



Advanced Innovative Machinery

Installation Instructions

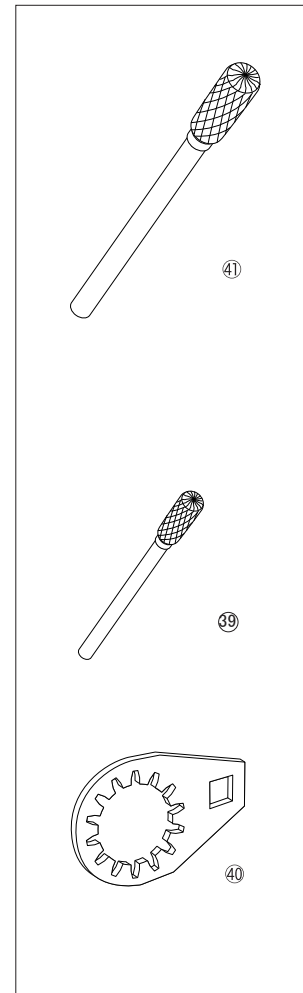
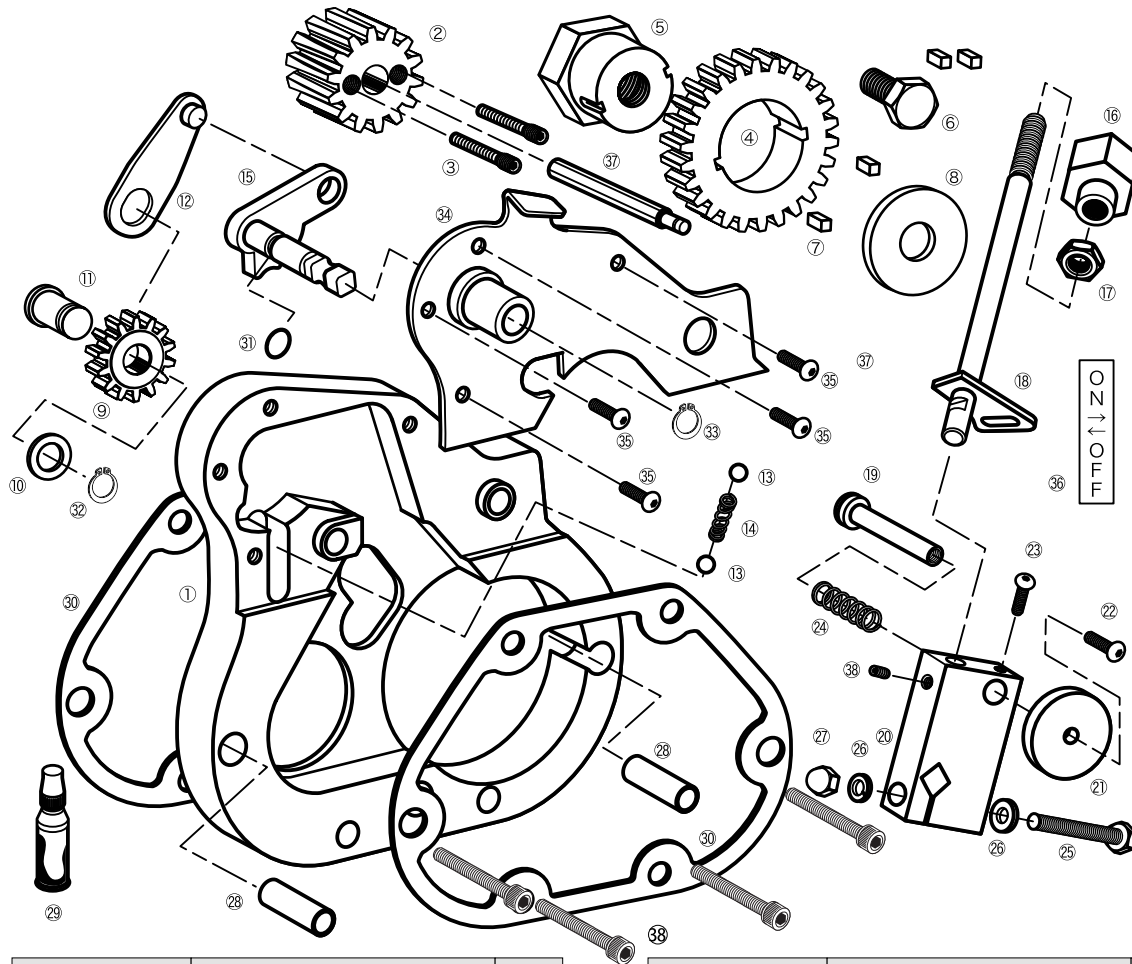
Parts#MB003-003

•Reverse Gear MAMBA (Monoblock for Cable operated)

For 5 speed Trans., '87 to '06 Big Twin models (except '06 Dyna)

Read and become familiar with these installation instructions before start.

