

#### Ural Brembo Brakes

- Urals from 2003 thru 2103 Equipped with Hydraulic Disc Brake in Front, with Manual Shoe-Type Drum Brakes in Rear and Sidecar
  - -Front Wheel Hydraulic Disc Brake Consists of Caliper, Brake Pads and Disc
  - -Front Brake Responsible for 70% of Total Stopping Power
  - -Sidecar Brake Connected to Rear Brake Pedal
  - -Spare Tire, Used to Directly Replace either Rear Wheel or Sidecar Wheel, but Disc Brake Prevents All-Around Replacement, as in the Old Days (pre-2003) when Ural Used a Drum Front Brake
- WARNING in Owner's Manual: Never Use Front Brake to Stop when Motorcycle Is Moving in Reverse
  - -Severe Damage to Front Brake Caliper and Mounting Plate Will Occur
- Order of Presentation
  - -Brembo (Italy) Disc Brakes
  - -Calipers
  - -Replaceable Pads
  - -Hydraulic Reservoir
  - -Hydraulic Brake Line
  - -Ural by Year and Model
  - -Fixed / Floating Rotor Disc: New and Old
- Front Disc Brakes Require Periodic Inspection, but Do Not Require Adjustment
  - -Brake Pads Inspected by Removing Dust Shield from Top of Caliper
  - -Check Thickness Pads: Should Be Replaced when Less than 1/8" of Pad Remaining on Either Pad
  - -Brake Hose Inspected for Leaks and Cracks along Length of Hose and Banjo Fittings on Both Ends

Brembo Brakes are found on modern Urals (2003+), but not on Dneprs.

#### **Ural Disc Brake Parts**

Stainless Steel, Braided Cable, Hydraulic Brake Line (Hose)

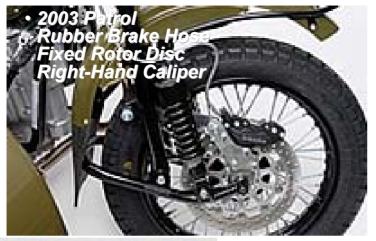


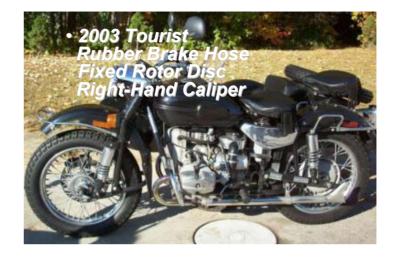
# Brake Disc Evolution by Part Numbers

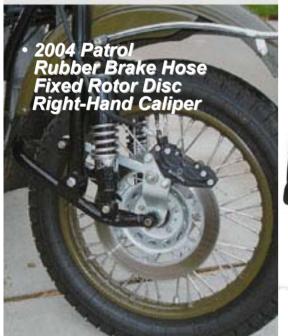
- Front Disc Brake Caliper Introduced to Urals in 2003
  - Front Brake Caliper (Brembo): IMZ-8.1238-27005-01 (Brembo 20.6800.10)
- Brake Rotor Disc
  - 2003-2007: IMZ-8.1037-06026 (Russian) 300 mm diameter
    - Not Available Anymore: Upgrade Using Brembo Items;
      - 8 IMZ-8.1037-06026-10 Brembo Floating Rotor Installed from 2007
      - 8a IMZ-8.1037-06132 (steel) IMZ-8.1037-06132-10 (aluminum) Brembo Brake Adapter Used to Mount Brembo Rotor (adapter plate has width to it to shim the rotor out from the hub)
  - Brake Disc (2007-2009): IMZ-8.1037-06026-10 (Brembo 08.4899.72) 320 mm diameter
    - Disc a Little Bit Thinner
    - European Recall in Fall 2010 to Add Washers beneath Rotor Screws
      - Original Bolts Too Long in Some Cases
      - Bolts Fit Brembo Discs, which Were Thicker
  - Brake Disc (2010+): IMZ-8.1037-06026-NG (www.ngbrakedisc.com) 295 mm diameter
- Front Brake Switch
  - Brake Switch (Brembo) Up to 2006: IMZ-8.1037-17048-07
  - Brake Switch (Brembo) 2007-2008: IMZ-8.1037-17048-2007, IMZ-8.1037-17048-EU
  - Brake Switch (Brembo) 2009+: IMZ-8.1037-17048-2009 (Brembo 10.4671.61)
- Front Master Brake Cylinder (MBC) Assembly
  - Front Master Brake Cylinder: IMZ-8.1238-27003-10 (Brembo 10.4620.79)
- Hydraulic Brake Line (Hose)
  - Rubber Brake Hose (2003-2007)
    - IMZ-8.1037-27014-10 (for Telescopic Fork)
    - IMZ-8.1037-27015 (for Leading Link)
  - Steel-Flex Braided Brake, incl. banjo bolts and sealing rings (2008+): IMZ-8.1037-27015-08
- Front Brake Pads
  - Set of Two Brake Pads: IMZ-8.1238-27097 (Brembo 107.6708.10 Organic Compound)
  - Set of Two Brake Pads: Brembo Sintered: 07.6708.02
  - Set of Two EBC Double-H Sintered Metal Brake Pads: FA244HH
- Conversion Kit for Drum Brake to Brembo Disc Brake
  - Complete Assy. Converts Russian Drum Brake to a 2007-Style Brembo Disc Brake, Includes All Components (front wheel, fork leg, rotor, caliper mounts, reaction link, all hardware, etc.)
  - Front Forks
  - Telescopic Fork (Russian): IMZ-8.103-08001-30 (750 cc)
  - Leading Link Fork Assy for Disc Brake from 2006: IMZ-8.1037-08001-40
  - Leading Link Fork Assy for Disc Brake from 2007: IMZ-8.1037-08001-41
  - Leading Link Fork Assy for Disc Brake from 2008: IMZ-8.1037-08001-08
  - Leading Link Fork Assy for Disc Brake from 2011: IMZ-8.1037-08001-90-Color

