorities.

OD SIX SPEED

**POWER FLOW:**
**HOW EFFICIENT IS YOUR TRANSMISSION IN SIXTH GEAR?**



**Conventional Overdrive 92% Efficient**



**Direct Drive 99% Efficient**
**Wastes Less Horsepower!**

The undercutting on the side of the dog teeth (highlighted with red line on image below) is an important distinction between DD6 and OD6. OD6 undercut angle is 4° and the DD6 angle is 1°. The function of the undercut is to hold the transmission in gear, along with the shift system detent. 4° undercut angles, as compared to 1° angles, have slightly increased shift effort and slightly compromised shift quality but are necessary with aggressive engine tuning. For reference, some pro-stock V- twin applications run undercut angles as high as 10°. In contrast, Japanese motorcycles usually have undercut angles close to 0° but they can get away with that because their engines lack the violent power pulses of a 45° V-twin.

DD6 4-5 Dog Clutch Shown with Dog Tooth Angle

# DD6

## DIRECT DRIVE 6-SPEED

Generally, the DD6 is designed for touring riders who put on miles, and the OD6 is for the speed freaks and custom bikes. Study the information below and/or consult our tech department to decide which 6-speed is right for your application.

The OD6 offers more gear ratio choices than the DD6. These ratio choices are tailored towards the more aggressive rider with more aggressive engines. As engine output increases, the utility of the stock 1st gear ratio diminishes. In other words, a stock 1st gear will only get you partially across the intersection from a dead stop before you have to shift into 2nd gear. Precisely the reason why we developed R-ratio 1st and 2nd gears for OD6. Also, bigger engines can pull a steeper 6th gear ratio and this is why we developed deep overdrive for OD6. The 6th gear ratio in the DD6 is fixed at 1:1 by design and can't be changed.

**WHAT DOES OVERDRIVE MEAN?**
5th gear in our OD6 has a 1:1 ratio. All ratios greater than 1:1 are underdriven like 4th gear which is 1.23:1. Ratios less than 1:1 are overdriven like 6th gear which is .86:1 and gives the resultant RPM reduction on the highway.

**OD6 TECHNICAL HIGHLIGHTS**
- 165 ft-lb torque capacity
- Many gear ratio choices for performance applications
- Some light case modification may be required due to casting variation from the factory

**OD6 APPLICATION GUIDELINES**
- 1990-99 EVO engines producing more than 100 ft-lbs of torque
- 1999-06 Twin Cam engines producing more than 120 ft-lbs of torque
- American Ironhorse, Bourget, Titan, Gilroy Indian, and other 45° V-Twin American motorcycles
- Any Harley or 45° V-Twin American motorcycle with an open belt drive
- All 1986-89 Harleys with original tapered mainshaft clutch interface

**WHAT DOES DIRECT DRIVE MEAN?**
6th gear in the DD6 has a 1:1 ratio; the same as 5th gear in a 5-speed. The 1:1 gear is THE direct drive gear. With the DD6 the 'overdrive' effect on the highway is achieved by 'overdriving' the primary with a 28 tooth motor sprocket.

**DD6 TECHNICAL HIGHLIGHTS**
- 120 ft-lb torque capacity
- No exhaust clearance issues due to door width and profile
- Minor case modification may be required due to casting variations
- Combination of helical and spur gears yields silent operation and no gear noise
- 28 tooth compensator sprocket, supplied with kit or assembly, also gives 14% more starter torque
- Best achievable 6-speed fuel economy, period.

**DD6 APPLICATION GUIDELINES**
- Most 1999-06 Twin Cam Harley applications
- Riders who demand a 6-speed with the smoothest shift quality available
- Touring riders who put on serious miles and spend a majority of the time on the road in 6th gear.


## OD6: OVERDRIVE 6 SPEED

**KEY FEATURES**

- Billet 6061-T6 bearing door
- 1/8" thick bearing retainer plate
- Redundant neutral smooth shift system
- Hard chrome plated shift forks
- Diamond cut gearset made out of 8620 steel
- Optional gear ratios
- Five-year 50,000 mile warranty

**NOTES**

- The OD6 is available with a 3.24 optional 1st gear ratio for higher horse power applications. Change the middle numeral '0' to a '1'. Example: PN 914
- For R-Ratio gears change the middle number '0' to '21'. Example PN 9214
- The OD6 is available with a deep overdrive gear .80 6th; Please consult our technical staff before choosing this option; this is typically for big inch motor applications only.
- Complete OD6 FLT-FLH transmissions come with Function Formed FL oil spout and dipstick

**BUILDER'S KIT PART NUMBERS***

*All Part Numbers Listed Are Standard 2.94 Gear Ratios*

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| T401 | OD6 Builder's Kit with Tapered Mainshaft | 1987-89 FLT-FLH, Softail & FXR |
| 401 | OD6 Builder's Kit | 1990-92 FLT-FLH, 1990-97 S/T, 1990-94 FXR, 1991-97 Dyna |
| 401S | OD6 Builder's Kit | 1999 FXR, 1998 Dyna, 1998-99 Softail |
| 401SP | OD6 Builder's Kit | 1999-00 Dyna |
| 401P | OD6 Builder's Kit | 2000-06 Softail, 2001-05 Dyna |
| 402 | OD6 Builder's Kit | 1993-97 FLT-FLH |
| 402S | OD6 Builder's Kit | 1998 FLT-FLH |
| 404SP | OD6 Builder's Kit | 1999-00 FLT-FLH |
| 404P | OD6 Builder's Kit | 2001 FLT-FLH |
| 404P2 | OD6 Builder's Kit | 2002-06 FLT-FLH |

**COMPLETE TRANSMISSION PART NUMBERS****

*All Part Numbers Listed Are Standard 2.94 Gear Ratios*

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| T701 | OD6 Transmission with Tapered Mainshaft | 1987-89 Softail |
| T702 | OD6 Transmission with Tapered Mainshaft | 1987-89 FLT-FLH & FXR |
| 701 | OD6 Transmission | 1990-97 Softail |
| 702 | OD6 Transmission | 1990-94 FXR, 1990-92 FLT-FLH |
| 703 | OD6 Transmission | 1991-97 Dyna |
| 704 | OD6 Transmission | 1993-97 FLT-FLH |
| 801 | OD6 Transmission | 1998-99 Softail |
| 803 | OD6 Transmission | 1998 Dyna |
| 804 | OD6 Transmission | 1998 FLT-FLH |
| 901 | OD6 Transmission | 2000-06 Softail |
| 902 | OD6 Transmission | 1999 FXR |
| 903 | OD6 Transmission | 1999-00 Dyna |
| 904 | OD6 Transmission | 1999-00 FLT-FLH |
| 003 | OD6 Transmission | 2001-05 Dyna |
| 004 | OD6 Transmission | 2001 FLT-FLH |
| 0042 | OD6 Transmission | 2002-06 FLT-FLH |

# THE ORIGINAL 6-SPEED TRANSMISSION

This is the ORIGINAL 6-speed design that revolutionized the American V-Twin industry. Yet, it's still the best overdrive 6-speed built to this day...hands down. Our OD6 is built to comfortably handle the power from today's big-inch motors. This transmission is rated for motors putting out up to 165ft/lbs of continuous use. It is available as a complete transmission with a wide variety of case options and configurations, or as a builder's kit for your stock case application, which requires little to no modification. The BAKER OD6 is available with several optional gear ratios to match your engine torque and riding style.

The OD6 is available with standard, optional or R-ratio configurations:

**STANDARD RATIOS**

| | |
|---|---|
| 1st Gear | 2.94/Optional 3.24 |
| 2nd Gear | 2.21 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |
| 6th Gear | .86/Optional .80 |

**R-RATIOS**

| | |
|---|---|
| 1st Gear | 2.82 |
| 2nd Gear | 2.08 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |
| 6th Gear | .86/Optional .80 |

***BUILDER'S KIT AND **COMPLETE TRANSMISSION NOTES**

- The OD6 is not designed to be compatible with automatic chain tensioners or easy-pull clutch kits
- The OD6 comes standard with a conventional pattern shift drum (1-N-2-3-4-5-6). Reverse pattern shift drums (6-5-4-3-2-N-1) and N1 shift drums (N-1-2-3-4-5-6) are also available; inquire with our sales department

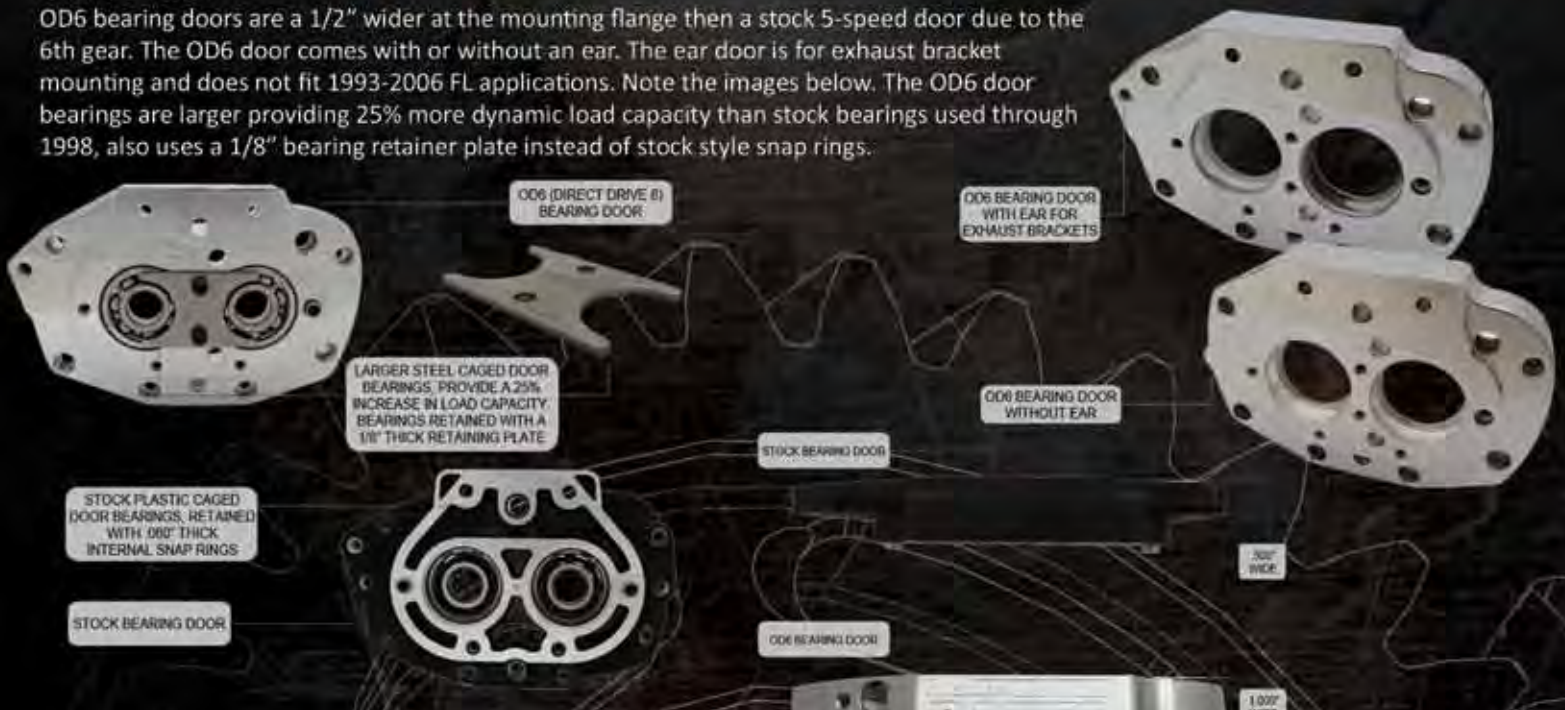
****COMPLETE TRANSMISSION NOTES**

- Add an 'R' suffix to raw case, 'B' to specify black, and 'P' to specify polished case finish.
- Add a 'PB' suffix to PN 701 for a polished billet BAKER case
- Add a 'CB' suffix to PN 701 for a chrome billet BAKER case
- 1999-06 Twin Cam complete transmissions are available for registered Harley motorcycles only; call our sales department for details
- Optional front or rear feed hydraulic side covers are available as an upgrade; inquire with our tech department for details

# OD6 OVER DRIVE SIX SPEED FEATURES AND TECHNICAL INFO...

## BEARING DOOR

OD6 bearing doors are a 1/2" wider at the mounting flange then a stock 5-speed door due to the 6th gear. The OD6 door comes with or without an ear. The ear door is for exhaust bracket mounting and does not fit 1993-2006 FL applications. Note the images below. The OD6 door bearings are larger providing 25% more dynamic load capacity than stock bearings used through 1998, also uses a 1/8" bearing retainer plate instead of stock style snap rings.




## EXHAUST BRACKET

Due to the OD6 bearing door being a 1/2" wider than stock, some FLT/FLH models may require a modified exhaust bracket for the mounting of the exhaust to the bottom of the bearing door. This modified bracket is approximately 5/8" difference from stock to accommodate the new door width. This bracket is sold separately from the kit, BAKER PN 188-6.


## CASE FINISH OPTIONS

Our OD6 cases come in a variety of configurations to fit your bike model and the following finishes:

- Show Chrome (BAKER billet only - Not Shown)
- Polished
- Wrinkle Black
- Raw



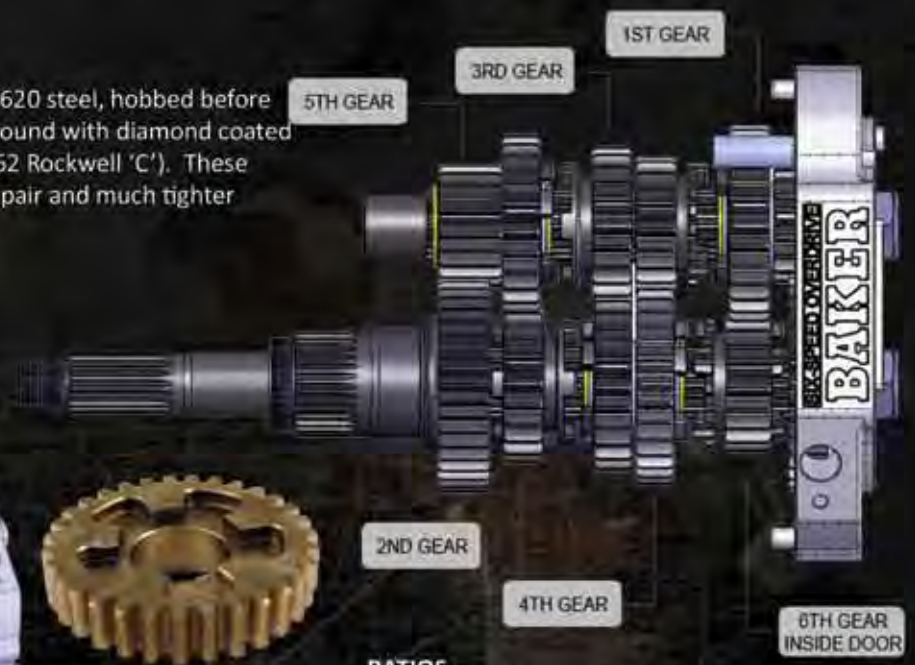


## CASE DESIGN

The BAKER Softail case design addresses all of the shortcomings of the factory and othermarket designs. We added stud pads to the inside of the case so that the threaded holes for the transmission studs were blind holes, NOT through holes like some aftermarket brands. Looking at the image above you can see the difference.

## GEARSET

All OD6 gearsets are made with 8620 steel, hobbed before heat treatment, then precision ground with diamond coated tooling after heat treatment (58-62 Rockwell 'C'). These extra steps ensure a quieter gear pair and much tighter backlash control.



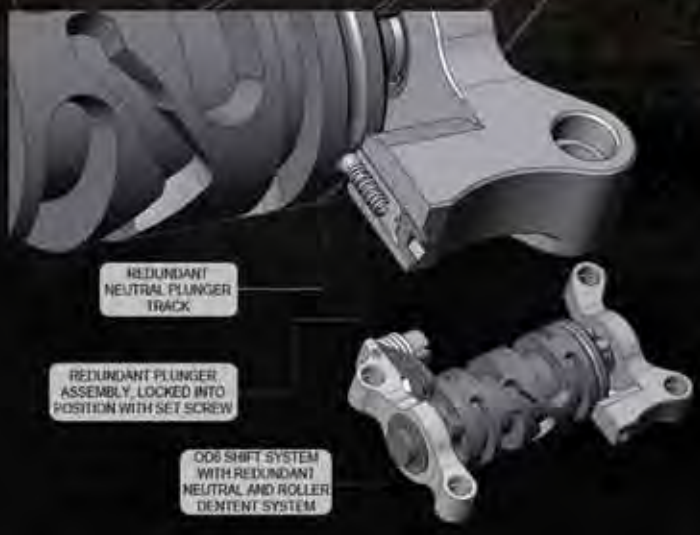


## RATIOS

The OD6 comes in a standard 2.94, or optional 3.24 or R-Ratio 2.82 configurations. A way to physically tell which ratio you have is pretty common knowledge here at BAKER, but if you would like to know look at the 1st gear pair on the gearset. Our standard 2.94 1st gear will not have a notch on the 1st countershaft gear, our (stock) 3.24 1st gear will have a single notch around the center of the 1st countershaft gear and our 2.82 (R-Ratio) 1st gear will have 2 notches around the 1st gear countershaft. Use the image to the left for reference. This is very important to know if you need any replacement parts or components.

## SHIFT SYSTEM

Our 6-speed shift system with roller detent guarantees smooth shifts every time and our redundant neutral detent ensures that finding neutral is an easy chore. We mount a plunger detent on the left side pillow block and cut a plunger track into the barrel of the shift drum. The plunger follows this track during operation (shifting) and when shifting into neutral pops into a pocket. This system lets you feel that you're shifting into neutral. No more guessing. Shift drum features more aggressive timing on the fork groove profiles and is case hardened to 58 RC for wear resistance and crisp shifts. We built our reputation on smooth shifting 6-speed transmissions; our 6-speed drum designs benefit from the engineering lessons learned.





## SHIFT FORKS

Our investment cast shift forks are made with 4140 steel and are hard chrome plated for wear resistance. The fork design has oil reliefs to ensure proper lubrication and wear resistance on fork blades and shift fork grooves.

# DD6
## DIRECT DRIVE 6-SPEED

| STANDARD RATIOS | | EFFECTIVE RATIOS | |
|---|---|---|---|
| 1st Gear | 3.77 | 1st Gear | 3.24 |
| 2nd Gear | 2.56 | 2nd Gear | 2.20 |
| 3rd Gear | 1.87 | 3rd Gear | 1.61 |
| 4th Gear | 1.44 | 4th Gear | 1.24 |
| 5th Gear | 1.15 | 5th Gear | .99 |
| 6th Gear | 1.00 | 6th Gear | .86 |

Note: Effective ratios reflect the use of the 28 tooth comp sprocket that is provided with the DD6 builder's kit or transmission


## DD6: DIRECT DRIVE 6 SPEED

**KEY FEATURES**

- Billet 6061-T6 bearing door
- 1/8" thick bearing retainer plate
- Helical & spur gear design gear for quiet operation
- 28 tooth comp sprocket forged out of 8620 gear steel
- Regina double row primary chain
- Fat shoe chain tensioner w/hardware
- All transmission seals, gaskets and hardware
- Five-year/50,000 mile warranty

**BUILDER'S KIT PART NUMBERS****

*ALL PART NUMBERS LISTED ARE STANDARD (EFFECTIVE) GEAR RATIOS*

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| DD411L | DD6 Builder's Kit | 1990-97 Softail; 1991-97 Dyna |
| DD411 | DD6 Builder's Kit | 1990-94 FXR; 1990-97 FLT-FLH |
| DD411SL | DD6 Builder's Kit | 1998-99 Softail; 1998-00 Dyna |
| DD411S | DD6 Builder's Kit | 1999 FXR; 1998-00 FLT-FLH |
| DD411PL | DD6 Builder's Kit | 2000-06 Softail; 2001-05 Dyna |
| DD411P | DD6 Builder's Kit | 2001-06 FLT-FLH |

**COMPLETE TRANSMISSION PART NUMBERS*****

*ALL PART NUMBERS LISTED ARE STANDARD (EFFECTIVE) GEAR RATIOS*

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| DD014*2 | DD6 Transmission | 2002-06 FLT-FLH |
| DD014* | DD6 Transmission | 2001 FLT-FLH |
| DD914* | DD6 Transmission | 1999-00 FLT-FLH |
| DD814* | DD6 Transmission | 1998 FLT-FLH |
| DD714* | DD6 Transmission | 1993-97 FLT-FLH |
| DD013*L | DD6 Transmission | 2001-05 Dyna |
| DD913*L | DD6 Transmission | 1999-00 Dyna |
| DD813*L | DD6 Transmission | 1998 Dyna |
| DD713*L | DD6 Transmission | 1991-97 Dyna |
| DD912* | DD6 Transmission | 1999 FXR |
| DD712* | DD6 Transmission | 1990-94 FXR; 1990-92 FLT-FLH |
| DD911*L | DD6 Transmission | 2000-06 Softail |
| DD811*L | DD6 Transmission | 1998-99 Softail |
| DD711*L | DD6 Transmission | 1990-97 Softail |

**SEE COMPLETE TRANSMISSION NOTES*

# THE DIRECT DRIVE 6 MEANS A SMOOTH, QUIET, EFFICIENT TRANSMISSION FOR TOURING, WITHOUT LOSING POWER IN HIGH TORQUE LOW GEARS

From an engineering standpoint, it is difficult to design a machine or mechanism that achieves multiple objectives with minimal compromise. An amphibious car is a good example. A few have been manufactured over the years, and they achieved the goal of navigating on land and water, but did neither very well. On the other hand, a Swiss Army knife achieves multiple objectives with minimal compromise. You can snatch the cork out of a wine bottle or kill somebody all with the same widget. The DD6, or Direct Drive 6-speed, combines three technical approaches to achieve the most advanced transmission gearset design available for your Big Twin with minimal compromise. First, 1st through 3rd gears are straight cut (spur) for strength during maximum acceleration with no parasitic axial thrust. Secondly, 4th and 5th gears are automotive style helical gears for quiet and smooth operation as highway speed approaches. Lastly, 6th gear is direct drive which means there is no underdrive or overdrive in top gear which translates into 99% efficiency for minimum parasitic loss, minimum wear and tear, and maximum fuel efficiency.

We didn't focus solely on the gearset, we made this sucker shift like butter. The sequential motion of the hard chrome plated forks is controlled by a fixed spindle radial ball bearing mounted shift drum. Hard chrome guarantees long fork life with minimal imposed friction on the fork groove of the gear. The fixed spindle drum design eliminates any chance of binding or imposed friction about the axis of drum rotation. Drum rotation is controlled by a roller detent and actuated by a BAKER shift pawl with a anti-overshift feature. To make finding neutral an easy chore, we mounted a redundant detent on the left side pillow block.

****BUILDER'S KIT AND ***COMPLETE TRANSMISSION NOTES**

- The DD6 is available with a 2.94 optional 1st gear ratio for higher horsepower applications. Change the middle numeral '1' to a '0'. Example: DD411P has the standard 3.24 1st gear ratio. For the alternate 2.94 (effective) 1st gear ratio, use PN DD401P
- The DD6 is not designed to be used in conjunction with belt drive primaries, automatic chain tensioners or easy-pull clutch kits.
- Chrome trap door is standard. Polished and wrinkle black doors may be special ordered; inquire with our sales department
- +12mm mainshaft available for wide tire applications
- N1 shift drum is optional for a N-1-2-3-4-5-6 shift pattern

*****COMPLETE TRANSMISSION NOTES**

- Replace the '*' in the part number with an 'R' to specify raw case, 'B' to specify black wrinkle case, and 'P' to specify polished case.
- 1999-06 Twin Cam complete transmissions are available for registered Harley motorcycles only; call our sales department for details
- Optional front or rear feed hydraulic side covers are available as an upgrade; inquire with our tech department for details

DD6
DIRECT DRIVE 6-SPEED

# FEATURES AND TECHNICAL INFO...

DD6 (DIRECT DRIVE 6) BEARING DOOR

LARGER STEEL CAGED DOOR BEARINGS, PROVIDE A 25% INCREASE IN LOAD CAPACITY. BEARINGS RETAINED WITH A 1/8" THICK PLATE TO CONTROL AXIAL THRUST FROM HELICAL GEARS

## BEARING DOOR

All DD6 bearing doors have the same outer profile as the stock 5-speeds so exhaust brackets, torque arms etc. fit like stock. The DD6 door comes with or without an ear. The ear door is for exhaust bracket mounting and does not fit 1993-2006 FL applications. Note the images below. The DD6 door bearings are larger providing 25% more dynamic load capacity than stock bearings used through 1998, also uses a 1/8" bearing retainer plate instead of stock style snap rings.

STOCK PLASTIC CAGED DOOR BEARINGS, RETAINED WITH .060" THICK INTERNAL SNAP RINGS

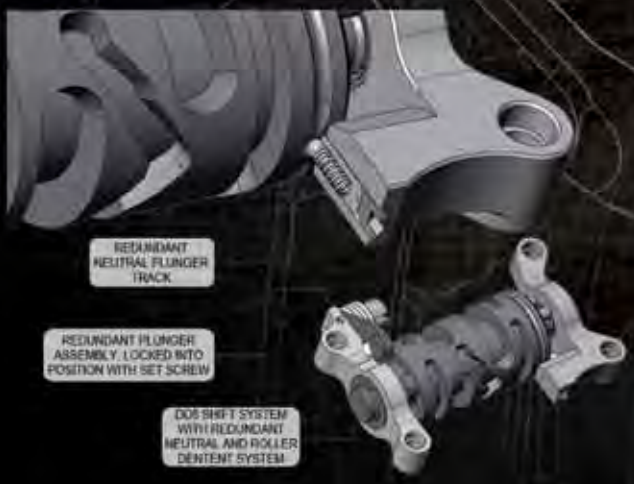
STOCK BEARING DOOR

DD6 BEARING DOOR WITH EAR FOR EXHAUST BRACKETS

DD6 BEARING DOOR WITHOUT EAR

## SHIFT SYSTEM

Our 6-speed shift system with roller detent guarantees smooth shifts every time and our redundant neutral detent ensures that finding neutral is an easy chore. We mount a plunger detent on the left side pillow block and cut a plunger track into the barrel of the shift drum. The plunger follows this track during operation (shifting) and when shifting into neutral pops into a pocket. This system lets you feel that you're shifting into neutral. No more guessing. Shift drum features more aggressive timing on the fork groove profiles and is case hardened to 58 Rockwell for wear resistance and crisp shifts. We built our reputation on smooth shifting Overdrive 6-speed transmissions; our DD6 drum design benefits from the engineering lessons learned.



REDUNDANT NEUTRAL PLUNGER TRACK

REDUNDANT PLUNGER ASSEMBLY, LOCKED INTO POSITION WITH SET SCREW

DD6 SHIFT SYSTEM WITH REDUNDANT NEUTRAL AND ROLLER DENTENT SYSTEM

## CASE DESIGN

The BAKER Softail case design addresses all of the shortcomings of the factory and othermarket designs. We added stud pads to the inside of the case so that the threaded holes for the transmission studs were blind holes, NOT through holes like some aftermarket brands. Looking at the image below you can see the difference.

5 CASTED IN PADS TO ELIMINATE ANY POTENTIAL LEAK THROUGH THE TRANSMISSION STUDS

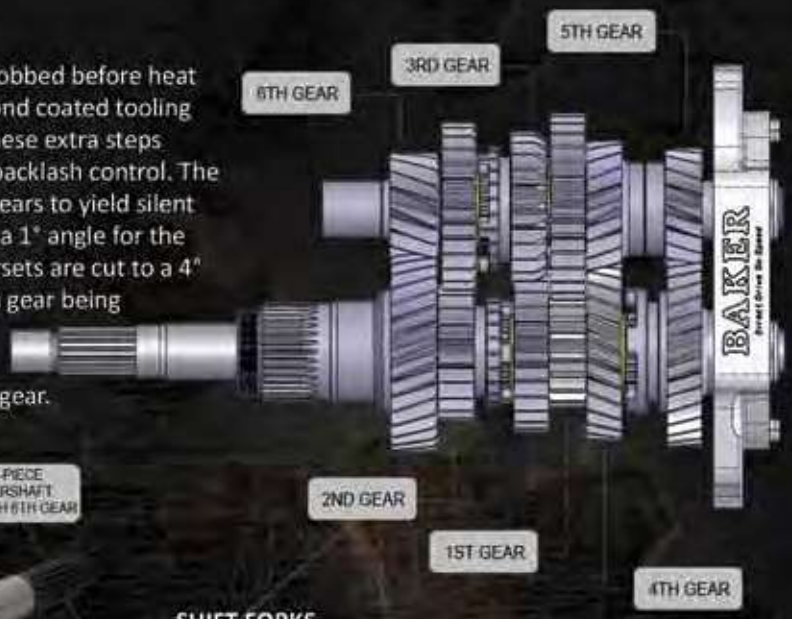
AFTERMARKET TRANSMISSION CASE, YOU CAN SEE THE BREAKTHROUGH WHICH COULD BE A POTENTIAL LEAK

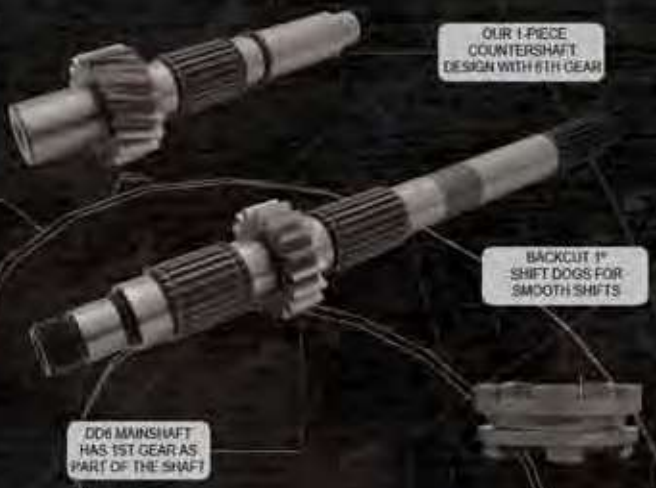
BAKER CASE

AFTERMARKET CASE

## GEARSET

All DD6 gearsets are made with 8620 steel, hobbed before heat treatment, then precision ground with diamond coated tooling after heat treatment (58-62 Rockwell 'C'). These extra steps ensure a quieter gear pair and much tighter backlash control. The gearset is a combination of helical and spur gears to yield silent gear operation. The dog teeth are backcut at a 1° angle for the smoothest shift possible, while standard gearsets are cut to a 4° angle. The mainshaft is unique with 1st main gear being incorporated as part of the shaft.
The countershaft also features a unique 1-piece design, combining the shaft with 6th gear.




## SHIFT FORKS

Our investment cast shift forks are made with 4140 steel and are hard chrome plated for wear resistance. The fork design has oil reliefs to ensure proper lubrication and wear resistance on fork blades and shift fork grooves.


