

03-04 COBRA INSTRUCTIONS

The logo for HELLION POWER SYSTEMS features the word "HELLION" in large, bold, metallic 3D letters with a red-to-silver gradient. The letter "O" is stylized with a double 'X' shape. Below it, the words "POWER SYSTEMS" are written in a smaller, red, metallic font. The background includes faint, orange-toned sketches of a car's rear end and a wheel.

# HELLION

POWER SYSTEMS

**HELLION POWER SYSTEMS**  
**03-04 MUSTANG COBRA**  
**KIT INSTRUCTIONS**

**HELLION**

# 03-04 COBRA INSTRUCTIONS

## NECESSARY PARTS REQUIRED FOR INSTALLATION

03-04 Cobra Hellion Kit ONLY

Necessary:

**99-01 Alternator**

**#YR3210346AA**

**Alternator Bracket**

**#XR3Z-10153-AB**

**99-01 Cobra Intake**

**(Lower) #YR3Z9424BA**

**(Upper) #XR3Z9424AA**

**Serpentine Belt**

**Napa Part # K060987**

**99-01 Throttle Cable Bracket & Cable**

**Bracket # XR3Z9728CA**

**Cable #1R3Z9A758CA**

**Alternator Wires to extend.**

**pigtail #1U2Z14S411UA**

**\*If keeping EGR is desired, need 99-01 EGR tube**

**#XR3Z9D477DB**

*Read all instructions before attempting installation.*



1. Disconnect battery.
2. Remove headlights
3. Remove front wheels and inner fender liners
4. Remove front fascia by removing (4) nuts from in side fender, 2 on each side on the inner fascia in front of wheels. Remove pushpins from top of front fascia, remove pushpins from bottom fascia to lower radiator support. Disconnect lower fog light plugs and then remove fascia.

## Super Charger Removal

03-04 Cobra refer to Steps #5-32

5. The following Hellion supercharger removal and intake instructions are for reference only. Installer must have common automotive knowledge before attempting. All steps are to reconfigure 03-04 Cobra vehicles to a 99-01 Cobra specs.
6. Drain Radiator, intercooler and remove blower belt
7. Remove Intake Tubing
8. Remove Throttle Body & Plenum



9. Remove intercooler reservoir tank.



10. Remove coolant overflow tank



11. Remove top radiator hoses

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12. Remove intercooler water lines from upper blower pulley bracket. Be sure to have paper towels handy for extra coolant in the lower intake plenum.



16. Remove lower intake manifold



13. Remove Blower pulley brackets



17. Remove lower blower pulley.



14. Disconnect injector harness; wiring and EGR tube from supercharger.

15. Remove supercharger



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18. Remove alternator and alternator bracket



19. Remove upper idler and bracket



20. Remove coolant can support rod

21. Remove intercooler pump and lines from passenger inner fender



22. Remove upper coolant crossover tube



23. Remove power steering bracket from reservoir

24. Install new power steering bracket to valve cover using the stock 13mm bolt from upper crank pulley assembly and nut from factory wire harness bracket. Remove double threaded bolt (not used). Be sure factory harness bracket is behind power steering bracket as seen in following pictures.



25. Install power steering reservoir and line with factory bolts. Bending of the line and line bracket may be required.



26. Install injectors & injector harnesses if upgrading injectors.

27. The IAT2/MAP sensor install can be done a number of ways. The following pictures are for reference only of where we have had the most success. Others have placed the sensor in the middle of the intake lid as well.



28. Install 99-01 Intake

29. Install 99-01 EGR tube or install block of plate on intake and cap on exhaust manifold if EGR delete is utilized.

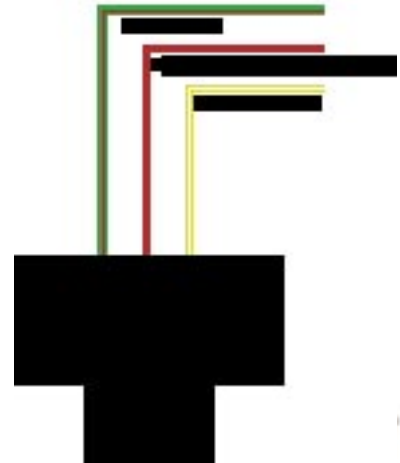
30. Install Throttle Body and IAC on new 99-01 Intake and remove factory tape from harness to gain extra wire length for TPS connector as seen in following picture.