As you can see, it's hard to keep up with the changes associated with Brembo disc brakes.

# Disc Brake Evolution on Urals (2003-2004)









It takes a heap of investigation to determine the evolutionary path of such a simple arrangement.

Disc Brake Evolution on Urals (2005-2006)



The forks' leading link design, though archaic, actually works better for sidecar handling than do conventional telescopic forks.

# Disc Brake Evolution on Urals (2007-2008)



switches, pads, master cylinders and conversion kits.

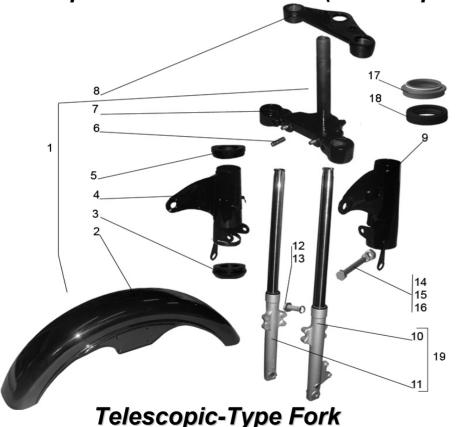
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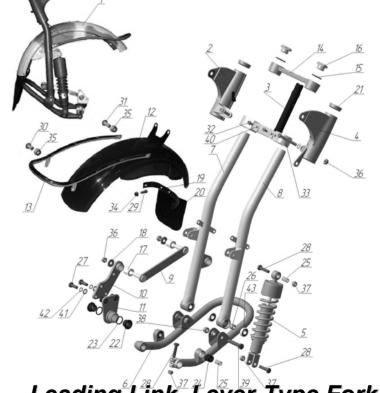
# Disc Brake Evolution on Urals (2009-2011)



# Leading-Link versus Telescopic Front Forks

- · Leading Link Fork
  - -Used on Patrol, Gear-Up and Tourist
  - -Mounts Brembo Caliper on Right-Hand Side
- Telescopic Fork
  - -Used on Retro, Troyka
  - -Mounts Brembo Caliper on Left-Hand Side
    - Except for Ural T and M-70 (Telescopic Fork and Right-Hand Caliper)

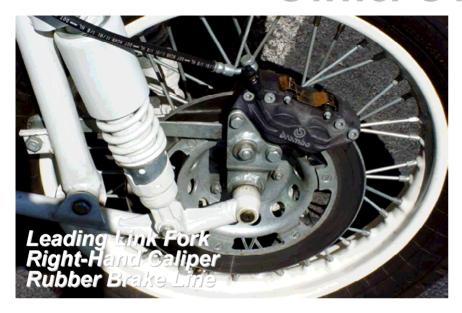




Leading Link, Lever-Type Fork

Differing front forks require differing brake solutions.

