



**Performance  
Machine · Inc**  
DISC BRAKES AND WHEELS FOR MOTORCYCLES

Installation Instructions  
**PM Phatail Kit for OEM 6spd**  
For 2007 and newer Softails®

### ATTENTION

Statements in these instructions that are preceded by the following words are of special significance:

#### **Warning**

This means there is the possibility of injury to yourself or others.

#### **Caution**

This means there is the possibility of damage to the motorcycle.

#### **Note**

*Information of particular importance has been placed in italics.*

### Important Notice

Before installing this kit, read through these instructions completely; this will familiarize you with the way in which the parts fit together and the tools needed to complete the job.

The PM Phatail Kit involves significant alterations of your motorcycle and may void your factory warranty. PM **STRONGLY** recommends this conversion be done by an experienced motorcycle mechanic.

Before performing any installation steps, disconnect the motorcycle's battery to eliminate any possibility of damage to the electrical system or injury to yourself due to a short circuit.

### Warranty

Performance Machine Inc. warrants to the original purchaser that the parts of this Phatail Kit to be free of manufacturing defects in materials and workmanship for a period of one (1) year from the date of purchase. In the event warranty service is required, you must call Performance Machine immediately with a description of the problem.

If it is deemed necessary for Performance Machine to make an evaluation to determine whether the part is defective, a return authorization number will be given by Performance Machine. The parts must be packaged properly so as to not cause further damage and returned prepaid to Performance Machine with a copy of the original invoice of purchase and a detailed letter outlining the nature of the problem. If after the evaluation by Performance Machine the part was found to be defective it will be repaired or replaced at no cost to you. If we replace it, we may replace it with a reconditioned one of the same design.

Performance Machine shall not be held liable for any consequential or incidental damages resulting from the failure of a Performance Machine part.

Performance Machine shall have no obligation if a part becomes defective as a result of improper installation or abuse.



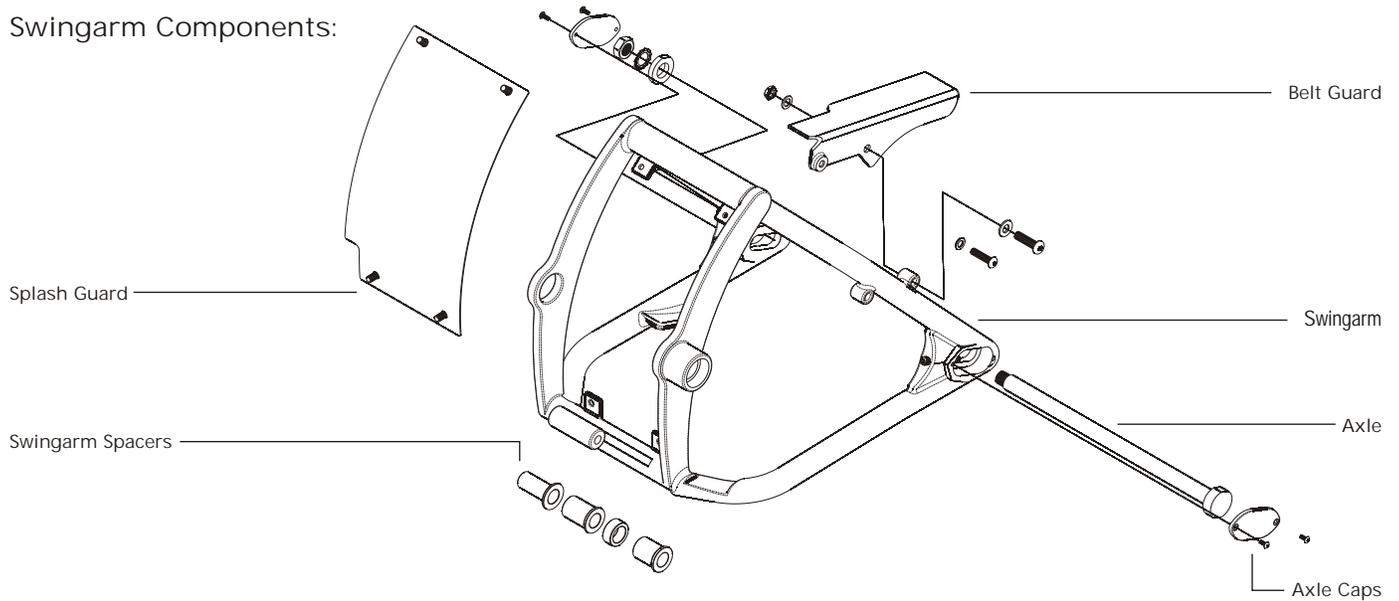
### Disclaimer

These Performance Machine parts are designed for high performance motorcycle applications and are intended for the very experienced rider only. The installation of these Performance Machine parts may adversely effect or void your factory warranty.