## CASE FINISH OPTIONS

Our DD6 cases come in a variety of configurations to fit your bike model and in the following finishes:

- Polished
- Wrinkle Black
- Raw

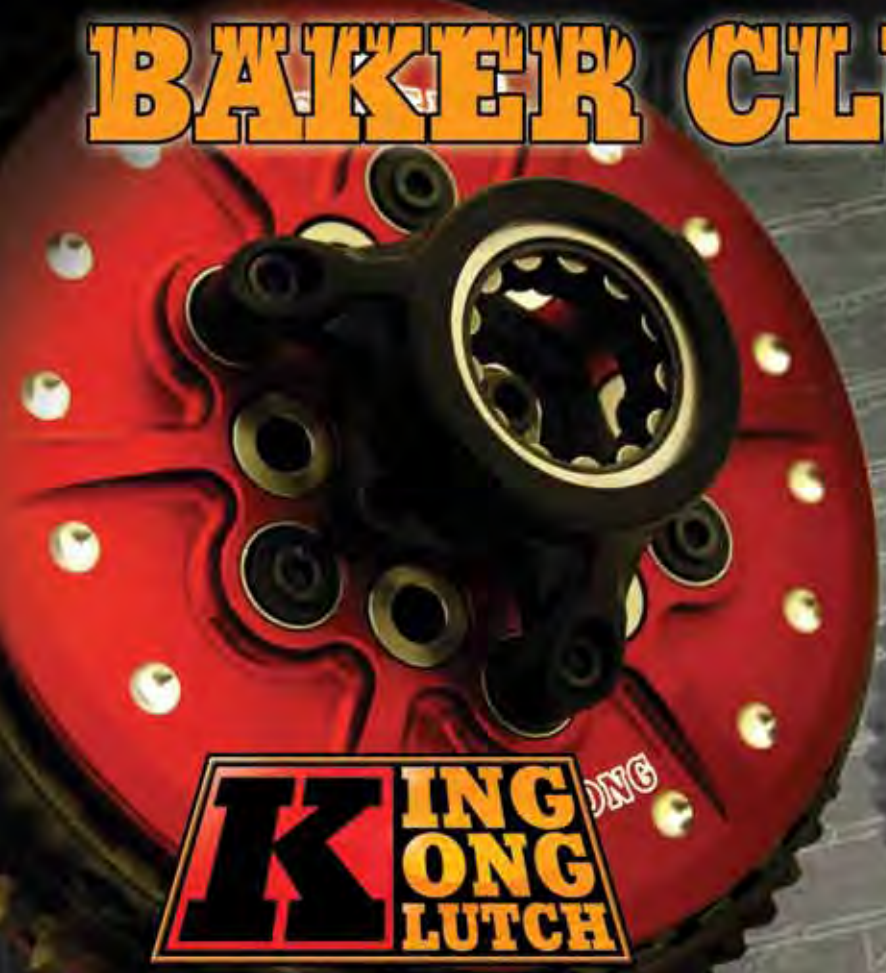


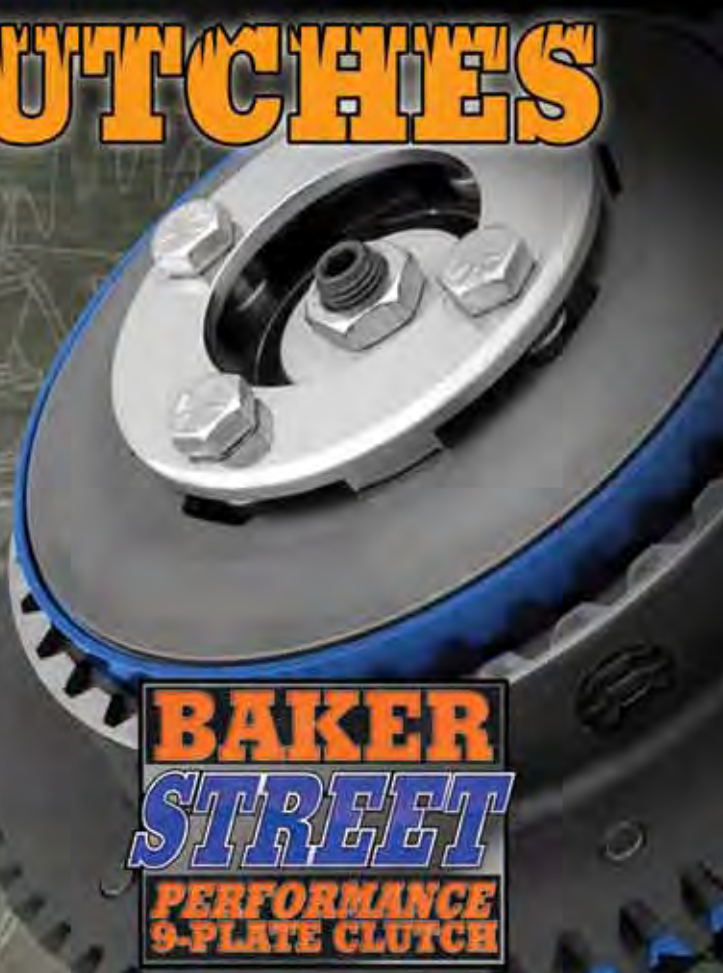

DD6RV
DIRECT DRIVE 6-SPEED REVERSE

DD6RV-DD6 WITH REVERSE SYSTEM

The DD6-RV upgrades any existing 1990-06 Big Twin 5-speed to a BAKER Direct Drive 6-Speed with reverse. The contents in the DD6-RV kit are similar to our reverse systems for Factory 5-speeds (FSR - see page 45) ; door, side cover, countershaft, reverse gear train and hardware. Existing gearset (except countershaft), shift system and top cover will be re-used with the DD6-RV installation.

# BAKER CLUTCHES




"Torque capacity of a clutch is dictated by the diameter and the number of clutch plates." So our goal was to implement the largest diameter clutch plates that would fit underneath the starter ring gear minor diameter. We found the biggest ones in a Cadillac 5-speed automatic tranny, so we designed our King Kong Klutch around 20 of these massive plates.

**FEATURES:**

- Twenty 7-inch diameter, single-sided K2 friction plates
- Three interchangeable coil spring options; light, medium and heavy
- BAKER'S exclusive one-piece clutch basket and 66 tooth ring gear design
- Larger torque capacity
- Positive pressure plate alignment with Perma-Glide bearings
- Red anodized clutch carrier and pressure plate
- Two-year/20,000 mile warranty

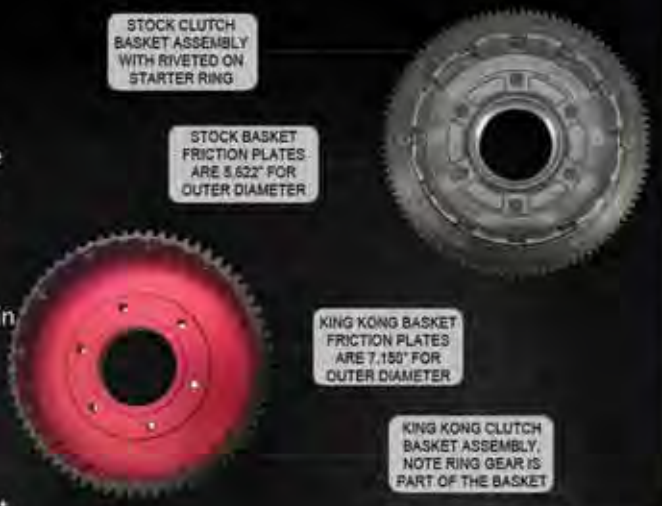
The BAKER 9-Plate Street Performance Clutch is the competitively priced smaller brother of the KKK, it's a 'must have' for all 1990-93 Big Twins, and 1994-06 Big Twins with our optional 9 tooth pinion. It features a one piece clutch basket, which is 23% larger than stock, and a hard anodized hub for increased strength and durability. We moved the friction material towards the outer diameter of the plate, which increases torque capacity and reduces heat build-up, all resulting in a longer clutch life.

**FEATURES:**

- 9 Kevlar 2-sided clutch plates with large mean radius
- Blue anodized clutch carrier and pressure plate
- BAKER'S exclusive 1-piece clutch basket and 66 tooth ring gear design
- Larger torque capacity over stock
- Diaphragm-type pressure plate spring with ergonomic break-over feel during disengagement.
- Standard diaphragm spring installed; separate heavy duty rated spring included with purchase
- Two-year/20,000 mile warranty


## CLUTCH DESIGN

The fundamental design approach of the BAKER clutches is different than anything available from the factory or other aftermarket manufacturers. For strength reasons, we manufacture our clutch with a 1-piece ring gear/basket. First, a large donut shaped forging is turned on a CNC lathe to the shape of the finished basket. Next, the internal splines for the friction plates are formed with a 6-foot long broach. Threads for attachment of the carrier are machined on a mill, then the ring gear teeth are hobbed on the same type of machine that makes our gears. It is not cheap to make the heart and soul of our clutches in this manner but the end result justifies the expense. The radial strength gained by integrally putting the ring gear around the basket is analogous to the steel bands placed around a whiskey barrel. Without the steel bands, the barrel would explode and that would be alcohol abuse. Additionally, the ring gear is supported by the hoop of the basket and this guarantees the T.I.R. at the pitch line of the ring gear teeth (no egg shaped ring gear). We offer 35, 36, 37, and 38 tooth clutch sprockets with our clutches to dial in your overall gear ratio.





## AC/DC PINION

We only manufacture clutches with the 66 tooth ring gear. In 1994, Harley migrated from the 66 tooth ring to a 102 tooth design to achieve more starting torque. The flip side of that is the teeth sheer off, especially on modified motors. If you have a 1994-06 (except 06 Dyna) 102 tooth clutch basket you must purchase the AC/DC starter pinion separately, PN SP1000.

### KKK: KING KONG KLUTCH

| PN | DESCRIPTION |
|---|---|
| 20P200-KK-35 | KKK with 35T Sprocket |
| 20P200-KK-36 | KKK with 36T Sprocket |
| 20P200-KK-37 | KKK with 37T Sprocket |
| 20P200-KK-38 | KKK with 38T Sprocket |
| 20P200-KK-S-35 | KKK with 35T Sprocket and FFP Outer Support |
| 20P200-KK-S-36 | KKK with 36T Sprocket and FFP Outer Support |
| 20P200-KK-S-37 | KKK with 37T Sprocket and FFP Outer Support |
| 20P200-KK-S-38 | KKK with 38T Sprocket and FFP Outer Support |

**FITMENT**
1990-06 Big Twins (except 06 Dyna)
1994-06 FLH/FLT Models

### 9 PLATE CLUTCH

| PN | DESCRIPTION |
|---|---|
| 9P300-56-35 | 9-Plate Clutch with 35T Sprocket |
| 9P300-56-36 | 9-Plate Clutch with 36T Sprocket |
| 9P300-56-37 | 9-Plate Clutch with 37T Sprocket |
| 9P300-56-38 | 9-Plate Clutch with 38T Sprocket |

**FITMENT**
1990-06 Big Twins (except 06 Dyna)


## FRICTION PLATES

The King Kong ring gear basket design and friction plates dwarf the stock clutch components. Look at the size of the KKK friction plates relative to the stock 1998-06 factory clutch plates; by increasing the diameter of the friction plate we are able to increase the torque handling capacity. The KKK comes with 20 of these massive single sided friction plates. The single sided KKK friction plates dissipate heat more quickly than standard two-sided friction plates resulting in a longer lasting, more durable clutch.

# BAKER DRIVETRAIN SYNCHRONOUS BELT DRIVE

## SBD: SYNCHRONOUS BELT DRIVE

| PN | DESCRIPTION |
|---|---|
| SBD-0-NS* | SBD, No Offset, No Outboard Support |
| SBD-0-S* | SBD, No Offset, With Outboard Support |
| SBD-1/2-NS* | SBD, 1/2" Offset, No Outboard Support |
| SBD-1/2-S* | SBD, 1/2" Offset, With Outboard Support |

**FITMENT**
1990-06 Softail & Custom

Add: -BA suffix for black anodized finish
Add: -BAP suffix for black anodized finished & polished outboard support
Add: -K Suffix for kickstart only version

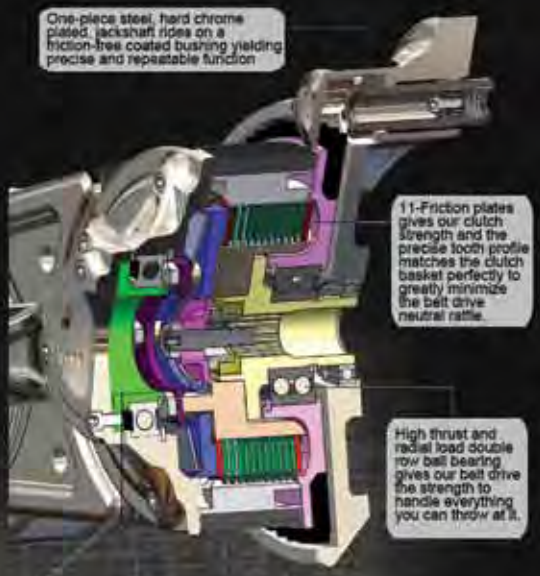
** Standard finish is polished, unless black anodize (-BA or -BAP) suffix is added to PN*

PN Examples:

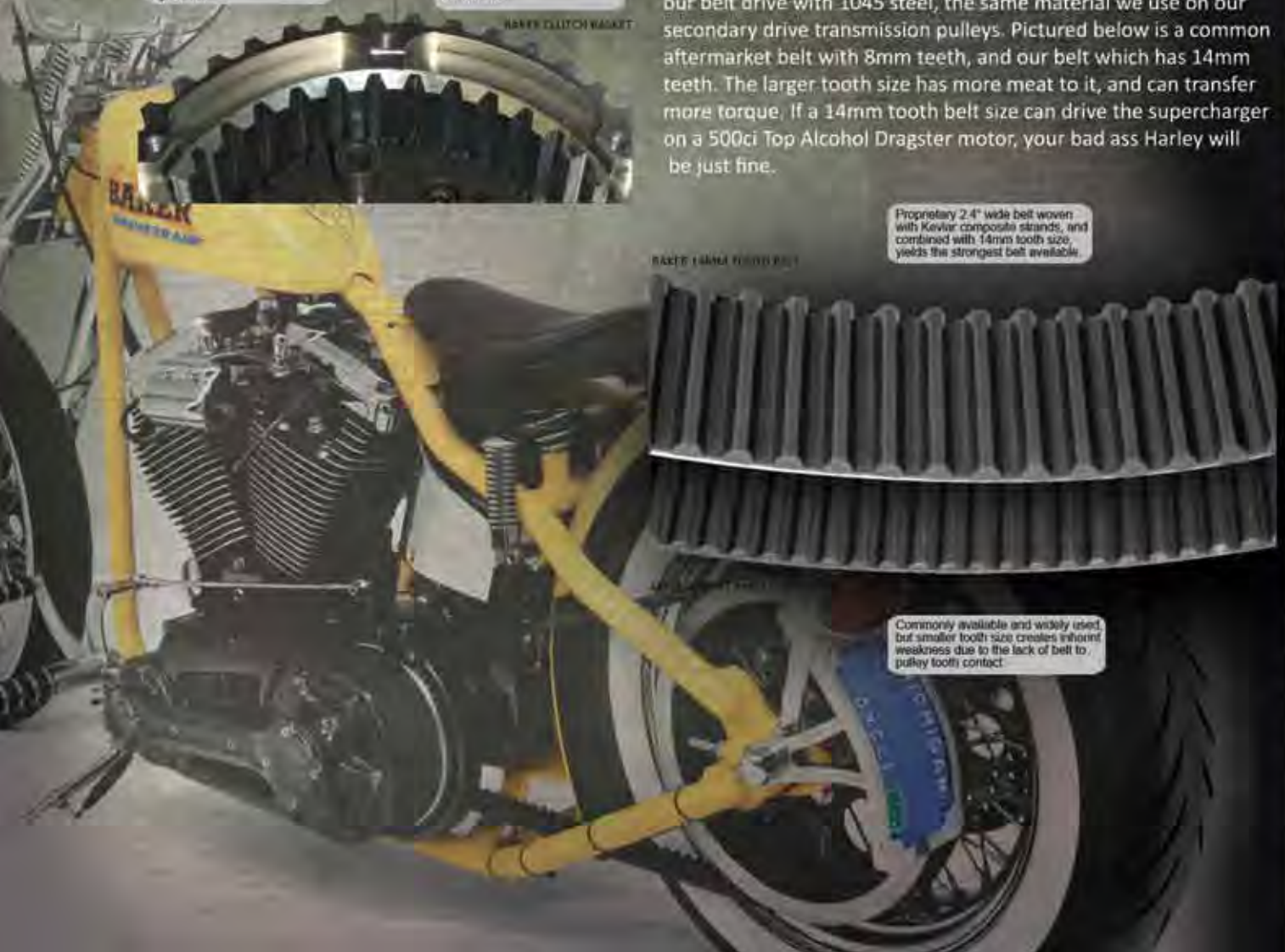
| | |
|---|---|
| SBD-1/2-NS-BA | SBD, 1/2 Offset, No Support, Black Anodized Finish |
| SBD-0-S-K | SBD, No Offset, Outboard Support, Polished Finish, Kickstart Version |

**KEY FEATURES**
- Zinc plated steel pulleys for strength, and corrosion resistance
- One piece steel clutch basket
- One piece starter jackshaft
- Forged aluminum outboard support (dog bone) and pulley covers
- Available with a show polished or black anodized finish
- Available in 0" or 1/2" offset configurations
- 28 tooth zinc plated 1045 steel pulley up front and a 43 tooth zinc plated 1045 steel pulley in the rear
- 1.58 pulley ratio yields a 7% increase in torque to the rear wheel on stock Softails from 1994-06
- One-piece, 66T 1045 steel ring gear is mated to a 9-tooth, one-piece jackshaft that rides on an impregnated bushing
- 2.4" wide proprietary belt with 14mm teeth
- 11 plate clutch pack holds up to 120 ft-lbs of continuous use while the tight tolerance clutch basket all but eliminates the 'neutral clutch rattle' most belt drives suffer from
- Forged 6061-T6 aluminum outboard support (dog bone) and pulley covers
- Motor plate and edge guard are machined from 6061-T6 billet plate stock
- Available with or without, polished or black anodized outboard support. Outboard support versions are recommended for 60+ HP applications
- Two-year/20,000 mile warranty

Having an open belt drive is one of those traits of a cool chopper. The mechanical nature of an open belt whippin' in the breeze gives that element of nostalgia that is so popular in the V-twin dominated world we all love. We agree and tried to build on that cool factor with some modern day engineering. Our 2.4" wide belt rides on zinc plated 1045 steel pulleys. We used larger 14mm teeth and a forged outboard support to add as much strength as possible. Our 11 plate clutch design will handle up 120 ft-lbs of continuous use right out of the box. Our one-piece jackshaft is exponentially stronger than stock, and when matched with our one-piece clutch basket design, will yield years of reliable starting that everyone expects these days. Not being happy with a product that just works great, we pulled out our design pencils and added a level of aesthetic styling that complements the strength of the mechanical design.

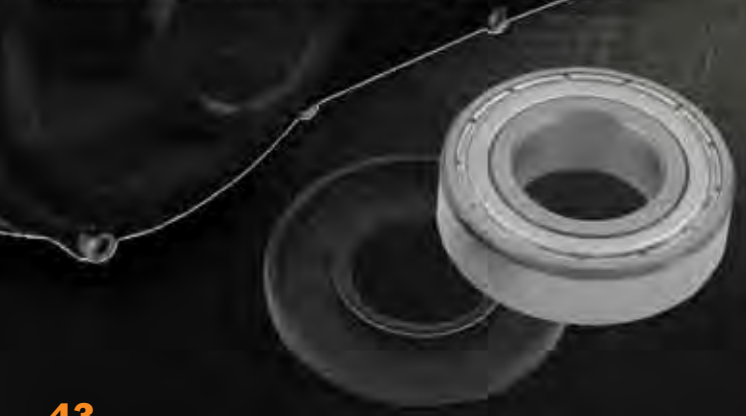



A used, aluminum, aftermarket clutch basket is shown at left. Over time, engine torque carried by the clutch plates wears grooves in the flanks of the teeth. Anyone who has wrenched for at least one riding season, has seen this phenomenon in the flesh. These wear marks when they start, cause clutch disengagement and shifting issues and make it difficult to find neutral. When they get to be as bad as those pictured, you have to replace the entire basket at your expense. The wearing of the clutch plates into the basket, and the belt into the pulleys is the reason we designed our belt drive with 1045 steel, the same material we use on our secondary drive transmission pulleys. Pictured below is a common aftermarket belt with 8mm teeth, and our belt which has 14mm teeth. The larger tooth size has more meat to it, and can transfer more torque. If a 14mm tooth belt size can drive the supercharger on a 500ci Top Alcohol Dragster motor, your bad ass Harley will be just fine.

# FUNCTION-FORMED PRIMARY™

The primary drive housing is the most recognizable piece of architecture on an American motorcycle. It is centrally located and transfers power from the engine to the transmission. We sculpted our forged 6061-T6 Function Formed Primary (FFP) to enhance the natural mechanical beauty of the elements inside. A SolidWorks 3D model of the clutch, chain, starter pinion, and motor sprocket was created and then we sparingly started adding material to wrap around those elements. No extra aluminum, just mechanical beauty. And there's a glory hole in the middle for that open look, with the benefits of the chain intact. FFP fits all Softail, EVO and Twin Cam models without modification. Compatible with stock 66-tooth and 102-tooth clutches, compensating sprocket, chain, and starter motors. Each primary kit includes an inner primary housing, outer primary cover, one-piece starter jackshaft, chain adjustment shoe and mechanism, gaskets, and fasteners. For performance junkies with mountain motors, the FFP has an optional internal outside bearing support (FFPS) that integrates with the King Kong Klutch. Applications above 150 ft-lbs require the outside clutch support to keep the transmission mainshaft from flexing. The outside bearing support version is the first enclosed, wet primary available with this feature. Belt drives have been available for years with outside supports. Our KKK clutch is required with outside support spider for fitted compatibilty.



**HIGH TORQUE BEARING**

The Function Form Primary comes standard with our High Torque Bearing kit, PN 189-56, installed. This replaces the stock (PN 34091-85) inner bearing race that has been used on Big Twins since 1985. This factory inner primary bearing rides on this race. By design, this race press-fits onto the transmission mainshaft. This system works fine for stock engines. 100 HP+ engines will make this race walk on the mainshaft. If it walks inboard, it will damage the maindrive gear seal and cause a transmission oil leak. If it walks outboard, it will cause a primary oil leak. Our high torque bearing kit eliminates this condition.

# FFP: FUNCTION FORMED PRIMARY

| PN | DESCRIPTION |
|---|---|
| 4100-FFP-P | FFP, Polished |
| 4100-FFP-B | FFP, Black Anodized |
| FFPP-KKK*-OBS | FFP, Polished with KKK and Outboard Bearing Support |
| FFPB-KKK*-OBS | FFP, Black Anodized with KKK and Outboard Bearing Support |

** Specify tooth count for sprocket with 35, 36, 37 or 38 added in place of *, depending on your desired primary drive ratio. Example PN FFPP-KKK36-OBS*

**KEY FEATURES**

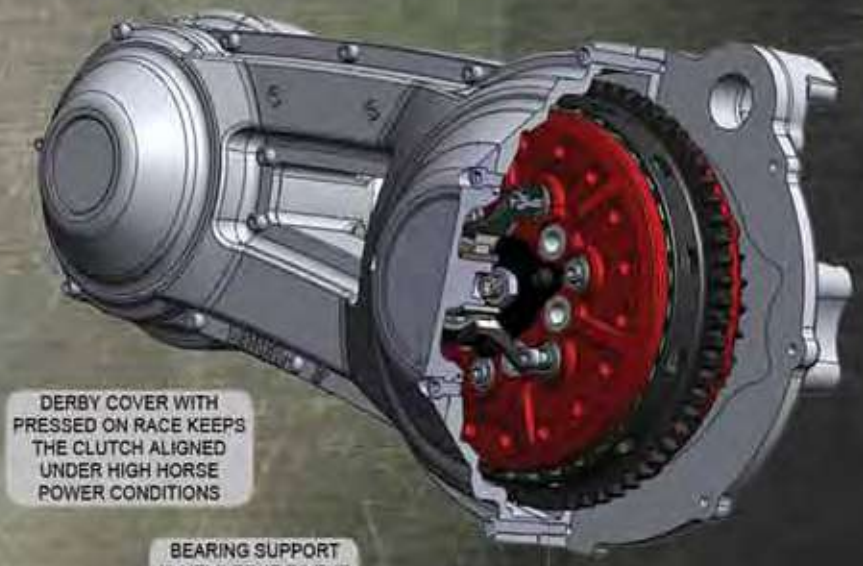
- 6061-T6 forged inner and outer primary
- Externally adjustable primary chain
- One-piece starter jackshaft for strength
- Fits stock and custom Softail applications
- Optional bearing support with King Kong Klutch for high torque applications
- Available in black or polished
- Starter pinion (provided) compatible with 66 tooth ring gear clutches
- Compatible with several different primary ratios; see below
- Two-year/20,000 mile warranty

**PRIMARY CONFIGURATIONS**

| Motor Sprocket | Clutch Sprocket | Chain Length |
|---|---|---|
| 21 | 36 | 80 |
| 24 | 37 | 82 |
| 25 | 36 | 82 |
| 27 | 38 | 84 |

**CHAIN ADJUSTMENT**

The FFP is the only primary available with an externally adjustable primary chain. No removal of the outer primary is necessary and no gaskets are used. Just remove the inspection cover and adjust the chain to specification with the adjuster screw on the bottom of the primary.




**OPTIONAL BEARING SUPPORT**

With the King Kong Klutch being the ultimate in high horsepower clutches for Big Twins, we had to design a bearing support to keep the mainshaft from bending under severe loads. The bearing support features a billet 6061-T6 design which is mounted to the King Kong Klutch using 3 alignment dowels and utilizes a heavy duty roller bearing. The bearing support version of the FFP is designed to work with the BAKER KKK 'King Kong Klutch' only. The derby cover of the primary has a bearing race pressed onto the snout of the cover which slides inside the bearing of the support when installed to keep the clutch assembly true to the world no matter how much horsepower you throw at it.

# F5R


## F5R: FACTORY 5-SPEED REVERSE

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| F5-RV-1 | F5R Reverse System | 1990-97 All Big Twin Models |
| F5-RV-2 | F5R Reverse System | 1998-99 Softail, 98-00, FLT/ FLH, Dyna, 99 FXR |
| F5-RV-3* | F5R Reverse System | 2000-06 Softail, 01-06 FLT/ FLH, 01-05 Dyna |

*2000-2006 Softail Models Require BAKER PN TCSO-A, Oil Line Adapter Kit

**KEY FEATURES**

- Will retrofit onto BAKER DD5 or stock 1990-06 H-D® 5-speed transmissions
- Full complement of parts and detailed instructions included for easy installation
- Reverse gear ratio is designed as a creeper gear for safe operation
- Reverse selection controlled by aircraft grade shifting solenoid & crank assembly
- Electronic reverse safety lock out solenoid is energized with the handlebar mounted momentary toggle switch
- No 'accidentally' shifting into reverse. Solenoids are only powered when the bike is in neutral.
- Redundant dual spring system on the shifting bell crank assembly make it is the safest reverse system on the market today
- True 'plug & play' wiring harness
- Does not use the starter motor for reverse maneuvers so your manhood is protected
- No case modifications required for reverse gearset installation
- Two-year/20,000 mile warranty

# DD6RV

## DIRECT DRIVE 6-SPEED REVERSE

The DD6-RV upgrades any existing 1990-2006 Big Twin 5-speed to a Direct Drive 6-speed with Reverse. The contents of the DD6-RV kit are similar to the F5R; door, side cover, countershaft, reverse geartrain and hardware. Existing gearset (except countershaft), shift system and top cover are re-used with the DD6-RV installation.

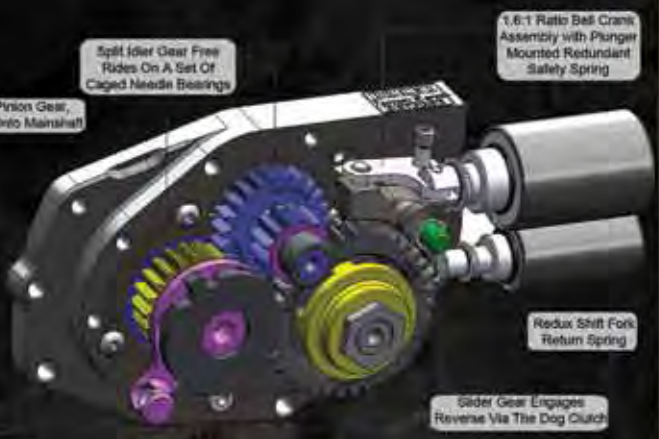
| PN | DESCRIPTION |
|---|---|
| DD6-RVP* | DD6 Reverse, Polished |
| DD6-RVC* | DD6 Reverse, Chrome |

**FITMENT**

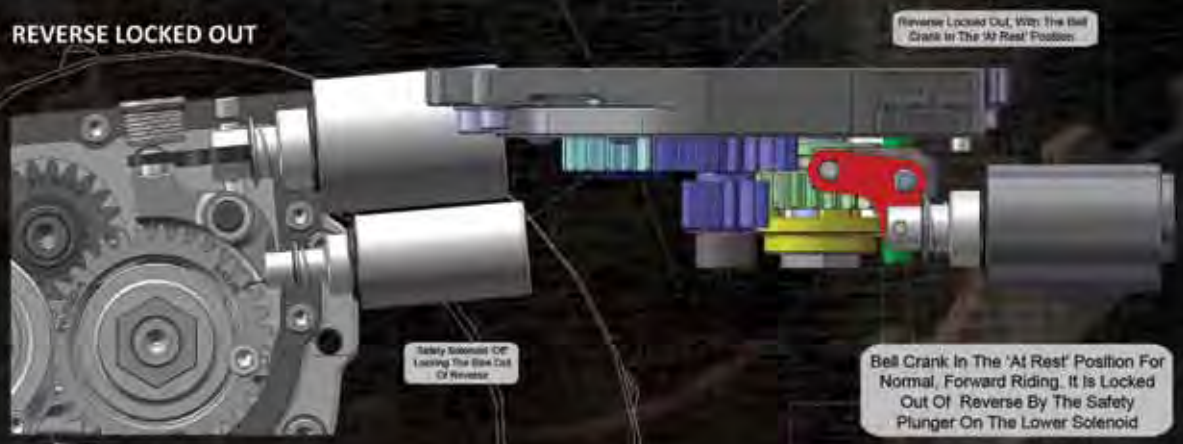
All left side drive BAKER DD6's

*2000-2006 Softail Models Require BAKER PN TCSO-A, Oil Line Adapter Kit

The F5R kit adds a reverse gear to any 1990-2006 Big Twin 5-speed. Existing gearset (except countershaft), shift system and top cover are reused with the F5R installation. The F5R will be appreciated by those with heavy GVW applications (trikes, side cars and trailers) or those with compromised leg mobility. Also available as a 5-speed builder's kit with reverse, or as a complete transmission upgrade. No longer do you have to wrestle that large bagger out of a tight parking situation. You can safely and easily back up in reverse using the throttle and clutch. All reverse functions are on the handlebars and/or inner fairing. No reaching down near the hot exhaust to actuate reverse. By design it is mechanically impossible to be in reverse and a forward gear like other units on the market. Maintain the freedom of being powered by an American Big Twin – even in reverse!

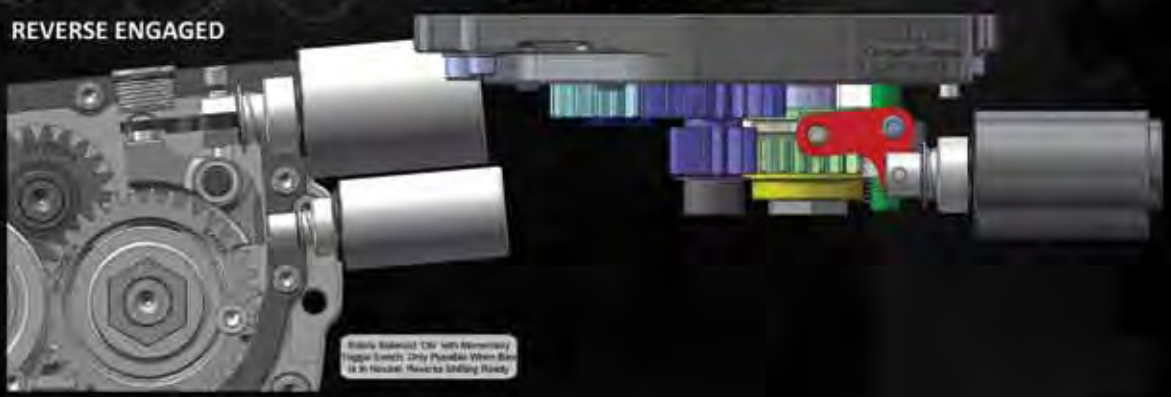



## REVERSE LOCKED OUT





## REVERSE ENGAGED



# BAKER +1 OIL PAN

We bought a new 2007 FL to use for 7-speed transmission development work. The first thing we noticed was how hot the damn thing ran. In traffic, we could see those little heat wave squiggle lines (maybe a flashback) coming off the motor. The 4-qt capacity, unchanged since 1993 when the 80" motor made 49 hp, seemed inadequate.