# Owner's Manuals





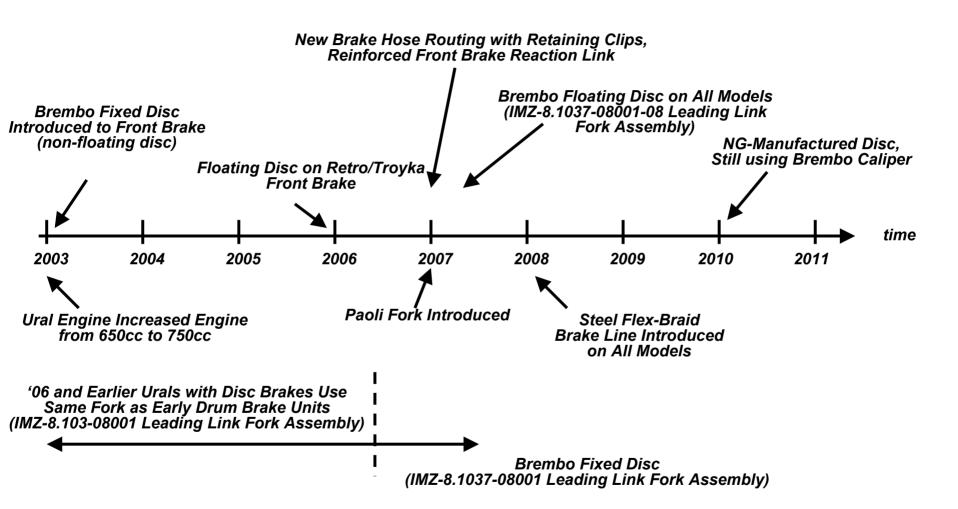
Component (750 cc)	Leading Link Fork	Telescopic Front Fork
Front Fork	IMZ-8.1037-08001-50 (for EU)	IMZ-8.1036-08001 (Retro from 2010)
	IMZ-8.1037-08001-40 (from 2006)	IMZ-8.1037-08001-11 (Paoli)
	IMZ-8.1037-08001-41 (from 2007)	
	IMZ-8.1037-08001-08 (from 2008)	
	IMZ-8.1037-08001-90-Color (2010) (Bearing Type)	
	IMZ-8.1037-08001-3 (up to 2007) (Bushing Type)	
Brake Line	IMZ-8.1037-27015	IMZ-8. 126-27014-10
Front Wheel Bracket Mounting Set	IMZ-8.1037-27001	IMZ-8.1236-27001

#### 2006-2011 Ural Maintenance Manuals



Caution: The maintenance manuals for Patrol, Gear-Up and Tourist show figures that may not indicate the correct year or model.

# Ural Changes and Upgrades for Brembo Brakes: Timeline



Brembo full-floating disc proved more than capable of stopping the 700-plus pound bike (along with rider and passenger) with ease.

### Disc Brake Evolution on Urals









Marzocchi Telescopic Fork on sT

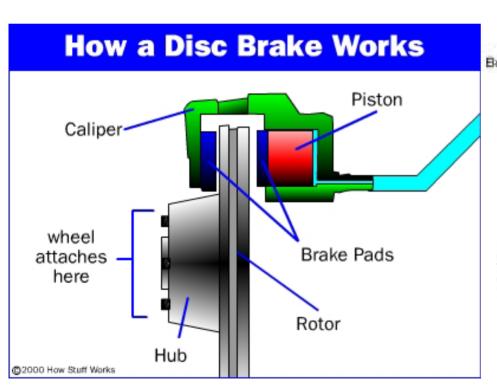


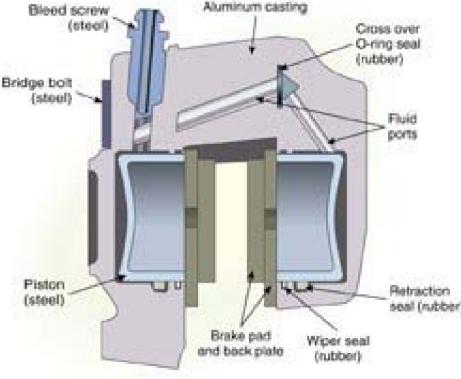


### Disc Brakes (2000 How Stuff Works)

- Disc Brake Similar to Brakes on a Bicycle
  - -Bicycle Brakes Have Caliper, which Squeeze Brake Pads against Wheel
  - -Motorcycle Disc Brake Pads Squeeze Rotor instead of Wheel
  - -Force Transmitted Hydraulically, Instead of thru a Wire Cable
  - -Friction between Pads and Disc Slows Disc Down

