



***Russian Motorcycles
Brembo Disc Brakes
Part II: Repair***

(See Also Part I: Brembo Disc Brake Systems)

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Disc Brakes: Checking the Status of Replacement

(<http://www.smug.ru/ural-remont/tormoza/tormoznoy-disk-proverka-sostoyaniya-zamena/>)

- Disc Brake Must Be Replaced after Excessive Wear or Deformation, Such as Dropping the Bike*
- Minimum Allowable Thickness Is 4 mm*
- Brake Disc Life Is 100,000 km*
- Measure Thickness of Disc Surface Using Calipers without Removing Wheel from Bike*
- Replace the Brake Disc When Removing the Wheel*



1. Using a wrench to the 10 mm nuts plate to the hub, loosen the six mounting screws (on motorcycles "Ural" issue since 2005 used bolts allen wrench 5 mm).



Before inserting the disc should be treated with all the fixing bolts anaerobic thread-locker. Need to tighten the bolts to a torque of 8.10 Nm.

Brake Fluid Replacement

- **Brake Fluid Replacement Is Recommended Every Two Years**
 - **Do Not Mix Different Brake Fluid**
 - **Be Careful, Brake Fluid Is Toxic, Be Careful**
 - **After Contact with Skin It Should Be Washed with Warm, Soapy Water**
- **Clean the Tank (Reservoir) Lid before Removing**
- **Use Brake Fluid Standards of DOT 3-5 Sealed Containers**



1. Use a phillips screwdriver to loosen the two screws in the reservoir cover.



2. Remove the tank lid with rubber gasket seal.

Brake Fluid Replacement



3. Carefully inspect the tank lid and gasket for damage. Before replacing them, they should be cleaned of dirt and remnants of the old brake fluid.



4. Remove the protective rubber boot brake caliper bleeder plug and push-on an elastic, transparent hose of suitable diameter, the other end is placed in a clean container filled with fresh brake fluid.

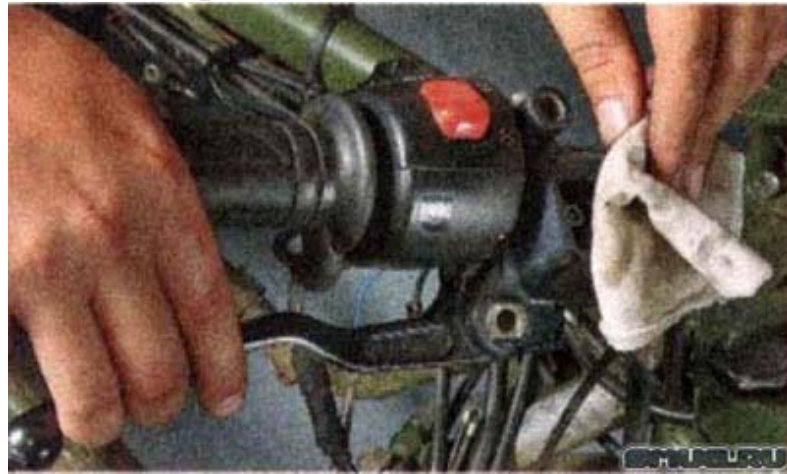


5. Loosen the bleeder plug, using a 8 mm wrench 0.5 to 1.5 turns.

Brake Fluid Replacement



6. Discard the brake fluid, gently pressing the brake lever. To avoid splashing brake fluid, it is recommended to cover the brake master cylinder reservoir with a cloth.



7. After starting to bleed the brake fluid from the system, it is necessary to fill the tank with fresh liquid to prevent the ingress of air into the system.



8. After tightening the drain fitting, repeatedly press the brake lever until resistance depression. After topping the liquid to the top mark in the inspection window to set the seal and the tank cover. Tighten the two cover bolts, and remove brake fluid drips with a wipe-cloth.

Disc Brake Pad Replacement

- Pads Must Be Replaced as a Kit
- Minimum Thickness of Brake Pad Friction Layer: 1 mm
- To Determine the Degree of Pad Wear, Look at Working Surface of the Pad
- If It Bears Visible Wear, Replace



1. For Convenience, Brake Pad Must Be Removed from the Brake Caliper Disc for a Wrench to Loosen Two 14 mm Caliper Mounting Bolts.