31. Install 99-01 Alternator and alternator bracket (in the 99-01 location). Use factory bolts from the upper idler and bracket you removed in step 16 to mount the lower part of the alternator.



32. Install alternator pigtail (IU2Z-145411-UA) and wire according to diagram and picture below. The middle wire can be fused and connected to the power distribution block in front of driver side strut tower.



33. Install new throttle bracket and cable

34. Remove factory h-pipe and remove o2 sensors for later use.

35. Remove factory air box from fender.



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36. Disconnect (5) connectors and push harness through hole back into fender well.



37. Reconnect (5) connectors through air inlet hole. This will open up the smaller hole in the fender, allowing installation of boost inlet tube.



38. If necessary, unbolt AC line from block, Remove stud that originally held AC line.

39. Bend AC line down towards the ground and slightly towards radiator. This will create clearance for turbo-charger. Take care when bending by supporting the line in the process.



40. If Necessary, relocate inner fender computer box. It is blocking the hole that is used to route the intake piping. When removing computer box on inside of fender, remove the tabs that hold box to car, this will reveal longer holes in fender. Re-install box with the supplied  $\frac{1}{4}$ " bolts and nuts. This will relocate the box about  $\frac{1}{2}$ " towards front of the car. This should make enough room for the  $2 \frac{1}{2}$ " boost pipe that will be run through that hole. If not, you can drill 2 new holes  $\frac{1}{2}$ " towards the front of the car from the original mounting holes. See picture below for computer box illustration.



## K-Member Instructions

41. Remove old k-member, springs and a-arms. (See K-member instructions)

42. If installing UPR k-member, oil filter relocation kit is not required. Motorcraft oil filter will not fit w/ UPR K-member. The following are other filters that work. For all other k-members remove oil filter before re-installing new k-member. Please see Step 50 for tapping the oil pan.

43. Install new k-member; bend brake lines out of the way on both sides to make room for K-member to set against frame. On driver side, remove ground strap bolt from bottom of frame rail to allow k member to

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sit against frame, drill hole and relocate the ground strap to frame rail making sure a good ground is maintained, install a-arms, caster camber plates and coilovers per manufacturers instructions. Adjust coilovers to preferred ride height. Have vehicle aligned. See pictures below.

Driver Side



Passenger Side



## Oil Filter Relocation Kit

44. Remove Driver side wheel and remove front fascia if not already removed.

45. Install pipe fittings into oil filter adapter and engine adapter using pipe paste, teflon tape or silicone. There might be a couple of option for oil feed and return. It is up to you on which you use. Be sure not to get tape, paste or silicone in fittings or lines.



46. Install adapter onto engine and tighten



47. Place oil filter relocation bracket against front bumper to mark mounting holes



48. Drill bumper with 5/16 drill bit. The bumper is hardened steel; so multiple drill bits may be needed to reach the size required.



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49. Mount adapter to bumper using supplied 5/16 bolts, nuts and washers.



50. Measure hose length, routing away from hot and moving parts. When setting line length, it is important to check for sway bar travel. Have suspension loaded to have the sway bar swing back when setting hose position. Remember sway bar will swing forward when the suspension is unloaded.

51. Cut hose and push on ends. Putting the hose end in a pot of boiling water will help with softening the hose temporarily to make fitting install easier. Also, spraying barbed fitting end will help. ENDS MUST BE PUSHED ON UNTIL THEY BOTTOM OUT. FAILURE TO DO SO MAY CAUSE AN OIL LEAK AND ENGINE DAMAGE.



52. Install and tighten oil lines, \*note inlet and outlet\*

53. Install filter on remote mount. Pre-oil filter to help with initial oil circulation.



### Punch Oil Pan

54. The next step is to punch and tap the oil pan. We recommend removing the pan for this process while the K-Member is out of the car and you can weld a fitting in. This way you can be assured all metal shavings and paint flakes have been removed from the oil pan. If you are unable to remove the pan, this is ok, as the following procedure has been done for many years without problem.



