

## **Installation Instructions** **BX11 Boxmount Front Brake Kit** **89-05 Mazda MX-5 Miata**

**Braking systems should only be serviced by experienced and skilled persons possessing the correct tools for the task. Improperly serviced, installed or maintained brake systems are dangerous. Do not take this responsibility lightly. Race equipment, including brakes should be inspected regularly for material fatigue, excess wear and damage from use.**

- It is recommended to have a Mazda FSM (Factory Service Manual) on hand before beginning any service on your Miata. Really.
- The included .5 liter bottle of brake fluid should be enough to bleed the front brakes. If you decide to bleed the rear brakes, you may need a second bottle of fluid. Do not mix brands of brake fluid.
- We prefer isopropyl alcohol for cleaning dust and fingerprints off of the brake system as it leaves no residue. Use only in well ventilated area free from any flame or source of ignition.
- Latex or nitrile gloves are recommended to help keep parts clean and free of greasy fingerprints during assembly
- Do not get grease or brake fluid on the brake pads. Doing so can permanently ruin their function
- OEM backing plates can either be bent to clear rotor or removed entirely
- Check torque on every fastener, connection, plug and thing you touched before lowering car to ground. Twice.
- TEST the brake pedal after completing installation of the kit, BEFORE lowering car to ground.

**You will regret not reading the stuff on this page :)**

### Included parts

- 2x Wilwood 120-13839 calipers, gray anodized, 4x1.375 piston type
- 2x Boxmount caliper brackets, 7075 T-6 forged billet alloy
- 4x Boxmount braces, steel
- 8x M10 x 1.25 x 45mm JIS flange head bolt
- 2x Brake hose, stainless braided, vinyl coated
- 1x Motul RBF600, .5 liter

### Two piece rotor version

- 1x Friction ring, 11x.810" directional, left hand vane, 6x6.25 BCD
- 1x Friction ring, 11x.810" directional, right hand vane, 6x6.25 BCD
- 2x Rotor hat, hub-centric, 6061 T-6 forged billet alloy
- 12x 5/16-18 x .75 bolt
- 1x Red Loctite 271, 5ml

### ND rotor version

- 2x 11" one piece ND rotor
- 8x .2mm, steel shim
- 8x .1mm steel shim

## Installation instructions

### Assembling two piece rotor system

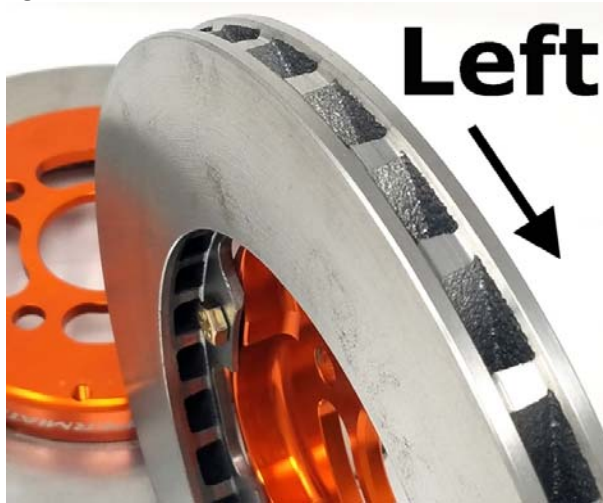
1b. Apply small dab of red loctite to thread of each bolt **Fig 1**. Assemble while thread locking compound is still liquid

**Fig 1**

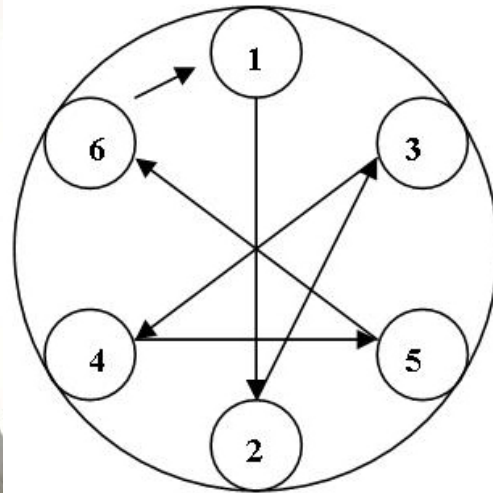


- 2b. Attach rotors to alloy hat with 5/16-18 bolts as shown in Fig 2.
- 3b. Torque in this cross-pattern sequence to 25 ft-lbs / 34Nm Fig 3