Two Piece for H-D 5 Speed Trans., Cable operated (Parts#MB003-003)



Parts#	Name	Q	
①	PMB001-080	Gear Housing	1
②	PMB001-002	Main Gear	1
③	PMB001-003	Lock pin screws(2)	2
④	PMB001-004	Counter Gear	1
⑤	PMB001-005	Counter Nut	1
⑥	PMB001-006	Bolt M10 x 10	1
⑦	PMB001-007	Break off keys (4)	4
⑧	PMB001-008	Washer 10mm x 32mm	1
⑨	PMB001-009	Idler Gear	1
⑩	PMB001-081	Thrust washer	1
⑪	PMB001-082	Idler pin	1
⑫	PMB001-083	Shifter linkage	1
⑬	PMB001-013	Ball Bearing 8mm	2
⑭	PMB001-014	Spring 8mm x 12mm	1
⑮	PMB001-084	Reverse shifter	1
⑯	PMB001-016	Shifter knob	1
⑰	PMB001-017	Nut M10	1
⑱	PMB001-018	Shift Lever	1
⑲	PMB001-019	Shift Lock Pin	1
⑳	PMB001-020	Shift body	1

Parts#	Name	Q	
㉑	PMB001-021	Shift disc	1
㉒	PMB001-022	Screw 6mm x 10mm	1
㉓	PMB001-023	Screw 5mm x 10mm	1
㉔	PMB001-024	Spring 10mm x 20mm	1
㉕	PMB001-025	Bolt 8mm x 40mm	1
㉖	PMB001-026	Lock Washer (2)	1
㉗	PMB001-027	Nut M8	1
㉘	PMB001-085	Dowel pin	2
㉙	PMB001-029	LockTite #620(Green)	1
㉚	PMB001-030	Gasket (2)	2
㉛	PMB001-031	O r i n g	1
㉜	PMB001-032	Snap Ring, Steel	2
㉝	PMB001-033	Snap Ring, SS	1
㉞	PMB001-086	Side plate	1
㉟	PMB001-087	Screw 5mm x 12mm (4)	4
㊱		Sticker	
㊲	PMB001-077	79mm Extension rod	1
㊳	PMB001-088	Bolt, 1/4"-20 x 1 3/4"	4
㊴	PMB001-078	5mm Drill Bit or Bur	2
㊵	PMB001-089	Plate wrench adaptor	1
㊶	PMB001-101	8mm Bur (big)	1



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AIM PERFORMANCE PRODUCTS

Parts#MB003-003

•Reverse Gear MAMBA (Two Piece for Cable operated)

For 5 speed Trans., '87 to '06 Big Twin models (except '06 Dyna)

Installation Instructions 1/3

Read and become familiar with these installation instructions before start.

⚠ WARNING!!

To prevent accidental vehicle start-up, which could cause serious injury, disconnect negative(-) battery cable before proceeding.

Note

Touring models: '09, '10 model is not required pipe modifications. Other years require the True dual pipe (Parts#FS001-001) or changing full exhaust system due to clearance issue.

Softail, Dyna models and some aftermarket exhaust pipes: May require pipe modifications or changing exhaust pipe due to clearance issue.

1. Drain the transmission oil. Remove exhaust pipe if it is necessary.
2. Remove the Rightside transmission side cover and oil slinger assembly.
3. Remove two nuts from the mainshaft and countershaft.
4. Clean threads of mainshaft and countershaft using a parts cleaner to remove oil. Apply plenty of supplied LockTite# 620 (Green) 29 to thread of mainshaft.

5. **Caution**
Do not use impact wrench (Power tool) to tighten the main gear 2 which causes breaking mainshaft.

Note
To prevent rotating mainshaft during tightening main gear. Shift into 1st gear and apply rear brake.

See Figure 1. Tighten the main gear 2 to 80ft-lbs (109Nm) using the supplied plate wrench 36.