#### Motorcycle caliper





# Ural's Floating (two-piece) Rotor •Two Types of Motorcycle Brake Discs: Fixed (2003-2006) & Floating (2007+)

- •Fixed Brake Disc (introduced on 2003 Urals)
  - -One Piece Disc
    - •Brake Pad Contact Face and Wheel Mounting Face All Part of Same Piece of Metal
  - -Relatively Inexpensive to Produce
  - -Perform Perfectly Well
  - -If Subjected to Serious, Possibly Unable to Dilate or Expand
- •Floating Brake Disc (introduced on 2007 Urals)
  - -Constructed in Two Parts
    - •Aluminum Center Part Fixed to Motorcycle Wheel and Stainless Rotor
  - -When Rotor Subjected to Serious Heat, It Expands
  - -By Allowing It to Float Separately from the Mounting Face, It Is Free to Expand and Shrink at Will without Being Constrained by Its Mounting
  - -Expansion Takes Place in All Directions at Once and Not Constrained
    - ·If you prevent this from happening in one direction (by fixing it on its mounting face) it has no choice but to warp, so floating discs are made in two parts to allow the discs to expand and prevent them from warping. Mainly a high performance type brake disc.
- •Which Is Better?
  - -Fixed disc is much better for high-performance braking. For daily driving, floating disc is good. And why most car manufacturers prefer floating discs? Because these are easier to design and fabricate, thus lower manufacturing costs.
  - -Floating rotors are two piece rotors that has the hub and the disc joined by bolts. That way you can have lightweight alloys for the hub and a different compound/fabrication for the disc and have the best of both worlds. Also heat dissipates faster in floating rotors, why I'm not sure.
  - -The main complain about floating rotors is that they're much louder than normal rotors because they're two-piece, thus allowing more noise to be eminate when the disc "vibrate" under braking.

The floating disc heats up more uniformly, and the controlled float which is present allows for the differential expansion of the hot disc, and the relatively cool aluminum bell.

#### **Bembo Directional Brakes**

#### Are Brembo Calipers Directional?

-Brembo's calipers are directional, due to the use of <u>differential</u> piston sizes (30/40 mm). The leading pistons are smaller in diameter in order to combat uneven wear of the brake pads. Upon close examination of the caliper, you will find a small arrow cast in place which denotes the direction of disc rotation. Additionally, when mounted on the vehicle, the bleed screw must be at the top of the caliper.

#### Brembo Brakes in Australia

-The disc brake is one of the reasons that sidecar Urals cannot be sold in Australia. Certifying engineers, DOTARS and the various state and territory rego authorities all take a rather dim view of brake components rubbing or bending when applied in reverse. And when that then ceases to allow the front brake to work in the forward direction, it is referred to as a catastrophic failure. Now, while putting a warning in the owner's manual not to use the front brake in reverse may work in Europe, the USA and Canada, it doesn't cut it here for a vehicle fitted with a reverse gear in Australia. (http://bcozz.multiply.com/journal/item/345)

### 2010 Catalog Hydraulic Disc Brakes (uralnwco.ipower.com)



Item #

10284460 (650/750)

IMZ-8.1037-27001-01



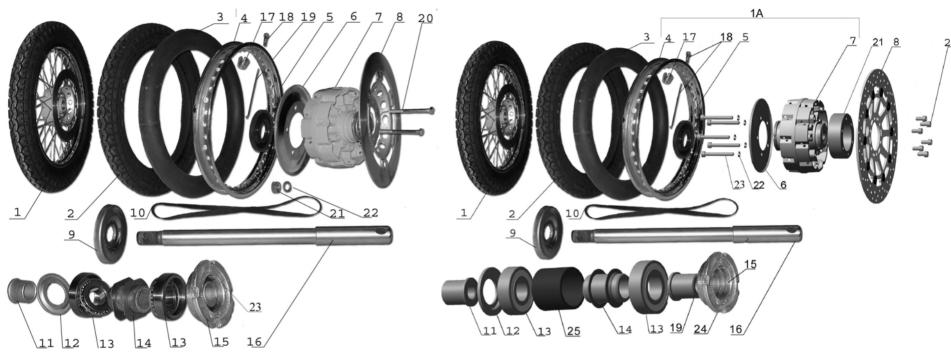
1	IMZ-8.1238-27003	Master Cylinder Assembly (Brembo 10.4620.79)	1
	Component: 2218.20.00 (650/750)	Brake Stop-Light Switch	1
	IMZ-8.1037-17048-2007	Brake Stop-Light Switch (Brembo 10.4761.61)	1
	IMZ-8.1037-17048-EU	Brake Stop-Light Switch italian for European wire harness 2007	1
	IMZ-8.1037-17048-2009	Brake Stop-Light Switch	1
	Component: 3040.04.00 (650/750	Lever	1
2	IMZ-8.1238-27005-01	Caliper (Brembo 20.6800.10)	1
3	IMZ-8.1037-27015	Front Brake Hose, Rubber (2003-2007)	1
3	IMZ-8.1037-27016 (650/750)	Front Brake Hose, Rubber	1

