

## BLEEDING PROCEDURES

**TBM DOT 5.1 Extreme 6 Brake fluid is the recommended brake fluid for TBM Brake Systems.**

*\* TBM Brake System are compatible with any DOT 3, DOT 4, or DOT 5.1 fluid.*

*\* The use of DOT 5 Brake fluid or any other silicone based fluids will cause caliper and master cylinder seals to swell and can result in excessive brake drag.*

In order to properly bleed the system, brake calipers should be mounted so the bleeder fitting is at the highest point of the caliper. This will allow gravity to move the air up and out of the caliper during the bleeding process.

1. Fill the master cylinder with the proper fluid to the master cylinder fill line.
2. Insure all caliper bleed screws are tight and the system is sealed.
3. Start the bleeding process at the caliper furthest from the master cylinder.
4. With the system still sealed, have someone, very slowly, apply even pressure to the brake pedal until they feel some resistance. *\*It is okay to make more than one stroke/pump of the pedal as long as you are applying a smooth stroke. Erratic application of the pedal will aerate the system and you will struggle to remove all air from the system.*
5. Once resistance is felt, hold pedal down while someone else opens the bleed screw at the caliper, letting the pedal go to the floor, and the fluid and air to exit the caliper.
6. Tighten the bleed screw at the caliper. Then the brake pedal can be released to allow it to return to its standard operating position.
7. Repeat steps 4-6 at each caliper until all signs of air/bubbles have been removed from the system.



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## BRAKE PAD BEDDING PROCEDURES

### \*\*\* WARNING \*\*\*

*Prior to bedding the brake pads, brakes must be tested for proper fitment, and have been deemed safe to operate. See TBM's Brake Testing Procedures.*

For best results, we recommend scuffing the annulus surface of the rotor with 80 Grit on a Dual Action sander or a Rotor Hone to remove the zinc-plating from the pad swept area. The rotors have been black zinc-plated to protect the part from rust. The zinc-plating will eventually burn off from the pad swept area but the pad bedding process can be delayed or interfered with if this step is neglected.

*Have an experienced driver take the vehicle out in an area where you can safely and legally bring the vehicle up to speeds of 55-65 mph:*

- 1. Bring the car up to 25-30 mph and then quickly slow down to 5-10 mph. Repeat this process 3-4 times.**
- 2. Then proceed by bringing the vehicle up to speeds of 50-55 mph and then quickly slow the car down to 20-25 mph. Repeat this process 3-4 times.**
- 3. Safely drive the vehicle without applying the brakes to allow the rotors to cool before coming to a complete stop. *\*Coming to a complete stop with the rotors hot from the bedding process can cause high spotting of the pad material that will result in pedal pulsation.***

The goal is to generate enough heat in the braking system so the pad compound will transfer an even layer of material onto the rotors. Street pads are not designed to be used in extreme heat conditions. There is no need to bring the temperature of the pads and rotors above normal operating temperatures seen in day-to-day street driving conditions.

After the bedding cycle, there should be an even layer of pad transfer on the rotors. If the rotors appear to have spotty and/or uneven pad material on the rotor face, this is typically the result of improper pad bedding and can cause uneven pad wear and/or brake chatter. Sand the pad swept surface of the rotors to remove the uneven pad transfer and reattempt steps 1 and 2.



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## RESIDUAL PRESSURE VALVES

*2 lb. Residual Pressure Valves are a great tool to help prevent fluid from flowing back into the master cylinder reservoir and also can help improve pedal feel.*

### Should you run a 2 lb. Residual Pressure Valve?

- If your master cylinder is mounted lower than the plane of where the calipers are mounted, a 2 lb. residual valve is required. They will help prevent the fluid from flowing back down into the master cylinder. Not running a valve would result in inconsistent pedal feel, the need to pump the brake pedal to engage the brakes, and hinder the brake bleeding process.
- If the vehicle is plumbed with brake line that doesn't move down from the master cylinder to the calipers. Areas of hardline that go up and over portions of the vehicle are key locations for air to get trapped. Running a 2 lb. Residual Pressure Valve will help in the bleeding process to get the air removed from these traps and will also help prevent fluid from flowing back down into these valleys during the caliper piston retraction process.
- If the master cylinder is mounted higher than the calipers and the vehicle is plumbed so that all lines are smoothly flowing down hill from the master cylinder to the calipers but you are looking for a firmer initial pedal feel. Running a 2 lb. Residual Pressure Valve will keep the system primed with 2 psi of fluid. This is not enough pressure to cause the brakes to drag but is enough to make the brake pedal firmer and more responsive at initial engagement.