So we designed a new pan in SolidWorks with a 5 qt capacity by going wider rather than deeper, hence the +1 Oil Pan. Taking a closer look at the stock pan we discovered it has the oil pickup and return in the front of the pan within 2" of each other. So we improved the oil circulation by putting the pickup in the rear of our +1 Oil Pan and the return in the front. The results tell the story, providing a 10-30 degree reduction in engine oil teperature.

## +1 OIL PAN

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| BD-5QTR-EVO | +1 Oil Pan, Cast, Silver | 1993-98 FLT-FLH |
| BD-5QTB-EVO | +1 Oil Pan, Cast, Wrinkle Black | 1993-98 FLT-FLH |
| BD-5QTR | +1 Oil Pan,Cast, Silver | 1999-08 FLT-FLH |
| BD-5QTB | +1 Oil Pan, Cast, Wrinkle Black | 1999-08 FLT-FLH |
| BD-5QTP-2PEVO | +1 Oil Pan, 2pc Billet, Show Polished | 1993-98 FLT-FLH |
| BD-5QTC-2PEVO | +1 Oil Pan, 2pc Billet, Chrome | 1993-98 FLT-FLH |
| BD-5QTP-2PC | +1 Oil Pan, 2pc Billet, Show Polished | 1999-08 FLT-FLH |
| BD-5QTC-2PC | +1 Oil Pan, 2pc Billet, Chrome | 1999-08 FLT-FLH |

**NOTE**
When installing an oil temperature sending unit on a BAKER +1 Oil Pan, install the sending unit before installing the pan on the transmission housing.

**KEY FEATURES**
- Cast oil pans are 1-piece design, made from A356-T6 aluminum
- Billet oil pans are 2-piece design, made from 6061-T6 aluminum
- Oil feed in the rear of the pan and return in the front provides maximum cooling
- Reduces engine oil temperature by 10-30º
- Multiple integral baffles eliminate the stock plastic spring loaded baffle
- Integral bosses for Alloy Art TXR® and True Track® stabilizers structurally located on the bottom of pan
- No modifications required for installation
- Compatible with factory oil temperature sensor
- Five-year/50,000 mile warranty

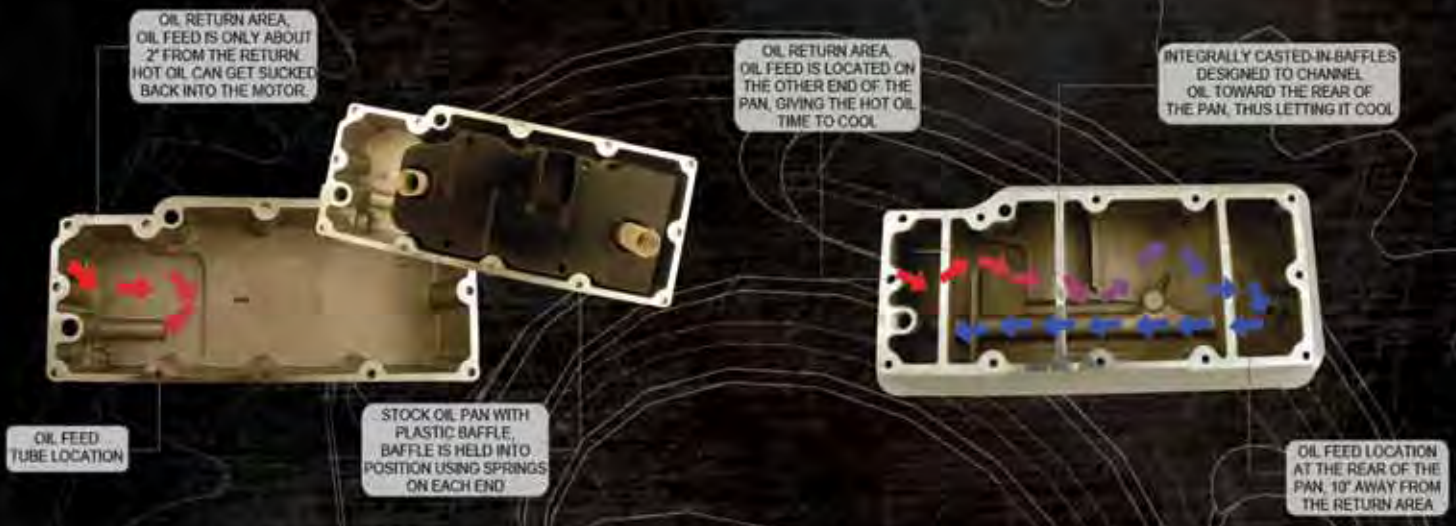

BAKER+1

# BAKER +1 OIL PAN

# FEATURES AND TECHNICAL INFO...

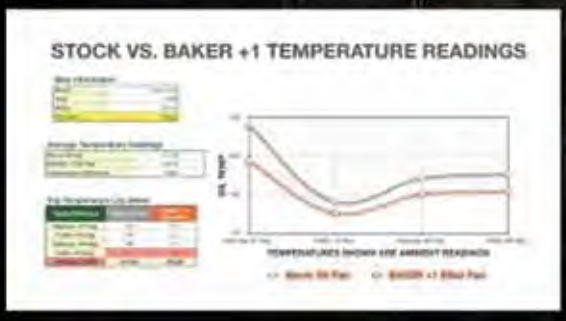
## ANATOMY OF A BAKER OIL PAN

The +1 Oil Pan replaces the stock plastic baffle system with integrally positioned baffles as part of the pan, casted in on our cast pans and machined in on our billet line. We also have the feed location moved to the rear of the pan and kept the return location in the front for more complete system circulation. Looking at the images below you can see how the oil would flow through the BAKER pan and the internals of the baffling system. The factory oil pan uses a removable plastic baffle system which can cause wear on the inside of the pan from engine vibration. The oil feed and return areas on the factory pan are within 2 inches of each other located in the front of the pan. This can cause the tendency of hot oil getting sucked back into the motor by seeping around the plastic baffle.




## OIL TEMPERATURE

The temperature of your motor oil plays a big factor in the life and longevity of your motor. The temperature data chart shows an average of 14° drop with the BAKER +1 pan vs. stock. It also shows the longer and hotter the ride, the bigger the temperature differential. Some of our customers have recorded up to a 30° temperature drop in the Nevada desert during the summer where temperatures can easily reach 110°.




## STABILIZERS

After getting the speed wobbles on a high speed sweeper, we realized the need for this pan to work in conjunction with stabilizers on the market, so we tested it with both types – It really worked, no more speed wobbles! So we incorporated two bosses on the bottom to directly bolt the heim joint of both types of stabilizers to the oil pan.

| PN | Description |
|---|---|
| 20-00 | True Track Stabilizer Unit |
| TXR-1 | Alloy Art Stabilizer Unit |

Bottom view of a 1999 FL with Alloy Art unit installed

Bottom view of a 1999 FL with True Track unit installed


## BAKER +1 / S&S ADAPTER KIT

We highly recommend the +1 Oil Pan for S&S® T124 applications. That motor makes a lot of power and a lot of heat. The oil feed and return on the right back of the motor is unique and requires a special adapter kit for proper fitment. Kit includes special adapter block to route the oil lines and associated hardware.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 5QT-1160 | Adapter Kit | +1 Oil Pan with S&S T124 Motor |

## PAN FINISH OPTIONS

The cast version has 2 options for finish; raw cast and wrinkle black. The billet 2-piece version is available in polished and chrome finishes.

# F5K

## F5K: 5-SPEED KICKER KIT

| PN | DESCRIPTION |
|---|---|
| 578-56MR-K | F5K with Raw Door, Mechanical Ball & Ramp Cable Kicker |
| 578-56HR-K | F5K with Raw Door, Hydraulic Kicker |
| 578-56MB-K | F5K with Wrinkle Black Door, Mechanical Ball & Ramp Cable Kicker |
| 578-56HB-K | F5K with Wrinkle Black Door, Hydraulic Kicker |
| 578-56MP-K | F5K with Polished Door, Mechanical Ball & Ramp Cable Kicker |
| 578-56HP-K | F5K with Polished Door, Hydraulic Kicker |

**KEY FEATURES**

- Heavy duty 6061-T6 all billet aluminum construction bearing door and kicker cover
- 1018HR heat treated steel mainshaft hub and retainer
- BAKER heavy duty stainless steel straight kick arm
- BAKER bronze kick pedal with 5/8" spindle
- Transmission case removal from bike not required for installation
- Hydraulic type kits come with 1.5" piston; 11/16" bore master cylinder is required for compatibility with piston
- Cable type kits come with ball ramp actuator
- Compatible with factory electric starter, for kick-only and electric start
- Bearing door and kicker cover come pre-assembled for quick installation
- Two-year/20,000 mile warranty

**NOTES FOR FITMENT**

- 1989-99 Factory 5-speeds and BAKER Direct Drive 5-speeds
- 1999-06 Factory 5-speeds
- Will not clear factory exhaust
- Fuel injection models will need to be converted to carburetor
- Twin Cam models will need an ignition retrofit to either a cam type sensor or a magneto

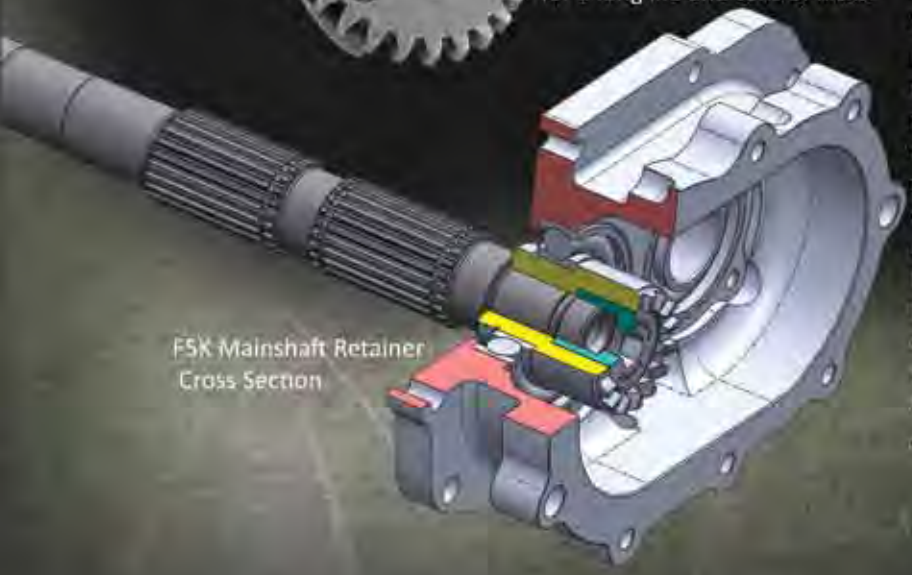
Our F5K is designed to fit on 1990-06 Factory 5-speeds and the BAKER DD5. We know bolt on kicker kits are nothing new. Over the years many have come and gone for one common reason: they all relied on a ratchet hub or shaft extension that screwed on to the end of the mainshaft in place of the 3/4-16 nyloc jam nut. They all eventually broke for the same reason - the end of the mainshaft snapped off!

Our F5K kicker kits use a ratchet hub that presses onto the shank of the mainshaft, then the O.D. of the ratchet hub presses into the over-sized trap door bearing. The ratchet hub is effectively located and secured from moving by the over-sized door bearing; see CAD cross-sectional image below.

**KICKER COVER OPTIONS**
We manufacture and offer 2 different kicker covers making our the F5K completely customizable from stock to custom build. The kicker covers are available in mechanical ball & ramp cable style or a hydraulic model. Kicker covers come completely show polished. Call our Tech lines for upgraded custom finishes.

Included Components

**KICKER GEARS**
All BAKER F5K's come with an F5K version of the Klassic Kicker Gears standard. These gears are made with 1018 HR Steel, precision machined and heat treated to 50-55 RC. These gears are tough for a long life and tons of kicks.



F5K Mainshaft Retainer Cross Section

**MAINSHAFT RETAINER**
We developed our whole kicker kit around our mainshaft retainer. Other aftermarket kicker kits use a retainer that is part of the ratchet gear that gets threaded on to the mainshaft. With every kick of your bike this retainer continuously gets tighter on the threads of the mainshaft. This eventually causes failure and the end of the mainshaft breaks off. Our kit uses a larger diameter mainshaft bearing to house our ratchet gear. This ratchet gear becomes the support for the mainshaft. The mainshaft is retained by a nut, just like the factory so no extra stress is put on to the shaft. These features help make our F5K the most reliable kicker kit available.

**TRAP DOOR FINISH OPTIONS**
We offer three different options for trap door finish on the F5K, below:

Raw

Wrinkle Black

Polished


## FRANKENTRANNY

**KEY FEATURES**

- Billet 6061-T6 bearing door
- Hard chrome plated shift forks
- Diamond cut OD6 Gearset
- 500 RPM reduction in cruising speeds on highway in 6th gear
- Doweled trap door for positive kicker cover alignment (ONLY with BAKER Kicker Covers)
- Redundant neutral shift system
- Complete Frankentranny transmissions are available for 1990-06 Softail, Dyna, FXR, FLT-FLH, or FXR; inquire with our tech department
- Five-year/50,000 mile warranty

**BUILDER'S KIT PART NUMBERS**

*All Part Numbers Listed Are Standard 2.94 Gear Ratios*

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| FT106L | Frankentranny Builder's Kit | 1990-97 All Big Twin |
| FT106SL | Frankentranny Builder's Kit | 1998-99 Softail<br>1998-00 FLT-FLH & Dyna |
| FT106P | Frankentranny Builder's Kit | 2001-05 Dyna<br>2001-06 FLT- FLH<br>2000-06 Softail |

**COMPLETE TRANSMISSION PART NUMBERS**

*All Part Numbers Listed Are Standard 2.94 Gear Ratios*

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| K701* | Frankentranny Complete with Standard Cover | 1990-99 Softail |
| K701*-FF | Frankentranny Complete with Function Formed Cover | 1990-99 Softail |

**Specify 'R' suffix for raw finish, 'B' suffix for wrinkle black, and 'P' suffix for polished case finish*

The BAKER Frankentranny comes in standard, optional, or R-Ratio configurations

**STANDARD RATIOS**

| | |
|---|---|
| 1st Gear | 2.94/Optional 3.24 |
| 2nd Gear | 2.21 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |
| 6th Gear | .86/Optional .80 |

**R-RATIOS**

| | |
|---|---|
| 1st Gear | 2.82 |
| 2nd Gear | 2.08 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |
| 6th Gear | .86/Optional .80 |

# IF YOU CAN RIDE IT... WE CAN HELP YOU KICK IT...

Mary Shelley published the novel 'Frankenstein' when she was 19 years old in 1818. Her brilliant story has withstood the test of time with many subsequent novels based on her work and many interesting movies. According to the inner circle of the BAKER opium den, the 1936-based Harley 4-speed kicker is the mechanical equivalent of Ms. Shelley's literary masterpiece. So we got inspired by her and went back to the R&D lab and pieced together something for EVOs and 1st generation Twin Cams. Effectively, we combined a 4-speed kicker with a BAKER 6-speed that fits into the 5-speed cases used from 1990-06.

**BUILDER'S KIT AND COMPLETE TRANSMISSION NOTES**

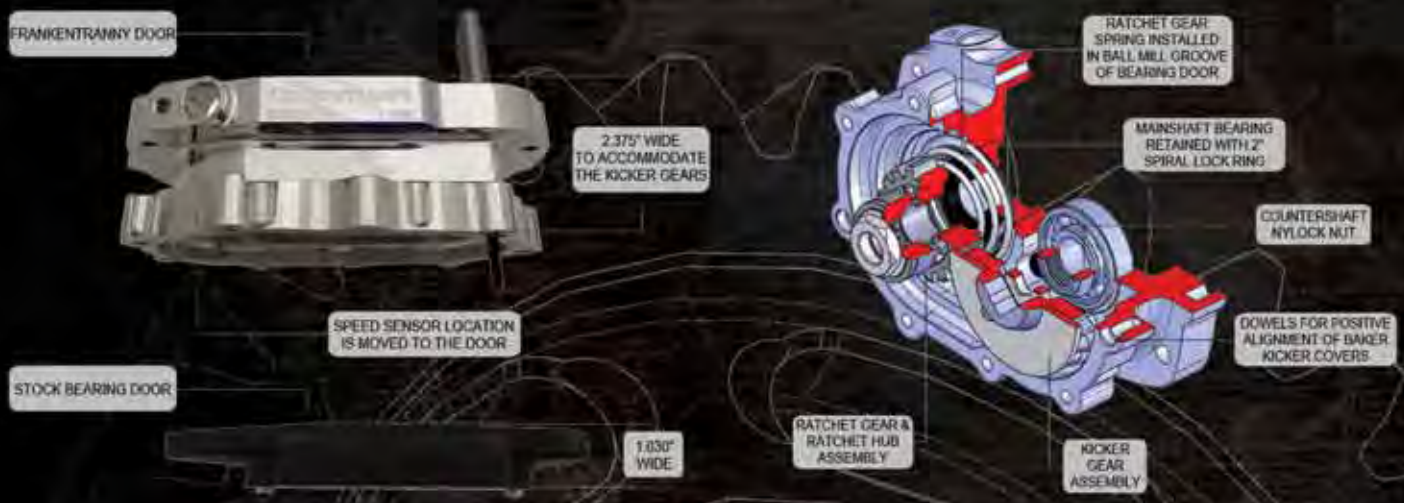
- EFI models require carb retrofit and cam based ignition
- FL Models from 1993 and later require a BAKER FF oil spout
- For N1 shift system add suffix 'N1' to the part number; example FT106L-N1 or K701P-N1
- The Frankentranny is available with a 3.24 optional 1st gear ratio . Change the middle numeral '0' to a '1'. Example: FT116SL or K711P
- For R-ratio gears change the middle number '0' to '21'; Example FT1216SL
- The Frankentranny is also available with a deep overdrive gear, .80 6th. Please speak with our technical staff before selecting this option, it is typically for big inch motor applications only
- Some exhaust systems may not be compatible with the Frankentranny Kit due to extended mainshaft and bearing door length
- Builder's kit does not include kicker cover or components; must be purchased seperately

THE FAMOUS BAKER FRANKENTRANNY

# FEATURES AND TECHNICAL INFO...

## BEARING DOOR

Made out of billet 6061-T6 aluminum, the Frankentranny bearing door is about 1 3/8" wider then a stock 5-speed. The door is wider in order to contain the 6th gear and all of the kicker gear components used in a 4-speed application. The beehive spring is contained within the door riding on a ball mill track, the kicker gear stops are machined into the internal profile of the door for strength. Take a look at the sectioned view below. You can see we didn't leave any room to waste.




Door Comparision

Internal Door Design

## EAR OR NO EAR

You get the look of an old bobber with the Frankentranny, but you also have the option to use a modern starter. Start with a push of a button or kick start. If you would like to keep things simple, we can remove the starter ear on the case. Start your bike the old fashioned way, by kick only. For a no ear case, add suffix 'S' to the end of the part number; Example K701P-N1-S



## CASE DESIGN

The BAKER Softail case design addresses all of the shortcomings of the factory and othermarket designs. We added stud pads to the inside of the case so that the threaded holes for the transmission studs were blind holes, NOT through holes like some aftermarket brands. Looking at the image above you can see the difference.

## CASE FINISH OPTIONS:

Polished, Raw and Wrinkle Black


## IGNITION RETROFIT ALTERNATIVES

Starting in 1999 with the first Twin Cam engines, Harley began using a flywheel-based trigger for the ignition. This style ignition requires the flywheel (aka crankshaft) to turn over 3 or 4 times for it to 'find itself' before it starts sparking. Three or four rotations of the flywheel with kick starting may not sound like much while you're taking a shit right now and reading this, but it's almost humanly impossible. Cam-based ignitions spark at less than one flywheel revolution and it lights off the first time it hits TDC.

If you install one of our Frankentranny kits on a Twin Cam you must covert the ignition to a cam-based unit like the ones shown to the right. Also EFI models will have to be converted to a carb setup.

## GEARSET

The Frankentranny utilizes the OD6 gearset. All OD6 gearsets are made with 8620 steel, hobbed before heat treatment, then precision ground with diamond coated tooling after heat treatment (58-62 Rockwell 'C'). These extra steps ensure a quieter gear pair and much tighter backlash control.


## SHIFT FORKS

Our investment cast shift forks are made with 4140 steel and are hard chrome plated for wear resistance. The fork design has oil reliefs to ensure proper lubrication and wear resistance on fork blades and shift fork grooves..


## SPEEDOMETER RECALIBRATION

A speedometer recalibration unit may be required for Frankentranny applications, PN 95E-56A. Visit our website for additional details.

## SHIFT SYSTEM

Our 6-speed shift system with roller detent guarantees smooth shifts every time and our redundant neutral detent ensures that finding neutral is an easy chore. We mount a plunger detent on the left side pillow block and cut a plunger track into the barrel of the shift drum. The plunger follows this track during operation (shifting) and when shifting into neutral pops into a pocket. This system lets you feel that you're shifting into neutral. No more guessing. Shift drum features more aggressive timing on the fork groove profiles and is case hardened to 58 RC for wear resistance and crisp shifts. We built our reputation on smooth shifting 6-speed transmissions; our 6-speed drum designs benefit from the engineering lessons learned.

## RATIOS

The Frankentranny comes in a standard 2.94, or optional 3.24 or R-Ratio 2.82 configurations. A way to physically tell which ratio you have is pretty common knowledge here at BAKER, but if you would like to know look at the 1st gear pair on the gearset. Our standard 2.94 1st gear will not have a notch on the 1st countershaft gear, our (stock) 3.24 1st gear will have a single notch around the center of the 1st countershaft gear and our 2.82 (R-Ratio) 1st gear will have 2 notches around the 1st gear countershaft. Use the image to the right for reference. This is very important to know if you need any replacement parts or components.


## KICKER GEARS

Our Klassic Kicker Gears are standard in all complete Frankentrannys. These gears are made from 1018 HR steel. They're tumble finished to 20 micro, and heat treated to 50-55 RC; these gears roll smooth as glass

# PARTS AND ACCESSORIES...

**BILLET SPEEDOMETER SENSOR**
Our simple, sleek and clean show polished speedometer sensor keeps a stylish low profile to the transmission case. For those with keen sense of attention to detail, this is certainly a noticeable upgrade to the plastic, bulky OEM equivalent. O-ring and 1/4-20×5/8 SHCS fastener included.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| BDT-6017 | Speedo Sensor, Billet | 1994-06 Big Twins except 06 Dyna |

**SPEEDO SENSOR HOLE PLUG**
If you need to cap off the speedo sensor hole for whatever reason, you need this plug. Some other companies do this with a steel plate and a gasket, just like the old 4-speeds. Have you ever seen a 4-speed with the speedo cable drive hole capped off this way? It probably showed signs of leakage. Our plugs are made of 6061-T6 with a low profile top for a clean look and include an o-ring and a button head screw to prevent leaks.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 108-56P | Speedo Sensor Hole Plug, Show Polished | 1994-06 Big Twins except 06 Dyna |
| 108-56B | Speedo Sensor Hole Plug, Wrinkle Black | 1994-06 Big Twins except 06 Dyna |

**FF HYDRAULIC SIDE COVERS**
Our hydraulic side covers were one of the first parts in the Function Formed product line. We took away all the 'fat' of the standard aftermarket side cover and left the function. We offer side covers with front feed and rear feed ports. You will see our full line of hydraulic side covers on our website under the 1987-06 Big Twin tab of the Parts & Accessories page, or by scanning the QR code to the right.

**OIL SPOUT SPACER KIT**
If you install a high horsepower starter motor on your 1993-06 FLT/FLH, the oil spout will interfere with the end of the starter motor. Our spout spacer kit moves the spout out 11/32" to clear longer starters. Kit includes a 6061-T6 spacer, 2 gaskets, and fasteners.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 109-56 | Oil Spout Spacer Kit | 1993-06 FLT-FLH |

**HIGH TORQUE BEARING KIT**
Our High Torque Bearing Kit eliminates oil leaks and eases serviceability. The stock 34091-85 inner bearing race has been used on Big Twins since 1985. The inner primary bearing rides on this race. By design, this race press-fits onto the transmission mainshaft. This system works fine for stock engines. 100 HP+ engines will make this race walk on the mainshaft. If it walks inboard, it will damage the maindrive gear seal and cause a transmission oil leak. If it walks outboard, it will cause a primary oil leak. Our high torque bearing kit eliminates this condition. Kit includes a precision honed bearing and seal.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 189-56 | High Torque Bearing Kit | 1985-07 Big Twin Models |

**BILLET STEEL FORK KIT**
Our shift fork kits include all three forks and are a direct replacement for the standard OEM 5-speed forks with much needed improvements over the stock design. The cross section of these forks is three times thicker than stock. These billet steel forks are hard chrome plated like a fine American made tool.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| PN 167-5 | Billet Steel Shift Fork Kit | 1987-06 Big Twins except 06 Dyna |

**SPEEDOMETER RECALIBRATION UNIT**
Starting in 1994, the factory started using electronic speedos on some of the models. Today, all models use this. If you are changing the transmission pulley, rear wheel pulley, or using a different diameter rear tire, or installing one of our transmissions you will need a recal box.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 95E-56A | Speedometer Recalibration Unit | 1994-06 Big Twins except 06 Dyna |

## HEAVY DUTY THROWOUT BEARING KIT

The BAKER Heavy Duty Throwout bearing kit was developed to address the failures of the stock clutch throwout bearing in 1987-up applications with the ball-and-ramp actuator. People have been griping about the 37311-75 throwout bearing since it was introduced in Big Twins in 1975. Failures occur when the clutch cable is inadvertently adjusted with little to no free play. Performance clutches are even harder on that little bearing. Our larger thrust bearing features a 97% greater surface area and 77% greater static load capacity than the stock bearing.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| TBK-56L | Heavy Duty Throwout Bearing | 1987-Later LSD 5-Speed Applications |

## FF OIL SPOUT

The Function Formed oil spout accomplishes 2 things. First, the sleek FF spout design is a fraction of the size of the factory oil spout. Second, the dipstick screws into the spout body to eliminate the problem of stock dipsticks popping out especially with modified motors. The use of the Function Formed oil spout with the BAKER OD6 and Screaming Eagle 6- speeds eliminates the need for factory oil spout spacers. You'll get a cleaner installation and will eliminate the need to re-route the factory formed rubber oil breather line. See our full line of oil spout options on the Parts & Accessories page on our website under the 1987-06 Big Twin Tab, or by scanning the QR code to the right.

## FINE PITCH ADJUSTER BRACKET AND SHOE

The BAKER primary chain adjuster bracket looks like the stock 39990-01 style bracket but has 28% more adjuster teeth. The finer pitch teeth make it easier to dial in your primary chain slack. Also available is a fat adjuster shoe for special applications that require it.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| FTA-K | Fine Tooth Adjuster and Shoe | 1987-06 Big Twins except 06 Dyna |

## ANTI OVERSHIFT RATCHET PAWL

The stock ratchet pawl used from 1980 to 2000 utilized scissor spring that was well known for breaking. Each time an upshift or downshift is made the pawl spring is cycled. After many cycles, the spring leg breaks. The unfortunate side effect of this failure is the broken spring leg going through the transmission gears and destroying the transmission. Any seasoned tech has seen this one. Our ratchet pawl utilizes a rectangular cross-section spring like the 21st century Big Twins.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 555-56BA | Ratchet Pawl | 1980-00 ex 2000 Softail |
| 555-56L-A* | Ratchet Pawl | 2000-06 Softail, 2001-06 FL, 2001-05 Dyna |

**Must upgrade to shift drum with ¼" pawl pins for PN 555-56L-A*

## CLUTCH PACK KITS

BAKER Clutch Pack Replacement Kits contain all necessary fiber and steel plates to restore like new performance to your BAKER clutch. These are original equipment plates which will yield proper stack height and trouble free operation.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| CPRK-9P | Clutch Rebuild Kit | BAKER 9 Plate Street Perfomance Clutch |
| CPRK-KKK | Clutch Rebuild Kit | BAKER King Kong Klutch |
| CPRK-SBD | Clutch Rebuild Kit | BAKER Softail Belt Drive Clutch |

## TRANSMISSION REBUILD KITS

An all inclusive Kit designed to freshen up those high mileage bikes. Developed to work specifically with our OD6, DD6, DD5 and OEM5 left side drive transmissions. Includes bearings, snap rings, gaskets, seals and retaining nuts.

Includes:
- Transmission Case Bearings
- Transmission Case Snap Rings
- Transmission Trap Door Bearings
- Gearset Bearings
- Gearset Snap Rings and Thrust Washers
- Transmission Assembly Gaskets
- Transmission Assembly Seals

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| TRK-DYN | Transmission Rebuild Kit | 1994-05 Dyna |
| TRK-DYN-E | Transmission Rebuild Kit | 1991-93 Dyna |
| TRK-FLSTX | Transmission Rebuild Kit | 1994-06 Softail, FXR, FLT-FLH |
| TRK-FLSTX-E | Transmission Rebuild Kit | 1987-93 Softail, FXR, FLT-FLH |
| TRK-OD6 | Transmission Rebuild Kit | BAKER OD6 |
| TRK-DD6 | Transmission Rebuild Kit | BAKER DD6 |

# PARTS AND ACCESSORIES...

### VOYEUR TOP COVER

The Voyeur Top Cover is made with 2" thick bullet proof polycarbonate; the kind used in Detroit convenience stores. You can see if any crimes or sexual transgressions are being committed inside your transmission. But it really allows the mechanical menagerie of torque multiplication to be viewed in plain sight. The Voyeur is manufactured with Zelux W, a machinable optical grade polycarbonate, then vapor polished to achieve transparency. Hidden transmission vent system is standard, just like the BAKER forged aluminum top covers. 12-point ARP fasteners and a top cover gasket are included. No neutral switch provision available.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 441-56P-KIT | Voyeur Top Cover | 1990-06* Big Twin (Except Dyna Models) |

** Stock shifter pawl assembly must be replaced with BAKER PN 555-56B-A on 1990-1999 Softail, FLH/FLT models with stock 5-speed*

### TRANSMISSION DIPSTICK

Have you ever heard of a 5-speed transmission dipstick breaking off and working its way into the gearbox with disastrous results? Ask any seasoned technician; he's seen one. The low frequency firing pulses of the American V-Twin make the stock zinc die-cast dipstick go into resonance like a suspension bridge in a severe windstorm. Over time, the stalk breaks off and you know the rest of the story. Bigger engines make this situation even worse. We redesigned the dipstick with the largest radius possible between the stalk and the head. This radius stiffens the dipstick and increases its natural frequency. Our dipstick is made of billet aluminum and is show-chrome plated.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 130-56C | Transmission Dipstick | 1987-Later Big Twin |

### SPROCKET AND PULLEY OPTIONS

BAKER offers a wide variety of Pulleys and Sprockets for most of your needs, including offsets for most applications. You can find our entire line of Sprockets and Pulleys on the Parts & Accessories page under the 1987-06 Big Twin Tab on our website, or by scanning the QR code to the right.

### SPROCKET SPACER (LATE)

If you are a seasoned technician, you have seen a severely worn sprocket spacer. Over time and miles with dirt and grit, the stock 33344-94 spacer is too soft and it gets gouged by the seal that rides against it. As the spacer gets gouged, the seal relaxes. When the seal relaxes, the leaks begin. Our sprocket spacer is a direct replacement for the stock spacer except ours is case hardened steel that has a Rockwell 'C' hardness of 55. No more gouging, no more leaks.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 33344-94S | Sprocket Spacer | 1994-06 Big Twin & Sportster except 06 Dyna |

### SPROCKET SPACER (EARLY)

We got smart over the years and changed the OD of this sprocket spacer to work with the more commonly found PN12067B seal, instead of the older 12050 seal. Our sprocket spacer is a direct replacement for the stock spacer except ours is case hardened steel that has a Rockwell 'C' hardness of 55. No more gouging, no more leaks.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 33334-85B | Sprocket Spacer | 1985-93 Big Twin & Sportster |

**5-SPEED DRUMS**
BAKER offers a wide selection of shift drum options. Smooth Shift Kits to make your stock trans shift like a BAKER, 5-Speed Replacement Drums, N1 Shift Drums to allow for finding Neutral with no doubt, as well as Reverse Pattern Drum Kits. You can view our full line of Drum options on the Parts & Accessories page under the 1987-06 Big Twin tab on our website, or by scanning the QR code to the right.