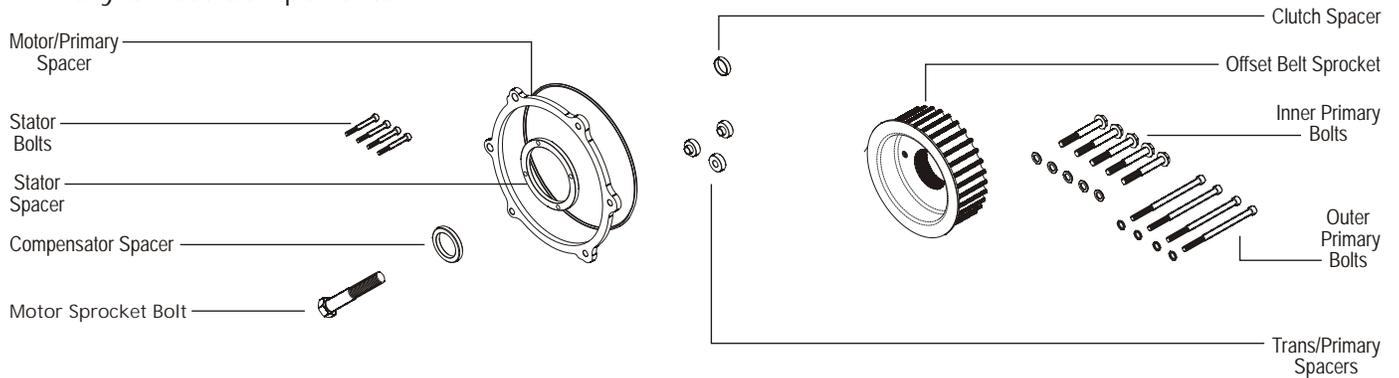
# PM Phatail Kit for OEM 6spd Softtail (2007 & newer)- Parts List

Before starting to install the Phatail kit on your motorcycle, check the packing list to make sure the kit received is the correct one for your model motorcycle and that all components are present.

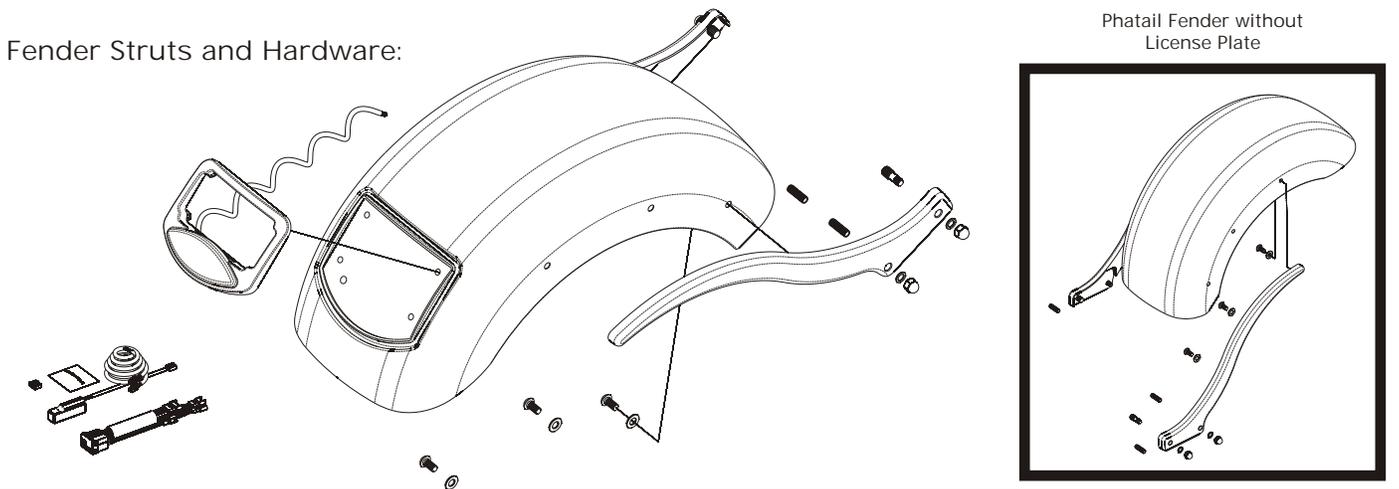
## Swingarm Components:



## Primary Offset Components:



## Fender Struts and Hardware:



Additional items necessary for installation (not included)