2. Remove the Caliper from the Disc.

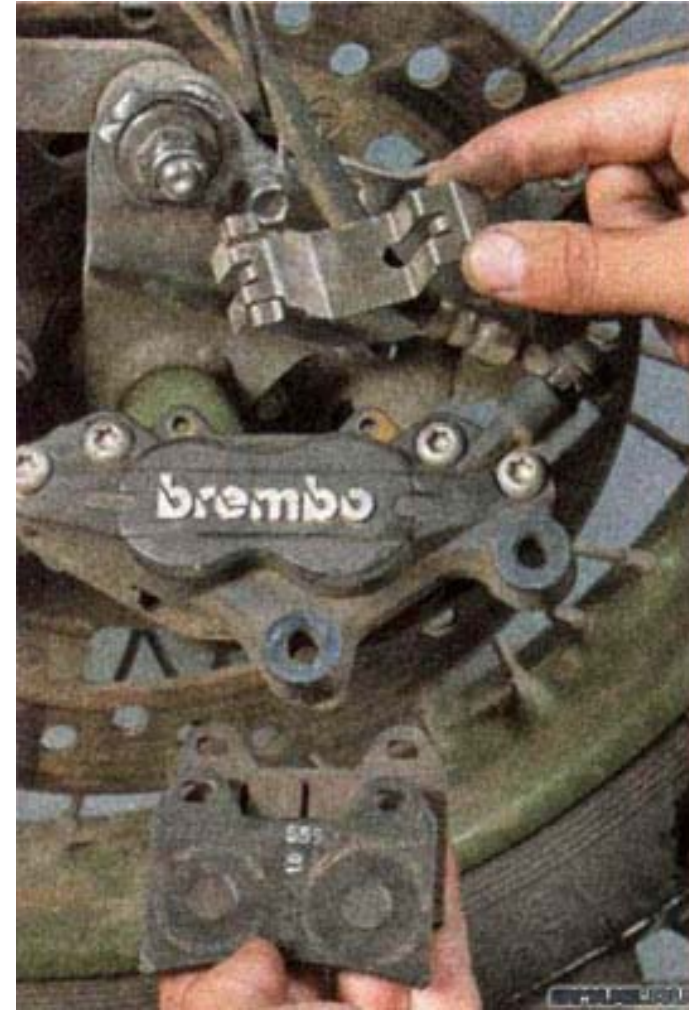
Disk Brake Pad Replacement



3. Tweezers pliers and pull out two cotter pin securing the caliper.



4. Pliers pull out the two guides, brake pad out of the caliper.



5. After removing the rails remove the top cover support and extract the brake pads.

Disk Brake Pad Replacement

Do not press the brake lever at the removed blocks, it will lead to the extrusion of the working pistons and cylinders getting air in the system

Installation

- 1. Install the removed parts in reverse order. Shoe linings are installed in the side of the disc.***
- 2. Before installing new pads mounting spatula or other suitable tool pistons in the cylinders.***
- 3. Coat the locking pins with a thin layer of grease.***

It is important to avoid getting lubricant on the working surface pads or brake disc!

Front Brake Lever: Removal and Installation

- **Most Frequent Breakdowns for Motorcycles in Falls: Broken Levers**
- **Not Important for Motorcycle with Sidecar**
- **Replacement Levers Presents No Problem for the Novice Mechanic**



1. Use a Wrench to Unscrew the 19 mm Lever Axle Nut.



2. Carefully Extract the Axle Bolt and Remove Lever.

Installation of a New Lever in Reverse Order, Preliminary Having Lightly Greased the Bolt Axis. Between the Lever and "Frog" Is a Small Cylindrical Spacer, Which May Fall When Removing the Lever. If Lost - When You Press the L, It Will Not Affect the "Frog", and Will Not Energize Stop-Light.