55. Mark a point  $\frac{3}{4}$ " Inches down from oil pan rail, and centered left to right.

56. Take the supplied punch and hammer a hole into the oil pan. Hit the punch until it seats against pan.





57. Next, take the supplied 3/8" pipe tap and coat it with grease. Tap hole in pan. The grease will catch the tapped shavings.



58. Remove tap and wipe the remaining grease from hole, being careful not to let shavings fall into pan.  
59. Take supplied fitting (3/8" pipe to -10an) and install in pan using pipe paste to seal threads. You may also wish to use RTV sealant between the fitting and pan to help seal the fitting and reduce any risk of leaks.

## Turbo

60. Loosen clocking bolts on turbocharger. These bolts attach the center section of the turbo to the compressor and exhaust housings.

61. Clock compressor housing and turbine housing according to the following pictures from the exhaust and compressor side. Take note of the first picture and the bracket mounted to the compressor side (polished) housing for future reference. Snug one bolt on each housing to hold clocking in place. If clocking is off, just loosen the one bolt and adjust accordingly. (Oil drain should point down)



62. Install 90 degree 1/8 pipe to #4 fitting to top of turbo. Leave filter fitting on turbo. Install and tighten fitting so it faces the rear of the car (towards engine). See following picture and first picture in Step 57. (Use minimal pipe paste)



63. Install 90 degree barb fitting to compressor housing. Position fitting so it faces downwards. See following picture on the lower right of the turbo. This will be connected to the underside of the wastegate.



64. Install billet oil drain flange with supplied gasket and bolts. See picture below. Use minimal pipe thread paste between billet pieces.



65. Slide supplied 2 1/2" silicone hose onto end of compressor housing. Install and tighten supplied 2 1/2" T-bolt clamp. Leave loose for adjustments.



66. Install turbo support bracket to front cover of the engine using supplied M8x30mm allen head bolts and spacers. Bracket can also be seen in Step 57 mounted to turbo side.



67. Remove the compressor housing retention bracket where the turbo support bracket will mount to turbo housing. The retention bracket is the part under the clocking bolts. Bolt bracket to turbocharger using the same compressor-housing bolts and retention bracket. Clock turbo correctly & tighten all compressor-housing bolts. Leave one exhaust housing bolt tight and the rest loose for additional adjustment when up-pipe is installed.

## Turbo Install

**NOTE: For all exhaust pipe slip connections, use anti-seize or similar to help with fitment and adjustments.**

68. Install main turbo up-pipe. From underneath, raise pipe up and bolt to passenger side exhaust manifold using factory nuts. Leave just slightly loose for adjustments, but tight so that it doesn't move on its own. You want the pipe to be in the correct position, but need to be able to shift it, if needed later on



69. Next, install (4) bolts that secure the turbo to up-pipe, using steel shim gasket between turbo and pipe. Loosen the one remaining clocking bolt on the exhaust housing to final clock the exhaust side. Tighten 2 cattycorner nuts/bolts that hold the turbo to the up-pipe. With the turbo support bracket also snug to the front cover of the engine, now tighten all exhaust housing clocking bolts. You will have to remove the turbo from the engine bay to complete this process. After all clocking bolts are tight, re-install turbo, turbo support bracket and leave all nuts and bolts loose.



70. The vertical section of the power steering line will need to be bent towards engine to make clearance for down pipe. Rotating the hose and clamp on underside of reservoir may help with adjustments. WD-40 helps the line slide in the rubber grommet/bracket while bending.



71. Install supplied Heat shield over exhaust housing while turbo is in the engine bay. (76mm Turbo only)



72. Hang down pipe to exhaust housing using supplied V-band clamp. Leave clamp loose. (Heat shield not shown in picture)



## Wastegate installation

73. Install supplied 1/8" pipe barb into the underside of the wastegate. (See following pic). This is very important. The fitting must be on the correct side for proper operation. An incorrect installation will over boost the engine.