Primary Oil  
Primary Gasket

Corbin Seat:



Photo 1



Photo 2

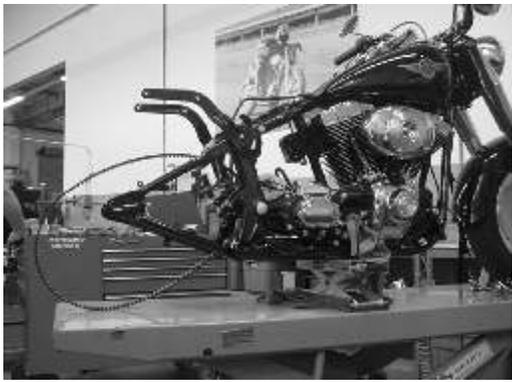


Photo 3



Photo 4

## Recommended Tools

This is a complex installation and will require several specialized tools to complete correctly.



- 1) Sawzall (can substitute hack saw)
- 2) Inner bearing race remover/installer
- 3) Primary Drive Locking Tool ((HD part no HD-47977)
- 4) Mainshaft locknut wrench
- 5) Main drive gear remover/installer

## Stock Component Removal

To install the PM Phatail Kit it will be necessary to raise the motorcycle off the ground on a suitable lift.

### Warning

*Be sure to center the motorcycle on the lift so that it does not fall over when you raise it up or when you are working on it*

Installation of the PM Phatail Kit begins with the disassembly and removal of the rear end of the bike. Start with the simplest and most obvious components. For detailed information on removal of these parts, consult your factory manual.

Disconnect the battery, Drain oil from Primary

Remove:

- 1) Seat
- 2) Pipes & Mounting Brackets
- 3) Fender Struts, Fender & Lights
- 4) Rear Wheel & Brake

### Note

*Oil Tank DOES NOT have to be removed.*

## Remove Stock Swingarm

The stock swingarm will be removed and discarded to make way for your new Phatail swingarm!

- 1) Remove rear shock absorbers.
- 2) Remove pivot shaft and spacers.
- 3) Remove swingarm from frame. See photo 4.

### Note

*Save all stock hardware & spacers, as some will be re-used.*

## Stock Component Removal (continued)

The next stage involves the removal of the inner and outer primary. Please consult your factory manual for more detailed information.

- 1) Begin by removing the outer primary cover.
- 2) Remove starter motor.
- 3) Remove primary chain tensioner
- 4) Remove primary chain, clutch and compensating sprocket, as well as rotor.

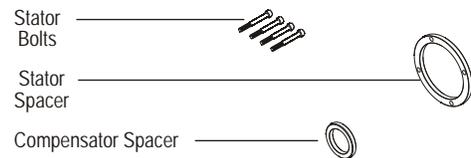
————— Note —————  
*Left Hand Threads on mainshaft nut!*

- 5) Remove the 5 bolts securing the inner primary housing to the motor and transmission.
- 6) Remove inner primary.



## Stator & Compensating Sprocket - Spacer Installation

- 1) Remove the 4 bolts holding the stator to the motor. Pull stator out slightly and place PM stator spacer between stator plate and motor.
- 2) Reassemble using supplied hardware and red thread lock. Torque to 55-75 Inch LBS
- 3) install compensator spacer onto crankshaft.



## Transmission Belt Sprocket Removal

The next stage involves the removal of transmission belt sprocket and requires specialized tools. Please consult your factory manual for more detailed information.

- 1) Remove belt sprocket lock plate and nut
- 2) Remove belt sprocket
- 3) Using a puller, pull the transmission inner race away from the transmission 8.5 to 9mm

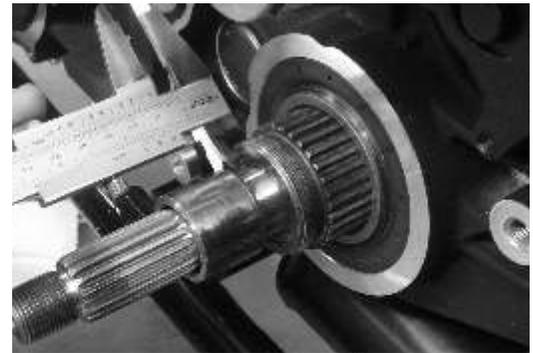
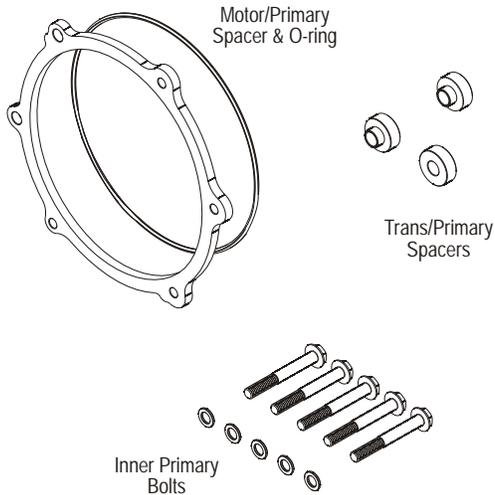