**BULLY DERBY COVER**
Add some style to your bike, push that nerdy stock derby cover out of your way with the Bully. Machined from 6061-T6 billet aluminum and compatible with either the 2007-later o-ring seal or 1999-06 derby cover gasket. Polished stainless steel hardware included.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 602-BLY | Derby Cover Kit, Stock Primary, Wrinkle Black w/ Highlights | 1999-Later 5 Hole Derby Cover Models |
| 603-BLY | Derby Cover Kit, Stock Primary, Chrome | |

**SP1000 STARTER PINION**
SP1000 is required when converting a 1994-06 Big Twin from a stock 102 tooth ring gear clutch to a 66 tooth ring gear clutch. Machined from 8620 virgin gear grade steel and case hardened to 58-62 HRC.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| SP1000 | Starter Pinion | 1994-06 Big Twin except 06 Dyna |

**COMPENSATING SPROCKETS**
It's common knowledge that engine upgrades like a cam, carburetor, or bigger cubes can increase torque to the rear wheel. But the easiest and most inexpensive way to increase torque to the rear wheel, with no sacrifice in dependability, is to change your primary gearing by changing the compensating sprocket. You can view our full line of compensating sprocket options on the Parts & Accessories page under the 1987-06 Big Twin Tab on our website, or by scanning the QR code to the right.

**PRIMARY CHAINS**
We offer 6 different primary chain lengths for 1979-2006 Big Twin models. Changing the compensating sprocket size or the clutch basket size will require a new length chain. Consult our tech staff about the best combination for your application.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 4282-74-56 | Primary Chain, 74 Pitches | 1979-06 FXR, FLT/FLH |
| 4282-76-56 | Primary Chain, 76 Pitches | 1979-06 FXR, FLT/FLH |
| 4282-78-56 | Primary Chain, 78 Pitches | 1979-06 FXR, FLT/FLH |
| 4282-80-56 | Primary Chain, 80 Pitches | 1986-06 Softail & Dyna except 06 Dyna |
| 4282-82-56 | Primary Chain, 82 Pitches | 1986-06 Softail & Dyna except 06 Dyna |
| 4282-84-56 | Primary Chain, 84 Pitches | 1986-06 Softail & Dyna except 06 Dyna |

# NOTHING BEATS NEW IRON IF YOU WANT TO ROLL...

Modern motorcycles and cars have performance, handling, comfort, dependability, and cool stereos that eclipse anything and everything from yesteryear. And every year it gets better. This could be viewed as heresy by the owners of older iron but it's not meant to be. The beauty of the mechanical architecture of a 1965 FL cannot be matched by any modern offerings. But given the choice to ride a 2009 Road King or a 1965 FL to Alaska and back, I'm going to take the new bike every time.

Any owner of a 2007-up Big Twin knows what I'm talking about. New iron from the factory these days features a modern powertrain with a fuel injected 96 inch motor , 6-speed Cruise Drive transmission, and an automotive style starting system with no jackshaft that goes CRUNCH when starting. Solid technological advancements that are leaps and bounds beyond a Big Twin of 10 years ago. But even as evolved and refined as new Harleys are, there are design shortcomings, issues, and problems. And that's the charter for BAKER Drivetrain. We take what the factory is offering and make it better, faster, and stronger.

We offered our first generation 6-speed back in 1998 as an upgrade to the ubiquitous factory 5-speed. It gave improved shift quality and a extra gear for highway cruising. The factory came out with their 6-speed in 2006. So in a sense, we made 2006 era hardware available back in 1998. And this is the template for a lot of our products. We make the future available now.

Example. 2007-2009 Big Twins can be very noisy in 5th gear. Back in 2007 we released the F6F (Factory 6 Fix) to remedy this nuisance noise. F6F helical gears replaced the straight cut gears from the factory. In 2010 the factory released a similar fix across the board. In effect, we brought 2010 technology to 2007 to those who were dissatisfied with what they had.

Example. Our Direct Drive 7-Speed (DD7) remedies some problems with the factory Cruise Drive© 6-speed and upgrades the gearbox into the 21st century. The 1st gear ratio is way too tall and the shifts are clunky and quite audible. Lots of clutch work is required to negotiate stop and go traffic. The DD7 has a shorter 1st gear ratio with all ratios distributed evenly up to 7th gear, which is 1:1. It also employs TorqueBox technology with a linear roller detent system that shifts like butter. Think 7 gears is too many? Take a look at the high performance German and Italian cars that have 7-speeds these days that give a suitable gear ratio for any speed. We are simply bringing the future to the present for your Big Twin.

The moral to the story is this. You can depend on us to have state-of-the-art drivetrain products for your Big Twin, new and old. And we back our products with a solid warranty and knowledgeable customer service and support. Our products are American made and they are not cheap but we make no apologies for that because our goal is to manufacture the very best drivetrain products for your Harley Davidson motorcycle and stay true to the American machine

BERT BAKER

PROCEED TO THE 6 SPEED ERA >>>>>>>>>>>>>

# DD7

The DD7 upgrades any existing 2006-later Big Twin 6-speed to a full 7-speed transmission. The BAKER DD7 is more than just another gear added to the mix for the sake of one-upmanship. That 7th gear enables the motorcycle to now make full use, by way of gear ratio management, of the torque and power put out by the new 96 ci and 110 ci motors rolling off the assembly line in Milwaukee. We did not make this transmission a deep overdrive, rather we shortened 1st gear and tightened up the gears to deliver the riding experience that you were after when you bought your bike. The gear ratios leave you, the rider, with the experience of smooth, crisp, continuously pulling acceleration from 1st all the way through 4th gear. Then you are able to start getting into the cruising portion of the program in gears 5th-7th. No big drops in RPM from one gear to the next or lugging the motorcycle off of a stop light, just smooth, uninhibited acceleration.

## DD7: DIRECT DRIVE 7-SPEED

| PN | Description |
|---|---|
| DD7A-376C | DD7 Builder's Kit, Chrome Door |
| DD7A-376BLK | DD7 Builder's Kit, Wrinkle Black Door |

**Fitment**
2006-Later Dyna, 2007-Later Softail/Touring

**NOTE**
Complete DD7 transmissions are also available for 2006-up Dyna and 2007-up Softail and FLT-FLH; call for details

**KEY FEATURES**
- Shorter first gear ratio (numerically higher) to help with the off-the-light get up and go, as well as slow speed maneuvering
- Fully assembled gearset and shift system. No adjustments needed for installation
- The DD7 re-uses the stock shifter pawl and includes a new main drive gear bearing and seal, door, top and side cover gaskets
- Compatible will all types of aftermarket hydraulic side covers, as well as the stock Screaming Eagle versions
- Direct slide in installation. No case modifications needed
- Clears all exhaust and works with all aftermarket clutches
- Includes a new transmission top cover that holds the linear, roller bearing mounted, shift detent
- Easy to find neutral, every time. Smooth shifting without the the stock clunks or 'jerks' when engaging
- Upgraded ARP 12 pt stainless steel bolts included For transmission top and side cover
- BAKER Direct Drive 7 Speed stock side cover emblem included
- Five-year/50,000 mile warranty

**FITMENT NOTE**

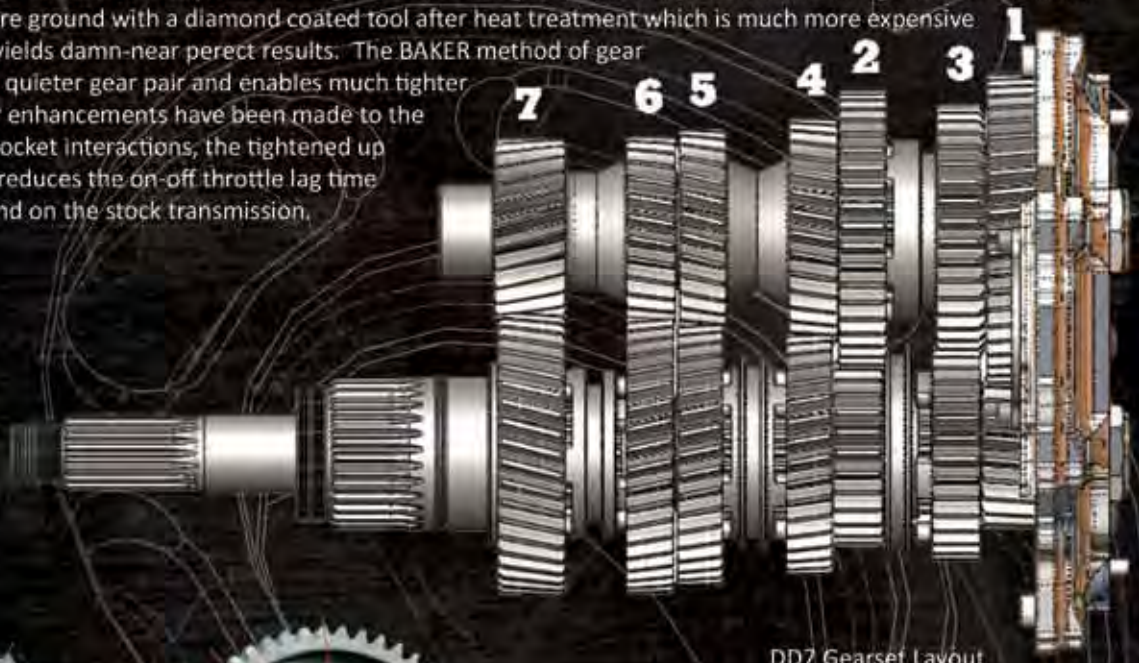
2008-up throttle-by-wire bikes require the ECM (engine control module) to be re-flashed to achieve cruise control function in 4th-7th gears. BAKER can facilitate this update to your ECM with Dynojet for a nominal charge. Without the ECM update, cruise control will function in 7th gear and the red line will be 5200 RPM. Any questions on this, please give our tech line a call.

5 YEAR LIMITED WARRANTY

# DD7 FEATURES AND TECHNICAL INFO...

**GEARSET**

The factory 6 speed has a 1 piece mainshaft with gears 1-4 machined out of one forging. This is easier and cheaper for high volume manufacturing, but yields a mainshaft that weighs over 5 lbs. This heavy one piece design is largely responsible for the clunk heard on every shift. The DD7 has a 1 piece mainshaft (8620 steel) that only incorporates the small diameter 1st gear and weighs 3 lbs less than the stock unit. Whereas the stock gearsets utilizes a straight cut gear for 1st, and helical for 2-6, the DD7 uses straight cut 2 and 3rd gears, with the remainder being of a helical design. The largest amount of torque is put to the ground in 2nd 3rd gear, and straight cut gears handle that power the best. There is a not a lot of cruising going on in these gears, so the strength benefit of straight cut teeth outweighs the noise reduction factor inherent with a helical tooth design. The tooth profiles of the stock factory gears are power honed after heat treatment to correct the inherent distortion that occurs during heat treatment. Power honing is an economical process at high manufacturing volumes that yields above-average results. The tooth profiles of BAKER gears are ground with a diamond coated tool after heat treatment which is much more expensive than power honing but yields damn-near perect results. The BAKER method of gear manufacturing ensures a quieter gear pair and enables much tighter backlash control. Further enhancements have been made to the male-female dog tooth pocket interactions, the tightened up radial gap on our design reduces the on-off throttle lag time and gear clunk noise found on the stock transmission.




DD7 Gearset Layout


DD7 Gears vs Stock

| DD7 RATIOS | | STOCK RATIOS | |
|---|---|---|---|
| 1st Gear | 3.76 | 1st Gear | 3.34 |
| 2nd Gear | 2.75 | 2nd Gear | 2.30 |
| 3rd Gear | 2.06 | 3rd Gear | 1.71 |
| 4th Gear | 1.55 | 4th Gear | 1.41 |
| 5th Gear | 1.27 | 5th Gear | 1.18 |
| 6th Gear | 1.10 | 6th Gear | 1.00 |
| 7th Gear | 1.00 | 7th Gear | N/A |

## SHIFT SYSTEM

The DD7 shift drum design utilizes many of the trade secrets and tricks we have learned over the years. Smooth and positive shifting is achieved by making the shift drum as light as possible and incoprorating advanced geometry in the drum tracks. Our meticulously designed neutral position on the shift drum detent clover leaf makes it easy to find neutral, every time. The close tolerance drum design paired with the advanced gearset lay out, yields tight, repeatable dog tooth gaps that are not possible with mass production cast shift drum designs used on the stock transmission. The linear detent, shown below ,was first used in the OEM car world. We were the first to introduce it to the V-Twin world on the Torque Box transmissions and the DD7 utilizes it to achieve the legendary BAKER snick-pop shift quality. It produces the lowest friction possible, with the controlled nature of using a coil spring in a strictly linear manner. The amount of precise control possible with a linear detent, cannot be realized with the scissor spring and lever wheel detent design found on the stock gearset. All of these changes, along with the billet steel machined, hard chrome plated shift forks, make the DD7 our smoothest shifting transmission.

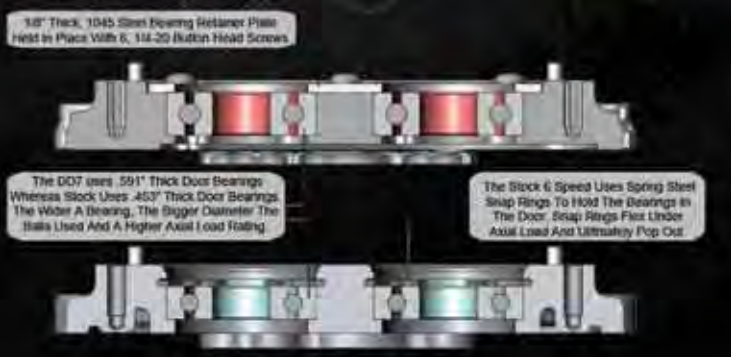


DD7 vs Stock Shift Drum

## BEARING DOOR ASSEMBLY

The stock bearing door is cast aluminum, the DD7 door is machined from virgin billet 6061-T6 aluminum. Billet is always stronger cast. The stock transmission has a phenomenon we call 'Ghost Lever'. Starting from low RPM's in 2nd or 3rd gear, go right to W.O.T. and then get off the throttle. Watch the clutch lever walk in and out from the handlebar. This is an indication of the shafts in the transmission walking left and right in the case due to the skinny stock door bearings walking in and out of the bearing bores.It is also an indication that your clutch is slightly disengaging. If you have had clutch problems, this is a big contributing factor. We use 28% wider ball bearings in the door and use a cold rolled 1045 steel plate to hold them in place, rather than the stock snap rings. No more 'ghost lever' and worn out clutches. Much more power (up to 160 ft-lbs) can be thrown at it without the bearings breaking a sweat.


The DD7 door has steel bearing cages




The stock door has plastic bearing cages

# F6K

The F6K is the only kicker kit available for 2007 (will fit 2006 Dyna) and later Cruise Drive 6 speed motorcycles. Bolt on kicker kits are nothing new, but for Factory Cruise Drive bikes they are.

Our F6K kicker kits use a ratchet hub that presses onto the shank of the mainshaft, then the O.D. of the ratchet hub presses into the over-sized trap door bearing. The ratchet hub is effectively located and secured from moving by the over-sized door bearing; see CAD cross-sectional image on the right.

## F6K: FACTORY 6-SPEED KICKER

| PN | DESCRIPTION |
|---|---|
| 678-56MR-K | F6K, Raw Door, Mechanical Ball & Ramp Cable Kicker |
| 678-56HR-K | F6K, Raw Door, Hydraulic Kicker |
| 678-56MB-K | F6K, Wrinkle Black Door, Mechanical Ball & Ramp Cable Kicker |
| 678-56HB-K | F6K, Wrinkle Black Door, Hydraulic Kicker |
| 678-56MP-K | F6K, Polished Door, Mechanical Ball & Ramp Cable Kicker |
| 678-56HP-K | F6K, Polished Door, Hydraulic Kicker |

**FITMENT**

2006-Later Dyna, 2007-Later Touring and Softail models with Factory 6-speed. Ignition retrofit required to eliminate crank sensor based ignition and conversion from EFI to carburetor

**NOTES**

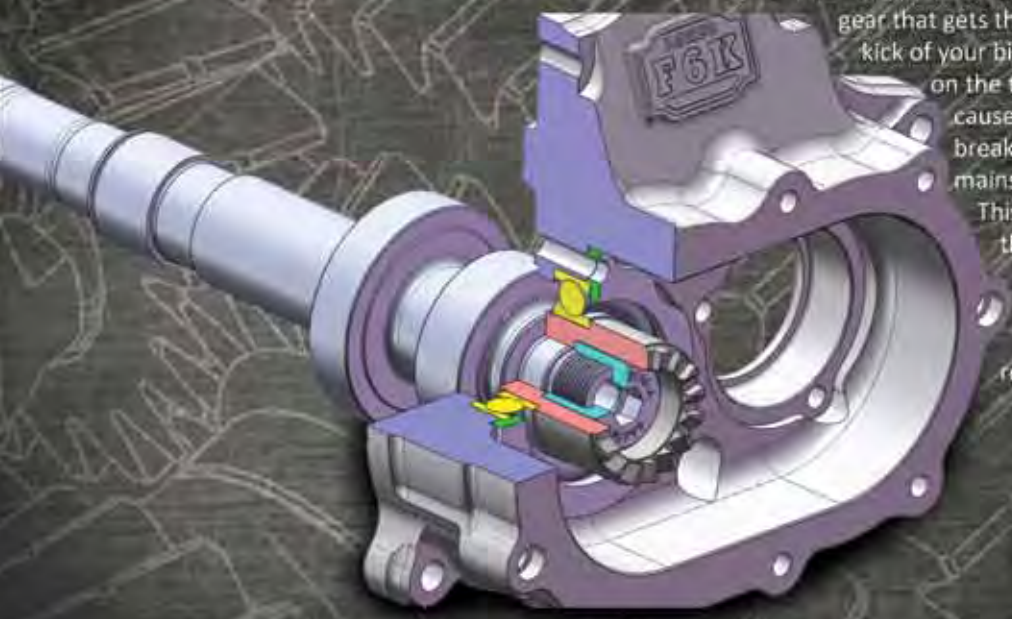
Complete F6K transmission assemblies are also available; call or sales sales department for details

**KEY FEATURES**

- Heavy duty 6061-T6 billet aluminum bearing door and kicker cover
- 1018HR heat treated steel mainshaft hub and retainer
- BAKER heavy duty stainless steel straight kick arm
- BAKER bronze kick pedal with 5/8" spindle
- Transmission case removal from bike not required for installation
- Hydraulic type kits come with 1.5" piston. 11/16" bore master cylinder is required for matched compatibility
- Cable type kits come with ball ramp actuator
- Compatible with factory electric starter, for kick and electric start
- Bearing door and kicker cover come pre-assembled for quick installation
- Two-year/20,000 mile warranty

**KICKER GEARS**
All BAKER F6K's come with an F6K version of the Klassic Kicker Gears standard. These gears are made from 1018 HR Steel, precision machined and heat treated to 50-55 RC. These gears are tough for a long life and tons of kicks.

**MAINSHAFT RETAINER**
We developed our whole kicker kit around our mainshaft retainer. Other aftermarket kicker kits use a retainer that is part of the ratchet gear that gets threaded on to the mainshaft. With every kick of your bike this retainer continuously gets tighter on the threads of the mainshaft. This eventually causes failure and the end of the mainshaft breaks off. Our kit uses a larger diameter mainshaft bearing to house our ratchet gear. This ratchet gear becomes the support for the mainshaft. The mainshaft is retained by a nut, just like the factory so no extra stress is put on to the shaft. These features help make our F6K the most reliable kicker kit available.




**KICKER COVER OPTIONS**
We manufacture and offer 2 different kicker covers, cable type and hydraulic, making the F6K completely customizable from stock to custom build. Kicker covers come completely show polished. Consult our Tech lines for custom finish upgrades.

**DOOR FINISH OPTIONS**
There are three options for door finish on the Factory 6 Kicker:


Polished


Wrinkle Black


Raw

# F6R

# FACTORY 6-SPEED REVERSE SYSTEM

The F6R kit adds a reverse gear to any existing 2006-later factory big twin 6-speed. The system is unlike any other on the market – it works off the stock shift lever. With a simple 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. You'll also find it's much easier to find neutral than on a stock bike. Our reverse gears are fully heat treated, with diamond ground tooth profiles and cut from gear grade 8620 steel. Our gear ratios were chosen to make it easy for you to maneuver your bike in reverse. The overall 4.98:1 gear ratio in reverse is essentially a creeper gear, which is 45% shorter than the stock 3.34:1 first gear.

## F6R: FACTORY 6-SPEED REVERSE

| PN | Description |
|---|---|
| F6RV-M | F6R , Bolt On, Mechanical |
| F6RV-H | F6R, Bolt On, Hydraulic |

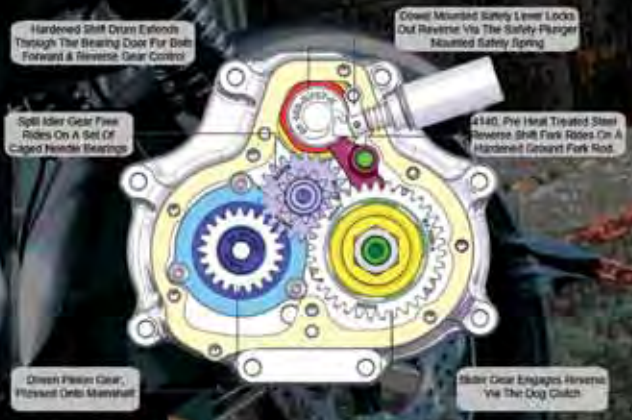
Add: -P suffix for polished door and side cover
Add: -C suffix for chrome door and side cover
Add: -F6F suffix for F6F upgrade (2006-2009 models)

**Fitment**
2006-Later Dyna, 2007-Later Softail/ Touring*
*See additional fitment notes on next page

**KEY FEATURES**

- Adds a reverse gear to the stock Cruise Drive 6-speed transmission
- Full complement of parts and detailed instructions included for an easy installation
- Reverse is designed as a creeper gear for the safest operation possible
- Reverse selection controlled by foot shift lever. Shift into reverse like any other gear. (R-1-N-2-3-4-5-6 shift pattern)
- Electronic reverse safety lock out solenoid is energized with the handlebar or inner fairing mounted momentary toggle switch
- No 'accidentally' shifting into reverse due to the safety lever mechanism that locks out reverse when the solenoid is not energized
- No reaching near hot pipes or auxiliary levers to work
- Redundant spring system on the safety lever assembly make our F6R the safest reverse system on the market
- Included shift drum improves shift quality and the ability to find neutral, every time
- True 'plug & play' wiring harness. No using the starter motor for reverse maneuvers
- No case modifications required for reverse gearset installation
- Two-year/20,000 mile warranty

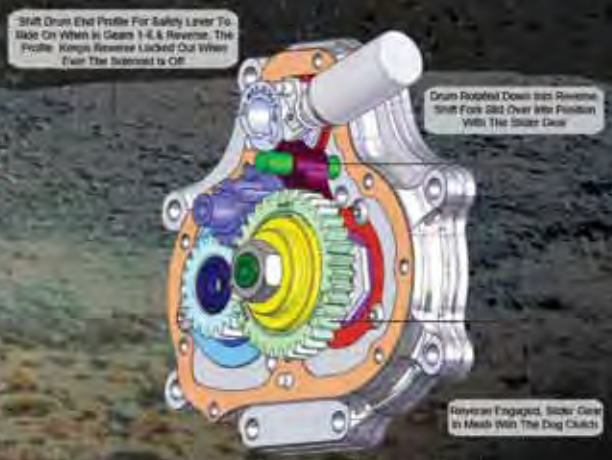
- 4.98:1 ratio reverse gear in the F6R gearset, which is 45% shorter than the stock 1st gear ( 3.34:1). Making it essentially a creeper gear
- Reverse gears and dogs made of 8620 gear steel, fully case hardened to 58-62 Rockwell C. Ground tooth profiles with diamond coating tooling.
  Billet (6061-T6) aluminum bearing door and side covers. Available in polished or chrome finishes
- Pre heat treated 4140 billet steel shift fork (28-32 Rockwell C) rides on a case hardened, ground finish fork rod
- Hydraulic side cover (1.5" Piston) works with stock and aftermarket 11/16" bore hydraulic clutch lever assemblies
- All included bolts are polished stainless steel
- Included shift drum is machined from 12L14 billet steel,then case hardened to 48-52 Rockwell C (R-1-N-2-3-4-5-6 shift pattern)
- Adds a reverse gear to the stock Cruise Drive 6-speed transmision
- Fully assembled F6R is same width as stock




F6R, Safety Solenoid 'Off', Reverse Locked Out


F6R Safety Lever, At Rest


F6R In Reverse Gear




F6R In Reverse, Moving Parts

***FITMENT**

We offer either forward facing (pictured above) or rear facing safety solenoid orientation to accomodate all exhaust types. For more information about exhaust fitment consult our Sales/Tech staff.

# BAKER +1 OIL PAN

We bought a new 2007 FL to use for 7-speed transmission development work. The first thing we noticed was how hot the damn thing ran. In traffic, we could see those little heat wave squiggle lines (maybe a flashback) coming off the motor. The 4-qt capacity, unchanged since 1993 when the 80" motor made 49 hp, seemed inadequate.

So we designed a new pan in SolidWorks with a 5 qt capacity by going wider rather than deeper, hence the +1 Oil Pan. Taking a closer look at the stock pan we discovered it has the oil pickup and return in the front of the pan within 2" of each other. So we improved the oil circulation by putting the pickup in the rear of our +1 Oil Pan and the return in the front. The results tell the story, providing a 10-30 degree reduction in engine oil teperature.

## +1 OIL PAN

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| BD-5QTR | +1 Oil Pan, Cast, Silver | 1999-08 FLT-FLH |
| BD-5QTB | +1 Oil Pan, Cast, Wrinkle Black | 1999-08 FLT-FLH |
| BD-5QTP-2PC | +1 Oil Pan, 2pc Billet, Show Polished | 1999-08 FLT-FLH |
| BD-5QTC-2PC | +1 Oil Pan, 2pc Billet, Chrome | 1999-08 FLT-FLH |

**NOTE**
When installing an oil temperature sending unit on a BAKER +1 Oil Pan, install the sending unit before installing the pan on the transmission housing

**KEY FEATURES**
- Cast oil pans are 1-piece design, made from A356-T6 aluminum
- Billet oil pans are 2-piece design, made from 6061-T6 aluminum
- Oil feed in the rear of the pan and return in the front provides maximum cooling
- Reduces engine oil temperature by 10-30º
- Multiple integral baffles eliminate the stock plastic spring loaded baffle
- Integral bosses for Alloy Art TXR® and True Track® stabilizers structurally located on the bottom of pan
- No modifications required for installation
- Compatible with factory oil temperature sensor
- Five-year/50,000 mile warranty

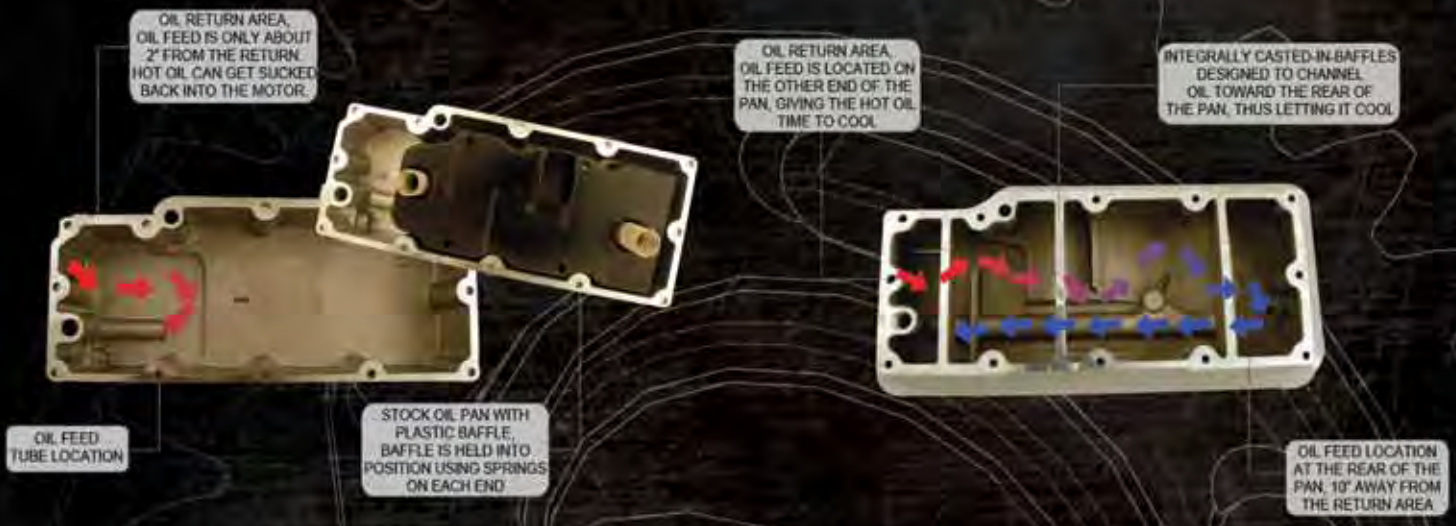

BAKER

# BAKER +1 OIL PAN

# FEATURES AND TECHNICAL INFO...

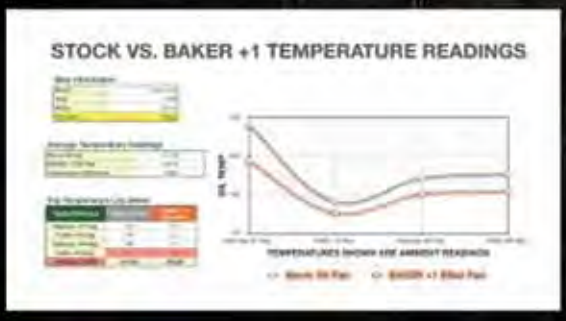
## ANATOMY OF A BAKER OIL PAN

The +1 Oil Pan replaces the stock plastic baffle system with integrally positioned baffles as part of the pan, casted in on our cast pans and machined in on our billet line. We also have the feed location moved to the rear of the pan and kept the return location in the front for more complete system circulation. Looking at the images below you can see how the oil would flow through the BAKER pan and the internals of the baffling system. The factory oil pan uses a removable plastic baffle system which can cause wear on the inside of the pan from engine vibration. The oil feed and return areas on the Factory pan are within 2 inches of each other located in the front of the pan. This can cause the tendency of hot oil getting sucked back into the motor by seeping around the plastic baffle.




## OIL TEMPERATURE

The temperature of your motor oil plays a big factor in the life and longevity of your motor. The temperature data chart shows an average of 14° drop with the BAKER +1 pan vs. stock. It also shows the longer and hotter the ride, the bigger the temperature differential. Some of our customers have recorded up to a 30° temperature drop in the Nevada desert during the summer where temperatures can easily reach 110°.




**STABILIZERS**
After getting the speed wobbles on a high speed sweeper, we realized the need for this pan to work in conjunction with stabilizers on the market, so we tested it with both types – It really worked, no more speed wobbles! So we incorporated two bosses on the bottom to directly bolt the heim joint of both types of stabilizers to the oil pan.

| PN | Description |
|---|---|
| 20-00 | True Track Stabilizer Unit |
| TXR-1 | Alloy Art Stabilizer Unit |

Bottom view of a 1999 FL with Alloy Art unit installed

Bottom view of a 1999 FL with True Track unit installed


**BAKER +1 / S&S ADAPTER KIT**
We highly recommend the +1 Oil Pan for S&S© T124 applications. That motor makes a lot of power and a lot of heat. The oil feed and return on the right back of the motor is unique and requires a special adapter kit for proper fitment. Kit includes special adapter block to route the oil lines and associated hardware.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 5QT-1160 | Adapter Kit | +1 Oil Pan with S&S T124 Motor |

**PAN FINISH OPTIONS**
The cast version has 2 options for finish; raw cast and wrinkle black. The billet 2-piece version is available in polished and chrome finishes.

# BAKER +1.5 OIL PAN

Keep your 2009-later touring model cool. Today's Big Twin engine makes a lot more power and a lot more heat than its predecessor of 20 years ago. In 1993, the 80 c.i. EVO engine made 69 ft-lbs torque, according to online specs. In 2009, the 110 CVO engine made a claimed 115 ft-lbs torque. More torque equals more heat, but that's just part of the story. The engine oil capacity of 4.0 quarts is unchanged from 1993 to present even though modern engines make a lot more power and a lot more heat. To the engineers at BAKER Drivetrain, this didn't make much sense. Engine oil does two things. It lubricates metal-on-metal interfaces and carries heat away from hot spots like cylinder heads and the underside of the pistons. So BAKER's +1.5 quart oil pan was designed to lower engine oil temperature by using a larger volume of oil to carry heat away from the hot engine.

