

IRS Racing Brake Kit (MMBAK-15, -16)



This Maximum Motorsports IRS Racing Brake Kit will improve the braking performance of your IRS-equipped Mustang racecar. This kit will significantly reduce rotor temperatures, and the rigid four-piston caliper will greatly improve brake pad life and pedal feel by eliminating taper wear of the pads. Plus, the unique and aggressive appearance looks great!

The increase in thermal capacity provided by this MM kit allows increasing the rear brake bias. This allows a more proper match of the rear brake capacity to upgraded front brakes. A better balanced, better performing brake system not only shortens stopping distances, it inspires driver confidence, which leads to lower lap times.

The lower center of gravity, longer wheelbase, better weight balance, and improved suspension of a racecar reduces forward weight transfer during braking, which gives the car the ability to utilize more rear brake bias than a street-oriented Mustang suspension can tolerate. Dialing in more rear brake with an adjustable proportioning valve will overwhelm the thermal capacity of the stock Cobra rear brakes. The larger rotors of the MM kit provide more thermal mass, allowing an increase in rear brake bias while keeping temperatures lower than with the stock Cobra rotors.

The MM IRS Racing Brake Kits includes:

- Two-piece, directional, 12.72" x 1.25" vented and slotted rotors for increased brake cooling and stopping power. Rotors are larger diameter and thicker than stock rotors, increasing thermal capacity. They have larger internal cooling vanes, and asymmetric slots to vent hot gases for improved pad bite.
- Rotor hats are machined from aluminum for reduced weight. Hats are available in either fixed or floating versions.

- Floating rotors (*MMBAK-16 ONLY*) can move laterally relative to the hub. This slight movement can absorb misalignment in the brake system, allow expansion/contraction of the rotor without adverse braking effects, and reduce pad kickback since the rotor can "float" with pad movement.
- Four-piston forged aluminum Wilwood calipers are lightweight; yet provide high brake torque for maximum stopping performance. Calipers utilize larger-than-stock pads. The increase in friction material volume prolongs pad life.
- Stainless steel brake hoses to replace the stock rubber hoses for improved pedal feel and increased reliability under the extreme stress of open track use.

Important Notes

- This kit does *not include a parking brake*. Installation of this kit will disable the stock parking brake, making it non-functional.
- This kit should only be installed with properly matching front brakes. The appropriate *minimum* size front rotor is the standard Cobra 13" rotor. The thicker rotors of a StopTech front brake kit are much more desirable. The stock Cobra aluminum PBR sliding-bridge calipers are the *minimum* suitable caliper choice. Fixed-mount four-piston calipers provide a much more balanced match.
- The four-piston calipers require more clearance to the wheel spokes than the stock Cobra Varga rear caliper. Wheels that clear 4-piston front calipers from Brembo and StopTech will clear these Wilwood calipers.
- Brake pads are *not* included with this kit because they should be chosen to complement the front pad compound on *your* racecar. Contact a MM Tech Associate to discuss your performance brake pad needs.

Required Tools:

- Ratchet
- Sockets (assorted)
- Torque Wrench
- Wrenches (assorted)
- Extension (assorted, optional)
- 12mm Flare Wrench

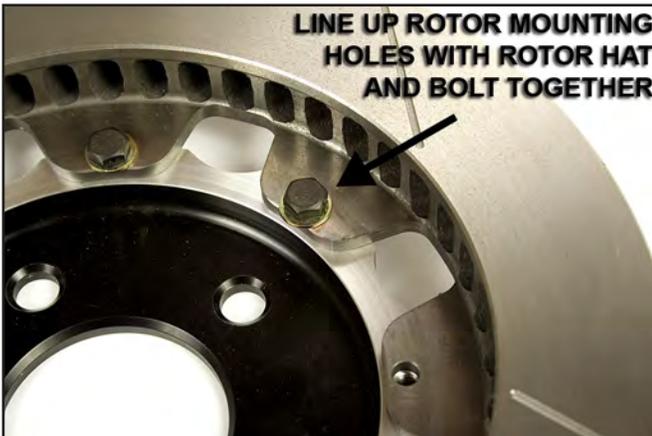
Read all instructions before beginning work. Following instructions in the proper sequence will ensure the best and easiest installation.

Assembling the Rotors

NOTE: For MMBAK-15, start from Step 1. For MMBAK-16, start from Step 6.