Photo 5

## PM Transmission Belt Sprocket Installation

- 1) Install PM's Offset Belt Sprocket and tighten nut to 50lbs initial torque to seat sprocket. Loosen sprocket nut to remove initial torque and tighten back up to 35 ft lbs.
- 2) Install lock plate per specs in HD manual and secure with thread lock.
- 3) Place final drive belt over sprocket.

## Primary Installation



15) With o-ring pocket facing out, place supplied motor spacer against crankcase. Stock gasket is retained as well and captured between motor spacer and motor.

16) Place inner primary against motor spacer and capture transmission housing spacers between transmission and inner primary.

17) Using supplied hardware and red thread lock, install bolts and tighten to 16 ft lbs.

### ———— Note ————

*PM Strongly recommends utilizing the factory manual as a guide for disassembly as well as assembly of all primary and transmission components.*

## Primary Gear and Clutch Assembly; Installation



18) Place clutch spacer onto the transmission input shaft.

19) Place clutch, chain, and compensating sprocket assembly into primary.

20) Use supplied bolt and original steel washer to install compensating sprocket and install primary assembly per HD manual.

21) Install Chain tensioner

22) Install starter motor

## Outer Primary Installation



23) Install primary cover replacing the four longer bolts that thread into the crankcase with the supplied hardware.

24) Fill primary with HD specified oil

## Remove Fender Struts

To accommodate the Phatail Kit, the OEM fender struts will have to be cut off of the frame. Cover all exposed motor parts to prevent contamination from metal chips. Remove the strut flush with the horizontal connector plate and grind smooth. PM recommends painting the exposed metal to prevent corrosion.

### ———— Note ————

*Fit Supplied Billet Fender Struts to frame to check fitment. Remove additional material if necessary*



Photo 6

## Install Phatail Swingarm

The PM Phatail Kit for 2007 and newer Softails includes 3 swingarm spacers that are used in addition to the OEM spacers.

- 1) Remove bearings from stock swingarm and install in Phatail unit.
- 2) Insert left side long spacer from outside of frame.
- 3) Slide left side small spacer over long spacer from inside frame.
- 4) Insert third left side spacer(1.40" spacer) in swingarm bearing tube from inside swingarm.
- 5) Slide swingarm into frame.
- 6) Push left side outboard spacer through frame and into swingarm.
- 7) Slide stock right side spacer from inside swingarm through bearing and into frame.
- 8) Locate 2nd stock spacer between trans case and inside of swingarm.
- 9) Install swingarm pivot bolt and tighten to factory specs.