# PLUS +1.5 OIL PAN

| PN | DESCRIPTION |
|---|---|
| BD-1.5B | +1.5 Oil Pan, Wrinkle Black, Highlighted Fins |
| BD-1.5CVO | +1.5 Oil Pan, Granite, Highlighted Fins |
| BD-1.5CVOB | +1.5 Oil Pan, Gloss Black, Highlighted Fins |
| BD-1.5P | +1.5 Oil Pan, Show Polished, Special Order |
| BD-1.5C | +1.5 Oil Pan, Chrome, Special Order |
| BD-1.5B-DCF | +1.5 Oil Pan, Wrinkle Black, Diamond Cut Fins |
| BD-1.5CVO-DCF | +1.5 Oil Pan, Granite, Diamond Cut Fins |
| BD-1.5B-DCS | +1.5 Oil Pan, Wrinkle Black, Diamond Cut Show Finish |
| BD-1.5CVO-DCS | +1.5 Oil Pan, Granite, Diamond Cut Show Finish |

**FITMENT**

The BAKER +1.5 Oil Pan will fit 2009-later touring models and Harley trikes.

**KEY FEATURES**

- Reduces engine oil temperature by 16 degrees or more
- 2-piece 6061-T6 aluminum construction with metal core gasket
- Features cooling fins on bottom with highlighted finish
- Co-planar baffle labyrinth design to channel oil through the pan
- Clearanced in the rear for crossover exhaust pipe compatibility
- Zero leak drain plugs for engine and transmission oil
- Easy installation with no modifications required
- Works with aftermarket and OEM oil temperature sending units
- 5-year/50,000 mile warranty

**NOTES**

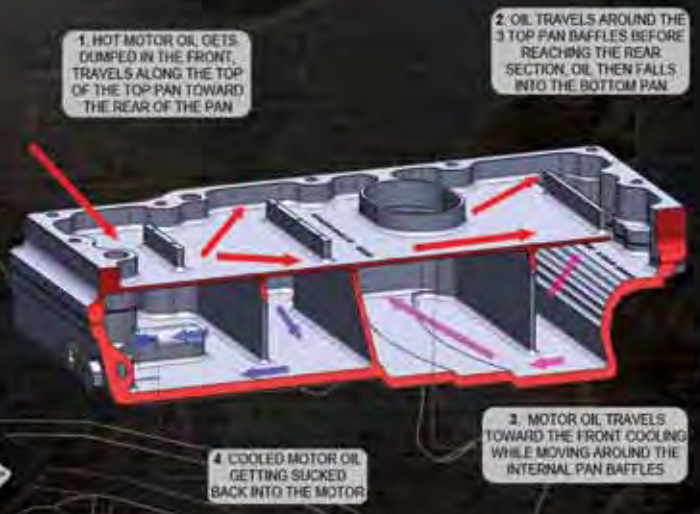
- Chrome and polished pans are special order only, additional charges apply
- Additional charges apply to diamond cut pans

# BAKER +1.5 OIL PAN

# FEATURES AND TECHNICAL INFO...

## ANATOMY OF A BAKER 1.5 OIL PAN

Our 2-piece pan design features a co-planar labyrinth to circulate hot oil from front to rear on the top level, and rear-to-front on the bottom level. The 2-piece construction was necessary because the bottom half being much wider than the gasket profile of the transmission case.

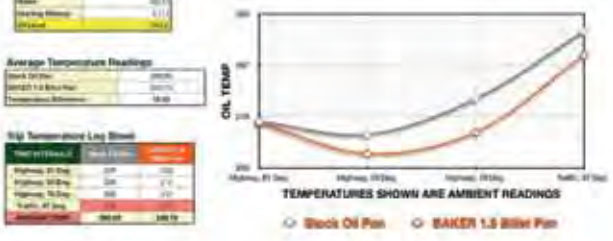

To realize maximum engine cooling benefit install the +1.5 pan and fill the oil sump to 5.5 quarts (+1.5 quarts) to realize the maximum reduction in oil temperature. Oil fill level on the dipstick will read the same as stock.

## OIL TEMPERATURE READINGS

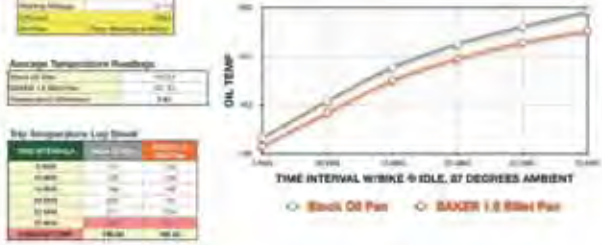
Looking at the images on the right, the +1.5 oil pan was good for an average 16° reduction in engine oil temperature with a 20° reduction in stop and go traffic in sub-90° ambient Michigan temperatures. Note the engine oil temperature went up to 315° in the stop and go traffic segment with the stock pan. It is very bad for engine oil to go above 300°. Higher reductions in engine oil temperature with the +1.5 oil pan can be achieved in warmer ambient climates in the south.

Most late model 2011 Big Twins, including our 2011 Road Glide, come with an oil cooler. The Factory oil cooler works very well when going down the road at highway speeds with air flow going over the heat exchanger but is marginally effective in stop and go traffic. The +1.5 oil pan is effective in reducing engine temperature on the highway or in traffic because it works through additional oil capacity, not a heat exchanger. To test this we did an static temperature test for a half hour on each pan while checking the temperature at 10 minute intervals . The +1.5 shows over a 9° difference compared to stock just at a stand still.

### STOCK VS. BAKER 1.5 DYNAMIC TEMPERATURE READINGS




### 1/2 HOUR STATIC TEMPERATURE READINGS



**PAN COMPARISON**

The +1.5 pan oil capacity, up to the gasket surface, is 4.1 quarts. The stock pan oil capacity, up to the gasket surface, is 2.6 quarts. The side-by-side bottom view shows the comparative size difference. The +1.5 is 8.053" wide, which is about 2 3/8" wider than stock. To aid in cooling the +1.5 has cooling fins in the front and rear giving more surface area. The installed pan comparison image really shows how the +1.5 completely fills the under carriage of the frame; looking like it was supposed to be that way from the factory.


**TO REALIZE MAXIMUM OIL BLOW-BY REDUCTION**

Oil blow-by on SE 110 engines is a chronic issue for aggressive riders. It is caused by the larger displacement engine building up pressure in the cam chest and the oil sump. This forces oil up the push rod tubes, out the head breathers, into the air cleaner and all over the right side of the bike. Harley tech line is advising dealers to run the stock oil sump 1 quart low to increase the volume of air in the sump. This corrects the blow-by issue but makes the oil temperature skyrocket. By running the +1.5 pan at .5 quarts over stock (4.5 quarts) the blow-by condition can be cured with a small reduction in oil temperature.

**DIAMOND CUT OPTION**

Cool your oil 12% faster by diamond cutting your +1.5 oil pan. We worked with Keith Brinton, owner of "Diamond Heads", to increase cooling and give the customer a little personalized appearance to our pan. The look is created by making hundreds of cuts in the outer edge of the cooling fins and this does two things. First, they make the pan look fantastic because the cuts are placed at the perfect angle to reflect light. It is that reflection of light that makes them sparkle and shine. Secondly they help the engine run cooler. The added surface area achieved with the diamond cutting gives more heat transfer from the hot oil to the ambient air.

Black

CVO Granite

**FINISH OPTIONS**

The 1.5 has 3 finish options, standard wrinkle black and granite or gloss black for CVO models.

# BULLY PRIMARY

**KEY FEATURES**

- All parts machined from 6061-T6 billet aluminum
- Direct bolt-on in place of the stock outer primary cover
- Comes standard as a complete outer primary cover assembly, including derby and inspection covers
- Clears all stock dimensionally equivalent clutches, chain tensioners and compensating sprockets
- Stainless steel fasteners standard
- Inspection Cover design for use with Attitude Manual Chain Adjuster Kit
- Stock fitting derby covers will bolt right up to the bellhousing
- Greatly reduces primary chain, clutch and compensator sprocket related noise.
- Bully Derby Cover available for stock, 1999-later 5-hole derby cover, Big Twin models
- Motor sprocket and bellhousing bolt to outer primary plate with blind threaded holes, no leaks
- Includes outer primary gasket, inspection cover gasket and derby cover rubber o-ring
- Two-year/20,000 mile warranty

| PN | Description |
|---|---|
| 600-BLY | Bully Primary, Wrinkle Black with Highlights |
| 600-BLY-M | Bully Primary with Attitude Adjuster, Wrinkle Black with Highlights |
| 601-BLY | Bully Primary, Chrome |
| 601-BLY-M | Bully Primary with Attitude Adjuster, Chrome |

**FITMENT**

2007-Later Touring

**NOTES**

Gloss black finish also available with or without highlights; consult our Sales Staff for more details

**ATTITUDE CHAIN ADJUSTER**

One of the big differences in the function of the Bully Primary cover, when compared to the stock unit, is the inclusion of an inspection cover. With the stock auto adjust chain tensioner assembly installed, this inspection cover will never need to be removed. We included an inspection cover because we also offer a manual adjust chain tensioner. The Attitude Chain Adjuster solves two issues associated with the stock auto tensioner; inner primary bearing and left side motor case bearing failures. We offer this chain adjuster for fitment with stock outer primary covers, as well as a package deal with the Bully Primary Cover.

# BE A... BÜLLY

## Mechanically Potent Design
## BY BAKER DRIVETRAIN

The Bully Primary Cover will add the style and cool factor to your 2007 & later Touring model that the stock primary cover could not. With the introduction of the stock 6-speed on the 2007 Touring models also came a completely new primary assembly. This new primary design got smoother and thus more boring than the previous version. Being the biggest single piece of architecture on the left side of the motorcycle, it is just begging to be upgraded and replaced. Having cut our teeth on many designs using our Function Formed rules, we set out to make the primary cover assembly wrap the essential function components of the primary. We added a motor sprocket cover, inspection cover and what we call the bellhousing around the clutch to break up the large mushy surface area of the stock unit. Adding separate covers also opens up the possibilities when it comes to customizing the aesthetics to meet your demands.

**BULLY DERBY COVER KIT**

The Bully Primary Cover kit comes with the derby cover you see pictured on this page. A good looking part that will set off any style that you rock. We decided early on when developing this primary cover to make sure that the stock bolt pattern and diameter of the Derby Cover was maintained. So that you people could put their own special derby cover on our primary cover, or such that someone could buy just our Bully Derby Cover Kit and bolt it on their stock outer primary.

**PRIMARY COVER FINISH OPTIONS**

The Bully Primary Cover is offered in 3 different finishes: Chrome, Wrinkle Black with Highlights, and Gloss Black with or without highlights.

# CRUISE DRIVE PARTS AND ACCESSORIES...

### BULLY DERBY COVER

Add some style to your bike, push that nerdy stock derby cover out of your way with the Bully. Machined from 6061-T6 billet aluminum and compatible with either the 2007-later O-ring seal or 1999-06 derby cover gasket. Polished stainless steel hardware included.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 602-BLY | Derby Cover Kit, Black with Highligts | 1999-Later 5-Hole Derby Cover Models |
| 603-BLY | Derby Cover Kit, Chrome Plated | 1999-Later 5-Hole Derby Cvoer Models |

### ATTITUDE CHAIN ADJUSTER

The Attitude Chain Adjuster solves the issues associated with the stock auto chain tensioner on 2006-later Dyna & 2007-later Softail/Touring models. The first moment the chain has enough slack in it to ratchet the shoe up another notch it will. One notch tighter might not be an issue, but you don't have any control of when this mechanism stops tightening the chain. The end result in many cases is the primary chain is so tight that it will start wearing out left side motor case bearings, inner primary bearings, clutch hub bearings and transmission output gear bearings. Our manual chain tensioner allows you to adjust the chain to the proper 5/8-7/8" (cold) freeplay and never have to worry about the chain getting too tight. We offer this chain adjuster for use with stock outer primary covers, as well as a package deal with the BAKER Bully Primary Cover.

**KEY FEATURES**

- Chain shoe machined from nylon 66
- Active plate and back support plate investment cast with 4130 steel
- 28% finer tooth spacing (compared to 2001-06 chain adjusters) for more accurate adjustments
- Chain adjustment method same as 2001-06 style stock 'L' bracket adjusters


**DYNOJET TORQUE READINGS**

Stock vs. BAKER Attitude Adjuster

- Increases torque by 3.42 ft/lbs
- Reduces primary noise
- Improves inner primary bearing race durability

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 177-67K | Attitude Chain Adjuster Kit | 2006-Later Dyna,<br>2007-Later Softail/Touring |

### STREET DOOR

Improve transmission function and reduce phantom clutch lever movement by 90% with the BAKER Street Door. The Street Door features our Function Formed styling and is manufactured with 6061-T6 aluminum. The bearings, which are 28% wider than stock, are retained with a 6-bolt steel 1/8" plate. Increased axial loads generated by the helical gearset allow the stock door beveled snap rings to compress, which allows the door bearings to walk and the clutch to disengage. The Street Door corrects this shortcoming and is a requirement for any serious motor upgrade. Installs with no modifications and includes ARP fasteners, mainshaft and countershaft nuts.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 486-6 | Street Door Assembly, Show Polished | 2006-Later Dyna<br>2007-Later Big Twin |

### FF HYDRAULIC SIDE COVER

Taking design cues from our ever increasing product family known as Function Formed, we have wrapped the outer design of our FF Side Cover around the functional components found inside. No garnish, or decorations, just the meat and potatoes to make this side cover look as good as it functions.

**KEY FEATURES**

- FF aesthetics milled out of 6061-T6 with chrome finish
- Low profile external features for maximum exhaust clearance
- 12 Point stainless steel ARP bolts and gasket included
- 1.5" diameter piston included
- Compatible with H-D or 11/16" hydraulic master cylinders

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| DD7-106C-Kit | FF Hydraulic Side Cover | 2006-Later Dyna, 2007-Later Softail/Touring |

**NOTE:** Screaming Eagle bikes must retrofit to the cable style center push rod system; 3pc system.

### SPEEDOMETER RECALIBRATION UNIT

Starting in 1994, the factory started using electronic speedos on some of the models. Today, all models use this. If you are changing the transmission pulley, rear wheel pulley, or using a different diameter rear tire, you will need a recal box. This kit is designed to splice our recalibration unit into the wiring harness on your 2006-Later Dyna and 2007-Later Softail/Touring models.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 95E-07 | Speedometer Recalibration Unit | 2006-Later Dyna 2007-Later Softail/Touring |

### FF CRUISE DRIVE TOP COVER

Sleek Function-Formed design Cruise Drive styled top cover inspired by the DD7 development program.

**KEY FEATURES**

- FF aesthetics milled out of 6061-T6 with chrome finish
- 12 point stainless steel ARP bolts and gaskets included
- Available as a discounted upgrade with F6F purchase

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| DD7-105C-Kit | FF Top Cover | 2006-Later Dyna, 2007-Later Softail/Touring |

### HIGH TORQUE BEARING KIT

Our High Torque Bearing Kit eliminates oil leaks and eases serviceability. The stock 34091-85 inner bearing race has been used on Big Twins since 1985. The inner primary bearing rides on this race. By design, this race press-fits onto the transmission mainshaft. This system works fine for stock engines. 100 HP+ engines will make this race walk on the mainshaft. If it walks inboard, it will damage the maindrive gear seal and cause a transmission oil leak. If it walks outboard, it will cause a primary oil leak. Our high torque bearing kit eliminates this condition. Kit includes a precision honed bearing and seal.

| PN | DESCRIPTION |
|---|---|
| 189-56 | High Torque Bearing Kit |

**FITMENT:** 1985-07 Big Twin Models

### HEAVY DUTY THROWOUT BEARING KIT

The BAKER Heavy Duty Throwout bearing kit was developed to address the failures of the stock clutch throwout bearing in 1987-up applications with the ball-and-ramp actuator. People have been griping about the 37311-75 throwout bearing since it was introduced in Big Twins in 1975. Failures occur when the clutch cable is inadvertently adjusted with little to no free play. Performance clutches are even harder on that little bearing. Our larger thrust bearing features a 97% greater surface area and 77% greater static load capacity than the stock bearing.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| TBK-56L | Heavy Duty Throwout Bearing Kit | 2006-Later Dyna, 2007-Later Softail/Touring |

# CRUISE DRIVE SPROCKETS & PULLEYS

**CRUISE DRIVE PULLEYS**

With the launch of the Cruise Drive transmission on the 2006 Dyna models, the factory started using bigger diameter splines on the output gear. This change required us to tool up 2 new pulleys to meet the tuning needs of our performance minded customers. Pulleys are available in 31 and 30 tooth configurations.

**NOTES**

- 30 tooth pulley requires the use of an 'international' belt (available through your local Harley dealer) for all Cruise Drive applications except 2009-Later FL models
- 31 tooth pulley can be used with the stock belt for all Cruise Drive applications except 2009-Later FL models
- 2009-Later Cruise Drive models require the use of a 139 tooth belt (available through any aftermarket distributor) with 30 or 31 tooth pulley

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 30T-07 | 30 Tooth Drive Pulley, Zero Offset | 2006-Later Dyna, 2007-Later Softail/Touring |
| 31T-07 | 31 Tooth Drive Pulley, Zero Offset | 2006-Later Dyna, 2007-Later Softail/Touring |

**25 TOOTH DRIVE SPROCKET**

Conversion of the stock belt drive to 530 Chain is the tried and true solution to address broken belts in performance applications. 2009-later applications require retrofit to earlier non-'cush-drive' rear wheel, or aftermarket wheel, to make wheel sprocket installation possible.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 25T02-07 | 25 Tooth Drive Sprocket, 2" Offset | 2006-Later Dyna, 2007-Later Softail/Touring |

## PULLEY & BELT CONFIGURATION PART NUMBER CHART

| MODEL | YEAR | PULLEY PN | BELT PN | PULLEY PN | BELT PN | STOCK REAR PULLEY |
|---|---|---|---|---|---|---|
| Dyna | 2006 | 30T-07 | 40594-06 | 31T-07 | 40015-00 | 70T |
| Dyna | 2007 | 30T-07 | 40048-07 | 31T-07 | 40046-07 | 70T |
| S/T W/200 REAR | 2007 | 30T-07 | 40074-07 | 31T-07 | 40058-07 | 66T |
| S/T W/240 REAR | 2007 | 30T-07 | 40074-07 | 31T-07 | 40073-07 | 66T |
| FL | 2007 | 30T-07 | 40056-07 | 31T-07 | 40024-07 | 66T |
| Dyna | 2008 | 30T-07 | 40048-07 | 31T-07 | 40046-07 | 66T |
| S/T W/200 REAR | 2008 | 30T-07 | 40074-07 | 31T-07 | 40058-07 | 66T |
| S/T W/240 REAR | 2008 | 30T-07 | 40074-07 | 31T-07 | 40073-07 | 66T |
| FL | 2008 | 30T-07 | 40056-07 | 31T-07 | 40024-07 | 66T, Bolt-on Cush Drive |
| Dyna | 2009 | 30T-07 | 40048-07 | 31T-07 | 40046-07 | 66T |
| S/T W/200 REAR | 2009 | 30T-07 | 40074-07 | 31T-07 | 40058-07 | 66T |
| S/T W/240 REAR | 2009 | 30T-07 | 40074-07 | 31T-07 | 40073-07 | 66T |
| FL | 2009 | 30T-07 | BDL-SPC-139-1 | 31T-07 | BDL-SPC-139-1 | 68T Cast into Wheel Cush Drive |
| Dyna | 2010-Later | 30T-07 | 40048-07 | 31T-07 | 40046-07 | 66T |
| S/T W/200 REAR | 2010-Later | 30T-07 | 40074-07 | 31T-07 | 40058-07 | 66T |
| S/T W/240 REAR | 2010-Later | 30T-07 | 40074-07 | 31T-07 | 40073-07 | 66T |
| FL | 2010-Later | 30T-07 | BDL-SPC-139-1 | 31T-07 | BDL-SPC-139-1 | 68T Cast into Wheel Cush Drive |

# TORQUE AND THE STACCATO EXHAUST SOUND ARE AMERICAN AS...

The older pilots refer to it as the Sound of Round. That's the beautiful mechanical cacophony you hear from an airplane with a Pratt & Whitney R-985 when its crawling through sky. That 985 cubic inch 9-cylinder radial makes a sound that can't be duplicated or imitated. Same goes for a Harley engine. A big displacement 45° V-twin with high compression and a really nervous camshaft with lots of valve overlap sounds better than every girl in a strip club simultaneously screaming your name.

At BAKER Drivetrain we are gear-heads and motor-heads; we love this shit. But we don't make motors; we make drivetrains and they often take a back seat to the iconic presence of the motor. The Custom and Performance catalog is proof that we won't let the drivetrain be overlooked. It's importance as the caretaker of delivering that juicy V-twin torque to the rear tire cannot be emphasized enough. So you have some torque. The OD6 and PowerBox will handle 165 ft-lbs of torque. Both have a common gearset but the PowerBox borrows heavily gusseted architecture from Satan's transmission, the TorqueBox which begs for 250 ft-lbs of torque. The Function Formed Primary (FFP) has that classic belt drive look but it's enclosed wet design has a through-hole in the middle and is ready for mid control fabrication. And don't forget the clutch, it is surrounded by two bullies; the torque from the motor and the rear tire/pavement but the KKK clutch was born from a Cadillac transmission, grew up in Detroit, and can kick anybody's ass. And there's more unique drivetrain components that are only available in the collection you are looking through right now, so please check it out.

This company was started 15 years ago because motors were making more and more power, but nobody was taking the drivetrain seriously. Make sure to choose the right drivetrain, chassis, and rear wheel to put the power to the ground.

BERT BAKER

PROCEED TO CUSTOM & PERFORMANCE >>>>>>>

# BAKER CLUTCHES

## KING KONG KLUTCH

"Torque capacity of a clutch is dictated by the diameter and the number of clutch plates." So our goal was to implement the largest diameter clutch plates that would fit underneath the starter ring gear minor diameter. We found the biggest ones in a Cadillac 5-speed automatic tranny, so we designed our King Kong Klutch around 20 of these massive plates.

**FEATURES:**

- Twenty 7-inch diameter, single-sided K2 friction plates
- Three interchangeable coil spring options; light, medium and heavy
- BAKER'S exclusive one-piece clutch basket and 66 tooth ring gear design
- Larger torque capacity
- Positive pressure plate alignment with Permaglide bearings
- Red anodized clutch carrier and pressure plate
- Two-year/20,000 mile warranty

## BAKER STREET PERFORMANCE 9-PLATE CLUTCH

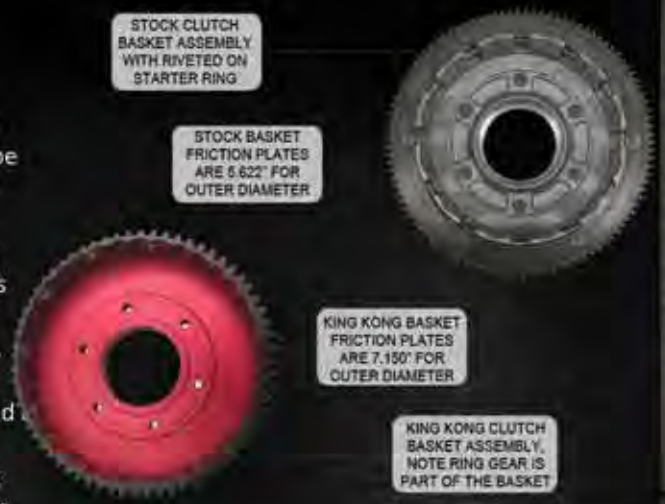
The BAKER 9-Plate Street Performance Clutch is the competitively priced smaller brother of the KKK. It's a 'must have' for all 1990-93 Big Twins, and 1994-06 Big Twins with our optional 9 tooth pinion. It features a one piece clutch basket, which is 23% larger than stock, and a hard anodized hub for increased strength and durability. We moved the friction material towards the outer diameter of the plate, which increases torque capacity and reduces heat build-up, all resulting in a longer clutch life.

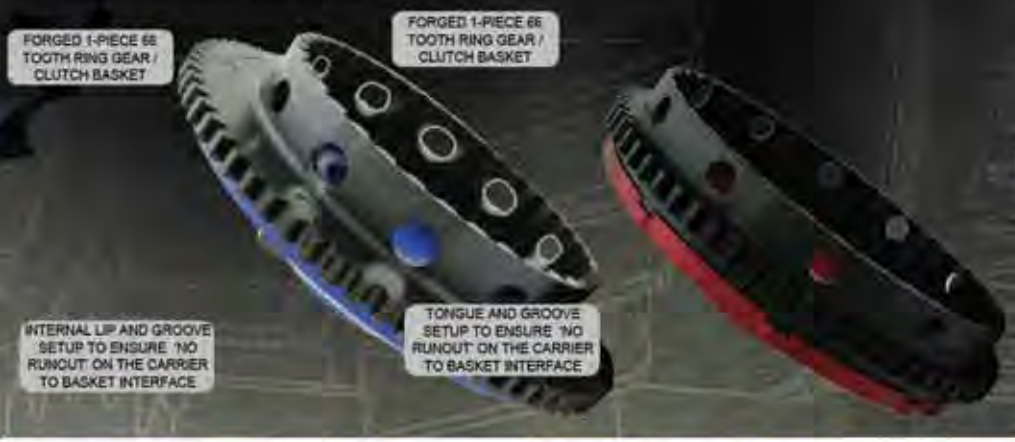
**FEATURES:**

- 9 Kevlar 2-sided clutch plates with large mean radius
- Blue anodized clutch carrier and pressure plate
- BAKER'S exclusive 1-piece clutch basket and 66 tooth ring gear design
- Larger torque capacity over stock
- Diaphragm-type pressure plate spring with ergonomic break-over feel during disengagement.
- Standard diaphragm spring installed; separate heavy duty rated spring included with purchase
- Two-year/20,000 mile warranty


## CLUTCH DESIGN

The fundamental design approach of the BAKER clutches is different than anything available from the factory or other aftermarket manufacturers. For strength reasons, we manufacture our clutch with a 1-piece ring gear/basket. First, a large donut shaped forging is turned on a CNC lathe to the shape of the finished basket. Next, the internal splines for the friction plates are formed with a 6-foot long broach. Threads for attachment of the carrier are machined on a mill, then the ring gear teeth are hobbed on the same type of machine that makes our gears. It is not cheap to make the heart and soul of our clutches in this manner but the end result justifies the expense. The radial strength gained by integrally putting the ring gear around the basket is analogous to the steel bands placed around whiskey barrel. Without the steel bands, the barrel would explode and that would be alcohol abuse. Additionally, the ring gear is supported by the hoop of the basket and this guarantees the T.I.R. at the pitch line of the ring gear teeth (no egg shaped ring gear). We offer 35, 36, 37, and 38 tooth clutch sprockets with our clutches to dial in you overall gear ratio.




## AC/DC PINION

We only manufacture clutches with the 66 tooth ring gear. In 1994, Harley migrated from the 66 tooth ring to a 102 tooth design to achieve more starting torque. The flip side of that is the teeth sheer off, especially on modified motors. If you have a 1994-06 (except 06 Dyna) 102 tooth clutch basket you must purchase the AC/DC starter pinion separately, PN SP1000.

### KKK: KING KONG KLUTCH

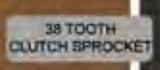
| PN | DESCRIPTION |
|---|---|
| 20P200-KK-35 | KKK with 35T Sprocket |
| 20P200-KK-36 | KKK with 36T Sprocket |
| 20P200-KK-37 | KKK with 37T Sprocket |
| 20P200-KK-38 | KKK with 38T Sprocket |
| 20P200-KK-S-35 | KKK with 35T Sprocket and FFP Outer Support |
| 20P200-KK-S-36 | KKK with 36T Sprocket and FFP Outer Support |
| 20P200-KK-S-37 | KKK with 37T Sprocket and FFP Outer Support |
| 20P200-KK-S-38 | KKK with 38T Sprocket and FFP Outer Support |

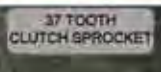
**FITMENT**
1990-06 Big Twins (except 2006 Dyna)
1994-06 FLH/FLT Models

### 9 PLATE CLUTCH

| PN | DESCRIPTION |
|---|---|
| 9P300-56-35 | 9-Plate Clutch with 35T Sprocket |
| 9P300-56-36 | 9-Plate Clutch with 36T Sprocket |
| 9P300-56-37 | 9-Plate Clutch with 37T Sprocket |
| 9P300-56-38 | 9-Plate Clutch with 38T Sprocket |

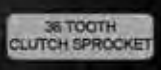
**FITMENT**
1990-06 Big Twins (except 2006 Dyna)




## FRICTION PLATES

The King Kong ring gear basket design and friction plates dwarf the stock clutch components. Look at the size of the KKK friction plates relative to the stock 1998-06 factory clutch plates; by increasing the diameter of the friction plate we are able to increase the torque handling capacity. The KKK comes with 20 of these massive single sided friction plates. The single sided KKK friction plates dissipate heat more quickly than standard two-sided friction plates resulting in a longer lasting, more durable clutch.




# BAKER DRIVETRAIN SYNCHRONOUS BELT DRIVE

## BIG DOG SYNCHRONOUS BELT DRIVE

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| BD-BDM-0NO | Synchronous Belt Drive, | 2005-07 Big Dog, 300mm Tire |
| BD-BDM-0-08 | Synchronous Belt Drive, No Offset, Polished | 2008-10 Big Dog, 300mm/330mm Tires |
| BD-BDM-1/2 | Synchronous Belt Drive 1/2" Offset, Polished | 2005-2007, 250mm Tire Models |
| BD-BDM-1/2-08 | Synchronous Belt Drive 1/2" Offset, Polished | 2008-2010, 210mm& 250mm Tire Models |

**KEY FEATURES**

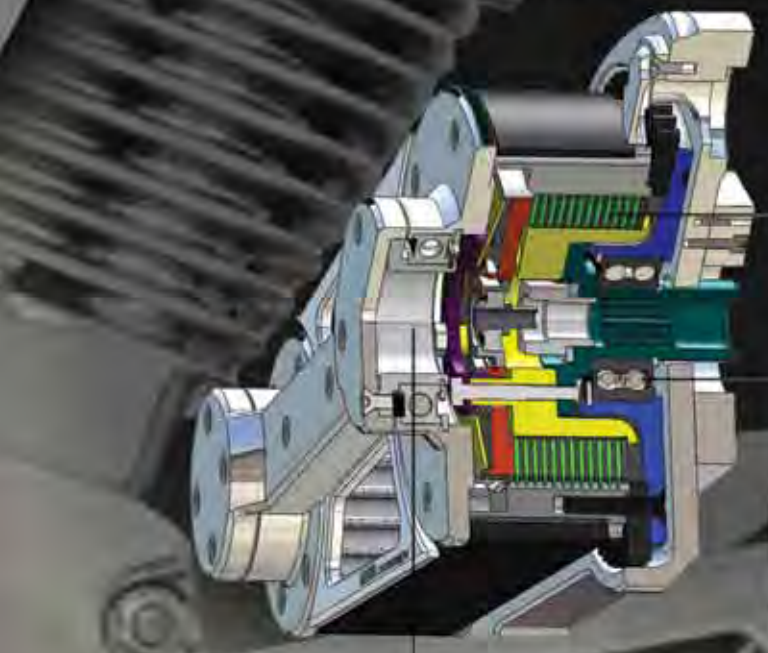
- 28 tooth stainless steel pulley up front and a 43T stainless steel pulley in the rear
- 1.58 pulley ratio yields a 7% increase in torque to the rear wheel
- One-piece 66 tooth 1045 steel ring gear
- 2.4" wide proprietary belt with 14mm teeth
- 12 plate clutch pack holds up to 120 ft-lbs of continuous use while the tight tolerance clutch basket all but eliminates the 'neutral clutch rattle' most belt drives suffer from
- Billet 6061-T6 aluminum outboard support (dog bone) and pulley covers
- Motor plate and edge guard are machined from 6061-T6 billet plate stock
- Comes standard with outboard support and a show polished finish
- Available in 0" or 1/2" offset configurations
- Stainless steel pulleys
- One-piece steel clutch basket
- Two-year/20,000 mile warranty

# HEY BIG DOGS!!

## THERE ARE A LOT OF YOU OUT THERE.

## DROP THE CHAINS. LOSE THE PACK.

The BAKER Synchronous Belt Drive for Big Dog applications allows you to update your 2005-10 Balance Drive BDM to an open belt drive from the closed wet primary system. Having an open belt drive is one of those traits of a cool chopper to a lot of us out there riding. The mechanical nature of an open belt whippin' in the breeze gives that element of nostalgia that is so popular in the V-twin dominated world we all love. We agree and tried to build on that cool factor with some modern day engineering. Our 2.4" wide belt rides on stainless steel pulleys. We used larger 14mm teeth and an outboard support design to add as much strength as possible. Our 12 plate clutch design will handle up 120 ft-lbs of continuous use right out of the box. Our one-piece jackshaft is significantly stronger than stock, and when matched with our one-piece clutch basket design, will deliver years of reliable starting. We were not happy stopping the design process with a product that just works great so we pulled out our design pencils and added a level of aesthetic styling that complements the strength of the mechanical design.