Brembo-Recommended Brake Bleeding Procedures

(www.cyclebrakes.com)

- 1. Fill the master cylinder reservoir with fresh, specified brake fluid from a sealed container. Operate the master cylinder lever SLOWLY several times to fill the brake circuits and begin to expel air from them.**
- 2. Connect a transparent plastic tube (of appropriate bore for a leakproof fit) to the caliper bleed valve, placing the free end in a brake-fluid-proof container. Position the bleed tube so that it rises above the bleed valve for a few inches (to allow a fluid head above the bleed valve exit) before descending into the container.**
- 3. Operate the brake lever 3 - 4 times, keeping it pulled in on the last stroke. Loosen the caliper bleed valve enough to allow fluid and purged air (seen as bubbles in the fluid) to enter the attached tube. Close the bleed valve. Repeat this operation several times while maintaining a sufficient fluid level in the master cylinder reservoir. With each cycle of bleeding, the lever should meet with more resistance, indicating that the air is being removed from the system (there should also be progressively fewer bubbles in the purged fluid in the tube). If conditions are ideal, satisfactory lever resistance should be attained at the point no more bubbles are observable in the purged fluid in the tube.**
- 4. Occasionally, a system will still have "spongy" lever even though no more air can be found in the purged fluid. This indicates air is still trapped in some part or parts of the circuit, and must be removed. The following methods will help to free the trapped air and complete the bleeding process:**
 - (a) Making sure the reservoir is filled and capped, lean the machine so the reservoir is positioned above the master cylinder outlet, then give the lever several short, quick strokes. This gives the residual air a less- interrupted upwards path towards the reservoir, and out of the line. Return the machine to the upright position, rap the calipers sharply with a plastic hammer or screwdriver handle, manipulate the flex lines and repeat. If this doesn't quite correct the problem, let the machine sit overnight and repeat the next day. In most cases, this should give an air-free final bleed. Be sure the reservoir is filled to the correct level after final bleeding.**
 - (b) In the case of master cylinders mounted on clip-on bars with a steep angle, it may be difficult to lean the machine sufficiently to position the reservoir above the master cylinder outlet. In this case it will be necessary to bleed the fitting at the high point (i.e. the master cylinder outlet).**

Bleeding Brembo Brake System (Brembo Brake Catalog)

http://www.cyclebrakes.com/Brembo_catalog.pdf

- **To bleed the brakes proceed as follows:**
 - Turn the handlebar until the top edge of the reservoir is horizontal.
 - Fill the reservoir with brake fluid ;
 - During bleeding avoid letting the brake fluid level go below the MIN level.
 - Apply the brakes several times to fill the braking system partially.
 - Insert a flexible transparent tube to the bleed screw.
 - Bleed through one bleed screw at a time:
 - Pull the brake lever all the way and keep it in this position;
 - Unscrew the bleed screw, let some brake fluid flow out (initially only air will come out) and then tighten the bleed screw (lightly);
 - Let go of the brake lever, wait a few seconds and repeat the above steps until no air bubbles come out of the bleed screw;
 - Tighten the bleed screw to the prescribed torque and fill up the reservoir with brake fluid.
 - Verify that there are no leaks from the various fittings and connections. If the braking system has been bled properly, following the lever dead travel, you will feel the direct action of the fluid without any sponginess; if this is not so, repeat the bleeding procedure.
- **Notes: If the lever seems too elastic following the bleeding procedure, proceed in the following manner:**
 - Remove one brake pad from a caliper.
 - Apply the brakes several times so as to push-out the pistons about 3 - 4 mm.
 - Push back the pistons (avoid damaging the rotor and the pistons).
 - Put the brake pad back into the caliper.
 - Repeat the above steps on the other(s) pad(s) and/or caliper(s).
 - Verify whether brake lever travel has improved.

Brake Reservoir (Service Manual)

- **Check Brake Reservoir Every Service Interval**
 - **try to get the master cylinder as level as possible (you might want to do this before you remove the cover)**
 - **Wipe off all dirt and avoid any contamination of the brake fluid in the reservoir**
 - **remove the two top screws on the reservoir**
 - **Remove the cover and the rubber gasket**
 - **Fill the reservoir to within 1/4 inch of the top with only DOT approved 3 or 4 brake fluid**
- **Be careful not to spill brake fluid on the paint, as damage to the paint may occur**
 - **Squeeze the brake lever several times to ensure that any air that has been introduced is forced out of the system.**
 - **Replace Rubber Gasket, Cover and Two Screws**
- **Bleeding the Brake Line after the hose has been replaced**
 - **Remove Cover as Above**
 - **squeeze the brake handle while at the same time, open the bleeder on the brake caliper.**
 - **When the lever goes all the way in, close the bleeder, release the lever and do it again (and again, etc) until you get no more air bubbles from the bleeder.**
 - **Don't let your master cylinder run low or you'll have to start from scratch.**
You may want a helper!