MMBAK-15 Fixed Rotor Assembly

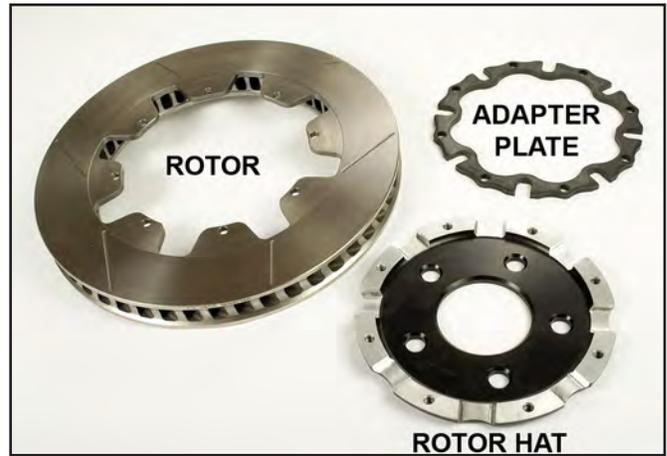
1. Inspect the Wilwood rotors and note the arrow indicating the direction of forward rotation.
2. Bolt the fixed rotor hats to the rotors with eight (8) lock-wire drilled, 5/16-18 x 3/4" G8 hex bolts and eight (8) 5/16" AN washers for each rotor assembly. Apply a drop of the supplied blue Loctite to the thread of each bolt.



3. Torque the bolts to **180 in-lbs (15 ft-lbs)**. Tech tip: torque bolts in a star pattern (e.g. as you would with lug nuts) for even clamp loading.
4. MM strongly recommends that the bolts securing the rotor hats to the rotors be wired together using appropriate safety lock-wire. Refer to the addendum sheet for the proper safety wiring procedure.
5. Skip forward to Step 13.

MMBAK-16 Floating Rotor Assembly

6. Inspect the Wilwood Rotors and note the arrow indicating the direction of forward rotation.



7. Inspect the floating rotor hat adapters and note the "HUB SIDE" text on one side of the adapter. This side should face the hub (inboard) when installed.
8. Bolt the floating rotor hat adapters to the floating rotor hats with eight (8) lock-wire drilled, 5/16-18 x 3/4" G8 hex bolts and eight (8) 5/16" AN washers for each floating hat assembly. Apply a drop of the supplied blue Loctite to the thread of each bolt.



9. Torque the hex bolts to **180 in-lbs (15 ft-lbs)**. Tech tip: torque bolts in a star pattern (e.g. as you would with lug nuts) for even clamp loading.
10. Insert eight (8) t-nuts into the slots in the floating rotor hat adapter. Bolt the floating hat assemblies to the rotors with eight (8) lock-wire drilled, 5/16-24 x 3/4" G8 socket head cap screws and eight (8) 5/16" AN washers and eight (8) T-nuts for each rotor assembly. Apply a drop of the supplied blue Loctite to the thread of each screw.



11. Torque the cap screws to **228 in-lbs (19 ft-lbs)**. Use the same star pattern when tightening the cap screws.
12. MM strongly recommends that the bolts securing the floating rotor hats to the floating hat adapters and the cap screws securing the hat assemblies to the rotors should be wired together using appropriate safety lock-wire. Refer to the addendum sheet for the proper safety wiring procedure.

Preparation

13. Park the car on level ground but do not set the parking brake.
14. Jack up the rear of the car and support it securely on jack stands. Use wheel blocks as necessary to prevent the car from rolling.
15. Remove the lug nuts and remove the rear wheels and tires.

Driver Side Installation

Parking Brake Cable Removal

NOTE: If the OE parking brake is already disconnected/removed from the car, skip to Step 21.

