



**EXHAUST SYSTEM # HD00709
RADICAL RADIUS WITH CROSSOVER
AND BILLET TIPS (2-2)**

Congratulations, you have acquired the finest aftermarket performance exhaust system available for your motorcycle. Your FREEDOM PERFORMANCE exhaust system was designed to perform fit and give the optimum sound and style at a very affordable price.

WARNING: FREEDOM PERFORMANCE WORKS WITH FACTORY STOCK MOTORCYCLES, ANY ALTERATION OR OTHER AFTERMARKET ACCESSORIES OR REPLACEMENT PARTS MAY INTERFERE WITH THIS EXHAUST SYSTEM AND IN ORDER TO PROPERLY FIT IN SOME CASES SUCH COMPONENTS MUST BE REMOVED.

Please follow the installation instructions and please do not hesitate to call us for any technical questions at (951) 898-4733
PACKAGING HD00707-HW (*) =ASSEMBLED

PART NUMBER	DESCRIPTION	QTY	PART NUMBER	DESCRIPTION	QTY
S325-F1	FRONT PIPE ASSEMBLY	1	HWC0002	HOSE CLAMP # 24 STAINLESS STEEL	4
S326-F1	REAR PIPE ASSEMBLY	1	HWC0003	HOSE CLAMP # 28 STAINLESS STEEL	3
S325-F2	FRONT HEAT SHIELD	1	HWB0064	3/8"-16 X 3/4" HEX SCREW ZINC PLATED	2
S326-F2	REAR HEAT SHIELD	1	HWB0006	5/16"-18 X 5/8" SERRATED FLANGE SCREW ZINC PLATED	3
MGS150-F5	MUFFLER ASSEMBLY	1	HWB0001	1/2"-20 X 3/8" BUTTON HEAD SCREW ZINC PLATES*	2
MBK-S190-F4	MOUNTING BRACKET SKINY TIRE	1	HWN0003	5/16"-18 K-LOCK NUT ZINC PLATED	1
MBK-S195-F4	MOUNTING BRACKET FAT TIRE	1	HWW0007	3/8" FLAT WASHER SMALL DIAMETER	2
A100ECA-F9	SYSTEM END CAP*	2	HWW0003	1/2" SPLIT WASHER ZINC PLATED*	2
A125-O2-F14	OXYGEN SENSOR ADAPTER (18-12)	2	HWM0002	PLSTIC TIE DOWN 7" LONG BLACK	1
MBK-M115-F14	BACK PLATE BRACKET ZINC PLATED	1	HD00707-HW	HARDWARE BOX	1
HWC0011	BARREL CLAMP # 60	2	HD00707-INS	INSTRUCTION MANUAL	1

STOCK EXHAUST REMOVAL

1. there are different softail models and every single one has a different exhaust system, although they are different, the procedure to uninstall stock exhaust system is very similar. Here we point out the main steps to uninstall stock system, refer to owner's manual for the specifics.
2. *****Softail Fat Bob***** remove torx screws holding heat shield to header using a torx # 25 bit, there are 6 screws in total to be removed. (See figure 1.1 & 1.2)
3. Remove hose claps holding muffler shields using a 5/16" nut driver or flat screw driver. There is one clamp per muffler, once clamp is removed detach heat shields as shown. (See figure 1.3 & 1.4)
4. Using a 9/16" deep socket or wrench loosen muffler clamps, we recommend using penetrating oil to ease muffler removal. (See figure 1.5)
5. Remove two screws holding lower muffler to mounting bracket using a 3/16" hex key wrench (See figure 1.6) now detach lower muffler from header. (See figure 1.7)
6. Repeat step with upper muffler and place it aside. (See figure 1.8)
7. Locate Oxygen sensor harness and disengage both front and rear sensors from harness. Refer to owner's manual for the proper procedures to remove it Make sure to remember the path of the wire as it will be re-routed thru the same path. (See figure 1.9 & 1.10)
8. Remove head port flange nuts using a 1/2" socket, two on each header. Some assistance may be required (See figure 1.11 & 1.12) Note: it may be necessary to remove heat exchanger cover to access front lower flange nut if this is the case follow the next step.
9. Using a #25 torx wrench or bit remove cover and place it aside. Slightly lift heat exchanger and place a rubber or plastic piece between frame and heat exchanger to allow space for the wrench to access head port nut. (See figure 1.13, 1.14 & 1.15) Note: if you wish to remove heat exchange entirely consult your owner's manual.
10. Remove header assembly some assistance may be required.
11. Models equipped with passenger peg remove it. First remove retaining ring holding pin in place, pull pin out, now, pull peg assembly carefully as it is spring actuated and part will fly out. Using a T45 star wrench or bit remove screw holding peg bracket. This bracket will be relocated to upper hole on frame. (See figure 1.16 1.17 & 1.18)
12. Remove mounting bracket using a 5/16" hex key wrench. (See figure 1.19)
13. Remove stock Oxygen sensors using a M14 wrench identify which is front and which is rear.
14. *****Softail Fat Boy & Breakout*****
15. Loosen muffler clamps using a 9/16" deep socket or wrench located in front of each muffler. (See figure 2.1 & 2.2)



