

PROCEDURA DI SPURGO  
BLEEDING PROCEDURE  
PROCÉDURE DE PURGE  
SÄUBERUNG  
PROCEDIMIENTO DE EXPURGACIÓN



**2011**

- I** Scarica il manuale del prodotto direttamente dal web:
- GB** Pls. download the products' instruction manual from the website:
- F** Merci de bien vouloir telecharger le manuel d'instructions sur la page:
- D** Bitte entladen Sie die Betriesanleitung vom den folgenden website:
- E** Por favor, descárgate el manual de instrucciones de nuestros productos de la web:
- BG** Моля, изтеглете наръчника на потребителя от следния адрес:
- HR** Molimo download-ajte nstrukcijski priručnik sa internetske stranice:
- SLO** Prosimo, da si naložite navodila o uporabi na strani:
- CZ** Stáhněte si prosím návod k použití z této webové stránky:
- DK** Download venligst produktets betjeningsvejledning fra følgende hjemmeside:
- SF** Ole hyvä ja lataa tuotteen käyttöohje seuraavalta sivulta:
- LV** Ladzu lejupielādējiet instrukciju brošūru no adreses:
- PL** Proszę pobrać instrukcję obsługi produktu ze strony:
- P** Por favor, descarga o manual de inströções dos nossos produtos na web:
- SK** Prosím stiahnite si manuál produktov a inštrukcie z web stránky:
- S** Download venligst produktets betjeningsvejledning fra følgende hjemmeside:
- H** Kérem, tölts le a terméknek használati utasításait a website-ról:
- N** Last ned instruksjonsmanual for dette produktet på vår webside:
- NL** Aub. Download de product handleiding van de website:
- CN** 请到网页下载产品使用手册:

**<http://support.formula-brake.com>**

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**WARNING! BEFORE INSTALLING AND USING THIS NEW FORMULA SRL PRODUCT IT IS CRITICAL TO YOUR SAFETY THAT YOU READ AND STRICTLY ADHERE TO THE INSTRUCTIONS IN THIS MANUAL. FAILURE TO DO SO COULD CAUSE SERIOUS INJURY, DEATH AND INVALIDATE YOUR LEGAL RIGHTS.**

**KEEP THIS MANUAL IN A SAFE PLACE FOR FUTURE REFERENCE AS IT CONTAINS INFORMATION CRITICAL TO YOUR SAFETY.**

**WARNING! DON'T TRY TO DISASSEMBLE OR MODIFY IN ANY WAY THIS NEW FORMULA SRL PRODUCT!**

**SERVICE ON THIS PRODUCT MUST BE PERFORMED ONLY BY QUALIFIED PROFESSIONAL MECHANICS WHO ARE FAMILIAR WITH AND UNDERSTAND THE TECHNICAL DETAILS OF HOW THIS PRODUCT WORKS.**

**IF YOU DECIDE TO IGNORE THIS IMPORTANT SAFETY WARNING, YOU ARE DOING SO AT YOUR OWN RISK AND AT NO LEGAL LIABILITY TO FORMULA SRL OR ITS DISTRIBUTORS.**

**Note: AS FOR ANY MANUAL, THIS ONE MAY BE UPDATED. CONTACT YOUR MECHANIC, OR CHECK OUR WEB SITE REGULARLY, ([www.formula-brake.com](http://www.formula-brake.com)) TO RECEIVE ANY SUCH UPDATES.**

**This manual provides information for safe and proper mounting and use of the braking system; and for its routine maintenance.**

**By following the rules contained in this manual you will ensure that the braking system has the best performance and operating life, along with avoiding the most common causes of accidents that may result from improper operation and maintenance.**

 **WARNING: Carefully follow safety rules for proper braking system function.**

**In this handbook you will find the following safety notices:**

 **CAUTION: Directs your attention toward unsafe practices which could result in damages to the equipment.**

## **GENERAL SAFETY RULES**

• **FORMULA SRL's brakes have been exclusively designed for use on 2-wheel vehicles moved by human propulsion. FORMULA SRL declines responsibility for any other use, as it is considered dangerous.**

• **Brakes are an essential product for bicycle safety. Improper set-up and use of the brakes may result in loss of control or accidents, with consequential injuries.**