	6.1.66. 1.16.16 2666	Prano Stop Light Christia	•
	Component: 3040.04.00 (650/750	Lever	1
2	IMZ-8.1238-27005-01	Caliper (Brembo 20.6800.10)	1
3	IMZ-8.1037-27015	Front Brake Hose, Rubber (2003-2007)	1
3	IMZ-8.1037-27016 (650/750)	Front Brake Hose, Rubber	1
or 3A	IMZ-8.1037-27015-08	Steel-Flex Brake Line (2008+)	1
4	IMZ-8.1238-27097	Brake Pads (Brembo 107.6708.10)	Kit of 2 Pads
or 4A	EBC pads	EBC Brake Pads	Kit of 2 Pads
5	IMZ-8.125-27228	Adapter	1
6	IMZ-8.1037-27187	Coupling Bolt (Banjo Fitting)	2
7	IMZ-8.1037-27186	Sealing Washer	4

Brembo Hydraulic Brake Assembly

Sealing Washer

#### Front Disc Brake Part Evolution



- · 2006-2007
- #7 Wheel Hub: IMZ-8.1037-06020-10
- #8 Front Brake Rotor: IMZ-8.1037-06026 (Not Available - Upgrade to Brembo item 8A and 8B)
- #8A Front brake rotor IMZ-8.1037-06026-10 (from 2007 (Brembo))
- #8B Brembo Brake Adapter IMZ-8.1037-06132 (Used to mount Brembo Rotor)
- #20 Screw M8x16 200299-P27C

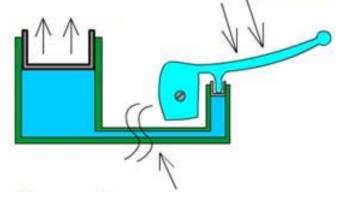
- 2008-2010
- #7 Wheel Hub: IMZ-8.1037-06020-10
- #8 Front Brake Rotor: IMZ-8.1037-06026-10 (Brembo 08.4899.72)
- #20 Screw M8x16 DIŃ 6912 M8x16
- #21 Rotor Spacer (Intermediate Bushing): IMZ-8.1037-06132-10

# Ural Hydraulic Disc Brakes

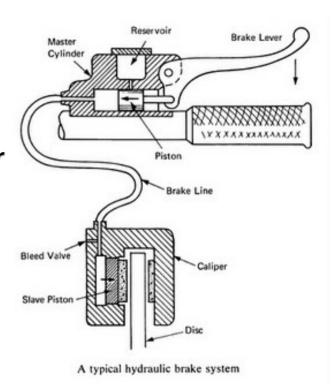
(Уральский гидравлические дисковые тормоза)

- Hydraulic Disk Brakes
  - -Master Cylinder, Located on Right Side of Steering Handlebar
  - -Hydraulic Fluid Hose, Connecting the Master Cylinder to the Brake Caliper
  - -Brake Disk, Bolted on the Front Wheel Hub

Caliper Piston (Cup) Right-Hand Brake Lever



Hydraulic Brake Line



Front Brake Master Brake Cylinder (BMC): Brembo Model PS13 (10.4620.79) (www.oppracing.com) 76.5 Brake Lever 77.5 Brake Hose @ prombo Banio Fitting (Coupling Bolt) Lever to Master Cylinder HANDLEBAR AXIS

#### TECHNICAL CHARACTERISTICS

Piston diameter: 13.0 mm
Weight: 0.354 Kg
Reservoir volume: 19.5 cm³

Reservoir volume difference between MAX and MIN level:

11.0 cm<sup>3</sup>

#### DESCRIPTION

Reservoir Fluid Level

Viewing Window

Fluid Reservoir

Front master cylinder with incorporated reservoir.

Handlebar Bracket

22

Construction Material: Aluminium Allay.

Operating fluid: brake fluid DOT4.

Clamp with seat for rearview mirror (Right thread).

Wired microswitch.

Master cylinder BODY color:

Master cylinder LEVER color: Black Anodic Oxidation.

Black Painting.

Brembo SKU #'s: Lever: 110.4372.13 Lever Pin: 110.2798.50 Clamp: 110.4372.13

Cap: 110.4308.60 Inlet: 110.2706.50

Micro-Switch: 110.4418.13

The Brembo part number is stamped on the bottom of the master cyclinder reservoir, where the two number indicate the piston diameter.

