

## Hydroboost Conversion Kit (MMBAK-19/-20)



*Read all instructions before beginning work. Following instructions in the proper sequence will ensure the best and easiest installation.*

Thank you for purchasing the Maximum Motorsports' Fox Mustang Hydroboost Conversion Kit.

- We include a CNC machined aluminum adapter block to mount the Hydroboost unit at the correct angle, height, fore/aft location, and lateral location to operate exactly as Ford designed it to operate.
- We include a new brake pedal arm with the correct pedal ratio.
- Our unique pedal pad assembly bolts to the pedal arm in any one of six possible positions, allowing customizing the brake pedal's position to suit your needs.
- Our kit retains factory cruise control.
- We include a new billet aluminum pedal box spacer to replace the stock plastic spacer.
- We include special tools required for installation.

### **Required Tools**

- Brake bleeding equipment
- Basic Hand Tools

### **Required Supplemental Items**

- Mustang Hydroboost Unit and Master Cylinder
- Power steering Hoses
- Brake hard lines to connect the master cylinder to the brake system
- Rubber Vacuum Cap or Plug

### **Installation Time**

Shop: 3 hours

Home Mechanic: 5 hours

### **Supplemental Installation Notes**

- When using a 1979-95 power steering pump, do NOT repeatedly press the brake pedal with the engine off because power steering fluid will overflow the reservoir. See the last section of these instructions for more information.

### **This Kit Contains**

Description	QTY
Hydroboost Adapter Block	1
Brake Pedal Arm	1
Brake Pedal Pad	1
3/8-16 x 1-1/4" Hexbolt	2
3/8 AN Washer	4
3/8 SAE Washer, G8	4
3/8-16 Nylock Nut	6
Plastic Washer	1
Hydroboost Nut Socket (MMT-12)	1
Aluminum Pedal Box Spacer (MMBK-30)	1
Firewall Bending Tool (MMBAK-20 only)	1
Blue Loctite	1
Installation Instructions	1

**Component Identification**



**NOTE:** There will be a part number engraved on the top side of the Hydroboost adapter block, used to determine which kit it was designed for.

MMBAK-19	1996 - 1998 Hydroboost	BK-077
MMBAK-20	1999 - 2004 Hydroboost	BK-076



**NOTE:** There are notches on top of the brake pedal arm, directly above the pivot tube, used to determine which kit it was designed for.

MMBAK-19	1996 - 1998 Hydroboost	1 notch
MMBAK-20	1999 - 2004 Hydroboost	2 notches



Plastic Washer



3/8" AN Washer



3/8" G8 Washer



3/8" Bolt



## Installation

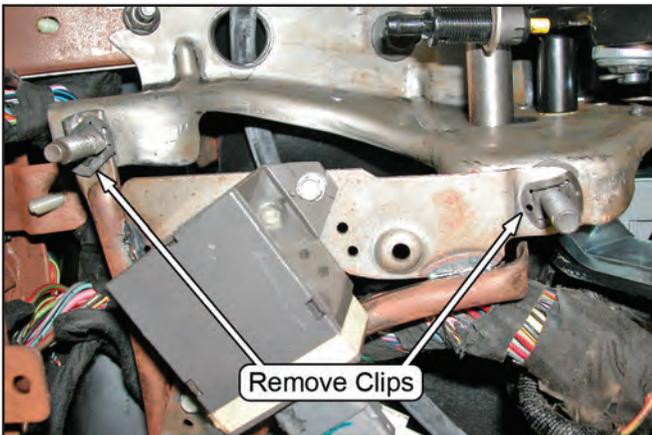
1. Disconnect the negative terminal of the car's battery.
2. Disconnect the positive terminal of the car's battery.

**WARNING:** Both battery terminals must be disconnected for at least two minutes prior to disassembly of the dash. Failure to do so can increase the risk of an accidental discharge of the vehicle's airbag.