• **The draining operation is one of the most important phases for guaranteeing perfect functioning of any brake system. The purpose of this operation is to remove all the air that is found in the circuit. FORMULA RECOMMENDS THAT THE USER NEVER PERFORMS DRAINING OPERATIONS BY HIM/HERSELF. THIS OPERATION MUST BE PERFORMED BY A MECHANIC. However, if the user does decide to perform the draining operations by him/herself, he/she must follow all the instructions carefully, always keeping in mind that he/she is acting at his/her own risk.**

**WARNING: The brake system fluid damages the painted parts of the bicycle. It is also very harmful if it comes into contact with eyes and skin.**

**If someone comes in contact with the brake fluid accidentally, wash the interested parts with plenty of water. If the fluid comes into contact with the eyes, go to a doctor immediately. In the case of accidental contact with or loss of DOT4 brake fluid, consult the relative safety card on the website <http://support.formula-brake.com>.**

## **BRAKING SYSTEM SAFETY RULES**

- Do not use products other than those recommended in this manual, as they can damage the system and make the brakes unreliable.
- The brake oil or other oils or greases used for bicycle lubrication must not come into contact with the disks. If this occurs, clean the disks with isopropyl alcohol (n. CAS 67.63.0- degreaser for optic lenses, PC monitors, etc.).
- The brake oil and lubricants must not come into contact with the brake pads. If this occurs, the pads will become contaminated and must be replaced.
- The brake oil and lubricants must not come into contact with the painted parts of the bicycle. If this occurs, clean with isopropyl alcohol (see above).
- Only use DOT 4 oil that comes from a container that has just been opened. Never re-use oil that was previously drained from the drain fitting. Old oil or used oil may contain water, which would compromise correct system operation.
- Always make sure that the system is not losing oil before each outing. To do so, activate the lever and hold it down, then, check the pipe connection and tank cover for possible oil loss. Go to a professional mechanic if oil loss is present. Oil loss can cause serious accidents!
- **THE BRAKE SYSTEM REQUIRES A SETTLING PERIOD TO REACH MAXIMUM EFFICIENCY.**

## **ENVIRONMENTAL NOTE**

In order to safeguard the environment, please refer to these simple instructions for the correct disposal of Formula srl products.

1) In regards to the brake liquid DOT4, it is recommended to follow the instructions in the safety sheet available from: <http://support.formula-brake.com>.

## **FOREWORD**

### **Hydraulic brake fluid**

Use only DOT 4 Super hydraulic brake fluid from sealed containers. Don't leave the bottles of DOT fluid open for a long time as this product absorbs moisture in the air and this will change its physical properties, seriously affecting the efficiency of the brakes. Change the oil in the system every year to maximize performance.

Always wear the appropriate protective gloves and goggles when performing this operation. Refer to the general safety standards.

## **MATERIAL REQUIRED FOR PERFORMING DRAINING OPERATIONS**

- Draining kit containing 2 syringes, two connection pipes and two fittings
- Riser to insert between the brake pads.
- 50 cc bottle of Dot.4 oil
- 100 cc (approximately) clean and dry glass jar
- T10 torx wrench for drainage dowels, possibly mounted on the starter and adjustment torque device
- One cloth rag for cleaning the pieces

If the sealing O-rings must be replaced, obtain a pair of O-rings with a diameter of 2.5x1 for each Rx model and O-rings with a diameter of 3x1 for every other brake model (go to a trusted reseller for original FORMULA spare parts).



**WARNING! READ THE FOLLOWING INFORMATION AND INSTRUCTIONS VERY CAREFULLY. NOT DOING SO COULD LEAD TO SERIOUS INJURY AND/OR AFFECT YOUR LEGAL RIGHTS.**

## SAFETY INFORMATION

Brakes are a critical safety related component of a bicycle. Improper set up or use of brakes may result in reduced braking power and, thus, loss of control of the bicycle which could ultimately cause serious injury or even death.

Bleeding is one of the most important steps to assure the perfect functioning of any hydraulic braking system. The goal of bleeding is to remove the air in the braking system. Any air inside a hydraulic braking system reduces its performance. **FORMULA STRONGLY RECOMMENDS THAT YOU AVOID BLEEDING YOUR BRAKES YOURSELVES BUT HAVE AN EXPERT MECHANIC PERFORM THIS DELICATE AND CRUCIAL FUNCTION FOR YOU.** Should you decide to perform it yourself, follow these instructions very carefully and please remember that you do so at your own risk.

Use only DOT.4 fluids with your Formula brakes. Do not use a fluid other than the DOT.4 fluids suggested. Doing so will damage the system and make the brakes unsafe to use.