Note: use good and safe practices when removing and installing your new exhaust system to prevent injuries that includes but is not limited to such safety glasses and gloves. When installing make sure gloves are not abrasive or damage may occur like scratching parts. Always secure motorcycle before any work is done.

16. Remove screws holding mufflers to mounting bracket using a 3/16" hex key wrench. Note: you may need to remove muffler shields first, if so use a 5/16" nut driver or flat screw driver. **(See figure 2.3 & 2.4)**
17. Remove upper muffler first (rear) by pulling and rotating at the same time you may need lubricating oil to ease removal. In some cases, you may need to rotate clamp to clear passenger peg. **(See figure 2.5)**
18. Repeat step with lower muffler (front) **(See figure 2.6)**
19. Locate Oxygen sensor harness and disengage both front and rear sensors from harness. Refer to owner's manual for the proper procedures to remove it Make sure to remember the path of the wire as it will be re-routed thru the same path. **(See figure 2.7 & 2.8)**
20. Remove head port flange nuts using a 1/2" socket, two on each header. **(See figure 2.9 & 2.10) Note: it may be necessary to remove heat exchanger cover to access front lower flange nut if this is the case refer to step 9.**
21. Remove header assembly some assistance may be required.
22. Models equipped with passenger peg refer to step #11
23. Remove mounting bracket using a 7/16" hex key wrench. **(See figure 2.11 & 2.12)**
24. Remove stock Oxygen sensors using a M14 wrench identify which is front and which is rear.
25. Passenger pegs for these models need to be relocated using a special adapter sold separately.
26. *****Softail Street Bob, Heritage, Deluxe, low rider and Slim*****
27. Remove screws holding muffler to mounting bracket using a 3/16" hex key wrench there are two screws per muffler. **(See figure 3.1 & 3.2)**
28. Loosen both muffler clamps using a 9/16" deep socket or wrench located at each muffler's nose. **(See figure 3.3)**
29. Remove mufflers and place them aside use lubricant oil to ease removal. **(See figure 3.4 & 3.5)**
30. Models equipped with passenger peg refer to step #11. This bracket will be relocated to upper hole on frame.
31. Locate and disconnect front and rear Oxygen sensor harness see owner's manual for proper procedures.
32. Models equipped with Mid-Controls remove screws using a T45 torx wrench or bit and let it hang. **(See figure 3.6 & 3.7)**
33. Remove head port flange nuts using a 1/2" socket, two on each header. **(See figure 3.8 & 3.9) Note: it may be necessary to remove heat exchanger cover to access front lower flange nut if this is the case refer to step 9.**
34. Remove header assembly some assistance may be required.
35. Models equipped with passenger peg refer to step #11
36. Remove stock mounting bracket using a 5/16" hex key wrench. **(See figure 3.10)**
37. Models equipped with saddle bags have a support bar that attaches to stock mounting bracket, remove screw holding plastic grommet and save both for re-use, these are located at the end of the support bar. **Note: in order to re-install saddle bag support bar a bracket is needed part number AC00249**
38. Remove Oxygen sensors from stock using a 14mm wrench.
39. *****Softail Sport Glide*****
- 40.