16. Disengage the parking brake cable end from the parking brake lever arm.



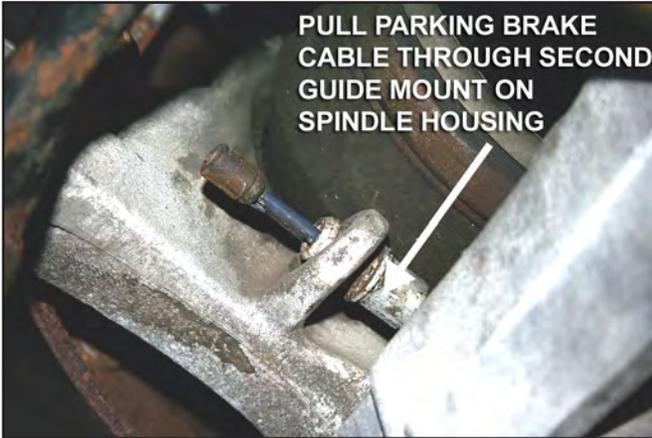
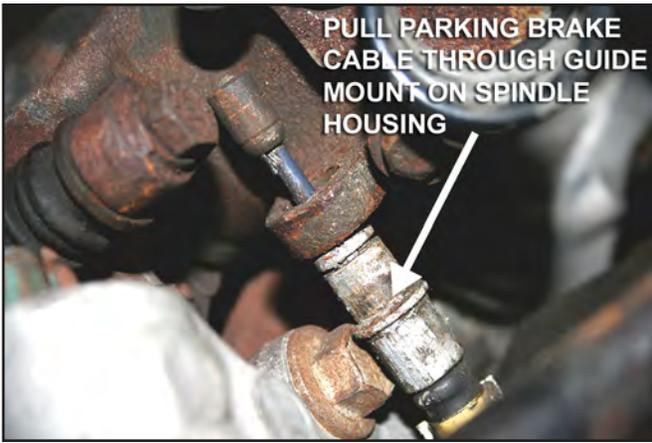
17. Remove the parking brake cable retaining clip.



18. Unbolt the parking brake cable mounting bracket from the lower control arm.



19. Pull the parking brake cable out of its spindle mount and guide hole.

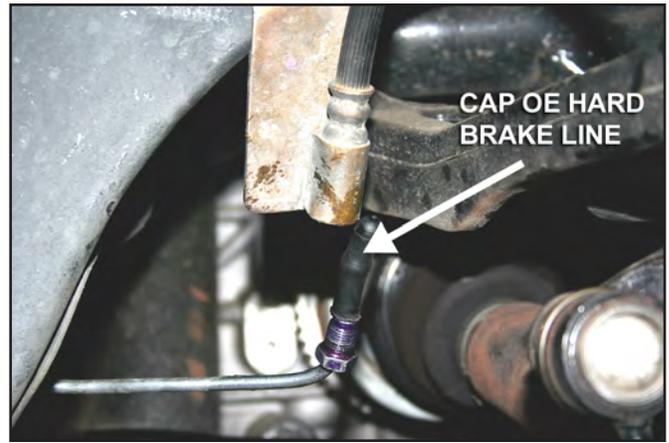
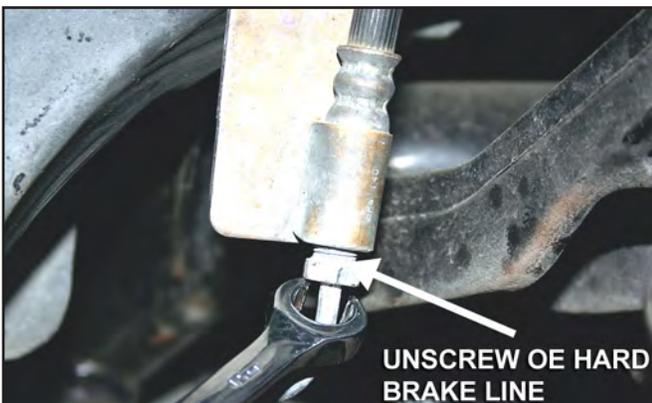


20. Use zip ties to secure the cable out of the way, or remove the parking brake cable altogether. Consult a service manual for the proper removal procedure.