3. Remove any paneling and/or components covering the steering column and its mounting bolts under the dash.

**NOTE:** For ease of product installation, we highly recommend removing the driver seat.

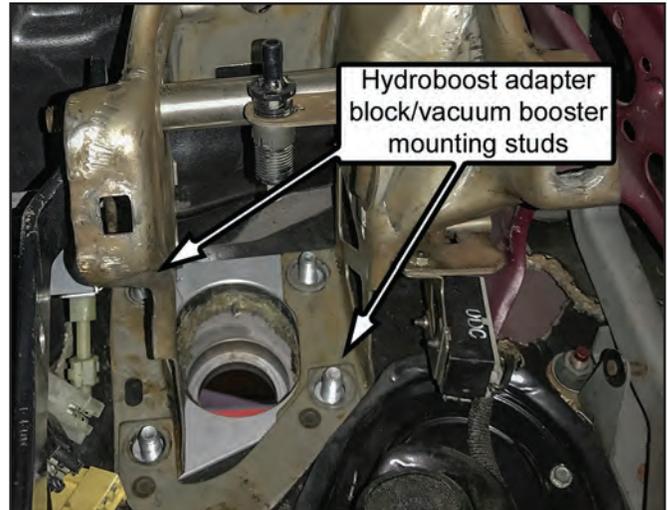
4. Disconnect any wiring or other attachments to the steering column.
5. Remove the four nuts holding the steering column assembly to the pedal box and swing the column down away from the pedal box.
6. Remove the two retaining clips holding the steering column brace in position on the pedal box.



7. Drain the brake master cylinder to prevent spilling fluid in the next steps.
8. If equipped, disconnect the low fluid level electrical connector from the master cylinder.
9. Disconnect the master cylinder hard lines and booster vacuum line at this time.
10. Plug or cap off any exposed brake lines or ports to avoid getting contaminants in the brake system.
11. Disconnect the pushrod and brake light switch from the stock brake pedal by removing the retaining clip. Save the OEM retaining clip and plastic washer for later use.

12. Remove the nuts from the four brake booster studs protruding through the firewall, which secure the pedal box to the firewall. This will remove the primary support holding up the brake booster & master cylinder. Be careful that they do not fall under their own weight and accidentally bend or kink any brake hard lines.

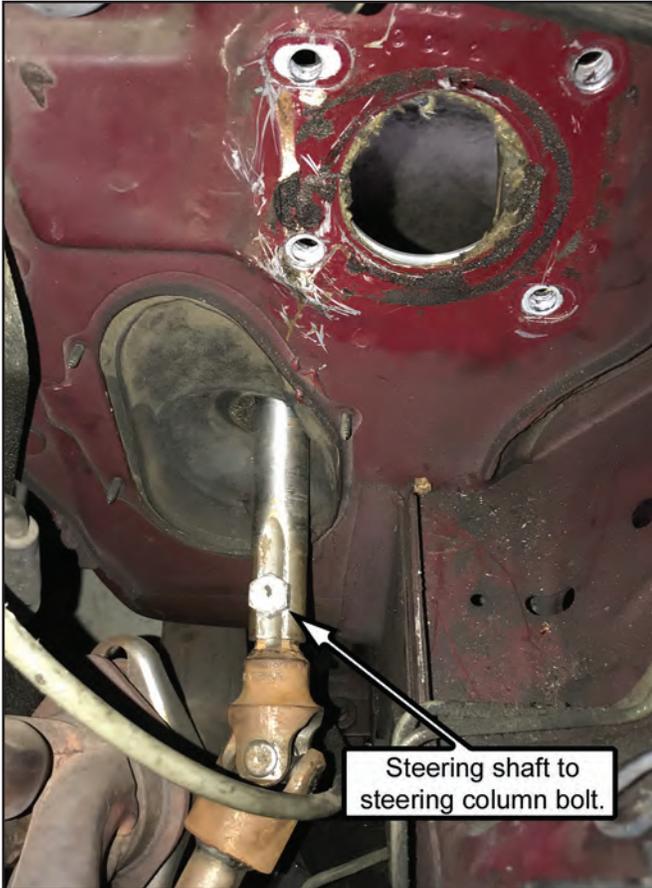
**Tech Tip:** Due to limited access, it can be helpful to use a socket with multiple universal or long wobble extensions.



13. Remove the master cylinder and brake booster from the car. Take care not to spill any leftover brake fluid.
14. Permanently seal any vacuum lines or ports exposed as a result of removing the brake booster. Most auto parts stores carry rubber caps for this purpose.