A used, aluminum, aftermarket clutch basket is shown below. Over time, engine torque carried by the clutch plates wears grooves in the flanks of the teeth. Anyone who has wrenched for at least one riding season, has seen this phenomenon in the flesh. These wear marks when they start, cause clutch disengagement and shifting issues and make it difficult to find neutral. When they get to be as bad as those pictured, you have to replace the entire basket at your expense. The wearing of the clutch plates into the basket, and the belt into the pulleys is the reason we designed our belt drive with stainless steel. Pictured below/left is a common aftermarket belt with 8mm teeth, and our belt which has 14mm teeth. The larger tooth size has more meat to it, and can transfer more torque. If a 14mm tooth belt size can drive the supercharger on a 500ci Top Alcohol Dragster motor, your bad ass Big Dog will be just fine.

Aftermarket Clutch Basket

Aftermarket clutch baskets are made out of aluminum. Before too long, there are often wear marks like these shown, rendering this clutch basket useless and needing replacement.

BAKER clutch baskets are made out of stainless steel, giving them long term wear resistance that aluminum can not match.

BAKER Clutch Basket

# BAKER DRIVE BRAKE

Drive Brake transmissions clean up the rear wheel brake related clutter. We designed our Drive Brake Transmission as a complete system to address some concerns we had with bolt-on systems. Some bolt on systems had small diameter rotors with partial brake pad engagement; the one we evaluated wouldn't even allow us to lock up and skid the rear wheel. So we designed our system with an 8" rotor and full pad engagement. With a prototype we were able to lock up the rear wheel and throw it sideways. Aesthetically, it is super clean with the caliper located in between the belt rungs and a minimalistic Function Formed hydraulic actuator spider.

## MAINTENANCE/SERVICE

The Drive Brake dual piston setup utilizes Performance Machine internal components. BAKER recommends checking for brake pad wear after the initial 1000 miles and every 5000 miles after to ensure proper function.

## BRAKE PAD KIT

| PN | DESCRIPTION |
|---|---|
| BRK-KIT | Brake Pads and Bypass O-Ring |

## NOTES

- Sprocket or Pulley assembly along with caliper must be removed in order to replace the brake pads.

## BELT OR CHAIN

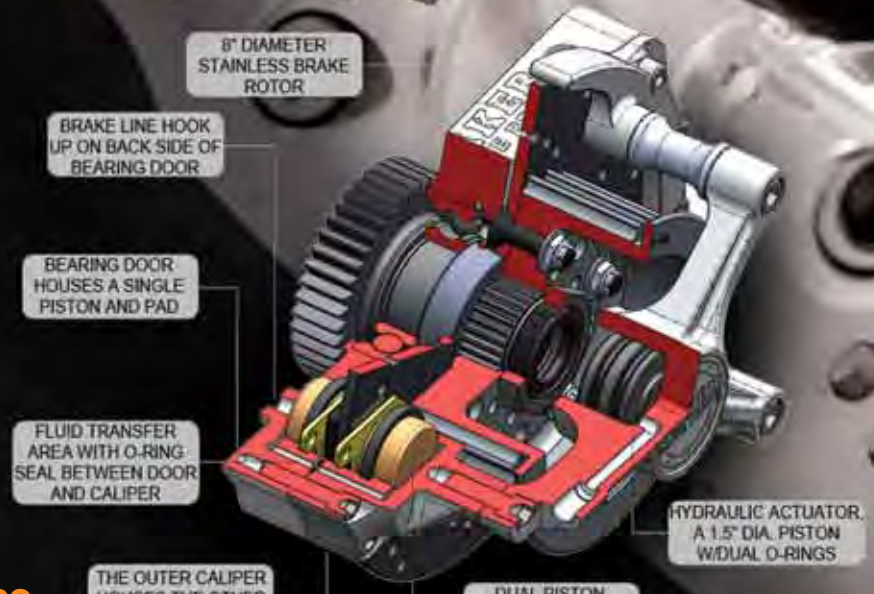
The drive brake comes standard with a 29 tooth .500" offset pulley assembly or an optional 23 tooth .900" offset sprocket.

## CASE FINISH OPTIONS

The Drive Brake Transmission is available with either a Show Polished or Chrome finish.

## SPEEDOMETER RECALIBRATION

The electronic speedometer provision uses a stock 1996-06 speed sensor, PN 74437-96. A BAKER Speedometer Recalibration Box (PN 95E-56A) may be required.




## SHIFT DRUM OPTIONS

Standard pattern shift drum (1-N-2-3-4-5-6)
M1 Pattern Shift Drum (N-1-2-3-4-5-6)

| STANDARD RATIOS | | R-RATIOS | |
|---|---|---|---|
| 1st Gear | 2.94 | 1st Gear | 2.82 |
| 2nd Gear | 2.21 | 2nd Gear | 2.08 |
| 3rd Gear | 1.60 | 3rd Gear | 1.60 |
| 4th Gear | 1.23 | 4th Gear | 1.23 |
| 5th Gear | 1.00 | 5th Gear | 1.00 |
| 6th Gear | .86 | 6th Gear | .86 |

# DRIVE BRAKE TRANSMISSION

**FITMENT**
1990-99 Right Side Drive Softail-Based and Custom Right Side Drive Motorcycles

| PN | DESCRIPTION |
|---|---|
| R701PB-BRK | Drive Brake Transmission, Polished, Standard Ratios |
| R7211PB-BRK | Drive Brake Transmission, Polished, 'R'-Ratios |
| R701CB-BRK | Drive Brake Transmission, Chrome, Standard Ratios |
| R7211CB-BRK | Drive Brake Transmission, Chrome, 'R'-Ratios |

**KEY FEATURES**
- 8" stainless steel rotor
- 6061-T6 aluminum clutch actuator spider with 1.5" diameter piston (hydraulic only). 11/16" master cylinder recommended
- Dual piston brake caliper with Performance Machine guts
- Inboard piston bore is an integral part of the door
- Polished stainless steel stand-offs under front spider legs
- Dual brake bleeders; one above each piston
- Available show polished or chrome
- Chrome top cover available with or without neutral switch
- 29 tooth .5" offset pulley standard
- N1 drum optional
- 'R'-ratio optional for big motor applications
- Five-year/50,000 mile warranty

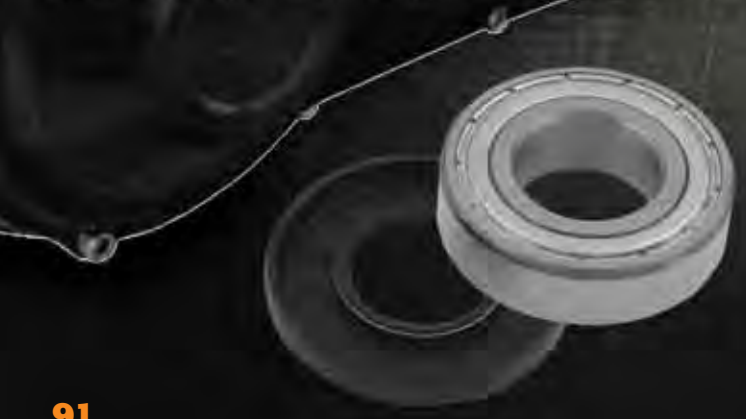
**NOTES**
- For chain drive sprocket add suffix '-S' at the end of the part number for 23 tooth sprocket; Example R701PB-BRK-S.
- For N1 shift pattern drum, add suffix '-N1' before -BRK in the part number; Example R701PB-N1-BRK
- For top cover without neutral switch add suffix 'N' before -BRK; Ex: R701PBN-BRK
- Chrome drive brake transmissions are only available with show polished bearing door and caliper

**TOP COVER OPTION**
Our Drive Brake Transmissions come standard with a neutral switch in the top cover. Some custom builds do not require a neutral light and for these applications we offer a top cover with no neutral switch.


**INTERNAL DESIGN**
The braking caliper is designed into the bearing door for ultimate strength, with a removable caliper on the outside for pad replacement in the future. Dual bleeders come standard allowing you to get every bit of air out of the system, thus leaving a firm/positive braking feel. The hydraulic actuator sits up off of the rotor being mounted off of the outside caliper and front fender which wraps the front of the rotor for saftey. The hydraulic actuator has a 1.5" diameter piston with dual O-Rings. BAKER recommends an 11/16" master cylinder (clutch perch) for the hydraulic clutch. Both the brake and clutch hydraulic system is DOT 5 compatible.

# FUNCTION-FORMED PRIMARY™

The primary drive housing is the most recognizable piece of architecture on an American motorcycle. It is centrally located and transfers power from the engine to the transmission. We sculpted our forged 6061-T6 Function Formed Primary (FFP) to enhance the natural mechanical beauty of the elements inside. A SolidWorks 3D model of the clutch, chain, starter pinion, and motor sprocket was created and then we sparingly started adding material to wrap around those elements. No extra aluminum, just mechanical beauty. And there's a glory hole in the middle which opens the door for running mid-controls, with the benefits of an enclosed chain. See our website for examples of bikes with FFP mid controls. FFP fits all Softail, EVO and Twin Cam models without modification. Compatible with stock 66-tooth and 102-tooth clutches, compensating sprocket, chain, and starter motors. Each primary kit includes an inner primary housing, outer primary cover, one-piece starter jackshaft, chain adjustment shoe and mechanism, gaskets, and fasteners. For performance junkies with mountain motors, the FFP has an optional internal outside bearing support (FFPS) that integrates with the King Kong Klutch. Applications above 150 ft-lbs require the outside clutch support to keep the transmission mainshaft from flexing. The outside bearing support version is the first enclosed, wet primary available with this feature. Belt drives have been available for years with outside supports. Our KKK clutch is required with outside support spider for fitted compatibilty.



**HIGH TORQUE BEARING**

The Function Form Primary comes standard with our High Torque Bearing kit, PN 189-56, installed. This replaces the stock (PN 34091-85) inner bearing race that has been used on Big Twins since 1985. This factory inner primary bearing rides on this race. By design, this race press-fits onto the transmission mainshaft. This system works fine for stock engines. 100 HP+ engines will make this race walk on the mainshaft. If it walks inboard, it will damage the maindrive gear seal and cause a transmission oil leak. If it walks outboard, it will cause a primary oil leak. Our high torque bearing kit eliminates this condition.

# FFP: FUNCTION FORMED PRIMARY

| PN | DESCRIPTION |
|---|---|
| 4100-FFP-P | FFP, Polished |
| 4100-FFP-B | FFP, Black Anodized |
| FFPP-KKK*-OBS | FFP, Polished with KKK and Outboard Bearing Support |
| FFPB-KKK*-OBS | FFP, Black Anodized with KKK and Outboard Bearing Support |

** Specify tooth count for sprocket with 35, 36, 37 or 38 added in place of *, depending on your desired primary drive ratio*
*Example PN FFPP-KKK36-OBS*

**KEY FEATURES**

- 6061-T6 forged inner and outer primary
- Externally adjustable primary chain
- One-piece starter jackshaft for strength
- Fits stock and custom Softail applications
- Optional bearing support with King Kong Klutch for high torque applications
- Available in black or polished
- Starter pinion (provided) compatible with 66 tooth ring gear clutches
- Compatible with several different primary ratios; see below
- Two-year/20,000 mile warranty

**PRIMARY CONFIGURATIONS**

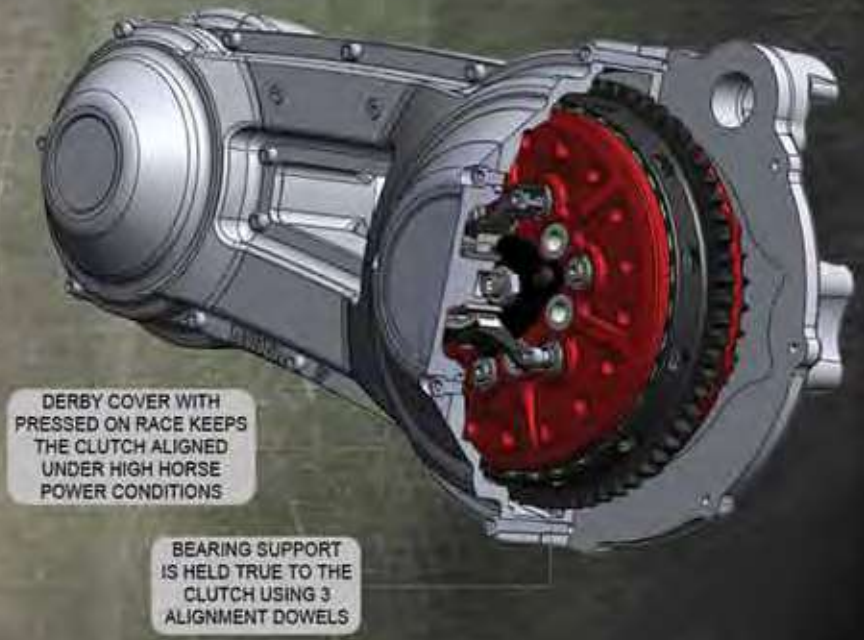
| Motor Sprocket | Clutch Sprocket | Chain Length |
|---|---|---|
| 21 | 36 | 80 |
| 24 | 37 | 82 |
| 25 | 36 | 82 |
| 27 | 38 | 84 |

**CHAIN ADJUSTMENT**

The FFP is the only primary available with an externally adjustable primary chain. No removal of the outer primary is necessary and no gaskets are used. Just remove the inspection cover and adjust the chain to specification with the adjuster screw on the bottom of the primary.

**NOTE**

The FFP opens the door to configure mid-controls on any 1990-2006 Softail. See the FFP section of our website for examples of customers who have used the FFP to set up their bikes with mid-controls.




**OPTIONAL BEARING SUPPORT**

With the King Kong Klutch being the ultimate in high horsepower clutches for Big Twins, we had to design a bearing support to keep the mainshaft from bending under severe loads. The bearing support features a billet 6061-T6 design which is mounted to the King Kong Klutch using 3 alignment dowels and utilizes a heavy duty roller bearing. The bearing support version of the FFP is designed to work with the BAKER KKK 'King Kong Klutch' only. The derby cover of the primary has a bearing race pressed onto the snout of the cover which slides inside the bearing of the support when installed to keep the clutch assembly true to the world no matter how much horsepower you throw at it.

# RT250 PROJECT
## AKA MR. POTATO HEAD


## RT250 TRANSMISSION
## (AKA MR. POTATO HEAD)

| PN | DESCRIPTION |
|---|---|
| RT250*-P | RT250 Transmission, Polished |
| RT250*-B | RT250 Transmission, Wrinkle Black |

*Specify 'A' for A-flange, 'B' for B-flange, or 'E' for EVO flange; dependent on your engine setup

**KEY FEATURES**

- Utilizes stock Softail primaries or BAKER FFP
- 6061-T6 billet case construction
- Tranny is offset ½" to the left to tuck the drive belt/chain inside the frame rail
- No ½" motor sprocket extension required; tranny is slammed against the inner primary
- Transmission mainshaft is ½" shorter than stock
- Stock Harley® FL frames converted by Rolling Thunder and original VIN retained for no registration hassle; consult Rolling Thunder Frames in Canada for more details
- Frames accept stock seat, bags, tank and front end
- Five-year/50,000 mile warranty

Mr. Potato Head® transmission was conceived in R&D a few years ago to study the possibilities of putting universal bosses on a featureless tranny case. Just like the Mr. Potato Head® toy, you can end up with a genetic hermaphrodite with a little off-the-menu creativity. The universal tranny case accepts an A-flange, B-flange or EVO flange. It also accepts all kinds of tail stocks. This exercise yielded the easiest solution to offsetting a tranny case side-to-side or up-and-down in short production runs. The RT250 vision began at Rolling Thunder when they divulged plans to develop an FL-type Bagger frame that was set up for a 250 tire and Softail length primary in a balanced right side drive chassis. They approached us about doing a special tranny that was specific to this frame. Mr. Potato Head® technology finally found its first home and we named it the RT250 project.


**SHIFT FORKS**
Our investment cast shift forks are made with 4140 steel and are hard chrome plated for wear resistance. The fork design has oil reliefs to ensure proper lubrication and wear resistance on fork blades and shift fork grooves.

**NO OFFSETS**
With the RT250 being developed around the stout 250mm rear tire, we wanted to do everything we could to keep a zero offset driveline. Using design data from our DSSC project and our common RSDs we were able to do just that. Starting with the primary side, we took a full 1/2" width out of the case so that the primary did not have to be offset. We also shortened the mainshaft 1/2" to tuck the clutch and primary close to the center of gravity of the motorcycle. On the right side, to keep the belt inside the frame rails, we developed a new low profile pulley cover and pulley. This design utilizes a 20mm belt width and keeps the belt tucked in between the frame rails for a tight, Factory look.


**GEARSET**
All DD6 gearsets are made with 8620 steel, hobbed before heat treatment, then precision ground with diamond coated tooling after heat treatment (58-62 Rockwell 'C'). These extra steps ensure a quieter gear pair and much tighter backlash control. The gearset is a combination of helical and spur gears to yield silent gear operation. The dog teeth are backcut at a 1° angle for the smoothest shift possible, while standard gearsets are cut to a 4° angle. The mainshaft is unique with 1st main gear being incorporated as part of the shaft. The countershaft also features a unique 1-piece design, combining the shaft with 6th gear.


**SHIFT SYSTEM**
Our 6-speed shift system with roller detent guarantees smooth shifts every time and our redundant neutral detent ensures that finding neutral is an easy chore. We mount a plunger detent on the left side pillow block and cut a plunger track into the barrel of the shift drum. The plunger follows this track during operation (shifting) and when shifting into neutral pops into a pocket. This system lets you feel that you're shifting into neutral. No more guessing. Shift drum features more aggressive timing on the fork groove profiles and is case hardened to 58 Rockwell for wear resistance and crisp shifts. We built our reputation on smooth shifting Overdrive 6-speed transmissions; our DD6 drum design benefits from the engineering lessons learned.

**ENGINE FITMENT**
The Mr. Potato Head transmission is the only transmission on the market that can bolt to Evolution, Twin Cam A or Twin Cam B engines. This makes the transmission versatile for whatever your powerplant may be. All variations are specifically designed to use the Softail length primary to provide the maximum design flexibility.

**CASE FINISH OPTIONS**
The RT250 RSD is available in either polished or wrinkle black finish


Polished


Wrinkle Black

**GEAR RATIOS**

| STANDARD RATIOS | | EFFECTIVE RATIOS | |
|---|---|---|---|
| 1st Gear | 3.45 | 1st Gear | 2.94 |
| 2nd Gear | 2.56 | 2nd Gear | 2.20 |
| 3rd Gear | 1.87 | 3rd Gear | 1.61 |
| 4th Gear | 1.44 | 4th Gear | 1.24 |
| 5th Gear | 1.15 | 5th Gear | .99 |
| 6th Gear | 1.00 | 6th Gear | .86 |

# POWERBOX TRANSMISSION

| PN | DESCRIPTION |
|---|---|
| PBR701PN | PowerBox, RSD, Standard Ratios, Polished |
| PBR7211PN | PowerBox, RSD, R-Ratios, Polished |
| PBL701PN | PowerBox, LSD, Standard Ratios, Polished |
| PBL7211PN | PowerBox, LSD, R-Ratios, Polished |

**FITMENT**

1990-99 Softail-based RSD (right side drive), LSD (left side drive) frames and custom applications

**NOTES**

- For an N1 shift pattern drum add suffix -N1 after the part number; Example: PBL701PN-N1

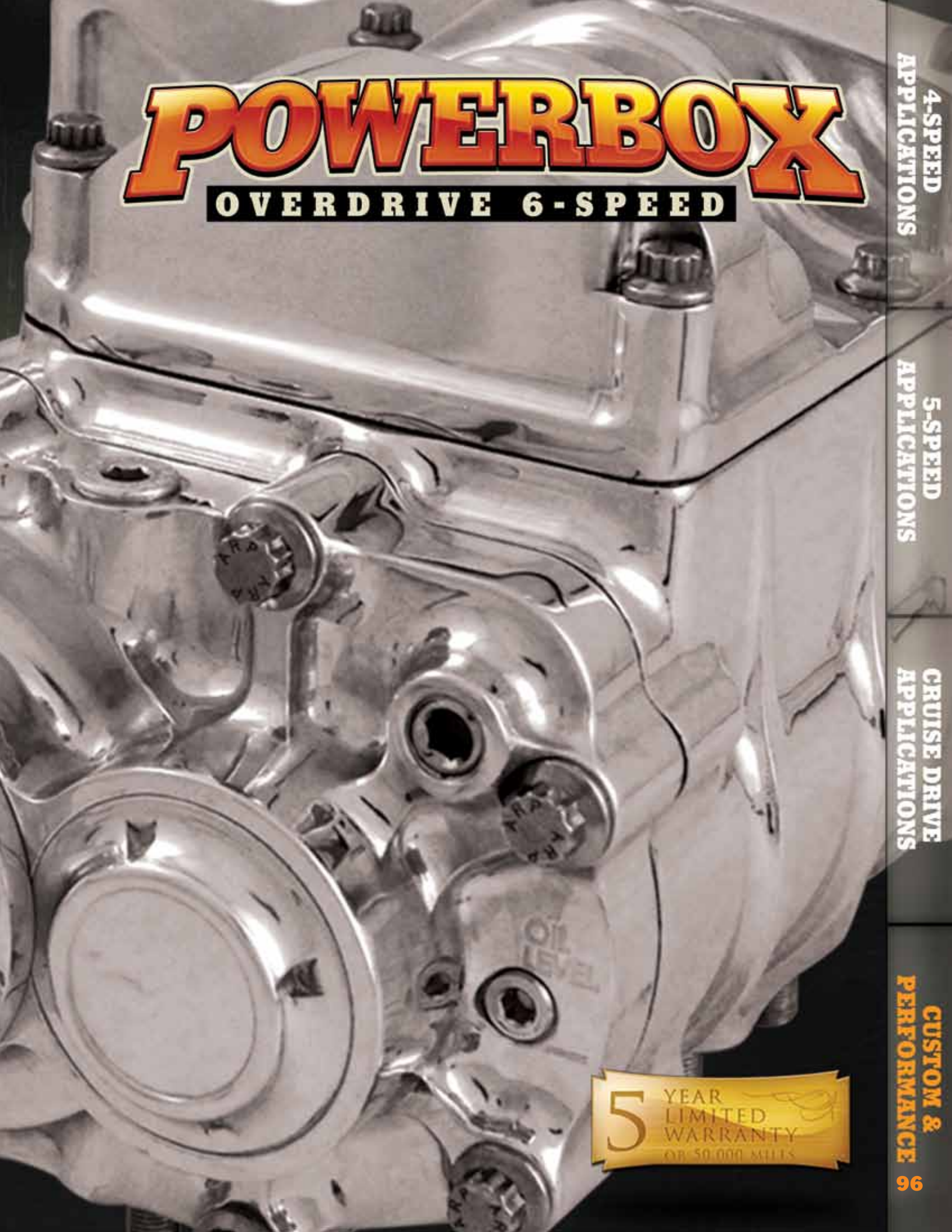
**KEY FEATURES**

- Hydraulic actuator with 1.5" piston standard; 11/16" master cylinder recommended
- RSD comes with choice of 29 tooth zero offset pulley, 23 tooth or 24 tooth .2" chain sprocket
- RSD can be upgraded with various offset chain sprockets and sizes to suit application. No pulley option available due to tight actuator spider size
- LSD comes with choice of pulley or sprocket
- LSD can be upgraded to all pulley and chain sizes and offsets to suit application
- No neutral switch for clean look
- No cost upgrade to N1 drum
- Speed sensor provision located on back of case requires .120" spacer
- 12 point stainless steel ARP fasteners
- Choice of standard and 'R' ratio gearsets
- Five-year/50,000 mile warranty

The design directives for the TorqueBox were clearly established in the early stages of development. This flagship gearbox had to have a 250 ft-lb torque capacity gearset but externally look like 400 ft-lb standing still. Development costs and resultant retail price were deemed irrelevant. By choosing the venerable 6-71 blower for architectural inspiration, we inadvertently gave rise to what is now trademarked as Function Formed™ design.

Enter the new PowerBox; Function Formed™ looks without the need to pawn your guns or your wife's jewelry. Design inspiration from the TorqueBox coupled with a diamond ground 8620 steel 6-speed overdrive gearset gives the PowerBox an input torque capacity of 165 ft-lb, with a 400 ft-lb curb appeal; some may argue more. More because the tidy compact design of the PowerBox makes the function Formed design elements pop out more. 34Ds will always be noticed more on a petite chick than a larger chick; same concept.

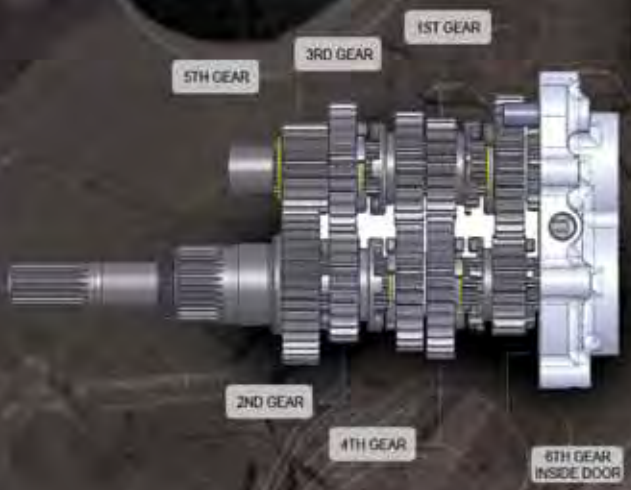
| STANDARD RATIOS | | R-RATIOS | |
|---|---|---|---|
| 1st Gear | 2.94 | 1st Gear | 2.82 |
| 2nd Gear | 2.21 | 2nd Gear | 2.08 |
| 3rd Gear | 1.60 | 3rd Gear | 1.60 |
| 4th Gear | 1.23 | 4th Gear | 1.23 |
| 5th Gear | 1.00 | 5th Gear | 1.00 |
| 6th Gear | .86 | 6th Gear | .86 |


POWERBOX
OVERDRIVE 6-SPEED
5 YEAR LIMITED WARRANTY
OR 50,000 MILES

# POWERBOX OVERDRIVE 6-SPEED FEATURES AND TECHNICAL INFO...

**GEARSET**

The PowerBox utilizes the BAKER OD6 gearset. All OD6 gearsets are made with 8620 steel, hobbed before heat treatment, then precision ground with diamond coated tooling after heat treatment (58-62 Rockwell 'C'). These extra steps ensure a quieter gear pair and much tighter backlash control.




LEFT SIDE DRIVE GEARSET

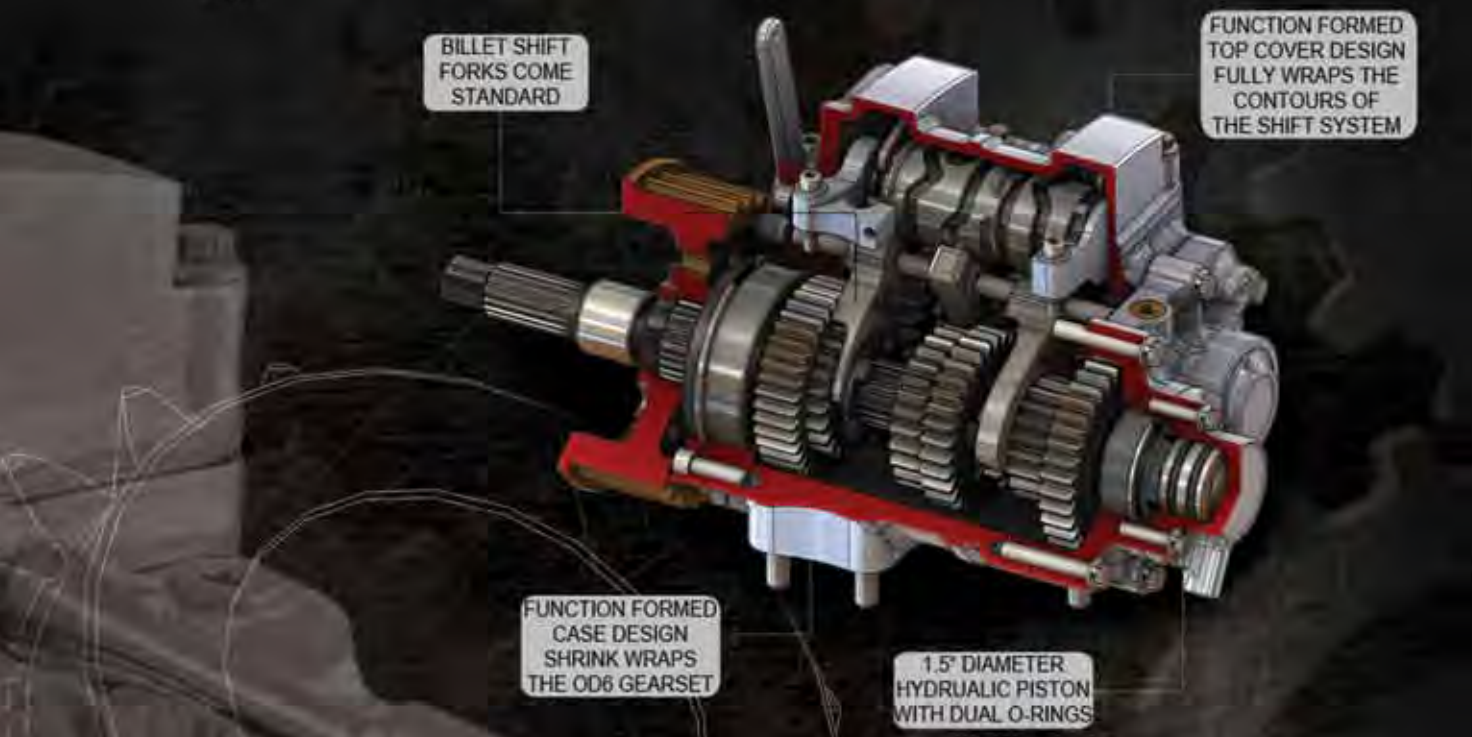

RIGHT SIDE DRIVE GEARSET


**SPEEDOMETER PICKUP**

The PowerBox has its speedometer pickup location in the middle of the case on the back side. The sensor reads off of the 4th gear. The stock 1996-06 speed sensor, PN 74437-96 is used with a .120" spacer for electronic speedometer applications. Speedometer recalibration box PN 95E-56A may be required.