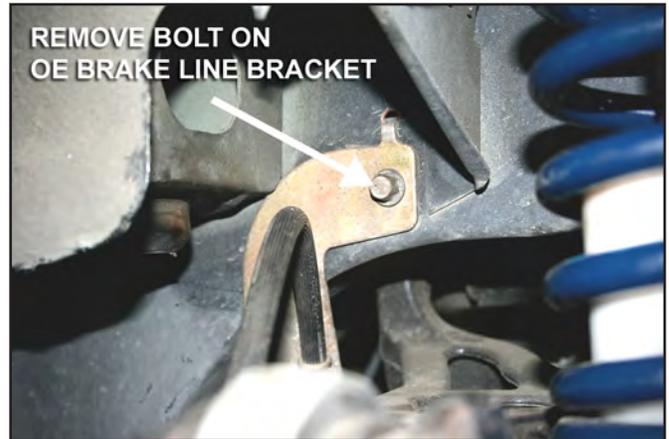
Caliper and Brake Hose Removal

21. Before disconnecting the brake hoses, place a tray under the fittings to catch spilled brake fluid. Disconnect the OE brake hard line from the frame rail bracket. Unscrew the flare nut on the brake hard line with a flare nut wrench to avoid rounding the nut. Cap the end of the brake hard line with the provided rubber brake hose inlet plug to prevent excess brake fluid from leaking out.

NOTE: Clean up any spilled brake fluid as soon as possible. Brake fluid will damage paint.



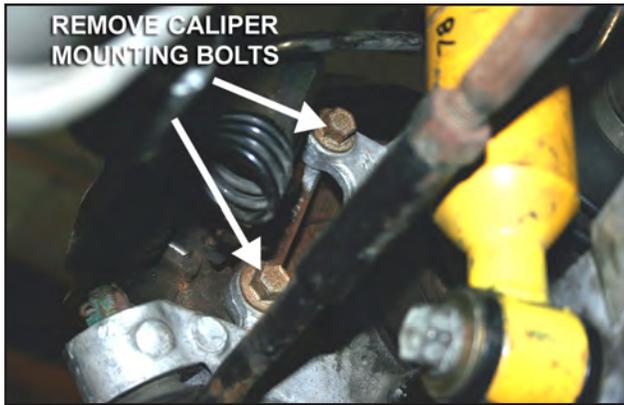
22. Unbolt the OE brake hose mount attached to the frame rail. Save the bolt for Step 40.



23. For 2003-2004 Mustang Cobras, unbolt and remove the brake hose locator brackets from the upper control arm. It will be necessary to spread the bracket legs apart to remove the bracket.



24. Unbolt the two (2) caliper mounting bolts. Save the mounting bolts for Step 26.

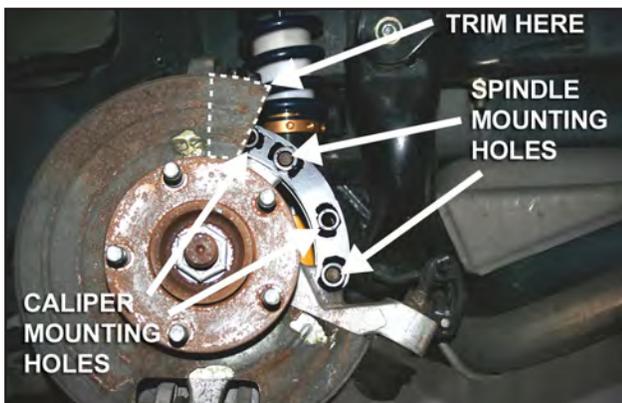


25. Remove the rotor and caliper, along with the OE rubber brake hose and frame rail bracket, as one assembly.

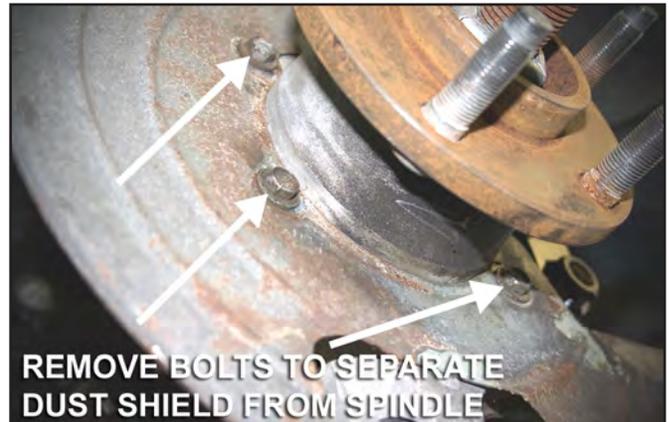
Caliper Relocation Bracket Installation

26. Install the driver's side MM Caliper Relocation Bracket on the spindle with the welded-on nuts facing outboard. Use the first and third mounting hole (from the bottom) on the MM Caliper Relocation Bracket to attach it to the caliper mounting holes on the spindle. Re-use the stock caliper mounting bolts. Do not completely tighten the bolts yet.