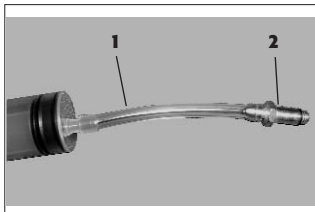
**⚠ WARNING! The DOT.4 fluid used in this braking system may be dangerous to your eyes or skin upon contact. ALWAYS WEAR APPROPRIATE GLOVES AND GOGGLES WHEN BLEEDING YOUR FORMULA BRAKES. In case of accidental contact, rinse your eyes and/or skin abundantly with running water. In case of contact with your eyes seek immediate medical assistance.**

DOT.4 fluids also damage painted surfaces. If any fluid comes in contact with a painted surface, wipe it off immediately and clean with isopropyl alcohol. Do not allow any brake fluid to come in contact with the brake rotors. If this occurs, clean the rotors with isopropyl alcohol. Do not allow any brake fluid to come in contact with the brake pads. If this occurs, the pads are contaminated and must be replaced. Do not touch the braking surface of any rotor with your bare hands, because the oils from your fingers will degrade its performance. Always wear gloves, or handle the rotor by its spokes. Disc brakes become very hot during use. Do not touch the caliper or rotor immediately after use. Make sure the brake has cooled down before making any adjustments.

## DRAINING PROCEDURE (R1-RX-The One- Mega)

1:

- The package consists of the parts indicated in the figure.
- Mount the two syringes with pipe 1 and fitting 2.
- Prepare a work surface with a clamp in which a pipe with the diameter of the bicycle handle will be held.



**2:**

- Pour the Dot 4 oil into the glass jar.
- Suction about 20 ml of Dot.4 oil with a syringe and keep the fitting immersed in the jar..

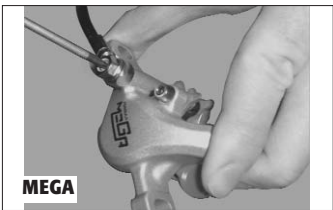
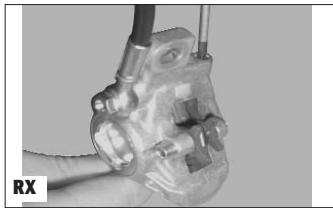


**3:**

- Unscrew the drainage dowel of the brake gripper with the appropriate torque 10 wrench.



**WARNING! Check the O-ring in the drain hole. Make sure it is in good condition and replace it, if necessary: use a 2.5x1mm diameter O-ring for Rx models and a 3x1mm diameter O-ring for R1 models, The One and Mega.**

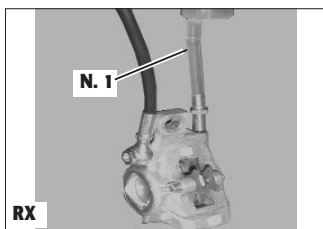
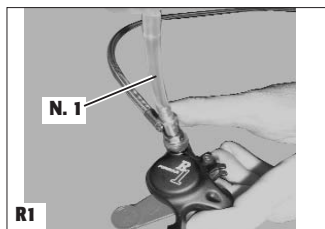


**4:**

- Remove the syringe with the oil and screw the fitting onto the gripper hole.
- Keep the gripper on the work table, at the same height as the pump.
- Insert the riser between the pads.

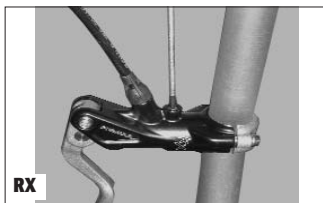


**WARNING!** The DOT.4 fluid used in this brake system is dangerous for the eyes and skin. In the case of accidental contact, wash eyes with plenty of water.



**5:**

- Place the pump on the pipe-handle. If Rx models must be operated on, the pump must be placed with its dowel slot in a vertical position.
- Unscrew the drainage dowel of the pump tank with the appropriate torque 10 wrench.



**6:**

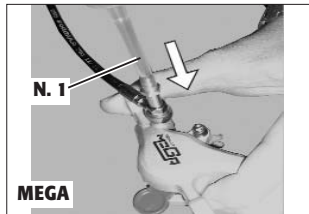
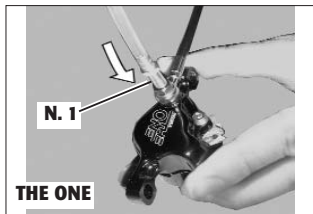
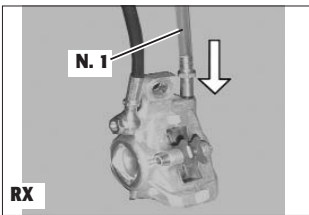
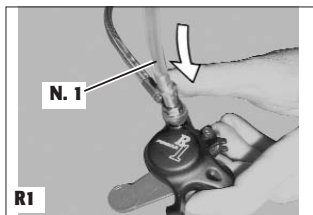
- Withdraw the second syringe and suction a slight quantity of Dot.4 oil from the jar. Screw the syringe fitting onto the pump drain hole.