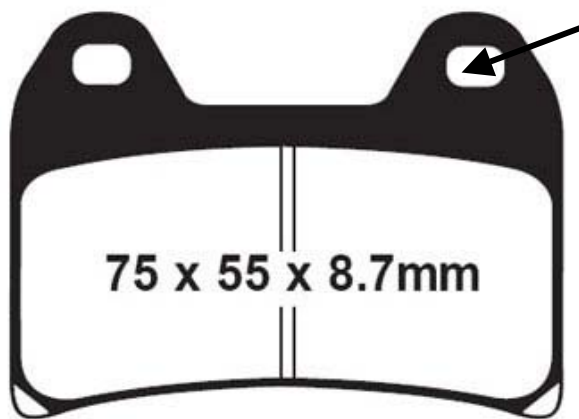


Brake Fluid: DOT 3, 4 and 5 (www.cyclebrakes.com)

- **All Brembo Braking Products Use Natural, Rubber-Base Seals**
 - **USE ONLY DOT-3/4 NON-SILICONE Type Fluids such as CASTROL™ 'LMA'**
 - **INCOMPATIBLE with DOT-5 Silicone-Based Brake Fluids**
 - **DOT- 5 SILICONE-based Fluids React with Natural-Rubber Seals to Swell Them**
 - **CAN CAUSE SEVERE PISTON RETRACTION PROBLEMS**
 - **No cure for problems caused by DOT-5, other than complete seal replacement**
- **The cap on the rectangular master cylinders says "DOT 3 - 5 Fluids"**
 - **Silicone DOT- 5 fluids are NOT generally in use in Europe, but Glycol-based "DOT-5.1" fluids ARE.**
 - **Hence, the "DOT-5" cap designation**
- **For best braking performance, we recommend changing brake fluid twice a year. If the machine is to be stored in a damp environment (over the winter, say), we recommend installing fresh fluid before and after the storage period. At minimum service levels, glycol brake fluids MUST be completely changed at intervals not to exceed a period of 18 months.**
- **DOT-4 has a higher boiling point than #3**
 - **Probably only an issue when REALLY heating up the brakes**
 - **DOT-3 will get it done fine on a Ural**
- **Dot 3 will slowly attack British brake rubber**
- **Dot 4 is compatible with British brake rubber parts**
- **Dot 5 is silicone brake fluid**

EBC Double-H Sintered Metal Brake Pads: FA244HH

- Folks Start Replacing Pads between 10 and 15 kms
- Brake Friction Surfaces (disc rotor) Should Be Good for Life of the Motorcycle and/or Owner, whichever comes first.
- IMZ's Part Number for Brake Pad Set: IMZ-8.1238-27097
- Less Expensive, Fully-Reliant EBC Replacement is FA244HH
 - HH Rated: Highest friction rating
 - Double-H Became Standard by Which All Brake Pads Are Judged
 - Double-H pads claimed their name from the industry standard gauge for measuring friction levels on brake pads
 - Grades of brake pads range from E,F,G through to H rating, each grade being a 20% step up in friction delivery
 - Double H: H rated cold and H rated when hot
 - Long-Lasting and Powerful Brake Effect, Do Not Fade
 - Fits Brembo 20.6800.10/20 4-piston (two-pin pad fixing) Calipers