6. **Caution**
Use Regular Drill which is less than 3000rpm. Do not use high speed air grinder and push the supplied 5mm bur very hard which causes breaking the bur.

Caution
Do not grind more than 0.945" (24mm) depth which causes damaging bearing inner race and bur.

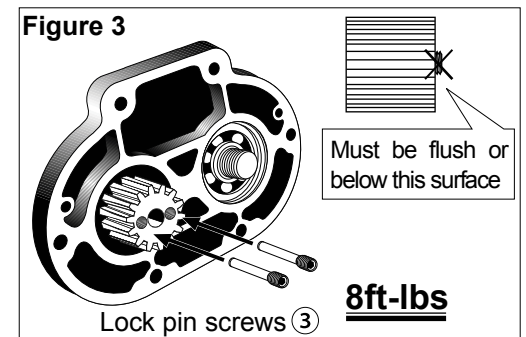
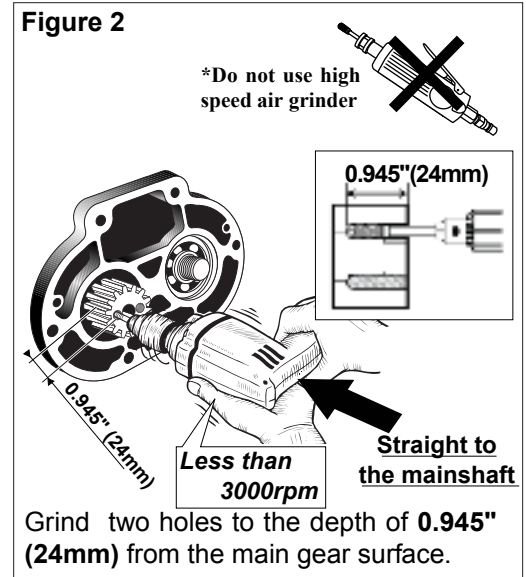
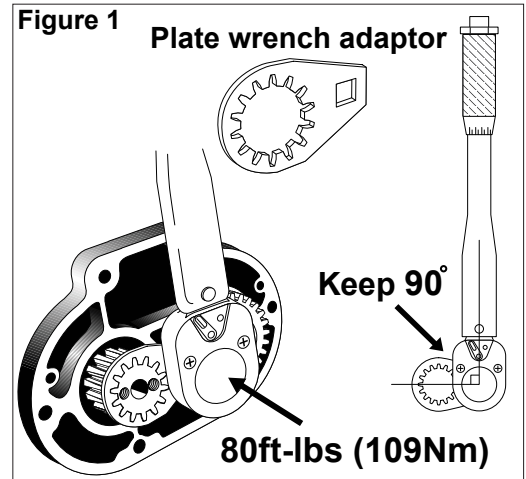
See Figure 2. Using the drill and supplied 5mm bur 37, grind the mainshaft straight (This is for Lock pin) to the depth of 0.945"(24mm) from the main gear surface through two holes of the main gear.

7. Completely clean the drilled holes. Use care to ensure debris does not enter transmission.
8. See Figure 3. Do not apply any LockTite to lock pin screw 3. Install Lock pin screws into the main gear. Tighten the lock pin screw to 8 ft-lbs.
9. Clean thread of the counter nut 5 using parts cleaner to remove oil. Apply plenty of the supplied LockTite#620 (Green) 29 to thread of countershaft.

10. **Caution**
Do not use impact wrench (Power tool) to tighten the counter nut which causes breaking countershaft.

Note
To prevent rotating countershaft during tightening main gear. Shift into 1st gear and apply rear brake.

See Figure 4. Tighten the counter nut 5 to 80ft-lbs (109Nm) using the 32mm socket.





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AIM PERFORMANCE PRODUCTS

Parts#MB003-003

• Reverse Gear MAMBA (Two Piece for Cable operated)
For 5 speed Trans., '87 to '06 Big Twin models (except '06 Dyna)