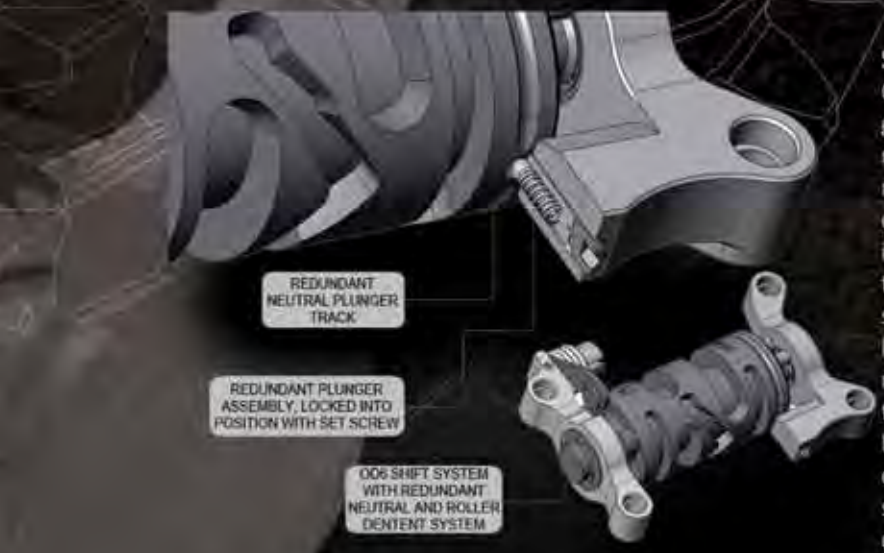
**DESIGN**

Design inspiration from the TorqueBox and coupled with our diamond ground 8620 gear steel 6-speed overdrive gearset gives the PowerBox an input torque capacity of 165 ft-lb, with 400 ft-lb curb appeal; some may argue more. More because the tidy compact design of the Power Box makes the Function Formed design elements pop out more.




**CASE FINISH**

A show polished finish is standard with the PowerBox transmssion. Other special finishes are available, consult our tech support staff for options and pricing.




**SHIFT SYSTEM**

Our 6-speed shift system with roller detent guarantees smooth shifts every time and our redundant neutral detent ensures that finding neutral is an easy chore. We mount a plunger detent on the left side pillow block and cut a plunger track into the barrel of the shift drum. The plunger follows this track during operation (shifting) and when shifting into neutral pops into a pocket. This system lets you feel that you're shifting into neutral. No more guessing. Shift drum features more aggressive timing on the fork groove profiles and is case hardened to 58 Rockwell for wear resistance and crisp shifts. We built our reputation on smooth shifting 6-speed transmissions; our 6-speed drum designs benefit from the engineering lessons learned.

**SHIFT DRUM OPTIONS**

Standard pattern shift drum (1-N-2-3-4-5-6)
N1 pattern shift drum (N-1-2-3-4-5-6)


# RSD: RIGHT SIDE DRIVE TRANSMISSION

**KEY FEATURES**

- Available as a complete Right Side Drive 5-Speed (RSD5) transmission or Right Side Drive 6-Speed (OD6R) with different available finishes for Softail, Dyna, FXR, and FLT based customs
- Requires a right side drive chassis (RSD)
- Mutiple gear ratio combinations available (both 5-speed and 6-speed versions) shown on the next page
- Full complement of straight cut gears for the ultimate in strength, featuring tooth forms ground with diamond coated tooling
- Compatible with all primary and clutch configurations on the market
- Zero offset 32 tooth pulley or 530 chain sprocket standard, many otpional offset pulleys available
- Pulley cover sold separately
- Elimination of drivetrain offset allows for balanced motorcycle construction
- Five-year/50,000 mile warranty

**RSD5 COMPLETE TRANSMISSION PART NUMBERS***

*All Part Numbers Listed Are Standard Gear Ratios*

| PN | DESCRIPTION | FITMENT* |
|---|---|---|
| R501 | RSD5 Transmission | 1990-97 Softail |
| R502 | RSD5 Transmission | 1990-94 FXR, 1990-92 FLT-FLH |
| R503 | RSD5 Transmission | 1991-97 Dyna |
| R504 | RSD5 Transmission | 1993-98 FLT-FLH |

**OD6R COMPLETE TRANSMISSION PART NUMBERS***

*All Part Numbers Listed Are Standard Gear Ratios*

| PN | DESCRIPTION | FITMENT* |
|---|---|---|
| R701 | OD6R Transmission | 1990-99 Softail |
| R702 | OD6R Transmission | 1990-94 FXR, 1990-92 FLT-FLH |
| R703 | OD6R Transmission | 1991-97 Dyna |
| R704 | OD6R Transmission | 1993-97 FLT-FLH |
| R803 | OD6R Transmission | 1998 Dyna |
| R804 | OD6R Transmission | 1998 FLT-FLH |
| R901 | OD6R Transmission | 2000-06 Softail |
| R903 | OD6R Transmission | 1999-00 Dyna |
| R904 | OD6R Transmission | 1999-00 FLT-FLH |
| R004 | OD6R Transmission | 2001 FLT-FLH |
| R003 | OD6R Transmission | 2001-05 Dyna |
| R0042 | OD6R Transmission | 2002-06 FLT-FLH |

*See next page for case finish and gear ratio options

# RIGHT SIDE DRIVE

# RSD

# BAKER DRIVETRAIN



We introduced RSD (Right Side Drive) in 2001 when the 240 tires came out as a solution to balance big tire customs, and it accomplished just that. RSD translates to zero offset and a perfectly balanced radical custom. The convention of offsetting the transmission to the left to get the secondary drive around the tire puts the entire motorcycle out of balance and adversely affects handling; see the illustration on the page after next. We proudly offer Right Side Drive transmissions for all Big Twin platforms; Softail, Softail based customs, Dyna's, FXR's and FL Touring models and are compatible with conventional left side drive clutches and primary drives. 530 Chain or Belt secondary drive, no problem. Mechanical or Hydraulic Clutch lever assemblies, we've got that covered too. We also offer a variety of gear ratio options to meet all of your drivetrain tuning needs.

**RSD5 PART NUMBER NOTES**

- The RSD5 is available with a 3.24 optional 1st gear ratio for near stock horse power applications. Change the middle numeral '0' to a '1'; Example R511
- The RSD5 is available with an optional R-Ratio gear ratio for high horse power applications. Change the middle numeral '0' to a '21'; Example R5211
- RSD5 Builder's kit come standard with a chrome plated, billet bearing door
- Complete RSD5 Transmissions are available with many case finishes:

| | |
|---|---|
| Raw Cast | Add 'R' Suffix |
| Wrinkle Black | Add 'B' Suffix |
| Polished | Add 'P' Suffix |
| Polished Billet EVO Softail | Add 'PB' Suffix |
| Chrome Billet EVO Softail | Add 'CB' Suffix |

Examples: R501P or R5211CB

- Speedo recalibration unit is required for electric speed sensor applications; BAKER PN 95E-56A.

**OD6R PART NUMBER NOTES**

- The OD6R is available with optional R-ratio gears for high horsepower applications. Change the middle numeral '0' to a '21'. Example: R9213
- The OD6R is available with an optional N-1 pattern shift drum (N-1-2-3-4-5-6) Add '-N1' suffix; Example R9213-N1
- OD6R Transmissions are available with multiple case finishes.

| | |
|---|---|
| Raw Cast | Add 'R' Suffix |
| Wrinkle Black | Add 'B' Suffix |
| Polished | Add 'P' Suffix |
| Polished Billet EVO Softail | Add 'PB' Suffix |
| Chrome Billet EVO Softail | Add 'CB' Suffix |

Examples: R901P or R7211CB.

- Speedo recalibration unit is required for electronic speed sensor applications; BAKER PN 95E-56A.

**THE RSD5 IS OFFERED IN STANDARD, OPTIONAL OR R-RATIO CONFIGURATIONS**

**STANDARD RATIOS**

| | |
|---|---|
| 1st Gear | 2.94/Optional 3.24 |
| 2nd Gear | 2.21 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |

**R-RATIOS**

| | |
|---|---|
| 1st Gear | 2.82 |
| 2nd Gear | 2.08 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |

**THE OD6R IS OFFERED IN STANDARD, OR R-RATIO CONFIGURATIONS**

**STANDARD RATIOS**

| | |
|---|---|
| 1st Gear | 2.94 |
| 2nd Gear | 2.21 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |
| 6th Gear | 0.86 |

**R-RATIOS**

| | |
|---|---|
| 1st Gear | 2.82 |
| 2nd Gear | 2.08 |
| 3rd Gear | 1.60 |
| 4th Gear | 1.23 |
| 5th Gear | 1.00 |
| 6th Gear | 0.86 |

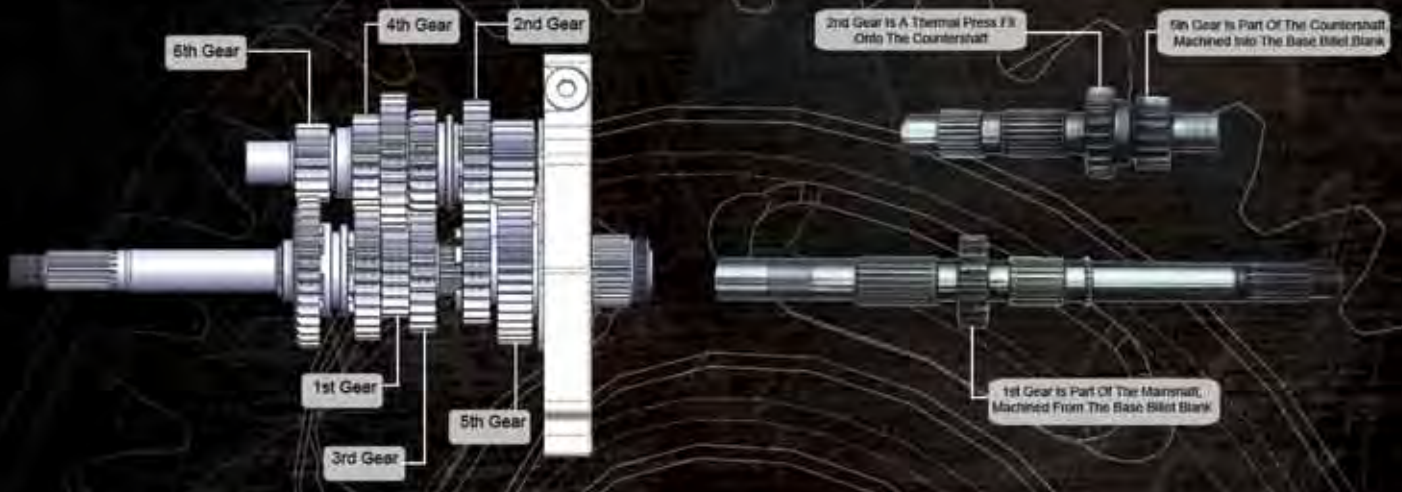
RIGHT SIDE DRIVE
RSD
BAKER DRIVETRAIN

# FEATURES AND TECHNICAL INFO...

## GEARSET

All RSD5 (Right Side Drive 5-Speed) and OD6R (Overdrive 6-Speed, Right Side Drive) gearsets are made from 8620 steel, with the gears being hobbed before heat treatment then precision ground with diamond coated tooling after heat treatment (58-62 Rockwell 'C'). These extra steps ensure a quieter gear pair and enable much tighter backlash control. The RSD5 and OD6R gearsets are spur gears (straight cut) to handle all the power being thrown at it. The dog teeth are backcut at a 4° angle to optimize the engagement of each shift and handle big horsepower.

The mainshaft on the OD6R is unique with 1st main gear being incorporated as part of the shaft, the countershaft also features a unique one-piece design, combining the shaft with 5th gear.




## BEARING DOOR

We offer 3 different Right Side Drive bearing doors for RSD5 and OD6R, as shown below. The differences in doors are the profiles and features that mate with the different transmission cases. The removable ear on the Dyna version (left) allows access to the stock swingarm pivot shaft. The FL version (middle) is longer to accommodate the engine oil spout and special dipstick feature. With the last door option (right), and most popular, being the Softail door. All of the function and precise geometry you expect, with no extra beef to clutter your bike. All of our RSD doors are machined from 6061-T6 billet stock to exact standards, then polished or chrome plated depending on the model.

## CASE FINISH OPTIONS

BAKER offers a variety of case finish options for all RSD transmissions
Chrome finish is only available with our BAKER Billet case:

Chrome


Raw

Wrinkle Black

Polished

# RIGHT-SIDE-DRIVE




## SHIFT SYSTEM

Our shift system with roller detent guarantees smooth shifts every time and our redundant neutral detent ensures that finding neutral is an easy chore. We mount a plunger detent on the left side pillow block and cut a plunger track into the barrel of the shift drum. The plunger follows this track during operation (shifting) and when shifting into neutral pops into a pocket. This system lets you feel that you're shifting into neutral. No more guessing. Shift drum features more aggressive timing on the fork groove profiles and is case hardened to 58 RC for wear resistance and crisp shifts. We built our reputation on smooth shifting 6-speed transmissions; our shift drum designs benefit from the engineering lessons learned.

**DO THE RIGHT THING!**
TAKE A GOOD LOOK BELOW AT WHICH MOTORCYCLE POWERTRAIN IS BETTER BALANCED:

NOT RIGHT (LEFT)

RIGHT


## SHIFT FORKS

Our investment cast shift forks are made with 4140 steel and are hard chrome plated for wear resistance. The fork design has oil reliefs to ensure proper lubrication and wear resistance on fork blades and shift fork grooves.

Investment Cast, 4140 Steel, Shift Forks With Integrated Strengthening Gussets

All Fork Are Hard Chrome Plated In The Fork Groove Contact Area For Long Term Durability

Cast In Pads Reduce Contact Surface Area To The Fork Grooves, Reducing Friction And Increasing The Ability Of Oil To Bath The Fork Grooves

**AVAILABLE FOR:**
**SOFTAIL | FLT | FXR | DYNA**

# BAKER DRIVETRAIN SYNCHRONOUS BELT DRIVE

## SBD: SYNCHRONOUS BELT DRIVE

| PN | DESCRIPTION |
|---|---|
| SBD-0-NS* | SBD, No Offset, No Outboard Support |
| SBD-0-S* | SBD, No Offset, With Outboard Support |
| SBD-1/2-NS* | SBD, 1/2" Offset, No Outboard Support |
| SBD-1/2-S* | SBD, 1/2" Offset, With Outboard Support |

**FITMENT**
1990-06 Softail & Custom

Add: -BA suffix for black anodized finish
Add: -BAP suffix for black anodized finished & polished outboard support
Add: -K Suffix for kickstart only version

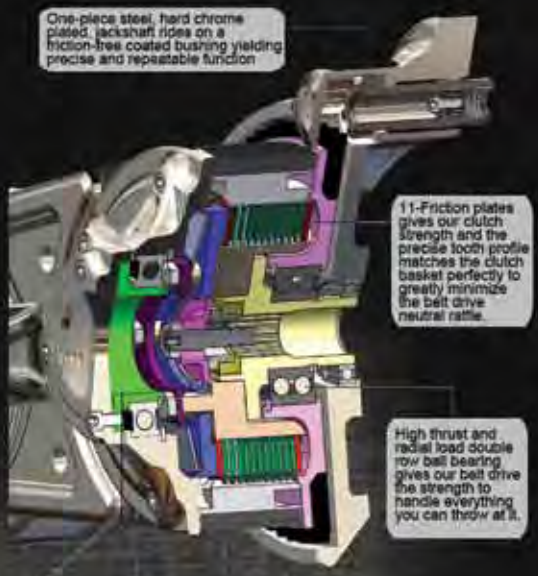
**Standard finish is polished, unless black anodize (-BA or -BAP) suffix is added to PN*

PN Examples:

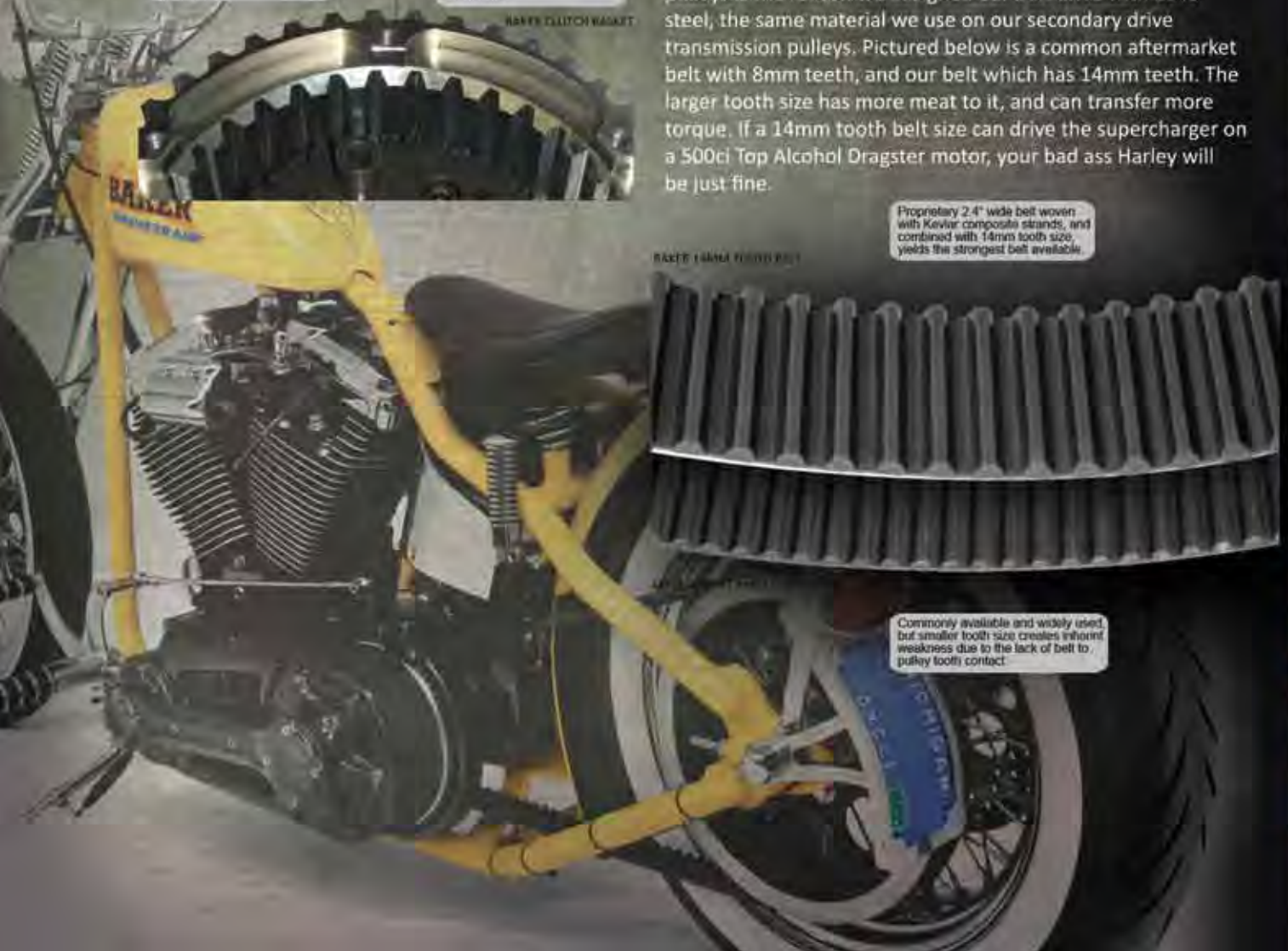
| | |
|---|---|
| SBD-1/2-NS-BA | SBD, 1/2 Offset, No Support, Black Anodized Finish |
| SBD-0-S-K | SBD, No Offset, Outboard Support, Polished Finish, Kickstart Version |

**KEY FEATURES**
- Zinc plated steel pulleys for strength, and corrosion resistance
- One piece steel clutch basket
- One piece starter jackshaft
- Forged aluminum outboard support (dog bone) and pulley covers
- Available with a show polished or black anodized finish
- Available in a 0" or 1/2" offset configuration
- 28 tooth zinc plated 1045 steel pulley up front and a 43 tooth zinc plated 1045 steel pulley in the rear
- 1.58 pulley ratio yields a 7% increase in torque to the rear wheel on stock Softails from 1994-06
- One-piece, 66T 1045 steel ring gear is mated to a 9-tooth, one-piece jackshaft that rides on an teflon bushing
- 2.4" wide proprietary belt with 14mm teeth
- 11 plate clutch pack holds up to 120 ft-lbs of continuous use while the tight tolerance clutch basket all but eliminates the 'neutral clutch rattle ' most belt drives suffer from
- Forged 6061-T6 aluminum outboard support (dog bone) and pulley covers
- Motor plate and edge guard are machined from 6061-T6 billet plate stock
- Available with or without, polished or black anodized outboard support. Outboard support versions are recommended for 60+ HP applications
- Two-year/20,000 mile warranty

Having an open belt drive is one of those traits of a cool chopper. The mechanical nature of an open belt whippin' in the breeze gives that element of nostalgia that is so popular in the V-twin dominated world we all love. We agree and tried to build on that cool factor with some modern day engineering. Our 2.4" wide belt rides on zinc plated 1045 steel pulleys. We used larger 14mm teeth and a forged outboard support to add as much strength as possible. Our 11-plate clutch design will handle up 120 ft-lbs of continuous use right out of the box. Our one-piece jackshaft is significantly stronger than stock, and when matched with our one-piece clutch basket design, will yield the years of reliable starting our customers expect. Not being happy with a product that just works great, we pulled out our design pencils and added a level of aesthetic styling that complements the strength of the mechanical design.




A used, aluminum, aftermarket clutch basket is shown at left. Over time, engine torque carried by the clutch plates wears grooves in the flanks of the teeth. Anyone who has wrenched for at least one riding season, has seen this phenomenon in the flesh. These wear marks when they start, cause clutch disengagement and shifting issues and make it difficult to find neutral. When they get to be as bad as those pictured, you have to replace the entire basket at your expense. The wearing of the clutch plates into the basket, and the belt into the pulleys is the reason we designed our belt drive with 1045 steel, the same material we use on our secondary drive transmission pulleys. Pictured below is a common aftermarket belt with 8mm teeth, and our belt which has 14mm teeth. The larger tooth size has more meat to it, and can transfer more torque. If a 14mm tooth belt size can drive the supercharger on a 500ci Top Alcohol Dragster motor, your bad ass Harley will be just fine.

# TC96B-RSD

## TC96B-RSD TRANSMISSION

| PN* | DESCRIPTION |
|---|---|
| DD6R901B | DD6R Transmission, Wrinkle Black |
| DD6R901R | DD6R Transmission, Silver |
| DD6R901P | DD6R Transmission, Polished |

**Fitment**
2007-Later Softail Custom

* Above part numbers do not include pulley covers. They are sold separately in cable and hydraulic versions.

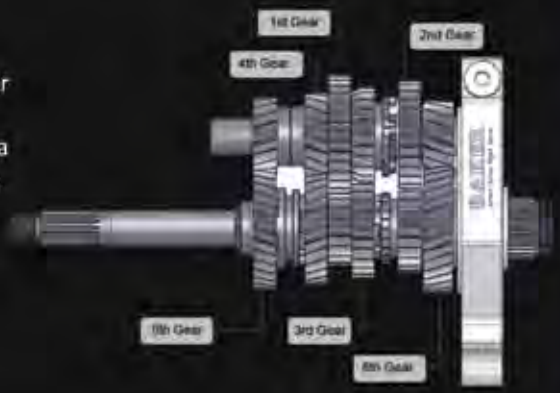
**KEY FEATURES**
- Complete Direct Drive, Right Side Drive 6-speed transmission
- Straight cut 1st-3rd gears for strength
- Helical cut 4th-6th gears for noise reduction
- Compatible with TC96 ci & Screamin Eagle TC110 ci engines
- TorqueBox type linear roller detent for superior shift quality
- Chrome trap door & top cover standard
- Zero offset pulley or chain sprocket standard; a variety of offset pulleys available
- Case and engine mount flange are machined from billet 6061-T6 aluminum
- Five-year/50,000 mile warranty

**AVAILABLE NO COST OPTIONS**
- Chain sprockets:
  .200" Offset (19T, 20T, 21T, 22T, 23T, 24T Counts)
  .500" Offset (21T, 22T, 23T, 24T Counts)
  .900" Offset (23T, 24T Counts)
- Zero Offset Steel Pulleys:
  29T, 30T, 31T or 32T Counts

From 1990-06, the Softail architecture and basic drivetrain dimensions were virtually unchanged, less a few small changes along the way, as it relates to the 5-speed transmission, starter, clutch, and primary drive. In 2007, with the advent of the Twin Cam 96" B motor and 6-speed cruise drive transmission, the drivetrain underwent radical changes such that the modern Softail drivetrain has almost nothing in common with its predecessors. Our DD6R, or Direct Drive 6-speed, with right side output is designed to go in place of the factory left side drive 6-speed and bolt up to the new style primary, starter, and clutch.

## GEARSET

All DD6 gearsets are made with 8620 steel, hobbed before heat treatment, then precision ground with diamond coated tooling after heat treatment (58-62 Rockwell 'C'). These extra steps ensure a quieter gear pair and much tighter backlash control. The gearset is a combination of helical and spur gears to yield silent gear operation. The dog teeth are backcut at a 1° angle for the smoothest shift possible, while standard gearsets are cut to a 4° angle. The mainshaft is unique with 1st main gear being incorporated as part of the shaft. The countershaft also features a unique one piece design, combining the shaft with 6th gear.





## SHIFT FORKS

Our investment cast shift forks are made with 4140 steel and are hard chrome plated for wear resistance. The fork design has oil reliefs to ensure proper lubrication and wear resistance on fork blades and shift fork grooves

## SHIFT SYSTEM

Our 6-speed shift system with roller detent guarantees smooth shifts every time and our redundant neutral detent ensures that finding neutral is an easy chore. We mount a plunger detent on the left side pillow block and cut a plunger track into the barrel of the shift drum. The plunger follows this track during operation (shifting) and when shifting into neutral pops into a pocket. This system lets you feel that you're shifting into neutral. No more guessing. Shift drum features more aggressive timing on the fork groove profiles and is case hardened to 58 Rockwell for wear resistance and crisp shifts. We built our reputation on smooth shifting Overdrive 6-speed transmissions, our DD6 drum design benefits from the engineering lessons learned.


## THE TC96B COMES WITH THE FOLLOWING GEAR RATIOS:

| STANDARD RATIOS | | EFFECTIVE RATIOS | |
|---|---|---|---|
| 1st Gear | 3.45 | 1st Gear | 2.94 |
| 2nd Gear | 2.56 | 2nd Gear | 2.20 |
| 3rd Gear | 1.87 | 3rd Gear | 1.61 |
| 4th Gear | 1.44 | 4th Gear | 1.24 |
| 5th Gear | 1.15 | 5th Gear | .99 |
| 6th Gear | 1.00 | 6th Gear | .86 |

## CASE FINISH OPTIONS

We offer three different case finishes for the TC96B RSD:

- Wrinkle Black
- Silver
- Polished

# TORQUEBOX TRANSMISSION

| PN | DESCRIPTION |
|---|---|
| TB521L | TorqueBox, LSD 5-Speed, R-Ratio, Polished |
| TB621L | TorqueBox, LSD 6-Speed, R-Ratio, Polished |
| TB521R | TorqueBox, RSD 5-Speed, R-Ratio, Polished |
| TB621R | TorqueBox, RSD 6-Speed, R-Ratio, Polished |
| TBZ5L | TorqueBox, LSD 5-Speed, Z-Ratio, Polished |
| TBZ6L | TorqueBox, LSD 6-Speed, Z-Ratio, Polished |
| TBZ5R | TorqueBox, RSD 5-Speed, Z-Ratio, Polished |
| TBZ6R | TorqueBox, RSD 6-Speed, Z-Ratio, Polished |

**FITMENT**

1990-99 Left Side Drive Softail-Based and Custom Right Side Drive Motorcycles

**KEY FEATURES**

- The only no-compromise 250 ft-lb transmission; available as a 5 or 6-Speed in Left Side or Right Side Drive configurations
- Compatible with most EVO Softails and custom builds
- Two rail shift fork system with common fork used three times
- 2" diameter shift drum suspended by two radial ball bearings mounted to a fixed spindle axis
- Ratchet pawl has overshift inhibitor (up and down) and is mounted on two radial ball bearings. Shift lever shaft cross sectional area is 65% larger than stock
- Ignition kill and neutral switches top mounted for easy dwell timing adjustment
- Shift system lever ratio is 35% less than stock for tight and precise snick-pop upshifts and downshifts
- Ball bearing mounted ratchet pawl shaft yields low shift system friction and hysteresis.
- N-1-2-3-4-5-6 shift pattern for false-neutral avoidance
- Shaft material is super strong 9310–the best steel made–this isn't standard by any means. Gear material is 8620. Very large 8.125 diameter pitch gear teeth. The gear teeth are 2x circumferentially thicker than stock.
- Tooth flanks are finish-ground after heat treat, AGMA class 12 grade gears.
- Housing is all billet construction from 6061-T651 aluminum. We start with 95 lbs of aluminum and end up with 17 lbs of case and 78 lbs of chips
- Five-year/50,000 mile warranty

The torque output of an engine is proportional to the bore and stroke. Engines make torque and drivetrain components take torque. It is torque, not horsepower that destroys clutches, transmissions and drive belts. The torque capacity of a transmission is proportional to the gear width and the center distance between the two shafts. All stock Harley transmissions and aftermarket transmissions have a center distance of 2.5". By increasing the center distance 20% to 3.0", the TorqueBox conservatively increases the torque capacity to 250 ft-lbs, continuous duty! In the early Torquebox design stages, the goal was set to design a continuous duty 250 ft-lb gearbox that visually looked like a 450 ft-lb gearbox on the outside. We achieved this by taking design cues from classic race-bred American superchargers and not having any excess material, anywhere. We achieved our goal. The TorqueBox is available as a 5 or 6-speed, left or right side drive. All frame, starter, and clutch interfaces are identical to stock 1990-99 models.

**6 SPEED RATIOS FOR LEFT OR RIGHT SIDE**

| R-RATIOS | | Z-RATIOS | |
|---|---|---|---|
| 1st Gear | 2.75 | 1st Gear | 2.61 |
| 2nd Gear | 2.05 | 2nd Gear | 1.89 |
| 3rd Gear | 1.55 | 3rd Gear | 1.50 |
| 4th Gear | 1.18 | 4th Gear | 1.12 |
| 5th Gear | 1.00 | 5th Gear | 1.00 |
| 6th Gear | .86 | 6th Gear | .95 |

**5 SPEED RATIOS FOR LEFT OR RIGHT SIDE**

| R-RATIOS | | Z-RATIOS | |
|---|---|---|---|
| 1st Gear | 2.75 | 1st Gear | 2.61 |
| 2nd Gear | 2.05 | 2nd Gear | 1.89 |
| 3rd Gear | 1.55 | 3rd Gear | 1.50 |
| 4th Gear | 1.18 | 4th Gear | 1.12 |
| 5th Gear | 1.00 | 5th Gear | 1.00 |

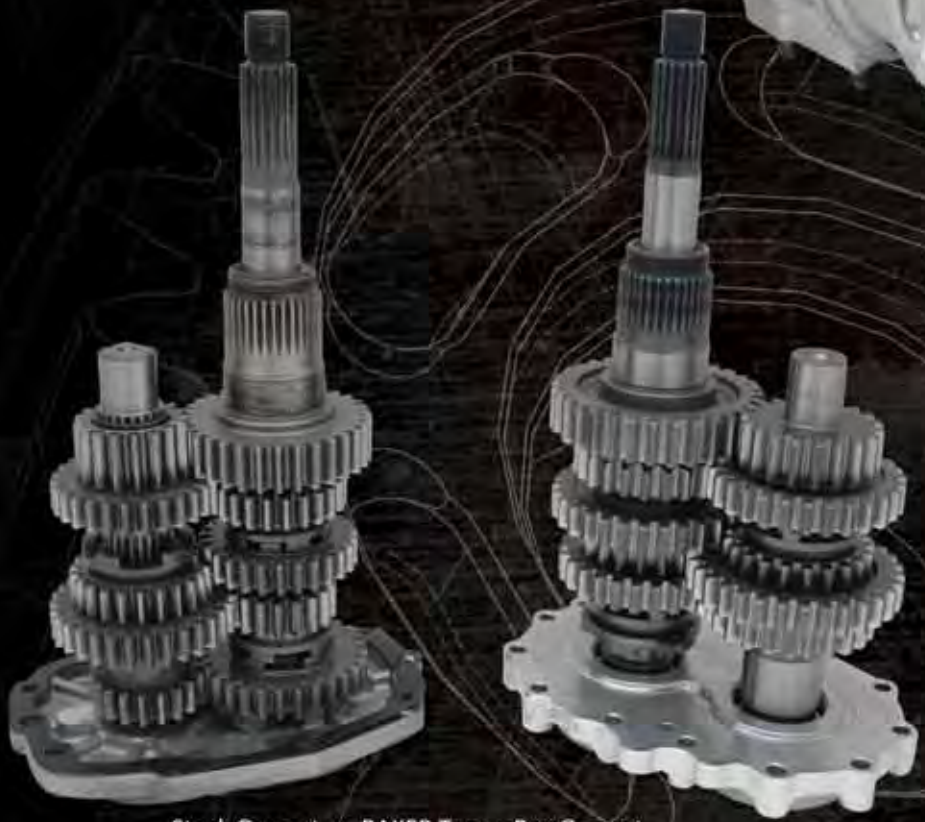

TR6
TORQUEBOX
6-SPEED
TR5
TORQUE BOX
5-SPEED

TB6 TORQUEBOX 6-SPEED

TB5 TORQUE BOX 5-SPEED

# FEATURES AND TECHNICAL INFO...

RSD TORQUEBOX WITH CLUTCH ACTUATOR



Stock Gearset vs. BAKER TorqueBox Gearset


**FRICTIONLESS DETENT SYSTEM**

A 3/8" primary ball bearing is cradled by, and rolls on, 50 secondary micro ball bearings. In turn, the cradle is part of a plunger that actuates during shifting and is guided by a tertiary linear micro ball bearing system.