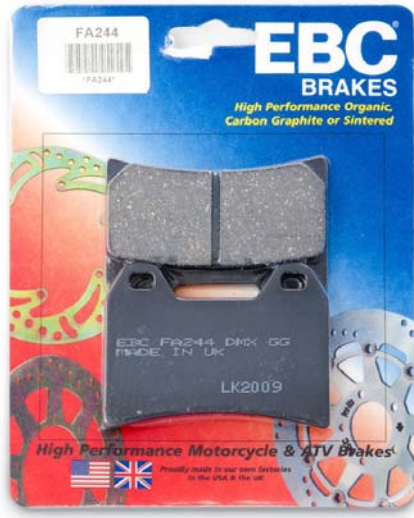


Holes for Pad-Retaining Pins on Calipers

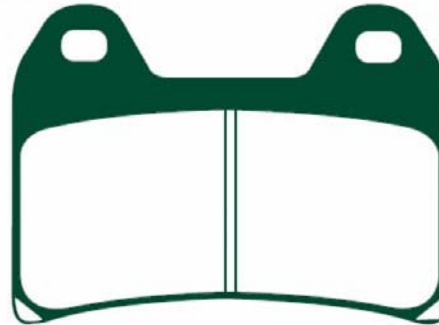
High-friction, Double-H sintered pads offer the maximum brake effect and a lifetime approximately double that of any organic pad.

EBC Carbon Graphite (Organic) Brake Pads: FA244

- **Typical Organic "feel" which Many Riders Prefer**
- **Ideal for general use with low rotor damage characteristics**
- **Environmentally friendly, free of asbestos, lead and other toxic materials**
- **Pads for Leisure / Sport Use**
 - **Lowest heat generation**
 - **Good for fast, dry, riding**
 - **Optimum 280 mm size Rotors**
- **The EBC Kevlar series has now been renamed NAO series or Non-Asbestos Organic, although the famous DuPont Kevlar fiber is still used in conjunction with other high-tech fibers that have come on the market.**



FA244 75 x 55 x 8.70mm



Ural NE Front Brake Pad Set



Front Brake Pad Set
List Price: \$84.00
SKU: PT022
(www.uralne.com)

Replacing Front Disk Brake Pads (www.sovietsteeds.com)

- **2005 Patrol**
 - **Started to Hear Metal Squeal Sound and Feel Brake Fade.**
- 1. Drape an Old Towel under Front Brake Fluid Container or Master Cylinder by the Handlebars, because Some Fluid Will Come Out**
 - 2. Remove Two Small Cir-Clips with Needle-Nose Pliers, that are into the Holding Pins (2) by Front Brake Pads. Holding Pins Have to Be Rotated until Cir-Clips Are Exposed from under the Side of the Dust Cover. At the End of the Holding Pins Is a Squared-Off End for a Place to Grab Them. Once Removed, Pull Out the Holding Pins. These Pins Go thru the Eyelets of the Brake Pads and thru the Brass-Looking Dust Cover on Top. (DO NOT TRY AND PRY THE BRASS DUST COVER OFF! You'll destroy it. That dust cover is held in place by the holding pins.) Make Note that the Dust Cover Has an Arrow On It. That Arrow Points towards the Bike/Engine, Looking at It from the Front of the Bike.**
 - 3. Remove Cover from Brake Fluid Master Cylinder. DO NOT PUMP THE FRONT BRAKE LEVER WITH THE MASTER CYLINDER COVER OFF! Or You Will Get a Fountain of Brake Fluid all over.**
 - 4. Remove Old Brake Pads**

Replacing Front Disk Brake Pads www.sovietsteeds.com

5. Look Down at Four Pucks that Engage the Pads. If Pads Are Shot, the Pucks Are in Towards the Brake Rotor pretty good.
6. Take Expander Tool (Harbor Freight for \$7), Primarily Used for Removal of Rubber Hoses, but Works Great for Spreading Out the Pucks. When Pucks Are Expanded, the Fluid in the Master Cylinder Starts to Rise. Some Fluid Will Overflow. Because the New Pads Are Thick, They Require that the Pucks Are Spread Out or Re-Tracked as Much as Possible to Fit In the New Pads.
7. Once Pucks Are Spread, Put In the New Pads. To Get the Eyelets (2 on each pad) to Line-Up with the Brake Pad Mounts for the Holding Pins to Go Back In, Use a Small Ice-Pick to Go thru the Brake Mount Hole on the the In-Board Side of the Mount, Hold Up the New Brake Pad on the In-Board Side, Put the Dust Cover Back in Place over the Pads and Rotor, and Put Back in the Holding Pins.
8. Once the two holding pins are in which go through the two new pads and through the dust cover, I put back in the two retaining cir clips. One for each holding pins. Then I turned the holding pins to hide the top of the cir clips under the brass dust cover.