NOTE: It may be necessary to modify the OEM dust shield to provide clearance for the MM Caliper Relocation Bracket and Wilwood caliper. If this is the case, trim the shield as necessary.



27. If trimming is necessary, unbolt the two (2) mounting bolts [older spindles have three (3) bolts] and remove the dust shield. Use appropriate cutting tools and safety precautions to trim the dust shield as necessary.



28. Reinstall the dust shield and torque the bolts to **89 in-lbs (7.5 ft-lbs)**.

Rotor and Caliper Test Fitting and Installation

29. Before installing the rotor assembly, clean off any built up rust or debris that may be on the hub face with steel wool, or a similar product, to ensure a clean mating surface.

30. Mount the driver side rotor assembly onto the hub. Double check that the arrow on the rotor is pointing in the direction of forward rotation. Temporarily mount the rotor assembly to the hub with lug nuts.



31. Remove the sticker that protects the brake fluid inlet port on the inboard face of the Wilwood caliper. The port is tapped for 1/8-27 NPT thread.

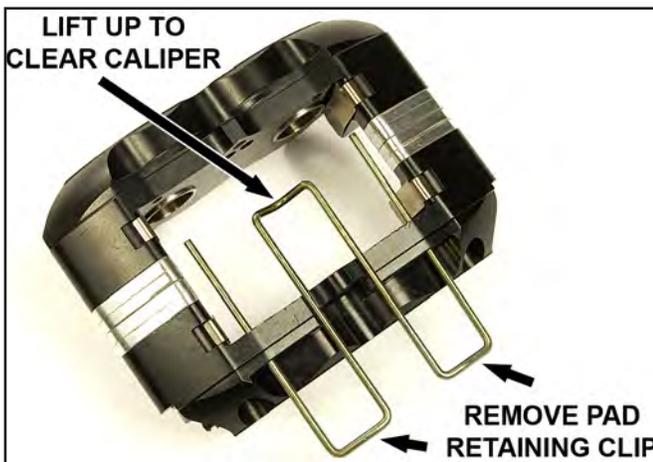
32. Install one of the supplied -3 AN to 1/8-27 NPT adapter fittings into the inlet port on the Wilwood caliper, with the -3 AN side facing out. Tighten the adapter hand tight plus 1.5-2.5 turns.

NOTE: Use caution when tightening the adapter fitting. Over tightening the adapter fitting may cause damage to the caliper.

33. Unscrew and remove the bridge bolt and bolt spacer from the Wilwood caliper. The bridge bolt threads into the inboard side of the caliper.



34. Remove the pad retaining clip from the caliper. The middle section of the clip has to be pulled upwards to clear the caliper.



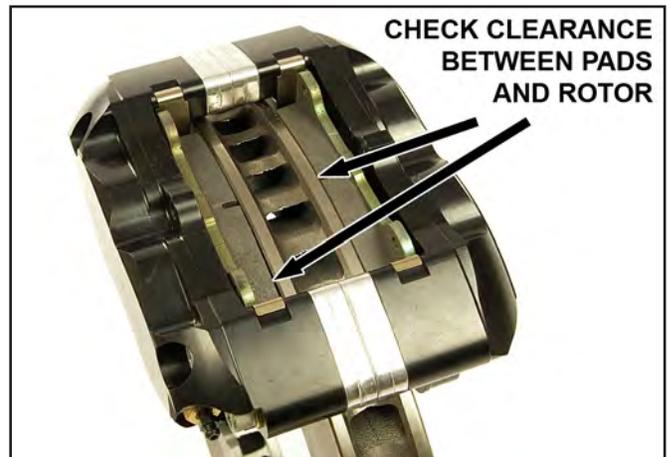
35. Test fit the caliper on the car. Due to their construction and bleeder screw placement, the Wilwood calipers can be used on either side of the car. It may be necessary to remove excess flashing material from the caliper mounts on the spindle. Remove the flashing by sanding/grinding as necessary.

NOTE: Only remove enough material to clear the caliper. Removing excess material can weaken the caliper mounts.



36. Slide the Wilwood caliper over the rotor and bolt the caliper to the MM Caliper Relocation Bracket with two (2) 7/16-14 x 1-1/2" G8 hex bolts and washers. Do not completely tighten the bolts yet.

