



Feel the Power of Freedom

EXHAUST SYSTEM # HD00396
RADICAL SHARP CURVE RADIUS (2-1-2)

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: DUE TO THIS DESIGN SOME ACCESSORIES MAY INTERFERE WITH THIS EXHAUST SYSTEM SUCH AS SADDLE BAGS OR PASSENGER FOOT PEGS IN ORDER TO FIT PROPERLY IN SOME MODELS THEY HAVE TO BE RELOCATED OR REMOVED.

Please follow the installation instructions and please do not hesitate to call us for any technical questions at (310) 324-0415

PACKAGING HD00396-HW (*) =ASSEMBLED

PART NUMBER	DESCRIPTION	QTY	PART NUMBER	DESCRIPTION	QTY
S290-F1	FRONT HEAD PIPE	1	HWC0002	HOSE CLAMP # 24 STAINLESS STEEL	3
S291-F1	REAR HEAD PIPE	1	HWC0003	HOSE CLAMP # 28 STAINLESS STEEL	4
S290-F2	FRONT HEAT SHIELD	1	HWC0011	BARREL CLAMP # 60 STAINLESS STEEL	2
S291-F2	REAR HEAT SHIELD	1	HWB0013	3/8"-16 X 2-1/2" HEAD CAP SCREW ZINC PLATED	1
MGS150-F5	CROSSOVER RADIUS MUFFLER	1	HWB0010	3/8"-16X3/4" SERRATED FLANGE SCREW ZINC	2
MBK-S155-F4	MOUNTING BRACKET	1	HWB0007	5/16-18 x 5/8" SERRATED FLANGE SCREW ZINC	3
MBK-M115-F7	BACK PLATE BRACKET	1	HWB0001	1/4"-20 X 3/8" BUTTON HEAD SCREW ZINC PLATES	2
A225ECA-F9	SYSTEM END CAP	2	HWN0003	5/16"-18 K-LOCK NUT ZINC PLATED	1
A110-O2-F14	OXYGEN SENSOR BUNG PLUG 12MM	2	HWW0003	1/4" SPLIT WASHER ZINC PLATED	2
A125-O2-F14	OXYGEN SENSOR ADAPTER (18-12)	2	HWM0002	PLSTIC TIE DOWN 7" LONG BLACK	1
HD00396-INS	INSTRUCTION MANUAL	1	HD00396-HW	HARDWARE BOX	1

STOCK EXHAUST REMOVAL

1. Disconnect Oxygen sensors: Some models (18MM sensors) have the sensor underneath the oil tank, on the right hand side, find the rear oxygen sensor connector and disengage from harness. Other models (12MM sensors) it's necessary to remove the seat from motorcycle refer to owner's manual for the proper procedures to remove it. Once the seat has been removed locate the harness and unplug sensor from harness. Make sure to remember the path of the wire as it will be re-routed thru the same path. Models without oxygen sensors skip steps 1, 2 and 3)
2. Unlock the plastic cover above the rectifier right in front of the frame of the motorcycle to get access to the front oxygen sensor connector. (18MM sensors) Unplug sensor from harness. Now remove cable tie which is holding sensor wire to the motorcycle frame and feed it the end of the wire through releasing it from the motorcycle.
3. Models with (12mm sensors) locate harness underneath the rectifier and disengage sensor. Note: older models have 18 mm sensors and (13-up) have 12mm sensors consult your owner's manual for more information. If equipped, loosen the floor boards to gain clearance for exhaust removal and installation.
4. Loosen heat shield clamps on both the front and rear head pipes.
5. If equipped, loosen crossover pipe clamp, located between front and rear head pipes.
6. Remove 2 exhaust port flange nuts from each head pipe, located at the cylinder head using a 1/2" socket.
7. Remove the bolts that attach mufflers to mounting bracket.
8. Remove the complete exhaust system and set aside. Assistance may be required.
9. Remove stock mounting bracket from motorcycle frame and set it aside.
10. On models (07-12) use a 7/8" or 22mm wrench, carefully remove the O² sensors from the stock head pipes and save for re-use with the new Freedom Performance exhaust system, on models (13-up) use a 14mm wrench. It may be necessary to use penetrating oil to ease the removal.
11. Now remove exhaust port flanges and retaining rings from the stock exhaust system using snap ring pliers. It is best to wear safety glasses when removing retaining rings to prevent eye injuries.
12. Some models have the passenger peg mounted to exhaust mounting bracket, if this is the case remove peg from bracket and save for re-use.
13. Lastly remove the two lower mounting studs from the frame.



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.