**Fig 2**



**Fig 3**



**Installing brake system**

1. Apply parking brake
2. Place front of car on two jack stands to allow removal of both front wheels
3. Leave cap on master cylinder
4. Place oil catch pan on ground under control arm
5. Loosen and remove caliper bracket bolts
6. Lift caliper off spindle and remove place on control arm
7. Remove rotor
8. Check that mating surface on spindle caliper tabs and threads are clean
9. Install bracket with braces as shown in Fig 4. Snug fasteners but do not torque yet

**Fig 4**



10. Install rotor. Use lug nut to hold rotor in place while installing caliper.

**Note:** Two piece rotors are left and right hand **Fig 2**

**Note:** Rotor must be clean and free of any oil, grease or dirt that could contaminate the brake pads.

11. Install caliper without pads as shown in **Fig 6**

**Fig 6**



12. Install pads as shown in **Fig 7**

**Fig 7**



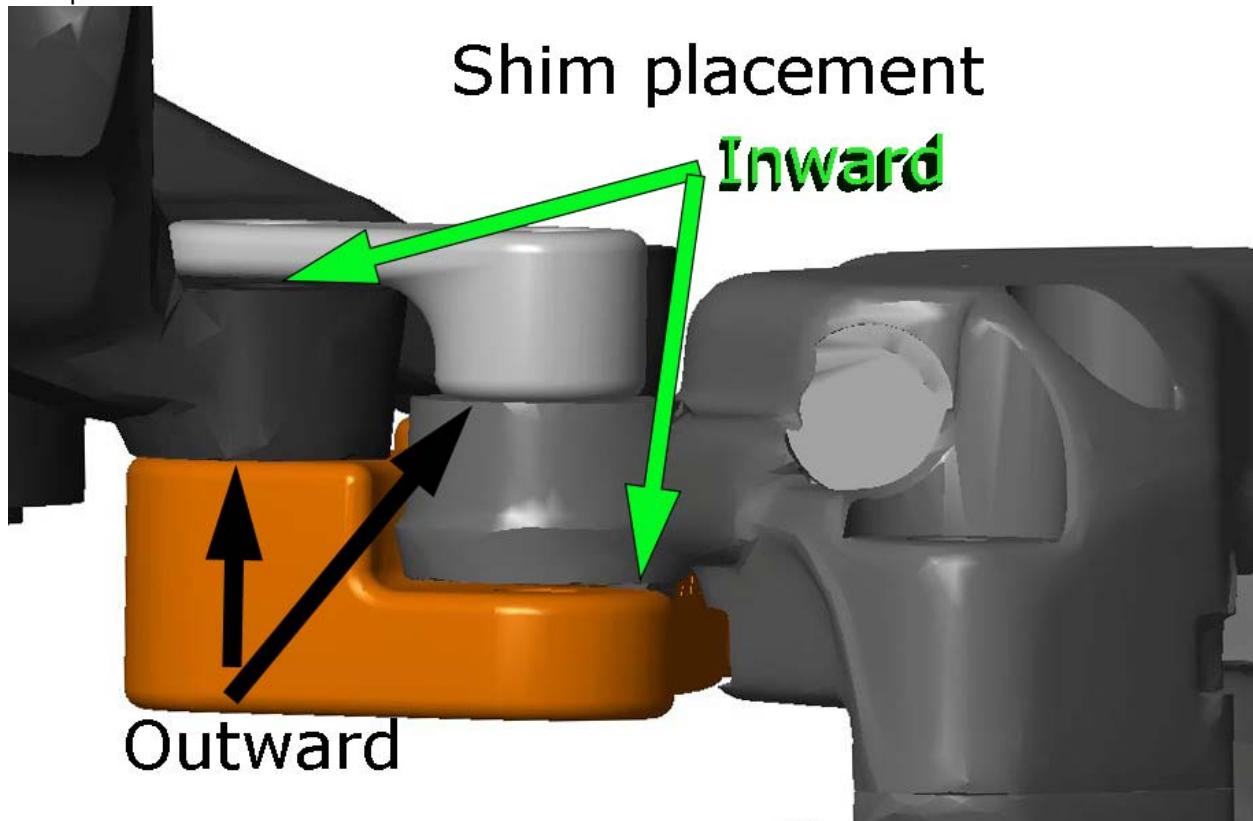
### Setting pad clearance on ND OEM rotor