15. Remove the steering shaft to steering column connecting bolt in the engine compartment.

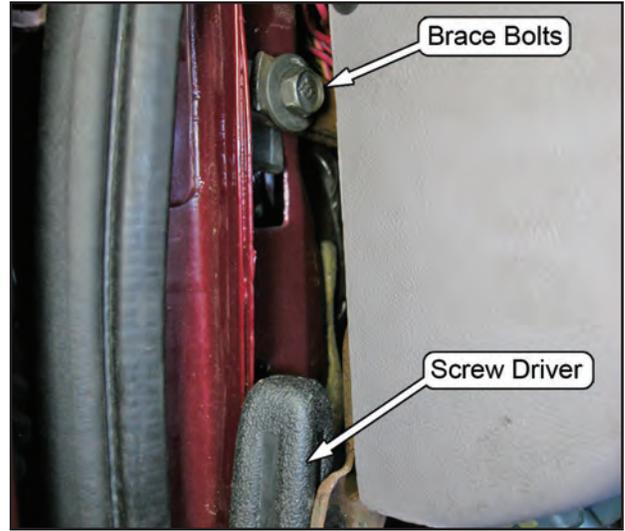
**NOTE:** Mark the orientation of the inner shaft/steering wheel to the outer steering column housing. Do not rotate the steering wheel relative to the outer steering column housing while it is removed from the car. Doing so may cause damage to the electrical connections. It is easiest to simply remove the key from the ignition and lock the steering wheel in place.



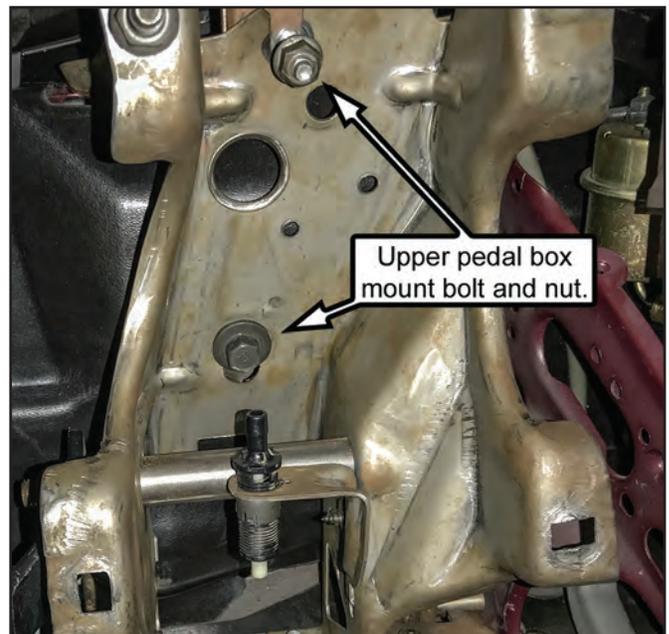
- 16. Remove the steering column.
- 17. Remove the driver side kick-panel.
- 18. Remove the lower dash retaining bolt on the driver side.
- 19. Pull away the rubber door seal adjacent to the dash.

20. Carefully pull the dash rearward enough to remove the outboard steering column brace bolt.

**NOTE:** Place the handle of a screwdriver between the dash and the doorjamb pinch weld to hold the dash away from the brace bolt



- 21. Remove the steering column support brace.
- 22. Disconnect the clutch cable from the clutch quadrant.
- 23. Disconnect any remaining items preventing removal of the pedal box, cruise control vacuum tube, wiring harnesses, etc.
- 24. Remove the remaining upper bolt and nut holding the pedal box under the dash and remove the pedal box from the vehicle.



25. Remove the plastic pedal box spacer.

26. Remove the OEM brake pedal from the pedal box. Do *NOT* discard the pivot bolt, retaining pin, crush sleeve, or pivot bushings; you will need to re-use them later.