Installation Instructions 2/3

11. Apply grease between the counter nut and counter gear. Install the counter gear④ on to the counter nut.
12. See Figure 5. Apply grease between the counter nut and counter gear. Install the counter gear④ on to the counter nut.
13. Align key grooves on the counter nut and counter gear. Install two break-off keys⑦ into the grooves.
14. **Note**
To prevent rotating countershaft during tightening main gear. Shift into 1st gear and apply rear brake.
See Figure 6. Apply LockTite#271 (Red) to the thread of bolt⑥. Install bolt with the washer to the counter nut. Tighten the bolt⑥ to **56ft-lbs (75Nm)**.
15. See Figure 7. Install the side cover gasket (Inner), Reverse gear housing, Two supplied dowel pins, side cover gasket (Outer).
16. See Figure 8. Remove the thrust bearing from oil slinger rod. Install thrust bearing to 12mm Extension rod ⑳.
17. Install 20mm Extension rod assembly into the mainshaft.
18. Modification to the cover

Figure 4

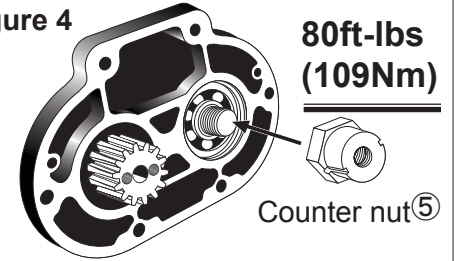


Figure 5

Apply grease between the counter boss and counter gear.

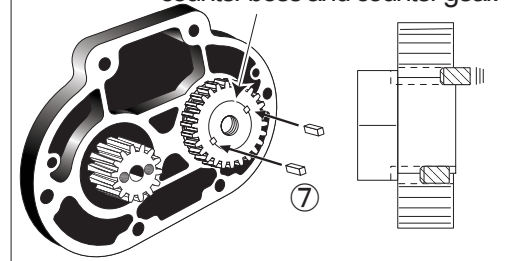


Figure 6

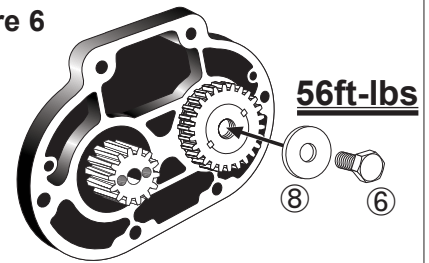


Figure 7

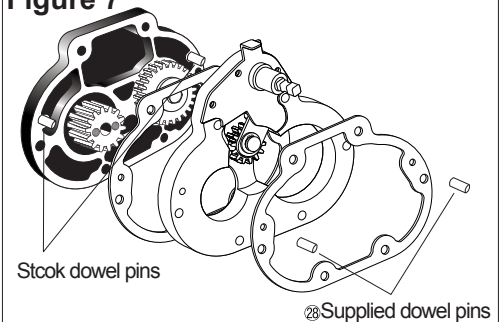
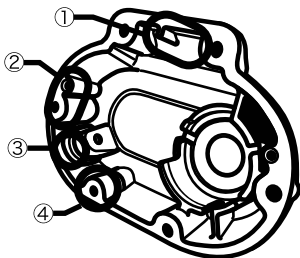


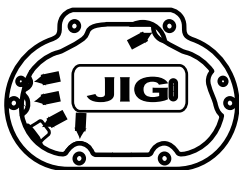
Figure 8



Modification needed

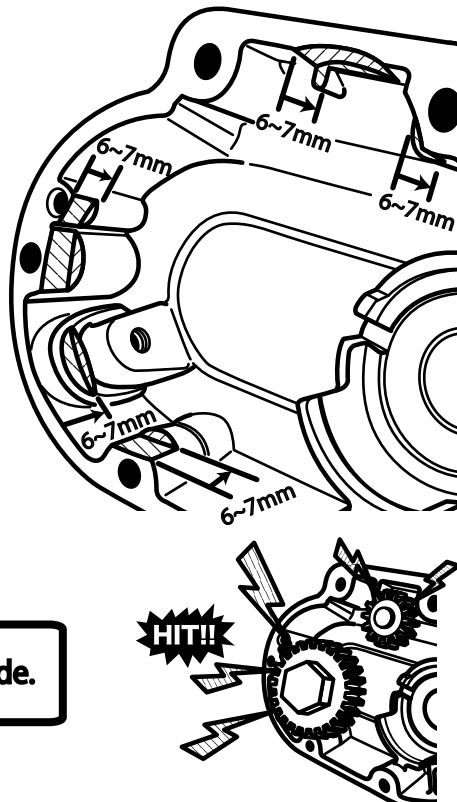


Need to grind about 6~7mm depth.



Use the Gasket as a guide.

Need to grind about 6~7mm depth.