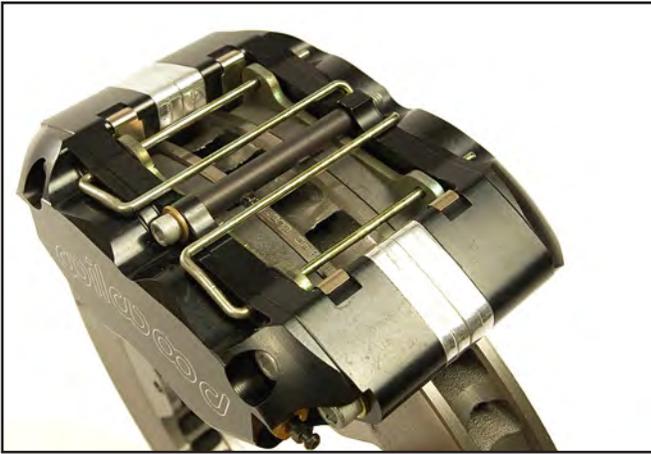
37. Test fit your brake pads in the Wilwood caliper. Slide the pads in from the top of the caliper and check for clearance issues between the rotor and pad. Check that the rotor can turn without any interference issues.



38. If there are no issues, torque the Wilwood caliper mounting bolts and spindle mounting bolts to **76 ft-lbs**.

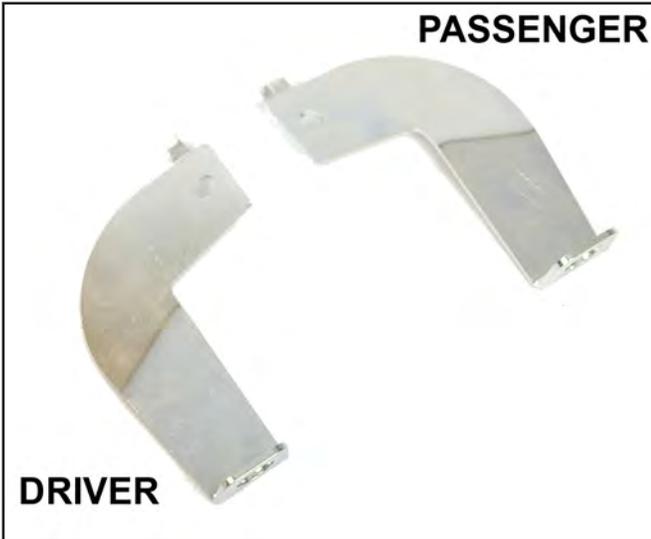
39. Complete the brake pad installation per the pad manufacturer's instructions.

40. Slide the pad retaining clip through the provided holes in the caliper and brake pads. Insert the bridge bolt with the provided washer through the mounting holes in the caliper and spacer and thread into inboard side of caliper. Torque the locknut on the bridge bolt to **100 in-lbs (8.5 ft-lbs)**.



Stainless Steel Brake Line Installation

41. Install the driver's side MM Frame Rail Bracket in the OE mounting location on the frame rail. Tighten the mounting bolt snug. When installed, the driver side MM Frame Rail Bracket has the brake fitting hole positioned forward of the frame rail mounting hole.



42. Connect one of the supplied braided stainless steel brake hoses to the MM Frame Rail Bracket by placing the 10 mm bubble flare fitting on the brake hose into the MM Frame Rail Bracket mounting hole.

43. Secure the 10 mm bubble flare fitting with a supplied brake fitting clip. The 10 mm bubble flare fitting has a groove for the brake fitting clip. Install the brake fitting clip in the groove with the tab on the clip facing outboard and downwards. The brake fitting should be secure.



44. Route the braided stainless steel brake hose under the upper control arm and connect it to the -3 AN adapter fitting on the backside of the Wilwood caliper. Make sure the adapter fitting on the back of the caliper doesn't move while you are tightening the brake hose fitting. Tighten the fitting until it is snug.