13. ND OEM style rotor may require shimming. *Skip step 13 for two piece rotor system*

Due to tolerance stack between the parts in the system, the caliper may not be precisely centered on the rotor. Most cars line up perfectly without shims but we include shims in case you need to fine tune. Brake pads should have enough clearance between rotor and caliper piston to slide into caliper easily and have a tiny bit of free play. If either pad will not slide in or has no free play, increase clearance on that side by adding shims over the bolts as shown in **Fig 8**. It may take a few tries to determine which shim combination works for your car. Use the same number and size of shims on upper and lower mounting hole. Left and right wheels may need different shims, or none at all. Once a caliper is shimmed, write down the shim combo for future reference. It won't change unless you bend your spindle.

**Note:** Brake pads must be clean and free of any oil, grease or dirt that could contaminate them.

Shim placement **FIG 8**



14. Bend ends of split "cotter" pin to lock pads in the caliper **Fig 7**

15. Torque all four caliper mounting bolts to 45 ft-lb / 61 Nm

16. Attach brake hose to hard line fitting on frame rail

17. Attach brake hose to caliper. **Fig 8** This is a tapered NPT fitting which requires Teflon tape or sealant.

**NOTE:** both brake hoses provided in this kit already have red sealant applied. **Fig 9** Swing hub assembly

through full right and left steering lock to ensure brake line does not snag, bind or contact anything. Now mount wheel and repeat the swings while checking for contact, binding of the brake hose. Adjust hose by rotating fitting if needed.

**Fig 8**



**Fig 9**



20. Repeat installation and test procedure for other front wheel
21. Refill master cylinder and begin bleeding front brakes. Bleed wheel furthest from master cylinder first, working your way back to the wheel nearest the master cylinder.
22. Check both ends of both brake hoses for leaks
23. After both brake hoses are securely fitted, pads installed and everything torqued on both front wheels, test hydraulic system by pressing brake pedal with approximately 100lbs of force and holding for 5-10s. Pedal should not sink during this test. Check both ends of brake hoses for leaks.
24. Check caliper function. Wheels should spin freely with brakes off. Have assistant apply moderate brake force (15-40 lbs) or place a weight on brake pedal to activate. With wheels in air wheels, they should not be able to be rotated by hand with moderate force applied to brake pedal. Verify the wheels spin freely again when brake pedal is released.
25. Torque wheel lug nuts
26. Lower car to ground with parking brake applied on level ground. Start engine. Release parking brake and check brake pedal feel. It should be firm and not sink with constant hard pressure of at least 2 minutes.  
**Note: Running engine in enclosed spaces releases unhealthy fumes that may be trapped and concentrated.**
27. Put car in gear and move car a foot or two slowly in one direction and apply brakes. Reverse direction and perform test again.  
**Note: Be aware of your surroundings. Initial brake test with moving vehicle should be performed where unsatisfactory brake function would not cause a collision of any kind. Be prepared to apply the parking brake in case of unsatisfactory brake function.**
28. Repeat previous test forward and reverse with wheels steered full left and full right  
**Note: Oversize wheels/tires may reduce steering lock. Verify brake hose routing with as much steering lock as the car is capable of.**
29. Raise car onto two jack stands again. Inspect for leaks. Inspect for signs that brake hoses are interfering.
30. Perform road test at low speeds. After road test, place car on two jackstands (last time), set parking brake and remove front wheels to perform final visual inspection of system for fastener torque and leaks.

**Congratulations, you now have really awesome brakes!**

**More info about NA/NB Miata brake systems**

<https://supermiata.com/supermiata-brake-faq.aspx>

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Brake pad compound recommendations for Supermiata BX11						
	Street only		Auto-x		HPDE/Race	
Rear Rotor	Front	Rear	Front	Rear	Front	Rear
<b><i>SUPERMIATA.COM</i></b>						
NA6	GS1 or BP-10	GS1 or BP-10	R6	R6	R8 or higher	1 step lower than front
NA8/NB1	GS1 or BP-10	GS1 or BP-10	R6	R6	R8 or higher	1 step lower than front
Sport	GS1 or BP-10	GS1 or BP-10	R6	GS1	R8 or higher	2 step lower than front
* HPDE/Race example for -1: R12 front, R10 Rear						
* BP-10 compound not available for rear Miata calipers but they pair well with OEM pads						
* R8 and higher pads can be used for auto-x but may not reach best torque until a few turns in the course						
* R series pads produce lots of dust. GS-1 are virtually dust free						