When grinding the cover, please apply cutting lube.



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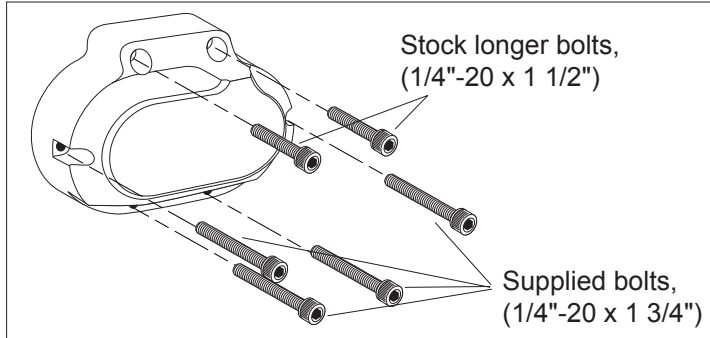
AIM PERFORMANCE PRODUCTS

Parts#MB003-003

• **Reverse Gear MAMBA (Two Piece for Cable operated)**
For 5 speed Trans., '87 to '06 Big Twin models (except '06 Dyna)

Installation Instructions 3/3

- 19.** Install the side cover using 4 of supplied bolts and 2 of longer stock bolts. Tighten the bolts to **9ft-lbs (12Nm)**.



- 20.** Install the Reverse shift lever to the Reverse housing. Tighten the bolt to **27ft-lbs (37Nm)**.
- 21.** Fill the transmission with transmission lubricant. See Harley-Davidson service manual.
- 22.** Install the exhaust pipe if it is necessary.
- 23.** Adjust clutch. Turn clutch cable adjuster until there is a large amount of free play at clutch lever. Loosen locknut on clutch adjuster screw. To take up all free play, turn screw inward (clockwise) until lightly seated. Activate the clutch lever to verify the ball and ramp are completely seated. Back out adjusting screw 1/4 to 1/2 turn. Tighten locknut while holding adjusting screw with an Allen wrench. Adjust the clutch cable. Ensure free play of 1/8in or more at the clutch lever pivot between the clutch holder and lever without pulling the cable.
- 24.** Connect the battery.

Warranty

One year warranty on Reverse Gear parts only.



Reverse gear operation

To engage reverse gear:

⚠ WARNING

- Do not shift into the reverse gear before shift into 1st gear to stop spinning all gears in the transmission.
- Use reverse gear in Neutral. Transmission must be in Neutral when engaging or using reverse gear.
- Reverse gear is intended for light duty use only.

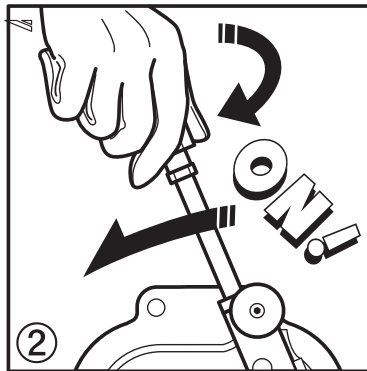
Failure to do so may result in breaking brake-off keys, damaged transmission or serious injury.

Note

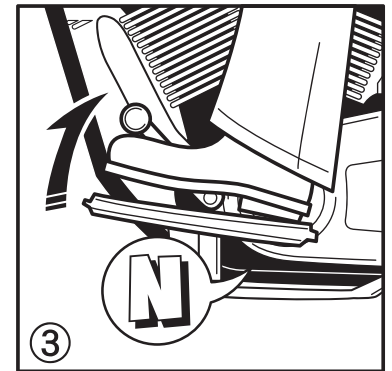
No throttle, just release (engine idle speed) the clutch lever until you are accustomed with motorcycle going reverse.



Disengage the clutch. Shift into the 1st gear to stop spinning all gears in the transmission to prevent damaged transmission when put into the reverse gear.

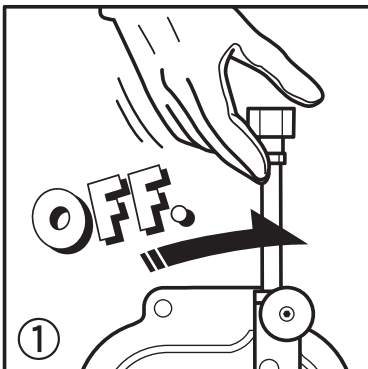


Twist the reverse handle (clockwise) and pull it back to shift into reverse gear. **Do not engage the clutch at this time.**



Shift transmission into Neutral. Engage the clutch to reverse motorcycle.