### Where to install a Residual Pressure Valve?

Residual Pressure Valves can be installed anywhere inline. It is best practice to install them at or as close to the master cylinder as possible. The residual pressure valve will only hold pressure from the valve onward.



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## BRAKE BIAS AND MASTER CYLINDER SELECTION

**Achieving proper brake pressure is key to a properly working brake system:**

Normal operating line pressure should be **650-750 psi** while being able to achieve **1200 psi** under max effort.

When using a single OEM or Aftermarket tandem style master cylinder it is important to make sure the front and rear brake components have been selected to give you proper front to rear brake bias. These master cylinders will not proportion the bias for you. If you are experiencing too much rear brake, a proportion valve should be installed to the rear lines to reduce rear line pressure. If you are experiencing too much front brake, you want to first make sure you are not restricting any rear line pressure with a proportion valve. Increasing the rear braking capabilities will improve the front-to-rear bias.

**Tandem style master cylinder bore recommendations for manual brake systems when running TBM Brakes XS3 1.75" piston calipers front and rear:**

<u>Pedal Ratio</u>	<u>Master Cylinder Size</u>
5:1	15/16"
6:1	1"
7:1	1-1/8"

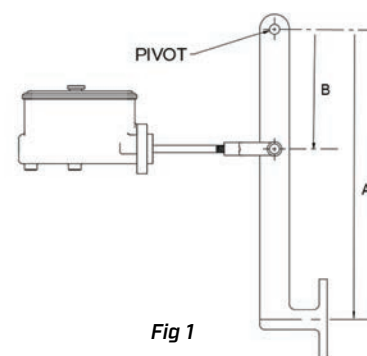
When using an aftermarket dual master cylinder, balance bar, and pedal assembly setup it is important to make sure the master cylinder sizes pair properly with the piston area of the calipers being used. The goal is to achieve proper line pressure with the balance bar centered and pedal travel at the middle of its stroke. From there, the balance bar can be used to fine tune the brake bias.

**Dual master cylinder bore recommendations for manual brake systems when running TBM Brakes XS3 1.75" piston calipers front and rear:**

<u>Pedal Ratio</u>	<u>Master Cylinder Size</u>
6.2:1	3/4" [Front and Rear]
7.2:1	13/16" [Front and Rear]

### How to measure your pedal assembly to determine your pedal ratio:

The dimension from the center of the pedals pad to the center of the pedals pivot point is distance "A". The dimension from the center of the pedals pivot point to the center of where the master cylinder pushrod is connected to the pedal is distance "B". Divide distance "A" by distance "B" to determine your pedal ratio. [Fig 1]





# TBM BRAKES

## BRAKE TESTING PROCEDURES

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1. Confirm system is sealed. Apply pressure to the brake pedal and hold for 2-5 minutes. Brake pedal should remain firm. If pedal drops, the entire braking system will need to be checked for leaks. Do not proceed with testing or pad bedding until pedal can firmly hold pressure.
  2. Confirm there is no brake components interference with any portion of the vehicle. With wheels on, turn the steering fully to the left and then the right, several times. Remove wheels and confirm no brake components are rubbing any other components of the vehicle.
  3. Drive vehicle at low speeds (5-15 mph) and proceed to make a few stops to confirm the vehicle will stop, the brake pedal feel is consistent, and you do not hear anything rubbing, or see anything leaking.
  4. Always wear seat belts and test vehicle in a place where these procedure are able to be performed safely and legally.
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# PRODUCT DISCLAIMER

## \*\*\* WARNING \*\*\*

TBM Brakes and components should be installed by a trained professional. The installer is responsible for making sure the appropriate parts and component are being used and are suitable for the application. Proper installation and usage is the responsibility of the installer. Nothing should be assumed. If at any time you are uncertain, seek help from a professional installer that works with and is competent in disc brake systems. TBM Brakes Sales and Tech Support are available but use of this support does not and will not guarantee proper installation, fitment, or appropriate usage.



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The logo features a stylized blue and black brake disc with a central hub, enclosed in a circular frame.

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