Shot after 15,000 km's

Replacing Front Disk Brake Pads (www.sovietsteeds.com) cont.

9. Once all assembled, I put the master cylinder cover back on. Then I pumped the front brake lever till I felt it regain action. Then I took the master cylinder cover back off and put a little Dot 4 brake fluid (On newer Urals, older Urals I believe use Dot 3) to make up for lost fluid. Put the Master cylinder cover back on. Then I took her for a spin in my neighborhood and tested several times. According to Brembo instructions, the pads should be run in for about 25 miles or so, meaning that I should go easy on them, but confidently use them till they burnish in. When I first went around the block, I made several stops and went back home, the rotor was very hot to the touch. But after another ride of about 2 miles they were not as hot, so the new pads are sitting right against the rotor when new. As I run her she should settle out.
10. Another thing I do is when the pucks are out, I spray em with WD40 and scrub off the grime with a soft bristle toothbrush. Rinse with brake-clean, and re-hydrate the rubber seals with a protectant.



The tool is for rubber hose removal but works great for spreading brake pucks.

Re-Build of Brake Master Cylinder (BMC) on 2007 Patrol by URAL CT, Plano, TX (sovietsteeds.com)

- **Brembo Kit for Brake Master Cylinder: SKU or part number of kit from Yoyodyne: 110.4362.50 cost: \$18.27** (<http://www.yoyodyneti.com/ProductInfo.aspx?productid=110.4362.50>)



BMC re-build kit on left and master cylinder to the right.



All the component needed plus the lubricant that came with the kit. Note the O-ring, seal (white), & seal retaining ring (silver)...these go into the BMC bore.

Re-Build of Brembo Brake Master Cylinder on 2007 Patrol by URAL CT, Plano, TX (sovietsteeds.com) cont.

- 1. Remove all fasteners securing the brake hose to the rig**
- 2. Drain all the brake fluid out, including the caliper**
- 3. Loosen banjo bolts**
- 4. Detached the Brake Master Cylinder (BMC) from the handle bar. Since I will be rebuilding the caliper, I loosened the caliper banjo bolt too, then I removed the whole front disc brake system.**
- 5. Separate BMC and Caliper from Brake Hose (make sure you do not loose copper washers). Now you may proceed to work on it from a workbench.**
- 6. Take the brake lever out and set it aside.**
- 7. Remove the pin, dust cover, & plunger assembly. All you have left in the BMC cavity are the seal retaining ring, seal and O-ring.**



New parts on left and used parts on right. Seal retaining ring, seal, & o-ring still in BMC

Re-Build of Brembo Brake Master Cylinder (BMC) on 2007 Patrol by URAL CT, Plano, TX (sovietsteeds.com) cont.

- 8. Carefully remove (pry with a small screw driver or dental pick) the seal and retaining ring. Then you'll have clear access to remove the O-ring.**
- 9. Clean the BMC using your favorite brake cleaner.**
- 10. Check the bore to make sure it is not damaged, gouged, or pitted. Use an ultra fine sandpaper and gently remove any burrs you may have left from the disassembly. Clean it again (repeat #9).**
- 11. Using the Brembo provided lubricant, carefully assemble the items in the kit to the BMCO-ring, the seal, then the seal retaining ring. Find a suitable drift to install the retaining ring carefully.**



Items still in the BMC. You have to carefully remove these parts out. DO NOT DAMAGE the bore of the BMC.



Should look like this when installed.

Re-Build of Brembo Brake Master Cylinder (BMC) on 2007 Patrol by URAL CT, Plano, TX (sovietsteeds.com) cont.