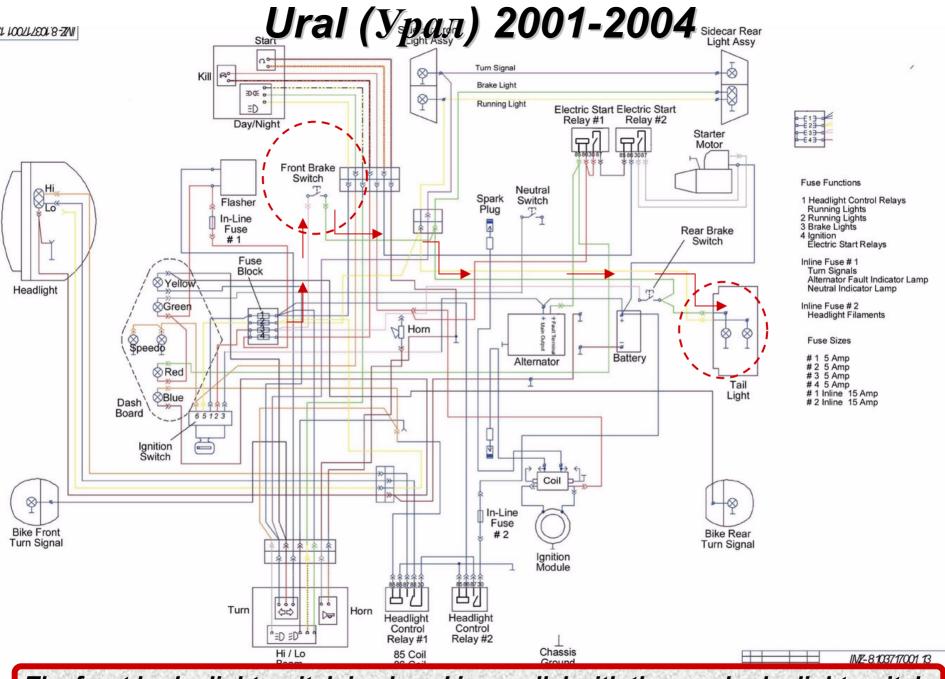
# Front Brake Light Switch (www.f2motorcycles.ltd.uk)

- Brake Light Micro-Switch for Disc Brake
  - -Ural 750's Fitted with Brembo Disc Front Brake
  - -Two Slightly Different Types
    - · 2003-2008
      - -IMZ-8.1037-17048-2007 (Discontinued in favor of a pressure switch on a banjo fitting)
      - -f2Motorcycles: F23307/TO 2007
      - -Brembo Part #: 110.4418.14 (switch is soldered into the harness a couple of inches from the switch, so you'll be splicing into the harness)
      - -Most Switch Vendors List Distance between Mounting Holes, the one that fits is 10 mm, center-to-center.
      - -IMZ-8.1037-17048-EU: Brake Switch, Italian, for European Wire Harness 2007
    - · 2009-201X
      - -IMZ-8.1037-17048-2009
      - -f2Motorcycles: F23307/AFTER 2007
      - -Brembo Part #: 10.4671.61

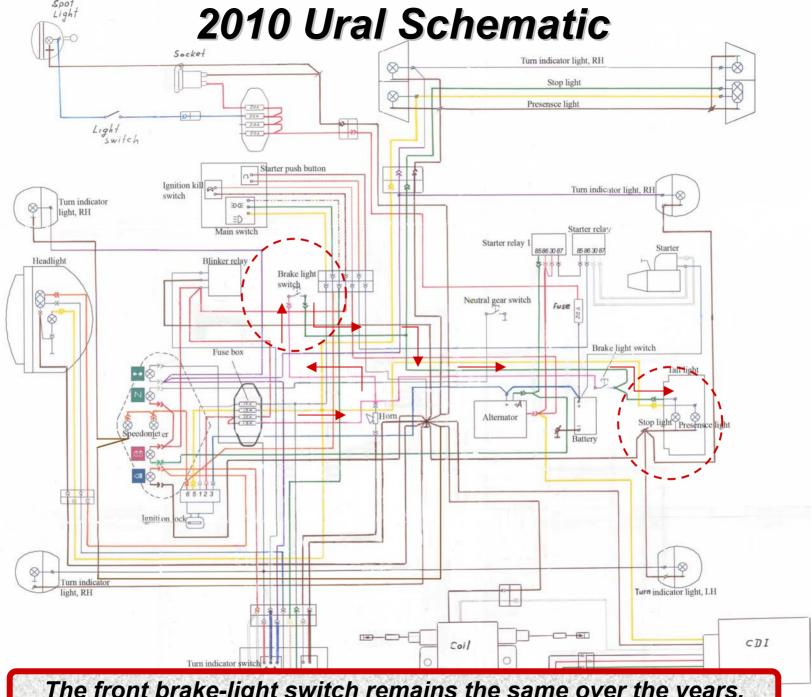


# Brembo Front Brake Micro-Switch (www.oppracing.com)





The front brake-light switch is placed in parallel with the rear brake-light switch 23