74. Install wastegate to up-pipe with supplied 8mm allen head bolts and supplied gasket. Leave bolts loose. There is no gasket between wastegate and L-shaped wastegate outlet pipe. You may use Orange High Temp RTV silicone if you choose. Slip L-shaped wastegate outlet pipe into downpipe. With everything loose, you should be able to rotate the downpipe and maneuver the L-shaped wastegate outlet pipe to the wastegate and bolt outlet pipe to wastegate using supplied 5/16" allen head bolts. Leave bolts loose. This may take 2 people as it is a very tight fit. Install U-shaped exhaust clamp and nuts on slip joint for the L-shaped wastegate outlet pipe to the downpipe. Do not tighten at this time.





## Intercooler Installation

75. Remove hood latch support bracket.



76. Remove Heat exchanger and Brackets (03-04 Cobra Only)



77. Slide supplied 2 ½ inch silicone hose ends onto intercooler inlet and outlet. Leave clamps loose for any necessary adjustments and possible interference.



78. Unbolt power steering line cooler from radiator support.

79. Remove power steering cooler bolts and clips



80. Relocate power steering cooler line clip to other slot in radiator support.



81. Install intercooler with supplied metric bolts and washers as seen in follow picture. Bolt it to lower radiator support, leaving bolts loose for any necessary adjustments later.





82. Install intercooler support strap to hood latch and intercooler. Hang strap from hood latch and secure with supplied 5/16" hardware.



83. Now clamp silicone hoses that you slipped onto the intercooler inlet and outlet from step 76 with supplied T-bolt clamps. Leave loose for adjustments.

84. Install intercooler pipe #1 from turbo to lower intercooler inlet. Slide 2 1/2 inch clamps over pipe first to ease installation. Leave clamps loose for any necessary adjustments.



85. Install intercooler pipe #2 onto upper intercooler outlet.



86. Install silicone hose and clamps. Leave loose for adjustments.



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**87.** Install intercooler pipe #3 and silicone hose. This pipe goes through the fender opening. There is enough room for it, but if you feel more comfortable opening the hole a little bit, that is an option to gain extra clearance, but is not required.



**88.** To mount Power Steering cooler, either bend power steering cooling line to reach front tab on intercooler or cut the factory 3/8" PS feed and return lines. Install supplied line and brass coupler fittings to extend power steering cooler lines to reach front of intercooler.

**89.** Once bent or extended, bolt it to intercooler.

**90.** Install 4" turbo inlet pipe, Mass-air meter, and filter onto turbo inlet. Make sure that the flow is correct and the air filter is secured to the end of the meter. Leave clamps loose until final intercooler pipe fitment.



**91.** Reconnect mass air meter, and plug in air temp sensor inside inner fender. Wires may need to be extended for the IAT-1 sensor.



**92.** Install intercooler pipe #4 and oval t-body silicone hose adaptor.



**93.** Loosen the 3 set screws on blow off valve and bolt to stub on bottom of s-shaped polished inlet tube. Install blow off valve outlet to stub on the 4-inch tube inlet, using 1 3/8 silicone hose and supplied clamps. Rotating the blow off valve on the will help with alignment of the silicone hose and stub on 4-inch inlet tube.



94. Position all intercooler pipes, intercooler and tighten all clamps. Take note of brake lines on the ABS module next to the compressor side of the turbo. Massaging of the lines may be required as every car is different.

95. The next step is to connect the valve covers to the 4" inlet. This can be done a couple of ways. One option is to take the supplied 3/8 hose and connect it to the PCV valve on the driver side valve cover. Route 3/8 hose to supplied 3/8X1/2X1/2 tee and connect tee to the small hose on the passenger side valve cover. Next connect 3rd leg of tee to the 1/2" stub on the polished 4" inlet pipe.



Option 2 is to take the supplied 3/8 hose and connect it to the PCV valve on the driver side valve cover. Route 3/8 hose to supplied 3/8X1/2X1/2 tee and connect hose that normally connects to the lower backside of t-body to the tee. Then connect the remaining side of the tee to the lower backside of the t-body. Finally, connect the passenger side valve cover hose to the 1/2" stub on the polished 4" inlet pipe. You may also choose to use pre-filters or oil separators as well to minimize any potential oil getting into the intake stream.

96. Attach the supplied vacuum line from the turbo compressor to the underside of the wastegate.

## Exhaust Installation

97. Install exhaust crossover pipe. First, remove (2) factory studs from driver side exhaust manifold. Before installing crossover check for ball size on exhaust manifold. Depending on the ball size, the supplied insert may need to be installed.