**NOTE:** It may be necessary to remove the clutch quadrant in order to remove the brake pedal arm bolt.



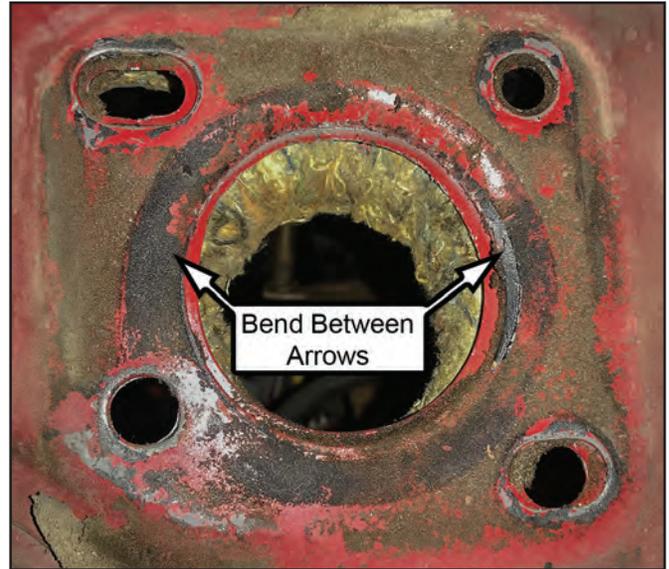
### **Firewall Modification**

**NOTE:** If installing a 1996-98 Hydroboost (MMBAK-19), skip to Brake Pedal Arm Installation.

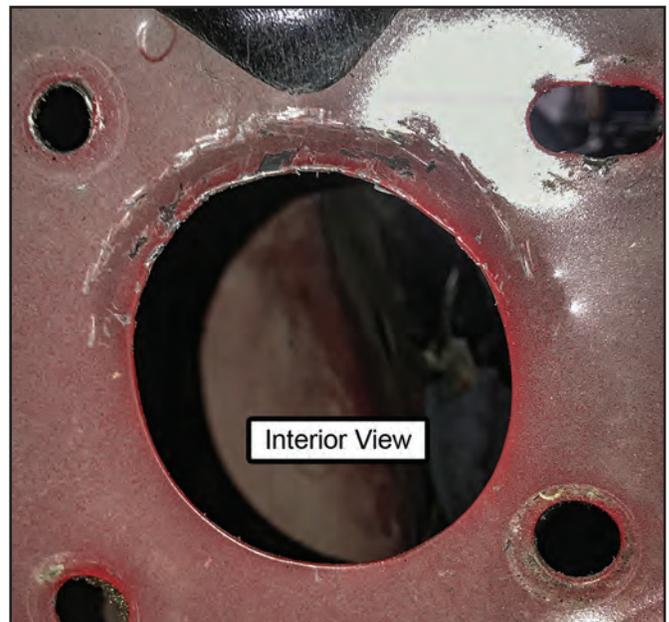
27. For the 1999-04 Hydroboost (MMBAK-20), you will have to slightly bend the top edge of the firewall opening where the pushrod goes through to provide clearance for the end of the Hydroboost unit.



28. With the supplied bending tool, slowly bend the upper portion of the firewall inwards towards the interior of the car. Slowly work the metal between the 10 o'clock and 2 o'clock positions a small amount at a time.