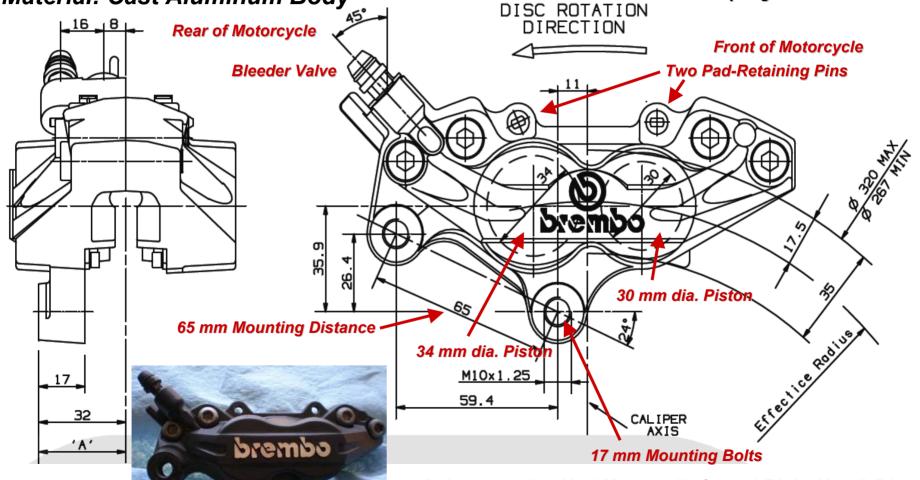
The front brake-light switch remains the same over the years.

# Brembo Fixed Caliper

P4 30/34 F (Brembo Part #: 20.6800.10)

• Fixed Caliper: 6800 Series

Bleeder Screw: 105.3246.14 Four Opposed Pistons (2 x 30mm + 2 x 34mm dia.)
Pads Supported by Two Pins Dust Cover: 105.1502.10 Retainers: 105.4542.18 Pin/Retainer: 120.3942.30 · Material: Cast Aluminum Body Pad Spring: 120.2255.90



It Appears that Ural Mounts (Left- and Right-Hand) Disc Direction backwards from Brembo Recommendation??

Brembo Part #'s:

# Hydraulic Brake Caliper and Brake Hose

(downloads.imz-ural.com)

Caliper Parts:

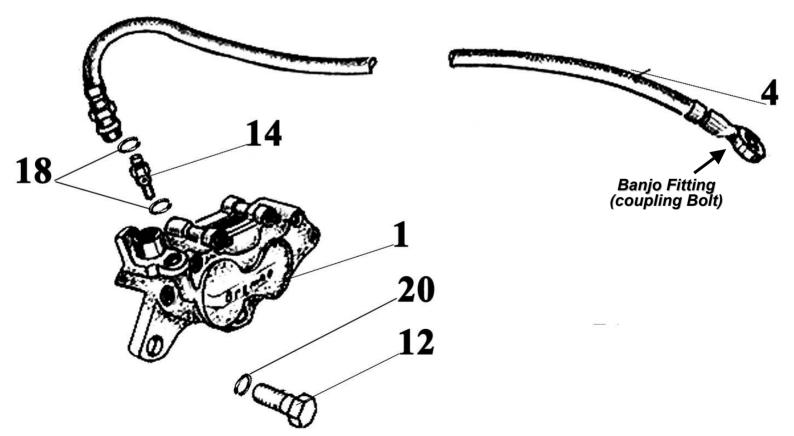
#1 Front Brake Caliper: Brembo 20.6800.10

#4 Brake Hose Assy: AMP1165

#12 Bolt M10-1,25-6q x40 201682-P27C 4 each

#14 Adapter: IMZ-8.125-27228

#18 Sealing Washer: 10284460 7 each #20 Washer 10L: 252156-P27C 2 each



Front Brake Assembly, Brembo Caliper



#### NG Front Brake Disk





Front Brake Disk

List Price: \$299.95 SKU:PT061 Front Brake Disk for All 750cc Motorcycles

(www.uralne.com)

# Disc Brake and Hydraulic Line Inspection

- · Check Disc Brake Pads Every Service Interval
  - -Disc Brakes Do Not Require Adjustment
  - -Brake Pads Inspected by Removing Dust Shield from Top of Caliper and Check the Thickness of the Pads
  - -Pads Replaced when Less than 1/8" of Pad Remaining on Either Pad
- Check Brake Hose Every Service Interval
  - -Brake Hose Inspected for Leaks and Cracks along Length of Hose
  - -WARNING: Never Use Any Aftermarket Brake Hose for Front Brake. Use Only Genuine Ural Brake Hoses. Could Result in Front Brake Failure and Void the Warranty.
- -Check Banjo Fittings on Either End 2008: Steel-Braided Brake Hoses
- - -Stainless Brake Line BIG Difference! (sovietsteeds.com) Rougaroo
  - -Far Superior to Rubber Flex Lines
  - -Brake Is Way More Responsive
  - -With Stainless, There Is No Sponginess At All