- **...Assemble the spring & stop, install the brass washer onto the piston (aka plunger), the small rubber seal, then the spring/stop assembly.**
 - **...Carefully insert lubricated piston assembly into the bore.**
 - **...Place the dust seal and using the plunger pin, carefully install the lever/bolt and use the lever to push in & hold the assembly in place while you work the dust seal around to install it. Tricky operation but you'll get it.**
- 12. Install the BMC to the handle bar. If all you're rebuilding is the BMC, put in your brake fluid of choice (DOT3 or 4) and bleed the brake system. Didn't put in the brake fluid yet because I was going to rebuild the caliper too. My preference is DOT4 because I think it's less hydroscopic than DOT3.**



The damaged plunger seal on my Ural's BMC. That was the reason why the BMC could not build pressure to activate the caliper pistons. I think the piece is lodged inside the brake hose and blocks the fluid from releasing the pistons causing the front brake to "hang up". Note: I'm just showing the damaged seal...cup side of seal should be facing towards the banjo end of BMC



Notice the clipped piece from the seal...

Seal Repair Kit for Brembo Caliper on 2007 Patrol **by URAL CT, Plano, TX (sovietsteeds.com)**

- Seal Repair Kit from Yoyodyne: YB3034 ~\$50
1. **Drain All Brake Fluid from Brake master Cylinder (BMC) and Caliper (you need to change the fluid anyways)**
 2. **Remove Caliper from the Rig. Do Not Remove the Hose Attachment from the BMC End, unless you're Re-Building the Master Cylinder too.**
 3. **With Caliper Out, Place It on Work bench, Remove the Brake Pads. Use the Ural Air-Pump with the Pointed Attachment that Came with the Pump. Place a piece of corrugated cardboard between the brake pistons and give the handle a swift pump. The pistons will come out but they may or may not pop out completely. The cardboard will prevent the pistons from banging against each other. You can also use rags. You can use compressed air but dial the air pressure way down so the pistons do not come flying out. Watch out because there may be some residual fluid in the bore.**



Ural air pump attached to the caliper



Close up...notice the Ural-supplied pointed attachment

Seal Repair Kit for Brembo Caliper on 2007 Patrol by URAL CT, Plano, TX (sovietsteeds.com) cont.

- 4. Using a #40 torx bit, Remove the 4 Bolts that Attaches the Two Halves Together. Again Take Care not to ding the pistons or mating surface.**
- 5. Carefully separate the two halves and remove the pistons...again take care in removing them.**



Note the 4 bolts securing the Brembo caliper halves



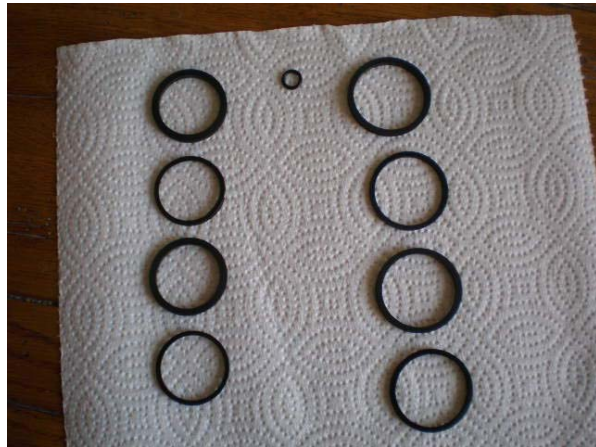
#40 Torx bit



**Two of the pistons...there are four
(2) 30mm & (2) 34mm pistons**

Seal Repair Kit for Brembo Caliper on 2007 Patrol **by URAL CT, Plano, TX (sovietsteeds.com) cont.**

- 6. Remove one O-ring and the old seals from the caliper using a dental pick or any suitable tool. Do not damage the bore. Replace them with the new seals, two per bore. Pay attention to the size, one bore is 30 mm & the other is 34 mm.**
- 7. Wet the pistons with brake fluid and carefully align a piston to the proper bore and push in to seat. Alignment is critical for ease of installation.**
- 8. Assembly of the two halves is the reverse. Securely tighten all 4 bolts. Install caliper to the rig. BTW, I used this pin set to clear the small openings from the brake master cylinder. There are 2 small holes on the reservoir.**



Here's a pix of the set of new seals and an O-ring. Wet them with brake fluid before installation



Note that the bottom seal is thicker than the top (wiper) seal.



Pin set used to clean the small openings in the carb too.