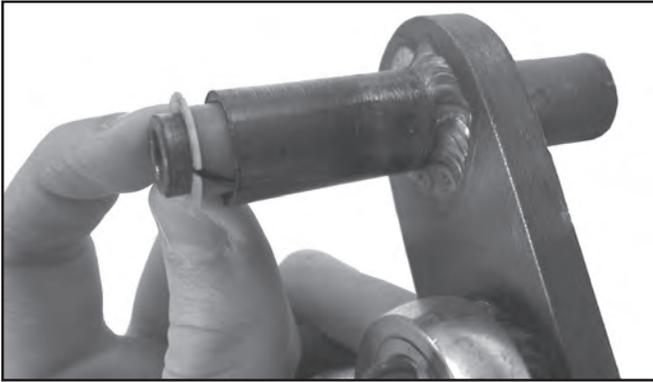


29. The goal is to bend about 3/8 of an inch worth of metal inwards to about 45 degrees.

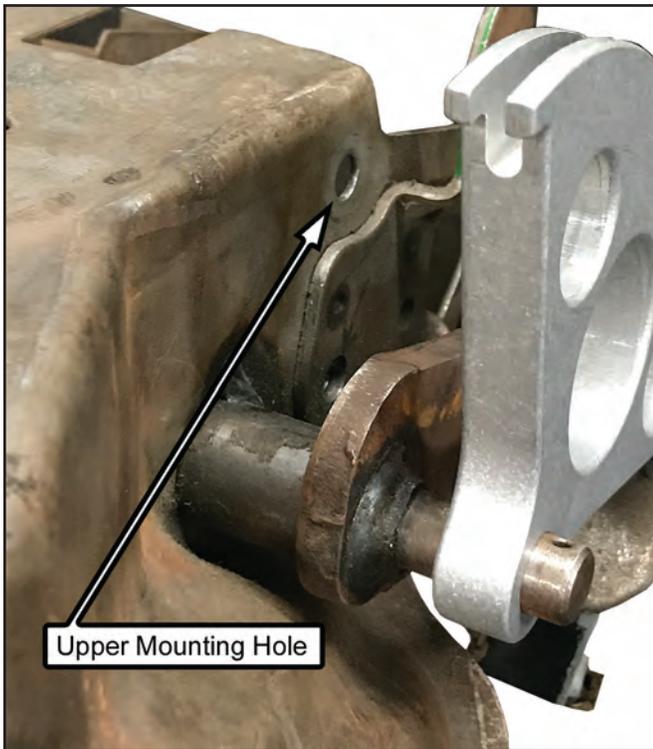


## Brake Pedal Arm and Pedal Box Installation

30. Transfer the OEM crush sleeve and pivot bushings into the pivot tube of the MM pedal arm.



31. Mount the pedal arm in the upper pair of holes, re-using the OEM pivot bolt & nut.



32. Torque the pivot bolt to 19 lb-ft.
33. Install the supplied aluminum pedal box spacer over the top of the carpet.
34. Re-install the OEM pedal box under the dash in its original position, using the upper mounting bolt or nut to hold the assembly in place.
35. Only hand tighten the upper mounting bolt and nut, do not fully torque them yet, in case the pedal box position needs to be adjusted to fit with the Hydroboost Adapter Block.

## Hydroboost Adapter Block Mounting

36. Remove the dust boot and circlip from the Hydroboost.
37. Remove the factory Hydroboost adapter from your Hydroboost unit using the supplied MM Hydroboost Nut Socket, MMT-12.
38. Install the Hydroboost adapter block onto your Hydroboost unit. Note the locating tooth on the Hydroboost adapter block that must be aligned with the notch on your Hydroboost unit. Put a small amount of the supplied Loctite on the threads of the Hydroboost unit.
39. Flip nut over from its original orientation, so the teeth are pointing away from the Hydroboost adapter block. Torque the nut to at least 150 lb-ft.



40. Reinstall circlip.
41. Reinstall the dust boot onto the Hydroboost unit.
42. Install the Hydroboost unit and adapter block into the firewall. The studs will pass through the four mounting holes in the pedal box spacer and the pedal box on the interior side of the firewall.
- NOTE:** Installing the Hydroboost with adapter block is easier with the master cylinder removed.
- NOTE:** On the 1999-04 Hydroboost units, removing the 3/8" barb fitting for the return line can help with installing the Hydroboost onto the firewall.
43. On the interior side of the firewall, install a 3/8" G8 washer and 3/8" Nylock nut over each stud. Leave loose to make the following steps easier.
- NOTE:** It may help to have someone push the Hydroboost against the firewall, from the engine bay, while getting the nuts started on the Hydroboost adapter block inside the car.
44. Place the supplied plastic washer over the brake pedal pushrod stud.

45. Position the brake light switch over the Hydroboost pushrod and slide it onto the stud. Move the pedal back and forth until everything is fully seated on the brake pedal arm stud.
46. Install the factory plastic washer and the OEM retaining pin onto the stud.
47. Torque the four 3/8" Nylock nuts on the pedal box to 26 lb-ft.

### **Remaining OEM Components**

48. Torque the upper pedal box bolt and nut to 15 lb-ft.
49. Re-install the remaining components under the dash that were removed or loosened during the pedal box removal. Such as the clutch cable, wiring connectors, steering column assembly, and dash paneling. Torque the steering shaft to steering column connecting bolt to 54 lb-ft.
50. Reinstall the driver seat.