To disengage reverse gear:



⚠ WARNING

Disengage the reverse gear before engaging any forward gears. Failure to do so may result in breaking brake-off keys, damaged transmission or serious injury.

Shift the reverse lever twist and forward to disengage reverse gear.



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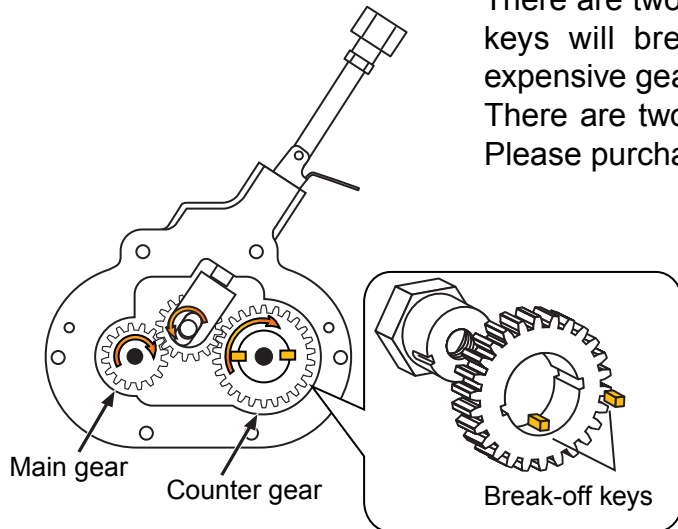
AIM PERFORMANCE PRODUCTS

Supplement

•Reverse Gear MAMBA (All models)

Read and become familiar with these installation instructions before start.

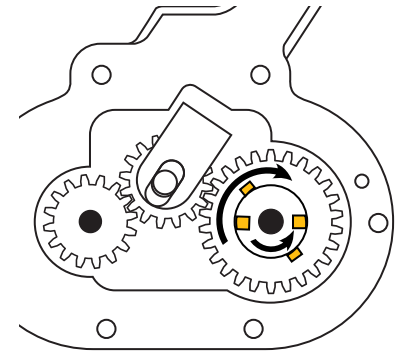
Break-off key replacement



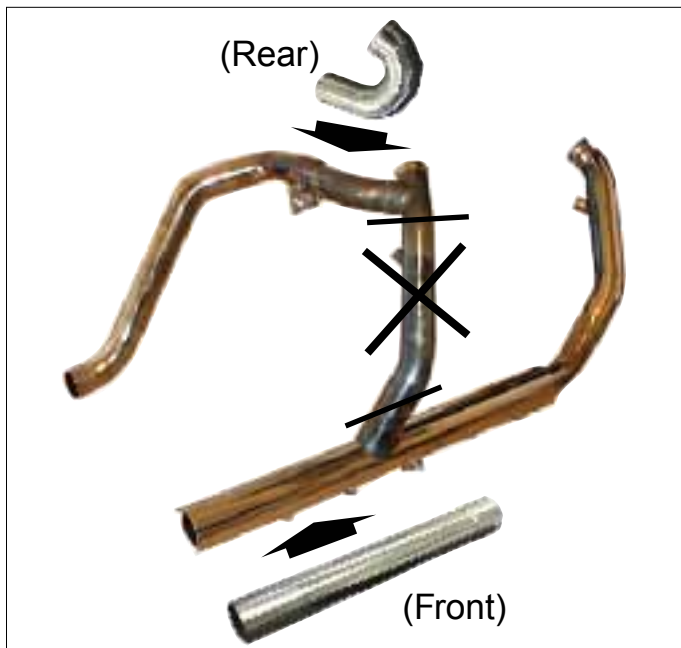
There are two break-off keys between the counter nut and gear. These keys will break when excessive load was applied to save more expensive gears than break-off keys.

There are two of extra keys in the kit. If you break all keys in the kit. Please purchase new Break-off keys (Parts#PMB001-007).

Excessive load!!



True Dual Pipe



True Dual Pipe

For '87-'08 Touring model's stock exhaust pipe

- Eliminate cross over pipe to clear our Reverse gear kit for Touring models
- O2 sensor fitting for '07-'08 models
- Kit comes with O2 sensor plug for '87-'06 models

Parts#FS001-001 \$225.00



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