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. Install exhaust port flanges and retaining rings (from stock system) onto head pipes. **(See figure 2.1)** (FREEDOM PERFORMANCE recommends replacement of exhaust port gaskets if damaged or worn out.
4. Install Oxygen sensors, these headers have an 18mm x 1.50 threads. **(See figure 2.2)** Models equipped with oxygen sensors Install oxygen sensor (from stock). If you have 18mm sensor just install the sensor as is with no other hardware. **(See figure 2.3)** if you have 12mm sensors install the adapter first then the sensor. **(See figure 2.4)** 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 to plug sensor bung port. **(See figure 2.5)**
5. Attach mounting bracket **MBK-S155-F4** **(See figure 2.6)** using a 9/16 socket or wrench to motorcycle frame using 3/8-16 x 3/4" flange screws (supplied) (If equipped, plastic plugs must be removed).
6. 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 2.7)**
7. Install front head pipe first, **S290-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 2.8)** Repeat step with rear head pipe **S291-F1**.
8. Mark a line with a marker 1.375" (1-3/8") from edge over pipe as shown. This is to know how far in the pipe will go inside muffler. **(See figure 2.9)**
9. 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 bolts. 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 2.10)** **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.**
10. 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.**
11. 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 2.11)**
12. Slide front shield (**S290-F2**) over the front muffler and pipe. **(See figure 2.12)** and carefully align it. Now insert the worm clamps in the direction of the arrow. **(See figure 2.13)** Use clamps as follow: (#24) over the header (#28) over the muffler.
13. Repeat step with the rear heat shield (**S291-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 2.14)**
14. Align heat shields and tighten clamps using a 5/16 nut driver. Using a 5mm hex key wrench, tighten both barrel band clamps.
15. Install system end caps using a 5/32" hex key wrench and screw and washers provided. If installed just make sure screws are tightened.
16. Reinstall front passenger floor.
17. On models equipped with oxygen sensors re-route and engage harness, (07-12) install a plastic zip-tight to hold front sensor cable to frame as it was originally and cut-off excess tail. Make sure cables do not make contact to any part of the exhaust to prevent heat damages.
18. If passenger peg was removed from stock bracket, re-install. If longer screw is needed use the one provided.
19. Check for adequate clearance between all exhaust system components and motorcycle accessories prone to heat damage.
20. 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.



Figure 2.1 install flange and retaining clip



Figure 2.2 install adapter and plug



Figure 2.3 install O2 sensor



Fig 2.4 install adapter then 12mm sensor



Figure 2.5 install adapter and plug.



Figure 2.6 install mounting bracket.



Figure 2.7 insert barrel clamps note screw head direction.



Figure 2.8 install front pipe.

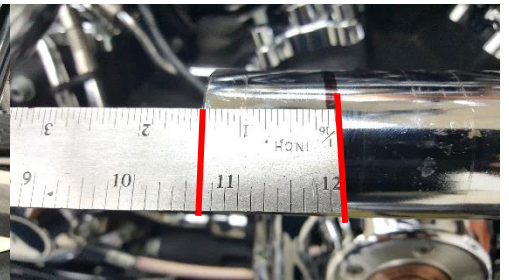


Figure 2.9 mark a line 1-3/8" from edge

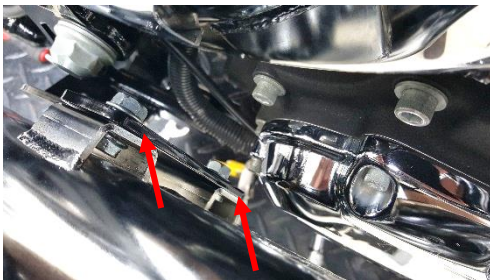


Figure 2.10 brackets are flush to mounting bracket

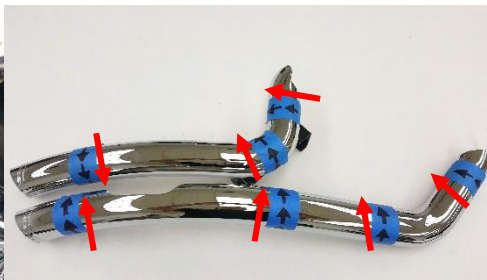


Figure 2.11 use painters tape to mark an arrow centered on inner heat shield clip



Figure 2.12 install front heat shield first and secure it with hose clamps.

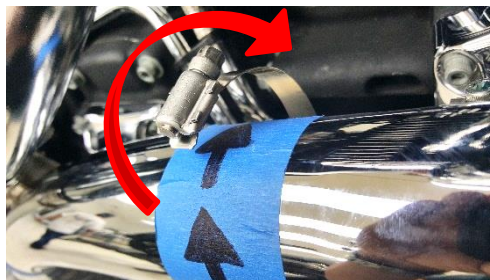


Figure 2.13 arrow indicates direction of insertion. Refer to figure 2.10



Figure 2.14 install rear heat shield and secure it with hose clamps



Figure 2.15 hardware

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.