### **Brake Pedal Pad Mounting**

**NOTE:** The MM pedal pad's vertical height on the pedal arm can be adjusted, which in turn changes the pedal ratio. We recommend starting with the pedal pad mounted in the middle pair of holes on the pedal arm. If, after road testing the car, you find the pedal effort and pedal travel not to your liking, the pedal ratio can be adjusted by mounting the pedal pad in one of the other sets of holes on the pedal arm. Mounting the pedal pad in the upper-most pair of holes results in a pedal arm length that is  $\frac{3}{4}$ " shorter. This means you will have less pedal travel and a higher pedal effort. Using the lowest pair of holes results in a pedal arm length that is  $\frac{3}{4}$ " longer; this means you will have more pedal travel and a lower pedal effort.

51. Place a 3/8" AN washer over each 3/8" bolt.
52. Position the pedal pad at the desired location on the pedal arm, and slide the two 3/8" bolts through the two selected mounting holes.
53. Place a 3/8" AN washer over the tip of each bolt.

54. Thread a 3/8" Nylock nut onto each bolt and snug down.



### **Driver Adjustments**

**NOTE:** The OEM brake pedal placement is considered by many drivers to be too "high" relative to the gas pedal. This makes heel/toe downshifting difficult. The adjustability of the brake pedal pad allows it to be moved closer to the elevation of the gas pedal.

55. Have the driver sit in the driver's seat and determine if the pedal pad position is suitable. Adjust the pedal pad as necessary.
56. Torque the 3/8" bolts fastening the pedal pad to the pedal arm to 33 lb-ft.

### **Finishing the installation**

57. If disconnected earlier, connect the brake light switch wires to the contacts on the back of the brake switch.
58. Reconnect the positive battery terminal.
59. Reconnect the negative battery terminal.
60. If the vehicle is equipped with cruise control, re-adjust the cutoff switch so the tip fully depresses when the pedal arm rests against the pedal stop.
 

**NOTE:** If the cutoff switch does not contact the pedal arm, it will be necessary to slightly bend the switch mounting bracket (use a pair of pliers) until contact is made. The cruise control module will not activate unless the cutoff switch fully depresses.
61. Install the master cylinder as per the factory service manual.
62. Install new brake lines connecting the master cylinder to the brake system. These typically will connect to either the stock brake proportion valve, or MM Brake Proportioning Valve Eliminator Kit (MMBAK-6)

63. Connect the hydraulic hose to all components of the power steering and Hydroboost system. DO NOT fill the power steering pump with fluid until the brakes have been bled.
64. Starting with the master cylinder, bleed the brake system as per the factory shop manual.
65. Bleed the Hydraulic system as per the factory shop manual.
66. Carefully test-drive the car. If after test-driving you wish to change the pedal effort and pedal travel, refer to the brake pedal pad mounting section.

### **Filling the Power Steering Pump Reservoir**

#### ***1996-2004 OEM power steering pump***

- Fill the reservoir and bleed the system as per the appropriate shop manual.

#### ***1979-1995 power steering pump***

**NOTE:** Do NOT repeatedly depress the brake pedal with the engine off because power steering fluid will overflow the reservoir. The Hydroboost has an internal accumulator that stores fluid under pressure to briefly supply power brake assist during an engine stall situation. If you press the brake pedal while the engine is off the hydraulic fluid in the accumulator will provide power assist and then return to the power steering reservoir. That will raise the fluid level in it because the power steering pump is not turning. If the brake pedal is pressed several times in this situation the fluid will overflow the reservoir.

- Fill the reservoir and bleed the system as per the appropriate shop manual.

**NOTE:** If fluid overflow from the reservoir is a problem in your installation, there are ways to deal with it:

- A piece of large diameter petroleum safe hose several inches long can be hose clamped around the top of the reservoir to increase its air capacity. The cap is then placed into the end of the hose and secured with a hose clamp.
- A remote reservoir can be added in parallel, plumbed into a fitting added to the filler neck of the stock reservoir. That fitting must be below the fluid level, and the remote reservoir must be positioned so it aligns with the fluid level in the stock reservoir.