EXHAUST INSTALLATION

1. Remove exhaust system from protective packaging it has been pre-assembled for you to see how its assembled, disassemble system and lay it down, place them in a non-abrasive surface such as a blanket or carpet. By doing this you can avoid scratching the parts in the in installation process.
2. Note: We recommend using painters tape to cover parts and accessories on motorcycle areas where damage can occur during installation.
3. Refer to picture for hardware needed and table of components at the top of the instructional sheet. **(See figure 5.1)**
4. Install mounting bracket. Wide tire models (Fat Boy and Breakout) use **MBK-S195-F4**. Slim tire models (Street Bob, Heritage, Deluxe, low rider, Sport glide and Slim) use **MBK-S190-F4** use a 9/16" wrench or socket with two 3/4" hex screws and washers provided. **(See figure 5.2 & 5.3)**
5. For wide tire models (Fat Boy and Breakout) if passenger peg is to be installed a bracket relocater is needed part number **AC00248** sold separately which contains two relocater brackets one for the right and one for the left so that both pegs have the same height. **(See figure 5.4 & 5.5)** if peg relocater is installed use longer screw which comes on the peg relocater kit. Notice that the pin on the right side relocater bracket (longer) will engage in the hole to prevent from rotating. The shorter relocater bracket is for the left side **(See figure 5.6)**
6. Models with stock saddle bags in order secure saddle bag support to new system's bracket a special bracket is needed part # **AC00249** sold separately. Notice that the pin will engage in the hole to prevent from rotating. **(See figure 5.7)**
7. Install exhaust port flanges and retaining rings (from stock system) onto head pipes. **(See figure 5.8)** (FREEDOM PERFORMANCE recommends replacement of exhaust port gaskets and retaining rings if damaged, bent or worn out.
8. Install Oxygen sensors, these headers have an 18mm x 1.50 threads. Install oxygen sensor (from stock). If you have 18mm sensor just install the sensor as is with no other hardware. If you have stock sensors install the adapter first then the sensor using a 14mm wrench. **(See figure 5.9 & 5.10)** apply a small amount of anti-seize compound to the threads of the O2 sensors and install them into the new head pipes. NOTE: Be careful not to get anti-seize on sensor tip, it may affect sensor functionality. If no sensor is to be installed, use adapter and plug 12MM x 1.25
9. Slide 1 Barrel clamp (# 60) in front of the slotted end of each muffler **NOTE: both clamp screw heads must face up and towards transmission, see picture for details. (See figure 5.11)**
10. Install front head pipe first, **S325-F1** finger tight stock flange nuts all the way but do not tighten at this time yet, use a 1/2" socket or drive screw. **(See figure 5.12)** Repeat step with rear head pipe **S326-F1. (See figure 5.13)**
11. Mark a line with a marker (1-3/8") (35mm) from edge over pipe as shown. This is to know how far in the pipe will go inside muffler. **(See figure 5.14)**
12. Install twin muffler, **MGS150-F5** align muffler inlets with both front and rear headers and slide muffler over pipes at the same time. Align brackets welded on the mufflers to mounting bracket, secure muffler using three 5/16-18 X 1/2" flange serrated screws. Insert back plate bracket inside longer bracket with the flat side facing towards the screw and a lock nut inside the smaller bracket. **DO NOT TIGHTEN AT THIS TIME YET. (See figure**

Note: use good and safe practices when removing and installing your new exhaust system to prevent injuries that includes but is not limited to such safety glasses and gloves. When installing make sure gloves are not abrasive or damage may occur like scratching parts. Always secure motorcycle before any work is done.

5.15 & 5.16) NOTE: make sure front end of both brackets is flush with mounting bracket to ensure that head pipes have gone inside muffler inlet just enough to prevent exhaust leaks.