#### Rubber Brake Hose for Disc Brake



Early Rubber Brake Hose for Disc Brake Product No.: \$2073-\$

Manufacturer: SASIC FRANCE

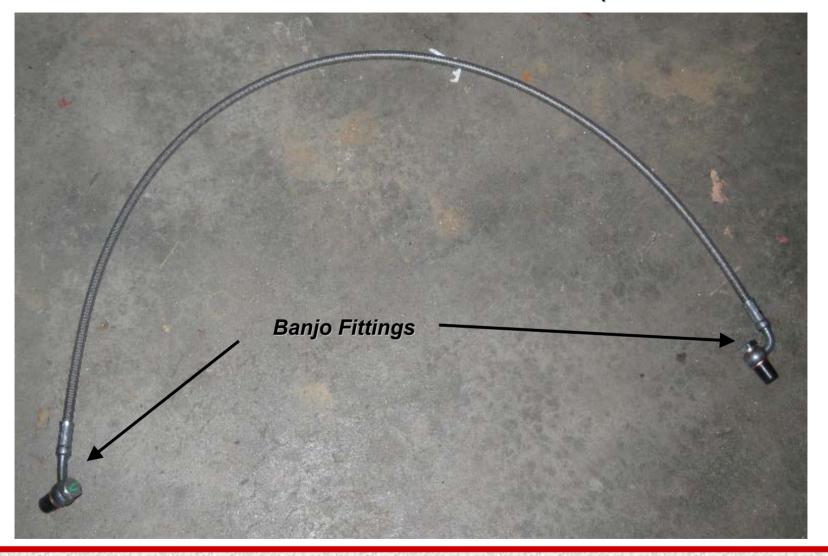
Length: 96 cm Pressed-on 10 mm Banjo Fittings with Protecting Tube List Price: 11.89 EUR

(www.ural-zentrale.de)



IMZ-8.1037-27015-08 Steelflex brake hose For all bikes with front disc brake except for Wolf with high handlebar http://www.ural.cc/index.php?perf par

### Later Steel-Braided Brake Line (www.sovietsteeds.com)



A Banjo fitting comprises a perforated hollow bolt and spherical union for fluid transfer, commonly found in automotive fuel, oil and hydraulic brake systems. The name stems from the shape of the fitting, having a large circular section connected to a thinner pipe, generally similar to the shape of a banjo.

## Disk Brake System (www.ural-zentrale.de)

• Product #: S2073

• List Price: 275 EUR

· Disk brake conversion kit for all models

• Brake disc is simple plugged in the wheel splines

- Delivered with brake disk with flange, mounting and cover, brake calliper with brake pads, hydraulic hoses with fittings, master cylinder with lever and bolts.
- Caution: Caliper bracket has to be welded on the fork or swing-arm. Suitable only for experienced DIY mechanics!



### Disc Brake Conversion for Dnepr Front Wheel:

- Christian's Dneprseiten (dnepr.at/e/tech\_26.htm)
   Dnepr Front Drum Brake Not Made for Panic Braking
- The Conversion :
  - -Front Wheel Yamaha SR500 (also possible: XS650)
  - -Two Brake Discs SR500 diameter = 298mm (or XS1100)

  - -Brake Pliers and Pump Yamaha XS850 (identically XS1100)
    -Steel-Flex Hose without Distributors Directly to the Pump
  - -Taper Roller Bearing for the Steering
  - -Bearings at the Front Wheel Were Changed to 20mm inner diameter, an Appropriate Spacer Was Made
  - -Disc Brake Lugs Made of Steel Plates (5mm) on Roller Bearings Situated on the Axle



#### Three-Wheel Disc Brake Conversion (dnepr.at/e/ga monega.htm)

- Based on Dnepr
- Disc Brakes on All Three Wheels (Brembo d'Or Gold Brembo)
  - —Quick-Locking Mechanisms for Hydraulics —Adapters from Full Aluminum, etc.
- Foot Brake Pedal Operates the Side Car and Rear Wheel AND a Small Caliper behind the front caliper
- Real Integral Brake Assembly with Full Exchangeability of Wheels



#### Conversion Set for Ural Front Disc Brake (swingarm)

Kit to Change Front Drum Brakes to Disc with Swingarm Fork

Number: IMZ-8.1037-30030-set

Wheel Rim: Chrome, Matt Black or Green Right Swingarm Tube: Matt Black or Green

Kit Includes:

- Complete Laced Wheel with Tire and Brembo Floating Disc
- Front Brake Lever to Pump Brembo
- Armored Brake Hose Plugs and Screws
- 4-Piston Brembo Caliper
- A Set of Calipers
- Right Tube Świngarm Does NOT Include Brake Fluid

List Price: 27 980 Kč (CZK)

(shop.ural.cz)



## Dnepr MT-16 Motorcycle (www.vostokmotors.com)