**MATERIALS**
We start out with a 6061-T6 billet chunk of aluminum that weighs in at 95 lbs. This creates the framework for the TorqueBox's ability to handle 250Ft/lbs of torque. The chunk gets whittled down to a 17 lb case that is both structurally and aesthetically pleasing with design cues from a 871 blower. The guts needed to match this. So both mainshaft and countershaft are cut out of the best steel made, 9310. The gears are cut out of 8620 and are a class 12 grade on the AGMA scale.

TorqueBox Gear

Stock Gear

Stock Case

TorqueBox Case

TorqueBox Drum

Stock Drum

**SHIFT DRUM**
All TorqueBoxes are fitted with N1 shift drums. For 5-speeds this makes the shift pattern N-1-2-3-4-5 and for 6-speeds it makes the shift pattern N-1-2-3-4-5-6. Along with N1 these racing transmissions are fitted with ignition kill shift drums. This makes for clutchless, wide open throttle shifts down the 1/4 mile and stop light to stop light! The ignition kill system will need to be wired into your current ignition system.

**CLUTCH ACTUATOR**
Right and left side drive units are both equipped with a 1.5" bore hydraulic slave cylinder. This provides easy holding (depending on clutch) at the drag tree before you go into clutchless ignition kill shifts. You will need a 11/16" bore master cylinder, brake and banjo bolt.


**SHIFT SYSTEM**
The TorqueBox uses a two rail fork system. This makes it possible to increase the width of the fork to provide more support and smoother shifts. Also featuring one common shift fork used three times to achieve commonality. We didn't stop at the forks and fork rods, a heavy duty shifter pawl was in need. The shifter pawl design makes shifts short and crisp. This system delivers a lever ratio that is 35% less than stock. The heavy duty shifter pawl rides on two radial ball bearings for smooth, repeating shifts.


The BAKER™ XL5 is an improved, smooth shifting 5-speed 'cartridge style' gearset for 1991-2003 Sportster/Buell models

GEARSET
Aircraft alloy gears with lead-in ramps on the shift dogs for smoother shifting

SHIFT DRUMS
Shift drums have optimized fork pin groove geometry for smoother shifting and improved ability to find neutral. Drum detent plate is made out of billet and secured to the drum using a bolt, no more flimsy retaining clip. Choice between a standard or reverse pattern shift system.
Standard Pattern Drum 1-N-2-3-4-5
Reverse Pattern Drum 5-4-3-2-N-1

GEAR RATIO COMPARISON CHART

| PN | Stock 91-94 | Stock 95-UP | XL5-101 | XL5-111 | XL5-121 | XL5-131 |
|---|---|---|---|---|---|---|
| 1st | 2.78 | 2.69 | 2.52 | 2.61 | 2.37 | 2.03 |
| 2nd | 2.03 | 1.97 | 1.96 | 1.96 | 1.88 | 1.67 |
| 3rd | 1.49 | 1.43 | 1.44 | 1.44 | 1.44 | 1.36 |
| 4th | 1.22 | 1.18 | 1.18 | 1.18 | 1.18 | 1.16 |
| 5th | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

## XL5: 5-SPEED SPORTSTER TRANSMISSION

| PN | DESCRIPTION |
|---|---|
| 101 | XL5 Builder's Kit, Stock Ratio |
| 111 | XL5 Builder's Kit, Close Ratio 1st |
| 121 | XL5 Builder's Kit, Close Ratio 1st & 2nd |
| 131 | XL5 Builder's Kit, Close Ratio 1st, 2nd, 3rd & 4th |

**FITMENT**
91-03 Sportster/Buell

**KEY FEATURES**
- Billet 6061-T6 trap door
- Complete gearset with lead in ramps including shafts and gears
- Gearset is assembled to the trap door including bearings, thrust washers, and retaining rings
- Bolted on detent plate with optimized geometry
- Smooth shift drum
- Low effort detent spring
- Stock style bronze shift forks with roller pins and cotter pins
- Five-year/50,000 mile warranty

**NOTES**
- Add an 'R' suffix at the end of the part number for reverse pattern shift drum and detent plate; Example 101-R

The BAKER™ XL6 is a six-speed overdrive 'cartridge style' gearset that converts any existing 1991-03 Sportster/Buell to a BAKER™ Six-Speed. 2nd through 5th gear ratios are effectively the same as stock, 6th gear is a true overdrive for a 511rpm drop at 75mph.

BAKER XL6 DRIVETRAIN

GEARSET
Stock gear widths in 1st through 5th were retained and a beefy 6th gear was added. This was accomplished by utilizing an exclusive BAKER dog tooth design. In using male shift dogs with female dog pockets we are able to slam 6 gears within the available envelope.

SHIFT DRUMS
Shift drums have optimized fork pin groove geometry for smoother shifting and improved ability to find neutral. Drum detent plate is made out of billet and secured to the drum using a bolt, no more flimsy retaining clip. Choice between a standard or reverse pattern shift system.
Standard Pattern Drum 1-N-2-3-4-5-6
Reverse Pattern Drum 6-5-4-3-2-N-1

XL6 SHIFT FORKS
Our shift forks are made out of billet for strength, bores are machined/polished to a 32 micro finish and then we hard chrome plate them for wear resistance.

GEAR RATIO COMPARISON CHART

| Gear | 91-95 | 96-upw/HCR* | XL6 | XL6w/HCR* | XL6 'S' | XL6 'S'w/HCR* |
|---|---|---|---|---|---|---|
| 1st | 2.78 | 2.69 | 2.61 | 2.52 | 2.37 | 2.29 |
| 2nd | 2.03 | 1.97 | 2.03 | 1.96 | 1.88 | 1.81 |
| 3rd | 1.49 | 1.43 | 1.49 | 1.44 | 1.49 | 1.44 |
| 4th | 1.22 | 1.18 | 1.22 | 1.18 | 1.22 | 1.18 |
| 5th | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 6th | - | - | .89 | .86 | .89 | .86 |

RPM DROP FROM 5TH TO 6TH W/XL6

| MPH | RPM in 5th | RPM in 6th | RPM Drop |
|---|---|---|---|
| 65 | 3162 | 2719 | 433 |
| 70 | 3405 | 2928 | 477 |
| 75 | 3648 | 3137 | 511 |
| 80 | 3891 | 3346 | 545 |

Above data based on a 56/35 primary reduction, 61/27 secondary reduction, and a 25" dia. rear tire

NOTES
- *HCR refers to the 5th gear pair (maindrive gear pair) that is standard OEM equipment from 96-up. The HCR 5th gear pair gives a significant noise improvement in 5 or 6-speeds, in all gear positions, over the 1991-95 style gear that it replaced. BAKER recommends HCR usage for most street applications. If the 91-95 style gears are used.
- 'S' refers to the S-Ratio option available

## XL6: 6-SPEED SPORTSTER TRANSMISSION

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 201 | XL6 Builder's Kit | 1991-94 Sportster/Buell |
| 202 | XL6 Builder's Kit | 1995-03 Sportster/Buell |
| 203 | XL6 Builder's Kit | 1991-03 S&S Dry XL case Primary Case Only |

**KEY FEATURES**
- 6061-T6 Aluminum trap door
- Complete gearset including shafts and gears. 5th gear pair from existing 5-speed is re-used
- Gearset is assembled to the trap door including bearings, thrust washers, and retaining rings
- Shift drum and detent plate with optimized geometry
- Screw used instead of flimsy retaining clip to hold the detent plate to the drum
- Low effort detent spring
- Three billet steel shift forks with roller pins and cotter pins
- Steel template for accurate case modification
- 'XL6' engraved derby cover (Kit PN 202 & 203 ONLY).
- Five-year/50,000 mile warranty

**NOTES**
- The 'XL6' engraved derby cover is only included in PN 202 & 203
- 5th gear pair is not included in the kits, must be purchased separately
- Add suffix '-S' to the end of the part number for S-ratio gears; Example 202-S
- Kit PN 203 is for S&S Sportster Cases; these cases have a special bearing door configuration
- Add suffix 'R' to the end of the part number for reverse pattern shift system; Example 202-S-R

# PARTS & ACCESSORIES...

**TRANSMISSION REBUILD KITS**

An all inclusive Kit designed to freshen up those high mileage bikes. Developed to work specifically with our OD6, DD6, DD5 and OEM5 left side drive transmissions. Includes bearings, snap rings, gaskets, seals and retaining nuts.

INCLUDES:
- Transmission case bearings
- Transmission case snap rings
- Transmission trap door bearings
- Gearset bearings
- Gearset snap rings and thrust washers
- Transmission assembly gaskets
- Transmission assembly seals

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| TRK-DYN | Transmission Rebuild Kit | 1994-05 Dyna |
| TRK-DYN-E | Transmission Rebuild Kit | 1991-93 Dyna |
| TRK-FLSTX | Transmission Rebuild Kit | 1994-06 Softail, FXR, FLT-FLH |
| TRK-FLSTX-E | Transmission Rebuild Kit | 1987-93 Softail, FXR, FLT-FLH |
| TRK-OD6 | Transmission Rebuild Kit | BAKER OD6 |
| TRK-DD6 | Transmission Rebuild Kit | BAKER DD6 |

**HEAVY DUTY THROWOUT BEARING KIT**

The BAKER Heavy Duty Throwout bearing kit was developed to address the failures of the stock clutch throwout bearing in 1987-up applications with the ball-and-ramp actuator. People have been griping about the 37311-75 throwout bearing since it was introduced in Big Twins in 1975. Failures occur when the clutch cable is inadvertently adjusted with little to no free play. Performance clutches are even harder on that little bearing. Our larger thrust bearing features a 97% greater surface area and 77% greater static load capacity than the stock bearing.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| TBK-56L | Heavy Duty Throwout Bearing | 1987-Later LSD 5-Speed Applications |

Heavy Duty Throwout Bearing Kit (top) VS. Stock

**CLUTCH PACK KITS**

BAKER Clutch Pack Replacement Kits contain all necessary fiber and steel plates to restore like new performance to your BAKER clutch. These are original equipment plates which will yield proper stack height and trouble free operation.

The most critical part of installing new clutch plates is getting the clutch stack height right. If the stack height is short, your new clutch will slip. To get the right stack height we sort through hundreds of plates and dimensionally select the right combination of plates to yield the right stack height. Final height check is verified (+/-.005") on granite plate with a height gage and a 50 lb cylindrical weight sitting on top of the stack to simulate the pressure plate load.

| PART NUMBER | DESCRIPTION | FITMENT |
|---|---|---|
| PN CPRK-9P | Clutch Rebuild Kit | BAKER 9 Plate Clutch |
| PN CPRK-KKK | Clutch Rebuild Kit | BAKER King Kong Klutch (KKK) |
| PN CPRK-SBD | Clutch Rebuild Kit | BAKER Softail Belt Drive Clutch (SBD) |

**VOYEUR TOP COVER**

The Voyeur Top Cover is made with 2" thick bulletproof polycarbonate which allows the mechanical menagerie of torque multiplication taking place inside your transmissioin to be viewed in plain sight. The Voyeur is manufactured with Zelux W, a machinable optical grade polycarbonate, then vapor polished to achieve transparency.

Our hidden transmission vent system is standard, the same system that is used in the BAKER forged Aluminum top covers. 12pt ARP fasteners a top cover gasket are included. No neutral switch provision available.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 441-56P-KIT | Voyeur Top Cover | 1990-06* Big Twin except Dyna |

** Stock shifter pawl assembly must be replaced with BAKER PN 555-56B-A on 1990-1999 Softail, FLH/FLT models with stock 5-speed*

**SPROCKET AND PULLEY OPTIONS**

BAKER offers a wide selection of sprockets and pulleys for different applications and offsets. See our full selection on page 115, or visit our website for more details

**BATWING CABLE TYPE PULLEY COVER**

**FITMENT**

- All BAKER RSD except PowerBox, TorqueBox, and DriveBrake

**KEY FEATURES**

- Designed for extra pulley and belt coverage
- Compatible with standard -87 style clutch cables
- Includes ball ramp actuator assembly
- Limited production run

| PN | DESCRIPTION |
|---|---|
| BW127-56MC | Batwing Cable Type Pulley Cover |

**PULLEY COVER OPTIONS**

BAKER offers a wide selection of Pulley Covers for different applications and offsets. To see our full selection, please visit our website on the Parts and Accessories page under the Custom & Performace tab.

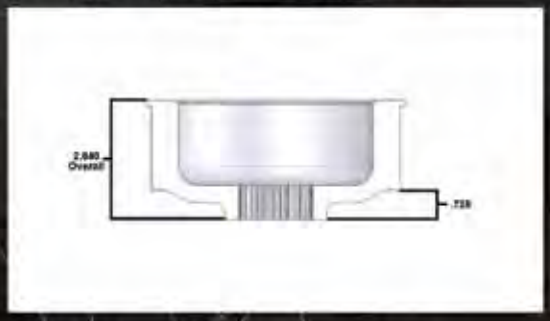
# SPROCKETS AND PULLEYS

BAKER offers a wide variety of Pulleys and Sprockets for most of your needs, including offsets for just about every application

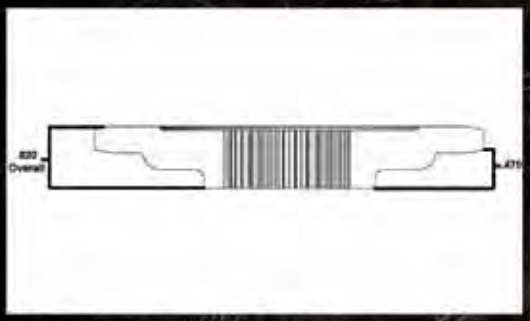
## WHY DO I NEED AN OFFSET PULLEY OR SPROCKET?

Refer to the images below for a short course in Pulley and Sprocket Offset Conventions...

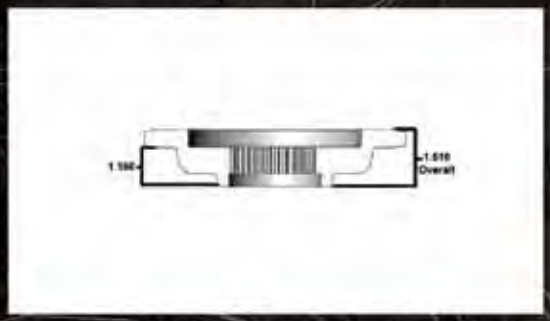
32 Tooth 0" Offset Pulley Section View



32 Tooth .875" Offset Pulley Section



24 tooth, .2" Offset Section View of Sprocket



24 tooth, .5" Offset Section View of Sprocket

**SPROCKETS**

By the mid-1980's, Harley was using the belt drive secondaries in 100% of their Big Twins. The same 1-1/2" wide belt is still used today because it is quiet, clean, and dependable. These belts are the only way to go until you start using an engine that makes serious power. When the engine displacement is above 107ci in a decent state of tune, the life expectancy of the secondary belt is severely degraded. Furthermore, if you are running big meat on the rear you will be hooking up hard, especially in the lower gears; this will destroy your belt. Simply put, the belt drive system is not designed to transmit this amount of torque to the rear wheel and deal with the severe shock loads. In performance applications, the tried and true 530 chain driven secondary drive is the only dependable way to transmit big torque. BAKER Drivetrain offers many 530 chain size transmission drive sprockets for your performance needs for 1985-up Big Twin and 91-up Sportster/Buell. Our sprockets are made in the U.S.A.

**.200" OFFSET SPROCKET**

.200" offset sprockets are modeled after the factory 21 tooth Sportster sprocket, P/N 37709-89, except this series is available with various tooth counts for flexibility in dialing-in your secondary drive ratio

| PN | DESCRIPTION |
|---|---|
| 19T02-56 | 19 Tooth Sprocket |
| 20T02-56 | 20 Tooth Sprocket |
| 21T02-56 | 21 Tooth Sprocket |
| 22T02-56 | 22 Tooth Sprocket |
| 23T02-56 | 23 Tooth Sprocket |
| 24T02-56 | 24 Tooth Sprocket |

**.500" OFFSET SPROCKET**

The .5" sprocket series permits use of a wider tire than stock and great flexibility in dialing-in your secondary drive ratio

| PN | DESCRIPTION |
|---|---|
| 21T05-56 | 21 Tooth Sprocket |
| 22T05-56 | 22 Tooth Sprocket |
| 23T05-56 | 23 Tooth Sprocket |
| 24T05-56 | 24 Tooth Sprocket |

**.900" DEEP OFFSET SPROCKET**

This sprocket is the maximum offset that can be used without any modification to the stock inner primary. This makes it possible to run a 180 rear tire with no transmission offset or primary drive monkey-business required. Some rear fender modification may be required.

| PN | DESCRIPTION |
|---|---|
| 23T09-56 | 23 Tooth Sprocket |
| 24T09-56 | 24 Tooth Sprocket |

## STEEL LONG LIFE PULLEYS

These pulleys are made from a solid chunk of steel and are 23% lighter than the stock cast iron piece. We recommend long life pulleys for performance applications where 100,000 mile+ pulley life is required. Designed for long distance touring applications with mild to moderate engine performance upgrades.

All Big Twins with a belt drive from 1985-up have a 32 tooth transmission pulley. Changing to a different pulley with more or less teeth will change two performance attributes of your American machine: rear wheel torque and cruising RPM. Increasing rear wheel torque will increase acceleration. Installing a pulley with more than 32 teeth will decrease your acceleration through the gears and decrease your cruising RPM. Installing a pulley with less than 32 teeth will increase your acceleration through the gears and it will also increase your cruising RPM. This is called engineering compromise; to get one thing, you have to give up another.

However, our BAKER 6-Speed Overdrive allows you to 'cheat' engineering compromise. It is common for our customers to install a 30 tooth pulley when they install our 6-speed overdrive. This gives them a 7% increase in rear wheel torque and an 8% lower cruising RPM on the highway. It is truly the best of both worlds for your American V-Twin.

| Pulley Tooth Count | 29** | 30** | 31* | 32 | 33 | 34** |
|---|---|---|---|---|---|---|
| Wheel Torque Increase | +10% | +7% | +3% | 0 | -3% | -6% |
| Cruising RPM in 6th | 3017 | 2916 | 2822 | 2734 | 2648 | 2573 |

* No belt length change is required with a 31 tooth pulley
** Belt Change Required
*** Cruising RPM in 6th at 75 MPH; compared to 3179 RPM with a stock 5-speed

### ZERO OFFSET STEEL PULLEY

Machined from billet rounds of 1045, these stock replacements are toughest pulleys available on the market. With lightening holes added to help reduce rotating mass, and a maximized cross section reach the balance between strength and weight reduction, they are a step above the mass produced stock units. Available in the following tooth counts:

| PN | DESCRIPTION |
|---|---|
| 29BD-56F | Zero Offset Steel Pulley, 29 Tooth |
| 30BD-56F | Zero Offset Steel Pulley, 30 Tooth |
| 31BD-56F | Zero Offset Steel Pulley, 31 Tooth |
| 32BD-56F | Zero Offset Steel Pulley, 32 Tooth |

### LOW PROFILE STEEL PULLEY

These pulleys were made in response to ever decreasing belt widths available on the aftermarket. With pulley you can sneak in the next size tire, or get that compact look that you are after.

| PN | DESCRIPTION |
|---|---|
| RT292 | Low Profile Steel Pulley, 32 Tooth |

### .250" OFFSET STEEL PULLEY

All the same features and quality as our zero offset steel pulleys, but in a .250" offset version.

| PN | DESCRIPTION |
|---|---|
| 32BDN-56-.25 | .250" Offset Steel Pulley, 32 Tooth |

### SPROCKET SPACER (LATE)

If you are a seasoned technician, you have seen a severely worn sprocket spacer. Over time and miles with dirt and grit, the stock 33344-94 spacer is too soft and it gets gouged by the seal that rides against it. As the spacer gets gouged, the seal relaxes. When the seal relaxes, the leaks begin. Our sprocket spacer is a direct replacement for the stock spacer except ours is case hardened steel that has a Rockwell 'C' hardness of 55. No more gouging, no more leaks.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 33344-94S | Sproket Space, Late | 1994-06 Big Twin & Sportster except 06 Dyna |

### SPROCKET SPACER (EARLY)

We got smart over the years and changed to OD of this sprocket spacer to work with the more commonly found PN12067B seal, instead of the old style 12050 seal. Our sprocket spacer is a direct replacement for the stock spacer except ours is case hardened steel that has a Rockwell 'C' hardness of 55. No more gouging, no more leaks.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| 33344-85B | Sproket Space, Early | 1985-93 Big Twin and Sportster |

# BAKER TOOLS...

**MAINDRIVE GEAR BEARING TOOL**
This kit is required for removing the old maindrive gear and bearing and installing the new ones. The designs of these tools are based on the standard Harley tools but adapted to service left side drive and right side drive 5 and 6-speeds. The steel components of this service kit are black oxide coated for corrosion protection. The aluminum components are anodized candy apple red. Includes very detailed tool sequence instruction sheets.

| PN | DESCRIPTION |
|---|---|
| TOOLA-56 | Maindrive Gear Bearing Tool |

**FITMENT**
Left side drive and right side drive 5 and 6 speeds

**INNER RACE SERVICE TOOL**
This kit is required for removing and installing the inner primary bearing race, PN 34091-85, which is used on all Big Twin models from late 1984-up. The inner race must be removed to slide the gearset out of the case. This tool is based on the standard Harley tool but adapted to service left side drive and right side drive 5 & 6 speeds.

| PN | DESCRIPTION |
|---|---|
| TOOLB-56 | Inner Primary Bearing Race Service Tool |

**FITMENT**
Left side drive and right side drive 5 and 6 speeds

**PULLEY LOCKING TOOL**
The pulley locking tool is clamped to the pulley as shown and prevents pulley rotation while torqueing the 1-7/8" pulley nut to the proper factory spec. of 50ft-lbs +35°. Anodized candy apple red. Works on 29-34 tooth pulleys.

| PN | DESCRIPTION |
|---|---|
| TOOLC-56 | Transmission Pulley Locking Tool |

**FITMENT**
29-34 Tooth Pulleys

**PULLEY NUT SOCKET**
The mother of all pulley nut sockets is made from one piece of bar stock and hard chrome plated for a super tough finish. The throat of our socket is deeper than others to enable service work on right side drive 5 and 6-speed transmissions.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| TOOLD-56 | Pulley Nut Socket | Right Side Drive 5 and 6-Speed Transmissions |

**DD6RV PRESS TOOL**
Specifically designed to press the 4th and 5th gears off the countershaft when installing a reverse system on your stock DD6. Machined from high grade cold rolled steel, it has the durability to match its simplicity of use.

| PN | DESCRIPTION | FITMENT |
|---|---|---|
| TOOL-DD6-RV | Reverse Press Tool | Direct Drive 6-Speed Reverse |

**OUR FULL LINE OF TRANSMISSION SERVICE TOOLS FOR 2007-LATER BIG TWINS CAN BE VIEWED ON OUR WEBSITE**

BAKER 12 STEP PROGRAM

REBUILD. REMANUFACTURE. RENEW...
TRUST THE DRIVETRAIN AUTHORITY

# BAKER FACTORY SERVICE & REPAIR PROGRAM

You're not alone... there is help out there for your ride...

We've all been there. You notice that your bike is starting to miss a shift here and there. You don't think much about it. First it's one or two missed shifts a day. Then, it starts missing a lot of shifts every day. You surround yourself with other guys who have bikes that miss shifts just like yours – just to make it seem ok. Maybe your transmission is starting to drip oil, too. Initially, maybe it's just a couple of drops. You just kind of rub it into the ground with your boot, hoping it will just go away and nobody will notice.

Next, it's a few more drops. Pretty soon you've got a full fledged leak goin' on and you're parking your bike on newspaper, but you're always changing the paper and throwing it away so your bros don't see it. Let's face it buddy: your bike has got a problem. You can just keep going on denying it, or get the ole' girl some help.

Thankfully, for bikes like yours, we've introduced the BAKER 12 Step Remanufacturing Program. We can repair or completely remanufacture your existing BAKER or Big Dog transmission with original BAKER parts. We can also repair or completely remanufacture your H-D transmission with your choice of O.E.M. H-D or BAKER parts.

Depending on the age or condition of your transmission you may decide to upgrade with a DD5, DD6, or OD6 builder's kit; the choice is yours. The transmission technicians at BAKER Drivetrain are the most knowledgeable in the V-Twin world and with our reasonal shop rate we offer the best value in the business.

Our 12-Step Program includes:

1. Inspect and receive incoming packaged transmission from a worried owner like yourself
2. Unpack said transmission
3. Disassemble components
4. Clean and detoxify
5. Inspect components
6. Diagnose
7. Review options with owner... there are different ways to cure what's happening with your bike
8. Reassemble with new BAKER or genuine H-D components
9. Bench test
10. Complete written report – here's proof that your tranny is finally clean, and ready to ride
11. Pack it up like new
12. Ship back to owner

Don't worry, we'll be discreet. You and your bike are the only ones who have to know.....so get with the program!

# FIND WHICH TRANSMISSION FITS YOUR STOCK MOTORCYCLE

## 2006-LATER DYNA AND 2007-LATER SOFTAIL AND TOURING

| ALL BIG TWIN (6-D CRUISE DRIVE 6-SPEED TRANSMISSIONS) | 2006-Later |
|---|---|
| DD7 Direct Drive 7-Speed | DD7A-376C |
| F6R Reverse Gear * | F6RV-M |

| ALL BIG TWIN (6-D CRUISE DRIVE 6-SPEED TRANSMISSIONS) | 2006-Later |
|---|---|
| F6F Noise Reducing Helical 6th Gear Pair ** | 485-6C |
| F6K Factory 6-Speed Kicker Kit | 679-6K6K |

* F6R will fit 2006-2008 with stock exhaust. For 2009 and 2010 Models, a true duals exhaust is necessary for clearance.

** F6F will only fit up to 2009 models

## 1984-2006

| FLT/FLH* | 2008-2002 | 2001 | 2000-1999 | 1998 | 1997-1993 | 1991-1990 | 1989-1987 | 1986-Earlier |
|---|---|---|---|---|---|---|---|---|
| DD6 6-Speed Builders Kit | DD411P | DD411P | DD411S | DD411S | DD411 | DD411 | | |
| DD6 6-Speed Complete Assembly | DD0142 | DD014 | DD914 | DD814 | DD714 | DD712 | | |
| DD6 6-Speed Builders Kit | 404P2 | 404P | 4045P | 4025 | 402 | 401 | T401 | Call BAKER |
| DD6 6-Speed Complete Assembly | 0042 | 004 | 904 | 804 | 704 | 702 | T702 | |
| DD5 5-Speed Builders Kit | *FLTR, FLTRI, FLTCUI, FLHTC, FLHR, FLHRI, FLHRC (ETC.) | | | | 501K | 501K | T501K | |
| DD5 5-Speed Complete Assembly | | | | | 504 | 502 | T502 | |

| SOFTAIL* | 2006-2000 | 1999-1998 | 1997-1990 | 1989-1987 | 1986-1984 |
|---|---|---|---|---|---|
| DD6 6-Speed Builders Kit | DD411PL | DD411SL | DD411L | | |
| DD6 6-Speed Complete Assembly | DD911L | DD811L | DD711L | | |
| DD6 6-Speed Builders Kit | 401P | 401S | 401 | T401 | Call BAKER |
| DD6 6-Speed Complete Assembly | 901 | 801 | 701 | T701 | |
| DD5 5-Speed Builders Kit | *FLST, FLSTC, FLSTF, FLSTFI, FLSTCI (ETC.) | | 501K | T501K | |
| DD5 5-Speed Complete Assembly | | | 501 | 501 | |

| FXR* | 1998 | 1994-1993 | 1989-1987 | 1986-1985 | 1984-Earlier |
|---|---|---|---|---|---|
| DD6 6-Speed Builders Kit | DD411S | DD411 | *FXRS, FXRT, FXRD, FXR3 (ETC.) | | |
| DD6 6-Speed Complete Assembly | DD912 | DD712 | | | |
| DD6 6-Speed Builders Kit | 401S | 401 | T401S | Call BAKER | |
| DD6 6-Speed Complete Assembly | 902 | 702 | T702 | | |
| DD5 5-Speed Builders Kit | | 501K | T501 | | |
| DD5 5-Speed Complete Assembly | | 502 | T502 | | |

| DYNA* | 2005-2001 | 2000-1996 | 1998 | 1997-1991 | *FXDN, FXDL, FXDT, FXDX, FXDXT (ETC.) |
|---|---|---|---|---|---|
| DD6 6-Speed Builders Kit | DD411PL | DD411SL | DD411SL | DD411L | |
| DD6 6-Speed Complete Assembly | DD913L | DD913L | DD813L | DD713L | |
| DD6 6-Speed Builders Kit | 401P | 401SP | 401S | 401 | |
| DD6 6-Speed Complete Assembly | 903 | 903 | 803 | 703 | |
| DD5 5-Speed Builders Kit | Call BAKER | | 501KS | 501K | |
| DD5 5-Speed Complete Assembly | | | | 501K | |

You must specify the finish of the case by adding a suffix to the part number. Add a 'P' suffix to specify polished finish, a 'B' to specify wrinkle black, an 'R' to specify raw (as cast), and 'C' to specify chrome (BAKER Billet Series only).

## 1936-EARLY (E) 1984

| PAN, KNUCKLE AND SHOVELHEAD 4-SPEED CASES | 1936-E1984 |
|---|---|
| 5-Into-4 6-Speed Complete Assembly | |

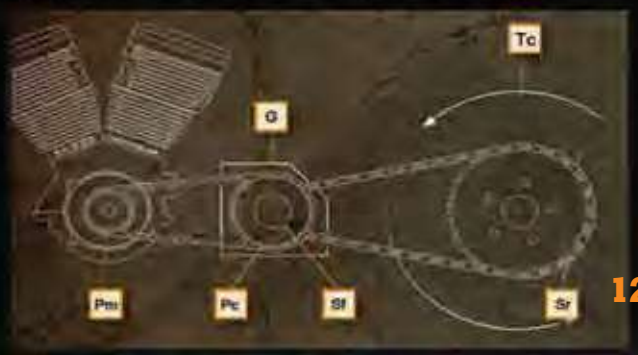
| PAN, KNUCKLE AND SHOVELHEAD 4-SPEED CASES | 1936-E1984 |
|---|---|
| 4-Speed Ratchet Top 4-Speed | |

# DRIVETRAIN BASICS: CALCULATING SPEED AND ENGINE RPMS

At BAKER, our lives are all about multiplying torque. It begins by mastering the math and ends with making sure you stay riding in the best range possible...for the long haul.

S = Speed (miles per hour)
RPM = Engine revolutions per minute
Sr = Rear sprocket tooth count, secondary drive
Pc = Clutch sprocket tooth count, primary drive
G = Gear ratio
Tc = Circumference of rear tire: (diameter (ft.) X 3.1416) (Typical tire is 25" in diameter) Example: 2.083ft. (25") X 3.1416 = 6.54ft.
Sf = Front pulley/sprocket tooth count (tranny output, secondary drive)
Pm = Motor sprocket tooth count, primary drive

RPM = (S × Sr × Pc × G × 88.00) ÷ (Tc × Sf × Pm)
Speed = (RPM × Tc × Sf × Pm) ÷ (Sr × Pc × G × 88.00)




Find out more about drivetrain & transmission parts we have.