13. Align both pipes, tighten to mounting bracket using a 1/2" open wrench (3 screws) now tighten exhaust port flange nuts using a 1/2" socket. **Do not tighten barrel clamps yet.**
14. Install heat shields. For these steps it is imperative to use caution, space is very tight and scratches may occur. We recommend to use painters tape, cut a small piece and tape it over the heat shield where the clips are located (**these are the clips welded inside the heat shield**) now mark the center of the clip with a pen or marker also mark an arrow pointing the direction of hose clamp insertion as seen of the fig. (**See figure 5.17**)
15. Slide front shield (**S325-F2**) over the front muffler and pipe and carefully align it. Now insert the worm clamps in the direction of the arrow. (**See figure 5.18**) Use clamps as follow: (#24) over the header (#28) over the muffler. (**See figure 5.19**)
16. Repeat step with the rear heat shield (**S326-F2**) Note: we recommend for you to cover front heat shield on top right below where the rear pipe system is to be installed with a non-abrasive rag or painters tape to prevent scratches during installation of rear shield. (**See figure 5.20**)
17. Align heat shields and tighten clamps using a 5/16 nut driver. Using a 5mm hex key wrench, tighten both barrel band clamps.
18. Install system end caps using a 5/32" hex key wrench and screw and washers provided. If installed just make sure screws are tightened. (**See figure 5.21**)
19. Reinstall right passenger peg. Slim tire models remove plastic plug from threaded hole on frame and reinstall peg bracket. (**See figure 5.22 & 5.23 & 5.24**) Wide tire models, install peg bracket on relocater bracket make sure the contour on both brackets match so that peg won't rotate. (**See figure 5.25, 5.26, 5.27 & 5.28**)
20. Models with saddle bags install plastic grommet to relocater bracket using the stock screw. Make sure the plastic grommet extrusion engages into the slots of the relocater bracket for prepper alignment. (**See figure 5.29**)
21. Re-route and engage Oxygen sensor harness.
22. Check for adequate clearance between all exhaust system components and motorcycle accessories prone to heat damage.
23. Clean exhaust system with some chrome cleaner and remove painters tape (if used during installation) before turning on engine. Failure to follow this procedure may result in damages to the chrome finish as oils burn out leaving permanent marks.

Note: Be sure to tighten all hardware before starting your engine. Retighten after the first 100 miles.

Re-mapping is strongly recommended by FREEDOM PERFORMANCE

Every attempt has been made to provide improved cornering Clearance. However, due to design and space boundaries on some motorcycle models, ground and cornering clearance may not be improved and in some cases may even be reduced.

WARNING!
FREEDOM PERFORMANCE DOES NOT WARRANTY ANY CHROME OR BLACK FINISH PRODUCTS AGAINST DISCOLORATION.



Fig. 1.1 remove screws



Fig. 1.2 (6 total)



Fig. 1.3 remove hose clamps



Fig. 1.4 remove shields



Fig 1.5 loosen muffer clamps



Fig. 1.6 remove screws



Fig. 1.7 remove upper muffer.



Fig. 1.8 remove lower muffer



Fig. 1.9 disengage sensor harness



Fig. 1.10 locate front sensor



Fig. 1.11 remove rear flange nuts



Fig. 1.12 remove front flange nuts



Figure 1.13 remove screw



Fig. 1.14 remove cover



Fig. 1.15 space heat exchanger



Fig. 1.16 remove retaining ring



Fig. 1.17 pull pin and remove peg



Fig. 1.18 remove peg bracket



Fig. 1.19 remove mounting bracket



Fig. 2.1 loosen upper clamp



Fig.2.1 loosen lower clamp



Fig. 2.3 remove screws upper muffer



Fig. 2.4 remove lower muffer screws



Fig. 2.5 remove upper muffer

Note: use good and safe practices when removing and installing your new exhaust system to prevent injuries that includes but is not limited to such safety glasses and gloves. When installing make sure gloves are not abrasive or damage may occur like scratching parts. Always secure motorcycle before any work is done.