98. Bolt crossover pipe to driver side manifold using supplied bolts and washers. Bolt other end to main turbo up-pipe using supplied 3/8" bolts and washers.



99. Bolt exhaust hanger to driver side transmission mount using supplied 5/16" bolt, nut and washer. This is the sheet metal bracket that is attached to the floor of the car that the transmission cross member mounts to.



100. Install rubber dog bone to exhaust hanger. Use WD-40 or a silicone spray for easier installation.

101. Install "double barrel" exhaust pipe to downpipe. We recommend using anti-seize in all slip fit connections. Slide 3" exhaust clamps on before sliding pipe on.





102. Hang double barrel pipe on rubber dog bone.



103. Install straight pipe or catalytic converter onto the double barrel. Again, slide clamp on first.



104. Install Y-pipe onto straight pipe or cat, sliding clamp on first. If desired, Install O2 sensors. If rear O2 sensors are to be used, extending the factory harness by cutting & soldering the wires will be necessary or buying o2 sensor extensions.



105. Bolt Y-pipe to mufflers.



106. Position the entire exhaust system with about 1/2" clearance from other parts.

107. Position pipes taking aware proximity to suspension components.

108. The turbo support bracket is slotted to allow for differences among cars. Find correct placement and tighten all bolts. When tightening exhaust clamps, slide clamp to the edge of the pipe.



109. Zip tie power steering lines and wires away from down pipe. (pic)

110. Cut 1 1/2 inches off of the Lower radiator hose and block inlet -this will raise the thermostat housing away from down pipe. If this isn't enough, we have found that cutting the hose that runs to the bottom of the coolant reservoir helps with raising the thermostat housing as well. If needed, cut to desired length.





## Oil Feed Line

111. Locate pipe plug on the underside of the oil filter mount, remove plug. (This is the location for the turbo oil feed. Replace plug with supplied 90-degree 1/4" pipe to #4 fitting.

112. Install 47" oil feed line from turbo oil inlet to the underside of the oil filter mount. Route line away from hot pipes & moving parts. Secure with supplied zip ties.



113. Assemble #10 steel braided oil return line, positioning 90 degree fitting on the pan, and straight end towards turbo. Tighten oil return line.



114. Remove air temp sensor from factory air inlet pipe and install the sensor in the top of the supplied conical air filter. Hole may need to be slightly enlarged or drilled for fitment. Harness may need to be extended to reach sensor.



## Heat wrap install

The following may or may not need to be done. The following is left up to the customer. We have some customers without the heat wrap and some have used it. However, we highly recommend installing the heat shield pads on the pipes that run below the steering rack boots.

115. Wrap all power steering lines with supplied heat wrap and zip ties.

116. Wrap all a/c lines with supplied heat wrap.

117. Install the supplied 4" x 6" heat shields on top of the main turbo pipe and the double barrel exhaust. Secure with supplied metal zip ties. This will shield the steering rack boots from heat.

118. Install the supplied overflow tank support rod. Slide on washer, then push the threaded end through the hole on the overflow tank and secure with nylon insert nut.

119. Re-install the radiator overflow tank and attach hose.

120. Tighten all overflow tank bolts.

121. Install supplied modified 03/04 coolant crossover tubes.

122. Install supplied Polished radiator tube with supplied clamps and 1 ¼ silicone hose.

## **03-04 COBRA INSTRUCTIONS**

- *Re-install fender well, and front fascia.*
- *Re-install headlights*
- *Have car aligned.*
- *Check all bolts and hose connections.*
- *Start car, checking for exhaust and fluid leaks.*
- *Fill radiator, overflow reservoir and clear air pockets.*
- *Re-install coolant can cover.*
- *Change oil. We recommend using synthetic oil.*
- *Install supplied spark plugs and gap to .030.*

**TAKE VEHICLE TO A DYNO FACILITY AND HAVE A CHIP BURNED TO TUNE IN THE CAR.**



**PUTTING THE VEHICLE UNDER BOOST WITHOUT THE PROPER PROGRAMMING WILL CAUSE MAJOR ENGINE DAMAGE.**

# HELLION POWER SYSTEMS

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