



## **Brake Bleeding and Fluid information**

### **Recommended fluid is DOT 5 silicone based**

Bleeding the 360 Brake is done the same way as any other braking system. Many different methods are used successfully, so there is not one specific method to use. The removal of air bubbles is critical to a quality bleed, regardless of method.

However, the 360 brake is often more difficult to bleed on the rear application specifically. This may be caused by a number of reasons.

1. The rear brake having a long distance of horizontal brake line makes air bubble removal to the master more difficult. As well, the caliper is often at the same height as the master cylinder while on the bike.
2. The 360 brake can trap air behind the piston, and the circular design can require more fluid to be pushed through the bleeder to remove all air.
3. Please remember that the 360 Brake requires a minimum of a 9/16<sup>th</sup> master cylinder for a single brake, and an 11/16<sup>th</sup> master for duals. Using a smaller than specified master will not provide enough flow, using a larger is not a problem, and will result in a firmer, taller pedal / lever.
4. The 360 Brake is designed for AN3 fittings and NOT banjo bolts. Use of a banjo bolt on the brake will result in leakage and air introduction into the system, and will not work.

### **Possible symptoms of improper bleeding include:**

1. Spongy pedal (handle)
2. Boiling of brake fluid
3. Not enough pedal (handle) travel for the given master cylinder diameter.

### **Tips for bleeding the 360 Brake: Regardless of method you are using**

1. Make sure that inlet port and bleeder port being used are in a vertical position(or close to) If your custom install looks better with the line coming in from the bottom, then remove the brake, and bleed it off the wheel in a vertical position. Once the air is removed, the install can go inverted as long as no air is reintroduced.
2. Remove unused inlet port plug, and slowly depress handle to push air out of plug hole. Then re-install plug while handle is still depressed to remove air from port.
3. Make sure unused ports, as well as all fittings are tight, and leak free.
4. Make sure Caliper is below the height of the master Cylinder. The front is easy and always the case. The rear is more difficult, but might need to be removed from the wheel, and be bled hanging below the master cylinder height.
5. Tap the line and let air bubbles rise to the top of the master Cylinder reservoir. Let sit, then repeat.
6. Make sure you do not suck the reservoir dry, this will introduce more air.
7. If problem persists, lightly tap the face of the caliper while bleeding with a soft non marking object. This will help the air find its way out of the circular piston cavity, upwards in both directions.
8. Repeat if needed. Even if you do not see bubbles, air may be present in the system, so repeat.

### **Fluid Selection:**

Dot 5 is recommended for the following reason.

1. Very high temperature boiling point 500 F. vs. 446 F. on DOT 4
2. Will not damage paint surfaces if spilled.

#### *Negatives of DOT 5.*

1. Is more compressible which causes a spongier pedal.
2. Silicone is not able to deal with moisture, therefore any water, or air will boil more readily, than Poly – ether based (dot4, 5.1) which will mix. DOT 5.1 for example is 2 times less compressible than silicone based, and will provide a firmer pedal.

#### **More info about Fluids:**

##### **SILICONE BASED FLUID**

Fluids containing Silicone are generally used in military type vehicles and because Silicone based fluids will not damage painted surfaces they are also somewhat common in show cars.

Silicone-based fluids are regarded as DOT 5 fluids. They are highly compressible and can give the driver a feeling of a spongy pedal. The higher the brake system temperature the more the compressibility of the fluid and this increases the feeling of a spongy pedal.

Silicone based fluids are non-hygroscopic meaning that they will not absorb or mix with water. When water is present in the brake system it will create a water/fluid/water/fluid situation. Because water boils at approximately 212° F, the ability of the brake system to operate correctly decreases, and the steam created from boiling water adds air to the system. It is important to remember that water may be present in any brake system. Therefore silicone brake fluid lacks the ability to deal with moisture and will dramatically decrease a brake systems performance.

##### **POLYGLYCOL ETHER BASED FLUIDS**

Fluids containing Poly glycol ethers are regarded as DOT 3, 4, and DOT 5.1. These type fluids are hygroscopic meaning they have an ability to mix with water and still perform adequately. However, water will drastically reduce the boiling point of fluid. In a passenger car this is not an issue. In a racecar it is a major issue because as the boiling point decreases the performance ability of the fluid also decreases.

Poly glycol type fluids are 2 times less compressible than silicone type fluids, even when heated. Less compressibility of brake fluid will increase pedal feel. Changing fluid on a regular basis will greatly increase the performance of the brake system.

**FLUID SPECIFICATIONS** All brake fluids must meet federal standard #116. Under this standard is three Department of Transportation (DOT) minimal specifications for brake fluid. They are DOT 3, DOT 4, and DOT 5.1 (for fluids based with Polyalkylene Glycol Ether) and DOT 5 (for Silicone based fluids).

#### *Bleeding Methods information:*

Follow the standard Harley Davidson method, or there are many posted on the Web under “Motorcycle brake bleeding procedures” in your search engine.

For more information, please contact your dealer, service technician or [360brake.com](http://360brake.com)