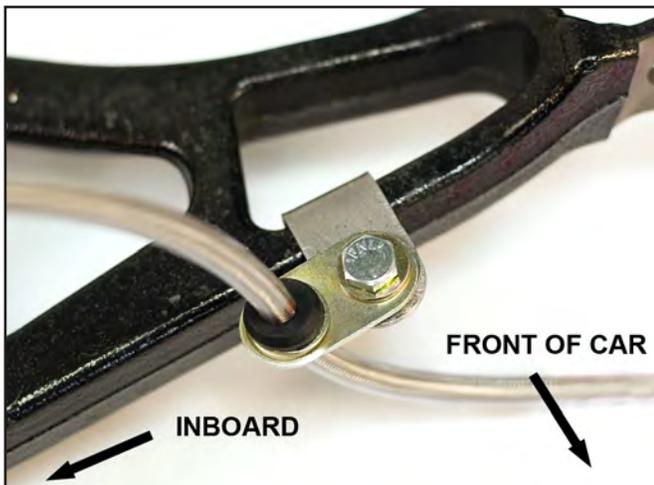
45. Place a MM IRS Control Arm Bracket on the front leg of the upper control arm, with the mounting holes facing the front of the car. Spread the bracket apart to slip it over the control arm and then clamp it back together afterwards.

46. Bolt the metal brake hose mount (preinstalled on the braided stainless steel brake hose) to the top side of the MM IRS Control Arm Bracket on the control arm. Place the supplied 1/4" G5 hex bolt with a G8 washer through the holes in the hose mount and MM IRS Control Arm Bracket. Place a G8 washer and a G8 nylock nut on the bolt to secure the brake line. Tighten the bolt until it is snug and the brake hose mount cannot move.





NOTE: Mounting the metal brake hose mount parallel to the control arm with the brake hose on the inboard side should provide adequate clearance to prevent the brake hose from contacting anything.



47. Temporarily mount the wheel and tire, and ensure that the hose is not rubbing against anything. If the braided stainless steel brake hose is in contact with anything, the hose will be worn through. If there is contact, reposition the MM IRS Control Arm Bracket on the control arm, or bend the MM Frame Rail Bracket to gain proper clearance.
48. Once you are comfortable with the placement of the brake hose, remove the rubber brake hose inlet plug from the OE brake hard line and connect the brake hard line to the braided stainless steel brake hose. Tighten the fitting until snug.

Passenger Side Installation

49. Repeat Steps 16 to 47 for the passenger's side of the car.

Finishing the Installation

50. Bleed the rear brake system, starting with the passenger side caliper. Consult a service manual for the proper procedure.

NOTE: On calipers with an inboard and outboard bleeder screw, such as the Wilwood calipers, always bleed the inboard bleeder screw first. Also, since the Wilwood calipers have bleeder screws on the top and bottom of the outboard and inboard sides, always use the top-most bleeder screws.

If a leak is evident around the caliper adapter fittings after bleeding the brakes, slightly loosen the -3 AN fitting on the brake hose and tighten the adapter fitting 1/2 a turn. Retighten the -3 AN brake hose fitting and bleed the caliper again.

51. Reinstall the wheels and lower the car to the ground.
52. Torque the lug nuts to the manufacturer's specifications.

NOTE: Properly bed-in pads and rotors before making any hard stops. Consult the instructions provided with your brake pads for the proper bed-in procedure.

This kit includes:

- 2 Wilwood 12.72" x 1.25" Vented and Slotted Rotor – D & P
- 2 Fixed Aluminum Rotor Hat (MMBAK-15 ONLY)
- 2 Floating Aluminum Rotor Hat (MMBAK-16 ONLY)
- 2 Floating Rotor Hat Adapter (MMBAK-16 ONLY)
- 2 Wilwood Caliper – D & P
- 2 Braided Stainless Steel Brake Hose
- 2 Caliper Relocation Bracket – D & P
- 2 Frame Rail Bracket – D & P
- 2 IRS Control Arm Bracket
- 2 Brake Fitting Clip
- 2 Brake Hose Inlet Plug
- 2 -3 AN to 1/8-27 NPT Fitting
- 16 5/16-24 x 3/4" G8 Lock-Wire Drilled SHCS (MMBAK-16 ONLY)
- 16 5/16-24 T-nut (MMBAK-16 ONLY)
- 16 5/16-18 x 3/4" Lock-Wire Drilled Hex Bolt
- 16 5/16" AN Washer
- 16 5/16" AN Washer (MMBAK-16 ONLY)
- 4 7/16-14 x 1-1/2" G8 Hex Head Cap Screw
- 4 7/16" G8 Washer
- 2 1/4-20 x 7/8" G5 Hex Bolt
- 4 1/4" G8 Washer
- 2 1/4-20 Nylock Nut
- 1 .5 ml Packet of Blue Loctite