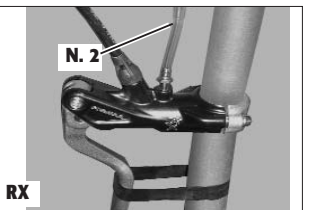
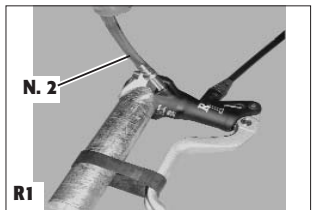
**7:**

- Work on the gripper syringe with the two syringes inserted by pushing the piston in a manner that allows oil to enter the circuit and flow into the cylinder of syringe n. 2r.
- Leave a slight amount of oil in syringe n. 1.



**8:**

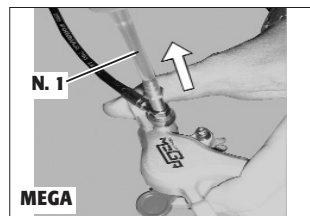
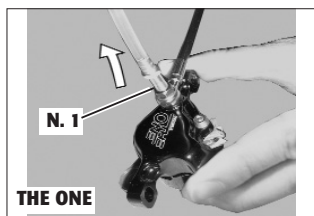
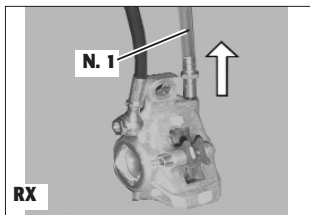
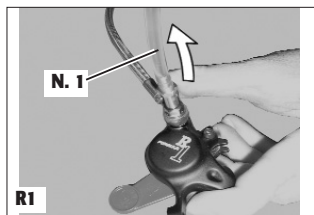
- Press the pump lever until it reaches its end-stop position to close the connection with the tank. Lock the lever in this position.





## 9:

- Keep SYRINGE 2 (Pump) in a vertical position and pull the piston of SYRINGE 1 (gripper) to create vacuum, allowing any air bubbles to be transferred into the syringe. Repeat this operation 3 or 4 times until all the air bubbles have been completely removed and collected in the SYRINGE (when there is no more air in the gripper, SYRINGE suction hardens).



**⚠ WARNING! Make sure that, during the suction stage, the level inside the pump syringe does not descend too far. Although closed, the pump piston o-ring is devised to work when pressurized and not when depressurized, which means that a blow-by may occur at this stage. If the level descends too far, move the lever away from the handlebar and keep a low pressure on the syringe, refill the syringe connected to the pump.**

## 10:

- Tenere premuta la leva e lasciarla lentamente facendo pressione contemporaneamente sulla siringa 1 della pinza. In questo modo l'olio comincia a fluire.  
Effettuare il passaggio di olio, dalla siringa 1 alla siringa 2, 2/3 volte per una maggiore sicurezza di un perfetto spurgo.

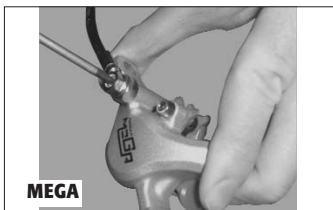
## 11:

- Remove SYRINGE 1 from the gripper and remount the dowel.

**⚠ WARNING! Tighten the bleed screw in the appropriate way at 2 Nm of torque, taking care not to damage the O-ring**



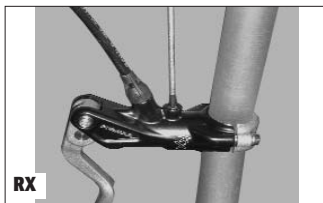
*inside.*



## 12:

**⚠ WARNING! Before removing SYRINGE 2 from the pump, perform some test braking operations and pump compression to make sure that the membrane is in the correct position.**

- Remove SYRINGE 2 from the pump.



- Check the quantity of oil and refill, if necessary.
- Remount the pump tank drainage dowel.



www.formula-brake.com

## **Formula srl**

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