Fig. 2.6 remove lower muffler



Fig. 2.7 disconnect rear sensor



Fig. 2.8 disconnect front sensor



Fig. 2.9 remove rear flange nuts



Fig. 2.10 remove front flange nuts



Fig. 2.11 remove mounting bracket



Fig. 2.12 mounting bracket removed



Fig. 3.1 remove upper muffler screws



Fig. 3.2 remove lower muffler screws



Fig. 3.3 loosen both muffler clamps



Fig. 3.4 remove upper muffler



Fig. 3.5 remove lower muffler



Fig. 3.6 remove mid control screws



Fig. 3.7 let it hang



Fig. 3.8 remove rear flange nuts



Fig. 3.9 remove front flange nuts



Fig. 3.10 remove mounting bracket



Fig. 4.1



Note: use good and safe practices when removing and installing your new exhaust system to prevent injuries that includes but is not limited to such safety glasses and gloves. When installing make sure gloves are not abrasive or damage may occur like scratching parts. Always secure motorcycle before any work is done.



Fig. 5.1 hardware



Fig. 5.2 install bracket wide tire



Fig. 5.3 install bracket slim tire



Fig. 5.4 wide tire right peg relocater

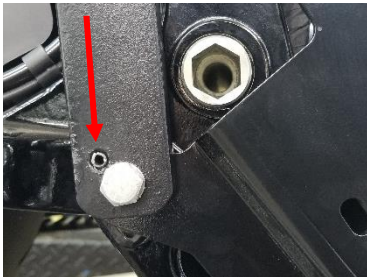


Fig. 5.5 anti-rotation pin

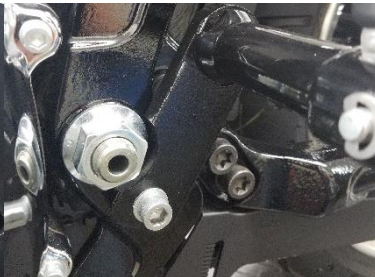


Fig. 5.6 left side peg relocater



Fig. 5.7 saddle bag bracket support



Fig. 5.8 install rings and flanges



Fig. 5.9 install sensors adapters



Fig. 5.10 install Oxygen sensors



Fig. 5.11 insert barrel band clamps



Fig. 5.12 install front pipe



Fig. 5.13 install rear pipe



Fig. 5.14 mark a line @ 1-3/8" (35mm)



Fig. 5.15 install muffler assembly



Fig. 5.16 secure muffler to bracket make brackets are flush to each other

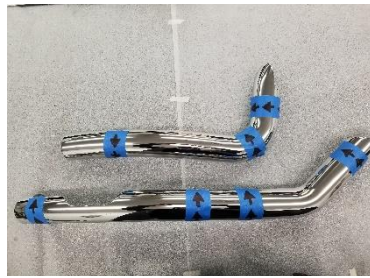


Fig. 5.17 mark shields as shown



Fig. 5.18 install front heat shield



Fig. 5.19 insert hose clamps as shown

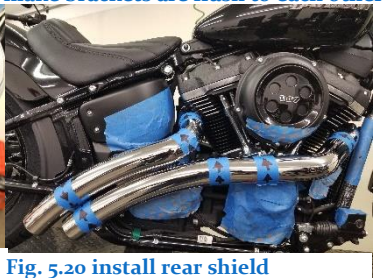


Fig. 5.20 install rear shield

Note: use good and safe practices when removing and installing your new exhaust system to prevent injuries that includes but is not limited to such safety glasses and gloves. When installing make sure gloves are not abrasive or damage may occur like scratching parts. Always secure motorcycle before any work is done.



Fig. 5.21 install end caps



Fig. 5.22 remove plastic plug from thread hole on frame



Fig. 5.23 install peg bracket



Fig. 5.24 reinstall peg on bracket.



Fig. 5.25 wide tire bracket installation on right side



Fig. 5.26 wide tire bracket installation on left side



Fig. 5.27 install peg right side



Fig. 5.28 install peg left side



Fig. 5.29 saddle bag relocater bracket