Photo 7

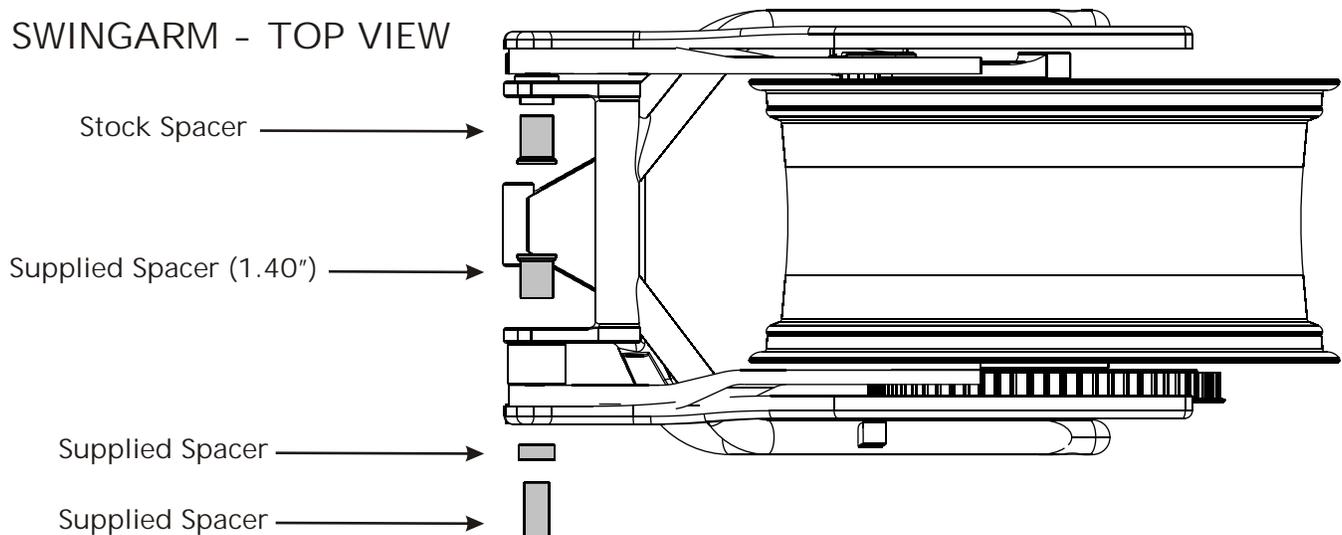


Photo 8

### ———— Note ————

*Consult factory manual for detailed instructions explaining swingarm installation.*

## SWINGARM - TOP VIEW



## Install Rear Fender & Struts

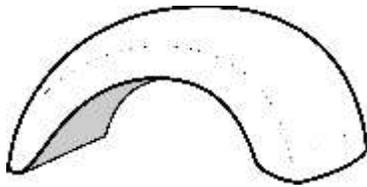
Install supplied strut studs into frame (apply drop of Threadlock). Note step stud is NOT used for Duece frames. Install Supplied fender struts with acorn nuts. Install fender bolts (3/8" 16 x 3/4" button head with washer) from inside fender. Will not be accessible once wheel is mounted.

———— Note ————

*Stock rear lights and license plate will not bolt directly to Phatail fender. Will require custom fabrication or use of PM Phatail fender with integrated light and license plate frame.*



Photo 9



Drill holes in fender for ignition module (fit seat for proper clearance, before mounting ignition module)



Phatail Fender Struts

PM recommends any changes or modification to rear fender be done at this point, as fender can not be removed without removing rear wheel as well. Always test fit fender before painting.



Phatail Fender without License Plate

Install supplied splashguard into swingarm.

**Warning**

*Confirm all electrical, as well as electrical breakers do not make contact with metal or moving parts.*

———— Note ————

*This is a good time to test fit your exhaust system, as some full length systems sill interfere with the wider Phatail Swingarm.*



Phatail Fender with integrated license plate taillight and blinkers.

## Integrated License Plate Frame

### PM Phatail Wiring Changes:

The light housing/license plate frame included with the PM Phatail was designed to use with the light on top or bottom. The Phatail application utilizes the light in the bottom position and therefore requires the purple and brown wires to be swapped for correct turn signal function.

Swap BROWN and PURPLE before plugging into harness



Supplied harness

Wires from Phatail Tailight



Photo 10



Photo 11



Photo 12



Photo 13

## Install Rear Brake & Wheel

Attach brake line to brake caliper (stock line can be used in most cases). Some PM brake systems require the caliper be bled off of the bike (do this now). for additional information covering PM brakes, see separate instruction sheet included with PM caliper.

Raise rear of bike high enough to allow rear wheel to slide under. Locate wheel and slide drive belt over pulley.

Lower bike until swingarm axle holes line up with wheel. See photo 10.

Before locating caliper bracket, wheel spacers (Supplied with PM Wheels) must be installed.

On right side, insert wheel spacer against wheel bearing and slide caliper bracket between spacer and swingarm. See photo 11.

### ———— Note ————

*For PM Driveside brake systems, please reference the Driveside Installaion Sheet supplied with the brake system.*

Install supplied axle (coat axle with thin layer of grease) and insert into swingarm from left side of bike. Do not force axle, slight movement of wheel and spacers will aid in axle insertion. Install supplied star washer and nut. Using allen head wrench, align wheel and adjust belt tension to factory specifications and torque axle to 60-65 ft-lbs.

Install supplied axle caps on both sides of swingarm.

Re-install exhaust system.

Stand back and gloat over a successful conversion as well as having one of the wildest HD framed custom bikes in your neck of the woods!

### **Warning**

*Exceeding 65ft. Lbs will damage wheel bearings.*

After installing the PM Phatail Kit we strongly encourage you to do a systems check of your bike.

1. While bike is still on a stand, slowly rotate wheels watching for any potential interference (disc to caliper, caliper to wheel, wheel to fender).
2. After properly bleeding brakes, lever or pedal feel should be firm and consistent.
3. Test at slow speeds, checking brakes in short intervals. Visually inspect disc, caliper and wheel before and after road testing. For the first 100 miles break in disc and pads by using light to medium braking. Avoid unnecessary hard braking. Braking power will progressively increase with less effort as brake pads and disc break in.

